

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Framework for energy market communications –
Part 301: Common information model (CIM) extensions for markets**

**Cadre pour les communications pour le marché de l'énergie –
Partie 301: Extensions du modèle d'information commun (CIM) pour les marchés**



THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2014 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

IEC Catalogue - webstore.iec.ch/catalogue

The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

IEC publications search - www.iec.ch/searchpub

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and also once a month by email.

Electropedia - www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing more than 30 000 terms and definitions in English and French, with equivalent terms in 14 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary

More than 55 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

IEC Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: csc@iec.ch.

A propos de l'IEC

La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications IEC

Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Catalogue IEC - webstore.iec.ch/catalogue

Application autonome pour consulter tous les renseignements bibliographiques sur les Normes internationales, Spécifications techniques, Rapports techniques et autres documents de l'IEC. Disponible pour PC, Mac OS, tablettes Android et iPad.

Recherche de publications IEC - www.iec.ch/searchpub

La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études,...). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

IEC Just Published - webstore.iec.ch/justpublished

Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et aussi une fois par mois par email.

Electropedia - www.electropedia.org

Le premier dictionnaire en ligne de termes électroniques et électriques. Il contient plus de 30 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans 14 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

Glossaire IEC - std.iec.ch/glossary

Plus de 55 000 entrées terminologiques électrotechniques, en anglais et en français, extraites des articles Termes et Définitions des publications IEC parues depuis 2002. Plus certaines entrées antérieures extraites des publications des CE 37, 77, 86 et CISPR de l'IEC.

Service Clients - webstore.iec.ch/csc

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: csc@iec.ch.

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Framework for energy market communications –
Part 301: Common information model (CIM) extensions for markets**

**Cadre pour les communications pour le marché de l'énergie –
Partie 301: Extensions du modèle d'information commun (CIM) pour les marchés**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX

XH

ICS 33.200

ISBN 978-2-8322-1587-6

**Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

CONTENTS

FOREWORD.....	22
INTRODUCTION.....	24
1 Scope.....	25
2 Normative references	25
3 Terms, definitions and abbreviations	26
3.1 Terms and definitions.....	26
3.2 Abbreviations.....	27
4 CIM specification.....	27
4.1 CIM modeling notation	27
4.2 CIM packages.....	28
4.3 CIM classes and relationships.....	30
4.3.1 Classes	30
4.3.2 Generalization	31
4.3.3 Simple association.....	32
4.3.4 Aggregation	33
4.4 CIM model concepts and examples.....	33
4.4.1 'MarketCommon' package.....	33
4.4.2 'MarketManagement' package.....	34
4.4.3 'MarketOperations' package.....	38
4.5 Modeling guidelines	44
4.5.1 Modeling for change	44
4.5.2 Process for amendments to the CIM	44
4.5.3 Changes to the CIM UML model	45
4.5.4 Changes to the CIM standards documents.....	45
4.5.5 CIM profiles	45
4.6 Modeling tools	45
5 Detailed model	46
5.1 Overview.....	46
5.2 Context.....	46
6 Top package IEC 62325	47
6.1 General.....	47
6.2 IEC 62325CIMVersion root class.....	48
6.3 Package MarketCommon	48
6.3.1 General	48
6.3.2 MarketParticipant.....	50
6.3.3 MarketRole	50
6.3.4 MarketRoleKind enumeration.....	51
6.3.5 RegisteredResource	55
6.4 Package MarketManagement.....	58
6.4.1 General	58
6.4.2 AceTariffType root class.....	61
6.4.3 AttributeInstanceComponent root class.....	62
6.4.4 Auction	62
6.4.5 BidTimeSeries	63
6.4.6 DateAndOrTime root class.....	64

6.4.7	Domain	65
6.4.8	FlowDirection root class	65
6.4.9	MarketAgreement	66
6.4.10	MarketDocument	66
6.4.11	MarketEvaluationPoint	67
6.4.12	MarketObjectStatus root class	68
6.4.13	MktPSRType	68
6.4.14	Period root class	69
6.4.15	Point root class	69
6.4.16	Price root class	70
6.4.17	Process	71
6.4.18	Reason root class	71
6.4.19	TimeSeries	72
6.4.20	Unit root class	73
6.5	Package MarketOperations	73
6.5.1	General	73
6.5.2	Package CongestionRevenueRights	76
6.5.3	Package MarketOpCommon	79
6.5.4	Package MarketPlan	92
6.5.5	Package MarketQualitySystem	101
6.5.6	Package MarketSystem	108
6.5.7	Package MktDomain	211
6.5.8	Package ParticipantInterfaces	235
6.5.9	Package ReferenceData	276
	Bibliography	358
	Figure 1 – 'TC 57 CIM' package dependency diagram	29
	Figure 2 – 'IEC 62325' package dependency diagram	30
	Figure 3 – Example of generalization	32
	Figure 4 – Example of simple association	33
	Figure 5 – Example of aggregation	33
	Figure 6 – Common market model	34
	Figure 7 – Market management model overview	35
	Figure 8 – Market management model	36
	Figure 9 – 'MarketManagement' 'TimeSeries' core concept	38
	Figure 10 – Market operator software systems for US style electricity markets	39
	Figure 11 – Regional transmission organization for US style electricity market	40
	Figure 12 – Registered resource reference definition for US style electricity market	41
	Figure 13 – Bid definition for US style electricity market	42
	Figure 14 – Resource bid schedule definitions for US style electricity market	43
	Figure 15 – Market clearing for US style electricity market	44
	Figure 16 – Class diagram IEC 62325::Main	48
	Figure 17 – Class diagram MarketCommon::MarketCommon	49
	Figure 18 – Package diagram MarketManagement::externalDependencies	59
	Figure 19 – Class diagram MarketManagement::Inheritance	60
	Figure 20 – Class diagram MarketManagement::MarketManagementOverview	61

Figure 21 – Class diagram MarketOperations::Main	74
Figure 22 – Package diagram MarketOperations::MarketOperations	75
Figure 23 – Class diagram CongestionRevenueRights::CongestionRevenueRights	76
Figure 24 – Class diagram MarketPlan::MarketPlan	93
Figure 25 – Class diagram MarketQualitySystem::AllocationResults	102
Figure 26 – Class diagram ExternalInputs::ASRequirements	109
Figure 27 – Class diagram ExternalInputs::DefaultBids	110
Figure 28 – Class diagram ExternalInputs::DeratedBranchLimits	111
Figure 29 – Class diagram ExternalInputs::ExistingTransmissionContractRights	112
Figure 30 – Class diagram ExternalInputs::IntermittentResourceSchedules	113
Figure 31 – Class diagram ExternalInputs::LoadForecast	114
Figure 32 – Class diagram ExternalInputs::OutageOrDeratedEquipment	114
Figure 33 – Class diagram ExternalInputs::Telemetry	116
Figure 34 – Class diagram MarketResults::Instructions	161
Figure 35 – Class diagram MarketResults::MarketClearing	162
Figure 36 – Class diagram MarketResults::MarketClearingResults	163
Figure 37 – Class diagram MarketResults::MarketRegionClearing	164
Figure 38 – Class diagram MarketResults::PnodeClearing	165
Figure 39 – Class diagram MarketResults::ResourceAwardsClearing	167
Figure 40 – Class diagram MarketResults::TransactionBidClearing	169
Figure 41 – Class diagram ParticipantInterfaces::ParticipantBids	236
Figure 42 – Class diagram ParticipantInterfaces::ParticipantTrades	237
Figure 43 – Class diagram ParticipantInterfaces::ResourceBids	238
Figure 44 – Class diagram ParticipantInterfaces::ResourceBidSchedules	239
Figure 45 – Class diagram ParticipantInterfaces::TransactionBids	240
Figure 46 – Class diagram ReferenceData::AggregateNode	277
Figure 47 – Class diagram ReferenceData::Contracts	278
Figure 48 – Class diagram ReferenceData::MeteredSubSystem	279
Figure 49 – Class diagram ReferenceData::MultiStateGenerator	280
Figure 50 – Class diagram ReferenceData::PriceNode	281
Figure 51 – Class diagram ReferenceData::RegisteredGenerator	282
Figure 52 – Class diagram ReferenceData::RegisteredInterTie	283
Figure 53 – Class diagram ReferenceData::RegisteredLoad	284
Figure 54 – Class diagram ReferenceData::RegisteredResource	285
Figure 55 – Class diagram ReferenceData::RTO	286
Table 1 – Attribute documentation	46
Table 2 – Association ends documentation	46
Table 3 – Enums documentation	47
Table 4 – Attributes of IEC 62325::IEC 62325CIMVersion	48
Table 5 – Attributes of MarketCommon::MarketParticipant	50
Table 6 – Association ends of MarketCommon::MarketParticipant with other classes	50
Table 7 – Attributes of MarketCommon::MarketRole	50

Table 8 – Association ends of MarketCommon::MarketRole with other classes	51
Table 9 – Literals of MarketCommon::MarketRoleKind	51
Table 10 – Attributes of MarketCommon::RegisteredResource	55
Table 11 – Association ends of MarketCommon::RegisteredResource with other classes	57
Table 12 – Attributes of MarketManagement::AceTariffType	62
Table 13 – Association ends of MarketManagement::AceTariffType with other classes	62
Table 14 – Attributes of MarketManagement::AttributeInstanceComponent	62
Table 15 – Association ends of MarketManagement::AttributeInstanceComponent with other classes	62
Table 16 – Attributes of MarketManagement::Auction	63
Table 17 – Association ends of MarketManagement::Auction with other classes	63
Table 18 – Attributes of MarketManagement::BidTimeSeries	63
Table 19 – Association ends of MarketManagement::BidTimeSeries with other classes	64
Table 20 – Attributes of MarketManagement::DateAndOrTime	64
Table 21 – Association ends of MarketManagement::DateAndOrTime with other classes	65
Table 22 – Attributes of MarketManagement::Domain	65
Table 23 – Association ends of MarketManagement::Domain with other classes	65
Table 24 – Attributes of MarketManagement::FlowDirection	65
Table 25 – Association ends of MarketManagement::FlowDirection with other classes	65
Table 26 – Attributes of MarketManagement::MarketAgreement	66
Table 27 – Association ends of MarketManagement::MarketAgreement with other classes	66
Table 28 – Attributes of MarketManagement::MarketDocument	67
Table 29 – Association ends of MarketManagement::MarketDocument with other classes	67
Table 30 – Attributes of MarketManagement::MarketEvaluationPoint	68
Table 31 – Association ends of MarketManagement::MarketEvaluationPoint with other classes	68
Table 32 – Attributes of MarketManagement::MarketObjectStatus	68
Table 33 – Association ends of MarketManagement::MarketObjectStatus with other classes	68
Table 34 – Attributes of MarketManagement::MktPSRType	69
Table 35 – Association ends of MarketManagement::MktPSRType with other classes	69
Table 36 – Attributes of MarketManagement::Period	69
Table 37 – Association ends of MarketManagement::Period with other classes	69
Table 38 – Attributes of MarketManagement::Point	70
Table 39 – Association ends of MarketManagement::Point with other classes	70
Table 40 – Attributes of MarketManagement::Price	70
Table 41 – Association ends of MarketManagement::Price with other classes	70
Table 42 – Attributes of MarketManagement::Process	71
Table 43 – Association ends of MarketManagement::Process with other classes	71
Table 44 – Attributes of MarketManagement::Reason	71
Table 45 – Association ends of MarketManagement::Reason with other classes	72

Table 46 – Attributes of MarketManagement::TimeSeries	72
Table 47 – Association ends of MarketManagement::TimeSeries with other classes	72
Table 48 – Attributes of MarketManagement::Unit	73
Table 49 – Association ends of MarketManagement::Unit with other classes	73
Table 50 – Attributes of CongestionRevenueRights::CRR	77
Table 51 – Association ends of CongestionRevenueRights::CRR with other classes	78
Table 52 – Attributes of CongestionRevenueRights::CRROrgRole	78
Table 53 – Association ends of CongestionRevenueRights:: CRROrgRole with other classes	78
Table 54 – Attributes of CongestionRevenueRights::CRRSegment	79
Table 55 – Association ends of CongestionRevenueRights:: CRRSegment with other classes	79
Table 56 – Attributes of MarketOpCommon::MarketInvoice	80
Table 57 – Association ends of MarketOpCommon::MarketInvoice with other classes	80
Table 58 – Attributes of MarketOpCommon::MarketInvoiceLineItem	80
Table 59 – Association ends of MarketOpCommon:: MarketInvoiceLineItem with other classes	81
Table 60 – Association ends of MarketOpCommon::MarketLedger with other classes	81
Table 61 – Attributes of MarketOpCommon::MarketLedgerEntry	81
Table 62 – Association ends of MarketOpCommon:: MarketLedgerEntry with other classes	82
Table 63 – Attributes of MarketOpCommon::MktActivityRecord	82
Table 64 – Association ends of MarketOpCommon:: MktActivityRecord with other classes	82
Table 65 – Attributes of MarketOpCommon::MktConnectivityNode	83
Table 66 – Association ends of MarketOpCommon:: MktConnectivityNode with other classes	83
Table 67 – Attributes of MarketOpCommon::MktEnergyConsumer	83
Table 68 – Association ends of MarketOpCommon:: MktEnergyConsumer with other classes	84
Table 69 – Attributes of MarketOpCommon::MktGeneratingUnit	85
Table 70 – Association ends of MarketOpCommon:: MktGeneratingUnit with other classes	86
Table 71 – Attributes of MarketOpCommon::MktLine	87
Table 72 – Association ends of MarketOpCommon::MktLine with other classes	87
Table 73 – Attributes of MarketOpCommon::MktLoadArea	87
Table 74 – Association ends of MarketOpCommon::MktLoadArea with other classes	88
Table 75 – Attributes of MarketOpCommon::MktMeasurement	88
Table 76 – Association ends of MarketOpCommon::MktMeasurement with other classes	88
Table 77 – Attributes of MarketOpCommon::MktOrganisation	89
Table 78 – Association ends of MarketOpCommon::MktOrganisation with other classes	89
Table 79 – Attributes of MarketOpCommon::MktPowerTransformer	89
Table 80 – Association ends of MarketOpCommon:: MktPowerTransformer with other classes	90
Table 81 – Attributes of MarketOpCommon::MktTerminal	91

Table 82 – Association ends of MarketOpCommon::MktTerminal with other classes	91
Table 83 – Attributes of MarketOpCommon::MktUserAttribute	92
Table 84 – Association ends of MarketOpCommon::MktUserAttribute with other classes	92
Table 85 – Attributes of MarketPlan::CRRMarket	93
Table 86 – Association ends of MarketPlan::CRRMarket with other classes	94
Table 87 – Attributes of MarketPlan::EnergyMarket	94
Table 88 – Association ends of MarketPlan::EnergyMarket with other classes	95
Table 89 – Attributes of MarketPlan::Market	95
Table 90 – Association ends of MarketPlan::Market with other classes	96
Table 91 – Attributes of MarketPlan::MarketActualEvent	96
Table 92 – Association ends of MarketPlan::MarketActualEvent with other classes	96
Table 93 – Attributes of MarketPlan::MarketFactors	96
Table 94 – Association ends of MarketPlan::MarketFactors with other classes	97
Table 95 – Attributes of MarketPlan::MarketPlan	97
Table 96 – Association ends of MarketPlan::MarketPlan with other classes	98
Table 97 – Attributes of MarketPlan::MarketProduct	98
Table 98 – Association ends of MarketPlan::MarketProduct with other classes	98
Table 99 – Attributes of MarketPlan::MarketRun	99
Table 100 – Association ends of MarketPlan::MarketRun with other classes	99
Table 101 – Attributes of MarketPlan::PlannedMarket	100
Table 102 – Association ends of MarketPlan::PlannedMarket with other classes	100
Table 103 – Attributes of MarketPlan::PlannedMarketEvent	100
Table 104 – Association ends of MarketPlan::PlannedMarketEvent with other classes	101
Table 105 – Attributes of MarketQualitySystem::AllocationResult	103
Table 106 – Association ends of MarketQualitySystem:: AllocationResult with other classes	103
Table 107 – Attributes of MarketQualitySystem::AllocationResultValues	103
Table 108 – Association ends of MarketQualitySystem:: AllocationResultValues with other classes	104
Table 109 – Attributes of MarketQualitySystem::AuxiliaryCost	104
Table 110 – Association ends of MarketQualitySystem::AuxiliaryCost with other classes	104
Table 111 – Association ends of MarketQualitySystem:: AuxiliaryObject with other classes	104
Table 112 – Attributes of MarketQualitySystem::AuxiliaryValues	105
Table 113 – Association ends of MarketQualitySystem:: AuxiliaryValues with other classes	105
Table 114 – Attributes of MarketQualitySystem::ExpectedEnergy	105
Table 115 – Association ends of MarketQualitySystem:: ExpectedEnergy with other classes	105
Table 116 – Attributes of MarketQualitySystem::ExpectedEnergyValues	106
Table 117 – Association ends of MarketQualitySystem:: ExpectedEnergyValues with other classes	106
Table 118 – Attributes of MarketQualitySystem::FiveMinAuxiliaryData	106
Table 119 – Association ends of MarketQualitySystem:: FiveMinAuxiliaryData with other classes	106

Table 120 – Attributes of MarketQualitySystem::TenMinAuxiliaryData	107
Table 121 – Association ends of MarketQualitySystem:: TenMinAuxiliaryData with other classes	107
Table 122 – Attributes of MarketQualitySystem::TradingHubPrice	107
Table 123 – Association ends of MarketQualitySystem:: TradingHubPrice with other classes	107
Table 124 – Attributes of MarketQualitySystem::TradingHubValues	108
Table 125 – Association ends of MarketQualitySystem:: TradingHubValues with other classes	108
Table 126 – Attributes of ExternalInputs::AnalogMeasurementValueQuality	117
Table 127 – Association ends of ExternalInputs:: AnalogMeasurementValueQuality with other classes	117
Table 128 – Attributes of ExternalInputs::AreaLoadCurve	118
Table 129 – Association ends of ExternalInputs::AreaLoadCurve with other classes	118
Table 130 – Attributes of ExternalInputs::ASRequirements	118
Table 131 – Association ends of ExternalInputs::ASRequirements with other classes	119
Table 132 – Attributes of ExternalInputs::BaseCaseConstraintLimit	119
Table 133 – Association ends of ExternalInputs:: BaseCaseConstraintLimit with other classes	119
Table 134 – Attributes of ExternalInputs::BranchEndFlow	120
Table 135 – Association ends of ExternalInputs::BranchEndFlow with other classes	120
Table 136 – Attributes of ExternalInputs::ConstraintTerm	120
Table 137 – Association ends of ExternalInputs::ConstraintTerm with other classes	121
Table 138 – Attributes of ExternalInputs::ContingencyConstraintLimit	121
Table 139 – Association ends of ExternalInputs:: ContingencyConstraintLimit with other classes	121
Table 140 – Attributes of ExternalInputs::ControlAreaSolutionData	122
Table 141 – Association ends of ExternalInputs:: ControlAreaSolutionData with other classes	122
Table 142 – Attributes of ExternalInputs::DefaultBid	123
Table 143 – Association ends of ExternalInputs::DefaultBid with other classes	123
Table 144 – Attributes of ExternalInputs::DefaultBidCurve	124
Table 145 – Association ends of ExternalInputs::DefaultBidCurve with other classes	124
Table 146 – Attributes of ExternalInputs::DefaultBidCurveData	125
Table 147 – Association ends of ExternalInputs:: DefaultBidCurveData with other classes	125
Table 148 – Attributes of ExternalInputs::DefaultConstraintLimit	125
Table 149 – Association ends of ExternalInputs:: DefaultConstraintLimit with other classes	126
Table 150 – Attributes of ExternalInputs::DiscreteMeasurementValueQuality	126
Table 151 – Association ends of ExternalInputs:: DiscreteMeasurementValueQuality with other classes	126
Table 152 – Attributes of ExternalInputs::DistributionFactorSet	127
Table 153 – Association ends of ExternalInputs:: DistributionFactorSet with other classes	127
Table 154 – Attributes of ExternalInputs::EnergyConsumerData	127

Table 155 – Association ends of ExternalInputs:: EnergyConsumerData with other classes	128
Table 156 – Attributes of ExternalInputs::EnergyPriceIndex	128
Table 157 – Association ends of ExternalInputs::EnergyPriceIndex with other classes	128
Table 158 – Attributes of ExternalInputs::EnergyProfile	128
Table 159 – Association ends of ExternalInputs::EnergyProfile with other classes	129
Table 160 – Attributes of ExternalInputs::EnergyTransaction	129
Table 161 – Association ends of ExternalInputs::EnergyTransaction with other classes	130
Table 162 – Attributes of ExternalInputs::GenDistributionFactor	130
Table 163 – Association ends of ExternalInputs:: GenDistributionFactor with other classes	130
Table 164 – Attributes of ExternalInputs::GeneratingUnitDynamicValues	131
Table 165 – Association ends of ExternalInputs:: GeneratingUnitDynamicValues with other classes	131
Table 166 – Attributes of ExternalInputs::GenericConstraints	131
Table 167 – Association ends of ExternalInputs::GenericConstraints with other classes	132
Table 168 – Attributes of ExternalInputs::InterchangeETCData	132
Table 169 – Association ends of ExternalInputs::InterchangeETCData with other classes	132
Table 170 – Attributes of ExternalInputs::InterchangeSchedule	132
Table 171 – Association ends of ExternalInputs:: InterchangeSchedule with other classes	133
Table 172 – Attributes of ExternalInputs::IntermittentResourceEligibility	133
Table 173 – Association ends of ExternalInputs:: IntermittentResourceEligibility with other classes	134
Table 174 – Attributes of ExternalInputs::LoadDistributionFactor	134
Table 175 – Association ends of ExternalInputs:: LoadDistributionFactor with other classes	135
Table 176 – Attributes of ExternalInputs::LossSensitivity	135
Table 177 – Association ends of ExternalInputs::LossSensitivity with other classes	135
Table 178 – Attributes of ExternalInputs::MktACLineSegment	136
Table 179 – Association ends of ExternalInputs::MktACLineSegment with other classes	136
Table 180 – Attributes of ExternalInputs::MktAnalogLimit	137
Table 181 – Association ends of ExternalInputs::MktAnalogLimit with other classes	137
Table 182 – Attributes of ExternalInputs::MktAnalogLimitSet	138
Table 183 – Association ends of ExternalInputs::MktAnalogLimitSet with other classes	138
Table 184 – Attributes of ExternalInputs::MktAnalogValue	138
Table 185 – Association ends of ExternalInputs::MktAnalogValue with other classes	139
Table 186 – Attributes of ExternalInputs::MktControlArea	139
Table 187 – Association ends of ExternalInputs::MktControlArea with other classes	139
Table 188 – Attributes of ExternalInputs::MktDiscreteValue	140
Table 189 – Association ends of ExternalInputs::MktDiscreteValue with other classes	140
Table 190 – Attributes of ExternalInputs::MktOperationalLimitType	141
Table 191 – Association ends of ExternalInputs:: MktOperationalLimitType with other classes	141
Table 192 – Attributes of ExternalInputs::MktOutageSchedule	141

Table 193 – Association ends of ExternalInputs::MktOutageSchedule with other classes	142
Table 194 – Attributes of ExternalInputs::MktSeriesCompensator	143
Table 195 – Association ends of ExternalInputs:: MktSeriesCompensator with other classes	143
Table 196 – Attributes of ExternalInputs::MktShuntCompensator	144
Table 197 – Association ends of ExternalInputs:: MktShuntCompensator with other classes	144
Table 198 – Attributes of ExternalInputs::MktSwitch.....	145
Table 199 – Association ends of ExternalInputs::MktSwitch with other classes	145
Table 200 – Attributes of ExternalInputs::MktTapChanger.....	146
Table 201 – Association ends of ExternalInputs::MktTapChanger with other classes	146
Table 202 – Association ends of ExternalInputs::MWLimitSchedule with other classes	147
Table 203 – Attributes of ExternalInputs::NodeConstraintTerm	147
Table 204 – Association ends of ExternalInputs::NodeConstraintTerm with other classes	147
Table 205 – Attributes of ExternalInputs::Profile	148
Table 206 – Association ends of ExternalInputs::Profile with other classes	148
Table 207 – Attributes of ExternalInputs::ProfileData.....	148
Table 208 – Association ends of ExternalInputs::ProfileData with other classes	149
Table 209 – Attributes of ExternalInputs::ReservedDemandCurve	149
Table 210 – Association ends of ExternalInputs:: ReserveDemandCurve with other classes	149
Table 211 – Attributes of ExternalInputs::SCADAInformation	150
Table 212 – Attributes of ExternalInputs::SecurityConstraints	150
Table 213 – Association ends of ExternalInputs::SecurityConstraints with other classes	150
Table 214 – Attributes of ExternalInputs::SecurityConstraintSum	151
Table 215 – Association ends of ExternalInputs:: SecurityConstraintSum with other classes	152
Table 216 – Attributes of ExternalInputs::ServicePoint.....	152
Table 217 – Association ends of ExternalInputs::ServicePoint with other classes	152
Table 218 – Attributes of ExternalInputs::ShuntCompensatorDynamicData	153
Table 219 – Association ends of ExternalInputs::ShuntCompensatorDynamicData with other classes	153
Table 220 – Attributes of ExternalInputs::SwitchStatus	153
Table 221 – Association ends of ExternalInputs::SwitchStatus with other classes	153
Table 222 – Attributes of ExternalInputs::SysLoadDistributionFactor.....	154
Table 223 – Association ends of ExternalInputs:: SysLoadDistributionFactor with other classes	154
Table 224 – Attributes of ExternalInputs::TapChangerDynamicData.....	154
Table 225 – Association ends of ExternalInputs:: TapChangerDynamicData with other classes	155
Table 226 – Attributes of ExternalInputs::TerminalConstraintTerm	155
Table 227 – Association ends of ExternalInputs:: TerminalConstraintTerm with other classes	155
Table 228 – Attributes of ExternalInputs::TransferInterface.....	155

Table 229 – Association ends of ExternalInputs::TransferInterface with other classes	156
Table 230 – Attributes of ExternalInputs::TransferInterfaceSolution	156
Table 231 – Association ends of ExternalInputs:: TransferInterfaceSolution with other classes	156
Table 232 – Attributes of ExternalInputs::TransmissionCapacity	156
Table 233 – Association ends of ExternalInputs:: TransmissionCapacity with other classes	157
Table 234 – Attributes of ExternalInputs::TransmissionInterfaceRightEntitlement	157
Table 235 – Association ends of ExternalInputs:: TransmissionInterfaceRightEntitlement with other classes	158
Table 236 – Attributes of ExternalInputs::TransmissionPath.....	158
Table 237 – Association ends of ExternalInputs::TransmissionPath with other classes	158
Table 238 – Association ends of ExternalInputs:: TransmissionReservation with other classes	159
Table 239 – Attributes of ExternalInputs::TREntitlement	159
Table 240 – Association ends of ExternalInputs::TREntitlement with other classes	159
Table 241 – Attributes of ExternalInputs::UnitInitialConditions	160
Table 242 – Association ends of ExternalInputs::UnitInitialConditions with other classes	160
Table 243 – Attributes of MarketResults::AncillaryServiceClearing.....	170
Table 244 – Association ends of MarketResults:: AncillaryServiceClearing with other classes	170
Table 245 – Attributes of MarketResults::BillDeterminant.....	171
Table 246 – Association ends of MarketResults::BillDeterminant with other classes.....	171
Table 247 – Attributes of MarketResults::ChargeProfile	172
Table 248 – Association ends of MarketResults::ChargeProfile with other classes	172
Table 249 – Attributes of MarketResults::ChargeProfileData	173
Table 250 – Association ends of MarketResults::ChargeProfileData with other classes.....	173
Table 251 – Attributes of MarketResults::CommitmentClearing	173
Table 252 – Association ends of MarketResults:: CommitmentClearing with other classes	174
Table 253 – Attributes of MarketResults::Commitments	174
Table 254 – Association ends of MarketResults::Commitments with other classes	174
Table 255 – Attributes of MarketResults::ConstraintClearing.....	175
Table 256 – Association ends of MarketResults::ConstraintClearing with other classes	175
Table 257 – Attributes of MarketResults::ConstraintResults	176
Table 258 – Association ends of MarketResults::ConstraintResults with other classes.....	176
Table 259 – Attributes of MarketResults::DopInstruction	177
Table 260 – Association ends of MarketResults::DopInstruction with other classes.....	177
Table 261 – Attributes of MarketResults::DotInstruction	177
Table 262 – Association ends of MarketResults::DotInstruction with other classes.....	178
Table 263 – Attributes of MarketResults::ExPostLoss	178
Table 264 – Association ends of MarketResults::ExPostLoss with other classes	179
Table 265 – Attributes of MarketResults::ExPostLossResults.....	179
Table 266 – Association ends of MarketResults::ExPostLossResults with other classes	180

Table 267 – Attributes of MarketResults::ExPostMarketRegion	180
Table 268 – Association ends of MarketResults::ExPostMarketRegion with other classes	180
Table 269 – Attributes of MarketResults::ExPostMarketRegionResults	181
Table 270 – Association ends of MarketResults:: ExPostMarketRegionResults with other classes	181
Table 271 – Attributes of MarketResults::ExPostPricing	181
Table 272 – Association ends of MarketResults::ExPostPricing with other classes	182
Table 273 – Attributes of MarketResults::ExPostPricingResults	182
Table 274 – Association ends of MarketResults:: ExPostPricingResults with other classes	182
Table 275 – Attributes of MarketResults::ExPostResource	183
Table 276 – Association ends of MarketResults::ExPostResource with other classes	183
Table 277 – Attributes of MarketResults::ExPostResourceResults	184
Table 278 – Association ends of MarketResults:: ExPostResourceResults with other classes	184
Table 279 – Attributes of MarketResults::GeneralClearing	184
Table 280 – Association ends of MarketResults::GeneralClearing with other classes	185
Table 281 – Attributes of MarketResults::GeneralClearingResults	185
Table 282 – Association ends of MarketResults:: GeneralClearingResults with other classes	185
Table 283 – Attributes of MarketResults::InstructionClearing	186
Table 284 – Association ends of MarketResults::InstructionClearing with other classes	186
Table 285 – Attributes of MarketResults::InstructionClearingDOP	186
Table 286 – Association ends of MarketResults:: InstructionClearingDOP with other classes	187
Table 287 – Attributes of MarketResults::InstructionClearingDOT	187
Table 288 – Association ends of MarketResults:: InstructionClearingDOT with other classes	188
Table 289 – Attributes of MarketResults::Instructions	188
Table 290 – Association ends of MarketResults::Instructions with other classes	189
Table 291 – Attributes of MarketResults::LoadFollowingOperatorInput	189
Table 292 – Association ends of MarketResults:: LoadFollowingOperatorInput with other classes	189
Table 293 – Attributes of MarketResults::LossClearing	190
Table 294 – Association ends of MarketResults::LossClearing with other classes	190
Table 295 – Attributes of MarketResults::LossClearingResults	190
Table 296 – Association ends of MarketResults::LossClearingResults with other classes	191
Table 297 – Attributes of MarketResults::MarketRegionResults	191
Table 298 – Association ends of MarketResults:: MarketRegionResults with other classes	192
Table 299 – Attributes of MarketResults::MarketResults	192
Table 300 – Association ends of MarketResults::MarketResults with other classes	192
Table 301 – Attributes of MarketResults::MarketStatement	193
Table 302 – Association ends of MarketResults::MarketStatement with other classes	193

Table 303 – Attributes of MarketResults::MarketStatementLineItem	193
Table 304 – Association ends of MarketResults:: MarketStatementLineItem with other classes	194
Table 305 – Attributes of MarketResults::MitigatedBid	195
Table 306 – Association ends of MarketResults::MitigatedBid with other classes	195
Table 307 – Attributes of MarketResults::MitigatedBidClearing	195
Table 308 – Association ends of MarketResults::MitigatedBidClearing with other classes	196
Table 309 – Attributes of MarketResults::MitigatedBidSegment.....	196
Table 310 – Association ends of MarketResults:: MitigatedBidSegment with other classes	196
Table 311 – Attributes of MarketResults::MPMClearing.....	196
Table 312 – Association ends of MarketResults::MPMClearing with other classes	197
Table 313 – Attributes of MarketResults::MPMResourceStatus	197
Table 314 – Association ends of MarketResults::MPMResourceStatus with other classes	198
Table 315 – Attributes of MarketResults::MPMTestResults	198
Table 316 – Association ends of MarketResults::MPMTestResults with other classes	198
Table 317 – Attributes of MarketResults::PassThroughBill	199
Table 318 – Association ends of MarketResults::PassThroughBill with other classes	200
Table 319 – Attributes of MarketResults::PnodeClearing.....	200
Table 320 – Association ends of MarketResults::PnodeClearing with other classes	200
Table 321 – Attributes of MarketResults::PnodeResults	201
Table 322 – Association ends of MarketResults::PnodeResults with other classes	201
Table 323 – Attributes of MarketResults::ResourceAwardClearing	201
Table 324 – Association ends of MarketResults:: ResourceAwardClearing with other classes	202
Table 325 – Attributes of MarketResults::ResourceAwardInstruction.....	202
Table 326 – Association ends of MarketResults::ResourceAwardInstruction with other classes	204
Table 327 – Attributes of MarketResults::ResourceClearing	204
Table 328 – Association ends of MarketResults::ResourceClearing with other classes	205
Table 329 – Attributes of MarketResults::ResourceDispatchResults.....	205
Table 330 – Association ends of MarketResults:: ResourceDispatchResults with other classes	206
Table 331 – Attributes of MarketResults::ResourceLoadFollowingInst.....	206
Table 332 – Association ends of MarketResults:: ResourceLoadFollowingInst with other classes	206
Table 333 – Association ends of MarketResults::RMRDetermination with other classes	207
Table 334 – Attributes of MarketResults::RMROperatorInput	207
Table 335 – Association ends of MarketResults::RMROperatorInput with other classes	207
Table 336 – Attributes of MarketResults::RUCAwardInstruction	208
Table 337 – Association ends of MarketResults:: RUCAwardInstruction with other classes	208
Table 338 – Attributes of MarketResults::SelfScheduleBreakdown	209

Table 339 – Association ends of MarketResults:: SelfScheduleBreakdown with other classes	209
Table 340 – Attributes of MarketResults::Settlement	209
Table 341 – Association ends of MarketResults::Settlement with other classes	210
Table 342 – Attributes of MarketResults::TransactionBidClearing	210
Table 343 – Association ends of MarketResults:: TransactionBidClearing with other classes	210
Table 344 – Attributes of MarketResults::TransactionBidResults	211
Table 345 – Association ends of MarketResults:: TransactionBidResults with other classes	211
Table 346 – Literals of MktDomain::ActionType	212
Table 347 – Literals of MktDomain::AnalogLimitType	212
Table 348 – Literals of MktDomain::AnodeType	212
Table 349 – Literals of MktDomain::ApnodeType	213
Table 350 – Literals of MktDomain::AreaControlMode	214
Table 351 – Literals of MktDomain::AutomaticDispatchMode	214
Table 352 – Literals of MktDomain::AutomaticDisplnstTypeCommitment	214
Table 353 – Literals of MktDomain::BidCalculationBasis	214
Table 354 – Literals of MktDomain::BidMitigationStatus	215
Table 355 – Literals of MktDomain::BidMitigationType	215
Table 356 – Literals of MktDomain::BidType	216
Table 357 – Literals of MktDomain::BidTypeRMR	216
Table 358 – Literals of MktDomain::BranchRatingType	216
Table 359 – Literals of MktDomain::CheckOutType	216
Table 360 – Literals of MktDomain::CommitmentType	217
Table 361 – Literals of MktDomain::ConstraintLimitType	217
Table 362 – Literals of MktDomain::ConstraintRampType	217
Table 363 – Literals of MktDomain::ContractType	218
Table 364 – Literals of MktDomain::CostBasis	218
Table 365 – Literals of MktDomain::CRRCategoryType	218
Table 366 – Literals of MktDomain::CRRHedgeType	219
Table 367 – Literals of MktDomain::CRRRoleType	219
Table 368 – Literals of MktDomain::CRRSegmentType	219
Table 369 – Literals of MktDomain::DispatchResponseType	220
Table 370 – Literals of MktDomain::EnergyPriceIndexType	220
Table 371 – Literals of MktDomain::EnergyProductType	220
Table 372 – Literals of MktDomain::EnergyTransactionType	221
Table 373 – Literals of MktDomain::EquipmentStatusType	221
Table 374 – Literals of MktDomain::ExecutionType	221
Table 375 – Literals of MktDomain::FlagTypeRMR	221
Table 376 – Literals of MktDomain::FlowDirectionType	222
Table 377 – Literals of MktDomain::FuelSource	222
Table 378 – Literals of MktDomain::InterTieDirection	223
Table 379 – Literals of MktDomain::LoadForecastType	223

Table 380 – Literals of MktDomain::MarketProductSelfSchedType	223
Table 381 – Literals of MktDomain::MarketProductType	224
Table 382 – Literals of MktDomain::MarketType	224
Table 383 – Literals of MktDomain::MktAccountKind	225
Table 384 – Literals of MktDomain::MktBillMediaKind	225
Table 385 – Literals of MktDomain::MktInvoiceLineItemKind	225
Table 386 – Literals of MktDomain::MPMTestIdentifierType	226
Table 387 – Literals of MktDomain::MPMTestMethodType	226
Table 388 – Literals of MktDomain::MPMTestOutcome	226
Table 389 – Literals of MktDomain::MQSCHGType	227
Table 390 – Literals of MktDomain::MQSInstructionSource	227
Table 391 – Literals of MktDomain::OnOff	227
Table 392 – Literals of MktDomain::OutageType	227
Table 393 – Literals of MktDomain::ParticipationCategoryMPM	228
Table 394 – Literals of MktDomain::PassIndicatorType	228
Table 395 – Literals of MktDomain::PurposeFlagType	229
Table 396 – Literals of MktDomain::RampCurveType	229
Table 397 – Literals of MktDomain::RampModeType	229
Table 398 – Literals of MktDomain::RampRateCondition	230
Table 399 – Literals of MktDomain::RampRateType	230
Table 400 – Literals of MktDomain::ReserveRequirementType	230
Table 401 – Literals of MktDomain::ResourceAncillaryServiceType	231
Table 402 – Literals of MktDomain::ResourceAssnType	231
Table 403 – Literals of MktDomain::ResourceCapacityType	231
Table 404 – Literals of MktDomain::ResourceLimitIndicator	232
Table 405 – Literals of MktDomain::ResourceRegistrationStatus	232
Table 406 – Literals of MktDomain::ResultsConstraintType	232
Table 407 – Literals of MktDomain::SelfSchedReferenceType	233
Table 408 – Literals of MktDomain::SelfScheduleBreakdownType	233
Table 409 – Literals of MktDomain::SwitchStatusType	233
Table 410 – Literals of MktDomain::TimeOfUse	234
Table 411 – Literals of MktDomain::TradeType	234
Table 412 – Literals of MktDomain::TRType	234
Table 413 – Literals of MktDomain::UnitType	235
Table 414 – Literals of MktDomain::YesNo	235
Table 415 – Attributes of ParticipantInterfaces::ActionRequest	240
Table 416 – Association ends of ParticipantInterfaces::ActionRequest with other classes	241
Table 417 – Attributes of ParticipantInterfaces::AreaLoadBid	241
Table 418 – Association ends of ParticipantInterfaces::AreaLoadBid with other classes	241
Table 419 – Attributes of ParticipantInterfaces::AttributeProperty	242
Table 420 – Association ends of ParticipantInterfaces::AttributeProperty with other classes	242
Table 421 – Attributes of ParticipantInterfaces::Bid	242

Table 422 – Association ends of ParticipantInterfaces::Bid with other classes	243
Table 423 – Attributes of ParticipantInterfaces::BidDistributionFactor	243
Table 424 – Association ends of ParticipantInterfaces:: BidDistributionFactor with other classes	244
Table 425 – Attributes of ParticipantInterfaces::BidError	244
Table 426 – Association ends of ParticipantInterfaces::BidError with other classes	244
Table 427 – Attributes of ParticipantInterfaces::BidHourlyProductSchedule	245
Table 428 – Association ends of ParticipantInterfaces:: BidHourlyProductSchedule with other classes	245
Table 429 – Attributes of ParticipantInterfaces::BidHourlySchedule	245
Table 430 – Association ends of ParticipantInterfaces:: BidHourlySchedule with other classes	246
Table 431 – Attributes of ParticipantInterfaces::BidPriceCurve	246
Table 432 – Association ends of ParticipantInterfaces::BidPriceCurve with other classes	246
Table 433 – Attributes of ParticipantInterfaces::BidPriceSchedule	247
Table 434 – Association ends of ParticipantInterfaces:: BidPriceSchedule with other classes	247
Table 435 – Attributes of ParticipantInterfaces::BidSelfSched	248
Table 436 – Association ends of ParticipantInterfaces:: BidSelfSched with other classes	249
Table 437 – Attributes of ParticipantInterfaces::BidSet	249
Table 438 – Association ends of ParticipantInterfaces::BidSet with other classes	249
Table 439 – Attributes of ParticipantInterfaces::ChargeComponent	250
Table 440 – Association ends of ParticipantInterfaces:: ChargeComponent with other classes	250
Table 441 – Attributes of ParticipantInterfaces::ChargeGroup	251
Table 442 – Association ends of ParticipantInterfaces::ChargeGroup with other classes	251
Table 443 – Attributes of ParticipantInterfaces::ChargeType	251
Table 444 – Association ends of ParticipantInterfaces::ChargeType with other classes	252
Table 445 – Attributes of ParticipantInterfaces::DispatchInstReply	252
Table 446 – Association ends of ParticipantInterfaces:: DispatchInstReply with other classes	253
Table 447 – Association ends of ParticipantInterfaces:: EnergyPriceCurve with other classes	253
Table 448 – Attributes of ParticipantInterfaces::GeneratingBid	254
Table 449 – Association ends of ParticipantInterfaces::GeneratingBid with other classes	255
Table 450 – Attributes of ParticipantInterfaces::HourlyPreDispatchSchedule	256
Table 451 – Association ends of ParticipantInterfaces:: HourlyPreDispatchSchedule with other classes	256
Table 452 – Attributes of ParticipantInterfaces::InterTieBid	257
Table 453 – Association ends of ParticipantInterfaces::InterTieBid with other classes	257
Table 454 – Attributes of ParticipantInterfaces::InterTieDispatchResponse	258
Table 455 – Association ends of ParticipantInterfaces:: InterTieDispatchResponse with other classes	258
Table 456 – Attributes of ParticipantInterfaces::LoadBid	259

Table 457 – Association ends of ParticipantInterfaces::LoadBid with other classes	260
Table 458 – Attributes of ParticipantInterfaces::LoadFollowingInst	261
Table 459 – Association ends of ParticipantInterfaces:: LoadFollowingInst with other classes	261
Table 460 – Attributes of ParticipantInterfaces::LoadReductionPriceCurve	261
Table 461 – Association ends of ParticipantInterfaces:: LoadReductionPriceCurve with other classes	262
Table 462 – Attributes of ParticipantInterfaces::MajorChargeGroup	262
Table 463 – Association ends of ParticipantInterfaces:: MajorChargeGroup with other classes	262
Table 464 – Attributes of ParticipantInterfaces::MarketScheduledEvent	263
Table 465 – Association ends of ParticipantInterfaces:: MarketScheduledEvent with other classes	263
Table 466 – Attributes of ParticipantInterfaces::NotificationTimeCurve	263
Table 467 – Association ends of ParticipantInterfaces:: NotificationTimeCurve with other classes	264
Table 468 – Attributes of ParticipantInterfaces::OpenTieSchedule	264
Table 469 – Association ends of ParticipantInterfaces:: OpenTieSchedule with other classes	265
Table 470 – Attributes of ParticipantInterfaces::ProductBid	265
Table 471 – Association ends of ParticipantInterfaces::ProductBid with other classes	265
Table 472 – Attributes of ParticipantInterfaces::PumpingCostSchedule	266
Table 473 – Association ends of ParticipantInterfaces:: PumpingCostSchedule with other classes	266
Table 474 – Attributes of ParticipantInterfaces::PumpingLevelSchedule	266
Table 475 – Association ends of ParticipantInterfaces:: PumpingLevelSchedule with other classes	267
Table 476 – Attributes of ParticipantInterfaces::PumpingShutDownCostSchedule	267
Table 477 – Association ends of ParticipantInterfaces:: PumpingShutDownCostSchedule with other classes	268
Table 478 – Attributes of ParticipantInterfaces::RampRateCurve	268
Table 479 – Association ends of ParticipantInterfaces:: RampRateCurve with other classes	269
Table 480 – Attributes of ParticipantInterfaces::ResourceBid	269
Table 481 – Association ends of ParticipantInterfaces::ResourceBid with other classes	270
Table 482 – Attributes of ParticipantInterfaces::StartUpCostCurve	271
Table 483 – Association ends of ParticipantInterfaces:: StartUpCostCurve with other classes	271
Table 484 – Attributes of ParticipantInterfaces::StartUpTimeCurve	272
Table 485 – Association ends of ParticipantInterfaces:: StartUpTimeCurve with other classes	272
Table 486 – Attributes of ParticipantInterfaces::Trade	272
Table 487 – Association ends of ParticipantInterfaces::Trade with other classes	273
Table 488 – Attributes of ParticipantInterfaces::TradeError	274
Table 489 – Association ends of ParticipantInterfaces::TradeError with other classes	274
Table 490 – Attributes of ParticipantInterfaces::TradeProduct	275
Table 491 – Association ends of ParticipantInterfaces::TradeProduct with other classes	275

Table 492 – Attributes of ParticipantInterfaces::TransactionBid	275
Table 493 – Association ends of ParticipantInterfaces:: TransactionBid with other classes	276
Table 494 – Attributes of ReferenceData::AdjacentCaset	287
Table 495 – Association ends of ReferenceData::AdjacentCaset with other classes	287
Table 496 – Attributes of ReferenceData::AggregatedPnode	287
Table 497 – Association ends of ReferenceData::AggregatedPnode with other classes	288
Table 498 – Attributes of ReferenceData::AggregateNode	288
Table 499 – Association ends of ReferenceData::AggregateNode with other classes	289
Table 500 – Attributes of ReferenceData::BidPriceCap	289
Table 501 – Association ends of ReferenceData::BidPriceCap with other classes	290
Table 502 – Attributes of ReferenceData::CnodeDistributionFactor	290
Table 503 – Association ends of ReferenceData:: CnodeDistributionFactor with other classes	290
Table 504 – Attributes of ReferenceData::CombinedCycleConfiguration	291
Table 505 – Association ends of ReferenceData:: CombinedCycleConfiguration with other classes	293
Table 506 – Attributes of ReferenceData::CombinedCycleConfigurationMember	295
Table 507 – Association ends of ReferenceData:: CombinedCycleConfigurationMember with other classes	295
Table 508 – Attributes of ReferenceData::CombinedCycleLogicalConfiguration	296
Table 509 – Association ends of ReferenceData:: CombinedCycleLogicalConfiguration with other classes	296
Table 510 – Attributes of ReferenceData::CombinedCycleTransitionState	296
Table 511 – Association ends of ReferenceData:: CombinedCycleTransitionState with other classes	297
Table 512 – Attributes of ReferenceData::CongestionArea	297
Table 513 – Association ends of ReferenceData::CongestionArea with other classes	297
Table 514 – Attributes of ReferenceData::ContractDistributionFactor	298
Table 515 – Association ends of ReferenceData:: ContractDistributionFactor with other classes	298
Table 516 – Attributes of ReferenceData::ContractRight	299
Table 517 – Association ends of ReferenceData::ContractRight with other classes	300
Table 518 – Attributes of ReferenceData::ControlAreaDesignation	300
Table 519 – Association ends of ReferenceData:: ControlAreaDesignation with other classes	301
Table 520 – Attributes of ReferenceData::Flowgate	301
Table 521 – Association ends of ReferenceData::Flowgate with other classes	301
Table 522 – Attributes of ReferenceData::FlowgatePartner	302
Table 523 – Association ends of ReferenceData::FlowgatePartner with other classes	302
Table 524 – Attributes of ReferenceData::FlowgateRelief	302
Table 525 – Association ends of ReferenceData::FlowgateRelief with other classes	303
Table 526 – Attributes of ReferenceData::FlowgateValue	303
Table 527 – Association ends of ReferenceData::FlowgateValue with other classes	304
Table 528 – Attributes of ReferenceData::ForbiddenRegion	304
Table 529 – Association ends of ReferenceData::ForbiddenRegion with other classes	304

Table 530 – Attributes of ReferenceData::FormerReference	304
Table 531 – Association ends of ReferenceData::FormerReference with other classes	305
Table 532 – Attributes of ReferenceData::FuelCostCurve	305
Table 533 – Association ends of ReferenceData::FuelCostCurve with other classes	305
Table 534 – Attributes of ReferenceData::FuelRegion	306
Table 535 – Association ends of ReferenceData::FuelRegion with other classes	306
Table 536 – Attributes of ReferenceData::GasPrice	306
Table 537 – Association ends of ReferenceData::GasPrice with other classes	306
Table 538 – Attributes of ReferenceData::HostControlArea	307
Table 539 – Association ends of ReferenceData::HostControlArea with other classes	307
Table 540 – Attributes of ReferenceData::IndividualPnode	308
Table 541 – Association ends of ReferenceData::IndividualPnode with other classes	308
Table 542 – Attributes of ReferenceData::LoadAggregationPoint	309
Table 543 – Association ends of ReferenceData:: LoadAggregationPoint with other classes	309
Table 544 – Attributes of ReferenceData::LoadRatio	309
Table 545 – Association ends of ReferenceData::LoadRatio with other classes	310
Table 546 – Attributes of ReferenceData::LoadReductionTimeCurve	310
Table 547 – Association ends of ReferenceData:: LoadReductionTimeCurve with other classes	310
Table 548 – Attributes of ReferenceData::LocalReliabilityArea	311
Table 549 – Association ends of ReferenceData::LocalReliabilityArea with other classes	311
Table 550 – Attributes of ReferenceData::MarketPerson	311
Table 551 – Association ends of ReferenceData::MarketPerson with other classes	312
Table 552 – Attributes of ReferenceData::MarketQualificationRequirement	312
Table 553 – Association ends of ReferenceData:: MarketQualificationRequirement with other classes	313
Table 554 – Attributes of ReferenceData::MarketRegion	313
Table 555 – Association ends of ReferenceData::MarketRegion with other classes	313
Table 556 – Attributes of ReferenceData::MarketSkill	314
Table 557 – Association ends of ReferenceData::MarketSkill with other classes	314
Table 558 – Attributes of ReferenceData::MaxStartUpCostCurve	315
Table 559 – Association ends of ReferenceData:: MaxStartUpCostCurve with other classes	315
Table 560 – Attributes of ReferenceData::MeteredSubSystem	315
Table 561 – Association ends of ReferenceData::MeteredSubSystem with other classes	316
Table 562 – Attributes of ReferenceData::MktCombinedCyclePlant	316
Table 563 – Association ends of ReferenceData:: MktCombinedCyclePlant with other classes	316
Table 564 – Attributes of ReferenceData::MktConductingEquipment	317
Table 565 – Association ends of ReferenceData:: MktConductingEquipment with other classes	317
Table 566 – Attributes of ReferenceData::MktContingency	317
Table 567 – Association ends of ReferenceData::MktContingency with other classes	318

Table 568 – Attributes of ReferenceData::MktHeatRateCurve	318
Table 569 – Association ends of ReferenceData::MktHeatRateCurve with other classes	319
Table 570 – Attributes of ReferenceData::MktThermalGeneratingUnit	319
Table 571 – Association ends of ReferenceData:: MktThermalGeneratingUnit with other classes	320
Table 572 – Attributes of ReferenceData::MPMTestCategory	321
Table 573 – Association ends of ReferenceData::MPMTestCategory with other classes	322
Table 574 – Attributes of ReferenceData::MPMTestThreshold	322
Table 575 – Association ends of ReferenceData::MPMTestThreshold with other classes	323
Table 576 – Attributes of ReferenceData::MSSAggregation	323
Table 577 – Association ends of ReferenceData::MSSAggregation with other classes	323
Table 578 – Attributes of ReferenceData::MSSZone	324
Table 579 – Association ends of ReferenceData::MSSZone with other classes	324
Table 580 – Attributes of ReferenceData::OilPrice	325
Table 581 – Association ends of ReferenceData::OilPrice with other classes	325
Table 582 – Attributes of ReferenceData::OrgPnodeAllocation	325
Table 583 – Association ends of ReferenceData::OrgPnodeAllocation with other classes	325
Table 584 – Attributes of ReferenceData::OrgResOwnership	326
Table 585 – Association ends of ReferenceData::OrgResOwnership with other classes	326
Table 586 – Attributes of ReferenceData::Pnode	326
Table 587 – Association ends of ReferenceData::Pnode with other classes	327
Table 588 – Attributes of ReferenceData::PnodeDistributionFactor	327
Table 589 – Association ends of ReferenceData:: PnodeDistributionFactor with other classes	328
Table 590 – Attributes of ReferenceData::RegisteredGenerator	328
Table 591 – Association ends of ReferenceData:: RegisteredGenerator with other classes	332
Table 592 – Attributes of ReferenceData::RegisteredInterTie	334
Table 593 – Association ends of ReferenceData::RegisteredInterTie with other classes	335
Table 594 – Attributes of ReferenceData::RegisteredLoad	336
Table 595 – Association ends of ReferenceData::RegisteredLoad with other classes	338
Table 596 – Attributes of ReferenceData::RegulatingLimit	339
Table 597 – Association ends of ReferenceData::RegulatingLimit with other classes	340
Table 598 – Attributes of ReferenceData::ResourceAncillaryServiceQualification	340
Table 599 – Association ends of ReferenceData:: ResourceAncillaryServiceQualification with other classes	340
Table 600 – Attributes of ReferenceData::ResourceCapacity	341
Table 601 – Association ends of ReferenceData::ResourceCapacity with other classes	341
Table 602 – Attributes of ReferenceData::ResourceOperationMaintenanceCost	342
Table 603 – Association ends of ReferenceData:: ResourceOperationMaintenanceCost with other classes	342
Table 604 – Attributes of ReferenceData::ResourceStartupCost	342
Table 605 – Association ends of ReferenceData:: ResourceStartupCost with other classes	343

Table 606 – Association ends of ReferenceData:: ResourceVerifiableCosts with other classes	343
Table 607 – Attributes of ReferenceData::RMRHeatRateCurve	344
Table 608 – Association ends of ReferenceData::RMRHeatRateCurve with other classes	344
Table 609 – Attributes of ReferenceData::RMRStartUpCostCurve	344
Table 610 – Association ends of ReferenceData:: RMRStartUpCostCurve with other classes	345
Table 611 – Attributes of ReferenceData::RMRStartUpEnergyCurve	345
Table 612 – Association ends of ReferenceData:: RMRStartUpEnergyCurve with other classes	346
Table 613 – Attributes of ReferenceData::RMRStartUpFuelCurve	346
Table 614 – Association ends of ReferenceData:: RMRStartUpFuelCurve with other classes	346
Table 615 – Attributes of ReferenceData::RMRStartUpTimeCurve	347
Table 616 – Association ends of ReferenceData:: RMRStartUpTimeCurve with other classes	347
Table 617 – Attributes of ReferenceData::RTO	347
Table 618 – Association ends of ReferenceData::RTO with other classes	348
Table 619 – Attributes of ReferenceData::RUCZone	349
Table 620 – Association ends of ReferenceData::RUCZone with other classes	349
Table 621 – Attributes of ReferenceData::SchedulingCoordinator	349
Table 622 – Association ends of ReferenceData:: SchedulingCoordinator with other classes	350
Table 623 – Attributes of ReferenceData:: SchedulingCoordinatorUser	351
Table 624 – Association ends of ReferenceData:: SchedulingCoordinatorUser with other classes	351
Table 625 – Attributes of ReferenceData:: SchedulingPoint	351
Table 626 – Association ends of ReferenceData::SchedulingPoint with other classes	351
Table 627 – Attributes of ReferenceData::StartUpEnergyCurve	352
Table 628 – Association ends of ReferenceData::StartUpEnergyCurve with other classes	352
Table 629 – Attributes of ReferenceData::StartUpFuelCurve	353
Table 630 – Association ends of ReferenceData::StartUpFuelCurve with other classes	353
Table 631 – Attributes of ReferenceData::SubControlArea	353
Table 632 – Association ends of ReferenceData::SubControlArea with other classes	354
Table 633 – Attributes of ReferenceData::SubstitutionResourceList	355
Table 634 – Association ends of ReferenceData:: SubstitutionResourceList with other classes	355
Table 635 – Attributes of ReferenceData::TACArea	355
Table 636 – Association ends of ReferenceData::TACArea with other classes	355
Table 637 – Attributes of ReferenceData::TransmissionRightChain	356
Table 638 – Association ends of ReferenceData:: TransmissionRightChain with other classes	356
Table 639 – Attributes of ReferenceData::WheelingCounterParty	356
Table 640 – Association ends of ReferenceData:: WheelingCounterParty with other classes	357

INTERNATIONAL ELECTROTECHNICAL COMMISSION

FRAMEWORK FOR ENERGY MARKET COMMUNICATIONS –

Part 301: Common information model (CIM) extensions for markets

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 62325-301 has been prepared by IEC technical committee 57: Power systems management and associated information exchange.

The text of this standard is based on the following documents:

FDIS	Report on voting
57/1438/FDIS	57/1469/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

Throughout this document, references are made to the UML model. References to specific UML packages and classes are made by citing the name of package or class in single quotes, example, 'IEC 61970' or 'IdentifiedObject'.

A list of all parts of the IEC 62325 series, under the general title: *Framework for energy market communications*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

This International Standard is part of the IEC 62325 series for deregulated energy market data exchanges. This standard was originally based upon the work of the European transmission system operators TF 14 EDI (Electronic data interchange) and the EPRI TR 1009455 and TR 1011431 (CIM extensions to support market operations, phase 1 and phase 2).

The principal objective of the IEC 62325 series of standards is to produce standards which facilitate the integration of market application software developed independently by different vendors into a market management system, between market management systems and market participant systems. This is accomplished by defining message exchanges to enable these applications or systems access to public data and exchange information independent of how such information is represented internally.

The common information model (CIM) specifies the basis for the semantics for this message exchange. The profile specifications, which are contained in other parts of the IEC 62325 standards, specify the content of the messages exchanged. Profile specifications in other parts of the IEC 62325 standard support both European style markets based on the European regulations and the Third Party Access and zonal market concepts and US style markets characterized by day ahead unit commitment by a market operator, intraday and real time balancing through central dispatch, and settlement based on locational marginal prices. These markets are used in the US and in other parts of the world and are not exclusively limited to North America.

The CIM is an abstract model that represents all the major objects in an electric utility enterprise typically needed to model the operational aspects of a utility. This model includes public classes and attributes for these objects, as well as the relationships between them.

The objects represented in the CIM are abstract in nature and may be used in a wide variety of applications. The use of the CIM goes far beyond its application in a market management system. This standard should be understood as a tool to enable integration in any domain where a market system model is needed to facilitate interoperability and plug compatibility between applications and systems independent of any particular implementation.

The IEC 62325 standards are part of a series of standards. IEC 61970 standards define the EMS application programming interfaces and the IEC 61968 standards define System interfaces for distribution management. IEC 62325-301 corresponds to the IEC 61970-301 and the IEC 61968-11 standards that describe parts of the common information model relevant to modeling interfaces for EMS, DMS and MMS systems. While there are multiple IEC standards dealing with different parts of the CIM, there is a single, unified information model comprising the CIM behind all these individual standards documents.

FRAMEWORK FOR ENERGY MARKET COMMUNICATIONS –

Part 301: Common information model (CIM) extensions for markets

1 Scope

This part of IEC 62325 specifies the common information model for energy market communications.

The common information model (CIM) is an abstract model that represents all the major objects in an electric utility enterprise typically involved in utility operations and electricity market management. By providing a standard way of representing power system resources as object classes and attributes, along with their relationships, the CIM facilitates the integration of market management system (MMS) applications developed independently by different vendors, between entire MMS systems developed independently, or between an MMS system and other systems concerned with different aspects of market management, such as capacity allocation, day-ahead management, balancing, settlement, etc.

The CIM facilitates integration by defining a common language (i.e. semantics) based on the CIM to enable these applications or systems to access public data and exchange information independent of how such information is represented internally.

The object classes represented in the CIM are abstract in nature and may be used in a wide variety of applications. The use of the CIM goes far beyond its application in a market management system.

Due to the size of the complete CIM, the object classes contained in the CIM are grouped into a number of logical packages, each of which represents a certain part of the overall power system being modeled. Collections of these packages are progressed as separate international standards. This particular international standard specifies a set of packages which provide a logical view of the functional aspects of market management within an electricity market that is shared between all applications. Other standards specify more specific parts of the model that are needed by only certain applications. Subclause 4.2 provides the current grouping of packages into standards documents.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 61968-11, *Application integration at electric utilities – System interfaces for distribution management – Part 11: Common information model (CIM) extensions for distribution*

IEC 61970-301, *Energy management system application program interface (EMS-API) – Part 301: Common information model (CIM) base*

IEC 62325-450, *Framework for energy market communications – Part 450: Profile and context modelling rules*

Object management group: *UML 2.0 specification* – available at <<http://www.omg.org>>

3 Terms, definitions and abbreviations

For the purposes of this document, the terms and definitions given in IEC 61970-2 as well as the following apply.

3.1 Terms and definitions

3.1.1

Application program interface

API

set of public functions provided by an executable application component for use by other executable application components

[SOURCE: IEC 61970-2:2004, 3.4]

3.1.2

CIM model manager

CIM compliant model manager

3.1.3

Extensible markup language

XML

is a markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable

3.1.4

XML schema description

XSD

is an XML-based language used to describe and control XML document contents

3.1.5

intra-day markets

intra-day scheduling markets which refine the commitment and schedules produced by the day ahead markets

3.1.6

load forecast

load forecast system which predicts load for the specified time horizon

3.1.7

Market management system

MMS

computer system comprising a software platform that provides basic support services and a set of applications with the functionality needed for the effective management of the electricity market

Note 1 to entry: These software systems in an electricity market may include support for capacity allocation, scheduling energy, ancillary or other services, real-time operations and settlements.

3.1.8

scheduler

scheduling system for resources

3.1.9

third party access

concept in market management systems which allows third parties to use the transmission system on an equal basis

3.1.10**Unified modeling language
UML**

modeling language in the field of object-oriented software engineering that is maintained by the Object Management Group

3.1.11**RDF schema
RDFS**

W3C recommendation which provides basic elements for the description of ontologies

3.1.12**Ontology web language
OWL**

W3C recommendation which provides a knowledge representation language for authoring ontologies

3.2 Abbreviations**3.2.1****B and S**

billing and settlement

3.2.2**CRR**

congestion revenue rights

3.2.3**DAM**

day ahead market which determines the commitment and schedules of resources

3.2.4**DMS**

distribution management system

3.2.5**EMS**

energy management system

3.2.6**MDMS**

meter data management system

3.2.7**RTM**

real time markets which finalize dispatch for system resources

4 CIM specification**4.1 CIM modeling notation**

The CIM is defined using object-oriented modeling techniques. Specifically, the CIM specification uses the unified modeling language (UML) notation, which defines the CIM as a group of packages.

Each package in the CIM contains one or more class diagrams showing graphically all the classes in that package and their relationships. Each class is then defined in text in terms of its attributes and relationships to other classes.

The UML notation is described in Object Management Group (OMG) documents and several published textbooks.

4.2 CIM packages

The CIM is partitioned into a set of packages. A package is a general purpose means of grouping related model elements. The packages have been chosen to make the model easier to design, understand and review. The common information model consists of the complete set of packages. Entities may have associations that cross many package boundaries. Each application may use information represented in several packages.

The comprehensive CIM is partitioned into groups of packages for convenience in managing and maintaining them. IEC 62325-301 includes the following packages:

- 'MarketCommon'
- 'MarketManagement'
- 'MarketOperations'

Packages used by the IEC 61970-301 standard and packages used by the IEC 61968-11 standard describe additional parts of the CIM that deal with other logical views of utility operations including wires, topology, generation, load, outages, assets, location, activities, consumers, documentation, work management, and distribution-specific network models.

NOTE The package boundaries do not imply application boundaries. An application may use CIM entities from several packages.

Figure 1 shows package dependencies. The 'IEC 62325' package and its subpackages depend on the 'IEC 61970' and 'IEC 61968' packages. The 'IEC 61970' package is used by the IEC 61970 series of standards as a core model that represents power system resources and their relationships. The 'IEC 61968' package is used by the IEC 61968 series of standards describing logical views of utility operations, including assets, location, activities, customers, documentation, work management and metering models. The dashed line indicates a dependency relationship, with the arrowhead pointing from the dependent package to the package on which it has a dependency.

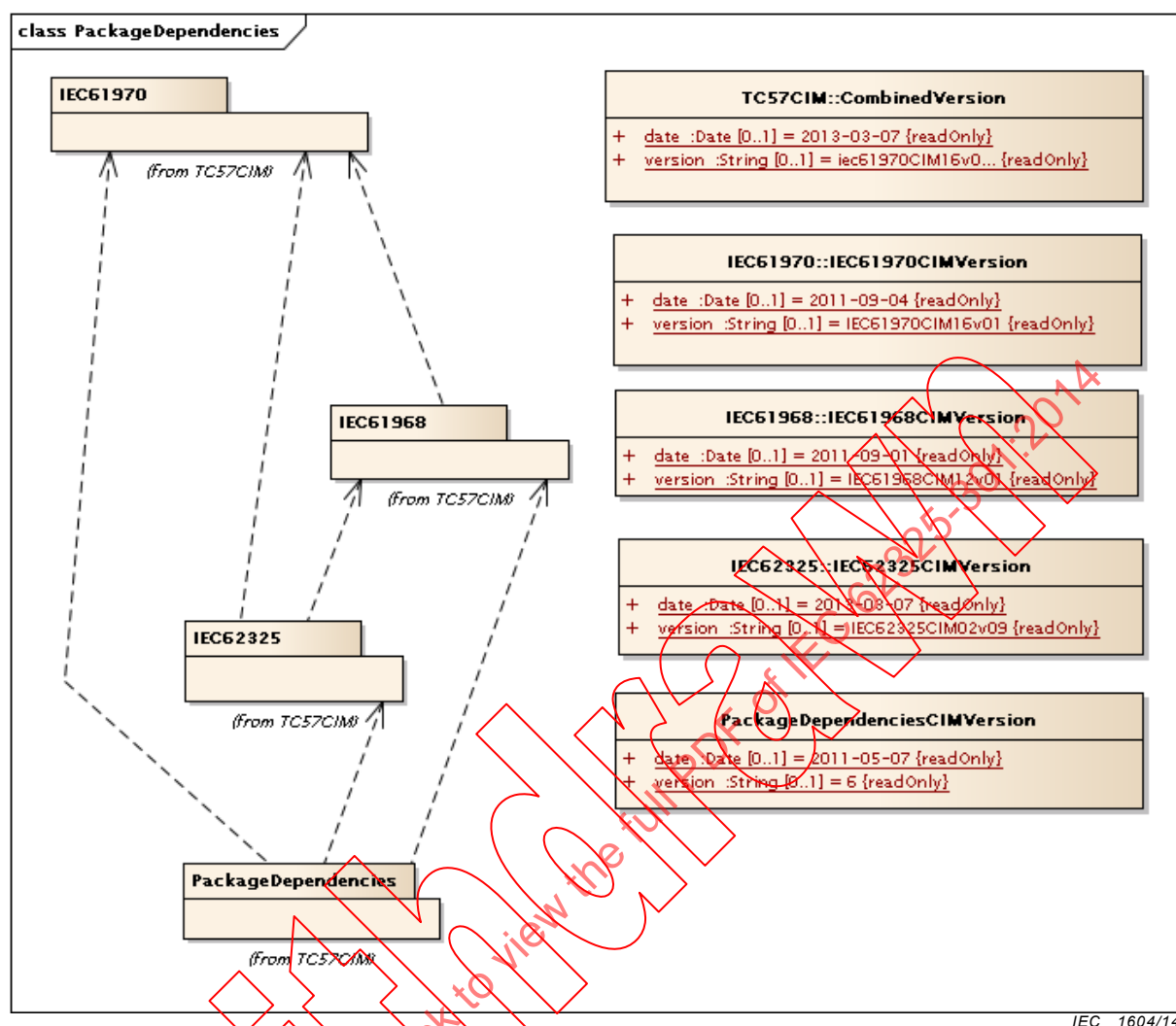


Figure 1 – 'TC 57CIM' package dependency diagram

Figure 2 shows the packages defined for IEC 62325-301 and their dependency relationships. The dashed line indicates a dependency relationship, with the arrowhead pointing from the dependent package to the package on which it has a dependency.

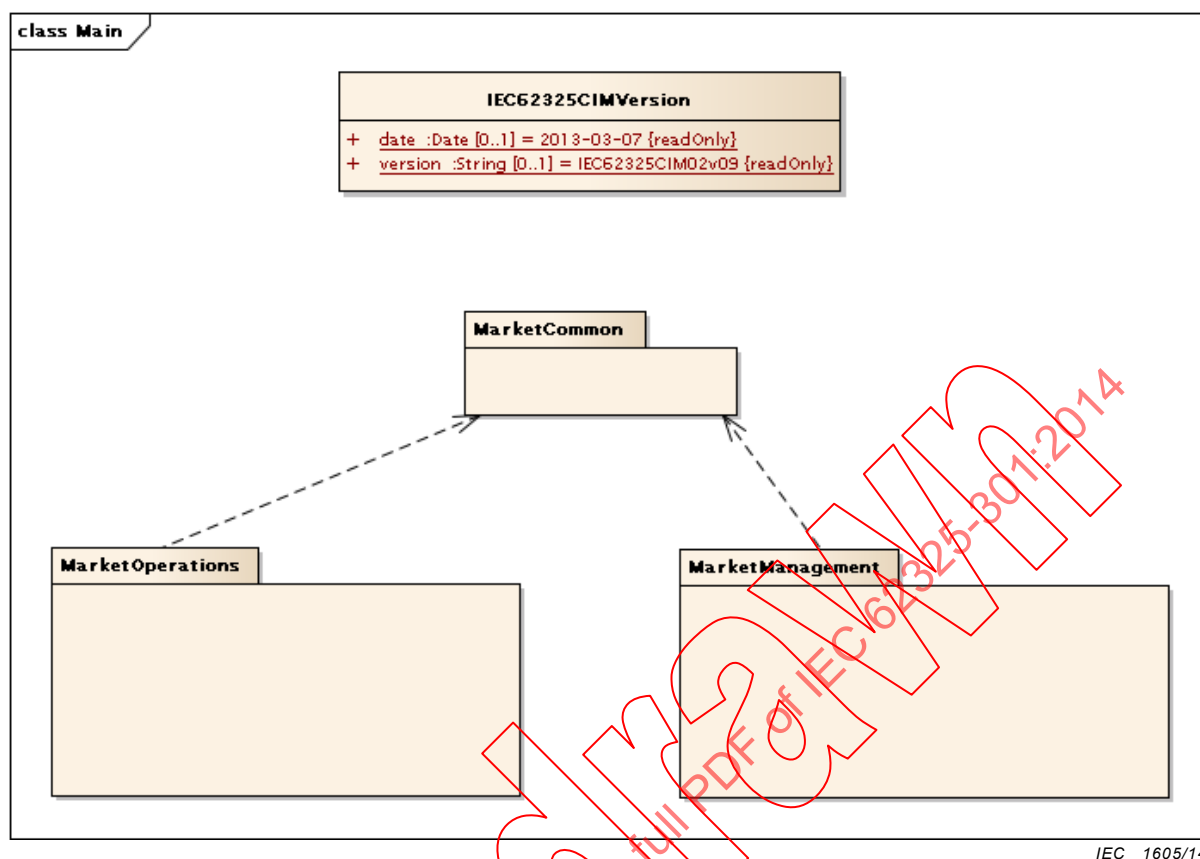


Figure 2 – ‘IEC 62325’ package dependency diagram

Clause 6 contains the specification for each of the CIM packages.

NOTE The contents of the CIM defined in this specification were auto-generated from the CIM UML electronic model release IEC 62325CIM02v09, which is available through the CIM Users Group.

4.3 CIM classes and relationships

4.3.1 Classes

The class diagram(s) for each CIM package shows all the classes in the package and their relationships. Where relationships exist with classes in other packages, those classes are also shown.

Classes and objects model what is in a power system that needs to be represented in a common way to market applications. A class is a description of an object found in the real world, such as a bid, registered resource, or registered load that needs to be represented as part of the overall electricity market in an MMS. Other types of objects include things such as schedules and measurements that MMS applications also need to process, analyze, and store. Such objects need a common representation to achieve the purposes of this standard for plug-compatibility and interoperability. A particular object in a power system with a unique identity is modeled as an instance of the class to which it belongs.

The CIM is defined to facilitate data exchange. As defined in this document, CIM entities have no behavior. IEC 62325-450 *Profile and context modeling rules* defines the modeling principles to generate a profile and the modeling framework principles to define the message payload.

Classes have attributes that describe the characteristics of the objects. Each class in the CIM contains the attributes that describe and identify a specific instance of the class. Only the

attributes that are of public interest to MMS applications are included in the class descriptions.

Each attribute has a type, which identifies what kind of attribute it is. Typical attributes are of type 'Integer', 'Float', 'Boolean', 'String', 'Datetime', 'Date', 'Duration', and 'Decimal', which are called primitive types. However, many additional types are defined as part of the CIM specification. For example, 'RegisteredGenerator' has a "maxDependableCap" attribute of type 'ActivePower'. The definition of many shared types is contained in the 'Domain' package described in Clause 6. The UML stereotypes of 'Primitive', 'Enumeration', 'CIMDatatype', and 'Compound' are added to classes used as types:

- The 'CIMDatatype' stereotype is used with a specific CIM semantics to describe a type that has several attributes {'value', 'unit', 'multiplier', 'denominatorUnit', 'denominatorMultiplier'}, which implies custom mapping to serialization artifacts such as RDFS, OWL, and XSD. Classes with these stereotypes do not participate in generalization or association relationships and are simply used as types for attributes.
- The 'enumeration' stereotype is used to describe the type of an attribute with an enumerated list of choices.
- The 'Compound' stereotype is used to describe sets of related attributes that are commonly reused. 'Compound' classes may consist of attributes whose types are 'Primitive', 'enumeration', 'CIMDatatype' or other 'compound' classes as long as the 'compound' classes do not recurse.

All CIM attributes are implicitly optional in the sense that profiles using the CIM may eliminate any attributes.

Relationships between classes reveal how they are structured in terms of each other. CIM classes are related in a variety of ways, as described in 4.3.2, 4.3.3 and 4.3.4.

4.3.2 Generalization

A generalization is a relationship between a more general and a more specific class. The more specific class can contain only additional information. For example, 'RegisteredGenerator' is a specific subclass of 'RegisteredResource'. Generalization provides for the specific class to inherit attributes and relationships from all the more general classes above it.

Figure 3 is an example of generalization. In this example taken from the 'MarketCommon' package, a 'MarketParticipant' is a more specific type of 'Organisation'. 'Organisation' also inherits from 'IdentifiedObject'.

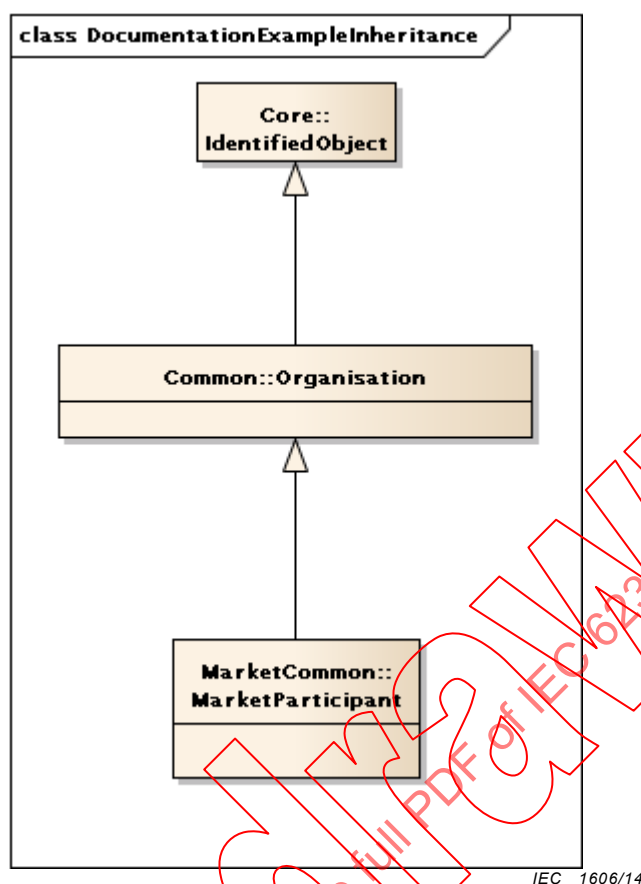


Figure 3 – Example of generalization

4.3.3 Simple association

An association is a conceptual connection between classes. Each association has two “association ends”. The “association ends” were called “roles” prior to the UML 2.0 *specification*. Each association end describes the role the target class (i.e., the class the association end goes to) has in relation to the source class (i.e., the class the association end goes *from*). Association ends are usually given the name of the target class with or without a qualifier term (verb, noun, adverb) phrase. Each association end also has multiplicity/cardinality, which is an indication of how many objects may participate in the given relationship. In the CIM, associations are not named, only association ends are named. For example, in the CIM there is an association between a ‘MarketParticipant’ and ‘MarketRole’ (See Figure 4 which is taken from the ‘MarketCommon’ package). Multiplicity is shown at both ends of the association. In this example, a ‘MarketParticipant’ object may reference 0 or more ‘MarketRole’ objects and a ‘MarketRole’ may be referenced by 0 or more ‘MarketParticipant’ objects.

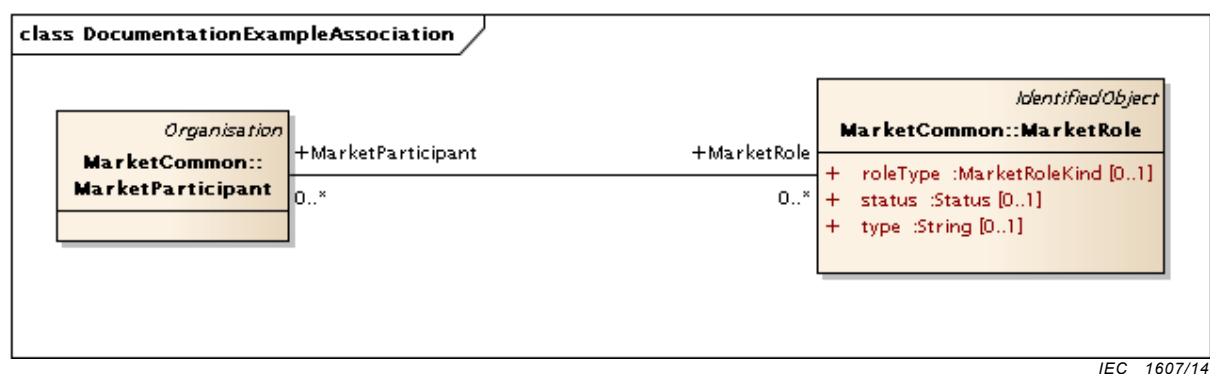


Figure 4 – Example of simple association

4.3.4 Aggregation

Aggregation is a special case of association. Aggregation indicates that the relationship between the classes is some sort of whole-part relationship, where the whole class “consists of” or “contains” the part class, and the part class is “part of” the whole class. The part class does not inherit from the whole class as in generalization. Figure 5 illustrates an aggregation between the ‘EnergyProfile’ class and the ‘EnergyTransaction’ class, which is taken from the ‘ExternalInputs’ package. As shown, an ‘EnergyProfile’ can be a member of one ‘EnergyTransaction’ object, but an ‘EnergyTransaction’ object can contain any one or more of ‘EnergyProfile’ objects. In the context of using CIM as an information model, aggregation does not have a precise or formal interpretation beyond a simple association and is intended to visually assist in representing normal usage.

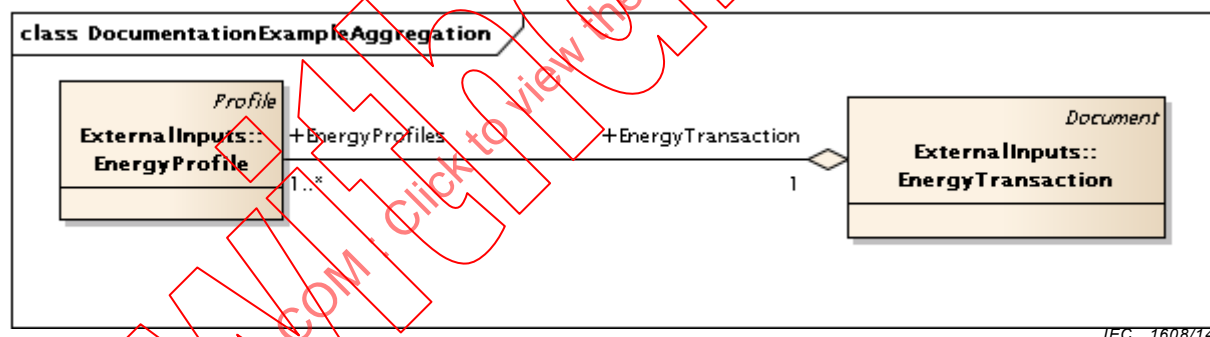


Figure 5 – Example of aggregation

4.4 CIM model concepts and examples

4.4.1 ‘MarketCommon’ package

The common market model describes the market participants and the role they are assuming in the market. Defined market roles are supplied by a list (‘MarketRoleKind’). A market participant could play several roles in a market, as shown in Figure 6.

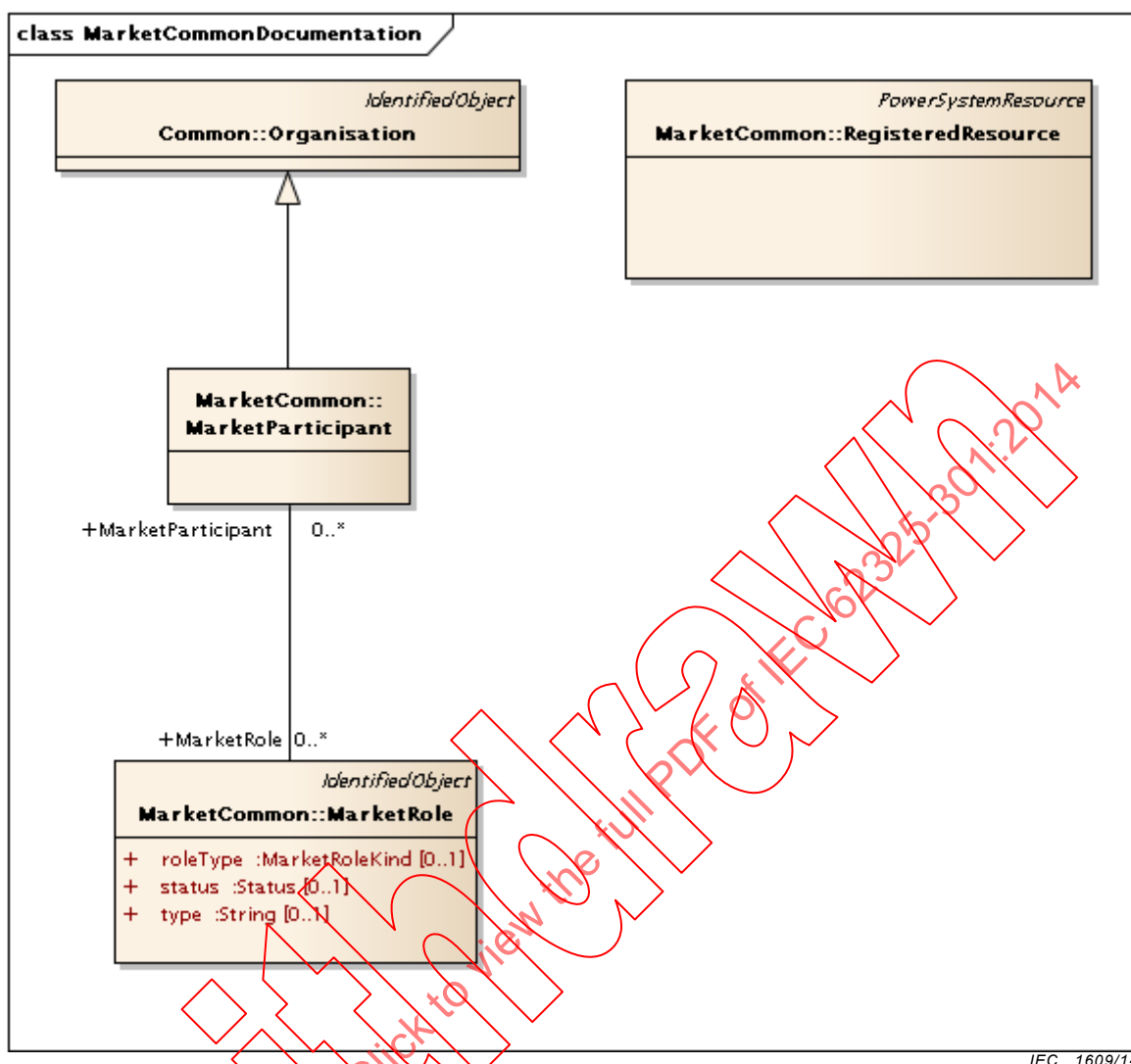


Figure 6 – Common market model

4.4.2 'MarketManagement' package

The market management model describes a consistent set of classes to be used together with the common market model to generate a profile. The profile, in such a case, is to be used when the electricity market is mainly based on regulated Third Party Access, i.e. transmission system operators have to allow any electricity supplier non-discriminatory access to:

- the transmission network to supply customers
- and the wholesale and retail market transactions (bilateral or through a power exchange) being the way to exchange the energy

The 'MarketManagement' package refers to what is later called the European style market. Figure 7 shows an overview of the layered modeling framework to build from the CIM down to the specification of messages. This layered modeling framework defines the way from the CIM concepts of the 'MarketManagement' package through the definition of a market profile to generate the contextualized documents for information exchange.

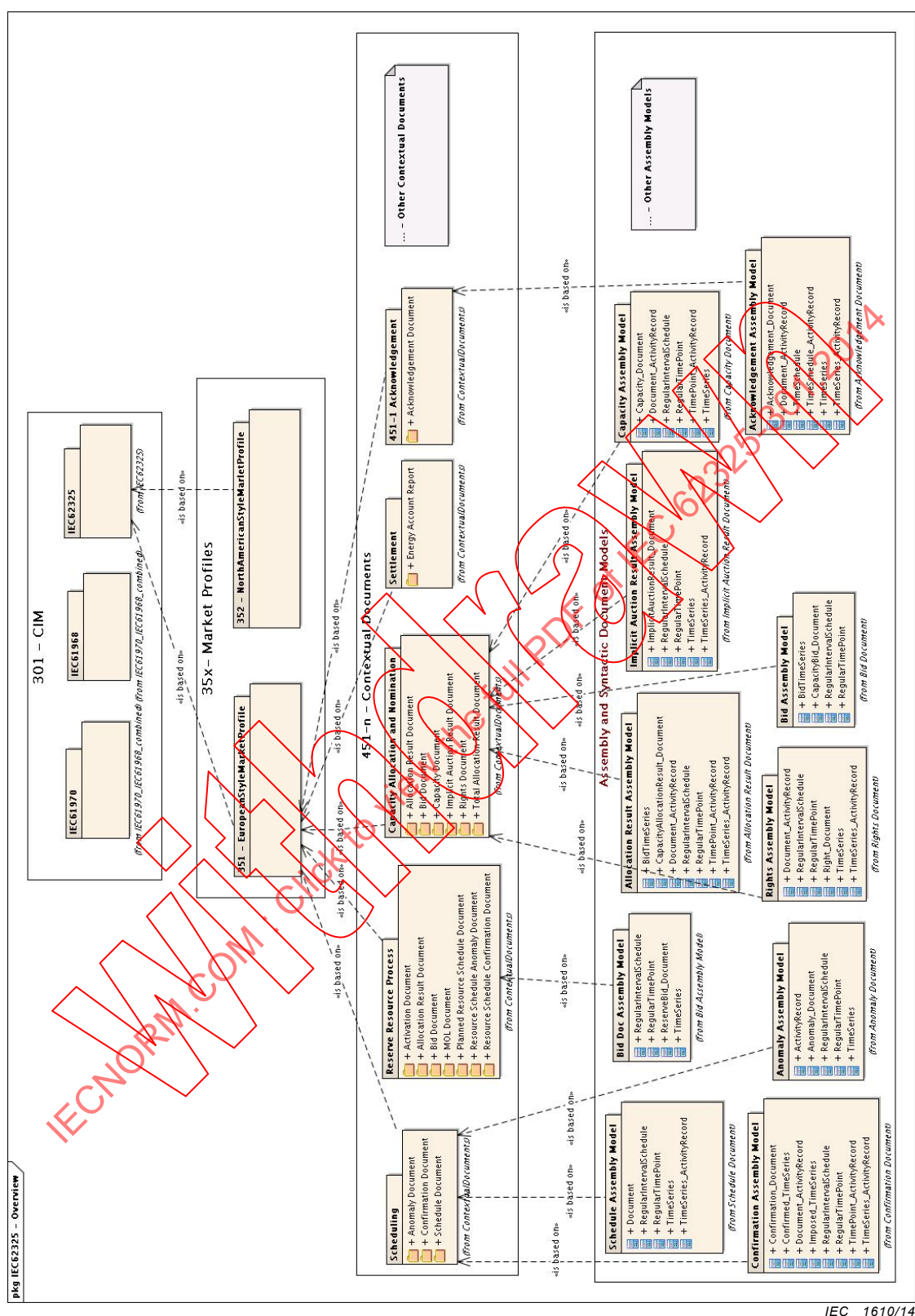


Figure 7 – Market management model overview

As shown in Figure 7, for each business process necessary to run an electricity market, a dedicated set of contextualized documents is provided. As indicated in Figure 7, the market profiles are specified in IEC 62325-351 and the contextual documents are described in IEC 62325-451-1, IEC 62325-451-2, etc.

Figure 8 shows the classes of the ‘MarketManagement’ package.

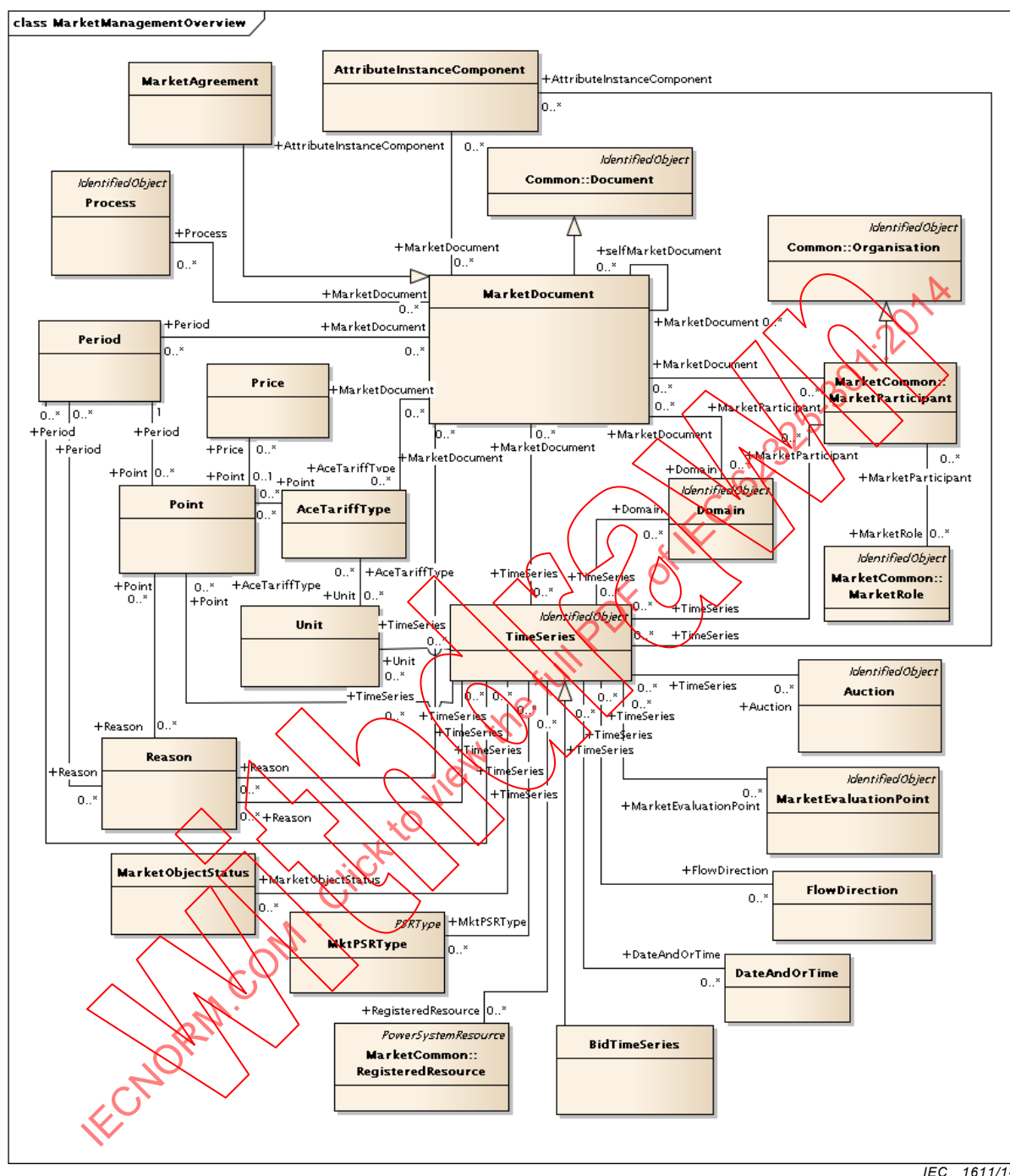


Figure 8 – Market management model

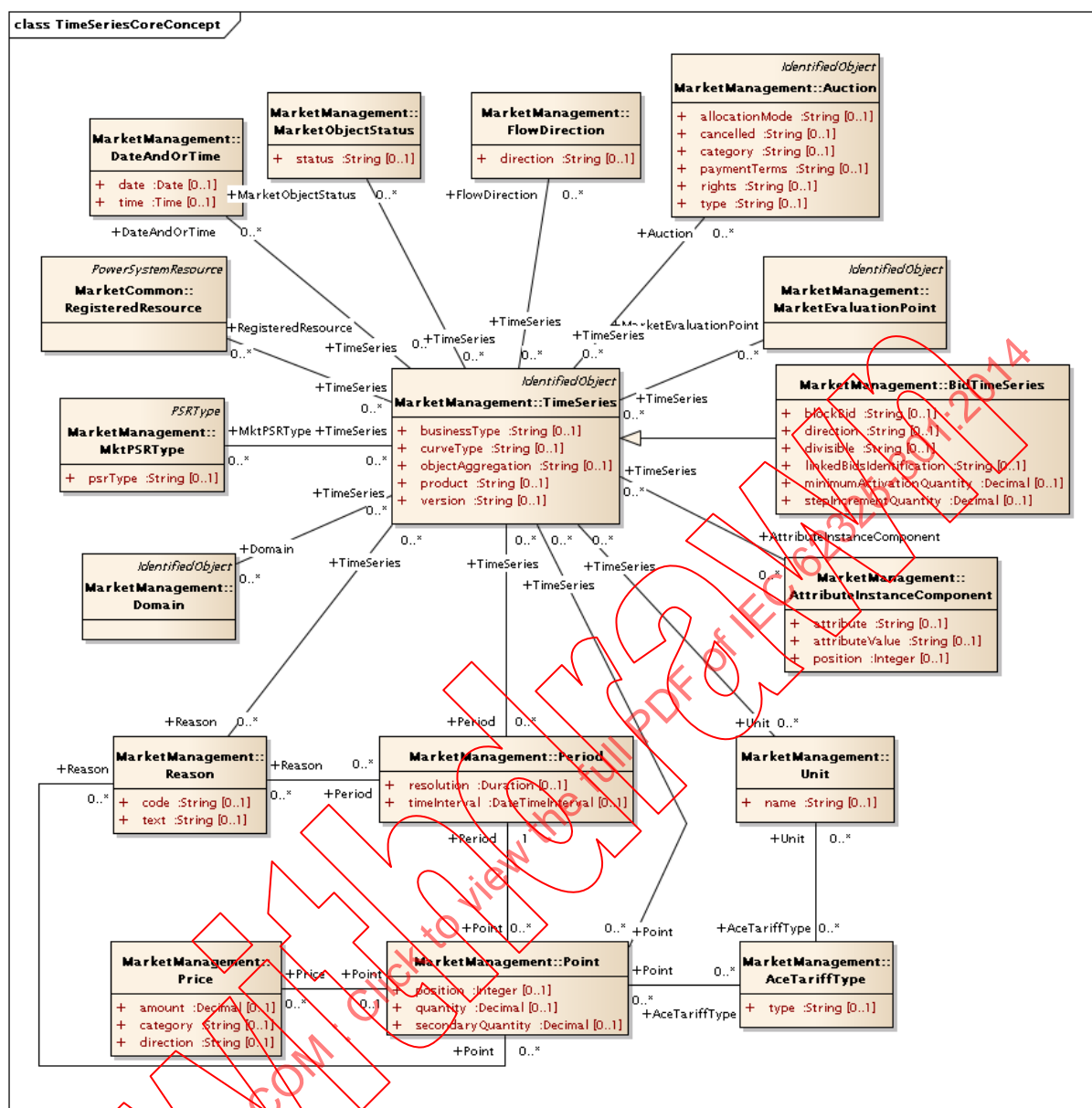
In this market management model a key role is given to the concept of ‘MarketDocument’, i.e. the transactions on the electricity market are based on contractual exchanges of information between market participants through a given set of documents depending upon the business process.

As shown in Figure 7, for each business process necessary to run an electricity market, a dedicated set of contextualized documents is provided. As an example, here is a non-exhaustive list of processes:

- The acknowledgment process: As the information exchange is based on contractual exchanges, it is of matter to have a functional acknowledgment for the exchanged document, and not only a technical acknowledgment;
- The scheduling process: This process describes the way of exchanging information related to schedules, i.e. generation schedules, load schedules, bilateral trade schedules, power exchanges trade schedules, etc;
- The settlement process: This process describes how to exchange the information necessary to settle the electricity market, i.e. the comparison of the scheduled energy and the actual meters;
- The transmission capacity allocation and nomination process: This process describes the explicit and implicit auctions of transmission capacity for cross border trades. It includes also the secondary market of capacity rights, i.e. the resell of capacity rights;
- The reserve resource process: This process describes the way resources, i.e. the generation units and the dispatchable load, are scheduled, and capacity is auctioned and in particular the activation by the system operator of the tertiary reserve for balancing purpose;
- etc.

The 'Process' class (see Figure 8) enables to define for a given document the process to which the information flow is directed. For example, the "schedule document" can be used in different processes such as "forecast", "long term", "day ahead", "intra day" etc.

Within a 'MarketDocument', another important concept is to be underlined, i.e. the 'TimeSeries' concept (see Figure 9) based on which market participants (i.e. 'MarketParticipant' class) playing a role (i.e. 'MarketRole' class) in a market business process (i.e. 'Process' class) can exchange schedules of volume/price related to an energy domain area (i.e. 'Domain' class) for a given business type (such as "internal trade", "cross-border trade", "primary reserve", "secondary reserve", "tertiary reserve", etc.). These documents are the basis on which all exchanges are built in order to manage energy exchanges, bid, capacity allocation, energy reserve resources, and settlement.



IEC 1612/14

Figure 9 – ‘MarketManagement’ ‘TimeSeries’ core concept

To handle quantities and prices in a contractual way for the electricity market, attributes of type ‘Decimal’ have been introduced in the modeling.

4.4.3 ‘MarketOperations’ package

4.4.3.1 Market operations

The ‘MarketOperations’ package describes a consistent set of classes to be used together with the common market model (and other parts of the CIM described in IEC 61970-301 and IEC 61968-11) to generate a profile. The profile, in such a case, is to be used for US style electricity market that is mainly characterized by day ahead unit commitment by a market operator, intraday and real time balancing through central dispatch, and settlement based on locational marginal prices.

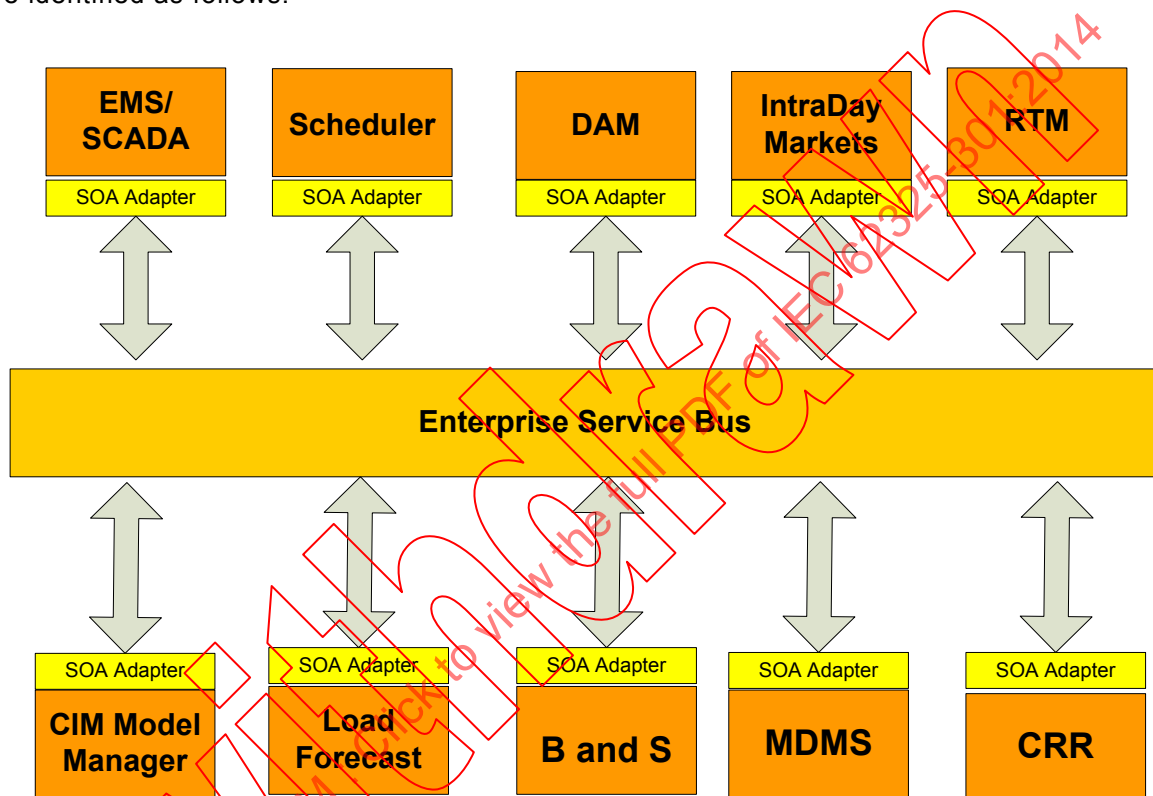
This kind of US style electricity market also includes the auction of congestion revenue rights which are financial instruments that market participants purchase to hedge against congestion

costs. Meter data management and billing and settlement are also included. The 'MarketOperations' package includes models to support these characteristics.

Subclauses 4.4.3.2 through 4.4.3.6 describe major concepts referenced in the 'MarketOperations' package.

4.4.3.2 Market operator software systems

Figure 10 shows the software systems of a typical operator of US style electricity markets that are referenced in the 'MarketOperations' package. The market operator may also be known as a regional transmission operator (RTO) or independent system operator (ISO). The systems are identified as follows:

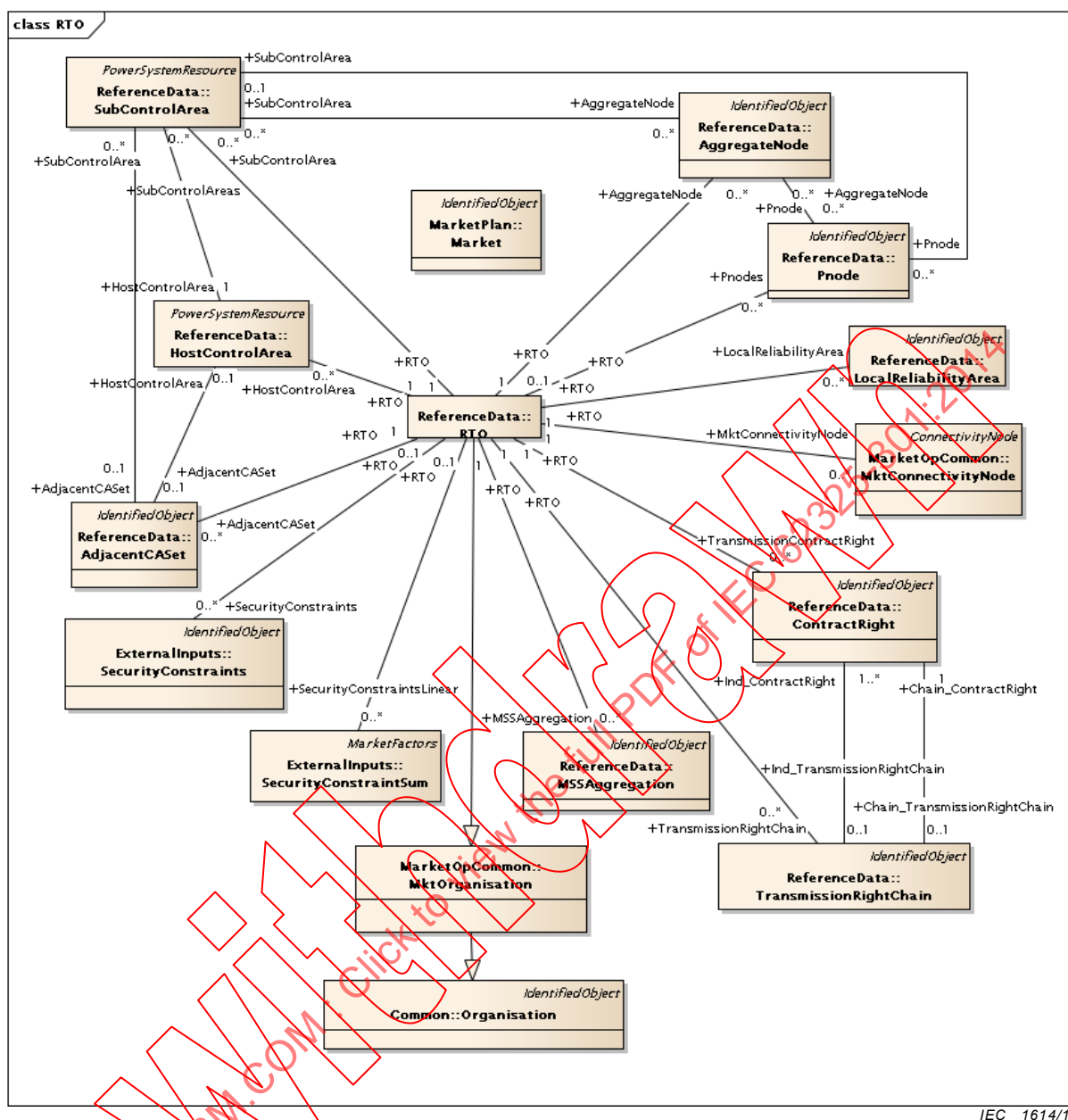


IEC 1613/14

Figure 10 – Market operator software systems for US style electricity markets

4.4.3.3 Regional transmission operator interfaces

Figure 11 illustrates an overview of the UML interface model for a regional transmission operator (RTO) to support the interfaces illustrated in Figure 10. The major classes are briefly summarized: The classes 'AggregateNode' and 'Pnode' are used to model pricing nodes where locational marginal prices are averaged with a weighted average calculation. The class 'LocalReliabilityArea' is used to identify and model load pockets within the RTO. The class 'MktConnectivityNode' is used to extend the IEC 61970 'ConnectivityNode' class with market data. The classes 'TransmissionRightChain', 'ContractRight', and 'MSSAggregation' are used to model legacy contracts for use of the transmission system and to represent grandfathered transmission ownership rights. The classes 'Organisation' and 'MktOrganisation' identify the RTO. The classes 'SecurityConstraints' and 'SecurityConstraintSum' are used to model system constraints such as nomograms that approximate transient stability constraints. The classes 'HostControlArea', 'SubControlArea', and 'AdjacentCAsSet' are used to model data to support control area operations. Resource models and participating transmission owner data are included through associations with their associated classes. More details of the RTO model are included in Clause 6.



IEC 1614/14

Figure 11 – Regional transmission organization for US style electricity market

4.4.3.4 Resource model

Figure 12 illustrates a high level view of the UML model that supports the resource model data for US style electricity market. The class 'RegisteredResource' is a parent class with the following subclasses: 'RegisteredLoad', 'RegisteredInterTie', and 'RegisteredGenerator'. The 'RegisteredResource' class has associations with the classes 'AggregateNode', 'Pnode' and 'MktConnectivityNode' to support aggregated and physical resources. The associations to the 'AggregateNode' and to 'AggregatedPnode' (association is inherited from 'Pnode') support the aggregated resource definition on an aggregated node or aggregated pricing node basis. The associations to 'IndividualPnode' (inherited from 'Pnode') and 'MktConnectivityNode' support the physical resource definition on a pricing or connectivity node basis. Additional associations are also available through the subclasses 'RegisteredLoad', 'RegisteredInterTie' and 'RegisteredGenerator' to support both aggregated and physical resources by a direct tie to the physical resources defined in the power system network model. 'RegisteredLoad' has the association to 'MktEnergyConsumer', 'RegisteredInterTie' has the association to 'Flowgate' and 'RegisteredGenerator' has the association to 'MktGeneratingUnit'

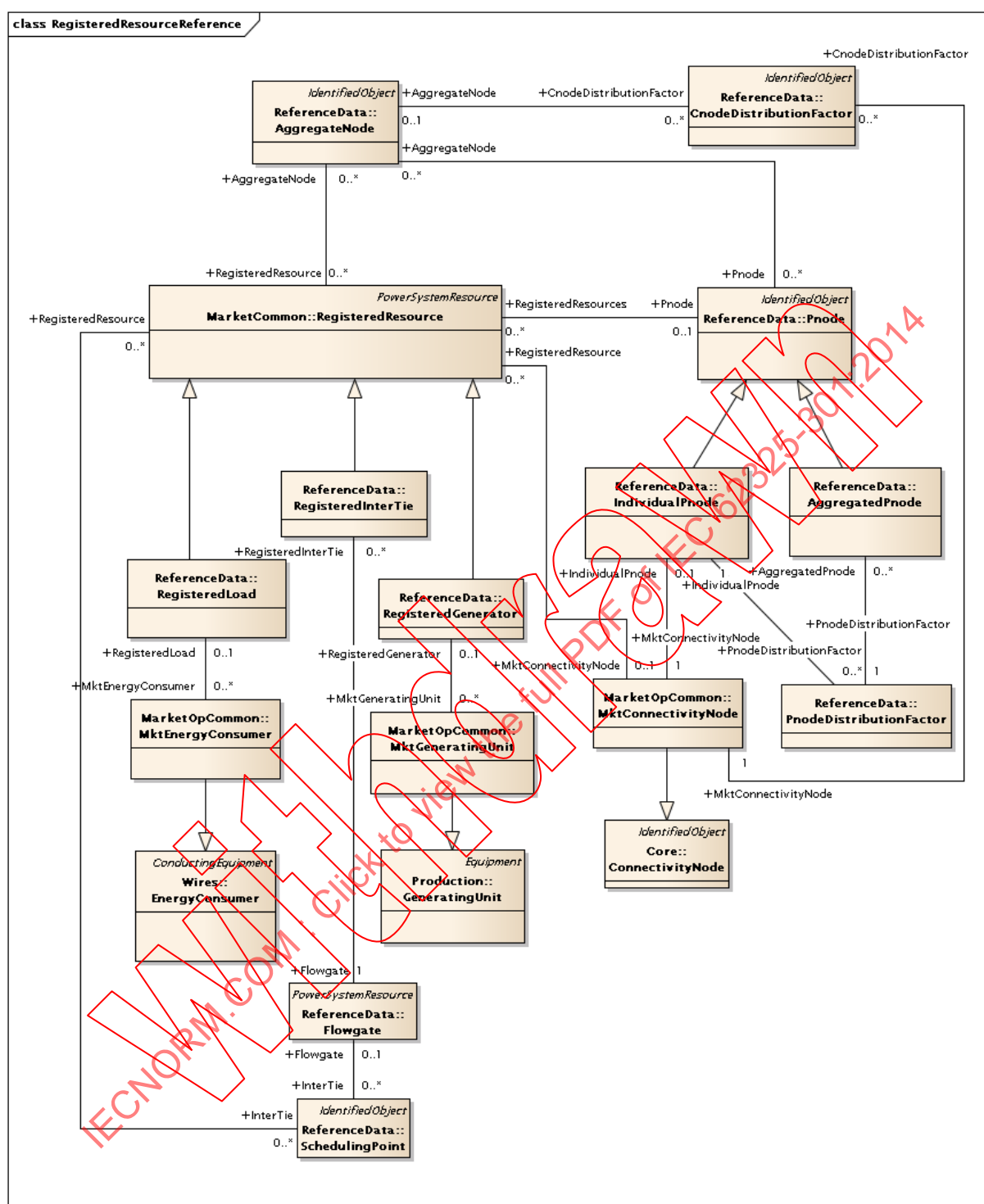


Figure 12 – Registered resource reference definition for US style electricity market

4.4.3.5 Bid/Offer model

US style electricity markets are based on offers to sell and bids to buy electricity products that are cleared by a market operator subject to network and resource constraints. Bids and offers include price quantity pairs and technical data related to the ability of the market participant to deliver the quoted products.

Figure 13 shows the overview of the classes and associations that are used to model offers and bids. The term bid is used to include offers to sell and bids to buy one or more electricity

products. The 'Bid' class is a subclass of the 'Document' class from the 'IEC 61968' package. Bids are further classified as 'ResourceBids' or 'TransactionBids'. 'Resource' bids are bids that are based on physical (or virtual) resources that are inside the footprint of the RTO and thus under the direct operational control of the RTO. 'TransactionBids' are bilateral agreements made between market participants that are reported to the RTO for inclusion as constraints in the market clearing. The RTO determines whether the bilateral agreements can be consummated while maintaining system reliability standards.

Bids are associated with scheduling coordinators that submit them on behalf of market participants as shown by the association between the 'Bid' class and the 'SchedulingCoordinator' class. While the association between the 'Bid' class and the 'SchedulingCoordinator' class is optional, it shall be noted that if this association is optional, then the association between the 'Bid' class and the 'MarketParticipant' class shall be required. That is, while both associations to the 'Bid' class are optional in the model, if either one or both are contained in the profile, at least one of the associations between the 'Bid' class and the 'SchedulingCoordinator' or the 'MarketParticipant' is required.

The bid class has a relationship to the 'BidProduct' class and to the 'MarketProduct' classes. These associations are used to model the submittal of bids for energy and ancillary services. A further association between the 'Bid' class and the 'Market' class indicates which market the bid is intended for (day ahead, real time, etc)

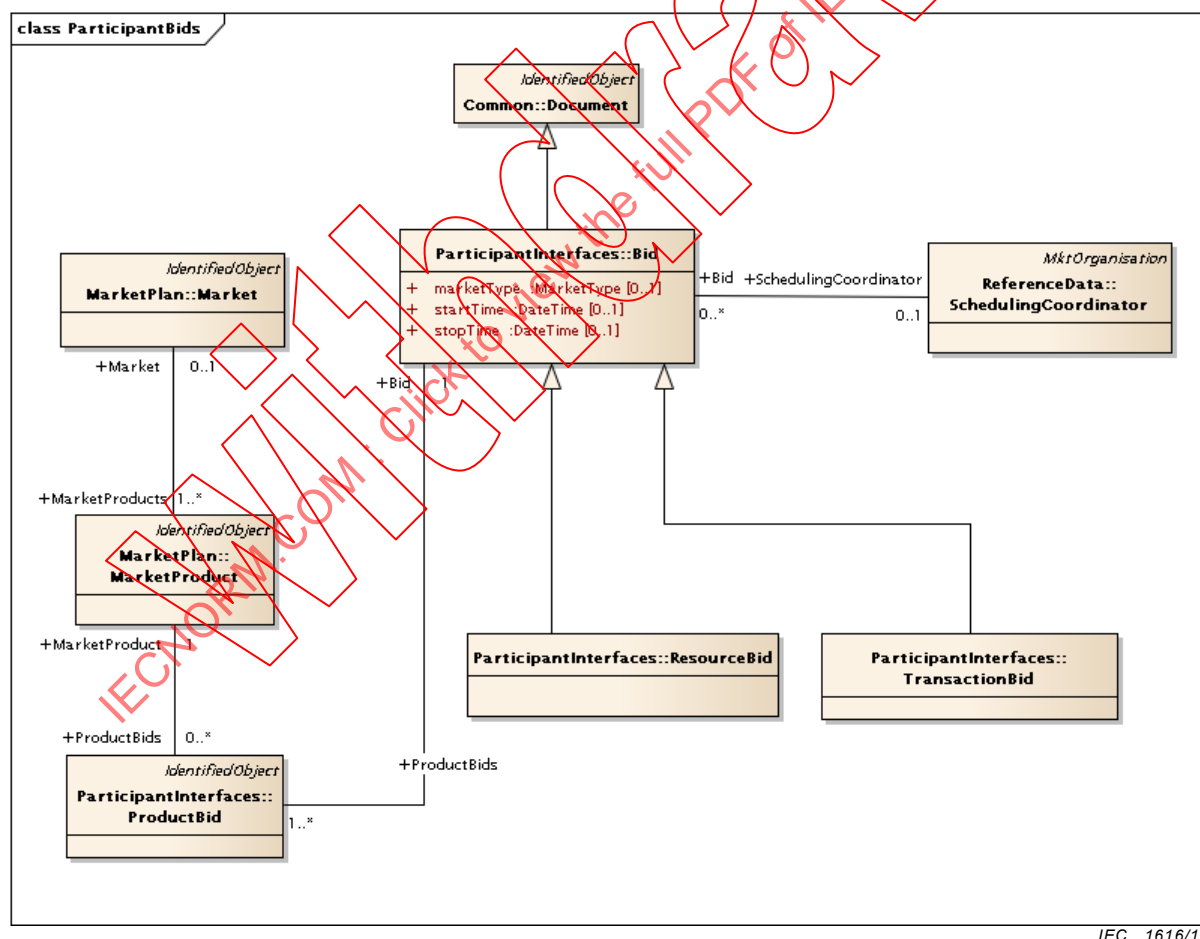


Figure 13 – Bid definition for US style electricity market

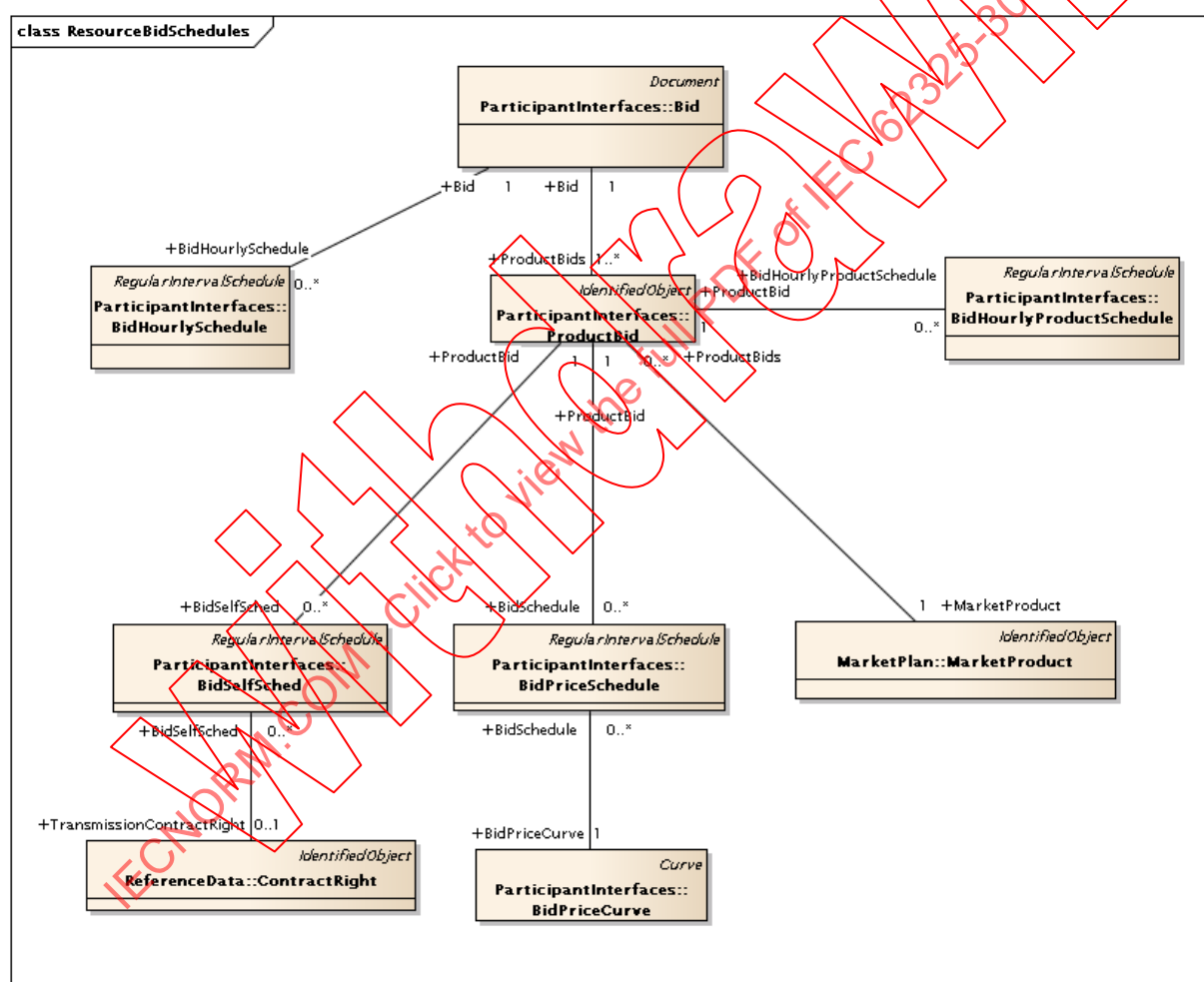
Figure 14 shows further details of bids/offers.

The 'Bid' class is associated with a 'ProductBid' class, which in turn is associated with the 'BidPriceSchedule' class. The class 'BidPriceSchedule' defines bid schedules to allow a

product bid to use specified bid price curves for different time intervals. This simplifies the modeling of bids that are made for multi-interval time horizons. The bid schedule is the set of consecutive intervals for which the bid is valid.

A bid may also be a self schedule, meaning that the market participant would like to operate the resource according to a certain (for example minimum) schedule. The market operator determines whether this resource can run with the submitted self schedule while system reliability criteria are met. These self schedules are settled at the LMPs determined during the market clearing. The class 'Bid' is associated with the class 'ProductBid', which is associated with the class 'BidSelfSchedule' to support the modeling of self schedules. The class 'BidSelfSched' is associated with the class 'ContractRight' which may be used to model the use of legacy contracts to support self schedules

This model also supports bids with part of the range of bid classified as a self schedule and part as regular bid.



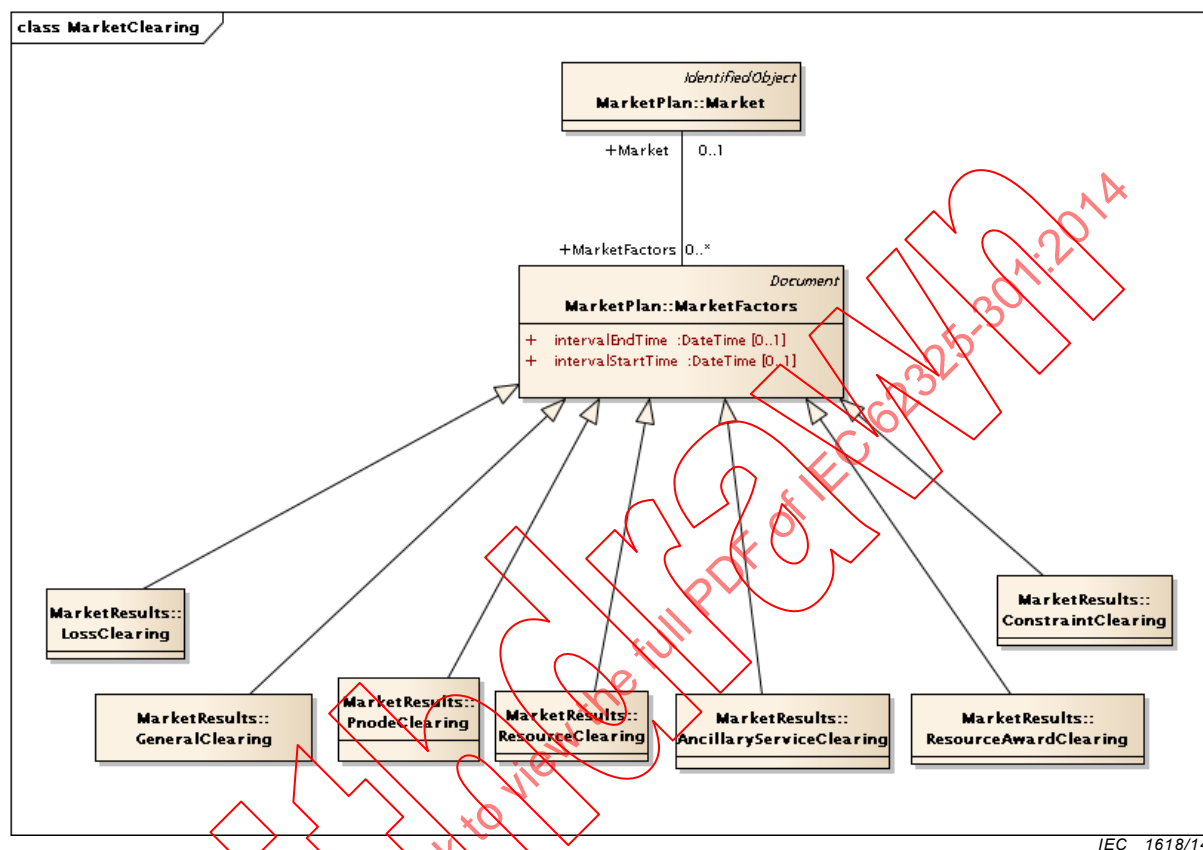
IEC 1617/14

Figure 14 – Resource bid schedule definitions for US style electricity market

4.4.3.6 Market clearing results

Figure 15, illustrates the major classes used to communicate the results of a market clearing run for a US style electricity market. The class 'Market' is used to model the type of market (day ahead, real time, or intraday). The class 'MarketFactors' is used to model the market time horizon. The class 'LossClearing' is used to model electrical losses during the market horizon. The class 'GeneralClearing' is used to model the identity of the market interval. The class 'PnodeClearing' and its associations are used to model the cleared prices (locational

marginal prices) of the run. The class 'ResourceClearing' is used to model market clearing results on a resource basis. The class 'AncillaryServiceClearing' is used to model the clearing results for ancillary services on a market region basis. The class 'ResourceAwardClearing' is used to model further details of the resource clearing. The class 'ConstraintClearing' is used to model the exchange of data on constraints which are binding constraints in the optimal market clearing solution.



IEC 1618/14

Figure 15 – Market clearing for US style electricity market

4.5 Modeling guidelines

4.5.1 Modeling for change

IEC 62325-301 defines the CIM along with IEC 61970-301 and IEC 61968-11.

4.5.2 Process for amendments to the CIM

It may be desirable to amend the CIM to either revise the existing model or to extend the CIM to model additional elements of an electric utility power system. The recommended process for such amendments is as follows.

- Prepare a use case(s) to describe the desired changes. This should include proposed changes to the appropriate class diagrams showing new/revised classes, attributes, and associations.
- The use case(s) is then reviewed by the appropriate working group to decide if the requested changes should be treated as revisions to the current CIM standard, or if they should be treated as private amendments, not requiring a change to the standard itself.
- Proposed amendments accepted by the working group will be added to a list of outstanding issues, and at the appropriate time, a new version of the CIM model will be prepared and an update made to the appropriate IEC CIM specification.

4.5.3 Changes to the CIM UML model

From a modeling perspective, when the CIM is extended, the approach is to start with the existing CIM UML model. The extensions may be added in any of several ways that are available in UML, but in all cases the approach is to inspect the current model and determine the best way to build off of the existing class diagrams. The extensions may take the form of any of the following, starting from the simplest to the most complex:

- adding additional attributes to existing classes;
- adding additional associations between two existing classes;
- adding new classes that are specializations of existing classes;
- adding new classes via associations with existing classes.

The main objective is to reuse the existing CIM to the maximum extent possible. From a packaging point of view, extensions should be made to existing packages where possible. If the extensions comprise a new domain of application, then consideration should be given to creating a new package for the additions, but still creating the necessary associations to the existing package, keeping in mind that even though a new package is being created, the CIM is still a single model.

4.5.4 Changes to the CIM standards documents

From a documentation perspective, when the CIM is extended, a decision shall be made whether the changes constitute updates to existing CIM standards documents, or whether a new part 3xx specification is required. In either case, the extensions will then become part of the IEC standard CIM.

4.5.5 CIM profiles

An implementation of the CIM need not include all classes, attributes, or associations in the standard CIM specification to be compliant with the CIM standard. Profiles may be defined to specify which elements shall be included (i.e., mandatory elements) in a particular use of the CIM, as well as which are optional. These profiles are defined in the Part 35X, and 45x series of standards and shall be based on the modeling rules defined in IEC 62325-450.

In IEC 62325-450, the definition of CIM profiles follows a layered modeling framework to go from the CIM information model down to the specification of messages based on CIM concepts through the definition of different regional contextual models and their subsequent contextualized documents for information exchange.

A full discussion of the rules for IEC 62325 series profiles is presented in the IEC 62325-450 document. Please refer to this document for a complete explanation and a full description of these rules.

4.6 Modeling tools

The entire CIM UML model exists as an Enterprise Architect project file and is viewable with that tool, including the class diagrams and descriptions of classes, attributes, types, and relationships. Viewing the CIM in this fashion provides a graphical navigation interface that permits all CIM specification data to be viewed via point-and-click from the class diagram in each package. A free viewer is available through Sparx Systems.

Ideally, the CIM information model is independent of any specific UML tool, though experience has shown that exchanges between different tools are often less than perfect. Until tool interoperability is proven effective, future changes to the CIM specification, resulting in new versions of this standard, will be incorporated first into the Enterprise Architect project description to ensure a single source for the CIM model data.

5 Detailed model

5.1 Overview

The common information model (CIM) represents a comprehensive logical view of market operations system information. This definition includes the public classes and attributes, as well as the relationships between them. Subclause 5.2 describes how Clause 6 is structured. Clause 6 is automatically generated from the CIM model.

5.2 Context

The CIM is partitioned into subpackages. Classes within the packages are listed alphabetically. Native class attributes are listed first, followed by inherited attributes in order of depth of inheritance, then by attribute name. Native associations are listed first for each class, followed by inherited associations in order of depth of inheritance, then alphabetically by class name, then alphabetically by association end name. The associations are described according to the role of each class participating in the association. The association ends are listed under the class at each end of an association.

For each package, the model information for each class is fully described in attribute and association end tables. Attribute and association end information for native and inherited attributes is listed as shown in Table 1 and Table 2. For any inherited attributes or association ends the “description” column will contain text indicating the attributes is inherited from a specific class. The description column for native attributes and association ends contains the actual description.

Table 1 – Attribute documentation

name	type	description
native1	Float	A floating point native attribute of the class is described here.
native2	ActivePower	Documentation for another native attribute of type ActivePower.
Name	Float	Inherited from class IdentifiedObject

As shown in Table 1, in an attribute table, in some cases, an attribute is a constant, in which case the phrase “(const)” is added in the name column of the attribute table. In such cases, the attribute normally has an initial value also which is preceded by an equal sign and appended to the attribute name.

Table 2 – Association ends documentation

[mult from]	[mult to] name	type	description
[0..*]	[0..1] PSRType	PSRType	PSRType (custom classification) for this PowerSystemResource.
[0..1]	[0..*] Measurements	Measurement	The Measurements that are included in the naming hierarchy where the PSR is the containing object
[1..1]	[0..*] OperatingShare	OperatingShare	The linkage to any number of operating share objects.
[0..*]	[0..*] PsrLists	PsrList	
[1..1]	[0..1] OutageSchedule	OutageSchedule	A power system resource may have an outage schedule
[0..*]	[0..*] ReportingGroup	ReportingGroup	Reporting groups to which this PSR belongs.

[mult from]	[mult to] name	type	description
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

As shown in Table 2, in an association ends table, the first column describes the multiplicity at the other end of the association (i.e., the multiplicity of the class for which association ends are being described). The multiplicity of the association end itself is included in brackets. The association end name is listed in plain text. The class at the other end of the association is listed in the “type” column. A multiplicity of zero indicates an optional association. A multiplicity of “*” indicates any number is allowed. For example, a multiplicity of [1..*] indicates a range from 1 to any larger number is allowed.

In the case that a class is an enumeration, the attributes table is replaced by the enums table as shown in Table 3, since enumeration literals have no type. There are no inherited enumeration literals for an enumeration class.

Table 3 – Enums documentation

literal	description
native1	This is the first native enumeration value.
native2	This is the second native enumeration value.
native3	There are typically no inherited attributes for enumerations.

6 Top package IEC 62325

6.1 General

The IEC 62325 subpackages of the CIM are developed, standardized and maintained by the IEC.

Figure 16 shows class diagram Main.

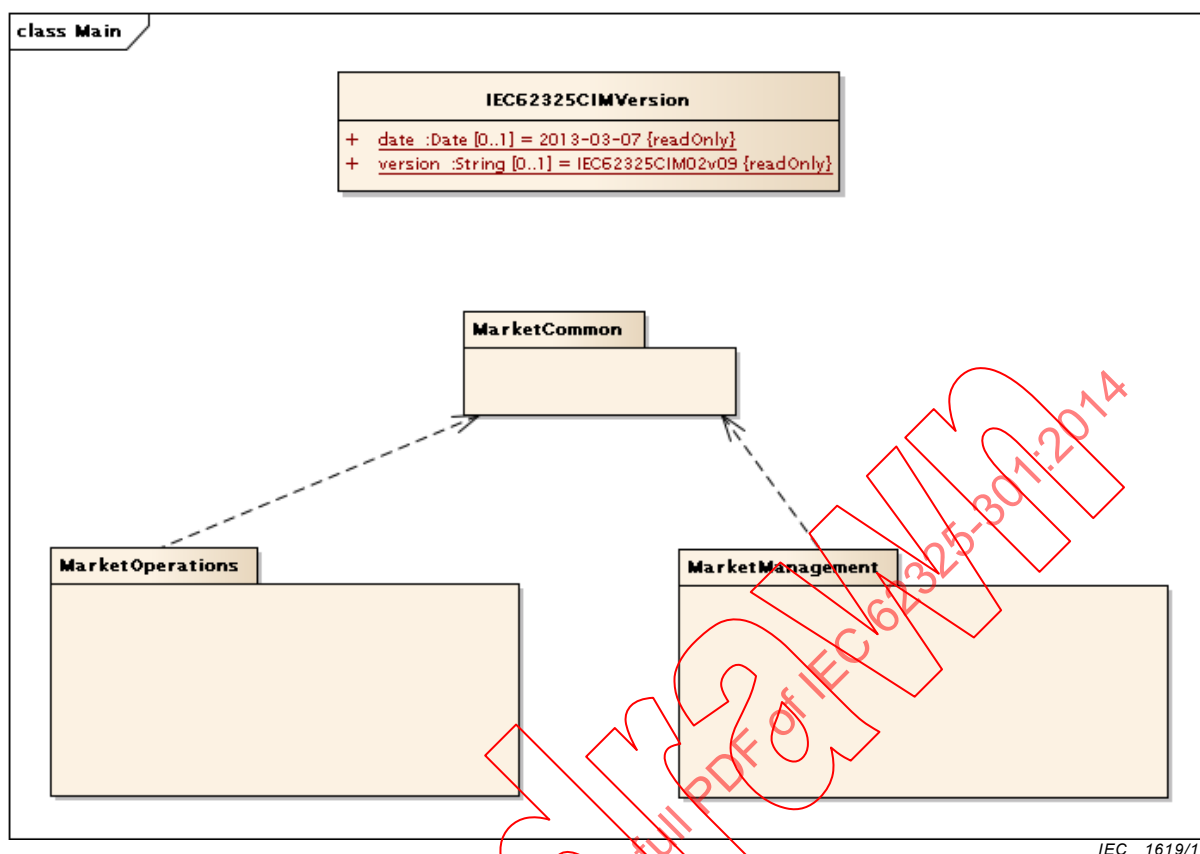


Figure 16 – Class diagram IEC 62325::Main

This diagram shows all IEC 62325 packages and their logical dependencies.

6.2 IEC 62325CIMVersion root class

IEC 62325 version number assigned to this UML model.

Table 4 shows all attributes of IEC 62325CIMVersion.

Table 4 – Attributes of IEC 62325::IEC 62325CIMVersion

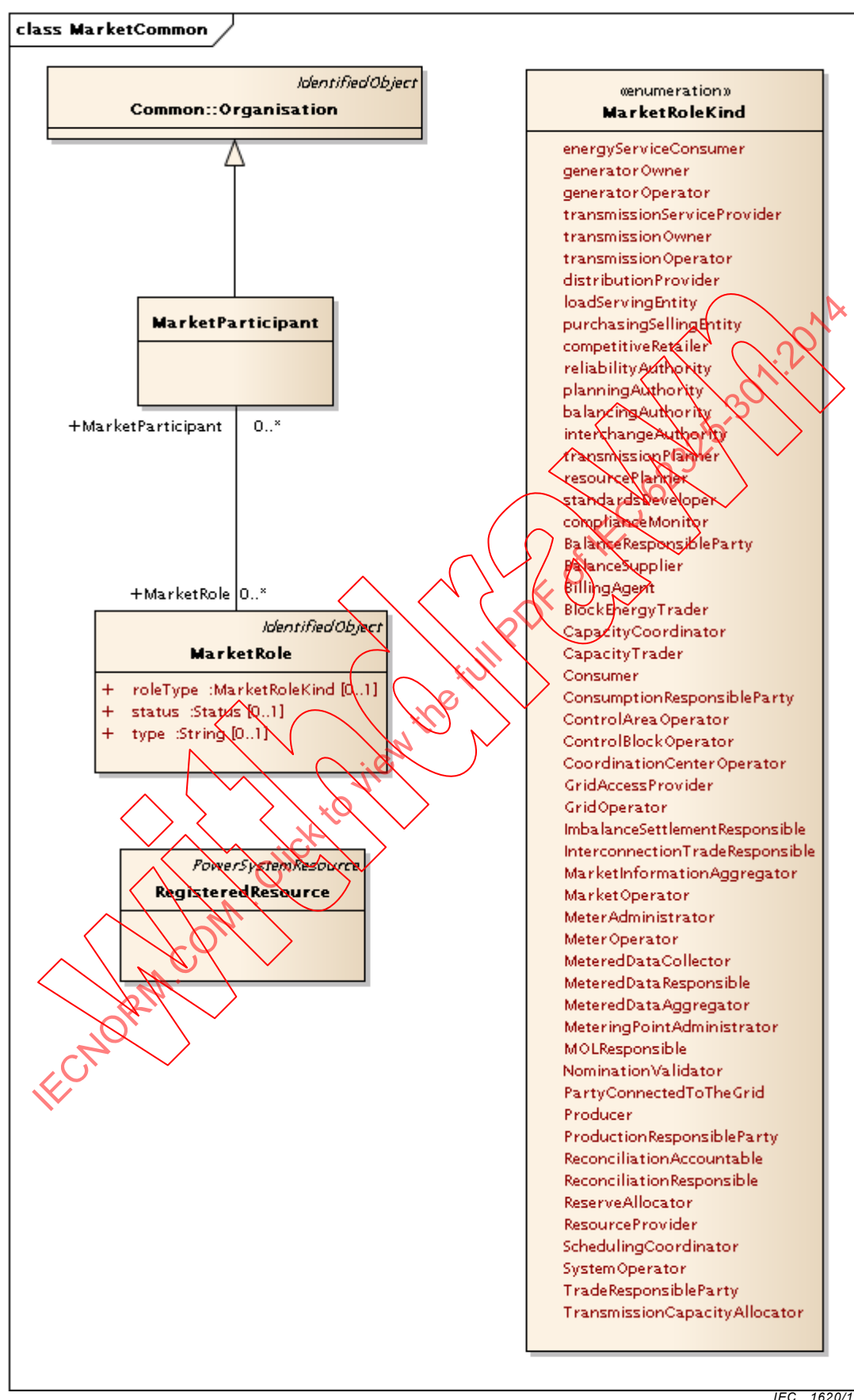
name	type	description
date=2013-03-07 (const)	Date	Form is YYYY-MM-DD for example for January 5, 2009 it is 2009-01-05.
version=IEC 62325CIM02v09 (const)	String	Form is IEC 62325CIMXXvYY where XX is the major CIM package version and the YY is the minor version. For example IEC 62325CIM10v03.

6.3 Package MarketCommon

6.3.1 General

This package contains the common objects shared by both MarketManagement and MarketOperations packages.

Figure 17 shows class diagram MarketCommon.



IEC 1620/14

Figure 17 – Class diagram MarketCommon::MarketCommon

Common classes used by both MarketManagement and MarketOperations packages.

6.3.2 MarketParticipant

An identification of a party acting in a electricity market business process. This class is used to identify organizations that can participate in market management and/or market operations.

Table 5 shows all attributes of MarketParticipant.

Table 5 – Attributes of MarketCommon::MarketParticipant

name	type	description
streetAddress	StreetAddress	inherited from: Organisation
postalAddress	PostalAddress	inherited from: Organisation
phone1	TelephoneNumber	inherited from: Organisation
phone2	TelephoneNumber	inherited from: Organisation
electronicAddress	ElectronicAddress	inherited from: Organisation
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 6 shows all association ends of MarketParticipant with other classes.

Table 6 – Association ends of MarketCommon::MarketParticipant with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] MarketDocument	MarketDocument	
[0..*]	[0..*] MarketRole	MarketRole	
[0..*]	[0..*] TimeSeries	TimeSeries	
[0..1]	[0..*] Bid	Bid	
[0..1]	[0..*] Roles	OrganisationRole	inherited from: Organisation
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.3.3 MarketRole

The external intended behaviour played by a party within the electricity market.

Table 7 shows all attributes of MarketRole.

Table 7 – Attributes of MarketCommon::MarketRole

name	type	description
roleType	MarketRoleKind	Defined using an enumerated list of types of market roles for use when a finite list of types are desired.
status	Status	Status of the market role.
type	String	The kind of market roles that can be played by parties for given domains within the electricity market. Types are flexible using dataType of string for free-entry of role types.

name	type	description
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 8 shows all association ends of MarketRole with other classes.

Table 8 – Association ends of MarketCommon::MarketRole with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] MarketParticipant	MarketParticipant	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.3.4 MarketRoleKind enumeration

Kind of market role an organisation can have.

Table 9 shows all literals of MarketRoleKind.

Table 9 – Literals of MarketCommon::MarketRoleKind

literal	description
energyServiceConsumer	Energy service consumer.
generatorOwner	Generator merchant owner.
generatorOperator	Generator merchant operator.
transmissionServiceProvider	Transmission service provider.
transmissionOwner	Transmission owner.
transmissionOperator	Transmission operator.
distributionProvider	Distribution provider.
loadServingEntity	Load serving entity.
purchasingSellingEntity	Purchasing selling entity.
competitiveRetailer	Competitive retailer.
reliabilityAuthority	Reliability authority.
planningAuthority	Planning authority.
balancingAuthority	Balancing authority.
interchangeAuthority	Interchange authority.
transmissionPlanner	Transmission planner.
resourcePlanner	Resource planner.
standardsDeveloper	Standards developer.
complianceMonitor	Compliance monitor.
BalanceResponsibleParty	A party that has a contract proving financial security and identifying balance responsibility with the Imbalance Settlement Responsible of the Market Balance Area entitling the party to operate in the market. This is the only role allowing a party to nominate energy on a wholesale level.

literal	description
	Additional information: The meaning of the word "balance" in this context signifies that the quantity contracted to provide or to consume shall be equal to the quantity really provided or consumed. Equivalent to "Program responsible party" in the Netherlands. Equivalent to "Balance group manager" in Germany. Equivalent to "market agent" in Spain.
BalanceSupplier	A party that markets the difference between actual metered energy consumption and the energy bought with firm energy contracts by the Party Connected to the Grid. In addition the Balance Supplier markets any difference with the firm energy contract (of the Party Connected to the Grid) and the metered production. Additional information: There is only one Balance Supplier for each Accounting Point.
BillingAgent	The party responsible for invoicing a concerned party.
BlockEnergyTrader	A party that is selling or buying energy on a firm basis (a fixed volume per market time period).
CapacityCoordinator	A party, acting on behalf of the System Operators involved, responsible for establishing a coordinated Offered Capacity and/or Net Transfer Capacity (NTC) and/or Available Transfer Capacity (ATC) between several Market Balance Areas.
CapacityTrader	A party that has a contract to participate in the Capacity Market to acquire capacity through a Transmission Capacity Allocator. The capacity may be acquired on behalf of an Interconnection Trade Responsible or for sale on secondary capacity markets.
Consumer	A party that consumes electricity. Additional information: This is a Type of Party Connected to the Grid.
ConsumptionResponsibleParty	A party who can be brought to rights, legally and financially, for any imbalance between energy nominated and consumed for all associated Accounting Points. Additional information: This is a type of Balance Responsible Party.
ControlAreaOperator	Responsible for: 1. The coordination of exchange programs between its related Market Balance Areas and for the exchanges between its associated Control Areas. 2. The load frequency control for its own area. 3. The coordination of the correction of time deviations.
ControlBlockOperator	Responsible for: 1. The coordination of exchanges between its associated Control Blocks and the organisation of the coordination of exchange programs between its related Control Areas. 2. The load frequency control within its own block and ensuring that its Control Areas respect their obligations in respect to load frequency control and time deviation. 3. The organisation of the settlement and/or compensation between its Control Areas.

literal	description
CoordinationCenterOperator	Responsible for: 1. The coordination of exchange programs between its related Control Blocks and for the exchanges between its associated Coordination Center Zones. 2. Ensuring that its Control Blocks respect their obligations in respect to load frequency control. 3. Calculating the time deviation in cooperation with the associated coordination centers. 4. Carrying out the settlement and/or compensation between its Control Blocks and against the other Coordination Center Zones.
GridAccessProvider	A party responsible for providing access to the grid through an Accounting Point and its use for energy consumption or production to the Party Connected to the Grid.
GridOperator	A party that operates one or more grids.
ImbalanceSettlementResponsible	A party that is responsible for settlement of the difference between the contracted quantities and the realised quantities of energy products for the Balance Responsible Parties in a Market Balance Area. Note: The Imbalance Settlement Responsible has not the responsibility to invoice. The Imbalance Settlement Responsible may delegate the invoicing responsibility to a more generic role such as a Billing Agent.
InterconnectionTradeResponsible	Is a Balance Responsible Party or depends on one. They are recognized by the Nomination Validator for the nomination of already allocated capacity. Additional information: This is a type of Balance Responsible Party.
MarketInformationAggregator	Market Information Aggregator, A party that provides market related information that has been compiled from the figures supplied by different actors in the market. This information may also be published or distributed for general use. Note: The Market Information Aggregator may receive information from any market participant that is relevant for publication or distribution.
MarketOperator	The unique power exchange of trades for the actual delivery of energy that receives the bids from the Balance Responsible Parties that have a contract to bid. The Market Operator determines the market energy price for the Market Balance Area after applying technical constraints from the System Operator. It may also establish the price for the reconciliation within a Metering Grid Area.
MeterAdministrator	A party responsible for keeping a database of meters.
MeterOperator	A party responsible for installing, maintaining, testing, certifying and decommissioning physical meters.
MeteredDataCollector	A party responsible for meter reading and quality control of the reading.
MeteredDataResponsible	A party responsible for the establishment and validation of metered data based on the collected data received from the Metered Data Collector. The party is responsible for the history of metered data for a Metering Point.
MeteredDataAggregator	A party responsible for the establishment and qualification of metered data from the Metered Data Responsible. This data is aggregated according to a

literal	description
	defined set of market rules.
MeteringPointAdministrator	A party responsible for registering the parties linked to the metering points in a Metering Grid Area. They are also responsible for maintaining the Metering Point technical specifications. They are responsible for creating and terminating metering points.
MOLResponsible	Responsible for the management of the available tenders for all Acquiring System Operators to establish the order of the reserve capacity that can be activated.
NominationValidator	Has the responsibility of ensuring that all capacity nominated is within the allowed limits and confirming all valid nominations to all involved parties. They inform the Interconnection Trade Responsible of the maximum nominated capacity allowed. Depending on market rules for a given interconnection the corresponding System Operators may appoint one Nomination Validator.
PartyConnectedToTheGrid	A party that contracts for the right to consume or produce electricity at an Accounting Point.
Producer	A party that produces electricity. Additional information: This is a type of Party Connected to the Grid.
ProductionResponsibleParty	A party who can be brought to rights, legally and financially, for any imbalance between energy nominated and produced for all associated Accounting Points. Additional information: This is a type of Balance Responsible Party.
ReconciliationAccountable	A party that is financially accountable for the reconciled volume of energy products for a profiled Accounting Point.
ReconciliationResponsible	A party that is responsible for reconciling, within a Metering Grid Area, the volumes used in the imbalance settlement process for profiled Accounting Points and the actual metered quantities. Note: The Reconciliation Responsible may delegate the invoicing responsibility to a more generic role such as a Billing Agent.
ReserveAllocator	Informes the market of reserve requirements, receives tenders against the requirements and in compliance with the prequalification criteria, determines what tenders meet requirements and assigns tenders.
ResourceProvider	A role that manages a resource object and provides the schedules for it
SchedulingCoordinator	A party that is responsible for the schedule information and its exchange on behalf of a Balance Responsible Party. For example in the Polish market a Scheduling Coordinator is responsible for information interchange for scheduling and settlement.
SystemOperator	A party that is responsible for a stable power system operation (including the organisation of physical balance) through a transmission grid in a geographical area. The System Operator will also determine and be responsible for cross border capacity and exchanges. If necessary they may reduce allocated capacity to ensure operational stability. Transmission as mentioned above means "the transport of electricity on the extra high or high voltage network with a view to its delivery to final customers or to distributors. Operation of transmission includes as well the tasks of

literal	description
	system operation concerning its management of energy flows, reliability of the system and availability of all necessary system services." (definition taken from the ENTSO-E RGCE Operation handbook Glossary). Note: additional obligations may be imposed through local market rules.
TradeResponsibleParty	A party who can be brought to rights, legally and financially, for any imbalance between energy nominated and consumed for all associated Accounting Points. Note: A power exchange without any privileged responsibilities acts as a Trade Responsible Party. Additional information: This is a type of Balance Responsible Party.
TransmissionCapacityAllocator	Manages the allocation of transmission capacity for an Allocated Capacity Area. For explicit auctions: The Transmission Capacity Allocator manages, on behalf of the System Operators, the allocation of available transmission capacity for an Allocated capacity Area. They offer the available transmission capacity to the market, allocates the available transmission capacity to individual Capacity Traders and calculates the billing amount of already allocated capacities to the Capacity Traders.

6.3.5 RegisteredResource

A resource that is registered through the market participant registration system. Examples include generating unit, load, and non-physical generator or load.

Table 10 shows all attributes of RegisteredResource.

Table 10 – Attributes of MarketCommon::RegisteredResource

name	type	description
ACAFlag	YesNo	Indication that this resource is associated with an Adjacent Control Area
ASSPOptimizationFlag	YesNo	Indication that the resource participates in the optimization process by default.
commercialOpDate	DateTime	Resource Commercial Operation Date.
contingencyAvailFlag	YesNo	contingent operating reserve availability (Yes/No). Resource is available to participate with capacity in contingency dispatch.
dispatchFlag	YesNo	Dispatch flag: indicates whether the resource is dispatchable (Y/N) It is move to the RegisteredResource class for the participating load dispatch purpose
ECAFlag	YesNo	Indication that this resource is associated with an Embedded Control area
endEffectiveDate	DateTime	end effective date
flexibleOfferFlag	YesNo	flexible offer flag (Y/N)
hourlyPredispatch	YesNo	Indicates need to dispatch before the start of the operating hour. Only relevant in Real-Time

name	type	description
		Market. Applies to generation, inertia and participating load resource. Value (Y/N)
isAggregatedRes	YesNo	a flag to indicate if a resource is an aggregated resource
lastModified	DateTime	Indication of the last time this item was modified/versioned.
LMPMFlag	YesNo	LMPM flag: indicates whether the resource is subject to the LMPM test (Yes/No)
marketParticipationFlag	YesNo	Market Participation flag: indicates whether the resource participate in the market (Y/N)
maxBaseSelfSchedQty	Float	maximum base self schedule quantity
maxOnTime	Float	maximum on time after start up
minDispatchTime	Hours	minimum number of consecutive hours a resource shall be dispatched if bid is accepted
minOffTime	Float	minimum off time after shut down
minOnTime	Float	minimum on time after start up
mustOfferFlag	YesNo	Must offer flag: indicates whether the unit is subject to the must offer provisions (Y/N)
nonMarket	YesNo	Flag to indicate that the Resource is not participating in the Market Operations.
pointOfDeliveryFlag	YesNo	Indication that the registered resource is a Point of Delivery (YES) resource which implies there is a POD Loss Factor.
priceSetFlagDA	YesNo	Price setting flag: indicates whether a resource is capable of setting the Market Clearing Price (Y) for the DA market, and if not, indicates whether the resource shall submit bids for energy at \$ 0 (S) or not (N) Initially in the RegisteredGenerator class. It was move to the RegisteredResource class for the participating load dispatch purpose
priceSetFlagRT	YesNo	Price setting flag: indicates whether a resource is capable of setting the Market Clearing Price (Y) for the RT market, and if not, indicates whether the resource shall submit bids for energy at \$ 0 (S) or not (N) Initially in the RegisteredGenerator class. It was move to the RegisteredResource class for the participating load dispatch purpose
registrationStatus	ResourceRegistrationStatus	Registration Status of resource – Active, Mothballed, Planned, or Decommissioned.
resourceAdequacyFlag	YesNo	Indication that this resource participates in the resource adequacy function.
SMPMFlag	YesNo	SMPM flag: indicates whether the resource is subject to the SMPM test (Yes/No)
startEffectiveDate	DateTime	start effective date
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 11 shows all association ends of RegisteredResource with other classes.

Table 11 – Association ends of MarketCommon::RegisteredResource with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..*] SubstitutionResourceList	SubstitutionResourceList	
[0..*]	[0..*] SubControlArea	SubControlArea	
[1..1]	[0..*] ResourceAncillaryServiceQualification	ResourceAncillaryServiceQualification	RegisteredResources are qualified for resource ancillary service types (which include market product types as well as other types such as BlackStart) by the association to the class ResourceAncillaryServiceQualification.
[0..*]	[0..*] ResourceCapacity	ResourceCapacity	
[0..*]	[0..*] InterTie	SchedulingPoint	
[1..1]	[0..*] OrgResOwnership	OrgResOwnership	
[1..1]	[0..*] FormerReference	FormerReference	
[0..*]	[0..*] ForbiddenRegion	ForbiddenRegion	
[0..1]	[0..*] ContractDistributionFactor	ContractDistributionFactor	
[0..*]	[0..*] AggregateNode	AggregateNode	
[0..*]	[0..1] AdjacentCASet	AdjacentCASet	
[0..*]	[0..*] RampRateCurve	RampRateCurve	
[1..1]	[0..*] LoadFollowingInst	LoadFollowingInst	
[1..1]	[0..*] DispatchInstReply	DispatchInstReply	
[0..1]	[0..*] ResourceLoadFollowingInst	ResourceLoadFollowingInst	
[0..1]	[0..*] ResourceDispatchResults	ResourceDispatchResults	
[0..1]	[0..*] RUCAwardInstruction	RUCAwardInstruction	
[0..1]	[0..*] RMROperatorInput	RMROperatorInput	
[0..1]	[0..*] MPMResourceStatus	MPMResourceStatus	
[0..1]	[0..*] DopInstruction	DopInstruction	
[1..1]	[0..*] Commitments	Commitments	
[1..1]	[0..*] IntermittentResourceEligibility	IntermittentResourceEligibility	
[0..1]	[0..*] ExpectedEnergyValues	ExpectedEnergyValues	
[0..1]	[0..*] AllocationResultValues	AllocationResultValues	
[0..*]	[0..1] MktOrganisation	MktOrganisation	
[0..*]	[0..1] MktConnectivityNode	MktConnectivityNode	
[0..*]	[0..*] TimeSeries	TimeSeries	
[1..1]	[0..1] ResourceVerifiableCosts	ResourceVerifiableCosts	
[0..*]	[0..1] Pnode	Pnode	A registered resource injects power at one or more connectivity nodes related to a pnode
[0..*]	[0..*] MPMTestThreshold	MPMTestThreshold	
[0..*]	[0..1] HostControlArea	HostControlArea	
[0..*]	[0..*] ControlAreaDesignation	ControlAreaDesignation	
[0..1]	[0..*] ResourceAwardInstruction	ResourceAwardInstruction	
[0..1]	[0..*] LoadFollowingOperatorInput	LoadFollowingOperatorInput	

[mult from]	[mult to] name	type	description
[1..1]	[0..*] Instructions	Instructions	
[0..1]	[0..*] ExPostResourceResults	ExPostResourceResults	
[0..1]	[0..*] DotInstruction	DotInstruction	
[1..1]	[0..1] DefaultBid	DefaultBid	
[0..*]	[0..*] EnergyMarkets	EnergyMarket	
[0..*]	[0..1] PSRTYPE	PSRTYPE	inherited from: PowerSystemResource
[0..1]	[0..*] Measurements	Measurement	inherited from: PowerSystemResource
[1..1]	[0..*] OperatingShare	OperatingShare	inherited from: PowerSystemResource
[0..*]	[0..*] PsrLists	PsrList	inherited from: PowerSystemResource
[1..1]	[0..1] OutageSchedule	OutageSchedule	inherited from: PowerSystemResource
[0..*]	[0..*] ReportingGroup	ReportingGroup	inherited from: PowerSystemResource
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.4 Package MarketManagement

6.4.1 General

This package contains all core CIM Market Extensions required for market management systems.

Figure 18 shows package diagram externalDependencies.

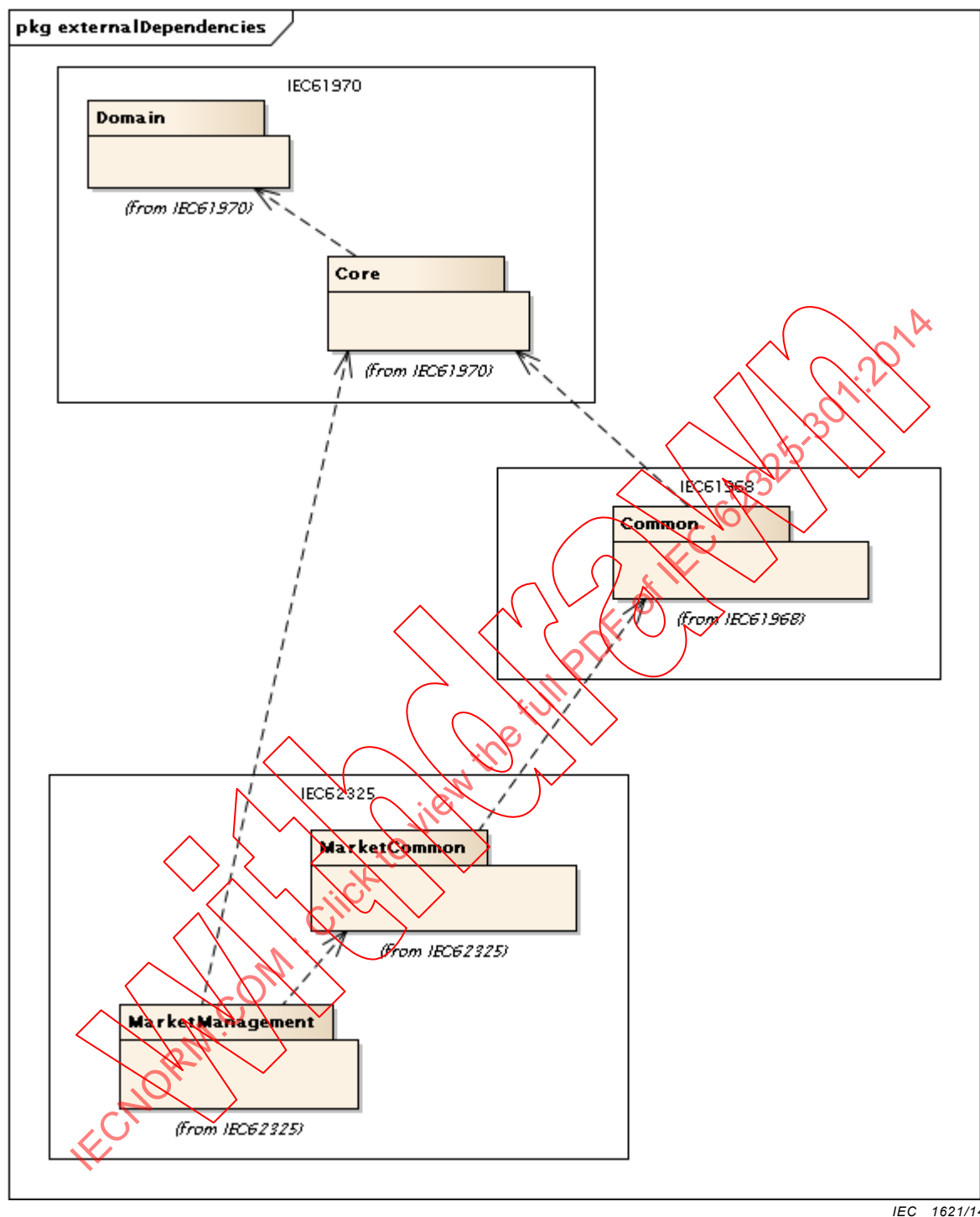


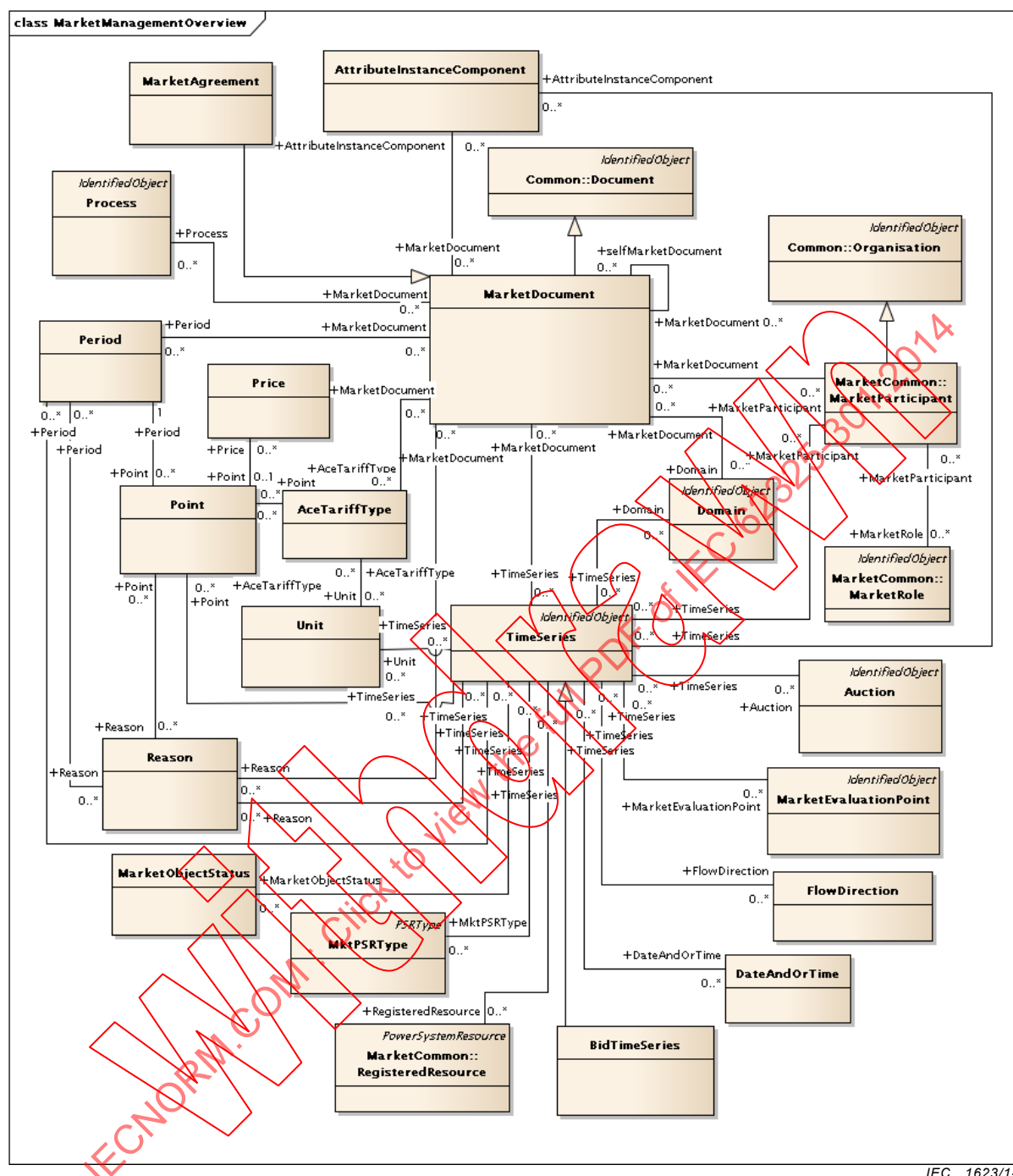
Figure 18 – Package diagram MarketManagement::externalDependencies

Market Management external dependencies.

Figure 19 shows class diagram Inheritance.



Figure 20 shows class diagram MarketManagementOverview.



IEC 1623/14

Figure 20 – Class diagram MarketManagement::MarketManagementOverview

Here are described all used classes for the definition of Market Management Profiles.

It is possible to see all dependencies with other common CIM concepts in Energy Management Systems and Distribution Management Systems.

6.4.2 AceTariffType root class

The Area Control Error tariff type that is applied or used.

Table 12 shows all attributes of AceTariffType.

Table 12 – Attributes of MarketManagement::AceTariffType

name	type	description
type	String	The coded type of an ACE tariff.

Table 13 shows all association ends of AceTariffType with other classes.

Table 13 – Association ends of MarketManagement::AceTariffType with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] Unit	Unit	
[0..*]	[0..*] MarketDocument	MarketDocument	
[0..*]	[0..*] Point	Point	

6.4.3 AttributeInstanceComponent root class

A class used to provide information about an attribute.

Table 14 shows all attributes of AttributeInstanceComponent.

Table 14 – Attributes of MarketManagement::AttributeInstanceComponent

name	type	description
attribute	String	The identification of the formal name of an attribute.
attributeValue	String	The instance value of the attribute.
position	Integer	A sequential value representing a relative sequence number.

Table 15 shows all association ends of AttributeInstanceComponent with other classes.

Table 15 – Association ends of MarketManagement::AttributeInstanceComponent with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] TimeSeries	TimeSeries	
[0..*]	[0..*] MarketDocument	MarketDocument	

6.4.4 Auction

A class providing the identification and type of an auction.

Table 16 shows all attributes of Auction.

Table 16 – Attributes of MarketManagement::Auction

name	type	description
allocationMode	String	Identification of the method of allocation in an auction.
cancelled	String	An indicator that signifies that the auction has been cancelled.
category	String	The product category of an auction.
paymentTerms	String	The terms which dictate the determination of the bid payment price.
rights	String	The rights of use the transmission capacity acquired in an auction.
type	String	The kind of the Auction (e.g. implicit, explicit ...).
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 17 shows all association ends of Auction with other classes.

Table 17 – Association ends of MarketManagement::Auction with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] TimeSeries	TimeSeries	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.4.5 BidTimeSeries

The formal specification of specific characteristics related to a bid.

Table 18 shows all attributes of BidTimeSeries.

Table 18 – Attributes of MarketManagement::BidTimeSeries

name	type	description
blockBid	String	Indication that the values in the period are considered as a whole. They cannot be changed or subdivided.
direction	String	The coded identification of the energy flow.
divisible	String	An indication whether or not each element of the bid may be partially accepted or not.
linkedBidsIdentification	String	Unique identification associated with all linked bids.
minimumActivationQuantity	Decimal	The minimum quantity of energy that can be activated at a given time interval.
stepIncrementQuantity	Decimal	The minimum increment that can be applied for an increase in an activation request.
businessType	String	inherited from: TimeSeries
curveType	String	inherited from: TimeSeries
objectAggregation	String	inherited from: TimeSeries

name	type	description
product	String	inherited from: TimeSeries
version	String	inherited from: TimeSeries
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 19 shows all association ends of BidTimeSeries with other classes.

Table 19 – Association ends of MarketManagement::BidTimeSeries with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] MarketParticipant	MarketParticipant	inherited from: TimeSeries
[0..*]	[0..*] DateAndOrTime	DateAndOrTime	inherited from: TimeSeries
[0..*]	[0..*] Domain	Domain	inherited from: TimeSeries
[0..*]	[0..*] FlowDirection	FlowDirection	inherited from: TimeSeries
[0..*]	[0..*] MarketDocument	MarketDocument	inherited from: TimeSeries
[0..*]	[0..*] MarketEvaluationPoint	MarketEvaluationPoint	inherited from: TimeSeries
[0..*]	[0..*] Period	Period	inherited from: TimeSeries
[0..*]	[0..*] Reason	Reason	inherited from: TimeSeries
[0..*]	[0..*] RegisteredResource	RegisteredResource	inherited from: TimeSeries
[0..*]	[0..*] AttributeInstanceComponent	AttributeInstanceComponent	inherited from: TimeSeries
[0..*]	[0..*] Auction	Auction	inherited from: TimeSeries
[0..*]	[0..*] MarketObjectStatus	MarketObjectStatus	inherited from: TimeSeries
[0..*]	[0..*] MktPSRType	MktPSRType	inherited from: TimeSeries
[0..*]	[0..*] Point	Point	inherited from: TimeSeries
[0..*]	[0..*] Unit	Unit	inherited from: TimeSeries
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.4.6 DateAndOrTime root class

The date and or the time.

Table 20 shows all attributes of DateAndOrTime.

Table 20 – Attributes of MarketManagement::DateAndOrTime

name	type	description
date	Date	Date as "yyyy-mm-dd", which conforms with ISO 8601
time	Time	Time as "hh:mm:ss.sssZ", which conforms with ISO 8601.

Table 21 shows all association ends of DateAndOrTime with other classes.

Table 21 – Association ends of MarketManagement::DateAndOrTime with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] TimeSeries	TimeSeries	

6.4.7 Domain

An area of activity defined within the energy market.

Table 22 shows all attributes of Domain.

Table 22 – Attributes of MarketManagement::Domain

name	type	description
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 23 shows all association ends of Domain with other classes.

Table 23 – Association ends of MarketManagement::Domain with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] MarketDocument	MarketDocument	
[0..*]	[0..*] TimeSeries	TimeSeries	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.4.8 FlowDirection root class

The coded identification of the direction of energy flow.

Table 24 shows all attributes of FlowDirection.

Table 24 – Attributes of MarketManagement::FlowDirection

name	type	description
direction	String	The coded identification of the direction of energy flow.

Table 25 shows all association ends of FlowDirection with other classes.

Table 25 – Association ends of MarketManagement::FlowDirection with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] TimeSeries	TimeSeries	

6.4.9 MarketAgreement

An identification or eventually the contents of an agreement between two or more parties.

Table 26 shows all attributes of MarketAgreement.

Table 26 – Attributes of MarketManagement::MarketAgreement

name	type	description
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 27 shows all association ends of MarketAgreement with other classes.

Table 27 – Association ends of MarketManagement::MarketAgreement with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] AttributeInstanceComponent	AttributeInstanceComponent	inherited from: MarketDocument
[0..*]	[0..*] Domain	Domain	inherited from: MarketDocument
[0..*]	[0..*] Period	Period	inherited from: MarketDocument
[0..*]	[0..*] selfMarketDocument	MarketDocument	inherited from: MarketDocument
[0..*]	[0..*] MarketParticipant	MarketParticipant	inherited from: MarketDocument
[0..*]	[0..1] AceTariffType	AceTariffType	inherited from: MarketDocument
[0..*]	[0..*] Reason	Reason	inherited from: MarketDocument
[0..*]	[0..*] TimeSeries	TimeSeries	inherited from: MarketDocument
[0..*]	[0..*] Process	Process	inherited from: MarketDocument
[0..*]	[0..*] MarketDocument	MarketDocument	inherited from: MarketDocument
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.4.10 MarketDocument

Electronic document containing the information necessary to satisfy a given business process set of requirements.

Table 28 shows all attributes of MarketDocument.

Table 28 – Attributes of MarketManagement::MarketDocument

name	type	description
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 29 shows all association ends of MarketDocument with other classes.

Table 29 – Association ends of MarketManagement::MarketDocument with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] AttributeInstanceComponent	AttributeInstanceComponent	
[0..*]	[0..*] Domain	Domain	
[0..*]	[0..*] Period	Period	
[0..*]	[0..*] selfMarketDocument	MarketDocument	
[0..*]	[0..*] MarketParticipant	MarketParticipant	
[0..*]	[0..*] AceTariffType	AceTariffType	
[0..*]	[0..*] Reason	Reason	
[0..*]	[0..*] TimeSeries	TimeSeries	
[0..*]	[0..*] Process	Process	
[0..*]	[0..*] MarketDocument	MarketDocument	
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.4.11 MarketEvaluationPoint

The identification of an entity where energy products are measured or computed.

Table 30 shows all attributes of MarketEvaluationPoint.

Table 30 – Attributes of MarketManagement::MarketEvaluationPoint

name	type	description
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 31 shows all association ends of MarketEvaluationPoint with other classes.

Table 31 – Association ends of MarketManagement::MarketEvaluationPoint with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] TimeSeries	TimeSeries	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.4.12 MarketObjectStatus root class

The condition or position of an object with regard to its standing.

Table 32 shows all attributes of MarketObjectStatus.

Table 32 – Attributes of MarketManagement::MarketObjectStatus

name	type	description
status	String	The coded condition or position of an object with regard to its standing.

Table 33 shows all association ends of MarketObjectStatus with other classes.

Table 33 – Association ends of MarketManagement::MarketObjectStatus with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] TimeSeries	TimeSeries	

6.4.13 MktPSRType

The type of a power system resource.

Table 34 shows all attributes of MktPSRType.

Table 34 – Attributes of MarketManagement::MktPSRType

name	type	description
psrType	String	The coded type of a power system resource.
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 35 shows all association ends of MktPSRType with other classes.

Table 35 – Association ends of MarketManagement::MktPSRType with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] TimeSeries	TimeSeries	
[0..1]	[0..*] PowerSystemResources	PowerSystemResource	inherited from: PSRType
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.4.14 Period root class

An identification of a time interval that may have a given resolution.

Table 36 shows all attributes of Period.

Table 36 – Attributes of MarketManagement::Period

name	type	description
resolution	Duration	The number of units of time that compose an individual step within a period.
timeInterval	DateTimeInterval	The start and end date and time for a given interval.

Table 37 shows all association ends of Period with other classes.

Table 37 – Association ends of MarketManagement::Period with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] Reason	Reason	
[0..*]	[0..*] MarketDocument	MarketDocument	
[1..1]	[0..*] Point	Point	
[0..*]	[0..*] TimeSeries	TimeSeries	

6.4.15 Point root class

An identification of a set of values being addressed within a specific interval of time.

Table 38 shows all attributes of Point.

Table 38 – Attributes of MarketManagement::Point

name	type	description
position	Integer	A sequential value representing the relative position within a given time interval.
quantity	Decimal	Principal quantity identified for a point.
secondaryQuantity	Decimal	Secondary quantity identified for a point.

Table 39 shows all association ends of Point with other classes.

Table 39 – Association ends of MarketManagement::Point with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] AceTariffType	AceTariffType	
[0..*]	[1..1] Period	Period	
[0..*]	[0..*] TimeSeries	TimeSeries	
[0..1]	[0..*] Price	Price	
[0..*]	[0..*] Reason	Reason	

6.4.16 Price root class

The cost corresponding to a specific measure and expressed in a currency.

Table 40 shows all attributes of Price.

Table 40 – Attributes of MarketManagement::Price

name	type	description
amount	Decimal	A number of monetary units specified in a unit of currency.
category	String	The category of a price to be used in a price calculation. The price category is mutually agreed between System Operators.
direction	String	The direction indicates whether a System Operator pays the Market Parties or inverse.

Table 41 shows all association ends of Price with other classes.

Table 41 – Association ends of MarketManagement::Price with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] Point	Point	

6.4.17 Process

The formal specification of a set of business transactions having the same business goal.

Table 42 shows all attributes of Process.

Table 42 – Attributes of MarketManagement::Process

name	type	description
classificationType	String	The classification mechanism used to group a set of objects together within a business process. The grouping may be of a detailed or a summary nature.
processType	String	The kind of business process.
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 43 shows all association ends of Process with other classes.

Table 43 – Association ends of MarketManagement::Process with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] MarketDocument	MarketDocument	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.4.18 Reason root class

The motivation of an act.

Table 44 shows all attributes of Reason.

Table 44 – Attributes of MarketManagement::Reason

name	type	description
code	String	The motivation of an act in coded form.
text	String	The textual explanation corresponding to the reason code.

Table 45 shows all association ends of Reason with other classes.

Table 45 – Association ends of MarketManagement::Reason with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] MarketDocument	MarketDocument	
[0..*]	[0..*] Point	Point	
[0..*]	[0..*] Period	Period	
[0..*]	[0..*] TimeSeries	TimeSeries	

6.4.19 TimeSeries

A set of regular time-ordered measurements or values of quantitative nature of an individual or collective phenomenon taken at successive, in most cases equidistant, periods / points of time.

Table 46 shows all attributes of TimeSeries.

Table 46 – Attributes of MarketManagement::TimeSeries

name	type	description
businessType	String	The identification of the nature of the time series.
curveType	String	The coded representation of the type of curve being described.
objectAggregation	String	Identification of the object that is the common dominator used to aggregate a time series.
product	String	The type of the product such as Power, energy, reactive power, transport capacity that is the subject of the time series.
version	String	Version of the time series.
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 47 shows all association ends of TimeSeries with other classes.

Table 47 – Association ends of MarketManagement::TimeSeries with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] MarketParticipant	MarketParticipant	
[0..*]	[0..*] DateAndOrTime	DateAndOrTime	
[0..*]	[0..*] Domain	Domain	
[0..*]	[0..*] FlowDirection	FlowDirection	
[0..*]	[0..*] MarketDocument	MarketDocument	
[0..*]	[0..*] MarketEvaluationPoint	MarketEvaluationPoint	
[0..*]	[0..*] Period	Period	
[0..*]	[0..*] Reason	Reason	
[0..*]	[0..*] RegisteredResource	RegisteredResource	

[mult from]	[mult to] name	type	description
[0..*]	[0..*] AttributeInstanceComponent	AttributeInstanceComponent	
[0..*]	[0..*] Auction	Auction	
[0..*]	[0..*] MarketObjectStatus	MarketObjectStatus	
[0..*]	[0..*] MktPSRType	MktPSRType	
[0..*]	[0..*] Point	Point	
[0..*]	[0..*] Unit	Unit	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.4.20 Unit root class

The identification of the unit name for the time series quantities.

Table 48 shows all attributes of Unit.

Table 48 – Attributes of MarketManagement::Unit

name	type	description
name	String	The coded representation of the unit.

Table 49 shows all association ends of Unit with other classes.

Table 49 – Association ends of MarketManagement::Unit with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] TimeSeries	TimeSeries	
[0..*]	[0..*] AceTariffType	AceTariffType	

6.5 Package MarketOperations

6.5.1 General

This package contains all core CIM Market Extensions required for market operations systems.

Figure 21 shows class diagram Main.

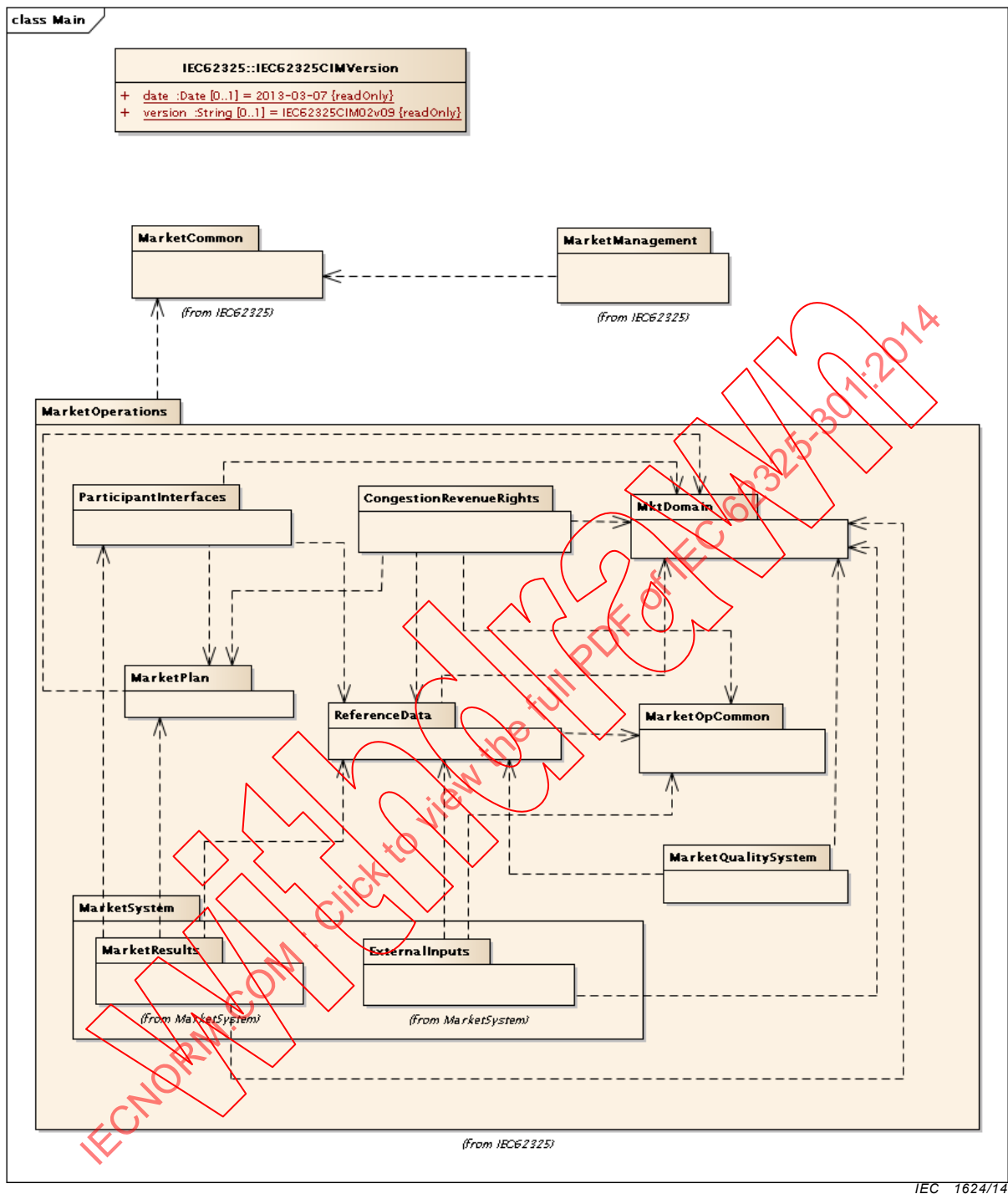


Figure 21 – Class diagram MarketOperations::Main

Figure 22 shows package diagram MarketOperations.



Figure 22 – Package diagram MarketOperations::MarketOperations

This package contains all core CIM Market Extensions required for market operations systems.

6.5.2 Package CongestionRevenueRights

6.5.2.1 General

Congestion rent is a major, highly volatile charge currently faced by many participants in the LMP-based electrical energy markets. For this reason, the ISOs offer congestion revenue rights (CRR), also known as financial transmission rights or transmission congestion contracts. These are financial instruments that allow market participants to hedge against congestion charges when they schedule their generation, load and bilateral energy transactions.

Figure 23 shows class diagram CongestionRevenueRights.

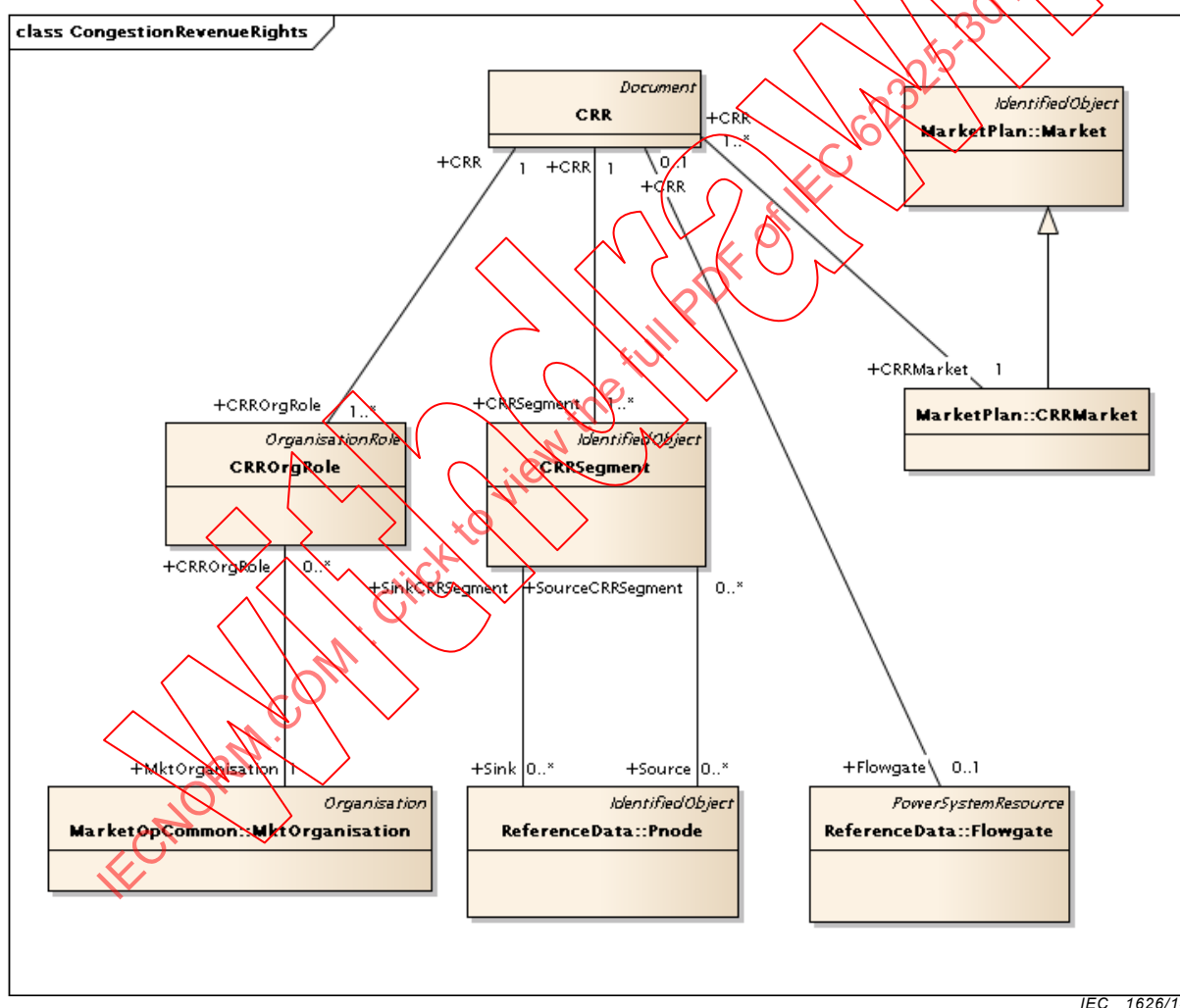


Figure 23 – Class diagram CongestionRevenueRights::CongestionRevenueRights

A congestion revenue right (CRR) is a financial instrument which entitles the holder to a CRR payment when the Congestion is in the direction of the source to CRR source to the CRR sink. The classes shown are used to model the CRR data. The CRRSegment class contains information about CRR segments. The MktOrganization class contains information about the entity that holds the CRR. Associations from CRRSegment to Reference data show the source and sink PNodes.

6.5.2.2 CRR

Congestion Revenue Rights (CRR) class that is inherited from a Document class.

A CRR is a financial concept that is used to hedge congestion charges.

The CRR is usually settled based on the Locational Marginal Prices (LMPs) that are calculated in the day-ahead market. These LMPs are determined by the Day-ahead resource schedules/bids. CRRs will not hedge against marginal losses. If the congestion component of LMP at the sink is greater than at the source, then the CRR owner is entitled to receive a portion of congestion revenues. If the congestion component at the sink is less than at the source, then an obligation-type CRR owner will be charged, but an option-type CRR owner will not.

Table 50 shows all attributes of CRR.

Table 50 – Attributes of CongestionRevenueRights::CRR

name	type	description
cRRcategory	CRRCategoryType	CRR category represents 'PTP' for a point-to-point CRR, or 'NSR' for a Network Service Right. If CRR category is 'PTP', both Source ID and Sink ID fields are required. If CRR category is 'NSR' only one field, either Source ID or Sink ID, shall be not null and the other shall be null. However, the 'NSR' category will include at least three records
cRRtype	CRRSegmentType	Type of the CRR, from the possible type definitions in the CRR System (e.g. 'LSE', 'ETC').
hedgeType	CRRHedgeType	hedger type Obligation or Option
timeOfUse	TimeOfUse	Time of Use flag of the CRR – Peak (ON), Offpeak (OFF) or all 24 hours (24HR).
tradeSliceID	String	Segment of the CRR described in the current record
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 51 shows all association ends of CRR with other classes.

Table 51 – Association ends of CongestionRevenueRights::CRR with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..1] Flowgate	Flowgate	
[1..*]	[1..1] CRRMarket	CRRMarket	
[1..1]	[1..*] CRRSegment	CRRSegment	
[1..1]	[1..*] CRROrgRole	CRROrgRole	
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.2.3 CRROrgRole

Identifies a way in which an organisation may participate with a defined Congestion Revenue Right (CRR).

Table 52 shows all attributes of CRROrgRole.

Table 52 – Attributes of CongestionRevenueRights::CRROrgRole

name	type	description
kind	CRRRoleType	Kind of role the organisation is with regards to the congestion revenue rights.
status	Status	Status of congestion revenue rights organisation role.
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 53 shows all association ends of CRROrgRole with other classes.

Table 53 – Association ends of CongestionRevenueRights::CRROrgRole with other classes

[mult from]	[mult to] name	type	description
[1..*]	[1..1] CRR	CRR	
[0..*]	[1..1] MktOrganisation	MktOrganisation	
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: OrganisationRole
[0..*]	[0..1] Organisation	Organisation	inherited from: OrganisationRole
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.2.4 CRRSegment

CRRSegment represents a segment of a CRR in a particular time frame.

The segment class contains CRR kind, type, quantity, hedger type, time of use flag, and segment period.

Table 54 shows all attributes of CRRSegment.

Table 54 – Attributes of CongestionRevenueRights::CRRSegment

name	type	description
amount	Money	Dollar amount = quantity x clearingPrice
clearingPrice	Money	Clearing price of a CRR
endDateTime	DateTime	segment end date time
quantity	Float	The MW amount associated with the CRR
startDateTime	DateTime	segment start date time
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 55 shows all association ends of CRRSegment with other classes.

Table 55 – Association ends of CongestionRevenueRights::CRRSegment with other classes

[mult from]	[mult to] name	type	description
[1..*]	[1..1] CRR	CRR	
[0..*]	[0..*] Source	Pnode	
[0..*]	[0..*] Sink	Pnode	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.3 Package MarketOpCommon

6.5.3.1 General

This package contains the common objects shared by MarketOperations packages.

6.5.3.2 MarketInvoice root class

A roll up of invoice line items. The whole invoice has a due date and amount to be paid, with information such as customer, banks etc. being obtained through associations. The invoice roll up is based on individual line items that each contain amounts and descriptions for specific services or products.

Table 56 shows all attributes of MarketInvoice.

Table 56 – Attributes of MarketOpCommon::MarketInvoice

name	type	description
amount	Money	Total amount due on this invoice based on line items and applicable adjustments.
billMediaKind	MktBillMediaKind	Kind of media by which the CustomerBillingInfo was delivered.
dueDate	Date	Calculated date upon which the Invoice amount is due.
kind	MktAccountKind	Kind of invoice (default is 'sales').
mailedDate	Date	Date on which the customer billing statement/invoice was printed/mailed.
proForma	Boolean	True if payment is to be paid by a Customer to accept a particular ErpQuote (with associated Design) and have work initiated, at which time an associated ErpInvoice should automatically be generated. ErpPayment.subjectStatus satisfies terms specified in the ErpQuote.
referenceNumber	String	Number of an invoice to be reference by this invoice.
transactionDateTime	DateTime	Date and time when the invoice is issued.
transferType	String	Type of invoice transfer.

Table 57 shows all association ends of MarketInvoice with other classes.

Table 57 – Association ends of MarketOpCommon::MarketInvoice with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..*] MajorChargeGroup	MajorChargeGroup	
[1..1]	[0..*] MarketInvoiceLineItems	MarketInvoiceLineItem	

6.5.3.3 MarketInvoiceLineItem root class

An individual line item on an invoice.

Table 58 shows all attributes of MarketInvoiceLineItem.

Table 58 – Attributes of MarketOpCommon::MarketInvoiceLineItem

name	type	description
billPeriod	DateTimeInterval	Bill period for the line item.
glAccount	String	General Ledger account code shall be a valid combination.
glDateTime	DateTime	Date and time line item will be posted to the General Ledger.
kind	MktInvoiceLineItemKind	Kind of line item.
lineAmount	Float	Amount due for this line item.
lineNumber	String	Line item number on invoice statement.
lineVersion	String	Version number of the bill run.
netAmount	Float	Net line item charge amount.

name	type	description
previousAmount	Float	Previous line item charge amount.

Table 59 shows all association ends of MarketInvoiceLineItem with other classes.

Table 59 – Association ends of MarketOpCommon::MarketInvoiceLineItem with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] MarketInvoice	MarketInvoice	
[0..*]	[0..*] Settlement	Settlement	
[0..*]	[0..1] ContainerMarketInvoiceLineItem	MarketInvoiceLineItem	
[0..1]	[0..*] ComponentMarketInvoiceLineItems	MarketInvoiceLineItem	

6.5.3.4 MarketLedger root class

In accounting transactions, a ledger is a book containing accounts to which debits and credits are posted from journals, where transactions are initially recorded. Journal entries are periodically posted to the ledger. Ledger Actual represents actual amounts by account within ledger within company or business area. Actual amounts may be generated in a source application and then loaded to a specific ledger within the enterprise general ledger or budget application.

Table 60 shows all association ends of MarketLedger with other classes.

Table 60 – Association ends of MarketOpCommon::MarketLedger with other classes

[mult from]	[mult to] name	type	description
[1..1]	[0..*] MarketLedgerEntries	MarketLedgerEntry	

6.5.3.5 MarketLedgerEntry root class

Details of an individual entry in a ledger, which was posted from a journal on the posted date.

Table 61 shows all attributes of MarketLedgerEntry.

Table 61 – Attributes of MarketOpCommon::MarketLedgerEntry

name	type	description
accountID	String	Account identifier for this entry.
accountKind	MktAccountKind	Kind of account for this entry.
amount	Money	The amount of the debit or credit for this account.
postedDateTime	DateTime	Date and time this entry was posted to the ledger.

name	type	description
status	Status	Status of ledger entry.
transactionDateTime	DateTime	Date and time journal entry was recorded.

Table 62 shows all association ends of MarketLedgerEntry with other classes.

Table 62 – Association ends of MarketOpCommon::MarketLedgerEntry with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] Settlement	Settlement	
[0..*]	[1..1] MarketLedger	MarketLedger	

6.5.3.6 MktActivityRecord

Subclass of IEC 61968: Common:ActivityRecord

Table 63 shows all attributes of MktActivityRecord.

Table 63 – Attributes of MarketOpCommon::MktActivityRecord

name	type	description
createdDateTime	DateTime	inherited from: ActivityRecord
type	String	inherited from: ActivityRecord
severity	String	inherited from: ActivityRecord
reason	String	inherited from: ActivityRecord
status	Status	inherited from: ActivityRecord
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 64 shows all association ends of MktActivityRecord with other classes.

Table 64 – Association ends of MarketOpCommon::MktActivityRecord with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] MarketFactors	MarketFactors	
[0..*]	[0..*] Assets	Asset	inherited from: ActivityRecord
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.3.7 MktConnectivityNode

Subclass of IEC 61970:Topology:ConnectivityNode

Table 65 shows all attributes of MktConnectivityNode.

Table 65 – Attributes of MarketOpCommon::MktConnectivityNode

name	type	description
endEffectiveDate	DateTime	end effective date
startEffectiveDate	DateTime	start effective date
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 66 shows all association ends of MktConnectivityNode with other classes.

Table 66 – Association ends of MarketOpCommon::MktConnectivityNode with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..*] RegisteredResource	RegisteredResource	
[1..1]	[0..*] NodeConstraintTerm	NodeConstraintTerm	
[0..*]	[1..1] RTO	RTO	
[1..1]	[0..1] SysLoadDistribuFactor	SysLoadDistributionFactor	
[1..1]	[0..*] LossPenaltyFactor	LossSensitivity	
[1..1]	[0..*] CnodeDistributionFactor	CnodeDistributionFactor	
[1..1]	[0..1] IndividualPnode	IndividualPnode	
[0..*]	[1..1] ConnectivityNodeContainer	ConnectivityNodeContainer	inherited from: ConnectivityNode
[0..*]	[0..1] TopologicalNode	TopologicalNode	inherited from: ConnectivityNode
[0..1]	[0..*] Terminals	Terminal	inherited from: ConnectivityNode
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.3.8 MktEnergyConsumer

Subclass of IEC 61970:Wires:EnergyConsumer

Table 67 shows all attributes of MktEnergyConsumer.

Table 67 – Attributes of MarketOpCommon::MktEnergyConsumer

name	type	description
customerCount	Integer	inherited from: EnergyConsumer
grounded	WindingConnection	inherited from: EnergyConsumer
pfixed	ActivePower	inherited from: EnergyConsumer
pfixedPct	PerCent	inherited from: EnergyConsumer
phaseConnection	PhaseShuntConnectionKind	inherited from: EnergyConsumer
qfixed	ReactivePower	inherited from: EnergyConsumer

name	type	description
qfixedPct	PerCent	inherited from: EnergyConsumer
aggregate	Boolean	inherited from: Equipment
normallyInService	Boolean	inherited from: Equipment
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 68 shows all association ends of MktEnergyConsumer with other classes

**Table 68 – Association ends of MarketOpCommon::
MktEnergyConsumer with other classes**

[mult from]	[mult to] name	type	description
[1..1]	[0..*] EnergyConsumerData	EnergyConsumerData	
[0..*]	[0..1] RegisteredLoad	RegisteredLoad	
[0..*]	[0..1] LoadResponse	LoadResponseCharacteristic	inherited from: EnergyConsumer
[1..1]	[0..*] EnergyConsumerPhase	EnergyConsumerPhase	inherited from: EnergyConsumer
[1..*]	[0..1] PowerCutZone	PowerCutZone	inherited from: EnergyConsumer
[0..*]	[0..1] BaseVoltage	BaseVoltage	inherited from: ConductingEquipment
[1..1]	[0..*] Terminals	Terminal	inherited from: ConductingEquipment
[0..*]	[0..*] ProtectionEquipments	ProtectionEquipment	inherited from: ConductingEquipment
[1..1]	[0..*] ClearanceTags	ClearanceTag	inherited from: ConductingEquipment
[1..1]	[0..1] SvStatus	SvStatus	inherited from: ConductingEquipment
[0..*]	[0..1] EquipmentContainer	EquipmentContainer	inherited from: Equipment
[1..1]	[0..*] ContingencyEquipment	ContingencyEquipment	inherited from: Equipment
[0..1]	[0..*] OperationalLimitSet	OperationalLimitSet	inherited from: Equipment
[0..*]	[0..1] PSRType	PSRType	inherited from: PowerSystemResource
[0..1]	[0..*] Measurements	Measurement	inherited from: PowerSystemResource
[1..1]	[0..*] OperatingShare	OperatingShare	inherited from: PowerSystemResource
[0..*]	[0..*] PsrLists	PsrList	inherited from: PowerSystemResource
[1..1]	[0..1] OutageSchedule	OutageSchedule	inherited from: PowerSystemResource
[0..*]	[0..*] ReportingGroup	ReportingGroup	inherited from: PowerSystemResource
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.3.9 MktGeneratingUnit

Subclass of IEC 61970:Production:GeneratingUnit

Table 69 shows all attributes of MktGeneratingUnit.

Table 69 – Attributes of MarketOpCommon::MktGeneratingUnit

name	type	description
allocSpinResP	ActivePower	inherited from: GeneratingUnit
autoCntrlMarginP	ActivePower	inherited from: GeneratingUnit
baseP	ActivePower	inherited from: GeneratingUnit
controlDeadband	ActivePower	inherited from: GeneratingUnit
controlPulseHigh	Seconds	inherited from: GeneratingUnit
controlPulseLow	Seconds	inherited from: GeneratingUnit
controlResponseRate	ActivePowerChangeRate	inherited from: GeneratingUnit
dispReserveFlag	Boolean	inherited from: GeneratingUnit
efficiency	PU	inherited from: GeneratingUnit
energyMinP	HeatRate	inherited from: GeneratingUnit
fastStartFlag	Boolean	inherited from: GeneratingUnit
fuelPriority	Integer	inherited from: GeneratingUnit
genControlMode	GeneratorControlMode	inherited from: GeneratingUnit
genControlSource	GeneratorControlSource	inherited from: GeneratingUnit
genOperatingMode	GeneratorOperatingMode	inherited from: GeneratingUnit
governorMPL	PU	inherited from: GeneratingUnit
governorSCD	PerCent	inherited from: GeneratingUnit
highControlLimit	ActivePower	inherited from: GeneratingUnit
initialIP	ActivePower	inherited from: GeneratingUnit
longPF	Float	inherited from: GeneratingUnit
lowControlLimit	ActivePower	inherited from: GeneratingUnit
lowerRampRate	ActivePowerChangeRate	inherited from: GeneratingUnit
maxEconomicP	ActivePower	inherited from: GeneratingUnit
maximumAllowableSpinningReserve	ActivePower	inherited from: GeneratingUnit
maxOperatingP	ActivePower	inherited from: GeneratingUnit
minEconomicP	ActivePower	inherited from: GeneratingUnit
minimumOffTime	Seconds	inherited from: GeneratingUnit
minOperatingP	ActivePower	inherited from: GeneratingUnit
modelDetail	Classification	inherited from: GeneratingUnit
nominalIP	ActivePower	inherited from: GeneratingUnit
normalPF	Float	inherited from: GeneratingUnit
penaltyFactor	Float	inherited from: GeneratingUnit
raiseRampRate	ActivePowerChangeRate	inherited from: GeneratingUnit
ratedGrossMaxP	ActivePower	inherited from: GeneratingUnit
ratedGrossMinP	ActivePower	inherited from: GeneratingUnit
ratedNetMaxP	ActivePower	inherited from: GeneratingUnit
shortPF	Float	inherited from: GeneratingUnit
spinReserveRamp	ActivePowerChangeRate	inherited from: GeneratingUnit
startupCost	Money	inherited from: GeneratingUnit
startupTime	Seconds	inherited from: GeneratingUnit
stepChange	ActivePower	inherited from: GeneratingUnit
tieLinePF	Float	inherited from: GeneratingUnit

name	type	description
variableCost	Money	inherited from: GeneratingUnit
aggregate	Boolean	inherited from: Equipment
normallyInService	Boolean	inherited from: Equipment
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 70 shows all association ends of MktGeneratingUnit with other classes.

**Table 70 – Association ends of MarketOpCommon::
MktGeneratingUnit with other classes**

[mult from]	[mult to] name	type	description
[0..*]	[0..1] RegisteredGenerator	RegisteredGenerator	
[1..1]	[0..*] GeneratingUnitDynamicValues	GeneratingUnitDynamicValues	
[0..1]	[1..*] SynchronousMachines	SynchronousMachine	inherited from: GeneratingUnit
[1..1]	[0..1] GenUnitOpSchedule	GenUnitOpSchedule	inherited from: GeneratingUnit
[1..1]	[0..*] GrossToNetActivePowerCurves	GrossToNetActivePowerCurve	inherited from: GeneratingUnit
[1..1]	[0..*] GenUnitOpCostCurves	GenUnitOpCostCurve	inherited from: GeneratingUnit
[1..1]	[0..*] ControlAreaGeneratingUnit	ControlAreaGeneratingUnit	inherited from: GeneratingUnit
[0..*]	[0..1] EquipmentContainer	EquipmentContainer	inherited from: Equipment
[1..1]	[0..*] ContingencyEquipment	ContingencyEquipment	inherited from: Equipment
[0..1]	[0..*] OperationalLimitSet	OperationalLimitSet	inherited from: Equipment
[0..*]	[0..1] PSRType	PSRType	inherited from: PowerSystemResource
[0..1]	[0..*] Measurements	Measurement	inherited from: PowerSystemResource
[1..1]	[0..*] OperatingShare	OperatingShare	inherited from: PowerSystemResource
[0..*]	[0..*] PsrLists	PsrList	inherited from: PowerSystemResource
[1..1]	[0..1] OutageSchedule	OutageSchedule	inherited from: PowerSystemResource
[0..*]	[0..*] ReportingGroup	ReportingGroup	inherited from: PowerSystemResource
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.3.10 MktLine

Subclass for IEC 61970:Wires:Line

Table 71 shows all attributes of MktLine.

Table 71 – Attributes of MarketOpCommon::MktLine

name	type	description
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 72 shows all association ends of MktLine with other classes.

Table 72 – Association ends of MarketOpCommon::MktLine with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] Flowgate	Flowgate	
[0..*]	[0..1] Region	SubGeographicalRegion	inherited from: Line
[0..1]	[0..*] Equipments	Equipment	inherited from: EquipmentContainer
[1..1]	[0..*] ConnectivityNodes	ConnectivityNode	inherited from: ConnectivityNodeContainer
[0..1]	[0..*] TopologicalNode	TopologicalNode	inherited from: ConnectivityNodeContainer
[0..*]	[0..1] PSRType	PSRType	inherited from: PowerSystemResource
[0..1]	[0..*] Measurements	Measurement	inherited from: PowerSystemResource
[1..1]	[0..*] OperatingShare	OperatingShare	inherited from: PowerSystemResource
[0..*]	[0..*] PsrLists	PsrList	inherited from: PowerSystemResource
[1..1]	[0..1] OutageSchedule	OutageSchedule	inherited from: PowerSystemResource
[0..*]	[0..*] ReportingGroup	ReportingGroup	inherited from: PowerSystemResource
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.3.11 MktLoadArea

Subclass of IEC 61970:LoadModel: LoadArea

Table 73 shows all attributes of MktLoadArea.

Table 73 – Attributes of MarketOpCommon::MktLoadArea

name	type	description
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 74 shows all association ends of MktLoadArea with other classes.

Table 74 – Association ends of MarketOpCommon::MktLoadArea with other classes

[mult from]	[mult to] name	type	description
[1..1]	[0..*] RegisteredLoad	RegisteredLoad	
[0..1]	[0..*] AreaLoadCurve	AreaLoadCurve	
[1..1]	[1..*] SubLoadAreas	SubLoadArea	inherited from: LoadArea
[0..1]	[0..1] ControlArea	ControlArea	inherited from: EnergyArea
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.3.12 MktMeasurement

Subclass of IEC 61970:Meas:Measurement

Table 75 shows all attributes of MktMeasurement.

Table 75 – Attributes of MarketOpCommon::MktMeasurement

name	type	description
measurementType	String	inherited from: Measurement
phases	PhaseCode	inherited from: Measurement
unitMultiplier	UnitMultiplier	inherited from: Measurement
unitSymbol	UnitSymbol	inherited from: Measurement
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 76 shows all association ends of MktMeasurement with other classes.

Table 76 – Association ends of MarketOpCommon::MktMeasurement with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] Pnode	Pnode	
[0..*]	[0..1] Terminal	Terminal	inherited from: Measurement
[0..*]	[0..1] PowerSystemResource	PowerSystemResource	inherited from: Measurement
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.3.13 MktOrganisation

Subclass of IEC 61968:Core2:TopLevel:Organisation

Table 77 shows all attributes of MktOrganisation.

Table 77 – Attributes of MarketOpCommon::MktOrganisation

name	type	description
creditFlag	YesNo	Flag to indicate creditworthiness (Y, N)
creditStartEffectiveDate	DateTime	Date that the organisation becomes creditworthy.
endEffectiveDate	DateTime	end effective date
lastModified	DateTime	Indication of the last time this Organization information was modified.
organisationID	Integer	Organisation (internal) ID
qualificationStatus	String	Organisation qualification status, Qualified, Not Qualified, or Disqualified
startEffectiveDate	DateTime	start effective date
streetAddress	StreetAddress	inherited from: Organisation
postalAddress	PostalAddress	inherited from: Organisation
phone1	TelephoneNumber	inherited from: Organisation
phone2	TelephoneNumber	inherited from: Organisation
electronicAddress	ElectronicAddress	inherited from: Organisation
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 78 shows all association ends of MktOrganisation with other classes.

Table 78 – Association ends of MarketOpCommon::MktOrganisation with other classes

[mult from]	[mult to] name	type	description
[1..1]	[0..*] CRROrgRole	CRROrgRole	
[0..*]	[0..*] MarketPerson	MarketPerson	
[0..1]	[0..*] RegisteredResource	RegisteredResource	
[1..1]	[0..*] OrgResOwnership	OrgResOwnership	
[1..1]	[0..*] OrgPnodeAllocation	OrgPnodeAllocation	
[1..1]	[0..*] SchedulingCoordinator	SchedulingCoordinator	
[0..1]	[0..*] Roles	OrganisationRole	inherited from: Organisation
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.3.14 MktPowerTransformer

Subclass of IEC 61970:Wires:PowerTransformer

Table 79 shows all attributes of MktPowerTransformer.

Table 79 – Attributes of MarketOpCommon::MktPowerTransformer

name	type	description
vectorGroup	String	inherited from: PowerTransformer
aggregate	Boolean	inherited from: Equipment

name	type	description
normallyInService	Boolean	inherited from: Equipment
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 80 shows all association ends of MktPowerTransformer with other classes.

**Table 80 – Association ends of MarketOpCommon::
MktPowerTransformer with other classes**

[mult from]	[mult to] name	type	description
[0..*]	[0..*] Flowgate	Flowgate	
[0..*]	[0..1] EndBFlow	BranchEndFlow	
[0..*]	[0..1] EndAFlow	BranchEndFlow	
[0..1]	[0..*] PowerTransformerEnd	PowerTransformerEnd	inherited from: PowerTransformer
[0..1]	[0..*] TransformerTanks	TransformerTank	inherited from: PowerTransformer
[0..*]	[0..1] BaseVoltage	BaseVoltage	inherited from: ConductingEquipment
[1..1]	[0..*] Terminals	Terminal	inherited from: ConductingEquipment
[0..*]	[0..*] ProtectionEquipments	ProtectionEquipment	inherited from: ConductingEquipment
[1..1]	[0..*] ClearanceTags	ClearanceTag	inherited from: ConductingEquipment
[1..1]	[0..1] SvStatus	SvStatus	inherited from: ConductingEquipment
[0..*]	[0..1] EquipmentContainer	EquipmentContainer	inherited from: Equipment
[1..1]	[0..*] ContingencyEquipment	ContingencyEquipment	inherited from: Equipment
[0..1]	[0..*] OperationalLimitSet	OperationalLimitSet	inherited from: Equipment
[0..*]	[0..1] PSRType	PSRType	inherited from: PowerSystemResource
[0..1]	[0..*] Measurements	Measurement	inherited from: PowerSystemResource
[1..1]	[0..*] OperatingShare	OperatingShare	inherited from: PowerSystemResource
[0..*]	[0..*] PsrLists	PsrList	inherited from: PowerSystemResource
[1..1]	[0..1] OutageSchedule	OutageSchedule	inherited from: PowerSystemResource
[0..*]	[0..*] ReportingGroup	ReportingGroup	inherited from: PowerSystemResource
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.3.15 MktTerminal

Subclass of IEC 61970:Core:Terminal

Table 81 shows all attributes of MktTerminal.

Table 81 – Attributes of MarketOpCommon::MktTerminal

name	type	description
startEffectiveDate	DateTime	This is the begin date/time of the element eligibility for the flowgate.
endEffectiveDate	DateTime	This is the end date/time of the element eligibility for the flowgate.
connected	Boolean	inherited from: Terminal
phases	PhaseCode	inherited from: Terminal
sequenceNumber	Integer	inherited from: Terminal
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 82 shows all association ends of MktTerminal with other classes.

Table 82 – Association ends of MarketOpCommon::MktTerminal with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] Flowgate	Flowgate	
[1..1]	[0..*] TerminalConstraintTerm	TerminalConstraintTerm	
[0..*]	[1..1] ConductingEquipment	ConductingEquipment	inherited from: Terminal
[0..*]	[0..1] ConnectivityNode	ConnectivityNode	inherited from: Terminal
[0..1]	[0..*] RegulatingControl	RegulatingControl	inherited from: Terminal
[0..*]	[0..1] TopologicalNode	TopologicalNode	inherited from: Terminal
[1..*]	[0..1] BusNameMarker	BusNameMarker	inherited from: Terminal
[1..1]	[0..*] BranchGroupTerminal	BranchGroupTerminal	inherited from: Terminal
[0..1]	[0..*] Measurements	Measurement	inherited from: Terminal
[1..1]	[0..2] TieFlow	TieFlow	inherited from: Terminal
[0..1]	[0..*] OperationalLimitSet	OperationalLimitSet	inherited from: Terminal
[1..1]	[0..*] HasSecond_MutualCoupling	MutualCoupling	inherited from: Terminal
[1..1]	[0..*] HasFirst_MutualCoupling	MutualCoupling	inherited from: Terminal
[1..1]	[0..1] SvPowerFlow	SvPowerFlow	inherited from: Terminal
[1..1]	[0..*] AuxiliaryEquipment	AuxiliaryEquipment	inherited from: Terminal
[0..1]	[0..*] TransformerEnd	TransformerEnd	inherited from: Terminal
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.3.16 MktUserAttribute

Subclass of IEC 61968:Domain2:UserAttribute

Table 83 shows all attributes of MktUserAttribute.

Table 83 – Attributes of MarketOpCommon::MktUserAttribute

name	type	description
sequenceNumber	Integer	inherited from: UserAttribute
name	String	inherited from: UserAttribute
value	StringQuantity	inherited from: UserAttribute

Table 84 shows all association ends of MktUserAttribute with other classes.

Table 84 – Association ends of MarketOpCommon::MktUserAttribute with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] ChargeType	ChargeType	
[0..*]	[0..*] MarketStatementLineItem	MarketStatementLineItem	
[0..*]	[0..*] PassThroughBill	PassThroughBill	
[0..*]	[0..*] ChargeGroup	ChargeGroup	
[1..1]	[0..*] AttributeProperty	AttributeProperty	
[0..*]	[0..*] BillDeterminant	BillDeterminant	
[0..*]	[0..1] Transaction	Transaction	inherited from: UserAttribute

6.5.4 Package MarketPlan

6.5.4.1 General

Market plan definitions for planned markets, planned market events, actual market runs, actual market events.

Figure 24 shows class diagram MarketPlan.

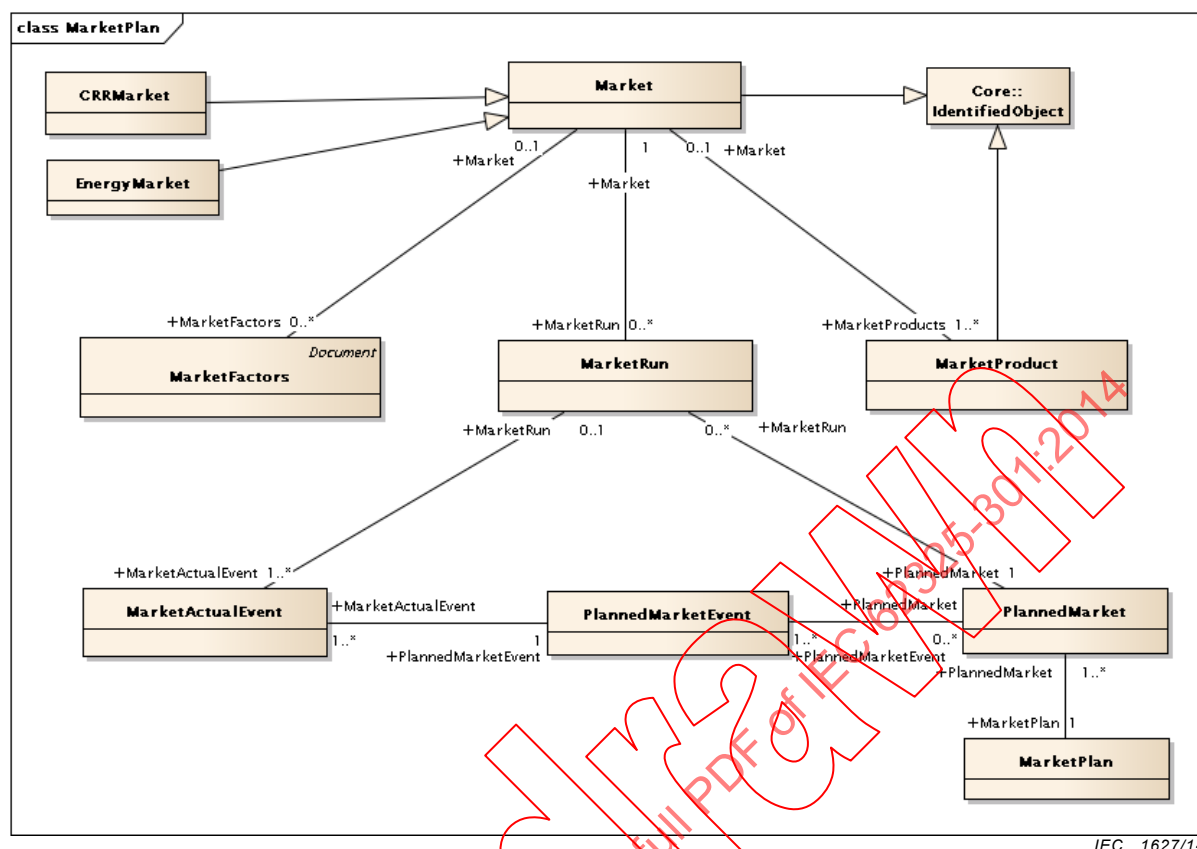


Figure 24 – Class diagram MarketPlan::MarketPlan

Shown are the major classes that are used to identify an instance of a market clearing solution. The class Market identifies whether the instance is a Day Ahead, Hour-Ahead (Intraday) or Real Time market. The class MarketFactors describes a market interval as the start and end date/time of the market. The MarketProduct class indicates the market product such as energy or ancillary service. The class PlannedMarket describes the start and end times of the market. Relationships between classes are also shown.

6.5.4.2 CRRMarket

Model that describes the Congestion Revenue Rights Auction Market

Table 85 shows all attributes of CRRMarket.

Table 85 – Attributes of MarketPlan::CRRMarket

name	type	description
labelID	String	labelID – an ID for a set of apnodes/pnodes used in a CRR market
actualEnd	DateTime	inherited from: Market
actualStart	DateTime	inherited from: Market
dst	Boolean	inherited from: Market
end	DateTime	inherited from: Market
localTimeZone	String	inherited from: Market
start	DateTime	inherited from: Market
status	String	inherited from: Market
timeIntervalLength	Float	inherited from: Market

name	type	description
tradingDay	DateTime	inherited from: Market
tradingPeriod	String	inherited from: Market
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 86 shows all association ends of CRRMarket with other classes.

Table 86 – Association ends of MarketPlan::CRRMarket with other classes

[mult from]	[mult to] name	type	description
[1..1]	[1..*] CRR	CRR	
[0..1]	[0..*] MarketFactors	MarketFactors	inherited from: Market
[0..1]	[1..*] MarketProducts	MarketProduct	inherited from: Market
[1..1]	[0..*] MarketRun	MarketRun	inherited from: Market
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.4.3 EnergyMarket

Energy and Ancillary Market (e.g. Energy, Spinning Reserve, Non-Spinning Reserve) with a description of the Market operation control parameters.

Table 87 shows all attributes of EnergyMarket.

Table 87 – Attributes of MarketPlan::EnergyMarket

name	type	description
actualEnd	DateTime	inherited from: Market
actualStart	DateTime	inherited from: Market
dst	Boolean	inherited from: Market
end	DateTime	inherited from: Market
localTimeZone	String	inherited from: Market
start	DateTime	inherited from: Market
status	String	inherited from: Market
timeIntervalLength	Float	inherited from: Market
tradingDay	DateTime	inherited from: Market
tradingPeriod	String	inherited from: Market
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 88 shows all association ends of EnergyMarket with other classes.

Table 88 – Association ends of MarketPlan::EnergyMarket with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] RegisteredResources	RegisteredResource	
[0..*]	[0..1] RTO	RTO	
[0..1]	[0..*] Settlements	Settlement	
[1..1]	[0..1] MarketResults	MarketResults	
[1..1]	[0..*] Bids	Bid	
[0..1]	[0..*] MarketFactors	MarketFactors	inherited from: Market
[0..1]	[1..*] MarketProducts	MarketProduct	inherited from: Market
[1..1]	[0..*] MarketRun	MarketRun	inherited from: Market
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.4.4 Market

Market (e.g. Day Ahead Market, RealTime Market) with a description of the the Market operation control parameters.

Table 89 shows all attributes of Market.

Table 89 – Attributes of MarketPlan::Market

name	type	description
actualEnd	DateTime	Market ending time – actual market end
actualStart	DateTime	Market starting time – actual market start
dst	Boolean	True if daylight savings time (DST) is in effect.
end	DateTime	Market end time.
localTimeZone	String	Local time zone.
start	DateTime	Market start time.
status	String	Market Status 'OPEN', 'CLOSED', 'CLEARED', 'BLOCKED'
timeIntervalLength	Float	Trading time interval length.
tradingDay	DateTime	Market trading date
tradingPeriod	String	Trading period that describes the market, possibilities could be for an Energy Market: Day Hour For a CRR Market: Year Month Season
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 90 shows all association ends of Market with other classes.

Table 90 – Association ends of MarketPlan::Market with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..*] MarketFactors	MarketFactors	
[0..1]	[1..*] MarketProducts	MarketProduct	
[1..1]	[0..*] MarketRun	MarketRun	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.4.5 MarketActualEvent root class

This class represent the actual instance of an event.

Table 91 shows all attributes of MarketActualEvent.

Table 91 – Attributes of MarketPlan::MarketActualEvent

name	type	description
description	String	Description of the event.
eventID	String	Actual event ID.
eventTime	DateTime	Start time of the event.

Table 92 shows all association ends of MarketActualEvent with other classes.

Table 92 – Association ends of MarketPlan::MarketActualEvent with other classes

[mult from]	[mult to] name	type	description
[1..*]	[0..1] MarketRun	MarketRun	Market run triggered by this actual event. For example, the DA run is triggered by the actual open bid submission event and terminated by the actual close bid submission event.
[1..*]	[1..1] PlannedMarketEvent	PlannedMarketEvent	Planned event executed by this actual event.

6.5.4.6 MarketFactors

Aggregation of market information relative for a specific time interval.

Table 93 shows all attributes of MarketFactors.

Table 93 – Attributes of MarketPlan::MarketFactors

name	type	description
intervalEndTime	DateTime	The end of the time interval for which requirement is defined.
intervalStartTime	DateTime	The start of the time interval for which

name	type	description
		requirement is defined.
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 94 shows all association ends of MarketFactors with other classes.

Table 94 – Association ends of MarketPlan::MarketFactors with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	
[0..*]	[0..1] Market	Market	
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.4.7 MarketPlan root class

This class identifies a set of planned markets. This class is a container of these planned markets

Table 95 shows all attributes of MarketPlan.

Table 95 – Attributes of MarketPlan::MarketPlan

name	type	description
description	String	Description of the planned market.
marketPlanID	String	Planned market identifier.
name	String	Name of the planned market.
tradingDay	DateTime	Planned market trading day.

Table 96 shows all association ends of MarketPlan with other classes.

Table 96 – Association ends of MarketPlan::MarketPlan with other classes

[mult from]	[mult to] name	type	description
[1..1]	[1..*] PlannedMarket	PlannedMarket	a market plan has a number of markets (DA, HA, RT)

6.5.4.8 MarketProduct

A product traded by an RTO (e.g. energy, 10 minute spinning reserve). Ancillary service product examples include: Regulation Up, Regulation Dn, Spinning Reserve, Non-Spinning Reserve, Operating Reserve.

Table 97 shows all attributes of MarketProduct.

Table 97 – Attributes of MarketPlan::MarketProduct

name	type	description
marketProductType	MarketProductType	Market product type examples: EN (Energy) RU (Regulation Up) RD (Regulation Dn) SR (Spinning Reserve) NR (Non-Spinning Reserve) RC (RUC)
rampInterval	Float	Ramping time interval for the specific market product type specified by marketProductType attribute. For example, if marketProductType = EN (from enumeration MarketProductType), then the rampInterval is the ramping time interval for Energy.
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 98 shows all association ends of MarketProduct with other classes.

Table 98 – Association ends of MarketPlan::MarketProduct with other classes

[mult from]	[mult to] name	type	description
[1..*]	[0..1] Market	Market	
[1..1]	[0..*] ProductBids	ProductBid	
[1..1]	[0..*] ResourceAwardInstruction	ResourceAwardInstruction	
[0..1]	[0..*] BidError	BidError	
[0..1]	[0..*] BidPriceCap	BidPriceCap	
[0..1]	[0..1] MarketRegionResults	MarketRegionResults	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.4.9 MarketRun root class

This class represent an actual instance of a planned market. For example, a Day Ahead market opens with the Bid Submission, ends with the closing of the Bid Submission. The market run represent the whole process. MarketRuns can be defined for markets such as Day Ahead Market, Real Time Market, Hour Ahead Market, Week Ahead Market,...

Table 99 shows all attributes of MarketRun.

Table 99 – Attributes of MarketPlan::MarketRun

name	type	description
executionType	ExecutionType	The execution type; Day Ahead, Intra Day, Real Time Pre-Dispatch, Real Time Dispatch
marketApprovalTime	DateTime	Approved time for case. Identifies the time that the dispatcher approved a specific real time unit dispatch case
marketApprovedStatus	Boolean	Set to true when the plan is approved by authority and becomes the official plan for the day ahead market. Identifies the approved case for the market for the specified time interval.
marketEndTime	DateTime	The end time defined as the end of the market, market end time.
marketID	String	An identification that defines the attributes of the Market. In today's terms: Market Type: DA, RTM, Trade Date: 1/25/04, Trade Hour: 1-25
marketRunID	String	A unique identifier that differentiates the different runs of the same Market ID. More specifically, if the market is re-opened and re-closed and rerun completely, the first set of results and the second set of results produced will have the same Market ID but will have different Market Run IDs since the multiple run is for the same market.
marketStartTime	DateTime	The start time defined as the beginning of the market, market start time.
marketType	MarketType	The market type, Day Ahead Market or Real Time Market.
reportedState	String	This is the state of market run activities as reported by market systems to the market definition services.
runState	String	This is the state controlled by market definition service. possible values could be but not limited by: Open, Close.

Table 100 shows all association ends of MarketRun with other classes.

Table 100 – Association ends of MarketPlan::MarketRun with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] Market	Market	
[0..1]	[1..*] MarketActualEvent	MarketActualEvent	All actual events that trigger this market run.
[0..*]	[1..1] PlannedMarket	PlannedMarket	A planned market could have multiple market runs for the reason that a planned market could have a rerun.

6.5.4.10 PlannedMarket root class

Represent a planned market. For example an planned DA/HA/RT market.

Table 101 shows all attributes of PlannedMarket.

Table 101 – Attributes of MarketPlan::PlannedMarket

name	type	description
marketEndTime	DateTime	Market end time.
marketID	String	An identification that defines the attributes of the Market. In todays terms: Market Type: DA, RTM, Trade Date: 1/25/04, Trade Hour: 1-25
marketStartTime	DateTime	Market start time.
marketType	MarketType	Market type.

Table 102 shows all association ends of PlannedMarket with other classes.

Table 102 – Association ends of MarketPlan::PlannedMarket with other classes

[mult from]	[mult to] name	type	description
[1..1]	[0..*] MarketRun	MarketRun	A planned market could have multiple market runs for the reason that a planned market could have a rerun.
[0..*]	[1..*] PlannedMarketEvent	PlannedMarketEvent	A planned market shall have a set of planned events
[1..*]	[1..1] MarketPlan	MarketPlan	a market plan has a number of markets (DA, HA, RT)

6.5.4.11 PlannedMarketEvent root class

This class represents planned events. Used to model the various planned events in a market (closing time, clearing time, etc).

Table 103 shows all attributes of PlannedMarketEvent.

Table 103 – Attributes of MarketPlan::PlannedMarketEvent

name	type	description
description	String	Description of the planned event.
eventType	String	Planned event type.
plannedEventID	String	Planned event identifier.
plannedTime	Integer	This is relative time so that this attribute can be used by more than one planned market. For example the bid submission is 10am everyday.

Table 104 shows all association ends of PlannedMarketEvent with other classes.

Table 104 – Association ends of MarketPlan::PlannedMarketEvent with other classes

[mult from]	[mult to] name	type	description
[1..1]	[1..*] MarketActualEvent	MarketActualEvent	All actual events that execute this planned event.
[1..*]	[0..*] PlannedMarket	PlannedMarket	A planned market shall have a set of planned events

6.5.5 Package MarketQualitySystem

6.5.5.1 General

Post-market accounting, calculation and meter data corrections to reduce invoicing errors and disputes. Reduces manual validation, verification and correction of transactional data that could affect market settlements. Republishing of market results with affected data corrected.

Figure 25 shows class diagram AllocationResults.

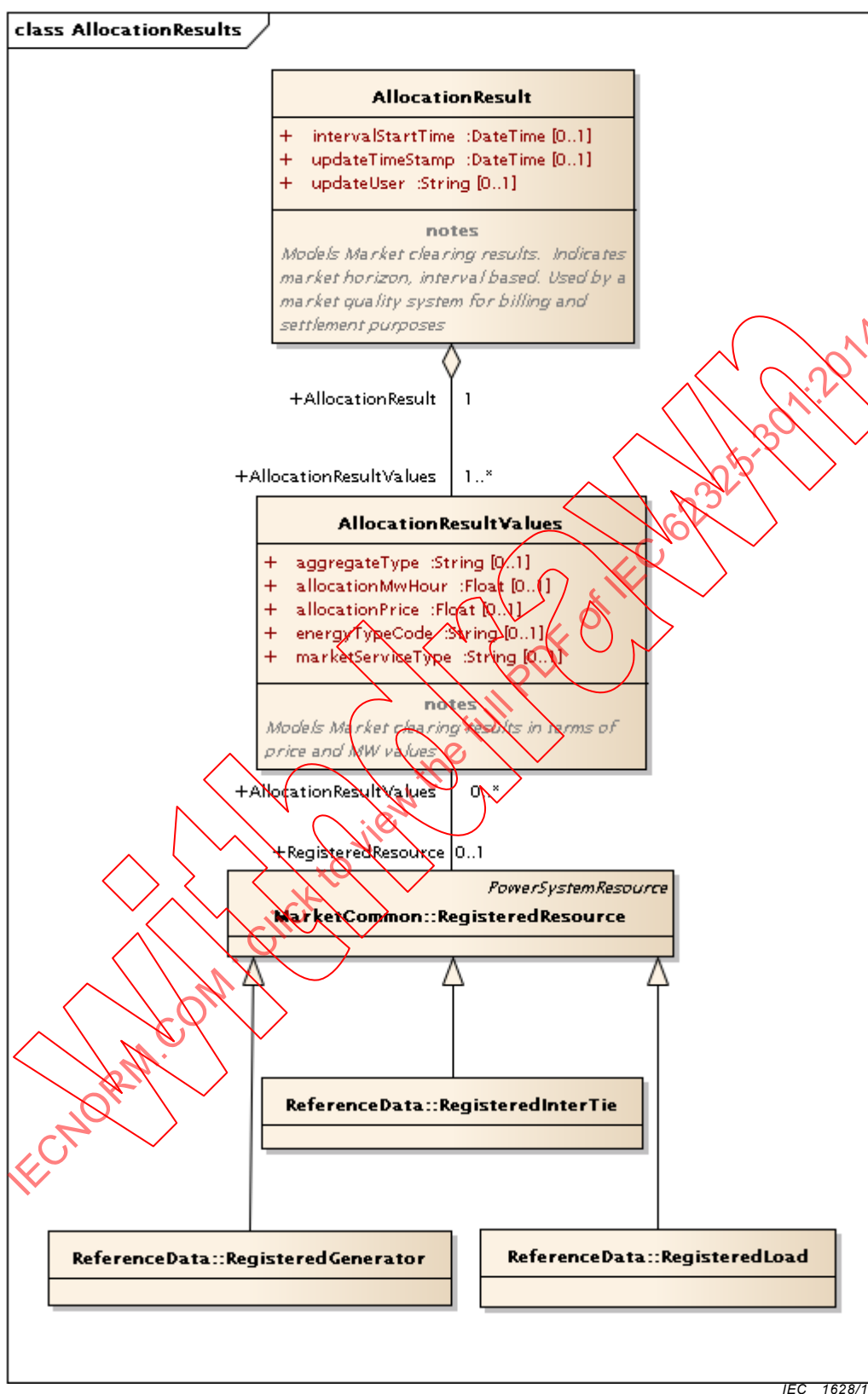


Figure 25 – Class diagram MarketQualitySystem::AllocationResults

This figure shows the major classes associated with the Market Quality Systems (MQS) which is typically used to perform analysis prior to Billing and Settlement. It describes the results that are sent to the MQS. Major classes include AllocationResult which define the market horizon. The allocated results are described in the classes AllocationResultsValues and RegisteredResource class and subclasses for Generators, Interties, and Loads.

6.5.5.2 AllocationResult root class

Models Market clearing results. Indicates market horizon, interval based. Used by a market quality system for billing and settlement purposes.

Table 105 shows all attributes of AllocationResult.

Table 105 – Attributes of MarketQualitySystem::AllocationResult

name	type	description
intervalStartTime	DateTime	
updateUser	String	
updateTimeStamp	DateTime	

Table 106 shows all association ends of AllocationResult with other classes.

Table 106 – Association ends of MarketQualitySystem::AllocationResult with other classes

[mult from]	[mult to] name	type	description
[1..1]	[1..*] AllocationResultValues	AllocationResultValues	

6.5.5.3 AllocationResultValues root class

Models Market clearing results in terms of price and MW values

Table 107 shows all attributes of AllocationResultValues.

Table 107 – Attributes of MarketQualitySystem::AllocationResultValues

name	type	description
aggregateType	String	"1" -- "Detail", "2" -- "Aggregate by Market service type", in which case, the "AllocationEnergyType" field will not be filled; "3" -- "Aggregate by "AllocationEnergyType", in which case "MarketServiceType" will not be filled.
allocationMwHour	Float	
allocationPrice	Float	
energyTypeCode	String	
marketServiceType	String	Choices are: ME – Market Energy Capacity; SR – Spinning Reserve Capacity; NR – Non-Spinning Reserve Capacity; DAC – Day Ahead Capacity; DEC – Derate Capacity

Table 108 shows all association ends of AllocationResultValues with other classes.

Table 108 – Association ends of MarketQualitySystem::AllocationResultValues with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] RegisteredResource	RegisteredResource	
[1..*]	[1..1] AllocationResult	AllocationResult	

6.5.5.4 AuxiliaryCost root class

Models Market clearing results for Auxillary costs

Table 109 shows all attributes of AuxiliaryCost.

Table 109 – Attributes of MarketQualitySystem::AuxiliaryCost

name	type	description
intervalStartTime	DateTime	
marketType	MarketType	
updateTimeStamp	DateTime	
updateUser	String	

Table 110 shows all association ends of AuxiliaryCost with other classes.

Table 110 – Association ends of MarketQualitySystem::AuxiliaryCost with other classes

[mult from]	[mult to] name	type	description
[1..1]	[1..*] AuxillaryValues	AuxiliaryValues	

6.5.5.5 AuxiliaryObject root class

Models Auxillary Values

Table 111 shows all association ends of AuxiliaryObject with other classes.

Table 111 – Association ends of MarketQualitySystem::AuxiliaryObject with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] RegisteredLoad	RegisteredLoad	
[0..*]	[0..1] RegisteredGenerator	RegisteredGenerator	

6.5.5.6 AuxiliaryValues

Models Auxillary Values

Table 112 shows all attributes of AuxiliaryValues.

Table 112 – Attributes of MarketQualitySystem::AuxiliaryValues

name	type	description
minExpostCapacity	Float	
maxExpostCapacity	Float	
availUndispatchedQ	Float	
incrementalIORAvail	Float	
startUpCost	Float	
startUpCostEligibilityFlag	YesNo	
noLoadCost	Float	
noLoadCostEligibilityFlag	YesNo	

Table 113 shows all association ends of AuxiliaryValues with other classes.

Table 113 – Association ends of MarketQualitySystem::AuxiliaryValues with other classes

[mult from]	[mult to] name	type	description
[1..*]	[1..1] AuxillaryCost	AuxiliaryCost	
[1..*]	[1..1] TenMinAuxillaryData	TenMinAuxiliaryData	
[1..*]	[1..1] FiveMinAuxillaryData	FiveMinAuxiliaryData	
[0..*]	[0..1] RegisteredLoad	RegisteredLoad	inherited from: AuxiliaryObject
[0..*]	[0..1] RegisteredGenerator	RegisteredGenerator	inherited from: AuxiliaryObject

6.5.5.7 ExpectedEnergy root class

Model Expected Energy from Market Clearing, interval based

Table 114 shows all attributes of ExpectedEnergy.

Table 114 – Attributes of MarketQualitySystem::ExpectedEnergy

name	type	description
intervalStartTime	DateTime	
updateUser	String	
updateTimeStamp	DateTime	

Table 115 shows all association ends of ExpectedEnergy with other classes.

Table 115 – Association ends of MarketQualitySystem::ExpectedEnergy with other classes

[mult from]	[mult to] name	type	description
[1..1]	[1..*] ExpectedEnergyValues	ExpectedEnergyValues	

6.5.5.8 ExpectedEnergyValues root class

Model Expected Energy from Market Clearing

Table 116 shows all attributes of ExpectedEnergyValues.

Table 116 – Attributes of MarketQualitySystem::ExpectedEnergyValues

name	type	description
energyTypeCode	String	
expectedMwh	Float	

Table 117 shows all association ends of ExpectedEnergyValues with other classes.

Table 117 – Association ends of MarketQualitySystem::ExpectedEnergyValues with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] RegisteredResource	RegisteredResource	
[1..*]	[1..1] ExpectedEnergy	ExpectedEnergy	

6.5.5.9 FiveMinAuxiliaryData root class

Models 5-Minutes Auxillary Data

Table 118 shows all attributes of FiveMinAuxiliaryData.

Table 118 – Attributes of MarketQualitySystem::FiveMinAuxiliaryData

name	type	description
intervalStartTime	DateTime	
updateUser	String	
updateTimeStamp	DateTime	

Table 119 shows all association ends of FiveMinAuxiliaryData with other classes.

Table 119 – Association ends of MarketQualitySystem::FiveMinAuxiliaryData with other classes

[mult from]	[mult to] name	type	description
[1..1]	[1..*] AuxillaryValues	AuxiliaryValues	

6.5.5.10 TenMinAuxiliaryData root class

Models 10-Minutes Auxillary Data

Table 120 shows all attributes of TenMinAuxiliaryData.

Table 120 – Attributes of MarketQualitySystem::TenMinAuxiliaryData

name	type	description
intervalStartTime	DateTime	
updateUser	String	
updateTimeStamp	DateTime	

Table 121 shows all association ends of TenMinAuxiliaryData with other classes.

Table 121 – Association ends of MarketQualitySystem::TenMinAuxiliaryData with other classes

[mult from]	[mult to] name	type	description
[1..1]	[1..*] AuxillaryData	AuxiliaryValues	

6.5.5.11 TradingHubPrice root class

Models prices at Trading Hubs, interval based

Table 122 shows all attributes of TradingHubPrice.

Table 122 – Attributes of MarketQualitySystem::TradingHubPrice

name	type	description
intervalStartTime	DateTime	
marketType	MarketType	
updateUser	String	
updateTimeStamp	DateTime	

Table 123 shows all association ends of TradingHubPrice with other classes.

Table 123 – Association ends of MarketQualitySystem::TradingHubPrice with other classes

[mult from]	[mult to] name	type	description
[1..1]	[1..*] TradingHubValues	TradingHubValues	

6.5.5.12 TradingHubValues root class

Models prices at Trading Hubs

Table 124 shows all attributes of TradingHubValues.

Table 124 – Attributes of MarketQualitySystem::TradingHubValues

name	type	description
price	Float	Utilizes the Market type. For DA, the price is hourly. For RTM the price is a 5 minute price.

Table 125 shows all association ends of TradingHubValues with other classes.

Table 125 – Association ends of MarketQualitySystem::TradingHubValues with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] AggregatedPnode	AggregatedPnode	
[1..*]	[1..1] TradingHubPrice	TradingHubPrice	

6.5.6 Package MarketSystem

6.5.6.1 General

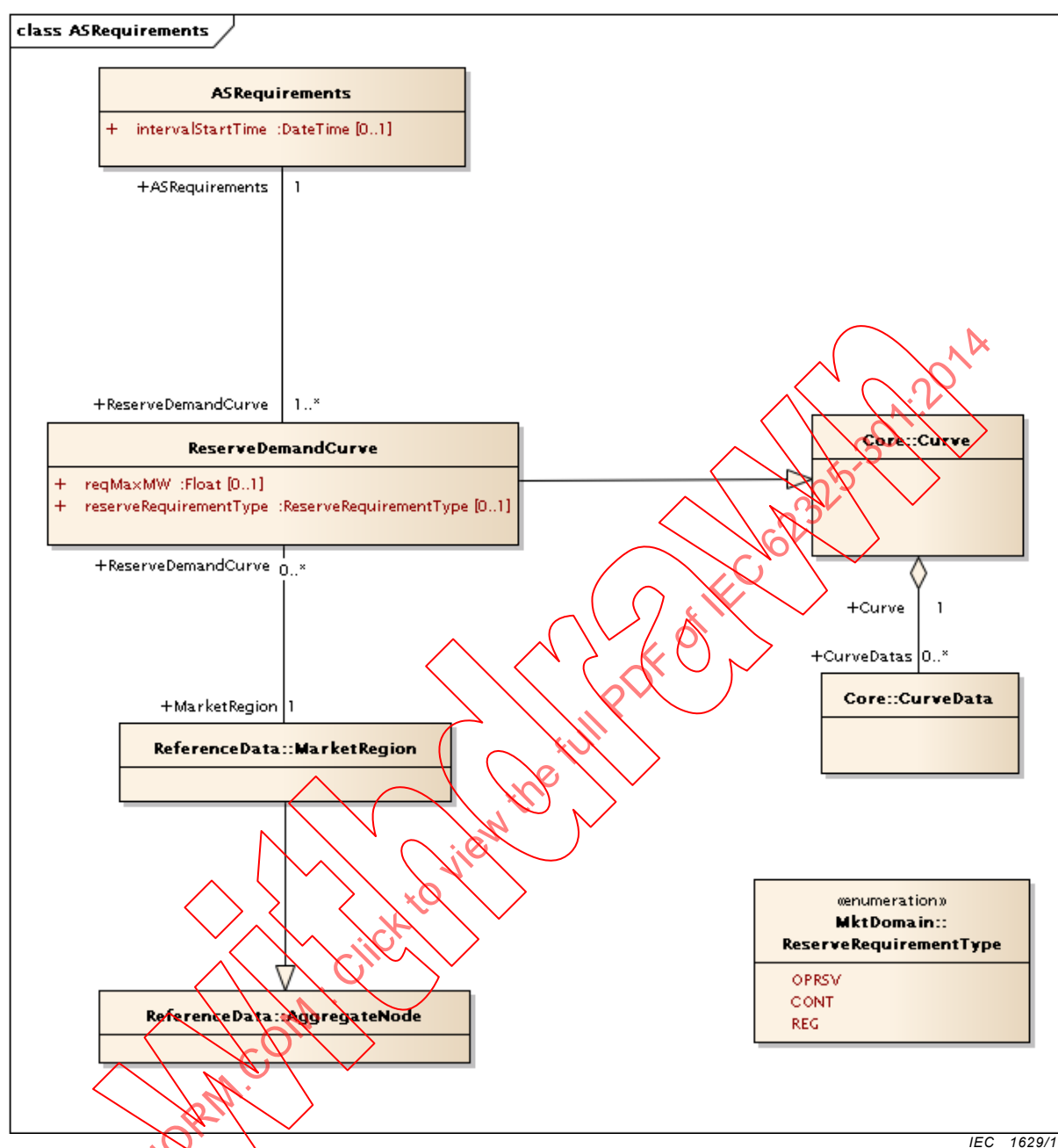
Market results and external inputs consumed by markets.

6.5.6.2 Package ExternalInputs

6.5.6.2.1 General

Inputs to the market system from external sources.

Figure 26 shows class diagram ASRequirements.



IEC 1629/14

Figure 26 – Class diagram ExternalInputs::ASRequirements

This figure models Ancillary Service requirements. The class **ASRequirements** is used to describe the interval for which the Ancillary Service is required. The **ASRequirement** class is used to describe the quantities of required ancillary services. The association to **MarketRegion** models the regional requirements of ancillary services. The class **MarketProduct** is used to describe the particular class of ancillary service.

Figure 27 shows class diagram **DefaultBids**.

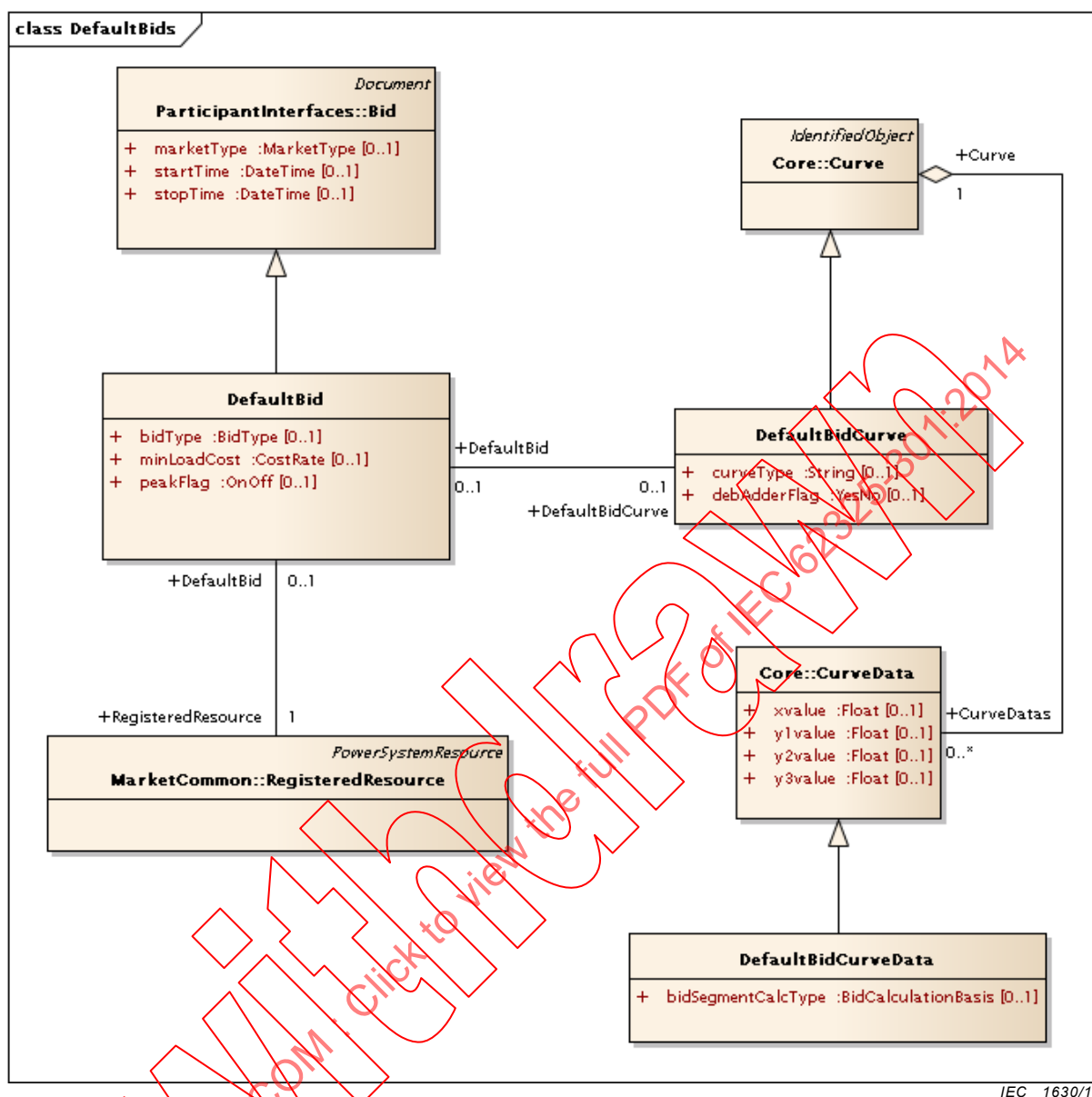


Figure 27 – Class diagram ExternalInputs::DefaultBids

Market Power Mitigation is a process that detects an attempt on the part of a market participant to exercise market power. Detection is followed by remediation. Remediation consist of substitution of a default bid for the original bid. This figure shows the classes used to model a default bid. The classes include a Curve and Curve Data classes (from the 61970 core package), as well the generic class DefaultBid which may be used to further describe the market specific remediation methods. Three typical methods are used: LMP, cost based on gas index, or out-of-market negotiation.

Figure 28 shows class diagram DeratedBranchLimits.

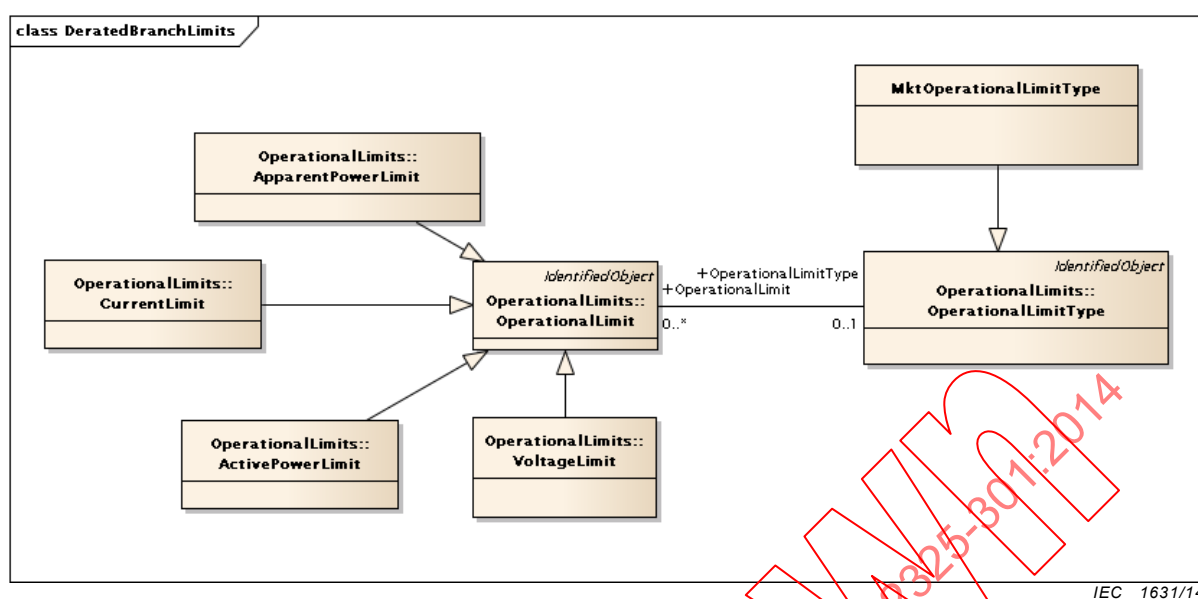
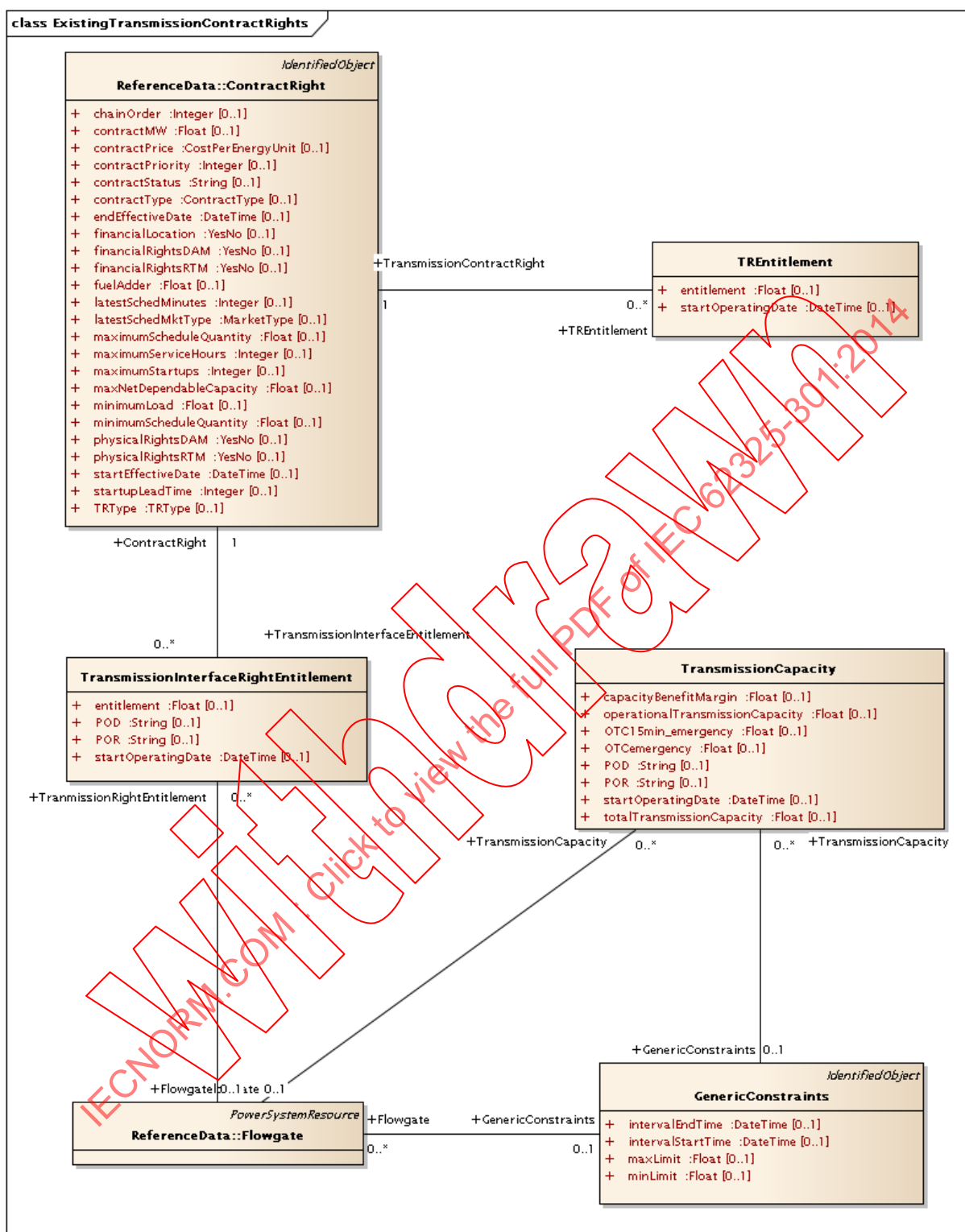


Figure 28 – Class diagram ExternalInputs::DeratedBranchLimits

This figure shows the major classes used to model operational limits. The classes are reused from the 61970 OperationalLimits package and include Active Power, Voltage, and Current Limits.

Figure 29 shows class diagram ExistingTransmissionContractRights.



IEC 1632/14

Figure 29 – Class diagram ExternalInputs::ExistingTransmissionContractRights

During the startup and evolution of LMP markets, the need arose to accommodate existing transmission rights in the market solution. This figure shows the major classes used to model these legacy rights. The ContractRight class includes information describing the specific rights that are contracted in terms of active power and other contract details. The TransmissionInterfaceRightEntitlement describe the physical aspects of the right in associated point of delivery and point of receipt of active power.

Figure 30 shows class diagram IntermittentResourceSchedules.

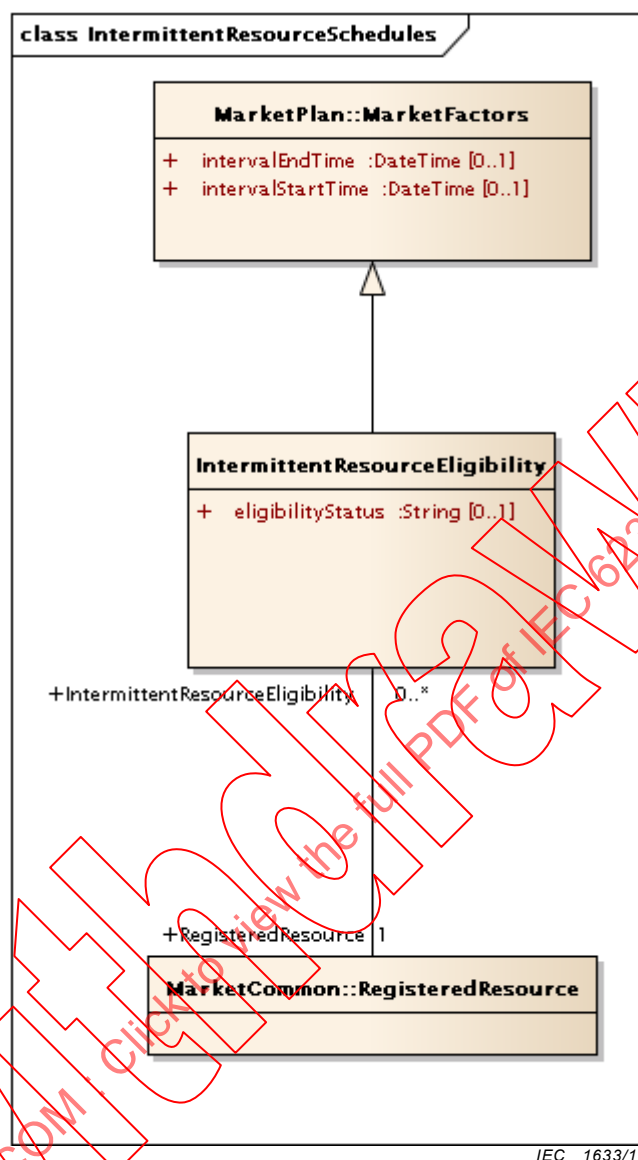


Figure 30 – Class diagram ExternalInputs::IntermittentResourceSchedules

This figure shows the major classes used to model intermittent (variable) resources. It is typically used to model renewables such as wind power. The **IntermittentResourceEligibility** class is used to indicate whether the resource is eligible to participate as a renewable resource governed by a generic renewable resource regime.

Figure 31 shows class diagram LoadForecast.

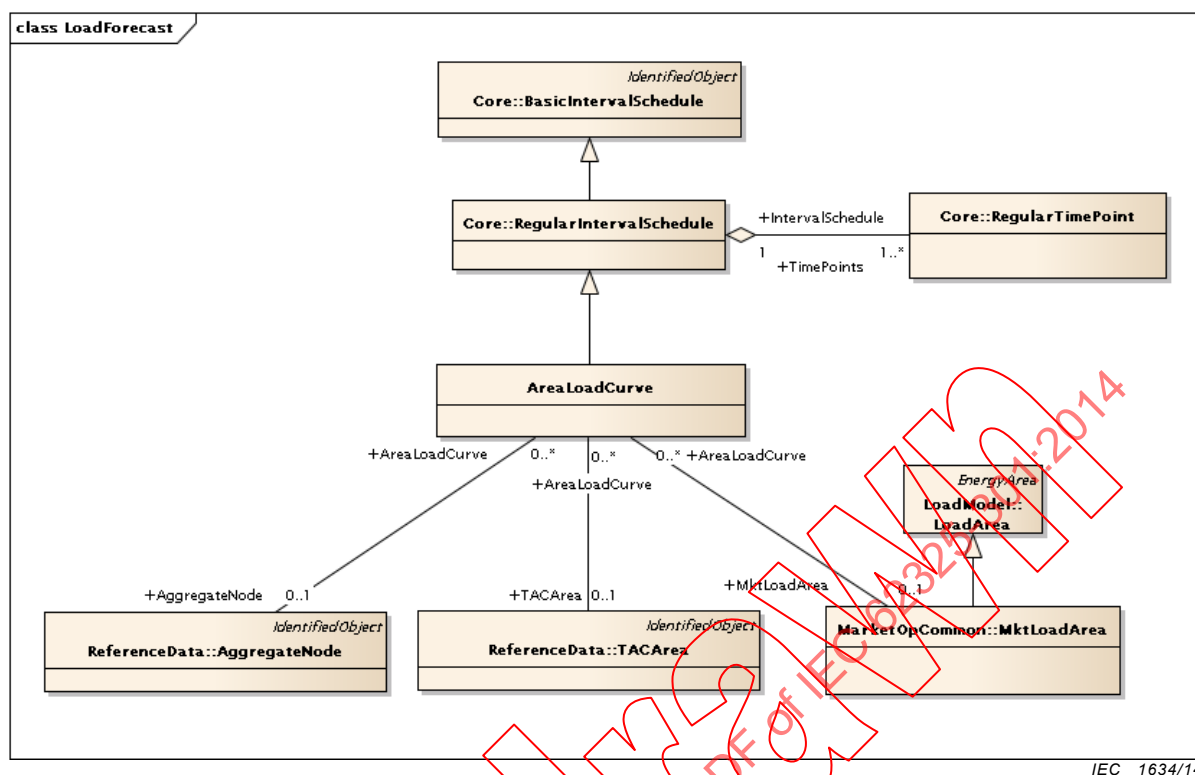


Figure 31 – Class diagram ExternalInputs::LoadForecast

This figure shows the classes used to model the load forecast over the market time horizon. The model reused classes from the 61970 Core package and adds specific models for markets.

Figure 32 shows class diagram OutageOrDeratedEquipment.

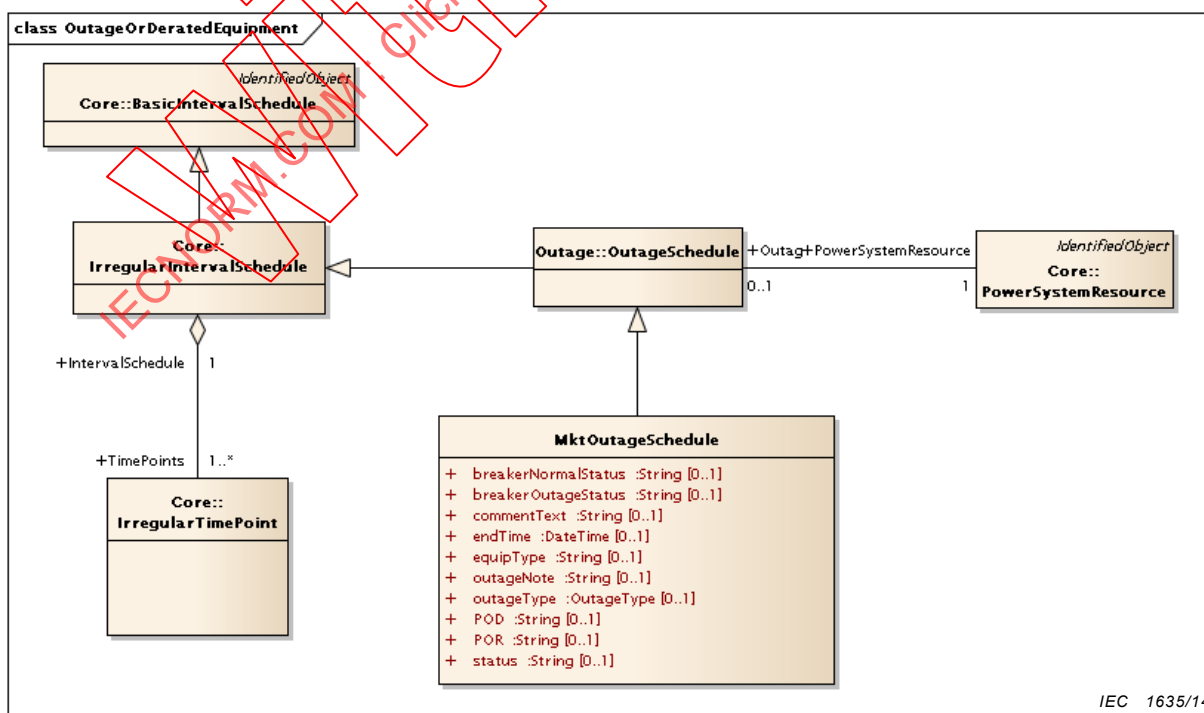


Figure 32 – Class diagram ExternalInputs::OutageOrDeratedEquipment

This figure shows the classes and relationships used to model schedule outages. Several classes are reused from the 61970 packages. The MktOutageSchedule class includes additional attributes to model equipment derations as well as complete outages.

Figure 33 shows class diagram Telemetry.

IECNORM.COM Click to view the full PDF of IEC 62325-301:2014

Withdrawing

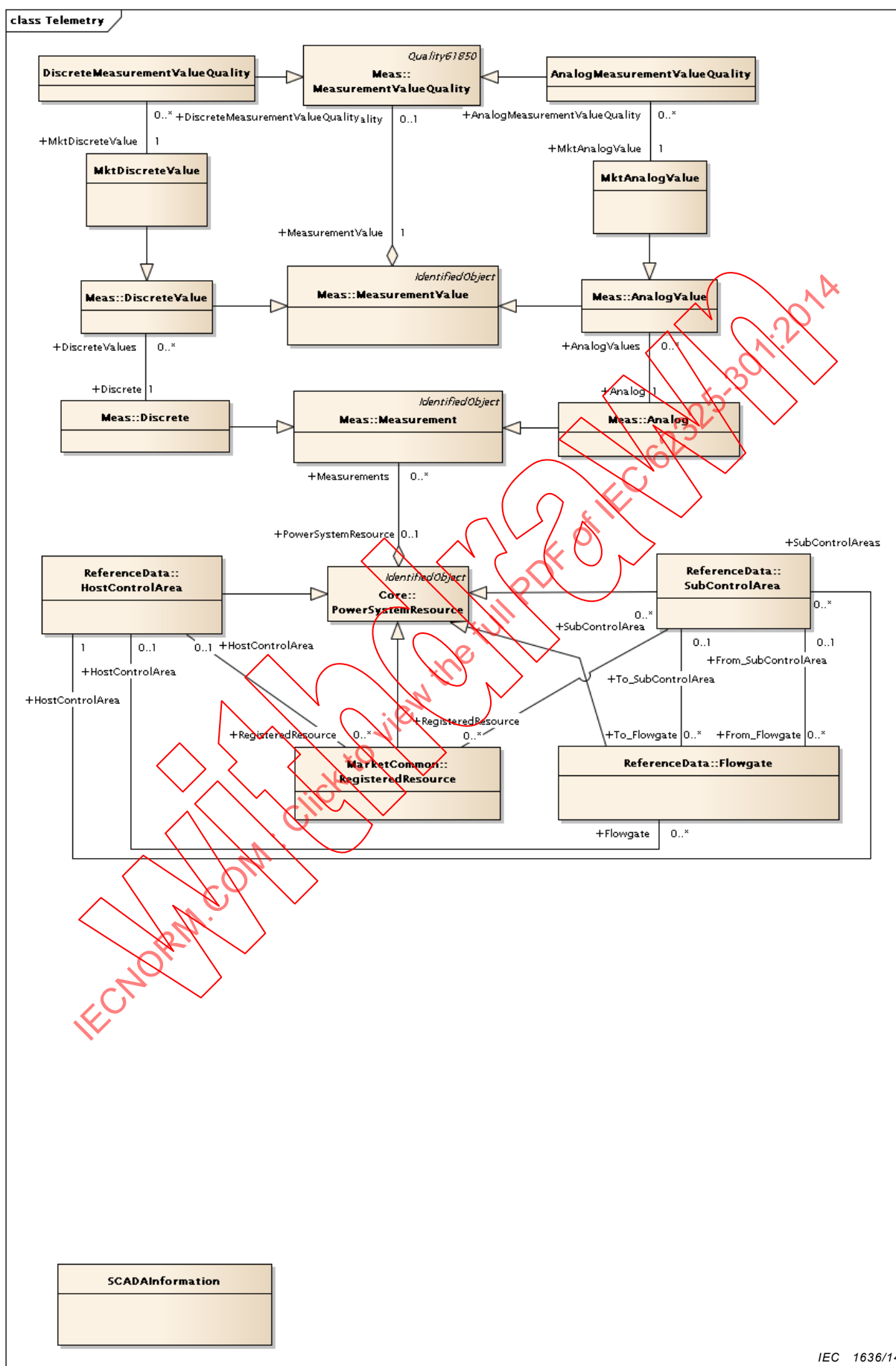


Figure 33 – Class diagram ExternalInputs::Telemetry

This figure shows the classes used to model telemetry that may be used (in the event of failure or non-availability of a state estimator solution) to initialize a real time market run. The figure shows classes from the 61970 package and additional market specific RegisteredResource and Flowgate classes and their relationships to the classes from the 61970 packages.

6.5.6.2.2 AnalogMeasurementValueQuality

Measurement quality flags for Analog Values.

Table 126 shows all attributes of AnalogMeasurementValueQuality.

Table 126 – Attributes of ExternalInputs::AnalogMeasurementValueQuality

name	type	description
scadaQualityCode	String	The quality code for the given Analog Value.
badReference	Boolean	inherited from: Quality61850
estimatorReplaced	Boolean	inherited from: Quality61850
failure	Boolean	inherited from: Quality61850
oldData	Boolean	inherited from: Quality61850
operatorBlocked	Boolean	inherited from: Quality61850
oscillatory	Boolean	inherited from: Quality61850
outOfRange	Boolean	inherited from: Quality61850
overflow	Boolean	inherited from: Quality61850
source	Source	inherited from: Quality61850
suspect	Boolean	inherited from: Quality61850
test	Boolean	inherited from: Quality61850
validity	Validity	inherited from: Quality61850

Table 127 shows all association ends of AnalogMeasurementValueQuality with other classes.

Table 127 – Association ends of ExternalInputs::AnalogMeasurementValueQuality with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] MktAnalogValue	MktAnalogValue	
[0..1]	[1..1] MeasurementValue	MeasurementValue	inherited from: MeasurementValueQuality

6.5.6.2.3 AreaLoadCurve

Area load curve definition.

Table 128 shows all attributes of AreaLoadCurve.

Table 128 – Attributes of ExternalInputs::AreaLoadCurve

name	type	description
forecastType	LoadForecastType	Load forecast area type.
endTime	DateTime	inherited from: RegularIntervalSchedule
timeStep	Seconds	inherited from: RegularIntervalSchedule
startTime	DateTime	inherited from: BasicIntervalSchedule
value1Unit	UnitSymbol	inherited from: BasicIntervalSchedule
value1Multiplier	UnitMultiplier	inherited from: BasicIntervalSchedule
value2Unit	UnitSymbol	inherited from: BasicIntervalSchedule
value2Multiplier	UnitMultiplier	inherited from: BasicIntervalSchedule
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 129 shows all association ends of AreaLoadCurve with other classes.

Table 129 – Association ends of ExternalInputs::AreaLoadCurve with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] MktLoadArea	MktLoadArea	
[0..*]	[0..1] AggregateNode	AggregateNode	
[0..*]	[0..1] TACArea	TACArea	
[1..1]	[1..*] TimePoints	RegularTimePoint	inherited from: RegularIntervalSchedule
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.4 ASRequirements root class

Models Ancillary Service Requirements. Describes interval for which the requirement is applicable.

Table 130 shows all attributes of ASRequirements.

Table 130 – Attributes of ExternalInputs::ASRequirements

name	type	description
intervalStartTime	DateTime	The start of the time interval for which requirement is defined.

Table 131 shows all association ends of ASRequirements with other classes.

Table 131 – Association ends of ExternalInputs::ASRequirements with other classes

[mult from]	[mult to] name	type	description
[1..1]	[1..*] ReserveDemandCurve	ReserveDemandCurve	

6.5.6.2.5 BaseCaseConstraintLimit

Possibly time-varying max MW or MVA and optionally Min MW limit or MVA limit (Y1 and Y2, respectively) assigned to a contingency analysis base case. Use CurveSchedule XAxisUnits to specify MW or MVA. To be used only if the BaseCaseConstraintLimit differs from the DefaultConstraintLimit.

Table 132 shows all attributes of BaseCaseConstraintLimit.

Table 132 – Attributes of ExternalInputs::BaseCaseConstraintLimit

name	type	description
curveStyle	CurveStyle	inherited from: Curve
xMultiplier	UnitMultiplier	inherited from: Curve
xUnit	UnitSymbol	inherited from: Curve
y1Multiplier	UnitMultiplier	inherited from: Curve
y1Unit	UnitSymbol	inherited from: Curve
y2Multiplier	UnitMultiplier	inherited from: Curve
y2Unit	UnitSymbol	inherited from: Curve
y3Multiplier	UnitMultiplier	inherited from: Curve
y3Unit	UnitSymbol	inherited from: Curve
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 133 shows all association ends of BaseCaseConstraintLimit with other classes.

Table 133 – Association ends of ExternalInputs::BaseCaseConstraintLimit with other classes

[mult from]	[mult to] name	type	description
[0..1]	[1..1] SecurityConstraintSum	SecurityConstraintSum	
[1..1]	[0..*] CurveDatas	CurveData	inherited from: Curve
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.6 BranchEndFlow root class

Dynamic flows and ratings associated with a branch end.

Table 134 shows all attributes of BranchEndFlow.

Table 134 – Attributes of ExternalInputs::BranchEndFlow

name	type	description
mwFlow	Float	The MW flow on the branch Attribute Usage: Active power flow at the series device, transformer, phase shifter, or line end
mVARFlow	Float	The MVAR flow on the branch Attribute Usage: Reactive power flow at the series device, transformer, phase shifter, or line end
normalRating	Float	The Normal Rating for the branch
longTermRating	Float	The Long Term Rating for the branch
shortTermRating	Float	The Short Term Rating for the branch
loadDumpRating	Float	The Load Dump Rating for the branch

Table 135 shows all association ends of BranchEndFlow with other classes.

Table 135 – Association ends of ExternalInputs::BranchEndFlow with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..*] MktPowerTransformerEndBFlow	MktPowerTransformer	
[0..1]	[0..*] MktPowerTransformerEndAFlow	MktPowerTransformer	
[0..1]	[0..*] MktACLineSegmentEndAFlow	MktACLineSegment	
[0..1]	[0..*] MktSeriesCompensatorEndBFlow	MktSeriesCompensator	
[0..1]	[0..*] MktACLineSegmentEndBFlow	MktACLineSegment	
[0..1]	[0..*] MktSeriesCompensatorEndAFlow	MktSeriesCompensator	

6.5.6.2.7 ConstraintTerm

A constraint term is one element of a linear constraint.

Table 136 shows all attributes of ConstraintTerm.

Table 136 – Attributes of ExternalInputs::ConstraintTerm

name	type	description
factor	String	
function	String	The function is an enumerated value that can be 'active', 'reactive', or 'VA' to indicate the type of flow.
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject

name	type	description
name	String	inherited from: IdentifiedObject

Table 137 shows all association ends of ConstraintTerm with other classes.

Table 137 – Association ends of ExternalInputs::ConstraintTerm with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] SecurityConstraintSum	SecurityConstraintSum	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.8 ContingencyConstraintLimit

Possibly time-varying max MW or MVA and optionally Min MW limit or MVA limit (Y1 and Y2, respectively) assigned to a constraint for a specific contingency. Use CurveSchedule XAxisUnits to specify MW or MVA.

Table 138 shows all attributes of ContingencyConstraintLimit.

Table 138 – Attributes of ExternalInputs::ContingencyConstraintLimit

name	type	description
curveStyle	CurveStyle	inherited from: Curve
xMultiplier	UnitMultiplier	inherited from: Curve
xUnit	UnitSymbol	inherited from: Curve
y1Multiplier	UnitMultiplier	inherited from: Curve
y1Unit	UnitSymbol	inherited from: Curve
y2Multiplier	UnitMultiplier	inherited from: Curve
y2Unit	UnitSymbol	inherited from: Curve
y3Multiplier	UnitMultiplier	inherited from: Curve
y3Unit	UnitSymbol	inherited from: Curve
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 139 shows all association ends of ContingencyConstraintLimit with other classes.

Table 139 – Association ends of ExternalInputs::ContingencyConstraintLimit with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] SecurityConstraintSum	SecurityConstraintSum	
[1..1]	[1..1] MWLimitSchedules	MWLimitSchedule	
[0..*]	[1..1] MktContingency	MktContingency	

[mult from]	[mult to] name	type	description
[1..1]	[0..*] CurveDatas	CurveData	inherited from: Curve
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.9 ControlAreaSolutionData root class

State Estimator Solution Pool Interchange and Losses

Table 140 shows all attributes of ControlAreaSolutionData.

Table 140 – Attributes of ExternalInputs::ControlAreaSolutionData

name	type	description
solvedLosses	Float	Pool Losses MW Attribute Usage: The active power losses of the pool in MW
solvedInterchange	Float	Pool MW Interchange Attribute Usage: The active power interchange of the pool

Table 141 shows all association ends of ControlAreaSolutionData with other classes.

Table 141 – Association ends of ExternalInputs::ControlAreaSolutionData with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] MktControlArea	MktControlArea	

6.5.6.2.10 DefaultBid

DefaultBid is a generic class to hold Default Energy Bid, Default Startup Bid, and Default Minimum Load Bid:

Default Energy Bid

A Default Energy Bid is a monotonically increasing staircase function consisting at maximum 10 economic bid segments, or 10 (\$/MW, MW) pairs. There are three methods for determining the Default Energy Bid:

- Cost Based: derived from the Heat Rate or Average Cost multiplied by the Gas Price Index plus 10 %.
- LMP Based: a weighted average of LMPs in the preceding 90 days
- Negotiated: an amount negotiated with the designated Independent Entity.

Default Startup Bid

A Default Startup Bid (DSUB) shall be calculated for each RMR unit based on the Startup Cost stored in the Master File and the applicable GPI and EPI

Default Minimum Load Bid

A Default Minimum Load Bid (DMLB) shall be calculated for each RMR unit based on the Minimum Load Cost stored in the Master File and the applicable GPI.

Table 142 shows all attributes of DefaultBid.

Table 142 – Attributes of ExternalInputs::DefaultBid

name	type	description
bidType	BidType	Default bid type such as Default Energy Bid, Default Minimum Load Bid, and Default Startup Bid
minLoadCost	CostRate	Minimum load cost in \$/hr
peakFlag	OnOff	on-peak, off-peak, or all
startTime	DateTime	inherited from: Bid
stopTime	DateTime	inherited from: Bid
marketType	MarketType	inherited from: Bid
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 143 shows all association ends of DefaultBid with other classes.

Table 143 – Association ends of ExternalInputs::DefaultBid with other classes

[mult from]	[mult to] name	type	description
[0..1]	[1..1] RegisteredResource	RegisteredResource	
[0..1]	[0..1] DefaultBidCurve	DefaultBidCurve	
[0..*]	[0..1] MarketParticipant	MarketParticipant	inherited from: Bid
[0..*]	[1..1] EnergyMarket	EnergyMarket	inherited from: Bid
[0..1]	[0..*] ChargeProfiles	ChargeProfile	inherited from: Bid
[1..1]	[0..*] MitigatedBidSegment	MitigatedBidSegment	inherited from: Bid
[0..*]	[0..1] SchedulingCoordinator	SchedulingCoordinator	inherited from: Bid
[0..1]	[0..*] MitigatedBid	MitigatedBid	inherited from: Bid
[0..1]	[0..*] RMRDetermination	RMRDetermination	inherited from: Bid
[0..*]	[1..1] ActionRequest	ActionRequest	inherited from: Bid
[1..1]	[1..*] ProductBids	ProductBid	inherited from: Bid

[mult from]	[mult to] name	type	description
[1..1]	[0..*] BidHourlySchedule	BidHourlySchedule	inherited from: Bid
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.11 DefaultBidCurve

Default bid curve for default energy bid curve and default startup curves (cost and time)

Table 144 shows all attributes of DefaultBidCurve.

Table 144 – Attributes of ExternalInputs::DefaultBidCurve

name	type	description
curveType	String	To indicate a type used for a default energy bid curve, such as LMP, cost or consultative based.
debAdderFlag	YesNo	Default energy bid adder flag
curveStyle	CurveStyle	inherited from: Curve
xMultiplier	UnitMultiplier	inherited from: Curve
xUnit	UnitSymbol	inherited from: Curve
y1Multiplier	UnitMultiplier	inherited from: Curve
y1Unit	UnitSymbol	inherited from: Curve
y2Multiplier	UnitMultiplier	inherited from: Curve
y2Unit	UnitSymbol	inherited from: Curve
y3Multiplier	UnitMultiplier	inherited from: Curve
y3Unit	UnitSymbol	inherited from: Curve
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 145 shows all association ends of DefaultBidCurve with other classes.

Table 145 – Association ends of ExternalInputs::DefaultBidCurve with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..1] DefaultBid	DefaultBid	
[1..1]	[0..*] CurveDatas	CurveData	inherited from: Curve
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.12 DefaultBidCurveData

Curve data for default bid curve and startup cost curve.

Table 146 shows all attributes of DefaultBidCurveData.

Table 146 – Attributes of ExternalInputs::DefaultBidCurveData

name	type	description
bidSegmentCalcType	BidCalculationBasis	Type of calculation basis used to define the default bid segment curve.
xvalue	Float	inherited from: CurveData
y1value	Float	inherited from: CurveData
y2value	Float	inherited from: CurveData
y3value	Float	inherited from: CurveData

Table 147 shows all association ends of DefaultBidCurveData with other classes.

Table 147 – Association ends of ExternalInputs::DefaultBidCurveData with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] Curve	Curve	inherited from: CurveData

6.5.6.2.13 DefaultConstraintLimit

Possibly time-varying max MW or MVA and optionally Min MW limit or MVA limit (Y1 and Y2, respectively) applied as a default value if no specific constraint limits are specified for a contingency analysis. Use CurveSchedule XAxisUnits to specify MW or MVA.

Table 148 shows all attributes of DefaultConstraintLimit.

Table 148 – Attributes of ExternalInputs::DefaultConstraintLimit

name	type	description
curveStyle	CurveStyle	inherited from: Curve
xMultiplier	UnitMultiplier	inherited from: Curve
xUnit	UnitSymbol	inherited from: Curve
y1Multiplier	UnitMultiplier	inherited from: Curve
y1Unit	UnitSymbol	inherited from: Curve
y2Multiplier	UnitMultiplier	inherited from: Curve
y2Unit	UnitSymbol	inherited from: Curve
y3Multiplier	UnitMultiplier	inherited from: Curve
y3Unit	UnitSymbol	inherited from: Curve
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 149 shows all association ends of DefaultConstraintLimit with other classes.

**Table 149 – Association ends of ExternalInputs::
DefaultConstraintLimit with other classes**

[mult from]	[mult to] name	type	description
[0..1]	[1..1] SecurityConstraintSum	SecurityConstraintSum	
[1..1]	[0..*] CurveDatas	CurveData	inherited from: Curve
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.14 DiscreteMeasurementValueQuality

Measurement quality flags for Discrete Values.

Table 150 shows all attributes of DiscreteMeasurementValueQuality.

Table 150 – Attributes of ExternalInputs::DiscreteMeasurementValueQuality

name	type	description
manualReplaceIndicator	Boolean	Switch Manual Replace Indicator. Flag indicating that the switch is manual replace.
removeFromOperationIndicator	Boolean	Removed From Operation Indicator. Flag indicating that the switch is removed from operation.
badReference	Boolean	inherited from: Quality61850
estimatorReplaced	Boolean	inherited from: Quality61850
failure	Boolean	inherited from: Quality61850
oldData	Boolean	inherited from: Quality61850
operatorBlocked	Boolean	inherited from: Quality61850
oscillatory	Boolean	inherited from: Quality61850
outOfRange	Boolean	inherited from: Quality61850
overFlow	Boolean	inherited from: Quality61850
source	Source	inherited from: Quality61850
suspect	Boolean	inherited from: Quality61850
test	Boolean	inherited from: Quality61850
validity	Validity	inherited from: Quality61850

Table 151 shows all association ends of DiscreteMeasurementValueQuality with other classes.

**Table 151 – Association ends of ExternalInputs::
DiscreteMeasurementValueQuality with other classes**

[mult from]	[mult to] name	type	description
[0..*]	[1..1] MktDiscreteValue	MktDiscreteValue	
[0..1]	[1..1] MeasurementValue	MeasurementValue	inherited from: MeasurementValueQuality

6.5.6.2.15 DistributionFactorSet root class

A containing class that groups all the distribution factors within a market.

This is calculated daily for DA factors and hourly for RT factors.

Table 152 shows all attributes of DistributionFactorSet.

Table 152 – Attributes of ExternalInputs::DistributionFactorSet

name	type	description
intervalStartTime	DateTime	The start of the time interval for which requirement is defined.
intervalEndTime	DateTime	The end of the time interval for which requirement is defined.
marketType	MarketType	

Table 153 shows all association ends of DistributionFactorSet with other classes.

Table 153 – Association ends of ExternalInputs::DistributionFactorSet with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] GenDistributionFactor	GenDistributionFactor	
[0..*]	[0..*] SysLoadDistribuFactor	SysLoadDistributionFactor	
[0..*]	[0..*] LoadDistributionFactor	LoadDistributionFactor	

6.5.6.2.16 EnergyConsumerData root class

Optimal Power Flow or State Estimator Load Data for OTS. This is used for RealTime, Study and Maintenance Users

Table 154 shows all attributes of EnergyConsumerData.

Table 154 – Attributes of ExternalInputs::EnergyConsumerData

name	type	description
loadMVAR	Float	The MVAR load Attribute Usage: The reactive power consumption of the load in MW
loadMW	Float	The active power consumption of the load in MW

Table 155 shows all association ends of EnergyConsumerData with other classes.

Table 155 – Association ends of ExternalInputs::EnergyConsumerData with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] MktEnergyConsumer	MktEnergyConsumer	

6.5.6.2.17 EnergyPriceIndex

An Energy Price Index for each Resource is valid for a period (e.g. daily) that is identified by a Valid Period Start Time and a Valid Period End Time. An Energy Price Index is in \$/MWh.

Table 156 shows all attributes of EnergyPriceIndex.

Table 156 – Attributes of ExternalInputs::EnergyPriceIndex

name	type	description
lastModified	DateTime	Time updated
startEffectiveDate	DateTime	Start effective date
endEffectiveDate	DateTime	End effective date
energyPriceIndex	Float	Energy price index
energyPriceIndexType	EnergyPriceIndexType	EPI type such as wholesale or retail
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 157 shows all association ends of EnergyPriceIndex with other classes.

Table 157 – Association ends of ExternalInputs::EnergyPriceIndex with other classes

[mult from]	[mult to] name	type	description
[1..1]	[1..1] RegisteredGenerator	RegisteredGenerator	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.18 EnergyProfile

Specifies the start time, stop time, level for an EnergyTransaction.

Table 158 shows all attributes of EnergyProfile.

Table 158 – Attributes of ExternalInputs::EnergyProfile

name	type	description
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 159 shows all association ends of EnergyProfile with other classes.

Table 159 – Association ends of ExternalInputs::EnergyProfile with other classes

[mult from]	[mult to] name	type	description
[1..*]	[1..1] TransactionBid	TransactionBid	
[1..*]	[1..1] EnergyTransaction	EnergyTransaction	An EnergyTransaction shall have at least one EnergyProfile.
[0..*]	[0..*] ProfileDatas	ProfileData	inherited from: Profile
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.19 EnergyTransaction

Specifies the schedule for energy transfers between interchange areas that are necessary to satisfy the associated interchange transaction.

Table 160 shows all attributes of EnergyTransaction.

Table 160 – Attributes of ExternalInputs::EnergyTransaction

name	type	description
capacityBacked	Boolean	Interchange capacity flag. When the flag is set to true, it indicates a transaction is capacity backed.
congestChargeMax	Money	Maximum congestion charges in monetary units.
deliveryPointP	ActivePower	Delivery point active power.
energyMin	ActivePower	Transaction minimum active power if dispatchable.
firmInterchangeFlag	Boolean	Firm interchange flag indicates whether or not this energy transaction can be changed without potential financial consequences.
payCongestion	Boolean	Willing to Pay congestion flag
reason	String	Reason for energy transaction.
receiptPointP	ActivePower	Receipt point active power.
state	EnergyTransactionType	{ Approve Deny Study }
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 161 shows all association ends of EnergyTransaction with other classes.

Table 161 – Association ends of ExternalInputs::EnergyTransaction with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] EnergyPriceCurves	EnergyPriceCurve	
[1..1]	[1..*] EnergyProfiles	EnergyProfile	An EnergyTransaction shall have at least one EnergyProfile.
[0..*]	[1..1] Export_SubControlArea	SubControlArea	Energy is transferred between interchange areas
[0..1]	[0..1] TransmissionReservation	TransmissionReservation	
[0..*]	[1..1] Import_SubControlArea	SubControlArea	Energy is transferred between interchange areas
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.20 GenDistributionFactor root class

This class models the generation distribution factors. This class needs to be used along with the AggregatedPnode and the IndividualPnode to show the distribution of each individual party.

Table 162 shows all attributes of GenDistributionFactor.

Table 162 – Attributes of ExternalInputs::GenDistributionFactor

name	type	description
factor	Float	Used to calculate generation "participation" of an individual pnode in an AggregatePnode.

Table 163 shows all association ends of GenDistributionFactor with other classes.

Table 163 – Association ends of ExternalInputs::GenDistributionFactor with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] DistributionFactorSet	DistributionFactorSet	
[1..*]	[0..1] AggregatedPnode	AggregatedPnode	
[0..1]	[0..1] IndividualPnode	IndividualPnode	

6.5.6.2.21 GeneratingUnitDynamicValues root class

Optimal Power Flow or State Estimator Unit Data for Operator Training Simulator. This is used for RealTime, Study and Maintenance Users

Table 164 shows all attributes of GeneratingUnitDynamicValues.

Table 164 – Attributes of ExternalInputs::GeneratingUnitDynamicValues

name	type	description
lossFactor	Float	Loss Factor
maximumMW	Float	The maximum active power generation of the unit in MW
minimumMW	Float	The minimum active power generation of the unit in MW
mVAR	Float	Unit reactive power generation in MVAR
mw	Float	Unit active power generation in MW
sensitivity	Float	Unit sensitivity factor. The distribution factors (DFAX) for the unit

Table 165 shows all association ends of GeneratingUnitDynamicValues with other classes.

Table 165 – Association ends of ExternalInputs::GeneratingUnitDynamicValues with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] MktGeneratingUnit	MktGeneratingUnit	
[0..*]	[0..1] Flowgate	Flowgate	

6.5.6.2.22 GenericConstraints

Generic constraints can represent secure areas, voltage profile, transient stability and voltage collapse limits.

The generic constraints can be one of the following forms:

- a) Thermal MW limit constraints type
- b) Group line flow constraint type

Table 166 shows all attributes of GenericConstraints.

Table 166 – Attributes of ExternalInputs::GenericConstraints

name	type	description
intervalEndTime	DateTime	Interval End Time
intervalStartTime	DateTime	Interval Start Time
maxLimit	Float	Maximum Limit (MW)
minLimit	Float	Minimum Limit (MW)
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 167 shows all association ends of GenericConstraints with other classes.

Table 167 – Association ends of ExternalInputs::GenericConstraints with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..*] Flowgate	Flowgate	
[0..1]	[0..*] TransmissionCapacity	TransmissionCapacity	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.23 InterchangeETCData root class

Existing Transmission Contract data for an interchange schedule

Table 168 shows all attributes of InterchangeETCData.

Table 168 – Attributes of ExternalInputs::InterchangeETCData

name	type	description
contractNumber	String	Existing transmission contract number
usageMW	Float	Existing transmission contract usage MW value

Table 169 shows all association ends of InterchangeETCData with other classes.

Table 169 – Association ends of ExternalInputs::InterchangeETCData with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] InterchangeSchedule	InterchangeSchedule	

6.5.6.2.24 InterchangeSchedule

Interchange schedule class to hold information for interchange schedules such as import export type, energy type, and etc.

Table 170 shows all attributes of InterchangeSchedule.

Table 170 – Attributes of ExternalInputs::InterchangeSchedule

name	type	description
checkOutType	CheckOutType	To indicate a check out type such as adjusted capacity or dispatch capacity.
directionType	InterTieDirection	Import or export.
energyType	MarketProductType	Energy product type.
intervalLength	Integer	Interval length.
marketType	MarketType	Market type.
operatingDate	DateTime	Operating date, hour.
outOfMarketType	Boolean	To indicate an out-of-market (OOM) schedule.
scheduleType	EnergyProductType	Schedule type.
wcrID	String	Wheeling Counter-Resource ID (required when

name	type	description
		Schedule Type=Wheel).
curveStyle	CurveStyle	inherited from: Curve
xMultiplier	UnitMultiplier	inherited from: Curve
xUnit	UnitSymbol	inherited from: Curve
y1Multiplier	UnitMultiplier	inherited from: Curve
y1Unit	UnitSymbol	inherited from: Curve
y2Multiplier	UnitMultiplier	inherited from: Curve
y2Unit	UnitSymbol	inherited from: Curve
y3Multiplier	UnitMultiplier	inherited from: Curve
y3Unit	UnitSymbol	inherited from: Curve
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 171 shows all association ends of InterchangeSchedule with other classes.

**Table 171 – Association ends of ExternalInputs::
InterchangeSchedule with other classes**

[mult from]	[mult to] name	type	description
[0..1]	[0..*] InterchangeETCData	InterchangeETCData	
[0..*]	[0..1] InterTie	SchedulingPoint	
[0..*]	[0..1] RegisteredInterTie	RegisteredInterTie	
[1..1]	[0..*] CurveDatas	CurveData	inherited from: Curve
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.25 IntermittentResourceEligibility

Indicates whether unit is eligible for treatment as a intermittent variable renewable resource

Table 172 shows all attributes of IntermittentResourceEligibility.

Table 172 – Attributes of ExternalInputs::IntermittentResourceEligibility

name	type	description
eligibilityStatus	String	Indicates whether a resource is eligible for PIRP program for a given hour
intervalEndTime	DateTime	inherited from: MarketFactors
intervalStartTime	DateTime	inherited from: MarketFactors
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document

name	type	description
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 173 shows all association ends of IntermittentResourceEligibility with other classes.

Table 173 – Association ends of ExternalInputs::IntermittentResourceEligibility with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] RegisteredResource	RegisteredResource	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	inherited from: MarketFactors
[0..*]	[0..1] Market	Market	inherited from: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.26 LoadDistributionFactor root class

This class models the load distribution factors. This class should be used in one of two ways:

Use it along with the AggregatedPnode and the IndividualPnode to show the distribution of each individual party

OR

Use it with Mkt_EnergyConsumer to represent the current MW/Mvar distribution within its parent load group.

Table 174 shows all attributes of LoadDistributionFactor.

Table 174 – Attributes of ExternalInputs::LoadDistributionFactor

name	type	description
pDistFactor	Float	Real power (MW) load distribution factor
qDistFactor	Float	Reactive power (MVar) load distribution factor

Table 175 shows all association ends of LoadDistributionFactor with other classes.

Table 175 – Association ends of ExternalInputs::LoadDistributionFactor with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] DistributionFactorSet	DistributionFactorSet	
[0..1]	[0..1] IndividualPnode	IndividualPnode	
[1..*]	[0..1] AggregatedPnode	AggregatedPnode	

6.5.6.2.27 LossSensitivity

Loss sensitivity applied to a ConnectivityNode for a given time interval.

Table 176 shows all attributes of LossSensitivity.

Table 176 – Attributes of ExternalInputs::LossSensitivity

name	type	description
lossFactor	Float	Loss penalty factor. Defined as: $1 / (1 - \text{Incremental Transmission Loss})$; with the Incremental Transmission Loss expressed as a plus or minus value. The typical range of penalty factors is (0,9 to 1,1).
intervalEndTime	DateTime	inherited from: MarketFactors
intervalStartTime	DateTime	inherited from: MarketFactors
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 177 shows all association ends of LossSensitivity with other classes.

Table 177 – Association ends of ExternalInputs::LossSensitivity with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] MktConnectivityNode	MktConnectivityNode	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	inherited from: MarketFactors
[0..*]	[0..1] Market	Market	inherited from: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject

[mult from]	[mult to] name	type	description
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.28 MktACLineSegment

Subclass of IEC 61970:Wires:ACLineSegment

Table 178 shows all attributes of MktACLineSegment.

Table 178 – Attributes of ExternalInputs::MktACLineSegment

name	type	description
b0ch	Susceptance	inherited from: ACLineSegment
bch	Susceptance	inherited from: ACLineSegment
g0ch	Conductance	inherited from: ACLineSegment
gch	Conductance	inherited from: ACLineSegment
r	Resistance	inherited from: ACLineSegment
r0	Resistance	inherited from: ACLineSegment
x	Reactance	inherited from: ACLineSegment
x0	Reactance	inherited from: ACLineSegment
length	Length	inherited from: Conductor
aggregate	Boolean	inherited from: Equipment
normallyInService	Boolean	inherited from: Equipment
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 179 shows all association ends of MktACLineSegment with other classes.

Table 179 – Association ends of ExternalInputs::MktACLineSegment with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] EndAFlow	BranchEndFlow	
[0..*]	[0..1] EndBFlow	BranchEndFlow	
[1..1]	[0..*] Clamp	Clamp	inherited from: ACLineSegment
[0..*]	[0..1] PerLengthImpedance	PerLengthImpedance	inherited from: ACLineSegment
[1..1]	[0..*] Cut	Cut	inherited from: ACLineSegment
[1..1]	[0..*] ACLineSegmentPhases	ACLineSegmentPhase	inherited from: ACLineSegment
[0..*]	[0..1] BaseVoltage	BaseVoltage	inherited from: ConductingEquipment
[1..1]	[0..*] Terminals	Terminal	inherited from: ConductingEquipment
[0..*]	[0..*] ProtectionEquipments	ProtectionEquipment	inherited from: ConductingEquipment
[1..1]	[0..*] ClearanceTags	ClearanceTag	inherited from: ConductingEquipment
[1..1]	[0..1] SvStatus	SvStatus	inherited from: ConductingEquipment
[0..*]	[0..1] EquipmentContainer	EquipmentContainer	inherited from: Equipment
[1..1]	[0..*] ContingencyEquipment	ContingencyEquipment	inherited from: Equipment

[mult from]	[mult to] name	type	description
[0..1]	[0..*] OperationalLimitSet	OperationalLimitSet	inherited from: Equipment
[0..*]	[0..1] PSRType	PSRType	inherited from: PowerSystemResource
[0..1]	[0..*] Measurements	Measurement	inherited from: PowerSystemResource
[1..1]	[0..*] OperatingShare	OperatingShare	inherited from: PowerSystemResource
[0..*]	[0..*] PsrLists	PsrList	inherited from: PowerSystemResource
[1..1]	[0..1] OutageSchedule	OutageSchedule	inherited from: PowerSystemResource
[0..*]	[0..*] ReportingGroup	ReportingGroup	inherited from: PowerSystemResource
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.29 MktAnalogLimit

Subclass of IEC 61970:Meas:AnalogLimit

Table 180 shows all attributes of MktAnalogLimit.

Table 180 – Attributes of ExternalInputs::MktAnalogLimit

name	type	description
exceededLimit	Boolean	true if limit exceeded
limitType	AnalogLimitType	The type of limit the value represents Branch Limit Types: Short Term Medium Term Long Term Voltage Limits: High Low
value	Float	inherited from: AnalogLimit
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 181 shows all association ends of MktAnalogLimit with other classes.

Table 181 – Association ends of ExternalInputs::MktAnalogLimit with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] LimitSet	AnalogLimitSet	inherited from: AnalogLimit
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.30 MktAnalogLimitSet

Subclass of IEC 61970:Meas:AnalogLimitSet

Table 182 shows all attributes of MktAnalogLimitSet.

Table 182 – Attributes of ExternalInputs::MktAnalogLimitSet

name	type	description
ratingSet	Integer	Rating set numbers
isPercentageLimits	Boolean	inherited from: LimitSet
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 183 shows all association ends of MktAnalogLimitSet with other classes.

Table 183 – Association ends of ExternalInputs::MktAnalogLimitSet with other classes

[mult from]	[mult to] name	type	description
[1..1]	[0..*] Limits	AnalogLimit	inherited from: AnalogLimitSet
[0..*]	[0..*] Measurements	Analog	inherited from: AnalogLimitSet
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.31 MktAnalogValue

Subclass of IEC 61970:Meas:AnalogValue

Table 184 shows all attributes of MktAnalogValue.

Table 184 – Attributes of ExternalInputs::MktAnalogValue

name	type	description
value	Float	inherited from: AnalogValue
timeStamp	DateTime	inherited from: MeasurementValue
sensorAccuracy	PerCent	inherited from: MeasurementValue
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 185 shows all association ends of MktAnalogValue with other classes.

Table 185 – Association ends of ExternalInputs::MktAnalogValue with other classes

[mult from]	[mult to] name	type	description
[1..1]	[0..*] AnalogMeasurementValueQuality	AnalogMeasurementValueQuality	
[0..*]	[1..1] Analog	Analog	inherited from: AnalogValue
[1..1]	[0..*] AltGeneratingUnit	AltGeneratingUnitMeas	inherited from: AnalogValue
[1..1]	[0..*] AltTieMeas	AltTieMeas	inherited from: AnalogValue
[1..1]	[0..1] RemoteSource	RemoteSource	inherited from: MeasurementValue
[1..1]	[0..1] MeasurementValueQuality	MeasurementValueQuality	inherited from: MeasurementValue
[0..*]	[1..1] MeasurementValueSource	MeasurementValueSource	inherited from: MeasurementValue
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.32 MktControlArea

Market subclass of IEC 61970:ControlArea

Table 186 shows all attributes of MktControlArea.

Table 186 – Attributes of ExternalInputs::MktControlArea

name	type	description
netInterchange	ActivePower	inherited from: ControlArea
pTolerance	ActivePower	inherited from: ControlArea
type	ControlAreaTypeKind	inherited from: ControlArea
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 187 shows all association ends of MktControlArea with other classes.

Table 187 – Association ends of ExternalInputs::MktControlArea with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..*] ControlAreaSolutionData	ControlAreaSolutionData	
[0..1]	[0..1] EnergyArea	EnergyArea	inherited from: ControlArea
[1..1]	[0..*] ControlAreaGeneratingUnit	ControlAreaGeneratingUnit	inherited from: ControlArea
[1..1]	[0..*] TieFlow	TieFlow	inherited from: ControlArea
[0..*]	[0..1] PSRType	PSRType	inherited from: PowerSystemResource
[0..1]	[0..*] Measurements	Measurement	inherited from: PowerSystemResource
[1..1]	[0..*] OperatingShare	OperatingShare	inherited from: PowerSystemResource
[0..*]	[0..*] PsrLists	PsrList	inherited from: PowerSystemResource

[mult from]	[mult to] name	type	description
[1..1]	[0..1] OutageSchedule	OutageSchedule	inherited from: PowerSystemResource
[0..*]	[0..*] ReportingGroup	ReportingGroup	inherited from: PowerSystemResource
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.33 MktDiscreteValue

Subclass of IEC 61970:Meas:DiscreteValue

Table 188 shows all attributes of MktDiscreteValue.

Table 188 – Attributes of ExternalInputs::MktDiscreteValue

name	type	description
value	Integer	inherited from: DiscreteValue
timeStamp	DateTime	inherited from: MeasurementValue
sensorAccuracy	PerCent	inherited from: MeasurementValue
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 189 shows all association ends of MktDiscreteValue with other classes.

Table 189 – Association ends of ExternalInputs::MktDiscreteValue with other classes

[mult from]	[mult to] name	type	description
[1..1]	[0..*] DiscreteMeasurementValueQuality	DiscreteMeasurementValueQuality	
[0..*]	[1..1] Discrete	Discrete	inherited from: DiscreteValue
[1..1]	[0..1] RemoteSource	RemoteSource	inherited from: MeasurementValue
[1..1]	[0..1] MeasurementValueQuality	MeasurementValueQuality	inherited from: MeasurementValue
[0..*]	[1..1] MeasurementValueSource	MeasurementValueSource	inherited from: MeasurementValue
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.34 MktOperationalLimitType

Subclass of IEC 61970:OperationalLimits:OperationalLimitType class

Table 190 shows all attributes of MktOperationalLimitType.

Table 190 – Attributes of ExternalInputs::MktOperationalLimitType

name	type	description
limitType	BranchRatingType	Limit Types: Normal, Emergency, Short Term Emergency, Long Term Emergency
acceptableDuration	Seconds	inherited from: OperationalLimitType
direction	OperationalLimitDirection Kind	inherited from: OperationalLimitType
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 191 shows all association ends of MktOperationalLimitType with other classes.

**Table 191 – Association ends of ExternalInputs::
MktOperationalLimitType with other classes**

[mult from]	[mult to] name	type	description
[0..1]	[0..*] OperationalLimit	OperationalLimit	inherited from: OperationalLimitType
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.35 MktOutageSchedule

Subclass of IEC 61970:Core:Outage:OutageSchedule.

Added additional attributes to represent both equipment outages and equipment rating/derate schedules needed for Market Operations. Attribute outageType is used to help distinguish between the two types.

Table 192 shows all attributes of MktOutageSchedule.

Table 192 – Attributes of ExternalInputs::MktOutageSchedule

name	type	description
breakerNormalStatus	String	Only applicable for CB/DSC. Possible value are {'O','C'} representing Open/Close breaker status.
breakerOutageStatus	String	Only applicable for CB/DSC. Possible value are {'O','C'} representing Open/Close breaker status.
commentText	String	Special comments submitted by the reliability engineer on the ticket that can effect Markets.
endTime	DateTime	Outage End Time.
equipType	String	Equipment Type - unit - load - Static VAR Compensator - line

name	type	description
		– series device – 2-winding transformer – 3-winding transformer - regulating shunt - fixed shunt (capacitor) - circuit breaker / disconnecter.
outageNote	String	Outage note.
outageType	OutageType	Outage type, IN, OUT, DERATE.
POD	String	Point of delivery.
POR	String	Point of receipt.
status	String	Status 'Active' – sysdate between planned start date and planned end date 'Apprv' – outage has been approved by Central Market 'Accept' – outage has been accepted by Central Market.
startTime	DateTime	inherited from: BasicIntervalSchedule
value1Unit	UnitSymbol	inherited from: BasicIntervalSchedule
value1Multiplier	UnitMultiplier	inherited from: BasicIntervalSchedule
value2Unit	UnitSymbol	inherited from: BasicIntervalSchedule
value2Multiplier	UnitMultiplier	inherited from: BasicIntervalSchedule
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 193 shows all association ends of MktOutageSchedule with other classes.

Table 193 – Association ends of ExternalInputs::MktOutageSchedule with other classes

[mult from]	[mult to] name	type	description
[0..1]	[1..1] PowerSystemResource	PowerSystemResource	inherited from: OutageSchedule
[0..1]	[0..1] SwitchingOperations	SwitchingOperation	inherited from: OutageSchedule
[1..1]	[1..*] TimePoints	IrregularTimePoint	inherited from: IrregularIntervalSchedule
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.36 MktSeriesCompensator

Subclass of IEC 61970:Wires:SeriesCompensator

Table 194 shows all attributes of MktSeriesCompensator.

Table 194 – Attributes of ExternalInputs::MktSeriesCompensator

name	type	description
r	Resistance	inherited from: SeriesCompensator
r0	Resistance	inherited from: SeriesCompensator
x	Reactance	inherited from: SeriesCompensator
x0	Reactance	inherited from: SeriesCompensator
aggregate	Boolean	inherited from: Equipment
normallyInService	Boolean	inherited from: Equipment
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 195 shows all association ends of MktSeriesCompensator with other classes.

Table 195 – Association ends of ExternalInputs::MktSeriesCompensator with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] EndBFlow	BranchEndFlow	
[0..*]	[0..1] EndAFlow	BranchEndFlow	
[0..*]	[0..1] BaseVoltage	BaseVoltage	inherited from: ConductingEquipment
[1..1]	[0..*] Terminals	Terminal	inherited from: ConductingEquipment
[0..*]	[0..*] ProtectionEquipments	ProtectionEquipment	inherited from: ConductingEquipment
[1..1]	[0..*] ClearanceTags	ClearanceTag	inherited from: ConductingEquipment
[1..1]	[0..1] SvStatus	SvStatus	inherited from: ConductingEquipment
[0..*]	[0..1] EquipmentContainer	EquipmentContainer	inherited from: Equipment
[1..1]	[0..*] ContingencyEquipment	ContingencyEquipment	inherited from: Equipment
[0..1]	[0..*] OperationalLimitSet	OperationalLimitSet	inherited from: Equipment
[0..*]	[0..1] PSRType	PSRType	inherited from: PowerSystemResource
[0..1]	[0..*] Measurements	Measurement	inherited from: PowerSystemResource
[1..1]	[0..*] OperatingShare	OperatingShare	inherited from: PowerSystemResource
[0..*]	[0..*] PsrLists	PsrList	inherited from: PowerSystemResource
[1..1]	[0..1] OutageSchedule	OutageSchedule	inherited from: PowerSystemResource
[0..*]	[0..*] ReportingGroup	ReportingGroup	inherited from: PowerSystemResource
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.37 MktShuntCompensator

Subclass of IEC 61970:Wires:ShuntCompensator

Table 196 shows all attributes of MktShuntCompensator.

Table 196 – Attributes of ExternalInputs::MktShuntCompensator

name	type	description
aVRDelay	Seconds	inherited from: ShuntCompensator
b0PerSection	Susceptance	inherited from: ShuntCompensator
bPerSection	Susceptance	inherited from: ShuntCompensator
g0PerSection	Conductance	inherited from: ShuntCompensator
gPerSection	Conductance	inherited from: ShuntCompensator
grounded	WindingConnection	inherited from: ShuntCompensator
maximumSections	Integer	inherited from: ShuntCompensator
nomU	Voltage	inherited from: ShuntCompensator
normalSections	Integer	inherited from: ShuntCompensator
phaseConnection	PhaseShuntConnectionKind	inherited from: ShuntCompensator
switchOnCount	Integer	inherited from: ShuntCompensator
switchOnDate	DateTime	inherited from: ShuntCompensator
voltageSensitivity	VoltagePerReactivePower	inherited from: ShuntCompensator
aggregate	Boolean	inherited from: Equipment
normallyInService	Boolean	inherited from: Equipment
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 197 shows all association ends of MktShuntCompensator with other classes.

Table 197 – Association ends of ExternalInputs::MktShuntCompensator with other classes

[mult from]	[mult to] name	type	description
[1..1]	[0..*] ShuntCompensatorDynamicData	ShuntCompensatorDynamicData	
[1..1]	[0..*] ShuntCompensatorPhase	ShuntCompensatorPhase	inherited from: ShuntCompensator
[1..1]	[0..1] SvShuntCompensatorSections	SvShuntCompensatorSections	inherited from: ShuntCompensator
[0..*]	[0..1] RegulatingControl	RegulatingControl	inherited from: RegulatingCondEq
[0..1]	[1..*] Controls	Control	inherited from: RegulatingCondEq
[0..*]	[0..1] BaseVoltage	BaseVoltage	inherited from: ConductingEquipment
[1..1]	[0..*] Terminals	Terminal	inherited from: ConductingEquipment
[0..*]	[0..*] ProtectionEquipments	ProtectionEquipment	inherited from: ConductingEquipment
[1..1]	[0..*] ClearanceTags	ClearanceTag	inherited from: ConductingEquipment
[1..1]	[0..1] SvStatus	SvStatus	inherited from: ConductingEquipment
[0..*]	[0..1] EquipmentContainer	EquipmentContainer	inherited from: Equipment
[1..1]	[0..*] ContingencyEquipment	ContingencyEquipment	inherited from: Equipment
[0..1]	[0..*] OperationalLimitSet	OperationalLimitSet	inherited from: Equipment
[0..*]	[0..1] PSRType	PSRType	inherited from: PowerSystemResource

[mult from]	[mult to] name	type	description
[0..1]	[0..*] Measurements	Measurement	inherited from: PowerSystemResource
[1..1]	[0..*] OperatingShare	OperatingShare	inherited from: PowerSystemResource
[0..*]	[0..*] PsrLists	PsrList	inherited from: PowerSystemResource
[1..1]	[0..1] OutageSchedule	OutageSchedule	inherited from: PowerSystemResource
[0..*]	[0..*] ReportingGroup	ReportingGroup	inherited from: PowerSystemResource
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.38 MktSwitch

Subclass of IEC 61970:Wires:Switch

Table 198 shows all attributes of MktSwitch.

Table 198 – Attributes of ExternalInputs::MktSwitch

name	type	description
normalOpen	Boolean	inherited from: Switch
ratedCurrent	CurrentFlow	inherited from: Switch
switchOnCount	Integer	inherited from: Switch
switchOnDate	DateTime	inherited from: Switch
retained	Boolean	inherited from: Switch
aggregate	Boolean	inherited from: Equipment
normallyInService	Boolean	inherited from: Equipment
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 199 shows all association ends of MktSwitch with other classes.

Table 199 – Association ends of ExternalInputs::MktSwitch with other classes

[mult from]	[mult to] name	type	description
[1..1]	[0..*] SwitchStatus	SwitchStatus	
[1..1]	[0..*] SwitchSchedules	SwitchSchedule	inherited from: Switch
[1..1]	[0..*] SwitchPhase	SwitchPhase	inherited from: Switch
[0..*]	[0..1] CompositeSwitch	CompositeSwitch	inherited from: Switch
[0..*]	[0..*] SwitchingOperations	SwitchingOperation	inherited from: Switch
[0..*]	[0..1] BaseVoltage	BaseVoltage	inherited from: ConductingEquipment
[1..1]	[0..*] Terminals	Terminal	inherited from: ConductingEquipment
[0..*]	[0..*] ProtectionEquipments	ProtectionEquipment	inherited from: ConductingEquipment
[1..1]	[0..*] ClearanceTags	ClearanceTag	inherited from: ConductingEquipment
[1..1]	[0..1] SvStatus	SvStatus	inherited from: ConductingEquipment
[0..*]	[0..1] EquipmentContainer	EquipmentContainer	inherited from: Equipment

[mult from]	[mult to] name	type	description
[1..1]	[0..*] ContingencyEquipment	ContingencyEquipment	inherited from: Equipment
[0..1]	[0..*] OperationalLimitSet	OperationalLimitSet	inherited from: Equipment
[0..*]	[0..1] PSRType	PSRType	inherited from: PowerSystemResource
[0..1]	[0..*] Measurements	Measurement	inherited from: PowerSystemResource
[1..1]	[0..*] OperatingShare	OperatingShare	inherited from: PowerSystemResource
[0..*]	[0..*] PsrLists	PsrList	inherited from: PowerSystemResource
[1..1]	[0..1] OutageSchedule	OutageSchedule	inherited from: PowerSystemResource
[0..*]	[0..*] ReportingGroup	ReportingGroup	inherited from: PowerSystemResource
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.39 MktTapChanger

Subclass of IEC 61970:Wires:TapChanger

Table 200 shows all attributes of MktTapChanger.

Table 200 – Attributes of ExternalInputs::MktTapChanger

name	type	description
highStep	Integer	inherited from: TapChanger
initialDelay	Seconds	inherited from: TapChanger
lowStep	Integer	inherited from: TapChanger
ltcFlag	Boolean	inherited from: TapChanger
neutralStep	Integer	inherited from: TapChanger
neutralU	Voltage	inherited from: TapChanger
normalStep	Integer	inherited from: TapChanger
regulationStatus	Boolean	inherited from: TapChanger
subsequentDelay	Seconds	inherited from: TapChanger
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 201 shows all association ends of MktTapChanger with other classes.

Table 201 – Association ends of ExternalInputs::MktTapChanger with other classes

[mult from]	[mult to] name	type	description
[1..1]	[0..*] TapChangerDynamicData	TapChangerDynamicData	
[0..*]	[0..1] TapChangerControl	TapChangerControl	inherited from: TapChanger
[1..1]	[0..1] SvTapStep	SvTapStep	inherited from: TapChanger
[1..1]	[0..*] TapSchedules	TapSchedule	inherited from: TapChanger
[0..*]	[0..1] PSRType	PSRType	inherited from: PowerSystemResource

[mult from]	[mult to] name	type	description
[0..1]	[0..*] Measurements	Measurement	inherited from: PowerSystemResource
[1..1]	[0..*] OperatingShare	OperatingShare	inherited from: PowerSystemResource
[0..*]	[0..*] PsrLists	PsrList	inherited from: PowerSystemResource
[1..1]	[0..1] OutageSchedule	OutageSchedule	inherited from: PowerSystemResource
[0..*]	[0..*] ReportingGroup	ReportingGroup	inherited from: PowerSystemResource
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.40 MWLimitSchedule root class

Maximum MW and optionally Minimum MW (Y1 and Y2, respectively)

Table 202 shows all association ends of MWLimitSchedule with other classes.

Table 202 – Association ends of ExternalInputs::MWLimitSchedule with other classes

[mult from]	[mult to] name	type	description
[1..1]	[1..1] SecurityConstraintLimit	ContingencyConstraintLimit	

6.5.6.2.41 NodeConstraintTerm

To be used only to constrain a quantity that cannot be associated with a terminal. For example, a registered generating unit that is not electrically connected to the network.

Table 203 shows all attributes of NodeConstraintTerm.

Table 203 – Attributes of ExternalInputs::NodeConstraintTerm

name	type	description
factor	String	inherited from: ConstraintTerm
function	String	inherited from: ConstraintTerm
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 204 shows all association ends of NodeConstraintTerm with other classes.

Table 204 – Association ends of ExternalInputs::NodeConstraintTerm with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] MktConnectivityNode	MktConnectivityNode	
[0..*]	[1..1] SecurityConstraintSum	SecurityConstraintSum	inherited from: ConstraintTerm
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject

[mult from]	[mult to] name	type	description
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.42 Profile

A profile is a simpler curve type.

Table 205 shows all attributes of Profile.

Table 205 – Attributes of ExternalInputs::Profile

name	type	description
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 206 shows all association ends of Profile with other classes.

Table 206 – Association ends of ExternalInputs::Profile with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] ProfileDatas	ProfileData	A profile has profile data associated with it.
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.43 ProfileData root class

Data for profile.

Table 207 shows all attributes of ProfileData.

Table 207 – Attributes of ExternalInputs::ProfileData

name	type	description
bidPrice	Float	Bid price associated with contract
capacityLevel	ActivePower	Capacity level for the profile, in MW.
energyLevel	RealEnergy	Energy level for the profile, in MWH.
minimumLevel	Float	Minimum MW value of contract
sequenceNumber	Integer	Sequence to provide item numbering for the profile. { greater than or equal to 1 }
startDateTime	DateTime	Start date/time for this profile.
stopDateTime	DateTime	Stop date/time for this profile.

Table 208 shows all association ends of ProfileData with other classes.

Table 208 – Association ends of ExternalInputs::ProfileData with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] Profile	Profile	A profile has profile data associated with it.

6.5.6.2.44 ReserveDemandCurve

Reserve demand curve. Models maximum quantities of reserve required per Market Region and models a reserve demand curve for the minimum quantities of reserve. The ReserveDemandCurve is a relationship between unit operating reserve price in \$/MWhr (Y-axis) and unit reserves in MW (X-axis).

Table 209 shows all attributes of ReserveDemandCurve.

Table 209 – Attributes of ExternalInputs::ReserveDemandCurve

name	type	description
reqMaxMW	Float	Region requirement maximum limit
reserveRequirementType	ReserveRequirementType	Reserve requirement type that the max and curve apply to. For example, operating reserve, regulation and contingency.
curveStyle	CurveStyle	inherited from: Curve
xMultiplier	UnitMultiplier	inherited from: Curve
xUnit	UnitSymbol	inherited from: Curve
y1Multiplier	UnitMultiplier	inherited from: Curve
y1Unit	UnitSymbol	inherited from: Curve
y2Multiplier	UnitMultiplier	inherited from: Curve
y2Unit	UnitSymbol	inherited from: Curve
y3Multiplier	UnitMultiplier	inherited from: Curve
y3Unit	UnitSymbol	inherited from: Curve
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 210 shows all association ends of ReserveDemandCurve with other classes.

Table 210 – Association ends of ExternalInputs::ReserveDemandCurve with other classes

[mult from]	[mult to] name	type	description
[1..*]	[1..1] ASRequirements	ASRequirements	
[0..*]	[1..1] MarketRegion	MarketRegion	
[1..1]	[0..*] CurveDatas	CurveData	inherited from: Curve
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.45 SCADAInformation root class

Contains information about the update from SCADA

Table 211 shows all attributes of SCADAInformation.

Table 211 – Attributes of ExternalInputs::SCADAInformation

name	type	description
timeStamp	DateTime	time of the update from SCADA

6.5.6.2.46 SecurityConstraints

Typical for regional transmission operators (RTOs), these constraints include transmission as well as generation group constraints identified in both base case and critical contingency cases.

Table 212 shows all attributes of SecurityConstraints.

Table 212 – Attributes of ExternalInputs::SecurityConstraints

name	type	description
minMW	ActivePower	Minimum MW limit (only for transmission constraints).
maxMW	ActivePower	Maximum MW limit
actualMW	ActivePower	Actual branch or group of branches MW flow (only for transmission constraints)
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 213 shows all association ends of SecurityConstraints with other classes.

Table 213 – Association ends of ExternalInputs::SecurityConstraints with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] RTO	RTO	
[0..*]	[0..1] GeneratingBid	GeneratingBid	
[0..1]	[0..1] Flowgate	Flowgate	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.47 SecurityConstraintSum

Typically provided by RTO systems, constraints identified in both base case and critical contingency cases have to be transferred.

A constraint has N (≥ 1) constraint terms. A term is represented by an

instance of TerminalConstraintTerm.

The constraint expression is:

$$\text{minValue} \leq c1 \cdot x1 + c2 \cdot x2 + \dots cn \cdot xn + k \leq \text{maxValue}$$

where:

- cn is ConstraintTerm.factor
- xn is the flow at the terminal

Flow into the associated equipment is positive for the purpose of ConnectivityNode NodeConstraintTerm

k is SecurityConstraintsLinear.resourceMW

The units of k are assumed to be same as the units of the flows, xn . The constants, cn , are dimensionless.

With these conventions, cn and k are all positive for a typical constraint such as "weighted sum of generation shall be less than limit". Furthermore, cn are all 1.0 for a case such as "interface flow shall be less than limit", assuming the terminals are chosen on the importing side of the interface.

Table 214 shows all attributes of SecurityConstraintSum.

Table 214 – Attributes of ExternalInputs::SecurityConstraintSum

name	type	description
intervalEndTime	DateTime	inherited from: MarketFactors
intervalStartTime	DateTime	inherited from: MarketFactors
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 215 shows all association ends of SecurityConstraintSum with other classes.

Table 215 – Association ends of ExternalInputs::SecurityConstraintSum with other classes

[mult from]	[mult to] name	type	description
[1..1]	[0..*] ConstraintTerms	ConstraintTerm	
[0..*]	[0..1] RTO	RTO	
[1..1]	[0..1] BaseCaseConstraintLimit	BaseCaseConstraintLimit	
[1..1]	[0..*] ContingencyConstraintLimits	ContingencyConstraintLimit	
[1..1]	[0..1] DefaultConstraintLimit	DefaultConstraintLimit	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	inherited from: MarketFactors
[0..*]	[0..1] Market	Market	inherited from: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.48 ServicePoint

The defined termination points of a transmission path (down to distribution level or to a customer – generation or consumption or both). Service points are defined from the viewpoint of the transmission service. Each service point is contained within (or on the boundary of) an interchange area. A service point is source or destination of a transaction.

Table 216 shows all attributes of ServicePoint.

Table 216 – Attributes of ExternalInputs::ServicePoint

name	type	description
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 217 shows all association ends of ServicePoint with other classes.

Table 217 – Association ends of ExternalInputs::ServicePoint with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..*] SourceReservation	TransmissionReservation	
[1..1]	[0..*] PORTransmissionPath	TransmissionPath	A transmission path has a "point-of-receipt" service point
[0..1]	[0..*] SinkReservation	TransmissionReservation	
[1..1]	[0..*] PODTransmissionPath	TransmissionPath	A transmission path has a "point-of-delivery" service point
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.49 ShuntCompensatorDynamicData root class

Optimal Power Flow or State Estimator Filter Bank Data for OTS. This is used for RealTime, Study and Maintenance Users

Table 218 shows all attributes of ShuntCompensatorDynamicData.

Table 218 – Attributes of ExternalInputs::ShuntCompensatorDynamicData

name	type	description
mVARInjection	Float	The injection of reactive power of the filter bank in the NA solution or VCS reactive power production
connectionStatus	Integer	The current status for the Voltage Control Capacitor 1= Connected 0 = Disconnected
desiredVoltage	Float	The desired voltage for the Voltage Control Capacitor
voltageRegulationStatus	Boolean	Indicator if the voltage control this is regulating True = Yes, False = No
stepPosition	Integer	Voltage control capacitor step position

Table 219 shows all association ends of ShuntCompensatorDynamicData with other classes.

Table 219 – Association ends of ExternalInputs::ShuntCompensatorDynamicData with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] MktShuntCompensator	MktShuntCompensator	

6.5.6.2.50 SwitchStatus root class

Optimal Power Flow or State Estimator Circuit Breaker Status.

Table 220 shows all attributes of SwitchStatus.

Table 220 – Attributes of ExternalInputs::SwitchStatus

name	type	description
switchStatus	SwitchStatusType	Circuit Breaker Status (closed or open) of the circuit breaker from the power flow.

Table 221 shows all association ends of SwitchStatus with other classes.

Table 221 – Association ends of ExternalInputs::SwitchStatus with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] MktSwitch	MktSwitch	

6.5.6.2.51 SysLoadDistributionFactor root class

This class models the system distribution factors. This class needs to be used along with the HostControlArea and the ConnectivityNode to show the distribution of each individual party.

Table 222 shows all attributes of SysLoadDistributionFactor.

Table 222 – Attributes of ExternalInputs::SysLoadDistributionFactor

name	type	description
factor	Float	Used to calculate load "participation" of a connectivity node in an host control area

Table 223 shows all association ends of SysLoadDistributionFactor with other classes.

Table 223 – Association ends of ExternalInputs::SysLoadDistributionFactor with other classes

[mult from]	[mult to] name	type	description
[0..1]	[1..1] MktConnectivityNode	MktConnectivityNode	
[0..*]	[0..*] DistributionFactorSet	DistributionFactorSet	
[0..*]	[1..1] HostControlArea	HostControlArea	

6.5.6.2.52 TapChangerDynamicData root class

Optimal Power Flow or State Estimator Phase Shifter Data. This is used for RealTime, Study and Maintenance Users. SE Solution Phase Shifter Measurements from the last run of SE

Table 224 shows all attributes of TapChangerDynamicData.

Table 224 – Attributes of ExternalInputs::TapChangerDynamicData

name	type	description
tapPosition	Float	Tap position of the phase shifter, high-side tap position of the transformer, or low-side tap position of the transformer
desiredVoltage	Float	The desired voltage for the LTC
voltageRegulationStatus	Boolean	Indicator if the LTC transformer is regulating True = Yes, False = No
angleRegulationStatus	Boolean	True means the phase shifter is regulating.
desiredMW	Float	Phase Shifter Desired MW. The active power regulation setpoint of the phase shifter
solvedAngle	Float	Phase Shifter Angle. The solved phase angle shift of the phase shifter
minimumAngle	Float	The minimum phase angle shift of the phase shifter
maximumAngle	Float	The maximum phase angle shift of the phase shifter

Table 225 shows all association ends of TapChangerDynamicData with other classes.

Table 225 – Association ends of ExternalInputs::TapChangerDynamicData with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] MktTapChanger	MktTapChanger	

6.5.6.2.53 TerminalConstraintTerm

A constraint term associated with a specific terminal on a physical piece of equipment.

Table 226 shows all attributes of TerminalConstraintTerm.

Table 226 – Attributes of ExternalInputs::TerminalConstraintTerm

name	type	description
factor	String	inherited from: ConstraintTerm
function	String	inherited from: ConstraintTerm
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 227 shows all association ends of TerminalConstraintTerm with other classes.

Table 227 – Association ends of ExternalInputs::TerminalConstraintTerm with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] MktTerminal	MktTerminal	
[0..*]	[1..1] SecurityConstraintSum	SecurityConstraintSum	inherited from: ConstraintTerm
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.54 TransferInterface

A Transfer Interface is made up of branches such as transmission lines and transformers.

Table 228 shows all attributes of TransferInterface.

Table 228 – Attributes of ExternalInputs::TransferInterface

name	type	description
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 229 shows all association ends of TransferInterface with other classes.

Table 229 – Association ends of ExternalInputs::TransferInterface with other classes

[mult from]	[mult to] name	type	description
[1..1]	[1..1] TransferInterfaceSolution	TransferInterfaceSolution	
[0..*]	[0..1] HostControlArea	HostControlArea	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.55 TransferInterfaceSolution root class

TNA Interface Definitions from OPF for VSA

Table 230 shows all attributes of TransferInterfaceSolution.

Table 230 – Attributes of ExternalInputs::TransferInterfaceSolution

name	type	description
interfaceMargin	Float	The margin for the interface
transferLimit	Float	Transfer Interface + Limit Attribute Usage: The absolute of the maximum flow on the transfer interface. This is a positive MW value.
postTransferMW	Float	Post Transfer MW for step

Table 231 shows all association ends of TransferInterfaceSolution with other classes.

Table 231 – Association ends of ExternalInputs::TransferInterfaceSolution with other classes

[mult from]	[mult to] name	type	description
[1..1]	[1..1] TransferInterface	TransferInterface	
[0..1]	[0..1] MktContingencyA	MktContingency	
[0..1]	[0..1] MktContingencyB	MktContingency	

6.5.6.2.56 TransmissionCapacity root class

This class models the transmission (either a transmission interface or a POR/POD pair) capacity including Total Transfer Capacity (TTC), Operating Transfer Capacity (OTC), and Capacity Benefit Margin (CBM)

Table 232 shows all attributes of TransmissionCapacity.

Table 232 – Attributes of ExternalInputs::TransmissionCapacity

name	type	description
capacityBenefitMargin	Float	Capacity Benefit Margin (CBM) is used by Markets to calculate the transmission interface limits. This number could be manually or procedurally determined. The CBM is defined per

name	type	description
		transmission interface (branch group).
operationalTransmissionCapacity	Float	The Operational Transmission Capacity (OTC) is the transmission capacity under the operating condition during a specific time period, incorporating the effects of derates and current settings of operation controls. The OTCs for all transmission interface (branch group) are always provided regardless of outage or switching conditions.
OTC15min_emergency	Float	The Operational Transmission Capacity (OTC) 15 minute Emergency Limit
OTCEmergency	Float	The Operational Transmission Capacity (OTC) Emergency Limit.
POD	String	point of delivery
POR	String	point of receipt
startOperatingDate	DateTime	Operating date & hour when the entitlement applies
totalTransmissionCapacity	Float	Total Transmission Capacity

Table 233 shows all association ends of TransmissionCapacity with other classes.

Table 233 – Association ends of ExternalInputs::TransmissionCapacity with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] GenericConstraints	GenericConstraints	
[0..*]	[0..1] Flowgate	Flowgate	

6.5.6.2.57 TransmissionInterfaceRightEntitlement root class

This is formally called the branch group ETC/TOR entitlement with the inclusion of CVR as ETC. Is used to represent the entitlements. This could be also used to represent the TR entitlement on a POR/POD.

Table 234 shows all attributes of TransmissionInterfaceRightEntitlement.

Table 234 – Attributes of ExternalInputs::TransmissionInterfaceRightEntitlement

name	type	description
entitlement	Float	the entitlement
POD	String	point of delivery
POR	String	point of receipt
startOperatingDate	DateTime	Operating date and hour when the entitlement applies

Table 235 shows all association ends of TransmissionInterfaceRightEntitlement with other classes.

Table 235 – Association ends of ExternalInputs::TransmissionInterfaceRightEntitlement with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] ContractRight	ContractRight	
[0..*]	[0..1] Flowgate	Flowgate	

6.5.6.2.58 TransmissionPath

An electrical connection, link, or line consisting of one or more parallel transmission elements between two areas of the interconnected electric systems, or portions thereof. TransmissionCorridor and TransmissionRightOfWay refer to legal aspects. The TransmissionPath refers to the segments between a TransmissionProvider's ServicePoints.

Table 236 shows all attributes of TransmissionPath.

Table 236 – Attributes of ExternalInputs::TransmissionPath

name	type	description
availTransferCapability	ActivePower	The available transmission capability of a transmission path for the reference direction.
parallelPathFlag	Boolean	Flag which indicates if the transmission path is also a designated interconnection "parallel path".
totalTransferCapability	ActivePower	The total transmission capability of a transmission path in the reference direction.
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 237 shows all association ends of TransmissionPath with other classes.

Table 237 – Association ends of ExternalInputs::TransmissionPath with other classes

[mult from]	[mult to] name	type	description
[1..1]	[0..*] TransmissionReservation	TransmissionReservation	
[0..*]	[1..1] PointOfReceipt	ServicePoint	A transmission path has a "point-of-receipt" service point
[0..*]	[1..1] DeliveryPoint	ServicePoint	A transmission path has a "point-of-delivery" service point
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.2.59 TransmissionReservation root class

A transmission reservation is obtained from the OASIS system to reserve transmission for a specified time period, transmission path and transmission product.

Table 238 shows all association ends of TransmissionReservation with other classes.

Table 238 – Association ends of ExternalInputs::TransmissionReservation with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..1] EnergyTransaction	EnergyTransaction	
[0..1]	[0..1] TransactionBid	TransactionBid	
[0..*]	[0..1] Source	ServicePoint	
[0..*]	[0..1] Sink	ServicePoint	
[0..*]	[1..1] TransmissionPath	TransmissionPath	

6.5.6.2.60 TREntitlement root class

A Transmission Right(TR) can be a chain of TR's or on individual.

When a transmission right is not a chain, this is formally the ETC/TOR Entitlement for each ETC/TOR contract with the inclusion of CVR(Converted Rights) as an ETC. This is the sum of all entitlements on all related transmission interfaces for the same TR.

When TR is a chain, its entitlement is the minimum of all entitlements for the individual TRs in the chain.

Table 239 shows all attributes of TREntitlement.

Table 239 – Attributes of ExternalInputs::TREntitlement

name	type	description
entitlement	Float	The entitlement
startOperatingDate	DateTime	Operating date and hour when the entitlement applies

Table 240 shows all association ends of TREntitlement with other classes.

Table 240 – Association ends of ExternalInputs::TREntitlement with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] TransmissionContractRight	ContractRight	

6.5.6.2.61 UnitInitialConditions

Resource status at the end of a given clearing period.

Table 241 shows all attributes of UnitInitialConditions.

Table 241 – Attributes of ExternalInputs::UnitInitialConditions

name	type	description
cumEnergy	RealEnergy	Cumulative energy production over trading period.
cumStatusChanges	Integer	Cumulative number of status changes of the resource.
numberOfStartups	Integer	Number of start ups in the Operating Day until the end of previous hour.
onlineStatus	Boolean	'true' if the GeneratingUnit is currently On-Line
resourceMW	ActivePower	Resource MW output at the end of previous clearing period.
resourceStatus	Integer	Resource status at the end of previous clearing period: 0 – off-line 1 – on-line production 2 – in shutdown process 3 – in startup process
statusDate	DateTime	Time and date for resourceStatus
timeInStatus	Float	Time in market trading intervals the resource is in the state as of the end of the previous clearing period.
timeInterval	DateTime	Time interval
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 242 shows all association ends of UnitInitialConditions with other classes.

Table 242 – Association ends of ExternalInputs::UnitInitialConditions with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] GeneratingUnit	RegisteredGenerator	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.3 Package MarketResults

6.5.6.3.1 General

Results from the execution of a market.

Figure 34 shows class diagram Instructions.

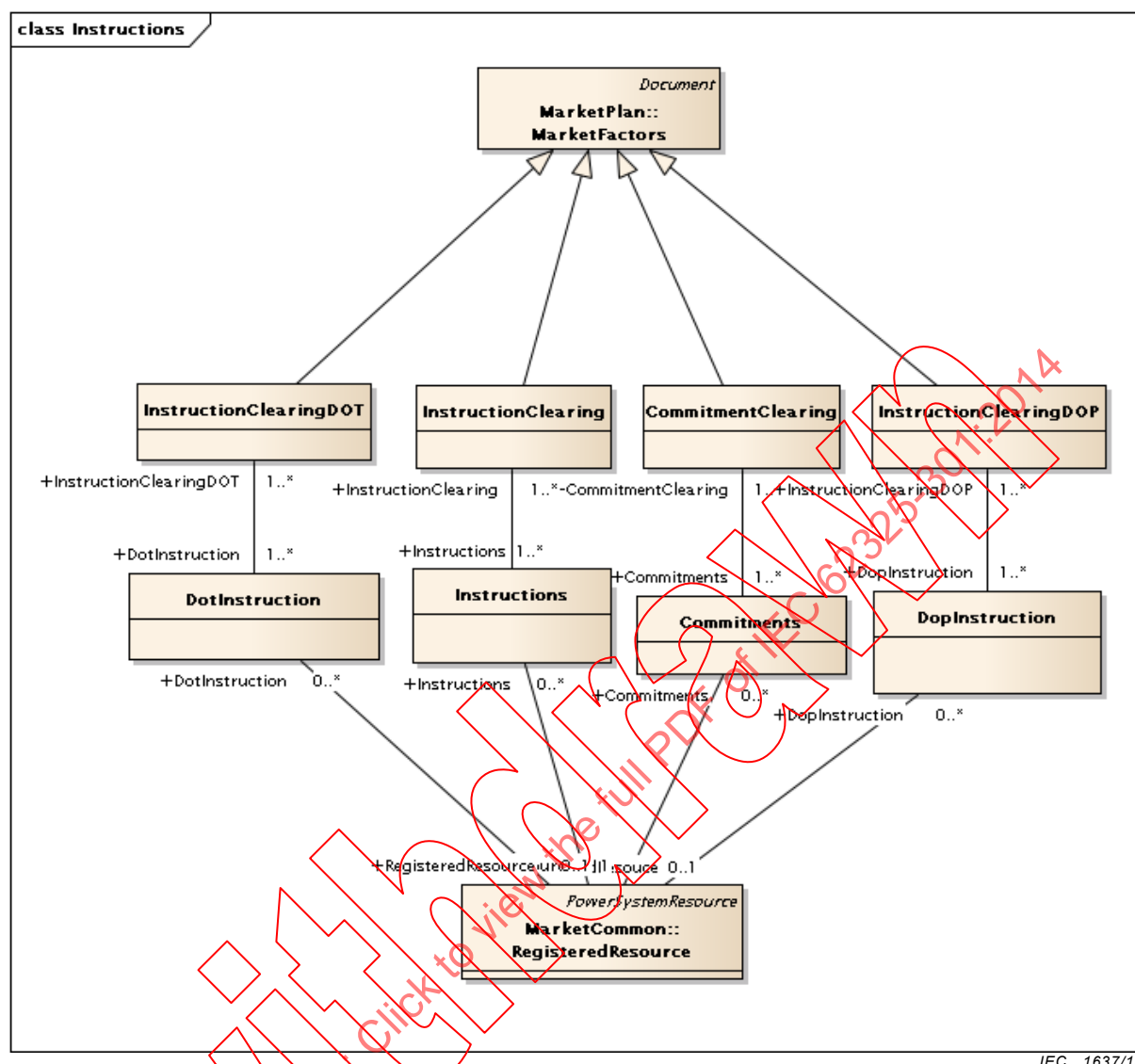


Figure 34 – Class diagram MarketResults::Instructions

This figure shows the classes used to model the instructions sent to market participants following a market clearing. The major classes and relationships include the RegisteredResource class that models the participating resource, the Commitment and CommitmentClearing classes which model results which calls for commitment of resource. The DotInstruction and DopInstruction allow the modeling of the results of a dynamic (or lookahead) dispatch that may be used in the real time market.

Figure 35 shows class diagram MarketClearing.

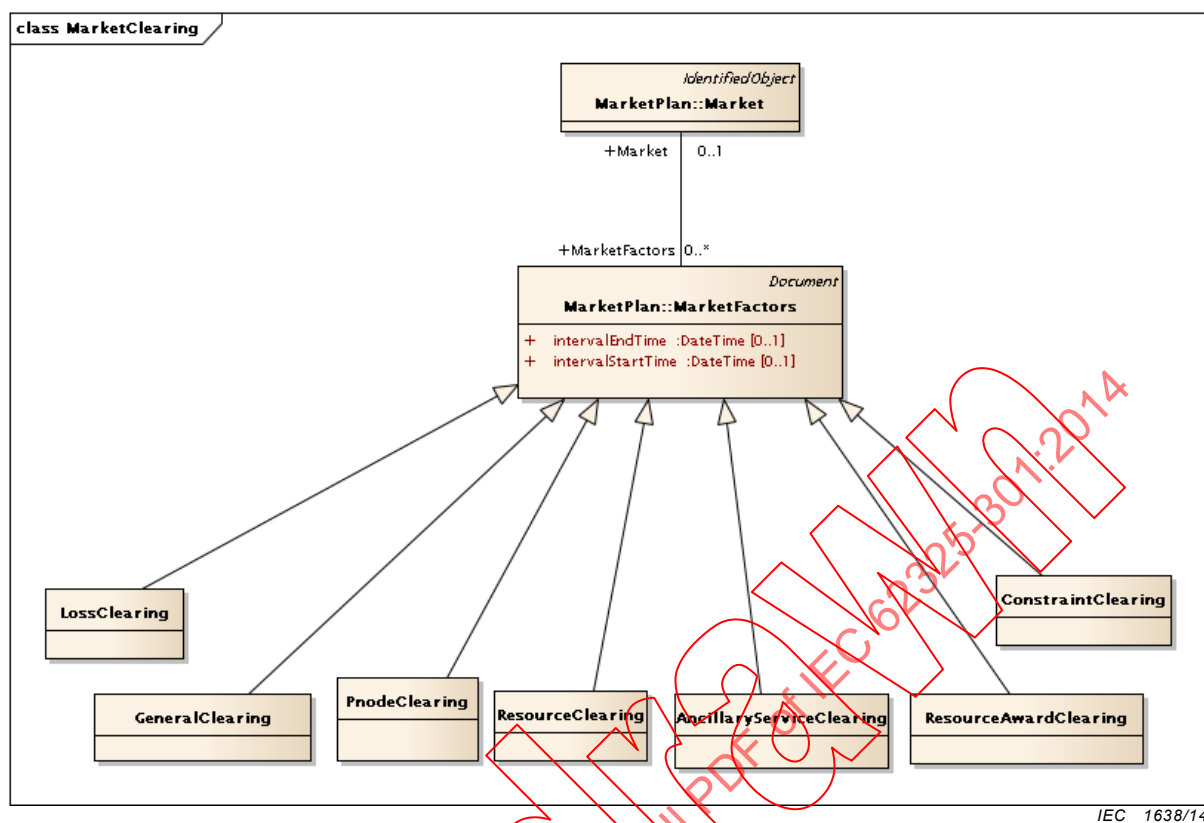
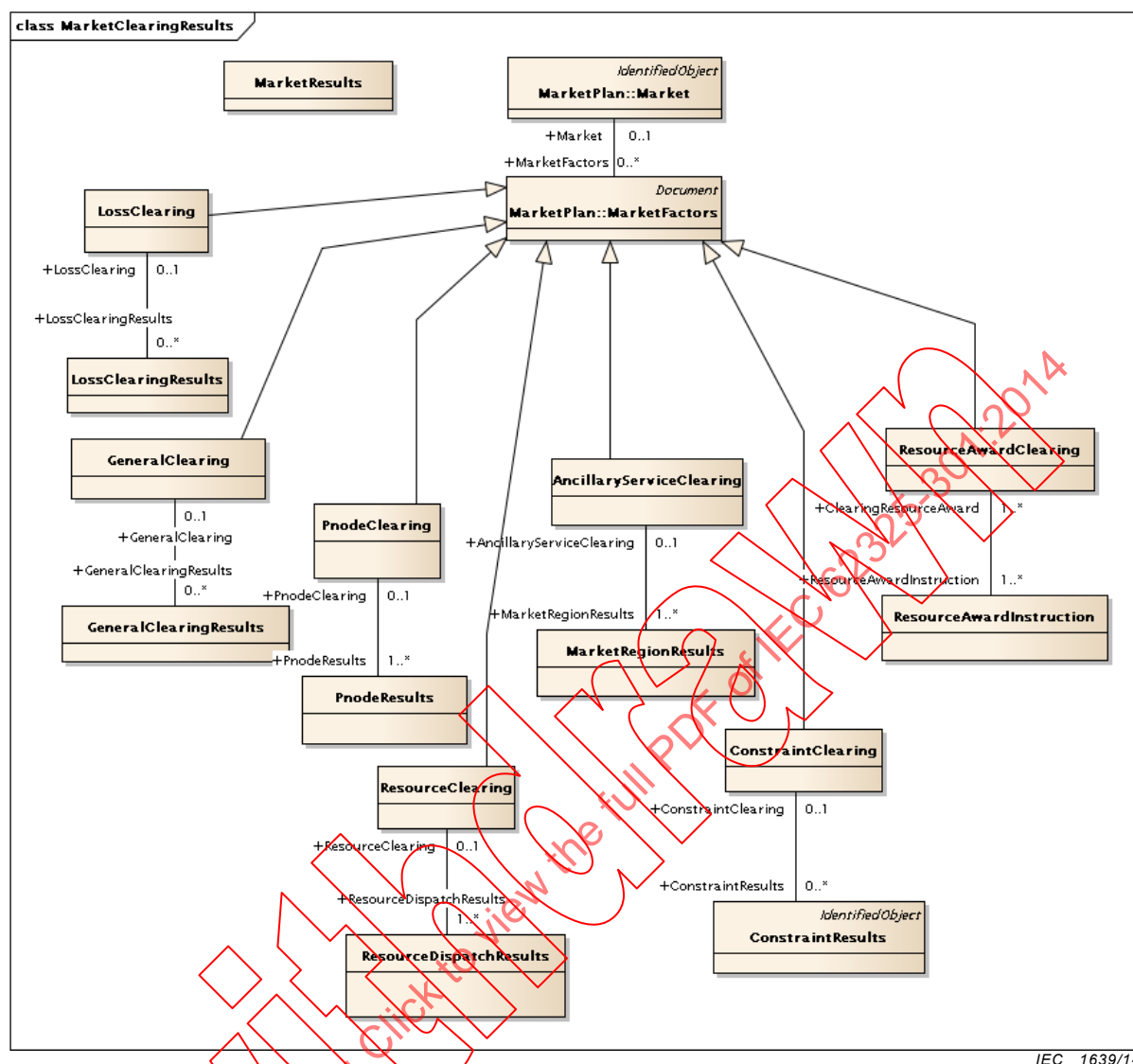


Figure 35 – Class diagram MarketResults::MarketClearing

Each of the defined market clearing classes inherit from the MarketFactors class to allow definition of the market time intervals and the execution type within the market.

Figure 36 shows class diagram MarketClearingResults.



IEC 1639/14

Figure 36 – Class diagram MarketResults::MarketClearingResults

This figure shows the classes and relationships used to model the results of the market clearing at an overview level. The Market Results class summarizes the market run. The LossClearingResults Class summarizes losses. The GeneralClearingResults is used to model the cleared load on a load zone basis. The PnodeClearing and PnodeClearingResults classes are used to model the locational marginal prices (LMPs) at the level of individual pricing nodes. The ResourceClearing and ResourceDispatchInstruction classes includes the dispatch instructions and indicator of a normal case or contingency case dispatch. The AncillaryServiceClearing class includes information on ancillary services. The ConstraintResults class contains the constraints that are binding and their associated shadow costs. The ResourceAwardInstruction includes Active Power awards and LMP information.

Figure 37 shows class diagram MarketRegionClearing.

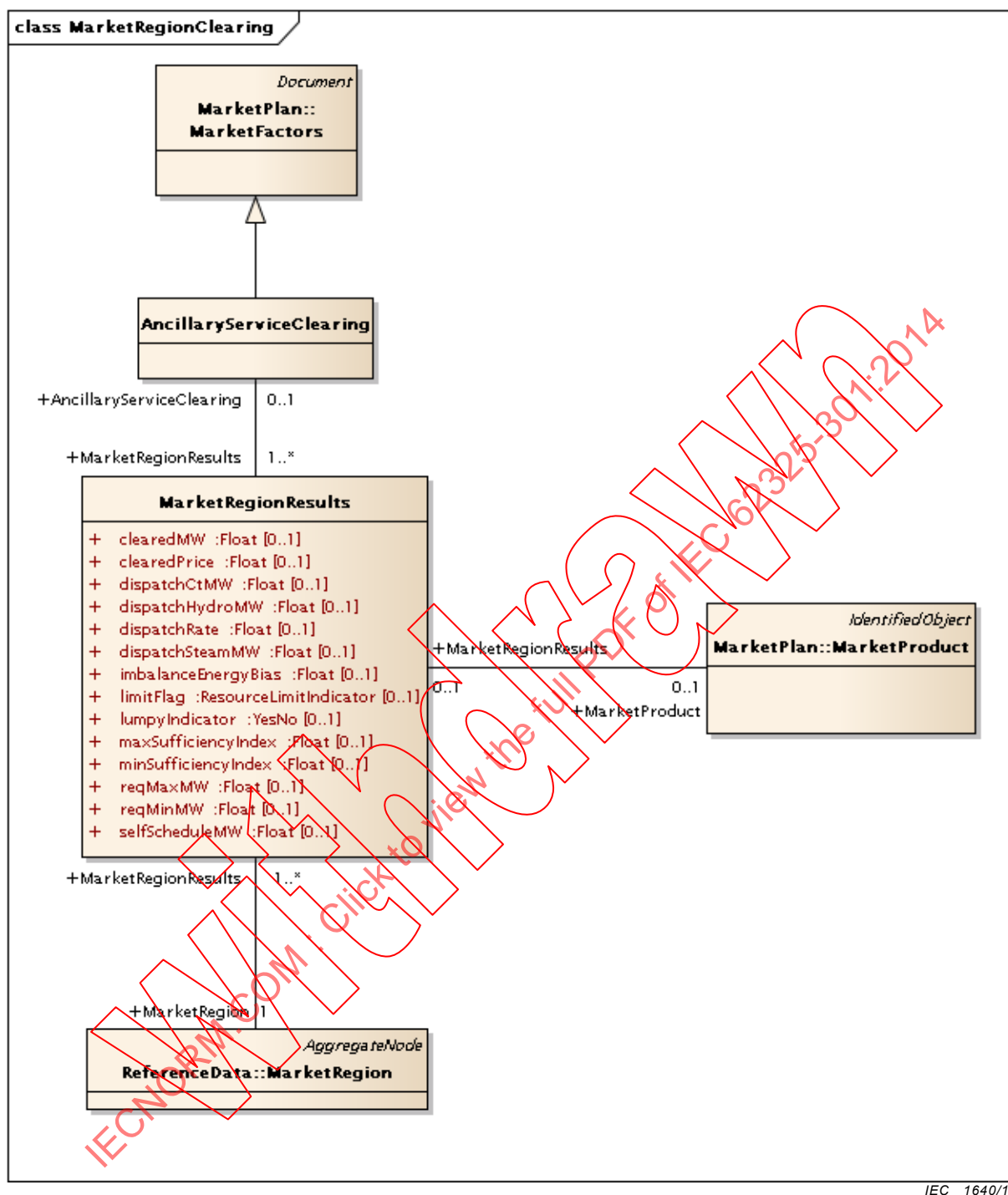
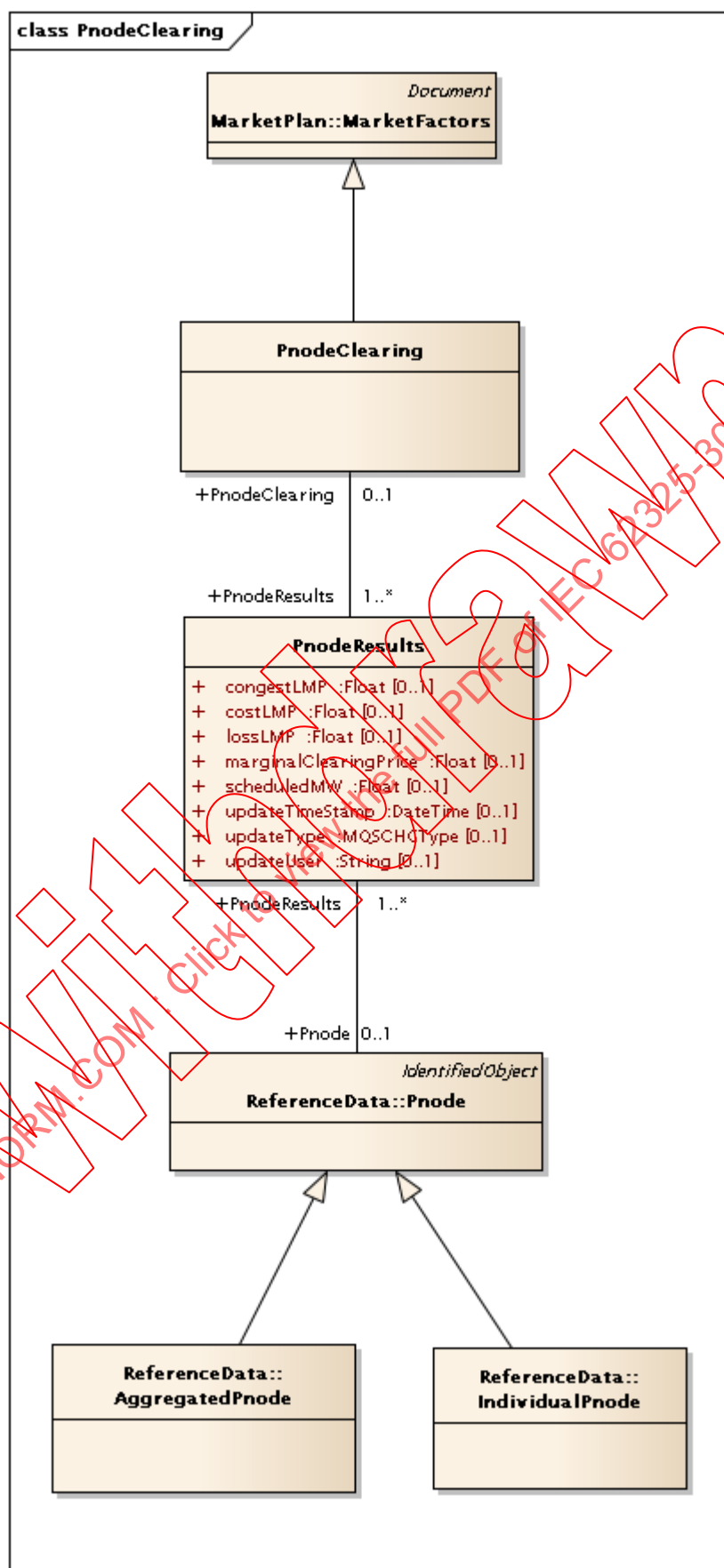


Figure 37 – Class diagram MarketResults::MarketRegionClearing

This figure shows the classes and relationships used to model the results of the market clearing of ancillary services at the level of a region of the market. The model includes results at the level of specific ancillary service products by means of the class MarketProduct and association to MarketRegionResults.

Figure 38 shows class diagram PnodeClearing.



IEC 1641/14

Figure 38 – Class diagram MarketResults::PnodeClearing

This figure shows the classes and relationships used to model the results of the market clearing at the level of the pricing nodes. The locational marginal prices (LMPs) and their components: energy, congestion and losses are shown for each pricing node. Modeling of results at the levels of aggregated Pnodes and Individual Pnodes is supported by the classes AggregatedPnode and IndividualPnode.

Figure 39 shows class diagram ResourceAwardsClearing.

IECNORM.COM Click to view the full PDF of IEC 62325-301:2014

Withdrawing

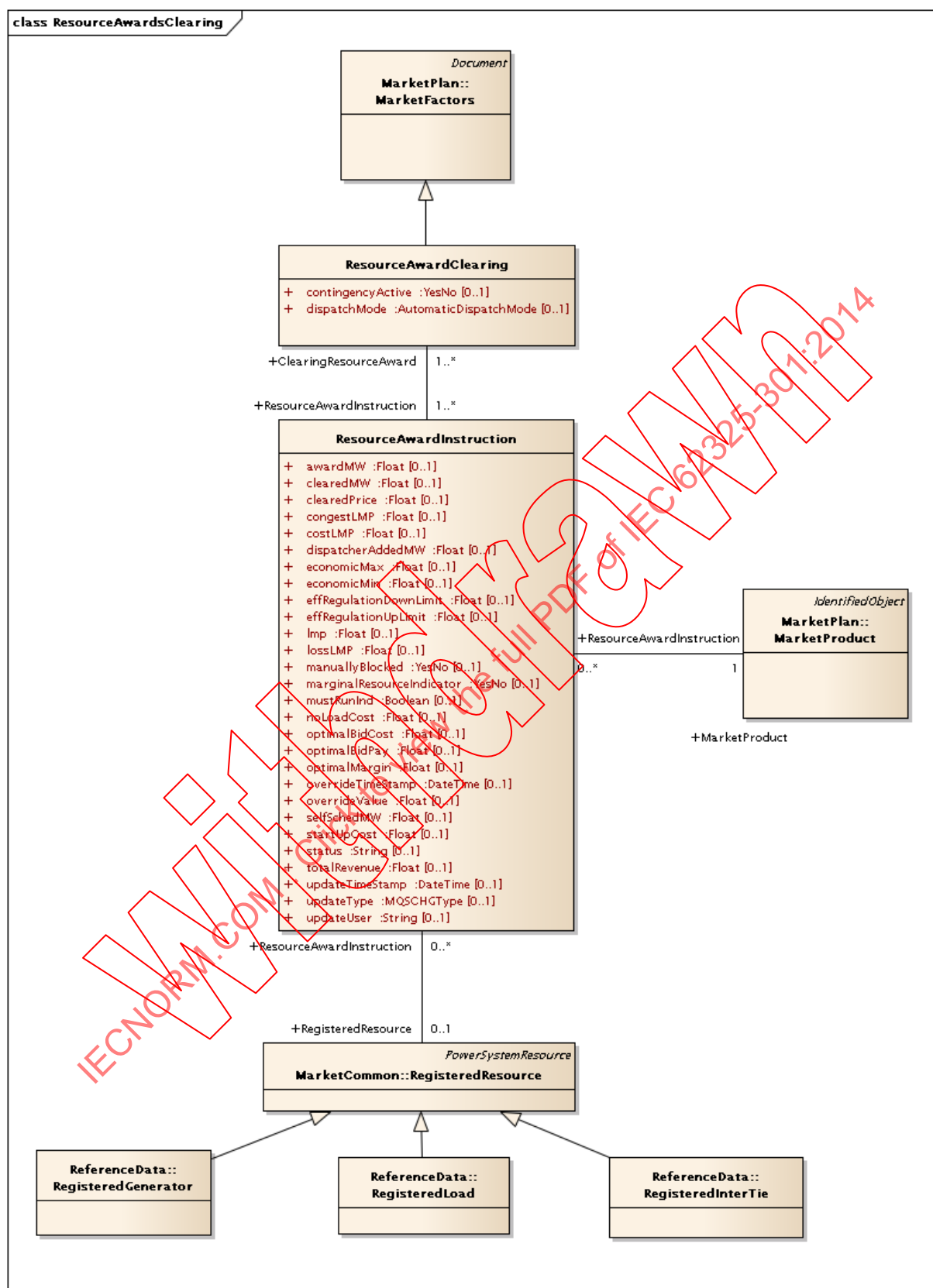


Figure 39 – Class diagram MarketResults::ResourceAwardsClearing

This figure shows the classes and relationships used to model the results of the market clearing with more emphasis on the ResourceAwardInstruction. The main class of this diagram is the ResourceAwardInstruction which models the details of the award to the

resource including the active power, the locational marginal price (LMP) and along with its energy, congestion and cost components. the resource model includes RegisteredGenerator, RegisteredLoad and RegisteredInterTie as subclasses.

Figure 40 shows class diagram TransactionBidClearing.

IECNORM.COM Click to view the full PDF of IEC 62325-301:2014

Withdawn

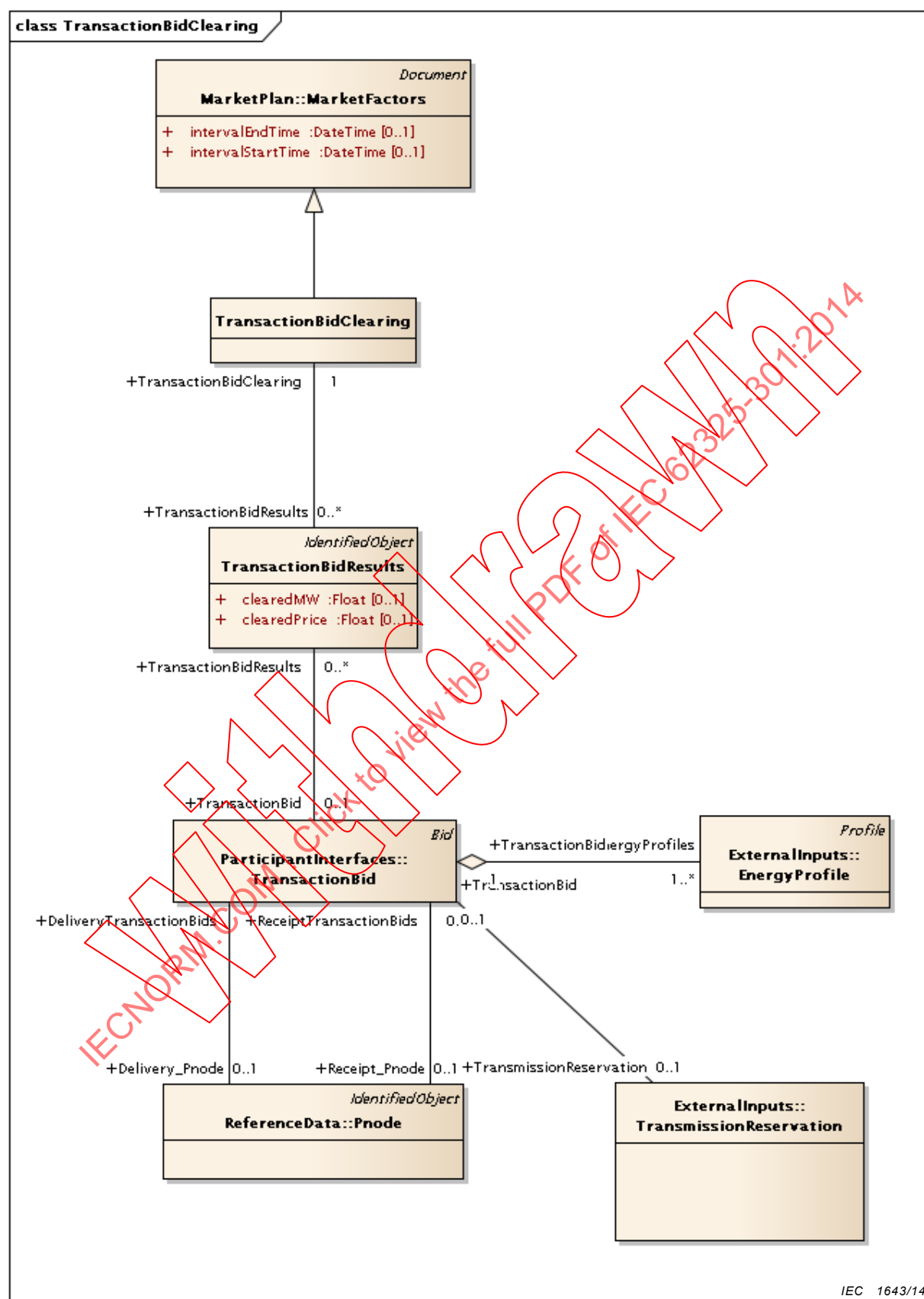


Figure 40 – Class diagram MarketResults::TransactionBidClearing

This figure shows the classes and relationships used to model the results of the market clearing with more emphasis on Transaction Results. The model includes TransactionBid class and its relationship to Point of Delivery and Point of Receipt Pnodes.

6.5.6.3.2 AncillaryServiceClearing

Model of results of market clearing with respect to Ancillary Service products

Table 243 shows all attributes of AncillaryServiceClearing.

Table 243 – Attributes of MarketResults::AncillaryServiceClearing

name	type	description
intervalEndTime	DateTime	inherited from: MarketFactors
intervalStartTime	DateTime	inherited from: MarketFactors
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 244 shows all association ends of AncillaryServiceClearing with other classes.

Table 244 – Association ends of MarketResults::AncillaryServiceClearing with other classes

[mult from]	[mult to] name	type	description
[0..1]	[1..*] MarketRegionResults	MarketRegionResults	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	inherited from: MarketFactors
[0..*]	[0..1] Market	Market	inherited from: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.3.3 BillDeterminant

Model various charges to support billing and settlement of

Table 245 shows all attributes of BillDeterminant.

Table 245 – Attributes of MarketResults::BillDeterminant

name	type	description
calculationLevel	String	Level in charge calculation order.
configVersion	String	The version of configuration of calculation logic in the settlement.
deleteStatus	String	
effectiveDate	DateTime	
exception	String	
factor	String	
frequency	String	
numberInterval	Integer	Number of intervals of bill determinant in trade day, eg 300 for five minute intervals.
offset	String	
precisionLevel	String	The level of precision in the current value.
primaryYN	String	
referenceFlag	String	
reportable	String	
roundOff	String	
source	String	
terminationDate	DateTime	
unitOfMeasure	String	The UOM for the current value of the Bill Determinant.
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 246 shows all association ends of BillDeterminant with other classes.

Table 246 – Association ends of MarketResults::BillDeterminant with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] MktUserAttribute	MktUserAttribute	
[0..1]	[0..*] ChargeProfileData	ChargeProfileData	
[0..*]	[0..*] ChargeComponents	ChargeComponent	A BillDeterminant can have 0-n ChargeComponent and a ChargeComponent can associate to 0-n BillDeterminant.

[mult from]	[mult to] name	type	description
[0..1]	[0..1] ChargeProfile	ChargeProfile	
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.3.4 ChargeProfile

A type of profile for financial charges

Table 247 shows all attributes of ChargeProfile.

Table 247 – Attributes of MarketResults::ChargeProfile

name	type	description
type	String	The type of profile. It could be amount, price, or quantity.
frequency	String	The calculation frequency, daily or monthly.
numberInterval	Integer	The number of intervals in the profile data.
unitOfMeasure	String	The unit of measure applied to the value attribute of the profile data.
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 248 shows all association ends of ChargeProfile with other classes.

Table 248 – Association ends of MarketResults::ChargeProfile with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..1] BillDeterminant	BillDeterminant	
[0..1]	[0..*] ChargeProfileData	ChargeProfileData	
[0..*]	[0..1] PassThroughBill	PassThroughBill	
[0..*]	[0..1] Bid	Bid	
[0..*]	[0..*] ProfileDatas	ProfileData	inherited from: Profile
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.3.5 ChargeProfileData root class

Model of various charges associated with an energy profile to support billing and settlement

Table 249 shows all attributes of ChargeProfileData.

Table 249 – Attributes of MarketResults::ChargeProfileData

name	type	description
sequence	Integer	The sequence number of the profile.
timeStamp	DateTime	The date and time of an interval.
value	Float	The value of an interval given a profile type (amount, price, or quantity), subject to the UOM.

Table 250 shows all association ends of ChargeProfileData with other classes.

Table 250 – Association ends of MarketResults::ChargeProfileData with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] BillDeterminant	BillDeterminant	
[0..*]	[0..1] ChargeProfile	ChargeProfile	

6.5.6.3.6 CommitmentClearing

Models results of market clearing which call for commitment of units.

Table 251 shows all attributes of CommitmentClearing.

Table 251 – Attributes of MarketResults::CommitmentClearing

name	type	description
intervalEndTime	DateTime	inherited from: MarketFactors
intervalStartTime	DateTime	inherited from: MarketFactors
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 252 shows all association ends of CommitmentClearing with other classes.

Table 252 – Association ends of MarketResults::CommitmentClearing with other classes

[mult from]	[mult to] name	type	description
[1..*]	[1..*] Commitments	Commitments	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	inherited from: MarketFactors
[0..*]	[0..1] Market	Market	inherited from: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.3.7 Commitments root class

Provides the necessary information (on a resource basis) to capture the Startup/Shutdown commitment results. This information is relevant to all markets.

Table 253 shows all attributes of Commitments.

Table 253 – Attributes of MarketResults::Commitments

name	type	description
commitmentType	CommitmentType	the type of UC status (self commitment, ISO commitment, or SCUC commitment)
instructionCost	Float	Total cost associated with changing the status of the resource.
instructionType	AutomaticDisplnstTypeCo mmitment	Indicator of either a Start-Up or a Shut-Down.
intervalEndTime	DateTime	End time for the commitment period. This will be on an interval boundary.
intervalStartTime	DateTime	Start time for the commitment period. This will be on an interval boundary.
minStatusChangeTime	Integer	SCUC commitment period start-up time. Calculated start up time based on the StartUpTimeCurve provided with the Bid. This is a combination of StartUp time bid and Unit down time. Units is minutes
noLoadCost	Float	Unit no load cost in case of energy commodity
updateTimeStamp	DateTime	
updateType	MQSCHGType	
updateUser	String	

Table 254 shows all association ends of Commitments with other classes.

Table 254 – Association ends of MarketResults::Commitments with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] RegisteredResource	RegisteredResource	
[1..*]	[1..*] CommitmentClearing	CommitmentClearing	

6.5.6.3.8 ConstraintClearing

Groups all items associated with Binding Constraints and Constraint Violations per interval and market.

Table 255 shows all attributes of ConstraintClearing.

Table 255 – Attributes of MarketResults::ConstraintClearing

name	type	description
intervalEndTime	DateTime	inherited from: MarketFactors
intervalStartTime	DateTime	inherited from: MarketFactors
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 256 shows all association ends of ConstraintClearing with other classes.

Table 256 – Association ends of MarketResults::ConstraintClearing with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..*] ConstraintResults	ConstraintResults	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	inherited from: MarketFactors
[0..*]	[0..1] Market	Market	inherited from: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.3.9 ConstraintResults

Provides the Market results for the constraint processing for either the DAM or RTM. The data includes the constraint type (binding or violated), the solved value for the constraint, and the associated shadow price.

Table 257 shows all attributes of ConstraintResults.

Table 257 – Attributes of MarketResults::ConstraintResults

name	type	description
baseFlow	Float	Branch base Power Flow.
BGLimit	Float	This value is determined in DA and RTM. The SCUC optimization ensures that the MW flow on the Branch Group will not exceed this limit in the relevant direction.
BGTRResCap	Float	Branch Group TR Reservation Capacity – This value is determined in DA and RTM. It is the amount of spare transmission capacity that is left for the TR holder to use.
bindingLimit	Float	MW Limit.
clearedValue	Float	Cleared MW.
competitivePathConstraint	YesNo	Non-competitive path constraint Flag" (Y/N) indicating whether the shadow price on a non-competitive path was non-zero.
constraintType	ResultsConstraintType	Type of constraint.
limitFlag	ConstraintLimitType	Limit flag ('Maximum', 'Minimum').
optimizationFlag	YesNo	Included in optimization Y/N.
overloadMW	Float	Transmission overload MW.
percentMW	Float	Actual MW flow as percent of limit.
shadowPrice	Float	Shadow Price (\$/MW) for the commodity. Shadow price for the corresponding constraint.
updateTimeStamp	DateTime	Update time stamp.
updateType	MQSCHGType	MQS change type.
updateUser	String	Updated user.
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 258 shows all association ends of ConstraintResults with other classes.

Table 258 – Association ends of MarketResults::ConstraintResults with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] MktContingency	MktContingency	
[0..*]	[0..1] ConstraintClearing	ConstraintClearing	
[1..*]	[1..1] Flowgate	Flowgate	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.3.10 DopInstruction root class

Provides the necessary information (on a resource basis) to capture the Dispatch Operating Point (DOP) results on a Dispatch interval. This information is only relevant to the RT interval market.

Table 259 shows all attributes of DopInstruction.

Table 259 – Attributes of MarketResults::DopInstruction

name	type	description
mwDOP	ActivePower	Dispatched Operating Point (MW)
timestampDOP	DateTime	DOP time stamp
plotPriority	Integer	A value used to establish priority of the DOP when plotting. This is only applicable when two DOPs exist for the same time, but with different MW values. E.g. when indicating a step in the curve. Its used to determine if the curve steps up or down.
runIndicatorDOP	YesNo	Indication of DOP validity. Shows the DOP is calculated from the latest run (YES). A NO indicator shows that the DOP is copied from a previous execution. Up to 2 intervals can be missed.
updateUser	String	
updateTimeStamp	DateTime	
updateType	MQSCHGType	

Table 260 shows all association ends of DopInstruction with other classes.

Table 260 – Association ends of MarketResults::DopInstruction with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] RegisteredResource	RegisteredResource	
[1..*]	[1..*] InstructionClearingDOP	InstructionClearingDOP	

6.5.6.3.11 DotInstruction root class

Provides the necessary information (on a resource basis) to capture the Dispatch Operating Target (DOT) results on a Dispatch interval. This information is only relevant to the RT interval market.

Table 261 shows all attributes of DotInstruction.

Table 261 – Attributes of MarketResults::DotInstruction

name	type	description
actualRampRate	Float	Actual ramp rate.
compliantIndicator	YesNo	Flag indicating whether or not the resource was in compliance with the instruction (plus/minus 10%). Directs if a unit is allowed to set the price (ex-post pricing).
DOT	Float	Dispatch operating target value.
economicMaxOverride	Float	Economic Max Limit override for unit, this value is null, if it is not, this value overrides the Energy column value. Allows dispatcher to override the unit's energy value.
expectedEnergy	Float	Expected energy.

name	type	description
generatorPerformanceDegree	Float	The Degree of Generator Performance (DGP) used for the unit. Measure of how a generator responds to raise /lower signals. Calculated every five minutes.
hourAheadSchedEnergy	Float	HASP results.
hourlySchedule	Float	Hourly Schedule (DA Energy Schedule).
instructionTime	DateTime	The date/time for the instruction.
maximumEmergencyInd	Boolean	True if maximum emergency limit activated; false otherwise. If unit is requested to move up to its max emergency limit., this flag is set to true.
meterLoadFollowing	Float	Meter Sub System Load Following.
nonRampRestrictedMW	Float	Desired MW that is not ramp restricted. If no ramp rate limit existed for the unit, this is the MW value that the unit was requested to move to.
nonSpinReserve	Float	Non Spin Reserve used to procure energy.
previousDOTTimeStamp	DateTime	Timestamp when the previous DOT value was issued.
rampRateLimit	Float	The ramp rate limit for the unit in MWs per minute. Participant bidding data.
regulationStatus	YesNo	Regulation Status (Yes/No).
spinReserve	Float	Spin Reserve used to procure energy.
standardRampEnergy	Float	Standard ramping energy (MWH).
supplementalEnergy	Float	Supplemental Energy procure by Real Time Dispatch.
unitStatus	Integer	Output results from the case identifying the reason the unit was committed by the software.

Table 262 shows all association ends of DotInstruction with other classes.

Table 262 – Association ends of MarketResults::DotInstruction with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] RegisteredResource	RegisteredResource	
[1..*]	[1..*] InstructionClearingDOT	InstructionClearingDOT	

6.5.6.3.12 ExPostLoss

Model of ex-post calculation of MW losses.

Table 263 shows all attributes of ExPostLoss.

Table 263 – Attributes of MarketResults::ExPostLoss

name	type	description
intervalEndTime	DateTime	inherited from: MarketFactors
intervalStartTime	DateTime	inherited from: MarketFactors
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document

name	type	description
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 264 shows all association ends of ExPostLoss with other classes.

Table 264 – Association ends of MarketResults::ExPostLoss with other classes

[mult from]	[mult to] name	type	description
[1..1]	[0..*] ExPostLossResults	ExPostLossResults	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	inherited from: MarketFactors
[0..*]	[0..1] Market	Market	inherited from: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.3.13 ExPostLossResults root class

Model results of ex-post calculation of MW losses. Summarizes loss in two categories losses on the the extra high voltage transmission and total losses. Calculated for each subcontrol area.

Table 265 shows all attributes of ExPostLossResults.

Table 265 – Attributes of MarketResults::ExPostLossResults

name	type	description
totalLossMW	Float	Total MW losses in the company Attribute Usage: Information purposes – Output of LPA engine.
ehvLossMW	Float	EHV MW losses in the company Attribute Usage: Information purposes – Output of LPA engine.

Table 266 shows all association ends of ExPostLossResults with other classes.

Table 266 – Association ends of MarketResults::ExPostLossResults with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] ExPostLoss	ExPostLoss	
[0..*]	[0..1] SubControlArea	SubControlArea	

6.5.6.3.14 ExPostMarketRegion

Model of ex-post calculation of cleared MW on a regional basis

Table 267 shows all attributes of ExPostMarketRegion.

Table 267 – Attributes of MarketResults::ExPostMarketRegion

name	type	description
intervalEndTime	DateTime	inherited from: MarketFactors
intervalStartTime	DateTime	inherited from: MarketFactors
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 268 shows all association ends of ExPostMarketRegion with other classes.

Table 268 – Association ends of MarketResults::ExPostMarketRegion with other classes

[mult from]	[mult to] name	type	description
[1..1]	[0..1] ExPostMarketRegionResults	ExPostMarketRegionResults	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	inherited from: MarketFactors
[0..*]	[0..1] Market	Market	inherited from: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.3.15 ExPostMarketRegionResults root class

Model of expost calculation of cleared MW on a region basis. Includes cleared price

Table 269 shows all attributes of ExPostMarketRegionResults.

Table 269 – Attributes of MarketResults::ExPostMarketRegionResults

name	type	description
exPostClearedPrice	Float	

Table 270 shows all association ends of ExPostMarketRegionResults with other classes.

Table 270 – Association ends of MarketResults::ExPostMarketRegionResults with other classes

[mult from]	[mult to] name	type	description
[0..1]	[1..1] ExPostMarketRegion	ExPostMarketRegion	
[0..*]	[1..1] MarketRegion	MarketRegion	

6.5.6.3.16 ExPostPricing

Model of ex-post pricing of nodes

Table 271 shows all attributes of ExPostPricing.

Table 271 – Attributes of MarketResults::ExPostPricing

name	type	description
energyPrice	Float	market energy price
intervalEndTime	DateTime	inherited from: MarketFactors
intervalStartTime	DateTime	inherited from: MarketFactors
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 272 shows all association ends of ExPostPricing with other classes.

Table 272 – Association ends of MarketResults::ExPostPricing with other classes

[mult from]	[mult to] name	type	description
[1..1]	[0..*] ExPostResults	ExPostPricingResults	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	inherited from: MarketFactors
[0..*]	[0..1] Market	Market	inherited from: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.3.17 ExPostPricingResults root class

Model of ex-post pricing of nodes. Includes LMP information, pnode based.

Table 273 shows all attributes of ExPostPricingResults.

Table 273 – Attributes of MarketResults::ExPostPricingResults

name	type	description
congestLMP	Float	Congestion component of Location Marginal Price (LMP) in monetary units per MW; congestion component of the hourly LMP at a specific pricing node Attribute Usage: Result of the Security, Pricing, and Dispatch (SPD)/Simultaneous Feasibility Test (SFT) software and denotes the hourly congestion component of LMP for each pricing node.
Imp	Float	5 min weighted average LMP; the Location Marginal Price of the Pnode for which price calculation is carried out. Attribute Usage: 5 min weighted average LMP to be displayed on UI
lossLMP	Float	Loss component of Location Marginal Price (LMP) in monetary units per MW; loss component of the hourly LMP at a specific pricing node Attribute Usage: Result of the Security, Pricing, and Dispatch (SPD)/Simultaneous Feasibility Test (SFT) software and denotes the hourly loss component of LMP for each pricing node.

Table 274 shows all association ends of ExPostPricingResults with other classes.

Table 274 – Association ends of MarketResults::ExPostPricingResults with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] ExPostPricing	ExPostPricing	
[0..*]	[1..1] Pnode	Pnode	

6.5.6.3.18 ExPostResource

Model of ex-post pricing of resources.

Table 275 shows all attributes of ExPostResource.

Table 275 – Attributes of MarketResults::ExPostResource

name	type	description
intervalEndTime	DateTime	inherited from: MarketFactors
intervalStartTime	DateTime	inherited from: MarketFactors
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 276 shows all association ends of ExPostResource with other classes.

Table 276 – Association ends of MarketResults::ExPostResource with other classes

[mult from]	[mult to] name	type	description
[1..1]	[0..*] ExPostResourceResults	ExPostResourceResults	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	inherited from: MarketFactors
[0..*]	[0..1] Market	Market	inherited from: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.3.19 ExPostResourceResults root class

Model of ex-post pricing of resources contains components of LMPs: energy, congestion, loss. Resource based.

Table 277 shows all attributes of ExPostResourceResults.

Table 277 – Attributes of MarketResults::ExPostResourceResults

name	type	description
congestionLMP	Float	LMP component in USD (deprecated)
desiredMW	Float	Desired output of unit
dispatchRate	Float	Unit Dispatch rate from real time unit dispatch.
Imp	Float	LMP (Local Marginal Price) in USD at the equipment (deprecated)
lossLMP	Float	loss Imp (deprecated)
maxEconomicMW	Float	Economic Maximum MW
minEconomicMW	Float	Economic Minimum MW
resourceMW	Float	Current MW output of the equipment Attribute Usage: Information purposes – Information purposes – Output of LPA engine.
status	EquipmentStatusType	Status of equipment

Table 278 shows all association ends of ExPostResourceResults with other classes.

Table 278 – Association ends of MarketResults::ExPostResourceResults with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] RegisteredResource	RegisteredResource	
[0..*]	[1..1] ExPostResource	ExPostResource	

6.5.6.3.20 GeneralClearing

Model of clearing result of the market run at the market level. Identifies interval

Table 279 shows all attributes of GeneralClearing.

Table 279 – Attributes of MarketResults::GeneralClearing

name	type	description
intervalEndTime	DateTime	inherited from: MarketFactors
intervalStartTime	DateTime	inherited from: MarketFactors
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject

name	type	description
name	String	inherited from: IdentifiedObject

Table 280 shows all association ends of GeneralClearing with other classes.

Table 280 – Association ends of MarketResults::GeneralClearing with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..*] GeneralClearingResults	GeneralClearingResults	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	inherited from: MarketFactors
[0..*]	[0..1] Market	Market	inherited from: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.3.21 GeneralClearingResults root class

Provides the adjusted load forecast value on a load forecast zone basis.

Table 281 shows all attributes of GeneralClearingResults.

Table 281 – Attributes of MarketResults::GeneralClearingResults

name	type	description
loadForecast	ActivePower	Load Prediction/Forecast (MW), by Time Period (5', 10', 15')
totalLoad	Float	Amount of load in the control zone Attribute Usage: hourly load value for the specific area
totalNetInterchange	Float	Amount of interchange for the control zone Attribute Usage: hourly interchange value for the specific area

Table 282 shows all association ends of GeneralClearingResults with other classes.

Table 282 – Association ends of MarketResults::GeneralClearingResults with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] GeneralClearing	GeneralClearing	
[0..*]	[0..1] SubControlArea	SubControlArea	

6.5.6.3.22 InstructionClearing

Model of market clearing, relating to commitment instructions. Identifies interval

Table 283 shows all attributes of InstructionClearing.

Table 283 – Attributes of MarketResults::InstructionClearing

name	type	description
intervalEndTime	DateTime	inherited from: MarketFactors
intervalStartTime	DateTime	inherited from: MarketFactors
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 284 shows all association ends of InstructionClearing with other classes.

Table 284 – Association ends of MarketResults::InstructionClearing with other classes

[mult from]	[mult to] name	type	description
[1..*]	[1..*] Instructions	Instructions	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	inherited from: MarketFactors
[0..*]	[0..1] Market	Market	inherited from: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.3.23 InstructionClearingDOP

Model of market clearing, related to Dispatch Operating Point. Identifies interval

Table 285 shows all attributes of InstructionClearingDOP.

Table 285 – Attributes of MarketResults::InstructionClearingDOP

name	type	description
intervalEndTime	DateTime	inherited from: MarketFactors
intervalStartTime	DateTime	inherited from: MarketFactors
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document

name	type	description
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 286 shows all association ends of InstructionClearingDOP with other classes.

Table 286 – Association ends of MarketResults::InstructionClearingDOP with other classes

[mult from]	[mult to] name	type	description
[1..*]	[1..*] DopInstruction	DopInstruction	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	inherited from: MarketFactors
[0..*]	[0..1] Market	Market	inherited from: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.3.24 InstructionClearingDOT

Model of market clearing, related to Dispatch Operating Target (model of anticipatory dispatch). Identifies interval

Table 287 shows all attributes of InstructionClearingDOT.

Table 287 – Attributes of MarketResults::InstructionClearingDOT

name	type	description
contingencyActive	YesNo	Indication that the system is currently operating in a contingency mode.
dispatchMode	AutomaticDispatchMode	
intervalEndTime	DateTime	inherited from: MarketFactors
intervalStartTime	DateTime	inherited from: MarketFactors
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document

name	type	description
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 288 shows all association ends of InstructionClearingDOT with other classes.

Table 288 – Association ends of MarketResults::InstructionClearingDOT with other classes

[mult from]	[mult to] name	type	description
[1..*]	[1..*] DotInstruction	DotInstruction	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	inherited from: MarketFactors
[0..*]	[0..1] Market	Market	inherited from: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.3.25 Instructions root class

Provides the necessary information (on a resource basis) to capture the Startup/Shutdown instruction results. This information is relevant to the DA Market (RUC only) as well as the RT Market (HASP, Pre-dispatch, and Interval).

Table 289 shows all attributes of Instructions.

Table 289 – Attributes of MarketResults::Instructions

name	type	description
bindingDOT	Float	
bindingInstruction	YesNo	
instructionCost	Float	Total cost associated with changing the status of the resource.
instructionSource	MQSInstructionSource	instruction source for market quality results (INS, ACT)
instructionStartTime	DateTime	Time the resource should be at Pmin (for start ups). Time the resource is off line.
instructionType	AutomaticDisplnstTypeCommitment	Indicator of either a Start-Up or a Shut-Down.
manuallyBlocked	YesNo	Manually Blocked Indicator (Yes/No). The instruction has been blocked by an Operator.
minStatusChangeTime	Integer	Minimum start up time required to bring the unit online (minutes). SCUC commitment period start-up time. Calculated start up time based on the StartUpTimeCurve provided with the Bid. This is a combination of StartUp time bid and

name	type	description
		Unit down time. Units is minutes
updateTimeStamp	DateTime	
updateType	MQSCHGType	
updateUser	String	

Table 290 shows all association ends of Instructions with other classes.

Table 290 – Association ends of MarketResults::Instructions with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] RegisteredResource	RegisteredResource	
[1..*]	[1..*] InstructionClearing	InstructionClearing	

6.5.6.3.26 LoadFollowingOperatorInput root class

Model of load following capabilities that are entered by operators on a temporary basis. Related to Registered Resources in Metered Subsystems

Table 291 shows all attributes of LoadFollowingOperatorInput.

Table 291 – Attributes of MarketResults::LoadFollowingOperatorInput

name	type	description
dataEntryTimeStamp	DateTime	Time the data entry was performed
tempLoadFollowingUpManualCap	Float	temporarily manually entered LFU capacity.
tempLoadFollowingDownManualCap	Float	temporarily manually entered LFD capacity
updateUser	String	
updateTimeStamp	DateTime	
updateType	MQSCHGType	

Table 292 shows all association ends of LoadFollowingOperatorInput with other classes.

Table 292 – Association ends of MarketResults::LoadFollowingOperatorInput with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] RegisteredResource	RegisteredResource	

6.5.6.3.27 LossClearing

RT only and is published on 5 minute intervals for the previous RT time interval results.

Table 293 shows all attributes of LossClearing.

Table 293 – Attributes of MarketResults::LossClearing

name	type	description
intervalEndTime	DateTime	inherited from: MarketFactors
intervalStartTime	DateTime	inherited from: MarketFactors
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 294 shows all association ends of LossClearing with other classes.

Table 294 – Association ends of MarketResults::LossClearing with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..*] LossClearingResults	LossClearingResults	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	inherited from: MarketFactors
[0..*]	[0..1] Market	Market	inherited from: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.3.28 LossClearingResults root class

Provides the MW loss for RUC Zones, subcontrol areas, and the total loss.

Table 295 shows all attributes of LossClearingResults.

Table 295 – Attributes of MarketResults::LossClearingResults

name	type	description
lossMW	Float	

Table 296 shows all association ends of LossClearingResults with other classes.

Table 296 – Association ends of MarketResults::LossClearingResults with other classes

[mult from]	[mult to] name	type	description
[1..*]	[0..1] SubControlArea	SubControlArea	
[0..*]	[0..1] LossClearing	LossClearing	
[0..*]	[0..1] HostControlArea	HostControlArea	
[0..*]	[0..1] RUCZone	RUCZone	

6.5.6.3.29 MarketRegionResults root class

Provides all Region Ancillary Service results for the DA and RT markets. The specific data is commodity type (Regulation Up, Regulation Down, Spinning Reserve, Non-spinning Reserve, or Total Up reserves) based for the cleared MW, cleared price, and total capacity required for the region.

Table 297 shows all attributes of MarketRegionResults.

Table 297 – Attributes of MarketResults::MarketRegionResults

name	type	description
clearedMW	Float	Cleared generation Value in MW. For AS, this value is clearedMW = AS Total. For AS, clearedMW – selfScheduleMW = AS Procured
clearedPrice	Float	Marginal Price (\$/MW) for the commodity (Energy, Regulation Up, Regulation Down, Spinning Reserve, or Non-spinning reserve) based on the pricing run.
dispatchCtMW	Float	Dispatchable MW for Combustion units.
dispatchHydroMW	Float	Dispatchable MW for Hydro units.
dispatchRate	Float	Dispatch rate in MW/minutes.
dispatchSteamMW	Float	Dispatchable MW for Steam units.
imbalanceEnergyBias	Float	Imbalance Energy Bias (MW) by Time Period (5' only)
limitFlag	ResourceLimitIndicator	Locational AS Flags indicating whether the Upper or Lower Bound limit of the AS regional procurement is binding
lumpyIndicator	YesNo	The "Lumpy Flag"(Y/N) indicates whether the resource that sets the price is a lumpy generator by hour over the time horizon. Only applicable for the Day Ahead Market
maxSufficiencyIndex	Float	Region requirement maximum limit
minSufficiencyIndex	Float	Region requirement minimum limit
reqMaxMW	Float	Region requirement maximum limit
reqMinMW	Float	Region requirement minimum limit
selfScheduleMW	Float	Aof AS, selfScheduleMW = AS Self-Provided

Table 298 shows all association ends of MarketRegionResults with other classes.

Table 298 – Association ends of MarketResults::MarketRegionResults with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..1] MarketProduct	MarketProduct	
[1..*]	[0..1] AncillaryServiceClearing	AncillaryServiceClearing	
[1..*]	[1..1] MarketRegion	MarketRegion	

6.5.6.3.30 MarketResults root class

This class holds elements that are single values for the entire market time horizon. That is, for the Day Ahead market, there is 1 value for each element, not hourly based. Is a summary of the market run

Table 299 shows all attributes of MarketResults.

Table 299 – Attributes of MarketResults::MarketResults

name	type	description
startUpCost	Float	Total Start-up Cost (\$) over the time horizon
minimumLoadCost	Float	Total Minimum Load Cost (\$) over the time horizon
contingentOperatingResAvail	YesNo	Global Contingent Operating Reserve Availability Indicator (Yes/No)
energyCost	Float	Total Energy Cost (\$) over the time horizon
totalCost	Float	Total Cost (Energy + AS) cost (\$) by over the time horizon
ancillarySvcCost	Float	Total AS Cost (i.e., payment) (\$) over the time horizon
totalRucCost	Float	The total RUC capacity cost for this interval

Table 300 shows all association ends of MarketResults with other classes.

Table 300 – Association ends of MarketResults::MarketResults with other classes

[mult from]	[mult to] name	type	description
[0..1]	[1..1] EnergyMarket	EnergyMarket	

6.5.6.3.31 MarketStatement

A statement is a roll up of statement line items. Each statement along with its line items provide the details of specific charges at any given time. Used by Billing and Settlement

Table 301 shows all attributes of MarketStatement.

Table 301 – Attributes of MarketResults::MarketStatement

name	type	description
tradeDate	DateTime	The date of which Settlement is run.
referenceNumber	String	The version number of previous statement (in the case of true up).
start	DateTime	The start of a bill period.
end	DateTime	The end of a bill period.
transactionDate	DateTime	The date of which this statement is issued.
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 302 shows all association ends of MarketStatement with other classes.

Table 302 – Association ends of MarketResults::MarketStatement with other classes

[mult from]	[mult to] name	type	description
[1..1]	[0..*] MarketStatementLineItem	MarketStatementLineItem	
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.3.32 MarketStatementLineItem

An individual line item on a statement.

Table 303 shows all attributes of MarketStatementLineItem.

Table 303 – Attributes of MarketResults::MarketStatementLineItem

name	type	description
intervalNumber	String	The number of intervals.
intervalDate	DateTime	The date of which the settlement is run.
quantityUOM	String	The unit of measure for the quantity element of the line item.
previousAmount	Float	Previous settlement amount.

name	type	description
currentAmount	Float	Current settlement amount.
netAmount	Float	Net settlement amount.
previousQuantity	Float	Previous settlement quantity, subject to the UOM.
currentQuantity	Float	Current settlement quantity, subject to the UOM.
netQuantity	Float	Net settlement quantity, subject to the UOM.
previousPrice	Float	Previous settlement price.
currentPrice	Float	Current settlement price.
netPrice	Float	Net settlement price.
previousISOAmount	Float	Previous ISO settlement amount.
currentISOAmount	Float	Current ISO settlement amount.
netISOAmount	Float	Net ISO settlement amount.
previousISOQuantity	Float	Previous ISO settlement quantity.
currentISOQuantity	Float	Current ISO settlement quantity.
netISOQuantity	Float	Net ISO settlement quantity.
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 304 shows all association ends of MarketStatementLineItem with other classes.

**Table 304 – Association ends of MarketResults::
MarketStatementLineItem with other classes**

[mult from]	[mult to] name	type	description
[0..*]	[0..*] MktUserAttribute	MktUserAttribute	
[0..*]	[1..1] MarketStatement	MarketStatement	
[0..*]	[0..1] ContainerMarketStatementLineItem	MarketStatementLineItem	
[0..1]	[0..1] PassThroughBill	PassThroughBill	
[0..1]	[0..*] ComponentMarketStatementLineItem	MarketStatementLineItem	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.3.33 MitigatedBid

Mitigated bid results posted for a given settlement period.

Table 305 shows all attributes of MitigatedBid.

Table 305 – Attributes of MarketResults::MitigatedBid

name	type	description
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 306 shows all association ends of MitigatedBid with other classes.

Table 306 – Association ends of MarketResults::MitigatedBid with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..*] MitigatedBidClearing	MitigatedBidClearing	
[0..*]	[0..1] Bid	Bid	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.3.34 MitigatedBidClearing

Model of market power mitigation through reference or mitigated bids. Interval based.

Table 307 shows all attributes of MitigatedBidClearing.

Table 307 – Attributes of MarketResults::MitigatedBidClearing

name	type	description
intervalEndTime	DateTime	inherited from: MarketFactors
intervalStartTime	DateTime	inherited from: MarketFactors
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 308 shows all association ends of MitigatedBidClearing with other classes.

Table 308 – Association ends of MarketResults::MitigatedBidClearing with other classes

[mult from]	[mult to] name	type	description
[1..*]	[0..*] MPMResourceStatus	MPMResourceStatus	
[1..*]	[0..*] MitigatedBid	MitigatedBid	
[1..*]	[0..*] RMRDetermination	RMRDetermination	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	inherited from: MarketFactors
[0..*]	[0..1] Market	Market	inherited from: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.3.35 MitigatedBidSegment root class

Model of mitigated bid. Indicates segment of piece-wise linear bid, that has been mitigated

Table 309 shows all attributes of MitigatedBidSegment.

Table 309 – Attributes of MarketResults::MitigatedBidSegment

name	type	description
intervalStartTime	DateTime	
thresholdType	String	
segmentNumber	Integer	Mitigated Bid Segment Number
segmentMW	Float	Mitigated bid segment MW value

Table 310 shows all association ends of MitigatedBidSegment with other classes.

Table 310 – Association ends of MarketResults::MitigatedBidSegment with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] Bid	Bid	

6.5.6.3.36 MPMClearing

Model of results of Market Power tests, and possible mitigation. Interval based

Table 311 shows all attributes of MPMClearing.

Table 311 – Attributes of MarketResults::MPMClearing

name	type	description
LMPMFinalFlag	YesNo	
SMPMFinalFlag	YesNo	
mitigationOccuredFlag	YesNo	

name	type	description
intervalEndTime	DateTime	inherited from: MarketFactors
intervalStartTime	DateTime	inherited from: MarketFactors
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 312 shows all association ends of MPMClearing with other classes.

Table 312 – Association ends of MarketResults::MPMClearing with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..*] MPMTestResults	MPMTestResults	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	inherited from: MarketFactors
[0..*]	[0..1] Market	Market	inherited from: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.3.37 MPMResourceStatus root class

Model of results of Market Power tests, gives status of resource for the associated interval

Table 313 shows all attributes of MPMResourceStatus.

Table 313 – Attributes of MarketResults::MPMResourceStatus

name	type	description
resourceStatus	String	Interval Test Status 'N' – not applicable

Table 314 shows all association ends of MPMResourceStatus with other classes.

Table 314 – Association ends of MarketResults::MPMResourceStatus with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] RegisteredResource	RegisteredResource	
[0..*]	[1..*] MitigatedBidClearing	MitigatedBidClearing	
[0..*]	[1..1] MPMTTestCategory	MPMTTestCategory	

6.5.6.3.38 MPMTTestResults root class

Provides the outcome and margin percent (as appropriate) result data for the MPM tests. There are relationships to Zone for Designated Congestion Area Tests, CurveSchedData for bid segment tests, to the SubControlArea for the system wide level tests, and Rnodes for the LMPM impact tests.

Table 315 shows all attributes of MPMTTestResults.

Table 315 – Attributes of MarketResults::MPMTTestResults

name	type	description
outcome	MPMTTestOutcome	The results of the test. For the Price, Impact, and Conduct tests, typical values are NA, Pass, Fail, Disable, or Skip.
marginPercent	PerCent	Used to show the Margin % result of the Impact test

Table 316 shows all association ends of MPMTTestResults with other classes.

Table 316 – Association ends of MarketResults::MPMTTestResults with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] MPMClearing	MPMClearing	
[1..*]	[1..1] AggregatedRnode	AggregatedRnode	
[0..*]	[1..1] MPMTTestCategory	MPMTTestCategory	

6.5.6.3.39 PassThroughBill

Pass Through Bill is used for:

- 1) Two sided charge transactions with or without ISO involvement (hence the ?pass thru?)
- 2) Specific direct charges or payments that are calculated outside or provided directly to settlements
- 3) Specific charge bill determinants that are externally supplied and used in charge calculations

Table 317 shows all attributes of PassThroughBill.

Table 317 – Attributes of MarketResults::PassThroughBill

name	type	description
adjustedAmount	Money	
amount	Money	The charge amount of the product/service.
billedTo	String	The company to which the PTB transaction is billed.
billEnd	DateTime	Bill period end date
billRunType	String	The settlement run type, for example: prelim, final, and rerun.
billStart	DateTime	Bill period start date
effectiveDate	DateTime	The effective date of the transaction
isDisputed	Boolean	Disputed transaction indicator
isProfiled	Boolean	A flag indicating whether there is a profile data associated with the PTB.
paidTo	String	The company to which the PTB transaction is paid.
previousEnd	DateTime	The previous bill period end date
previousStart	DateTime	The previous bill period start date
price	Money	The price of product/service.
productCode	String	The product identifier for determining the charge type of the transaction.
providedBy	String	The company by which the PTB transaction service is provided.
quantity	FloatQuantity	The product quantity.
serviceEnd	DateTime	The end date of service provided, if periodic.
serviceStart	DateTime	The start date of service provided, if periodic.
soldTo	String	The company to which the PTB transaction is sold.
taxAmount	Money	The tax on services taken.
timeZone	String	The time zone code
tradeDate	DateTime	The trade date
transactionDate	DateTime	The date the transaction occurs.
transactionType	String	The type of transaction. For example, charge customer, bill customer, matching AR/AP, or bill determinant
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 318 shows all association ends of PassThroughBill with other classes.

Table 318 – Association ends of MarketResults::PassThroughBill with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] MktUserAttribute	MktUserAttribute	
[0..1]	[0..1] MarketStatementLineItem	MarketStatementLineItem	
[0..1]	[0..*] ChargeProfiles	ChargeProfile	
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.3.40 PnodeClearing

Pricing node clearing results posted for a given settlement period.

Table 319 shows all attributes of PnodeClearing.

Table 319 – Attributes of MarketResults::PnodeClearing

name	type	description
intervalEndTime	DateTime	inherited from: MarketFactors
intervalStartTime	DateTime	inherited from: MarketFactors
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 320 shows all association ends of PnodeClearing with other classes.

Table 320 – Association ends of MarketResults::PnodeClearing with other classes

[mult from]	[mult to] name	type	description
[0..1]	[1..*] PnodeResults	PnodeResults	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	inherited from: MarketFactors
[0..*]	[0..1] Market	Market	inherited from: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document

[mult from]	[mult to] name	type	description
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.3.41 PnodeResults root class

Provides the total price, the cost component, the loss component, and the congestion component for Pnodes for the forward and real time markets. There are several prices produced based on the run type (MPM, RUC, Pricing, or Scheduling/Dispatch).

Table 321 shows all attributes of PnodeResults.

Table 321 – Attributes of MarketResults::PnodeResults

name	type	description
marginalClearingPrice	Float	Locational Marginal Price (LMP) (\$/MWh)
costLMP	Float	Cost component of Locational Marginal Pricing (LMP) in monetary units per MW.
lossLMP	Float	Loss component of Location Marginal Price (LMP) in monetary units per MW.
congestLMP	Float	Congestion component of Location Marginal Price (LMP) in monetary units per MW.
scheduledMW	Float	total MW schedule at the pnode
updateUser	String	
updateTimeStamp	DateTime	
updateType	MQSCHGType	

Table 322 shows all association ends of PnodeResults with other classes.

Table 322 – Association ends of MarketResults::PnodeResults with other classes

[mult from]	[mult to] name	type	description
[1..*]	[0..1] PnodeClearing	PnodeClearing	
[1..*]	[0..1] Pnode	Pnode	

6.5.6.3.42 ResourceAwardClearing

Models details of bid and offer market clearing. Class indicates whether a contingency is active and whether the automatic dispatching system is active for this interval of the market solution

Table 323 shows all attributes of ResourceAwardClearing.

Table 323 – Attributes of MarketResults::ResourceAwardClearing

name	type	description
dispatchMode	AutomaticDispatchMode	
contingencyActive	YesNo	Indication that the system is currently operating

name	type	description
		in a contingency mode.
intervalEndTime	DateTime	inherited from: MarketFactors
intervalStartTime	DateTime	inherited from: MarketFactors
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 324 shows all association ends of ResourceAwardClearing with other classes.

Table 324 – Association ends of MarketResults::ResourceAwardClearing with other classes

[mult from]	[mult to] name	type	description
[1..*]	[1..*] ResourceAwardInstruction	ResourceAwardInstruction	
[1..*]	[1..*] RUCAwardInstruction	RUCAwardInstruction	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	inherited from: MarketFactors
[0..*]	[0..1] Market	Market	inherited from: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.3.43 ResourceAwardInstruction root class

Model of market results, instruction for resource. Contains details of award as attributes

Table 325 shows all attributes of ResourceAwardInstruction.

Table 325 – Attributes of MarketResults::ResourceAwardInstruction

name	type	description
awardMW	Float	For DA Energy: Not Applicable; For DA AS: DA AS market award; For RT Energy: Not Applicable; For RT AS: RT AS market award (excluding DA AS market or self-proviison awards)
clearedMW	Float	For DA Energy: Total Schedule = DA market

name	type	description
		schedule + DA self-schedule award; For DA AS: DA Ancillary Service Awards = DA AS market award + DA AS self-provision award; For RT Energy: Total Schedule = RT market schedule + RT self-schedule award; For RT AS: RT Ancillary Service Awards = RT AS self-provision award + RT AS market award + DA AS market award + DA AS self-provision award;
clearedPrice	Float	Marginal Price (\$/MW) for the commodity (Regulation Up, Regulation Down, Spinning Reserve, or Non-spinning reserve) for pricing run.
congestLMP	Float	Congestion component of Location Marginal Price (LMP) in monetary units per MW.
costLMP	Float	Cost component of Locational Marginal Pricing (LMP) in monetary units per MW.
dispatcherAddedMW	Float	The tier2 mw added by dispatcher action Market results of the synchronized reserve market
economicMax	Float	Unit max output for dispatch; bid in economic maximum
economicMin	Float	Unit min output for dispatch; bid in economic minimum
effRegulationDownLimit	Float	Effective Regulation Down Limit (MW)
effRegulationUpLimit	Float	Effective Regulation Up Limit
Imp	Float	Locational marginal price value
lossLMP	Float	Loss component of Location Marginal Price (LMP) in monetary units per MW.
manuallyBlocked	YesNo	Indicates if an award was manually blocked (Y/N). Valid for Spinning and Non-spinning.
marginalResourceIndicator	YesNo	Indicator (Yes / No) that this resource set the price for this dispatch / schedule.
mustRunInd	Boolean	Identifies if the unit was set to must run by the market participant responsible for bidding in the unit
noLoadCost	Float	Unit no-load cost in case of energy commodity
optimalBidCost	Float	Optimal Bid cost
optimalBidPay	Float	Optimal Bid production payment based on LMP
optimalMargin	Float	Optimal Bid production margin
overrideTimeStamp	DateTime	Time the manual data entry occurred.
overrideValue	Float	Provides the ability for the grid operator to override items, such as spin capacity requirements, prior to running the algorithm. This value is market product based (spin, non-spin, reg up, reg down, or RUC).
selfSchedMW	Float	For DA Energy: DA total self-schedule award; For DA AS: DA AS self-provision award; For RT Energy: RT total self-schedule award; For RT AS: RT AS self-provision award (excluding DA AS market or self-provision awards)
startUpCost	Float	Unit start up cost in case of energy commodity
status	String	In or out status of resource

name	type	description
totalRevenue	Float	Total bid revenue (startup_cost + no_load_cost + bid_pay)
updateTimeStamp	DateTime	
updateType	MQSCHGType	
updateUser	String	

Table 326 shows all association ends of ResourceAwardInstruction with other classes.

Table 326 – Association ends of MarketResults::ResourceAwardInstruction with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] RegisteredResource	RegisteredResource	
[1..1]	[0..*] SelfScheduleBreakdown	SelfScheduleBreakdown	
[0..*]	[1..1] MarketProduct	MarketProduct	
[1..*]	[1..*] ClearingResourceAward	ResourceAwardClearing	

6.5.6.3.44 ResourceClearing

Model of market results, including clearing result of resources. Associated with ResourceDispatchResults.

Table 327 shows all attributes of ResourceClearing.

Table 327 – Attributes of MarketResults::ResourceClearing

name	type	description
intervalEndTime	DateTime	inherited from: MarketFactors
intervalStartTime	DateTime	inherited from: MarketFactors
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 328 shows all association ends of ResourceClearing with other classes.

Table 328 – Association ends of MarketResults::ResourceClearing with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..*] ResourceLoadFollowingInst	ResourceLoadFollowingInst	
[0..1]	[1..*] ResourceDispatchResults	ResourceDispatchResults	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	inherited from: MarketFactors
[0..*]	[0..1] Market	Market	inherited from: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.3.45 ResourceDispatchResults root class

The ResourceDispatchResults class provides market results that can be provided to a SC. The specific data provided consists of several indicators such as contingency flags, blocked start up, and RMR dispatch. It also provides the projected overall and the regulating status of the resource.

Table 329 shows all attributes of ResourceDispatchResults.

Table 329 – Attributes of MarketResults::ResourceDispatchResults

name	type	description
blockedDispatch	String	Blocked Dispatch Indicator (Yes/No)
blockedPublishDOP	String	Block sending DOP to ADS (Y/N)
contingencyFlag	YesNo	Contingent Operating Reserve Indicator (Yes/No). Resource participating with AS capacity in contingency dispatch.
limitIndicator	String	indicate which limit is the constraints
lowerLimit	Float	resource energy ramping lower limit
maxRampRate	Float	maximum ramp rate
operatingLimitHigh	Float	The upper operating limit incorporating any derate used by the RTD for the Binding Interval.
operatingLimitLow	Float	The lower operating limit incorporating any derate used by the RTD for the Binding Interval.
penaltyDispatchIndicator	YesNo	Penalty Dispatch Indicator (Yes / No) indicating an un-economic adjustment.
regulatingLimitHigh	Float	The upper regulating limit incorporating any derate used by the RTD for the Binding Interval.
regulatingLimitLow	Float	The lower regulating limit incorporating any derate used by the RTD for the Binding Interval.
resourceStatus	String	Unit Commitment Status (On/Off/Starting)
totalSchedule	Float	Resource total upward schedule. total schedule = En + all AS per resource per interval
updateTimeStamp	DateTime	
updateType	MQSCHGType	
updateUser	String	
upperLimit	Float	resource energy ramping upper limit

Table 330 shows all association ends of ResourceDispatchResults with other classes.

Table 330 – Association ends of MarketResults::ResourceDispatchResults with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] RegisteredResource	RegisteredResource	
[1..*]	[0..1] ResourceClearing	ResourceClearing	

6.5.6.3.46 ResourceLoadFollowingInst root class

Model of market clearing results for resources that bid to follow load

Table 331 shows all attributes of ResourceLoadFollowingInst.

Table 331 – Attributes of MarketResults::ResourceLoadFollowingInst

name	type	description
instructionID	String	Unique instruction id per instruction, assigned by the SC and provided to ADS. ADS passes through.
intervalStartTime	DateTime	The start of the time interval for which requirement is defined.
calcLoadFollowingMW	Float	Weighted average for RTPD and RTCD and same for RTID
dispWindowLowLimt	Float	
dispWindowHighLimt	Float	

Table 332 shows all association ends of ResourceLoadFollowingInst with other classes.

Table 332 – Association ends of MarketResults::ResourceLoadFollowingInst with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] RegisteredResource	RegisteredResource	
[0..*]	[0..1] ResourceClearing	ResourceClearing	

6.5.6.3.47 RMRDetermination root class

Indicates whether unit is a reliability must run unit: required to be on to satisfy Grid Code Reliability criteria, load demand, or voltage support.

Table 333 shows all association ends of RMRDetermination with other classes.

Table 333 – Association ends of MarketResults::RMRDetermination with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..*] MitigatedBidClearing	MitigatedBidClearing	
[0..*]	[0..1] Bid	Bid	

6.5.6.3.48 RMROperatorInput

RMR Operator's entry of the RMR requirement per market interval.

Table 334 shows all attributes of RMROperatorInput.

Table 334 – Attributes of MarketResults::RMROperatorInput

name	type	description
manuallySchedRMRMw	Float	The lower of the original pre-dispatch or the AC run schedule (Also known as the RMR Requirement) becomes the pre-dispatch value.
updateUser	String	
updateTimeStamp	DateTime	
updateType	MQSCHGType	
intervalEndTime	DateTime	inherited from: MarketFactors
intervalStartTime	DateTime	inherited from: MarketFactors
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 335 shows all association ends of RMROperatorInput with other classes.

Table 335 – Association ends of MarketResults::RMROperatorInput with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] RegisteredResource	RegisteredResource	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	inherited from: MarketFactors
[0..*]	[0..1] Market	Market	inherited from: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject

[mult from]	[mult to] name	type	description
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.3.49 RUCAwardInstruction root class

This class models the information about the RUC awards

Table 336 shows all attributes of RUCAwardInstruction.

Table 336 – Attributes of MarketResults::RUCAwardInstruction

name	type	description
clearedPrice	Float	Marginal Price (\$/MW) for the commodity (Regulation Up, Regulation Down, Spinning Reserve, or Non-spinning reserve) for pricing run.
marketProductType	MarketProductType	major product type may include the following but not limited to: Energy Regulation Up Regulation Dn Spinning Reserve Non-Spinning Reserve Operating Reserve
RUCAward	Float	The RUC Award of a resource is the portion of the RUC Capacity that is not under RA or RMR contracts. The RUC Award of a resource is the portion of the RUC Capacity that is eligible for RUC Availability payment.
RUCCapacity	Float	The RUC Capacity of a resource is the difference between (i) the RUC Schedule and (ii) the higher of the DA Schedule and the Minimum Load.
RUCSchedule	Float	The RUC Schedule of a resource is its output level that balances the load forecast used in RUC. The RUC Schedule in RUC is similar to the DA Schedule in DAM.
updateTimeStamp	DateTime	
updateType	MQSCHGType	
updateUser	String	

Table 337 shows all association ends of RUCAwardInstruction with other classes.

Table 337 – Association ends of MarketResults::RUCAwardInstruction with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] RegisteredResource	RegisteredResource	
[1..*]	[1..*] ClearingResourceAward	ResourceAwardClearing	

6.5.6.3.50 SelfScheduleBreakdown root class

Model of Self Schedules Results. Includes self schedule MW, and type of self schedule for each self schedule type included in total self schedule MW value found in ResourceAwardInstruction.

Table 338 shows all attributes of SelfScheduleBreakdown.

Table 338 – Attributes of MarketResults::SelfScheduleBreakdown

name	type	description
selfSchedMW	Float	Cleared value for the specific self schedule type listed.
selfSchedType	SelfScheduleBreakdownType	Self schedule breakdown type.

Table 339 shows all association ends of SelfScheduleBreakdown with other classes.

Table 339 – Association ends of MarketResults::SelfScheduleBreakdown with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] ResourceAwardInstruction	ResourceAwardInstruction	

6.5.6.3.51 Settlement

Specifies a settlement run.

Table 340 shows all attributes of Settlement.

Table 340 – Attributes of MarketResults::Settlement

name	type	description
tradeDate	DateTime	The trade date on which the settlement is run.
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 341 shows all association ends of Settlement with other classes.

Table 341 – Association ends of MarketResults::Settlement with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] MarketInvoiceLineItem	MarketInvoiceLineItem	
[0..*]	[0..*] MarketLedgerEntry	MarketLedgerEntry	
[0..*]	[0..1] EnergyMarket	EnergyMarket	
[0..*]	[1..*] MajorChargeGroup	MajorChargeGroup	
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.3.52 TransactionBidClearing

Contains the intervals relevant for the associated TransactionBidResults. For example, Day Ahead cleared results for the transaction bids for each interval of the market day.

Table 342 shows all attributes of TransactionBidClearing.

Table 342 – Attributes of MarketResults::TransactionBidClearing

name	type	description
intervalEndTime	DateTime	inherited from: MarketFactors
intervalStartTime	DateTime	inherited from: MarketFactors
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 343 shows all association ends of TransactionBidClearing with other classes.

Table 343 – Association ends of MarketResults::TransactionBidClearing with other classes

[mult from]	[mult to] name	type	description
[1..1]	[0..*] TransactionBidResults	TransactionBidResults	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	inherited from: MarketFactors

[mult from]	[mult to] name	type	description
[0..*]	[0..1] Market	Market	inherited from: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.6.3.53 TransactionBidResults

Contains the cleared results for each TransactionBid submitted to and accepted by the market.

Table 344 shows all attributes of TransactionBidResults.

Table 344 – Attributes of MarketResults::TransactionBidResults

name	type	description
clearedMW	Float	The market transaction megawatt
clearedPrice	Float	The price of the market transaction
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 345 shows all association ends of TransactionBidResults with other classes.

Table 345 – Association ends of MarketResults::TransactionBidResults with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] TransactionBidClearing	TransactionBidClearing	
[0..*]	[0..1] TransactionBid	TransactionBid	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.7 Package MktDomain

6.5.7.1 General

The MktDomain package is a data dictionary of quantities and units that define datatypes for attributes (properties) that may be used by any class in any other package within MarketOperations.

6.5.7.2 ActionType enumeration

Action type associated with an ActionRequest against a ParticipantInterfaces::Trade.

Table 346 shows all literals of ActionType.

Table 346 – Literals of MktDomain::ActionType

literal	description
CANCEL	Cancel a trade.

6.5.7.3 AnalogLimitType enumeration

Limit type specified for AnalogLimits.

Table 347 shows all literals of AnalogLimitType.

Table 347 – Literals of MktDomain::AnalogLimitType

literal	description
BranchMediumTerm	Branch Medium Term Limit
BranchLongTerm	Branch Long Term Limit
BranchShortTerm	Branch Short Term Limit
VoltageHigh	Voltage High Limit
VoltageLow	Voltage Low Limit

6.5.7.4 AnodeType enumeration

Aggregated Nodes Types for example:

SYS – System Zone/Region;

RUC – RUC Zone;

LFZ – Load Forecast Zone;

REG – Market Energy/Ancillary Service Region;

AGR – Aggregate Generation Resource;

POD – Point of Delivery;

ALR – Aggregate Load Resource;

LTAC – Load Transmission Access Charge (TAC) Group;

ACA – Adjacent Control Area

ASR – Aggregated System Resource

ECA – Embedded Control Area

Table 348 shows all literals of AnodeType.

Table 348 – Literals of MktDomain::AnodeType

literal	description
SYS	System Zone/Region;
RUC	RUC Zone
LFZ	Load Forecast Zone
REG	Market Energy/Ancillary Service Region;
AGR	Aggregate Generation Resource;
POD	Point of Delivery;
ALR	Aggregate Load Resource;

literal	description
LTAC	Load TransmissionAccessCharge (TAC) Group;
ACA	Adjacent Control Area
ASR	Aggregated System Resource
ECA	Embedded Control Area

6.5.7.5 ApnodeType enumeration

Aggregate Node Types for example:

AG – Aggregated Generation

CPZ – Custom Price Zone

DPZ – Default Price Zone

LAP – Load Aggregation Point

TH – Trading Hub

SYS – System Zone

CA – Control Area

GA – generic aggregation

EHV – 500 kV

GH – generic hub

ZN – zone

INT – Interface

BUS – Bus

Table 349 shows all literals of ApnodeType.

Table 349 – Literals of MktDomain::ApnodeType

literal	description
AG	Aggregated Generation
CPZ	Custom Price Zone
DPZ	Default Price Zone
TH	Trading Hub
SYS	System Zone
CA	Control Area
DCA	Designated Congestion Area
GA	generic aggregation
GH	generic hub
EHV	500 kV – Extra High Voltage aggregate price nodes
ZN	Zone
INT	Interface
BUS	Bus

6.5.7.6 AreaControlMode enumeration

Area's present control mode

Table 350 shows all literals of AreaControlMode.

Table 350 – Literals of MktDomain::AreaControlMode

literal	description
CF	CF = Constant Frequency
CTL	Constant Tie-Line
TLB	Tie-Line Bias
OFF	Off control

6.5.7.7 AutomaticDispatchMode enumeration

Automatic Dispatch mode

Table 351 shows all literals of AutomaticDispatchMode.

Table 351 – Literals of MktDomain::AutomaticDispatchMode

literal	description
INTERVAL	
CONTINGENCY	Contingency occurrence, redispatch of contingency reserves
MANUAL	Operator override

6.5.7.8 AutomaticDisplnstTypeCommitment enumeration

Commitment instruction types.

Table 352 shows all literals of AutomaticDisplnstTypeCommitment.

Table 352 – Literals of MktDomain::AutomaticDisplnstTypeCommitment

literal	description
START_UP	Start up instruction type
SHUT_DOWN	Shut down instruction type

6.5.7.9 BidCalculationBasis enumeration

The basis used to calculate the bid price curve for an energy default bid.

Table 353 shows all literals of BidCalculationBasis.

Table 353 – Literals of MktDomain::BidCalculationBasis

literal	description
LMP_BASED	Based on prices paid at particular pricing location.
COST_BASED	Based on unit generation characteristics and a cost of fuel.
NEGOTIATED	An amount negotiated with the designated Independent Entity.

6.5.7.10 BidMitigationStatus enumeration

For example:

'S' – Mitigated by SMPM because of "misconduct"

'L' – Mitigated by LMPM because of "misconduct"

'R' – Modified by LMPM because of RMR rules

'M' – Mitigated because of "misconduct" both by SMPM and LMPM

'B' – Mitigated because of "misconduct" both by SMPM and modified by LMLM because of RMR rules

'O' – original

Table 354 shows all literals of BidMitigationStatus.

Table 354 – Literals of MktDomain::BidMitigationStatus

literal	description
S	
L	
R	
M	
B	
O	

6.5.7.11 BidMitigationType enumeration

For example:

Initial

Final

Table 355 shows all literals of BidMitigationType.

Table 355 – Literals of MktDomain::BidMitigationType

literal	description
I	
F	

6.5.7.12 BidType enumeration

For example:

DEFAULT_ENERGY_BID

DEFAULT_STARTUP_BID

DEFAULT_MINIMUM_LOAD_BID

Table 356 shows all literals of BidType.

Table 356 – Literals of MktDomain::BidType

literal	description
DEFAULT_ENERGY_BID	
DEFAULT_STARTUP_BID	
DEFAULT_MINIMUM_LOAD_BID	

6.5.7.13 BidTypeRMR enumeration

Bid self schedule type has two types as the required output of requirements and qualified pre-dispatch.

Table 357 shows all literals of BidTypeRMR.

Table 357 – Literals of MktDomain::BidTypeRMR

literal	description
REQUIREMENTS	Qualified pre-dispatch bid self schedule type.
QUALIFIED_PREDISPATCH	Output of requirements bid self schedule type.

6.5.7.14 BranchRatingType enumeration

Operational limit types for branch derates

Table 358 shows all literals of BranchRatingType.

Table 358 – Literals of MktDomain::BranchRatingType

literal	description
Normal	
Emergency	
ShortTerm	Short Term Emergency
LongTerm	Long Term Emergency

6.5.7.15 CheckOutType enumeration

To indicate a check out type such as adjusted capacity or dispatch capacity

Table 359 shows all literals of CheckOutType.

Table 359 – Literals of MktDomain::CheckOutType

literal	description
PRE_HOUR	
PRE_SCHEDULE	
AFTER_THE_FACT	

6.5.7.16 CommitmentType enumeration

For example:

SELF – Self commitment

ISO – New commitment for this market period

UC – Existing commitment that was a hold over from a previous market.

Table 360 shows all literals of CommitmentType.

Table 360 – Literals of MktDomain::CommitmentType

literal	description
SELF	
ISO	
UC	

6.5.7.17 ConstraintLimitType enumeration

Binding constraint results limit type, For example:

MAXIMUM

MINIMUM

Table 361 shows all literals of ConstraintLimitType.

Table 361 – Literals of MktDomain::ConstraintLimitType

literal	description
MAXIMUM	
MINIMUM	

6.5.7.18 ConstraintRampType enumeration

Constraint Ramp type

Table 362 shows all literals of ConstraintRampType.

Table 362 – Literals of MktDomain::ConstraintRampType

literal	description
FAST	
SLOW	

6.5.7.19 ContractType enumeration

Transmission Contract Type, For example:

O – Other

TE – Transmission Export

TI – Transmission Import

ETC – Existing Transmission Contract

RMT – RMT Contract

TOR – Transmission Ownership Right

RMR – Reliability Must Run Contract

CVR – Converted contract.

Table 363 shows all literals of ContractType.

Table 363 – Literals of MktDomain::ContractType

literal	description
ETC	ETC – Existing Transmission Contract
TOR	TOR – Transmission Ownership Right
RMR	RMR – Reliability Must Run Contract
RMT	RMT – RMT Contract
O	O – Other
TE	TE – Transmission Export
TI	TI – Transmission Import
CVR	CVR – Converted contract.

6.5.7.20 CostBasis enumeration

For example:

Bid Cost

Proxy Cost

Registered Cost

Table 364 shows all literals of CostBasis.

Table 364 – Literals of MktDomain::CostBasis

literal	description
BIDC	
PRXC	
REGC	

6.5.7.21 CRRCategoryType enumeration

Congestion Revenue Rights category types

Table 365 shows all literals of CRRCategoryType.

Table 365 – Literals of MktDomain::CRRCategoryType

literal	description
NSR	Network Service
PTP	Point to Point

6.5.7.22 CRRHedgeType enumeration

Congestion Revenue Right hedge type

Table 366 shows all literals of CRRHedgeType.

Table 366 – Literals of MktDomain::CRRHedgeType

literal	description
OBLIGATION	
OPTION	

6.5.7.23 CRRRoleType enumeration

Role types an organisation can play with respect to a congestion revenue right.

Table 367 shows all literals of CRRRoleType.

Table 367 – Literals of MktDomain::CRRRoleType

literal	description
SELLER	
BUYER	
OWNER	

6.5.7.24 CRRSegmentType enumeration

Type of the CRR, from the possible type definitions in the CRR System (e.g. 'LSE', 'ETC').

Table 368 shows all literals of CRRSegmentType.

Table 368 – Literals of MktDomain::CRRSegmentType

literal	description
AUC	
CAP	
CF	
CVR	Converted rights.
ETC	Existing Transmission Contract.
LSE	Load Serving Entity.
MT	Merchant transmission.
TOR	Transmission Ownership Rights.

6.5.7.25 DispatchResponseType enumeration

For example:

NON_RESPONSE

ACCEPT

DECLINE

PARTIAL.

Table 369 shows all literals of DispatchResponseType.

Table 369 – Literals of MktDomain::DispatchResponseType

literal	description
NON_RESPONSE	
ACCEPT	
DECLINE	
PARTIAL	

6.5.7.26 EnergyPriceIndexType enumeration

For example:

WHOLESALE

RETAIL

BOTH

Table 370 shows all literals of EnergyPriceIndexType.

Table 370 – Literals of MktDomain::EnergyPriceIndexType

literal	description
WHOLESALE	
RETAIL	
BOTH	

6.5.7.27 EnergyProductType enumeration

Energy product type

Table 371 shows all literals of EnergyProductType.

Table 371 – Literals of MktDomain::EnergyProductType

literal	description
FIRM	Firm
NFRM	Non Firm
DYN	Dynamic
WHL	Wheeling

6.5.7.28 EnergyTransactionType enumeration

Defines the state of a transaction.

Table 372 shows all literals of EnergyTransactionType.

Table 372 – Literals of MktDomain::EnergyTransactionType

literal	description
approve	Approve
deny	Deny
study	Study

6.5.7.29 EquipmentStatusType enumeration

Status of equipment

Table 373 shows all literals of EquipmentStatusType.

Table 373 – Literals of MktDomain::EquipmentStatusType

literal	description
In	Equipment is in.
Out	Equipment is out.

6.5.7.30 ExecutionType enumeration

Execution types of Market Runs

Table 374 shows all literals of ExecutionType.

Table 374 – Literals of MktDomain::ExecutionType

literal	description
DA	Day Ahead
HASP	Real Time Hour Ahead Execution
RTPD	Real Time Pre-dispatch
RTD	Real Time Dispatch

6.5.7.31 FlagTypeRMR enumeration

Indicates whether the unit is RMR and it's condition type, for example:

N' – not an RMR unit

'1' – RMR Condition 1 unit

'2' – RMR Condition 2 unit

Table 375 shows all literals of FlagTypeRMR.

Table 375 – Literals of MktDomain::FlagTypeRMR

literal	description
N	'N' – not an RMR unit
1	'1' – RMR Condition 1 unit
2	'2' – RMR Condition 2 unit

6.5.7.32 FlowDirectionType enumeration

Specifies the direction of energy flow in the flowgate.

Table 376 shows all literals of FlowDirectionType.

Table 376 – Literals of MktDomain::FlowDirectionType

literal	description
Forward	Forward direction.
Reverse	Reverse direction.

6.5.7.33 FuelSource enumeration

For example:

Bio Gas (Landfill, Sewage, Digester, etc.)

Biomass

Coal

DIST

Natural Gas

Geothermal

HRCV

None

Nuclear

Oil

Other

Solar

Waste to Energy

Water

Wind

Table 377 shows all literals of FuelSource.

Table 377 – Literals of MktDomain::FuelSource

literal	description
NG	Natural Gas
NNG	Non-Natural Gas
BGAS	Bio Gas (Landfill, Sewage, Digester, etc.)
BIOM	Biomass
COAL	Coal
DIST	
GAS	
GEOT	GeoThermal
HRCV	
NONE	
NUCL	Nuclear

literal	description
OIL	
OTHR	Other
SOLR	Solar
WAST	Waste to Energy
WATR	Water
WIND	Wind

6.5.7.34 InterTieDirection enumeration

Direction of an intertie.

Table 378 shows all literals of InterTieDirection.

Table 378 – Literals of MktDomain::InterTieDirection

literal	description
E	Export.
I	Import.

6.5.7.35 LoadForecastType enumeration

Load forecast zone types

Table 379 shows all literals of LoadForecastType.

Table 379 – Literals of MktDomain::LoadForecastType

literal	description
LFZ	Load forecast zone.
LZMS	Metered sub system zone.

6.5.7.36 MarketProductSelfSchedType enumeration

Market product self schedule bid types.

Table 380 shows all literals of MarketProductSelfSchedType.

Table 380 – Literals of MktDomain::MarketProductSelfSchedType

literal	description
ETC	Existing Transmission Contract.
TOR	Transmission Ownership Right.
RMR	Reliability Must Run.
RGMR	Regulatory must run.
RMT	Reliability must take.
PT	Price taker.
LPT	Low price taker.

literal	description
SP	Self provision.
RA	Resource adequacy.

6.5.7.37 MarketProductType enumeration

For example:

Energy, Reg Up, Reg Down, Spin Reserve, Nonspin Reserve, RUC, Load Following Up, and Load Following Down.

Table 381 shows all literals of MarketProductType.

Table 381 – Literals of MktDomain::MarketProductType

literal	description
EN	energy type
RU	regulation up
RD	regulation down
SR	spinning reserve
NR	non spinning reserve
RC	Residual Unit Commitment
LFU	Load following up
LFD	Load following down
REG	Regulation

6.5.7.38 MarketType enumeration

Market type.

Table 382 shows all literals of MarketType.

Table 382 – Literals of MktDomain::MarketType

literal	description
DAM	Day ahead market.
RTM	Real time market.
HAM	Hour Ahead Market.
RUC	Residual Unit Commitment.

6.5.7.39 MktAccountKind enumeration

Kind of Market account.

Table 383 shows all literals of MktAccountKind.

Table 383 – Literals of MktDomain::MktAccountKind

literal	description
normal	
reversal	
statistical	
estimate	

6.5.7.40 MktBillMediaKind enumeration

Kind of bill media.

Table 384 shows all literals of MktBillMediaKind.

Table 384 – Literals of MktDomain::MktBillMediaKind

literal	description
paper	
electronic	
other	

6.5.7.41 MktInvoiceLineItemKind enumeration

Kind of invoice line item.

Table 385 shows all literals of MktInvoiceLineItemKind.

Table 385 – Literals of MktDomain::MktInvoiceLineItemKind

literal	description
initial	
recalculation	
other	

6.5.7.42 MPMTIdentifierType enumeration

Market power mitigation test identifier type, for example:

- 1 ? Global Price Test
- 2 ? Global Conduct Test
- 3 ? Global Impact Test
- 4 ? Local Price Test
- 5 ? Local Conduct Test
- 6 ? Local Impact Test

Table 386 shows all literals of MPMTIdentifierType.

Table 386 – Literals of MktDomain::MPMTestIdentifierType

literal	description
1	1 – Global Price Test.
2	2 – Global Conduct Test.
3	3 – Global Impact Test.
4	4 – Local Price Test.
5	5 – Local Conduct Test.
6	6 – Local Impact Test.

6.5.7.43 MPMTestMethodType enumeration

Market power mitigation test method type.

Tests with the normal (default) thresholds or tests with the alternate thresholds.

Table 387 shows all literals of MPMTestMethodType.

Table 387 – Literals of MktDomain::MPMTestMethodType

literal	description
NORMAL	Normal.
ALTERNATE	Alternate.

6.5.7.44 MPMTestOutcome enumeration

For example:

Passed

Failed

Disabled

Skipped

Table 388 shows all literals of MPMTestOutcome.

Table 388 – Literals of MktDomain::MPMTestOutcome

literal	description
P	Passed
F	Failed
D	Disabled
S	Skipped

6.5.7.45 MQSCHGType enumeration

For example:

ADD – add

CHG – change

Table 389 shows all literals of MQSCHGType.

Table 389 – Literals of MktDomain::MQSCHGType

literal	description
ADD	
CHG	

6.5.7.46 MQSInstructionSource enumeration

Valid values, for example:

INS – Instruction from RTM

ACT – Actual instruction after the fact

Table 390 shows all literals of MQSInstructionSource.

Table 390 – Literals of MktDomain::MQSInstructionSource

literal	description
INS	
ACT	

6.5.7.47 OnOff enumeration

ON

OFF

Table 391 shows all literals of OnOff.

Table 391 – Literals of MktDomain::OnOff

literal	description
ON	
OFF	

6.5.7.48 OutageType enumeration

Outage type, IN, OUT, DERATE.

Table 392 shows all literals of OutageType.

Table 392 – Literals of MktDomain::OutageType

literal	description
OUT	Equipment status is outaged.
IN	Equipment status is reinstated.
DERATE	Equipment has a derated limit set by the derateP attribute.

6.5.7.49 ParticipationCategoryMPM enumeration

For example:

'Y' – Participates in both LMPM and SMPM

'N' – Not included in LMP price measures

'S' – Participates in SMPM price measures

'L' – Participates in LMPM price measures

Table 393 shows all literals of ParticipationCategoryMPM.

Table 393 – Literals of MktDomain::ParticipationCategoryMPM

literal	description
Y	
N	
S	
L	

6.5.7.50 PassIndicatorType enumeration

Defines the individual passes that produce results per execution type/market type

Table 394 shows all literals of PassIndicatorType.

Table 394 – Literals of MktDomain::PassIndicatorType

literal	description
MPM-1	Market Power Mitigation Pass 1
MPM-2	Market Power Mitigation Pass 2
MPM-3	Market Power Mitigation Pass 3
MPM-4	Market Power Mitigation Pass 4
RUC	Residual Unit Commitment
RTPD	Real Time Pre Dispatch
RTED	Real Time Economic Dispatch
HA-SCUC	Hour Ahead Security Constrained Unit Commitment
DA	Day Ahead

6.5.7.51 PurposeFlagType enumeration

MPM Purpose Flag, for example:

Nature of threshold data:

'M' – Mitigation threshold

'R' – Reporting threshold

Table 395 shows all literals of PurposeFlagType.

Table 395 – Literals of MktDomain::PurposeFlagType

literal	description
M	
R	

6.5.7.52 RampCurveType enumeration

For example:

0 – Fixed ramp rate independent of rate function unit MW output

1 – Static ramp rates as a function of unit MW output only

2 – Dynamic ramp rates as a function of unit MW output and ramping time

Table 396 shows all literals of RampCurveType.

Table 396 – Literals of MktDomain::RampCurveType

literal	description
0	Fixed ramp rate independent of rate function unit MW output
1	Static ramp rates as a function of unit MW output only
2	Dynamic ramp rates as a function of unit MW output and ramping time

6.5.7.53 RampModeType enumeration

For example:

0: ignore ramping limits,

1: 20-minute ramping rule,

2: 60-minute ramping rule

Table 397 shows all literals of RampModeType.

Table 397 – Literals of MktDomain::RampModeType

literal	description
0	Ignore ramping limits
1	20-minute ramping rule,
2	60-minute ramping rule

6.5.7.54 RampRateCondition enumeration

Ramp rate condition

Table 398 shows all literals of RampRateCondition.

Table 398 – Literals of MktDomain::RampRateCondition

literal	description
WORST	
BEST	
NORMAL	
NA	not applicable

6.5.7.55 RampRateType enumeration

Ramp rate curve type.

Table 399 shows all literals of RampRateType.

Table 399 – Literals of MktDomain::RampRateType

literal	description
OP	Operational ramp rate.
REG	Regulating ramp rate.
OP_RES	Operating reserve ramp rate.
LD_DROP	Load drop ramp rate.
LD_PICKUP	Load pick up rate.
INTERTIE	Intertie ramp rate.

6.5.7.56 ReserveRequirementType enumeration

For example:

Operating Reserve, Regulation, Contingency

Table 400 shows all literals of ReserveRequirementType.

Table 400 – Literals of MktDomain::ReserveRequirementType

literal	description
OPRSV	Operating Reserve
CONT	Contingency
REG	Regulation

6.5.7.57 ResourceAncillaryServiceType enumeration

Types used for resource AS qualifications

Table 401 shows all literals of ResourceAncillaryServiceType.

Table 401 – Literals of MktDomain::ResourceAncillaryServiceType

literal	description
REGUP	Regulation Up
REGDN	Regulation Down
RRSPIN	Spinning Reserve
NONSPIN	Non Spinning Reserve
RMR	Reliability Must Run
BLACKSTART	Black start
DSR	Demand Side Reponse
SYNCCOND	
PIRP	Intermittant resource
RUC	Reliability unit commitment

6.5.7.58 ResourceAssnType enumeration

For example:

Asset Owner Sink designator for use by CRR

Asset Owner Source designator for use by CRR

Reliability Must Run

Scheduling Coordinator

Load Serving Entity

Table 402 shows all literals of ResourceAssnType.

Table 402 – Literals of MktDomain::ResourceAssnType

literal	description
CSNK	
CSRC	
RMR	
SC	
LSE	

6.5.7.59 ResourceCapacityType enumeration

Resource capacity type.

Table 403 shows all literals of ResourceCapacityType.

Table 403 – Literals of MktDomain::ResourceCapacityType

literal	description
RU	Regulation Up.
RD	Regulation Down.
SR	Spinning reserve.
NR	Non spinning reserve.

literal	description
MO	Must Offer.
FO	Flexible Offer.
RA	Resource Adequacy.
RMR	Reliability Must Run.

6.5.7.60 ResourceLimitIndicator enumeration

Locational AS Flags indicating whether the Upper or Lower Bound limit of the AS regional procurement is binding

Table 404 shows all literals of ResourceLimitIndicator.

Table 404 – Literals of MktDomain::ResourceLimitIndicator

literal	description
UPPER	
LOWER	

6.5.7.61 ResourceRegistrationStatus enumeration

Types of resource registration status, for example

Active

Mothballed

Planned

Decommissioned

Table 405 shows all literals of ResourceRegistrationStatus.

Table 405 – Literals of MktDomain::ResourceRegistrationStatus

literal	description
Active	Resource registration is active
Planned	Registration status is in the planning stage
Mothballed	Resource registration has been suspended
Decommissioned	Resource registration status is decommissioned

6.5.7.62 ResultsConstraintType enumeration

Market results binding constraint types.

Table 406 shows all literals of ResultsConstraintType.

Table 406 – Literals of MktDomain::ResultsConstraintType

literal	description
FG_act	Flowgate actual base case
Contingency	Contingency.

literal	description
Interface	Interface.
Actual	Actual.

6.5.7.63 SelfSchedReferenceType enumeration

Indication of which type of self schedule is being referenced.

Table 407 shows all literals of SelfSchedReferenceType.

Table 407 – Literals of MktDomain::SelfSchedReferenceType

literal	description
ETC	Existing transmission contract.
TOR	Transmission ownership right.

6.5.7.64 SelfScheduleBreakdownType enumeration

Self schedule breakdown type.

Table 408 shows all literals of SelfScheduleBreakdownType.

Table 408 – Literals of MktDomain::SelfScheduleBreakdownType

literal	description
ETC	Existing transmission contract.
TOR	Transmission ownership right.
LPT	Low price taker.

6.5.7.65 SwitchStatusType enumeration

Circuit Breaker Status (closed or open) of the circuit breaker.

Table 409 shows all literals of SwitchStatusType.

Table 409 – Literals of MktDomain::SwitchStatusType

literal	description
Closed	Closed status.
Open	Open status.

6.5.7.66 TimeOfUse enumeration

Time of Use used by a CRR definition for specifying the time the CRR spans. ON – CRR spans the on peak hours of the day, OFF – CRR spans the off peak hours of the day, 24HR – CRR spans the entire day.

Table 410 shows all literals of TimeOfUse.

Table 410 – Literals of MktDomain::TimeOfUse

literal	description
ON	Time of use spans only the on peak hours of the day.
OFF	Time of use spans only the off peak hours of the day.
24HR	Time of use spans the entire day, 24 hours.

6.5.7.67 TradeType enumeration

Trade type.

Table 411 shows all literals of TradeType.

Table 411 – Literals of MktDomain::TradeType

literal	description
IST	InterSC Trade.
AST	Ancillary Services Trade.
UCT	Unit Commitment Trade.

6.5.7.68 TRType enumeration

Transmission Contract Right type -for example:

individual or chain of contract rights

Table 412 shows all literals of TRType.

Table 412 – Literals of MktDomain::TRType

literal	description
CHAIN	TR chain
INDIVIDUAL	Individual TR

6.5.7.69 UnitType enumeration

Combined Cycle

Gas Turbine

Hydro Turbine

Other

Photovoltaic

Hydro Pump-Turbine

Reciprocating Engine

Steam Turbine

Synchronous Condenser

Wind Turbine

Table 413 shows all literals of UnitType.

Table 413 – Literals of MktDomain::UnitType

literal	description
CCYC	Combined Cycle
GTUR	Gas Turbine
HYDR	Hydro Turbine
OTHR	Other
PHOT	Photovoltaic
PTUR	Hydro Pump-Turbine
RECP	Reciprocating Engine
STUR	Steam Turbine
SYNC	Synchronous Condenser
WIND	Wind Turbine

6.5.7.70 YesNo enumeration

Used as a flag set to Yes or No.

Table 414 shows all literals of YesNo.

Table 414 – Literals of MktDomain::YesNo

literal	description
YES	
NO	

6.5.8 Package ParticipantInterfaces**6.5.8.1 General**

Market participant interfaces for bids and trades.

Figure 41 shows class diagram ParticipantBids.

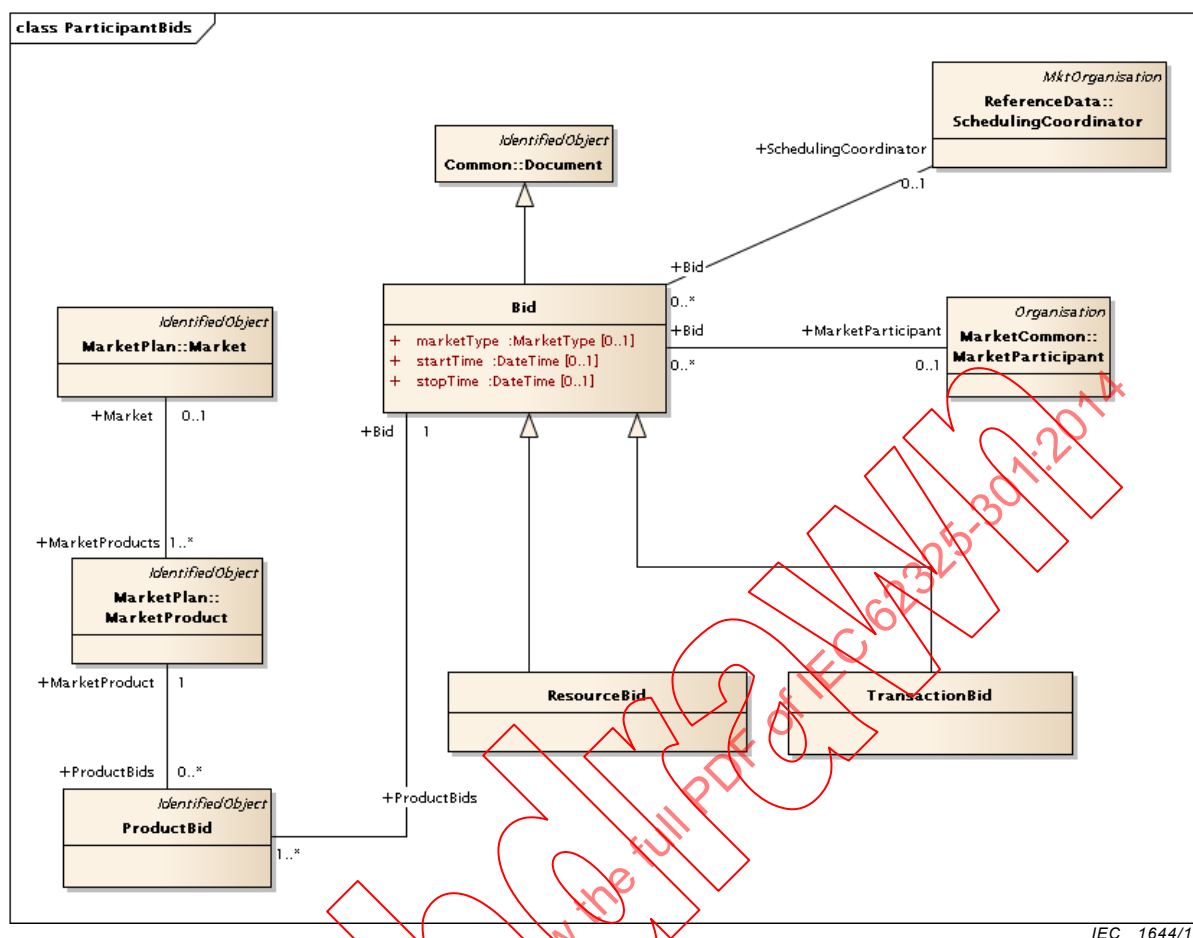


Figure 41 – Class diagram ParticipantInterfaces::ParticipantBids

This figure shows the overview of the class and associations that are used to model offers and bids. The term bid is used to include offers to sell and bids to buy one or more electrical products. The bid is a subclass of the document class from the 61968 package. Bids are further classified as Resource Bids or Transaction Bids. Bids are associated with Scheduling Coordinators that submit them on behalf of market participants as shown by the association between the Bid class and the Scheduling Coordinator class.

Figure 42 shows class diagram ParticipantTrades.

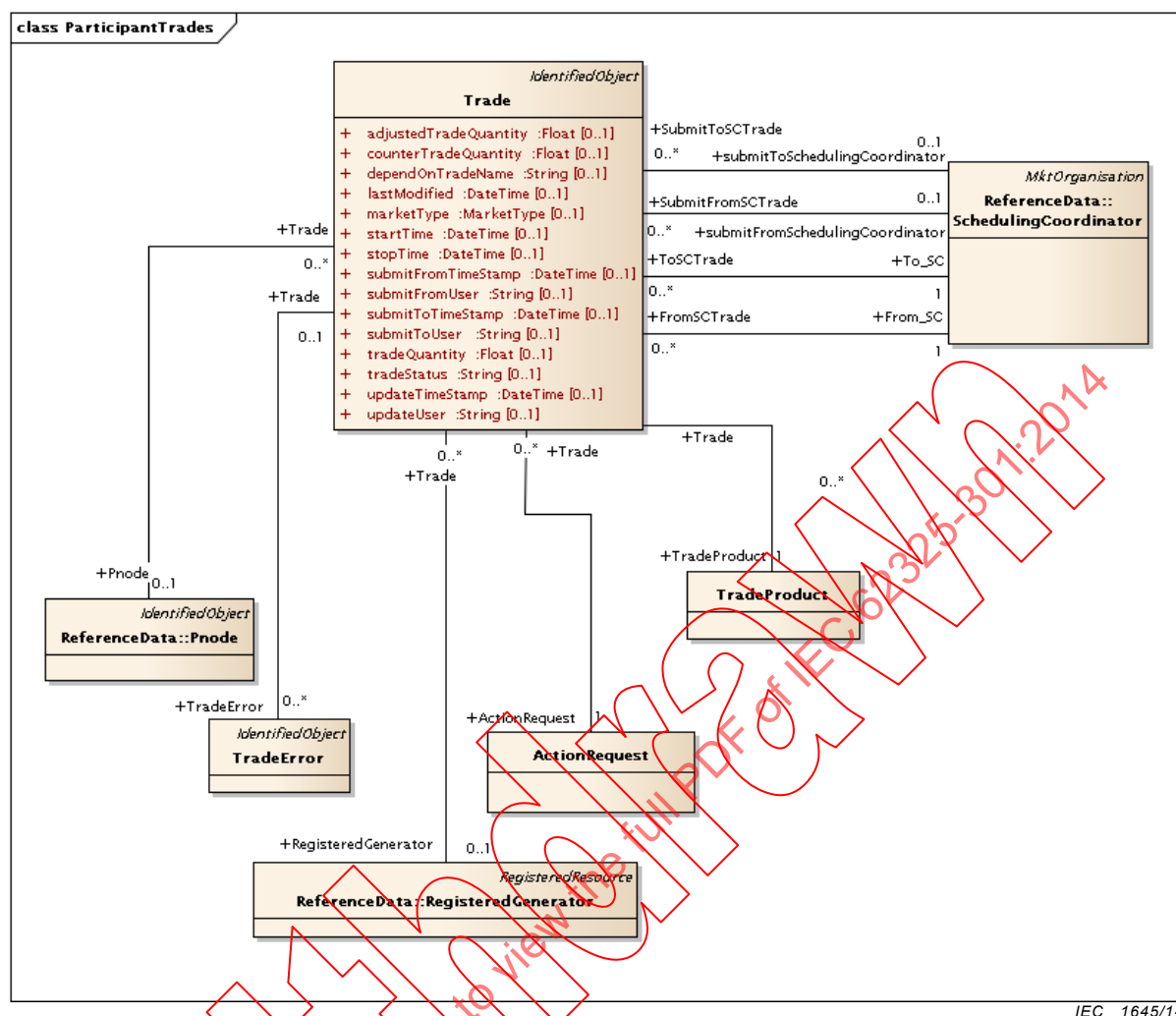


Figure 42 – Class diagram ParticipantInterfaces::ParticipantTrades

This figure shows the class and associations used to model inter scheduling coordinator financial trades. The TradeProduct class is used to indicate the electric product that is included in the trade. The SchedulingCoordinator class is used to indicate the scheduling coordinators involved in the trade.

Figure 43 shows class diagram ResourceBids.

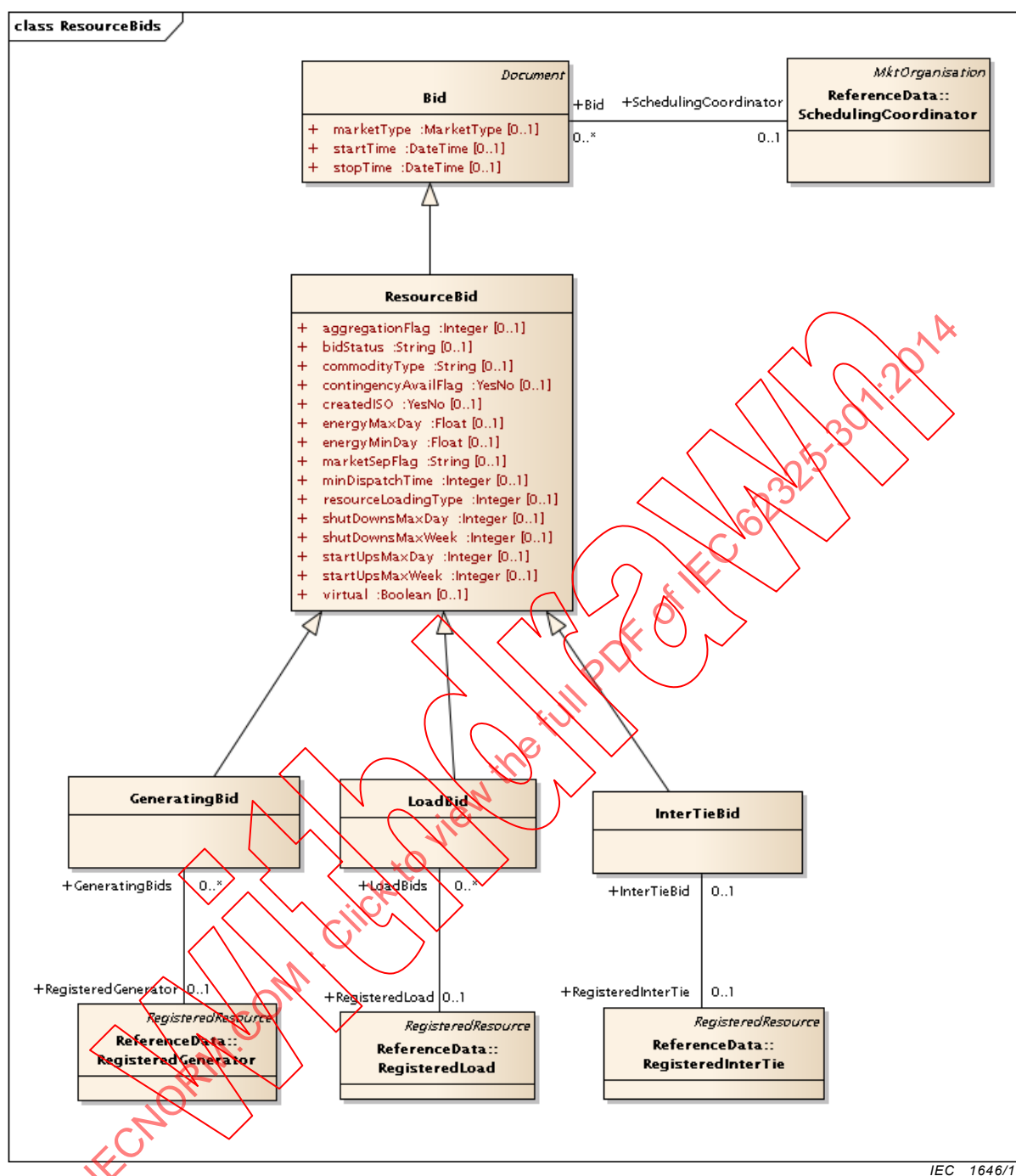


Figure 43 – Class diagram ParticipantInterfaces::ResourceBids

This figure shows the classes and associations used to model resource bids. The resource bid model includes the subclasses GeneratingBid, LoadBid, and IntertieBid to model the relationships to the ResourceBid and Bid classes.

Figure 44 shows class diagram ResourceBidSchedules.

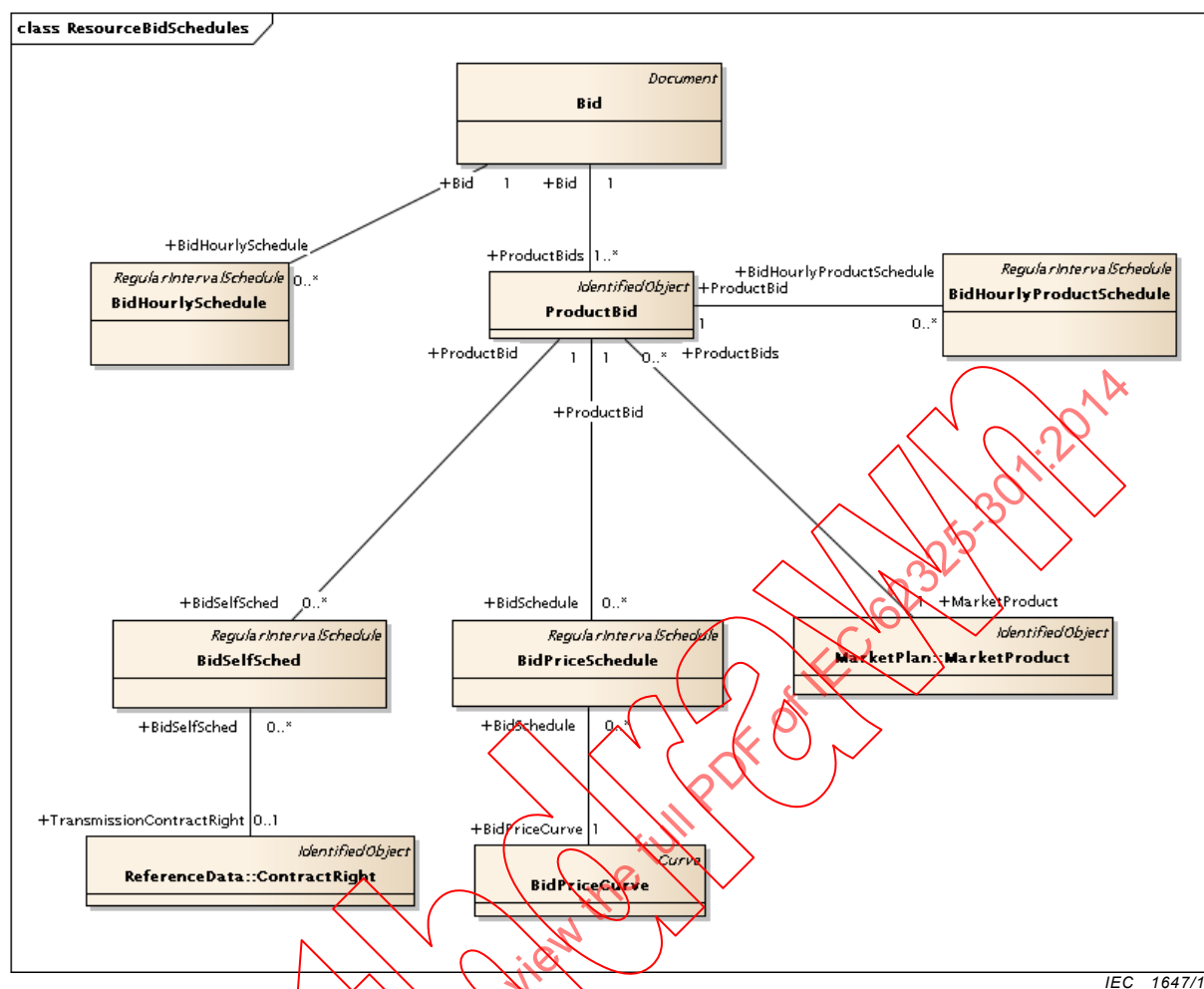


Figure 44 – Class diagram ParticipantInterfaces::ResourceBidSchedules

This figure shows the classes and associations used to model bid schedules. A scheduling coordinator may choose to submit a bid that is valid for several intervals of the market's time horizon. The classes of this model support this concept.

Figure 45 shows class diagram TransactionBids.

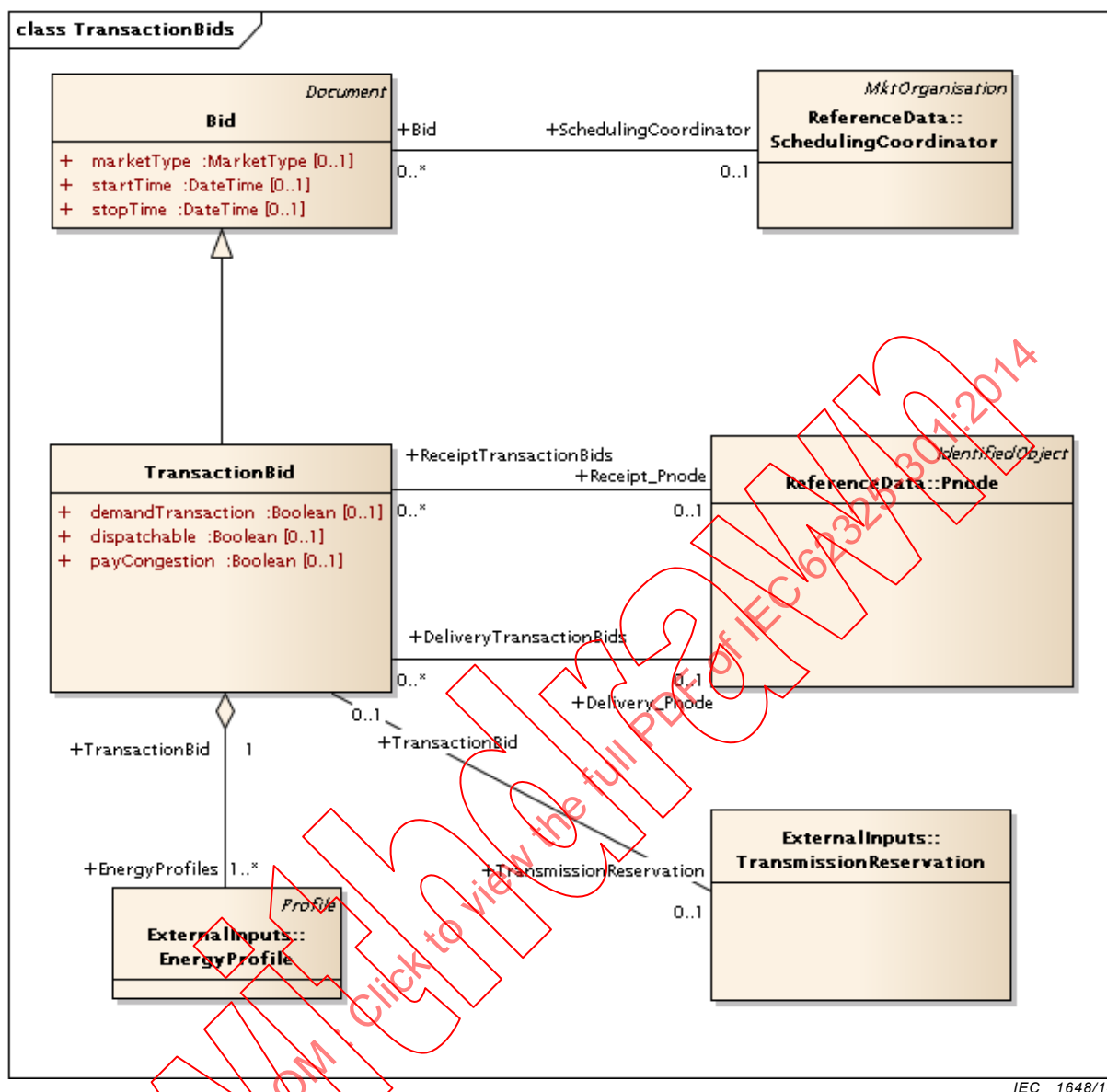


Figure 45 – Class diagram ParticipantInterfaces::TransactionBids

This figure shows the classes and associations used to model transaction bids. The TransactionBid model includes the subclasses GeneratingBid, LoadBid, and IntertieBid to model the relationships to the ResourceBid and Bid classes.

6.5.8.2 ActionRequest root class

Action request against an existing Trade.

Table 415 shows all attributes of ActionRequest.

Table 415 – Attributes of ParticipantInterfaces::ActionRequest

name	type	description
actionName	ActionType	Action name type for the action request.

Table 416 shows all association ends of ActionRequest with other classes.

Table 416 – Association ends of ParticipantInterfaces::ActionRequest with other classes

[mult from]	[mult to] name	type	description
[1..1]	[0..*] Bid	Bid	
[1..1]	[0..*] Trade	Trade	

6.5.8.3 AreaLoadBid

AreaLoadBid is not submitted by a market participant into the Markets. Instead, it is simply an aggregation of all LoadBids contained within a specific SubControlArea. This entity should inherit from Bid for representation of the timeframe (startTime, stopTime) and the market type.

Table 417 shows all attributes of AreaLoadBid.

Table 417 – Attributes of ParticipantInterfaces::AreaLoadBid

name	type	description
demandBidMW	Float	The Demand Bid Megawatt for the area case. Attribute Usage: This is Scheduled demand MW in Day Ahead
startTime	DateTime	inherited from: Bid
stopTime	DateTime	inherited from: Bid
marketType	MarketType	inherited from: Bid
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 418 shows all association ends of AreaLoadBid with other classes.

Table 418 – Association ends of ParticipantInterfaces::AreaLoadBid with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..*] LoadBid	LoadBid	
[0..*]	[0..1] MarketParticipant	MarketParticipant	inherited from: Bid
[0..*]	[1..1] EnergyMarket	EnergyMarket	inherited from: Bid
[0..1]	[0..*] ChargeProfiles	ChargeProfile	inherited from: Bid

[mult from]	[mult to] name	type	description
[1..1]	[0..*] MitigatedBidSegment	MitigatedBidSegment	inherited from: Bid
[0..*]	[0..1] SchedulingCoordinator	SchedulingCoordinator	inherited from: Bid
[0..1]	[0..*] MitigatedBid	MitigatedBid	inherited from: Bid
[0..1]	[0..*] RMRDetermination	RMRDetermination	inherited from: Bid
[0..*]	[1..1] ActionRequest	ActionRequest	inherited from: Bid
[1..1]	[1..*] ProductBids	ProductBid	inherited from: Bid
[1..1]	[0..*] BidHourlySchedule	BidHourlySchedule	inherited from: Bid
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.8.4 AttributeProperty root class

Property for a particular attribute that contains name and value

Table 419 shows all attributes of AttributeProperty.

Table 419 – Attributes of ParticipantInterfaces::AttributeProperty

name	type	description
sequence	String	
propertyName	String	
propertyValue	String	

Table 420 shows all association ends of AttributeProperty with other classes.

Table 420 – Association ends of ParticipantInterfaces::AttributeProperty with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] MktUserAttribute	MktUserAttribute	

6.5.8.5 Bid

Represents both bids to purchase and offers to sell energy or ancillary services in an RTO-sponsored market.

Table 421 shows all attributes of Bid.

Table 421 – Attributes of ParticipantInterfaces::Bid

name	type	description
startTime	DateTime	Start time and date for which bid applies.
stopTime	DateTime	Stop time and date for which bid is applicable.
marketType	MarketType	The market type, DAM or RTM.

name	type	description
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 422 shows all association ends of Bid with other classes.

Table 422 – Association ends of ParticipantInterfaces::Bid with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] MarketParticipant	MarketParticipant	
[0..*]	[1..1] EnergyMarket	EnergyMarket	
[0..1]	[0..*] ChargeProfiles	ChargeProfile	
[1..1]	[0..*] MitigatedBidSegment	MitigatedBidSegment	
[0..*]	[0..1] SchedulingCoordinator	SchedulingCoordinator	
[0..1]	[0..*] MitigatedBid	MitigatedBid	
[0..1]	[0..*] RMRDetermination	RMRDetermination	
[0..*]	[1..1] ActionRequest	ActionRequest	
[1..1]	[1..*] ProductBids	ProductBid	A bid comprises one or more product bids of market products
[1..1]	[0..*] BidHourlySchedule	BidHourlySchedule	
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.8.6 BidDistributionFactor root class

This class allows SC to input different time intervals for distribution factors

Table 423 shows all attributes of BidDistributionFactor.

Table 423 – Attributes of ParticipantInterfaces::BidDistributionFactor

name	type	description
timeIntervalStart	DateTime	Start of the time interval in which bid is valid (yyyy-mm-dd hh24: mi: ss).
timeIntervalEnd	DateTime	End of the time interval n which bid is valid (yyyy-mm-dd hh24: mi: ss)

Table 424 shows all association ends of BidDistributionFactor with other classes.

Table 424 – Association ends of ParticipantInterfaces::BidDistributionFactor with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..*] PnodeDistributionFactor	PnodeDistributionFactor	
[0..*]	[1..1] ProductBid	ProductBid	

6.5.8.7 BidError

This class represent the error information for a bid that is detected during bid validation

Table 425 shows all attributes of BidError.

Table 425 – Attributes of ParticipantInterfaces::BidError

name	type	description
errPriority	Integer	Priority number for the error message
errMessage	String	error message
ruleID	Integer	
startTime	DateTime	hour within the bid for which the error applies
endTime	DateTime	hour within the bid for which the error applies
logTimeStamp	DateTime	
componentType	String	
msgLevel	Integer	
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 426 shows all association ends of BidError with other classes.

Table 426 – Association ends of ParticipantInterfaces::BidError with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] MarketProduct	MarketProduct	
[0..*]	[0..*] ResourceBid	ResourceBid	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.8.8 BidHourlyProductSchedule

Containment for bid parameters that are dependent on a market product type.

Table 427 shows all attributes of BidHourlyProductSchedule.

Table 427 – Attributes of ParticipantInterfaces::BidHourlyProductSchedule

name	type	description
endTime	DateTime	inherited from: RegularIntervalSchedule
timeStep	Seconds	inherited from: RegularIntervalSchedule
startTime	DateTime	inherited from: BasicIntervalSchedule
value1Unit	UnitSymbol	inherited from: BasicIntervalSchedule
value1Multiplier	UnitMultiplier	inherited from: BasicIntervalSchedule
value2Unit	UnitSymbol	inherited from: BasicIntervalSchedule
value2Multiplier	UnitMultiplier	inherited from: BasicIntervalSchedule
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 428 shows all association ends of BidHourlyProductSchedule with other classes.

Table 428 – Association ends of ParticipantInterfaces::BidHourlyProductSchedule with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] ProductBid	ProductBid	
[1..1]	[1..*] TimePoints	RegularTimePoint	inherited from: RegularIntervalSchedule
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.8.9 BidHourlySchedule

Containment for bid hourly parameters that are not product dependent.

Table 429 shows all attributes of BidHourlySchedule.

Table 429 – Attributes of ParticipantInterfaces::BidHourlySchedule

name	type	description
endTime	DateTime	inherited from: RegularIntervalSchedule
timeStep	Seconds	inherited from: RegularIntervalSchedule
startTime	DateTime	inherited from: BasicIntervalSchedule
value1Unit	UnitSymbol	inherited from: BasicIntervalSchedule
value1Multiplier	UnitMultiplier	inherited from: BasicIntervalSchedule
value2Unit	UnitSymbol	inherited from: BasicIntervalSchedule
value2Multiplier	UnitMultiplier	inherited from: BasicIntervalSchedule
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 430 shows all association ends of BidHourlySchedule with other classes.

Table 430 – Association ends of ParticipantInterfaces::BidHourlySchedule with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] Bid	Bid	
[1..1]	[1..*] TimePoints	RegularTimePoint	inherited from: RegularIntervalSchedule
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.8.10 BidPriceCurve

Relationship between unit operating price in \$/hour (Y-axis) and unit output in MW (X-axis).

Table 431 shows all attributes of BidPriceCurve.

Table 431 – Attributes of ParticipantInterfaces::BidPriceCurve

name	type	description
curveStyle	CurveStyle	inherited from: Curve
xMultiplier	UnitMultiplier	inherited from: Curve
xUnit	UnitSymbol	inherited from: Curve
y1Multiplier	UnitMultiplier	inherited from: Curve
y1Unit	UnitSymbol	inherited from: Curve
y2Multiplier	UnitMultiplier	inherited from: Curve
y2Unit	UnitSymbol	inherited from: Curve
y3Multiplier	UnitMultiplier	inherited from: Curve
y3Unit	UnitSymbol	inherited from: Curve
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 432 shows all association ends of BidPriceCurve with other classes.

Table 432 – Association ends of ParticipantInterfaces::BidPriceCurve with other classes

[mult from]	[mult to] name	type	description
[1..1]	[0..*] BidSchedule	BidPriceSchedule	
[1..1]	[0..*] CurveDatas	CurveData	inherited from: Curve
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.8.11 BidPriceSchedule

Defines bid schedules to allow a product bid to use specified bid price curves for different time intervals.

Table 433 shows all attributes of BidPriceSchedule.

Table 433 – Attributes of ParticipantInterfaces::BidPriceSchedule

name	type	description
bidType	BidMitigationType	BID Type: I – Initial Bid; F – Final Bid
mitigationStatus	BidMitigationStatus	Mitigation Status: 'S' – Mitigated by SMPM because of "misconduct" 'L' – Mitigated by LMPM because of "misconduct" 'R' – Modified by LMPM because of RMR rules 'M' – Mitigated because of "misconduct" both by SMPM and LMPM 'B' – Mitigated because of "misconduct" both by SMPM and modified by LMLM because of RMR rules 'Q' – original
endTime	DateTime	inherited from: RegularIntervalSchedule
timeStep	Seconds	inherited from: RegularIntervalSchedule
startTime	DateTime	inherited from: BasicIntervalSchedule
value1Unit	UnitSymbol	inherited from: BasicIntervalSchedule
value1Multiplier	UnitMultiplier	inherited from: BasicIntervalSchedule
value2Unit	UnitSymbol	inherited from: BasicIntervalSchedule
value2Multiplier	UnitMultiplier	inherited from: BasicIntervalSchedule
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 434 shows all association ends of BidPriceSchedule with other classes.

Table 434 – Association ends of ParticipantInterfaces::BidPriceSchedule with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] BidPriceCurve	BidPriceCurve	
[0..*]	[1..1] ProductBid	ProductBid	
[1..1]	[1..*] TimePoints	RegularTimePoint	inherited from: RegularIntervalSchedule
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.8.12 BidSelfSched

Defines self schedule values to be used for specified time intervals.

Table 435 shows all attributes of BidSelfSched.

Table 435 – Attributes of ParticipantInterfaces::BidSelfSched

name	type	description
balancingFlag	YesNo	This is a Y/N flag for a self-schedule of a resource per market per date and hour, using a specific TR ID. It indicates whether a self-schedule using a TR is balanced with another self-schedule using the same TR ID.
bidType	BidTypeRMR	bidType has two types as the required output of requirements and qualified pre-dispatch.
priorityFlag	YesNo	This is a Y/N flag for a self-schedule of a resource per market per date and hour, using a specific TR ID. It indicates whether a self-schedule using a TR has scheduling priority in DAM/RTM.
pumpSelfSchedMw	Float	Contains the PriceTaker, ExistingTransmissionContract, TransmissionOwnershipRights pumping self schedule quantity. If this value is not null, then the unit is in pumping mode.
referenceType	SelfSchedReferenceType	Indication of which type of self schedule is being referenced.
selfSchedMw	Float	Self scheduled value
selfSchedSptResource	String	Price Taker Export Self Sched Support Resource
selfSchedType	MarketProductSelfSchedType	This attribute is used to specify if a bid includes a self sched bid. If so what self sched type is it. The possible values are shown as follow but not limited to: 'ETC' – Existing transmission contract 'TOR' – Transmission ownership right 'RMR' – Reliability must run 'RGMR' – Regulatory must run "RMT" – Reliability must take "PT" – Price taker "LPT" – Low price taker "SP" – Self provision "RA" – Resource adequacy This attribute is originally defined in the BidSelfSched class
updateType	MQSCHGType	
wheelingTransactionReference	String	A unique identifier of a wheeling transaction. A wheeling transaction is a balanced Energy exchange among Supply and Demand Resources.
endTime	DateTime	inherited from: RegularIntervalSchedule
timeStep	Seconds	inherited from: RegularIntervalSchedule
startTime	DateTime	inherited from: BasicIntervalSchedule
value1Unit	UnitSymbol	inherited from: BasicIntervalSchedule
value1Multiplier	UnitMultiplier	inherited from: BasicIntervalSchedule
value2Unit	UnitSymbol	inherited from: BasicIntervalSchedule

name	type	description
value2Multiplier	UnitMultiplier	inherited from: BasicIntervalSchedule
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 436 shows all association ends of BidSelfSched with other classes.

Table 436 – Association ends of ParticipantInterfaces::BidSelfSched with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] TransmissionContractRight	ContractRight	
[0..*]	[0..1] AdjacentCaset	AdjacentCaset	
[0..*]	[0..1] HostControlArea	HostControlArea	
[0..*]	[0..1] SubControlArea	SubControlArea	
[0..*]	[1..1] ProductBid	ProductBid	
[1..1]	[1..*] TimePoints	RegularTimePoint	inherited from: RegularIntervalSchedule
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.8.13 BidSet

As set of mutually exclusive bids for which a maximum of one may be scheduled.

Of these generating bids, only one generating bid can be scheduled at a time.

Table 437 shows all attributes of BidSet.

Table 437 – Attributes of ParticipantInterfaces::BidSet

name	type	description
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 438 shows all association ends of BidSet with other classes.

Table 438 – Association ends of ParticipantInterfaces::BidSet with other classes

[mult from]	[mult to] name	type	description
[0..1]	[1..*] GeneratingBids	GeneratingBid	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.8.14 ChargeComponent

A Charge Component is a list of configurable charge quality items to feed into settlement calculation and/or bill determinants.

Table 439 shows all attributes of ChargeComponent.

Table 439 – Attributes of ParticipantInterfaces::ChargeComponent

name	type	description
deleteStatus	String	
effectiveDate	DateTime	
terminationDate	DateTime	
message	String	
type	String	
sum	String	
roundOff	String	
equation	String	
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 440 shows all association ends of ChargeComponent with other classes.

Table 440 – Association ends of ParticipantInterfaces::ChargeComponent with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] BillDeterminants	BillDeterminant	A BillDeterminant can have 0-n ChargeComponent and a ChargeComponent can associate to 0-n BillDeterminant.
[0..*]	[0..*] ChargeTypes	ChargeType	A ChargeType can have 0-n ChargeComponent and a ChargeComponent can associate to 0-n ChargeType
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.8.15 ChargeGroup

Charge Group is the grouping of Charge Types for settlement invoicing purpose. Examples such as Ancillary Services, Interests, etc.

Table 441 shows all attributes of ChargeGroup.

Table 441 – Attributes of ParticipantInterfaces::ChargeGroup

name	type	description
marketCode	String	
effectiveDate	DateTime	
terminationDate	DateTime	
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 442 shows all association ends of ChargeGroup with other classes.

Table 442 – Association ends of ParticipantInterfaces::ChargeGroup with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] MktUserAttribute	MktUserAttribute	
[0..*]	[0..1] ChargeGroupParent	ChargeGroup	A ChargeGroup instance can have relationships with other ChargeGroup instances.
[0..*]	[0..*] ChargeType	ChargeType	A ChargeGroup can have 0-n ChargeType. A ChargeType can associate to 0-n ChargeGroup.
[0..1]	[0..*] ChargeGroupChild	ChargeGroup	A ChargeGroup instance can have relationships with other ChargeGroup instances.
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.8.16 ChargeType

Charge Type is the basic level configuration for settlement to process specific charges for invoicing purpose. Examples such as: Day Ahead Spinning Reserve Default Invoice Interest Charge, etc.

Table 443 shows all attributes of ChargeType.

Table 443 – Attributes of ParticipantInterfaces::ChargeType

name	type	description
effectiveDate	DateTime	
terminationDate	DateTime	
factor	String	
chargeOrder	String	
frequencyType	String	
chargeVersion	String	
totalInterval	String	
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document

name	type	description
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 444 shows all association ends of ChargeType with other classes

Table 444 – Association ends of ParticipantInterfaces::ChargeType with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] MktUserAttribute	MktUserAttribute	
[0..*]	[0..*] ChargeComponents	ChargeComponent	A ChargeType can have 0-n ChargeComponent and a ChargeComponent can associate to 0-n ChargeType
[0..*]	[0..*] ChargeGroup	ChargeGroup	A ChargeGroup can have 0-n ChargeType. A ChargeType can associate to 0-n ChargeGroup.
[0..*]	[0..*] MajorChargeGroup	MajorChargeGroup	A MajorChargeGroup can have 0-n ChargeType. A ChargeType can associate to 0-n MajorChargeGroup.
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.8.17 DispatchInstReply

Response from registered resource acknowledging receipt of dispatch instructions

Table 445 shows all attributes of DispatchInstReply.

Table 445 – Attributes of ParticipantInterfaces::DispatchInstReply

name	type	description
acceptMW	ActivePower	The accepted mw amount by the responder. aka response mw.
acceptStatus	DispatchResponseType	The accept status submitted by the responder. enumeration type needs to be defined
certificationName	String	The Subject DN is the X509 Certificate Subject DN. This is the essentially the certificate name presented by the client. In the case of ADS Certificates, this will be the user name. It may be from an API Client or the MP Client (GUI). The Subject ID normally includes more than just

name	type	description
		the user name (Common Name), it can also contain information such as City, Company ID, etc.
clearedMW	ActivePower	MW amount associated with instruction. For 5 minute binding dispatches, this is the Goto MW or DOT
instructionTime	DateTime	The target date/time for the received instruction.
instructionType	String	instruction type: commitment out of sequence dispatch
passIndicator	PassIndicatorType	The type of run for the market clearing.
receivedTime	DateTime	Timestamp indicating the time at which the instruction was received.
startTime	DateTime	start time
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 446 shows all association ends of DispatchInstReply with other classes.

**Table 446 – Association ends of ParticipantInterfaces::
DispatchInstReply with other classes**

[mult from]	[mult to] name	type	description
[0..*]	[1..1] RegisteredResource	RegisteredResource	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.8.18 EnergyPriceCurve root class

Relationship between a price in \$(or other monetary unit) /hour (Y-axis) and a MW value (X-axis).

Table 447 shows all association ends of EnergyPriceCurve with other classes.

**Table 447 – Association ends of ParticipantInterfaces::
EnergyPriceCurve with other classes**

[mult from]	[mult to] name	type	description
[0..*]	[0..*] EnergyTransactions	EnergyTransaction	

6.5.8.19 GeneratingBid

Offer to supply energy/ancillary services from a generating unit or resource

Table 448 shows all attributes of GeneratingBid.

Table 448 – Attributes of ParticipantInterfaces::GeneratingBid

name	type	description
combinedCycleUnitOffer	String	Will indicate if the unit is part of a CC offer or not
downTimeMax	Float	Maximum down time.
installedCapacity	Float	Installed Capacity value
lowerRampRate	ActivePowerChangeRate	Maximum Dn ramp rate in MW/min
maxEmergencyMW	ActivePower	Power rating available for unit under emergency conditions greater than or equal to maximum economic limit.
maximumEconomicMW	Float	Maximum high economic MW limit, that should not exceed the maximum operating MW limit
minEmergencyMW	ActivePower	Minimum power rating for unit under emergency conditions, which is less than or equal to the economic minimum
minimumEconomicMW	Float	Low economic MW limit that shall be greater than or equal to the minimum operating MW limit
noLoadCost	Float	Resource fixed no load cost.
notificationTime	Float	Time required for crew notification prior to start up of the unit.
operatingMode	String	Bid operating mode ('C' – cycling, 'F' – fixed, 'M' – must run, 'U' – unavailable)
raiseRampRate	ActivePowerChangeRate	Maximum Up ramp rate in MW/min
rampCurveType	Integer	Ramp curve type: 0 – Fixed ramp rate independent of rate function unit MW output 1 – Static ramp rates as a function of unit MW output only 2 – Dynamic ramp rates as a function of unit MW output and ramping time
startupCost	Float	Startup cost/price
startUpRampRate	ActivePowerChangeRate	Resource startup ramp rate (MW/minute)
startUpType	Integer	Resource startup type: 1 – Fixed startup time and fixed startup cost 2 – Startup time as a function of down time and fixed startup cost 3 – Startup cost as a function of down time
upTimeMax	Float	Maximum up time.
aggregationFlag	Integer	inherited from: ResourceBid
bidStatus	String	inherited from: ResourceBid
commodityType	String	inherited from: ResourceBid
contingencyAvailFlag	YesNo	inherited from: ResourceBid
createdISO	YesNo	inherited from: ResourceBid
energyMaxDay	Float	inherited from: ResourceBid
energyMinDay	Float	inherited from: ResourceBid
marketSepFlag	String	inherited from: ResourceBid
minDispatchTime	Integer	inherited from: ResourceBid
resourceLoadingType	Integer	inherited from: ResourceBid
shutDownsMaxDay	Integer	inherited from: ResourceBid
shutDownsMaxWeek	Integer	inherited from: ResourceBid
startUpsMaxDay	Integer	inherited from: ResourceBid

name	type	description
startUpsMaxWeek	Integer	inherited from: ResourceBid
virtual	Boolean	inherited from: ResourceBid
startTime	DateTime	inherited from: Bid
stopTime	DateTime	inherited from: Bid
marketType	MarketType	inherited from: Bid
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 449 shows all association ends of GeneratingBid with other classes.

Table 449 – Association ends of ParticipantInterfaces::GeneratingBid with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..*] SecurityConstraints	SecurityConstraints	
[1..*]	[0..1] BidSet	BidSet	
[0..1]	[0..*] RampRateCurve	RampRateCurve	
[0..*]	[0..1] NotificationTimeCurve	NotificationTimeCurve	
[0..*]	[0..1] RegisteredGenerator	RegisteredGenerator	
[0..*]	[0..1] StartUpTimeCurve	StartUpTimeCurve	
[0..*]	[0..1] StartUpCostCurve	StartUpCostCurve	
[0..*]	[0..*] BidError	BidError	inherited from: ResourceBid
[0..*]	[0..1] MarketParticipant	MarketParticipant	inherited from: Bid
[0..*]	[1..1] EnergyMarket	EnergyMarket	inherited from: Bid
[0..1]	[0..*] ChargeProfiles	ChargeProfile	inherited from: Bid
[1..1]	[0..*] MitigatedBidSegment	MitigatedBidSegment	inherited from: Bid
[0..*]	[0..1] SchedulingCoordinator	SchedulingCoordinator	inherited from: Bid
[0..1]	[0..*] MitigatedBid	MitigatedBid	inherited from: Bid
[0..1]	[0..*] RMRDetermination	RMRDetermination	inherited from: Bid
[0..*]	[1..1] ActionRequest	ActionRequest	inherited from: Bid
[1..1]	[1..*] ProductBids	ProductBid	inherited from: Bid
[1..1]	[0..*] BidHourlySchedule	BidHourlySchedule	inherited from: Bid
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject

[mult from]	[mult to] name	type	description
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.8.20 HourlyPreDispatchSchedule

An indicator specifying that a resource shall have an Hourly Pre-Dispatch. The resource could be a RegisteredGenerator or a RegisteredInterTie.

This schedule is associated with the hourly parameters in a resource bid.

Table 450 shows all attributes of HourlyPreDispatchSchedule.

Table 450 – Attributes of ParticipantInterfaces::HourlyPreDispatchSchedule

name	type	description
value	Boolean	Flag defining that for this hour in the resource bid the resource shall have an hourly pre-dispatch.
endTime	DateTime	inherited from: RegularIntervalSchedule
timeStep	Seconds	inherited from: RegularIntervalSchedule
startTime	DateTime	inherited from: BasicIntervalSchedule
value1Unit	UnitSymbol	inherited from: BasicIntervalSchedule
value1Multiplier	UnitMultiplier	inherited from: BasicIntervalSchedule
value2Unit	UnitSymbol	inherited from: BasicIntervalSchedule
value2Multiplier	UnitMultiplier	inherited from: BasicIntervalSchedule
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 451 shows all association ends of HourlyPreDispatchSchedule with other classes.

Table 451 – Association ends of ParticipantInterfaces::HourlyPreDispatchSchedule with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] Bid	Bid	inherited from: BidHourlySchedule
[1..1]	[1..*] TimePoints	RegularTimePoint	inherited from: RegularIntervalSchedule
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.8.21 InterTieBid

This class represents the inter tie bid

Table 452 shows all attributes of InterTieBid.

Table 452 – Attributes of ParticipantInterfaces::InterTieBid

name	type	description
minHourlyBlock	Integer	The minimum hourly block for an Inter-Tie Resource supplied within the bid.
aggregationFlag	Integer	inherited from: ResourceBid
bidStatus	String	inherited from: ResourceBid
commodityType	String	inherited from: ResourceBid
contingencyAvailFlag	YesNo	inherited from: ResourceBid
createdISO	YesNo	inherited from: ResourceBid
energyMaxDay	Float	inherited from: ResourceBid
energyMinDay	Float	inherited from: ResourceBid
marketSepFlag	String	inherited from: ResourceBid
minDispatchTime	Integer	inherited from: ResourceBid
resourceLoadingType	Integer	inherited from: ResourceBid
shutDownsMaxDay	Integer	inherited from: ResourceBid
shutDownsMaxWeek	Integer	inherited from: ResourceBid
startUpsMaxDay	Integer	inherited from: ResourceBid
startUpsMaxWeek	Integer	inherited from: ResourceBid
virtual	Boolean	inherited from: ResourceBid
startTime	DateTime	inherited from: Bid
stopTime	DateTime	inherited from: Bid
marketType	MarketType	inherited from: Bid
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 453 shows all association ends of InterTieBid with other classes.

Table 453 – Association ends of ParticipantInterfaces::InterTieBid with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..1] RegisteredInterTie	RegisteredInterTie	
[0..1]	[0..*] RampRateCurve	RampRateCurve	
[0..*]	[0..*] BidError	BidError	inherited from: ResourceBid
[0..*]	[0..1] MarketParticipant	MarketParticipant	inherited from: Bid

[mult from]	[mult to] name	type	description
[0..*]	[1..1] EnergyMarket	EnergyMarket	inherited from: Bid
[0..1]	[0..*] ChargeProfiles	ChargeProfile	inherited from: Bid
[1..1]	[0..*] MitigatedBidSegment	MitigatedBidSegment	inherited from: Bid
[0..*]	[0..1] SchedulingCoordinator	SchedulingCoordinator	inherited from: Bid
[0..1]	[0..*] MitigatedBid	MitigatedBid	inherited from: Bid
[0..1]	[0..*] RMRDetermination	RMRDetermination	inherited from: Bid
[0..*]	[1..1] ActionRequest	ActionRequest	inherited from: Bid
[1..1]	[1..*] ProductBids	ProductBid	inherited from: Bid
[1..1]	[0..*] BidHourlySchedule	BidHourlySchedule	inherited from: Bid
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.8.22 InterTieDispatchResponse root class

Response from an intertie resource acknowledging receipt of dispatch instructions

Table 454 shows all attributes of InterTieDispatchResponse.

Table 454 – Attributes of ParticipantInterfaces::InterTieDispatchResponse

name	type	description
acceptStatus	DispatchResponseType	The accept status submitted by the responder. Valid values are NON-RESPONSE, ACCEPT, DECLINE, PARTIAL.
acceptMW	Float	The accepted mw amount by the responder. aka response mw.
clearedMW	Float	MW amount associated with instruction. For 5 minute binding dispatches, this is the Goto MW or DOT
startTime	DateTime	Part of the Composite key that downstream app uses to match the instruction
passIndicator	PassIndicatorType	Part of the Composite key that downstream app uses to match the instruction

Table 455 shows all association ends of InterTieDispatchResponse with other classes.

Table 455 – Association ends of ParticipantInterfaces::InterTieDispatchResponse with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] RegisteredInterTie	RegisteredInterTie	

6.5.8.23 LoadBid

Offer to supply energy/ancillary services from a load resource (participating load reduces consumption)

Table 456 shows all attributes of LoadBid.

Table 456 – Attributes of ParticipantInterfaces::LoadBid

name	type	description
dropRampRate	ActivePowerChangeRate	Maximum rate that load can be reduced (MW/minute)
loadRedInitiationCost	Money	load reduction initiation cost
loadRedInitiationTime	Float	load reduction initiation time
marketDate	DateTime	The date represents the NextMarketDate for which the load response bids apply to.
meteredValue	Boolean	Flag indicated that the load reduction is metered. (See above) If priceSetting and meteredValue both equal 1, then the facility is eligible to set LMP in the real time market.
minLoad	ActivePower	Minimum MW load below which it may not be reduced.
minLoadReduction	ActivePower	Minimum MW for a load reduction (e.g. MW rating of a discrete pump).
minLoadReductionCost	Money	Cost in \$ at the minimum reduced load
minLoadReductionInterval	Float	Shortest period load reduction shall be maintained before load can be restored to normal levels.
minTimeBetLoadRed	Float	Shortest time that load shall be left at normal levels before a new load reduction.
pickUpRampRate	ActivePowerChangeRate	Maximum rate load may be restored (MW/minute)
priceSetting	Boolean	Flag to indicate that the facility can set LMP Works in tandem with Metered Value. Greater chance of this being dynamic than the Metered Value, however, it is requested that Price Setting and Metered Value stay at the same source. Currently no customers have implemented the metering capability, but if this option is implemented, then Price Setting could become dynamic. However, Metered Value will remain static.
reqNoticeTime	Float	Time period that is required from an order to reduce a load to the time that it takes to get to the minimum load reduction.
shutdownCost	Money	The fixed cost associated with committing a load reduction.
aggregationFlag	Integer	inherited from: ResourceBid
bidStatus	String	inherited from: ResourceBid
commodityType	String	inherited from: ResourceBid
contingencyAvailFlag	YesNo	inherited from: ResourceBid
createdISO	YesNo	inherited from: ResourceBid
energyMaxDay	Float	inherited from: ResourceBid
energyMinDay	Float	inherited from: ResourceBid
marketSepFlag	String	inherited from: ResourceBid
minDispatchTime	Integer	inherited from: ResourceBid
resourceLoadingType	Integer	inherited from: ResourceBid
shutDownsMaxDay	Integer	inherited from: ResourceBid
shutDownsMaxWeek	Integer	inherited from: ResourceBid

name	type	description
startUpsMaxDay	Integer	inherited from: ResourceBid
startUpsMaxWeek	Integer	inherited from: ResourceBid
virtual	Boolean	inherited from: ResourceBid
startTime	DateTime	inherited from: Bid
stopTime	DateTime	inherited from: Bid
marketType	MarketType	inherited from: Bid
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 457 shows all association ends of LoadBid with other classes.

Table 457 – Association ends of ParticipantInterfaces::LoadBid with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..*] RampRateCurve	RampRateCurve	
[1..1]	[0..*] LoadReductionPriceCurve	LoadReductionPriceCurve	
[0..*]	[0..1] AreaLoadBid	AreaLoadBid	
[0..*]	[0..1] RegisteredLoad	RegisteredLoad	
[0..*]	[0..*] BidError	BidError	inherited from: ResourceBid
[0..*]	[0..1] MarketParticipant	MarketParticipant	inherited from: Bid
[0..*]	[1..1] EnergyMarket	EnergyMarket	inherited from: Bid
[0..1]	[0..*] ChargeProfiles	ChargeProfile	inherited from: Bid
[1..1]	[0..*] MitigatedBidSegment	MitigatedBidSegment	inherited from: Bid
[0..*]	[0..1] SchedulingCoordinator	SchedulingCoordinator	inherited from: Bid
[0..1]	[0..*] MitigatedBid	MitigatedBid	inherited from: Bid
[0..1]	[0..*] RMRDetermination	RMRDetermination	inherited from: Bid
[0..*]	[1..1] ActionRequest	ActionRequest	inherited from: Bid
[1..1]	[1..*] ProductBids	ProductBid	inherited from: Bid
[1..1]	[0..*] BidHourlySchedule	BidHourlySchedule	inherited from: Bid
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.8.24 LoadFollowingInst root class

Metered SubSystem Load Following Instruction

Table 458 shows all attributes of LoadFollowingInst.

Table 458 – Attributes of ParticipantInterfaces::LoadFollowingInst

name	type	description
mssInstructionID	String	Unique instruction id per instruction, assigned by the SC and provided to ADS. ADS passes through.
startTime	DateTime	Instruction Start Time
endTime	DateTime	Instruction End Time
loadFollowingMW	Float	Load Following MW. Positive for follow-up and negative for follow-down

Table 459 shows all association ends of LoadFollowingInst with other classes.

Table 459 – Association ends of ParticipantInterfaces::LoadFollowingInst with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] RegisteredResource	RegisteredResource	

6.5.8.25 LoadReductionPriceCurve

This is the price sensitivity that bidder expresses for allowing market load interruption. Relationship between price (Y1-axis) vs. MW (X-axis).

Table 460 shows all attributes of LoadReductionPriceCurve.

Table 460 – Attributes of ParticipantInterfaces::LoadReductionPriceCurve

name	type	description
curveStyle	CurveStyle	inherited from: Curve
xMultiplier	UnitMultiplier	inherited from: Curve
xUnit	UnitSymbol	inherited from: Curve
y1Multiplier	UnitMultiplier	inherited from: Curve
y1Unit	UnitSymbol	inherited from: Curve
y2Multiplier	UnitMultiplier	inherited from: Curve
y2Unit	UnitSymbol	inherited from: Curve
y3Multiplier	UnitMultiplier	inherited from: Curve
y3Unit	UnitSymbol	inherited from: Curve
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 461 shows all association ends of LoadReductionPriceCurve with other classes.

**Table 461 – Association ends of ParticipantInterfaces::
LoadReductionPriceCurve with other classes**

[mult from]	[mult to] name	type	description
[0..*]	[1..1] LoadBid	LoadBid	
[0..*]	[0..*] RegisteredLoad	RegisteredLoad	
[1..1]	[0..*] CurveDatas	CurveData	inherited from: Curve
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.8.26 MajorChargeGroup

A Major Charge Group is the same as Invoice Type which provides the highest level of grouping for charge types configuration. Examples as Market, FERC, RMR.

Table 462 shows all attributes of MajorChargeGroup.

Table 462 – Attributes of ParticipantInterfaces::MajorChargeGroup

name	type	description
runType	String	
runVersion	String	
frequencyType	String	
invoiceType	String	
effectiveDate	DateTime	
terminationDate	DateTime	
requireAutorun	String	
revisionNumber	String	Revision number for the major charge group
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 463 shows all association ends of MajorChargeGroup with other classes.

**Table 463 – Association ends of ParticipantInterfaces::
MajorChargeGroup with other classes**

[mult from]	[mult to] name	type	description
[1..*]	[0..*] Settlement	Settlement	
[0..*]	[0..*] ChargeType	ChargeType	A MajorChargeGroup can have 0-n ChargeType. A ChargeType can associate to 0-n MajorChargeGroup.
[0..1]	[0..*] MktScheduledEvent	MarketScheduledEvent	
[1..*]	[0..*] MarketInvoice	MarketInvoice	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject

[mult from]	[mult to] name	type	description
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.8.27 MarketScheduledEvent

Signifies an event to trigger one or more activities, such as reading a meter, recalculating a bill, requesting work, when generating units shall be scheduled for maintenance, when a transformer is scheduled to be refurbished, etc.

Table 464 shows all attributes of MarketScheduledEvent.

Table 464 – Attributes of ParticipantInterfaces::MarketScheduledEvent

name	type	description
category	String	Category of scheduled event
duration	Seconds	Duration of the scheduled event, for example, the time to ramp between values.
status	Status	
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 465 shows all association ends of MarketScheduledEvent with other classes.

Table 465 – Association ends of ParticipantInterfaces::MarketScheduledEvent with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] MajorChargeGroup	MajorChargeGroup	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.8.28 NotificationTimeCurve

Notification time curve as a function of down time. Relationship between crew notification time (Y1-axis) and unit startup time (Y2-axis) vs. unit elapsed down time (X-axis).

Table 466 shows all attributes of NotificationTimeCurve.

Table 466 – Attributes of ParticipantInterfaces::NotificationTimeCurve

name	type	description
curveStyle	CurveStyle	inherited from: Curve
xMultiplier	UnitMultiplier	inherited from: Curve
xUnit	UnitSymbol	inherited from: Curve
y1Multiplier	UnitMultiplier	inherited from: Curve
y1Unit	UnitSymbol	inherited from: Curve

name	type	description
y2Multiplier	UnitMultiplier	inherited from: Curve
y2Unit	UnitSymbol	inherited from: Curve
y3Multiplier	UnitMultiplier	inherited from: Curve
y3Unit	UnitSymbol	inherited from: Curve
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 467 shows all association ends of NotificationTimeCurve with other classes.

Table 467 – Association ends of ParticipantInterfaces::NotificationTimeCurve with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..*] GeneratingBids	GeneratingBid	
[1..1]	[0..*] CurveDatas	CurveData	inherited from: Curve
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.8.29 OpenTieSchedule

Result of bid validation against conditions that may exist on an interchange that becomes disconnected or is heavily discounted with respect the MW flow.

This schedule is associated with the hourly parameters in a resource bid.

Table 468 shows all attributes of OpenTieSchedule.

Table 468 – Attributes of ParticipantInterfaces::OpenTieSchedule

name	type	description
value	Boolean	
endTime	DateTime	inherited from: RegularIntervalSchedule
timeStep	Seconds	inherited from: RegularIntervalSchedule
startTime	DateTime	inherited from: BasicIntervalSchedule
value1Unit	UnitSymbol	inherited from: BasicIntervalSchedule
value1Multiplier	UnitMultiplier	inherited from: BasicIntervalSchedule
value2Unit	UnitSymbol	inherited from: BasicIntervalSchedule
value2Multiplier	UnitMultiplier	inherited from: BasicIntervalSchedule
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 469 shows all association ends of OpenTieSchedule with other classes.

Table 469 – Association ends of ParticipantInterfaces::OpenTieSchedule with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] Bid	Bid	inherited from: BidHourlySchedule
[1..1]	[1..*] TimePoints	RegularTimePoint	inherited from: RegularIntervalSchedule
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.8.30 ProductBid

Component of a bid that pertains to one market product.

Table 470 shows all attributes of ProductBid.

Table 470 – Attributes of ParticipantInterfaces::ProductBid

name	type	description
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 471 shows all association ends of ProductBid with other classes.

Table 471 – Association ends of ParticipantInterfaces::ProductBid with other classes

[mult from]	[mult to] name	type	description
[1..*]	[1..1] Bid	Bid	A bid comprises one or more product bids of market products
[1..1]	[0..*] BidDistributionFactor	BidDistributionFactor	
[1..1]	[0..*] BidSchedule	BidPriceSchedule	
[1..1]	[0..*] BidSelfSched	BidSelfSched	
[0..*]	[1..1] MarketProduct	MarketProduct	
[1..1]	[0..1] BidHourlyProductSchedule	BidHourlyProductSchedule	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.8.31 PumpingCostSchedule

The operating cost of a Pump Storage Hydro Unit operating as a hydro pump.

This schedule is associated with the hourly parameters in a resource bid associated with a specific product within the bid.

Table 472 shows all attributes of PumpingCostSchedule.

Table 472 – Attributes of ParticipantInterfaces::PumpingCostSchedule

name	type	description
value	Float	
endTime	DateTime	inherited from: RegularIntervalSchedule
timeStep	Seconds	inherited from: RegularIntervalSchedule
startTime	DateTime	inherited from: BasicIntervalSchedule
value1Unit	UnitSymbol	inherited from: BasicIntervalSchedule
value1Multiplier	UnitMultiplier	inherited from: BasicIntervalSchedule
value2Unit	UnitSymbol	inherited from: BasicIntervalSchedule
value2Multiplier	UnitMultiplier	inherited from: BasicIntervalSchedule
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 473 shows all association ends of PumpingCostSchedule with other classes.

Table 473 – Association ends of ParticipantInterfaces::PumpingCostSchedule with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] ProductBid	ProductBid	inherited from: BidHourlyProductSchedule
[1..1]	[1..*] TimePoints	RegularTimePoint	inherited from: RegularIntervalSchedule
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.8.32 PumpingLevelSchedule

The fixed operating level of a Pump Storage Hydro Unit operating as a hydro pump. Associated with the energy market product type.

This schedule is associated with the hourly parameters in a resource bid associated with a specific product within the bid.

Table 474 shows all attributes of PumpingLevelSchedule.

Table 474 – Attributes of ParticipantInterfaces::PumpingLevelSchedule

name	type	description
value	Float	
endTime	DateTime	inherited from: RegularIntervalSchedule
timeStep	Seconds	inherited from: RegularIntervalSchedule
startTime	DateTime	inherited from: BasicIntervalSchedule
value1Unit	UnitSymbol	inherited from: BasicIntervalSchedule
value1Multiplier	UnitMultiplier	inherited from: BasicIntervalSchedule
value2Unit	UnitSymbol	inherited from: BasicIntervalSchedule

name	type	description
value2Multiplier	UnitMultiplier	inherited from: BasicIntervalSchedule
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 475 shows all association ends of PumpingLevelSchedule with other classes.

Table 475 – Association ends of ParticipantInterfaces::PumpingLevelSchedule with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] ProductBid	ProductBid	inherited from: BidHourlyProductSchedule
[1..1]	[1..*] TimePoints	RegularTimePoint	inherited from: RegularIntervalSchedule
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.8.33 PumpingShutDownCostSchedule

The cost to shutdown a Pump Storage Hydro Unit (in pump mode) or a pump.

This schedule is associated with the hourly parameters in a resource bid associated with a specific product within the bid.

Table 476 shows all attributes of PumpingShutDownCostSchedule.

Table 476 – Attributes of ParticipantInterfaces::PumpingShutDownCostSchedule

name	type	description
value	Float	
endTime	DateTime	inherited from: RegularIntervalSchedule
timeStep	Seconds	inherited from: RegularIntervalSchedule
startTime	DateTime	inherited from: BasicIntervalSchedule
value1Unit	UnitSymbol	inherited from: BasicIntervalSchedule
value1Multiplier	UnitMultiplier	inherited from: BasicIntervalSchedule
value2Unit	UnitSymbol	inherited from: BasicIntervalSchedule
value2Multiplier	UnitMultiplier	inherited from: BasicIntervalSchedule
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 477 shows all association ends of PumpingShutDownCostSchedule with other classes.

**Table 477 – Association ends of ParticipantInterfaces::
PumpingShutDownCostSchedule with other classes**

[mult from]	[mult to] name	type	description
[0..*]	[1..1] ProductBid	ProductBid	inherited from: BidHourlyProductSchedule
[1..1]	[1..*] TimePoints	RegularTimePoint	inherited from: RegularIntervalSchedule
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.8.34 RampRateCurve

Ramp rate as a function of resource MW output

Table 478 shows all attributes of RampRateCurve.

Table 478 – Attributes of ParticipantInterfaces::RampRateCurve

name	type	description
condition	RampRateCondition	condition for the ramp rate
constraintRampType	ConstraintRampType	The condition that identifies whether a Generating Resource should be constrained from Ancillary Service provision if its Schedule or Dispatch change across Trading Hours or Trading Intervals requires more than a specified fraction of the duration of the Trading Hour or Trading Interval. Valid values are Fast/Slow
rampRateType	RampRateType	How ramp rate is applied (e.g. raise or lower, as when applied to a generation resource)
curveStyle	CurveStyle	inherited from: Curve
xMultiplier	UnitMultiplier	inherited from: Curve
xUnit	UnitSymbol	inherited from: Curve
y1Multiplier	UnitMultiplier	inherited from: Curve
y1Unit	UnitSymbol	inherited from: Curve
y2Multiplier	UnitMultiplier	inherited from: Curve
y2Unit	UnitSymbol	inherited from: Curve
y3Multiplier	UnitMultiplier	inherited from: Curve
y3Unit	UnitSymbol	inherited from: Curve
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 479 shows all association ends of RampRateCurve with other classes.

Table 479 – Association ends of ParticipantInterfaces::RampRateCurve with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] RegisteredResource	RegisteredResource	
[0..*]	[0..1] GeneratingBid	GeneratingBid	
[0..*]	[0..1] InterTieBid	InterTieBid	
[0..*]	[0..1] LoadBid	LoadBid	
[1..1]	[0..*] CurveDatas	CurveData	inherited from: Curve
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.8.35 ResourceBid

Energy bid for generation, load, or virtual type for the whole of the market-trading period (i.e., one day in day ahead market or one hour in the real time market)

Table 480 shows all attributes of ResourceBid.

Table 480 – Attributes of ParticipantInterfaces::ResourceBid

name	type	description
aggregationFlag	Integer	Aggregation flag 0: individual resource level 1: Aggregated node location 2: Aggregated price location)
bidStatus	String	
commodityType	String	Energy product (commodity) type: 'En' – Energy 'Ru' – Regulation Up 'Rd' – Regulation Dn 'Sr' – Spinning Reserve 'Nr' – Non-Spinning Reserve 'Or' – Operating Reserve
contingencyAvailFlag	YesNo	contingent operating reserve availability (Yes/No). Resource is available to participate with capacity only in contingency dispatch.
createdISO	YesNo	A Yes indicates that this bid was created by the ISO.
energyMaxDay	Float	Maximum amount of energy per day which can be produced during the trading period in MWh
energyMinDay	Float	Minimum amount of energy per day which has to be produced during the trading period in MWh
marketSepFlag	String	Market Separation Flag 'Y' – Enforce market separation constraints for this bid 'N' – Don't enforce market separation constraints for this bid.
minDispatchTime	Integer	minimum number of consecutive hours a resource shall be dispatched if bid is accepted

name	type	description
resourceLoadingType	Integer	Resource loading curve type 1 – step-wise continuous loading 2 – piece-wise linear continuous loading 3 – block loading
shutDownsMaxDay	Integer	Maximum number of shutdowns per day.
shutDownsMaxWeek	Integer	Maximum number of shutdowns per week.
startUpsMaxDay	Integer	Maximum number of startups per day.
startUpsMaxWeek	Integer	Maximum number of startups per week.
virtual	Boolean	True if bid is virtual. Bid is assumed to be non-virtual if attribute is absent
startTime	DateTime	inherited from: Bid
stopTime	DateTime	inherited from: Bid
marketType	MarketType	inherited from: Bid
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 481 shows all association ends of ResourceBid with other classes.

Table 481 – Association ends of ParticipantInterfaces::ResourceBid with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] BidError	BidError	
[0..*]	[0..1] MarketParticipant	MarketParticipant	inherited from: Bid
[0..*]	[1..1] EnergyMarket	EnergyMarket	inherited from: Bid
[0..1]	[0..*] ChargeProfiles	ChargeProfile	inherited from: Bid
[1..1]	[0..*] MitigatedBidSegment	MitigatedBidSegment	inherited from: Bid
[0..*]	[0..1] SchedulingCoordinator	SchedulingCoordinator	inherited from: Bid
[0..1]	[0..*] MitigatedBid	MitigatedBid	inherited from: Bid
[0..1]	[0..*] RMRDetermination	RMRDetermination	inherited from: Bid
[0..*]	[1..1] ActionRequest	ActionRequest	inherited from: Bid
[1..1]	[1..*] ProductBids	ProductBid	inherited from: Bid
[1..1]	[0..*] BidHourlySchedule	BidHourlySchedule	inherited from: Bid
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject

[mult from]	[mult to] name	type	description
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.8.36 StartUpCostCurve

Startup costs and time as a function of down time. Relationship between unit startup cost (Y1-axis) vs. unit elapsed down time (X-axis).

Table 482 shows all attributes of StartUpCostCurve.

Table 482 – Attributes of ParticipantInterfaces::StartUpCostCurve

name	type	description
curveStyle	CurveStyle	inherited from: Curve
xMultiplier	UnitMultiplier	inherited from: Curve
xUnit	UnitSymbol	inherited from: Curve
y1Multiplier	UnitMultiplier	inherited from: Curve
y1Unit	UnitSymbol	inherited from: Curve
y2Multiplier	UnitMultiplier	inherited from: Curve
y2Unit	UnitSymbol	inherited from: Curve
y3Multiplier	UnitMultiplier	inherited from: Curve
y3Unit	UnitSymbol	inherited from: Curve
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 483 shows all association ends of StartUpCostCurve with other classes.

Table 483 – Association ends of ParticipantInterfaces::StartUpCostCurve with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..1] GeneratingBid	GeneratingBid	
[0..*]	[0..*] RegisteredGenerators	RegisteredGenerator	
[1..1]	[0..*] CurveDatas	CurveData	inherited from: Curve
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.8.37 StartUpTimeCurve

Startup time curve as a function of down time, where time is specified in minutes. Relationship between unit startup time (Y1-axis) vs. unit elapsed down time (X-axis).

Table 484 shows all attributes of StartUpTimeCurve.

Table 484 – Attributes of ParticipantInterfaces::StartUpTimeCurve

name	type	description
curveStyle	CurveStyle	inherited from: Curve
xMultiplier	UnitMultiplier	inherited from: Curve
xUnit	UnitSymbol	inherited from: Curve
y1Multiplier	UnitMultiplier	inherited from: Curve
y1Unit	UnitSymbol	inherited from: Curve
y2Multiplier	UnitMultiplier	inherited from: Curve
y2Unit	UnitSymbol	inherited from: Curve
y3Multiplier	UnitMultiplier	inherited from: Curve
y3Unit	UnitSymbol	inherited from: Curve
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 485 shows all association ends of StartUpTimeCurve with other classes.

Table 485 – Association ends of ParticipantInterfaces::StartUpTimeCurve with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..*] GeneratingBid	GeneratingBid	
[0..1]	[0..1] RegisteredGenerator	RegisteredGenerator	
[1..1]	[0..*] CurveDatas	CurveData	inherited from: Curve
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.8.38 Trade

Inter Scheduling Coordinator Trades to model financial trades which may impact settlement

Table 486 shows all attributes of Trade.

Table 486 – Attributes of ParticipantInterfaces::Trade

name	type	description
adjustedTradeQuantity	Float	The validated and current market accepted trade amount of a physical energy trade.
counterTradeQuantity	Float	MW quantity submitted by counter SC for the same trade
dependOnTradeName	String	The Depend On IST Name points to the unique IST Name in the chain of physical energy trades.
lastModified	DateTime	Time and date the trade was last modified.
marketType	MarketType	
startTime	DateTime	Start time and date for which trade applies.
stopTime	DateTime	Stop time and date for which trade is applicable.

name	type	description
submitFromTimeStamp	DateTime	Timestamp of submittal of submit From Scheduling Coordinator Trade to Market Participant Bid Submittal
submitFromUser	String	Userid of the submit From Scheduling Coordinator trade
submitToTimeStamp	DateTime	Timestamp of submittal of submit To Scheduling Coordinator Trade to Market Participant Bid Submittal
submitToUser	String	Userid of the submit To Scheduling Coordinator trade
tradeQuantity	Float	tradeQuantity: If tradeType = IST, The amount of an Energy Trade. If tradeType = AST, The amount of an Ancillary Service Obligation Trade. If tradeType = UCT, The amount of a Unit Commitment Obligation Trade.
tradeStatus	String	Resulting status of the trade following the rule engine processing.
updateTimeStamp	DateTime	
updateUser	String	
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 487 shows all association ends of Trade with other classes.

Table 487 – Association ends of ParticipantInterfaces::Trade with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..*] TradeError	TradeError	
[0..*]	[1..1] ActionRequest	ActionRequest	
[0..*]	[0..1] Pnode	Pnode	
[0..*]	[0..1] submitToSchedulingCoordinator	SchedulingCoordinator	
[0..*]	[1..1] TradeProduct	TradeProduct	
[0..*]	[1..1] To_SC	SchedulingCoordinator	
[0..*]	[1..1] From_SC	SchedulingCoordinator	
[0..*]	[0..1] submitFromSchedulingCoordinator	SchedulingCoordinator	
[0..*]	[0..1] RegisteredGenerator	RegisteredGenerator	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.8.39 TradeError

Trade error and warning messages associated with the rule engine processing of the submitted trade.

Table 488 shows all attributes of TradeError.

Table 488 – Attributes of ParticipantInterfaces::TradeError

name	type	description
errPriority	Integer	Priority number for the error message
errMessage	String	error message
ruleID	Integer	Rule identifier which triggered the error/warning message
startTime	DateTime	hour within the trade for which the error applies
endTime	DateTime	hour within the trade for which the error applies
logTimeStamp	DateTime	Timestamp of logged error/warning message
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 489 shows all association ends of TradeError with other classes.

Table 489 – Association ends of ParticipantInterfaces::TradeError with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] Trade	Trade	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.8.40 TradeProduct root class

TradeType	TradeProduct
IST (InterSC Trade)	PHY (Physical Energy Trade)
IST	APN (Energy Trades at Aggregated Pricing Nodes)
IST	CPT (Converted Physical Energy Trade)
AST (Ancilliary Services Trade)	RUT (Regulation Up Trade)
AST	RDT (Regulation Down Trade)
AST	SRT (Spinning Reserve Trade)
AST	NRT (Non-Spinning Reserve Trade)

UCT (Unit Commitment Trade) null

Table 490 shows all attributes of TradeProduct.

Table 490 – Attributes of ParticipantInterfaces::TradeProduct

name	type	description
tradeType	TradeType	IST – InterSC Trade; AST – Ancillary Services Trade; UCT – Unit Commitment Trade
tradeProductType	String	PHY (Physical Energy Trade); APN (Energy Trades at Aggregated Pricing Nodes); CPT (Converted Physical Energy Trade); RUT (Regulation Up Trade); RDT (Regulation Down Trade); SRT (Spinning Reserve Trade); NRT (Non-Spinning Reserve Trade)

Table 491 shows all association ends of TradeProduct with other classes.

Table 491 – Association ends of ParticipantInterfaces::TradeProduct with other classes

[mult from]	[mult to] name	type	description
[1..1]	[0..*] Trade	Trade	

6.5.8.41 TransactionBid

Bilateral or scheduled transactions for energy and ancillary services considered by market clearing process

Table 492 shows all attributes of TransactionBid.

Table 492 – Attributes of ParticipantInterfaces::TransactionBid

name	type	description
demandTransaction	Boolean	Set true if this is a demand transaction.
dispatchable	Boolean	Set true if this is a dispatchable transaction.
payCongestion	Boolean	Set true if this is a willing to pay transaction. This flag is used to determine whether a schedule is willing-to-pay-congestion or not.
startTime	DateTime	inherited from: Bid
stopTime	DateTime	inherited from: Bid
marketType	MarketType	inherited from: Bid
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document

name	type	description
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 493 shows all association ends of TransactionBid with other classes.

**Table 493 – Association ends of ParticipantInterfaces:
TransactionBid with other classes**

[mult from]	[mult to] name	type	description
[1..1]	[1..*] EnergyProfiles	EnergyProfile	
[0..1]	[0..1] TransmissionReservation	TransmissionReservation	
[0..1]	[0..*] TransactionBidResults	TransactionBidResults	
[0..*]	[0..1] Receipt_Pnode	Pnode	
[0..*]	[0..1] Delivery_Pnode	Pnode	
[0..*]	[0..1] MarketParticipant	MarketParticipant	inherited from: Bid
[0..*]	[1..1] EnergyMarket	EnergyMarket	inherited from: Bid
[0..1]	[0..*] ChargeProfiles	ChargeProfile	inherited from: Bid
[1..1]	[0..*] MitigatedBidSegment	MitigatedBidSegment	inherited from: Bid
[0..*]	[0..1] SchedulingCoordinator	SchedulingCoordinator	inherited from: Bid
[0..1]	[0..*] MitigatedBid	MitigatedBid	inherited from: Bid
[0..1]	[0..*] RMRDetermination	RMRDetermination	inherited from: Bid
[0..*]	[1..1] ActionRequest	ActionRequest	inherited from: Bid
[1..1]	[1..*] ProductBids	ProductBid	inherited from: Bid
[1..1]	[0..*] BidHourlySchedule	BidHourlySchedule	inherited from: Bid
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9 Package ReferenceData

6.5.9.1 General

Market static reference data.

Figure 46 shows class diagram AggregateNode.

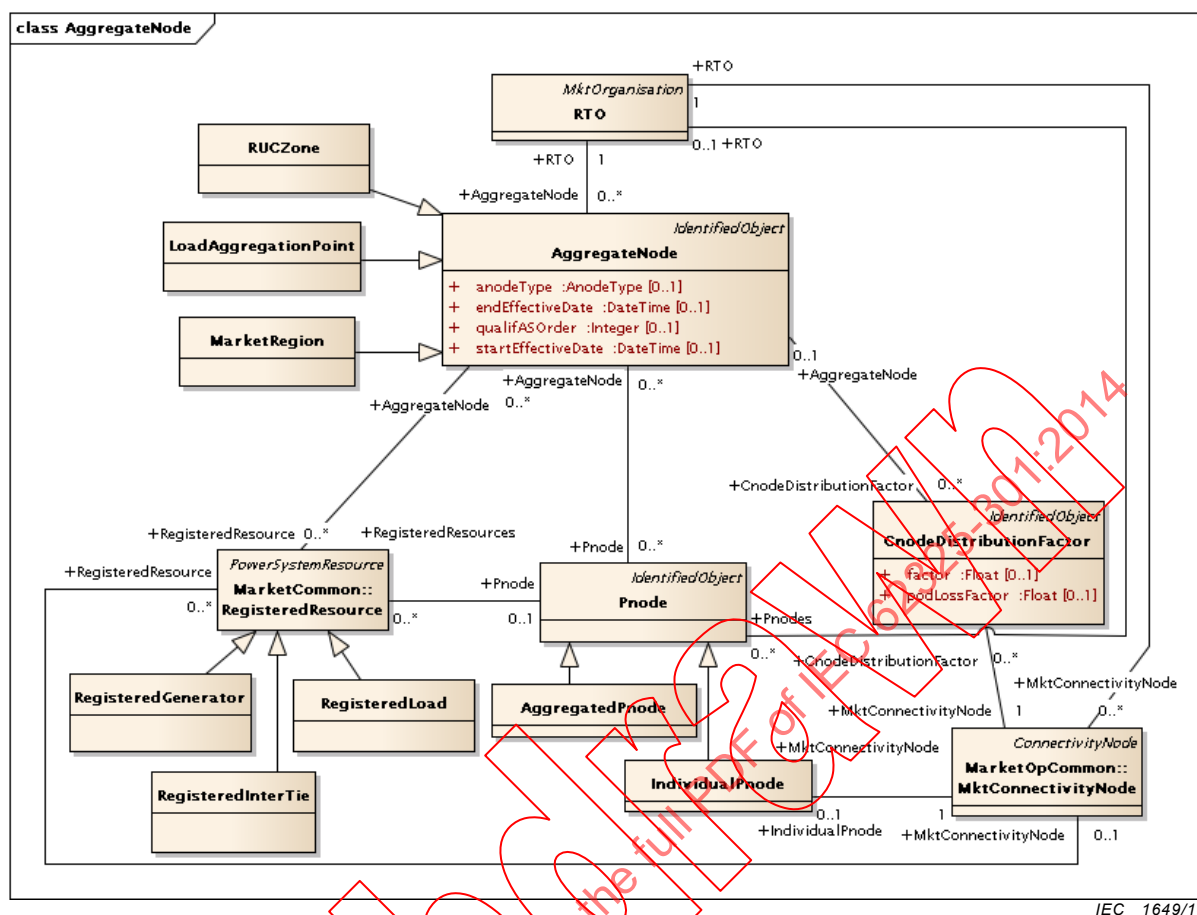


Figure 46 – Class diagram ReferenceData::AggregateNode

This figure shows classes and associations used to model aggregate nodes. The aggregated node allows a grouping of Pnode and Cnodes that is further defined by AnodeType. Reliability Unit Commitment zones are modeled by the RUCZone subclass. Load aggregation points are modeled by the LoadAggregationPoint subclass, and market regions by the MarketRegion subclass. Registered resources are associated with Aggregated nodes.

Figure 47 shows class diagram Contracts.

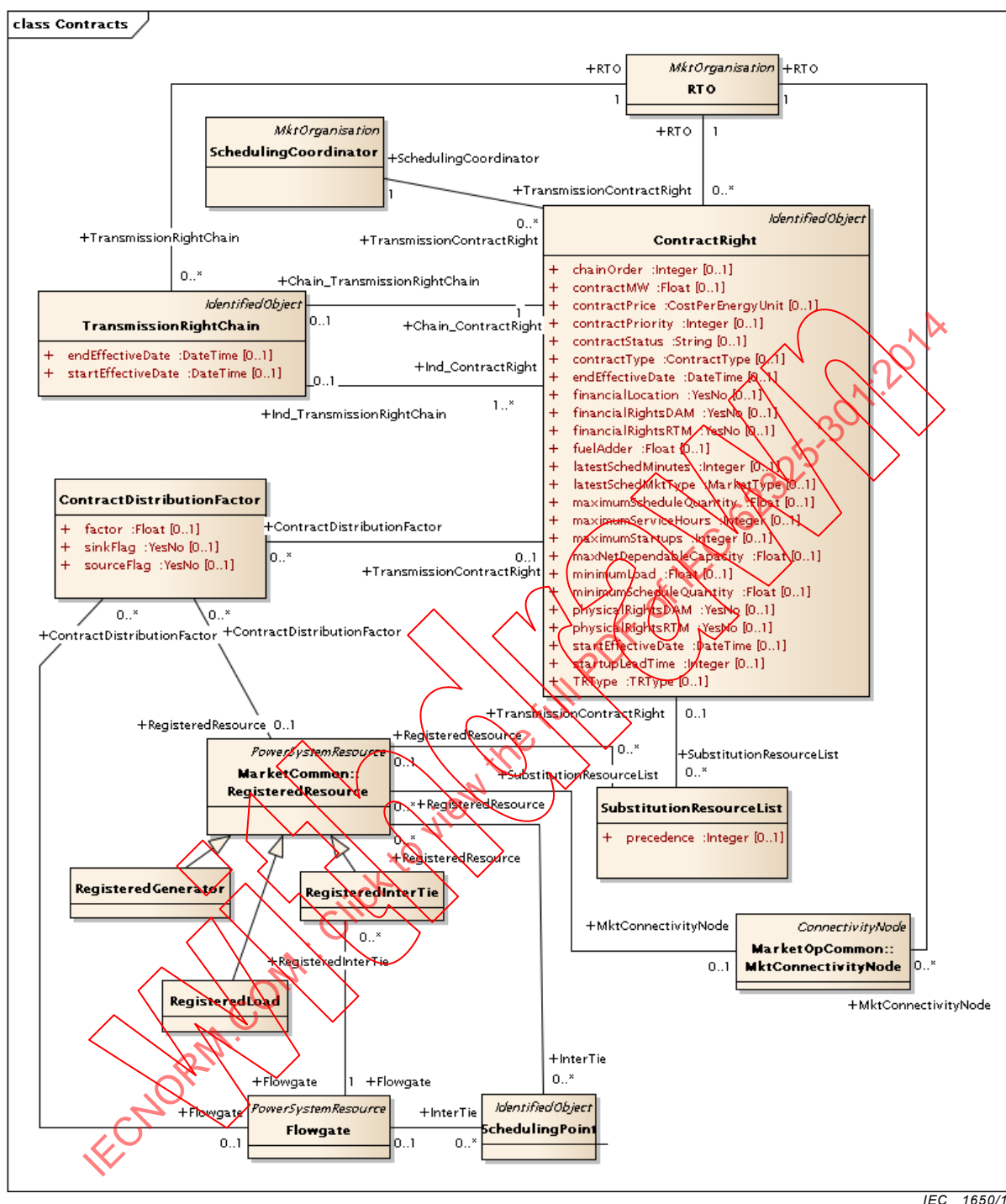


Figure 47 – Class diagram ReferenceData::Contracts

This figure shows the classes and associations used to model Contract rights. The class ContractRight is used to summarize contract information. Types of contracts include Existing Transmission Contracts (ETC), Transmission Ownership Rights (TOR), Reliability Must Run (RMR) and Reliability Must Take (RMT). ETCs and TOR represent grandfathered transmission use contracts that exist at the time of startup of an ISO. RMR and RMT affect generation. The figure shows associations with the TransmissionRightChain which may be used to model chaining of ETCs and with Scheduling Coordinators. Associations are also included to model distribution to sources and sinks (the Contract DistributionFactor class) and to registered resources (RegisteredResource class).

Figure 48 shows class diagram MeteredSubSystem.

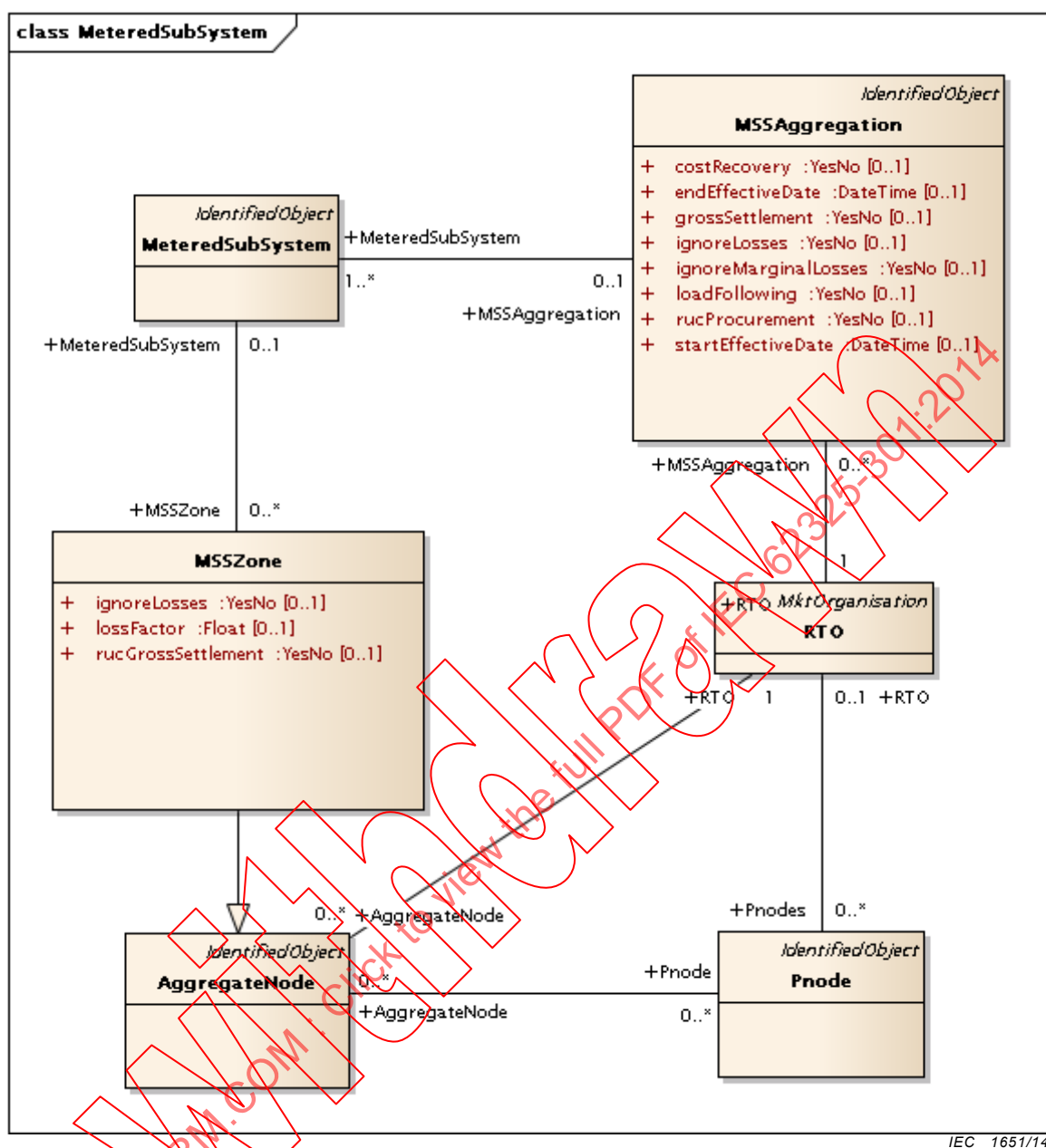


Figure 48 – Class diagram ReferenceData::MeteredSubSystem

This figure shows the classes and associations used to model metered subsystems. A metered subsystem (MSS) is a geographically contiguous system which was historically operated as a separate control area and which is now operated in accordance with a MSS agreement. Associations are shown with the class MSSZone which is used to model zones with an MSS. MSSZone is subtype of the Aggregated Node.

Figure 49 shows class diagram MultiStateGenerator.

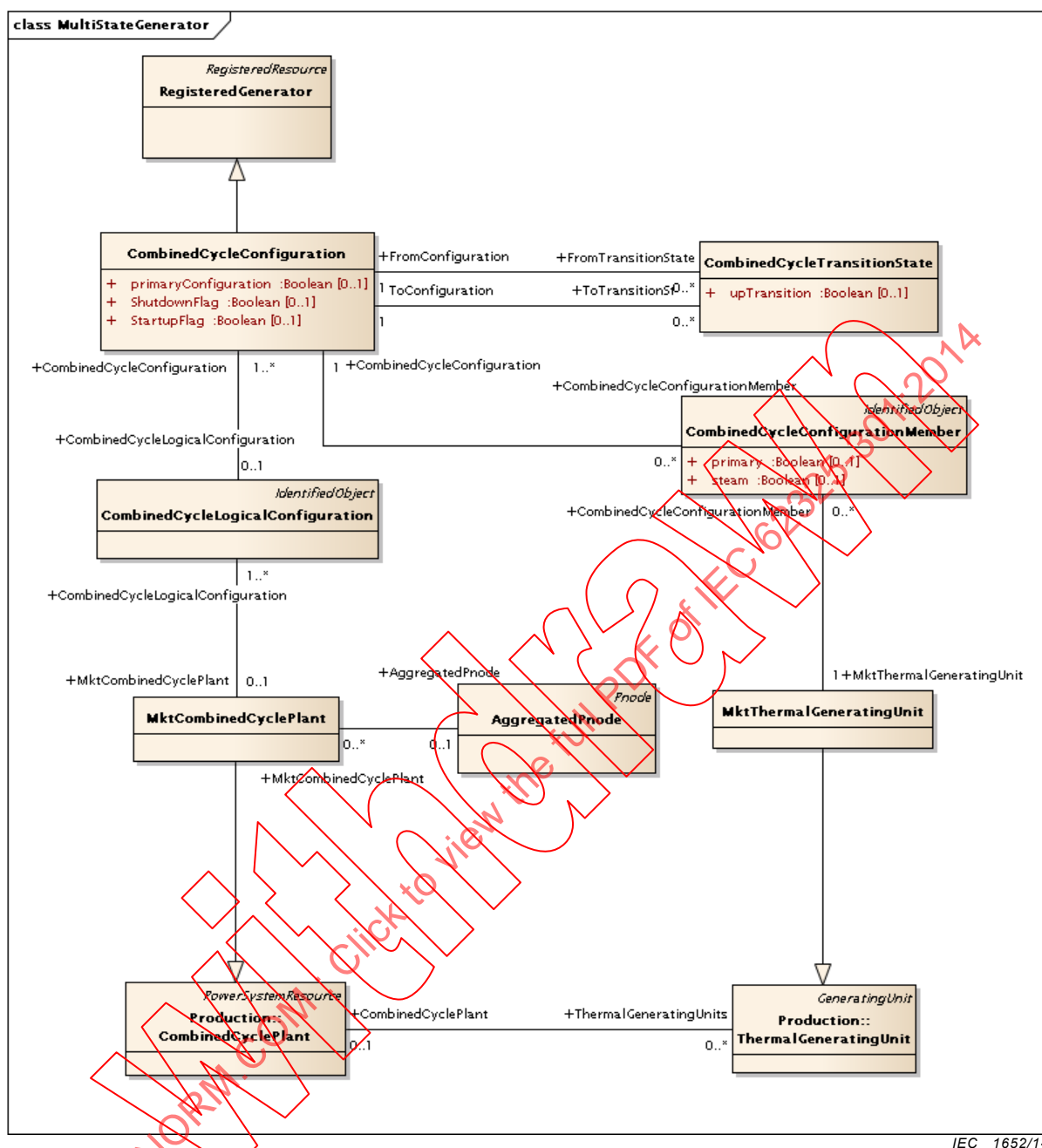
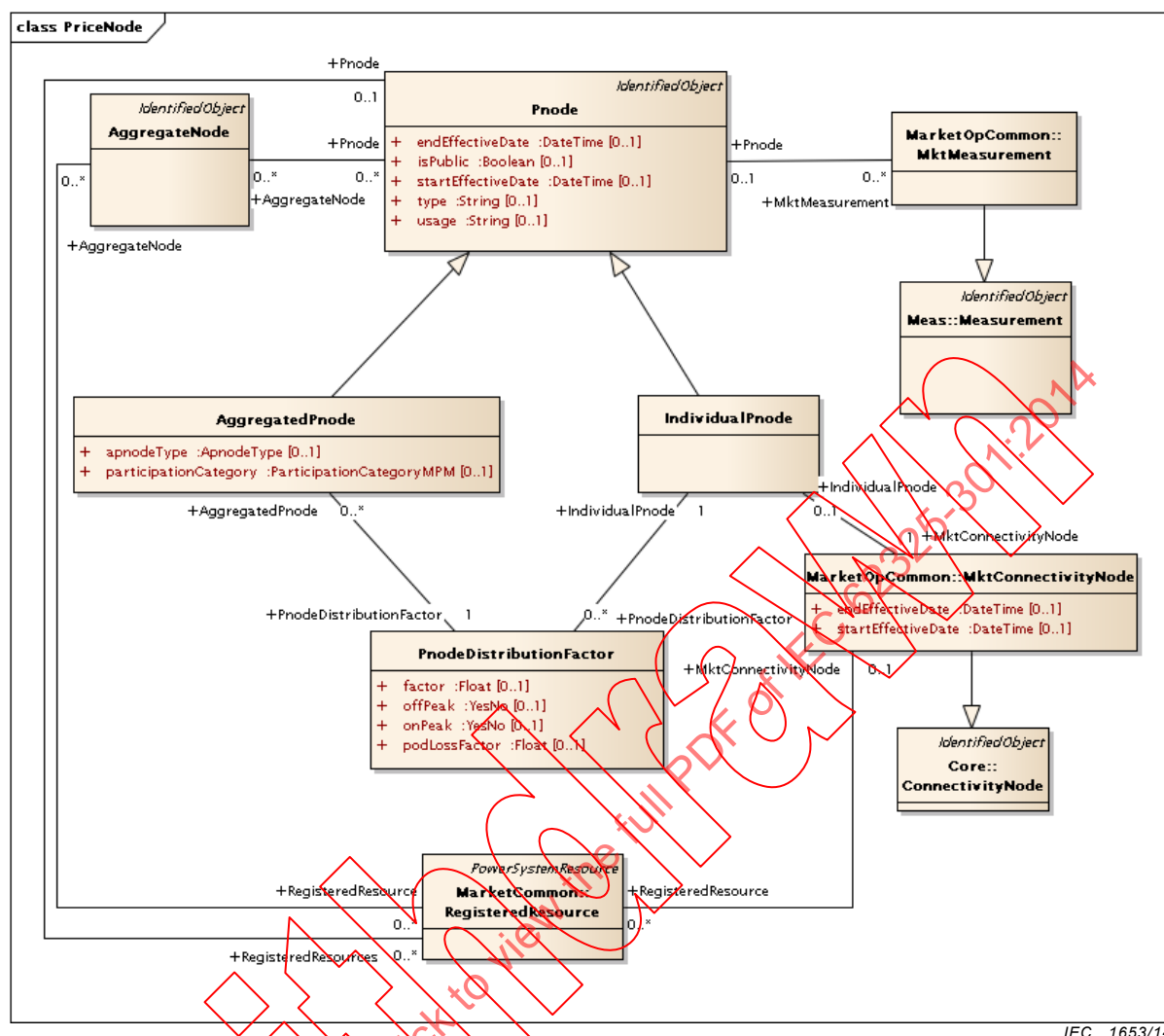


Figure 49 – Class diagram ReferenceData::MultiStateGenerator

This figure shows the classes and associations used to model MultiState Generating Units, such as combined cycle plants. The combined cycle plant is associated with the LogicalConfiguration class, the Configuration class and the ConfigurationMember class which are used to model the various modes of operation of the plant. The MktCombinedCyclePlant and the MktThermalGeneratingUnit classes are subclasses of the parent classes from 61970 Production package.

Figure 50 shows class diagram PriceNode.



IEC 1653/14

Figure 50 – Class diagram ReferenceData::PriceNode

This figure shows the classes and associations used to model pricing nodes. The pricing node is referenced by market participants, in bids/offers for energy, ancillary services, and CRRs. AggregatePnodes and IndividualPnodes are subclasses of the Pnode class. Pnodes are associated with registered resources and used in bids/offers. Pnodes are also associated with the MktMeasurement class which is used in Billing and Settlement.

Figure 51 shows class diagram RegisteredGenerator.

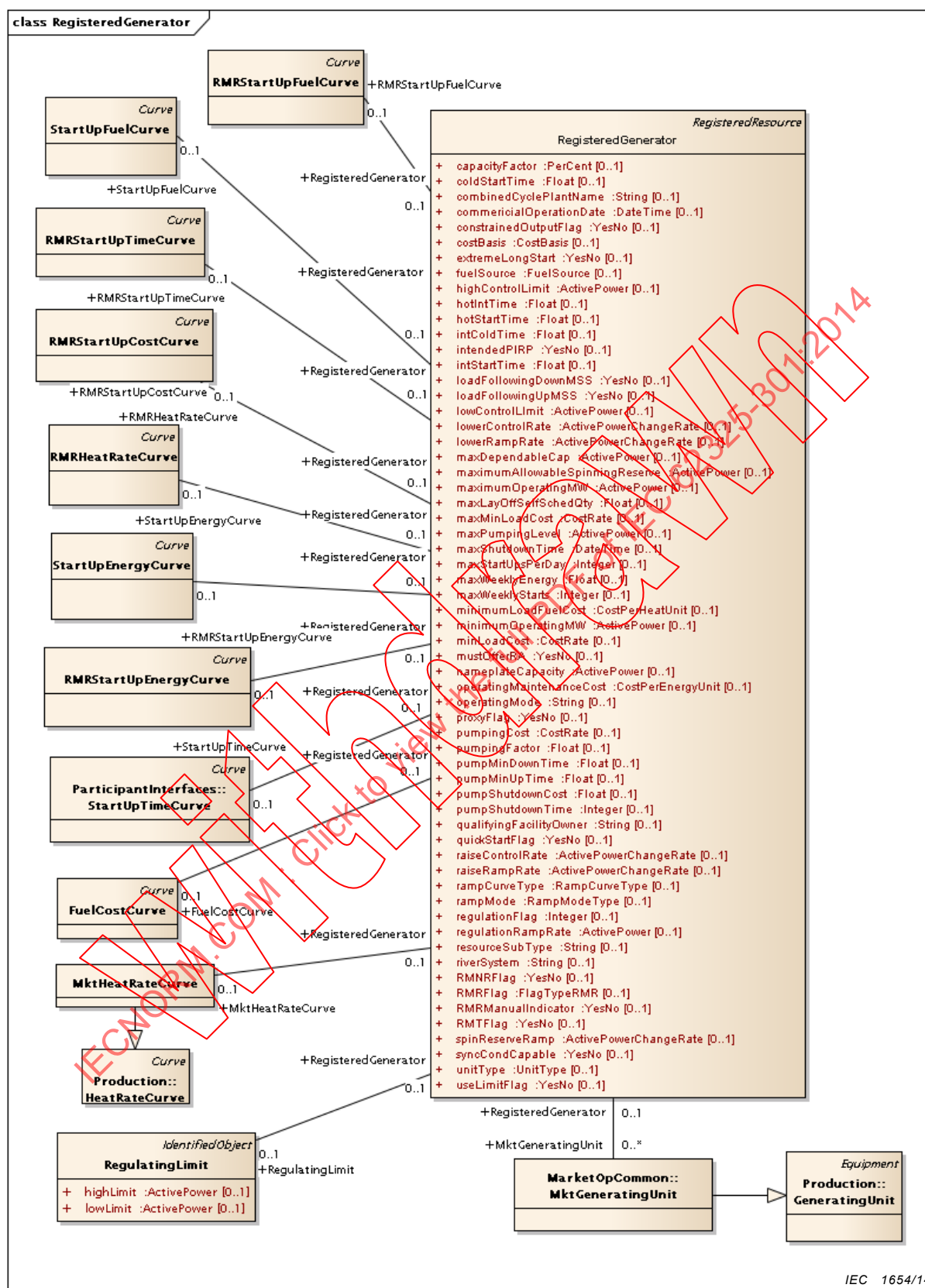


Figure 51 – Class diagram ReferenceData::RegisteredGenerator

This figure shows the classes and associations use to model registered generators. The RMRStartUpFuelCurve is used to model the cost of starting generating units classified as reliability must run units. Other classes are used to model startup cost, start up energy curve,

heat rates, and start up time for RMR units. The class FuelCostCurve is used to model the relationship between startup fuel cost and unit active power output.

Figure 52 shows class diagram RegisteredInterTie.

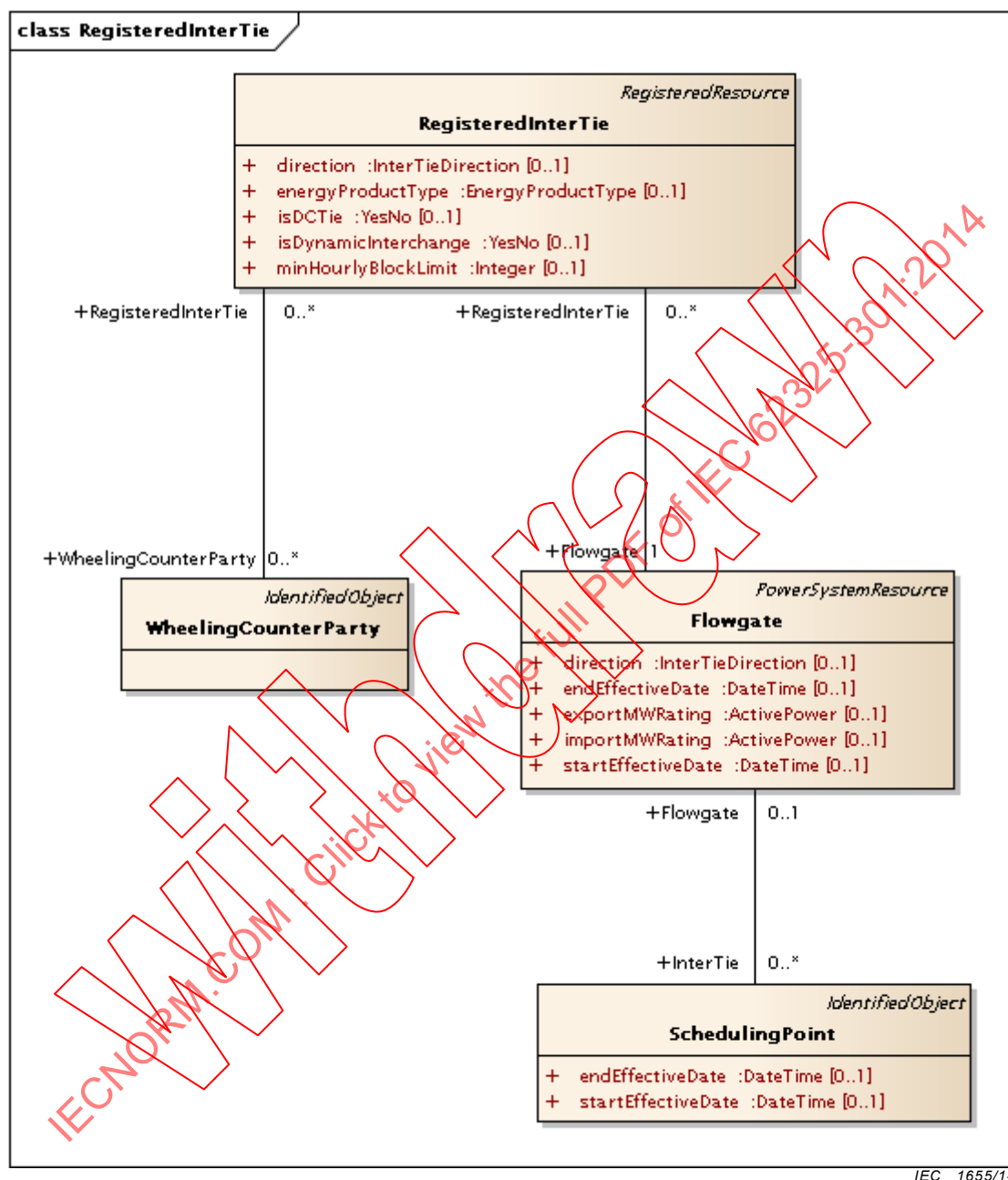


Figure 52 – Class diagram ReferenceData::RegisteredInterTie

This figure shows the classes and associations used to model registered interties. The SchedulingPoint class is associated with a flowgate which is in turn associated with a RegisteredInterTie. The RegisteredInterTie may be an AC or DC tie to a neighbouring utility entity.

Figure 53 shows class diagram RegisteredLoad.

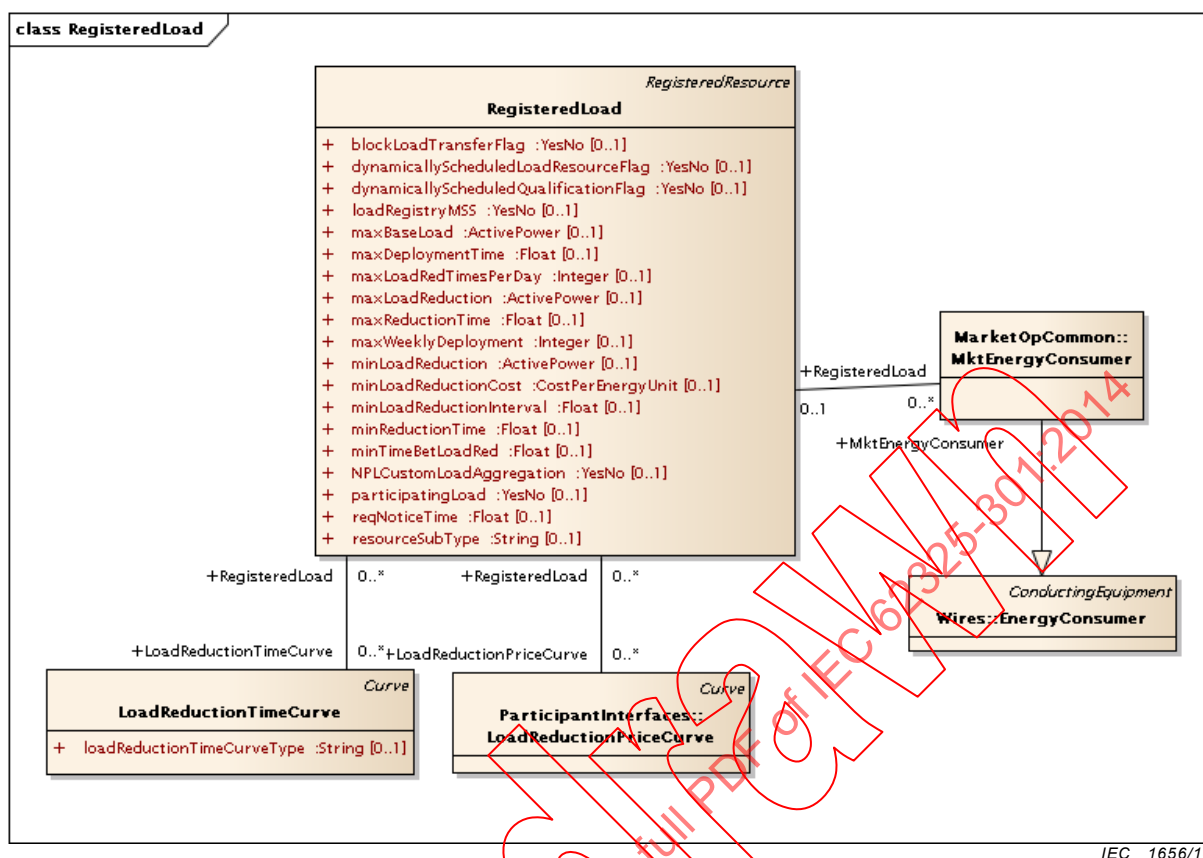
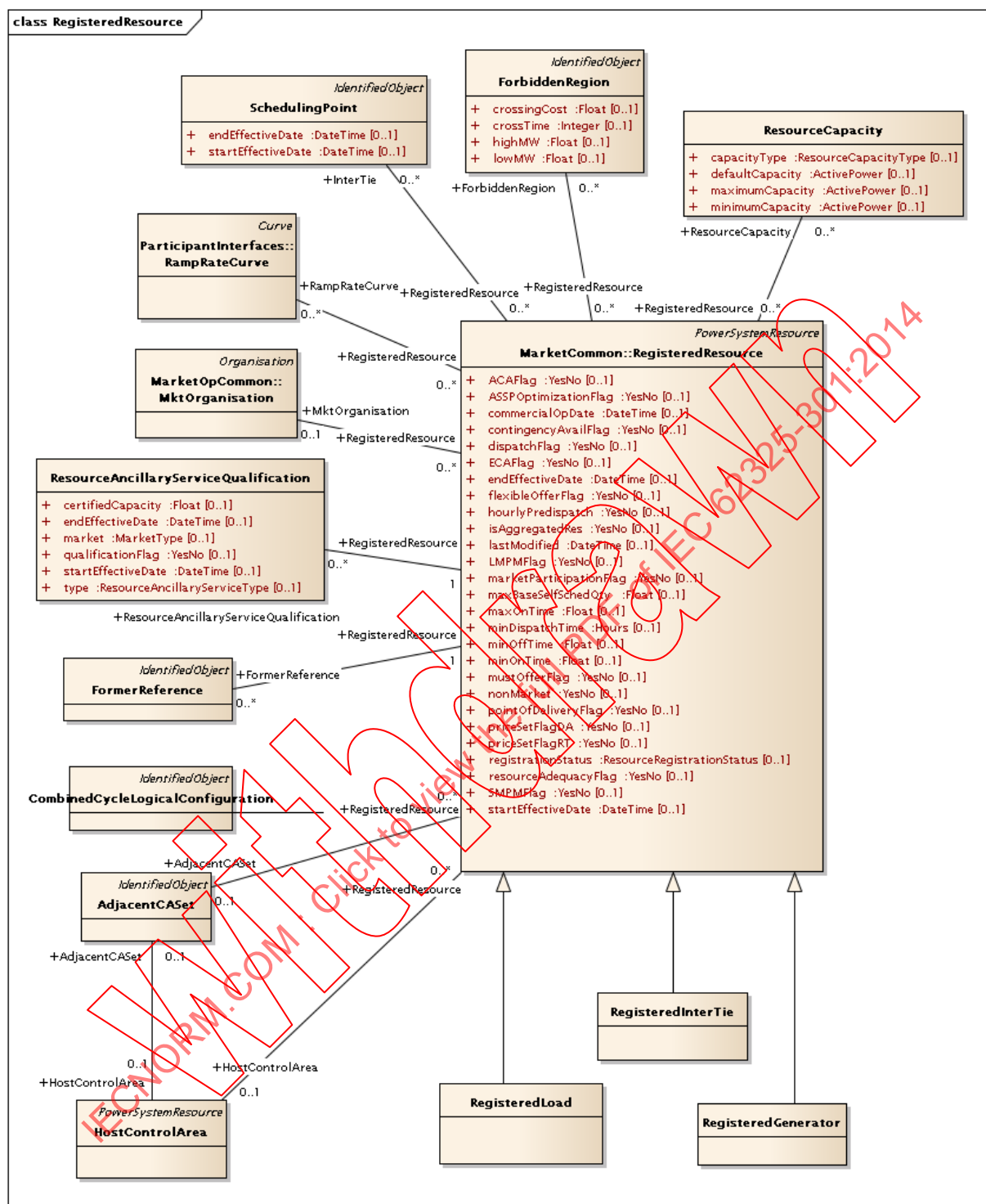


Figure 53 – Class diagram ReferenceData::RegisteredLoad

This figure shows the classes and associations use to model registered loads. RegisterLoads may participate in the market by offering to reduce baseline consumption of energy and one or more electrical products (energy, ancillary services) in return for a payment. The LoadReductionTimeCurve class and the LoadReductionPriceCure class are used to model the parameters of load reduction offer. The MktEnergyConsumer class models the location of the load in the network.

Figure 54 shows class diagram RegisteredResource.



IEC 1657/14

Figure 54 – Class diagram ReferenceData::RegisteredResource

This figure shows the classes and associations used to model registered resources. The RegisteredResource class is the parent class of the RegisteredGenerator, RegisteredInterTie, and RegisteredLoad subclasses. Major classes include the ResourceAncillaryServiceQualification class that is used to describe the ancillary services that the resource is qualified to offer. The ResourceCapability, the ForbiddenRegion and RampRateCurve classes are used to model technical capabilities of the resource. The SchedulingPoint class models the points on the boundary to other utility entities where the resource can deliver market products to the RTO.

Figure 55 shows class diagram RTO.

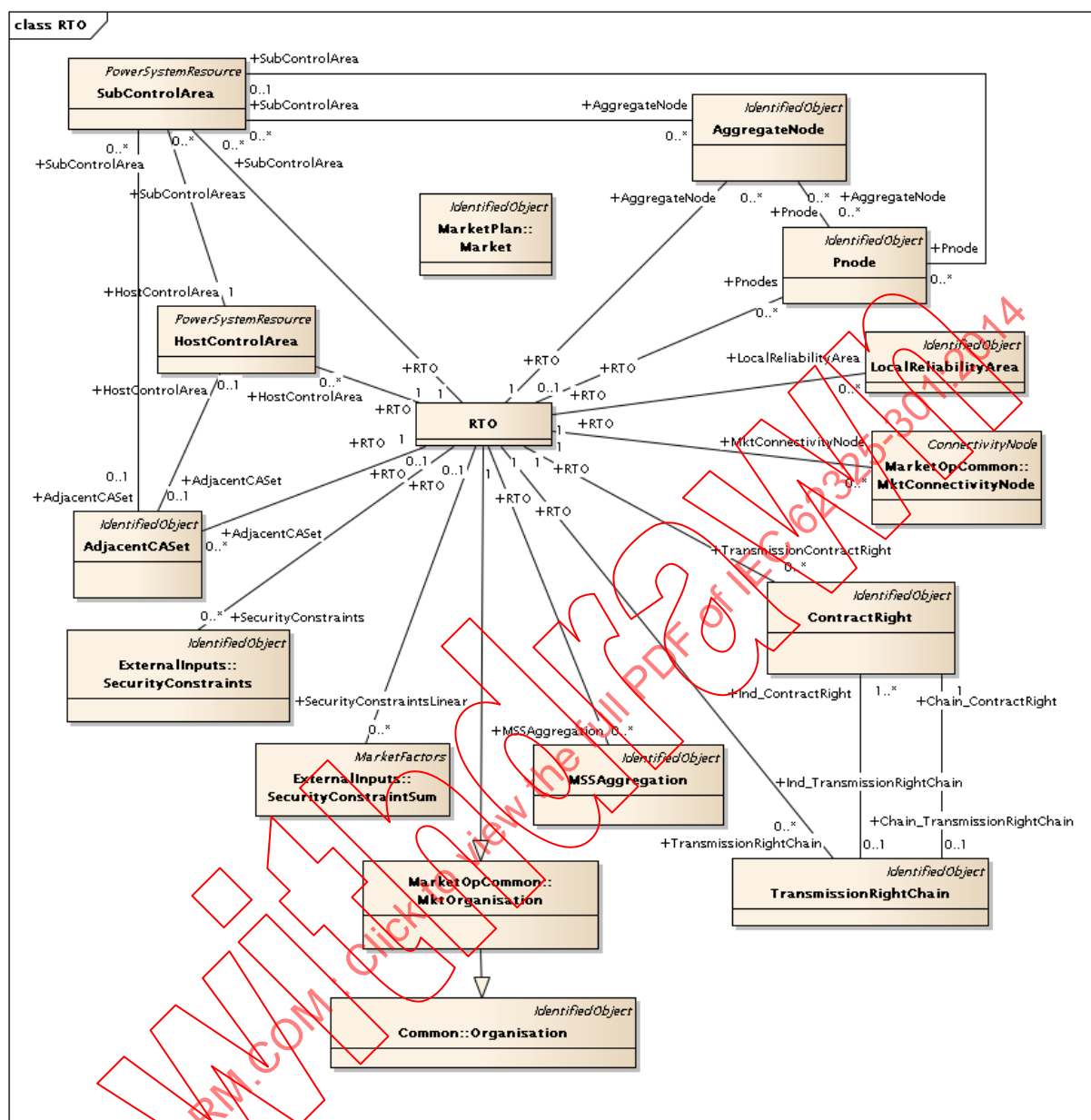


Figure 55 – Class diagram ReferenceData::RTO

This figure shows the classes and associations used to model a Regional Transmission Organization that operates an electricity market. The major classes and relationships are shown at an overview level. Supporting figures appear throughout the standard.

6.5.9.2 AdjacentCaset

Groups Adjacent Control Areas

Table 494 shows all attributes of AdjacentCaset.

Table 494 – Attributes of ReferenceData::AdjacentCaset

name	type	description
endEffectiveDate	DateTime	end effective date
lossPercentage	Float	Loss percentage
startEffectiveDate	DateTime	start effective date
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 495 shows all association ends of AdjacentCaset with other classes.

Table 495 – Association ends of ReferenceData::AdjacentCaset with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..*] BidSelfSched	BidSelfSched	
[0..1]	[0..*] SubControlArea	SubControlArea	
[0..1]	[0..*] RegisteredResource	RegisteredResource	
[0..*]	[1..1] RTO	RTO	
[0..1]	[0..1] HostControlArea	HostControlArea	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.3 AggregatedPnode

An aggregated pricing node is a specialized type of pricing node used to model items such as System Zone, Default Price Zone, Custom Price Zone, Control Area, Aggregated Generation, Aggregated Participating Load, Aggregated Non-Participating Load, Trading Hub, Designated Control Area(DCA) Zone

Table 496 shows all attributes of AggregatedPnode.

Table 496 – Attributes of ReferenceData::AggregatedPnode

name	type	description
apnodeType	ApnodeType	Aggregate Price Node Types
participationCategory	ParticipationCategoryMP M	Designated Control Area participation in LMP price measurement 'Y' – Participates in both Local Market Power Mitigation (LMPM) and System Market Power Mitigation (SMPM) 'N' – Not included in LMP price measures 'S' – Participatesin SMPM price measures 'L' – Participatesin LMPM price measures
endEffectiveDate	DateTime	inherited from: Pnode
isPublic	Boolean	inherited from: Pnode
startEffectiveDate	DateTime	inherited from: Pnode
type	String	inherited from: Pnode
usage	String	inherited from: Pnode

name	type	description
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 497 shows all association ends of AggregatedPnode with other classes.

Table 497 – Association ends of ReferenceData::AggregatedPnode with other classes

[mult from]	[mult to] name	type	description
[0..1]	[1..*] GenDistributionFactor	GenDistributionFactor	
[0..1]	[1..*] LoadDistributionFactor	LoadDistributionFactor	
[1..1]	[1..*] MPMTestResults	MPMTestResults	
[0..*]	[1..1] PnodeDistributionFactor	PnodeDistributionFactor	
[0..*]	[0..*] TACArea	TACArea	
[1..1]	[0..*] TradingHubValues	TradingHubValues	
[0..*]	[1..*] MPMTestThreshold	MPMTestThreshold	
[0..1]	[0..*] MktCombinedCyclePlant	MktCombinedCyclePlant	
[0..1]	[0..*] RegisteredResources	RegisteredResource	inherited from: Pnode
[0..*]	[0..*] SourceCRRSegment	CRRSegment	inherited from: Pnode
[0..*]	[0..*] SinkCRRSegment	CRRSegment	inherited from: Pnode
[0..1]	[0..*] MktMeasurement	MktMeasurement	inherited from: Pnode
[1..1]	[0..*] ExPostResults	ExPostPricingResults	inherited from: Pnode
[0..1]	[1..*] PnodeResults	PnodeResults	inherited from: Pnode
[0..1]	[0..*] Trade	Trade	inherited from: Pnode
[0..1]	[0..*] ReceiptTransactionBids	TransactionBid	inherited from: Pnode
[0..1]	[0..*] DeliveryTransactionBids	TransactionBid	inherited from: Pnode
[0..*]	[0..1] SubControlArea	SubControlArea	inherited from: Pnode
[0..*]	[0..*] AggregateNode	AggregateNode	inherited from: Pnode
[1..1]	[0..*] OrgPnodeAllocation	OrgPnodeAllocation	inherited from: Pnode
[0..*]	[0..1] RTO	RTO	inherited from: Pnode
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.4 AggregateNode

An aggregated node can define a typed grouping further defined by the AnodeType enumeratuion. Types range from System Zone/Regions to Market Energy Regions to Aggregated Loads and Aggregated Generators.

Table 498 shows all attributes of AggregateNode.

Table 498 – Attributes of ReferenceData::AggregateNode

name	type	description
anodeType	AnodeType	Type of aggregated node
endEffectiveDate	DateTime	end effective date

name	type	description
qualifASOrder	Integer	Processing Order for AS self-provisions for this region. The priority of this attribute directs the awards of any resource that resides in overlapping regions. The regions are processed in priority manner.
startEffectiveDate	DateTime	start effective date
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 499 shows all association ends of AggregateNode with other classes.

Table 499 – Association ends of ReferenceData::AggregateNode with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] Pnode	Pnode	
[0..*]	[0..*] SubControlArea	SubControlArea	
[0..1]	[0..*] CnodeDistributionFactor	CnodeDistributionFactor	
[0..*]	[0..*] RegisteredResource	RegisteredResource	
[0..1]	[0..*] AreaLoadCurve	AreaLoadCurve	
[0..*]	[1..1] RTO	RTO	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.5 BidPriceCap root class

This class represent the bid price cap.

Table 500 shows all attributes of BidPriceCap.

Table 500 – Attributes of ReferenceData::BidPriceCap

name	type	description
marketType	MarketType	Market Type of the cap (DAM or RTM)
bidFloor	CostPerEnergyUnit	Bid Floor, (\$/MWH)
bidCeiling	CostPerEnergyUnit	Bid Ceiling (\$/MWH)
defaultPrice	CostPerEnergyUnit	Bid Default Price(\$/MWH)
bidFloorAS	CostPerEnergyUnit	Bid Floor (\$/MWH) for generic AS versus a specific market product
bidCeilingAS	CostPerEnergyUnit	Bid Ceiling (\$/MWH) for generic AS versus a specific market product

Table 501 shows all association ends of BidPriceCap with other classes.

Table 501 – Association ends of ReferenceData::BidPriceCap with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] MarketProduct	MarketProduct	

6.5.9.6 CnodeDistributionFactor

Participation factors per Cnode. Used to calculate "participation" of Cnode in an AggregateNode. Each Cnode associated to an AggregateNode would be assigned a participation factor for its participation within the AggregateNode.

Table 502 shows all attributes of CnodeDistributionFactor.

Table 502 – Attributes of ReferenceData::CnodeDistributionFactor

name	type	description
factor	Float	Used to calculate "participation" of Cnode in an AggregateNode
podLossFactor	Float	Point of delivery loss factor
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 503 shows all association ends of CnodeDistributionFactor with other classes.

Table 503 – Association ends of ReferenceData::CnodeDistributionFactor with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] MktConnectivityNode	MktConnectivityNode	
[0..*]	[0..1] SubControlArea	SubControlArea	
[0..*]	[0..1] AggregateNode	AggregateNode	
[0..*]	[0..1] HostControlArea	HostControlArea	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.7 CombinedCycleConfiguration

Configuration options for combined cycle units.

For example, a Combined Cycle with (CT1, CT2, ST1) will have (CT1, ST1) and (CT2, ST1) configurations as part of (1CT + 1ST logical configuration).

Table 504 shows all attributes of CombinedCycleConfiguration.

Table 504 – Attributes of ReferenceData::CombinedCycleConfiguration

name	type	description
primaryConfiguration	Boolean	Whether this CombinedCycleConfiguration is the primary configuration in the associated Logical configuration?
ShutdownFlag	Boolean	Whether Combined Cycle Plant can be shut-down in this Configuration?
StartupFlag	Boolean	Whether Combined Cycle Plant can be started in this Logical Configuration?
capacityFactor	PerCent	inherited from: RegisteredGenerator
coldStartTime	Float	inherited from: RegisteredGenerator
combinedCyclePlantName	String	inherited from: RegisteredGenerator
commercialOperationDate	DateTime	inherited from: RegisteredGenerator
constrainedOutputFlag	YesNo	inherited from: RegisteredGenerator
costBasis	CostBasis	inherited from: RegisteredGenerator
extremeLongStart	YesNo	inherited from: RegisteredGenerator
fuelSource	FuelSource	inherited from: RegisteredGenerator
highControlLimit	ActivePower	inherited from: RegisteredGenerator
hotIntTime	Float	inherited from: RegisteredGenerator
hotStartTime	Float	inherited from: RegisteredGenerator
intColdTime	Float	inherited from: RegisteredGenerator
intendedPIRP	YesNo	inherited from: RegisteredGenerator
intStartTime	Float	inherited from: RegisteredGenerator
loadFollowingDownMSS	YesNo	inherited from: RegisteredGenerator
loadFollowingUpMSS	YesNo	inherited from: RegisteredGenerator
lowControlLimit	ActivePower	inherited from: RegisteredGenerator
lowerControlRate	ActivePowerChangeRate	inherited from: RegisteredGenerator
lowerRampRate	ActivePowerChangeRate	inherited from: RegisteredGenerator
maxDependableCap	ActivePower	inherited from: RegisteredGenerator
maximumAllowableSpinningReserve	ActivePower	inherited from: RegisteredGenerator
maximumOperatingMW	ActivePower	inherited from: RegisteredGenerator
maxLayOffSelfSchedQty	Float	inherited from: RegisteredGenerator
maxMinLoadCost	CostRate	inherited from: RegisteredGenerator
maxPumpingLevel	ActivePower	inherited from: RegisteredGenerator
maxShutdownTime	DateTime	inherited from: RegisteredGenerator
maxStartUpsPerDay	Integer	inherited from: RegisteredGenerator
maxWeeklyEnergy	Float	inherited from: RegisteredGenerator
maxWeeklyStarts	Integer	inherited from: RegisteredGenerator
minimumLoadFuelCost	CostPerHeatUnit	inherited from: RegisteredGenerator
minimumOperatingMW	ActivePower	inherited from: RegisteredGenerator
minLoadCost	CostRate	inherited from: RegisteredGenerator
mustOfferRA	YesNo	inherited from: RegisteredGenerator
nameplateCapacity	ActivePower	inherited from: RegisteredGenerator
operatingMaintenanceCost	CostPerEnergyUnit	inherited from: RegisteredGenerator
operatingMode	String	inherited from: RegisteredGenerator
proxyFlag	YesNo	inherited from: RegisteredGenerator

name	type	description
pumpingCost	CostRate	inherited from: RegisteredGenerator
pumpingFactor	Float	inherited from: RegisteredGenerator
pumpMinDownTime	Float	inherited from: RegisteredGenerator
pumpMinUpTime	Float	inherited from: RegisteredGenerator
pumpShutdownCost	Float	inherited from: RegisteredGenerator
pumpShutdownTime	Integer	inherited from: RegisteredGenerator
qualifyingFacilityOwner	String	inherited from: RegisteredGenerator
quickStartFlag	YesNo	inherited from: RegisteredGenerator
raiseControlRate	ActivePowerChangeRate	inherited from: RegisteredGenerator
raiseRampRate	ActivePowerChangeRate	inherited from: RegisteredGenerator
rampCurveType	RampCurveType	inherited from: RegisteredGenerator
rampMode	RampModeType	inherited from: RegisteredGenerator
regulationFlag	Integer	inherited from: RegisteredGenerator
regulationRampRate	ActivePower	inherited from: RegisteredGenerator
resourceSubType	String	inherited from: RegisteredGenerator
riverSystem	String	inherited from: RegisteredGenerator
RMNRFlag	YesNo	inherited from: RegisteredGenerator
RMRFlag	FlagTypeRMR	inherited from: RegisteredGenerator
RMRManualIndicator	YesNo	inherited from: RegisteredGenerator
RMTFlag	YesNo	inherited from: RegisteredGenerator
spinReserveRamp	ActivePowerChangeRate	inherited from: RegisteredGenerator
syncCondCapable	YesNo	inherited from: RegisteredGenerator
unitType	UnitType	inherited from: RegisteredGenerator
useLimitFlag	YesNo	inherited from: RegisteredGenerator
ACAFlag	YesNo	inherited from: RegisteredResource
ASSPOptimizationFlag	YesNo	inherited from: RegisteredResource
commercialOpDate	DateTime	inherited from: RegisteredResource
contingencyAvailFlag	YesNo	inherited from: RegisteredResource
dispatchFlag	YesNo	inherited from: RegisteredResource
ECAFlag	YesNo	inherited from: RegisteredResource
endEffectiveDate	DateTime	inherited from: RegisteredResource
flexibleOfferFlag	YesNo	inherited from: RegisteredResource
hourlyPredispatch	YesNo	inherited from: RegisteredResource
isAggregatedRes	YesNo	inherited from: RegisteredResource
lastModified	DateTime	inherited from: RegisteredResource
LMPMFlag	YesNo	inherited from: RegisteredResource
marketParticipationFlag	YesNo	inherited from: RegisteredResource
maxBaseSelfSchedQty	Float	inherited from: RegisteredResource
maxOnTime	Float	inherited from: RegisteredResource
minDispatchTime	Hours	inherited from: RegisteredResource
minOffTime	Float	inherited from: RegisteredResource
minOnTime	Float	inherited from: RegisteredResource
mustOfferFlag	YesNo	inherited from: RegisteredResource
nonMarket	YesNo	inherited from: RegisteredResource

name	type	description
pointOfDeliveryFlag	YesNo	inherited from: RegisteredResource
priceSetFlagDA	YesNo	inherited from: RegisteredResource
priceSetFlagRT	YesNo	inherited from: RegisteredResource
registrationStatus	ResourceRegistrationStatus	inherited from: RegisteredResource
resourceAdequacyFlag	YesNo	inherited from: RegisteredResource
SMPMFlag	YesNo	inherited from: RegisteredResource
startEffectiveDate	DateTime	inherited from: RegisteredResource
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 505 shows all association ends of CombinedCycleConfiguration with other classes.

**Table 505 – Association ends of ReferenceData:
CombinedCycleConfiguration with other classes**

[mult from]	[mult to] name	type	description
[1..1]	[0..*] CombinedCycleConfigurationMember	CombinedCycleConfigurationMember	
[1..1]	[0..*] FromTransitionState	CombinedCycleTransitionState	
[1..1]	[0..*] ToTransitionState	CombinedCycleTransitionState	
[1..*]	[0..1] CombinedCycleLogicalConfiguration	CombinedCycleLogicalConfiguration	
[0..1]	[0..*] MktGeneratingUnit	MktGeneratingUnit	inherited from: RegisteredGenerator
[0..1]	[0..*] GeneratingBids	GeneratingBid	inherited from: RegisteredGenerator
[0..1]	[0..1] StartUpTimeCurve	StartUpTimeCurve	inherited from: RegisteredGenerator
[0..1]	[0..*] Trade	Trade	inherited from: RegisteredGenerator
[0..1]	[0..1] MktHeatRateCurve	MktHeatRateCurve	inherited from: RegisteredGenerator
[0..1]	[0..1] StartUpFuelCurve	StartUpFuelCurve	inherited from: RegisteredGenerator
[0..1]	[0..1] RegulatingLimit	RegulatingLimit	inherited from: RegisteredGenerator
[0..1]	[0..1] StartUpEnergyCurve	StartUpEnergyCurve	inherited from: RegisteredGenerator
[0..1]	[0..1] RMRStartUpTimeCurve	RMRStartUpTimeCurve	inherited from: RegisteredGenerator
[0..1]	[0..1] RMRStartUpFuelCurve	RMRStartUpFuelCurve	inherited from: RegisteredGenerator
[0..1]	[0..1] RMRStartUpEnergyCurve	RMRStartUpEnergyCurve	inherited from: RegisteredGenerator
[0..1]	[0..1] RMRStartUpCostCurve	RMRStartUpCostCurve	inherited from: RegisteredGenerator
[0..1]	[0..1] RMRHeatRateCurve	RMRHeatRateCurve	inherited from: RegisteredGenerator
[0..1]	[0..*] AuxillaryObject	AuxiliaryObject	inherited from: RegisteredGenerator
[1..1]	[1..1] EnergyPriceIndex	EnergyPriceIndex	inherited from: RegisteredGenerator
[0..1]	[0..*] UnitInitialConditions	UnitInitialConditions	inherited from: RegisteredGenerator
[0..*]	[0..*] StartUpCostCurves	StartUpCostCurve	inherited from: RegisteredGenerator
[0..1]	[0..1] FuelCostCurve	FuelCostCurve	inherited from: RegisteredGenerator

[mult from]	[mult to] name	type	description
[0..*]	[0..1] FuelRegion	FuelRegion	inherited from: RegisteredGenerator
[0..*]	[0..1] LocalReliabilityArea	LocalReliabilityArea	inherited from: RegisteredGenerator
[0..1]	[0..*] SubstitutionResourceList	SubstitutionResourceList	inherited from: RegisteredResource
[0..*]	[0..*] SubControlArea	SubControlArea	inherited from: RegisteredResource
[1..1]	[0..*] ResourceAncillaryServiceQualification	ResourceAncillaryServiceQualification	inherited from: RegisteredResource
[0..*]	[0..*] ResourceCapacity	ResourceCapacity	inherited from: RegisteredResource
[0..*]	[0..*] InterTie	SchedulingPoint	inherited from: RegisteredResource
[1..1]	[0..*] OrgResOwnership	OrgResOwnership	inherited from: RegisteredResource
[1..1]	[0..*] FormerReference	FormerReference	inherited from: RegisteredResource
[0..*]	[0..*] ForbiddenRegion	ForbiddenRegion	inherited from: RegisteredResource
[0..1]	[0..*] ContractDistributionFactor	ContractDistributionFactor	inherited from: RegisteredResource
[0..*]	[0..*] AggregateNode	AggregateNode	inherited from: RegisteredResource
[0..*]	[0..1] AdjacentCASet	AdjacentCASet	inherited from: RegisteredResource
[0..*]	[0..*] RampRateCurve	RampRateCurve	inherited from: RegisteredResource
[1..1]	[0..*] LoadFollowingInst	LoadFollowingInst	inherited from: RegisteredResource
[1..1]	[0..*] DispatchInstReply	DispatchInstReply	inherited from: RegisteredResource
[0..1]	[0..*] ResourceLoadFollowingInst	ResourceLoadFollowingInst	inherited from: RegisteredResource
[0..1]	[0..*] ResourceDispatchResults	ResourceDispatchResults	inherited from: RegisteredResource
[0..1]	[0..*] RUCAwardInstruction	RUCAwardInstruction	inherited from: RegisteredResource
[0..1]	[0..*] RMROperatorInput	RMROperatorInput	inherited from: RegisteredResource
[0..1]	[0..*] MPMResourceStatus	MPMResourceStatus	inherited from: RegisteredResource
[0..1]	[0..*] DopInstruction	DopInstruction	inherited from: RegisteredResource
[1..1]	[0..*] Commitments	Commitments	inherited from: RegisteredResource
[1..1]	[0..*] IntermittentResourceEligibility	IntermittentResourceEligibility	inherited from: RegisteredResource
[0..1]	[0..*] ExpectedEnergyValues	ExpectedEnergyValues	inherited from: RegisteredResource
[0..1]	[0..*] AllocationResultValues	AllocationResultValues	inherited from: RegisteredResource
[0..*]	[0..1] MktOrganisation	MktOrganisation	inherited from: RegisteredResource
[0..*]	[0..1] MktConnectivityNode	MktConnectivityNode	inherited from: RegisteredResource
[0..*]	[0..*] TimeSeries	TimeSeries	inherited from: RegisteredResource
[1..1]	[0..1] ResourceVerifiableCosts	ResourceVerifiableCosts	inherited from: RegisteredResource
[0..*]	[0..1] Pnode	Pnode	inherited from: RegisteredResource
[0..*]	[0..*] MPMTestThreshold	MPMTestThreshold	inherited from: RegisteredResource
[0..*]	[0..1] HostControlArea	HostControlArea	inherited from: RegisteredResource
[0..*]	[0..*] ControlAreaDesignation	ControlAreaDesignation	inherited from: RegisteredResource
[0..1]	[0..*] ResourceAwardInstruction	ResourceAwardInstruction	inherited from: RegisteredResource
[0..1]	[0..*] LoadFollowingOperatorInput	LoadFollowingOperatorInput	inherited from: RegisteredResource
[1..1]	[0..*] Instructions	Instructions	inherited from: RegisteredResource
[0..1]	[0..*] ExPostResourceResults	ExPostResourceResults	inherited from: RegisteredResource
[0..1]	[0..*] DotInstruction	DotInstruction	inherited from: RegisteredResource

[mult from]	[mult to] name	type	description
[1..1]	[0..1] DefaultBid	DefaultBid	inherited from: RegisteredResource
[0..*]	[0..*] EnergyMarkets	EnergyMarket	inherited from: RegisteredResource
[0..*]	[0..1] PSRType	PSRType	inherited from: PowerSystemResource
[0..1]	[0..*] Measurements	Measurement	inherited from: PowerSystemResource
[1..1]	[0..*] OperatingShare	OperatingShare	inherited from: PowerSystemResource
[0..*]	[0..*] PsrLists	PsrList	inherited from: PowerSystemResource
[1..1]	[0..1] OutageSchedule	OutageSchedule	inherited from: PowerSystemResource
[0..*]	[0..*] ReportingGroup	ReportingGroup	inherited from: PowerSystemResource
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.8 CombinedCycleConfigurationMember

Configuration Member of CCP Configuration.

Table 506 shows all attributes of CombinedCycleConfigurationMember.

Table 506 – Attributes of ReferenceData::CombinedCycleConfigurationMember

name	type	description
primary	Boolean	primary configuration.
steam	Boolean	Steam plant.
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 507 shows all association ends of CombinedCycleConfigurationMember with other classes.

**Table 507 – Association ends of ReferenceData::
CombinedCycleConfigurationMember with other classes**

[mult from]	[mult to] name	type	description
[0..*]	[1..1] MktThermalGeneratingUnit	MktThermalGeneratingUnit	
[0..*]	[1..1] CombinedCycleConfiguration	CombinedCycleConfiguration	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.9 CombinedCycleLogicalConfiguration

Logical Configuration of a Combined Cycle plant.

Operating Combined Cycle Plant (CCP) configurations are represented as Logical CCP Resources. Logical representation shall be used for Market applications to optimize and control Market Operations. Logical representation is also necessary for controlling the number of CCP configurations and to temper performance issues that may otherwise occur.

For example, (2CT configuration), (1CT + 1ST configuration) are examples of logical configuration, without specifying the specific CT and ST participating in the configuration.

Table 508 shows all attributes of CombinedCycleLogicalConfiguration.

Table 508 – Attributes of ReferenceData::CombinedCycleLogicalConfiguration

name	type	description
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 509 shows all association ends of CombinedCycleLogicalConfiguration with other classes.

Table 509 – Association ends of ReferenceData::CombinedCycleLogicalConfiguration with other classes

[mult from]	[mult to] name	type	description
[0..1]	[1..*] CombinedCycleConfiguration	CombinedCycleConfiguration	
[1..*]	[0..1] MktCombinedCyclePlant	MktCombinedCyclePlant	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.10 CombinedCycleTransitionState root class

Defines the available from and to Transition States for the Combine Cycle Configurations.

Table 510 shows all attributes of CombinedCycleTransitionState.

Table 510 – Attributes of ReferenceData::CombinedCycleTransitionState

name	type	description
upTransition	Boolean	Flag indicating whether this is an UP transition. If not, it is a DOWN transition.

Table 511 shows all association ends of CombinedCycleTransitionState with other classes.

**Table 511 – Association ends of ReferenceData::
CombinedCycleTransitionState with other classes**

[mult from]	[mult to] name	type	description
[0..*]	[1..1] FromConfiguration	CombinedCycleConfigurat ion	
[0..*]	[1..1] ToConfiguration	CombinedCycleConfigurat ion	

6.5.9.11 CongestionArea

Designated Congestion Area Definition (DCA)

Table 512 shows all attributes of CongestionArea.

Table 512 – Attributes of ReferenceData::CongestionArea

name	type	description
apnodeType	ApnodeType	inherited from: AggregatedPnode
participationCategory	ParticipationCategoryMP M	inherited from: AggregatedPnode
endEffectiveDate	DateTime	inherited from: Pnode
isPublic	Boolean	inherited from: Pnode
startEffectiveDate	DateTime	inherited from: Pnode
type	String	inherited from: Pnode
usage	String	inherited from: Pnode
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 513 shows all association ends of CongestionArea with other classes.

Table 513 – Association ends of ReferenceData::CongestionArea with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] IndividualPnode	IndividualPnode	
[0..1]	[1..*] GenDistributionFactor	GenDistributionFactor	inherited from: AggregatedPnode
[0..1]	[1..*] LoadDistributionFactor	LoadDistributionFactor	inherited from: AggregatedPnode
[1..1]	[1..*] MPMTTestResults	MPMTTestResults	inherited from: AggregatedPnode
[0..*]	[1..1] PnodeDistributionFactor	PnodeDistributionFactor	inherited from: AggregatedPnode
[0..*]	[0..*] TACArea	TACArea	inherited from: AggregatedPnode
[1..1]	[0..*] TradingHubValues	TradingHubValues	inherited from: AggregatedPnode
[0..*]	[1..*] MPMTTestThreshold	MPMTTestThreshold	inherited from: AggregatedPnode
[0..1]	[0..*] MktCombinedCyclePlant	MktCombinedCyclePlant	inherited from: AggregatedPnode
[0..1]	[0..*] RegisteredResources	RegisteredResource	inherited from: Pnode
[0..*]	[0..*] SourceCRRSegment	CRRSegment	inherited from: Pnode
[0..*]	[0..*] SinkCRRSegment	CRRSegment	inherited from: Pnode

[mult from]	[mult to] name	type	description
[0..1]	[0..*] MktMeasurement	MktMeasurement	inherited from: Pnode
[1..1]	[0..*] ExPostResults	ExPostPricingResults	inherited from: Pnode
[0..1]	[1..*] PnodeResults	PnodeResults	inherited from: Pnode
[0..1]	[0..*] Trade	Trade	inherited from: Pnode
[0..1]	[0..*] ReceiptTransactionBids	TransactionBid	inherited from: Pnode
[0..1]	[0..*] DeliveryTransactionBids	TransactionBid	inherited from: Pnode
[0..*]	[0..1] SubControlArea	SubControlArea	inherited from: Pnode
[0..*]	[0..*] AggregateNode	AggregateNode	inherited from: Pnode
[1..1]	[0..*] OrgPnodeAllocation	OrgPnodeAllocation	inherited from: Pnode
[0..*]	[0..1] RTO	RTO	inherited from: Pnode
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.12 ContractDistributionFactor root class

Distribution among resources at the sink point or source point

Table 514 shows all attributes of ContractDistributionFactor.

Table 514 – Attributes of ReferenceData::ContractDistributionFactor

name	type	description
factor	Float	MW value that this resource provides to the overall contract.
sourceFlag	YesNo	This value will be set to YES if the referenced Cnode is defined as the source point in the contract.
sinkFlag	YesNo	This value will be set to YES if the referenced Cnode is defined as the sink point in the contract.

Table 515 shows all association ends of ContractDistributionFactor with other classes.

Table 515 – Association ends of ReferenceData::ContractDistributionFactor with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] RegisteredResource	RegisteredResource	
[0..*]	[0..1] TransmissionContractRight	ContractRight	
[0..*]	[0..1] Flowgate	Flowgate	

6.5.9.13 ContractRight

Provides definition of Transmission Ownership Right and Existing Transmission Contract identifiers for use by SCUC. RMR contract hosting: Startup lead time, Contract Service Limits,

Max Service Hours, Max MWs, Max Start-ups, Ramp Rate, Max Net Dependable Capacity, Min Capacity and Unit Substitution for DAM/RTM to retrieve;

Table 516 shows all attributes of ContractRight.

Table 516 – Attributes of ReferenceData::ContractRight

name	type	description
chainOrder	Integer	When used in conjunction with a Transmission Right contract chain, this is the precedence for the contracts.
contractMW	Float	MW value of the contract
contractPrice	CostPerEnergyUnit	Financial value of the contract
contractPriority	Integer	Priority for the contract. This should be unique among all contracts for a specific resource. This value is the directive for the SCUC algorithm on the order to satisfy/cut contracts.
contractStatus	String	Contract status
contractType	ContractType	type of the contract. Possible values are but not limited by: ETC, TOR or RMR and RMT self schedules
endEffectiveDate	DateTime	end effective date
financialLocation	YesNo	Indicator if the location associated with this contract is financial (e.g. pricing nodes) or physical (e.g. connectivity nodes).
financialRightsDAM	YesNo	Flag to indicate this contract provides financial rights in the DA Market
financialRightsRTM	YesNo	Flag to indicate this contract provides financial rights in the RT Market
fuelAdder	Float	Estimated Fuel Adder
latestSchedMinutes	Integer	This indicates the latest schedule minutes (e.g. t – xx) that this resource can be notified to respond. This attribute is only used if the market type is not supplied.
latestSchedMktType	MarketType	This indicates the latest schedule market type a contract can be applied to. This is used in conjunction with the latestSchedMinutes attribute to determine the latest time this contract can be called in. The possible values for this attribute are: DAM, RTM or it can be omitted. If omitted, the latestSchedMinutes attribute defines the value.
maximumScheduleQuantity	Float	Maximum schedule MW quantity
maximumServiceHours	Integer	Maximum service hours
maximumStartups	Integer	Maximum startups
maxNetDependableCapacity	Float	Maximum Net Dependable Capacity
minimumLoad	Float	Minimum Load
minimumScheduleQuantity	Float	Minimum schedule quantity
physicalRightsDAM	YesNo	Flag to indicate this contract provides physical rights in the DA Market
physicalRightsRTM	YesNo	Flag to indicate this contract provides physical rights in the RT Market
startEffectiveDate	DateTime	start effective date
startupLeadTime	Integer	Start up lead time
TRType	TRType	Transmission Right type – is this an individual contract right or a chain contract right. Types =

name	type	description
		CHAIN or INDIVIDUAL
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 517 shows all association ends of ContractRight with other classes.

Table 517 – Association ends of ReferenceData::ContractRight with other classes

[mult from]	[mult to] name	type	description
[1..1]	[0..*] TREntitlement	TREntitlement	
[0..1]	[0..*] BidSelfSched	BidSelfSched	
[0..1]	[0..*] ContractDistributionFactor	ContractDistributionFactor	
[0..1]	[0..*] SubstitutionResourceList	SubstitutionResourceList	
[1..1]	[0..*] TransmissionInterfaceEntitlement	TransmissionInterfaceRightEntitlement	
[0..*]	[1..1] RTO	RTO	
[0..*]	[1..1] SchedulingCoordinator	SchedulingCoordinator	
[1..*]	[0..1] Ind_TransmissionRightChain	TransmissionRightChain	
[1..1]	[0..1] Chain_TransmissionRightChain	TransmissionRightChain	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.14 ControlAreaDesignation root class

Indicates Control Area associated with self-schedule.

Table 518 shows all attributes of ControlAreaDesignation.

Table 518 – Attributes of ReferenceData::ControlAreaDesignation

name	type	description
attained	YesNo	Attained.
native	YesNo	Native.

Table 519 shows all association ends of ControlAreaDesignation with other classes.

Table 519 – Association ends of ReferenceData::ControlAreaDesignation with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] RegisteredResource	RegisteredResource	
[0..*]	[0..*] SubControlArea	SubControlArea	

6.5.9.15 Flowgate

A flowgate, is single or group of transmission elements intended to model MW flow impact relating to transmission limitations and transmission service usage.

Table 520 shows all attributes of Flowgate.

Table 520 – Attributes of ReferenceData::Flowgate

name	type	description
direction	InterTieDirection	The direction of the flowgate, export or import
endEffectiveDate	DateTime	end effective date
exportMWRating	ActivePower	Export MW rating
importMWRating	ActivePower	Import MW rating
startEffectiveDate	DateTime	start effective date
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 521 shows all association ends of Flowgate with other classes.

Table 521 – Association ends of ReferenceData::Flowgate with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] MktLine	MktLine	
[0..*]	[0..*] MktPowerTransformer	MktPowerTransformer	
[0..1]	[0..1] SecurityConstraints	SecurityConstraints	
[0..1]	[0..*] TransmissionCapacity	TransmissionCapacity	
[0..1]	[0..*] TransmissionRightEntitlement	TransmissionInterfaceRightEntitlement	
[1..1]	[1..*] ConstraintResults	ConstraintResults	
[0..1]	[0..*] ContractDistributionFactor	ContractDistributionFactor	
[1..1]	[0..*] FlowgateRelief	FlowgateRelief	
[1..1]	[0..*] RegisteredInterTie	RegisteredInterTie	
[0..*]	[0..1] To_SubControlArea	SubControlArea	
[1..1]	[0..*] FlowgateValue	FlowgateValue	
[0..*]	[0..1] From_SubControlArea	SubControlArea	
[0..1]	[0..*] InterTie	SchedulingPoint	
[0..1]	[0..1] CRR	CRR	
[0..1]	[0..*] MktTerminal	MktTerminal	

[mult from]	[mult to] name	type	description
[0..1]	[0..*] GeneratingUnitDynamicValues	GeneratingUnitDynamicValues	
[0..*]	[0..1] GenericConstraints	GenericConstraints	
[0..*]	[0..1] HostControlArea	HostControlArea	
[0..*]	[0..1] PSRTYPE	PSRTYPE	inherited from: PowerSystemResource
[0..1]	[0..*] Measurements	Measurement	inherited from: PowerSystemResource
[1..1]	[0..*] OperatingShare	OperatingShare	inherited from: PowerSystemResource
[0..*]	[0..*] PsrLists	PsrList	inherited from: PowerSystemResource
[1..1]	[0..1] OutageSchedule	OutageSchedule	inherited from: PowerSystemResource
[0..*]	[0..*] ReportingGroup	ReportingGroup	inherited from: PowerSystemResource
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.16 FlowgatePartner

Flowgate defined partner

Table 522 shows all attributes of FlowgatePartner.

Table 522 – Attributes of ReferenceData::FlowgatePartner

name	type	description
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 523 shows all association ends of FlowgatePartner with other classes.

Table 523 – Association ends of ReferenceData::FlowgatePartner with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..1] FlowgateValue	FlowgateValue	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.17 FlowgateRelief root class

IDC (Interchange Distribution Calculator) sends data for a TLR (Transmission Loading Relief).

Table 524 shows all attributes of FlowgateRelief.

Table 524 – Attributes of ReferenceData::FlowgateRelief

name	type	description
effectiveDate	DateTime	Date/Time when record becomes effective Used to determine when a record becomes

name	type	description
		effective.
terminateDate	DateTime	Date/Time when record is no longer effective Used to determine when a record is no longer effective
idcTargetMktFlow	Integer	Energy Flow level that should be maintained according to the TLR rules as specified by the IDC. For Realtime Markets use in dispatch to control constraints under TLR and calculate unconstrained market flows

Table 525 shows all association ends of FlowgateRelief with other classes.

Table 525 – Association ends of ReferenceData::FlowgateRelief with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] Flowgate	Flowgate	

6.5.9.18 FlowgateValue root class

Day Ahead, Network Native Load, Economic Dispatch, values used for calculation of Network Native Load (NNL) Determinator process.

Table 526 shows all attributes of FlowgateValue.

Table 526 – Attributes of ReferenceData::FlowgateValue

name	type	description
economicDispatchLimit	Integer	Limit for Economic Dispatch priority 6 energy flow on the specified flowgate for the specified time period.
effectiveDate	DateTime	Date/Time when record becomes effective Used to determine when a record becomes effective
firmNetworkLimit	Integer	Limit for firm flow on the specified flowgate for the specified time period. The amount of energy flow over a specified flowgate due to generation in the market which can be classified as Firm Network priority.
flowDirectionFlag	FlowDirectionType	Specifies the direction of energy flow in the flowgate
mktFlow	Integer	The amount of energy flow over a specified flowgate due to generation in the market.
netFirmNetworkLimit	Integer	Net Energy flow in flowgate for the associated FlowgatePartner

Table 527 shows all association ends of FlowgateValue with other classes.

Table 527 – Association ends of ReferenceData::FlowgateValue with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] Flowgate	Flowgate	
[0..1]	[0..1] FlowgatePartner	FlowgatePartner	

6.5.9.19 ForbiddenRegion

Forbidden region is operating ranges where the units are unable to maintain steady operation without causing equipment damage. The four attributes that define a forbidden region are the low MW, the High MW, the crossing time, and the crossing cost.

Table 528 shows all attributes of ForbiddenRegion.

Table 528 – Attributes of ReferenceData::ForbiddenRegion

name	type	description
crossingCost	Float	Cost associated with crossing the forbidden region
crossTime	Integer	Time to cross the forbidden region in minutes.
highMW	Float	High end of the region definition
lowMW	Float	Low end of the region definition.
aliasName	String	Inherited from: IdentifiedObject
mRID	String	Inherited from: IdentifiedObject
name	String	Inherited from: IdentifiedObject

Table 529 shows all association ends of ForbiddenRegion with other classes.

Table 529 – Association ends of ReferenceData::ForbiddenRegion with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] RegisteredResource	RegisteredResource	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.20 FormerReference

Used to indicate former references to the same piece of equipment. The ID, name, and effectivity dates are utilized.

Table 530 shows all attributes of FormerReference.

Table 530 – Attributes of ReferenceData::FormerReference

name	type	description
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject

name	type	description
name	String	inherited from: IdentifiedObject

Table 531 shows all association ends of FormerReference with other classes.

Table 531 – Association ends of ReferenceData::FormerReference with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] RegisteredResource	RegisteredResource	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.21 FuelCostCurve

Relationship between unit fuel cost in \$/kWh(Y-axis) and unit output in MW (X-axis).

Table 532 shows all attributes of FuelCostCurve.

Table 532 – Attributes of ReferenceData::FuelCostCurve

name	type	description
curveStyle	CurveStyle	inherited from: Curve
xMultiplier	UnitMultiplier	inherited from: Curve
xUnit	UnitSymbol	inherited from: Curve
y1Multiplier	UnitMultiplier	inherited from: Curve
y1Unit	UnitSymbol	inherited from: Curve
y2Multiplier	UnitMultiplier	inherited from: Curve
y2Unit	UnitSymbol	inherited from: Curve
y3Multiplier	UnitMultiplier	inherited from: Curve
y3Unit	UnitSymbol	inherited from: Curve
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 533 shows all association ends of FuelCostCurve with other classes.

Table 533 – Association ends of ReferenceData::FuelCostCurve with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..1] RegisteredGenerator	RegisteredGenerator	
[1..1]	[0..*] CurveDatas	CurveData	inherited from: Curve
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.22 FuelRegion

Indication of region for fuel inventory purposes

Table 534 shows all attributes of FuelRegion.

Table 534 – Attributes of ReferenceData::FuelRegion

name	type	description
endEffectiveDate	DateTime	end effective date
fuelRegionType	String	The type of fuel region
lastModified	DateTime	Time of last update
startEffectiveDate	DateTime	start effective date
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 535 shows all association ends of FuelRegion with other classes.

Table 535 – Association ends of ReferenceData::FuelRegion with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..*] RegisteredGenerator	RegisteredGenerator	
[0..*]	[1..1] RTO	RTO	
[1..1]	[1..1] OilPrice	OilPrice	
[1..1]	[1..1] GasPrice	GasPrice	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.23 GasPrice root class

Price of gas in monetary units

Table 536 shows all attributes of GasPrice.

Table 536 – Attributes of ReferenceData::GasPrice

name	type	description
gasPriceIndex	Float	The average natural gas price at a defined fuel region.

Table 537 shows all association ends of GasPrice with other classes.

Table 537 – Association ends of ReferenceData::GasPrice with other classes

[mult from]	[mult to] name	type	description
[1..1]	[1..1] FuelRegion	FuelRegion	

6.5.9.24 HostControlArea

A HostControlArea has a set of tie points and a set of generator controls (i.e., AGC). It also has a total load, including transmission and distribution losses.

Table 538 shows all attributes of HostControlArea.

Table 538 – Attributes of ReferenceData::HostControlArea

name	type	description
areaControlMode	AreaControlMode	The area's present control mode: (CF = constant frequency) or (CTL = constant tie-line) or (TLB = tie-line bias) or (OFF = off control)
endEffectiveDate	DateTime	end effective date
freqSetPoint	Frequency	The present power system frequency set point for automatic generation control
frequencyBiasFactor	Float	The control area's frequency bias factor, in MW/0.1 Hz, for automatic generation control (AGC)
startEffectiveDate	DateTime	start effective date
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 539 shows all association ends of HostControlArea with other classes.

Table 539 – Association ends of ReferenceData::HostControlArea with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..*] RegisteredResource	RegisteredResource	
[1..1]	[0..*] SysLoadDistribuFactor	SysLoadDistributionFactor	
[0..1]	[0..*] TransferInterface	TransferInterface	
[0..1]	[0..*] LossClearingResults	LossClearingResults	
[0..1]	[0..*] BidSelfSched	BidSelfSched	
[0..1]	[0..1] AdjacentCASet	AdjacentCASet	
[0..1]	[0..*] CnodeDistributionFactor	CnodeDistributionFactor	
[0..1]	[0..*] Flowgate	Flowgate	
[1..1]	[0..*] SubControlAreas	SubControlArea	The interchange area may operate as a control area
[0..*]	[1..1] RTO	RTO	
[0..*]	[0..1] PSRType	PSRType	inherited from: PowerSystemResource
[0..1]	[0..*] Measurements	Measurement	inherited from: PowerSystemResource
[1..1]	[0..*] OperatingShare	OperatingShare	inherited from: PowerSystemResource
[0..*]	[0..*] PsrLists	PsrList	inherited from: PowerSystemResource
[1..1]	[0..1] OutageSchedule	OutageSchedule	inherited from: PowerSystemResource
[0..*]	[0..*] ReportingGroup	ReportingGroup	inherited from: PowerSystemResource
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.25 IndividualPnode

Individual pricing node based on Pnode

Table 540 shows all attributes of IndividualPnode.

Table 540 – Attributes of ReferenceData::IndividualPnode

name	type	description
endEffectiveDate	DateTime	inherited from: Pnode
isPublic	Boolean	inherited from: Pnode
startEffectiveDate	DateTime	inherited from: Pnode
type	String	inherited from: Pnode
usage	String	inherited from: Pnode
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 541 shows all association ends of IndividualPnode with other classes.

Table 541 – Association ends of ReferenceData::IndividualPnode with other classes

[mult from]	[mult to] name	type	description
[0..1]	[1..1] MktConnectivityNode	MktConnectivityNode	
[0..1]	[0..1] GenDistributionFactor	GenDistributionFactor	
[0..1]	[0..1] LoadDistributionFactor	LoadDistributionFactor	
[1..1]	[0..*] PnodeDistributionFactor	PnodeDistributionFactor	
[0..*]	[0..*] CongestionArea	CongestionArea	
[0..1]	[0..*] RegisteredResources	RegisteredResource	inherited from: Pnode
[0..*]	[0..*] SourceCRRSegment	CRRSegment	inherited from: Pnode
[0..*]	[0..*] SinkCRRSegment	CRRSegment	inherited from: Pnode
[0..1]	[0..*] MktMeasurement	MktMeasurement	inherited from: Pnode
[1..1]	[0..*] ExPostResults	ExPostPricingResults	inherited from: Pnode
[0..1]	[1..*] PnodeResults	PnodeResults	inherited from: Pnode
[0..1]	[0..*] Trade	Trade	inherited from: Pnode
[0..1]	[0..*] ReceiptTransactionBids	TransactionBid	inherited from: Pnode
[0..1]	[0..*] DeliveryTransactionBids	TransactionBid	inherited from: Pnode
[0..*]	[0..1] SubControlArea	SubControlArea	inherited from: Pnode
[0..*]	[0..*] AggregateNode	AggregateNode	inherited from: Pnode
[1..1]	[0..*] OrgPnodeAllocation	OrgPnodeAllocation	inherited from: Pnode
[0..*]	[0..1] RTO	RTO	inherited from: Pnode
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.26 LoadAggregationPoint

A specialized class of type AggregatedNode type. Defines Load Aggregation Points.

Table 542 shows all attributes of LoadAggregationPoint.

Table 542 – Attributes of ReferenceData::LoadAggregationPoint

name	type	description
anodeType	AnodeType	inherited from: AggregateNode
endEffectiveDate	DateTime	inherited from: AggregateNode
qualifASOrder	Integer	inherited from: AggregateNode
startEffectiveDate	DateTime	inherited from: AggregateNode
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 543 shows all association ends of LoadAggregationPoint with other classes.

Table 543 – Association ends of ReferenceData::LoadAggregationPoint with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] Pnode	Pnode	inherited from: AggregateNode
[0..*]	[0..*] SubControlArea	SubControlArea	inherited from: AggregateNode
[0..1]	[0..*] CnodeDistributionFactor	CnodeDistributionFactor	inherited from: AggregateNode
[0..*]	[0..*] RegisteredResource	RegisteredResource	inherited from: AggregateNode
[0..1]	[0..*] AreaLoadCurve	AreaLoadCurve	inherited from: AggregateNode
[0..*]	[1..1] RTO	RTO	inherited from: AggregateNode
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.27 LoadRatio root class

Representing the ratio of the load share for the associated SC.

Table 544 shows all attributes of LoadRatio.

Table 544 – Attributes of ReferenceData::LoadRatio

name	type	description
intervalStartTime	DateTime	Interval Start Time
intervalEndTime	DateTime	Interval End Time
share	PerCent	Share in percentage of total Market load for the selected time interval.

Table 545 shows all association ends of LoadRatio with other classes.

Table 545 – Association ends of ReferenceData::LoadRatio with other classes

[mult from]	[mult to] name	type	description
[1..1]	[0..1] SchedulingCoordinator	SchedulingCoordinator	

6.5.9.28 LoadReductionTimeCurve

This is the curve that describes the load reduction time. Relationship between time (Y1-axis) vs. MW (X-axis).

Table 546 shows all attributes of LoadReductionTimeCurve.

Table 546 – Attributes of ReferenceData::LoadReductionTimeCurve

name	type	description
loadReductionTimeCurveType	String	type of the curve. Possible values are but not limited to: Max, Min,
curveStyle	CurveStyle	inherited from: Curve
xMultiplier	UnitMultiplier	inherited from: Curve
xUnit	UnitSymbol	inherited from: Curve
y1Multiplier	UnitMultiplier	inherited from: Curve
y1Unit	UnitSymbol	inherited from: Curve
y2Multiplier	UnitMultiplier	inherited from: Curve
y2Unit	UnitSymbol	inherited from: Curve
y3Multiplier	UnitMultiplier	inherited from: Curve
y3Unit	UnitSymbol	inherited from: Curve
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 547 shows all association ends of LoadReductionTimeCurve with other classes.

Table 547 – Association ends of ReferenceData::LoadReductionTimeCurve with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] RegisteredLoad	RegisteredLoad	
[1..1]	[0..*] CurveDatas	CurveData	inherited from: Curve
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.29 LocalReliabilityArea

Allows definition of reliability areas (eg load pockets) within the ISO/RTO

Table 548 shows all attributes of LocalReliabilityArea.

Table 548 – Attributes of ReferenceData::LocalReliabilityArea

name	type	description
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 549 shows all association ends of LocalReliabilityArea with other classes.

Table 549 – Association ends of ReferenceData::LocalReliabilityArea with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..*] RegisteredGenerator	RegisteredGenerator	
[0..*]	[1..1] RTO	RTO	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.30 MarketPerson

General purpose information for name and other information to contact people.

Table 550 shows all attributes of MarketPerson.

Table 550 – Attributes of ReferenceData::MarketPerson

name	type	description
category	String	Category of this person relative to utility operations, classified according to the utility's corporate standards and practices. Examples include employee, contractor, agent, not affiliated, etc. This field is not used to indicate whether this person is a customer of the utility. Often an employee or contractor is also a customer. Customer information is gained with relationship to Organisation and CustomerData. In similar fashion, this field does not indicate the various roles this person may fill as part of utility operations.
electronicAddressAlternate	ElectronicAddress	Alternate Electronic address.
electronicAddressPrimary	ElectronicAddress	Primary Electronic address.
firstName	String	Person's first name.
governmentID	String	Unique identifier for person relative to its governing authority, for example a federal tax identifier (such as a Social Security number in the United States).
landlinePhone	TelephoneNumber	Landline phone number.
lastName	String	Person's last (family, sir) name.
mName	String	Middle name(s) or initial(s).
mobilePhone	TelephoneNumber	Mobile phone number.
prefix	String	A prefix or title for the person's name, such as

name	type	description
		Miss, Mister, Doctor, etc.
specialNeed	String	Special service needs for the person (contact) are described; examples include life support, etc.
status	Status	
suffix	String	A suffix for the person's name, such as II, III, etc.
userID	String	The user name for the person; required to log in.
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 551 shows all association ends of MarketPerson with other classes.

Table 551 – Association ends of ReferenceData::MarketPerson with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..*] MarketSkills	MarketSkill	
[0..*]	[0..*] MktOrganisation	MktOrganisation	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.31 MarketQualificationRequirement

Certain skills are required and shall be certified in order for a person (typically a member of a crew) to be qualified to work on types of equipment.

Table 552 shows all attributes of MarketQualificationRequirement.

Table 552 – Attributes of ReferenceData::MarketQualificationRequirement

name	type	description
effectiveDate	DateTime	Effective date of the privilege, terminate date of the privilege, or effective date of the application for the organization
expirationDate	DateTime	This is the terminate date of the application for the organization The specific organization can no longer access the application as of the terminate date
qualificationID	String	Qualification identifier.
status	Integer	The status of the privilege. Shows the status of the user's qualification. The current statuses are: 1=New, 2=Active, 3=Refused, 4=Terminated, 5=Withdrawn and it is subject to update.
statusType	String	This is the name of the status of the qualification and is used to display the status of the user's or organization's status.
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject

name	type	description
name	String	inherited from: IdentifiedObject

Table 553 shows all association ends of MarketQualificationRequirement with other classes.

**Table 553 – Association ends of ReferenceData::
MarketQualificationRequirement with other classes**

[mult from]	[mult to] name	type	description
[0..*]	[0..*] MarketSkills	MarketSkill	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.32 MarketRegion

A specialized class of AggregatedNode type. Defines the MarketRegions. Regions could be system Market Regions, Energy Regions or Ancillary Service Regions.

Table 554 shows all attributes of MarketRegion.

Table 554 – Attributes of ReferenceData::MarketRegion

name	type	description
anodeType	AnodeType	inherited from: AggregateNode
endEffectiveDate	DateTime	inherited from: AggregateNode
qualifASOrder	Integer	inherited from: AggregateNode
startEffectiveDate	DateTime	inherited from: AggregateNode
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 555 shows all association ends of MarketRegion with other classes.

Table 555 – Association ends of ReferenceData::MarketRegion with other classes

[mult from]	[mult to] name	type	description
[1..1]	[0..*] ReserveDemandCurve	ReserveDemandCurve	
[1..1]	[1..*] MarketRegionResults	MarketRegionResults	
[1..1]	[0..*] ExPostMarketRegionResults	ExPostMarketRegionResults	
[0..*]	[0..*] Pnode	Pnode	inherited from: AggregateNode
[0..*]	[0..*] SubControlArea	SubControlArea	inherited from: AggregateNode
[0..1]	[0..*] CnodeDistributionFactor	CnodeDistributionFactor	inherited from: AggregateNode
[0..*]	[0..*] RegisteredResource	RegisteredResource	inherited from: AggregateNode
[0..1]	[0..*] AreaLoadCurve	AreaLoadCurve	inherited from: AggregateNode

[mult from]	[mult to] name	type	description
[0..*]	[1..1] RTO	RTO	inherited from: AggregateNode
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.33 MarketSkill

Proficiency level of a craft, which is required to operate or maintain a particular type of asset and/or perform certain types of work.

Table 556 shows all attributes of MarketSkill.

Table 556 – Attributes of ReferenceData::MarketSkill

name	type	description
certificationPeriod	DateTimeInterval	Interval between the certification and its expiry.
effectiveDateTime	DateTime	Date and time the skill became effective.
level	String	Level of skill for a Craft.
type	String	inherited from: Document
createdDateTime	DateTime	inherited from: Document
lastModifiedDateTime	DateTime	inherited from: Document
revisionNumber	String	inherited from: Document
electronicAddress	ElectronicAddress	inherited from: Document
subject	String	inherited from: Document
title	String	inherited from: Document
docStatus	Status	inherited from: Document
status	Status	inherited from: Document
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 557 shows all association ends of MarketSkill with other classes.

Table 557 – Association ends of ReferenceData::MarketSkill with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] MarketQualificationRequirements	MarketQualificationRequirement	
[0..*]	[0..1] MarketPerson	MarketPerson	
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	inherited from: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.34 MaxStartUpCostCurve

The maximum Startup costs and time as a function of down time. Relationship between unit startup cost (Y1-axis) vs. unit elapsed down time (X-axis). This is used to validate the information provided in the Bid.

Table 558 shows all attributes of MaxStartUpCostCurve.

Table 558 – Attributes of ReferenceData::MaxStartUpCostCurve

name	type	description
curveStyle	CurveStyle	inherited from: Curve
xMultiplier	UnitMultiplier	inherited from: Curve
xUnit	UnitSymbol	inherited from: Curve
y1Multiplier	UnitMultiplier	inherited from: Curve
y1Unit	UnitSymbol	inherited from: Curve
y2Multiplier	UnitMultiplier	inherited from: Curve
y2Unit	UnitSymbol	inherited from: Curve
y3Multiplier	UnitMultiplier	inherited from: Curve
y3Unit	UnitSymbol	inherited from: Curve
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 559 shows all association ends of MaxStartUpCostCurve with other classes.

Table 559 – Association ends of ReferenceData::MaxStartUpCostCurve with other classes

[mult from]	[mult to] name	type	description
[1..1]	[0..*] CurveDatas	CurveData	inherited from: Curve
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.35 MeteredSubSystem

A metered subsystem

Table 560 shows all attributes of MeteredSubSystem.

Table 560 – Attributes of ReferenceData::MeteredSubSystem

name	type	description
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 561 shows all association ends of MeteredSubSystem with other classes.

Table 561 – Association ends of ReferenceData::MeteredSubSystem with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..*] MSSZone	MSSZone	
[1..*]	[0..1] MSSAggregation	MSSAggregation	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.36 MktCombinedCyclePlant

Subclass of Production: CombinedCyclePlant from IEC 61970 package.

A set of combustion turbines and steam turbines where the exhaust heat from the combustion turbines is recovered to make steam for the steam turbines, resulting in greater overall plant efficiency

Table 562 shows all attributes of MktCombinedCyclePlant.

Table 562 – Attributes of ReferenceData::MktCombinedCyclePlant

name	type	description
combCyclePlantRating	ActivePower	inherited from: CombinedCyclePlant
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 563 shows all association ends of MktCombinedCyclePlant with other classes.

Table 563 – Association ends of ReferenceData::MktCombinedCyclePlant with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] AggregatedPnode	AggregatedPnode	
[0..1]	[1..*] CombinedCycleLogicalConfiguration	CombinedCycleLogicalConfiguration	
[0..1]	[0..*] ThermalGeneratingUnits	ThermalGeneratingUnit	inherited from: CombinedCyclePlant
[0..*]	[0..1] PSRType	PSRType	inherited from: PowerSystemResource
[0..1]	[0..*] Measurements	Measurement	inherited from: PowerSystemResource
[1..1]	[0..*] OperatingShare	OperatingShare	inherited from: PowerSystemResource
[0..*]	[0..*] PsrLists	PsrList	inherited from: PowerSystemResource
[1..1]	[0..1] OutageSchedule	OutageSchedule	inherited from: PowerSystemResource
[0..*]	[0..*] ReportingGroup	ReportingGroup	inherited from: PowerSystemResource
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.37 MktConductingEquipment

Subclass of IEC 61970:Core:ConductingEquipment

Table 564 shows all attributes of MktConductingEquipment.

Table 564 – Attributes of ReferenceData::MktConductingEquipment

name	type	description
aggregate	Boolean	inherited from: Equipment
normallyInService	Boolean	inherited from: Equipment
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 565 shows all association ends of MktConductingEquipment with other classes.

Table 565 – Association ends of ReferenceData::MktConductingEquipment with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] BaseVoltage	BaseVoltage	inherited from: ConductingEquipment
[1..1]	[0..*] Terminals	Terminal	inherited from: ConductingEquipment
[0..*]	[0..*] ProtectionEquipments	ProtectionEquipment	inherited from: ConductingEquipment
[1..1]	[0..*] ClearanceTags	ClearanceTag	inherited from: ConductingEquipment
[1..1]	[0..1] SvStatus	SvStatus	inherited from: ConductingEquipment
[0..*]	[0..1] EquipmentContainer	EquipmentContainer	inherited from: Equipment
[1..1]	[0..*] ContingencyEquipment	ContingencyEquipment	inherited from: Equipment
[0..1]	[0..*] OperationalLimitSet	OperationalLimitSet	inherited from: Equipment
[0..*]	[0..1] PSRType	PSRType	inherited from: PowerSystemResource
[0..1]	[0..*] Measurements	Measurement	inherited from: PowerSystemResource
[1..1]	[0..*] OperatingShare	OperatingShare	inherited from: PowerSystemResource
[0..*]	[0..*] PsrLists	PsrList	inherited from: PowerSystemResource
[1..1]	[0..1] OutageSchedule	OutageSchedule	inherited from: PowerSystemResource
[0..*]	[0..*] ReportingGroup	ReportingGroup	inherited from: PowerSystemResource
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.38 MktContingency

Subclass of IEC 61970:Contingency

Table 566 shows all attributes of MktContingency.

Table 566 – Attributes of ReferenceData::MktContingency

name	type	description
loadRolloverFlag	Boolean	load change flag

name	type	description
		Flag that indicates whether load rollover and load pickup should be processed for this contingency
ltcControlFlag	Boolean	ltc enable flag Flag that indicates if LTCs regulate voltage during the solution of the contingency
participationFactorSet	String	Participation Factor flag An indication which set of generator participation factors should be used to re-allocate generation in this contingency
screeningFlag	Boolean	screening flag for outage Flag that indicated whether screening is bypassed for the contingency
mustStudy	Boolean	inherited from: Contingency
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 567 shows all association ends of MktContingency with other classes.

Table 567 – Association ends of ReferenceData::MktContingency with other classes

[mult from]	[mult to] name	type	description
[1..1]	[0..*] ContingencyConstraintLimit	ContingencyConstraintLimit	
[0..1]	[0..1] TransferInterfaceSolutionA	TransferInterfaceSolution	
[0..1]	[0..1] TransferInterfaceSolutionB	TransferInterfaceSolution	
[1..1]	[0..*] ConstraintResults	ConstraintResults	
[1..1]	[0..*] ContingencyElement	ContingencyElement	inherited from: Contingency
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.39 MktHeatRateCurve

Subclass of IEC 61970: Generation: Production:HeatRateCurve

Table 568 shows all attributes of MktHeatRateCurve.

Table 568 – Attributes of ReferenceData::MktHeatRateCurve

name	type	description
isNetGrossP	Boolean	inherited from: HeatRateCurve
curveStyle	CurveStyle	inherited from: Curve
xMultiplier	UnitMultiplier	inherited from: Curve
xUnit	UnitSymbol	inherited from: Curve
y1Multiplier	UnitMultiplier	inherited from: Curve

name	type	description
y1Unit	UnitSymbol	inherited from: Curve
y2Multiplier	UnitMultiplier	inherited from: Curve
y2Unit	UnitSymbol	inherited from: Curve
y3Multiplier	UnitMultiplier	inherited from: Curve
y3Unit	UnitSymbol	inherited from: Curve
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 569 shows all association ends of MktHeatRateCurve with other classes.

Table 569 – Association ends of ReferenceData::MktHeatRateCurve with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..1] RegisteredGenerator	RegisteredGenerator	
[1..1]	[0..1] ResourceVerifiableCosts	ResourceVerifiableCosts	
[0..1]	[1..1] ThermalGeneratingUnit	ThermalGeneratingUnit	inherited from: HeatRateCurve
[1..1]	[0..*] CurveDatas	CurveData	inherited from: Curve
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.40 MktThermalGeneratingUnit

Subclass of ThermalGeneratingUnit from Production Package in IEC 61970.

Table 570 shows all attributes of MktThermalGeneratingUnit.

Table 570 – Attributes of ReferenceData::MktThermalGeneratingUnit

name	type	description
oMCost	CostPerHeatUnit	inherited from: ThermalGeneratingUnit
allocSpinResP	ActivePower	inherited from: GeneratingUnit
autoCntrlMarginP	ActivePower	inherited from: GeneratingUnit
baseP	ActivePower	inherited from: GeneratingUnit
controlDeadband	ActivePower	inherited from: GeneratingUnit
controlPulseHigh	Seconds	inherited from: GeneratingUnit
controlPulseLow	Seconds	inherited from: GeneratingUnit
controlResponseRate	ActivePowerChangeRate	inherited from: GeneratingUnit
dispReserveFlag	Boolean	inherited from: GeneratingUnit
efficiency	PU	inherited from: GeneratingUnit
energyMinP	HeatRate	inherited from: GeneratingUnit
fastStartFlag	Boolean	inherited from: GeneratingUnit
fuelPriority	Integer	inherited from: GeneratingUnit
genControlMode	GeneratorControlMode	inherited from: GeneratingUnit

name	type	description
genControlSource	GeneratorControlSource	inherited from: GeneratingUnit
genOperatingMode	GeneratorOperatingMode	inherited from: GeneratingUnit
governorMPL	PU	inherited from: GeneratingUnit
governorSCD	PerCent	inherited from: GeneratingUnit
highControlLimit	ActivePower	inherited from: GeneratingUnit
initialIP	ActivePower	inherited from: GeneratingUnit
longPF	Float	inherited from: GeneratingUnit
lowControlLimit	ActivePower	inherited from: GeneratingUnit
lowerRampRate	ActivePowerChangeRate	inherited from: GeneratingUnit
maxEconomicP	ActivePower	inherited from: GeneratingUnit
maximumAllowableSpinningReserve	ActivePower	inherited from: GeneratingUnit
maxOperatingP	ActivePower	inherited from: GeneratingUnit
minEconomicP	ActivePower	inherited from: GeneratingUnit
minimumOffTime	Seconds	inherited from: GeneratingUnit
minOperatingP	ActivePower	inherited from: GeneratingUnit
modelDetail	Classification	inherited from: GeneratingUnit
nominalP	ActivePower	inherited from: GeneratingUnit
normalPF	Float	inherited from: GeneratingUnit
penaltyFactor	Float	inherited from: GeneratingUnit
raiseRampRate	ActivePowerChangeRate	inherited from: GeneratingUnit
ratedGrossMaxP	ActivePower	inherited from: GeneratingUnit
ratedGrossMinP	ActivePower	inherited from: GeneratingUnit
ratedNetMaxP	ActivePower	inherited from: GeneratingUnit
shortPF	Float	inherited from: GeneratingUnit
spinReserveRamp	ActivePowerChangeRate	inherited from: GeneratingUnit
startupCost	Money	inherited from: GeneratingUnit
startupTime	Seconds	inherited from: GeneratingUnit
stepChange	ActivePower	inherited from: GeneratingUnit
tieLinePF	Float	inherited from: GeneratingUnit
variableCost	Money	inherited from: GeneratingUnit
aggregate	Boolean	inherited from: Equipment
normallyInService	Boolean	inherited from: Equipment
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 571 shows all association ends of MktThermalGeneratingUnit with other classes.

**Table 571 – Association ends of ReferenceData::
MktThermalGeneratingUnit with other classes**

[mult from]	[mult to] name	type	description
[1..1]	[0..*] CombinedCycleConfiguration	CombinedCycleConfigurat	

[mult from]	[mult to] name	type	description
	Member	ionMember	
[0..1]	[0..1] CAESPlant	CAESPlant	inherited from: ThermalGeneratingUnit
[0..*]	[0..1] CogenerationPlant	CogenerationPlant	inherited from: ThermalGeneratingUnit
[0..*]	[0..1] CombinedCyclePlant	CombinedCyclePlant	inherited from: ThermalGeneratingUnit
[1..1]	[0..*] EmissionAccounts	EmissionAccount	inherited from: ThermalGeneratingUnit
[1..1]	[0..*] EmissionCurves	EmissionCurve	inherited from: ThermalGeneratingUnit
[1..1]	[0..*] FossilFuels	FossilFuel	inherited from: ThermalGeneratingUnit
[1..1]	[0..*] FuelAllocationSchedules	FuelAllocationSchedule	inherited from: ThermalGeneratingUnit
[1..1]	[0..1] HeatInputCurve	HeatInputCurve	inherited from: ThermalGeneratingUnit
[1..1]	[0..1] HeatRateCurve	HeatRateCurve	inherited from: ThermalGeneratingUnit
[1..1]	[0..1] IncrementalHeatRateCurve	IncrementalHeatRateCurve	inherited from: ThermalGeneratingUnit
[1..1]	[0..1] ShutdownCurve	ShutdownCurve	inherited from: ThermalGeneratingUnit
[1..1]	[0..1] StartupModel	StartupModel	inherited from: ThermalGeneratingUnit
[0..1]	[1..*] SynchronousMachines	SynchronousMachine	inherited from: GeneratingUnit
[1..1]	[0..1] GenUnitOpSchedule	GenUnitOpSchedule	inherited from: GeneratingUnit
[1..1]	[0..*] GrossToNetActivePowerCurves	GrossToNetActivePowerCurve	inherited from: GeneratingUnit
[1..1]	[0..*] GenUnitOpCostCurves	GenUnitOpCostCurve	inherited from: GeneratingUnit
[1..1]	[0..*] ControlAreaGeneratingUnit	ControlAreaGeneratingUnit	inherited from: GeneratingUnit
[0..*]	[0..1] EquipmentContainer	EquipmentContainer	inherited from: Equipment
[1..1]	[0..*] ContingencyEquipment	ContingencyEquipment	inherited from: Equipment
[0..1]	[0..*] OperationalLimitSet	OperationalLimitSet	inherited from: Equipment
[0..*]	[0..1] PSRType	PSRType	inherited from: PowerSystemResource
[0..1]	[0..*] Measurements	Measurement	inherited from: PowerSystemResource
[1..1]	[0..*] OperatingShare	OperatingShare	inherited from: PowerSystemResource
[0..*]	[0..*] PsrLists	PsrList	inherited from: PowerSystemResource
[1..1]	[0..1] OutageSchedule	OutageSchedule	inherited from: PowerSystemResource
[0..*]	[0..*] ReportingGroup	ReportingGroup	inherited from: PowerSystemResource
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.41 MPMTTestCategory

Provides a reference to the Market Power Mitigation test identifiers and methods for the results of the DA or RT markets. Specific data is the test identifier (Price, Conduct, or Impact) and the test method (System MPM, Local MPM, Alternate System MPM, or Alternate Local MPM).

Table 572 shows all attributes of MPMTTestCategory.

Table 572 – Attributes of ReferenceData::MPMTTestCategory

name	type	description
testIdentifier	MPMTTestIdentifierType	1 – Global Price Test

name	type	description
		2 – Global Conduct Test 3 – Global Impact Test 4 – Local Price Test 5 – Local Conduct Test 6 – Local Impact Test
testMethod	MPMTestMethodType	The method of performing the market power monitoring. Examples are Normal (default) thresholds or Alternate thresholds.
purposeFlag	PurposeFlagType	Nature of threshold data: 'M' – Mitigation threshold 'R' – Reporting threshold
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 573 shows all association ends of MPMTestCategory with other classes.

Table 573 – Association ends of ReferenceData::MPMTestCategory with other classes

[mult from]	[mult to] name	type	description
[1..1]	[0..*] MPMResourceStatus	MPMResourceStatus	
[1..1]	[0..*] MPMTestResults	MPMTestResults	
[1..1]	[0..*] MPMTestThreshold	MPMTestThreshold	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.42 MPMTestThreshold root class

Market Power Mitigation (MPM) test thresholds for resource as well as designated congestion areas (DCAs)

Table 574 shows all attributes of MPMTestThreshold.

Table 574 – Attributes of ReferenceData::MPMTestThreshold

name	type	description
price	CostPerEnergyUnit	Price Threshold in \$/MW
percent	PerCent	Price Threshold in %
marketType	MarketType	Market Type (DAM, RTM)

Table 575 shows all association ends of MPMTestThreshold with other classes.

Table 575 – Association ends of ReferenceData::MPMTestThreshold with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] RegisteredResource	RegisteredResource	
[1..*]	[0..*] AggregatedPnode	AggregatedPnode	
[0..*]	[1..1] MPMTestCategory	MPMTestCategory	

6.5.9.43 MSSAggregation

Metered Sub-System aggregation of MSS Zones.

Table 576 shows all attributes of MSSAggregation.

Table 576 – Attributes of ReferenceData::MSSAggregation

name	type	description
costRecovery	YesNo	Charge for Emission Costs, Start Up Costs, or Minimum Load Costs.
endEffectiveDate	DateTime	end effective date
grossSettlement	YesNo	MSS Load Following may select Net vs. Gross settlement. Net Settlement requires the net Demand settled at the MSS LAP and Net Supply needs to settle at the equivalent to the weighted average price of the MSS generation. Gross load will be settled at the System LAP and the Gross supply will be settled at the LMP. MSS Aggregation that elects gross settlement shall have to identify if its resources are Load Following or not.
ignoreLosses	YesNo	Provides an indication if losses are to be ignored for this zone. Also referred to as Exclude Marginal Losses.
ignoreMarginalLosses	YesNo	Provides an indication if marginal losses are to be ignored for this zone.
loadFollowing	YesNo	Indication that this particular MSSA participates in the Load Following function.
rucProcurement	YesNo	Indicates that RUC will be procured by the ISO or self provided.
startEffectiveDate	DateTime	start effective date
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 577 shows all association ends of MSSAggregation with other classes.

Table 577 – Association ends of ReferenceData::MSSAggregation with other classes

[mult from]	[mult to] name	type	description
[0..1]	[1..*] MeteredSubSystem	MeteredSubSystem	
[0..*]	[1..1] RTO	RTO	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject

[mult from]	[mult to] name	type	description
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.44 MSSZone

Model to define a zone within a Metered Sub System

Table 578 shows all attributes of MSSZone.

Table 578 – Attributes of ReferenceData::MSSZone

name	type	description
ignoreLosses	YesNo	Provides an indication if losses are to be ignored for this metered subsystem zone.
lossFactor	Float	This is the default loss factor for the Metered Sub-System (MSS) zone. The actual losses are calculated during the RT market.
rucGrossSettlement	YesNo	Metered Sub-System (MSS) Load Following may select Net vs. Gross settlement. Net Settlement requires the net Demand settled at the Metered Sub-System (MSS) Load Aggregation Point (LAP) and Net Supply needs to settle at the equivalent to the weighted average price of the MSS generation. Gross load will be settled at the System LAP and the Gross supply will be settled at the LMP. MSS Aggregation that elects gross settlement shall have to identify if its resources are Load Following or not.
anodeType	AnodeType	inherited from: AggregateNode
endEffectiveDate	DateTime	inherited from: AggregateNode
qualifASOrder	Integer	inherited from: AggregateNode
startEffectiveDate	DateTime	inherited from: AggregateNode
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 579 shows all association ends of MSSZone with other classes.

Table 579 – Association ends of ReferenceData::MSSZone with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] MeteredSubSystem	MeteredSubSystem	
[0..*]	[0..*] Pnode	Pnode	inherited from: AggregateNode
[0..*]	[0..*] SubControlArea	SubControlArea	inherited from: AggregateNode
[0..1]	[0..*] CnodeDistributionFactor	CnodeDistributionFactor	inherited from: AggregateNode
[0..*]	[0..*] RegisteredResource	RegisteredResource	inherited from: AggregateNode
[0..1]	[0..*] AreaLoadCurve	AreaLoadCurve	inherited from: AggregateNode
[0..*]	[1..1] RTO	RTO	inherited from: AggregateNode
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.45 OilPrice root class

Price of oil in monetary units

Table 580 shows all attributes of OilPrice.

Table 580 – Attributes of ReferenceData::OilPrice

name	type	description
oilPriceIndex	Float	The average oil price at a defined fuel region.

Table 581 shows all association ends of OilPrice with other classes.

Table 581 – Association ends of ReferenceData::OilPrice with other classes

[mult from]	[mult to] name	type	description
[1..1]	[1..1] FuelRegion	FuelRegion	

6.5.9.46 OrgPnodeAllocation

This class models the allocation between asset owners and pricing nodes

Table 582 shows all attributes of OrgPnodeAllocation.

Table 582 – Attributes of ReferenceData::OrgPnodeAllocation

name	type	description
endEffectiveDate	DateTime	end effective date
maxMWAllocation	ActivePower	Maximum MW for the Source/Sink for the Allocation
startEffectiveDate	DateTime	start effective date
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 583 shows all association ends of OrgPnodeAllocation with other classes.

Table 583 – Association ends of ReferenceData::OrgPnodeAllocation with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] MktOrganisation	MktOrganisation	
[0..*]	[1..1] Pnode	Pnode	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.47 OrgResOwnership

This class model the ownership percent and type of ownership between resource and organisation

Table 584 shows all attributes of OrgResOwnership.

Table 584 – Attributes of ReferenceData::OrgResOwnership

name	type	description
asscType	ResourceAssnType	association type for the association between Organisation and Resource:
endEffectiveDate	DateTime	end effective date
masterSchedulingCoordinatorFlag	YesNo	Flag to indicate that the SC representing the Resource is the Master SC.
ownershipPercent	PerCent	ownership percentage for each resource
startEffectiveDate	DateTime	start effective date
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 585 shows all association ends of OrgResOwnership with other classes.

Table 585 – Association ends of ReferenceData::OrgResOwnership with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] MktOrganisation	MktOrganisation	
[0..*]	[1..1] RegisteredResource	RegisteredResource	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.48 Pnode

A pricing node is directly associated with a connectivity node. It is a pricing location for which market participants submit their bids, offers, buy/sell CRRs, and settle.

Table 586 shows all attributes of Pnode.

Table 586 – Attributes of ReferenceData::Pnode

name	type	description
endEffectiveDate	DateTime	End effective date of the period in which the price node definition is valid.
isPublic	Boolean	If true, this Pnode is public (prices are published for DA/RT and FTR markets), otherwise it is private (location is not usable by market for bidding/FTRs/transactions).
startEffectiveDate	DateTime	Start effective date of the period in which the price node definition is valid.
type	String	Pnode type

name	type	description
usage	String	Price node usage: 'Control Area' 'Regulation Region' 'Price Zone' 'Spin Region' 'Non-Spin Region' 'Price Hub'
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 587 shows all association ends of Pnode with other classes.

Table 587 – Association ends of ReferenceData::Pnode with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..*] RegisteredResources	RegisteredResource	A registered resource injects power at one or more connectivity nodes related to a pnode
[0..*]	[0..*] SourceCRRSegment	CRRSegment	
[0..*]	[0..*] SinkCRRSegment	CRRSegment	
[0..1]	[0..*] MktMeasurement	MktMeasurement	
[1..1]	[0..*] ExPostResults	ExPostPricingResults	
[0..1]	[1..*] PnodeResults	PnodeResults	
[0..1]	[0..*] Trade	Trade	
[0..1]	[0..*] ReceiptTransactionBids	TransactionBid	
[0..1]	[0..*] DeliveryTransactionBids	TransactionBid	
[0..*]	[0..1] SubControlArea	SubControlArea	
[0..*]	[0..*] AgggregateNode	AggregateNode	
[1..1]	[0..*] OrgPnodeAllocation	OrgPnodeAllocation	
[0..*]	[0..1] RTO	RTO	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.49 PnodeDistributionFactor root class

This class allows SC to input different distribution factors for pricing node

Table 588 shows all attributes of PnodeDistributionFactor.

Table 588 – Attributes of ReferenceData::PnodeDistributionFactor

name	type	description
factor	Float	Used to calculate "participation" of Pnode in an AggregatePnode. For example, for regulation region this factor is 1 and total sum of all factors for a specific regulation region does not have to

name	type	description
		be 1. For pricing zone the total sum of all factors has to be 1.
offPeak	YesNo	Indication that this distribution factor is to apply during off peak.
onPeak	YesNo	Indication that this factor is to apply during Peak periods.
podLossFactor	Float	Point of delivery loss factor

Table 589 shows all association ends of PnodeDistributionFactor with other classes.

Table 589 – Association ends of ReferenceData::PnodeDistributionFactor with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] BidDistributionFactor	BidDistributionFactor	
[1..1]	[0..*] AggregatedPnode	AggregatedPnode	
[0..*]	[1..1] IndividualPnode	IndividualPnode	

6.5.9.50 RegisteredGenerator

Model of a generator that is registered to participate in the market

Table 590 shows all attributes of RegisteredGenerator.

Table 590 – Attributes of ReferenceData::RegisteredGenerator

name	type	description
capacityFactor	PerCent	Capacity Factor
coldStartTime	Float	Cold start time.
combinedCyclePlantName	String	Name of the Combined Cycle Plant (valid for Combined Cycle modes or configurations)
commercialOperationDate	DateTime	
constrainedOutputFlag	YesNo	Constrained Output Generator (COG) Indicator (Yes/No), per Generating Resource
costBasis	CostBasis	
extremeLongStart	YesNo	Some long-start up time units may need to receive start up instruction before DA market results are available. Long-Start resources may be either physical resources within the control with start-up times greater than 18 hours or the long-start contractual inter-tie commitment that shall be completed by 6 am one-day ahead. Therefore, there is a need for a process to determine the commitment of such resources before the DA market.
fuelSource	FuelSource	Values: Natural Gas Based Resource, Non Natural Gas Based Resource "NG" – Natural-Gas-Based Resource – a Resource that is powered by Natural Gas "NNG" – Non-Natural-Gas-Based Resource – a Resource that is powered by some other fuel than Natural Gas

name	type	description
highControlLimit	ActivePower	High limit for secondary (AGC) control
hotIntTime	Float	Hot-to-intermediate time (Seasonal)
hotStartTime	Float	Hot start time.
intColdTime	Float	Intermediate-to-cold time (Seasonal)
intendedPIRP	YesNo	Provides an indication that this resource is intending to participate in the intermittent resource program.
intStartTime	Float	Intermediate start time.
loadFollowingDownMSS	YesNo	Certifies resources for use in MSS Load Following Down
loadFollowingUpMSS	YesNo	Certifies resources for use in MSS Load Following Up
lowControlLimit	ActivePower	Low limit for secondary (AGC) control
lowerControlRate	ActivePowerChangeRate	Regulation down response rate in MW per minute
lowerRampRate	ActivePowerChangeRate	
maxDependableCap	ActivePower	Maximum Dependable Capacity (MNDC).
maximumAllowableSpinningReserve	ActivePower	Maximum allowable spinning reserve. Spinning reserve will never be considered greater than this value regardless of the current operating point.
maximumOperatingMW	ActivePower	This is the maximum operating MW limit the dispatcher can enter for this unit
maxLayOffSelfSchedQty	Float	
maxMinLoadCost	CostRate	The registered maximum Minimum Load Cost of a Generating Resource registered with a Cost Basis of "Bid Cost".
maxPumpingLevel	ActivePower	max pumping level of a hydro pump unit
maxShutdownTime	DateTime	Maximum time this device can be shut down.
maxStartUpsPerDay	Integer	maximum start ups per day
maxWeeklyEnergy	Float	Maximum weekly Energy (Seasonal)
maxWeeklyStarts	Integer	Maximum weekly starts (seasonal parameter)
minimumLoadFuelCost	CostPerHeatUnit	The cost for the fuel required to get a Generating Resource to operate at the minimum load level
minimumOperatingMW	ActivePower	This is the minimum operating MW limit the dispatcher can enter for this unit.
minLoadCost	CostRate	minimum load cost. Value is (currency/hr)
mustOfferRA	YesNo	Flag to indicate that this unit is a resource adequacy resource and must offer.
nameplateCapacity	ActivePower	MW value stated on the nameplate of the Generator -- the value it potentially could provide.
operatingMaintenanceCost	CostPerEnergyUnit	The portion of the Operating Cost of a Generating Resource that is not related to fuel cost.
operatingMode	String	Combined Cycle operating mode.
proxyFlag	YesNo	
pumpingCost	CostRate	
pumpingFactor	Float	Pumping factor for pump storage units, conversion factor between generating and pumping.
pumpMinDownTime	Float	The minimum down time for the pump in a pump storage unit.

name	type	description
pumpMinUpTime	Float	The minimum up time aspect for the pump in a pump storage unit
pumpShutdownCost	Float	The cost to shutdown a pump during the pump aspect of a pump storage unit.
pumpShutdownTime	Integer	The shutdown time (minutes) of the pump aspect of a pump storage unit.
qualifyingFacilityOwner	String	
quickStartFlag	YesNo	Quick start flag (Yes/No)
raiseControlRate	ActivePowerChangeRate	Regulation up response rate in MW per minute
raiseRampRate	ActivePowerChangeRate	
rampCurveType	RampCurveType	Ramp curve type: 0 – Fixed ramp rate independent of rate function unit MW output 1 – Static ramp rates as a function of unit MW output only 2 – Dynamic ramp rates as a function of unit MW output and ramping time
rampMode	RampModeType	Ramping mode 0: ignore ramping limits 1: 20-minute ramping rule 2: 60-minute ramping rule
regulationFlag	Integer	0 = Unit is not on regulation 1 = Unit is on AGC and regulating 2 = Unit is suppose to be on regulation but it is not under regulation now
regulationRampRate	ActivePower	For the outage scheduling services
resourceSubType	String	CCGT90 Combined Cycle greater than 90 MW CCLE90 Combined Cycle less than or equal to 90 MW CLLIG Coal and Lignite DSL Diesel GASSTM Gas-Steam GSNONR Gas Steam Non-Reheat Boiler GSREH Gas Steam Reheat Boiler GSSUP Gas Steam Supercritical Boiler HYDRO Hydro NUC Nuclear RENEW Renewable SCGT90 Simple Cycle greater than 90 MW SCLE90 Simple Cycle less than or equal to 90 MW WIND Wind PS Pumped Storage
riverSystem	String	River System the Resource is tied to.
RMNRFlag	YesNo	Reliability must not run (RMNR) flag: indicated whether the RMR unit is set as an RMNR in the current market
RMRFlag	FlagTypeRMR	Reliability must run (RMR) flag: indicates whether the unit is RMR; Indicates whether the unit is RMR:

name	type	description
		N' – not an RMR unit '1' – RMR Condition 1 unit '2' – RMR Condition 2 unit
RMRManualIndicator	YesNo	Indicates the RMR Manual pre-determination status [Y/N]
RMTFlag	YesNo	Reliability must take (RMT) flag (Yes/No): indicates whether the unit is RMT
spinReserveRamp	ActivePowerChangeRate	
syncCondCapable	YesNo	Is the Resource Synchronous Condenser capable Resource?
unitType	UnitType	Generating unit type: Combined Cycle, Gas Turbine, Hydro Turbine, Other, Photovoltaic, Hydro Pump-Turbine, Reciprocating Engine, Steam Turbine, Synchronous Condenser, Wind Turbine
useLimitFlag	YesNo	Use limit flag: indicates if the use limited resource is fully scheduled (or has some slack for real-time dispatch) (Y/N)
ACAFlag	YesNo	inherited from: RegisteredResource
ASSPOptimizationFlag	YesNo	inherited from: RegisteredResource
commercialOpDate	DateTime	inherited from: RegisteredResource
contingencyAvailFlag	YesNo	inherited from: RegisteredResource
dispatchFlag	YesNo	inherited from: RegisteredResource
ECAFlag	YesNo	inherited from: RegisteredResource
endEffectiveDate	DateTime	inherited from: RegisteredResource
flexibleOfferFlag	YesNo	inherited from: RegisteredResource
hourlyPredispatch	YesNo	inherited from: RegisteredResource
isAggregatedRes	YesNo	inherited from: RegisteredResource
lastModified	DateTime	inherited from: RegisteredResource
LMPMFlag	YesNo	inherited from: RegisteredResource
marketParticipationFlag	YesNo	inherited from: RegisteredResource
maxBaseSelfSchedQty	Float	inherited from: RegisteredResource
maxOnTime	Float	inherited from: RegisteredResource
minDispatchTime	Hours	inherited from: RegisteredResource
minOffTime	Float	inherited from: RegisteredResource
minOnTime	Float	inherited from: RegisteredResource
mustOfferFlag	YesNo	inherited from: RegisteredResource
nonMarket	YesNo	inherited from: RegisteredResource
pointOfDeliveryFlag	YesNo	inherited from: RegisteredResource
priceSetFlagDA	YesNo	inherited from: RegisteredResource
priceSetFlagRT	YesNo	inherited from: RegisteredResource
registrationStatus	ResourceRegistrationStatus	inherited from: RegisteredResource
resourceAdequacyFlag	YesNo	inherited from: RegisteredResource
SMPMFlag	YesNo	inherited from: RegisteredResource
startEffectiveDate	DateTime	inherited from: RegisteredResource
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject

name	type	description
name	String	inherited from: IdentifiedObject

Table 591 shows all association ends of RegisteredGenerator with other classes.

**Table 591 – Association ends of ReferenceData::
RegisteredGenerator with other classes**

[mult from]	[mult to] name	type	description
[0..1]	[0..*] MktGeneratingUnit	MktGeneratingUnit	
[0..1]	[0..*] GeneratingBids	GeneratingBid	
[0..1]	[0..1] StartUpTimeCurve	StartUpTimeCurve	
[0..1]	[0..*] Trade	Trade	
[0..1]	[0..1] MktHeatRateCurve	MktHeatRateCurve	
[0..1]	[0..1] StartUpFuelCurve	StartUpFuelCurve	
[0..1]	[0..1] RegulatingLimit	RegulatingLimit	
[0..1]	[0..1] StartUpEnergyCurve	StartUpEnergyCurve	
[0..1]	[0..1] RMRStartUpTimeCurve	RMRStartUpTimeCurve	
[0..1]	[0..1] RMRStartUpFuelCurve	RMRStartUpFuelCurve	
[0..1]	[0..1] RMRStartUpEnergyCurve	RMRStartUpEnergyCurve	
[0..1]	[0..1] RMRStartUpCostCurve	RMRStartUpCostCurve	
[0..1]	[0..1] RMRHeatRateCurve	RMRHeatRateCurve	
[0..1]	[0..*] AuxillaryObject	AuxiliaryObject	
[1..1]	[1..1] EnergyPriceIndex	EnergyPriceIndex	
[0..1]	[0..*] UnitInitialConditions	UnitInitialConditions	
[0..*]	[0..*] StartUpCostCurves	StartUpCostCurve	
[0..1]	[0..1] FuelCostCurve	FuelCostCurve	
[0..*]	[0..1] FuelRegion	FuelRegion	
[0..*]	[0..1] LocalReliabilityArea	LocalReliabilityArea	
[0..1]	[0..*] SubstitutionResourceList	SubstitutionResourceList	inherited from: RegisteredResource
[0..*]	[0..*] SubControlArea	SubControlArea	inherited from: RegisteredResource
[1..1]	[0..*] ResourceAncillaryServiceQualification	ResourceAncillaryServiceQualification	inherited from: RegisteredResource
[0..*]	[0..*] ResourceCapacity	ResourceCapacity	inherited from: RegisteredResource
[0..*]	[0..*] InterTie	SchedulingPoint	inherited from: RegisteredResource
[1..1]	[0..*] OrgResOwnership	OrgResOwnership	inherited from: RegisteredResource
[1..1]	[0..*] FormerReference	FormerReference	inherited from: RegisteredResource
[0..*]	[0..*] ForbiddenRegion	ForbiddenRegion	inherited from: RegisteredResource
[0..1]	[0..*] ContractDistributionFactor	ContractDistributionFactor	inherited from: RegisteredResource
[0..*]	[0..*] AggregateNode	AggregateNode	inherited from: RegisteredResource
[0..*]	[0..1] AdjacentCASet	AdjacentCASet	inherited from: RegisteredResource
[0..*]	[0..*] RampRateCurve	RampRateCurve	inherited from: RegisteredResource
[1..1]	[0..*] LoadFollowingInst	LoadFollowingInst	inherited from: RegisteredResource

[mult from]	[mult to] name	type	description
[1..1]	[0..*] DispatchInstReply	DispatchInstReply	inherited from: RegisteredResource
[0..1]	[0..*] ResourceLoadFollowingInst	ResourceLoadFollowingInst	inherited from: RegisteredResource
[0..1]	[0..*] ResourceDispatchResults	ResourceDispatchResults	inherited from: RegisteredResource
[0..1]	[0..*] RUCAwardInstruction	RUCAwardInstruction	inherited from: RegisteredResource
[0..1]	[0..*] RMROperatorInput	RMROperatorInput	inherited from: RegisteredResource
[0..1]	[0..*] MPMResourceStatus	MPMResourceStatus	inherited from: RegisteredResource
[0..1]	[0..*] DopInstruction	DopInstruction	inherited from: RegisteredResource
[1..1]	[0..*] Commitments	Commitments	inherited from: RegisteredResource
[1..1]	[0..*] IntermittentResourceEligibility	IntermittentResourceEligibility	inherited from: RegisteredResource
[0..1]	[0..*] ExpectedEnergyValues	ExpectedEnergyValues	inherited from: RegisteredResource
[0..1]	[0..*] AllocationResultValues	AllocationResultValues	inherited from: RegisteredResource
[0..*]	[0..1] MktOrganisation	MktOrganisation	inherited from: RegisteredResource
[0..*]	[0..1] MktConnectivityNode	MktConnectivityNode	inherited from: RegisteredResource
[0..*]	[0..*] TimeSeries	TimeSeries	inherited from: RegisteredResource
[1..1]	[0..1] ResourceVerifiableCosts	ResourceVerifiableCosts	inherited from: RegisteredResource
[0..*]	[0..1] Pnode	Pnode	inherited from: RegisteredResource
[0..*]	[0..*] MPMTestThreshold	MPMTestThreshold	inherited from: RegisteredResource
[0..*]	[0..1] HostControlArea	HostControlArea	inherited from: RegisteredResource
[0..*]	[0..*] ControlAreaDesignation	ControlAreaDesignation	inherited from: RegisteredResource
[0..1]	[0..*] ResourceAwardInstruction	ResourceAwardInstruction	inherited from: RegisteredResource
[0..1]	[0..*] LoadFollowingOperatorInput	LoadFollowingOperatorInput	inherited from: RegisteredResource
[1..1]	[0..*] Instructions	Instructions	inherited from: RegisteredResource
[0..1]	[0..*] ExPostResourceResults	ExPostResourceResults	inherited from: RegisteredResource
[0..1]	[0..*] DotInstruction	DotInstruction	inherited from: RegisteredResource
[1..1]	[0..1] DefaultBid	DefaultBid	inherited from: RegisteredResource
[0..*]	[0..*] EnergyMarkets	EnergyMarket	inherited from: RegisteredResource
[0..*]	[0..1] PSRType	PSRType	inherited from: PowerSystemResource
[0..1]	[0..*] Measurements	Measurement	inherited from: PowerSystemResource
[1..1]	[0..*] OperatingShare	OperatingShare	inherited from: PowerSystemResource
[0..*]	[0..*] PsrLists	PsrList	inherited from: PowerSystemResource
[1..1]	[0..1] OutageSchedule	OutageSchedule	inherited from: PowerSystemResource
[0..*]	[0..*] ReportingGroup	ReportingGroup	inherited from: PowerSystemResource
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.51 RegisteredInterTie

This class represents the inter tie resource.

Table 592 shows all attributes of RegisteredInterTie.

Table 592 – Attributes of ReferenceData::RegisteredInterTie

name	type	description
direction	InterTieDirection	indicate the direction (export/import) of an intertie resource
energyProductType	EnergyProductType	Under each major product type, the commodity type can be applied to further specify the type.
isDCTie	YesNo	Flag to indicated whether this Inter-tie is a DC Tie.
isDynamicInterchange	YesNo	check if the inter-tie resource is registered for the dynamic interchange..
minHourlyBlockLimit	Integer	The registered upper bound of minimum hourly block for an Inter-Tie Resource
ACAFlag	YesNo	inherited from: RegisteredResource
ASSPOptimizationFlag	YesNo	inherited from: RegisteredResource
commercialOpDate	DateTime	inherited from: RegisteredResource
contingencyAvailFlag	YesNo	inherited from: RegisteredResource
dispatchFlag	YesNo	inherited from: RegisteredResource
ECAFlag	YesNo	inherited from: RegisteredResource
endEffectiveDate	DateTime	inherited from: RegisteredResource
flexibleOfferFlag	YesNo	inherited from: RegisteredResource
hourlyPredispatch	YesNo	inherited from: RegisteredResource
isAggregatedRes	YesNo	inherited from: RegisteredResource
lastModified	DateTime	inherited from: RegisteredResource
LMPMFlag	YesNo	inherited from: RegisteredResource
marketParticipationFlag	YesNo	inherited from: RegisteredResource
maxBaseSelfSchedQty	Float	inherited from: RegisteredResource
maxOnTime	Float	inherited from: RegisteredResource
minDispatchTime	Hours	inherited from: RegisteredResource
minOffTime	Float	inherited from: RegisteredResource
minOnTime	Float	inherited from: RegisteredResource
mustOfferFlag	YesNo	inherited from: RegisteredResource
nonMarket	YesNo	inherited from: RegisteredResource
pointOfDeliveryFlag	YesNo	inherited from: RegisteredResource
priceSetFlagDA	YesNo	inherited from: RegisteredResource
priceSetFlagRT	YesNo	inherited from: RegisteredResource
registrationStatus	ResourceRegistrationStatus	inherited from: RegisteredResource
resourceAdequacyFlag	YesNo	inherited from: RegisteredResource
SMPMFlag	YesNo	inherited from: RegisteredResource
startEffectiveDate	DateTime	inherited from: RegisteredResource
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 593 shows all association ends of RegisteredInterTie with other classes.

Table 593 – Association ends of ReferenceData::RegisteredInterTie with other classes

[mult from]	[mult to] name	type	description
[1..1]	[0..*] InterTieDispatchResponse	InterTieDispatchResponse	
[0..1]	[0..*] InterchangeSchedule	InterchangeSchedule	
[0..1]	[0..1] InterTieBid	InterTieBid	
[0..*]	[1..1] Flowgate	Flowgate	
[0..*]	[0..*] WheelingCounterParty	WheelingCounterParty	
[0..1]	[0..*] SubstitutionResourceList	SubstitutionResourceList	inherited from: RegisteredResource
[0..*]	[0..*] SubControlArea	SubControlArea	inherited from: RegisteredResource
[1..1]	[0..*] ResourceAncillaryServiceQualification	ResourceAncillaryServiceQualification	inherited from: RegisteredResource
[0..*]	[0..*] ResourceCapacity	ResourceCapacity	inherited from: RegisteredResource
[0..*]	[0..*] InterTie	SchedulingPoint	inherited from: RegisteredResource
[1..1]	[0..*] OrgResOwnership	OrgResOwnership	inherited from: RegisteredResource
[1..1]	[0..*] FormerReference	FormerReference	inherited from: RegisteredResource
[0..*]	[0..*] ForbiddenRegion	ForbiddenRegion	inherited from: RegisteredResource
[0..1]	[0..*] ContractDistributionFactor	ContractDistributionFactor	inherited from: RegisteredResource
[0..*]	[0..*] AggregateNode	AggregateNode	inherited from: RegisteredResource
[0..*]	[0..1] AdjacentCASet	AdjacentCASet	inherited from: RegisteredResource
[0..*]	[0..*] RampRateCurve	RampRateCurve	inherited from: RegisteredResource
[1..1]	[0..*] LoadFollowingInst	LoadFollowingInst	inherited from: RegisteredResource
[1..1]	[0..*] DispatchInstReply	DispatchInstReply	inherited from: RegisteredResource
[0..1]	[0..*] ResourceLoadFollowingInst	ResourceLoadFollowingInst	inherited from: RegisteredResource
[0..1]	[0..*] ResourceDispatchResults	ResourceDispatchResults	inherited from: RegisteredResource
[0..1]	[0..*] RUCAwardInstruction	RUCAwardInstruction	inherited from: RegisteredResource
[0..1]	[0..*] RMROperatorInput	RMROperatorInput	inherited from: RegisteredResource
[0..1]	[0..*] MPMResourceStatus	MPMResourceStatus	inherited from: RegisteredResource
[0..1]	[0..*] DopInstruction	DopInstruction	inherited from: RegisteredResource
[1..1]	[0..*] Commitments	Commitments	inherited from: RegisteredResource
[1..1]	[0..*] IntermittentResourceEligibility	IntermittentResourceEligibility	inherited from: RegisteredResource
[0..1]	[0..*] ExpectedEnergyValues	ExpectedEnergyValues	inherited from: RegisteredResource
[0..1]	[0..*] AllocationResultValues	AllocationResultValues	inherited from: RegisteredResource
[0..*]	[0..1] MktOrganisation	MktOrganisation	inherited from: RegisteredResource
[0..*]	[0..1] MktConnectivityNode	MktConnectivityNode	inherited from: RegisteredResource
[0..*]	[0..*] TimeSeries	TimeSeries	inherited from: RegisteredResource
[1..1]	[0..1] ResourceVerifiableCosts	ResourceVerifiableCosts	inherited from: RegisteredResource
[0..*]	[0..1] Pnode	Pnode	inherited from: RegisteredResource
[0..*]	[0..*] MPMTestThreshold	MPMTestThreshold	inherited from: RegisteredResource
[0..*]	[0..1] HostControlArea	HostControlArea	inherited from: RegisteredResource
[0..*]	[0..*] ControlAreaDesignation	ControlAreaDesignation	inherited from: RegisteredResource
[0..1]	[0..*]	ResourceAwardInstruction	inherited from: RegisteredResource

[mult from]	[mult to] name	type	description
	ResourceAwardInstruction	n	
[0..1]	[0..*] LoadFollowingOperatorInput	LoadFollowingOperatorInput	inherited from: RegisteredResource
[1..1]	[0..*] Instructions	Instructions	inherited from: RegisteredResource
[0..1]	[0..*] ExPostResourceResults	ExPostResourceResults	inherited from: RegisteredResource
[0..1]	[0..*] DotInstruction	DotInstruction	inherited from: RegisteredResource
[1..1]	[0..1] DefaultBid	DefaultBid	inherited from: RegisteredResource
[0..*]	[0..*] EnergyMarkets	EnergyMarket	inherited from: RegisteredResource
[0..*]	[0..1] PSRType	PSRType	inherited from: PowerSystemResource
[0..1]	[0..*] Measurements	Measurement	inherited from: PowerSystemResource
[1..1]	[0..*] OperatingShare	OperatingShare	inherited from: PowerSystemResource
[0..*]	[0..*] PsrLists	PsrList	inherited from: PowerSystemResource
[1..1]	[0..1] OutageSchedule	OutageSchedule	inherited from: PowerSystemResource
[0..*]	[0..*] ReportingGroup	ReportingGroup	inherited from: PowerSystemResource
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.52 RegisteredLoad

Model of a load that is registered to participate in the market (demand reduction)

Table 594 shows all attributes of RegisteredLoad.

Table 594 – Attributes of ReferenceData::RegisteredLoad

name	type	description
blockLoadTransferFlag	YesNo	Flag to indicate that the Resource is Block Load pseudo resource ('Y', 'N')
dynamicallyScheduledLoadResourceFlag	YesNo	Flag to indicate that a Load Resource is part of a DSR Load
dynamicallyScheduledQualificationFlag	YesNo	Qualification status (used for DSR qualification)
loadRegistryMSS	YesNo	Non-participating load registry as a MSS load
maxBaseLoad	ActivePower	Maximum Base Load (MW), per Participating Load Resource
maxDeploymentTime	Float	Maximum Deployment time (seconds)
maxLoadRedTimesPerDay	Integer	Maximum Number of Daily Load Curtailments
maxLoadReduction	ActivePower	maximum load reduction
maxReductionTime	Float	Maximum Load Reduction Time (min), per Participating Load Resource
maxWeeklyDeployment	Integer	Maximum weekly deployments
minLoadReduction	ActivePower	Minimum MW for a load reduction (e.g., MW rating of a discrete pump). This attribute may be used also in the LoadBid class. The reason that the attribute is also modeled in this class is that it is resource attribute and needs to be persistently stored.
minLoadReductionCost	CostPerEnergyUnit	minimum load reduction cost. Single number for the load

name	type	description
minLoadReductionInterval	Float	Shortest period load reduction shall be maintained before load can be restored to normal levels. This attribute may be used also in the LoadBid class. The reason that the attribute is also modeled in this class is that it is resource attribute and needs to be persistently stored.
minReductionTime	Float	Minimum Load Reduction Time (min), per Participating Load Resource
minTimeBetLoadRed	Float	Shortest time that load shall be left at normal levels before a new load reduction. This attribute may be used also in the LoadBid class. The reason that the attribute is also modeled in this class is that it is resource attribute and needs to be persistently stored.
NPLCustomLoadAggregation	YesNo	A Non-Participating Load Resource aggregation scheme with resource-specific Distribution Factors that are submitted with the Bid and for which the distributed Energy is settled at the relevant Distribution Location marginal prices.
participatingLoad	YesNo	Participating Load flag: indicates whether the load resource is participates in load reduction actions.
reqNoticeTime	Float	Time period that is required from an order to reduce a load to the time that it takes to get to the minimum load reduction. This attribute may be used also in the LoadBid class. The reason that the attribute is also modeled in this class is that it is resource attribute and needs to be persistently stored.
resourceSubType	String	CLR Controllable Load NCLR Non-Controllable Load
ACAFlag	YesNo	inherited from: RegisteredResource
ASSPOptimizationFlag	YesNo	inherited from: RegisteredResource
commercialOpDate	DateTime	inherited from: RegisteredResource
contingencyAvailFlag	YesNo	inherited from: RegisteredResource
dispatchFlag	YesNo	inherited from: RegisteredResource
ECAFlag	YesNo	inherited from: RegisteredResource
endEffectiveDate	DateTime	inherited from: RegisteredResource
flexibleOfferFlag	YesNo	inherited from: RegisteredResource
hourlyPredispatch	YesNo	inherited from: RegisteredResource
isAggregatedRes	YesNo	inherited from: RegisteredResource
lastModified	DateTime	inherited from: RegisteredResource
LMPMFlag	YesNo	inherited from: RegisteredResource
marketParticipationFlag	YesNo	inherited from: RegisteredResource
maxBaseSelfSchedQty	Float	inherited from: RegisteredResource
maxOnTime	Float	inherited from: RegisteredResource
minDispatchTime	Hours	inherited from: RegisteredResource
minOffTime	Float	inherited from: RegisteredResource
minOnTime	Float	inherited from: RegisteredResource
mustOfferFlag	YesNo	inherited from: RegisteredResource
nonMarket	YesNo	inherited from: RegisteredResource
pointOfDeliveryFlag	YesNo	inherited from: RegisteredResource

name	type	description
priceSetFlagDA	YesNo	inherited from: RegisteredResource
priceSetFlagRT	YesNo	inherited from: RegisteredResource
registrationStatus	ResourceRegistrationStatus	inherited from: RegisteredResource
resourceAdequacyFlag	YesNo	inherited from: RegisteredResource
SMPMFlag	YesNo	inherited from: RegisteredResource
startEffectiveDate	DateTime	inherited from: RegisteredResource
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 595 shows all association ends of RegisteredLoad with other classes.

Table 595 – Association ends of ReferenceData::RegisteredLoad with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..*] MktEnergyConsumer	MktEnergyConsumer	
[0..*]	[1..1] MktLoadArea	MktLoadArea	
[0..1]	[0..*] LoadBids	LoadBid	
[0..*]	[0..*] LoadReductionPriceCurve	LoadReductionPriceCurve	
[0..*]	[0..*] LoadReductionTimeCurve	LoadReductionTimeCurve	
[0..1]	[0..*] AuxillaryObject	AuxillaryObject	
[0..1]	[0..*] SubstitutionResourceList	SubstitutionResourceList	inherited from: RegisteredResource
[0..*]	[0..*] SubControlArea	SubControlArea	inherited from: RegisteredResource
[1..1]	[0..*] ResourceAncillaryServiceQualification	ResourceAncillaryServiceQualification	inherited from: RegisteredResource
[0..*]	[0..*] ResourceCapacity	ResourceCapacity	inherited from: RegisteredResource
[0..*]	[0..*] InterTie	SchedulingPoint	inherited from: RegisteredResource
[1..1]	[0..*] OrgResOwnership	OrgResOwnership	inherited from: RegisteredResource
[1..1]	[0..*] FormerReference	FormerReference	inherited from: RegisteredResource
[0..*]	[0..*] ForbiddenRegion	ForbiddenRegion	inherited from: RegisteredResource
[0..1]	[0..*] ContractDistributionFactor	ContractDistributionFactor	inherited from: RegisteredResource
[0..*]	[0..*] AggregateNode	AggregateNode	inherited from: RegisteredResource
[0..*]	[0..1] AdjacentCASet	AdjacentCASet	inherited from: RegisteredResource
[0..*]	[0..*] RampRateCurve	RampRateCurve	inherited from: RegisteredResource
[1..1]	[0..*] LoadFollowingInst	LoadFollowingInst	inherited from: RegisteredResource
[1..1]	[0..*] DispatchInstReply	DispatchInstReply	inherited from: RegisteredResource
[0..1]	[0..*] ResourceLoadFollowingInst	ResourceLoadFollowingInst	inherited from: RegisteredResource
[0..1]	[0..*] ResourceDispatchResults	ResourceDispatchResults	inherited from: RegisteredResource
[0..1]	[0..*] RUCAwardInstruction	RUCAwardInstruction	inherited from: RegisteredResource
[0..1]	[0..*] RMROperatorInput	RMROperatorInput	inherited from: RegisteredResource

[mult from]	[mult to] name	type	description
[0..1]	[0..*] MPMResourceStatus	MPMResourceStatus	inherited from: RegisteredResource
[0..1]	[0..*] DopInstruction	DopInstruction	inherited from: RegisteredResource
[1..1]	[0..*] Commitments	Commitments	inherited from: RegisteredResource
[1..1]	[0..*] IntermittentResourceEligibility	IntermittentResourceEligibility	inherited from: RegisteredResource
[0..1]	[0..*] ExpectedEnergyValues	ExpectedEnergyValues	inherited from: RegisteredResource
[0..1]	[0..*] AllocationResultValues	AllocationResultValues	inherited from: RegisteredResource
[0..*]	[0..1] MktOrganisation	MktOrganisation	inherited from: RegisteredResource
[0..*]	[0..1] MktConnectivityNode	MktConnectivityNode	inherited from: RegisteredResource
[0..*]	[0..*] TimeSeries	TimeSeries	inherited from: RegisteredResource
[1..1]	[0..1] ResourceVerifiableCosts	ResourceVerifiableCosts	inherited from: RegisteredResource
[0..*]	[0..1] Pnode	Pnode	inherited from: RegisteredResource
[0..*]	[0..*] MPMTestThreshold	MPMTestThreshold	inherited from: RegisteredResource
[0..*]	[0..1] HostControlArea	HostControlArea	inherited from: RegisteredResource
[0..*]	[0..*] ControlAreaDesignation	ControlAreaDesignation	inherited from: RegisteredResource
[0..1]	[0..*] ResourceAwardInstruction	ResourceAwardInstruction	inherited from: RegisteredResource
[0..1]	[0..*] LoadFollowingOperatorInput	LoadFollowingOperatorInput	inherited from: RegisteredResource
[1..1]	[0..*] Instructions	Instructions	inherited from: RegisteredResource
[0..1]	[0..*] ExPostResourceResults	ExPostResourceResults	inherited from: RegisteredResource
[0..1]	[0..*] DotInstruction	DotInstruction	inherited from: RegisteredResource
[1..1]	[0..1] DefaultBid	DefaultBid	inherited from: RegisteredResource
[0..*]	[0..*] EnergyMarkets	EnergyMarket	inherited from: RegisteredResource
[0..*]	[0..1] PSRType	PSRType	inherited from: PowerSystemResource
[0..1]	[0..*] Measurements	Measurement	inherited from: PowerSystemResource
[1..1]	[0..*] OperatingShare	OperatingShare	inherited from: PowerSystemResource
[0..*]	[0..*] PsrLists	PsrList	inherited from: PowerSystemResource
[1..1]	[0..1] OutageSchedule	OutageSchedule	inherited from: PowerSystemResource
[0..*]	[0..*] ReportingGroup	ReportingGroup	inherited from: PowerSystemResource
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.53 RegulatingLimit

This class represents the physical characteristic of a generator regarding the regulating limit

Table 596 shows all attributes of RegulatingLimit.

Table 596 – Attributes of ReferenceData::RegulatingLimit

name	type	description
highLimit	ActivePower	
lowLimit	ActivePower	
aliasName	String	inherited from: IdentifiedObject

name	type	description
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 597 shows all association ends of RegulatingLimit with other classes.

Table 597 – Association ends of ReferenceData::RegulatingLimit with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..1] RegisteredGenerator	RegisteredGenerator	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.54 ResourceAncillaryServiceQualification root class

Ancillary Services that a resource is qualified to provide

Table 598 shows all attributes of ResourceAncillaryServiceQualification.

Table 598 – Attributes of ReferenceData::ResourceAncillaryServiceQualification

name	type	description
certifiedCapacity	Float	Certified capacity for associated resource and market type and ancillary service type product
endEffectiveDate	DateTime	Ancillary Service Qualification end date
market	MarketType	market type
qualificationFlag	YesNo	Status of the qualification ('Y' = Active, 'N' = Inactive)
startEffectiveDate	DateTime	Ancillary Service Qualification effective from date
type	ResourceAncillaryService Type	Type of service based on ResourceAncillaryServiceType enumeration

Table 599 shows all association ends of ResourceAncillaryServiceQualification with other classes.

Table 599 – Association ends of ReferenceData::ResourceAncillaryServiceQualification with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1] RegisteredResource	RegisteredResource	RegisteredResources are qualified for resource ancillary service types (which include market product types as well as other types such as BlackStart) by the association to the class ResourceAncillaryServiceQualification.

6.5.9.55 ResourceCapacity root class

This class model the various capacities of a resource. A resource may have numbers of capacities related to operating, ancillary services, energy trade and so forth. The types are but not limited to:

Ancillary Service

Regulation Up

Regulation Dn

Spinning Reserve

Non-Spinning Reserve

Operating Reserve

RUC

Energy Trade

Table 600 shows all attributes of ResourceCapacity.

Table 600 – Attributes of ReferenceData::ResourceCapacity

name	type	description
capacityType	ResourceCapacityType	capacity type The types are but not limited to: Regulation Up Regulation Dn Spinning Reserve Non-Spinning Reserve FOO capacity MOO capacity
maximumCapacity	ActivePower	maximum capacity
minimumCapacity	ActivePower	minimum capacity
defaultCapacity	ActivePower	default capacity

Table 601 shows all association ends of ResourceCapacity with other classes.

Table 601 – Association ends of ReferenceData::ResourceCapacity with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] RegisteredResource	RegisteredResource	

6.5.9.56 ResourceOperationMaintenanceCost

To model the Operation and Maintenance (O and M) costs of a generation resource.

Table 602 shows all attributes of ResourceOperationMaintenanceCost.

Table 602 – Attributes of ReferenceData::ResourceOperationMaintenanceCost

name	type	description
gasPercentAboveLowSustainedLimit	PerCent	Percentage of Fuel Index Price (gas) for operating above Low Sustained Limit (LSL)
oilPercentAboveLowSustainedLimit	PerCent	Percentage of Fuel Oil Price (FOP) for operating above Low Sustained Limit (LSL)
omCostColdStartup	Float	Verifiable O&M Cost (\$), Cold Startup
omCostHotStartup	Float	Verifiable O&M Cost (\$), Hot Startup
omCostIntermediateStartup	Float	Verifiable O&M Cost (\$), Intermediate Startup
omCostLowSustainedLimit	Float	Verifiable O&M Cost (\$/MWh), LSL
solidfuelPercentAboveLowSustainedLimit	PerCent	Percentage of Solid Fuel for operating above Low Sustained Limit (LSL)
curveStyle	CurveStyle	inherited from: Curve
xMultiplier	UnitMultiplier	inherited from: Curve
xUnit	UnitSymbol	inherited from: Curve
y1Multiplier	UnitMultiplier	inherited from: Curve
y1Unit	UnitSymbol	inherited from: Curve
y2Multiplier	UnitMultiplier	inherited from: Curve
y2Unit	UnitSymbol	inherited from: Curve
y3Multiplier	UnitMultiplier	inherited from: Curve
y3Unit	UnitSymbol	inherited from: Curve
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 603 shows all association ends of ResourceOperationMaintenanceCost with other classes.

Table 603 – Association ends of ReferenceData::ResourceOperationMaintenanceCost with other classes

[mult from]	[mult to] name	type	description
[1..1]	[0..1] ResourceVerifiableCosts	ResourceVerifiableCosts	
[1..1]	[0..1] CurveDatas	CurveData	inherited from: Curve
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.57 ResourceStartupCost root class

To model the startup costs of a generation resource.

Table 604 shows all attributes of ResourceStartupCost.

Table 604 – Attributes of ReferenceData::ResourceStartupCost

name	type	description
fuelColdStartup	Float	Verifiable Cold Start Up Fuel (MMBtu per start)
fuelHotStartup	Float	Verifiable Hot Start Up Fuel (MMBtu per start)

name	type	description
fuelIntermediateStartup	Float	Verifiable Intermediate Start Up Fuel (MMBtu per start)
fuelLowSustainedLimit	Float	Minimum-Energy fuel, MMBtu/MWh
gasPercentColdStartup	PerCent	Percentage of Fuel Index Price (gas) for cold startup
gasPercentHotStartup	PerCent	Percentage of Fuel Index Price (gas) for hot startup
gasPercentIntermediateStartup	PerCent	Percentage of Fuel Index Price (gas) for intermediate startup
gasPercentLowSustainedLimit	PerCent	Percentage of FIP (gas) for operating at LSL
oilPercentColdStartup	PerCent	Percentage of Fuel Oil Price (FOP) for cold startup
oilPercentHotStartup	PerCent	Percentage of Fuel Oil Price (FOP) for hot startup
oilPercentIntermediateStartup	PerCent	Percentage of Fuel Oil Price (FOP) for intermediate startup
oilPercentLowSustainedLimit	PerCent	Percentage of FOP (oil) for operating at LSL
solidfuelPercentColdStartup	PerCent	Percentage of Solid Fuel for cold startup
solidfuelPercentHotStartup	PerCent	Percentage of Solid Fuel for hot startup
solidfuelPercentIntermediateStartup	PerCent	Percentage of Solid Fuel for intermediate startup
solidfuelPercentLowSustainedLimit	PerCent	Percentage of Solid Fuel for operating at LSL

Table 605 shows all association ends of ResourceStartupCost with other classes.

**Table 605 – Association ends of ReferenceData::
ResourceStartupCost with other classes**

[mult from]	[mult to] name	type	description
[0..*]	[1..1] ResourceVerifiableCosts	ResourceVerifiableCosts	

6.5.9.58 ResourceVerifiableCosts root class

This class is defined to describe the verifiable costs associated with a generation resource.

Table 606 shows all association ends of ResourceVerifiableCosts with other classes.

**Table 606 – Association ends of ReferenceData::
ResourceVerifiableCosts with other classes**

[mult from]	[mult to] name	type	description
[0..1]	[1..1] RegisteredResource	RegisteredResource	
[0..1]	[1..1] MktHeatRateCurve	MktHeatRateCurve	
[0..1]	[1..1] ResourceOperationMaintenanceCost	ResourceOperationMaintenanceCost	
[1..1]	[0..*] ResourceStartupCost	ResourceStartupCost	

6.5.9.59 RMRHeatRateCurve

Model to support processing of reliability must run units.

Table 607 shows all attributes of RMRHeatRateCurve.

Table 607 – Attributes of ReferenceData::RMRHeatRateCurve

name	type	description
curveStyle	CurveStyle	inherited from: Curve
xMultiplier	UnitMultiplier	inherited from: Curve
xUnit	UnitSymbol	inherited from: Curve
y1Multiplier	UnitMultiplier	inherited from: Curve
y1Unit	UnitSymbol	inherited from: Curve
y2Multiplier	UnitMultiplier	inherited from: Curve
y2Unit	UnitSymbol	inherited from: Curve
y3Multiplier	UnitMultiplier	inherited from: Curve
y3Unit	UnitSymbol	inherited from: Curve
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 608 shows all association ends of RMRHeatRateCurve with other classes.

Table 608 – Association ends of ReferenceData::RMRHeatRateCurve with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..1] RegisteredGenerator	RegisteredGenerator	
[1..1]	[0..*] CurveDatas	CurveData	inherited from: Curve
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.60 RMRStartUpCostCurve

Model to support processing of reliability must run units.

Table 609 shows all attributes of RMRStartUpCostCurve.

Table 609 – Attributes of ReferenceData::RMRStartUpCostCurve

name	type	description
curveStyle	CurveStyle	inherited from: Curve
xMultiplier	UnitMultiplier	inherited from: Curve
xUnit	UnitSymbol	inherited from: Curve
y1Multiplier	UnitMultiplier	inherited from: Curve
y1Unit	UnitSymbol	inherited from: Curve
y2Multiplier	UnitMultiplier	inherited from: Curve

name	type	description
y2Unit	UnitSymbol	inherited from: Curve
y3Multiplier	UnitMultiplier	inherited from: Curve
y3Unit	UnitSymbol	inherited from: Curve
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 610 shows all association ends of RMRStartUpCostCurve with other classes.

**Table 610 – Association ends of ReferenceData::
RMRStartUpCostCurve with other classes**

[mult from]	[mult to] name	type	description
[0..1]	[0..1] RegisteredGenerator	RegisteredGenerator	
[1..1]	[0..*] CurveDatas	CurveData	inherited from: Curve
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.61 RMRStartUpEnergyCurve

Model to support processing of reliability must run units.

Table 611 shows all attributes of RMRStartUpEnergyCurve.

Table 611 – Attributes of ReferenceData::RMRStartUpEnergyCurve

name	type	description
curveStyle	CurveStyle	inherited from: Curve
xMultiplier	UnitMultiplier	inherited from: Curve
xUnit	UnitSymbol	inherited from: Curve
y1Multiplier	UnitMultiplier	inherited from: Curve
y1Unit	UnitSymbol	inherited from: Curve
y2Multiplier	UnitMultiplier	inherited from: Curve
y2Unit	UnitSymbol	inherited from: Curve
y3Multiplier	UnitMultiplier	inherited from: Curve
y3Unit	UnitSymbol	inherited from: Curve
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 612 shows all association ends of RMRStartUpEnergyCurve with other classes.

**Table 612 – Association ends of ReferenceData::
RMRStartUpEnergyCurve with other classes**

[mult from]	[mult to] name	type	description
[0..1]	[0..1] RegisteredGenerator	RegisteredGenerator	
[1..1]	[0..*] CurveDatas	CurveData	inherited from: Curve
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.62 RMRStartUpFuelCurve

Model to support processing of reliability must run units.

Table 613 shows all attributes of RMRStartUpFuelCurve.

**Table 613 – Attributes of ReferenceData::
RMRStartUpFuelCurve**

name	type	description
curveStyle	CurveStyle	inherited from: Curve
xMultiplier	UnitMultiplier	inherited from: Curve
xUnit	UnitSymbol	inherited from: Curve
y1Multiplier	UnitMultiplier	inherited from: Curve
y1Unit	UnitSymbol	inherited from: Curve
y2Multiplier	UnitMultiplier	inherited from: Curve
y2Unit	UnitSymbol	inherited from: Curve
y3Multiplier	UnitMultiplier	inherited from: Curve
y3Unit	UnitSymbol	inherited from: Curve
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 614 shows all association ends of RMRStartUpFuelCurve with other classes.

**Table 614 – Association ends of ReferenceData::
RMRStartUpFuelCurve with other classes**

[mult from]	[mult to] name	type	description
[0..1]	[0..1] RegisteredGenerator	RegisteredGenerator	
[1..1]	[0..*] CurveDatas	CurveData	inherited from: Curve
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.63 RMRStartUpTimeCurve

Model to support processing of reliability must run units.

Table 615 shows all attributes of RMRStartUpTimeCurve.

Table 615 – Attributes of ReferenceData::RMRStartUpTimeCurve

name	type	description
curveStyle	CurveStyle	inherited from: Curve
xMultiplier	UnitMultiplier	inherited from: Curve
xUnit	UnitSymbol	inherited from: Curve
y1Multiplier	UnitMultiplier	inherited from: Curve
y1Unit	UnitSymbol	inherited from: Curve
y2Multiplier	UnitMultiplier	inherited from: Curve
y2Unit	UnitSymbol	inherited from: Curve
y3Multiplier	UnitMultiplier	inherited from: Curve
y3Unit	UnitSymbol	inherited from: Curve
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 616 shows all association ends of RMRStartUpTimeCurve with other classes.

Table 616 – Association ends of ReferenceData::RMRStartUpTimeCurve with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..1] RegisteredGenerator	RegisteredGenerator	
[1..1]	[0..*] CurveDatas	CurveData	inherited from: Curve
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.64 RTO

Regional transmission operator.

Table 617 shows all attributes of RTO.

Table 617 – Attributes of ReferenceData::RTO

name	type	description
creditFlag	YesNo	inherited from: MktOrganisation
creditStartEffectiveDate	DateTime	inherited from: MktOrganisation
endEffectiveDate	DateTime	inherited from: MktOrganisation
lastModified	DateTime	inherited from: MktOrganisation
organisationID	Integer	inherited from: MktOrganisation
qualificationStatus	String	inherited from: MktOrganisation
startEffectiveDate	DateTime	inherited from: MktOrganisation
streetAddress	StreetAddress	inherited from: Organisation

name	type	description
postalAddress	PostalAddress	inherited from: Organisation
phone1	TelephoneNumber	inherited from: Organisation
phone2	TelephoneNumber	inherited from: Organisation
electronicAddress	ElectronicAddress	inherited from: Organisation
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 618 shows all association ends of RTO with other classes.

Table 618 – Association ends of ReferenceData::RTO with other classes

[mult from]	[mult to] name	type	description
[1..1]	[0..*] MktConnectivityNode	MktConnectivityNode	
[1..1]	[0..*] AdjacentCASet	AdjacentCASet	
[1..1]	[0..*] AggregateNode	AggregateNode	
[1..1]	[0..*] TransmissionContractRight	ContractRight	
[1..1]	[0..*] FuelRegion	FuelRegion	
[1..1]	[0..*] HostControlArea	HostControlArea	
[1..1]	[0..*] LocalReliabilityArea	LocalReliabilityArea	
[0..1]	[0..*] Pnodes	Pnode	
[1..1]	[0..*] SubControlArea	SubControlArea	
[1..1]	[0..*] TransmissionRightChain	TransmissionRightChain	
[0..1]	[0..*] EnergyMarkets	EnergyMarket	
[0..1]	[0..*] SecurityConstraints	SecurityConstraints	
[0..1]	[0..*] SecurityConstraintsLinear	SecurityConstraintSum	
[1..1]	[0..*] MSSAggregation	MSSAggregation	
[1..1]	[0..*] CRROrgRole	CRROrgRole	inherited from: MktOrganisation
[0..*]	[0..*] MarketPerson	MarketPerson	inherited from: MktOrganisation
[0..1]	[0..*] RegisteredResource	RegisteredResource	inherited from: MktOrganisation
[1..1]	[0..*] OrgResOwnership	OrgResOwnership	inherited from: MktOrganisation
[1..1]	[0..*] OrgPnodeAllocation	OrgPnodeAllocation	inherited from: MktOrganisation
[1..1]	[0..*] SchedulingCoordinator	SchedulingCoordinator	inherited from: MktOrganisation
[0..1]	[0..*] Roles	OrganisationRole	inherited from: Organisation
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.65 RUCZone

A specialized class of type AggregatedNode type. Defines RUC Zones. A forecast region represents a collection of Nodes for which the Market operator has developed sufficient historical demand and relevant weather data to perform a demand forecast for such area. The

Market Operator may further adjust this forecast to ensure that the Reliability Unit Commitment produces adequate local capacity procurement.

Table 619 shows all attributes of RUCZone.

Table 619 – Attributes of ReferenceData::RUCZone

name	type	description
anodeType	AnodeType	inherited from: AggregateNode
endEffectiveDate	DateTime	inherited from: AggregateNode
qualifASOrder	Integer	inherited from: AggregateNode
startEffectiveDate	DateTime	inherited from: AggregateNode
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 620 shows all association ends of RUCZone with other classes.

Table 620 – Association ends of ReferenceData::RUCZone with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..*] LossClearingResults	LossClearingResults	
[0..*]	[0..*] Pnode	Pnode	inherited from: AggregateNode
[0..*]	[0..*] SubControlArea	SubControlArea	inherited from: AggregateNode
[0..1]	[0..*] CnodeDistributionFactor	CnodeDistributionFactor	inherited from: AggregateNode
[0..*]	[0..*] RegisteredResource	RegisteredResource	inherited from: AggregateNode
[0..1]	[0..*] AreaLoadCurve	AreaLoadCurve	inherited from: AggregateNode
[0..*]	[1..1] RTO	RTO	inherited from: AggregateNode
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.66 SchedulingCoordinator

Market participants could be represented by Scheduling Coordinators (SCs) that are registered with the RTO/ISO. One participant could register multiple SCs with the RTO/ISO. Many market participants can do business with the RTO/ISO using a single SC. One SC could schedule multiple generators. A load scheduling point could be used by multiple SCs. Each SC could schedule load at multiple scheduling points. An inter-tie scheduling point can be used by multiple SCs. Each SC can schedule interchange at multiple inter-tie scheduling points.

Table 621 shows all attributes of SchedulingCoordinator.

Table 621 – Attributes of ReferenceData::SchedulingCoordinator

name	type	description
scid	String	This is the short name or Scheduling Coordinator ID field.
creditFlag	YesNo	inherited from: MktOrganisation

name	type	description
creditStartEffectiveDate	DateTime	inherited from: MktOrganisation
endEffectiveDate	DateTime	inherited from: MktOrganisation
lastModified	DateTime	inherited from: MktOrganisation
organisationID	Integer	inherited from: MktOrganisation
qualificationStatus	String	inherited from: MktOrganisation
startEffectiveDate	DateTime	inherited from: MktOrganisation
streetAddress	StreetAddress	inherited from: Organisation
postalAddress	PostalAddress	inherited from: Organisation
phone1	TelephoneNumber	inherited from: Organisation
phone2	TelephoneNumber	inherited from: Organisation
electronicAddress	ElectronicAddress	inherited from: Organisation
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 622 shows all association ends of SchedulingCoordinator with other classes.

**Table 622 – Association ends of ReferenceData::
SchedulingCoordinator with other classes**

[mult from]	[mult to] name	type	description
[0..*]	[1..1] MktOrgansation	MktOrganisation	
[0..1]	[0..*] SubmitToSCTrade	Trade	
[1..1]	[0..*] ToSCTrade	Trade	
[1..1]	[0..*] FromSCTrade	Trade	
[0..1]	[0..*] SubmitFromSCTrade	Trade	
[1..1]	[0..*] TransmissionContractRight	ContractRight	
[0..1]	[0..*] Bid	Bid	
[0..1]	[1..1] LoadRatio	LoadRatio	
[1..1]	[0..*]	SchedulingCoordinatorUser	
[1..1]	[0..*] CRROrgRole	CRROrgRole	inherited from: MktOrganisation
[0..*]	[0..*] MarketPerson	MarketPerson	inherited from: MktOrganisation
[0..1]	[0..*] RegisteredResource	RegisteredResource	inherited from: MktOrganisation
[1..1]	[0..*] OrgResOwnership	OrgResOwnership	inherited from: MktOrganisation
[1..1]	[0..*] OrgPnodeAllocation	OrgPnodeAllocation	inherited from: MktOrganisation
[1..1]	[0..*] SchedulingCoordinator	SchedulingCoordinator	inherited from: MktOrganisation
[0..1]	[0..*] Roles	OrganisationRole	inherited from: Organisation
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.67 SchedulingCoordinatorUser root class

Describing users of a Scheduling Coordinator

Table 623 shows all attributes of SchedulingCoordinatorUser.

Table 623 – Attributes of ReferenceData::SchedulingCoordinatorUser

name	type	description
startEffectiveDate	DateTime	Login ID Effective Date
endEffectiveDate	DateTime	Login ID Expiration Date
loginID	String	Login ID
loginRole	String	Assigned roles (these are roles with either Read or Read/Write privileges on different Market Systems)

Table 624 shows all association ends of SchedulingCoordinatorUser with other classes.

Table 624 – Association ends of ReferenceData::SchedulingCoordinatorUser with other classes

[mult from]	[mult to] name	type	description
[0..*]	[1..1]	SchedulingCoordinator	

6.5.9.68 SchedulingPoint

Connection to other organizations at the boundary of the ISO/RTO.

Table 625 shows all attributes of SchedulingPoint.

Table 625 – Attributes of ReferenceData::SchedulingPoint

name	type	description
endEffectiveDate	DateTime	End effective date.
startEffectiveDate	DateTime	Start effective date.
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 626 shows all association ends of SchedulingPoint with other classes.

Table 626 – Association ends of ReferenceData::SchedulingPoint with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..*] RegisteredResource	RegisteredResource	
[0..1]	[0..*] InterchangeSchedule	InterchangeSchedule	
[0..*]	[0..1] Flowgate	Flowgate	

[mult from]	[mult to] name	type	description
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.69 StartUpEnergyCurve

The energy consumption of a generating resource to complete a start-up from the StartUpEnergyCurve. Definition of the StartUpEnergyCurve includes, xvalue as the cooling time and y1value as the MW value.

Table 627 shows all attributes of StartUpEnergyCurve.

Table 627 – Attributes of ReferenceData::StartUpEnergyCurve

name	type	description
curveStyle	CurveStyle	inherited from: Curve
xMultiplier	UnitMultiplier	inherited from: Curve
xUnit	UnitSymbol	inherited from: Curve
y1Multiplier	UnitMultiplier	inherited from: Curve
y1Unit	UnitSymbol	inherited from: Curve
y2Multiplier	UnitMultiplier	inherited from: Curve
y2Unit	UnitSymbol	inherited from: Curve
y3Multiplier	UnitMultiplier	inherited from: Curve
y3Unit	UnitSymbol	inherited from: Curve
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 628 shows all association ends of StartUpEnergyCurve with other classes.

Table 628 – Association ends of ReferenceData::StartUpEnergyCurve with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..1] RegisteredGenerator	RegisteredGenerator	
[1..1]	[0..*] CurveDatas	CurveData	inherited from: Curve
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.70 StartUpFuelCurve

The fuel consumption of a Generating Resource to complete a Start-Up.(x=cooling time) Form Startup Fuel Curve. xAxisData -> cooling time, y1AxisData -> MBtu

Table 629 shows all attributes of StartUpFuelCurve.

Table 629 – Attributes of ReferenceData::StartUpFuelCurve

name	type	description
curveStyle	CurveStyle	inherited from: Curve
xMultiplier	UnitMultiplier	inherited from: Curve
xUnit	UnitSymbol	inherited from: Curve
y1Multiplier	UnitMultiplier	inherited from: Curve
y1Unit	UnitSymbol	inherited from: Curve
y2Multiplier	UnitMultiplier	inherited from: Curve
y2Unit	UnitSymbol	inherited from: Curve
y3Multiplier	UnitMultiplier	inherited from: Curve
y3Unit	UnitSymbol	inherited from: Curve
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 630 shows all association ends of StartUpFuelCurve with other classes.

Table 630 – Association ends of ReferenceData::StartUpFuelCurve with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..1] RegisteredGenerator	RegisteredGenerator	
[1..1]	[0..*] CurveDatas	CurveData	inherited from: Curve
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.71 SubControlArea

An area defined for the purpose of tracking interchange with surrounding areas via tie points; may or may not serve as a control area.

Table 631 shows all attributes of SubControlArea.

Table 631 – Attributes of ReferenceData::SubControlArea

name	type	description
areaShortName	String	Market area short name, which is the regulation zone. It references AGC regulation zone name.
constantCoefficient	Float	Loss estimate constant coefficient
embeddedControlArea	YesNo	Used in conjunction with the InternalCA flag. If the InternalCA flag is YES, this flag does not apply. If the InternaCA flag is NO, this flag provides an indication of AdjacentCA (NO) or Embedded CA (YES).
endEffectiveDate	DateTime	end effective date
internalCA	YesNo	A Yes/No indication that this control area is contained internal to the system.
linearCoefficient	Float	Loss estimate linear coefficient
localCA	YesNo	Indication that this control area is the local

name	type	description
		control area.
maxSelfSchedMW	Float	Maximum amount of self schedule MWs allowed for an embedded control area.
minSelfSchedMW	Float	Minimum amount of self schedule MW allowed for an embedded control area.
quadraticCoefficient	Float	Loss estimate quadratic coefficient
startEffectiveDate	DateTime	start effective date
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 632 shows all association ends of SubControlArea with other classes.

Table 632 – Association ends of ReferenceData::SubControlArea with other classes

[mult from]	[mult to] name	type	description
[1..1]	[0..*] Export_EnergyTransactions	EnergyTransaction	Energy is transferred between interchange areas
[1..1]	[0..*] Import_EnergyTransactions	EnergyTransaction	Energy is transferred between interchange areas
[0..1]	[0..*] GeneralClearingResults	GeneralClearingResults	
[0..1]	[0..*] BidSelfSched	BidSelfSched	
[0..*]	[0..*] RegisteredResource	RegisteredResource	
[0..1]	[0..*] ExPostLossResults	ExPostLossResults	
[0..1]	[1..*] LossClearingResults	LossClearingResults	
[0..*]	[0..1] AdjacentCASet	AdjacentCASet	
[0..*]	[0..*] AggregateNode	AggregateNode	
[0..1]	[0..*] CnodeDistributionFactor	CnodeDistributionFactor	
[0..*]	[0..*] ControlAreaDesignation	ControlAreaDesignation	
[0..1]	[0..*] To_Flowgate	Flowgate	
[0..1]	[0..*] From_Flowgate	Flowgate	
[0..*]	[1..1] HostControlArea	HostControlArea	The interchange area may operate as a control area
[0..1]	[0..*] Pnode	Pnode	
[0..*]	[1..1] RTO	RTO	
[0..*]	[0..1] PSRType	PSRType	inherited from: PowerSystemResource
[0..1]	[0..*] Measurements	Measurement	inherited from: PowerSystemResource
[1..1]	[0..*] OperatingShare	OperatingShare	inherited from: PowerSystemResource
[0..*]	[0..*] PsrLists	PsrList	inherited from: PowerSystemResource
[1..1]	[0..1] OutageSchedule	OutageSchedule	inherited from: PowerSystemResource
[0..*]	[0..*] ReportingGroup	ReportingGroup	inherited from: PowerSystemResource
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.72 SubstitutionResourceList root class

List of resources that can be substituted for within the bounds of a Contract definition. This class has a precedence and a resource.

Table 633 shows all attributes of SubstitutionResourceList.

Table 633 – Attributes of ReferenceData::SubstitutionResourceList

name	type	description
precedence	Integer	An indicator of the order a resource should be substituted. The lower the number the higher the precedence.

Table 634 shows all association ends of SubstitutionResourceList with other classes.

Table 634 – Association ends of ReferenceData::SubstitutionResourceList with other classes

[mult from]	[mult to] name	type	description
[0..*]	[0..1] RegisteredResource	RegisteredResource	
[0..*]	[0..1] TransmissionContractRight	ContractRight	

6.5.9.73 TACArea

Transmission Access Charge Area. Charges assessed, on behalf of the Participating Transmission Owner, to parties who require access to the controlled grid.

Table 635 shows all attributes of TACArea.

Table 635 – Attributes of ReferenceData::TACArea

name	type	description
endEffectiveDate	DateTime	end effective date
startEffectiveDate	DateTime	start effective date
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 636 shows all association ends of TACArea with other classes.

Table 636 – Association ends of ReferenceData::TACArea with other classes

[mult from]	[mult to] name	type	description
[0..1]	[0..*] AreaLoadCurve	AreaLoadCurve	
[0..*]	[0..*] AggregatedPnode	AggregatedPnode	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.74 TransmissionRightChain

Allows chaining of TransmissionContractRights. Many individual contract rights can be included in the definition of a TransmissionRightChain. A TransmissionRightChain is also defined as a TransmissionContractRight itself.

Table 637 shows all attributes of TransmissionRightChain.

Table 637 – Attributes of ReferenceData::TransmissionRightChain

name	type	description
endEffectiveDate	DateTime	end effective date
startEffectiveDate	DateTime	start effective date
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 638 shows all association ends of TransmissionRightChain with other classes.

Table 638 – Association ends of ReferenceData::TransmissionRightChain with other classes

[mult from]	[mult to] name	type	description
[0..1]	[1..*] Ind_ContractRight	ContractRight	
[0..1]	[1..1] Chain_ContractRight	ContractRight	
[0..*]	[1..1] RTO	RTO	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

6.5.9.75 WheelingCounterParty

Counter party in a wheeling transaction.

Table 639 shows all attributes of WheelingCounterParty.

Table 639 – Attributes of ReferenceData::WheelingCounterParty

name	type	description
aliasName	String	inherited from: IdentifiedObject
mRID	String	inherited from: IdentifiedObject
name	String	inherited from: IdentifiedObject

Table 640 shows all association ends of WheelingCounterParty with other classes.

**Table 640 – Association ends of ReferenceData::
WheelingCounterParty with other classes**

[mult from]	[mult to] name	type	description
[0..*]	[0..*] RegisteredInterTie	RegisteredInterTie	
[0..1]	[0..*] DiagramObjects	DiagramObject	inherited from: IdentifiedObject
[1..1]	[0..*] Names	Name	inherited from: IdentifiedObject

Bibliography

EPRI TR 1009455, *CIM Extensions to Support Market Operations Phase 1: Day Ahead and Real Time Scheduling Applications*

EPRI TR-1011431, *CIM Extensions to Support Market Operations Phase 2: Day Ahead and Real Time Scheduling Applications*

CIM Users Group – The community of CIM users. <http://cimug.ucaiug.org>

IEC/TS 61970-2, *Energy management system application program interface (EMS-API) – Part 2: Glossary*

IEC 62361-100, *Power systems management and associated information exchange – Interoperability in the long term – Part 100: CIM Profiles to XML Schema Mapping*¹

¹ To be published.

IECNORM.COM Click to view the full PDF of IEC 62325-301:2014

Withdrawn

SOMMAIRE

AVANT-PROPOS	383
INTRODUCTION	385
1 Domaine d'application	386
2 Références normatives	386
3 Termes, définitions et abréviations	387
3.1 Termes et définitions	387
3.2 Abréviations	388
4 Spécification du CIM	389
4.1 Notation de modélisation du CIM	389
4.2 Paquetages CIM	389
4.3 Classes CIM et relations	391
4.3.1 Classes	391
4.3.2 Generalization (généralisation)	392
4.3.3 Simple Association (association simple)	393
4.3.4 Aggregation (agrégation)	394
4.4 Concepts du modèle CIM et exemples	394
4.4.1 Paquetage 'Common Market'	394
4.4.2 Paquetage 'MarketManagement'	395
4.4.3 Paquetage 'MarketOperations'	400
4.5 Conseils de modélisation	407
4.5.1 Modélisation pour changements	407
4.5.2 Processus pour les amendements au CIM	407
4.5.3 Changements apportés au modèle UML du CIM	408
4.5.4 Changements apportés aux documents normatifs du CIM	408
4.5.5 Profils CIM	408
4.6 Outils de modélisation	409
5 Modèle détaillé	409
5.1 Vue générale	409
5.2 Contexte	409
6 Paquetage supérieur IEC 62325	410
6.1 Généralités	410
6.2 Classe racine IEC 62325CIMVersion	411
6.3 Paquetage MarketCommon	411
6.3.1 Généralités	411
6.3.2 MarketParticipant	413
6.3.3 MarketRole	413
6.3.4 Enumération MarketRoleKind	414
6.3.5 RegisteredResource	418
6.4 Paquetage MarketManagement	421
6.4.1 Généralités	421
6.4.2 Classe racine AceTariffType	424
6.4.3 Classe racine AttributeInstanceComponent	425
6.4.4 Vente aux enchères	425
6.4.5 BidTimeSeries	426
6.4.6 Classe racine DateAndOrTime	428

6.4.7	Domain	428
6.4.8	Classe racine FlowDirection.....	429
6.4.9	MarketAgreement	429
6.4.10	MarketDocument	430
6.4.11	MarketEvaluationPoint	431
6.4.12	Classe racine MarketObjectStatus	432
6.4.13	MktPSRType.....	432
6.4.14	Classe racine Period.....	433
6.4.15	Classe racine Point.....	434
6.4.16	Classe racine Price.....	434
6.4.17	Process	435
6.4.18	Classe racine Reason.....	435
6.4.19	TimeSeries	436
6.4.20	Classe racine Unit	437
6.5	Paquetage MarketOperations.....	438
6.5.1	Généralités	438
6.5.2	Paquetage CongestionRevenueRights	440
6.5.3	Paquetage MarketOpCommon	443
6.5.4	Paquetage MarketPlan	457
6.5.5	Paquetage MarketQualitySystem	467
6.5.6	Paquetage MarketSystem	475
6.5.7	Paquetage MktDomain.....	591
6.5.8	Paquetage ParticipantInterfaces.....	616
6.5.9	Paquetage ReferenceData.....	663
	Bibliographie.....	760
	Figure 1 – Diagramme des dépendances de paquetages 'TC 57CIM'	390
	Figure 2 – Diagramme des dépendances de paquetages "IEC 62325"	391
	Figure 3 – Exemple de généralisation.....	393
	Figure 4 – Exemple d'association simple.....	394
	Figure 5 – Exemple d'agrégation.....	394
	Figure 6 – Modèle Common Market	395
	Figure 7 – Présentation du modèle Market Management.....	397
	Figure 8 – Modèle Market Management	398
	Figure 9 – Concept de base 'TimeSeries' 'MarketManagement'	400
	Figure 10 – Systèmes informatiques de l'opérateur d'un marché de l'électricité de type américain.....	401
	Figure 11 – Organisation de transport régional pour le marché de l'électricité de type américain.....	402
	Figure 12 – Définition de référence de RegisteredResource pour le marché de l'électricité de type américain.....	404
	Figure 13 – Définition de l'offre pour le marché de l'électricité de type américain	405
	Figure 14 – Définitions des programmes d'offre des ressources pour le marché de l'électricité de type américain.....	406
	Figure 15 – Compensation du marché de l'électricité de type américain.....	407
	Figure 16 – Diagramme de classe IEC 62325::Main	411
	Figure 17 – Diagramme de classe MarketCommon::MarketCommon	412

Figure 18 – Diagramme du paquetage MarketManagement::externalDependencies	422
Figure 19 – Diagramme de classe MarketManagement::Inheritance	423
Figure 20 – Diagramme de classe MarketManagement::MarketManagementOverview	424
Figure 21 – Diagramme de classe MarketOperations::Main	438
Figure 22 – Diagramme du paquetage MarketOperations::MarketOperations	439
Figure 23 – Diagramme de classe CongestionRevenueRights:: CongestionRevenueRights	440
Figure 24 – Diagramme de classe MarketPlan::MarketPlan	458
Figure 25 – Diagramme de classe MarketQualitySystem::AllocationResults	469
Figure 26 – Diagramme de classe ExternalInputs::ASRequirements	476
Figure 27 – Diagramme de classe ExternalInputs::DefaultBids	477
Figure 28 – Diagramme de classe ExternalInputs::DeratedBranchLimits	478
Figure 29 – Diagramme de classe ExternalInputs::ExistingTransmissionContractRights	479
Figure 30 – Diagramme de classe ExternalInputs::IntermittentResourceSchedules	480
Figure 31 – Diagramme de classe ExternalInputs::LoadForecast	481
Figure 32 – Diagramme de classe ExternalInputs::OutageOrDeratedEquipment	481
Figure 33 – Diagramme de classe ExternalInputs::Telemetry	483
Figure 34 – Diagramme de classe MarketResults::Instructions	536
Figure 35 – Diagramme de classe MarketResults::MarketClearing	537
Figure 36 – Diagramme de classe MarketResults::MarketClearingResults	538
Figure 37 – Diagramme de classe MarketResults::MarketRegionClearing	539
Figure 38 – Diagramme de classe MarketResults::PnodeClearing	540
Figure 39 – Diagramme de classe MarketResults::ResourceAwardsClearing	542
Figure 40 – Diagramme de classe MarketResults::TransactionBidClearing	544
Figure 41 – Diagramme de classe ParticipantInterfaces::ParticipantBids	616
Figure 42 – Diagramme de classe ParticipantInterfaces::ParticipantTrades	617
Figure 43 – Diagramme de classe ParticipantInterfaces::ResourceBids	618
Figure 44 – Diagramme de classe ParticipantInterfaces::ResourceBidSchedules	619
Figure 45 – Diagramme de classe ParticipantInterfaces::TransactionBids	620
Figure 46 – Diagramme de classe ReferenceData::AggregateNode	664
Figure 47 – Diagramme de classe ReferenceData::Contracts	665
Figure 48 – Diagramme de classe ReferenceData::MeteredSubSystem	666
Figure 49 – Diagramme de classe ReferenceData::MultiStateGenerator	667
Figure 50 – Diagramme de classe ReferenceData::PriceNode	668
Figure 51 – Diagramme de classe ReferenceData::RegisteredGenerator	669
Figure 52 – Diagramme de classe ReferenceData::RegisteredInterTie	670
Figure 53 – Diagramme de classe ReferenceData::RegisteredLoad	671
Figure 54 – Diagramme de classe ReferenceData::RegisteredResource	672
Figure 55 – Diagramme de classe ReferenceData::RTO	673
Tableau 1 – Documentation d'attribut	409
Tableau 2 – Documentation des extrémités d'association	410
Tableau 3 – Documentation des Enums	410

Tableau 4 – Attributs de IEC 62325::IEC 62325CIMVersion	411
Tableau 5 – Attributs de MarketCommon::MarketParticipant	413
Tableau 6 – Extrémités d'association de MarketCommon::MarketParticipant avec d'autres classes	413
Tableau 7 – Attributs de MarketCommon::MarketRole	414
Tableau 8 – Extrémités d'association de MarketCommon:: MarketRole avec d'autres classes	414
Tableau 9 – Libellés de MarketCommon::MarketRoleKind	415
Tableau 10 – Attributs de MarketCommon::RegisteredResource	418
Tableau 11 – Extrémités d'association de MarketCommon:: RegisteredResource avec d'autres classes	420
Tableau 12 – Attributs de MarketManagement::AceTariffType	425
Tableau 13 – Extrémités d'association de MarketManagement:: AceTariffType avec d'autres classes	425
Tableau 14 – Attributs de MarketManagement::AttributeInstanceComponent	425
Tableau 15 – Extrémités d'association de MarketManagement:: AttributeInstanceComponent avec d'autres classes	425
Tableau 16 – Attributs de MarketManagement::Auction	426
Tableau 17 – Extrémités d'association de MarketManagement:: Auction avec d'autres classes	426
Tableau 18 – Attributs de MarketManagement::BidTimeSeries	427
Tableau 19 – Extrémités d'association de MarketManagement:: BidTimeSeries avec d'autres classes	427
Tableau 20 – Attributs de MarketManagement::DateAndOrTime	428
Tableau 21 – Extrémités d'association de MarketManagement:: DateAndOrTime avec d'autres classes	428
Tableau 22 – Attributs de MarketManagement::Domain	428
Tableau 23 – Extrémités d'association de MarketManagement:: Domain avec d'autres classes	429
Tableau 24 – Attributs de MarketManagement::FlowDirection	429
Tableau 25 – Extrémités d'association de MarketManagement:: FlowDirection avec d'autres classes	429
Tableau 26 – Attributs de MarketManagement::MarketAgreement	430
Tableau 27 – Extrémités d'association de MarketManagement:: MarketAgreement avec d'autres classes	430
Tableau 28 – Attributs de MarketManagement::MarketDocument	431
Tableau 29 – Extrémités d'association de MarketManagement:: MarketDocument avec d'autres classes	431
Tableau 30 – Attributs de MarketManagement::MarketEvaluationPoint	432
Tableau 31 – Extrémités d'association de MarketManagement:: MarketEvaluationPoint avec d'autres classes	432
Tableau 32 – Attributs de MarketManagement::MarketObjectStatus	432
Tableau 33 – Extrémités d'association de MarketManagement:: MarketObjectStatus avec d'autres classes	432
Tableau 34 – Attributs de MarketManagement::MktPSRType	433
Tableau 35 – Extrémités d'association de MarketManagement:: MktPSRType avec d'autres classes	433
Tableau 36 – Attributs de MarketManagement::Period	433

Tableau 37 – Extrémités d'association de MarketManagement:: Period avec d'autres classes	433
Tableau 38 – Attributs de MarketManagement::Point	434
Tableau 39 – Extrémités d'association de MarketManagement:: Point avec d'autres classes	434
Tableau 40 – Attributs de MarketManagement::Price	434
Tableau 41 – Extrémités d'association de MarketManagement:: Price avec d'autres classes	435
Tableau 42 – Attributs de MarketManagement::Process	435
Tableau 43 – Extrémités d'association de MarketManagement:: Process avec d'autres classes	435
Tableau 44 – Attributs de MarketManagement::Reason	435
Tableau 45 – Extrémités d'association de MarketManagement:: Reason avec d'autres classes	436
Tableau 46 – Attributs de MarketManagement::TimeSeries	436
Tableau 47 – Extrémités d'association de MarketManagement:: TimeSeries avec d'autres classes	437
Tableau 48 – Attributs de MarketManagement::Unit	437
Tableau 49 – Extrémités d'association de MarketManagement:: Unit avec d'autres classes	437
Tableau 50 – Attributs de CongestionRevenueRights::CRR	441
Tableau 51 – Extrémités d'association de CongestionRevenueRights:: CRR avec d'autres classes	442
Tableau 52 – Attributs de CongestionRevenueRights:: CRROrgRole	442
Tableau 53 – Extrémités d'association de CongestionRevenueRights:: CRROrgRole avec d'autres classes	442
Tableau 54 – Attributs de CongestionRevenueRights::CRRSegment	443
Tableau 55 – Extrémités d'association de CongestionRevenueRights:: CRRSegment avec d'autres classes	443
Tableau 56 – Attributs de MarketOpCommon::MarketInvoice	444
Tableau 57 – Extrémités d'association de MarketOpCommon:: MarketInvoice avec d'autres classes	444
Tableau 58 – Attributs de MarketOpCommon::MarketInvoiceLineItem	445
Tableau 59 – Extrémités d'association de MarketOpCommon:: MarketInvoiceLineItem avec d'autres classes	445
Tableau 60 – Extrémités d'association de MarketOpCommon:: MarketLedger avec d'autres classes	446
Tableau 61 – Attributs de MarketOpCommon::MarketLedgerEntry	446
Tableau 62 – Extrémités d'association de MarketOpCommon:: MarketLedgerEntry avec d'autres classes	446
Tableau 63 – Attributs de MarketOpCommon::MktActivityRecord	447
Tableau 64 – Extrémités d'association de MarketOpCommon:: MktActivityRecord avec d'autres classes	447
Tableau 65 – Attributs de MarketOpCommon::MktConnectivityNode	447
Tableau 66 – Extrémités d'association de MarketOpCommon:: MktConnectivityNode avec d'autres classes	448
Tableau 67 – Attributs de MarketOpCommon::MktEnergyConsumer	448

Tableau 68 – Extrémités d'association de MarketOpCommon:: MktEnergyConsumer avec d'autres classes	449
Tableau 69 – Attributs de MarketOpCommon::MktGeneratingUnit	450
Tableau 70 – Extrémités d'association de MarketOpCommon:: MktGeneratingUnit avec d'autres classes	451
Tableau 71 – Attributs de MarketOpCommon::MktLine	452
Tableau 72 – Extrémités d'association de MarketOpCommon:: MktLine avec d'autres classes	452
Tableau 73 – Attributs de MarketOpCommon::MktLoadArea	452
Tableau 74 – Extrémités d'association de MarketOpCommon:: MktLoadArea avec d'autres classes	453
Tableau 75 – Attributs de MarketOpCommon::MktMeasurement	453
Tableau 76 – Extrémités d'association de MarketOpCommon:: MktMeasurement avec d'autres classes	453
Tableau 77 – Attributs de MarketOpCommon::MktOrganisation	454
Tableau 78 – Extrémités d'association de MarketOpCommon:: MktOrganisation avec d'autres classes	454
Tableau 79 – Attributs de MarketOpCommon::MktPowerTransformer	455
Tableau 80 – Extrémités d'association de MarketOpCommon:: MktPowerTransformer avec d'autres classes	455
Tableau 81 – Attributs de MarketOpCommon::MktTerminal	456
Tableau 82 – Extrémités d'association de MarketOpCommon:: MktTerminal avec d'autres classes	456
Tableau 83 – Attributs de MarketOpCommon::MktUserAttribute	457
Tableau 84 – Extrémités d'association de MarketOpCommon:: MktUserAttribute avec d'autres classes	457
Tableau 85 – Attributs de MarketPlan::CRRMarket	459
Tableau 86 – Extrémités d'association de MarketPlan::CRRMarket avec d'autres classes	459
Tableau 87 – Attributs de MarketPlan::EnergyMarket	460
Tableau 88 – Extrémités d'association de MarketPlan:: EnergyMarket avec d'autres classes	460
Tableau 89 – Attributs de MarketPlan::Market	461
Tableau 90 – Extrémités d'association de MarketPlan::Market avec d'autres classes	461
Tableau 91 – Attributs de MarketPlan::MarketActualEvent	462
Tableau 92 – Extrémités d'association de MarketPlan:: MarketActualEvent avec d'autres classes	462
Tableau 93 – Attributs de MarketPlan::MarketFactors	462
Tableau 94 – Extrémités d'association de MarketPlan:: MarketFactors avec d'autres classes	463
Tableau 95 – Attributs de MarketPlan::MarketPlan	463
Tableau 96 – Extrémités d'association de MarketPlan::MarketPlan avec d'autres classes	463
Tableau 97 – Attributs de MarketPlan::MarketProduct	464
Tableau 98 – Extrémités d'association de MarketPlan:: MarketProduct avec d'autres classes	464
Tableau 99 – Attributs de MarketPlan::MarketRun	465

Tableau 100 – Extrémités d'association de MarketPlan::MarketRun avec d'autres classes	465
Tableau 101 – Attributs de MarketPlan::PlannedMarket	466
Tableau 102 – Extrémités d'association de MarketPlan::PlannedMarket avec d'autres classes	466
Tableau 103 – Attributs de MarketPlan::PlannedMarketEvent	466
Tableau 104 – Extrémités d'association de MarketPlan::PlannedMarketEvent avec d'autres classes	467
Tableau 105 – Attributs de MarketQualitySystem::AllocationResult	469
Tableau 106 – Extrémités d'association de MarketQualitySystem::AllocationResult avec d'autres classes	469
Tableau 107 – Attributs de MarketQualitySystem::AllocationResultValues	470
Tableau 108 – Extrémités d'association de MarketQualitySystem::AllocationResultValues avec d'autres classes	470
Tableau 109 – Attributs de MarketQualitySystem::AuxiliaryCost	470
Tableau 110 – Extrémités d'association de MarketQualitySystem::AuxiliaryCost avec d'autres classes	471
Tableau 111 – Extrémités d'association de MarketQualitySystem::AuxiliaryObject avec d'autres classes	471
Tableau 112 – Attributs de MarketQualitySystem::AuxiliaryValues	471
Tableau 113 – Extrémités d'association de MarketQualitySystem::AuxiliaryValues avec d'autres classes	472
Tableau 114 – Attributs de MarketQualitySystem::ExpectedEnergy	472
Tableau 115 – Extrémités d'association de MarketQualitySystem::ExpectedEnergy avec d'autres classes	472
Tableau 116 – Attributs de MarketQualitySystem::ExpectedEnergyValues	472
Tableau 117 – Extrémités d'association de MarketQualitySystem::ExpectedEnergyValues avec d'autres classes	473
Tableau 118 – Attributs de MarketQualitySystem::FiveMinAuxiliaryData	473
Tableau 119 – Extrémités d'association de MarketQualitySystem::FiveMinAuxiliaryData avec d'autres classes	473
Tableau 120 – Attributs de MarketQualitySystem::TenMinAuxiliaryData	473
Tableau 121 – Extrémités d'association de MarketQualitySystem::TenMinAuxiliaryData avec d'autres classes	474
Tableau 122 – Attributs de MarketQualitySystem::TradingHubPrice	474
Tableau 123 – Extrémités d'association de MarketQualitySystem::TradingHubPrice avec d'autres classes	474
Tableau 124 – Attributs de MarketQualitySystem::TradingHubValues	474
Tableau 125 – Extrémités d'association de MarketQualitySystem::TradingHubValues avec d'autres classes	475
Tableau 126 – Attributs de ExternalInputs::AnalogMeasurementValueQuality	484
Tableau 127 – Extrémités d'association de ExternalInputs::AnalogMeasurementValueQuality avec d'autres classes	484
Tableau 128 – Attributs de ExternalInputs::AreaLoadCurve	485
Tableau 129 – Extrémités d'association de ExternalInputs::AreaLoadCurve avec d'autres classes	485
Tableau 130 – Attributs de ExternalInputs::ASRequirements	485

Tableau 131 – Extrémités d'association de ExternalInputs:: ASRequirements avec d'autres classes	486
Tableau 132 – Attributs de ExternalInputs::BaseCaseConstraintLimit	486
Tableau 133 – Extrémités d'association de ExternalInputs:: BaseCaseConstraintLimit avec d'autres classes.....	486
Tableau 134 – Attributs de ExternalInputs::BranchEndFlow	487
Tableau 135 – Extrémités d'association de ExternalInputs:: BranchEndFlow avec d'autres classes	487
Tableau 136 – Attributs de ExternalInputs::ConstraintTerm.....	487
Tableau 137 – Extrémités d'association de ExternalInputs:: ConstraintTerm avec d'autres classes	488
Tableau 138 – Attributs de ExternalInputs::ContingencyConstraintLimit.....	488
Tableau 139 – Extrémités d'association de ExternalInputs:: ContingencyConstraintLimit avec d'autres classes.....	489
Tableau 140 – Attributs de ExternalInputs::ControlAreaSolutionData	489
Tableau 141 – Extrémités d'association de ExternalInputs:: ControlAreaSolutionData avec d'autres classes.....	489
Tableau 142 – Attributs de ExternalInputs::DefaultBid	490
Tableau 143 – Extrémités d'association de ExternalInputs:: DefaultBid avec d'autres classes	491
Tableau 144 – Attributs de ExternalInputs::DefaultBidCurve	492
Tableau 145 – Extrémités d'association de ExternalInputs:: DefaultBidCurve avec d'autres classes	492
Tableau 146 – Attributs de ExternalInputs::DefaultBidCurveData	493
Tableau 147 – Extrémités d'association de ExternalInputs:: DefaultBidCurveData avec d'autres classes	493
Tableau 148 – Attributs de ExternalInputs::DefaultConstraintLimit	493
Tableau 149 – Extrémités d'association de ExternalInputs:: DefaultConstraintLimit avec d'autres classes	494
Tableau 150 – Attributs de ExternalInputs::DiscreteMeasurementValueQuality	494
Tableau 151 – Extrémités d'association de ExternalInputs:: DiscreteMeasurementValueQuality avec d'autres classes	495
Tableau 152 – Attributs de ExternalInputs::DistributionFactorSet	495
Tableau 153 – Extrémités d'association de ExternalInputs:: DistributionFactorSet avec d'autres classes.....	495
Tableau 154 – Attributs de ExternalInputs::EnergyConsumerData.....	496
Tableau 155 – Extrémités d'association de ExternalInputs:: EnergyConsumerData avec d'autres classes	496
Tableau 156 – Attributs de ExternalInputs::EnergyPriceIndex	496
Tableau 157 – Extrémités d'association de ExternalInputs:: EnergyPriceIndex avec d'autres classes	497
Tableau 158 – Attributs de ExternalInputs::EnergyProfile.....	497
Tableau 159 – Extrémités d'association de ExternalInputs:: EnergyProfile avec d'autres classes	497
Tableau 160 – Attributs de ExternalInputs::EnergyTransaction	498
Tableau 161 – Extrémités d'association de ExternalInputs:: EnergyTransaction avec d'autres classes	499
Tableau 162 – Attributs de ExternalInputs::GenDistributionFactor.....	499

Tableau 163 – Extrémités d'association de ExternalInputs:: GenDistributionFactor avec d'autres classes	499
Tableau 164 – Attributs de ExternalInputs::GeneratingUnitDynamicValues	500
Tableau 165 – Extrémités d'association de ExternalInputs:: GeneratingUnitDynamicValues avec d'autres classes	500
Tableau 166 – Attributs de ExternalInputs::GenericConstraints	500
Tableau 167 – Extrémités d'association de ExternalInputs:: GenericConstraints avec d'autres classes	501
Tableau 168 – Attributs de ExternalInputs::InterchangeETCData	501
Tableau 169 – Extrémités d'association de ExternalInputs:: InterchangeETCData avec d'autres classes	501
Tableau 170 – Attributs de ExternalInputs::InterchangeSchedule	502
Tableau 171 – Extrémités d'association de ExternalInputs:: InterchangeSchedule avec d'autres classes	502
Tableau 172 – Attributs de ExternalInputs::IntermittentResourceEligibility	503
Tableau 173 – Extrémités d'association de ExternalInputs:: IntermittentResourceEligibility avec d'autres classes	503
Tableau 174 – Attributs de ExternalInputs::LoadDistributionFactor	504
Tableau 175 – Extrémités d'association de ExternalInputs:: LoadDistributionFactor avec d'autres classes	504
Tableau 176 – Attributs de ExternalInputs::LossSensitivity	505
Tableau 177 – Extrémités d'association de ExternalInputs:: LossSensitivity avec d'autres classes	505
Tableau 178 – Attributs de ExternalInputs::MktACLLineSegment	506
Tableau 179 – Extrémités d'association de ExternalInputs:: MktACLLineSegment avec d'autres classes	507
Tableau 180 – Attributs de ExternalInputs::MktAnalogLimit	508
Tableau 181 – Extrémités d'association de ExternalInputs:: MktAnalogLimit avec d'autres classes	508
Tableau 182 – Attributs de ExternalInputs::MktAnalogLimitSet	508
Tableau 183 – Extrémités d'association de ExternalInputs:: MktAnalogLimitSet avec d'autres classes	509
Tableau 184 – Attributs de ExternalInputs::MktAnalogValue	509
Tableau 185 – Extrémités d'association de ExternalInputs:: MktAnalogValue avec d'autres classes	509
Tableau 186 – Attributs de ExternalInputs::MktControlArea	510
Tableau 187 – Extrémités d'association de ExternalInputs:: MktControlArea avec d'autres classes	510
Tableau 188 – Attributs de ExternalInputs::MktDiscreteValue	511
Tableau 189 – Extrémités d'association de ExternalInputs:: MktDiscreteValue avec d'autres classes	511
Tableau 190 – Attributs de ExternalInputs::MktOperationalLimitType	511
Tableau 191 – Extrémités d'association de ExternalInputs:: MktOperationalLimitType avec d'autres classes	512
Tableau 192 – Attributs de ExternalInputs::MktOutageSchedule	513
Tableau 193 – Extrémités d'association de ExternalInputs:: MktOutageSchedule avec d'autres classes	514
Tableau 194 – Attributs de ExternalInputs::MktSeriesCompensator	514

Tableau 195 – Extrémités d'association de ExternalInputs::MktSeriesCompensator avec d'autres classes.....	515
Tableau 196 – Attributs de ExternalInputs::MktShuntCompensator	516
Tableau 197 – Extrémités d'association de ExternalInputs:: MktShuntCompensator avec d'autres classes.....	517
Tableau 198 – Attributs de ExternalInputs::MktSwitch	518
Tableau 199 – Extrémités d'association de ExternalInputs:: MktSwitch avec d'autres classes	518
Tableau 200 – Attributs de ExternalInputs::MktTapChanger	519
Tableau 201 – Extrémités d'association de ExternalInputs:: MktTapChanger avec d'autres classes	519
Tableau 202 – Extrémités d'association de ExternalInputs:: MWLimitSchedule avec d'autres classes	520
Tableau 203 – Attributs de ExternalInputs::NodeConstraintTerm	520
Tableau 204 – Extrémités d'association de ExternalInputs:: NodeConstraintTerm avec d'autres classes	520
Tableau 205 – Attributs de ExternalInputs::Profile	521
Tableau 206 – Extrémités d'association de ExternalInputs::Profile avec d'autres classes	521
Tableau 207 – Attributs de ExternalInputs::ProfileData	521
Tableau 208 – Extrémités d'association de ExternalInputs:: ProfileData avec d'autres classes	521
Tableau 209 – Attributs de ExternalInputs::ReserveDemandCurve	522
Tableau 210 – Extrémités d'association de ExternalInputs:: ReserveDemandCurve avec d'autres classes.....	522
Tableau 211 – Attributs de ExternalInputs::SCADAInformation	523
Tableau 212 – Attributs de ExternalInputs::SecurityConstraints	523
Tableau 213 – Extrémités d'association de ExternalInputs:: SecurityConstraints avec d'autres classes.....	523
Tableau 214 – Attributs de ExternalInputs::SecurityConstraintSum	524
Tableau 215 – Extrémités d'association de ExternalInputs:: SecurityConstraintSum avec d'autres classes.....	525
Tableau 216 – Attributs de ExternalInputs::ServicePoint	525
Tableau 217 – Extrémités d'association de ExternalInputs:: ServicePoint avec d'autres classes	526
Tableau 218 – Attributs de ExternalInputs::ShuntCompensatorDynamicData	526
Tableau 219 – Extrémités d'association de ExternalInputs:: ShuntCompensatorDynamicData avec d'autres classes	526
Tableau 220 – Attributs de ExternalInputs::SwitchStatus	527
Tableau 221 – Extrémités d'association de ExternalInputs:: SwitchStatus avec d'autres classes	527
Tableau 222 – Attributs de ExternalInputs::SysLoadDistributionFactor	527
Tableau 223 – Extrémités d'association de ExternalInputs:: SysLoadDistributionFactor avec d'autres classes.....	527
Tableau 224 – Attributs de ExternalInputs::TapChangerDynamicData	528
Tableau 225 – Extrémités d'association de ExternalInputs:: TapChangerDynamicData avec d'autres classes.....	528
Tableau 226 – Attributs de ExternalInputs::TerminalConstraintTerm	528

Tableau 227 – Extrémités d'association de ExternalInputs:: TerminalConstraintTerm avec d'autres classes.....	529
Tableau 228 – Attributs de ExternalInputs::TransferInterface	529
Tableau 229 – Extrémités d'association de ExternalInputs:: TransferInterface avec d'autres classes	529
Tableau 230 – Attributs de ExternalInputs::TransferInterfaceSolution	530
Tableau 231 – Extrémités d'association de ExternalInputs:: TransferInterfaceSolution avec d'autres classes.....	530
Tableau 232 – Attributs de ExternalInputs::TransmissionCapacity	531
Tableau 233 – Extrémités d'association de ExternalInputs:: TransmissionCapacity avec d'autres classes	531
Tableau 234 – Attributs de ExternalInputs::TransmissionInterfaceRightEntitlement.....	532
Tableau 235 – Extrémités d'association de ExternalInputs:: TransmissionInterfaceRightEntitlement avec d'autres classes	532
Tableau 236 – Attributs de ExternalInputs::TransmissionPath.....	532
Tableau 237 – Extrémités d'association de ExternalInputs:: TransmissionPath avec d'autres classes	533
Tableau 238 – Extrémités d'association de ExternalInputs:: TransmissionReservation avec d'autres classes.....	533
Tableau 239 – Attributs de ExternalInputs::TREntitlement.....	534
Tableau 240 – Extrémités d'association de ExternalInputs:: TREntitlement avec d'autres classes	534
Tableau 241 – Attributs de ExternalInputs::UnitInitialConditions.....	535
Tableau 242 – Extrémités d'association de ExternalInputs:: UnitInitialConditions avec d'autres classes.....	535
Tableau 243 – Attributs de MarketResults::AncillaryServiceClearing	545
Tableau 244 – Extrémités d'association de MarketResults:: AncillaryServiceClearing avec d'autres classes.....	545
Tableau 245 – Attributs de MarketResults::BillDeterminant	546
Tableau 246 – Extrémités d'association de MarketResults:: BillDeterminant avec d'autres classes.....	547
Tableau 247 – Attributs de MarketResults::ChargeProfile	547
Tableau 248 – Extrémités d'association de MarketResults:: ChargeProfile avec d'autres classes.....	548
Tableau 249 – Attributs de MarketResults::ChargeProfileData	548
Tableau 250 – Extrémités d'association de MarketResults:: ChargeProfileData avec d'autres classes	548
Tableau 251 – Attributs de MarketResults::CommitmentClearing	549
Tableau 252 – Extrémités d'association de MarketResults:: CommitmentClearing avec d'autres classes.....	549
Tableau 253 – Attributs de MarketResults::Commitments	550
Tableau 254 – Extrémités d'association de MarketResults:: Commitments avec d'autres classes	550
Tableau 255 – Attributs de MarketResults::ConstraintClearing	551
Tableau 256 – Extrémités d'association de MarketResults:: ConstraintClearing avec d'autres classes	551
Tableau 257 – Attributs de MarketResults::ConstraintResults	552

Tableau 258 – Extrémités d'association de MarketResults:: ConstraintResults avec d'autres classes	552
Tableau 259 – Attributs de MarketResults::DopInstruction	553
Tableau 260 – Extrémités d'association de MarketResults:: DopInstruction avec d'autres classes	553
Tableau 261 – Attributs de MarketResults::DotInstruction	554
Tableau 262 – Extrémités d'association de MarketResults:: DotInstruction avec d'autres classes	554
Tableau 263 – Attributs de MarketResults::ExPostLoss	555
Tableau 264 – Extrémités d'association de MarketResults:: ExPostLoss avec d'autres classes	555
Tableau 265 – Attributs de MarketResults::ExPostLossResults	556
Tableau 266 – Extrémités d'association de MarketResults:: ExPostLossResults avec d'autres classes	556
Tableau 267 – Attributs de MarketResults::ExPostMarketRegion	556
Tableau 268 – Extrémités d'association de MarketResults:: ExPostMarketRegion avec d'autres classes	557
Tableau 269 – Attributs de MarketResults::ExPostMarketRegionResults	557
Tableau 270 – Extrémités d'association de MarketResults:: ExPostMarketRegionResults avec d'autres classes	557
Tableau 271 – Attributs de MarketResults::ExPostPricing	558
Tableau 272 – Extrémités d'association de MarketResults:: ExPostPricing avec d'autres classes	558
Tableau 273 – Attributs de MarketResults::ExPostPricingResults	559
Tableau 274 – Extrémités d'association de MarketResults:: ExPostPricingResults avec d'autres classes	559
Tableau 275 – Attributs de MarketResults::ExPostResource	560
Tableau 276 – Extrémités d'association de MarketResults:: ExPostResource avec d'autres classes	560
Tableau 277 – Attributs de MarketResults::ExPostResourceResults	561
Tableau 278 – Extrémités d'association de MarketResults:: ExPostResourceResults avec d'autres classes	561
Tableau 279 – Attributs de MarketResults::GeneralClearing	562
Tableau 280 – Extrémités d'association de MarketResults:: GeneralClearing avec d'autres classes	562
Tableau 281 – Attributs de MarketResults::GeneralClearingResults	563
Tableau 282 – Extrémités d'association de MarketResults:: GeneralClearingResults avec d'autres classes	563
Tableau 283 – Attributs de MarketResults::InstructionClearing	563
Tableau 284 – Extrémités d'association de MarketResults:: InstructionClearing avec d'autres classes	564
Tableau 285 – Attributs de MarketResults::InstructionClearingDOP	564
Tableau 286 – Extrémités d'association de MarketResults:: InstructionClearingDOP avec d'autres classes	565
Tableau 287 – Attributs de MarketResults::InstructionClearingDOT	565
Tableau 288 – Extrémités d'association de MarketResults:: InstructionClearingDOT avec d'autres classes	566
Tableau 289 – Attributs de MarketResults::Instructions	566

Tableau 290 – Extrémités d'association de MarketResults:: Instructions avec d'autres classes	567
Tableau 291 – Attributs de MarketResults::LoadFollowingOperatorInput	567
Tableau 292 – Extrémités d'association de MarketResults:: LoadFollowingOperatorInput avec d'autres classes	567
Tableau 293 – Attributs de MarketResults::LossClearing	568
Tableau 294 – Extrémités d'association de MarketResults:: LossClearing avec d'autres classes	568
Tableau 295 – Attributs de MarketResults::LossClearingResults	568
Tableau 296 – Extrémités d'association de MarketResults:: LossClearingResults avec d'autres classes	569
Tableau 297 – Attributs de MarketResults::MarketRegionResults	569
Tableau 298 – Extrémités d'association de MarketResults:: MarketRegionResults avec d'autres classes	570
Tableau 299 – Attributs de MarketResults::MarketResults	570
Tableau 300 – Extrémités d'association de MarketResults:: MarketResults avec d'autres classes	570
Tableau 301 – Attributs de MarketResults: MarketStatement	571
Tableau 302 – Extrémités d'association de MarketResults: MarketStatement avec d'autres classes	571
Tableau 303 – Attributs de MarketResults::MarketStatementLineItem	572
Tableau 304 – Extrémités d'association de MarketResults:: MarketStatementLineItem avec d'autres classes	572
Tableau 305 – Attributs de MarketResults::MitigatedBid	573
Tableau 306 – Extrémités d'association de MarketResults:: MitigatedBid avec d'autres classes	573
Tableau 307 – Attributs de MarketResults::MitigatedBidClearing	573
Tableau 308 – Extrémités d'association de MarketResults:: MitigatedBidClearing avec d'autres classes	574
Tableau 309 – Attributs de MarketResults::MitigatedBidSegment	574
Tableau 310 – Extrémités d'association de MarketResults:: MitigatedBidSegment avec d'autres classes	574
Tableau 311 – Attributs de MarketResults::MPMClearing	575
Tableau 312 – Extrémités d'association de MarketResults:: MPMClearing avec d'autres classes	575
Tableau 313 – Attributs de MarketResults::MPMResourceStatus	576
Tableau 314 – Extrémités d'association de MarketResults:: MPMResourceStatus avec d'autres classes	576
Tableau 315 – Attributs de MarketResults::MPMTestResults	576
Tableau 316 – Extrémités d'association de MarketResults:: MPMTestResults avec d'autres classes	576
Tableau 317 – Attributs de MarketResults::PassThroughBill	578
Tableau 318 – Extrémités d'association de MarketResults:: PassThroughBill avec d'autres classes	579
Tableau 319 – Attributs de MarketResults::PnodeClearing	579
Tableau 320 – Extrémités d'association de MarketResults:: PnodeClearing avec d'autres classes	580
Tableau 321 – Attributs de MarketResults::PnodeResults	580

Tableau 322 – Extrémités d'association de MarketResults:: PnodeResults avec d'autres classes	580
Tableau 323 – Attributs de MarketResults::ResourceAwardClearing	581
Tableau 324 – Extrémités d'association de MarketResults:: ResourceAwardClearing avec d'autres classes.....	581
Tableau 325 – Attributs de MarketResults::ResourceAwardInstruction	582
Tableau 326 – Extrémités d'association de MarketResults:: ResourceAwardInstruction avec d'autres classes.....	583
Tableau 327 – Attributs de MarketResults::ResourceClearing	584
Tableau 328 – Extrémités d'association de MarketResults:: ResourceClearing avec d'autres classes	584
Tableau 329 – Attributs de MarketResults::ResourceDispatchResults	585
Tableau 330 – Extrémités d'association de MarketResults:: ResourceDispatchResults avec d'autres classes.....	585
Tableau 331 – Attributs de MarketResults::ResourceLoadFollowingInst.....	586
Tableau 332 – Extrémités d'association de MarketResults:: ResourceLoadFollowingInst avec d'autres classes	586
Tableau 333 – Extrémités d'association de MarketResults:: RMRDetermination avec d'autres classes	586
Tableau 334 – Attributs de MarketResults::RMROperatorInput.....	587
Tableau 335 – Extrémités d'association de MarketResults:: RMROperatorInput avec d'autres classes	587
Tableau 336 – Attributs de MarketResults::RUCAwardInstruction	588
Tableau 337 – Extrémités d'association de MarketResults:: RUCAwardInstruction avec d'autres classes.....	588
Tableau 338 – Attributs de MarketResults::SelfScheduleBreakdown	589
Tableau 339 – Extrémités d'association de MarketResults:: SelfScheduleBreakdown avec d'autres classes.....	589
Tableau 340 – Attributs de MarketResults::Settlement	589
Tableau 341 – Extrémités d'association de MarketResults:: Settlement avec d'autres classes	590
Tableau 342 – Attributs de MarketResults::TransactionBidClearing.....	590
Tableau 343 – Extrémités d'association de MarketResults:: TransactionBidClearing avec d'autres classes.....	591
Tableau 344 – Attributs de MarketResults::TransactionBidResults	591
Tableau 345 – Extrémités d'association de MarketResults:: TransactionBidResults avec d'autres classes.....	591
Tableau 346 – Libellés de MktDomain::ActionType	592
Tableau 347 – Libellés de MktDomain::AnalogLimitType.....	592
Tableau 348 – Libellés de MktDomain::AnodeType	593
Tableau 349 – Libellés de MktDomain::ApnodeType	594
Tableau 350 – Libellés de MktDomain::AreaControlMode	594
Tableau 351 – Libellés de MktDomain::AutomaticDispatchMode	594
Tableau 352 – Libellés de MktDomain::AutomaticDisplnInstTypeCommitment	595
Tableau 353 – Libellés de MktDomain::BidCalculationBasis	595
Tableau 354 – Libellés de MktDomain::BidMitigationStatus.....	595
Tableau 355 – Libellés de MktDomain::BidMitigationType.....	596

Tableau 356 – Libellés de MktDomain::BidType	596
Tableau 357 – Libellés de MktDomain::BidTypeRMR	596
Tableau 358 – Libellés de MktDomain::BranchRatingType	597
Tableau 359 – Libellés de MktDomain::CheckOutType	597
Tableau 360 – Libellés de MktDomain::CommitmentType	597
Tableau 361 – Libellés de MktDomain::ConstraintLimitType	598
Tableau 362 – Libellés de MktDomain::ConstraintRampType	598
Tableau 363 – Libellés de MktDomain::ContractType	598
Tableau 364 – Libellés de MktDomain::CostBasis	599
Tableau 365 – Libellés de MktDomain::CRRCategoryType	599
Tableau 366 – Libellés de MktDomain::CRRHedgeType	599
Tableau 367 – Libellés de MktDomain::CRRRoleType	599
Tableau 368 – Libellés de MktDomain::CRRSegmentType	600
Tableau 369 – Libellés de MktDomain::DispatchResponseType	600
Tableau 370 – Libellés de MktDomain::EnergyPriceIndexType	601
Tableau 371 – Libellés de MktDomain::EnergyProductType	601
Tableau 372 – Libellés de MktDomain::EnergyTransactionType	601
Tableau 373 – Libellés de MktDomain::EquipmentStatusType	601
Tableau 374 – Libellés de MktDomain::ExecutionType	602
Tableau 375 – Libellés de MktDomain::FlagTypeRMR	602
Tableau 376 – Libellés de MktDomain::FlowDirectionType	602
Tableau 377 – Libellés de MktDomain::FuelSource	603
Tableau 378 – Libellés de MktDomain::InterTieDirection	603
Tableau 379 – Libellés de MktDomain::LoadForecastType	604
Tableau 380 – Libellés de MktDomain::MarketProductSelfSchedType	604
Tableau 381 – Libellés de MktDomain::MarketProductType	604
Tableau 382 – Libellés de MktDomain::MarketType	605
Tableau 383 – Libellés de MktDomain::MktAccountKind	605
Tableau 384 – Libellés de MktDomain::MktBillMediaKind	605
Tableau 385 – Libellés de MktDomain::MktInvoiceLineItemKind	606
Tableau 386 – Libellés de MktDomain::MPMTestIdentifierType	606
Tableau 387 – Libellés de MktDomain::MPMTestMethodType	606
Tableau 388 – Libellés de MktDomain::MPMTestOutcome	607
Tableau 389 – Libellés de MktDomain::MQSCHGType	607
Tableau 390 – Libellés de MktDomain::MQSInstructionSource	607
Tableau 391 – Libellés de MktDomain::OnOff	608
Tableau 392 – Libellés de MktDomain::OutageType	608
Tableau 393 – Libellés de MktDomain::ParticipationCategoryMPM	608
Tableau 394 – Libellés de MktDomain::PassIndicatorType	609
Tableau 395 – Libellés de MktDomain::PurposeFlagType	609
Tableau 396 – Libellés de MktDomain::RampCurveType	610
Tableau 397 – Libellés de MktDomain::RampModeType	610
Tableau 398 – Libellés de MktDomain::RampRateCondition	610

Tableau 399 – Libellés de MktDomain::RampRateType	611
Tableau 400 – Libellés de MktDomain::ReserveRequirementType	611
Tableau 401 – Libellés de MktDomain::ResourceAncillaryServiceType	611
Tableau 402 – Libellés de MktDomain::ResourceAssnType	612
Tableau 403 – Libellés de MktDomain::ResourceCapacityType	612
Tableau 404 – Libellés de MktDomain::ResourceLimitIndicator	612
Tableau 405 – Libellés de MktDomain::ResourceRegistrationStatus	613
Tableau 406 – Libellés de MktDomain::ResultsConstraintType	613
Tableau 407 – Libellés de MktDomain::SelfSchedReferenceType	613
Tableau 408 – Libellés de MktDomain::SelfScheduleBreakdownType	614
Tableau 409 – Libellés de MktDomain::SwitchStatusType	614
Tableau 410 – Libellés de MktDomain::TimeOfUse	614
Tableau 411 – Libellés de MktDomain::TradeType	614
Tableau 412 – Libellés de MktDomain::TRType	615
Tableau 413 – Libellés de MktDomain::UnitType	615
Tableau 414 – Libellés de MktDomain::YesNo	616
Tableau 415 – Attributs de ParticipantInterfaces::ActionRequest	620
Tableau 416 – Extrémités d'association de ParticipantInterfaces:: ActionRequest avec d'autres classes	621
Tableau 417 – Attributs de ParticipantInterfaces::AreaLoadBid	621
Tableau 418 – Extrémités d'association de ParticipantInterfaces:: AreaLoadBid avec d'autres classes	622
Tableau 419 – Attributs de ParticipantInterfaces::AttributeProperty	622
Tableau 420 – Extrémités d'association de ParticipantInterfaces:: AttributeProperty avec d'autres classes	622
Tableau 421 – Attributs de ParticipantInterfaces::Bid	623
Tableau 422 – Extrémités d'association de ParticipantInterfaces:: Bid avec d'autres classes	623
Tableau 423 – Attributs de ParticipantInterfaces::BidDistributionFactor	624
Tableau 424 – Extrémités d'association de ParticipantInterfaces:: BidDistributionFactor avec d'autres classes	624
Tableau 425 – Attributs de ParticipantInterfaces::BidError	624
Tableau 426 – Extrémités d'association de ParticipantInterfaces:: BidError avec d'autres classes	625
Tableau 427 – Attributs de ParticipantInterfaces::BidHourlyProductSchedule	625
Tableau 428 – Extrémités d'association de ParticipantInterfaces:: BidHourlyProductSchedule avec d'autres classes	625
Tableau 429 – Attributs de ParticipantInterfaces::BidHourlySchedule	626
Tableau 430 – Extrémités d'association de ParticipantInterfaces:: BidHourlySchedule avec d'autres classes	626
Tableau 431 – Attributs de ParticipantInterfaces::BidPriceCurve	627
Tableau 432 – Extrémités d'association de ParticipantInterfaces:: BidPriceCurve avec d'autres classes	627
Tableau 433 – Attributs de ParticipantInterfaces::BidPriceSchedule	628
Tableau 434 – Extrémités d'association de ParticipantInterfaces:: BidPriceSchedule avec d'autres classes	628

Tableau 435 – Attributs de ParticipantInterfaces::BidSelfSched	629
Tableau 436 – Extrémités d'association de ParticipantInterfaces:: BidSelfSched avec d'autres classes	630
Tableau 437 – Attributs de ParticipantInterfaces::BidSet.....	630
Tableau 438 – Extrémités d'association de ParticipantInterfaces:: BidSet avec d'autres classes	631
Tableau 439 – Attributs de ParticipantInterfaces::ChargeComponent	631
Tableau 440 – Extrémités d'association de ParticipantInterfaces:: ChargeComponent avec d'autres classes.....	631
Tableau 441 – Attributs de ParticipantInterfaces::ChargeGroup	632
Tableau 442 – Extrémités d'association de ParticipantInterfaces:: ChargeGroup avec d'autres classes	632
Tableau 443 – Attributs de ParticipantInterfaces::ChargeType	633
Tableau 444 – Extrémités d'association de ParticipantInterfaces:: ChargeType avec d'autres classes	633
Tableau 445 – Attributs de ParticipantInterfaces::DispatchInstReply	634
Tableau 446 – Extrémités d'association de ParticipantInterfaces:: DispatchInstReply avec d'autres classes.....	634
Tableau 447 – Extrémités d'association de ParticipantInterfaces:: EnergyPriceCurve avec d'autres classes.....	635
Tableau 448 – Attributs de ParticipantInterfaces::GeneratingBid	636
Tableau 449 – Extrémités d'association de ParticipantInterfaces:: GeneratingBid avec d'autres classes	638
Tableau 450 – Attributs de ParticipantInterfaces::HourlyPreDispatchSchedule.....	639
Tableau 451 – Extrémités d'association de ParticipantInterfaces:: HourlyPreDispatchSchedule avec d'autres classes	639
Tableau 452 – Attributs de ParticipantInterfaces::InterTieBid	640
Tableau 453 – Extrémités d'association de ParticipantInterfaces:: InterTieBid avec d'autres classes	641
Tableau 454 – Attributs de ParticipantInterfaces::InterTieDispatchResponse	641
Tableau 455 – Extrémités d'association de ParticipantInterfaces:: InterTieDispatchResponse avec d'autres classes	642
Tableau 456 – Attributs de ParticipantInterfaces::LoadBid	643
Tableau 457 – Extrémités d'association de ParticipantInterfaces:: LoadBid avec d'autres classes.....	645
Tableau 458 – Attributs de ParticipantInterfaces::LoadFollowingInst.....	645
Tableau 459 – Extrémités d'association de ParticipantInterfaces::LoadFollowingInst avec d'autres classes.....	646
Tableau 460 – Attributs de ParticipantInterfaces::LoadReductionPriceCurve.....	646
Tableau 461 – Extrémités d'association de ParticipantInterfaces:: LoadReductionPriceCurve avec d'autres classes	646
Tableau 462 – Attributs de ParticipantInterfaces::MajorChargeGroup	647
Tableau 463 – Extrémités d'association de ParticipantInterfaces:: MajorChargeGroup avec d'autres classes.....	647
Tableau 464 – Attributs de ParticipantInterfaces::MarketScheduledEvent	648
Tableau 465 – Extrémités d'association de ParticipantInterfaces:: MarketScheduledEvent avec d'autres classes	648
Tableau 466 – Attributs de ParticipantInterfaces::NotificationTimeCurve.....	648

Tableau 467 – Extrémités d'association de ParticipantInterfaces:: NotificationTimeCurve avec d'autres classes	649
Tableau 468 – Attributs de ParticipantInterfaces::OpenTieSchedule	649
Tableau 469 – Extrémités d'association de ParticipantInterfaces:: OpenTieSchedule avec d'autres classes.....	649
Tableau 470 – Attributs de ParticipantInterfaces::ProductBid	650
Tableau 471 – Extrémités d'association de ParticipantInterfaces:: ProductBid avec d'autres classes	650
Tableau 472 – Attributs de ParticipantInterfaces::PumpingCostSchedule	651
Tableau 473 – Extrémités d'association de ParticipantInterfaces:: PumpingCostSchedule avec d'autres classes.....	651
Tableau 474 – Attributs de ParticipantInterfaces::PumpingLevelSchedule.....	652
Tableau 475 – Extrémités d'association de ParticipantInterfaces:: PumpingLevelSchedule avec d'autres classes	652
Tableau 476 – Attributs de ParticipantInterfaces::PumpingShutDownCostSchedule	653
Tableau 477 – Extrémités d'association de ParticipantInterfaces:: PumpingShutDownCostSchedule avec d'autres classes.....	653
Tableau 478 – Attributs de ParticipantInterfaces::RampRateCurve	654
Tableau 479 – Extrémités d'association de ParticipantInterfaces:: RampRateCurve avec d'autres classes.....	654
Tableau 480 – Attributs de ParticipantInterfaces::ResourceBid	655
Tableau 481 – Extrémités d'association de ParticipantInterfaces:: ResourceBid avec d'autres classes	656
Tableau 482 – Attributs de ParticipantInterfaces::StartUpCostCurve	657
Tableau 483 – Extrémités d'association de ParticipantInterfaces:: StartUpCostCurve avec d'autres classes.....	657
Tableau 484 – Attributs de ParticipantInterfaces::StartUpTimeCurve	658
Tableau 485 – Extrémités d'association de ParticipantInterfaces:: StartUpTimeCurve avec d'autres classes	658
Tableau 486 – Attributs de ParticipantInterfaces::Trade	659
Tableau 487 – Extrémités d'association de ParticipantInterfaces:: Trade avec d'autres classes	660
Tableau 488 – Attributs de ParticipantInterfaces::TradeError	660
Tableau 489 – Extrémités d'association de ParticipantInterfaces:: TradeError avec d'autres classes.....	661
Tableau 490 – Attributs de ParticipantInterfaces::TradeProduct	661
Tableau 491 – Extrémités d'association de ParticipantInterfaces:: TradeProduct avec d'autres classes	662
Tableau 492 – Attributs de ParticipantInterfaces::TransactionBid	662
Tableau 493 – Extrémités d'association de ParticipantInterfaces::TransactionBid avec d'autres classes	663
Tableau 494 – Attributs de ReferenceData::AdjacentCASet	674
Tableau 495 – Extrémités d'association de ReferenceData:: AdjacentCASet avec d'autres classes	674
Tableau 496 – Attributs de ReferenceData::AggregatedPnode	675
Tableau 497 – Extrémités d'association de ReferenceData:: AggregatedPnode avec d'autres classes	676
Tableau 498 – Attributs de ReferenceData::AggregateNode	677

Tableau 499 – Extrémités d'association de ReferenceData:: AggregateNode avec d'autres classes	677
Tableau 500 – Attributs de ReferenceData:: BidPriceCap	678
Tableau 501 – Extrémités d'association de ReferenceData:: BidPriceCap avec d'autres classes	678
Tableau 502 – Attributs de ReferenceData:: CnodeDistributionFactor	678
Tableau 503 – Extrémités d'association de ReferenceData:: CnodeDistributionFactor avec d'autres classes	679
Tableau 504 – Attributs de ReferenceData:: CombinedCycleConfiguration	679
Tableau 505 – Extrémités d'association de ReferenceData:: CombinedCycleConfiguration avec d'autres classes	682
Tableau 506 – Attributs de ReferenceData:: CombinedCycleConfigurationMember	685
Tableau 507 – Extrémités d'association de ReferenceData:: CombinedCycleConfigurationMember avec d'autres classes	685
Tableau 508 – Attributs de ReferenceData:: CombinedCycleLogicalConfiguration	685
Tableau 509 – Extrémités d'association de ReferenceData:: CombinedCycleLogicalConfiguration avec d'autres classes	686
Tableau 510 – Attributs de ReferenceData:: CombinedCycleTransitionState	686
Tableau 511 – Extrémités d'association de ReferenceData:: CombinedCycleTransitionState avec d'autres classes	686
Tableau 512 – Attributs de ReferenceData:: CongestionArea	687
Tableau 513 – Extrémités d'association de ReferenceData:: CongestionArea avec d'autres classes	688
Tableau 514 – Attributs de ReferenceData:: ContractDistributionFactor	688
Tableau 515 – Extrémités d'association de ReferenceData:: ContractDistributionFactor avec d'autres classes	689
Tableau 516 – Attributs de ReferenceData:: ContractRight	690
Tableau 517 – Extrémités d'association de ReferenceData:: ContractRight avec d'autres classes	691
Tableau 518 – Attributs de ReferenceData:: ControlAreaDesignation	691
Tableau 519 – Extrémités d'association de ReferenceData:: ControlAreaDesignation avec d'autres classes	691
Tableau 520 – Attributs de ReferenceData:: Flowgate	692
Tableau 521 – Extrémités d'association de ReferenceData:: Flowgate avec d'autres classes	693
Tableau 522 – Attributs de ReferenceData:: FlowgatePartner	693
Tableau 523 – Extrémités d'association de ReferenceData:: FlowgatePartner avec d'autres classes	694
Tableau 524 – Attributs de ReferenceData:: FlowgateRelief	694
Tableau 525 – Extrémités d'association de ReferenceData:: FlowgateRelief avec d'autres classes	694
Tableau 526 – Attributs de ReferenceData:: FlowgateValue	695
Tableau 527 – Extrémités d'association de ReferenceData:: FlowgateValue avec d'autres classes	695
Tableau 528 – Attributs de ReferenceData:: ForbiddenRegion	695
Tableau 529 – Extrémités d'association de ReferenceData:: ForbiddenRegion avec d'autres classes	696
Tableau 530 – Attributs de ReferenceData:: FormerReference	696

Tableau 531 – Extrémités d'association de ReferenceData:: FormerReference avec d'autres classes	696
Tableau 532 – Attributs de ReferenceData::FuelCostCurve	697
Tableau 533 – Extrémités d'association de ReferenceData:: FuelCostCurve avec d'autres classes	697
Tableau 534 – Attributs de ReferenceData::FuelRegion	697
Tableau 535 – Extrémités d'association de ReferenceData:: FuelRegion avec d'autres classes	698
Tableau 536 – Attributs de ReferenceData::GasPrice	698
Tableau 537 – Extrémités d'association de ReferenceData:: GasPrice avec d'autres classes	698
Tableau 538 – Attributs de ReferenceData::HostControlArea	699
Tableau 539 – Extrémités d'association de ReferenceData:: HostControlArea avec d'autres classes	699
Tableau 540 – Attributs de ReferenceData::IndividualPnode	700
Tableau 541 – Extrémités d'association de ReferenceData:: IndividualPnode avec d'autres classes	700
Tableau 542 – Attributs de ReferenceData::LoadAggregationPoint	701
Tableau 543 – Extrémités d'association de ReferenceData:: LoadAggregationPoint avec d'autres classes	701
Tableau 544 – Attributs de ReferenceData::LoadRatio	701
Tableau 545 – Extrémités d'association de ReferenceData:: LoadRatio avec d'autres classes	702
Tableau 546 – Attributs de ReferenceData::LoadReductionTimeCurve	702
Tableau 547 – Extrémités d'association de ReferenceData:: LoadReductionTimeCurve avec d'autres classes	702
Tableau 548 – Attributs de ReferenceData::LocalReliabilityArea	703
Tableau 549 – Extrémités d'association de ReferenceData:: LocalReliabilityArea avec d'autres classes	703
Tableau 550 – Attributs de ReferenceData::MarketPerson	704
Tableau 551 – Extrémités d'association de ReferenceData:: MarketPerson avec d'autres classes	704
Tableau 552 – Attributs de ReferenceData::MarketQualificationRequirement	705
Tableau 553 – Extrémités d'association de ReferenceData:: MarketQualificationRequirement avec d'autres classes	705
Tableau 554 – Attributs de ReferenceData::MarketRegion	706
Tableau 555 – Extrémités d'association de ReferenceData:: MarketRegion avec d'autres classes	706
Tableau 556 – Attributs de ReferenceData::MarketSkill	707
Tableau 557 – Extrémités d'association de ReferenceData:: MarketSkill avec d'autres classes	707
Tableau 558 – Attributs de ReferenceData::MaxStartUpCostCurve	708
Tableau 559 – Extrémités d'association de ReferenceData:: MaxStartUpCostCurve avec d'autres classes	708
Tableau 560 – Attributs de ReferenceData::MeteredSubSystem	708
Tableau 561 – Extrémités d'association de ReferenceData:: MeteredSubSystem avec d'autres classes	709
Tableau 562 – Attributs de ReferenceData::MktCombinedCyclePlant	709

Tableau 563 – Extrémités d'association de ReferenceData:: MktCombinedCyclePlant avec d'autres classes.....	710
Tableau 564 – Attributs de ReferenceData::MktConductingEquipment	710
Tableau 565 – Extrémités d'association de ReferenceData:: MktConductingEquipment avec d'autres classes.....	711
Tableau 566 – Attributs de ReferenceData::MktContingency	712
Tableau 567 – Extrémités d'association de ReferenceData:: MktContingency avec d'autres classes	712
Tableau 568 – Attributs de ReferenceData::MktHeatRateCurve	713
Tableau 569 – Extrémités d'association de ReferenceData:: MktHeatRateCurve avec d'autres classes	713
Tableau 570 – Attributs de ReferenceData::MktThermalGeneratingUnit.....	714
Tableau 571 – Extrémités d'association de ReferenceData:: MktThermalGeneratingUnit avec d'autres classes.....	716
Tableau 572 – Attributs de ReferenceData::MPMTestCategory	717
Tableau 573 – Extrémités d'association de ReferenceData:: MPMTestCategory avec d'autres classes	717
Tableau 574 – Attributs de ReferenceData::MPMTestThreshold.....	717
Tableau 575 – Extrémités d'association de ReferenceData:: MPMTestThreshold avec d'autres classes.....	718
Tableau 576 – Attributs de ReferenceData::MSSAggregation.....	718
Tableau 577 – Extrémités d'association de ReferenceData:: MSSAggregation avec d'autres classes	719
Tableau 578 – Attributs de ReferenceData::MSSZone	719
Tableau 579 – Extrémités d'association de ReferenceData:: MSSZone avec d'autres classes	720
Tableau 580 – Attributs de ReferenceData::OilPrice	720
Tableau 581 – Extrémités d'association de ReferenceData:: OilPrice avec d'autres classes	720
Tableau 582 – Attributs de ReferenceData::OrgPnodeAllocation.....	721
Tableau 583 – Extrémités d'association de ReferenceData:: OrgPnodeAllocation avec d'autres classes.....	721
Tableau 584 – Attributs de ReferenceData::OrgResOwnership	721
Tableau 585 – Extrémités d'association de ReferenceData:: OrgResOwnership avec d'autres classes.....	722
Tableau 586 – Attributs de ReferenceData::Pnode.....	722
Tableau 587 – Extrémités d'association de ReferenceData::Pnode avec d'autres classes	723
Tableau 588 – Attributs de ReferenceData::PnodeDistributionFactor	723
Tableau 589 – Extrémités d'association de ReferenceData:: PnodeDistributionFactor avec d'autres classes.....	724
Tableau 590 – Attributs de ReferenceData::RegisteredGenerator	724
Tableau 591 – Extrémités d'association de ReferenceData:: RegisteredGenerator avec d'autres classes	728
Tableau 592 – Attributs de ReferenceData::RegisteredInterTie	730
Tableau 593 – Extrémités d'association de ReferenceData:: RegisteredInterTie avec d'autres classes	731
Tableau 594 – Attributs de ReferenceData::RegisteredLoad	733

Tableau 595 – Extrémités d'association de ReferenceData:: RegisteredLoad avec d'autres classes	735
Tableau 596 – Attributs de ReferenceData::RegulatingLimit.....	737
Tableau 597 – Extrémités d'association de ReferenceData:: RegulatingLimit avec d'autres classes	737
Tableau 598 – Attributs de ReferenceData::ResourceAncillaryServiceQualification	737
Tableau 599 – Extrémités d'association de ReferenceData:: ResourceAncillaryServiceQualification avec d'autres classes	738
Tableau 600 – Attributs de ReferenceData::ResourceCapacity	738
Tableau 601 – Extrémités d'association de ReferenceData:: ResourceCapacity avec d'autres classes	739
Tableau 602 – Attributs de ReferenceData::ResourceOperationMaintenanceCost.....	739
Tableau 603 – Extrémités d'association de ReferenceData:: ResourceOperationMaintenanceCost avec d'autres classes	740
Tableau 604 – Attributs de ReferenceData::ResourceStartupCost.....	740
Tableau 605 – Extrémités d'association de ReferenceData:: ResourceStartupCost avec d'autres classes	741
Tableau 606 – Extrémités d'association de ReferenceData:: ResourceVerifiableCosts avec d'autres classes	741
Tableau 607 – Attributs de ReferenceData::RMRHeatRateCurve	742
Tableau 608 – Extrémités d'association de ReferenceData:: RMRHeatRateCurve avec d'autres classes	742
Tableau 609 – Attributs de ReferenceData::RMRStartUpCostCurve	743
Tableau 610 – Extrémités d'association de ReferenceData:: RMRStartUpCostCurve avec d'autres classes	743
Tableau 611 – Attributs de ReferenceData::RMRStartUpEnergyCurve	744
Tableau 612 – Extrémités d'association de ReferenceData:: RMRStartUpEnergyCurve avec d'autres classes	744
Tableau 613 – Attributs de ReferenceData::RMRStartUpFuelCurve	745
Tableau 614 – Extrémités d'association de ReferenceData:: RMRStartUpFuelCurve avec d'autres classes	745
Tableau 615 – Attributs de ReferenceData::RMRStartUpTimeCurve	746
Tableau 616 – Extrémités d'association de ReferenceData:: RMRStartUpTimeCurve avec d'autres classes	746
Tableau 617 – Attributs de ReferenceData::RTO	747
Tableau 618 – Extrémités d'association de ReferenceData:: RTO avec d'autres classes.....	748
Tableau 619 – Attributs de ReferenceData::RUCZone	749
Tableau 620 – Extrémités d'association de ReferenceData:: RUCZone avec d'autres classes	749
Tableau 621 – Attributs de ReferenceData::SchedulingCoordinator	750
Tableau 622 – Extrémités d'association de ReferenceData:: SchedulingCoordinator avec d'autres classes	751
Tableau 623 – Attributs de ReferenceData::SchedulingCoordinatorUser	751
Tableau 624 – Extrémités d'association de ReferenceData:: SchedulingCoordinatorUser avec d'autres classes	752
Tableau 625 – Attributs de ReferenceData::SchedulingPoint.....	752
Tableau 626 – Extrémités d'association de ReferenceData:: SchedulingPoint avec d'autres classes	752

Tableau 627 – Attributs de ReferenceData::StartUpEnergyCurve.....	753
Tableau 628 – Extrémités d'association de ReferenceData:: StartUpEnergyCurve avec d'autres classes	753
Tableau 629 – Attributs de ReferenceData::StartUpFuelCurve	754
Tableau 630 – Extrémités d'association de ReferenceData:: StartUpFuelCurve avec d'autres classes	754
Tableau 631 – Attributs de ReferenceData::SubControlArea	755
Tableau 632 – Extrémités d'association de ReferenceData:: SubControlArea avec d'autres classes	756
Tableau 633 – Attributs de ReferenceData::SubstitutionResourceList	756
Tableau 634 – Extrémités d'association de ReferenceData:: SubstitutionResourceList avec d'autres classes	757
Tableau 635 – Attributs de ReferenceData::TACArea.....	757
Tableau 636 – Extrémités d'association de ReferenceData:: TACArea avec d'autres classes	757
Tableau 637 – Attributs de ReferenceData::TransmissionRightChain.....	758
Tableau 638 – Extrémités d'association de ReferenceData:: TransmissionRightChain avec d'autres classes.....	758
Tableau 639 – Attributs de ReferenceData::WheelingCounterParty	758
Tableau 640 – Extrémités d'association de ReferenceData:: WheelingCounterParty avec d'autres classes.....	759

IECNORM.COM Click to view the full PDF of IEC 62325-301:2014

COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

**CADRE POUR LES COMMUNICATIONS
POUR LE MARCHÉ DE L'ÉNERGIE –****Partie 301: Extensions du modèle d'information
commun (CIM) pour les marchés****AVANT-PROPOS**

- 1) La Commission Electrotechnique Internationale (IEC) est une organisation mondiale de normalisation composée de l'ensemble des comités électrotechniques nationaux (Comités nationaux de l'IEC). L'IEC a pour objet de favoriser la coopération internationale pour toutes les questions de normalisation dans les domaines de l'électricité et de l'électronique. A cet effet, l'IEC – entre autres activités – publie des Normes internationales, des Spécifications techniques, des Rapports techniques, des Spécifications accessibles au public (PAS) et des Guides (ci-après dénommés "Publication(s) de l'IEC"). Leur élaboration est confiée à des comités d'études, aux travaux desquels tout Comité national intéressé par le sujet traité peut participer. Les organisations internationales, gouvernementales et non gouvernementales, en liaison avec l'IEC, participent également aux travaux. L'IEC collabore étroitement avec l'Organisation Internationale de Normalisation (ISO), selon des conditions fixées par accord entre les deux organisations.
- 2) Les décisions ou accords officiels de l'IEC concernant les questions techniques représentent, dans la mesure du possible, un accord international sur les sujets étudiés, étant donné que les Comités nationaux de l'IEC intéressés sont représentés dans chaque comité d'études.
- 3) Les Publications de l'IEC se présentent sous la forme de recommandations internationales et sont agréées comme telles par les Comités nationaux de l'IEC. Tous les efforts raisonnables sont entrepris afin que l'IEC s'assure de l'exactitude du contenu technique de ses publications; l'IEC ne peut pas être tenue responsable de l'éventuelle mauvaise utilisation ou interprétation qui en est faite par un quelconque utilisateur final.
- 4) Dans le but d'encourager l'uniformité internationale, les Comités nationaux de l'IEC s'engagent, dans toute la mesure possible, à appliquer de façon transparente les Publications de l'IEC dans leurs publications nationales et régionales. Toutes divergences entre toutes Publications de l'IEC et toutes publications nationales ou régionales correspondantes doivent être indiquées en termes clairs dans ces dernières.
- 5) L'IEC elle-même ne fournit aucune attestation de conformité. Des organismes de certification indépendants fournissent des services d'évaluation de conformité et, dans certains secteurs, accèdent aux marques de conformité de l'IEC. L'IEC n'est responsable d'aucun des services effectués par les organismes de certification indépendants.
- 6) Tous les utilisateurs doivent s'assurer qu'ils sont en possession de la dernière édition de cette publication.
- 7) Aucune responsabilité ne doit être imputée à l'IEC, à ses administrateurs, employés, auxiliaires ou mandataires, y compris ses experts particuliers et les membres de ses comités d'études et des Comités nationaux de l'IEC, pour tout préjudice causé en cas de dommages corporels et matériels, ou de tout autre dommage de quelque nature que ce soit, directe ou indirecte, ou pour supporter les coûts (y compris les frais de justice) et les dépenses découlant de la publication ou de l'utilisation de cette Publication de l'IEC ou de toute autre Publication de l'IEC, ou au crédit qui lui est accordé.
- 8) L'attention est attirée sur les références normatives citées dans cette publication. L'utilisation de publications référencées est obligatoire pour une application correcte de la présente publication.
- 9) L'attention est attirée sur le fait que certains des éléments de la présente Publication de l'IEC peuvent faire l'objet de droits de brevet. L'IEC ne saurait être tenue pour responsable de ne pas avoir identifié de tels droits de brevets et de ne pas avoir signalé leur existence.

La Norme internationale IEC 62325-301 a été établie par le comité d'études 57 de l'IEC: Gestion des systèmes de puissance et échanges d'informations associés.

Le texte de cette norme est issu des documents suivants:

FDIS	Rapport de vote
57/1438/FDIS	57/1469/RVD

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à l'approbation de cette norme.

Cette publication a été rédigée selon les Directives ISO/IEC, Partie 2.

Tout au long du présent document, les références sont basées sur le modèle UML. Les références à des paquetages et classes UML spécifiques sont effectuées en citant le nom du paquetage ou de la classe entre guillemets simples (par ex: 'IEC 61970' ou 'IdentifiedObject').

Une liste de toutes les parties de la série IEC 62325, publiée sous le titre général *Cadre pour les communications pour le marché de l'énergie*, peut être consultée sur le site web de l'IEC.

Le comité a décidé que le contenu de cette publication ne sera pas modifié avant la date de stabilité indiquée sur le site web de l'IEC sous "<http://webstore.iec.ch>" dans les données relatives à la publication recherchée. A cette date, la publication sera

- reconduite,
- supprimée,
- remplacée par une édition révisée, ou
- amendée.

IMPORTANT – Le logo "colour inside" qui se trouve sur la page de couverture de cette publication indique qu'elle contient des couleurs qui sont considérées comme utiles à une bonne compréhension de son contenu. Les utilisateurs devraient, par conséquent, imprimer cette publication en utilisant une imprimante couleur.

INTRODUCTION

La présente Norme internationale fait partie de la série de normes IEC 62325 concernant les échanges d'informations relatives au marché déréglementé de l'énergie. Elle a été initialement fondée sur les travaux réalisés par les gestionnaires de réseaux de transport européens TF 14 EDI (Echange de données informatisé) et dans le cadre des publications EPRI TR 1009455 et TR 1011431 (Extensions du CIM pour la prise en charge des opérations du marché phase 1 et phase 2).

Le principal objectif de la série de normes IEC 62325 est de produire des normes destinées à faciliter l'intégration de logiciels d'application pour le marché, développés de façon indépendante par différents fournisseurs, dans un système de gestion de marché, et entre des systèmes de gestion de marché et des systèmes participant au marché. Cela se fait par la définition d'échanges de messages pour permettre à ces applications ou systèmes d'accéder aux données publiques et d'échanger des informations, indépendamment de la façon dont ces informations sont représentées en interne.

Le modèle d'information commun (CIM) spécifie la base de la sémantique pour cet échange de messages. Les spécifications de profil, qui sont contenues dans d'autres parties de la série IEC 62325, précisent le contenu des messages échangés. Elles prennent en charge les marchés de type européen, fondés sur les normes européennes et sur les concepts d'accès de tiers au réseau et de répartition du marché en zones, et les marchés de type américain, caractérisés par une gestion de la production à J-1 effectuée par un opérateur du marché, par un équilibrage intrajournalier et en temps réel via un système de répartition central, et par le règlement selon les prix marginaux locaux. Ces marchés sont utilisés aux Etats-Unis et dans d'autres régions du monde, et ne se limitent pas exclusivement à l'Amérique du Nord.

Le CIM est un modèle abstrait contenant tous les objets principaux d'une entreprise de distribution d'électricité habituellement nécessaires pour représenter les opérations d'une entreprise d'électricité. Ce modèle inclut les classes et les attributs publics de ces objets, ainsi que les relations entre eux.

Les objets représentés dans le CIM sont de nature abstraite et peuvent être utilisés dans une large gamme d'applications. L'utilisation du CIM n'est pas limitée à son application dans un système de gestion de marché. Il convient que cette norme soit comprise comme un outil permettant l'intégration dans tout domaine où un modèle de système de marché est nécessaire pour faciliter l'interopérabilité et la compatibilité de connexion entre des applications et des systèmes indépendants de toute mise en œuvre particulière.

Les normes IEC 62325 font partie d'une série de normes. Les normes IEC 61970 définissent les interfaces de programmation d'application EMS et les normes IEC 61968 définissent les interfaces système pour la gestion de distribution. L'IEC 62325-301 correspond aux normes IEC 61970-301 et IEC 61968-11, qui décrivent des parties du modèle d'information commun applicables aux interfaces de modélisation des systèmes EMS, DMS et MMS. Alors qu'il existe plusieurs normes de l'IEC qui traitent des différentes parties du CIM, un seul modèle d'information unifié comprenant le CIM est derrière tous ces documents normatifs individuels.

CADRE POUR LES COMMUNICATIONS POUR LE MARCHÉ DE L'ÉNERGIE –

Partie 301: Extensions du modèle d'information commun (CIM) pour les marchés

1 Domaine d'application

La présente partie de la norme IEC 62325 spécifie le modèle d'information commun relatif aux communications pour le marché de l'énergie.

Le modèle d'information commun (CIM) est un modèle abstrait de tous les objets principaux d'une entreprise de distribution d'électricité habituellement impliqués dans les opérations de l'entreprise et dans la gestion du marché de l'électricité. En fournissant une façon normalisée de représenter des ressources de systèmes électriques comme classes et attributs d'objets ainsi que leurs relations, le CIM facilite l'intégration des applications de système de gestion de marché (MMS) développées de façon indépendante par différents fournisseurs, entre des systèmes MMS complets développés de façon indépendante, ou entre un système MMS et d'autres systèmes concernés par différents aspects de la gestion de marché, tels que l'attribution de la capacité, la gestion à 24 h, l'équilibrage, le règlement, etc.

Le CIM facilite l'intégration en définissant un langage commun (c'est-à-dire une sémantique) fondé sur le modèle CIM pour permettre à ces applications ou systèmes d'accéder aux données publiques et d'échanger des informations indépendamment de la représentation interne de ces informations.

Les classes d'objets représentées dans le CIM sont de nature abstraite et peuvent être utilisées dans une large gamme d'applications. L'utilisation du CIM n'est pas limitée à son application dans un système de gestion de marché.

A cause de la taille du CIM complet, les classes d'objets qui le composent sont regroupées en un certain nombre de paquetages logiques, qui représentent chacun une certaine partie du système électrique modélisé. Les collections de ces paquetages sont fournies progressivement sous forme de Normes internationales distinctes. La présente Norme internationale spécifie un ensemble de paquetages qui offrent une vue logique sur les aspects fonctionnels de la gestion d'un marché de l'électricité qui est partagée par toutes les applications. D'autres normes spécifient des aspects plus spécifiques du modèle qui ne sont nécessaires qu'à certaines applications. Le Paragraphe 4.2 ci-dessous définit le découpage actuel des paquetages dans les documents normatifs.

2 Références normatives

Les documents suivants sont cités en référence de manière normative, en intégralité ou en partie, dans le présent document et sont indispensables pour son application. Pour les références datées, seule l'édition citée s'applique. Pour les références non datées, la dernière édition du document de référence s'applique (y compris les éventuels amendements).

IEC 61968-11, *Intégration d'applications pour les services électriques – Interfaces système pour la gestion de distribution – Partie 11: Extensions du modèle d'information commun (CIM) pour la distribution*

IEC 61970-301, *Interface de programmation d'application pour système de gestion d'énergie (EMS-API) – Partie 301: Base de modèle d'information commun (CIM)*

IEC 62325-450, *Cadre pour les communications pour le marché de l'énergie – Partie 450: Règles de modélisation de profils et de contextes*

Object management group: UML 2.0, *Specification* – disponible à l'adresse <http://www.omg.org>

3 Termes, définitions et abréviations

Pour les besoins du présent document, les termes et définitions de l'IEC 61970-2 ainsi que les suivants s'appliquent.

3.1 Termes et définitions

3.1.1

interface de programmation d'application

API (application program interface en anglais)

ensemble des fonctions publiques offertes par un composant exécutable d'application et destinées à être utilisées par d'autres composants exécutables d'application

[SOURCE: IEC 61970-2:2004, 3.4]

3.1.2

CIM model manager

gestionnaire de modèle conforme au CIM

3.1.3

Extensible Markup Language

XML

est un langage de marquage qui définit un ensemble de règles pour le codage des documents dans un format lisible à la fois par l'homme et la machine

3.1.4

XML Schema Description

XSD

est un langage XML utilisé pour décrire et contrôler le contenu des documents XML

3.1.5

marchés intrajournaliers

marchés de programmation intrajournalière qui affinent l'engagement et les programmes produits par les marchés du jour d'avant

3.1.6

prévision de charge

système de prévision de charge qui prédit la charge pour l'horizon temporel spécifié

3.1.7

système de gestion de marché

MMS (Market Management System en anglais)

système informatique comprenant une plate-forme logicielle offrant les services de support de base et un ensemble d'applications offrant les fonctionnalités requises pour une gestion efficace du marché de l'électricité

Note 1 à l'article: Ces systèmes informatiques intégrés à un marché de l'électricité peuvent comprendre un service de support à l'attribution de la capacité, à la planification de l'énergie, aux services auxiliaires ou autres, aux opérations et aux règlements en temps réel.

3.1.8

scheduler

système de programmation pour les ressources

3.1.9

accès tiers

concept dans les systèmes de gestion de marché qui permet aux tiers d'utiliser le système de transmission au même titre que les autres

3.1.10

langage de modélisation unifié

UML (Unified Modeling Language en anglais)

langage de modélisation dans le domaine de l'ingénierie logicielle orientée objet qui est géré par l'Object Management Group (OMG)

3.1.11

schéma RDF

RDFS (RDF Schema en anglais)

recommandation W3C qui fournit des éléments de base pour la description des ontologies

3.1.12

langage d'ontologies Web

OWL (Ontology Web Language en anglais)

recommandation W3C qui fournit un langage de représentation de connaissances pour la création d'ontologies

3.2 Abréviations

3.2.1

B and S (Billing and Settlement en anglais)

facturation et règlement

3.2.2

CRR (Congestion Revenue Rights en anglais)

droits à revenu de congestion

3.2.3

DAM (Day Ahead Market en anglais)

marché à J-1 qui détermine l'engagement et les programmes des ressources

3.2.4

DMS (Distribution Management System en anglais)

système de gestion de la distribution

3.2.5

EMS (Energy Management System en anglais)

système de gestion d'énergie

3.2.6

MDMS (Meter Data Management System en anglais)

système de gestion des données de compteur

3.2.7

RTM (Real Time Market en anglais)

marchés en temps réel qui finalisent la répartition pour les ressources système

4 Spécification du CIM

4.1 Notation de modélisation du CIM

Le CIM est défini à l'aide de techniques de modélisation orientées objet. Plus précisément, la spécification du CIM utilise la notation du langage de modélisation unifié (UML), qui définit le CIM comme un groupe de paquetages.

Chaque paquetage du CIM contient un ou plusieurs diagrammes de classe montrant sous forme graphique toutes les classes de ce paquetage et leurs relations. Chaque classe est ensuite définie de façon textuelle en mettant l'accent sur ses attributs et ses relations avec d'autres classes.

La notation UML est décrite dans les documents de l'Object Management Group (OMG) et dans plusieurs autres manuels publiés.

4.2 Paquetages CIM

Le CIM est fractionné en un ensemble de paquetages. Un paquetage est un moyen général permettant de grouper des éléments liés à un modèle. Les paquetages ont été choisis pour simplifier la conception, la compréhension et la révision du modèle. Le modèle d'information commun se compose de l'ensemble des paquetages. Des entités peuvent avoir des associations dépassant les limites de plusieurs paquetages. Chaque application peut utiliser des informations représentées dans plusieurs paquetages.

Le CIM complet est fractionné en groupes de paquetages, ce qui facilite la gestion et la maintenance. La norme IEC 62325-301 inclut les paquetages suivants:

- 'MarketCommon'
- 'MarketManagement'
- 'MarketOperations'

Les paquetages utilisés par la norme IEC 61970-301 et les paquetages utilisés par la norme IEC 61968-11 décrivent des parties supplémentaires du CIM qui traitent d'autres vues logiques des opérations d'une entreprise de service public, comprenant les modèles des fils, de la topologie, de la production, de la charge, des interruptions de service, du patrimoine, des emplacements, des activités, des clients, de la documentation et des travaux, et des modèles de réseau spécifiques à la distribution.

NOTE Les limites d'un paquetage n'impliquent pas de limites pour les applications. Une application peut utiliser des entités CIM de différents paquetages.

La Figure 1 présente les dépendances de paquetages. Le paquetage 'IEC 62325' et ses sous-paquetages dépendent des paquetages 'IEC 61970' et 'IEC 61968'. Le paquetage 'IEC 61970' est utilisé par la série de normes IEC 61970 comme un modèle central qui représente les ressources des systèmes électriques et leurs relations. Le paquetage 'IEC 61968' est utilisé par la série de normes IEC 61968 qui décrit les vues logiques des opérations d'une entreprise de service public, y compris vue du patrimoine, des emplacements, des activités, des clients, de la documentation et des travaux, et des modèles de comptage. Les lignes tiretées indiquent une relation de dépendance, la flèche allant du paquetage dépendant vers le paquetage dont il dépend.

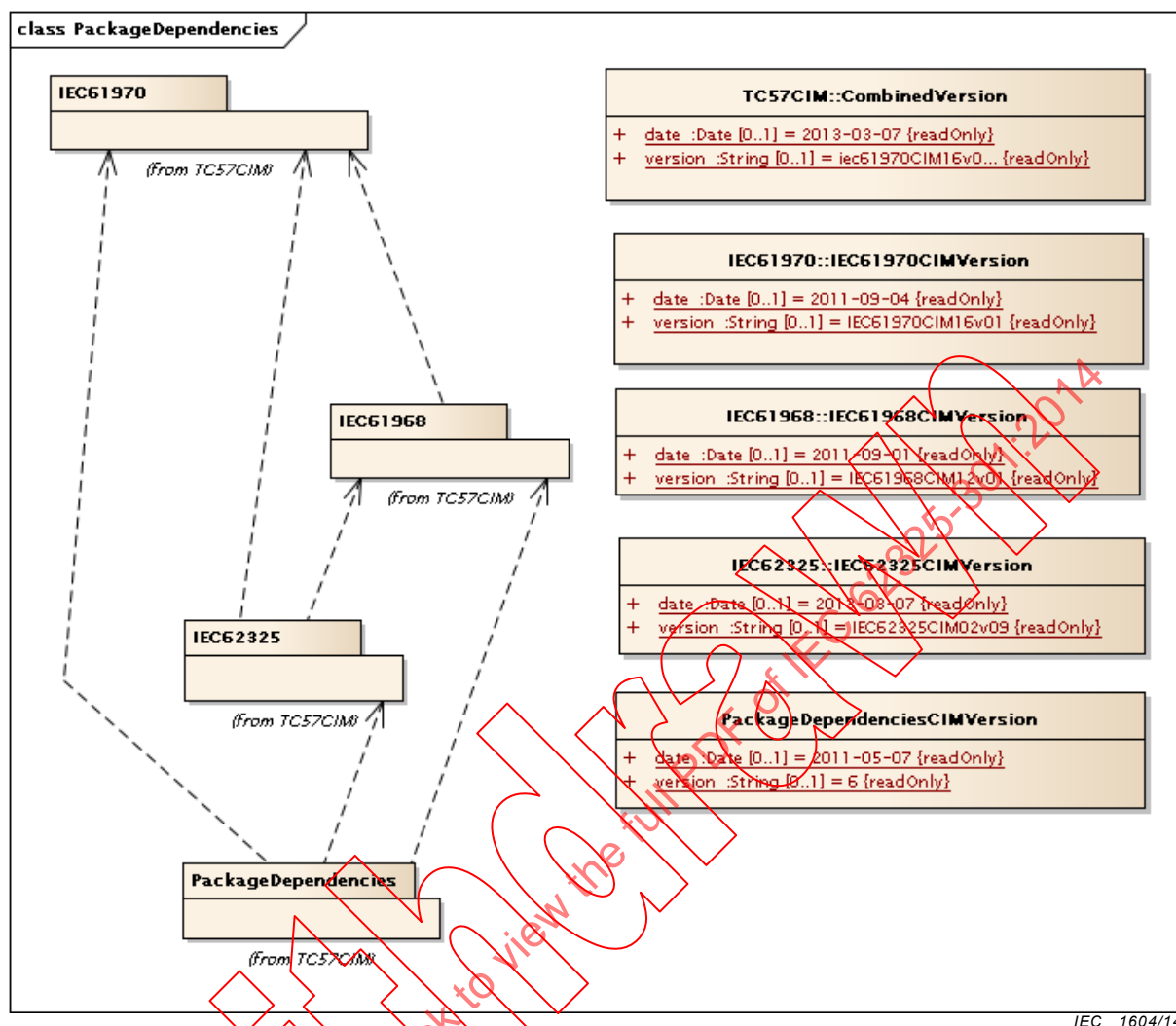
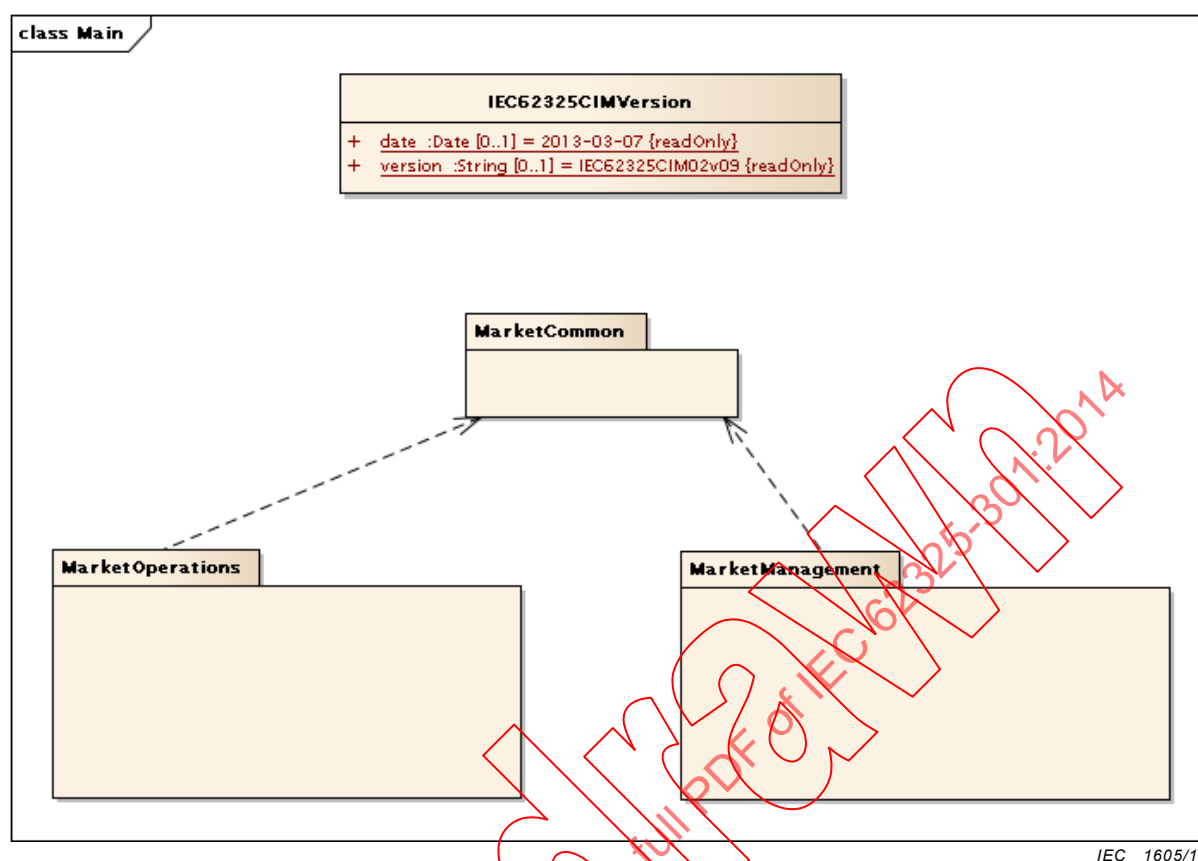


Figure 1 – Diagramme des dépendances de paquetages 'TC 57CIM'

La Figure 2 représente les paquetages définis pour l'IEC 62325-301 et leurs relations de dépendance. Les lignes tiretées indiquent une relation de dépendance, la flèche allant du paquetage dépendant vers le paquetage dont il dépend.



IEC 1605/14

Figure 2 – Diagramme des dépendances de paquets "IEC 62325"

L'Article 6 contient la spécification associée à chacun des paquets du CIM.

NOTE Le contenu du CIM défini dans la présente spécification a été créé automatiquement à partir de la version IEC 62325CIM02v09 du modèle électronique UML du CIM, qui est disponible auprès du groupe des utilisateurs du CIM (CIM Users Group).

4.3 Classes CIM et relations

4.3.1 Classes

Le ou les diagrammes de classe de chaque paquetage du CIM représentent toutes les classes du paquetage et leurs relations. Lorsque des relations existent avec des classes appartenant à d'autres paquets, ces classes sont également représentées.

Les classes et les objets modélisent ce qui se trouve dans un système électrique et qui doit être représenté de la même façon pour les applications du marché. Une classe est une description d'un objet réel, tel qu'une offre, une ressource consignée ou une charge consignée, qui doit être représenté comme faisant partie de l'ensemble du marché de l'électricité dans un MMS. Parmi les autres types d'objet figurent des éléments tels que les programmes et les mesures que des applications MMS doivent également traiter, analyser et enregistrer. De tels objets nécessitent une représentation commune pour atteindre les objectifs de compatibilité de connexion et d'interopérabilité de la présente norme. Un objet particulier d'un système électrique ayant une identité unique est modélisé comme une instance de la classe à laquelle il appartient.

Le CIM est défini pour faciliter l'échange de données. Comme défini dans le présent document, les entités du CIM n'ont pas de comportement. L'IEC 62325-450 *Règles de modélisation de profils et de contextes* définit les principes de modélisation pour générer un profil et les principes du cadre de modélisation pour définir la charge utile de message.

Les classes comportent des attributs qui décrivent les caractéristiques des objets. Chaque classe du CIM contient les attributs décrivant et identifiant une instance spécifique de la classe. Seuls les attributs d'intérêt public pour les applications MMS sont inclus dans les descriptions de classes.

Chaque attribut possède un type qui identifie le type d'attribut dont il s'agit. Les attributs typiques sont de type 'Integer' (entier), 'Float' (flottant), 'Boolean' (booléen), 'String' (chaîne), 'Datetime' (date et heure), 'Date', 'Duration' (durée) et 'Decimal' (décimal), qui sont appelés types primitifs. Cependant, de nombreux types supplémentaires sont définis comme partie intégrante de la spécification CIM. Par exemple, 'RegisteredGenerator' a un attribut 'maxDependableCap' de type 'ActivePower'. La définition de nombreux types partagés est contenue dans le paquetage 'Domain' décrit à l'Article 6. Les stéréotypes 'Primitive', 'enumeration', 'CIMDatatype' et 'Compound' de l'UML sont ajoutés aux classes utilisées comme types:

- Le stéréotype 'CIMDatatype' est utilisé avec une sémantique spécifique du CIM pour décrire un type ayant plusieurs attributs {'value', 'unit', 'multiplier', 'denominatorUnit', 'denominatorMultiplier'}, qui implique une mise en correspondance personnalisée avec des artefacts de sérialisation tels que RDFS, OWL et XSD. Les classes ayant ces stéréotypes ne participent pas à des relations de généralisation ou d'association et sont simplement utilisées comme types pour des attributs.
- Le stéréotype 'enumeration' est utilisé pour décrire le type d'un attribut avec une liste énumérée de choix.
- Le stéréotype 'Compound' est utilisé pour décrire des ensembles d'attributs liés qui sont couramment réutilisés. Les classes 'Compound' peuvent se composer d'attributs de type 'Primitive', 'enumeration', 'CIMDatatype' ou d'autres classes 'Compound', à condition que les classes 'Compound' ne soient pas récursives.

Tous les attributs du CIM sont implicitement facultatifs en ce sens que les profils utilisant le CIM peuvent les éliminer tous.

Les relations entre les classes révèlent la façon dont elles sont structurées les unes par rapport aux autres. Les classes CIM sont reliées de différentes façons, comme décrit dans les 4.3.2, 4.3.3 et 4.3.4.

4.3.2 Generalization (généralisation)

Une généralisation est une relation entre une classe générale et une classe plus spécifique. La classe la plus spécifique ne peut contenir que des informations supplémentaires. Par exemple, 'RegisteredGenerator' est une sous-classe spécifique de 'RegisteredResource'. La généralisation permet à une classe spécifique d'hériter d'attributs et de relations de toutes les classes plus générales situées au-dessus d'elle.

La Figure 3 est un exemple de généralisation. Dans cet exemple issu du paquetage 'MarketCommon', un 'MarketParticipant' est un type plus spécifique de 'Organisation'. 'Organisation' hérite également de 'IdentifiedObject'.

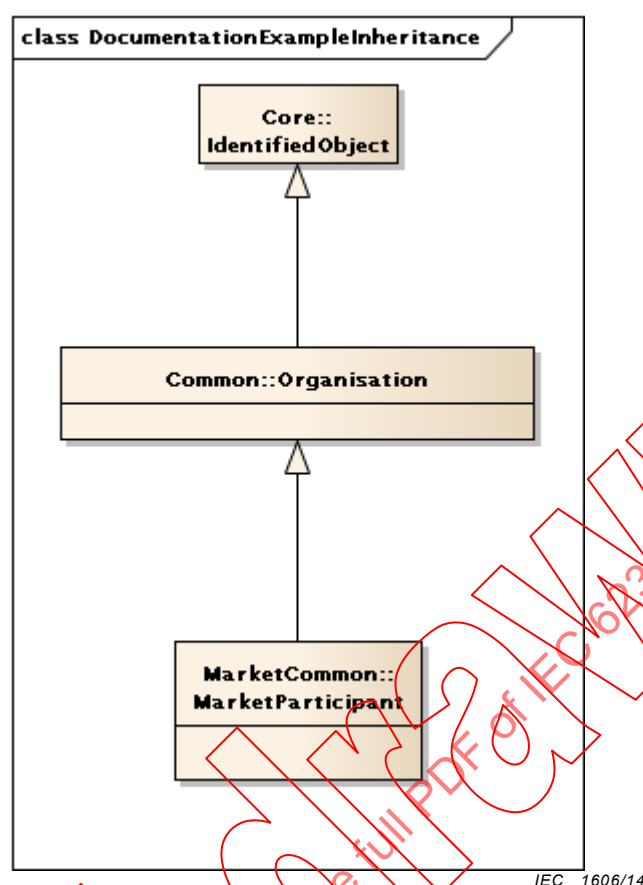


Figure 3 – Exemple de généralisation

4.3.3 Simple Association (association simple)

Une association est une connexion conceptuelle entre des classes. Chaque association a deux "extrémités d'association". Les "extrémités d'association" étaient appelées "rôles" avant la spécification UML 2.0. Chaque extrémité d'association décrit le rôle que la classe cible (c'est-à-dire la classe vers laquelle l'extrémité d'association part) a en relation avec la classe source (c'est-à-dire la classe à partir de laquelle l'extrémité d'association part). La coutume est d'attribuer aux extrémités d'association le nom de la classe cible avec ou sans qualificatif (verbe, nom ou adverbe). Chaque extrémité d'association possède aussi une cardinalité/multiplicité, qui est une indication du nombre d'objets qui peuvent prendre part à la relation décrite. Dans le CIM, les associations ne sont pas nommées, seules les extrémités d'association le sont. Par exemple, dans le CIM, il existe une association entre un 'MarketParticipant' et un 'MarketRole' (voir la Figure 4, qui est issue du paquetage 'MarketCommon'). La multiplicité est montrée aux deux extrémités de l'association. Dans cet exemple, un objet 'MarketParticipant' peut faire référence à 0 ou à plusieurs objets 'MarketRole', et un 'MarketRole' peut être référencé dans 0 ou plusieurs objets 'MarketParticipant'.

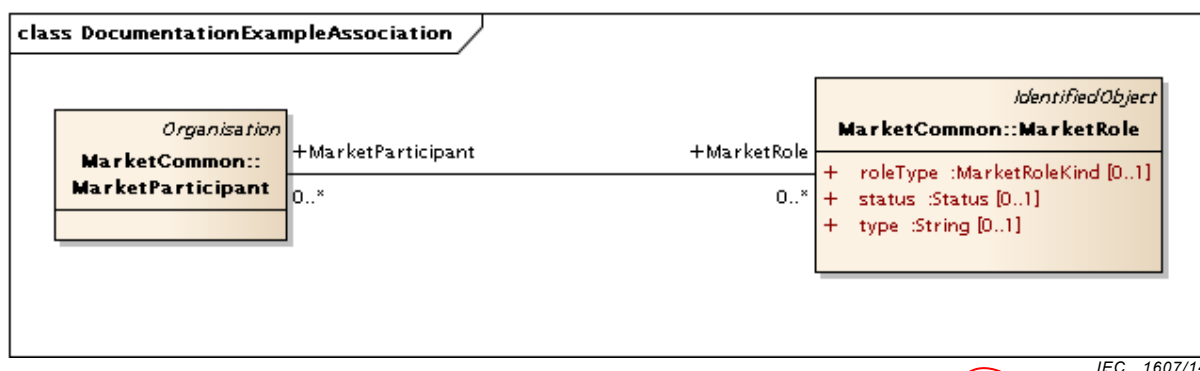


Figure 4 – Exemple d'association simple

4.3.4 Aggregation (agrégation)

L'agrégation est un cas spécial d'association. L'agrégation indique que la relation entre les classes est une sorte de relation classe entière/classe partielle, où la classe entière "consists of" (se compose de) ou "contains" (contient) la classe partielle et cette classe partielle est une "part of" (partie de) la classe entière. La classe partielle n'hérite pas de la classe entière comme dans la généralisation. La Figure 5 illustre une agrégation entre la classe 'EnergyProfile' et la classe 'EnergyTransaction', qui est issue du paquetage 'ExternalInputs'. Elle indique également qu'un 'EnergyProfile' peut faire partie d'un seul objet 'EnergyTransaction', mais qu'un objet 'EnergyTransaction' peut contenir n'importe quel nombre d'objets 'EnergyProfile'. Dans le cadre de l'utilisation du CIM comme modèle d'information, l'agrégation n'a pas d'interprétation précise ou formelle au-delà d'une association simple, et permet de représenter visuellement une utilisation normale.

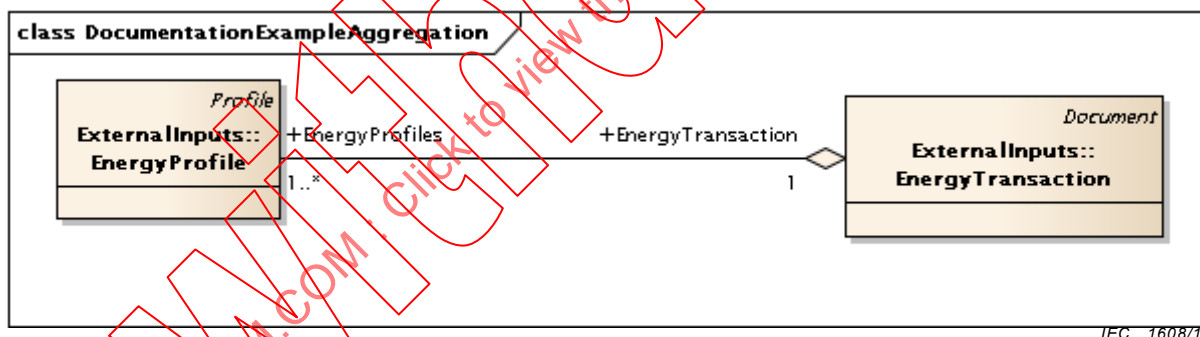


Figure 5 – Exemple d'agrégation

4.4 Concepts du modèle CIM et exemples

4.4.1 Paquetage 'Common Market'

Le modèle Common Market décrit les participants du marché ainsi que leurs rôles. Les rôles définis du marché figurent dans une liste ('MarketRoleKind'). Un MarketParticipant peut jouer plusieurs rôles dans un marché (voir Figure 6).

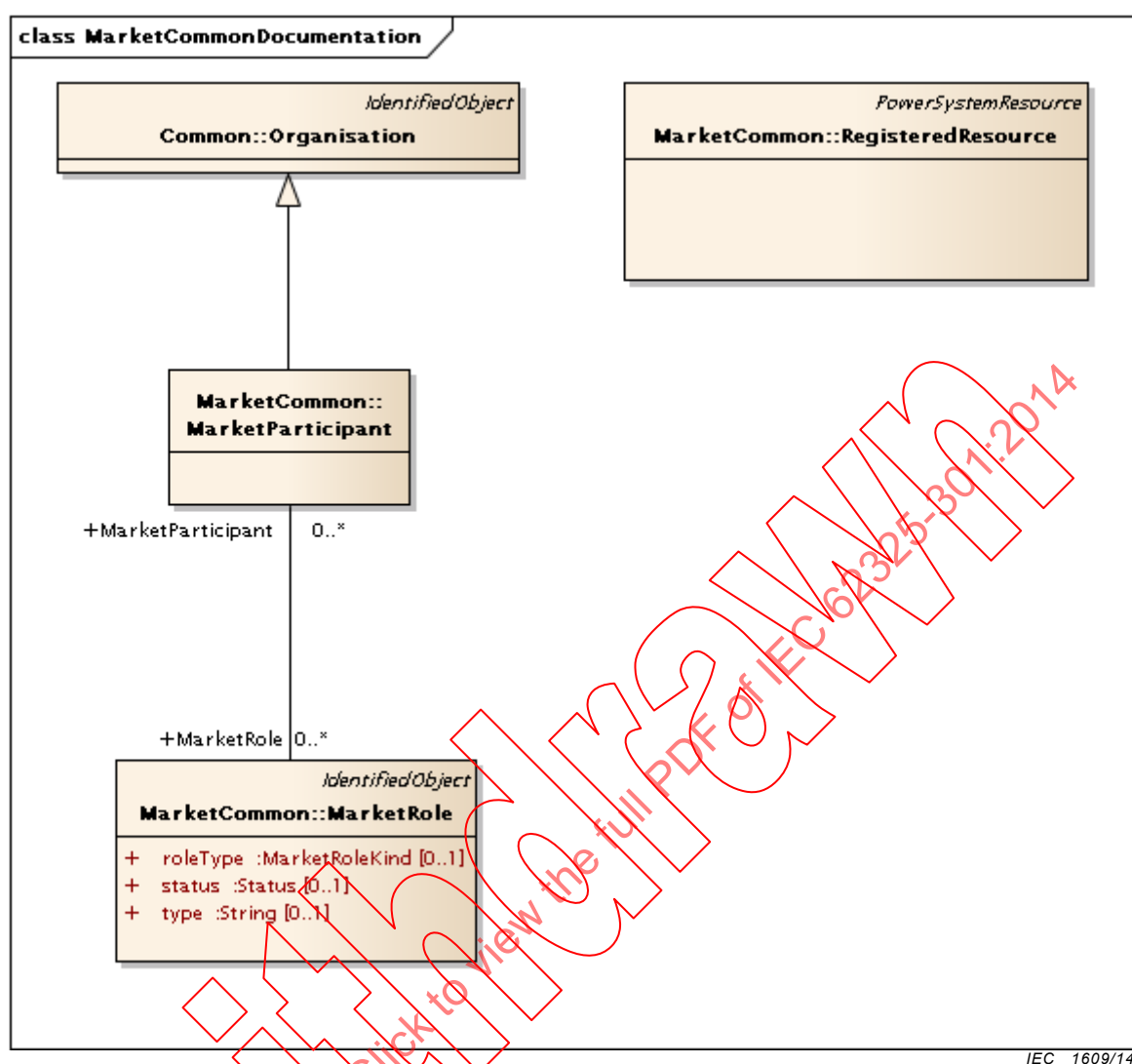


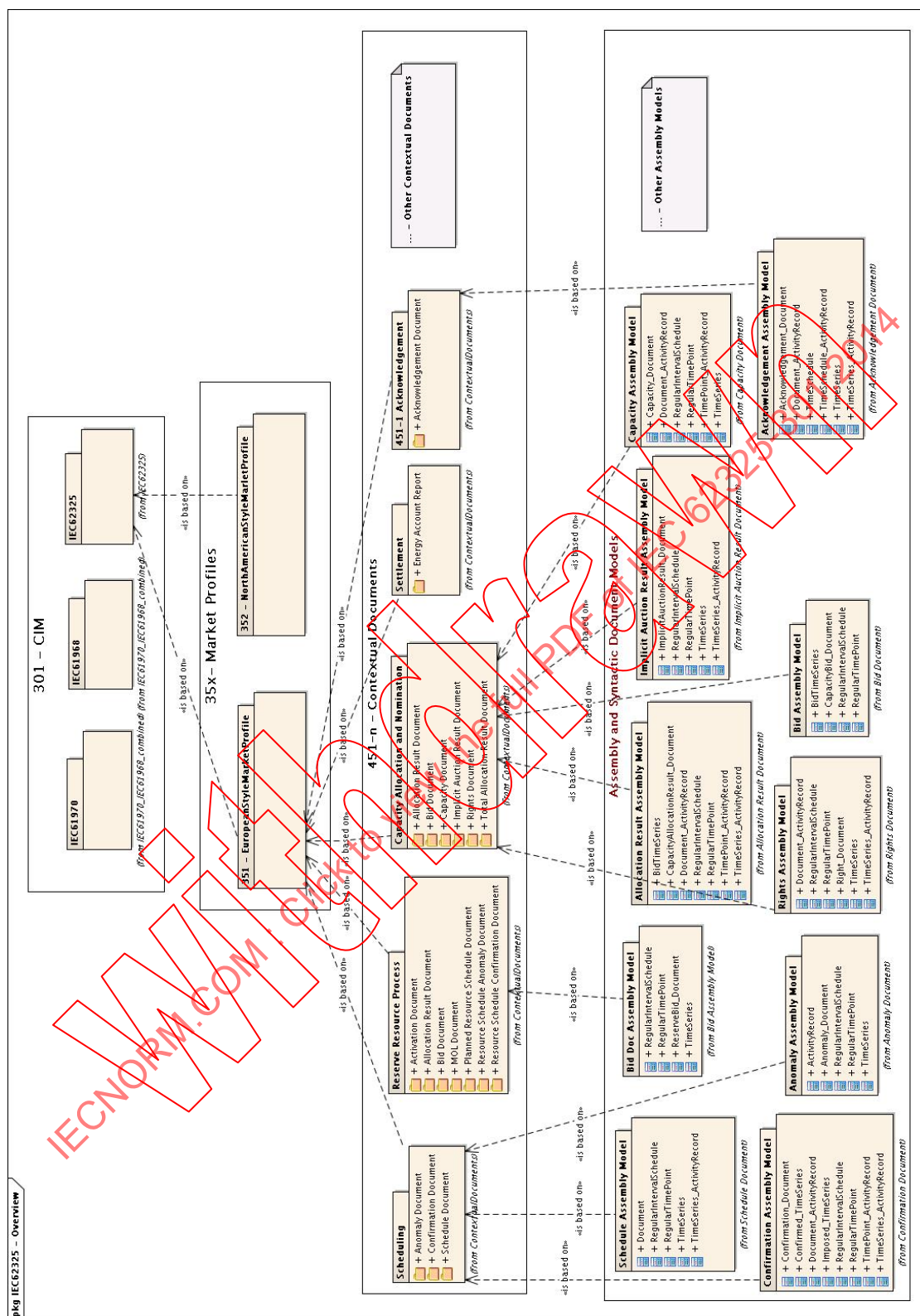
Figure 6 – Modèle Common Market

4.4.2 Paquetage 'MarketManagement'

Le modèle Market Management décrit un ensemble cohérent de classes à utiliser avec le modèle Common Market pour générer un profil. Dans ce cas, le profil doit être utilisé lorsque le marché de l'électricité est principalement basé sur un accès réglementé de tiers au réseau, c'est-à-dire que les gestionnaires de réseaux de transport doivent donner aux fournisseurs d'électricité un accès non discriminatoire:

- au réseau de transport pour qu'ils puissent fournir de l'énergie à leurs clients;
- et aux transactions du marché de gros et de détail (bilatérales ou via une installation d'échange d'énergie entre réseaux) servant à l'échange d'énergie.

Le paquetage 'MarketManagement' fait référence à ce qui est ultérieurement appelé système européen de gestion de marché. La Figure 7 présente le cadre de modélisation en couche à construire du CIM jusqu'à la spécification des messages. Ce cadre de modélisation définit la façon de générer des documents contextualisés pour échanger des informations en partant des concepts CIM du paquetage 'MarketManagement' jusqu'à la définition d'un profil de marché.



IEC 1610/14

Légende

Anglais	Français
From IEC 61970_IEC 61968_combined	A partir de IEC 61970_IEC 61968_combined
From IEC 62325	A partir de IEC 62325
Market Profiles	Profils de marché

Anglais	Français
Is based on	Est basé sur
Contextual Documents	Documents contextuels
Assembly and Syntactic Document Models	Modèles de documents d'assemblage et de syntaxe
Other Contextual Documents	Autres documents contextuels
Other Assembly Models	Autres modèles d'assemblage
Scheduling	Programmation
Reserve Resource Process	Processus de ressources en réserve
Capacity Allocation and Nomination	Attribution de la capacité et désignation
Settlement	Règlement
451-1 Acknowledgement	451-1 Acknowledgement (Acquittement)
From Contextual Documents	A partir de Contextual Documents
Schedule Assembly Model	Modèle d'assemblage de programmation
Bid Doc Assembly Model	Modèle d'assemblage de document d'offre
Allocation Result Assembly Model	Modèle d'assemblage de résultat de l'attribution
Implicit Auction Result Assembly Model	Modèle d'assemblage de résultat des ventes aux enchères implicites
Capacity Assembly Model	Modèle d'assemblage de capacité
From Schedule Document	A partir du document de programme
From Bid Assembly Model	A partir du modèle d'assemblage d'offre
From Allocation Result Document	A partir du document de résultat de l'attribution
From Implicit Auction Result Document	A partir du document de résultat des ventes aux enchères implicites
From Capacity Document	A partir du document de capacité
Confirmation Assembly Model	Modèle d'assemblage de confirmation
Anomaly Assembly Model	Modèle d'assemblage d'anomalie
Rights Assembly Model	Modèle d'assemblage de droits
Bid Assembly Model	Modèle d'assemblage d'offre
Acknowledgement Assembly Model	Modèle d'assemblage de reconnaissance
From Confirmation Document	A partir du document de confirmation
From Anomaly Document	A partir du document d'anomalie
From Rights Document	A partir du document de droits
From Bid Document	A partir du document d'offre
From Acknowledgement document	A partir du document de reconnaissance

Figure 7 – Présentation du modèle Market Management

Comme indiqué dans la Figure 7, un jeu spécifique de documents contextualisés est fourni pour chaque processus métier nécessaire à l'exploitation d'un marché de l'électricité. Comme indiqué dans la Figure 7, les profils de marché sont spécifiés dans l'IEC 62325-351 et les documents contextualisés sont décrits dans les normes IEC 62325-451-1, IEC 62325-451-2, etc.

La Figure 8 montre les classes du paquetage 'MarketManagement'.

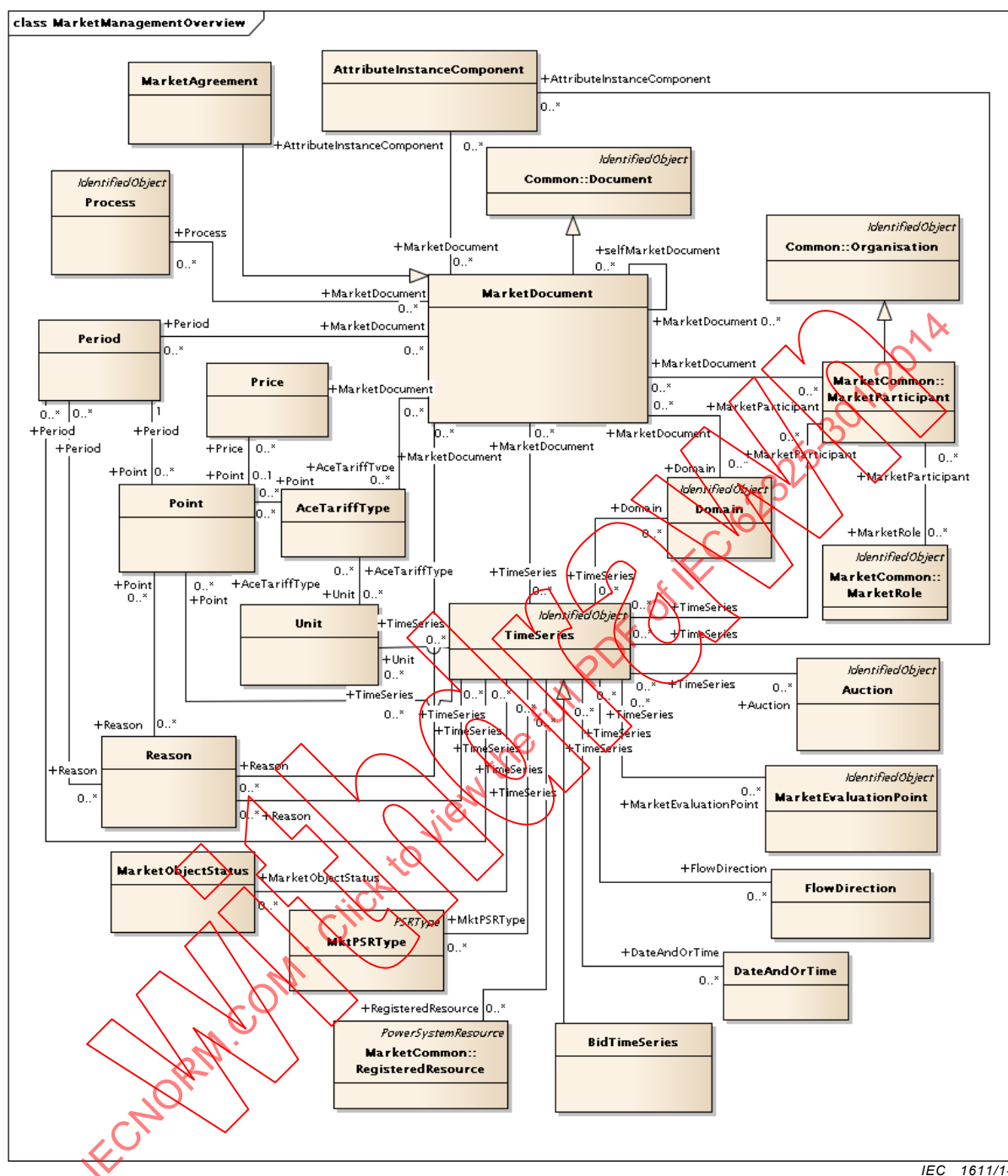


Figure 8 – Modèle Market Management

Dans ce modèle Market Management, un rôle clé est donné au concept de 'MarketDocument', c'est-à-dire que les transactions du marché de l'électricité sont basées sur des échanges contractuels d'informations entre les participants du marché via un jeu de documents donné en fonction du processus métier.

Comme indiqué dans la Figure 7, un jeu spécifique de documents contextualisés est fourni pour chaque processus métier nécessaire à l'exploitation d'un marché de l'électricité. A titre d'exemple, voici une liste non exhaustive des processus:

- processus d'acquittement étant donné que l'échange d'informations est basé sur des échanges contractuels, il est important d'obtenir une reconnaissance fonctionnelle du document échangé et pas seulement une reconnaissance technique;

- processus de programmation: ce processus décrit la façon d'échanger les informations relatives aux programmes (programmes de production, programmes de charge, programmes d'échanges commerciaux bilatéraux, programmes d'échange d'énergie entre réseaux, etc.);
- processus de règlement: ce processus décrit comment échanger les informations nécessaires au règlement du marché de l'électricité, à savoir la comparaison entre l'énergie programmée et les compteurs relevés;
- processus d'attribution de la capacité de transport et de désignation ce processus décrit les ventes aux enchères explicites et implicites de la capacité de transport dans le cadre du commerce transfrontalier. Il inclut également le marché secondaire des droits de capacité, c'est-à-dire la revente de droits de capacité;
- processus de ressources en réserve: ce processus décrit la programmation des ressources, c'est-à-dire les unités de production et la charge pouvant être répartie, et la vente aux enchères de la capacité et notamment l'activation par le gestionnaire de réseau de la réserve tertiaire à des fins d'équilibrage;
- etc.

La classe 'Process' (voir Figure 8) permet de définir pour un document donné le processus vers lequel le flux d'informations est dirigé. Par exemple, le Schedule Document peut être utilisé dans différents processus tels que "forecast", "long term", "day ahead", "intra day", etc.

Dans un 'MarketDocument', un autre concept important doit être souligné: le concept 'TimeSeries' (voir Figure 9) basé sur les participants du marché (classe 'MarketParticipant') jouant un rôle (classe 'MarketRole') dans un processus métier du marché (classe 'Process') qui peuvent échanger des programmes de volume/prix relatifs à un domaine d'énergie (classe Domain) pour un type business donné (tel que le "commerce intérieur", le "commerce transfrontalier", la "réserve primaire", la "réserve secondaire", la "réserve tertiaire", etc.). Ces documents constituent la base à partir de laquelle les échanges sont fondés afin de gérer les échanges d'énergie, les d'offres, l'attribution de capacité, les ressources d'énergie en réserve et le règlement.

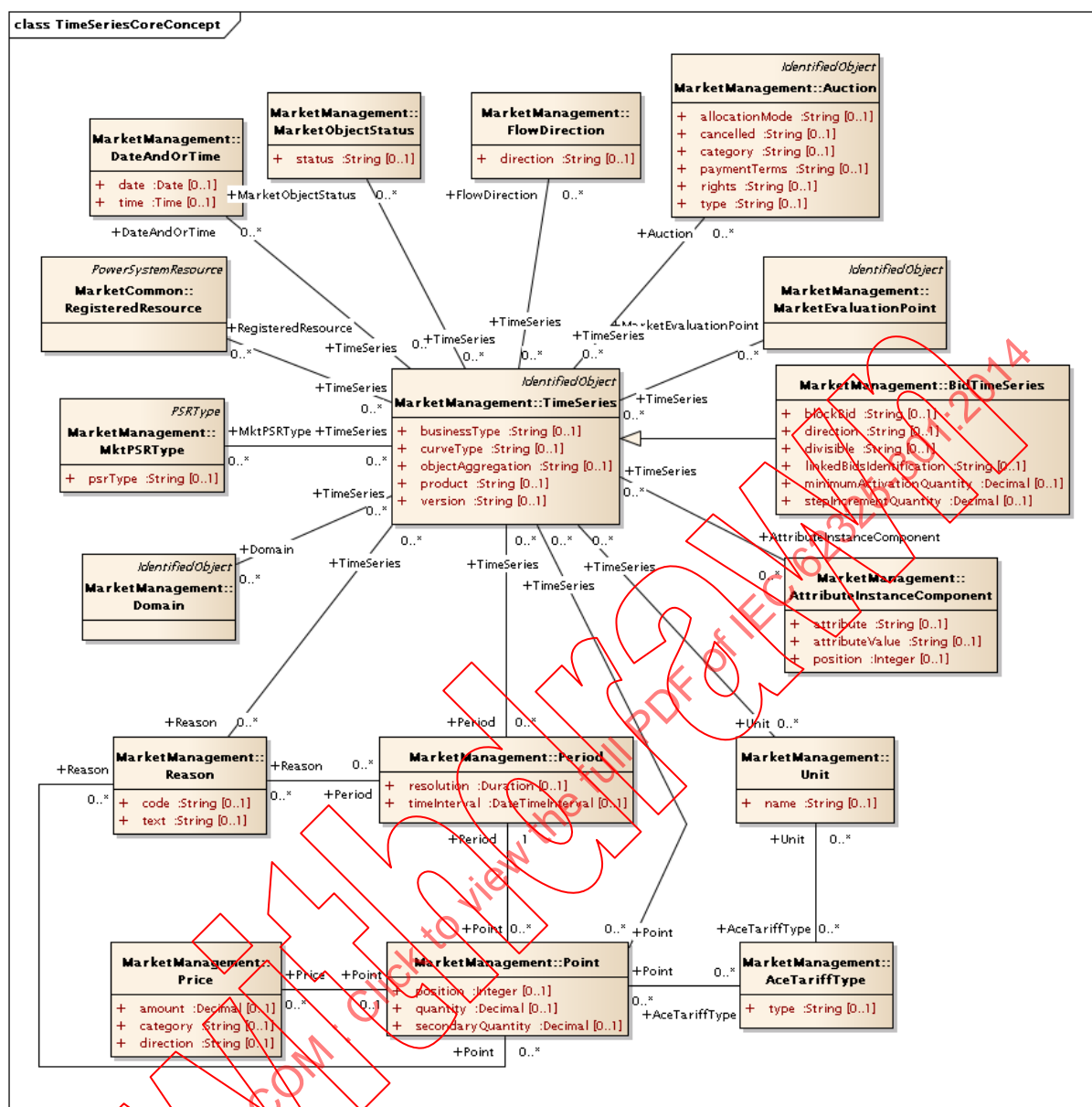


Figure 9 – Concept de base 'TimeSeries' 'MarketManagement'

Pour gérer les quantités et les prix de manière contractuelle dans le marché de l'électricité, les attributs de type 'Decimal' ont été intégrés à la modélisation.

4.4.3 Paquetage 'MarketOperations'

4.4.3.1 Opérations du marché

Le paquetage 'MarketOperations' décrit un ensemble cohérent de classes à utiliser avec le modèle Common Market (et d'autres parties du CIM décrites dans les normes IEC 61970-301 et IEC 61968-11) pour générer un profil. Dans ce cas, le profil doit être utilisé pour le marché de l'électricité de type américain caractérisé par une gestion de la production à J-1 effectuée par un opérateur du marché, par un équilibrage intrajournalier et en temps réel via un système de répartition central, et par le règlement selon les prix marginaux locaux.

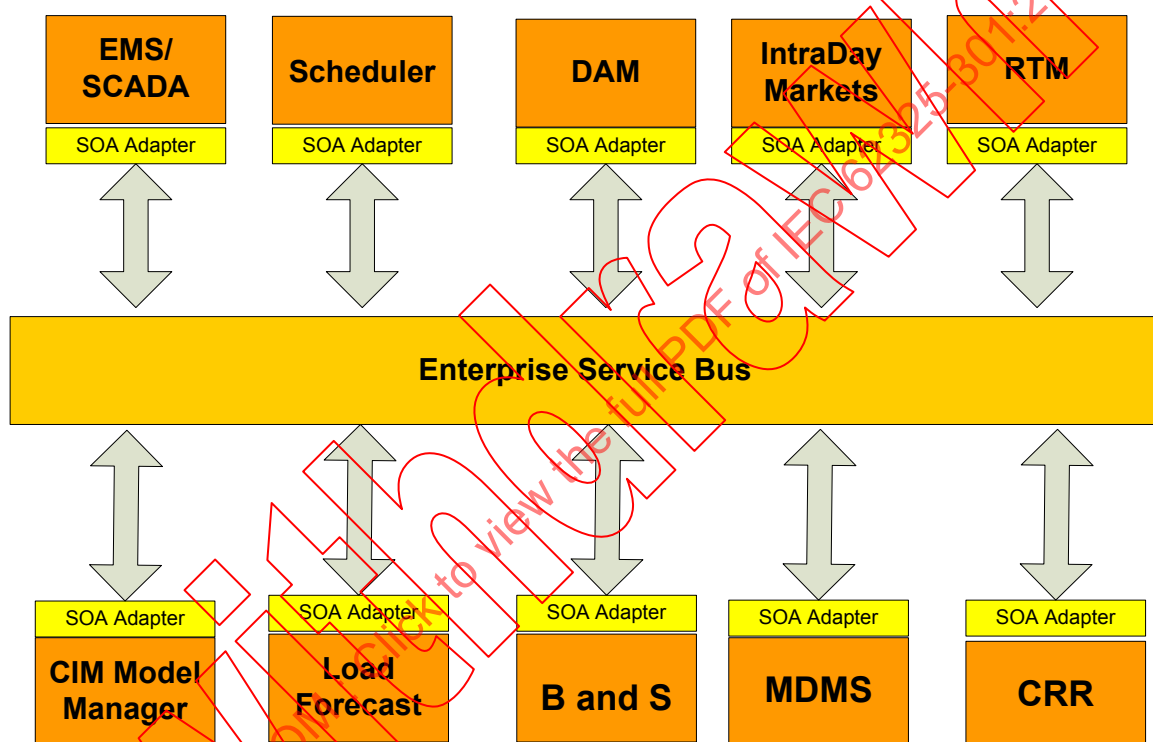
Le marché de l'électricité de type américain inclut également la vente aux enchères des droits à revenu de congestion (CRR, *Congestion Revenue Rights*), qui sont des instruments financiers que les participants du marché achètent pour se couvrir des frais de congestion.

Sont également inclus la gestion des données de compteur, la facturation et le règlement. Le paquetage 'MarketOperations' comprend des modèles prenant en charge ces caractéristiques.

Les Paragraphes 4.4.3.2 à 4.4.3.6 décrivent les principaux concepts référencés dans le paquetage 'MarketOperations'.

4.4.3.2 Systèmes informatiques d'un opérateur du marché

La Figure 10 présente les systèmes informatiques d'un opérateur type des marchés de l'électricité de type américain qui sont référencés dans le paquetage 'MarketOperations'. L'opérateur du marché peut également être un gestionnaire des réseaux de transport régionaux (RTO, Regional Transmission Operator) ou un gestionnaire de réseau indépendant (ISO, Independent System Operator). Ces systèmes informatiques sont identifiés comme suit:



IEC 1613/14

Légende

Anglais	Français
IntraDay Markets	Marchés intrajournaliers
SOA Adapter	Adaptateur SOA
Enterprise Service Bus	Bus de service d'entreprise

Figure 10 – Systèmes informatiques de l'opérateur d'un marché de l'électricité de type américain

4.4.3.3 Interfaces du gestionnaire des réseaux de transport régionaux

La Figure 11 présente le modèle d'interface UML d'un gestionnaire des réseaux de transport régionaux (RTO) capable de prendre en charge les interfaces de la Figure 10. Les principales classes sont brièvement résumées: les classes 'AggregateNode' et 'Pnode' sont utilisées afin de modéliser les nœuds de tarification pour lesquels les prix marginaux locaux sont calculés selon une moyenne pondérée. La classe 'LocalReliabilityArea' est utilisée pour identifier et modéliser les poches de charge dans le RTO. La classe 'MktConnectivityNode' est utilisée pour étendre la classe 'ConnectivityNode' de l'IEC 61970 avec les données du marché. Les

classes 'TransmissionRightChain', 'ContractRight' et 'MSSAggregation' permettent de modéliser les contrats existants afin d'utiliser le réseau de transport et de représenter les droits de propriété de transport maintenus en vertu d'une clause d'antériorité. Les classes 'Organisation' et 'MktOrganisation' identifient le RTO. Les classes 'SecurityConstraints' et 'SecurityConstraintSum' sont utilisées pour représenter les contraintes du système, telles que les nomogrammes qui sont proches des contraintes de stabilité transitoire. Les classes 'HostControlArea', 'SubControlArea' et 'AdjacentCAsSet' sont utilisées pour modéliser les données et prendre en charge les opérations des zones de commande. Les modèles de ressource et les données du propriétaire de transport participant sont inclus dans leurs classes associées. Pour plus de détails sur le modèle RTO, voir l'Article 6.

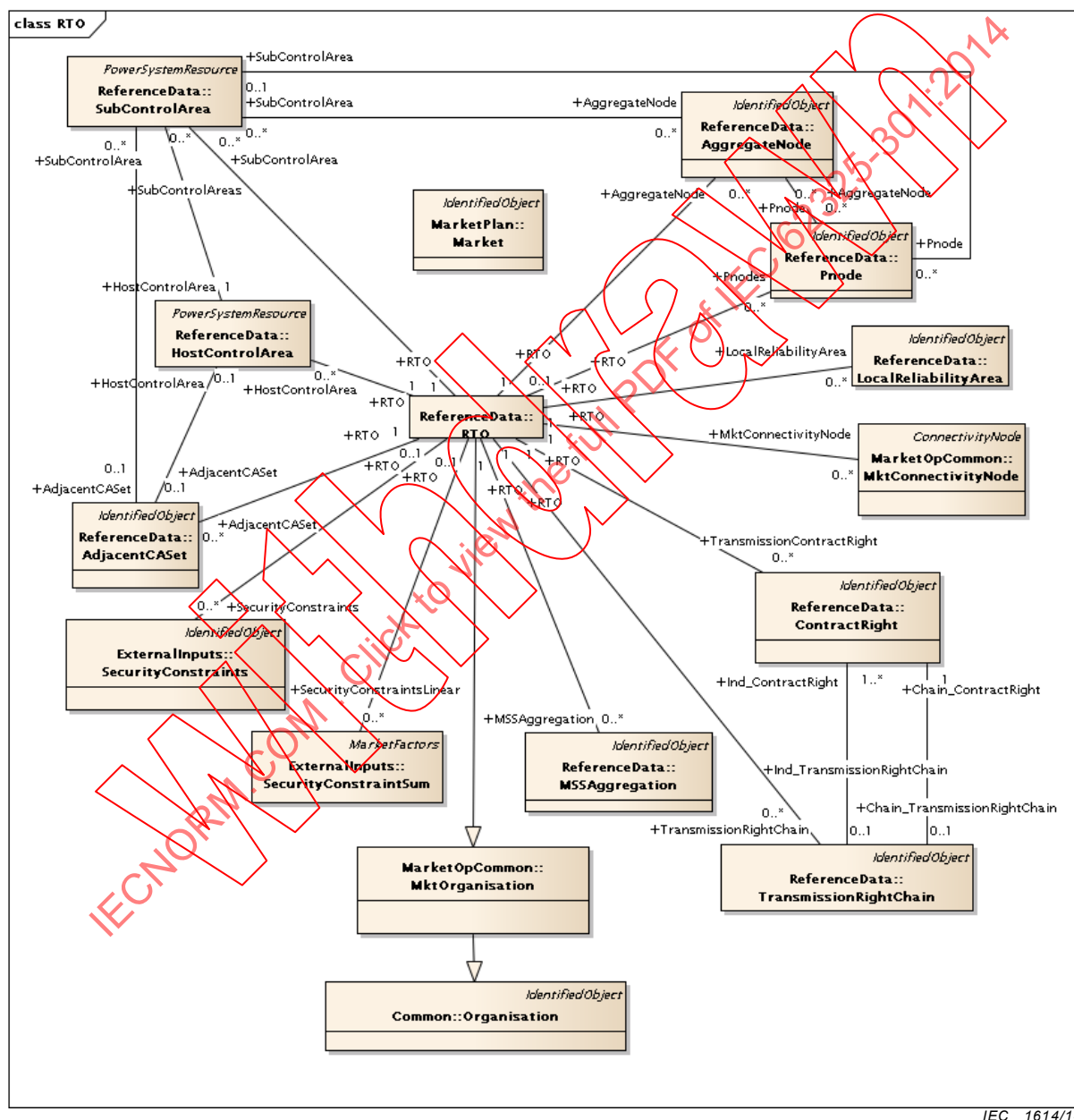


Figure 11 – Organisation de transport régional pour le marché de l'électricité de type américain

4.4.3.4 Modèle Resource

La Figure 12 donne un aperçu de haut niveau du modèle UML qui prend en charge les données du modèle de ressource du marché de l'électricité de type américain. La

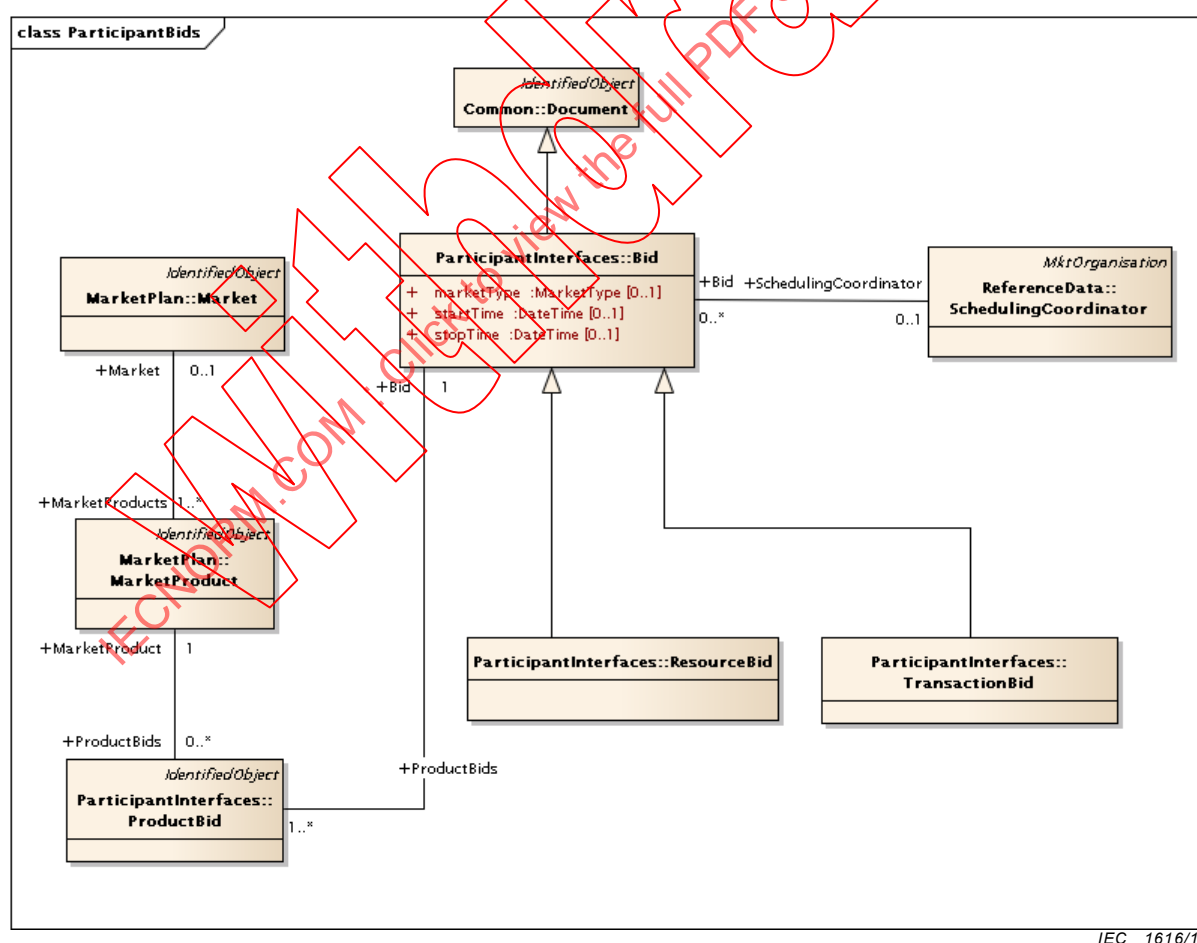
classe 'RegisteredResource' est une classe parent qui présente les sous-classes suivantes: 'RegisteredLoad', 'RegisteredInterTie' et 'RegisteredGenerator'. Elle est associée aux classes 'AggregateNode', 'Pnode' et 'MktConnectivityNode' afin de prendre en charge les ressources agrégées et physiques. Les associations avec 'AggregateNode' et 'AggregatedPnode' (l'association est héritée de 'Pnode') prennent en charge la définition des ressources agrégées sur la base d'un nœud agrégé ou d'un nœud de tarification agrégé. Les associations avec 'IndividualPnode' (héritées de 'Pnode') et 'MktConnectivityNode' prennent en charge la définition des ressources physiques sur la base d'un nœud de tarification ou de connectivité. D'autres associations sont également disponibles via les sous-classes 'RegisteredLoad', 'RegisteredInterTie' et 'RegisteredGenerator' pour prendre en charge les ressources agrégées et physiques par un lien direct aux ressources physiques définies dans le modèle de réseau de système électrique. 'RegisteredLoad' est associé à 'MktEnergyConsumer', 'RegisteredInterTie' à 'Flowgate' et 'RegisteredGenerator' à 'MktGeneratingUnit'.

Withdrawing
Click to view the full PDF of IEC 62325-301:2014
IECNORM.COM

La Figure 13 montre une vue générale des classes et des associations qui sont utilisées pour modéliser les offres et les offres. Le terme "offre" («bid») inclut les offres de vente et d'achat d'un ou plusieurs produits d'électricité. La classe 'Bid' est une sous-classe de la classe 'Document' du paquetage 'IEC 61968'. Les Bid sont elles-mêmes classées en 'ResourceBid' et 'TransactionBid'. Les 'ResourceBid' sont des offres basées sur des ressources physiques (ou virtuelles) qui sont situées dans la zone de couverture du RTO, c'est-à-dire directement sous le contrôle opérationnel du RTO. Les 'TransactionBid' sont des accords bilatéraux conclus entre les participants du marché, qui sont mentionnés au RTO comme étant des contraintes dans l'ajustement du marché. Le RTO décide si les accords bilatéraux peuvent être conclus dans le respect des normes de fiabilité du système.

Les offres sont associées aux coordinateurs de programmation qui les envoient au nom des participants du marché, comme le montre l'association entre la classe 'Bid' et la classe 'SchedulingCoordinator'. On doit noter que si cette association est facultative, l'association entre la classe 'Bid' et la classe 'MarketParticipant' doit être exigée. Autrement dit, tandis que les deux associations à la classe 'Bid' sont facultatives dans le modèle, si l'une des deux fait partie du profil, alors l'une des associations entre la classe 'Bid' et la classe 'SchedulingCoordinator' ou 'MarketParticipant' est exigée.

La classe Bid est reliée à la classe 'BidProduct' et aux classes 'MarketProduct'. Ces associations sont utilisées pour modéliser les offres relatives aux services énergétiques et auxiliaires. Une autre association entre la classe 'Bid' et la classe 'Market' indique le marché visé par l'offre (J-1, temps réel, etc.).



IEC 1616/14

Figure 13 – Définition de l'offre pour le marché de l'électricité de type américain

La Figure 14 donne des détails supplémentaires sur les enchères/offres.

La classe 'Bid' est associée à la classe 'ProductBid', qui est elle-même associée à la classe 'BidPriceSchedule'. La classe 'BidPriceSchedule' définit des programmes d'offre pour autoriser une offre de produit à utiliser des courbes de prix d'offre spécifiques sur plusieurs intervalles de temps. Cela simplifie la modélisation des offres qui sont effectuées sur des périodes couvrant plusieurs intervalles. Le programme d'offre est l'ensemble d'intervalles consécutifs pour lequel l'offre est valide.

Une offre peut également être un programme individuel indiquant que le participant du marché aimerait exploiter les ressources d'après un programme spécifique (par exemple, un programme minimum). L'opérateur du marché détermine si les ressources peuvent fonctionner avec le programme individuel envoyé tout en satisfaisant aux critères de fiabilité du système. Ces programmes individuels sont établis aux prix marginaux locaux (LMP, *Locational Marginal Prices*) déterminés pendant l'ajustement du marché. La classe 'Bid' est associée à la classe 'ProductBid', qui est associée à la classe 'BidSelfSchedule' pour prendre en charge la modélisation des programmes individuels. La classe 'BidSelfSchedule' est associée à la classe 'ContractRight', qui peut être utilisée pour modéliser l'utilisation de contrats existants afin de prendre en charge les programmes individuels.

Ce modèle prend également en charge les offres dont une partie est classée comme programme individuel et l'autre partie comme offre ordinaire.

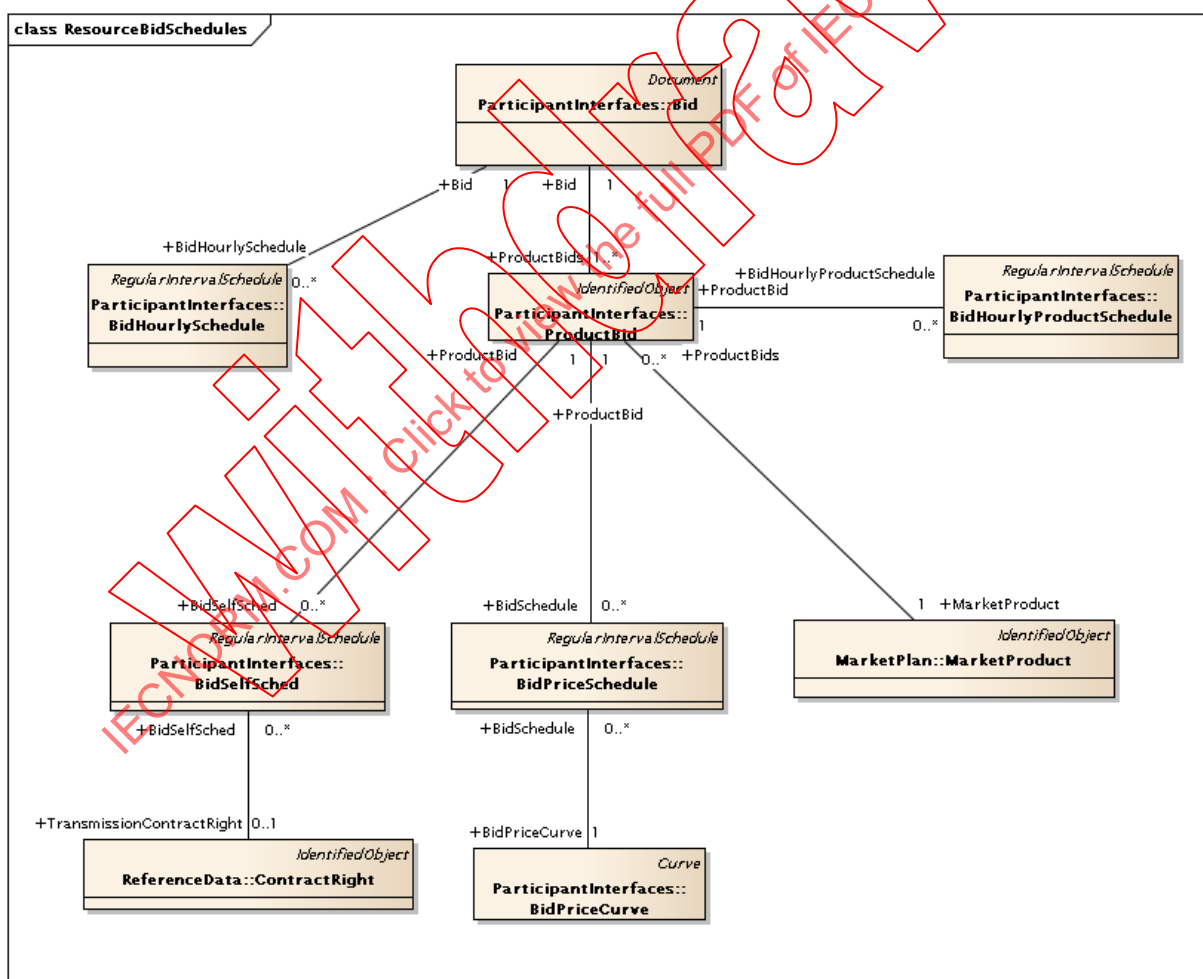
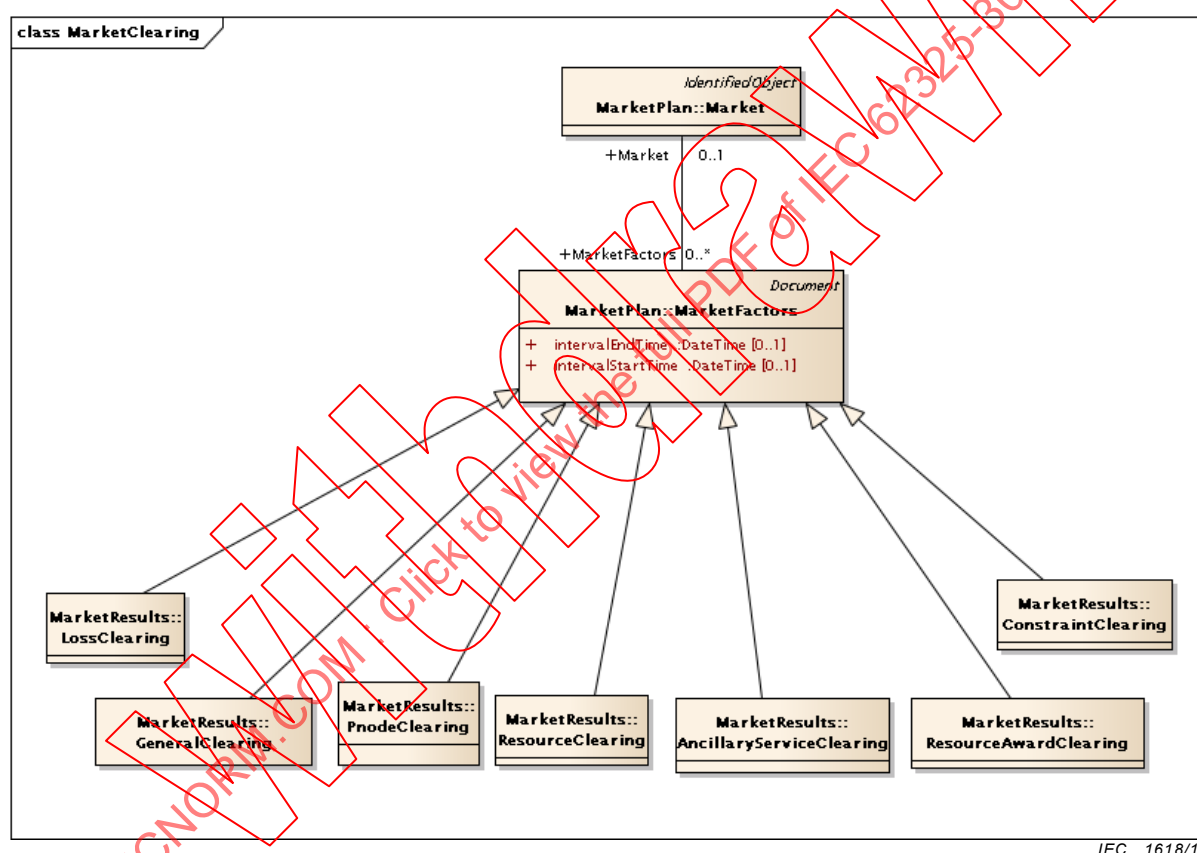


Figure 14 – Définitions des programmes d'offre des ressources pour le marché de l'électricité de type américain

4.4.3.6 Résultats d'équilibre du marché

La Figure 15 présente les principales classes utilisées pour communiquer les résultats du processus d'ajustement d'un marché de l'électricité de type américain. La classe 'Market' est utilisée pour modéliser le type de marché (J-1, temps réel ou intrajournalier). La classe 'MarketFactors' est utilisée pour modéliser l'horizon temporel du marché. La classe 'LossClearing' est utilisée pour modéliser les pertes électriques pendant l'horizon du marché. La classe 'GeneralClearing' est utilisée pour modéliser l'identité de l'intervalle du marché. La classe 'PnodeClearing' et ses associations sont utilisées pour modéliser les prix d'équilibre (LMP, prix marginaux locaux) du processus. La classe 'ResourceClearing' est utilisée pour modéliser les résultats d'équilibre du marché en fonction des ressources. La classe 'AncillaryServiceClearing' est utilisée pour modéliser les résultats de l'équilibre des services auxiliaires en fonction des régions du marché. La classe 'ResourceAwardClearing' est utilisée pour modéliser d'autres informations sur l'équilibre des ressources. La classe 'ConstraintClearing' est utilisée pour modéliser l'échange de données selon des contraintes avec obligation dans la solution optimale d'équilibre du marché.



IEC 1618/14

Figure 15 – Compensation du marché de l'électricité de type américain

4.5 Conseils de modélisation

4.5.1 Modélisation pour changements

La Partie 301 de l'IEC 62325 et de l'IEC 61970, et la Partie 11 de l'IEC 61968 définissent le CIM.

4.5.2 Processus pour les amendements au CIM

Il peut être souhaitable d'amender le CIM pour réviser le modèle ou pour étendre le CIM afin de modéliser des éléments supplémentaires d'un système électrique. Le processus recommandé pour ces amendements est le suivant:

- a) Préparer un ou plusieurs cas d'utilisation (Use Case) décrivant les changements souhaités. Il convient que cela inclue les changements proposés aux diagrammes de classe concernés avec illustration des classes, attributs et associations nouveaux ou révisés.
- b) Le ou les cas d'utilisation sont ensuite examinés par le groupe de travail approprié, qui va décider s'il convient que les changements demandés soient traités en tant que révisions de la norme CIM courante ou s'il convient qu'ils soient traités comme des amendements privés sans nécessiter de changement pour la norme.
- c) Les propositions d'amendements acceptées par le groupe de travail seront ajoutées à la liste des sujets majeurs et le moment venu, une nouvelle version du modèle CIM sera préparée et une mise à jour de la spécification CIM appropriée sera faite.

4.5.3 Changements apportés au modèle UML du CIM

Du point de vue de la modélisation, lorsque le CIM est étendu, l'approche doit partir du modèle UML de CIM existant. Les extensions peuvent être ajoutées de plusieurs façons disponibles avec UML, mais dans tous les cas, la bonne approche doit examiner le modèle courant et de déterminer la meilleure extension à partir des diagrammes de classe existants. Les extensions peuvent prendre l'une des formes suivantes, de la plus simple à la plus complexe:

- ajouter des attributs supplémentaires à des classes préexistantes;
- ajouter des associations supplémentaires entre deux classes préexistantes;
- ajouter de nouvelles classes constituant des spécialisations de classes préexistantes;
- ajouter de nouvelles classes à l'aide d'associations avec des classes préexistantes.

L'objectif principal est de réutiliser au maximum le CIM. Du point de vue des paquetages, il convient que les extensions soient faites aux paquetages existants chaque fois que cela est possible. Si les extensions comprennent un nouveau domaine d'application, il convient d'envisager de créer un nouveau paquetage pour les additions, mais en créant toujours les nécessaires associations au paquetage préexistant, en gardant à l'esprit que bien qu'un nouveau paquetage soit créé, le CIM continue d'être un seul modèle.

4.5.4 Changements apportés aux documents normatifs du CIM

D'un point de vue documentaire, lorsque le CIM est étendu, une décision doit être prise quant à la question de savoir si les changements constituent des mises à jour de documents normatifs sur le CIM ou si une nouvelle spécification partie 3xx est exigée. Dans les deux cas, les extensions deviendront une partie de la norme IEC sur le CIM.

4.5.5 Profils CIM

Une mise en œuvre du CIM peut ne pas inclure toutes les classes, attributs et associations de la spécification CIM et être tout de même conforme à la norme CIM. Des profils peuvent être définis pour spécifier quels éléments doivent être inclus (à savoir les éléments obligatoires) pour une utilisation particulière du CIM, ainsi que ceux qui sont facultatifs. Ces profils sont définis dans les Parties 35X et 45X des séries de normes et doivent respecter les règles de modélisation de l'IEC 62325-450.

Dans l'IEC 62325-450, la définition des profils CIM suit un cadre de modélisation en couche qui va du CIM jusqu'à la spécification des messages en fonction des concepts CIM, à travers la définition de plusieurs modèles contextuels régionaux et de leurs documents contextualisés ultérieurs pour l'échange d'informations.

Une analyse complète des règles associées aux profils de la série IEC 62325 est présentée dans le document IEC 62325-450. Se reporter à ce document pour obtenir une explication et une description complètes de ces règles.

4.6 Outils de modélisation

Le modèle UML du CIM complet existe sous la forme d'un fichier de projet Enterprise Architect et peut être visualisé avec cet outil, y compris les diagrammes de classe et les descriptions des classes, des attributs, des types et des relations. La visualisation du CIM de cette façon offre une interface de navigation graphique qui permet de visualiser toutes les données de spécification du CIM par simple pointer-cliquer sur le diagramme de classe dans chaque paquetage. Une visionneuse gratuite est disponible auprès de Sparx Systems.

Idéalement, le modèle d'information du CIM est indépendant de tout outil UML spécifique, bien que l'expérience ait montré que les échanges entre des outils différents sont souvent loin d'être parfaits. En attendant que l'interopérabilité des outils devienne réalité, les futurs changements apportés à la spécification du CIM, débouchant sur de nouvelles versions de la présente norme, seront incorporés en premier lieu dans la description du projet Enterprise Architect pour garantir une source unique pour les données de modèle CIM.

5 Modèle détaillé

5.1 Vue générale

Le modèle d'information commun (CIM) représente une vue logique complète des informations d'un système des opérations du marché. Cette définition inclut les classes et les attributs publics, ainsi que leurs relations. Le Paragraphe 5.2 décrit comment l'Article 6 est structuré. L'Article 6 est automatiquement généré à partir du modèle CIM.

5.2 Contexte

Le CIM est fractionné en sous-paquetages. Les classes au sein des paquetages sont énumérées alphabétiquement. Les attributs natifs d'une classe sont énumérés en premier, suivis des attributs hérités, dans l'ordre de profondeur d'héritage, puis du nom d'attribut. Les associations natives sont énumérées en premier pour chaque classe, suivies, dans l'ordre de profondeur d'héritage, des associations héritées, suivies, dans l'ordre alphabétique, du nom de classe, suivi, dans l'ordre alphabétique, du nom d'extrémité d'association. Les associations sont décrites selon le rôle de chaque classe participant à l'association. Les extrémités d'association sont répertoriées pour chaque classe à chaque extrémité d'une association.

Pour chaque paquetage, le modèle d'information de chaque classe est entièrement décrit dans des tableaux d'attributs et d'extrémités d'association. Les informations relatives aux attributs et extrémités d'association concernant les attributs natifs et hérités sont énumérées comme indiqué dans les Tableaux 1 et 2. Pour chaque attribut ou extrémité d'association hérités, la colonne "description" contiendra le texte indiquant que les attributs sont hérités d'une classe spécifique. La colonne "description" des attributs et extrémités d'association natifs contient la description réelle.

Tableau 1 – Documentation d'attribut

nom	type	description
native1	Float	Un attribut natif virgule flottante de la classe est décrit ici.
native2	ActivePower	Documentation pour un autre attribut natif du type ActivePower.
Name	Float	Hérité de la classe IdentifiedObject

Comme indiqué dans le Tableau 1, dans un tableau attributs, un attribut est dans certains cas une constante; l'expression "(const)" est alors ajoutée dans la colonne "nom" du tableau attributs. Dans de tels cas, l'attribut a normalement une valeur initiale qui est précédée du signal "égal" et accolée au nom d'attribut.

Tableau 2 – Documentation des extrémités d'association

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..1] PSRType	PSRType	PSRType (classification personnalisée) pour cette PowerSystemResource.
[0..1]	[0..*] Measurements	Measurement	Les Measurements qui sont incluses dans la hiérarchie de dénomination où le PSR est l'élément conteneur
[1..1]	[0..*] OperatingShare	OperatingShare	Le lien à n'importe quel nombre d'objets de quote-part d'opérateur.
[0..*]	[0..*] PsrLists	PsrList	
[1..1]	[0..1] OutageSchedule	OutageSchedule	Une ressource de système électrique peut avoir un programme d'indisponibilité.
[0..*]	[0..*] ReportingGroup	ReportingGroup	Groupes de reporting auxquels appartient cette PSR.
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

Comme indiqué dans le Tableau 2, dans un tableau extrémités d'association, la première colonne décrit la multiplicité à l'autre extrémité de l'association (c'est-à-dire, la multiplicité de la classe pour laquelle des extrémités d'association sont décrites). La multiplicité de l'extrémité d'association elle-même est incluse entre crochets. Le nom de l'extrémité d'association est répertorié en texte en clair. La classe à l'autre extrémité de l'association est énumérée dans la colonne "type". Une multiplicité zéro indique une association facultative. Une multiplicité "*" indique que n'importe quel nombre est admis. Par exemple, une multiplicité [1..*] indique qu'une plage allant de 1 à n'importe quel nombre supérieur est admise.

Lorsqu'une classe est énumération (c'est-à-dire une énumération), le tableau attributs est remplacé par le tableau enums comme indiqué dans le Tableau 3, car les libellés énumération n'ont pas de type. Il n'existe pas de libellés d'énumération hérités pour une classe d'énumération.

Tableau 3 – Documentation des Enums

libellé	description
native1	Il s'agit de la première valeur enumeration native.
native2	Il s'agit de la deuxième valeur enumeration native.
native3	Il n'y a typiquement pas d'attributs hérités pour les énumérations.

6 Paquetage supérieur IEC 62325

6.1 Généralités

Les sous-paquetages IEC 62325 du CIM sont développés, normalisés et maintenus par l'IEC.

La Figure 16 montre le diagramme de classe Main.

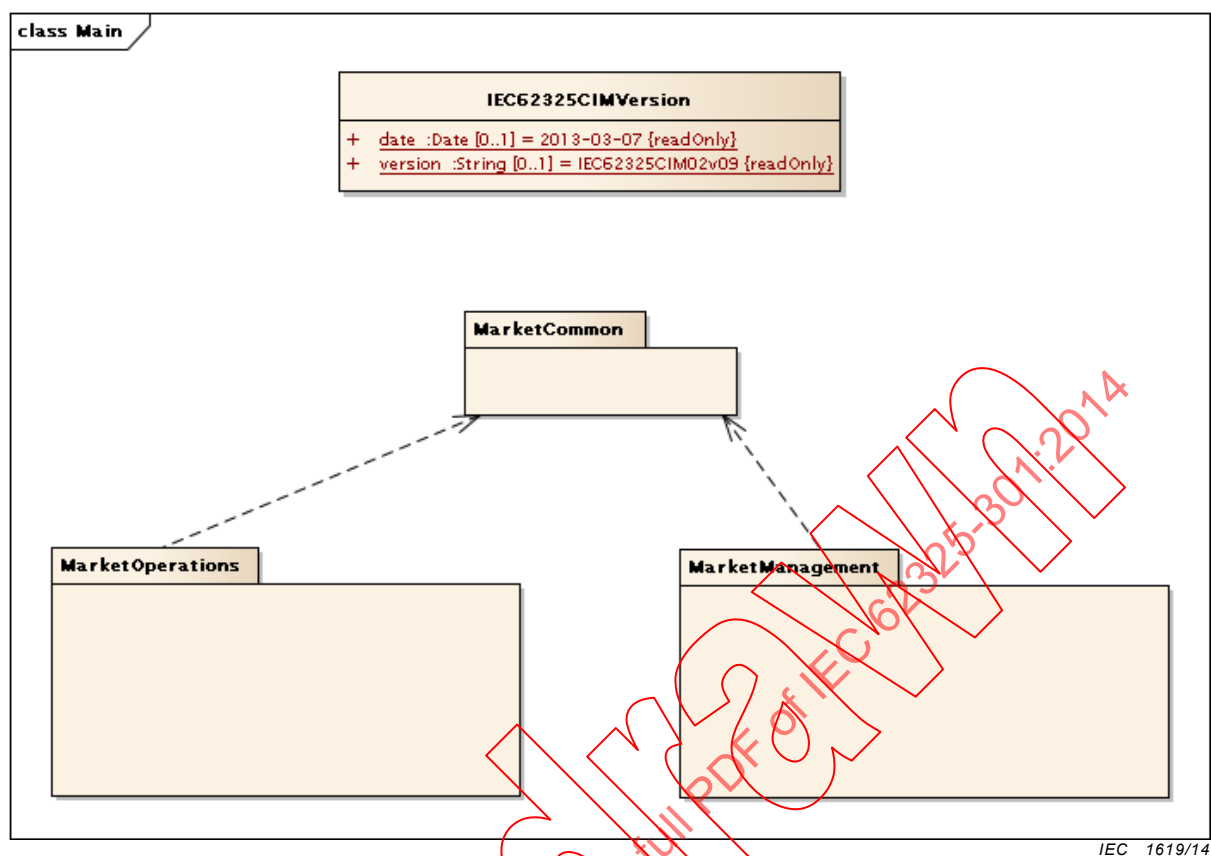


Figure 16 – Diagramme de classe IEC 62325::Main

Ce diagramme montre tous les paquets IEC 62325 et leurs dépendances logiques.

6.2 Classe racine IEC 62325CIMVersion

Numéro de version de l'IEC 62325 attribué à ce modèle UML.

Le Tableau 4 montre tous les attributs de IEC 62325CIMVersion.

Tableau 4 – Attributs de IEC 62325::IEC 62325CIMVersion

nom	type	description
date=2013-03-07 (const)	Date	La forme est AAAA-MM-JJ; par exemple, le 5 janvier 2009 est 2009-01-05.
version=IEC 62325CIM02v09 (const)	String	La forme est IEC 62325CIMXXvYY où XX est la version principale du paquetage du CIM et YY la version secondaire. Par exemple, IEC 62325CIM10v03.

6.3 Paquetage MarketCommon

6.3.1 Généralités

Ce paquetage contient les objets communs partagés par les paquetages MarketManagement et MarketOperations.

La Figure 17 montre le diagramme de classe MarketCommon.

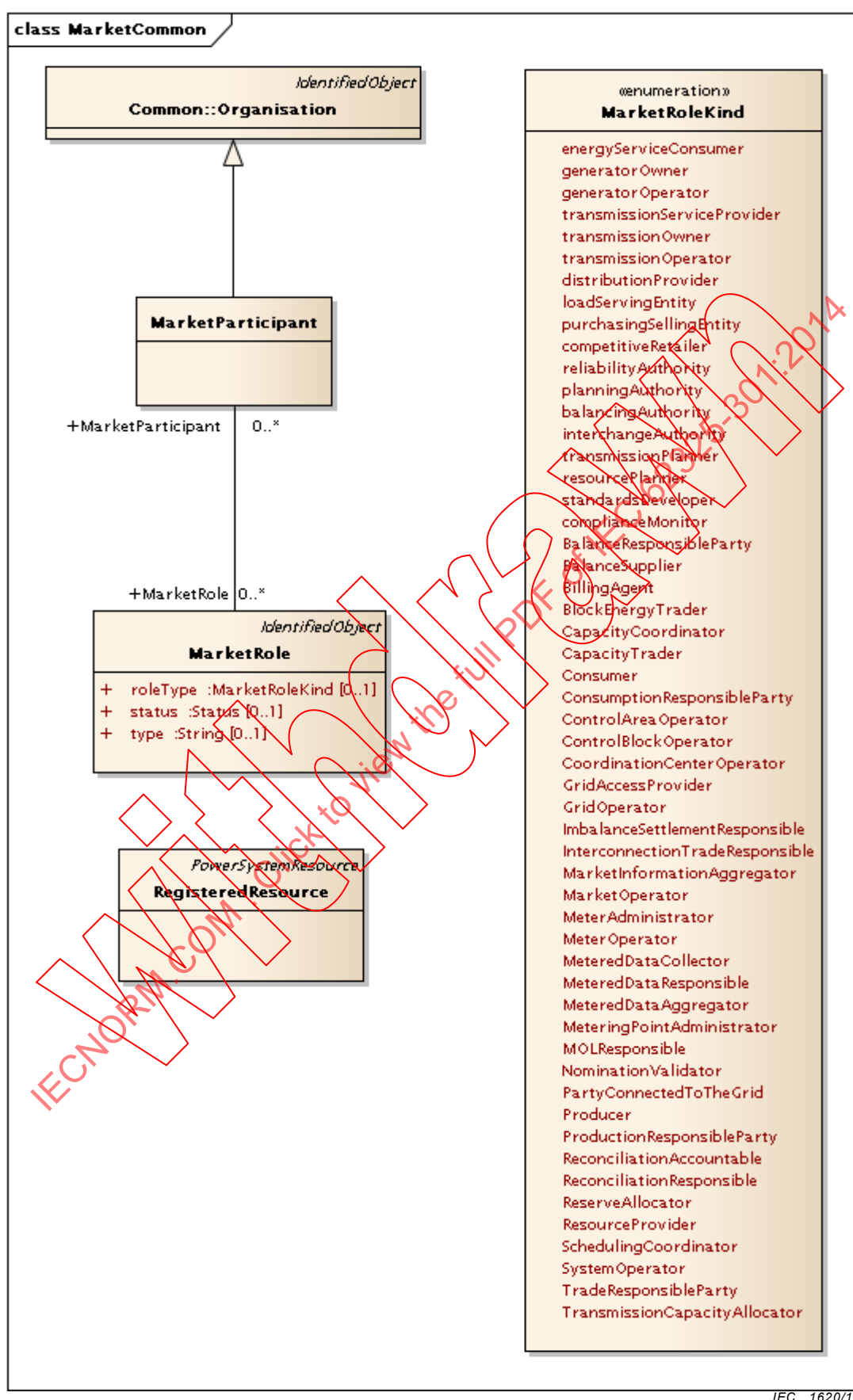


Figure 17 – Diagramme de classe MarketCommon::MarketCommon

Ce sont les classes communes utilisées par les paquetages MarketManagement et MarketOperations.

6.3.2 MarketParticipant

Identification d'une partie agissant dans un processus métier du marché de l'électricité. Cette classe est utilisée pour identifier les organisations qui peuvent participer à la gestion et/ou aux opérations du marché.

Le Tableau 5 montre tous les attributs de MarketParticipant.

Tableau 5 – Attributs de MarketCommon::MarketParticipant

nom	type	description
streetAddress	StreetAddress	Hérité de: Organisation
postalAddress	PostalAddress	Hérité de: Organisation
phone1	TelephoneNumber	Hérité de: Organisation
phone2	TelephoneNumber	Hérité de: Organisation
electronicAddress	ElectronicAddress	Hérité de: Organisation
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 6 montre toutes les extrémités d'association de MarketParticipant avec d'autres classes.

Tableau 6 – Extrémités d'association de MarketCommon::MarketParticipant avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] MarketDocument	MarketDocument	
[0..*]	[0..*] MarketRole	MarketRole	
[0..*]	[0..*] TimeSeries	TimeSeries	
[0..1]	[0..*] Bid	Bid	
[0..1]	[0..*] Roles	OrganisationRole	Hérité de: Organisation
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.3.3 MarketRole

Comportement externe joué par une partie du marché de l'électricité.

Le Tableau 7 montre tous les attributs de MarketRole.

Tableau 7 – Attributs de MarketCommon::MarketRole

nom	type	description
roleType	MarketRoleKind	Défini à l'aide d'une liste énumérée de types de rôle du marché à utiliser lorsqu'une liste prédéfinie de type est souhaitée.
status	Status	Statut du rôle du marché.
type	String	Le type de rôles du marché que les parties peuvent jouer dans certains domaines du marché de l'électricité. Les types sont souples; ils utilisent le type de données String pour la libre entrée des types de rôle.
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 8 montre toutes les extrémités d'association de MarketRole avec d'autres classes.

Tableau 8 – Extrémités d'association de MarketCommon::MarketRole avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] MarketParticipant	MarketParticipant	
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.3.4 Enumération MarketRoleKind

Type de rôle du marché qu'une organisation peut avoir.

Le Tableau 9 montre tous les libellés de MarketRoleKind.

Tableau 9 – Libellés de MarketCommon::MarketRoleKind

libellé	description
energyServiceConsumer	Consommateur d'un service d'énergie.
generatorOwner	Propriétaire commercial de générateurs.
generatorOperator	Opérateur commercial de générateurs.
transmissionServiceProvider	Fournisseur de service de transport.
transmissionOwner	Propriétaire de transport.
transmissionOperator	Gestionnaire de réseau.
distributionProvider	Prestataire de distribution.
loadServingEntity	Société d'approvisionnement.
purchasingSellingEntity	Société d'achat-vente.
competitiveRetailer	Revendeur concurrent.
reliabilityAuthority	Autorité de fiabilité.
planningAuthority	Autorité de planification.
balancingAuthority	Autorité responsable du maintien de l'équilibre.
interchangeAuthority	Autorité responsable des échanges.
transmissionPlanner	Responsable de la planification du transport.
resourcePlanner	Responsable de la planification des ressources.
standardsDeveloper	Normalisateur.
complianceMonitor	Contrôleur de conformité.
BalanceResponsibleParty	Entité titulaire d'un contrat garantissant la sécurité financière et identifiant la responsabilité d'équilibre avec le responsable du règlement du déséquilibre de la zone d'équilibre du marché, qui l'autorise à agir sur le marché. C'est le seul rôle qui autorise une entité à attribuer de l'énergie au niveau du marché de gros. Informations complémentaires: Le sens du mot "équilibre" dans ce contexte signifie que la quantité contractée à fournir ou à consommer doit être égale à la quantité réellement fournie ou consommée. Equivalent de la «Program responsible party» (Entité responsable du programme) aux Pays-Bas. Equivalent du "Balance Gross Manager" en Allemagne. Equivalent de "market agent" (l'agent de marché) en Espagne.
BalanceSupplier	Entité qui commercialise la différence entre la consommation d'énergie mesurée réelle et l'énergie achetée par l'entité raccordée au réseau dans le cadre de contrats d'énergie fermes. En outre, le BalanceSupplier commercialise la différence entre le contrat d'énergie ferme (de l'entité raccordée au réseau) et la production mesurée. Informations complémentaires: Il n'y a qu'un seul BalanceSupplier pour chaque AccountingPoint (point de comptabilité)
BillingAgent	Entité responsable de la facturation à l'entité concernée.
BlockEnergyTrader	Entité qui vend ou achète de l'énergie sur une base ferme (un volume fixé selon la période du marché).
CapacityCoordinator	Entité agissant au nom des opérateurs du système engagés, responsable de l'établissement d'une capacité offerte (<i>Offered Capacity</i>) d'une capacité de transfert nette (NTC, <i>Net Transfer Capacity</i>) et/ou d'une capacité de transfert disponible (ATC, <i>Available Transfer Capacity</i>) coordonnées entre plusieurs zones d'équilibre du marché.
CapacityTrader	Entité ayant un contrat pour participer au marché de capacité (<i>Capacity Market</i>) afin d'acquérir de la capacité via un allocateur de capacité de transport (<i>Transmission Capacity Allocator</i>). La capacité peut être acquise au nom d'un responsable d'échange d'interconnexion (<i>Interconnection Trade Responsible</i>) ou elle peut être acquise pour être vendue sur des marchés secondaires.

libellé	description
Consumer	Entité qui consomme de l'électricité. Informations complémentaires: C'est un type d'entité raccordée au réseau.
ConsumptionResponsibleParty	Entité qui peut être rendue juridiquement et financièrement responsable de tout déséquilibre entre l'énergie attribuée et consommée pour tous les points comptables associés (<i>Accounting Points</i>). Informations complémentaires: C'est un type de Balance Responsible Party (entité responsable d'équilibre).
ControlAreaOperator	Responsable: 1. De la coordination des programmes d'échange entre ses zones d'équilibre du marché et des échanges entre ses zones de réglage associées. 2. De la commande de la fréquence de charge de sa zone. 3. De la coordination de la correction des écarts de temps.
ControlBlockOperator	Responsable: 1. De la coordination des échanges entre ses blocs de contrôle associés et de l'organisation de la coordination des programmes d'échange entre ses Zones de réglage associées. 2. Du contrôle de la fréquence de charge dans son bloc et du fait que ses Zones de réglage respectent leurs obligations en termes de contrôle de fréquence de charge et d'écart de temps. 3. De l'organisation du règlement et/ou de la compensation entre ses Zones de réglage.
CoordinationCenterOperator	Responsable: 1. De la coordination des programmes d'échange entre ses blocs de contrôle (<i>Control Blocks</i>) associés et des échanges entre ses zones de centre de coordination associées. 2. Du respect des obligations de contrôle de fréquence de charge par les blocs de contrôle. 3. Du calcul de l'écart de temps en collaboration avec les centres de coordination associés. 4. De la mise en œuvre du règlement et/ou de la compensation entre ses blocs de contrôle, et par rapport aux autres centres de coordination de zones (<i>Coordination Center Zones</i>).
GridAccessProvider	Entité responsable de la fourniture d'un accès au réseau à l'entité raccordée au réseau, via un point comptable (<i>Accounting Point</i>), et de son utilisation pour la consommation ou la production d'énergie.
GridOperator	Entité qui exploite un ou plusieurs réseaux.
ImbalanceSettlementResponsible	Entité responsable du règlement de la différence entre les quantités contractées et les quantités réalisées de produits énergétiques pour les entités responsables de l'équilibre dans une zone d'équilibre du marché. Note: Le ImbalanceSettlementResponsible (responsable du règlement des écarts) n'est pas chargé de la facturation. Il peut déléguer cette responsabilité à un participant dont le rôle est plus générique, tel que l'agent de recouvrement.
InterconnectionTradeResponsible	Entité qui est un Responsable d'équilibre ou qui dépend de l'une d'entre elles. Elle est reconnue par le validateur de désignation (<i>Nomination Approver</i>) pour l'attribution de la capacité déjà attribuée. Informations complémentaires: C'est un type de (Balance Responsible Party (responsable d'équilibre)).

libellé	description
MarketInformationAggregator	MarketInformationAggregator (Agrégateur des informations du marché): entité qui fournit des informations sur le marché qui ont été compilées à partir des chiffres donnés par les différents acteurs du marché. Ces informations peuvent également être publiées ou diffusées à des fins d'utilisation générale. Note: L'agrégateur des informations du marché peut recevoir des informations de n'importe quel participant du marché qui peuvent s'avérer utiles à des fins de publication ou de diffusion.
MarketOperator	Echange d'énergie commercial unique pour la livraison réelle d'énergie, qui reçoit les offres des entités responsables de l'équilibre qui ont un contrat à offrir. Le Market Operator (opérateur du marché) détermine le prix de l'énergie pour la zone d'équilibre du marché après avoir respecté les contraintes techniques de l'opérateur du système. Il peut également définir le prix du recollement dans une zone du réseau de comptage.
MeterAdministrator	Entité responsable de la conservation d'une base de données des compteurs.
MeterOperator	Entité responsable de l'installation, de la maintenance, des essais, de la certification et de la mise hors service des compteurs physiques.
MeteredDataCollector	Entité responsable du relevé de compteur et du contrôle de qualité associé.
MeteredDataResponsible	Entité responsable de l'établissement et de la validation des données de comptage en fonction des données du collecteur de données de comptage. (<i>Metered Data Collector</i>) L'entité est responsable de l'historique des données de comptage pour un point de comptage (<i>Metering Point</i>).
MeteredDataAggregator	Entité responsable de l'établissement et de la qualification des données de comptage communiquées par le responsable des données de comptage (<i>MeteredDataResponsible</i>). Ces données sont agrégées selon un ensemble de règles du marché définies.
MeteringPointAdministrator	Entité responsable de l'enregistrement des entités liées aux points de comptage dans la zone du réseau de comptage (<i>Metering Grid Area</i>). Elle est également responsable de la mise à jour des spécifications techniques du point de comptage ainsi que de la création et du retrait des points de comptage.
MOLResponsible	Responsable de la gestion des offres disponibles pour tous les opérateurs de système d'acquisition (Acquiring System Operateur) afin d'établir l'ordre de la capacité de réserve qui peut être activé.
NominationValidator	Responsable de l'attribution de la capacité dans les limites autorisées et de la confirmation de la validité de toutes les attributions aux entités concernées. Il informe le responsable d'échange d'interconnexion de la capacité maximale qui peut être attribuée. Selon les règles du marché pour une interconnexion donnée, les opérateurs du système correspondants peuvent désigner un Nomination Validateur (validateur de désignation).
PartyConnectedToTheGrid	Entité qui s'engage par un contrat à consommer ou produire de l'électricité à un point comptable.
Producer	Entité qui produit de l'électricité. Informations complémentaires: C'est un type d'entité raccordée au réseau.
ProductionResponsibleParty	Entité qui peut être rendue juridiquement et financièrement responsable de tout déséquilibre entre l'énergie attribuée et produite pour tous les points comptables associés. Informations complémentaires: C'est un type de Balance Responsible Party (responsable d'équilibre.)
ReconciliationAccountable	Entité financièrement responsable du volume rapproché des produits énergétiques pour un point comptable profilé.
ReconciliationResponsible	Entité responsable du rapprochement, dans la zone du réseau de comptage, entre les volumes utilisés dans le processus de règlement du déséquilibre pour les points comptables profilés et les quantités réellement décomptées. Note: Le responsable du rapprochement peut déléguer la responsabilité de facturation à un participant dont le rôle est plus générique, tel que l'agent de recouvrement (<i>Billing Agent</i>).

libellé	description
ReserveAllocator	Informe le marché des exigences de réserve, reçoit des offres par rapport aux exigences et qui sont conformes aux critères de préqualification, détermine les offres satisfaisant aux exigences et attribue les offres.
ResourceProvider	Rôle qui gère un objet de ressource et qui fournit les programmes associés à cet objet.
SchedulingCoordinator	Partie responsable des informations de programmation et de leur échange au nom de l'entité responsable d'équilibre. Par exemple, sur le marché polonais, un SchedulingCoordinator est responsable de l'échange d'informations sur la programmation et le règlement.
SystemOperator	Entité responsable de l'exploitation stable du système électrique (y compris de l'organisation de l'équilibre physique) via un réseau de transport dans une zone géographique. L'opérateur du système déterminera également et sera responsable de la capacité et des échanges transfrontaliers. S'il y a lieu, il peut réduire la capacité attribuée afin de garantir la stabilité d'exploitation. Comme indiqué ci-dessus, le transport correspond au "transport de l'électricité sur le réseau très haute tension ou haute tension et livraison aux clients finaux ou aux distributeurs. L'opération de transport inclut également les tâches d'exploitation du système concernant la gestion des flux d'énergie, la fiabilité du système et la disponibilité de tous les services du système nécessaires" (définition tirée du glossaire de "l'Operation Handbook" de l'ENTSO-E RGCE). NOTE D'autres obligations peuvent être imposées par des règles locales du marché.
TradeResponsibleParty	Entité qui peut être rendue juridiquement et financièrement responsable de tout déséquilibre entre l'énergie attribuée et consommée pour tous les points comptables associés. Note: <u>Un échange d'énergie sans responsabilités privilégiées agit comme un Trade Responsible Party</u> Informations complémentaires C'est un type d'entité Balance Responsible Party.
TransmissionCapacityAllocator	Gère l'attribution de la capacité de transport dans une zone de capacité attribuée. Pour des enchères explicites: L'allocateur de capacité de transport gère, au nom des opérateurs du système, l'attribution de la capacité de transport disponible dans une zone de capacité attribuée. Il offre la capacité de transport disponible au marché, attribue la capacité de transport disponible aux négociants de capacité individuelle (<i>Capacity Traders</i>) et calcule le montant de facturation des capacités déjà attribuées pour les négociants de capacité.

6.3.5 RegisteredResource

Ressource enregistrée via le système d'enregistrement des participants du marché. Par exemple: unité de génération, charge, générateur ou charge non physique.

Le Tableau 10 montre tous les attributs de RegisteredResource.

Tableau 10 – Attributs de MarketCommon::RegisteredResource

nom	type	description
ACAFlag	YesNo	Indique que cette ressource est associée à une zone de contrôle adjacente.
ASSPOptimizationFlag	YesNo	Indique que cette ressource participe au processus d'optimisation par défaut.
commercialOpDate	DateTime	Date d'exploitation commerciale de la ressource
contingencyAvailFlag	YesNo	Disponibilité de la réserve d'exploitation contingente (Yes/No). La ressource est

nom	type	description
		disponible pour participer avec la capacité dans la répartition de la contingence.
dispatchFlag	YesNo	Indicateur de répartition: indique si la ressource est répartissable (Y/N) Déplacé vers la classe RegisteredResource pour la répartition de la charge participante.
ECAFlag	YesNo	Indique que cette ressource est associée à une zone de contrôle embarqué.
endEffectiveDate	DateTime	Date de fin effective
flexibleOfferFlag	YesNo	Indicateur d'offre flexible (Y/N)
hourlyPredispatch	YesNo	Indique une répartition obligatoire avant le début de l'heure d'exploitation. Uniquement pertinent sur le marché en temps réel. S'applique aux ressources de génération, d'interconnexion et de charge participante. Valeur (Y/N).
isAggregatedRes	YesNo	Indicateur spécifiant si une ressource est une ressource agrégée.
lastModified	DateTime	Indique la date et l'heure à laquelle cet élément a été modifié/versionné pour la dernière fois.
LMPMFlag	YesNo	Indicateur LMPM: indique si la ressource est soumise à l'essai LMPM (Yes/No).
marketParticipationFlag	YesNo	Indicateur de participation au marché: indique si la ressource participe au marché (Y/N).
maxBaseSelfSchedQty	Float	Quantité de base maximale à programmation automatique
maxOnTime	Float	Temps d'exploitation maximal après démarrage
minDispatchTime	Hours	nombre minimal d'heures consécutives pendant lesquelles une ressource doit être répartie en cas d'acceptation de la soumission
minOffTime	Float	Temps d'extinction minimal après arrêt
minOnTime	Float	Temps d'exploitation minimal après démarrage
mustOfferFlag	YesNo	Indicateur d'offre obligatoire: indique si l'unité est soumise aux provisions d'offre obligatoire (Y/N).
nonMarket	YesNo	Indicateur spécifiant que la ressource ne participe pas aux opérations du marché.
pointOfDeliveryFlag	YesNo	Indique que la ressource enregistrée est une ressource Point de livraison (YES), ce qui implique qu'il existe un facteur de perte POD.
priceSetFlagDA	YesNo	Indicateur de définition du prix: indique si une ressource est capable de définir le prix d'équilibre sur le marché (Y) pour le marché DA et, si ce n'est pas le cas, indique si la ressource doit soumettre des soumissions pour l'énergie à 0 \$ (S) ou non (N). A l'origine, il était dans la classe RegisteredGenerator mais a été déplacé dans la classe RegisteredResource pour la répartition de la charge participante.
priceSetFlagRT	YesNo	Indicateur de définition du prix: indique si une ressource est capable de définir le prix d'équilibre sur le marché (Y) pour le marché RT et, si ce n'est pas le cas, indique si la ressource doit soumettre des soumissions pour l'énergie à 0 \$ (S) ou non (N). A l'origine, il était dans la classe RegisteredGenerator mais a été déplacé dans la classe RegisteredResource pour la répartition de la charge participante.

nom	type	description
registrationStatus	ResourceRegistrationStatus	Statut d'enregistrement de la ressource: actif, suspendu, planifié ou hors service.
resourceAdequacyFlag	YesNo	Indique que cette ressource participe à la fonction d'adéquation de ressource.
SMPMFlag	YesNo	Indicateur SMPM: indique si la ressource est soumise à l'essai SMPM (Yes/No).
startEffectiveDate	DateTime	Date de début effective
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
nom	String	Hérité de: IdentifiedObject

Le Tableau 11 montre toutes les extrémités d'association de RegisteredResource avec d'autres classes.

**Tableau 11 – Extrémités d'association de MarketCommon:
RegisteredResource avec d'autres classes**

[mult à partir de]	[mult vers] nom	type	description
[0..1]	[0..*] SubstitutionResourceList	SubstitutionResourceList	
[0..*]	[0..*] SubControlArea	SubControlArea	
[1..1]	[0..*] ResourceAncillaryServiceQualification	ResourceAncillaryServiceQualification	Les RegisteredResources sont qualifiés pour les types de services auxiliaires de ressource (qui incluent les types de produit du marché ainsi que d'autres types, tels que BlackStart) en étant associés à la classe ResourceAncillaryServiceQualification.
[0..*]	[0..*] ResourceCapacity	ResourceCapacity	
[0..*]	[0..*] InterTie	SchedulingPoint	
[1..1]	[0..*] OrgResOwnership	OrgResOwnership	
[1..1]	[0..*] FormerReference	FormerReference	
[0..*]	[0..*] ForbiddenRegion	ForbiddenRegion	
[0..1]	[0..*] ContractDistributionFactor	ContractDistributionFactor	
[0..*]	[0..1] AggregateNode	AggregateNode	
[0..*]	[0..1] AdjacentCaset	AdjacentCaset	
[0..*]	[0..*] RampRateCurve	RampRateCurve	
[1..1]	[0..*] LoadFollowingInst	LoadFollowingInst	
[1..1]	[0..*] DispatchInstReply	DispatchInstReply	
[0..1]	[0..*] ResourceLoadFollowingInst	ResourceLoadFollowingInst	
[0..1]	[0..*] ResourceDispatchResults	ResourceDispatchResults	
[0..1]	[0..*] RUCAwardInstruction	RUCAwardInstruction	
[0..1]	[0..*] RMROperatorInput	RMROperatorInput	
[0..1]	[0..*] MPMResourceStatus	MPMResourceStatus	
[0..1]	[0..*] DopInstruction	DopInstruction	
[1..1]	[0..*] Commitments	Commitments	

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[0..*] IntermittentResourceEligibility	IntermittentResourceEligibility	
[0..1]	[0..*] ExpectedEnergyValues	ExpectedEnergyValues	
[0..1]	[0..*] AllocationResultValues	AllocationResultValues	
[0..*]	[0..1] MktOrganisation	MktOrganisation	
[0..*]	[0..1] MktConnectivityNode	MktConnectivityNode	
[0..*]	[0..*] TimeSeries	TimeSeries	
[1..1]	[0..1] ResourceVerifiableCosts	ResourceVerifiableCosts	
[0..*]	[0..1] Pnode	Pnode	Une ressource enregistrée injecte de l'alimentation dans un ou plusieurs nœuds de connectivité relatifs à un nœud de tarification.
[0..*]	[0..*] MPMTestThreshold	MPMTestThreshold	
[0..*]	[0..1] HostControlArea	HostControlArea	
[0..*]	[0..*] ControlAreaDesignation	ControlAreaDesignation	
[0..1]	[0..*] ResourceAwardInstruction	ResourceAwardInstruction	
[0..1]	[0..*] LoadFollowingOperatorInput	LoadFollowingOperatorInput	
[1..1]	[0..*] Instructions	Instructions	
[0..1]	[0..*] ExPostResourceResults	ExPostResourceResults	
[0..1]	[0..*] DotInstruction	DotInstruction	
[1..1]	[0..1] DefaultBid	DefaultBid	
[0..*]	[0..*] EnergyMarkets	EnergyMarket	
[0..*]	[0..1] PSRType	PSRType	Hérité de: PowerSystemResource
[0..1]	[0..*] Measurements	Mesure	Hérité de: PowerSystemResource
[1..1]	[0..*] OperatingShare	OperatingShare	Hérité de: PowerSystemResource
[0..*]	[0..*] PsrLists	PsrList	Hérité de: PowerSystemResource
[1..1]	[0..1] OutageSchedule	OutageSchedule	Hérité de: PowerSystemResource
[0..*]	[0..*] ReportingGroup	ReportingGroup	Hérité de: PowerSystemResource
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Nom	Hérité de: IdentifiedObject

6.4 Paquetage MarketManagement

6.4.1 Généralités

Ce paquetage contient toutes les principales extensions de marché du CIM exigées pour les systèmes de gestion de marché.

La Figure 18 montre le diagramme de paquetages externalDependencies.

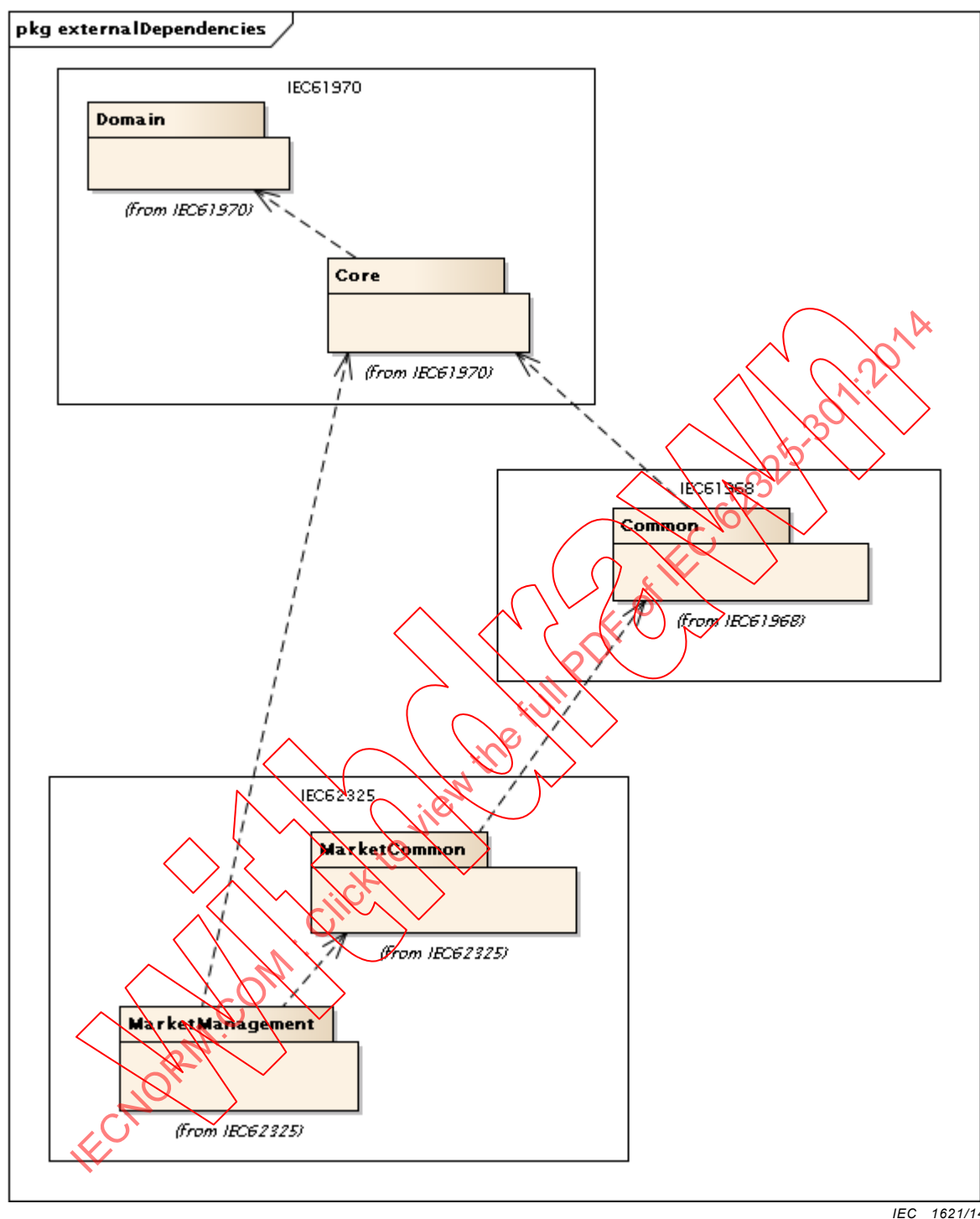
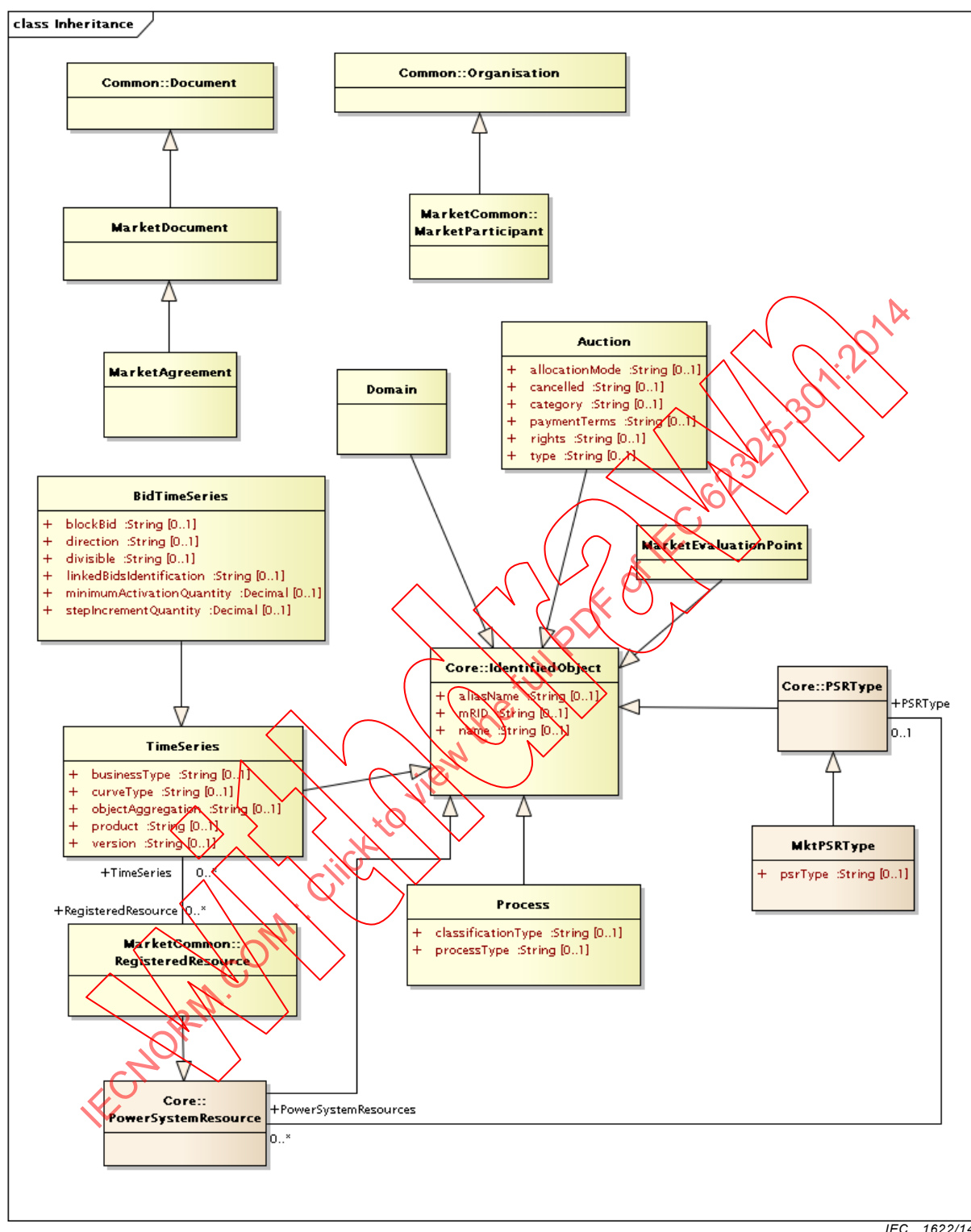


Figure 18 – Diagramme du paquetage MarketManagement::externalDependencies

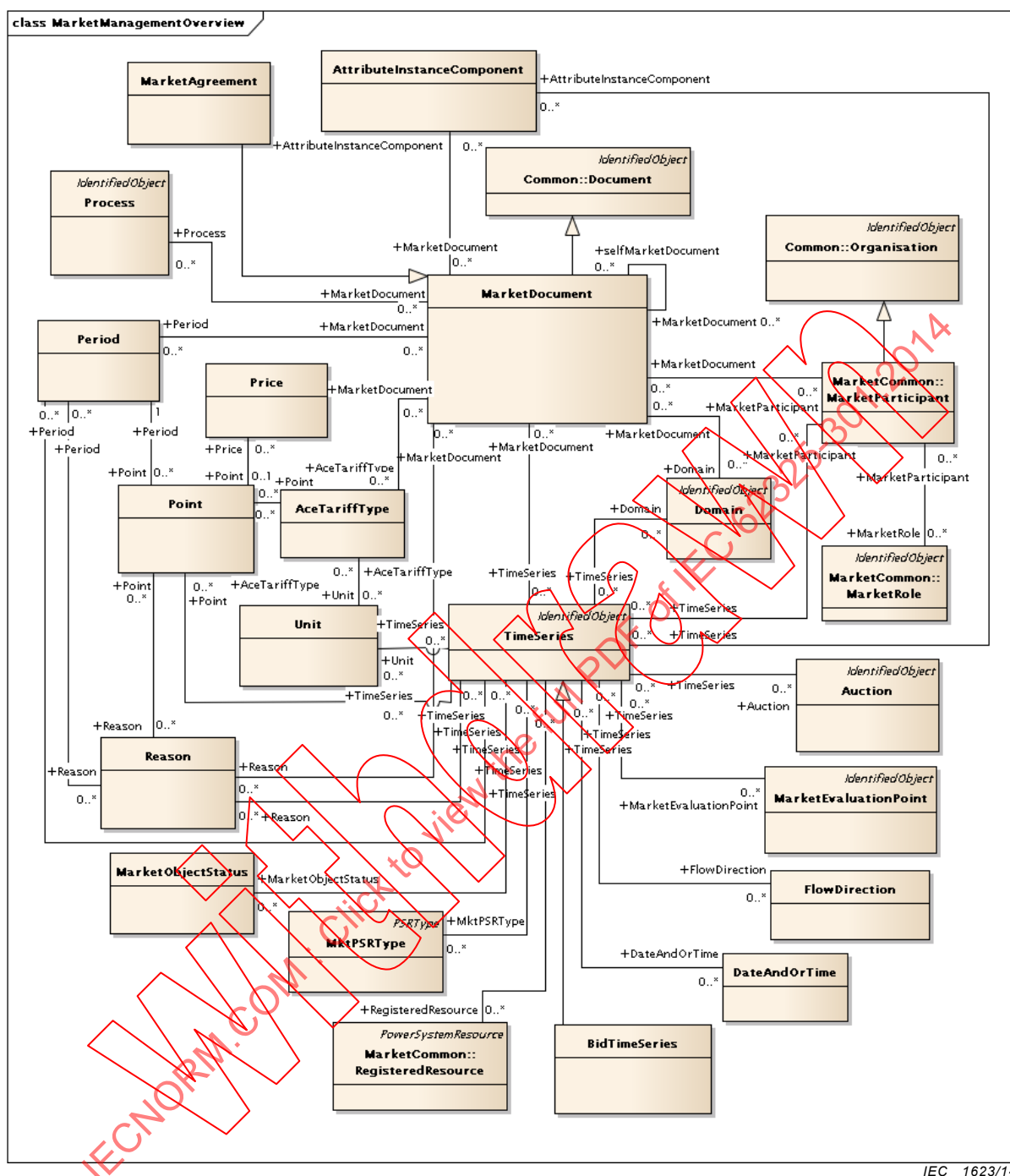
Dépendances externes de la gestion de marché.

La Figure 19 montre le diagramme de classe Inheritance.



Structure des héritages de la gestion de marché.

La Figure 20 montre le diagramme de classe MarketManagementOverview.



IEC 1623/14

Figure 20 – Diagramme de classe MarketManagement::MarketManagementOverview

Cette figure décrit toutes les classes utilisées pour la définition des profils de gestion de marché.

On peut voir toutes les dépendances avec d'autres concepts communs du CIM dans les systèmes de gestion d'énergie et les systèmes de gestion de la distribution.

6.4.2 Classe racine AceTariffType

Le type de tarif des erreurs de Zone de réglage (ACE, *Area Control Error*) qui est appliqué ou utilisé.

Le Tableau 12 montre tous les attributs de AceTariffType.

Tableau 12 – Attributs de MarketManagement::AceTariffType

nom	type	description
type	String	Le type codé d'un tarif ACE.

Le Tableau 13 montre toutes les extrémités d'association de AceTariffType avec d'autres classes.

Tableau 13 – Extrémités d'association de MarketManagement::AceTariffType avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] Unit	Unit	
[0..*]	[0..*] MarketDocument	MarketDocument	
[0..*]	[0..*] Point	Point	

6.4.3 Classe racine AttributeInstanceComponent

Classe utilisée pour fournir des informations sur un attribut.

Le Tableau 14 montre tous les attributs de AttributeInstanceComponent.

Tableau 14 – Attributs de MarketManagement::AttributeInstanceComponent

nom	type	description
attribute	String	Identification du nom formel de l'attribut.
attributeValue	String	Valeur d'instance de l'attribut.
position	Integer	Valeur séquentielle représentant un numéro de séquence relatif.

Le Tableau 15 montre toutes les extrémités d'association de AttributeInstanceComponent avec d'autres classes.

Tableau 15 – Extrémités d'association de MarketManagement::AttributeInstanceComponent avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] TimeSeries	TimeSeries	
[0..*]	[0..*] MarketDocument	MarketDocument	

6.4.4 Vente aux enchères

Classe fournissant l'identification et le type d'une vente aux enchères.

Le Tableau 16 montre tous les attributs de Auction.

Tableau 16 – Attributs de MarketManagement::Auction

nom	type	description
allocationMode	String	Identification de la méthode d'attribution dans une vente aux enchères.
cancelled	String	Indicateur spécifiant que la vente aux enchères a été annulée.
category	String	Catégorie de produit d'une vente aux enchères.
paymentTerms	String	Conditions régissant la détermination du prix d'offre.
rights	String	Droits d'utilisation de la capacité de transport acquise lors d'une vente aux enchères.
type	String	Type de vente aux enchères (ex. implicite, explicite...).
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 17 montre toutes les extrémités d'association de Auction avec d'autres classes.

Tableau 17 – Extrémités d'association de MarketManagement::Auction avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] TimeSeries	TimeSeries	
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.4.5 BidTimeSeries

Spécification formelle de caractéristiques spécifiques relatives à une offre.

Le Tableau 18 montre tous les attributs de BidTimeSeries.

Tableau 18 – Attributs de MarketManagement::BidTimeSeries

nom	type	description
blockBid	String	Indique que les valeurs de la période sont considérées comme un ensemble. Elles ne peuvent être ni changées, ni subdivisées.
direction	String	Identification codée du flux de l'énergie.
divisible	String	Indique si chaque élément de l'offre peut être accepté en partie ou non.
linkedBidsIdentification	String	Identification unique associée à toutes les offres liées.
minimumActivationQuantity	Decimal	Quantité minimale d'énergie qui peut être activée à un intervalle de temps donné.
stepIncrementQuantity	Decimal	Incrément minimal qui peut s'appliquer à une augmentation lors d'une demande d'activation.
businessType	String	Hérité de: TimeSeries
curveType	String	Hérité de: TimeSeries
objectAggregation	String	Hérité de: TimeSeries
product	String	Hérité de: TimeSeries
version	String	Hérité de: TimeSeries
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 19 montre toutes les extrémités d'association de BidTimeSeries avec d'autres classes.

Tableau 19 – Extrémités d'association de MarketManagement::BidTimeSeries avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] MarketParticipant	MarketParticipant	Hérité de: TimeSeries
[0..*]	[0..*] DateAndOrTime	DateAndOrTime	Hérité de: TimeSeries
[0..*]	[0..*] Domain	Domain	Hérité de: TimeSeries
[0..*]	[0..*] FlowDirection	FlowDirection	Hérité de: TimeSeries
[0..*]	[0..*] MarketDocument	MarketDocument	Hérité de: TimeSeries
[0..*]	[0..*] MarketEvaluationPoint	MarketEvaluationPoint	Hérité de: TimeSeries
[0..*]	[0..*] Period	Period	Hérité de: TimeSeries
[0..*]	[0..*] Reason	Reason	Hérité de: TimeSeries
[0..*]	[0..*] RegisteredResource	RegisteredResource	Hérité de: TimeSeries
[0..*]	[0..*] AttributeInstanceComponent	AttributeInstanceComponent	Hérité de: TimeSeries

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] Auction	Auction	Hérité de: TimeSeries
[0..*]	[0..*] MarketObjectStatus	MarketObjectStatus	Hérité de: TimeSeries
[0..*]	[0..*] MktPSRType	MktPSRType	Hérité de: TimeSeries
[0..*]	[0..*] Point	Point	Hérité de: TimeSeries
[0..*]	[0..*] Unit	Unit	Hérité de: TimeSeries
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.4.6 Classe racine DateAndOrTime

La date et/ou l'heure.

Le Tableau 20 montre tous les attributs de DateAndOrTime.

Tableau 20 – Attributs de MarketManagement::DateAndOrTime

nom	type	description
date	Date	Date sous la forme "aaaa-mm-jj", qui est conforme à l'ISO 8601
time	Time	Heure sous la forme "hh:mm:ss.sssZ", qui est conforme à l'ISO 8601

Le Tableau 21 montre toutes les extrémités d'association de DateAndOrTime avec d'autres classes.

Tableau 21 – Extrémités d'association de MarketManagement::DateAndOrTime avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] TimeSeries	TimeSeries	

6.4.7 Domain

Domaine d'activité défini dans le marché de l'énergie.

Le Tableau 22 montre tous les attributs de Domain.

Tableau 22 – Attributs de MarketManagement::Domain

nom	type	description
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 23 montre toutes les extrémités d'association de Domain avec d'autres classes.

**Tableau 23 – Extrémités d'association de MarketManagement::
Domain avec d'autres classes**

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] MarketDocument	MarketDocument	
[0..*]	[0..*] TimeSeries	TimeSeries	
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.4.8 Classe racine FlowDirection

Identification codée du sens du flux de l'énergie.

Le Tableau 24 montre tous les attributs de FlowDirection.

Tableau 24 – Attributs de MarketManagement::FlowDirection

nom	type	description
direction	String	Identification codée du sens du flux de l'énergie.

Le Tableau 25 montre toutes les extrémités d'association de FlowDirection avec d'autres classes.

**Tableau 25 – Extrémités d'association de MarketManagement::
FlowDirection avec d'autres classes**

[mult from]	[mult vers] nom	type	description
[0..*]	[0..*] TimeSeries	TimeSeries	

6.4.9 MarketAgreement

Identification ou finalement contenu d'un accord entre au moins deux entités.

Le Tableau 26 montre tous les attributs de MarketAgreement.

Tableau 26 – Attributs de MarketManagement::MarketAgreement

nom	type	description
type	String	Hérité de: Document
createdDateTime	DateTime	Hérité de: Document
lastModifiedDateTime	DateTime	Hérité de: Document
revisionNumber	String	Hérité de: Document
electronicAddress	ElectronicAddress	Hérité de: Document
subject	String	Hérité de: Document
title	String	Hérité de: Document
docStatus	Status	Hérité de: Document
status	Status	Hérité de: Document
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 27 montre toutes les extrémités d'association de MarketAgreement avec d'autres classes.

Tableau 27 – Extrémités d'association de MarketManagement::MarketAgreement avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] AttributeInstanceComponent	AttributeInstanceComponent	Hérité de: MarketDocument
[0..*]	[0..*] Domain	Domain	Hérité de: MarketDocument
[0..*]	[0..*] Period	Period	Hérité de: MarketDocument
[0..*]	[0..*] selfMarketDocument	MarketDocument	Hérité de: MarketDocument
[0..*]	[0..*] MarketParticipant	MarketParticipant	Hérité de: MarketDocument
[0..*]	[0..*] AceTariffType	AceTariffType	Hérité de: MarketDocument
[0..*]	[0..*] Reason	Reason	Hérité de: MarketDocument
[0..*]	[0..*] TimeSeries	TimeSeries	Hérité de: MarketDocument
[0..*]	[0..*] Process	Process	Hérité de: MarketDocument
[0..*]	[0..*] MarketDocument	MarketDocument	Hérité de: MarketDocument
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.4.10 MarketDocument

Document électronique contenant les informations nécessaires pour satisfaire à un ensemble d'exigences de processus métier.

Le Tableau 28 montre tous les attributs de MarketDocument.

Tableau 28 – Attributs de MarketManagement::MarketDocument

nom	type	description
type	String	Hérité de: Document
createdDateTime	DateTime	Hérité de: Document
lastModifiedDateTime	DateTime	Hérité de: Document
revisionNumber	String	Hérité de: Document
electronicAddress	ElectronicAddress	Hérité de: Document
subject	String	Hérité de: Document
title	String	Hérité de: Document
docStatus	Status	Hérité de: Document
status	Status	Hérité de: Document
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 29 montre toutes les extrémités d'association de MarketDocument avec d'autres classes.

Tableau 29 – Extrémités d'association de MarketManagement::MarketDocument avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] AttributeInstanceComponent	AttributeInstanceComponent	
[0..*]	[0..*] Domain	Domain	
[0..*]	[0..*] Period	Period	
[0..*]	[0..*] selfMarketDocument	MarketDocument	
[0..*]	[0..*] MarketParticipant	MarketParticipant	
[0..*]	[0..*] AceTariffType	AceTariffType	
[0..*]	[0..*] Reason	Reason	
[0..*]	[0..*] TimeSeries	TimeSeries	
[0..*]	[0..*] Process	Process	
[0..*]	[0..*] MarketDocument	MarketDocument	
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.4.11 MarketEvaluationPoint

Identification d'une entité dans laquelle les produits énergétiques sont mesurés ou calculés.

Le Tableau 30 montre tous les attributs de MarketEvaluationPoint.

Tableau 30 – Attributs de MarketManagement::MarketEvaluationPoint

nom	type	description
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 31 montre toutes les extrémités d'association de MarketEvaluationPoint avec d'autres classes.

Tableau 31 – Extrémités d'association de MarketManagement::MarketEvaluationPoint avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] TimeSeries	TimeSeries	
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.4.12 Classe racine MarketObjectStatus

Condition ou position d'un objet par rapport à son statut.

Le Tableau 32 montre tous les attributs de MarketObjectStatus.

Tableau 32 – Attributs de MarketManagement::MarketObjectStatus

nom	type	description
status	String	Condition ou position codée d'un objet par rapport à son statut.

Le Tableau 33 montre toutes les extrémités d'association de MarketObjectStatus avec d'autres classes.

Tableau 33 – Extrémités d'association de MarketManagement::MarketObjectStatus avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] TimeSeries	TimeSeries	

6.4.13 MktPSRType

Type de ressource du système électrique.

Le Tableau 34 montre tous les attributs de MktPSRType.

Tableau 34 – Attributs de MarketManagement::MktPSRType

nom	type	description
psrType	String	Type codé de ressource du système électrique.
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 35 montre toutes les extrémités d'association de MktPSRType avec d'autres classes.

Tableau 35 – Extrémités d'association de MarketManagement::MktPSRType avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] TimeSeries	TimeSeries	
[0..1]	[0..*] PowerSystemResources	PowerSystemResource	Hérité de: PSRType
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.4.14 Classe racine Period

Identification d'un intervalle de temps qui peut avoir une résolution donnée.

Le Tableau 36 montre tous les attributs de Period.

Tableau 36 – Attributs de MarketManagement::Period

nom	type	description
resolution	Duration	Nombre d'unités de temps qui composent une étape individuelle dans une période.
timeInterval	DateTimeInterval	Date et heure de début et de fin d'un intervalle donné.

Le Tableau 37 montre toutes les extrémités d'association de Period avec d'autres classes.

Tableau 37 – Extrémités d'association de MarketManagement::Period avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] Reason	Reason	
[0..*]	[0..*] MarketDocument	MarketDocument	
[1..1]	[0..*] Point	Point	
[0..*]	[0..*] TimeSeries	TimeSeries	

6.4.15 Classe racine Point

Identification d'un ensemble de valeurs traitées dans un intervalle de temps spécifique.

Le Tableau 38 montre tous les attributs de Point.

Tableau 38 – Attributs de MarketManagement::Point

nom	type	description
position	Integer	Valeur séquentielle représentant la position relative dans un intervalle de temps donné.
quantity	Decimal	Quantité principale identifiée à un point.
secondaryQuantity	Decimal	Quantité secondaire identifiée à un point.

Le Tableau 39 montre toutes les extrémités d'association de Point avec d'autres classes.

Tableau 39 – Extrémités d'association de MarketManagement::Point avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] AceTariffType	AceTariffType	
[0..*]	[1..1] Period	Period	
[0..*]	[1..1] TimeSeries	TimeSeries	
[0..1]	[0..*] Price	Price	
[0..*]	[0..*] Reason	Reason	

6.4.16 Classe racine Price

Coût correspondant à une mesure spécifique et exprimé dans une devise.

Le Tableau 40 montre tous les attributs de Price.

Tableau 40 – Attributs de MarketManagement::Price

nom	type	description
amount	Decimal	Nombre d'unités monétaires spécifié dans une unité monétaire.
category	String	Catégorie de prix à utiliser pour calculer un prix. La catégorie de prix est définie par accord mutuel entre les opérateurs du système.
direction	String	Le sens indique si un opérateur du système paie les entités du marché ou inversement.

Le Tableau 41 montre toutes les extrémités d'association de Price avec d'autres classes.

**Tableau 41 – Extrémités d'association de MarketManagement::
Price avec d'autres classes**

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..1] Point	Point	

6.4.17 Process

Spécification formelle d'un ensemble d'opérations commerciales ayant le même objectif.

Le Tableau 42 montre tous les attributs de Process.

Tableau 42 – Attributs de MarketManagement::Process

nom	type	description
classificationType	String	Mécanisme de classification utilisé pour regrouper un ensemble d'objets dans un processus métier. Le regroupement peut être détaillé ou résumé.
processType	String	Type de processus métier.
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 43 montre toutes les extrémités d'association de Process avec d'autres classes.

**Tableau 43 – Extrémités d'association de MarketManagement::
Process avec d'autres classes**

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] MarketDocument	MarketDocument	
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.4.18 Classe racine Reason

Motivation d'un acte.

Le Tableau 44 montre tous les attributs de Reason.

Tableau 44 – Attributs de MarketManagement::Reason

nom	type	description
code	String	Motivation d'un acte sous forme codée.
text	String	Explication textuelle correspondant au code de cause.

Le Tableau 45 montre toutes les extrémités d'association de Reason avec d'autres classes.

Tableau 45 – Extrémités d'association de MarketManagement::Reason avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] MarketDocument	MarketDocument	
[0..*]	[0..*] Point	Point	
[0..*]	[0..*] Period	Period	
[0..*]	[0..*] TimeSeries	TimeSeries	

6.4.19 TimeSeries

Série Chronologique, ensemble de mesures chronologiques ordinaires ou de valeurs quantitatives d'un phénomène individuel ou collectif prises à des périodes/instants successifs, et souvent, équidistants.

Le Tableau 46 montre tous les attributs de TimeSeries

Tableau 46 – Attributs de MarketManagement::TimeSeries

nom	type	description
businessType	String	Identification de la nature de la série chronologique.
curveType	String	Représentation codée du type de courbe décrit.
objectAggregation	String	Identification de l'objet qui est le dominateur commun utilisé pour agréger une série chronologique.
product	String	Type de produit, tel que la puissance, l'énergie, la puissance réactive, la capacité de transport, qui fait l'objet de la série chronologique.
version	String	Version de la série chronologique.
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 47 montre toutes les extrémités d'association de TimeSeries avec d'autres classes.

Tableau 47 – Extrémités d'association de MarketManagement::TimeSeries avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] MarketParticipant	MarketParticipant	
[0..*]	[0..*] DateAndOrTime	DateAndOrTime	
[0..*]	[0..*] Domain	Domain	
[0..*]	[0..*] FlowDirection	FlowDirection	
[0..*]	[0..*] MarketDocument	MarketDocument	
[0..*]	[0..*] MarketEvaluationPoint	MarketEvaluationPoint	
[0..*]	[0..*] Period	Period	
[0..*]	[0..*] Reason	Reason	
[0..*]	[0..*] RegisteredResource	RegisteredResource	
[0..*]	[0..*] AttributeInstanceComponent	AttributeInstanceComponent	
[0..*]	[0..*] Auction	Auction	
[0..*]	[0..*] MarketObjectStatus	MarketObjectStatus	
[0..*]	[0..*] MktPSRType	MktPSRType	
[0..*]	[0..*] Point	Point	
[0..*]	[0..*] Unit	Unit	
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.4.20 Classe racine Unit

Identification du nom de l'unité pour les grandeurs de série chronologique.

Le Tableau 48 montre tous les attributs de Unit.

Tableau 48 – Attributs de MarketManagement::Unit

nom	type	description
name	String	Représentation codée de l'unité.

Le Tableau 49 montre toutes les extrémités d'association de Unit avec d'autres classes.

Tableau 49 – Extrémités d'association de MarketManagement::Unit avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] TimeSeries	TimeSeries	
[0..*]	[0..*] AceTariffType	AceTariffType	

6.5 Paquetage MarketOperations

6.5.1 Généralités

Ce paquetage contient toutes les principales extensions de marché du CIM exigées pour les systèmes des opérations du marché.

La Figure 21 montre le diagramme de classe Main.

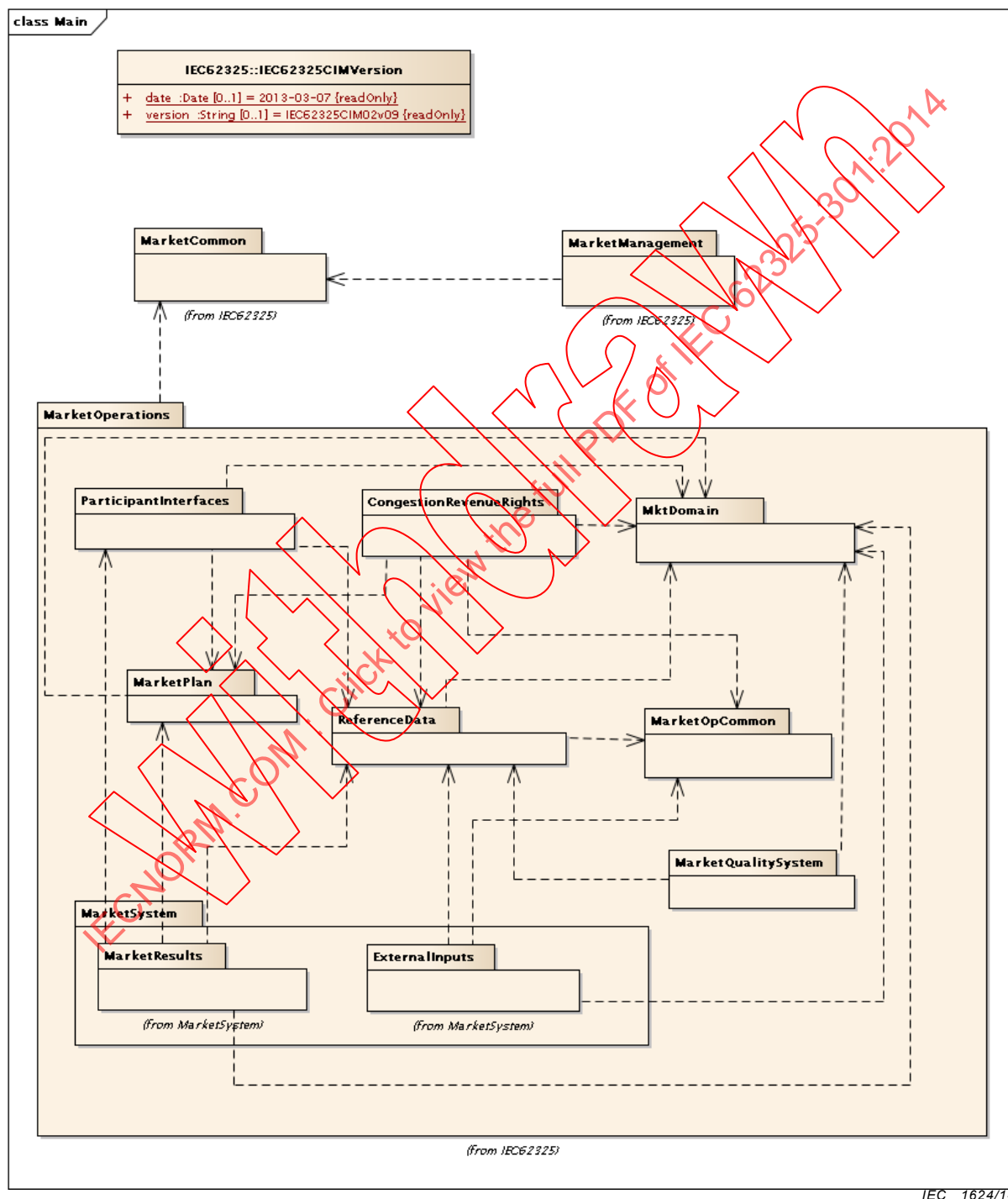


Figure 21 – Diagramme de classe MarketOperations::Main

La Figure 22 montre le diagramme de paquets MarketOperations.

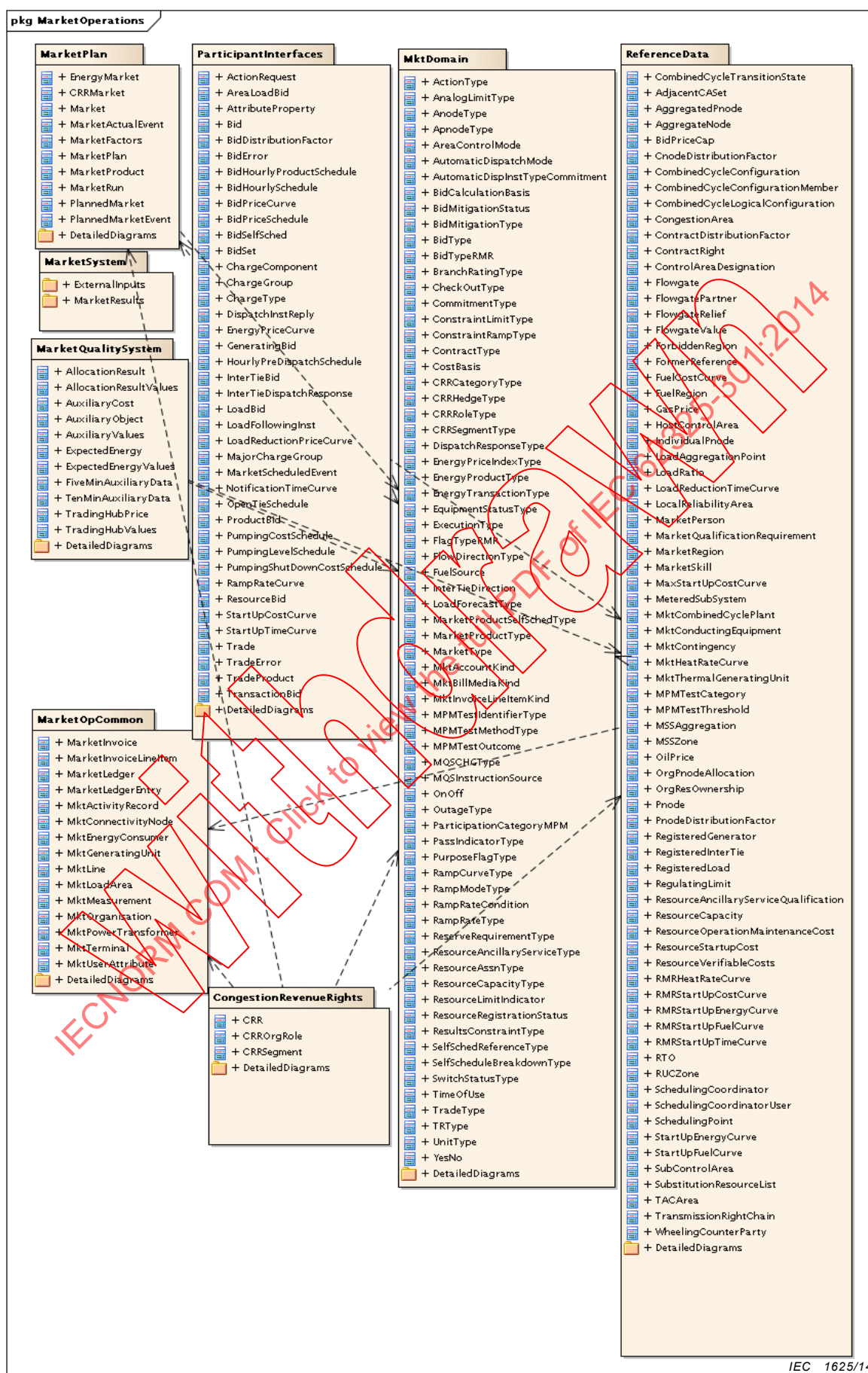


Figure 22 – Diagramme du paquetage MarketOperations::MarketOperations

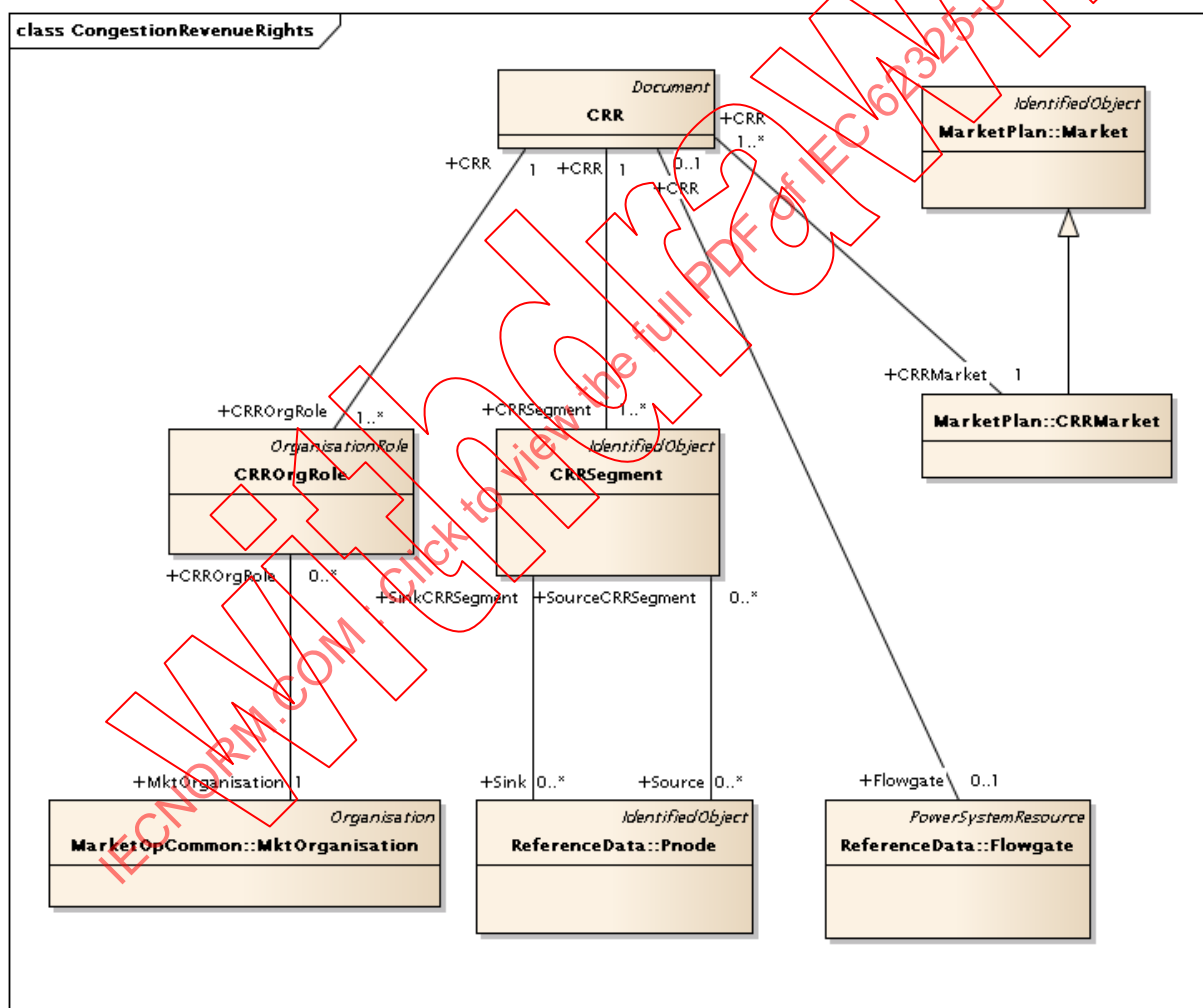
Ce paquetage contient toutes les principales extensions de marché du CIM exigées pour les systèmes des opérations du marché.

6.5.2 Paquetage CongestionRevenueRights

6.5.2.1 Généralités

Les frais de congestion sont une charge importante et très volatile qui concerne aujourd'hui de nombreux participants dans les marchés de l'énergie électrique basés sur les prix marginaux locaux (LMP). Pour cette raison, les ISO offrent des droits à rente de congestion (CRR, *Congestion Revenue Rights*), également appelées droits de transport financiers ou contrats de congestion de transport. Ce sont des instruments financiers qui permettent aux participants du marché de se couvrir des frais de congestion lors de la programmation des transactions de production, de charge et d'énergie bilatérales.

La Figure 23 montre le diagramme de classe CongestionRevenueRights.



IEC 1626/14

Figure 23 – Diagramme de classe CongestionRevenueRights::
CongestionRevenueRights

Un droit à revenu de congestion (CRR) est un instrument financier qui permet à son détenteur de recevoir un versement de CRR lorsque la congestion s'effectue de la source vers la source de CRR et de la source de CRR vers le puits de CRR. Les classes illustrées sont utilisées pour modéliser les données de CRR. La classe CRRSegment contient des informations sur les segments de CRR. La classe MktOrganization contient des informations sur l'entité qui

détient la CRR. Les associations de CRRSegment vers ReferenceData montrent la source et le puits Pnodes.

6.5.2.2 CRR

Classe de droit à revenu de congestion (CRR) héritée de la classe Document.

Une CRR est un concept financier qui est utilisé pour se couvrir des frais de congestion.

La CRR est généralement réglée selon les prix marginaux locaux (LMP) qui sont calculés dans le marché à J-1. Ces LMP sont définis par les programmes/offres des ressources à J-1. Les CRR ne couvriront pas les pertes marginales. Si le composant de congestion du LMP au puits est supérieur à celui à la source, le propriétaire de la CRR peut recevoir une partie des revenus de congestion. Si le composant de congestion au puits est inférieur à celui à la source, alors le propriétaire de CRR sous forme d'obligations sera facturé, tandis que le propriétaire de CRR sous forme d'options ne le sera pas.

Le Tableau 50 montre tous les attributs de CRR.

Tableau 50 – Attributs de CongestionRevenueRights::CRR

nom	type	description
cRRcategory	CRRCategoryType	Catégorie de CRR définie sur "PTP" (<i>point-to-point</i>) pour une CRR point à point ou sur "NSR" (<i>Network Service Right</i>) pour un droit de service réseau. Si la catégorie de CRR est "PTP", les champs ID source et ID puits sont exigés. Si la catégorie de CRR est "NSR", un champ (ID source ou ID puits) doit être défini sur zéro et l'autre ne doit pas être défini sur zéro. Cependant, la catégorie "NSR" comprendra au moins trois enregistrements.
cRRtype	CRRSegmentType	Type de CRR, dans les définitions types possibles du système de CRR (ex. "LSE", "ETC").
hedgeType	CRRHedgeType	Type d'opérateur en couverture Obligation ou Option
timeOfUse	TimeOfUse	Indicateur des heures d'utilisation de la CRR – heures de pointe (ON), heures creuses (OFF) ou 24h/24 (24HR).
tradeSliceID	String	Segment de la CRR décrit dans l'enregistrement actuel
type	String	Hérité de: Document
createdDateTime	DateTime	Hérité de: Document
lastModifiedDateTime	DateTime	Hérité de: Document
revisionNumber	String	Hérité de: Document
electronicAddress	ElectronicAddress	Hérité de: Document
subject	String	Hérité de: Document
title	String	Hérité de: Document
docStatus	Status	Hérité de: Document
status	Status	Hérité de: Document
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 51 montre toutes les extrémités d'association de la CRR avec d'autres classes.

Tableau 51 – Extrémités d'association de CongestionRevenueRights::CRR avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..1]	[0..1] Flowgate	Flowgate	
[1..*]	[1..1] CRRMarket	CRRMarket	
[1..1]	[1..*] CRRSegment	CRRSegment	
[1..1]	[1..*] CRROrgRole	CRROrgRole	
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.2.3 CRROrgRole

Identifie comment une organisation peut participer avec un droit à revenu de congestion définie (CRR).

Le Tableau 52 montre tous les attributs de CRROrgRole.

Tableau 52 – Attributs de CongestionRevenueRights::CRROrgRole

nom	type	description
kind	CRRRoleType	Type de rôle de l'organisation quant aux droits à revenu de congestion.
status	Status	Statut du rôle de l'organisation quant aux droits à revenu de congestion.
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 53 montre toutes les extrémités d'association de CRROrgRole avec d'autres classes.

Tableau 53 – Extrémités d'association de CongestionRevenueRights::CRROrgRole avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..*]	[1..1] CRR	CRR	
[0..*]	[1..1] MktOrganisation	MktOrganisation	
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: OrganisationRole
[0..*]	[0..1] Organisation	Organisation	Hérité de: OrganisationRole
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.2.4 CRRSegment

CRRSegment représente un segment de la CRR dans une trame temps particulière.

La classe de segment contient le type, la quantité, le type d'opérateur en couverture, l'indicateur des heures d'utilisation et la période de segment de la CRR.

Le Tableau 54 montre tous les attributs de CRRSegment.

Tableau 54 – Attributs de CongestionRevenueRights::CRRSegment

nom	type	description
amount	Money	Quantité de dollars = quantité x clearingPrice
clearingPrice	Money	Prix d'équilibre d'une CRR
endDateTime	DateTime	Date et heure de fin de segment
quantity	Float	Quantité de MW associée à la CRR
startDateTime	DateTime	Date et heure de début de segment
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 55 montre toutes les extrémités d'association de CRRSegment avec d'autres classes.

Tableau 55 – Extrémités d'association de CongestionRevenueRights::CRRSegment avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..*]	[1..1] CRR	CRR	
[0..*]	[0..*] Source	Pnode	
[0..*]	[0..*] Sink	Pnode	
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.3 Paquetage MarketOpCommon

6.5.3.1 Généralités

Ce paquetage contient les objets communs partagés par les paquetages MarketOperations.

6.5.3.2 Classe racine MarketInvoice

Ensemble des éléments de ligne d'une facture. Toutes les factures comportent une échéance, un montant à régler et des informations (client, banques, etc.) à obtenir grâce à des associations. L'ensemble de la facture est fondé sur des éléments de ligne individuels, qui chacun contiennent des montants et des descriptions pour des services ou produits spécifiques.

Le Tableau 56 montre tous les attributs de MarketInvoice.

Tableau 56 – Attributs de MarketOpCommon::MarketInvoice

nom	type	description
amount	Money	Montant total à régler sur cette facture basé sur les éléments de ligne et les ajustements applicables.
billMediaKind	MktBillMediaKind	Type de support utilisé pour fournir les CustomerBillingInfo.
dueDate	Date	Date calculée à partir de laquelle le montant de la facture est dû.
kind	MktAccountKind	Type de facture ("vente" par défaut).
mailedDate	Date	Date à laquelle le relevé de facturation/la facture client a été imprimé/envoyé par courrier.
proForma	Boolean	True si le paiement doit être réglé par le client pour accepter un ErpQuote particulier (avec la conception associée) et lancer le travail, au moment où il convient de générer automatiquement un ErpInvoice associé. EprPayment.subjectStatus satisfait aux conditions spécifiées dans ErpQuote.
referenceNumber	String	Numéro de facture référencé par cette facture.
transactionDateTime	DateTime	Date et heure d'émission de la facture.
transferType	String	Type de transfert de facture.

Le Tableau 57 montre toutes les extrémités d'association de MarketInvoice avec d'autres classes.

Tableau 57 – Extrémités d'association de MarketOpCommon::MarketInvoice avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[1..*] MajorChargeGroup	MajorChargeGroup	
[1..1]	[0..*] MarketInvoiceLineItems	MarketInvoiceLineItem	

6.5.3.3 Classe racine MarketInvoiceLineItem

Elément de ligne individuel sur une facture.

Le Tableau 58 montre tous les attributs de MarketInvoiceLineItem.

Tableau 58 – Attributs de MarketOpCommon::MarketInvoiceLineItem

nom	type	description
billPeriod	DateTimeInterval	Période de facturation de l'élément de ligne.
glAccount	String	Le code de facturation du grand livre général doit être une combinaison valide.
glDateTime	DateTime	Les éléments de ligne de date et d'heure seront publiés sur le grand livre général.
kind	MktInvoiceLineItemKind	Type d'élément de ligne.
lineAmount	Float	Montant dû pour cet élément de ligne.
lineNumber	String	Numéro d'élément de ligne sur le relevé de facturation.
lineVersion	String	Numéro de version de la facture.
netAmount	Float	Montant net des frais de l'élément de ligne.
previousAmount	Float	Montant précédent des frais de l'élément de ligne.

Le Tableau 59 montre toutes les extrémités d'association de MarketInvoiceLineItem avec d'autres classes.

Tableau 59 – Extrémités d'association de MarketOpCommon::MarketInvoiceLineItem avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[1..1] MarketInvoice	MarketInvoice	
[0..*]	[0..*] Settlement	Settlement	
[0..*]	[0..1] ContainerMarketInvoiceLineItem	MarketInvoiceLineItem	
[0..1]	[0..*] ComponentMarketInvoiceLineItems	MarketInvoiceLineItem	

6.5.3.4 Classe racine MarketLedger

Dans les transactions de comptabilité, un grand livre est un registre contenant les comptes sur lesquels des débits et des crédits sont publiés depuis des journaux, dans lesquels des transactions sont enregistrées au préalable. Les entrées du journal sont régulièrement publiées sur le grand livre. Le grand livre réel contient les montants réels des comptes d'une société ou d'un service. Les montants réels peuvent être générés dans une application source, puis chargés dans un grand livre spécifique appartenant au grand livre général ou à l'application budgétaire d'une entreprise.

Le Tableau 60 montre toutes les extrémités d'association de MarketLedger avec d'autres classes.

Tableau 60 – Extrémités d'association de MarketOpCommon::MarketLedger avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[0..*] MarketLedgerEntries	MarketLedgerEntry	

6.5.3.5 Classe racine MarketLedgerEntry

Détails d'une entrée individuelle dans un grand livre provenant d'un journal à la date attribuée.

Le Tableau 61 montre tous les attributs de MarketLedgerEntry.

Tableau 61 – Attributs de MarketOpCommon::MarketLedgerEntry

nom	type	description
accountID	String	Identifiant de compte de cette entrée.
accountKind	MktAccountKind	Type de compte de cette entrée.
amount	Money	Montant du débit/crédit de ce compte.
postedDateTime	DateTime	Date et heure auxquelles cette entrée a été publiée sur le grand livre.
status	Status	Statut de l'entrée du grand livre.
transactionDateTime	DateTime	Date et heure de l'enregistrement de l'entrée du journal.

Le Tableau 62 montre toutes les extrémités d'association de MarketLedgerEntry avec d'autres classes.

Tableau 62 – Extrémités d'association de MarketOpCommon::MarketLedgerEntry avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] Settlement	Settlement	
[0..*]	[1..1] MarketLedger	MarketLedger	

6.5.3.6 MktActivityRecord

Sous-classe de IEC 61968: Common:ActivityRecord

Le Tableau 63 montre tous les attributs de MktActivityRecord.

Tableau 63 – Attributs de MarketOpCommon::MktActivityRecord

nom	type	description
createdDateTime	DateTime	Hérité de: ActivityRecord
type	String	Hérité de: ActivityRecord
severity	String	Hérité de: ActivityRecord
reason	String	Hérité de: ActivityRecord
status	Status	Hérité de: ActivityRecord
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 64 montre toutes les extrémités d'association de MktActivityRecord avec d'autres classes.

Tableau 64 – Extrémités d'association de MarketOpCommon::MktActivityRecord avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] MarketFactors	MarketFactors	
[0..*]	[0..*] Assets	Asset	Hérité de: ActivityRecord
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.3.7 MktConnectivityNode

Sous-classe de IEC 61970:Topology:ConnectivityNode

Le Tableau 65 montre tous les attributs de MktConnectivityNode.

Tableau 65 – Attributs de MarketOpCommon::MktConnectivityNode

nom	type	description
endEffectiveDate	DateTime	Date de fin effective
startEffectiveDate	DateTime	Date de début effective
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 66 montre toutes les extrémités d'association de MktConnectivityNode avec d'autres classes.

Tableau 66 – Extrémités d'association de MarketOpCommon::MktConnectivityNode avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..1]	[0..*] RegisteredResource	RegisteredResource	
[1..1]	[0..*] NodeConstraintTerm	NodeConstraintTerm	
[0..*]	[1..1] RTO	RTO	
[1..1]	[0..1] SysLoadDistribuFactor	SysLoadDistributionFactor	
[1..1]	[0..*] LossPenaltyFactor	LossSensitivity	
[1..1]	[0..*] CnodeDistributionFactor	CnodeDistributionFactor	
[1..1]	[0..1] IndividualPnode	IndividualPnode	
[0..*]	[1..1] ConnectivityNodeContainer	ConnectivityNodeContainer	Hérité de: ConnectivityNode
[0..*]	[0..1] TopologicalNode	TopologicalNode	Hérité de: ConnectivityNode
[0..1]	[0..*] Terminals	Terminal	Hérité de: ConnectivityNode
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.3.8 MktEnergyConsumer

Sous-classe de IEC 61970:Wires:EnergyConsumer

Le Tableau 67 montre tous les attributs de MktEnergyConsumer.

Tableau 67 – Attributs de MarketOpCommon::MktEnergyConsumer

nom	type	description
customerCount	Integer	Hérité de: EnergyConsumer
grounded	WindingConnection	Hérité de: EnergyConsumer
pfixed	ActivePower	Hérité de: EnergyConsumer
pfixedPct	PerCent	Hérité de: EnergyConsumer
phaseConnection	PhaseShuntConnectionKind	Hérité de: EnergyConsumer
qfixed	ReactivePower	Hérité de: EnergyConsumer
qfixedPct	PerCent	Hérité de: EnergyConsumer
aggregate	Boolean	Hérité de: Equipment
normallyInService	Boolean	Hérité de: Equipment
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 68 montre toutes les extrémités d'association de MktEnergyConsumer avec d'autres classes.

**Tableau 68 – Extrémités d'association de MarketOpCommon::
MktEnergyConsumer avec d'autres classes**

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[0..*] EnergyConsumerData	EnergyConsumerData	
[0..*]	[0..1] RegisteredLoad	RegisteredLoad	
[0..*]	[0..1] LoadResponse	LoadResponseCharacteristic	Hérité de: EnergyConsumer
[1..1]	[0..*] EnergyConsumerPhase	EnergyConsumerPhase	Hérité de: EnergyConsumer
[1..*]	[0..1] PowerCutZone	PowerCutZone	Hérité de: EnergyConsumer
[0..*]	[0..1] BaseVoltage	BaseVoltage	Hérité de: ConductingEquipment
[1..1]	[0..*] Terminals	Terminal	Hérité de: ConductingEquipment
[0..*]	[0..*] ProtectionEquipments	ProtectionEquipment	Hérité de: ConductingEquipment
[1..1]	[0..*] ClearanceTags	ClearanceTag	Hérité de: ConductingEquipment
[1..1]	[0..1] SvStatus	SvStatus	Hérité de: ConductingEquipment
[0..*]	[0..1] EquipmentContainer	EquipmentContainer	Hérité de: Equipment
[1..1]	[0..*] ContingencyEquipment	ContingencyEquipment	Hérité de: Equipment
[0..1]	[0..*] OperationalLimitSet	OperationalLimitSet	Hérité de: Equipment
[0..*]	[0..1] PSRType	PSRType	Hérité de: PowerSystemResource
[0..1]	[0..*] Measurements	Measurement	Hérité de: PowerSystemResource
[1..1]	[0..*] OperatingShare	OperatingShare	Hérité de: PowerSystemResource
[0..*]	[0..*] PsrLists	PsrList	Hérité de: PowerSystemResource
[1..1]	[0..1] OutageSchedule	OutageSchedule	Hérité de: PowerSystemResource
[0..*]	[0..*] ReportingGroup	ReportingGroup	Hérité de: PowerSystemResource
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.3.9 MktGeneratingUnit

Sous-classe de IEC 61970:Production:GeneratingUnit

Le Tableau 69 montre tous les attributs de MktGeneratingUnit.

Tableau 69 – Attributs de MarketOpCommon::MktGeneratingUnit

nom	type	description
allocSpinResP	ActivePower	Hérité de: GeneratingUnit
autoCntrlMarginP	ActivePower	Hérité de: GeneratingUnit
baseP	ActivePower	Hérité de: GeneratingUnit
controlDeadband	ActivePower	Hérité de: GeneratingUnit
controlPulseHigh	Seconds	Hérité de: GeneratingUnit
controlPulseLow	Seconds	Hérité de: GeneratingUnit
controlResponseRate	ActivePowerChangeRate	Hérité de: GeneratingUnit
dispReserveFlag	Boolean	Hérité de: GeneratingUnit
efficiency	PU	Hérité de: GeneratingUnit
energyMinP	HeatRate	Hérité de: GeneratingUnit
fastStartFlag	Boolean	Hérité de: GeneratingUnit
fuelPriority	Integer	Hérité de: GeneratingUnit
genControlMode	GeneratorControlMode	Hérité de: GeneratingUnit
genControlSource	GeneratorControlSource	Hérité de: GeneratingUnit
genOperatingMode	GeneratorOperatingMode	Hérité de: GeneratingUnit
governorMPL	PU	Hérité de: GeneratingUnit
governorSCD	PerCent	Hérité de: GeneratingUnit
highControlLimit	ActivePower	Hérité de: GeneratingUnit
initialP	ActivePower	Hérité de: GeneratingUnit
longPF	Float	Hérité de: GeneratingUnit
lowControlLimit	ActivePower	Hérité de: GeneratingUnit
lowerRampRate	ActivePowerChangeRate	Hérité de: GeneratingUnit
maxEconomicP	ActivePower	Hérité de: GeneratingUnit
maximumAllowableSpinningReserve	ActivePower	Hérité de: GeneratingUnit
maxOperatingP	ActivePower	Hérité de: GeneratingUnit
minEconomicP	ActivePower	Hérité de: GeneratingUnit
minimumOffTime	Seconds	Hérité de: GeneratingUnit
minOperatingP	ActivePower	Hérité de: GeneratingUnit
modelDetail	Classification	Hérité de: GeneratingUnit
nominalP	ActivePower	Hérité de: GeneratingUnit
normalPF	Float	Hérité de: GeneratingUnit
penaltyFactor	Float	Hérité de: GeneratingUnit
raiseRampRate	ActivePowerChangeRate	Hérité de: GeneratingUnit
ratedGrossMaxP	ActivePower	Hérité de: GeneratingUnit
ratedGrossMinP	ActivePower	Hérité de: GeneratingUnit
ratedNetMaxP	ActivePower	Hérité de: GeneratingUnit
shortPF	Float	Hérité de: GeneratingUnit
spinReserveRamp	ActivePowerChangeRate	Hérité de: GeneratingUnit
startupCost	Money	Hérité de: GeneratingUnit
startupTime	Seconds	Hérité de: GeneratingUnit
stepChange	ActivePower	Hérité de: GeneratingUnit
tieLinePF	Float	Hérité de: GeneratingUnit

nom	type	description
variableCost	Money	Hérité de: GeneratingUnit
aggregate	Boolean	Hérité de: Equipment
normallyInService	Boolean	Hérité de: Equipment
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 70 montre toutes les extrémités d'association de MktGeneratingUnit avec d'autres classes.

**Tableau 70 – Extrémités d'association de MarketOpCommon:
MktGeneratingUnit avec d'autres classes**

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..1] RegisteredGenerator	RegisteredGenerator	
[1..1]	[0..*] GeneratingUnitDynamicValues	GeneratingUnitDynamicValues	
[0..1]	[1..*] SynchronousMachines	SynchronousMachine	Hérité de: GeneratingUnit
[1..1]	[0..1] GenUnitOpSchedule	GenUnitOpSchedule	Hérité de: GeneratingUnit
[1..1]	[0..*] GrossToNetActivePowerCurves	GrossToNetActivePowerCurves	Hérité de: GeneratingUnit
[1..1]	[0..*] GenUnitOpCostCurves	GenUnitOpCostCurve	Hérité de: GeneratingUnit
[1..1]	[0..*] ControlAreaGeneratingUnit	ControlAreaGeneratingUnit	Hérité de: GeneratingUnit
[0..*]	[0..1] EquipmentContainer	EquipmentContainer	Hérité de: Equipment
[1..1]	[0..*] ContingencyEquipment	ContingencyEquipment	Hérité de: Equipment
[0..1]	[0..*] OperationalLimitSet	OperationalLimitSet	Hérité de: Equipment
[0..*]	[0..1] PSRType	PSRType	Hérité de: PowerSystemResource
[0..1]	[0..*] Measurements	Measurement	Hérité de: PowerSystemResource
[1..1]	[0..*] OperatingShare	OperatingShare	Hérité de: PowerSystemResource
[0..*]	[0..*] PsrLists	PsrList	Hérité de: PowerSystemResource
[1..1]	[0..1] OutageSchedule	OutageSchedule	Hérité de: PowerSystemResource
[0..*]	[0..*] ReportingGroup	ReportingGroup	Hérité de: PowerSystemResource
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.3.10 MktLine

Sous-classe de IEC 61970:Wires:Line

Le Tableau 71 montre tous les attributs de MktLine.

Tableau 71 – Attributs de MarketOpCommon::MktLine

nom	type	description
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 72 montre toutes les extrémités d'association de MktLine avec d'autres classes.

Tableau 72 – Extrémités d'association de MarketOpCommon::MktLine avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] Flowgate	Flowgate	
[0..*]	[0..1] Region	SubGeographicalRegion	Hérité de: Line
[0..1]	[0..*] Equipments	Equipment	Hérité de: EquipmentContainer
[1..1]	[0..*] ConnectivityNodes	ConnectivityNode	Hérité de: ConnectivityNodeContainer
[0..1]	[0..*] TopologicalNode	TopologicalNode	Hérité de: ConnectivityNodeContainer
[0..*]	[0..1] PSRType	PSRType	Hérité de: PowerSystemResource
[0..1]	[0..*] Measurements	Measurement	Hérité de: PowerSystemResource
[1..1]	[0..*] OperatingShare	OperatingShare	Hérité de: PowerSystemResource
[0..*]	[0..*] PsrLists	PsrList	Hérité de: PowerSystemResource
[1..1]	[0..1] OutageSchedule	OutageSchedule	Hérité de: PowerSystemResource
[0..*]	[0..*] ReportingGroup	ReportingGroup	Hérité de: PowerSystemResource
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.3.11 MktLoadArea

Sous-classe de IEC 61970:LoadModel: LoadArea

Le Tableau 73 montre tous les attributs de MktLoadArea.

Tableau 73 – Attributs de MarketOpCommon::MktLoadArea

nom	type	description
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 74 montre toutes les extrémités d'association de MktLoadArea avec d'autres classes.

Tableau 74 – Extrémités d'association de MarketOpCommon::MktLoadArea avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[0..*] RegisteredLoad	RegisteredLoad	
[0..1]	[0..*] AreaLoadCurve	AreaLoadCurve	
[1..1]	[1..*] SubLoadAreas	SubLoadArea	Hérité de: LoadArea
[0..1]	[0..1] ControlArea	ControlArea	Hérité de: EnergyArea
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.3.12 MktMeasurement

Sous-classe de IEC 61970:Meas:Measurement

Le Tableau 75 montre tous les attributs de MktMeasurement.

Tableau 75 – Attributs de MarketOpCommon::MktMeasurement

nom	type	description
measurementType	String	Hérité de: Measurement
phases	PhaseCode	Hérité de: Measurement
unitMultiplier	UnitMultiplier	Hérité de: Measurement
unitSymbol	UnitSymbol	Hérité de: Measurement
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 76 montre toutes les extrémités d'association de MktMeasurement avec d'autres classes.

Tableau 76 – Extrémités d'association de MarketOpCommon::MktMeasurement avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..1] Pnode	Pnode	
[0..*]	[0..1] Terminal	Terminal	Hérité de: Measurement
[0..*]	[0..1] PowerSystemResource	PowerSystemResource	Hérité de: Measurement
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.3.13 MktOrganisation

Sous-classe de IEC 61968:Core2:TopLevel:Organisation

Le Tableau 77 montre tous les attributs de MktOrganisation.

Tableau 77 – Attributs de MarketOpCommon::MktOrganisation

nom	type	description
creditFlag	YesNo	Indicateur de solvabilité (Y, N)
creditStartEffectiveDate	DateTime	Date à laquelle l'organisation devient solvable.
endEffectiveDate	DateTime	Date de fin effective
lastModified	DateTime	Indication de la date et de l'heure de la dernière modification des informations sur l'organisation.
organisationID	Integer	ID (interne) organisation
qualificationStatus	String	Statut de qualification de l'organisation: Qualifié, Non Qualifié ou Disqualifié
startEffectiveDate	DateTime	Date de début effective
streetAddress	StreetAddress	Hérité de: Organisation
postalAddress	PostalAddress	Hérité de: Organisation
phone1	TelephoneNumber	Hérité de: Organisation
phone2	TelephoneNumber	Hérité de: Organisation
electronicAddress	ElectronicAddress	Hérité de: Organisation
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 78 montre toutes les extrémités d'association de MktOrganisation avec d'autres classes.

Tableau 78 – Extrémités d'association de MarketOpCommon::MktOrganisation avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[0..*] CRRORole	CRRORole	
[0..*]	[0..*] MarketPerson	MarketPerson	
[0..1]	[0..*] RegisteredResource	RegisteredResource	
[1..1]	[0..*] OrgResOwnership	OrgResOwnership	
[1..1]	[0..*] OrgPnodeAllocation	OrgPnodeAllocation	
[1..1]	[0..*] SchedulingCoordinator	SchedulingCoordinator	
[0..1]	[0..*] Roles	OrganisationRole	Hérité de: Organisation
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.3.14 MktPowerTransformer

Sous-classe de IEC 61970:Wires:PowerTransformer

Le Tableau 79 montre tous les attributs de MktPowerTransformer.

Tableau 79 – Attributs de MarketOpCommon::MktPowerTransformer

nom	type	description
vectorGroup	String	Hérité de: PowerTransformer
aggregate	Boolean	Hérité de: Equipment
normallyInService	Boolean	Hérité de: Equipment
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 80 montre toutes les extrémités d'association de MktPowerTransformer avec d'autres classes.

Tableau 80 – Extrémités d'association de MarketOpCommon::MktPowerTransformer avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] Flowgate	Flowgate	
[0..*]	[0..1] EndBFlow	BranchEndFlow	
[0..*]	[0..1] EndAFlow	BranchEndFlow	
[0..1]	[0..*] PowerTransformerEnd	PowerTransformerEnd	Hérité de: PowerTransformer
[0..1]	[0..*] TransformerTanks	TransformerTank	Hérité de: PowerTransformer
[0..*]	[0..1] BaseVoltage	BaseVoltage	Hérité de: ConductingEquipment
[1..1]	[0..*] Terminals	Terminal	Hérité de: ConductingEquipment
[0..*]	[0..*] ProtectionEquipments	ProtectionEquipment	Hérité de: ConductingEquipment
[1..1]	[0..*] ClearanceTags	ClearanceTag	Hérité de: ConductingEquipment
[1..1]	[0..1] SvStatus	SvStatus	Hérité de: ConductingEquipment
[0..*]	[0..1] EquipmentContainer	EquipmentContainer	Hérité de: Equipment
[1..1]	[0..*] ContingencyEquipment	ContingencyEquipment	Hérité de: Equipment
[0..1]	[0..*] OperationalLimitSet	OperationalLimitSet	Hérité de: Equipment
[0..*]	[0..1] PSRType	PSRType	Hérité de: PowerSystemResource
[0..1]	[0..*] Measurements	Measurement	Hérité de: PowerSystemResource
[1..1]	[0..*] OperatingShare	OperatingShare	Hérité de: PowerSystemResource
[0..*]	[0..*] PsrLists	PsrList	Hérité de: PowerSystemResource
[1..1]	[0..1] OutageSchedule	OutageSchedule	Hérité de: PowerSystemResource
[0..*]	[0..*] ReportingGroup	ReportingGroup	Hérité de: PowerSystemResource
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.3.15 MktTerminal

Sous-classe de IEC 61970:Core:Terminal

Le Tableau 81 montre tous les attributs de MktTerminal.

Tableau 81 – Attributs de MarketOpCommon::MktTerminal

nom	type	description
startEffectiveDate	DateTime	Date/heure de début de l'admissibilité de l'élément pour le Flowgate.
endEffectiveDate	DateTime	Date/heure de fin de l'admissibilité de l'élément pour le Flowgate.
connected	Boolean	Hérité de: Terminal
phases	PhaseCode	Hérité de: Terminal
sequenceNumber	Integer	Hérité de: Terminal
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 82 montre toutes les extrémités d'association de MktTerminal avec d'autres classes.

Tableau 82 – Extrémités d'association de MarketOpCommon::MktTerminal avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..1] Flowgate	Flowgate	
[1..1]	[0..*] TerminalConstraintTerm	TerminalConstraintTerm	
[0..*]	[1..1] ConductingEquipment	ConductingEquipment	Hérité de: Terminal
[0..*]	[0..1] ConnectivityNode	ConnectivityNode	Hérité de: Terminal
[0..1]	[0..*] RegulatingControl	RegulatingControl	Hérité de: Terminal
[0..*]	[0..1] TopologicalNode	TopologicalNode	Hérité de: Terminal
[1..*]	[0..1] BusNameMarker	BusNameMarker	Hérité de: Terminal
[1..1]	[0..*] BranchGroupTerminal	BranchGroupTerminal	Hérité de: Terminal
[0..1]	[0..*] Measurements	Measurement	Hérité de: Terminal
[1..1]	[0..2] TieFlow	TieFlow	Hérité de: Terminal
[0..1]	[0..*] OperationalLimitSet	OperationalLimitSet	Hérité de: Terminal
[1..1]	[0..*] HasSecond_MutualCoupling	MutualCoupling	Hérité de: Terminal
[1..1]	[0..*] HasFirst_MutualCoupling	MutualCoupling	Hérité de: Terminal
[1..1]	[0..1] SvPowerFlow	SvPowerFlow	Hérité de: Terminal
[1..1]	[0..*] AuxiliaryEquipment	AuxiliaryEquipment	Hérité de: Terminal
[0..1]	[0..*] TransformerEnd	TransformerEnd	Hérité de: Terminal
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.3.16 MktUserAttribute

Sous-classe de IEC 61968:Domain2:UserAttribute

Le Tableau 83 montre tous les attributs de MktUserAttribute.

Tableau 83 – Attributs de MarketOpCommon::MktUserAttribute

nom	type	description
sequenceNumber	Integer	Hérité de: UserAttribute
name	String	Hérité de: UserAttribute
value	StringQuantity	Hérité de: UserAttribute

Le Tableau 84 montre toutes les extrémités d'association de MktUserAttribute avec d'autres classes.

Tableau 84 – Extrémités d'association de MarketOpCommon::MktUserAttribute avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] ChargeType	ChargeType	
[0..*]	[0..*] MarketStatementLineItem	MarketStatementLineItem	
[0..*]	[0..*] PassThroughBill	PassThroughBill	
[0..*]	[0..*] ChargeGroup	ChargeGroup	
[1..1]	[0..*] AttributeProperty	AttributeProperty	
[0..*]	[0..*] BillDeterminant	BillDeterminant	
[0..*]	[0..1] Transaction	Transaction	Hérité de: UserAttribute

6.5.4 Paquetage MarketPlan

6.5.4.1 Généralités

Définitions du plan du marché pour les marchés planifiés, les événements de marché planifié, les processus de marché réels et les événements de marché réels.

La Figure 24 montre le diagramme de classe MarketPlan.

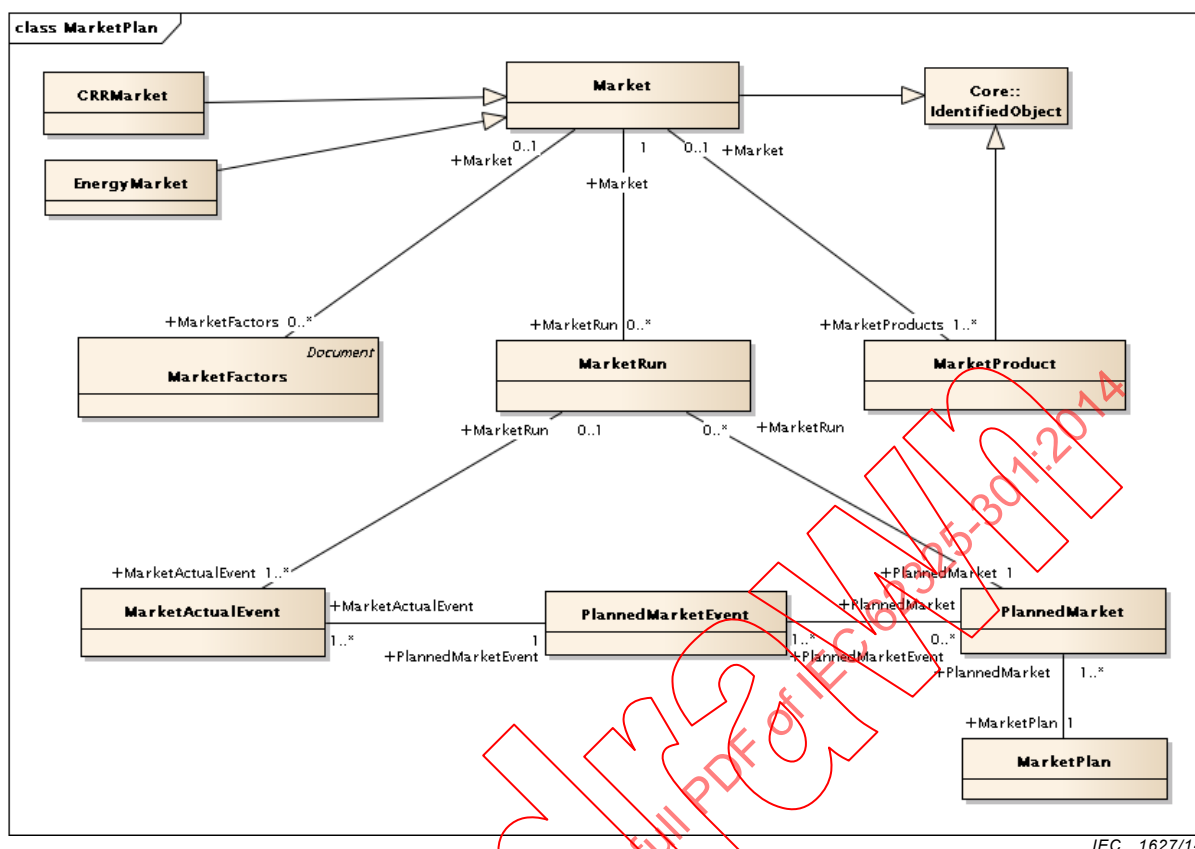


Figure 24 – Diagramme de classe MarketPlan::MarketPlan

Les classes principales illustrées sont utilisées pour identifier une instance d'une solution d'équilibre du marché. La classe Market permet d'identifier si l'instance est un marché J-1 (DAM), heure d'avant (intrajournalier) ou temps réel (RTM). La classe MarketFactors décrit un intervalle de marché comme la date/heure de début et de fin du marché. La classe MarketProduct indique le produit du marché, tel que le service énergétique ou auxiliaire. La classe PlannedMarket décrit les heures de début et de fin du marché. Les relations entre les classes sont également représentées.

6.5.4.2 CRRMarket

Modèle décrivant le marché de vente aux enchères des droits à revenu de congestion.

Le Tableau 85 montre tous les attributs de CRRMarket.

Tableau 85 – Attributs de MarketPlan::CRRMarket

nom	type	description
labelID	String	labelID – un ID pour un ensemble d'apnodes/pnodes utilisé dans un marché de CRR
actualEnd	DateTime	Hérité de: Market
actualStart	DateTime	Hérité de: Market
dst	Boolean	Hérité de: Market
end	DateTime	Hérité de: Market
localTimeZone	String	Hérité de: Market
start	DateTime	Hérité de: Market
status	String	Hérité de: Market
timeIntervalLength	Float	Hérité de: Market
tradingDay	DateTime	Hérité de: Market
tradingPeriod	String	Hérité de: Market
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 86 montre toutes les extrémités d'association de CRRMarket avec d'autres classes.

Tableau 86 – Extrémités d'association de MarketPlan::CRRMarket avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[1..*] CRR	CRR	
[0..1]	[0..*] MarketFactors	MarketFactors	Hérité de: Market
[0..1]	[1..*] MarketProducts	MarketProduct	Hérité de: Market
[1..1]	[0..*] MarketRun	MarketRun	Hérité de: Market
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.4.3 EnergyMarket

Marché énergétique et auxiliaire (ex. énergie, réserve tournante, réserve non tournante) avec une description des paramètres de réglage des opérations du marché.

Le Tableau 87 montre tous les attributs de EnergyMarket.

Tableau 87 – Attributs de MarketPlan::EnergyMarket

nom	type	description
actualEnd	DateTime	Hérité de: Market
actualStart	DateTime	Hérité de: Market
dst	Boolean	Hérité de: Market
end	DateTime	Hérité de: Market
localTimeZone	String	Hérité de: Market
start	DateTime	Hérité de: Market
status	String	Hérité de: Market
timeIntervalLength	Float	Hérité de: Market
tradingDay	DateTime	Hérité de: Market
tradingPeriod	String	Hérité de: Market
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 88 montre toutes les extrémités d'association de EnergyMarket avec d'autres classes.

Tableau 88 – Extrémités d'association de MarketPlan::EnergyMarket avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] RegisteredResources	RegisteredResource	
[0..*]	[0..1] RTO	RTO	
[0..1]	[0..*] Settlements	Settlement	
[1..1]	[0..1] MarketResults	MarketResults	
[1..1]	[0..*] Bids	Bid	
[0..1]	[0..*] MarketFactors	MarketFactors	Hérité de: Market
[0..1]	[1..*] MarketProducts	MarketProduct	Hérité de: Market
[1..1]	[0..*] MarketRun	MarketRun	Hérité de: Market
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.4.4 Market

Marché (à J-1 ou temps réel, par ex.) avec une description des paramètres de contrôle des opérations du marché.

Le Tableau 89 montre tous les attributs de Market.

Tableau 89 – Attributs de MarketPlan::Market

nom	type	description
actualEnd	DateTime	Heure de fin du marché – fin du marché réelle
actualStart	DateTime	Heure de début du marché – début du marché réel
dst	Boolean	True si l'heure d'économie d'énergie (DST, <i>Daylight Savings Time</i>) est appliquée.
end	DateTime	Heure de fin du marché.
localTimeZone	String	Fuseau horaire local.
start	DateTime	Heure de début du marché.
status	String	Statut du marché "OPEN" (OUVERT), "CLOSED" (FERME), "CLEARED" (EQUILIBRE), "BLOCKED" (BLOQUE)
timeIntervalLength	Float	Longueur de l'intervalle de temps entre les transactions
tradingDay	DateTime	Date de transaction sur le marché
tradingPeriod	String	Période d'échange décrivant le marché. Pour un marché de l'énergie: Jour Heure Pour un marché de CRR: Année Mois Saison
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 90 montre toutes les extrémités d'association de Market avec d'autres classes.

Tableau 90 – Extrémités d'association de MarketPlan::Market avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..1]	[0..*] MarketFactors	MarketFactors	
[0..1]	[1..*] MarketProducts	MarketProduct	
[1..1]	[0..*] MarketRun	MarketRun	
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.4.5 Classe racine MarketActualEvent

Cette classe représente l'instance réelle d'un événement.

Le Tableau 91 montre tous les attributs de MarketActualEvent.

Tableau 91 – Attributs de MarketPlan::MarketActualEvent

nom	type	description
description	String	Description de l'événement.
eventID	String	ID événement réel.
eventTime	DateTime	Heure de début de l'événement.

Le Tableau 92 montre toutes les extrémités d'association de MarketActualEvent avec d'autres classes.

Tableau 92 – Extrémités d'association de MarketPlan::MarketActualEvent avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..*]	[0..1] MarketRun	MarketRun	Processus de marché déclenché par cet événement réel. Par exemple, le processus DA est déclenché par l'événement de l'ouverture de d'un appel d'offres réel et se termine par l'événement de clôture d'un appel d'offres réel.
[1..*]	[1..1] PlannedMarketEvent	PlannedMarketEvent	Événement planifié exécuté par cet événement réel.

6.5.4.6 MarketFactors

Agrégation des informations du marché relatives à un intervalle de temps spécifique.

Le Tableau 93 montre tous les attributs de MarketFactors.

Tableau 93 – Attributs de MarketPlan::MarketFactors

nom	type	description
intervalEndTime	DateTime	Fin de l'intervalle de temps pour lequel une exigence est définie.
intervalStartTime	DateTime	Début de l'intervalle de temps pour lequel une exigence est définie.
type	String	Hérité de: Document
createdDateTime	DateTime	Hérité de: Document
lastModifiedDateTime	DateTime	Hérité de: Document
revisionNumber	String	Hérité de: Document
electronicAddress	ElectronicAddress	Hérité de: Document
subject	String	Hérité de: Document
title	String	Hérité de: Document
docStatus	Status	Hérité de: Document
status	Status	Hérité de: Document
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 94 montre toutes les extrémités d'association de MarketFactors avec d'autres classes.

Tableau 94 – Extrémités d'association de MarketPlan::MarketFactors avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	
[0..*]	[0..1] Market	Market	
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.4.7 Classe racine MarketPlan

Cette classe identifie un ensemble de marchés planifiés. Elle est le conteneur de ces marchés.

Le Tableau 95 montre tous les attributs de MarketPlan.

Tableau 95 – Attributs de MarketPlan::MarketPlan

nom	type	description
description	String	Description du marché planifié.
marketPlanID	String	Identifiant du marché planifié.
name	String	Nom du marché planifié.
tradingDay	DateTime	Jour d'échange du marché planifié.

Le Tableau 96 montre toutes les extrémités d'association de MarketPlan avec d'autres classes.

Tableau 96 – Extrémités d'association de MarketPlan::MarketPlan avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[1..*] PlannedMarket	PlannedMarket	Un plan de marché comprend plusieurs marchés (DA, HA, RT)

6.5.4.8 MarketProduct

Produit commercialisé par un RTO (ex. énergie, réserve tournante de 10 min). Des exemples de produits de services auxiliaires sont: régulation à la hausse, régulation à la baisse, réserve tournante, réserve non tournante, réserve d'exploitation.

Le Tableau 97 montre tous les attributs de MarketProduct.

Tableau 97 – Attributs de MarketPlan::MarketProduct

nom	type	description
marketProductType	MarketProductType	Exemples de type de produit du marché: EN (<i>Energy</i> , Energie) RU (<i>Regulation Up</i> , Régulation à la hausse) RD (<i>Regulation Dn</i> , Régulation à la baisse) SR (<i>Spinning Reserve</i> , Réserve tournante) NR (<i>Non-Spinning Reserve</i> , Réserve non tournante) RC (RUC, <i>Residual Unit Commitment</i> – Gestion de la production résiduelle)
rampInterval	Float	Intervalle de temps de rampe pour le type de produit du marché spécifié par l'attribut marketProductType. Par exemple, si marketProductType = EN (énumération MarketProductType), alors rampInterval est l'intervalle de temps de rampe de Energy.
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 98 montre toutes les extrémités d'association de MarketProduct avec d'autres classes.

Tableau 98 – Extrémités d'association de MarketPlan::MarketProduct avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..*]	[0..1] Market	Market	
[1..1]	[0..*] ProductBids	ProductBid	
[1..1]	[0..*] ResourceAwardInstruction	ResourceAwardInstruction	
[0..1]	[0..*] BidError	BidError	
[0..1]	[0..*] BidPriceCap	BidPriceCap	
[0..1]	[0..1] MarketRegionResults	MarketRegionResults	
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.4.9 Classe racine MarketRun

Cette classe représente une instance réelle d'un marché planifié. Par exemple, un marché à J-1 s'ouvre avec l'ouverture d'un appel d'offres (Bid Submission) et se termine par la clôture de cet appel d'offres. Le processus de marché représente l'ensemble du processus. MarketRuns peut être défini pour les marchés, tels que Day Ahead Market (marché à J-1), Real Time Market (marché en temps réel), Hour Ahead Market (marché de l'heure d'avant) et Week Ahead Market (marché de la semaine d'avant)...

Le Tableau 99 montre tous les attributs de MarketRun.

Tableau 99 – Attributs de MarketPlan::MarketRun

nom	type	description
executionType	ExecutionType	Type d'exécution: J-1, intrajournalier, pré-répartition en temps réel, répartition en temps réel
marketApprovalTime	DateTime	Heure approuvée de la répartition. Identifie l'heure à laquelle le répartiteur approuve un cas de répartition d'unités en temps réel spécifique.
marketApprovedStatus	Boolean	Défini sur True lorsque le plan est approuvé par une autorité. Celui-ci devient le plan officiel du marché à J-1. Identifie le cas approuvé du marché pour l'intervalle de temps spécifié.
marketEndTime	DateTime	Heure de fin définie comme la fin du marché: heure de fin du marché.
marketID	String	Identification qui définit les attributs du marché. Dans les conditions actuelles: Type de marché: DA, RTM, Date d'opération: 1/25/04, Heure d'opération: 1-25
marketRunID	String	Identifiant unique qui distingue les différents processus d'un même ID marché. De manière spécifique, si le marché est réouvert, puis refermé et complètement relancé, le premier et le deuxième ensemble de résultats produits auront le même ID marché, mais n'auront pas les mêmes ID processus de marché puisque les différents processus correspondent au même marché.
marketStartTime	DateTime	Heure de début définie comme le début du marché: heure de début du marché.
marketType	MarketType	Type de marché: marché à J-1 ou marché en temps réel.
reportedState	String	Etat des activités de processus de marché telles que rapportées par les systèmes de marché aux services de définition du marché.
runState	String	Etat contrôlé par le service de définition du marché. Exemples de valeurs possibles: Open (Ouvert), Close (Fermé)...

Le Tableau 100 montre toutes les extrémités d'association de MarketRun avec d'autres classes.

Tableau 100 – Extrémités d'association de MarketPlan::MarketRun avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[1..1] Market	Market	
[0..1]	[1..*] MarketActualEvent	MarketActualEvent	Tous les événements réels qui déclenchent ce processus de marché.
[0..*]	[1..1] PlannedMarket	PlannedMarket	Un marché planifié peut avoir plusieurs processus de marché, car il peut présenter un nouveau processus.

6.5.4.10 Classe racine PlannedMarket

Modélise un marché planifié. Par exemple, un marché DA/HA/RT planifié.

Le Tableau 101 montre tous les attributs de PlannedMarket.

Tableau 101 – Attributs de MarketPlan::PlannedMarket

nom	type	description
marketEndTime	DateTime	Heure de fin du marché.
marketID	String	Identification qui définit les attributs du marché. Dans les conditions actuelles: Type de marché: DA, RTM, Date d'opération: 1/25/04, Heure d'opération: 1-25.
marketStartTime	DateTime	Heure de début du marché.
marketType	MarketType	Type de marché.

Le Tableau 102 montre toutes les extrémités d'association de PlannedMarket avec d'autres classes.

Tableau 102 – Extrémités d'association de MarketPlan::PlannedMarket avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[0..*] MarketRun	MarketRun	Un marché planifié peut avoir plusieurs processus de marché, car il peut présenter un nouveau processus.
[0..*]	[1..*] PlannedMarketEvent	PlannedMarketEvent	Un marché planifié doit avoir un ensemble d'événements planifiés.
[1..*]	[1..1] MarketPlan	MarketPlan	Un plan de marché comprend plusieurs marchés (DA, HA, RT)

6.5.4.11 Classe racine PlannedMarketEvent

Cette classe représente des événements planifiés. Elle est utilisée pour modéliser les différents événements planifiés dans un marché (heure de fermeture, temps de compensation, etc.)

Le Tableau 103 montre tous les attributs de PlannedMarketEvent.

Tableau 103 – Attributs de MarketPlan::PlannedMarketEvent

nom	type	description
description	String	Description de l'événement planifié.
eventType	String	Type d'événement planifié.
plannedEventID	String	Identifiant de l'événement planifié.
plannedTime	Integer	C'est un temps relatif pour que cet attribut puisse être utilisé par plusieurs marchés planifiés. Par exemple, la soumission des offres s'effectue tous les jours à 10h.

Le Tableau 104 montre toutes les extrémités d'association de PlannedMarketEvent avec d'autres classes.

**Tableau 104 – Extrémités d'association de MarketPlan::
PlannedMarketEvent avec d'autres classes**

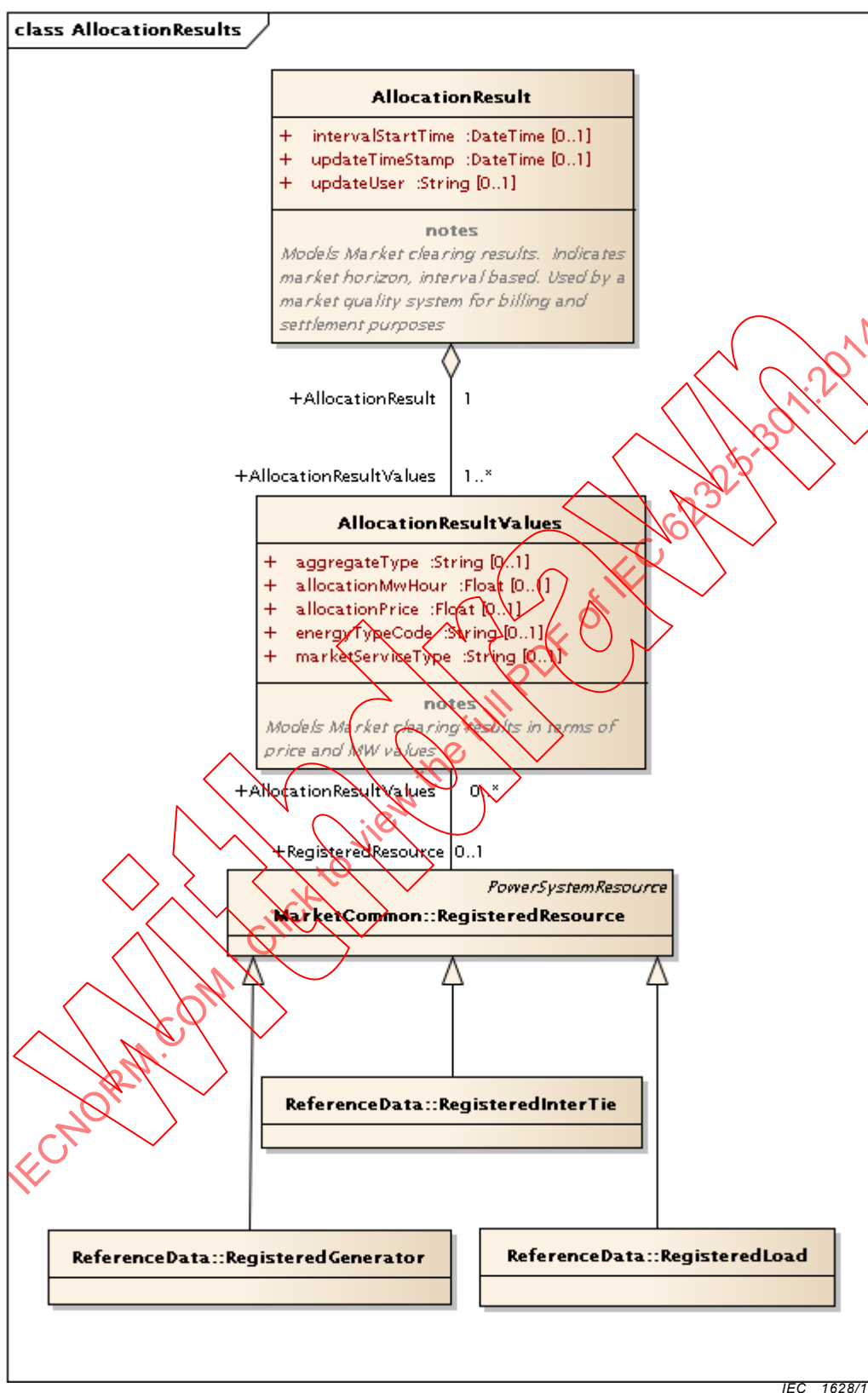
[mult à partir de]	[mult vers] nom	type	description
[1..1]	[1..*] MarketActualEvent	MarketActualEvent	Tous les événements réels qui exécutent cet événement planifié.
[1..*]	[0..*] PlannedMarket	PlannedMarket	Un marché planifié doit avoir un ensemble d'événements planifiés.

6.5.5 Paquetage MarketQualitySystem

6.5.5.1 Généralités

Comptabilité, calcul et corrections des données de compteur post-commercialisation pour réduire les erreurs et les litiges relatifs à la facturation. Réduit la validation, la vérification et la correction manuelles des données de transaction qui pourraient influencer sur les règlements du marché. Nouvelle publication des résultats du marché après correction des données concernées.

La Figure 25 montre le diagramme de classe AllocationResults.



Légende

Anglais	Français
Class AllocationResults	Classe AllocationResults

Anglais	Français
Notes Models Market clearing results. Indicates market horizon, interval based. Used by a market quality system for billing and settlement purposes	Notes Modélise les résultats d'équilibre du marché. Indique l'horizon du marché sur la base d'intervalles. Utilisée par un système de qualité du marché à des fins de facturation et de règlement
Notes Models Market clearing results in terms of price and MW values	Notes Modélise les résultats d'équilibre du marché en termes de prix et de MW

Figure 25 – Diagramme de classe MarketQualitySystem::AllocationResults

Cette figure montre les principales classes associées au système de qualité du marché (MQS, *Market Quality System*) qui est généralement utilisé pour effectuer des analyses avant la facturation et le règlement. Elle décrit les résultats envoyés au MQS. Les principales classes incluent AllocationResult qui définit l'horizon du marché. Les résultats attribués sont décrits dans les classes AllocationResultsValues et RegisteredResource, ainsi que dans les sous-classes pour les générateurs, les interconnexions et les charges.

6.5.5.2 Classe racine AllocationResult

Modélise les résultats d'équilibre du marché. Indique l'horizon du marché sur la base d'intervalles. Utilisée par un système de qualité du marché à des fins de facturation et de règlement.

Le Tableau 105 montre tous les attributs de AllocationResult.

Tableau 105 – Attributs de MarketQualitySystem::AllocationResult

nom	type	description
intervalStartTime	DateTime	
updateUser	String	
updateTimeStamp	DateTime	

Le Tableau 106 montre toutes les extrémités d'association de AllocationResult avec d'autres classes.

Tableau 106 – Extrémités d'association de MarketQualitySystem::AllocationResult avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[1..*] AllocationResultValues	AllocationResultValues	

6.5.5.3 Classe racine AllocationResultValues

Modélise les résultats d'équilibre du marché en termes de prix et de MW.

Le Tableau 107 montre tous les attributs de AllocationResultValues.

Tableau 107 – Attributs de MarketQualitySystem::AllocationResultValues

nom	type	description
aggregateType	String	"1" – "Detail", "2" – "Aggregate by Market service type", auquel cas le champ "AllocationEnergyType" ne sera pas renseigné; "3" – "Aggregate by "AllocationEnergyType", auquel cas "MarketServiceType" ne sera pas renseigné.
allocationMwHour	Float	
allocationPrice	Float	
energyTypeCode	String	
marketServiceType	String	Il convient de choisir entre: ME – Market Energy (capacité d'énergie du marché); SR – Spinning Reserve (capacité de réserve tournante); NR – Non-Spinning Reserve (capacité de réserve non tournante); DAC – Day Ahead Capacity (capacité à J-1); DEC – Derate Capacity (capacité de réduction).

Le Tableau 108 montre toutes les extrémités d'association de AllocationResultValues avec d'autres classes.

Tableau 108 – Extrémités d'association de MarketQualitySystem::AllocationResultValues avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..1] RegisteredResource	RegisteredResource	
[1..*]	[1..1] AllocationResult	AllocationResult	

6.5.5.4 Classe racine AuxiliaryCost

Modélise les résultats d'équilibre du marché pour les coûts auxiliaires.

Le Tableau 109 montre tous les attributs de AuxiliaryCost.

Tableau 109 – Attributs de MarketQualitySystem::AuxiliaryCost

nom	type	description
intervalStartTime	DateTime	
marketType	MarketType	
updateTimeStamp	DateTime	
updateUser	String	

Le Tableau 110 montre toutes les extrémités d'association de AuxiliaryCost avec d'autres classes.

Tableau 110 – Extrémités d'association de MarketQualitySystem::AuxiliaryCost avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[1..*] AuxiliaryValues	AuxiliaryValues	

6.5.5.5 Classe racine AuxiliaryObject

Modélise les valeurs auxiliaires.

Le Tableau 111 montre toutes les extrémités d'association de AuxiliaryObject avec d'autres classes.

Tableau 111 – Extrémités d'association de MarketQualitySystem::AuxiliaryObject avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..1] RegisteredLoad	RegisteredLoad	
[0..*]	[0..1] RegisteredGenerator	RegisteredGenerator	

6.5.5.6 AuxiliaryValues

Modélise les valeurs auxiliaires.

Le Tableau 112 montre tous les attributs de AuxiliaryValues.

Tableau 112 – Attributs de MarketQualitySystem::AuxiliaryValues

nom	type	description
minExpostCapacity	Float	
maxExpostCapacity	Float	
availUndispatchedQ	Float	
incrementalORAvail	Float	
startUpCost	Float	
startUpCostEligibilityFlag	YesNo	
noLoadCost	Float	
noLoadCostEligibilityFlag	YesNo	

Le Tableau 113 montre toutes les extrémités d'association de AuxiliaryValues avec d'autres classes.

Tableau 113 – Extrémités d'association de MarketQualitySystem::AuxiliaryValues avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..*]	[1..1] AuxillaryCost	AuxiliaryCost	
[1..*]	[1..1] TenMinAuxillaryData	TenMinAuxiliaryData	
[1..*]	[1..1] FiveMinAuxillaryData	FiveMinAuxiliaryData	
[0..*]	[0..1] RegisteredLoad	RegisteredLoad	Hérité de: AuxiliaryObject
[0..*]	[0..1] RegisteredGenerator	RegisteredGenerator	Hérité de: AuxiliaryObject

6.5.5.7 Classe racine ExpectedEnergy

Modélise l'énergie prévue à partir de l'ajustement du marché sur la base d'intervalles.

Le Tableau 114 montre tous les attributs de ExpectedEnergy.

Tableau 114 – Attributs de MarketQualitySystem::ExpectedEnergy

nom	type	description
intervalStartTime	DateTime	
updateUser	String	
updateTimeStamp	DateTime	

Le Tableau 115 montre toutes les extrémités d'association de ExpectedEnergy avec d'autres classes.

Tableau 115 – Extrémités d'association de MarketQualitySystem::ExpectedEnergy avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[1..*] ExpectedEnergyValues	ExpectedEnergyValues	

6.5.5.8 Classe racine ExpectedEnergyValues

Modélise l'énergie prévue à partir de l'ajustement du marché.

Le Tableau 116 montre tous les attributs de ExpectedEnergyValues.

Tableau 116 – Attributs de MarketQualitySystem::ExpectedEnergyValues

nom	type	description
energyTypeCode	String	
expectedMwh	Float	

Le Tableau 117 montre toutes les extrémités d'association de ExpectedEnergyValues avec d'autres classes.

Tableau 117 – Extrémités d'association de MarketQualitySystem::ExpectedEnergyValues avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..1] RegisteredResource	RegisteredResource	
[1..*]	[1..1] ExpectedEnergy	ExpectedEnergy	

6.5.5.9 Classe racine FiveMinAuxiliaryData

Modélise des données auxiliaires de 5 min.

Le Tableau 118 montre tous les attributs de FiveMinAuxiliaryData.

Tableau 118 – Attributs de MarketQualitySystem::FiveMinAuxiliaryData

nom	type	description
intervalStartTime	DateTime	
updateUser	String	
updateTimeStamp	DateTime	

Le Tableau 119 montre toutes les extrémités d'association de FiveMinAuxiliaryData avec d'autres classes.

Tableau 119 – Extrémités d'association de MarketQualitySystem::FiveMinAuxiliaryData avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[1..*] AuxiliaryValues	AuxiliaryValues	

6.5.5.10 Classe racine TenMinAuxiliaryData

Modélise des données auxiliaires de 10 min.

Le Tableau 120 montre tous les attributs de TenMinAuxiliaryData.

Tableau 120 – Attributs de MarketQualitySystem::TenMinAuxiliaryData

nom	type	description
intervalStartTime	DateTime	
updateUser	String	
updateTimeStamp	DateTime	

Le Tableau 121 montre toutes les extrémités d'association de TenMinAuxiliaryData avec d'autres classes.

Tableau 121 – Extrémités d'association de MarketQualitySystem::TenMinAuxiliaryData avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[1..*] AuxillaryData	AuxiliaryValues	

6.5.5.11 Classe racine TradingHubPrice

Modélise les prix sur les plates-formes de négociation sur la base d'intervalles.

Le Tableau 122 montre tous les attributs de TradingHubPrice.

Tableau 122 – Attributs de MarketQualitySystem::TradingHubPrice

nom	type	description
intervalStartTime	DateTime	
marketType	MarketType	
updateUser	String	
updateTimeStamp	DateTime	

Le Tableau 123 montre toutes les extrémités d'association de TradingHubPrice avec d'autres classes.

Tableau 123 – Extrémités d'association de MarketQualitySystem::TradingHubPrice avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[1..*] TradingHubValues	TradingHubValues	

6.5.5.12 Classe racine TradingHubValues

Modélise les prix sur les plates-formes de négociation.

Le Tableau 124 montre tous les attributs de TradingHubValues.

Tableau 124 – Attributs de MarketQualitySystem::TradingHubValues

nom	type	description
price	Float	Utilise le type de marché. Pour DA, le prix est calculé sur une base horaire. Pour RTM, le prix est défini pour 5 min.

Le Tableau 125 montre toutes les extrémités d'association de TradingHubValues avec d'autres classes.

Tableau 125 – Extrémités d'association de MarketQualitySystem::TradingHubValues avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[1..1] AggregatedPnode	AggregatedPnode	
[1..*]	[1..1] TradingHubPrice	TradingHubPrice	

6.5.6 Paquetage MarketSystem

6.5.6.1 Généralités

Résultats du marché et entrées externes consommées par les marchés.

6.5.6.2 Paquetage ExternalInputs

6.5.6.2.1 Généralités

Entre dans le système de marché depuis les sources externes.

La Figure 26 montre le diagramme de classe ASRequirements.

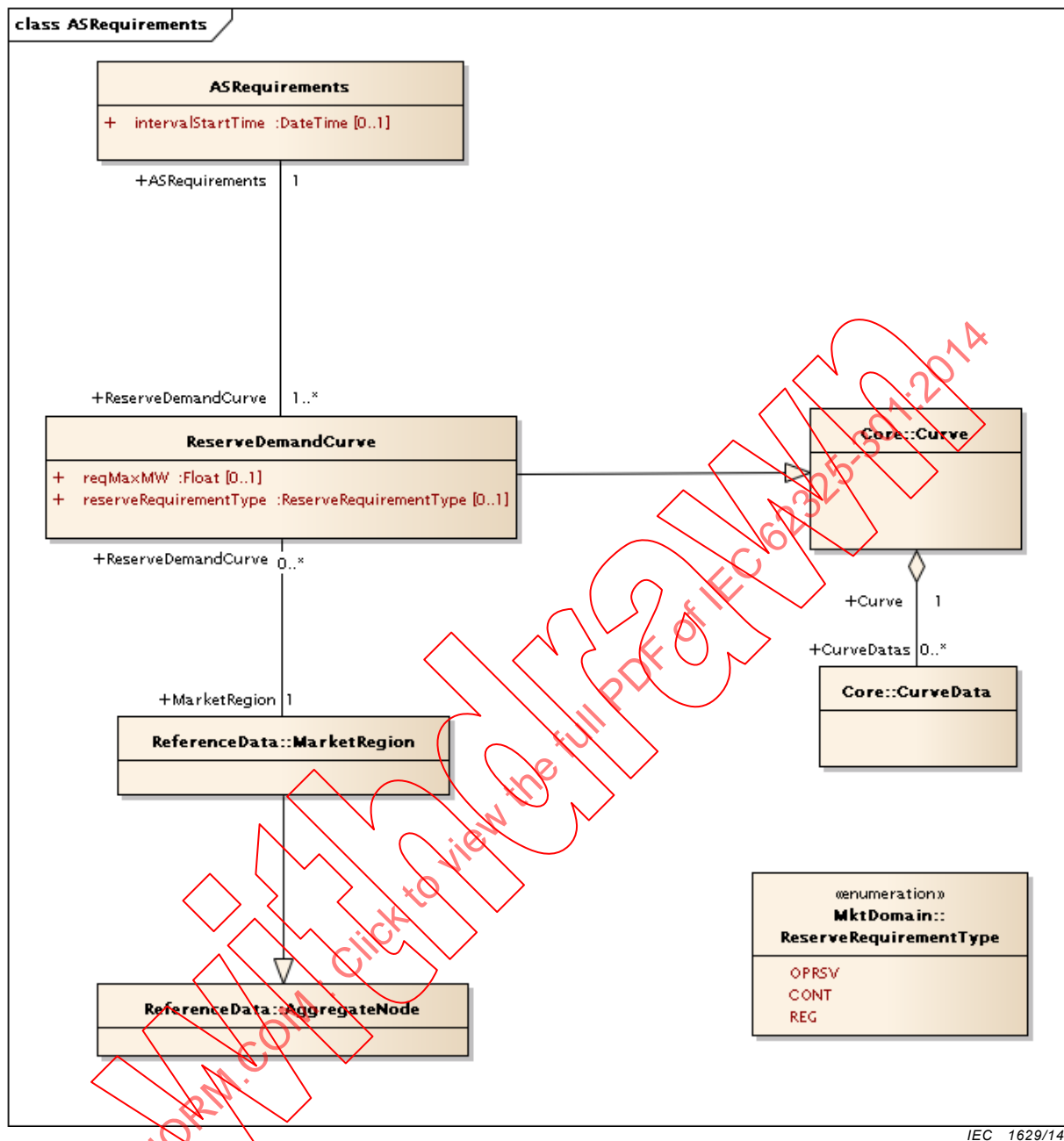


Figure 26 – Diagramme de classe ExternalInputs::ASRequirements

Cette figure modélise les exigences des services auxiliaires. La classe ASRequirements est utilisée pour décrire l'intervalle pour lequel l'AncillaryService (service auxiliaire) est exigé et pour indiquer les quantités de services auxiliaires exigées. L'association à MarketRegion modélise les exigences régionales des services auxiliaires. La classe MarketProduct est utilisée pour décrire la classe particulière de service auxiliaire.

La Figure 27 montre le diagramme de classe DefaultBids.

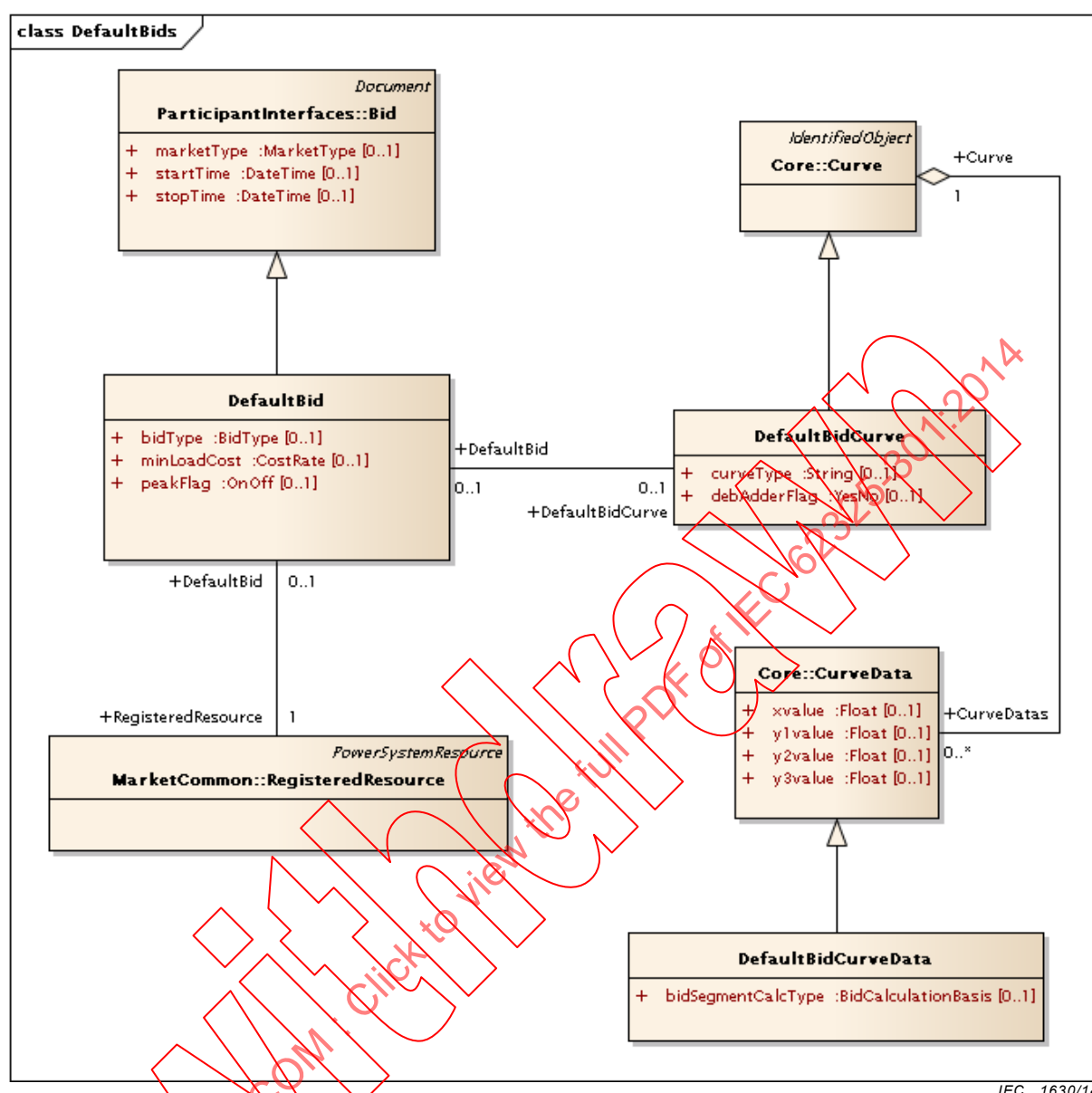
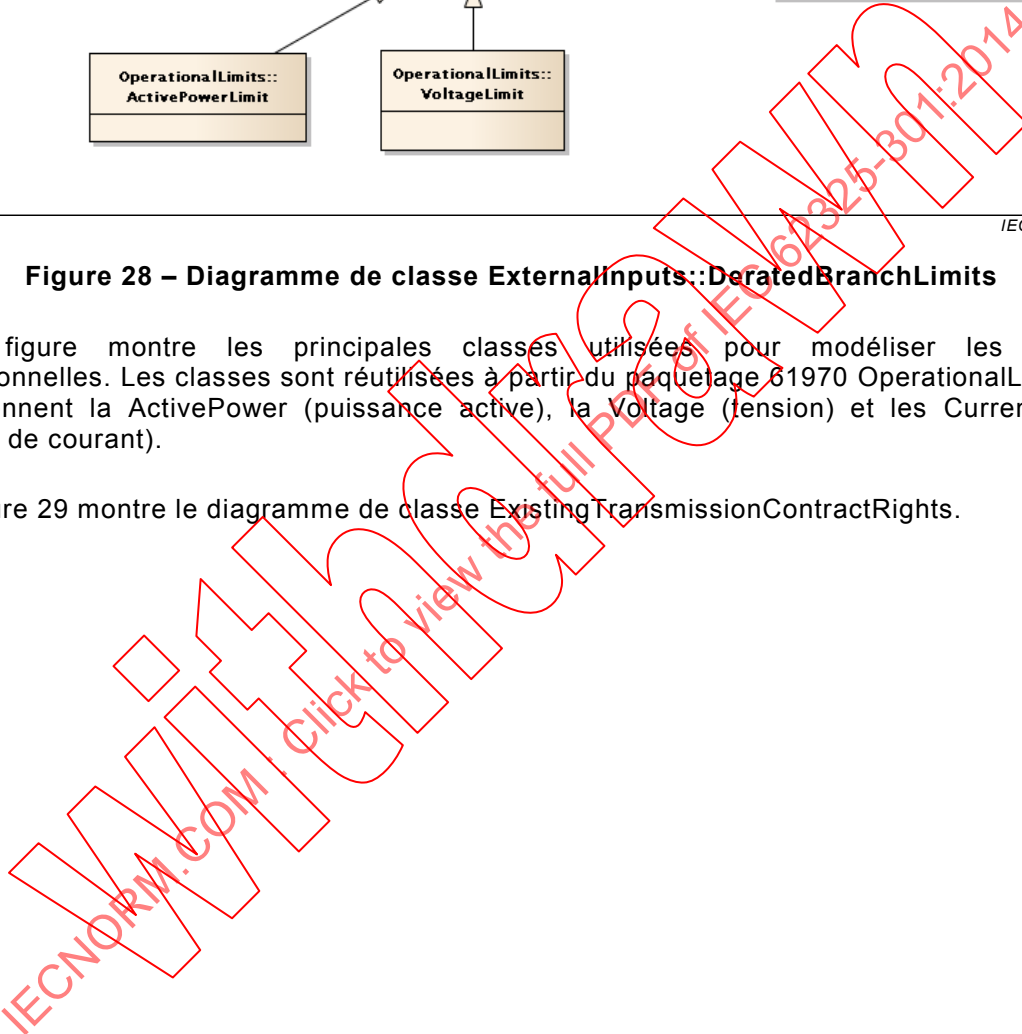


Figure 27 – Diagramme de classe ExternalInputs::DefaultBids

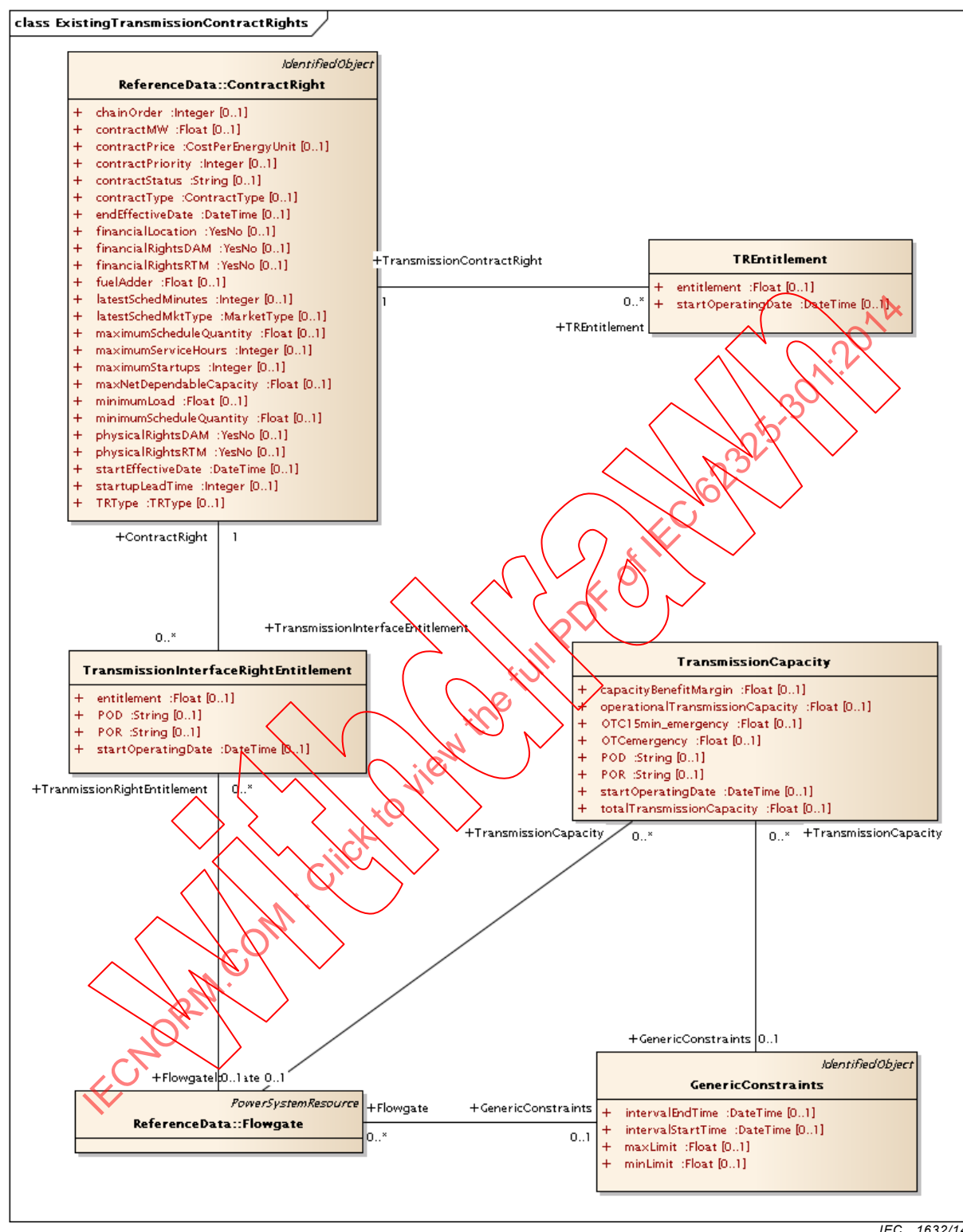
L'atténuation de l'emprise sur le marché (Market Power Mitigation) est un processus qui permet de détecter la tentative d'un participant d'exercer un pouvoir de marché. La détection est suivie de mesures correctives. Il s'agit par exemple de remplacer l'offre d'origine par une offre par défaut. Cette figure montre les classes utilisées pour modéliser une offre par défaut: Curve et Curve Data (du paquetage principal 61970), ainsi que la classe générique DefaultBid qui peut être utilisée pour décrire davantage les méthodes de mesures correctives spécifiques du marché. Trois méthodes types sont utilisées: LMP, coût basé sur l'indice du gaz ou négociation hors marché.

La Figure 28 montre le diagramme de classe DeratedBranchLimits.



Cette figure montre les principales classes utilisées pour modéliser les limites opérationnelles. Les classes sont réutilisées à partir du paquetage 61970 OperationalLimits et comprennent la ActivePower (puissance active), la Voltage (tension) et les CurrentLimits (limites de courant).

La Figure 29 montre le diagramme de classe ExistingTransmissionContractRights.



IEC 1632/14

Figure 29 – Diagramme de classe ExternalInputs::ExistingTransmissionContractRights

Lors du démarrage et de l'évolution des marchés LMP, il s'est avéré nécessaire de prendre en compte les droits de transport existants dans la solution du marché. Cette figure montre les principales classes utilisées pour modéliser ces droits existants. La classe ContractRight inclut des informations sur les droits spécifiques qui sont contractés en termes de puissance active et d'autres informations contractuelles. TransmissionInterfaceRightEntitlement décrit les aspects physiques du droit dans les points de livraison et de réception associés de la puissance active.

La Figure 30 montre le diagramme de classe IntermittentResourceSchedules.

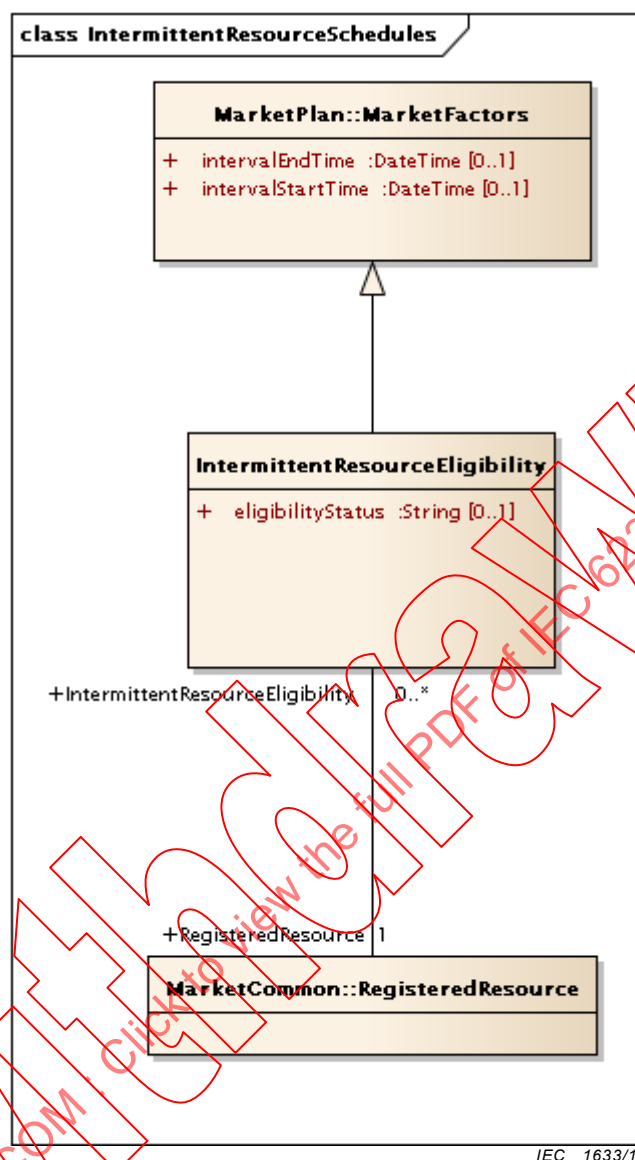


Figure 30 – Diagramme de classe ExternalInputs::IntermittentResourceSchedules

Cette figure montre les classes principales utilisées pour modéliser les ressources (variables) intermittentes. Elle est habituellement utilisée pour modéliser les énergies renouvelables, telles que l'énergie éolienne. La classe IntermittentResourceEligibility permet d'indiquer si les ressources peuvent participer en tant que ressources renouvelables régies par un régime générique de ressources renouvelables.

La Figure 31 montre le diagramme de classe LoadForecast.

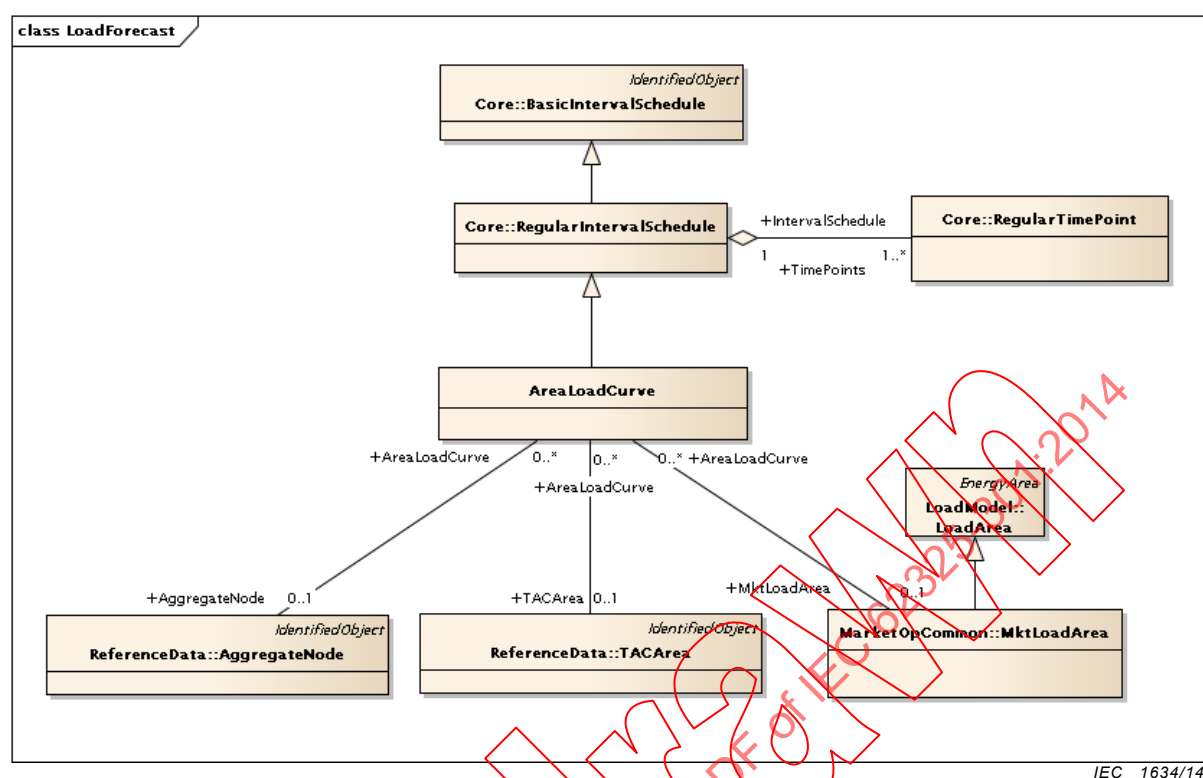


Figure 31 – Diagramme de classe ExternalInputs::LoadForecast

Cette figure montre les classes utilisées pour modéliser la prévision de charge dans l'horizon temporel du marché. Le modèle réutilisé est classé dans le paquetage Core 61970 et ajoute des modèles spécifiques aux marchés.

La Figure 32 montre le diagramme de classe OutageOrDeratedEquipment.

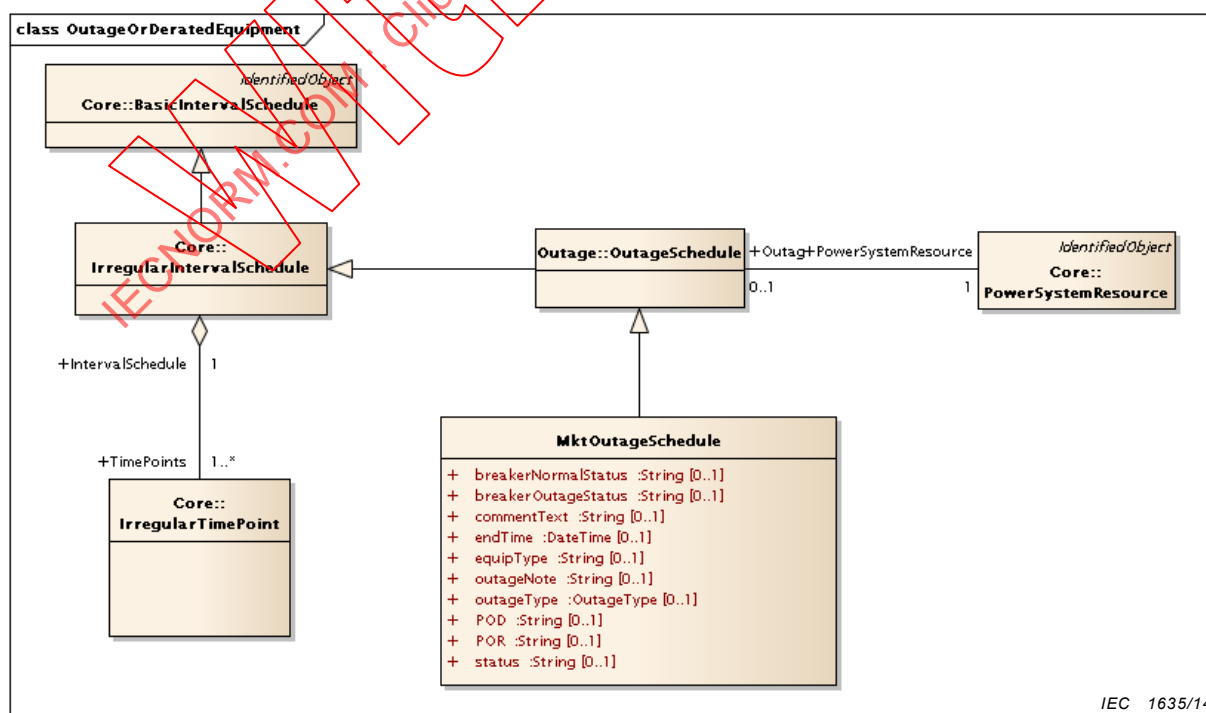
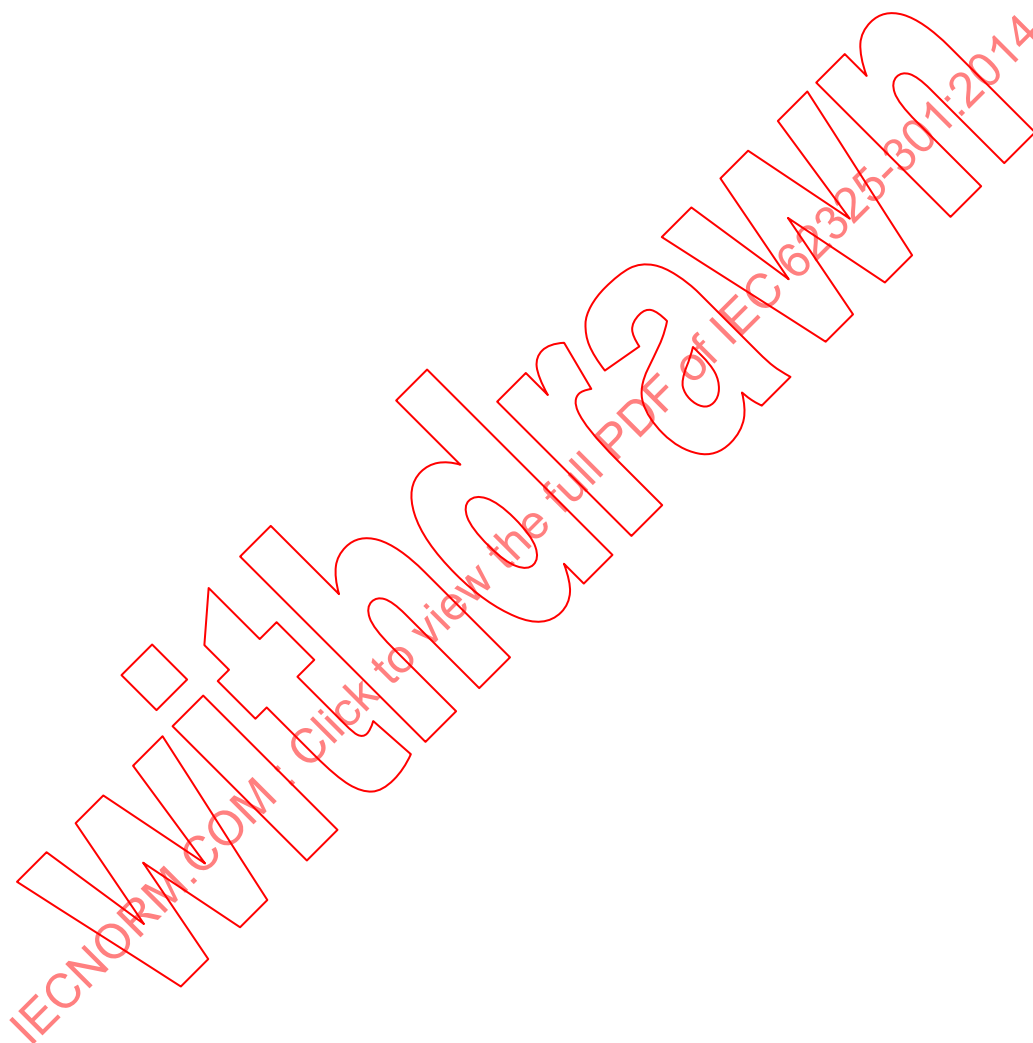


Figure 32 – Diagramme de classe ExternalInputs::OutageOrDeratedEquipment

Cette figure montre les classes et les relations utilisées pour modéliser les indisponibilités programmées. Plusieurs classes sont réutilisées depuis les paquetages 61970. La classe MktOutageSchedule inclut des attributs supplémentaires pour modéliser les réductions des équipements et les indisponibilités dans leur intégralité.

La Figure 33 montre le diagramme de classe Telemetry.



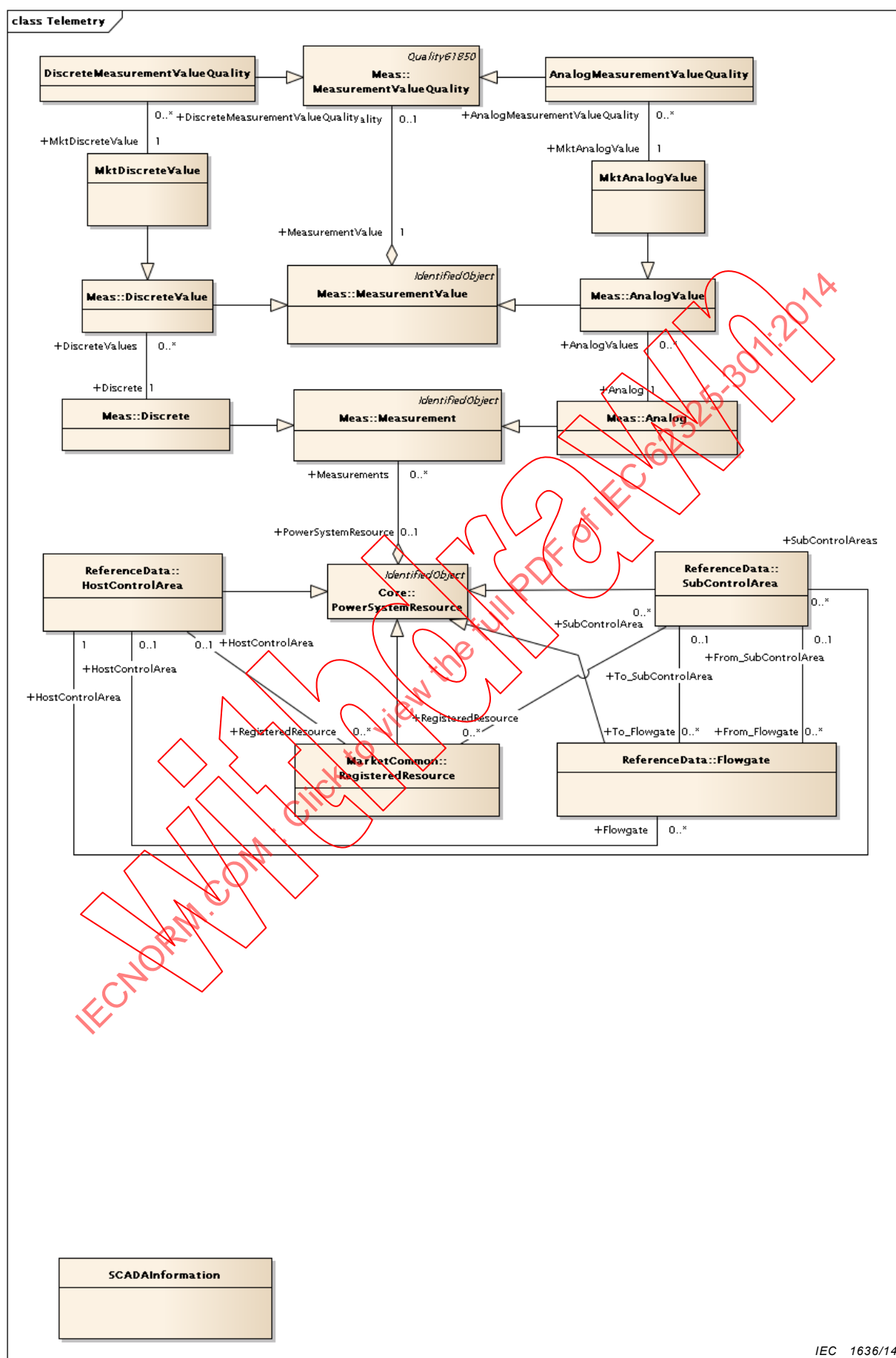


Figure 33 – Diagramme de classe ExternalInputs::Telemetry

Cette figure montre les classes permettant de modéliser la télémétrie qui peut être utilisée (en cas de défaillance ou d'indisponibilité d'une solution d'estimateur d'état) pour lancer un processus de marché en temps réel. La figure montre les classes du paquetage 61970 et d'autres classes RegisteredResource et Flowgate spécifiques au marché, ainsi que leurs relations avec les classes des paquetages 61970.

6.5.6.2.2 AnalogMeasurementValueQuality

Indicateurs de qualité de mesure des valeurs Analog (c'est-à-dire analogiques).

Le Tableau 126 montre tous les attributs de AnalogMeasurementValueQuality.

Tableau 126 – Attributs de ExternalInputs::AnalogMeasurementValueQuality

nom	type	description
scadaQualityCode	String	Code de qualité d'une valeur Analog donnée.
badReference	Boolean	Hérité de: Quality61850
estimatorReplaced	Boolean	Hérité de: Quality61850
failure	Boolean	Hérité de: Quality61850
oldData	Boolean	Hérité de: Quality61850
operatorBlocked	Boolean	Hérité de: Quality61850
oscillatory	Boolean	Hérité de: Quality61850
outOfRange	Boolean	Hérité de: Quality61850
overflow	Boolean	Hérité de: Quality61850
source	Source	Hérité de: Quality61850
suspect	Boolean	Hérité de: Quality61850
test	Boolean	Hérité de: Quality61850
validity	Validity	Hérité de: Quality61850

Le Tableau 127 montre toutes les extrémités d'association de AnalogMeasurementValueQuality avec d'autres classes.

Tableau 127 – Extrémités d'association de ExternalInputs::AnalogMeasurementValueQuality avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[1..1] MktAnalogValue	MktAnalogValue	
[0..1]	[1..1] MeasurementValue	MeasurementValue	Hérité de: MeasurementValueQuality

6.5.6.2.3 AreaLoadCurve

Définition de courbe de charge de zone.

Le Tableau 128 montre tous les attributs de AreaLoadCurve.

Tableau 128 – Attributs de ExternalInputs::AreaLoadCurve

nom	type	description
forecastType	LoadForecastType	Type de zone de prévision de charge.
endTime	DateTime	Hérité de: RegularIntervalSchedule
timeStep	Seconds	Hérité de: RegularIntervalSchedule
startTime	DateTime	Hérité de: BasicIntervalSchedule
value1Unit	UnitSymbol	Hérité de: BasicIntervalSchedule
value1Multiplier	UnitMultiplier	Hérité de: BasicIntervalSchedule
value2Unit	UnitSymbol	Hérité de: BasicIntervalSchedule
value2Multiplier	UnitMultiplier	Hérité de: BasicIntervalSchedule
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 129 montre toutes les extrémités d'association de AreaLoadCurve avec d'autres classes.

Tableau 129 – Extrémités d'association de ExternalInputs::AreaLoadCurve avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..1] MktLoadArea	MktLoadArea	
[0..*]	[0..1] AggregateNode	AggregateNode	
[0..*]	[0..1] TACArea	TACArea	
[1..1]	[1..*] TimePoints	RegularTimePoint	Hérité de: RegularIntervalSchedule
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.4 Classe racine ASRequirements

Modélise les exigences des services auxiliaires. Décrit l'intervalle pour lequel l'exigence est applicable.

Le Tableau 130 montre tous les attributs de ASRequirements.

Tableau 130 – Attributs de ExternalInputs::ASRequirements

nom	type	description
intervalStartTime	DateTime	Début de l'intervalle de temps pour lequel une exigence est définie.

Le Tableau 131 montre toutes les extrémités d'association de ASRequirements avec d'autres classes.

Tableau 131 – Extrémités d'association de ExternalInputs::ASRequirements avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[1..*] ReserveDemandCurve	ReserveDemandCurve	

6.5.6.2.5 BaseCaseConstraintLimit

Valeur maximale en MW ou MVA pouvant varier dans le temps et limite minimale facultative en MW ou MVA (Y1 et Y2, respectivement) attribuées à un scénario de base d'analyse de contingence. Utiliser CurveSchedule XAxisUnits pour indiquer des MW ou des MVA. A utiliser uniquement si BaseCaseConstraintLimit diffère de DefaultConstraintLimit.

Le Tableau 132 montre tous les attributs de BaseCaseConstraintLimit.

Tableau 132 – Attributs de ExternalInputs::BaseCaseConstraintLimit

nom	type	description
curveStyle	CurveStyle	Hérité de: Curve
xMultiplier	UnitMultiplier	Hérité de: Curve
xUnit	UnitSymbol	Hérité de: Curve
y1Multiplier	UnitMultiplier	Hérité de: Curve
y1Unit	UnitSymbol	Hérité de: Curve
y2Multiplier	UnitMultiplier	Hérité de: Curve
y2Unit	UnitSymbol	Hérité de: Curve
y3Multiplier	UnitMultiplier	Hérité de: Curve
y3Unit	UnitSymbol	Hérité de: Curve
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 133 montre toutes les extrémités d'association de BaseCaseConstraintLimit avec d'autres classes.

Tableau 133 – Extrémités d'association de ExternalInputs::BaseCaseConstraintLimit avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..1]	[1..1] SecurityConstraintSum	SecurityConstraintSum	
[1..1]	[0..*] CurveDatas	CurveData	Hérité de: Curve
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.6 Classe racine BranchEndFlow

Flux et valeurs dynamiques associés à l'extrémité d'une branche.

Le Tableau 134 montre tous les attributs de BranchEndFlow.

Tableau 134 – Attributs de ExternalInputs::BranchEndFlow

nom	type	description
mwFlow	Float	Le flux de MW sur la branche Utilisation de l'attribut: flux de puissance active au niveau de l'appareil, du transformateur, du déphaseur en série ou de l'extrémité ligne
mVARFlow	Float	Le flux MVAR sur la branche Utilisation de l'attribut: flux de puissance réactive au niveau de l'appareil, du transformateur, du déphaseur en série ou de l'extrémité ligne
normalRating	Float	La valeur assignée normale de la branche
longTermRating	Float	La valeur assignée à long terme de la branche
shortTermRating	Float	La valeur assignée à court terme de la branche
loadDumpRating	Float	La valeur assignée de perte de charge de la branche

Le Tableau 135 montre toutes les extrémités d'association de BranchEndFlow avec d'autres classes.

Tableau 135 – Extrémités d'association de ExternalInputs::BranchEndFlow avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..1]	[0..*] MktPowerTransformerEndBFlow	MktPowerTransformer	
[0..1]	[0..*] MktPowerTransformerEndAFlow	MktPowerTransformer	
[0..1]	[0..*] MktACLineSegmentEndAFlow	MktACLineSegment	
[0..1]	[0..*] MktSeriesCompensatorEndBFlow	MktSeriesCompensator	
[0..1]	[0..*] MktACLineSegmentEndBFlow	MktACLineSegment	
[0..1]	[0..*] MktSeriesCompensatorEndAFlow	MktSeriesCompensator	

6.5.6.2.7 ConstraintTerm

Une condition de contrainte est un élément d'une contrainte linéaire.

Le Tableau 136 montre tous les attributs de ConstraintTerm.

Tableau 136 – Attributs de ExternalInputs::ConstraintTerm

nom	type	description
factor	String	
function	String	La fonction est une valeur énumérée qui peut être "active", "réactive" ou "VA" pour indiquer le type de flux.
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 137 montre toutes les extrémités d'association de ConstraintTerm avec d'autres classes.

Tableau 137 – Extrémités d'association de ExternalInputs::ConstraintTerm avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[1..1] SecurityConstraintSum	SecurityConstraintSum	
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.8 ContingencyConstraintLimit

Valeur maximale en MW ou MVA pouvant varier dans le temps et limite minimale facultative en MW ou MVA (Y1 et Y2, respectivement) attribuées à une contrainte pour une contingence spécifique. Utiliser CurveSchedule XAxisUnits pour indiquer des MW ou des MVA.

Le Tableau 138 montre tous les attributs de ContingencyConstraintLimit.

Tableau 138 – Attributs de ExternalInputs::ContingencyConstraintLimit

nom	type	description
curveStyle	CurveStyle	Hérité de: Curve
xMultiplier	UnitMultiplier	Hérité de: Curve
xUnit	UnitSymbol	Hérité de: Curve
y1Multiplier	UnitMultiplier	Hérité de: Curve
y1Unit	UnitSymbol	Hérité de: Curve
y2Multiplier	UnitMultiplier	Hérité de: Curve
y2Unit	UnitSymbol	Hérité de: Curve
y3Multiplier	UnitMultiplier	Hérité de: Curve
y3Unit	UnitSymbol	Hérité de: Curve
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 139 montre toutes les extrémités d'association de ContingencyConstraintLimit avec d'autres classes.

Tableau 139 – Extrémités d'association de ExternalInputs::ContingencyConstraintLimit avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[1..1] SecurityConstraintSum	SecurityConstraintSum	
[1..1]	[1..1] MWLimitSchedules	MWLimitSchedule	
[0..*]	[1..1] MktContingency	MktContingency	
[1..1]	[0..*] CurveDatas	CurveData	Hérité de: Curve
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.9 Classe racine ControlAreaSolutionData

Echange et pertes du pool de solution d'estimateur d'état

Le Tableau 140 montre tous les attributs de ControlAreaSolutionData.

Tableau 140 – Attributs de ExternalInputs::ControlAreaSolutionData

nom	type	description
solvedLosses	Float	MW de pertes de pool Utilisation de l'attribut: les pertes de puissance active du pool en MW
solvedInterchange	Float	Echange en MW du pool Utilisation de l'attribut: l'échange de puissance active du pool

Le Tableau 141 montre toutes les extrémités d'association de ControlAreaSolutionData avec d'autres classes.

Tableau 141 – Extrémités d'association de ExternalInputs::ControlAreaSolutionData avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..1] MktControlArea	MktControlArea	

6.5.6.2.10 DefaultBid

DefaultBid (offre par défaut) est une classe générique regroupant Default Energy Bid, Default Startup Bid et Default Minimum Load Bid:

Default Energy Bid

Une DefaultEnergyBid (offre d'énergie par défaut) est une fonction en escalier croissante composée au maximum de 10 segments d'offre évaluée ou de 10 paires (\$/MW, MW). Il existe trois méthodes pour déterminer la DefaultEnergyBid.:

- selon les coûts: dérivée de la consommation de chaleur ou du coût moyen multiplié par l'indice de prix du gaz plus 10 %.
- selon les LMP: une moyenne pondérée des LMP au cours des 90 derniers jours
- négocié: un montant négocié avec l'entité indépendante désignée.

Default Startup Bid:

Un DSUB (*Default Startup Bid*) doit être calculé pour chaque unité RMR en fonction du StartUpCost(coût de démarrage) indiqué dans le fichier principal et dans le GPI et l'EPI applicables.

Default Minimum Load Bid:

Un DMLB (*Default Minimum Load Bid*) doit être calculé pour chaque unité RMR en fonction du Minimum Load Cost (coût de charge minimal) indiqué dans le fichier principal et dans le GPI applicable.

Le Tableau 142 montre tous les attributs de DefaultBid.

Tableau 142 – Attributs de ExternalInputs::DefaultBid

nom	type	description
bidType	BidType	Type d'offre par défaut tel que Default Energy Bid, Default Minimum Load Bid et Default Startup Bid
minLoadCost	CostRate	Coût de charge minimal en \$/h
peakFlag	OnOff	heures de pointe, heures creuses ou toutes les heures
startTime	DateTime	Hérité de: Bid
stopTime	DateTime	Hérité de: Bid
marketType	MarketType	Hérité de: Bid
type	String	Hérité de: Document
createdDateTime	DateTime	Hérité de: Document
lastModifiedDateTime	DateTime	Hérité de: Document
revisionNumber	String	Hérité de: Document
electronicAddress	ElectronicAddress	Hérité de: Document
subject	String	Hérité de: Document
title	String	Hérité de: Document
docStatus	Status	Hérité de: Document
status	Status	Hérité de: Document
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 143 montre toutes les extrémités d'association de DefaultBid avec d'autres classes.

**Tableau 143 – Extrémités d'association de ExternalInputs::
DefaultBid avec d'autres classes**

[mult à partir de]	[mult vers] nom	type	description
[0..1]	[1..1] RegisteredResource	RegisteredResource	
[0..1]	[0..1] DefaultBidCurve	DefaultBidCurve	
[0..*]	[0..1] MarketParticipant	MarketParticipant	Hérité de: Bid
[0..*]	[1..1] EnergyMarket	EnergyMarket	Hérité de: Bid
[0..1]	[0..*] ChargeProfiles	ChargeProfile	Hérité de: Bid
[1..1]	[0..*] MitigatedBidSegment	MitigatedBidSegment	Hérité de: Bid
[0..*]	[0..1] SchedulingCoordinator	SchedulingCoordinator	Hérité de: Bid
[0..1]	[0..*] MitigatedBid	MitigatedBid	Hérité de: Bid
[0..1]	[0..*] RMRDetermination	RMRDetermination	Hérité de: Bid
[0..*]	[1..1] ActionRequest	ActionRequest	Hérité de: Bid
[1..1]	[1..*] ProductBids	ProductBid	Hérité de: Bid
[1..1]	[0..*] BidHourlySchedule	BidHourlySchedule	Hérité de: Bid
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.11 DefaultBidCurve

Courbe d'offre par défaut pour la courbe d'offre d'énergie par défaut et pour les courbes de démarrage par défaut (coût et temps)

Le Tableau 144 montre tous les attributs de DefaultBidCurve.

Tableau 144 – Attributs de ExternalInputs::DefaultBidCurve

nom	type	description
curveType	String	Pour indiquer un type utilisé pour une courbe d'offre d'énergie par défaut, tel qu'un type basé sur les LMP, les coûts ou la consultation.
debAdderFlag	YesNo	Indicateur d'additionneur d'offre d'énergie par défaut
curveStyle	CurveStyle	Hérité de: Curve
xMultiplier	UnitMultiplier	Hérité de: Curve
xUnit	UnitSymbol	Hérité de: Curve
y1Multiplier	UnitMultiplier	Hérité de: Curve
y1Unit	UnitSymbol	Hérité de: Curve
y2Multiplier	UnitMultiplier	Hérité de: Curve
y2Unit	UnitSymbol	Hérité de: Curve
y3Multiplier	UnitMultiplier	Hérité de: Curve
y3Unit	UnitSymbol	Hérité de: Curve
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 145 montre toutes les extrémités d'association de DefaultBidCurve avec d'autres classes.

Tableau 145 – Extrémités d'association de ExternalInputs::DefaultBidCurve avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..1]	[0..1] DefaultBid	DefaultBid	
[1..1]	[0..*] CurveDatas	CurveData	Hérité de: Curve
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.12 DefaultBidCurveData

Données de courbe pour la courbe d'offre par défaut et pour la courbe de coût de démarrage.

Le Tableau 146 montre tous les attributs de DefaultBidCurveData.

Tableau 146 – Attributs de ExternalInputs::DefaultBidCurveData

nom	type	description
bidSegmentCalcType	BidCalculationBasis	Type de base de calcul utilisé pour définir la courbe de segment d'offre par défaut.
xvalue	Float	Hérité de: CurveData
y1value	Float	Hérité de: CurveData
y2value	Float	Hérité de: CurveData
y3value	Float	Hérité de: CurveData

Le Tableau 147 montre toutes les extrémités d'association de DefaultBidCurveData avec d'autres classes.

Tableau 147 – Extrémités d'association de ExternalInputs::DefaultBidCurveData avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[1..1] Curve	Curve	Hérité de: CurveData

6.5.6.2.13 DefaultConstraintLimit

Valeur maximale en MW ou MVA pouvant varier dans le temps et limite minimale facultative en MW ou MVA (Y1 et Y2, respectivement) attribuées à une valeur par défaut si aucune limite de contrainte spécifique n'est indiquée pour une analyse de contingence. Utiliser CurveSchedule XAxisUnits pour indiquer des MW ou des MVA.

Le Tableau 148 montre tous les attributs de DefaultConstraintLimit.

Tableau 148 – Attributs de ExternalInputs::DefaultConstraintLimit

nom	type	description
curveStyle	CurveStyle	Hérité de: Curve
xMultiplier	UnitMultiplier	Hérité de: Curve
xUnit	UnitSymbol	Hérité de: Curve
y1Multiplier	UnitMultiplier	Hérité de: Curve
y1Unit	UnitSymbol	Hérité de: Curve
y2Multiplier	UnitMultiplier	Hérité de: Curve
y2Unit	UnitSymbol	Hérité de: Curve
y3Multiplier	UnitMultiplier	Hérité de: Curve
y3Unit	UnitSymbol	Hérité de: Curve
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 149 montre toutes les extrémités d'association de DefaultConstraintLimit avec d'autres classes.

Tableau 149 – Extrémités d'association de ExternalInputs::DefaultConstraintLimit avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..1]	[1..1] SecurityConstraintSum	SecurityConstraintSum	
[1..1]	[0..*] CurveDatas	CurveData	Hérité de: Curve
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.14 DiscreteMeasurementValueQuality

Indicateurs de qualité de mesure des valeurs Discrete (c'est-à-dire discrètes).

Le Tableau 150 montre tous les attributs de DiscreteMeasurementValueQuality.

Tableau 150 – Attributs de ExternalInputs::DiscreteMeasurementValueQuality

nom	type	description
manualReplaceIndicator	Boolean	Indicateur de remplacement manuel du commutateur. Indicateur précisant que le commutateur est à remplacement manuel.
removeFromOperationIndicator	Boolean	Indicateur de mise hors service. Indicateur précisant que le commutateur a été mis hors service.
badReference	Boolean	Hérité de: Quality61850
estimatorReplaced	Boolean	Hérité de: Quality61850
failure	Boolean	Hérité de: Quality61850
oldData	Boolean	Hérité de: Quality61850
operatorBlocked	Boolean	Hérité de: Quality61850
oscillatory	Boolean	Hérité de: Quality61850
outOfRange	Boolean	Hérité de: Quality61850
overFlow	Boolean	Hérité de: Quality61850
source	Source	Hérité de: Quality61850
suspect	Boolean	Hérité de: Quality61850
test	Boolean	Hérité de: Quality61850
validity	Validity	Hérité de: Quality61850

Le Tableau 151 montre toutes les extrémités d'association de DiscreteMeasurementValueQuality avec d'autres classes.

Tableau 151 – Extrémités d'association de ExternalInputs::DiscreteMeasurementValueQuality avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[1..1] MktDiscreteValue	MktDiscreteValue	
[0..1]	[1..1] MeasurementValue	MeasurementValue	Hérité de: MeasurementValueQuality

6.5.6.2.15 Classe racine DistributionFactorSet

Classe principale regroupant tous les facteurs de distribution d'un marché.

Elle est calculée tous les jours pour les facteurs DA et toutes les heures pour les facteurs RT.

Le Tableau 152 montre tous les attributs de DistributionFactorSet.

Tableau 152 – Attributs de ExternalInputs::DistributionFactorSet

nom	type	description
intervalStartTime	DateTime	Début de l'intervalle de temps pour lequel une exigence est définie.
intervalEndTime	DateTime	Fin de l'intervalle de temps pour lequel une exigence est définie.
marketType	MarketType	

Le Tableau 153 montre toutes les extrémités d'association de DistributionFactorSet avec d'autres classes.

Tableau 153 – Extrémités d'association de ExternalInputs::DistributionFactorSet avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] GenDistributionFactor	GenDistributionFactor	
[0..*]	[0..*] SysLoadDistribuFactor	SysLoadDistributionFactor	
[0..*]	[0..*] LoadDistributionFactor	LoadDistributionFactor	

6.5.6.2.16 Classe racine EnergyConsumerData

Optimal Power Flow ou State Estimator Load Data pour le simulateur de formation des exploitants (OTS, *Operator Training Simulator*). Utilisée pour les utilisateurs RealTime, Study et Maintenance.

Le Tableau 154 montre tous les attributs de EnergyConsumerData.

Tableau 154 – Attributs de ExternalInputs::EnergyConsumerData

nom	type	description
loadMVAR	Float	La charge MVAR Utilisation de l'attribut: La consommation de puissance réactive de la charge en MW
loadMW	Float	La consommation de puissance active de la charge en MW

Le Tableau 155 montre toutes les extrémités d'association de EnergyConsumerData avec d'autres classes.

Tableau 155 – Extrémités d'association de ExternalInputs::EnergyConsumerData avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[1..1] MktEnergyConsumer	MktEnergyConsumer	

6.5.6.2.17 EnergyPriceIndex

Un EnergyPriceIndex (indice du prix de l'énergie) pour chaque ressource est valide pour une période (ex. quotidienne) identifiée par une heure de démarrage de période valide et par une heure de fin de période valide. L'indice du prix de l'énergie est exprimé en \$/MWh.

Le Tableau 156 montre tous les attributs de EnergyPriceIndex.

Tableau 156 – Attributs de ExternalInputs::EnergyPriceIndex

nom	type	description
lastModified	DateTime	Mise à jour de l'heure
startEffectiveDate	DateTime	Date de début effective
endEffectiveDate	DateTime	Date de fin effective
energyPriceIndex	Float	Indice du prix de l'énergie
energyPriceIndexType	EnergyPriceIndexType	Type d'EPI (gros ou détail)
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 157 montre toutes les extrémités d'association de EnergyPriceIndex avec d'autres classes.

Tableau 157 – Extrémités d'association de ExternalInputs::EnergyPriceIndex avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[1..1] RegisteredGenerator	RegisteredGenerator	
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.18 EnergyProfile

Indique l'heure de début, l'heure d'arrêt et le niveau d'EnergyTransaction.

Le Tableau 158 montre tous les attributs de EnergyProfile.

Tableau 158 – Attributs de ExternalInputs::EnergyProfile

nom	type	description
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 159 montre toutes les extrémités d'association de EnergyProfile avec d'autres classes.

Tableau 159 – Extrémités d'association de ExternalInputs::EnergyProfile avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..*]	[1..1] TransactionBid	TransactionBid	
[1..*]	[1..1] EnergyTransaction	EnergyTransaction	EnergyTransaction doit avoir au moins un EnergyProfile.
[0..*]	[0..*] ProfileDatas	ProfileData	Hérité de: Profile
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.19 EnergyTransaction

Indique le programme des transferts d'énergie entre les zones d'échange qui sont nécessaires pour réaliser la transaction d'échange associée.

Le Tableau 160 montre tous les attributs de EnergyTransaction.

Tableau 160 – Attributs de ExternalInputs::EnergyTransaction

nom	type	description
capacityBacked	Boolean	Indicateur de capacité d'échange. Lorsque l'indicateur est défini sur True, cela signifie qu'une transaction est suivie par la fourniture de la capacité demandée.
congestChargeMax	Money	Frais de congestion maximum en unités monétaires.
deliveryPointP	ActivePower	Puissance active au point de livraison.
energyMin	ActivePower	Puissance active minimale d'une transaction si elle est commandable.
firmInterchangeFlag	Boolean	L'indicateur d'échange ferme précise si cette transaction d'énergie peut être modifiée sans conséquences financières éventuelles.
payCongestion	Boolean	Indicateur de congestion Willing to Pay (Disposé à payer)
reason	String	Raison de la transaction d'énergie.
receiptPointP	ActivePower	Puissance active au point de réception.
state	EnergyTransactionType	{ Approve Deny Study }
type	String	Hérité de: Document
createdDateTime	DateTime	Hérité de: Document
lastModifiedDateTime	DateTime	Hérité de: Document
revisionNumber	String	Hérité de: Document
electronicAddress	ElectronicAddress	Hérité de: Document
subject	String	Hérité de: Document
title	String	Hérité de: Document
docStatus	Status	Hérité de: Document
status	Status	Hérité de: Document
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 161 montre toutes les extrémités d'association de EnergyTransaction avec d'autres classes.

Tableau 161 – Extrémités d'association de ExternalInputs::EnergyTransaction avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] EnergyPriceCurves	EnergyPriceCurve	
[1..1]	[1..*] EnergyProfiles	EnergyProfile	EnergyTransaction doit avoir au moins un EnergyProfile.
[0..*]	[1..1] Export_SubControlArea	SubControlArea	L'énergie est transférée entre les zones d'échange
[0..1]	[0..1] TransmissionReservation	TransmissionReservation	
[0..*]	[1..1] Import_SubControlArea	SubControlArea	L'énergie est transférée entre les zones d'échange
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.20 Classe racine GenDistributionFactor

Cette classe modélise les facteurs de distribution de production. Elle doit être utilisée avec AggregatedPnode et IndividualPnode pour montrer la distribution de chaque partie individuelle.

Le Tableau 162 montre tous les attributs de GenDistributionFactor.

Tableau 162 – Attributs de ExternalInputs::GenDistributionFactor

nom	type	description
factor	Float	Utilisé pour calculer la "participation" de production d'un Pnode individuel dans un AggregatePnode.

Le Tableau 163 montre toutes les extrémités d'association de GenDistributionFactor avec d'autres classes.

Tableau 163 – Extrémités d'association de ExternalInputs::GenDistributionFactor avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] DistributionFactorSet	DistributionFactorSet	
[1..*]	[0..1] AggregatedPnode	AggregatedPnode	
[0..1]	[0..1] IndividualPnode	IndividualPnode	

6.5.6.2.21 Classe racine GeneratingUnitDynamicValues

Optimal Power Flow ou State Estimator Unit Data pour le simulateur de formation des exploitants (OTS). Utilisée pour les utilisateurs RealTime, Study et Maintenance.

Le Tableau 164 montre tous les attributs de GeneratingUnitDynamicValues.

Tableau 164 – Attributs de ExternalInputs::GeneratingUnitDynamicValues

nom	type	description
lossFactor	Float	Facteur de perte
maximumMW	Float	La production de puissance active maximale de l'unité en MW
minimumMW	Float	La production de puissance active minimale de l'unité en MW
mVAR	Float	Production de puissance réactive de l'unité en MVAR
mw	Float	Production de puissance active de l'unité en MW
sensitivity	Float	Facteur de sensibilité de l'unité. Les facteurs de distribution (DFAX) de l'unité

Le Tableau 165 montre toutes les extrémités d'association de GeneratingUnitDynamicValues avec d'autres classes.

Tableau 165 – Extrémités d'association de ExternalInputs::GeneratingUnitDynamicValues avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[1..1] MktGeneratingUnit	MktGeneratingUnit	
[0..*]	[0..1] Flowgate	Flowgate	

6.5.6.2.22 GenericConstraints

Les contraintes génériques peuvent représenter des zones sécurisées, un profil de tension, une stabilité transitoire et des limites de chute de tension.

Les contraintes génériques peuvent avoir l'une des formes suivantes:

- a) Limites thermiques en MW
- b) contrainte type de flux de ligne de groupe

Le Tableau 166 montre tous les attributs de GenericConstraints.

Tableau 166 – Attributs de ExternalInputs::GenericConstraints

nom	type	description
intervalEndTime	DateTime	Heure de fin de l'intervalle
intervalStartTime	DateTime	Heure de début de l'intervalle
maxLimit	Float	Limite maximale (MW)
minLimit	Float	Limite minimale (MW)
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 167 montre toutes les extrémités d'association de GenericConstraints avec d'autres classes.

Tableau 167 – Extrémités d'association de ExternalInputs::GenericConstraints avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..1]	[0..*] Flowgate	Flowgate	
[0..1]	[0..*] TransmissionCapacity	TransmissionCapacity	
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.23 Classe racine InterchangeETCData

Données de contrat de transport existant pour un programme d'échange

Le Tableau 168 montre tous les attributs de InterchangeETCData.

Tableau 168 – Attributs de ExternalInputs::InterchangeETCData

nom	type	description
contractNumber	String	Numéro de contrat de transport existant
usageMW	Float	Valeur en MW de l'utilisation du contrat de transport existant

Le Tableau 169 montre toutes les extrémités d'association de InterchangeETCData avec d'autres classes.

Tableau 169 – Extrémités d'association de ExternalInputs::InterchangeETCData avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..1] InterchangeSchedule	InterchangeSchedule	

6.5.6.2.24 InterchangeSchedule

Classe de programme d'échange pour stocker des informations sur les programmes d'échange de type import/export, énergie, etc.

Le Tableau 170 montre tous les attributs de InterchangeSchedule.

Tableau 170 – Attributs de ExternalInputs::InterchangeSchedule

nom	type	description
checkOutType	CheckOutType	Pour indiquer un type de vérification tel que la capacité ajustée ou la capacité de répartition.
directionType	InterTieDirection	Import ou export.
energyType	MarketProductType	Type de produit énergétique.
intervalLength	Integer	Longueur de l'intervalle.
marketType	MarketType	Type de marché.
operatingDate	DateTime	Date/heure d'exploitation.
outOfMarketType	Boolean	Pour indiquer un programme hors marché (OOM, <i>Out-Of-Market</i>).
scheduleType	EnergyProductType	Type de programme.
wcrlD	String	ID compteur-ressource de transit (exigé lorsque Type de programme = Transit).
curveStyle	CurveStyle	Hérité de: Curve
xMultiplier	UnitMultiplier	Hérité de: Curve
xUnit	UnitSymbol	Hérité de: Curve
y1Multiplier	UnitMultiplier	Hérité de: Curve
y1Unit	UnitSymbol	Hérité de: Curve
y2Multiplier	UnitMultiplier	Hérité de: Curve
y2Unit	UnitSymbol	Hérité de: Curve
y3Multiplier	UnitMultiplier	Hérité de: Curve
y3Unit	UnitSymbol	Hérité de: Curve
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 171 montre toutes les extrémités d'association de InterchangeSchedule avec d'autres classes.

Tableau 171 – Extrémités d'association de ExternalInputs::InterchangeSchedule avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..1]	[0..*] InterchangeETCData	InterchangeETCData	
[0..*]	[0..1] InterTie	SchedulingPoint	
[0..*]	[0..1] RegisteredInterTie	RegisteredInterTie	
[1..1]	[0..*] CurveDatas	CurveData	Hérité de: Curve
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.25 IntermittentResourceEligibility

Indique si l'unité peut être considérée comme une ressource renouvelable variable intermittente

Le Tableau 172 montre tous les attributs de IntermittentResourceEligibility.

Tableau 172 – Attributs de ExternalInputs::IntermittentResourceEligibility

nom	type	description
eligibilityStatus	String	Indique si une ressource peut être admise dans le programme PIRP à une heure donnée
intervalEndTime	DateTime	Hérité de: MarketFactors
intervalStartTime	DateTime	Hérité de: MarketFactors
type	String	Hérité de: Document
createdDateTime	DateTime	Hérité de: Document
lastModifiedDateTime	DateTime	Hérité de: Document
revisionNumber	String	Hérité de: Document
electronicAddress	ElectronicAddress	Hérité de: Document
subject	String	Hérité de: Document
title	String	Hérité de: Document
docStatus	Status	Hérité de: Document
status	Status	Hérité de: Document
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 173 montre toutes les extrémités d'association de IntermittentResourceEligibility avec d'autres classes.

Tableau 173 – Extrémités d'association de ExternalInputs::IntermittentResourceEligibility avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[1..1] RegisteredResource	RegisteredResource	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	Hérité de: MarketFactors
[0..*]	[0..1] Market	Market	Hérité de: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.26 Classe racine LoadDistributionFactor

Cette classe modélise les facteurs de distribution de charge. Il convient de l'utiliser de l'une des manières suivantes:

Utilisation avec AggregatedPnode et IndividualPnode pour montrer la distribution de chaque partie individuelle

OU

Utilisation avec Mkt_EnergyConsumer pour représenter la distribution actuelle MW/Mvar dans son groupe de charge parent.

Le Tableau 174 montre tous les attributs de LoadDistributionFactor.

Tableau 174 – Attributs de ExternalInputs::LoadDistributionFactor

nom	type	description
pDistFactor	Float	Facteur de distribution de charge (MW) de puissance réelle
qDistFactor	Float	Facteur de distribution de charge (MVA _r) de puissance réactive

Le Tableau 175 montre toutes les extrémités d'association de LoadDistributionFactor avec d'autres classes.

Tableau 175 – Extrémités d'association de ExternalInputs::LoadDistributionFactor avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] DistributionFactorSet	DistributionFactorSet	
[0..1]	[0..1] IndividualPnode	IndividualPnode	
[1..*]	[0..1] AggregatedPnode	AggregatedPnode	

6.5.6.2.27 LossSensitivity

Sensibilité de perte appliquée à ConnectivityNode pour un intervalle de temps donné.

Le Tableau 176 montre tous les attributs de LossSensitivity.

Tableau 176 – Attributs de ExternalInputs::LossSensitivity

nom	type	description
lossFactor	Float	Facteur de pénalité de perte. Défini de la manière suivante: $1 / (1 - \text{perte de transport différentielle})$; la perte de transport différentielle est exprimée en valeur plus/moins. Les facteurs de pénalité (<i>penalty factors</i>) types sont compris entre (0,9 à 1,1).
intervalEndTime	DateTime	Hérité de: MarketFactors
intervalStartTime	DateTime	Hérité de: MarketFactors
type	String	Hérité de: Document
createdDateTime	DateTime	Hérité de: Document
lastModifiedDateTime	DateTime	Hérité de: Document
revisionNumber	String	Hérité de: Document
electronicAddress	ElectronicAddress	Hérité de: Document
subject	String	Hérité de: Document
title	String	Hérité de: Document
docStatus	Status	Hérité de: Document
status	Status	Hérité de: Document
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 177 montre toutes les extrémités d'association de LossSensitivity avec d'autres classes.

Tableau 177 – Extrémités d'association de ExternalInputs::LossSensitivity avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[1..1] MktConnectivityNode	MktConnectivityNode	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	Hérité de: MarketFactors
[0..*]	[0..1] Market	Market	Hérité de: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.28 MktACLineSegment

Sous-classe de IEC 61970:Wires:ACLineSegment

Le Tableau 178 montre tous les attributs de MktACLineSegment.

Tableau 178 – Attributs de ExternalInputs::MktACLineSegment

nom	type	description
b0ch	Susceptance	Hérité de: ACLineSegment
bch	Susceptance	Hérité de: ACLineSegment
g0ch	Conductance	Hérité de: ACLineSegment
gch	Conductance	Hérité de: ACLineSegment
r	Resistance	Hérité de: ACLineSegment
r0	Resistance	Hérité de: ACLineSegment
x	Reactance	Hérité de: ACLineSegment
x0	Reactance	Hérité de: ACLineSegment
length	Length	Hérité de: Conductor
aggregate	Boolean	Hérité de: Equipment
normallyInService	Boolean	Hérité de: Equipment
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 179 montre toutes les extrémités d'association de MktACLineSegment avec d'autres classes.

**Tableau 179 – Extrémités d'association de ExternalInputs::
MktACLineSegment avec d'autres classes**

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..1] EndAFlow	BranchEndFlow	
[0..*]	[0..1] EndBFlow	BranchEndFlow	
[1..1]	[0..*] Clamp	Clamp	Hérité de: ACLineSegment
[0..*]	[0..1] PerLengthImpedance	PerLengthImpedance	Hérité de: ACLineSegment
[1..1]	[0..*] Cut	Cut	Hérité de: ACLineSegment
[1..1]	[0..*] ACLineSegmentPhases	ACLineSegmentPhase	Hérité de: ACLineSegment
[0..*]	[0..1] BaseVoltage	BaseVoltage	Hérité de: ConductingEquipment
[1..1]	[0..*] Terminals	Terminal	Hérité de: ConductingEquipment
[0..*]	[0..*] ProtectionEquipments	ProtectionEquipment	Hérité de: ConductingEquipment
[1..1]	[0..*] ClearanceTags	ClearanceTag	Hérité de: ConductingEquipment
[1..1]	[0..1] SvStatus	SvStatus	Hérité de: ConductingEquipment
[0..*]	[0..1] EquipmentContainer	EquipmentContainer	Hérité de: Equipment
[1..1]	[0..*] ContingencyEquipment	ContingencyEquipment	Hérité de: Equipment
[0..1]	[0..*] OperationalLimitSet	OperationalLimitSet	Hérité de: Equipment
[0..*]	[0..1] PSRType	PSRType	Hérité de: PowerSystemResource
[0..1]	[0..*] Measurements	Measurement	Hérité de: PowerSystemResource
[1..1]	[0..*] OperatingShare	OperatingShare	Hérité de: PowerSystemResource
[0..*]	[0..*] PsrLists	PsrList	Hérité de: PowerSystemResource
[1..1]	[0..1] OutageSchedule	OutageSchedule	Hérité de: PowerSystemResource
[0..*]	[0..*] ReportingGroup	ReportingGroup	Hérité de: PowerSystemResource
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.29 MktAnalogLimit

Sous-classe de IEC 61970.Meas:AnalogLimit

Le Tableau 180 montre tous les attributs de MktAnalogLimit.

Tableau 180 – Attributs de ExternalInputs::MktAnalogLimit

nom	type	description
exceededLimit	Boolean	True si les limites sont dépassées
limitType	AnalogLimitType	Le type de limite que la valeur représente Types de limite de branche: Court terme Moyen terme Long terme Limites de tension: Haute Basse
value	Float	Hérité de: AnalogLimit
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 181 montre toutes les extrémités d'association de MktAnalogLimit avec d'autres classes.

Tableau 181 – Extrémités d'association de ExternalInputs::MktAnalogLimit avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[1..1] LimitSet	AnalogLimitSet	Hérité de: AnalogLimit
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.30 MktAnalogLimitSet

Sous-classe de IEC 61970:Meas:AnalogLimitSet

Le Tableau 182 montre tous les attributs de MktAnalogLimitSet.

Tableau 182 – Attributs de ExternalInputs::MktAnalogLimitSet

nom	type	description
ratingSet	Integer	Nombres de l'ensemble de valeurs assignées
isPercentageLimits	Boolean	Hérité de: LimitSet
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 183 montre toutes les extrémités d'association de MktAnalogLimitSet avec d'autres classes.

Tableau 183 – Extrémités d'association de ExternalInputs::MktAnalogLimitSet avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[0..*] Limits	AnalogLimit	Hérité de: AnalogLimitSet
[0..*]	[0..*] Measurements	Analog	Hérité de: AnalogLimitSet
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.31 MktAnalogValue

Sous-classe de IEC 61970:Meas:AnalogValue

Le Tableau 184 montre tous les attributs de MktAnalogValue.

Tableau 184 – Attributs de ExternalInputs::MktAnalogValue

nom	type	description
value	Float	Hérité de: AnalogValue
timeStamp	DateTime	Hérité de: MeasurementValue
sensorAccuracy	PerCent	Hérité de: MeasurementValue
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 185 montre toutes les extrémités d'association de MktAnalogValue avec d'autres classes.

Tableau 185 – Extrémités d'association de ExternalInputs::MktAnalogValue avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[0..*] AnalogMeasurementValueQuality	AnalogMeasurementValueQuality	
[0..*]	[1..1] Analog	Analog	Hérité de: AnalogValue
[1..1]	[0..*] AltGeneratingUnit	AltGeneratingUnitMeas	Hérité de: AnalogValue
[1..1]	[0..*] AltTieMeas	AltTieMeas	Hérité de: AnalogValue
[1..1]	[0..1] RemoteSource	RemoteSource	Hérité de: MeasurementValue
[1..1]	[0..1] MeasurementValueQuality	MeasurementValueQuality	Hérité de: MeasurementValue
[0..*]	[1..1] MeasurementValueSource	MeasurementValueSource	Hérité de: MeasurementValue
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.32 MktControlArea

Sous-classe de marché de IEC 61970:ControlArea

Le Tableau 186 montre tous les attributs de MktControlArea.

Tableau 186 – Attributs de ExternalInputs::MktControlArea

nom	type	description
netInterchange	ActivePower	Hérité de: ControlArea
pTolerance	ActivePower	Hérité de: ControlArea
type	ControlAreaTypeKind	Hérité de: ControlArea
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 187 montre toutes les extrémités d'association de MktControlArea avec d'autres classes.

Tableau 187 – Extrémités d'association de ExternalInputs::MktControlArea avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..1]	[0..*] ControlAreaSolutionData	ControlAreaSolutionData	
[0..1]	[0..1] EnergyArea	EnergyArea	Hérité de: ControlArea
[1..1]	[0..*] ControlAreaGeneratingUnit	ControlAreaGeneratingUnit	Hérité de: ControlArea
[1..1]	[0..*] TieFlow	TieFlow	Hérité de: ControlArea
[0..*]	[0..1] PSRType	PSRType	Hérité de: PowerSystemResource
[0..1]	[0..*] Measurements	Measurement	Hérité de: PowerSystemResource
[1..1]	[0..*] OperatingShare	OperatingShare	Hérité de: PowerSystemResource
[0..*]	[0..*] PsrLists	PsrList	Hérité de: PowerSystemResource
[1..1]	[0..1] OutageSchedule	OutageSchedule	Hérité de: PowerSystemResource
[0..*]	[0..*] ReportingGroup	ReportingGroup	Hérité de: PowerSystemResource
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.33 MktDiscreteValue

Sous-classe de IEC 61970:Meas:DiscreteValue

Le Tableau 188 montre tous les attributs de MktDiscreteValue.

Tableau 188 – Attributs de ExternalInputs::MktDiscreteValue

nom	type	description
value	Integer	Hérité de: DiscreteValue
timeStamp	DateTime	Hérité de: MeasurementValue
sensorAccuracy	PerCent	Hérité de: MeasurementValue
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 189 montre toutes les extrémités d'association de MktDiscreteValue avec d'autres classes.

Tableau 189 – Extrémités d'association de ExternalInputs::MktDiscreteValue avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[0..*] DiscreteMeasurementValueQuality	DiscreteMeasurementValueQuality	
[0..*]	[1..1] Discrete	Discrete	Hérité de: DiscreteValue
[1..1]	[0..1] RemoteSource	RemoteSource	Hérité de: MeasurementValue
[1..1]	[0..1] MeasurementValueQuality	MeasurementValueQuality	Hérité de: MeasurementValue
[0..*]	[1..1] MeasurementValueSource	MeasurementValueSource	Hérité de: MeasurementValue
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.34 MktOperationalLimitType

Sous-classe de la classe IEC 61970:OperationalLimits:OperationalLimitType

Le Tableau 190 montre tous les attributs de MktOperationalLimitType.

Tableau 190 – Attributs de ExternalInputs::MktOperationalLimitType

nom	type	description
limitType	BranchRatingType	Types de limite: Normal (Normale), Emergency (Urgence), Short Term Emergency (Urgence à court terme), Long Term Emergency (Urgence à long terme)
acceptableDuration	Seconds	Hérité de: OperationalLimitType
direction	OperationalLimitDirectionKind	Hérité de: OperationalLimitType
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 191 montre toutes les extrémités d'association de MktOperationalLimitType avec d'autres classes.

**Tableau 191 – Extrémités d'association de ExternalInputs::
MktOperationalLimitType avec d'autres classes**

[mult à partir de]	[mult vers] nom	type	description
[0..1]	[0..*] OperationalLimit	OperationalLimit	Hérité de: OperationalLimitType
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.35 MktOutageSchedule

Sous-classe de IEC 61970:Core:Outage:OutageSchedule.

Attributs supplémentaires ajoutés pour représenter les programmes d'indisponibilité et de valeur assignée/réduction de l'équipement nécessaires aux opérations du marché (*Market Operations*). L'attribut OutageType est utilisé pour permettre de distinguer les deux types.

Le Tableau 192 montre tous les attributs de MktOutageSchedule.

Tableau 192 – Attributs de ExternalInputs::MktOutageSchedule

nom	type	description
breakerNormalStatus	String	Applicable uniquement au CB/DSC. Valeurs possibles: {'O','C'} indiquant le statut du disjoncteur Open (Ouvert)/Close (Fermé).
breakerOutageStatus	String	Applicable uniquement au CB/DSC. Valeurs possibles: {'O','C'} indiquant le statut du disjoncteur Open (Ouvert)/Close (Fermé).
commentText	String	Commentaires spéciaux soumis par l'ingénieur de fiabilité sur le ticket pouvant influencer sur les Markets (marchés).
endTime	DateTime	Heure de fin d'indisponibilité.
equipType	String	Type d'équipement - unité - charge - compensateur de VAR statique - ligne - appareil en série - transformateur à deux enroulements - transformateur à trois enroulements - shunt de régulation - shunt fixe (condensateur) - disjoncteur/sectionneur.
outageNote	String	Note d'indisponibilité.
outageType	OutageType	Type d'indisponibilité: IN (disponible), OUT (indisponible), DERATE (réduit).
POD	String	Point de livraison.
POR	String	Point de réception.
status	String	Status "Active" – sysdate entre la date de démarrage planifiée et la date de fin planifiée "Apprv" – approbation d'une indisponibilité par le Central Market (marché central) "Accpt" – acceptation d'une indisponibilité par le Central Market (marché central).
startTime	DateTime	Hérité de: BasicIntervalSchedule
value1Unit	UnitSymbol	Hérité de: BasicIntervalSchedule
value1Multiplier	UnitMultiplier	Hérité de: BasicIntervalSchedule
value2Unit	UnitSymbol	Hérité de: BasicIntervalSchedule
value2Multiplier	UnitMultiplier	Hérité de: BasicIntervalSchedule
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 193 montre toutes les extrémités d'association de MktOutageSchedule avec d'autres classes.

Tableau 193 – Extrémités d'association de ExternalInputs::MktOutageSchedule avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..1]	[1..1] PowerSystemResource	PowerSystemResource	Hérité de: OutageSchedule
[0..1]	[0..*] SwitchingOperations	SwitchingOperation	Hérité de: OutageSchedule
[1..1]	[1..*] TimePoints	IrregularTimePoint	Hérité de: IrregularIntervalSchedule
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.36 MktSeriesCompensator

Sous-classe de IEC 61970:Wires:SeriesCompensator

Le Tableau 194 montre tous les attributs de MktSeriesCompensator

Tableau 194 – Attributs de ExternalInputs::MktSeriesCompensator

nom	type	description
r	Resistance	Hérité de: SeriesCompensator
r0	Resistance	Hérité de: SeriesCompensator
x	Reactance	Hérité de: SeriesCompensator
x0	Reactance	Hérité de: SeriesCompensator
aggregate	Boolean	Hérité de: Equipment
normallyInService	Boolean	Hérité de: Equipment
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 195 montre toutes les extrémités d'association de MktSeriesCompensator avec d'autres classes.

Tableau 195 – Extrémités d'association de ExternalInputs::MktSeriesCompensator avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..1] EndBFlow	BranchEndFlow	
[0..*]	[0..1] EndAFlow	BranchEndFlow	
[0..*]	[0..1] BaseVoltage	BaseVoltage	Hérité de: ConductingEquipment
[1..1]	[0..*] Terminals	Terminal	Hérité de: ConductingEquipment
[0..*]	[0..*] ProtectionEquipments	ProtectionEquipment	Hérité de: ConductingEquipment
[1..1]	[0..*] ClearanceTags	ClearanceTag	Hérité de: ConductingEquipment
[1..1]	[0..1] SvStatus	SvStatus	Hérité de: ConductingEquipment
[0..*]	[0..1] EquipmentContainer	EquipmentContainer	Hérité de: Equipment
[1..1]	[0..*] ContingencyEquipment	ContingencyEquipment	Hérité de: Equipment
[0..1]	[0..*] OperationalLimitSet	OperationalLimitSet	Hérité de: Equipment
[0..*]	[0..1] PSRType	PSRType	Hérité de: PowerSystemResource
[0..1]	[0..*] Measurements	Measurement	Hérité de: PowerSystemResource
[1..1]	[0..*] OperatingShare	OperatingShare	Hérité de: PowerSystemResource
[0..*]	[0..*] PsrLists	PsrList	Hérité de: PowerSystemResource
[1..1]	[0..1] OutageSchedule	OutageSchedule	Hérité de: PowerSystemResource
[0..*]	[0..*] ReportingGroup	ReportingGroup	Hérité de: PowerSystemResource
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.37 MktShuntCompensator

Sous-classe de IEC 61970:Wires.ShuntCompensator

Le Tableau 196 montre tous les attributs de MktShuntCompensator.

Tableau 196 – Attributs de ExternalInputs::MktShuntCompensator

nom	type	description
aVRDelay	Seconds	Hérité de: ShuntCompensator
b0PerSection	Susceptance	Hérité de: ShuntCompensator
bPerSection	Susceptance	Hérité de: ShuntCompensator
g0PerSection	Conductance	Hérité de: ShuntCompensator
gPerSection	Conductance	Hérité de: ShuntCompensator
grounded	WindingConnection	Hérité de: ShuntCompensator
maximumSections	Integer	Hérité de: ShuntCompensator
nomU	Voltage	Hérité de: ShuntCompensator
normalSections	Integer	Hérité de: ShuntCompensator
phaseConnection	PhaseShuntConnectionKind	Hérité de: ShuntCompensator
switchOnCount	Integer	Hérité de: ShuntCompensator
switchOnDate	DateTime	Hérité de: ShuntCompensator
voltageSensitivity	VoltagePerReactivePower	Hérité de: ShuntCompensator
aggregate	Boolean	Hérité de: Equipment
normallyInService	Boolean	Hérité de: Equipment
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 197 montre toutes les extrémités d'association de MktShuntCompensator avec d'autres classes.

**Tableau 197 – Extrémités d'association de ExternalInputs::
MktShuntCompensator avec d'autres classes**

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[0..*] ShuntCompensatorDynamicData	ShuntCompensatorDynamicData	
[1..1]	[0..*] ShuntCompensatorPhase	ShuntCompensatorPhase	Hérité de: ShuntCompensator
[1..1]	[0..1] SvShuntCompensatorSections	SvShuntCompensatorSections	Hérité de: ShuntCompensator
[0..*]	[0..1] RegulatingControl	RegulatingControl	Hérité de: RegulatingCondEq
[0..1]	[1..*] Controls	Control	Hérité de: RegulatingCondEq
[0..*]	[0..1] BaseVoltage	BaseVoltage	Hérité de: ConductingEquipment
[1..1]	[0..*] Terminals	Terminal	Hérité de: ConductingEquipment
[0..*]	[0..*] ProtectionEquipments	ProtectionEquipment	Hérité de: ConductingEquipment
[1..1]	[0..*] ClearanceTags	ClearanceTag	Hérité de: ConductingEquipment
[1..1]	[0..1] SvStatus	SvStatus	Hérité de: ConductingEquipment
[0..*]	[0..1] EquipmentContainer	EquipmentContainer	Hérité de: Equipment
[1..1]	[0..*] ContingencyEquipment	ContingencyEquipment	Hérité de: Equipment
[0..1]	[0..*] OperationalLimitSet	OperationalLimitSet	Hérité de: Equipment
[0..*]	[0..1] PSRType	PSRType	Hérité de: PowerSystemResource
[0..1]	[0..*] Measurements	Measurement	Hérité de: PowerSystemResource
[1..1]	[0..*] OperatingShare	OperatingShare	Hérité de: PowerSystemResource
[0..*]	[0..*] PsrLists	PsrList	Hérité de: PowerSystemResource
[1..1]	[0..1] OutageSchedule	OutageSchedule	Hérité de: PowerSystemResource
[0..*]	[0..*] ReportingGroup	ReportingGroup	Hérité de: PowerSystemResource
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.38 MktSwitch

Sous-classe de IEC 61970:Wires:Switch

Le Tableau 198 montre tous les attributs de MktSwitch.

Tableau 198 – Attributs de ExternalInputs::MktSwitch

nom	type	description
normalOpen	Boolean	Hérité de: Switch
ratedCurrent	CurrentFlow	Hérité de: Switch
switchOnCount	Integer	Hérité de: Switch
switchOnDate	DateTime	Hérité de: Switch
retained	Boolean	Hérité de: Switch
aggregate	Boolean	Hérité de: Equipment
normallyInService	Boolean	Hérité de: Equipment
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 199 montre toutes les extrémités d'association de MktSwitch avec d'autres classes.

Tableau 199 – Extrémités d'association de ExternalInputs::MktSwitch avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[0..*] SwitchStatus	SwitchStatus	
[1..1]	[0..*] SwitchSchedules	SwitchSchedule	Hérité de: Switch
[1..1]	[0..*] SwitchPhase	SwitchPhase	Hérité de: Switch
[0..*]	[0..1] CompositeSwitch	CompositeSwitch	Hérité de: Switch
[0..*]	[0..*] SwitchingOperations	SwitchingOperation	Hérité de: Switch
[0..*]	[0..1] BaseVoltage	BaseVoltage	Hérité de: ConductingEquipment
[1..1]	[0..*] Terminals	Terminal	Hérité de: ConductingEquipment
[0..*]	[0..*] ProtectionEquipments	ProtectionEquipment	Hérité de: ConductingEquipment
[1..1]	[0..*] ClearanceTags	ClearanceTag	Hérité de: ConductingEquipment
[1..1]	[0..1] SvStatus	SvStatus	Hérité de: ConductingEquipment
[0..*]	[0..1] EquipmentContainer	EquipmentContainer	Hérité de: Equipment
[1..1]	[0..*] ContingencyEquipment	ContingencyEquipment	Hérité de: Equipment
[0..1]	[0..*] OperationalLimitSet	OperationalLimitSet	Hérité de: Equipment
[0..*]	[0..1] PSRType	PSRType	Hérité de: PowerSystemResource
[0..1]	[0..*] Measurements	Measurement	Hérité de: PowerSystemResource
[1..1]	[0..*] OperatingShare	OperatingShare	Hérité de: PowerSystemResource
[0..*]	[0..*] PsrLists	PsrList	Hérité de: PowerSystemResource
[1..1]	[0..1] OutageSchedule	OutageSchedule	Hérité de: PowerSystemResource
[0..*]	[0..*] ReportingGroup	ReportingGroup	Hérité de: PowerSystemResource
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.39 MktTapChanger

Sous-classe de IEC 61970:Wires:TapChanger

Le Tableau 200 montre tous les attributs de MktTapChanger.

Tableau 200 – Attributs de ExternalInputs::MktTapChanger

nom	type	description
highStep	Integer	Hérité de: TapChanger
initialDelay	Seconds	Hérité de: TapChanger
lowStep	Integer	Hérité de: TapChanger
lrcFlag	Boolean	Hérité de: TapChanger
neutralStep	Integer	Hérité de: TapChanger
neutralU	Voltage	Hérité de: TapChanger
normalStep	Integer	Hérité de: TapChanger
regulationStatus	Boolean	Hérité de: TapChanger
subsequentDelay	Seconds	Hérité de: TapChanger
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 201 montre toutes les extrémités d'association de MktTapChanger avec d'autres classes.

Tableau 201 – Extrémités d'association de ExternalInputs::MktTapChanger avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[0..*] TapChangerDynamicData	TapChangerDynamicData	
[0..*]	[0..1] TapChangerControl	TapChangerControl	Hérité de: TapChanger
[1..1]	[0..1] SvTapStep	SvTapStep	Hérité de: TapChanger
[1..1]	[0..*] TapSchedules	TapSchedule	Hérité de: TapChanger
[0..*]	[0..1] PSRType	PSRType	Hérité de: PowerSystemResource
[0..1]	[0..*] Measurements	Measurement	Hérité de: PowerSystemResource
[1..1]	[0..*] OperatingShare	OperatingShare	Hérité de: PowerSystemResource
[0..*]	[0..*] PsrLists	PsrList	Hérité de: PowerSystemResource
[1..1]	[0..1] OutageSchedule	OutageSchedule	Hérité de: PowerSystemResource
[0..*]	[0..*] ReportingGroup	ReportingGroup	Hérité de: PowerSystemResource
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.40 Classe racine MWLimitSchedule

MW maximum et MW minimum facultatif (Y1 et Y2, respectivement)

Le Tableau 202 montre toutes les extrémités d'association de MWLimitSchedule avec d'autres classes.

Tableau 202 – Extrémités d'association de ExternalInputs::MWLimitSchedule avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[1..1] SecurityConstraintLimit	ContingencyConstraintLimit	

6.5.6.2.41 NodeConstraintTerm

A utiliser uniquement pour limiter une quantité qui ne peut pas être associée à une borne. Par exemple, une unité de production enregistrée qui n'est pas connectée électriquement au réseau.

Le Tableau 203 montre tous les attributs de NodeConstraintTerm.

Tableau 203 – Attributs de ExternalInputs::NodeConstraintTerm

nom	type	description
factor	String	Hérité de: ConstraintTerm
function	String	Hérité de: ConstraintTerm
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 204 montre toutes les extrémités d'association de NodeConstraintTerm avec d'autres classes.

Tableau 204 – Extrémités d'association de ExternalInputs::NodeConstraintTerm avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[1..1] MktConnectivityNode	MktConnectivityNode	
[0..*]	[1..1] SecurityConstraintSum	SecurityConstraintSum	Hérité de: ConstraintTerm
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.42 Profile

Un profil est un type de courbe plus simple.

Le Tableau 205 montre tous les attributs de Profile.

Tableau 205 – Attributs de ExternalInputs::Profile

nom	type	description
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 206 montre toutes les extrémités d'association de Profile avec d'autres classes.

Tableau 206 – Extrémités d'association de ExternalInputs::Profile avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] ProfileDatas	ProfileData	Un profil a des données de profil qui lui sont associées.
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.43 Classe racine ProfileData

Données de profil.

Le Tableau 207 montre tous les attributs de ProfileData.

Tableau 207 – Attributs de ExternalInputs::ProfileData

nom	type	description
bidPrice	Float	Prix d'offre associé au contrat
capacityLevel	ActivePower	Niveau de capacité du profil, en MW.
energyLevel	RealEnergy	Niveau d'énergie du profil, en MWh.
minimumLevel	Float	Valeur minimale du contrat en MW
sequenceNumber	Integer	Séquence pour numérotter les éléments du profil. { supérieur ou égal à 1 }
startDateTime	DateTime	Date/heure de début pour ce profil.
stopDateTime	DateTime	Date/heure de fin pour ce profil.

Le Tableau 208 montre toutes les extrémités d'association de ProfileData avec d'autres classes.

Tableau 208 – Extrémités d'association de ExternalInputs::ProfileData avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] Profile	Profile	Un profil a des données de profil qui lui sont associées.

6.5.6.2.44 ReserveDemandCurve

Courbe de demande de réserve. Modélise les quantités maximales de réserve exigées par Market Region (région de marché) et modélise une courbe de demande de réserve pour les quantités minimales de réserve. ReserveDemandCurve est une relation entre le prix de réserve d'exploitation de l'unité en \$/MWh (axe Y) et les réserves de l'unité en MW (axe X).

Le Tableau 209 montre tous les attributs de ReserveDemandCurve.

Tableau 209 – Attributs de ExternalInputs::ReserveDemandCurve

nom	type	description
reqMaxMW	Float	Limite maximale de l'exigence régionale
reserveRequirementType	ReserveRequirementType	Type d'exigences de réserve auquel s'appliquent la limite max et la courbe. Par exemple, réserve d'exploitation, régulation, contingence.
curveStyle	CurveStyle	Hérité de: Curve
xMultiplier	UnitMultiplier	Hérité de: Curve
xUnit	UnitSymbol	Hérité de: Curve
y1Multiplier	UnitMultiplier	Hérité de: Curve
y1Unit	UnitSymbol	Hérité de: Curve
y2Multiplier	UnitMultiplier	Hérité de: Curve
y2Unit	UnitSymbol	Hérité de: Curve
y3Multiplier	UnitMultiplier	Hérité de: Curve
y3Unit	UnitSymbol	Hérité de: Curve
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 210 montre toutes les extrémités d'association de ReserveDemandCurve avec d'autres classes.

Tableau 210 – Extrémités d'association de ExternalInputs::ReserveDemandCurve avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..*]	[1..1] ASRequirements	ASRequirements	
[0..*]	[1..1] MarketRegion	MarketRegion	
[1..1]	[0..*] CurveDatas	CurveData	Hérité de: Curve
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.45 Classe racine SCADAInformation

Contient des informations de mise à jour indiquées par SCADA

Le Tableau 211 montre tous les attributs de SCADAInformation.

Tableau 211 – Attributs de ExternalInputs::SCADAInformation

nom	type	description
timeStamp	DateTime	heure de mise à jour indiquée par SCADA

6.5.6.2.46 SecurityConstraints

Ces contraintes sont typiques pour les gestionnaires des réseaux de transport régionaux (RTO). Elles incluent des contraintes de transport et de groupe de production identifiées dans le scénario de base et dans les scénarios de contingence critique.

Le Tableau 212 montre tous les attributs de SecurityConstraints.

Tableau 212 – Attributs de ExternalInputs::SecurityConstraints

nom	type	description
minMW	ActivePower	Limite minimale en MW (uniquement pour les contraintes de transport).
maxMW	ActivePower	Limite maximale en MW
actualMW	ActivePower	Flux d'une branche réelle ou d'un groupe de branches en MW (uniquement pour les contraintes de transport)
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 213 montre toutes les extrémités d'association de SecurityConstraints avec d'autres classes.

Tableau 213 – Extrémités d'association de ExternalInputs::SecurityConstraints avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..1] RTO	RTO	
[0..*]	[0..1] GeneratingBid	GeneratingBid	
[0..1]	[0..1] Flowgate	Flowgate	
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.47 SecurityConstraintSum

Généralement fournies par les systèmes des RTO, les contraintes identifiées dans le scénario de base et dans les scénarios de contingence critique doivent être transférées.

Une contrainte a N (≥ 1) conditions de contraintes. Une condition est représentée par une instance de TerminalConstraintTerm.

L'expression de la contrainte est la suivante:

$$\text{minValue} \leq c1 \cdot x1 + c2 \cdot x2 + \dots cn \cdot xn + k \leq \text{maxValue}$$

où:

- cn est ConstraintTerm.factor
- xn est le flux de la borne

Le flux de l'équipement associé est positif pour NodeConstraintTerm de ConnectivityNode

k est SecurityConstraintsLinear.resourceMW

Les unités de k sont censées être les mêmes que les unités des flux, xn. Les constantes cn n'ont pas de dimension.

Avec ces conventions, cn et k sont positives pour une contrainte type telle que: "la somme pondérée de production doit être inférieure à la limite". En outre, les cn sont toutes égales à 1.0 pour un scénario tel que "le flux de l'interface doit être inférieur à la limite", en partant du principe que les bornes sont choisies sur le côté importation de l'interface

Le Tableau 214 montre tous les attributs de SecurityConstraintSum.

Tableau 214 – Attributs de ExternalInputs::SecurityConstraintSum

nom	type	description
intervalEndTime	DateTime	Hérité de: MarketFactors
intervalStartTime	DateTime	Hérité de: MarketFactors
type	String	Hérité de: Document
createdDateTime	DateTime	Hérité de: Document
lastModifiedDateTime	DateTime	Hérité de: Document
revisionNumber	String	Hérité de: Document
electronicAddress	ElectronicAddress	Hérité de: Document
subject	String	Hérité de: Document
title	String	Hérité de: Document
docStatus	Status	Hérité de: Document
status	Status	Hérité de: Document
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 215 montre toutes les extrémités d'association de SecurityConstraintSum avec d'autres classes.

Tableau 215 – Extrémités d'association de ExternalInputs::SecurityConstraintSum avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[0..*] ConstraintTerms	ConstraintTerm	
[0..*]	[0..1] RTO	RTO	
[1..1]	[0..1] BaseCaseConstraintLimit	BaseCaseConstraintLimit	
[1..1]	[0..*] ContingencyConstraintLimits	ContingencyConstraintLimit	
[1..1]	[0..1] DefaultConstraintLimit	DefaultConstraintLimit	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	Hérité de: MarketFactors
[0..*]	[0..1] Market	Market	Hérité de: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.48 ServicePoint

Les points terminaux définis d'une voie de transport (jusqu'au niveau de distribution ou du client – production ou consommation, ou les deux). Les points de service sont définis du point de vue du service de transport. Chaque point de service est contenu dans (ou à la limite de) la zone d'échange. Un point de service est la source ou la destination d'une transaction.

Le Tableau 216 montre tous les attributs de ServicePoint.

Tableau 216 – Attributs de ExternalInputs::ServicePoint

nom	type	description
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 217 montre toutes les extrémités d'association de ServicePoint avec d'autres classes.

Tableau 217 – Extrémités d'association de ExternalInputs::ServicePoint avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..1]	[0..*] SourceReservation	TransmissionReservation	
[1..1]	[0..*] PORTransmissionPath	TransmissionPath	Une voie de transmission a un point de service appelé "point de réception"
[0..1]	[0..*] SinkReservation	TransmissionReservation	
[1..1]	[0..*] PODTransmissionPath	TransmissionPath	Une voie de transmission a un point de service "point de livraison"
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.49 Classe racine ShuntCompensatorDynamicData

Optimal Power Flow ou State Estimator Filter Bank Data pour le simulateur de formation des exploitants (OTS, *Operator Training Simulator*). Utilisée pour les utilisateurs RealTime, Study et Maintenance.

Le Tableau 218 montre tous les attributs de ShuntCompensatorDynamicData.

Tableau 218 – Attributs de ExternalInputs::ShuntCompensatorDynamicData

nom	type	description
mVARInjection	Float	L'injection de puissance réactive du banc de filtres dans la solution NA ou production de puissance réactive VCS
connectionStatus	Integer	Le statut courant du condensateur de régulation de tension 1 = Connecté 0 = Déconnecté
desiredVoltage	Float	La tension souhaitée du condensateur de régulation de tension
voltageRegulationStatus	Boolean	Indicateur spécifiant si la régulation de tension agit en tant que régulateur; True = Oui, False = Non
stepPosition	Integer	Position d'un pas de condensateur de régulation de tension

Le Tableau 219 montre toutes les extrémités d'association de ShuntCompensatorDynamicData avec d'autres classes.

Tableau 219 – Extrémités d'association de ExternalInputs::ShuntCompensatorDynamicData avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[1..1] MktShuntCompensator	MktShuntCompensator	

6.5.6.2.50 Classe racine SwitchStatus

Optimal Power Flow ou State Estimator Circuit Breaker Status.

Le Tableau 220 montre tous les attributs de SwitchStatus.

Tableau 220 – Attributs de ExternalInputs::SwitchStatus

nom	type	description
switchStatus	SwitchStatusType	Statut du disjoncteur (fermé ou ouvert) du calcul de répartition (<i>power flow</i>).

Le Tableau 221 montre toutes les extrémités d'association de SwitchStatus avec d'autres classes.

Tableau 221 – Extrémités d'association de ExternalInputs::SwitchStatus avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[1..1] MktSwitch	MktSwitch	

6.5.6.2.51 Classe racine SysLoadDistributionFactor

Cette classe modélise les facteurs de distribution du système. Elle doit être utilisée avec HostControlArea et ConnectivityNode pour montrer la distribution de chaque partie individuelle.

Le Tableau 222 montre tous les attributs de SysLoadDistributionFactor.

Tableau 222 – Attributs de ExternalInputs::SysLoadDistributionFactor

nom	type	description
factor	Float	Utilisé pour calculer la "participation" de charge d'un nœud de connectivité dans une zone de régulation hôte

Le Tableau 223 montre toutes les extrémités d'association de SysLoadDistributionFactor avec d'autres classes.

Tableau 223 – Extrémités d'association de ExternalInputs::SysLoadDistributionFactor avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..1]	[1..1] MktConnectivityNode	MktConnectivityNode	
[0..*]	[0..*] DistributionFactorSet	DistributionFactorSet	
[0..*]	[1..1] HostControlArea	HostControlArea	

6.5.6.2.52 Classe racine TapChangerDynamicData

Optimal Power Flow ou State Estimator Phase Shifter Data. Utilisée pour les utilisateurs RealTime, Study et Maintenance. Mesures du déphaseur de solution SE du dernier processus de SE

Le Tableau 224 montre tous les attributs de TapChangerDynamicData.

Tableau 224 – Attributs de ExternalInputs::TapChangerDynamicData

nom	type	description
tapPosition	Float	Position de la prise du déphaseur, position supérieure de la prise du transformateur ou position inférieure de la prise du transformateur
desiredVoltage	Float	La tension souhaitée du LTC (changeur de prise en charge)
voltageRegulationStatus	Boolean	Indicateur spécifiant si le transformateur LTC agit en tant que régulateur; True = Oui, False = Non
angleRegulationStatus	Boolean	True signifie que le déphaseur régule.
desiredMW	Float	Quantité de MW souhaitée pour le déphaseur. Le point de consigne de régulation de la puissance active du déphaseur
solvedAngle	Float	Angle du déphaseur. Le déphasage angulaire résolu du déphaseur
minimumAngle	Float	Le déphasage angulaire minimal du déphaseur
maximumAngle	Float	Le déphasage angulaire maximal du déphaseur

Le Tableau 225 montre toutes les extrémités d'association de TapChangerDynamicData avec d'autres classes.

Tableau 225 – Extrémités d'association de ExternalInputs::TapChangerDynamicData avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[1..1] MktTapChanger	MktTapChanger	

6.5.6.2.53 TerminalConstraintTerm

Une condition de contrainte associée à une borne spécifique sur un équipement physique.

Le Tableau 226 montre tous les attributs de TerminalConstraintTerm.

Tableau 226 – Attributs de ExternalInputs::TerminalConstraintTerm

nom	type	description
factor	String	Hérité de: ConstraintTerm
function	String	Hérité de: ConstraintTerm
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 227 montre toutes les extrémités d'association de TerminalConstraintTerm avec d'autres classes.

Tableau 227 – Extrémités d'association de ExternalInputs::TerminalConstraintTerm avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[1..1] MktTerminal	MktTerminal	
[0..*]	[1..1] SecurityConstraintSum	SecurityConstraintSum	Hérité de: ConstraintTerm
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.54 TransferInterface

Une interface de transfert est composée de branches telles que les lignes de transmission et les transformateurs.

Le Tableau 228 montre tous les attributs de TransferInterface.

Tableau 228 – Attributs de ExternalInputs::TransferInterface

nom	type	description
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 229 montre toutes les extrémités d'association de TransferInterface avec d'autres classes.

Tableau 229 – Extrémités d'association de ExternalInputs::TransferInterface avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[1..1] TransferInterfaceSolution	TransferInterfaceSolution	
[0..*]	[0..1] HostControlArea	HostControlArea	
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.55 Classe racine TransferInterfaceSolution

Définitions d'interface TNA de OPF pour VSA

Le Tableau 230 montre tous les attributs de TransferInterfaceSolution.

Tableau 230 – Attributs de ExternalInputs::TransferInterfaceSolution

nom	type	description
interfaceMargin	Float	La marge de l'interface
transferLimit	Float	Interface de transfert + Limite Utilisation de l'attribut: la valeur absolue du flux maximum sur l'interface de transfert. C'est une valeur positive en MW.
postTransferMW	Float	MW post-transfert pour une étape

Le Tableau 231 montre toutes les extrémités d'association de TransferInterfaceSolution avec d'autres classes.

Tableau 231 – Extrémités d'association de ExternalInputs::TransferInterfaceSolution avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[1..1] TransferInterface	TransferInterface	
[0..1]	[0..1] MktContingencyA	MktContingency	
[0..1]	[0..1] MktContingencyB	MktContingency	

6.5.6.2.56 Classe racine TransmissionCapacity

Cette classe modélise la capacité de transport (une interface de transport ou une paire POR/POD) comprenant la capacité de transfert totale (TTC, *Total Transfer Capacity*), la capacité de transfert opérationnelle (OTC, *Operating Transfer Capacity*) et la marge bénéficiaire de capacité (CBM, *Capacity Benefit Margin*).

Le Tableau 232 montre tous les attributs de TransmissionCapacity.

Tableau 232 – Attributs de ExternalInputs::TransmissionCapacity

nom	type	description
capacityBenefitMargin	Float	La marge bénéficiaire de capacité (CBM) est utilisée par les marchés (<i>Markets</i>) pour calculer les limites de l'interface de transport. Ce nombre pourrait être déterminé manuellement ou selon une procédure. La CBM est définie par interface de transport (groupe de branches).
operationalTransmissionCapacity	Float	La capacité de transport opérationnelle (OTC) est la capacité de transport dans les conditions opérationnelles pendant une période de temps déterminée, comprenant les effets de réduction et les paramètres actuels de contrôle des opérations. Les OTC des interfaces de transport (groupe de branches) sont toujours fournies quelles que soient les conditions d'indisponibilité ou de commutation.
OTC15min_emergency	Float	Le seuil d'urgence de 15 min de la capacité de transport opérationnelle (OTC).
OTCemergency	Float	Le seuil d'urgence de la capacité de transport opérationnelle (OTC).
POD	String	point de livraison
POR	String	point de réception
startOperatingDate	DateTime	Date et heure d'exploitation lorsque le droit s'applique
totalTransmissionCapacity	Float	Capacité de transport totale

Le Tableau 233 montre toutes les extrémités d'association de TransmissionCapacity avec d'autres classes.

Tableau 233 – Extrémités d'association de ExternalInputs::TransmissionCapacity avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..1] GenericConstraints	GenericConstraints	
[0..*]	[0..1] Flowgate	Flowgate	

6.5.6.2.57 Classe racine TransmissionInterfaceRightEntitlement

Elle est officiellement appelée le droit ETC/TOR du groupe de branches avec CVR en guise de ETC. Elle est utilisée pour représenter les droits. Elle pourrait également être utilisée pour représenter le droit TR d'un POR/POD.

Le Tableau 234 montre tous les attributs de TransmissionInterfaceRightEntitlement.

Tableau 234 – Attributs de ExternalInputs::TransmissionInterfaceRightEntitlement

nom	type	description
entitlement	Float	le droit
POD	String	point de livraison
POR	String	point de réception
startOperatingDate	DateTime	Date et heure d'exploitation lorsque le droit s'applique

Le Tableau 235 montre toutes les extrémités d'association de TransmissionInterfaceRightEntitlement avec d'autres classes.

Tableau 235 – Extrémités d'association de ExternalInputs::TransmissionInterfaceRightEntitlement avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[1..1] ContractRight	ContractRight	
[0..*]	[0..1] Flowgate	Flowgate	

6.5.6.2.58 TransmissionPath

Une connexion, un lien ou une ligne électrique composé d'un ou de plusieurs éléments de transport parallèles entre deux zones des systèmes électriques interconnectés ou d'une partie d'entre eux. TransmissionCorridor et TransmissionRightOfWay font partie des aspects juridiques. TransmissionPath fait référence aux segments entre les ServicePoints d'un TransmissionProvider.

Le Tableau 236 montre tous les attributs de TransmissionPath.

Tableau 236 – Attributs de ExternalInputs::TransmissionPath

nom	type	description
availTransferCapability	ActivePower	La capacité de transport disponible d'une voie de transmission pour la direction de référence.
parallelPathFlag	Boolean	Indicateur précisant si la voie de transmission est également une "voie parallèle" d'interconnexion désignée.
totalTransferCapability	ActivePower	La capacité de transport totale d'une voie de transmission dans la direction de référence.
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 237 montre toutes les extrémités d'association de TransmissionPath avec d'autres classes.

**Tableau 237 – Extrémités d'association de ExternalInputs::
TransmissionPath avec d'autres classes**

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[0..*] TransmissionReservation	TransmissionReservation	
[0..*]	[1..1] PointOfReceipt	ServicePoint	Une voie de transmission a un point de service appelé "point de réception"
[0..*]	[1..1] DeliveryPoint	ServicePoint	Une voie de transmission a un point de service "point de livraison"
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.2.59 Classe racine TransmissionReservation

Une réservation de transport est obtenue du système OASIS pour réserver le transport pour une période de temps, une voie de transmission et un produit de transport donnés.

Le Tableau 238 montre toutes les extrémités d'association de TransmissionReservation avec d'autres classes.

**Tableau 238 – Extrémités d'association de ExternalInputs::
TransmissionReservation avec d'autres classes**

[mult à partir de]	[mult vers] nom	type	description
[0..1]	[0..1] EnergyTransaction	EnergyTransaction	
[0..1]	[0..1] TransactionBid	TransactionBid	
[0..*]	[0..1] Source	ServicePoint	
[0..*]	[0..1] Sink	ServicePoint	
[0..*]	[1..1] TransmissionPath	TransmissionPath	

6.5.6.2.60 Classe racine TREntitlement

Un Transmission Right (TR) (droit de transport) peut être une chaîne de TR ou un TR individuel.

Lorsqu'un droit de transport n'est pas une chaîne, il est officiellement le droit ETC/TOR de chaque contrat ETC/TOR avec CVR (*Converted Rights*) comme ETC. Il s'agit de la somme de tous les droits sur toutes les interfaces de transport liées pour un même TR.

Lorsque TR est une chaîne, son droit est le minimum de tous les droits pour les TR individuels de la chaîne.

Le Tableau 239 montre tous les attributs de TREntitlement.

Tableau 239 – Attributs de ExternalInputs::TREntitlement

nom	type	description
entitlement	Float	Le droit
startOperatingDate	DateTime	Date et heure d'exploitation lorsque le droit s'applique

Le Tableau 240 montre toutes les extrémités d'association de TREntitlement avec d'autres classes.

Tableau 240 – Extrémités d'association de ExternalInputs::TREntitlement avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[1..1] TransmissionContractRight	ContractRight	

6.5.6.2.61 UnitInitialConditions

Statut de ressource à la fin d'une période d'équilibre donnée.

Le Tableau 241 montre tous les attributs de UnitInitialConditions.

Tableau 241 – Attributs de ExternalInputs::UnitInitialConditions

nom	type	description
cumEnergy	RealEnergy	Production d'énergie cumulée sur une période d'échange.
cumStatusChanges	Integer	Nombre cumulé de changements de statut de la ressource.
numberOfStartups	Integer	Nombre de démarrages par jour d'exploitation (<i>Operating Day</i>) jusqu'à la fin de l'heure précédente.
onlineStatus	Boolean	"True" si le GeneratingUnit est actuellement en ligne
resourceMW	ActivePower	Sortie en MW de ressource à la fin de la période d'équilibre précédente.
resourceStatus	Integer	Statut de ressource à la fin de la période d'équilibre précédente. 0 – hors ligne 1 – production en ligne 2 – en cours d'arrêt 3 – en cours de démarrage
statusDate	DateTime	Heure et date de resourceStatus
timeInStatus	Float	Heure dans les intervalles d'échange de marché à laquelle la ressource revêt un statut à la fin de la période d'équilibre précédente.
timeInterval	DateTime	Intervalle de temps
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 242 montre toutes les extrémités d'association de UnitInitialConditions avec d'autres classes.

Tableau 242 – Extrémités d'association de ExternalInputs::UnitInitialConditions avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..1] GeneratingUnit	RegisteredGenerator	
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.3 Paquetage MarketResults

6.5.6.3.1 Généralités

Résultats de l'exécution d'un marché.

La Figure 34 montre le diagramme de classe Instructions.

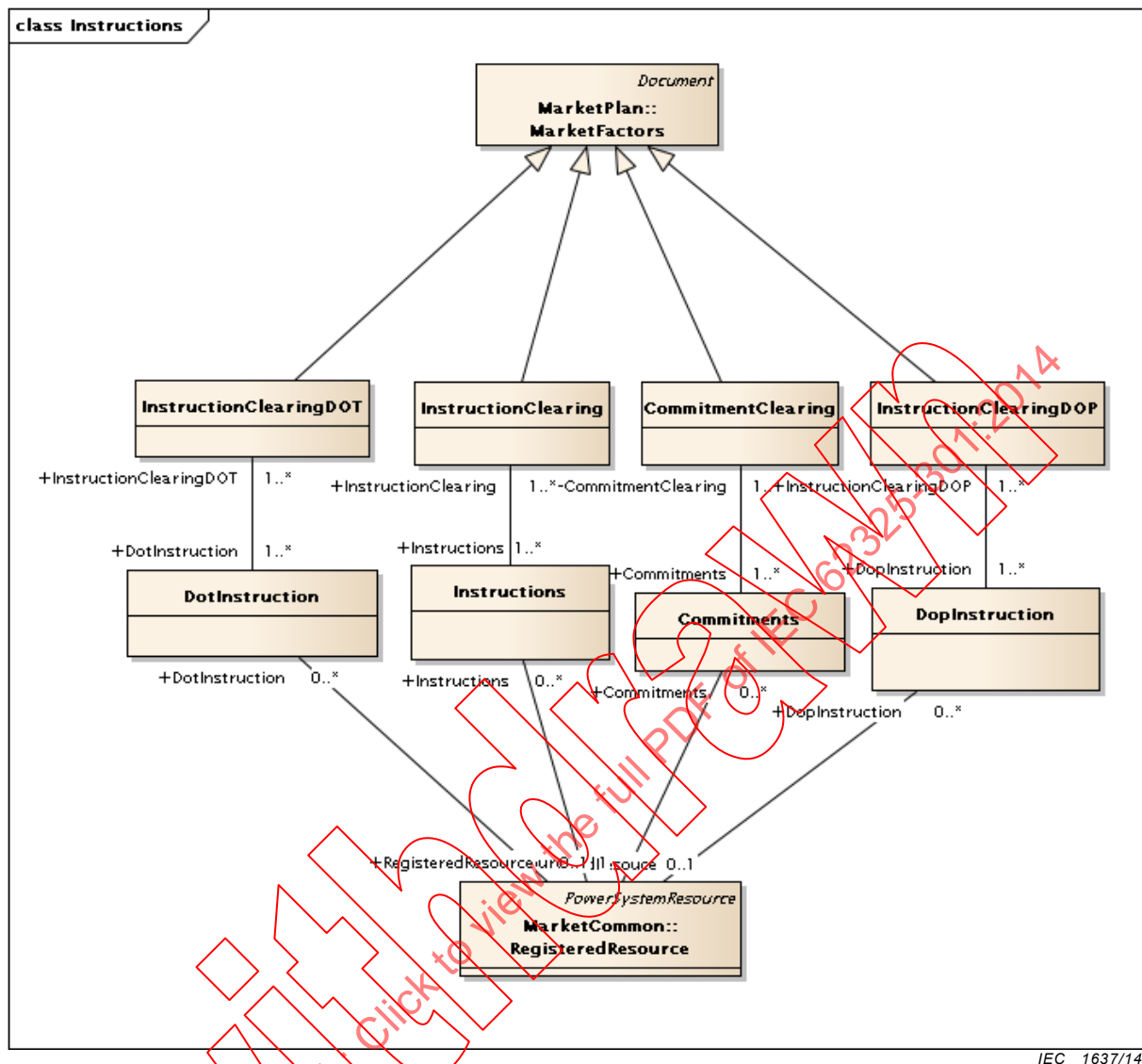


**Figure 34 – Diagramme de classe MarketResults::
Instructions**

Cette figure montre les classes utilisées pour modéliser les instructions envoyées aux participants du marché après l'ajustement du marché. Les principales classes et leurs relations incluent la classe RegisteredResource qui modélise la ressource participante, ainsi que les classes Commitment et CommitmentClearing qui modélisent les résultats qui demandent l'engagement de la ressource. DotInstruction et DopInstruction autorisent la modélisation des résultats d'une répartition dynamique (ou anticipée) qui peut être utilisée dans le marché en temps réel.

La Figure 35 montre le diagramme de classe MarketClearing.

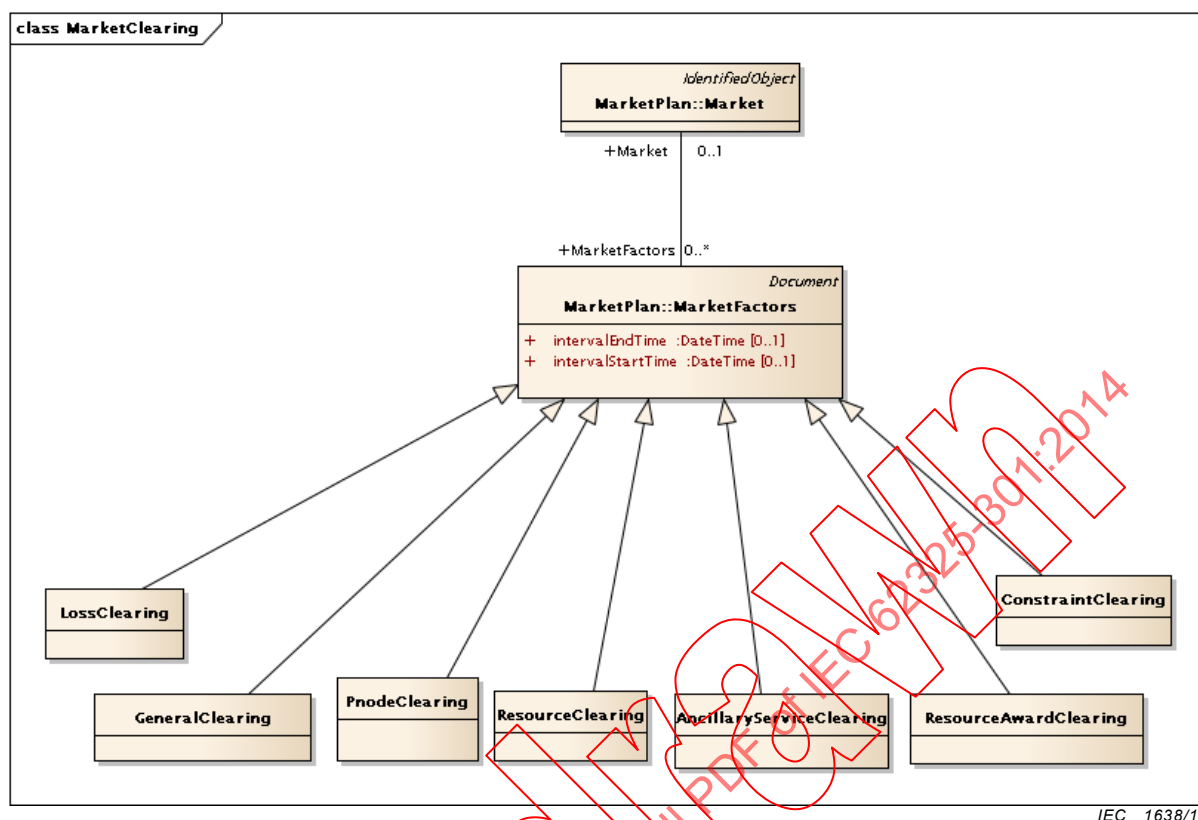
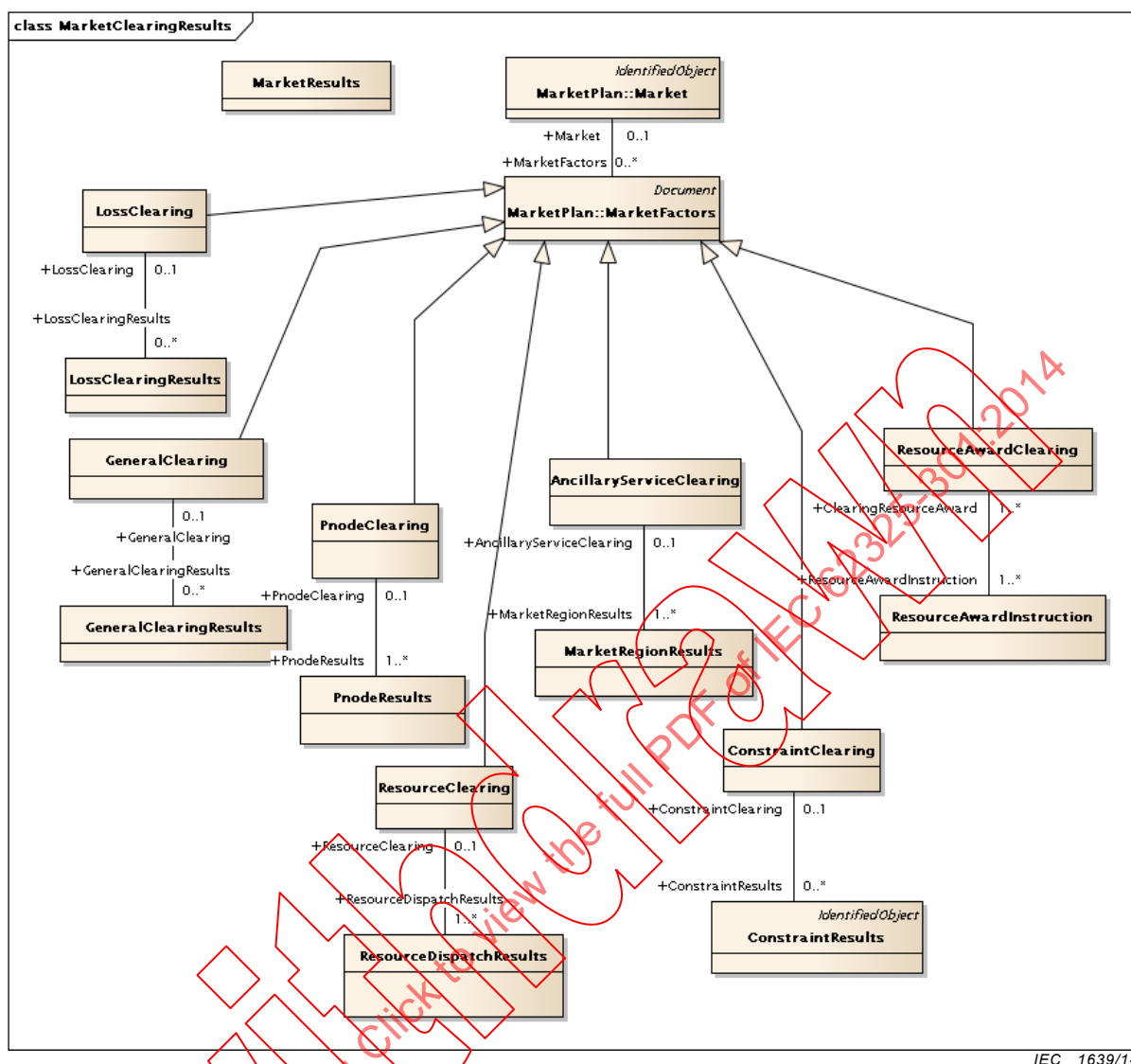


Figure 35 – Diagramme de classe MarketResults::MarketClearing

Chaque classe d'équilibre du marché définie hérite de la classe MarketFactors pour définir les intervalles de temps et le type d'exécution du marché.

La Figure 36 montre le diagramme de classe MarketClearingResults.

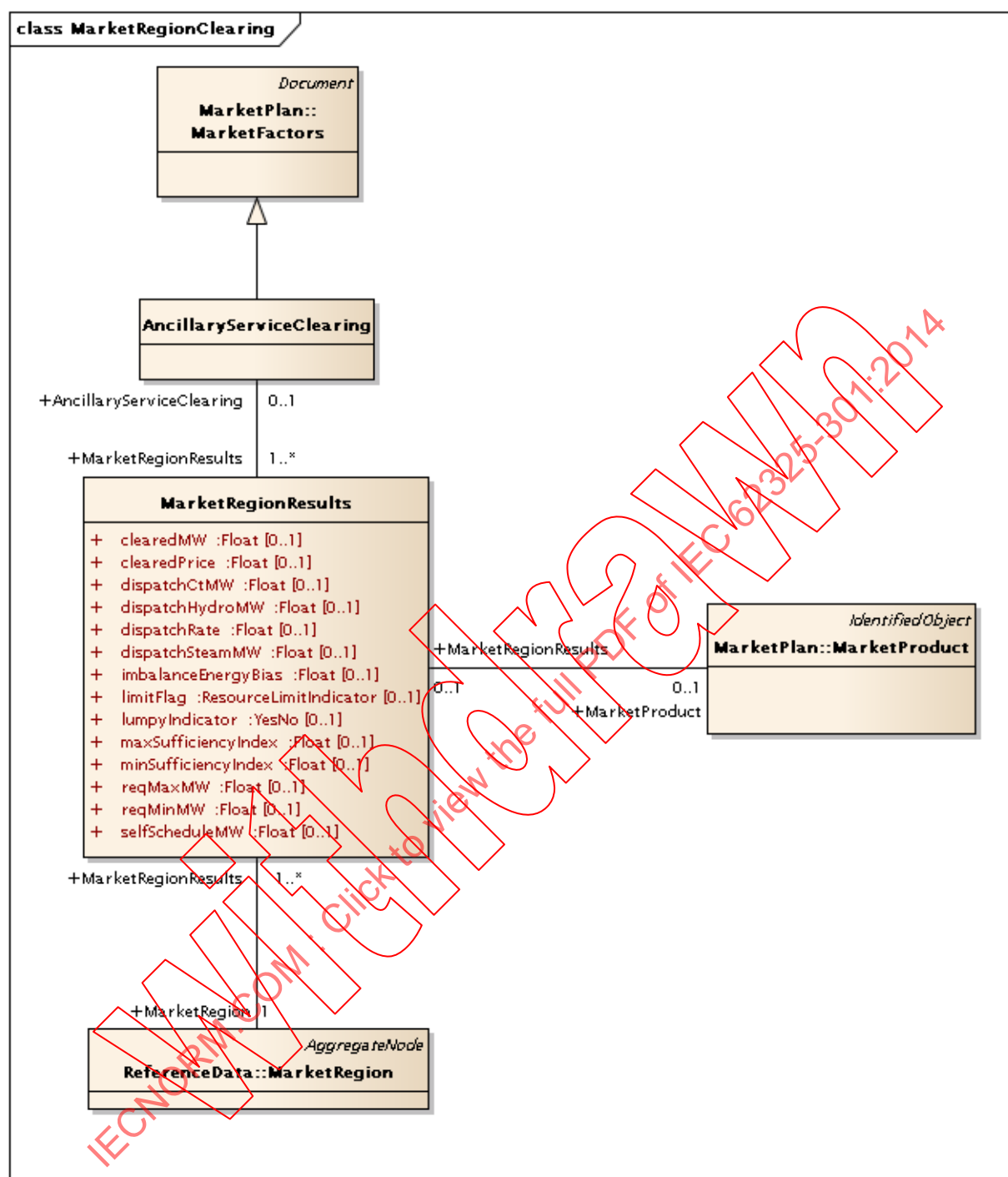


IEC 1639/14

Figure 36 – Diagramme de classe MarketResults::MarketClearingResults

Cette figure montre les classes et les relations utilisées pour modéliser les résultats de l'ajustement du marché de manière générale. La classe MarketResults résume le processus de marché. La classe LossClearingResults récapitule les pertes. GeneralClearingResults est utilisé pour modéliser la charge d'équilibre sur une base de zone de charge. Les classes PnodeClearing et PnodeClearingResults sont utilisées pour modéliser les prix marginaux locaux (LMP) au niveau des nœuds de tarification individuels. Les classes ResourceClearing et ResourceDispatchInstruction comprennent les instructions de répartition et l'indicateur d'une répartition dans un cas normal ou dans un cas de contingence. La classe AncillaryServiceClearing comprend des informations sur les services auxiliaires. La classe ConstraintResults comprend des contraintes de liaison et leurs coûts implicites associés. ResourceAwardInstruction inclut des attributions de puissance active et des informations LMP.

La Figure 37 montre le diagramme de classe MarketRegionClearing.

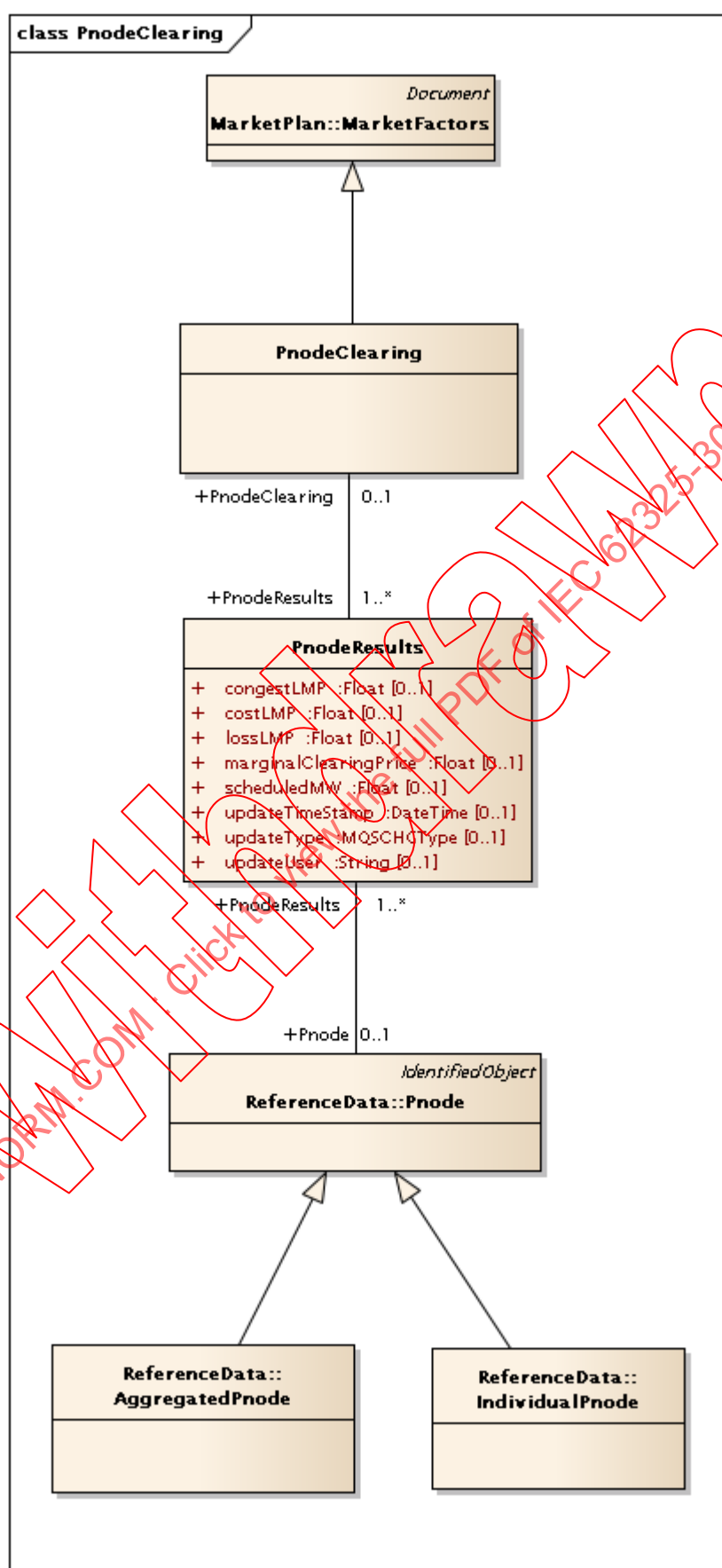


IEC 1640/14

Figure 37 – Diagramme de classe MarketResults::MarketRegionClearing

Cette figure montre les classes et les relations utilisées pour modéliser les résultats de l'ajustement du marché des services auxiliaires au niveau d'une région du marché. Le modèle inclut les résultats au niveau des produits de services auxiliaires spécifiques grâce à la classe MarketProduct et à l'association à MarketRegionResults.

La Figure 38 montre le diagramme de classe PnodeClearing.

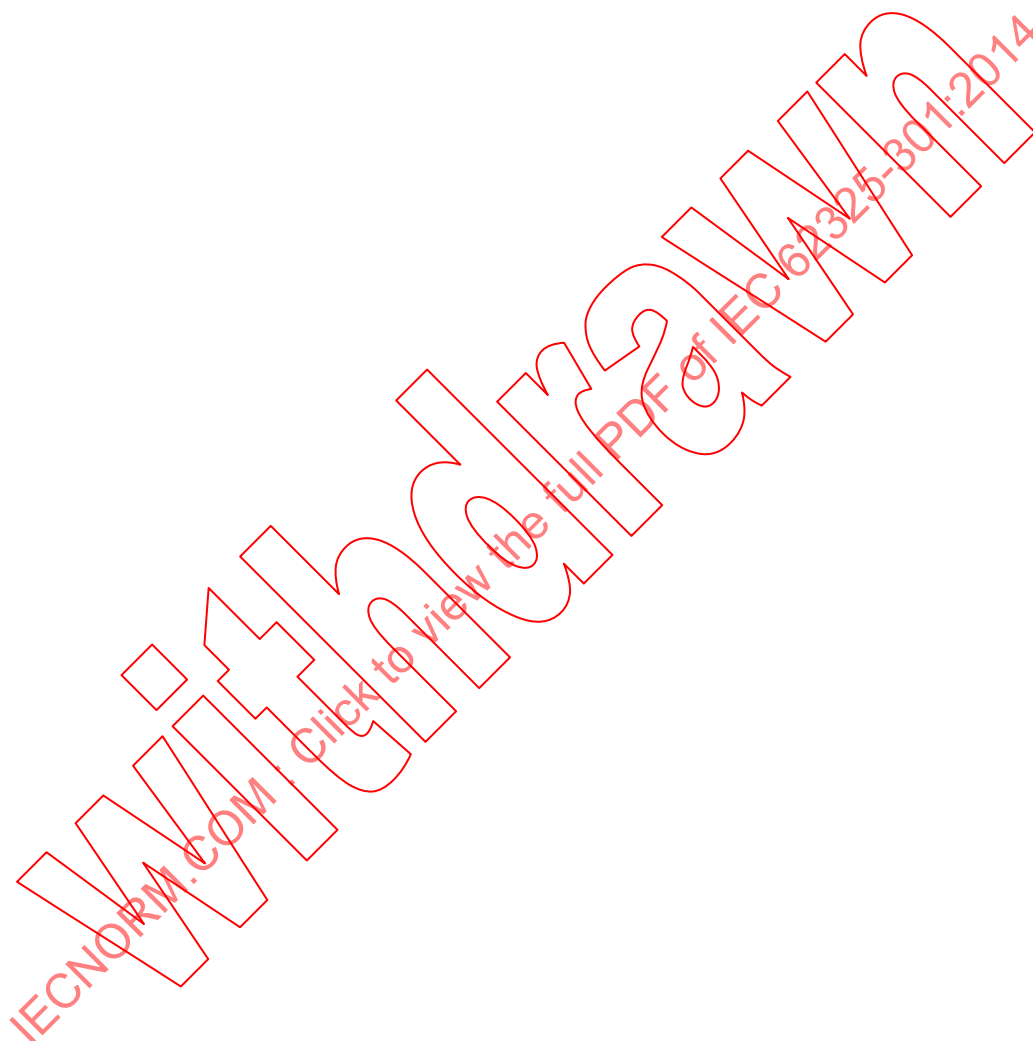


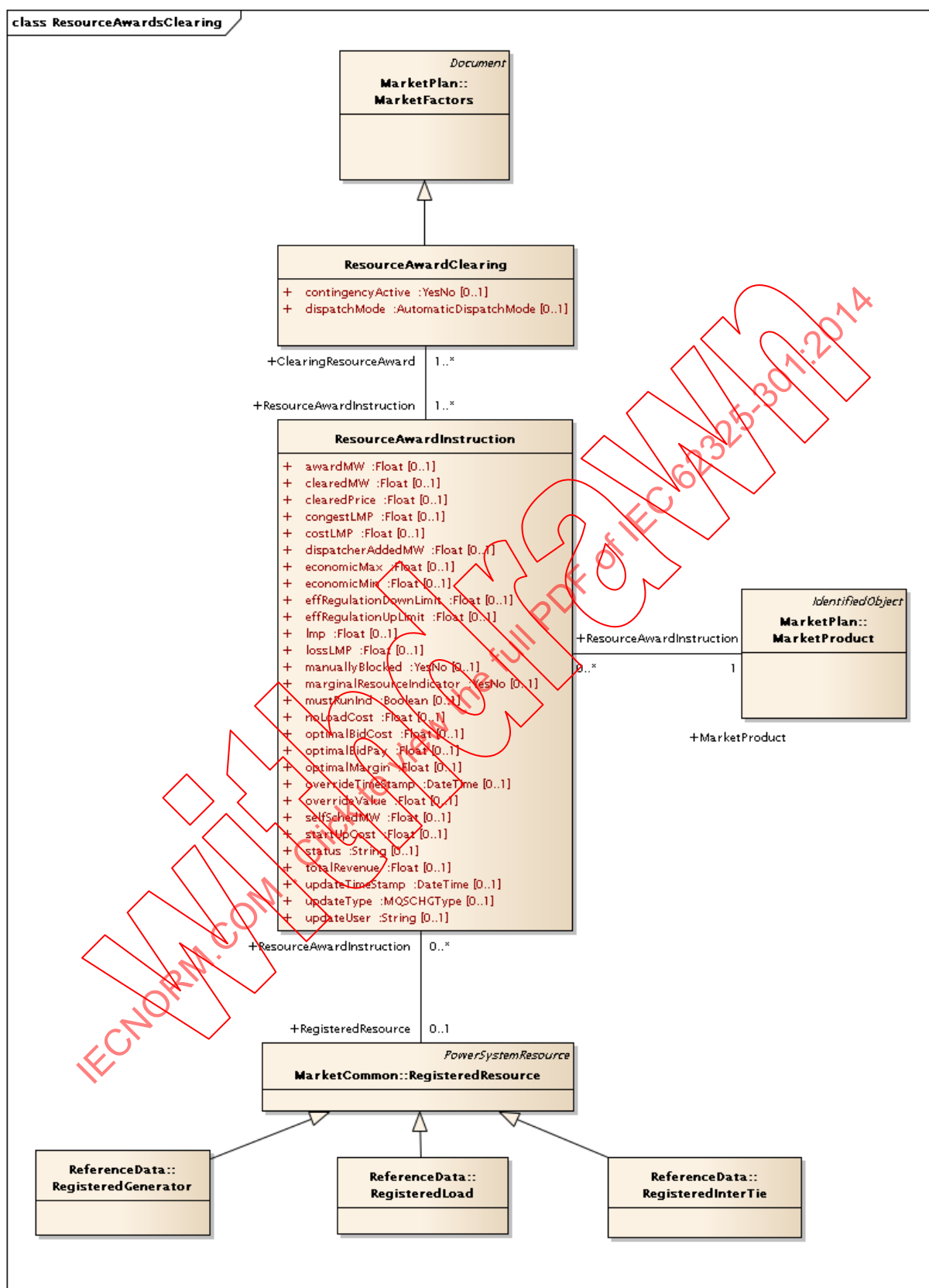
IEC 1641/14

Figure 38 – Diagramme de classe MarketResults::PnodeClearing

Cette figure montre les classes et les relations utilisées pour modéliser les résultats de l'ajustement du marché au niveau des nœuds de tarification. Les prix marginaux locaux (LMP) et leurs composants (énergie, congestion et pertes) sont affichés pour chaque nœud de tarification. La modélisation des résultats au niveau des Pnodes agrégés et des Pnodes individuels est prise en charge par les classes AggregatedPnode et IndividualPnode.

La Figure 39 montre le diagramme de classe ResourceAwardsClearing.





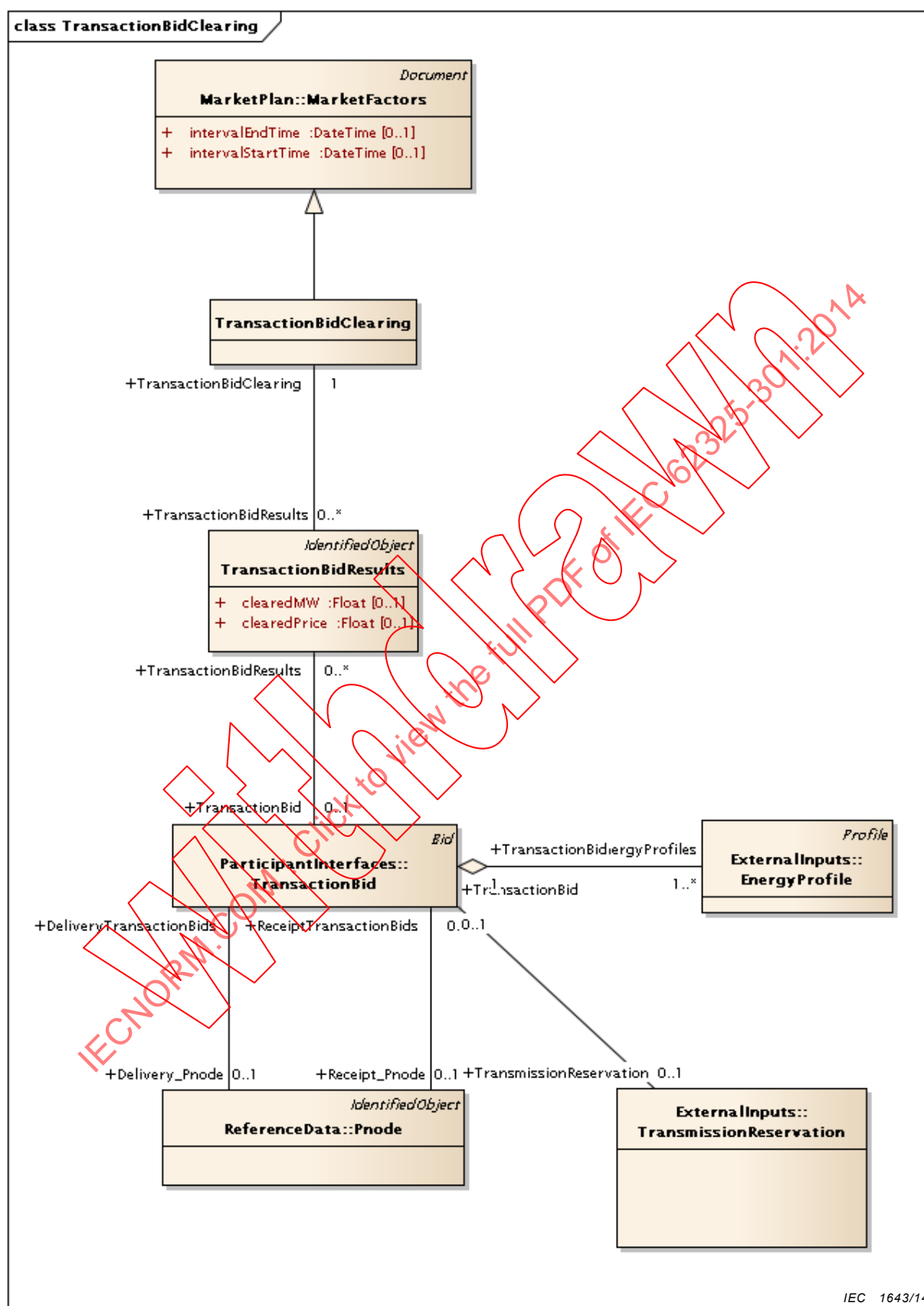
Cette figure montre les classes et les relations utilisées pour modéliser les résultats de l'ajustement du marché en mettant l'accent sur ResourceAwardInstruction. La classe principale de ce diagramme est ResourceAwardInstruction qui modélise les détails de

l'attribution à la ressource comprenant la puissance active, le prix marginal local (LMP) et ses composantes d'énergie, de congestion et de coût. Le modèle de ressource inclut les sous-classes RegisteredGenerator, RegisteredLoad et RegisteredInterTie.

La Figure 40 montre le diagramme de classe TransactionBidClearing.

IECNORM.COM Click to view the full PDF of IEC 62325-301:2014

Withdrawn



Cette figure montre les classes et les relations utilisées pour modéliser les résultats de l'ajustement du marché en mettant l'accent sur les résultats de transaction. Ce modèle inclut

la classe TransactionBid et ses relations avec les Pnodes Point de livraison et Point de réception.

6.5.6.3.2 AncillaryServiceClearing

Modèle les résultats de l'ajustement du marché par rapport aux produits des services auxiliaires

Le Tableau 243 montre tous les attributs de AncillaryServiceClearing.

Tableau 243 – Attributs de MarketResults::AncillaryServiceClearing

nom	type	description
intervalEndTime	DateTime	Hérité de: MarketFactors
intervalStartTime	DateTime	Hérité de: MarketFactors
type	String	Hérité de: Document
createdDateTime	DateTime	Hérité de: Document
lastModifiedDateTime	DateTime	Hérité de: Document
revisionNumber	String	Hérité de: Document
electronicAddress	ElectronicAddress	Hérité de: Document
subject	String	Hérité de: Document
title	String	Hérité de: Document
docStatus	Status	Hérité de: Document
status	Status	Hérité de: Document
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 244 montre toutes les extrémités d'association de AncillaryServiceClearing avec d'autres classes.

Tableau 244 – Extrémités d'association de MarketResults::AncillaryServiceClearing avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..1]	[1..*] MarketRegionResults	MarketRegionResults	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	Hérité de: MarketFactors
[0..*]	[0..1] Market	Market	Hérité de: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.3.3 BillDeterminant

Modélise différents frais pour prendre en charge la facturation et le règlement

Le Tableau 245 montre tous les attributs de BillDeterminant.

Tableau 245 – Attributs de MarketResults::BillDeterminant

nom	type	description
calculationLevel	String	Niveau de l'ordre de calcul des frais.
configVersion	String	La version de configuration de la logique de calcul pour le règlement.
deleteStatus	String	
effectiveDate	DateTime	
exception	String	
factor	String	
frequency	String	
numberInterval	Integer	Nombre d'intervalles de l'élément déterminant de facturation le jour de l'opération, ex. 300 pour des intervalles de cinq minutes.
offset	String	
precisionLevel	String	Le niveau de précision de la valeur actuelle.
primaryYN	String	
referenceFlag	String	
reportable	String	
roundOff	String	
source	String	
terminationDate	DateTime	
unitOfMeasure	String	L'unité de mesure de la valeur actuelle de l'élément déterminant de facturation.
type	String	Hérité de: Document
createdDateTime	DateTime	Hérité de: Document
lastModifiedDateTime	DateTime	Hérité de: Document
revisionNumber	String	Hérité de: Document
electronicAddress	ElectronicAddress	Hérité de: Document
subject	String	Hérité de: Document
title	String	Hérité de: Document
docStatus	Status	Hérité de: Document
status	Status	Hérité de: Document
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 246 montre toutes les extrémités d'association de BillDeterminant avec d'autres classes.

Tableau 246 – Extrémités d'association de MarketResults::BillDeterminant avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] MktUserAttribute	MktUserAttribute	
[0..1]	[0..*] ChargeProfileData	ChargeProfileData	
[0..*]	[0..*] ChargeComponents	ChargeComponent	Un élément déterminant de facturation peut avoir 0-n ChargeComponent et un ChargeComponent peut être associé à 0-n BillDeterminant.
[0..1]	[0..1] ChargeProfile	ChargeProfile	
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.3.4 ChargeProfile

Un type de profil pour les charges financières

Le Tableau 247 montre tous les attributs de ChargeProfile.

Tableau 247 – Attributs de MarketResults::ChargeProfile

nom	type	description
type	String	Le type de profil: montant, prix ou quantité.
frequency	String	La fréquence de calcul: quotidienne ou mensuelle.
numberInterval	Integer	Le nombre d'intervalles des données de profil.
unitOfMeasure	String	L'unité de mesure appliquée à l'attribut de valeur des données de profil.
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 248 montre toutes les extrémités d'association de ChargeProfile avec d'autres classes.

Tableau 248 – Extrémités d'association de MarketResults::ChargeProfile avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..1]	[0..1] BillDeterminant	BillDeterminant	
[0..1]	[0..*] ChargeProfileData	ChargeProfileData	
[0..*]	[0..1] PassThroughBill	PassThroughBill	
[0..*]	[0..1] Bid	Bid	
[0..*]	[0..*] ProfileDatas	ProfileData	Hérité de: Profile
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.3.5 Classe racine ChargeProfileData

Modèle de différents frais associés à un profil d'énergie pour prendre en charge la facturation et le règlement

Le Tableau 249 montre tous les attributs de ChargeProfileData.

Tableau 249 – Attributs de MarketResults::ChargeProfileData

nom	type	description
sequence	Integer	Le numéro de séquence du profil.
timeStamp	DateTime	La date et l'heure d'un intervalle.
value	Float	La valeur d'un intervalle selon un type de profil (montant, prix ou quantité), en fonction de l'unité de mesure.

Le Tableau 250 montre toutes les extrémités d'association de ChargeProfileData avec d'autres classes.

Tableau 250 – Extrémités d'association de MarketResults::ChargeProfileData avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..1] BillDeterminant	BillDeterminant	
[0..*]	[0..1] ChargeProfile	ChargeProfile	

6.5.6.3.6 CommitmentClearing

Modélise les résultats de l'ajustement du marché qui demandent la gestion de la production.

Le Tableau 251 montre tous les attributs de CommitmentClearing.

Tableau 251 – Attributs de MarketResults::CommitmentClearing

nom	type	description
intervalEndTime	DateTime	Hérité de: MarketFactors
intervalStartTime	DateTime	Hérité de: MarketFactors
type	String	Hérité de: Document
createdDateTime	DateTime	Hérité de: Document
lastModifiedDateTime	DateTime	Hérité de: Document
revisionNumber	String	Hérité de: Document
electronicAddress	ElectronicAddress	Hérité de: Document
subject	String	Hérité de: Document
title	String	Hérité de: Document
docStatus	Status	Hérité de: Document
status	Status	Hérité de: Document
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 252 montre toutes les extrémités d'association de CommitmentClearing avec d'autres classes.

Tableau 252 – Extrémités d'association de MarketResults::CommitmentClearing avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..*]	[1..*] Commitments	Commitments	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	Hérité de: MarketFactors
[0..*]	[0..1] Market	Market	Hérité de: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.3.7 Classe racine Commitments

Apporte les informations nécessaires (sur la base de ressources) pour la collecte des résultats d'engagement de Démarrage/Arrêt. Ces informations sont utiles pour tous les marchés.

Le Tableau 253 montre tous les attributs de Commitments.

Tableau 253 – Attributs de MarketResults::Commitments

nom	type	description
commitmentType	CommitmentType	Type de statut UC (engagement volontaire, engagement ISO ou engagement SCUC)
instructionCost	Float	Coût total associé au changement du statut de la ressource.
instructionType	AutomaticDisplnstTypeCommitment	Indique s'il s'agit d'un démarrage ou d'un arrêt.
intervalEndTime	DateTime	Heure de fin de la période d'engagement. Ce sera sur une limite d'intervalle.
intervalStartTime	DateTime	Heure de début de la période d'engagement. Ce sera sur une limite d'intervalle.
minStatusChangeTime	Integer	Temps de démarrage de la période d'engagement SCUC. Temps de démarrage calculé en fonction de StartupTimeCurve, fourni avec la Bid. Il s'agit d'une combinaison de l'Offre du temps de démarrage et du temps d'indisponibilité de l'unité. Unités en minutes
noLoadCost	Float	Coût à charge nulle de l'unité en cas de produit énergétique
updateTimeStamp	DateTime	
updateType	MQSCHGType	
updateUser	String	

Le Tableau 254 montre toutes les extrémités d'association de Commitments avec d'autres classes.

Tableau 254 – Extrémités d'association de MarketResults::Commitments avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[1..1] RegisteredResource	RegisteredResource	
[1..*]	[1..*] CommitmentClearing	CommitmentClearing	

6.5.6.3.8 ConstraintClearing

Regroupe tous les éléments associés aux contraintes avec obligation et aux violations de contraintes par intervalle et par marché.

Le Tableau 255 montre tous les attributs de ConstraintClearing.

Tableau 255 – Attributs de MarketResults::ConstraintClearing

nom	type	description
intervalEndTime	DateTime	Hérité de: MarketFactors
intervalStartTime	DateTime	Hérité de: MarketFactors
type	String	Hérité de: Document
createdDateTime	DateTime	Hérité de: Document
lastModifiedDateTime	DateTime	Hérité de: Document
revisionNumber	String	Hérité de: Document
electronicAddress	ElectronicAddress	Hérité de: Document
subject	String	Hérité de: Document
title	String	Hérité de: Document
docStatus	Status	Hérité de: Document
status	Status	Hérité de: Document
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 256 montre toutes les extrémités d'association de ConstraintClearing avec d'autres classes.

Tableau 256 – Extrémités d'association de MarketResults::ConstraintClearing avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..1]	[0..*] ConstraintResults	ConstraintResults	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	Hérité de: MarketFactors
[0..*]	[0..1] Market	Market	Hérité de: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.3.9 ConstraintResults

Fournit les résultats du marché sur le traitement des contraintes pour le DAM ou le RTM. Les données incluent le type de contrainte (avec obligation ou violée), la valeur résolue de la contrainte et le coût implicite associé.

Le Tableau 257 montre tous les attributs de ConstraintResults.

Tableau 257 – Attributs de MarketResults::ConstraintResults

nom	type	description
baseFlow	Float	Le flux de puissance de la base de la branche.
BGLimit	Float	Cette valeur est déterminée dans le DA et le RTM. L'optimisation SCUC garantit que le flux de MW du groupe de branches ne dépassera pas cette limite dans la bonne direction.
BGTRResCap	Float	Capacité de réservation TR du groupe de branches – Cette valeur est déterminée dans le DA et le RTM. Cela correspond à la quantité de capacité de transport restante que le détenteur de TR peut utiliser.
bindingLimit	Float	Limite en MW.
clearedValue	Float	MW octroyés.
competitivePathConstraint	YesNo	Indicateur de contrainte de voie non concurrentielle (Y/N) précisant si le coût implicite d'une voie non concurrentielle est différent de zéro.
constraintType	ResultsConstraintType	Type de contrainte.
limitFlag	ConstraintLimitType	Indicateur de limite ("Maximum", "Minimum").
optimizationFlag	YesNo	Inclus dans l'optimisation Y/N.
overloadMW	Float	MW de surcharge de transport.
percentMW	Float	Flux de MW réel en pourcentage de limite.
shadowPrice	Float	Coût implicite (\$/MW) du produit. Coût implicite de la contrainte correspondante.
updateTimeStamp	DateTime	Horodatage de mise à jour.
updateType	MQSCHGType	Type de changement du MQS.
updateUser	String	Utilisateur mis à jour.
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 258 montre toutes les extrémités d'association de ConstraintResults avec d'autres classes.

Tableau 258 – Extrémités d'association de MarketResults::ConstraintResults avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[1..1] MktContingency	MktContingency	
[0..*]	[0..1] ConstraintClearing	ConstraintClearing	
[1..*]	[1..1] Flowgate	Flowgate	
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.3.10 Classe racine DopInstruction

Apporte les informations nécessaires (sur la base de ressources) pour la collecte des résultats du point d'exploitation de répartition (DOP, *Dispatch Operating Point*) sur un intervalle de répartition. Ces informations ne sont utiles que pour le marché d'intervalle RT.

Le Tableau 259 montre tous les attributs de DopInstruction.

Tableau 259 – Attributs de MarketResults::DopInstruction

nom	type	description
mwDOP	ActivePower	Point d'exploitation réparti (MW)
timestampDOP	DateTime	Horodatage du DOP
plotPriority	Integer	Une valeur utilisée pour établir la priorité du DOP lors du traçage. Ceci s'applique uniquement lorsque deux DOP existent pour une même heure, mais avec des valeurs en MW différentes. Par ex. lors de l'indication d'une étape sur la courbe. Elle est utilisée pour déterminer si la courbe monte ou descend.
runIndicatorDOP	YesNo	Indication de la validité du DOP. Montre que le DOP est calculé à partir du dernier processus (YES). L'indicateur NO montre que le DOP est copié depuis une exécution précédente. 2 intervalles maximum peuvent être manqués.
updateUser	String	
updateTimeStamp	DateTime	
updateType	MQSCHGType	

Le Tableau 260 montre toutes les extrémités d'association de DopInstruction avec d'autres classes.

Tableau 260 – Extrémités d'association de MarketResults::DopInstruction avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..1] RegisteredResource	RegisteredResource	
[1..*]	[1..*] InstructionClearingDOP	InstructionClearingDOP	

6.5.6.3.11 Classe racine DotInstruction

Apporte les informations nécessaires (sur la base de ressources) pour la collecte des résultats de la cible d'exploitation de répartition (DOT, *Dispatch Operating Target*) sur un intervalle de répartition. Ces informations ne sont utiles que pour le marché d'intervalle RT.

Le Tableau 261 montre tous les attributs de DotInstruction.

Tableau 261 – Attributs de MarketResults::DotInstruction

nom	type	description
actualRampRate	Float	Taux de rampe réel.
compliantIndicator	YesNo	Indicateur précisant si la ressource est conforme à l'instruction (plus/moins 10 %). Indique si une unité peut fixer un prix (tarification ex-post).
DOT	Float	Valeur de la cible d'exploitation de répartition.
economicMaxOverride	Float	Remplacement de la limite maximale économique d'une unité: cette valeur est nulle. Sinon, cette valeur remplace la valeur de la colonne Energie (<i>Energy</i>). Autorise le répartiteur à remplacer la valeur énergétique de l'unité.
expectedEnergy	Float	Energie prévue.
generatorPerformanceDegree	Float	Le degré de performances du générateur (DGP, <i>Degree of Generator Performance</i>) utilisé pour l'unité. Mesure de la façon dont un générateur répond pour augmenter/réduire les signaux. Calculée toutes les cinq minutes.
hourAheadSchedEnergy	Float	Résultats du HASP.
hourlySchedule	Float	Programme horaire (programme énergétique du DA).
instructionTime	DateTime	La date/l'heure pour l'instruction.
maximumEmergencyInd	Boolean	True si le seuil d'urgence maximal est activé; sinon False. S'il est demandé à une unité d'atteindre son seuil d'urgence maximal, cet indicateur est défini sur True.
meterLoadFollowing	Float	Suivi de charge du sous-système du compteur.
nonRampRestrictedMW	Float	Quantité de MW souhaitée qui n'est pas restreinte par une rampe. Si aucune limite de taux de rampe n'existe pour l'unité, il s'agit de la valeur en MW sur laquelle l'unité a dû se positionner.
nonSpinReserve	Float	Réserve non tournante utilisée pour fournir de l'énergie.
previousDOTTimeStamp	DateTime	Horodatage lorsque la valeur DOT précédente a été émise.
rampRateLimit	Float	La limite du taux de rampe pour l'unité en MW par minute. Données d'offre du participant.
regulationStatus	YesNo	Statut de régulation (Yes/No).
spinReserve	Float	Réserve tournante utilisée pour fournir de l'énergie.
standardRampEnergy	Float	Energie de rampe normalisée (MWh).
supplementalEnergy	Float	Energie supplémentaire fournie par la répartition en temps réel.
unitStatus	Integer	Résultats de sortie du cas identifiant la raison pour laquelle l'unité a été engagée par le logiciel.

Le Tableau 262 montre toutes les extrémités d'association de DotInstruction avec d'autres classes.

Tableau 262 – Extrémités d'association de MarketResults::DotInstruction avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..1] RegisteredResource	RegisteredResource	
[1..*]	[1..*] InstructionClearingDOT	InstructionClearingDOT	

6.5.6.3.12 ExPostLoss

Modèle de calcul ex-post des pertes de MW.

Le Tableau 263 montre tous les attributs de ExPostLoss.

Tableau 263 – Attributs de MarketResults::ExPostLoss

nom	type	description
intervalEndTime	DateTime	Hérité de: MarketFactors
intervalStartTime	DateTime	Hérité de: MarketFactors
type	String	Hérité de: Document
createdDateTime	DateTime	Hérité de: Document
lastModifiedDateTime	DateTime	Hérité de: Document
revisionNumber	String	Hérité de: Document
electronicAddress	ElectronicAddress	Hérité de: Document
subject	String	Hérité de: Document
title	String	Hérité de: Document
docStatus	Status	Hérité de: Document
status	Status	Hérité de: Document
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 264 montre toutes les extrémités d'association de ExPostLoss avec d'autres classes.

Tableau 264 – Extrémités d'association de MarketResults::ExPostLoss avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[0..*] ExPostLossResults	ExPostLossResults	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	Hérité de: MarketFactors
[0..*]	[0..1] Market	Market	Hérité de: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.3.13 Classe racine ExPostLossResults

Modélise les résultats de calcul ex-post des pertes de MW. Résume les pertes en deux catégories: pertes liées au transport très haute tension et pertes totales. Calcul effectué pour chaque zone de sous-contrôle.

Le Tableau 265 montre tous les attributs de ExPostLossResults.

Tableau 265 – Attributs de MarketResults::ExPostLossResults

nom	type	description
totalLossMW	Float	Pertes totales de MW dans l'entreprise Utilisation de l'attribut: A titre informatif – Sortie du moteur LPA.
ehvLossMW	Float	Pertes de MW THT dans l'entreprise Utilisation de l'attribut: A titre informatif – Sortie du moteur LPA.

Le Tableau 266 montre toutes les extrémités d'association de ExPostLossResults avec d'autres classes.

Tableau 266 – Extrémités d'association de MarketResults::ExPostLossResults avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[1..1] ExPostLoss	ExPostLoss	
[0..*]	[0..1] SubControlArea	SubControlArea	

6.5.6.3.14 ExPostMarketRegion

Modèle de calcul ex-post des MW octroyés sur une base régionale

Le Tableau 267 montre tous les attributs de ExPostMarketRegion.

Tableau 267 – Attributs de MarketResults::ExPostMarketRegion

nom	type	description
intervalEndTime	DateTime	Hérité de: MarketFactors
intervalStartTime	DateTime	Hérité de: MarketFactors
type	String	Hérité de: Document
createdDateTime	DateTime	Hérité de: Document
lastModifiedDateTime	DateTime	Hérité de: Document
revisionNumber	String	Hérité de: Document
electronicAddress	ElectronicAddress	Hérité de: Document
subject	String	Hérité de: Document
title	String	Hérité de: Document
docStatus	Status	Hérité de: Document
status	Status	Hérité de: Document
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 268 montre toutes les extrémités d'association de ExPostMarketRegion avec d'autres classes.

Tableau 268 – Extrémités d'association de MarketResults::ExPostMarketRegion avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[0..1] ExPostMarketRegionResults	ExPostMarketRegionResults	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	Hérité de: MarketFactors
[0..*]	[0..1] Market	Market	Hérité de: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.3.15 Classe racine ExPostMarketRegionResults

Modèle de calcul ex-post des MW octroyés sur une base régionale. Comprend le prix d'équilibre

Le Tableau 269 montre tous les attributs de ExPostMarketRegionResults.

Tableau 269 – Attributs de MarketResults::ExPostMarketRegionResults

nom	type	description
exPostClearedPrice	Float	

Le Tableau 270 montre toutes les extrémités d'association de ExPostMarketRegionResults avec d'autres classes.

Tableau 270 – Extrémités d'association de MarketResults::ExPostMarketRegionResults avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..1]	[1..1] ExPostMarketRegion	ExPostMarketRegion	
[0..*]	[1..1] MarketRegion	MarketRegion	

6.5.6.3.16 ExPostPricing

Modèle de tarification ex-post des nœuds

Le Tableau 271 montre tous les attributs de ExPostPricing.

Tableau 271 – Attributs de MarketResults::ExPostPricing

nom	type	description
energyPrice	Float	prix de l'énergie sur le marché
intervalEndTime	DateTime	Hérité de: MarketFactors
intervalStartTime	DateTime	Hérité de: MarketFactors
type	String	Hérité de: Document
createdDateTime	DateTime	Hérité de: Document
lastModifiedDateTime	DateTime	Hérité de: Document
revisionNumber	String	Hérité de: Document
electronicAddress	ElectronicAddress	Hérité de: Document
subject	String	Hérité de: Document
title	String	Hérité de: Document
docStatus	Status	Hérité de: Document
status	Status	Hérité de: Document
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 272 montre toutes les extrémités d'association de ExPostPricing avec d'autres classes.

Tableau 272 – Extrémités d'association de MarketResults::ExPostPricing avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[0..*] ExPostResults	ExPostPricingResults	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	Hérité de: MarketFactors
[0..*]	[0..1] Market	Market	Hérité de: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.3.17 Classe racine ExPostPricingResults

Modèle de tarification ex-post des nœuds. Comprend les informations LMP, fondées sur Pnode.

Le Tableau 273 montre tous les attributs de ExPostPricingResults.

Tableau 273 – Attributs de MarketResults::ExPostPricingResults

nom	type	description
congestLMP	Float	Composant de congestion d'un prix marginal local (LMP) en unités monétaires par MW; composant de congestion du LMP horaire à un nœud de tarification spécifique Utilisation de l'attribut: Résultat du logiciel de sécurité, tarification et répartition (SPD)/essais de faisabilité simultané (SFT) et correspond au composant de congestion horaire du LMP pour chaque nœud de tarification.
Imp	Float	LMP moyen pondéré de 5 min.; prix marginal local du Pnode pour lequel le calcul de tarification est en cours d'exécution. Utilisation de l'attribut: LMP moyen pondéré de 5 min. à afficher sur l'interface utilisateur
lossLMP	Float	Composant de perte d'un prix marginal local (LMP) en unités monétaires par MW; composant de perte du LMP horaire à un nœud de tarification spécifique Utilisation de l'attribut: Résultat du logiciel de sécurité, tarification et répartition (SPD)/essais de faisabilité simultané (SFT) et correspond au composant de perte horaire du LMP pour chaque nœud de tarification.

Le Tableau 274 montre toutes les extrémités d'association de ExPostPricingResults avec d'autres classes.

Tableau 274 – Extrémités d'association de MarketResults::ExPostPricingResults avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[1..1] ExPostPricing	ExPostPricing	
[0..*]	[1..1] Pnode	Pnode	

6.5.6.3.18 ExPostResource

Modèle de tarification ex-post des ressources.

Le Tableau 275 montre tous les attributs de ExPostResource.

Tableau 275 – Attributs de MarketResults::ExPostResource

nom	type	description
intervalEndTime	DateTime	Hérité de: MarketFactors
intervalStartTime	DateTime	Hérité de: MarketFactors
type	String	Hérité de: Document
createdDateTime	DateTime	Hérité de: Document
lastModifiedDateTime	DateTime	Hérité de: Document
revisionNumber	String	Hérité de: Document
electronicAddress	ElectronicAddress	Hérité de: Document
subject	String	Hérité de: Document
title	String	Hérité de: Document
docStatus	Status	Hérité de: Document
status	Status	Hérité de: Document
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 276 montre toutes les extrémités d'association de ExPostResource avec d'autres classes.

**Tableau 276 – Extrémités d'association de MarketResults::
ExPostResource avec d'autres classes**

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[0..*] ExPostResourceResults	ExPostResourceResults	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	Hérité de: MarketFactors
[0..*]	[0..1] Market	Market	Hérité de: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.3.19 Classe racine ExPostResourceResults

Modèle de tarification ex-post des ressources contenant des composants de LMP: énergie, congestion, perte. Fondé sur les ressources.

Le Tableau 277 montre tous les attributs de ExPostResourceResults.

Tableau 277 – Attributs de MarketResults::ExPostResourceResults

nom	type	description
congestionLMP	Float	Composant LMP en dollars américains (déconseillé)
desiredMW	Float	Sortie souhaitée d'unités
dispatchRate	Float	Taux de répartition d'unité issu de la répartition d'unités en temps réel.
Imp	Float	LMP (<i>Local Marginal Price</i>) en dollars américains au niveau de l'équipement (déconseillé)
lossLMP	Float	Imp des pertes (déconseillé)
maxEconomicMW	Float	MW économique maximum
minEconomicMW	Float	MW économique minimum
resourceMW	Float	Sortie MW actuelle de l'équipement Utilisation de l'attribut: A titre informatif – A titre informatif – Sortie du moteur LPA.
status	EquipmentStatusType	Statut de l'équipement

Le Tableau 278 montre toutes les extrémités d'association de ExPostResourceResults avec d'autres classes.

Tableau 278 – Extrémités d'association de MarketResults::ExPostResourceResults avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..1] RegisteredResource	RegisteredResource	
[0..*]	[1..1] ExPostResource	ExPostResource	

6.5.6.3.20 GeneralClearing

Modèle de résultat d'ajustement du processus de marché au niveau du marché. Identifie l'intervalle

Le Tableau 279 montre tous les attributs de GeneralClearing.

Tableau 279 – Attributs de MarketResults::GeneralClearing

nom	type	description
intervalEndTime	DateTime	Hérité de: MarketFactors
intervalStartTime	DateTime	Hérité de: MarketFactors
type	String	Hérité de: Document
createdDateTime	DateTime	Hérité de: Document
lastModifiedDateTime	DateTime	Hérité de: Document
revisionNumber	String	Hérité de: Document
electronicAddress	ElectronicAddress	Hérité de: Document
subject	String	Hérité de: Document
title	String	Hérité de: Document
docStatus	Status	Hérité de: Document
status	Status	Hérité de: Document
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 280 montre toutes les extrémités d'association de GeneralClearing avec d'autres classes.

Tableau 280 – Extrémités d'association de MarketResults::GeneralClearing avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..1]	[0..*] GeneralClearingResults	GeneralClearingResults	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	Hérité de: MarketFactors
[0..*]	[0..1] Market	Market	Hérité de: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.3.21 Classe racine GeneralClearingResults

Fournit la valeur prévisionnelle de la charge ajustée sur une base de zone de prévision de charge.

Le Tableau 281 montre tous les attributs de GeneralClearingResults.

Tableau 281 – Attributs de MarketResults::GeneralClearingResults

nom	type	description
loadForecast	ActivePower	Prévision de charge (MW), par période de temps (5', 10', 15')
totalLoad	Float	Quantité de charge dans la Zone de réglage Utilisation de l'attribut: valeur de charge horaire pour le domaine spécifique
totalNetInterchange	Float	Quantité d'échange pour la Zone de réglage Utilisation de l'attribut: valeur d'échange horaire pour le domaine spécifique

Le Tableau 282 montre toutes les extrémités d'association de GeneralClearingResults avec d'autres classes.

Tableau 282 – Extrémités d'association de MarketResults::GeneralClearingResults avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..1] GeneralClearing	GeneralClearing	
[0..*]	[0..1] SubControlArea	SubControlArea	

6.5.6.3.22 InstructionClearing

Modèle d'ajustement du marché relatif aux instructions de démarrage. Identifie l'intervalle

Le Tableau 283 montre tous les attributs de InstructionClearing.

Tableau 283 – Attributs de MarketResults::InstructionClearing

nom	type	description
intervalEndTime	DateTime	Hérité de: MarketFactors
intervalStartTime	DateTime	Hérité de: MarketFactors
type	String	Hérité de: Document
createdDateTime	DateTime	Hérité de: Document
lastModifiedDateTime	DateTime	Hérité de: Document
revisionNumber	String	Hérité de: Document
electronicAddress	ElectronicAddress	Hérité de: Document
subject	String	Hérité de: Document
title	String	Hérité de: Document
docStatus	Status	Hérité de: Document
status	Status	Hérité de: Document
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 284 montre toutes les extrémités d'association de InstructionClearing avec d'autres classes.

Tableau 284 – Extrémités d'association de MarketResults::InstructionClearing avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..*]	[1..*] Instructions	Instructions	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	Hérité de: MarketFactors
[0..*]	[0..1] Market	Market	Hérité de: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.3.23 InstructionClearingDOP

Modèle d'ajustement du marché relatif à DispatchOperatingPoint. Identifie l'intervalle

Le Tableau 285 montre tous les attributs de InstructionClearingDOP.

Tableau 285 – Attributs de MarketResults::InstructionClearingDOP

nom	type	description
intervalEndTime	DateTime	Hérité de: MarketFactors
intervalStartTime	DateTime	Hérité de: MarketFactors
type	String	Hérité de: Document
createdDateTime	DateTime	Hérité de: Document
lastModifiedDateTime	DateTime	Hérité de: Document
revisionNumber	String	Hérité de: Document
electronicAddress	ElectronicAddress	Hérité de: Document
subject	String	Hérité de: Document
title	String	Hérité de: Document
docStatus	Status	Hérité de: Document
status	Status	Hérité de: Document
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 286 montre toutes les extrémités d'association de InstructionClearingDOP avec d'autres classes.

Tableau 286 – Extrémités d'association de MarketResults::InstructionClearingDOP avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..*]	[1..*] DopInstruction	DopInstruction	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	Hérité de: MarketFactors
[0..*]	[0..1] Market	Market	Hérité de: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.3.24 InstructionClearingDOT

Modèle d'ajustement du marché, relatif à Dispatch Operating Target (modèle de répartition anticipée). Identifie l'intervalle

Le Tableau 287 montre tous les attributs de InstructionClearingDOT.

Tableau 287 – Attributs de MarketResults::InstructionClearingDOT

nom	type	description
contingencyActive	YesNo	Indique que le système fonctionne actuellement dans un mode avec contingence.
dispatchMode	AutomaticDispatchMode	
intervalEndTime	DateTime	Hérité de: MarketFactors
intervalStartTime	DateTime	Hérité de: MarketFactors
type	String	Hérité de: Document
createdDateTime	DateTime	Hérité de: Document
lastModifiedDateTime	DateTime	Hérité de: Document
revisionNumber	String	Hérité de: Document
electronicAddress	ElectronicAddress	Hérité de: Document
subject	String	Hérité de: Document
title	String	Hérité de: Document
docStatus	Status	Hérité de: Document
status	Status	Hérité de: Document
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 288 montre toutes les extrémités d'association de InstructionClearingDOT avec d'autres classes.

Tableau 288 – Extrémités d'association de MarketResults::InstructionClearingDOT avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..*]	[1..*] DotInstruction	DotInstruction	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	Hérité de: MarketFactors
[0..*]	[0..1] Market	Market	Hérité de: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.3.25 Classe racine Instructions

Apporte les informations nécessaires (sur la base de ressources) pour la collecte des résultats de l'instruction Démarrage/Arrêt. Ces informations sont utiles pour le DAM (RUC exclusivement) et le RTM (HASP, pré-répartition et intervalle).

Le Tableau 289 montre tous les attributs de Instructions.

Tableau 289 – Attributs de MarketResults::Instructions

nom	type	description
bindingDOT	Float	
bindingInstruction	YesNo	
instructionCost	Float	Coût total associé au changement du statut de la ressource.
instructionSource	MQSInstructionSource	source de l'instruction pour les résultats qualité du marché (INS, ACT)
instructionStartTime	DateTime	Moment auquel il convient que la ressource soit sur Pmin (pour les démarrages). Moment auquel la ressource est hors ligne.
instructionType	AutomaticDisplnstTypeCommitment	Indique s'il s'agit d'un démarrage ou d'un arrêt.
manuallyBlocked	YesNo	Indicateur de blocage manuel (Yes/No). L'instruction a été bloquée par un opérateur.
minStatusChangeTime	Integer	Temps de démarrage minimal exigé pour mettre l'unité en ligne (minutes). Temps de démarrage de la période d'engagement SCUC. Temps de démarrage calculé en fonction de StartUpTimeCurve, fourni avec la Bid. Il s'agit d'une combinaison de l'offre du temps de démarrage et du temps d'arrêt de l'unité. Unités en minutes
updateTimeStamp	DateTime	
updateType	MQSCHGType	
updateUser	String	

Le Tableau 290 montre toutes les extrémités d'association de Instructions avec d'autres classes.

**Tableau 290 – Extrémités d'association de MarketResults::
Instructions avec d'autres classes**

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[1..1] RegisteredResource	RegisteredResource	
[1..*]	[1..*] InstructionClearing	InstructionClearing	

6.5.6.3.26 Classe racine LoadFollowingOperatorInput

Modèle de capacités de suivi charge entrées par les opérateurs sur une base temporaire. Relatif aux ressources enregistrées dans les sous-systèmes mesurés

Le Tableau 291 montre tous les attributs de LoadFollowingOperatorInput.

Tableau 291 – Attributs de MarketResults::LoadFollowingOperatorInput

nom	type	description
dataEntryTimeStamp	DateTime	Moment auquel la saisie de données a été réalisée
tempLoadFollowingUpManualCap	Float	capacité LFU entrée manuellement sur une base temporaire.
tempLoadFollowingDownManualCap	Float	capacité LFD entrée manuellement sur une base temporaire
updateUser	String	
updateTimeStamp	DateTime	
updateType	MQSCHGType	

Le Tableau 292 montre toutes les extrémités d'association de LoadFollowingOperatorInput avec d'autres classes.

**Tableau 292 – Extrémités d'association de MarketResults::
LoadFollowingOperatorInput avec d'autres classes**

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..1] RegisteredResource	RegisteredResource	

6.5.6.3.27 LossClearing

RT uniquement; n'est publié que toutes les 5 minutes pour les résultats des précédents intervalles de temps RT.

Le Tableau 293 montre tous les attributs de LossClearing.

Tableau 293 – Attributs de MarketResults::LossClearing

nom	type	description
intervalEndTime	DateTime	Hérité de: MarketFactors
intervalStartTime	DateTime	Hérité de: MarketFactors
type	String	Hérité de: Document
createdDateTime	DateTime	Hérité de: Document
lastModifiedDateTime	DateTime	Hérité de: Document
revisionNumber	String	Hérité de: Document
electronicAddress	ElectronicAddress	Hérité de: Document
subject	String	Hérité de: Document
title	String	Hérité de: Document
docStatus	Status	Hérité de: Document
status	Status	Hérité de: Document
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 294 montre toutes les extrémités d'association de LossClearing avec d'autres classes.

Tableau 294 – Extrémités d'association de MarketResults::LossClearing avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..1]	[0..*] LossClearingResults	LossClearingResults	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	Hérité de: MarketFactors
[0..*]	[0..1] Market	Market	Hérité de: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.3.28 Classe racine LossClearingResults

Indique la quantité perdue de MW pour les zones RUC, les zones de sous-contrôle et la perte totale.

Le Tableau 295 montre tous les attributs de LossClearingResults.

Tableau 295 – Attributs de MarketResults::LossClearingResults

nom	type	description
lossMW	Float	

Le Tableau 296 montre toutes les extrémités d'association de LossClearingResults avec d'autres classes.

Tableau 296 – Extrémités d'association de MarketResults::LossClearingResults avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..*]	[0..1] SubControlArea	SubControlArea	
[0..*]	[0..1] LossClearing	LossClearing	
[0..*]	[0..1] HostControlArea	HostControlArea	
[0..*]	[0..1] RUCZone	RUCZone	

6.5.6.3.29 Classe racine MarketRegionResults

Fournit tous les résultats des services auxiliaires régionaux pour le DAM et le RTM. Les données spécifiques sont de type produit (régulation à la hausse, régulation à la baisse, réserve tournante, réserve non tournante ou total majoré des réserves) en fonction des MW octroyés, du prix d'équilibre et de la capacité totale exigée pour la région.

Le Tableau 297 montre tous les attributs de MarketRegionResults.

Tableau 297 – Attributs de MarketResults::MarketRegionResults

nom	type	description
clearedMW	Float	Valeur de production octroyée en MW. Pour AS, cette valeur est clearedMW = AS Total. Pour AS, clearedMW – selfScheduleMW = AS Procured
clearedPrice	Float	Prix marginal (\$/MW) pour le produit (énergie, régulation à la hausse, régulation à la baisse, réserve tournante ou réserve non tournante) en fonction du calcul du prix.
dispatchCtMW	Float	MW commandables pour les unités de combustion.
dispatchHydroMW	Float	MW commandables pour les unités hydrauliques.
dispatchRate	Float	Taux de répartition en MW/minute.
dispatchSteamMW	Float	MW commandables pour les unités à vapeur.
imbalanceEnergyBias	Float	Influence énergétique du déséquilibre (MW) par période de temps (5 s uniquement)
limitFlag	ResourceLimitIndicator	Indicateurs AS locaux révélant si la limite supérieure ou inférieure de l'approvisionnement régional AS est contraignante
lumpyIndicator	YesNo	L'indicateur "arrondi" (Y/N) indique si la ressource qui définit le prix est un générateur irrégulier par heure pendant l'horizon temporel. Applicable uniquement au DAM
maxSufficiencyIndex	Float	Limite maximale de l'exigence régionale
minSufficiencyIndex	Float	Limite minimale de l'exigence régionale
reqMaxMW	Float	Limite maximale de l'exigence régionale
reqMinMW	Float	Limite minimale de l'exigence régionale
selfScheduleMW	Float	Aof AS, selfScheduleMW = AS Self-Provided

Le Tableau 298 montre toutes les extrémités d'association de MarketRegionResults avec d'autres classes.

Tableau 298 – Extrémités d'association de MarketResults::MarketRegionResults avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..1]	[0..1] MarketProduct	MarketProduct	
[1..*]	[0..1] AncillaryServiceClearing	AncillaryServiceClearing	
[1..*]	[1..1] MarketRegion	MarketRegion	

6.5.6.3.30 Classe racine MarketResults

Cette classe contient des éléments constitués de valeurs uniques pour l'ensemble de l'horizon temporel du marché. C'est-à-dire que pour le DAM, il y a une valeur pour chaque élément, non élaborée sur une base horaire. Récapitulatif du processus de marché

Le Tableau 299 montre tous les attributs de MarketResults.

Tableau 299 – Attributs de MarketResults::MarketResults

nom	type	description
startUpCost	Float	Coût total de démarrage (\$) sur l'horizon temporel
minimumLoadCost	Float	Coût de charge minimal (\$) sur l'horizon temporel
contingentOperatingResAvail	YesNo	Indicateur global de disponibilité de réserve d'exploitation contingente (Yes/No)
energyCost	Float	Coût minimal en énergie (\$) sur l'horizon temporel
totalCost	Float	Coût total (énergie + AS) (\$) par heure pendant l'horizon temporel
ancillarySvcCost	Float	Coût AS total (c'est-à-dire le règlement) pendant l'horizon temporel
totalRucCost	Float	Capacité RUC totale pour cet intervalle

Le Tableau 300 montre toutes les extrémités d'association de MarketResults avec d'autres classes.

Tableau 300 – Extrémités d'association de MarketResults::MarketResults avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..1]	[1..1] EnergyMarket	EnergyMarket	

6.5.6.3.31 MarketStatement

Une déclaration est un ensemble d'éléments de lignes de déclaration. Chaque déclaration et ses éléments de lignes donnent le détail des charges spécifiques à tout moment. Utilisée par la facturation et le règlement

Le Tableau 301 montre tous les attributs de MarketStatement.

Tableau 301 – Attributs de MarketResults: MarketStatement

nom	type	description
tradeDate	DateTime	Date à laquelle Settlement est exécuté.
referenceNumber	String	Le numéro de version de la précédente déclaration (en cas d'ajustement).
start	DateTime	Début d'une période de facturation.
end	DateTime	Fin d'une période de facturation.
transactionDate	DateTime	Date à laquelle la déclaration est émise.
type	String	Hérité de: Document
createdDateTime	DateTime	Hérité de: Document
lastModifiedDateTime	DateTime	Hérité de: Document
revisionNumber	String	Hérité de: Document
electronicAddress	ElectronicAddress	Hérité de: Document
subject	String	Hérité de: Document
title	String	Hérité de: Document
docStatus	Status	Hérité de: Document
status	Status	Hérité de: Document
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 302 montre toutes les extrémités d'association de MarketStatement avec d'autres classes.

Tableau 302 – Extrémités d'association de MarketResults: MarketStatement avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[0..*] MarketStatementLineItem	MarketStatementLineItem	
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.3.32 MarketStatementLineItem

Élément de ligne individuel sur une déclaration.

Le Tableau 303 montre tous les attributs de MarketStatementLineItem.

Tableau 303 – Attributs de MarketResults::MarketStatementLineItem

nom	type	description
intervalNumber	String	Nombre d'intervalles.
intervalDate	DateTime	Date à laquelle le règlement est effectué.
quantityUOM	String	Unité de mesure de la quantité de l'élément de ligne.
previousAmount	Float	Montant du précédent règlement.
currentAmount	Float	Montant du règlement actuel.
netAmount	Float	Montant net du règlement.
previousQuantity	Float	Quantité du règlement précédent, en fonction de l'unité de mesure.
currentQuantity	Float	Quantité du règlement actuel, en fonction de l'unité de mesure.
netQuantity	Float	Quantité nette du règlement, en fonction de l'unité de mesure.
previousPrice	Float	Prix du précédent règlement.
currentPrice	Float	Prix du règlement actuel.
netPrice	Float	Prix net du règlement.
previousISOAmount	Float	Montant du précédent règlement ISO.
currentISOAmount	Float	Montant du règlement ISO actuel.
netISOAmount	Float	Montant net du règlement ISO.
previousISOQuantity	Float	Quantité du précédent règlement ISO.
currentISOQuantity	Float	Quantité du règlement ISO actuel.
netISOQuantity	Float	Quantité nette du règlement ISO.
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 304 montre toutes les extrémités d'association de MarketStatementLineItem avec d'autres classes.

Tableau 304 – Extrémités d'association de MarketResults::MarketStatementLineItem avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] MktUserAttribute	MktUserAttribute	
[0..*]	[1..1] MarketStatement	MarketStatement	
[0..*]	[0..1] ContainerMarketStatementLineItem	MarketStatementLineItem	
[0..1]	[0..1] PassThroughBill	PassThroughBill	
[0..1]	[0..*] ComponentMarketStatementLineItem	MarketStatementLineItem	
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.3.33 MitigatedBid

Résultats d'une offre atténuée publiés pour une période de règlement précise.

Le Tableau 305 montre tous les attributs de MitigatedBid.

Tableau 305 – Attributs de MarketResults::MitigatedBid

nom	type	description
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 306 montre toutes les extrémités d'association de MitigatedBid avec d'autres classes.

Tableau 306 – Extrémités d'association de MarketResults::MitigatedBid avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[1..*] MitigatedBidClearing	MitigatedBidClearing	
[0..*]	[0..1] Bid	Bid	
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.3.34 MitigatedBidClearing

Modèle d'atténuation de l'emprise sur le marché fondé sur des offres de références ou des offres atténuées. Sur la base d'intervalles.

Le Tableau 307 montre tous les attributs de MitigatedBidClearing.

Tableau 307 – Attributs de MarketResults::MitigatedBidClearing

nom	type	description
intervalEndTime	DateTime	Hérité de: MarketFactors
intervalStartTime	DateTime	Hérité de: MarketFactors
type	String	Hérité de: Document
createdDateTime	DateTime	Hérité de: Document
lastModifiedDateTime	DateTime	Hérité de: Document
revisionNumber	String	Hérité de: Document
electronicAddress	ElectronicAddress	Hérité de: Document
subject	String	Hérité de: Document
title	String	Hérité de: Document
docStatus	Status	Hérité de: Document
status	Status	Hérité de: Document
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 308 montre toutes les extrémités d'association de MitigatedBidClearing avec d'autres classes.

Tableau 308 – Extrémités d'association de MarketResults::MitigatedBidClearing avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..*]	[0..*] MPMResourceStatus	MPMResourceStatus	
[1..*]	[0..*] MitigatedBid	MitigatedBid	
[1..*]	[0..*] RMRDetermination	RMRDetermination	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	Hérité de: MarketFactors
[0..*]	[0..1] Market	Market	Hérité de: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.3.35 Classe racine MitigatedBidSegment

Modèle d'offre atténuée. Indique un segment d'offre linéaire par morceaux qui a été atténué

Le Tableau 309 montre tous les attributs de MitigatedBidSegment.

Tableau 309 – Attributs de MarketResults::MitigatedBidSegment

nom	type	description
intervalStartTime	DateTime	
thresholdType	String	
segmentNumber	Integer	Numéro de segment de l'offre atténuée
segmentMW	Float	Valeur MW du segment de l'offre atténuée

Le Tableau 310 montre toutes les extrémités d'association de MitigatedBidSegment avec d'autres classes.

Tableau 310 – Extrémités d'association de MarketResults::MitigatedBidSegment avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[1..1] Bid	Bid	

6.5.6.3.36 MPMClearing

Modèle des résultats des essais d'emprise sur le marché et atténuation potentielle. Sur la base d'intervalles

Le Tableau 311 montre tous les attributs de MPMClearing.

Tableau 311 – Attributs de MarketResults::MPMClearing

nom	type	description
LMPMFinalFlag	YesNo	
SMPMFinalFlag	YesNo	
mitigationOccuredFlag	YesNo	
intervalEndTime	DateTime	Hérité de: MarketFactors
intervalStartTime	DateTime	Hérité de: MarketFactors
type	String	Hérité de: Document
createdDateTime	DateTime	Hérité de: Document
lastModifiedDateTime	DateTime	Hérité de: Document
revisionNumber	String	Hérité de: Document
electronicAddress	ElectronicAddress	Hérité de: Document
subject	String	Hérité de: Document
title	String	Hérité de: Document
docStatus	Status	Hérité de: Document
status	Status	Hérité de: Document
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 312 montre toutes les extrémités d'association de MPMCclearing avec d'autres classes.

Tableau 312 – Extrémités d'association de MarketResults::MPMCclearing avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..1]	[0..*] MPMTestResults	MPMTestResults	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	Hérité de: MarketFactors
[0..*]	[0..1] Market	Market	Hérité de: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.3.37 Classe racine MPMResourceStatus

Modèle des résultats des essais d'emprise sur le marché; indique le statut de la ressource pour l'intervalle associé

Le Tableau 313 montre tous les attributs de MPMResourceStatus.

Tableau 313 – Attributs de MarketResults::MPMResourceStatus

nom	type	description
resourceStatus	String	Statut de l'essai de l'intervalle 'N' – non applicable

Le Tableau 314 montre toutes les extrémités d'association de MPMResourceStatus avec d'autres classes.

Tableau 314 – Extrémités d'association de MarketResults::MPMResourceStatus avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..1] RegisteredResource	RegisteredResource	
[0..*]	[1..*] MitigatedBidClearing	MitigatedBidClearing	
[0..*]	[1..1] MPMTestCategory	MPMTestCategory	

6.5.6.3.38 Classe racine MPMTestResults

Fournit les données en pourcentage (si approprié) du résultat et de la marge (*Margin Percent*) pour les essais MPM. Il existe des relations avec la zone pour les essais de la zone de congestion désignée, CurveSchedData pour les essais du segment d'offre, avec SubControlArea pour les essais au niveau élargi du système et des Pnodes pour les essais d'impact LMPM.

Le Tableau 315 montre tous les attributs de MPMTestResults.

Tableau 315 – Attributs de MarketResults::MPMTestResults

nom	type	description
outcome	MPMTestOutcome	Résultat de l'essai. Pour le prix, l'impact et les essais de conductivité, les valeurs types sont NA (sans objet), Pass (réussite), Fail (échec), Disable (désactiver) ou Skip (ignorer).
marginPercent	PerCent	Utilisé pour montrer le résultat en pourcentage de la marge de l'essai d'impact

Le Tableau 316 montre toutes les extrémités d'association de MPMTestResults avec d'autres classes.

Tableau 316 – Extrémités d'association de MarketResults::MPMTestResults avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..1] MPMClearing	MPMClearing	
[1..*]	[1..1] AggregatedPnode	AggregatedPnode	
[0..*]	[1..1] MPMTestCategory	MPMTestCategory	

6.5.6.3.39 PassThroughBill

PassThroughBill est utilisé pour:

- 1) Des transactions de charge dans les deux sens avec ou sans implication ISO (d'où l'expression ?pass thru?)
- 2) Des charges ou paiements directs spécifiques calculés de façon externe ou fournis directement aux règlements
- 3) Eléments déterminants spécifiques à la facturation des charges fournis de façon externe et utilisés pour le calcul des charges

Le Tableau 317 montre tous les attributs de PassThroughBill.

IECNORM.COM Click to view the full PDF of IEC 62325-301:2014

Withd2W

Tableau 317 – Attributs de MarketResults::PassThroughBill

nom	type	description
adjustedAmount	Money	
amount	Money	Montant des frais du produit/service.
billedTo	String	Entreprise à laquelle la transaction PTB est facturée.
billEnd	DateTime	Date de fin de la période de facturation
billRunType	String	Type de processus de règlement; par exemple, prélim., final et nouveau processus.
billStart	DateTime	Date de début de la période de facturation
effectiveDate	DateTime	Date effective de la transaction
isDisputed	Boolean	Indicateur de transaction litigieuse
isProfiled	Boolean	Indicateur montrant si des données de profil sont associées au PTB.
paidTo	String	Entreprise à laquelle la transaction PTB est réglée.
previousEnd	DateTime	Date de fin de la précédente période de facturation
previousStart	DateTime	Date de début de la précédente période de facturation
price	Money	Prix du produit/service.
productCode	String	Identifiant du produit pour la détermination du type de charge de la transaction.
providedBy	String	Entreprise auprès de laquelle la transaction PTB est effectuée.
quantity	FloatQuantity	Quantité du produit.
serviceEnd	DateTime	Date de fin de la prestation de service, si périodique.
serviceStart	DateTime	Date de début de la prestation de service, si périodique.
soldTo	String	Entreprise à laquelle la transaction PTB est vendue.
taxAmount	Money	Part des taxes sur les services sélectionnés.
timeZone	String	Code du fuseau horaire
tradeDate	DateTime	Date d'opération
transactionDate	DateTime	Date à laquelle a lieu la transaction.
transactionType	String	Type de la transaction. Par exemple, facturation client, correspondance créances clients/comptes créditeurs ou éléments déterminants de facturation
type	String	Hérité de: Document
createdDateTime	DateTime	Hérité de: Document
lastModifiedDateTime	DateTime	Hérité de: Document
revisionNumber	String	Hérité de: Document
electronicAddress	ElectronicAddress	Hérité de: Document
subject	String	Hérité de: Document
title	String	Hérité de: Document
docStatus	Status	Hérité de: Document
status	Status	Hérité de: Document
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 318 montre toutes les extrémités d'association de PassThroughBill avec d'autres classes.

Tableau 318 – Extrémités d'association de MarketResults::PassThroughBill avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] MktUserAttribute	MktUserAttribute	
[0..1]	[0..1] MarketStatementLineItem	MarketStatementLineItem	
[0..1]	[0..*] ChargeProfiles	ChargeProfile	
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.3.40 PnodeClearing

Résultats d'équilibre d'un nœud de tarification publiés pour une période de règlement précise.

Le Tableau 319 montre tous les attributs de PnodeClearing.

Tableau 319 – Attributs de MarketResults::PnodeClearing

nom	type	description
intervalEndTime	DateTime	Hérité de: MarketFactors
intervalStartTime	DateTime	Hérité de: MarketFactors
type	String	Hérité de: Document
createdDateTime	DateTime	Hérité de: Document
lastModifiedDateTime	DateTime	Hérité de: Document
revisionNumber	String	Hérité de: Document
electronicAddress	ElectronicAddress	Hérité de: Document
subject	String	Hérité de: Document
title	String	Hérité de: Document
docStatus	Status	Hérité de: Document
status	Status	Hérité de: Document
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 320 montre toutes les extrémités d'association de PnodeClearing avec d'autres classes.

Tableau 320 – Extrémités d'association de MarketResults::PnodeClearing avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..1]	[1..*] PnodeResults	PnodeResults	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	Hérité de: MarketFactors
[0..*]	[0..1] Market	Market	Hérité de: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.3.41 Classe racine PnodeResults

Fournit le prix total, le composant coût, le composant perte et le composant congestion pour les Pnodes des DAM / RTM. Plusieurs prix sont produits en fonction du type de processus (MPM, RUC, tarification ou programmation/répartition).

Le Tableau 321 montre tous les attributs de PnodeResults.

Tableau 321 – Attributs de MarketResults::PnodeResults

nom	type	description
marginalClearingPrice	Float	Prix marginal local (LMP) (\$/MWh)
costLMP	Float	Composant coût du prix marginal local (LMP) en unités monétaires par MW.
lossLMP	Float	Composant perte du prix marginal local (LMP) en unités monétaires par MW.
congestLMP	Float	Composant congestion du prix marginal local (LMP) en unités monétaires par MW.
scheduledMW	Float	Programme MW total au niveau de Pnode
updateUser	String	
updateTimeStamp	DateTime	
updateType	MQSCHGType	

Le Tableau 322 montre toutes les extrémités d'association de PnodeResults avec d'autres classes.

Tableau 322 – Extrémités d'association de MarketResults::PnodeResults avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..*]	[0..1] PnodeClearing	PnodeClearing	
[1..*]	[0..1] Pnode	Pnode	

6.5.6.3.42 ResourceAwardClearing

Modélise les détails de l'offre et de l'ajustement du marché. La classe indique si une contingence est active et si le système de répartition automatique est actif pour cet intervalle de la solution de marché.

Le Tableau 323 montre tous les attributs de ResourceAwardClearing.

Tableau 323 – Attributs de MarketResults::ResourceAwardClearing

nom	type	description
dispatchMode	AutomaticDispatchMode	
contingencyActive	YesNo	Indique que le système fonctionne actuellement dans un mode avec contingence.
intervalEndTime	DateTime	Hérité de: MarketFactors
intervalStartTime	DateTime	Hérité de: MarketFactors
type	String	Hérité de: Document
createdDateTime	DateTime	Hérité de: Document
lastModifiedDateTime	DateTime	Hérité de: Document
revisionNumber	String	Hérité de: Document
electronicAddress	ElectronicAddress	Hérité de: Document
subject	String	Hérité de: Document
title	String	Hérité de: Document
docStatus	Status	Hérité de: Document
status	Status	Hérité de: Document
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 324 montre toutes les extrémités d'association de ResourceAwardClearing avec d'autres classes.

Tableau 324 – Extrémités d'association de MarketResults::ResourceAwardClearing avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..*]	[1..*] ResourceAwardInstruction	ResourceAwardInstruction	
[1..*]	[1..*] RUCAwardInstruction	RUCAwardInstruction	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	Hérité de: MarketFactors
[0..*]	[0..1] Market	Market	Hérité de: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.3.43 Classe racine ResourceAwardInstruction

Modèle des résultats du marché, instruction pour la ressource. Contient les détails d'attribution comme attributs

Le Tableau 325 montre tous les attributs de ResourceAwardInstruction.

Tableau 325 – Attributs de MarketResults::ResourceAwardInstruction

nom	type	description
awardMW	Float	Pour énergie DA: Non applicable; Pour AS DA: Attribution marché AS DA; Pour énergie RT: Non applicable; Pour AS RT: Attribution marché AS RT (à l'exception des attributions relatives au marché AS DA et à l'alimentation automatique)
clearedMW	Float	Pour énergie DA: Programme total = programme du marché J-1 (DAM) + attribution à programmation automatique J-1 (DA); Pour AS DA: Attributions services auxiliaires DA = attribution marché AS DA + attribution à programmation automatique AS DA; Pour énergie RT: Programme total = programme RTM + attribution planification automatique RT; Pour AS RT: Attributions services auxiliaires RT = attribution à programmation automatique RT + attribution marché AS RT + attribution marché AS DA + attribution à programmation automatique AS DA.
clearedPrice	Float	Prix marginal (\$/MW) pour le produit (régulation en à la hausse, régulation à la baisse, réserve tournante ou réserve non tournante) pour le calcul du prix.
congestLMP	Float	Composant congestion du prix marginal local (LMP) en unités monétaires par MW.
costLMP	Float	Composant coût du prix marginal local (LMP) en unités monétaires par MW.
dispatcherAddedMW	Float	Quantité MW tier2 ajoutée par le répartiteur
economicMax	Float	Résultats du marché du marché des réserves synchronisées Sortie max. de l'unité pour la répartition; offre comprise dans le maximum économique
economicMin	Float	Sortie min. de l'unité pour la répartition; offre comprise dans le minimum économique
effRegulationDownLimit	Float	Limite effective de régulation à la baisse (MW)
effRegulationUpLimit	Float	Limite effective de régulation à la hausse
lmp	Float	Valeur du prix marginal local
lossLMP	Float	Composant perte du prix marginal local (LMP) en unités monétaires par MW.
manuallyBlocked	YesNo	Indique si une attribution a été bloquée manuellement (Y/N). Valide pour la réserve tournante et non tournante.
marginalResourceIndicator	YesNo	Indicateur (Yes/No) montrant que cette ressource définit le prix pour la répartition/programme
mustRunInd	Boolean	Identifie si l'unité a été configurée pour devoir être exécutée par le participant du marché en charge des offres dans l'unité
noLoadCost	Float	Coût à charge nulle de l'unité en cas de produit énergétique
optimalBidCost	Float	Coût optimal de l'offre
optimalBidPay	Float	Règlement optimal de réalisation de l'offre en fonction du prix marginal local
optimalMargin	Float	Marge optimale de réalisation de l'offre
overrideTimeStamp	DateTime	Heure de la saisie manuelle de données.

nom	type	description
overrideValue	Float	Fournit la capacité pour l'opérateur de réseau de remplacer des éléments, telles que les exigences en rotation, avant d'exécuter l'algorithme. Cette valeur est fondée sur les produits du marché (rotation, non-rotation, régulation à la hausse, régulation à la baisse ou RUC).
selfSchedMW	Float	Pour énergie DA: Attribution à programmation automatique totale DA; Pour AS DA: Attribution alimentation automatique AS DA; Pour énergie RT: Attribution à programmation automatique totale RT; Pour AS RT: Attribution alimentation automatique AS RT (à l'exception des attributions relatives au marché AS DA et à alimentation automatique)
startUpCost	Float	Couût de démarrage de l'unité en cas de produit énergétique
status	String	Dans ou en dehors du statut de la ressource
totalRevenue	Float	Revenu total de l'offre (startup_cost + no_load_cost + bid_pay)
updateTimeStamp	DateTime	
updateType	MQSCHG Type	
updateUser	String	

Le Tableau 326 montre toutes les extrémités d'association de ResourceAwardInstruction avec d'autres classes.

**Tableau 326 – Extrémités d'association de MarketResults::
ResourceAwardInstruction avec d'autres classes**

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..1] RegisteredResource	RegisteredResource	
[1..1]	[0..*] SelfScheduleBreakdown	SelfScheduleBreakdown	
[0..*]	[1..1] MarketProduct	MarketProduct	
[1..*]	[1..*] ClearingResourceAward	ResourceAwardClearing	

6.5.6.3.44 ResourceClearing

Modèle des résultats du marché, notamment les résultats équilibrés des ressources. Associé à ResourceDispatchResults.

Le Tableau 327 montre tous les attributs de ResourceClearing.

Tableau 327 – Attributs de MarketResults::ResourceClearing

nom	type	description
intervalEndTime	DateTime	Hérité de: MarketFactors
intervalStartTime	DateTime	Hérité de: MarketFactors
type	String	Hérité de: Document
createdDateTime	DateTime	Hérité de: Document
lastModifiedDateTime	DateTime	Hérité de: Document
revisionNumber	String	Hérité de: Document
electronicAddress	ElectronicAddress	Hérité de: Document
subject	String	Hérité de: Document
title	String	Hérité de: Document
docStatus	Status	Hérité de: Document
status	Status	Hérité de: Document
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 328 montre toutes les extrémités d'association de ResourceClearing avec d'autres classes.

Tableau 328 – Extrémités d'association de MarketResults::ResourceClearing avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..1]	[0..*] ResourceLoadFollowingInst	ResourceLoadFollowingInst	
[0..1]	[1..*] ResourceDispatchResults	ResourceDispatchResults	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	Hérité de: MarketFactors
[0..*]	[0..1] Market	Market	Hérité de: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.3.45 Classe racine ResourceDispatchResults

La classe ResourceDispatchResults comprend les résultats de marché qui peuvent être transmis à un coordinateur de programmation (SC). Les données spécifiques fournies se composent de plusieurs indicateurs tels que les indicateurs de contingence, le démarrage bloqué et la répartition RMR. Elles fournissent par ailleurs le statut prévisionnel global et le statut de régulation de la ressource.

Le Tableau 329 montre tous les attributs de ResourceDispatchResults.

Tableau 329 – Attributs de MarketResults::ResourceDispatchResults

nom	type	description
blockedDispatch	String	Indicateur de répartition bloquée (Yes/No).
blockedPublishDOP	String	Blocage envoyant DOP vers ADS (Y/N)
contingencyFlag	YesNo	Indicateur de réserve d'exploitation contingente (Yes/No). Ressource participant à la capacité AS dans la répartition de la contingence.
limitIndicator	String	Indique quelle limite constitue la contrainte
lowerLimit	Float	Limite inférieure de rampe d'énergie de la ressource
maxRampRate	Float	Taux de rampe maximum
operatingLimitHigh	Float	Limite opérationnelle supérieure intégrant toute réduction utilisée par la répartition en temps réel (RTD) pour l'intervalle de liaison.
operatingLimitLow	Float	Limite opérationnelle inférieure intégrant toute réduction utilisée par la répartition en temps réel pour l'intervalle de liaison.
penaltyDispatchIndicator	YesNo	Indicateur de répartition à pénalité (Yes / No) révélant une régulation non économique.
regulatingLimitHigh	Float	Limite de régulation supérieure intégrant toute réduction utilisée par la répartition en temps réel (RTD) pour l'intervalle de liaison.
regulatingLimitLow	Float	Limite de régulation inférieure intégrant toute réduction utilisée par la répartition en temps réel pour l'intervalle de liaison.
resourceStatus	String	Statut d'engagement de l'unité (Marche/Arrêt/Démarrage)
totalSchedule	Float	Programme ascendant total des ressources. Programme total = En + toutes les AS par ressource et par intervalle
updateTimeStamp	DateTime	
updateType	MQSCHGType	
updateUser	String	
upperLimit	Float	Limite supérieure de rampe d'énergie de la ressource

Le Tableau 330 montre toutes les extrémités d'association de ResourceDispatchResults avec d'autres classes.

Tableau 330 – Extrémités d'association de MarketResults::ResourceDispatchResults avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..1] RegisteredResource	RegisteredResource	
[1..*]	[0..1] ResourceClearing	ResourceClearing	

6.5.6.3.46 Classe racine ResourceLoadFollowingInst

Modèle des résultats d'équilibre du marché pour les ressources réalisant des Offres pour être conformes à la charge

Le Tableau 331 montre tous les attributs de ResourceLoadFollowingInst.

Tableau 331 – Attributs de MarketResults::ResourceLoadFollowingInst

nom	type	description
instructionID	String	Identifiant d'instruction unique pour chaque instruction; affecté par le coordinateur de programmation et fourni à l'ADS. L'ADS passe à travers.
intervalStartTime	DateTime	Début de l'intervalle de temps pour lequel une exigence est définie.
calcLoadFollowingMW	Float	Moyenne pondérée pour RTPD et RTCD et identique pour RTID
dispWindowLowLimt	Float	
dispWindowHighLimt	Float	

Le Tableau 332 montre toutes les extrémités d'association de ResourceLoadFollowingInst avec d'autres classes.

Tableau 332 – Extrémités d'association de MarketResults::ResourceLoadFollowingInst avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..1] RegisteredResource	RegisteredResource	
[0..*]	[0..1] ResourceClearing	ResourceClearing	

6.5.6.3.47 Classe racine RMRDetermination

Indique s'il s'agit d'une unité RMR "fiabilité – marche obligatoire": son activation est exigée pour satisfaire aux critères de fiabilité, à la demande de charge ou à la prise en charge de la tension.

Le Tableau 333 montre toutes les extrémités d'association de RMRDetermination avec d'autres classes.

Tableau 333 – Extrémités d'association de MarketResults::RMRDetermination avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[1..*] MitigatedBidClearing	MitigatedBidClearing	
[0..*]	[0..1] Bid	Bid	

6.5.6.3.48 RMROperatorInput

Saisie par l'opérateur RMR des exigences RMR par intervalle de marché.

Le Tableau 334 montre tous les attributs de RMROperatorInput.

Tableau 334 – Attributs de MarketResults::RMROperatorInput

nom	type	description
manuallySchedRMRMw	Float	La valeur inférieure de la pré-répartition originelle ou du processus AC (ou besoin RMR) devient la valeur de pré-répartition.
updateUser	String	
updateTimeStamp	DateTime	
updateType	MQSCHGType	
intervalEndTime	DateTime	Hérité de: MarketFactors
intervalStartTime	DateTime	Hérité de: MarketFactors
type	String	Hérité de: Document
createdDateTime	DateTime	Hérité de: Document
lastModifiedDateTime	DateTime	Hérité de: Document
revisionNumber	String	Hérité de: Document
electronicAddress	ElectronicAddress	Hérité de: Document
subject	String	Hérité de: Document
title	String	Hérité de: Document
docStatus	Status	Hérité de: Document
status	Status	Hérité de: Document
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 335 montre toutes les extrémités d'association de RMROperatorInput avec d'autres classes.

Tableau 335 – Extrémités d'association de MarketResults::RMROperatorInput avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..1] RegisteredResource	RegisteredResource	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	Hérité de: MarketFactors
[0..*]	[0..1] Market	Market	Hérité de: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.3.49 Classe racine RUCAwardInstruction

Cette classe modélise les informations relatives aux attributions RUC

Le Tableau 336 montre tous les attributs de RUCAwardInstruction.

Tableau 336 – Attributs de MarketResults::RUCAwardInstruction

nom	type	description
clearedPrice	Float	Prix marginal (\$/MW) pour le produit (régulation à la hausse, régulation à la baisse, réserve tournante ou réserve non tournante) pour le calcul du prix.
marketProductType	MarketProductType	Le type de produit majeur peut comprendre les éléments suivants, sans pour autant s'y limiter: Energie Régulation à la hausse Régulation à la baisse Réserve tournante Réserve non tournante Réserve d'exploitation
RUCAward	Float	L'attribution RUC d'une ressource est la part de capacité RUC qui n'est pas soumise à un contrat RA ou RMR. L'attribution RUC d'une ressource est la part de capacité RUC qui est éligible pour un règlement de disponibilité RUC.
RUCCapacity	Float	La capacité RUC d'une ressource est la différence entre (i) le RUC Schedule et (ii) la valeur supérieure du programme DA et la charge minimum.
RUCSchedule	Float	RUCSchedule d'une ressource constitue son niveau de sortie qui équilibre la prévision de charge utilisée dans RUC. La RUCSchedule dans RUC est similaire au DA Schedule dans DAM.
updateTimeStamp	DateTime	
updateType	MQSCHGType	
updateUser	String	

Le Tableau 337 montre toutes les extrémités d'association de RUCAwardInstruction avec d'autres classes.

Tableau 337 – Extrémités d'association de MarketResults::RUCAwardInstruction avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..1] RegisteredResource	RegisteredResource	
[1..*]	[1..*] ClearingResourceAward	ResourceAwardClearing	

6.5.6.3.50 Classe racine SelfScheduleBreakdown

Modèle des résultats à programmations automatiques. Comprend les quantités de MW à programmation automatique et le type de programmation automatique pour chaque type à programmation automatique inclus dans la valeur totale des MW à programmation automatique trouvée dans ResourceAwardInstruction..

Le Tableau 338 montre tous les attributs de SelfScheduleBreakdown.

Tableau 338 – Attributs de MarketResults::SelfScheduleBreakdown

nom	type	description
selfSchedMW	Float	Valeur d'équilibre pour le type à programmation automatique spécifique répertorié.
selfSchedType	SelfScheduleBreakdownType	Type de panne de programmation automatique.

Le Tableau 339 montre toutes les extrémités d'association de SelfScheduleBreakdown avec d'autres classes.

Tableau 339 – Extrémités d'association de MarketResults::SelfScheduleBreakdown avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[1..1] ResourceAwardInstruction	ResourceAwardInstruction	

6.5.6.3.51 Settlement

Spécifie un processus de règlement.

Le Tableau 340 montre tous les attributs de Settlement.

Tableau 340 – Attributs de MarketResults::Settlement

nom	type	description
tradeDate	DateTime	Date d'opération à laquelle le règlement est effectué.
type	String	Hérité de: Document
createdDateTime	DateTime	Hérité de: Document
lastModifiedDateTime	DateTime	Hérité de: Document
revisionNumber	String	Hérité de: Document
electronicAddress	ElectronicAddress	Hérité de: Document
subject	String	Hérité de: Document
title	String	Hérité de: Document
docStatus	Status	Hérité de: Document
status	Status	Hérité de: Document
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 341 montre toutes les extrémités d'association de Settlement avec d'autres classes.

Tableau 341 – Extrémités d'association de MarketResults::Settlement avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[0..*] MarketInvoiceLineItem	MarketInvoiceLineItem	
[0..*]	[0..*] MarketLedgerEntry	MarketLedgerEntry	
[0..*]	[0..1] EnergyMarket	EnergyMarket	
[0..*]	[1..*] MajorChargeGroup	MajorChargeGroup	
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.3.52 TransactionBidClearing

Contient les intervalles utiles pour le TransactionBidResults associé. Par exemple, les résultats d'équilibre à J-1 pour les offres des transactions de chaque intervalle du jour de marché.

Le Tableau 342 montre tous les attributs de TransactionBidClearing.

Tableau 342 – Attributs de MarketResults::TransactionBidClearing

nom	type	description
intervalEndTime	DateTime	Hérité de: MarketFactors
intervalStartTime	DateTime	Hérité de: MarketFactors
type	String	Hérité de: Document
createdDateTime	DateTime	Hérité de: Document
lastModifiedDateTime	DateTime	Hérité de: Document
revisionNumber	String	Hérité de: Document
electronicAddress	ElectronicAddress	Hérité de: Document
subject	String	Hérité de: Document
title	String	Hérité de: Document
docStatus	Status	Hérité de: Document
status	Status	Hérité de: Document
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 343 montre toutes les extrémités d'association de TransactionBidClearing avec d'autres classes.

Tableau 343 – Extrémités d'association de MarketResults::TransactionBidClearing avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[1..1]	[0..*] TransactionBidResults	TransactionBidResults	
[0..*]	[0..*] MktActivityRecord	MktActivityRecord	Hérité de: MarketFactors
[0..*]	[0..1] Market	Market	Hérité de: MarketFactors
[0..1]	[0..*] ConfigurationEvents	ConfigurationEvent	Hérité de: Document
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.6.3.53 TransactionBidResults

Contient les résultats d'équilibre pour chaque TransactionBid soumis au et accepté par le marché.

Le Tableau 344 montre tous les attributs de TransactionBidResults.

Tableau 344 – Attributs de MarketResults::TransactionBidResults

nom	type	description
clearedMW	Float	Quantité de mégawatts de la transaction du marché
clearedPrice	Float	Prix de la transaction de marché
aliasName	String	Hérité de: IdentifiedObject
mRID	String	Hérité de: IdentifiedObject
name	String	Hérité de: IdentifiedObject

Le Tableau 345 montre toutes les extrémités d'association de TransactionBidResults avec d'autres classes.

Tableau 345 – Extrémités d'association de MarketResults::TransactionBidResults avec d'autres classes

[mult à partir de]	[mult vers] nom	type	description
[0..*]	[1..1] TransactionBidClearing	TransactionBidClearing	
[0..*]	[0..1] TransactionBid	TransactionBid	
[0..1]	[0..*] DiagramObjects	DiagramObject	Hérité de: IdentifiedObject
[1..1]	[0..*] Names	Name	Hérité de: IdentifiedObject

6.5.7 Packaging MktDomain

6.5.7.1 Généralités

Le paquetage MktDomain est une bibliothèque de données regroupant les grandeurs et les unités qui définissent les types de données des attributs (propriétés) pouvant être repris par n'importe quelle classe dans n'importe quel autre paquetage au sein de MarketOperations.

6.5.7.2 Enumération ActionType

Type d'action associé avec un ActionRequest par rapport à un ParticipantInterfaces::Trade.

Le Tableau 346 montre tous les libellés de ActionType.

Tableau 346 – Libellés de MktDomain::ActionType

libellé	description
CANCEL	Annule une opération.

6.5.7.3 Enumération AnalogLimitType

Type de limite spécifié pour AnalogLimits.

Le Tableau 347 montre tous les libellés de AnalogLimitType.

Tableau 347 – Libellés de MktDomain::AnalogLimitType

libellé	description
BranchMediumTerm	Limite à moyen terme de l'agence
BranchLongTerm	Limite à long terme de l'agence
BranchShortTerm	Limite à court terme de l'agence
VoltageHigh	Limite supérieure de tension
VoltageLow	Limite inférieure de tension

6.5.7.4 Enumération AnodeType

Types de nœud agrégé, par exemple:

SYS – Zone/région système;

RUC – Zone RUC;

LFZ – Zone de prévision de charge;

REG – Région énergie/services auxiliaires du marché

AGR – Ressource de production agrégée;

POD – Point de livraison;

ALR – Ressource de charge agrégée;

LTAC – Groupe de charge TransmissionAccessCharge (TAC);

ACA – Zone de réglage adjacente

ASR – Ressource système agrégée

ECA – Zone de réglage embarquée

Le Tableau 348 montre tous les libellés de AnodeType.

Tableau 348 – Libellés de MktDomain::AnodeType

libellé	description
SYS	Zone/région système;
RUC	Zone RU
LFZ	Zone de prévision de charge
REG	Région énergie/services auxiliaires du marché;
AGR	Ressource de production agrégée;
POD	Point de livraison;
ALR	Ressource de charge agrégée;
LTAC	Groupe de charge TransmissionAccessCharge (TAC);
ACA	Zone de réglage adjacent
ASR	Ressource système agrégée
ECA	Zone de réglage embarquée

6.5.7.5 Enumération ApnodeType

Types de nœud agrégé, par exemple:

AG – Production agrégée

CPZ – Zone de tarification personnalisée

DPZ – Zone de tarification par défaut

LAP – Point d'agrégation de charge

TH – Plate-forme de négociation

SYS – Zone système

CA – Zone de réglage

GA – Agrégation générique

EHV – 500 kV

GH – Plate-forme générique

ZN – Zone

INT – Interface

BUS – Bus

Le Tableau 349 montre tous les libellés de ApnodeType.

Tableau 349 – Libellés de MktDomain::ApnodeType

libellé	description
AG	Production agrégée
CPZ	Zone de tarification personnalisée
DPZ	Zone de tarification par défaut
TH	Plate-forme de négociation
SYS	Zone système
CA	Zone de réglage
DCA	Zone de congestion désignée
GA	Agrégation générique
GH	Plate-forme générique
EHV	500 kV – Nœuds de tarification agrégés très haute tension
ZN	Zone
INT	Interface
BUS	Bus

6.5.7.6 Enumération AreaControlMode

Mode de contrôle actuel de la zone

Le Tableau 350 montre tous les libellés de AreaControlMode.

Tableau 350 – Libellés de MktDomain::AreaControlMode

libellé	description
CF	CF = Fréquence constante
CTL	Ligne d'interconnexion constante
TLB	Conditionnement par ligne d'interconnexion
OFF	Contrôle d'arrêt

6.5.7.7 Enumération AutomaticDispatchMode

Mode de répartition automatique

Le Tableau 351 montre tous les libellés de AutomaticDispatchMode.

Tableau 351 – Libellés de MktDomain::AutomaticDispatchMode

libellé	description
INTERVAL	
CONTINGENCY	Occurrence de la contingence, nouvelle répartition des réserves de contingence
MANUAL	Remplacement de l'opérateur

6.5.7.8 Enumération AutomaticDisplnstTypeCommitment

Types d'instruction des engagements.

Le Tableau 352 montre tous les libellés de AutomaticDisplnstTypeCommitment.

Tableau 352 – Libellés de MktDomain::AutomaticDisplnstTypeCommitment

libellé	description
START_UP	Type d'instruction de démarrage
SHUT_DOWN	Type d'instruction d'arrêt

6.5.7.9 Enumération BidCalculationBasis

La base est utilisée pour calculer la courbe du prix de l'offre pour une offre d'énergie par défaut.

Le Tableau 353 montre tous les libellés de BidCalculationBasis.

Tableau 353 – Libellés de MktDomain::BidCalculationBasis

libellé	description
LMP_BASED	Fondé sur les prix payés à un emplacement de tarification en particulier.
COST_BASED	Fondé sur les caractéristiques de production de l'unité et sur le coût du combustible.
NEGOTIATED	Montant négocié avec l'entité indépendante désignée.

6.5.7.10 Enumération BidMitigationStatus

Par exemple,

'S' – Atténuation par SMPM en cas de "faute"

'L' – Atténuation par LMPM en cas de "faute"

'R' – Modification par LMPM en raison des règles RMR

'M' – Atténuation en cas de "faute" par SMPM et LMPM

'B' – Atténuation en cas de "faute" par SMPM et modification par LMLM en raison des règles RMR

'O' – Original

Le Tableau 354 montre tous les libellés de BidMitigationStatus.

Tableau 354 – Libellés de MktDomain::BidMitigationStatus

libellé	description
S	
L	
R	
M	
B	
O	

6.5.7.11 Enumération BidMitigationType

Par exemple,

Initial

Final

Le Tableau 355 montre tous les libellés de BidMitigationType.

Tableau 355 – Libellés de MktDomain::BidMitigationType

libellé	description
I	
F	

6.5.7.12 Enumération BidType

Par exemple,

DEFAULT_ENERGY_BID

DEFAULT_STARTUP_BID

DEFAULT_MINIMUM_LOAD_BID

Le Tableau 356 montre tous les libellés de BidType.

Tableau 356 – Libellés de MktDomain::BidType

libellé	description
DEFAULT_ENERGY_BID	
DEFAULT_STARTUP_BID	
DEFAULT_MINIMUM_LOAD_BID	

6.5.7.13 Enumération BidTypeRMR

Le type de programmes automatiques d'offre d'offre présente deux types correspondant à la sortie exigée pour les exigences et la pré-répartition qualifiée.

Le Tableau 357 montre tous les libellés de BidTypeRMR.

Tableau 357 – Libellés de MktDomain::BidTypeRMR

libellé	description
REQUIREMENTS	Type de programmes automatiques d'offreprogrammation pour la pré-répartition qualifiée.
QUALIFIED_PREDISPATCH	Type d'offre de programmation automatique pour les exigences en sortie.

6.5.7.14 Enumération BranchRatingType

Types de limite opérationnelle pour les réductions d'agence

Le Tableau 358 montre tous les libellés de BranchRatingType.

Tableau 358 – Libellés de MktDomain::BranchRatingType

libellé	description
Normal	
Emergency	
ShortTerm	Urgence à court terme
LongTerm	Urgence à long terme

6.5.7.15 Enumération CheckOutType

Pour indiquer un type de vérification tel que la capacité ajustée ou la capacité de répartition

Le Tableau 359 montre tous les libellés de CheckOutType.

Tableau 359 – Libellés de MktDomain::CheckOutType

libellé	description
PRE_HOUR	
PRE_SCHEDULE	
AFTER_THE_FACT	

6.5.7.16 Enumération CommitmentType

Par exemple:

SELF – Engagement volontaire

ISO – Nouvel engagement pour cette période de marché

UC – Engagement existant qui était un vestige d'un précédent marché.

Le Tableau 360 montre tous les libellés de CommitmentType.

Tableau 360 – Libellés de MktDomain::CommitmentType

libellé	description
SELF	
ISO	
UC	

6.5.7.17 Enumération ConstraintLimitType

Type de limite des résultats des contraintes avec obligation, par exemple:

MAXIMUM

MINIMUM

Le Tableau 361 montre tous les libellés de ConstraintLimitType.

Tableau 361 – Libellés de MktDomain::ConstraintLimitType

libellé	description
MAXIMUM	
MINIMUM	

6.5.7.18 Enumération ConstraintRampType

Type de rampe de contrainte

Le Tableau 362 montre tous les libellés de ConstraintRampType.

Tableau 362 – Libellés de MktDomain::ConstraintRampType

libellé	description
FAST	
SLOW	

6.5.7.19 Enumération ContractType

Type de contrat de transport, par exemple:

O – Autre

TE – Export de transport

TI – Import de transport

ETC – Contrat de transport existant

RMT – Contrat RMT

TOR – Droit de propriété de transport

RMR – Contrat RMR

CVR – Contrat converti.

Le Tableau 363 montre tous les libellés de ContractType.

Tableau 363 – Libellés de MktDomain::ContractType

libellé	description
ETC	ETC – Contrat de transport existant
TOR	TOR – Droit de propriété de transport
RMR	RMR – Contrat RMR
RMT	RMT – Contrat RMT
O	O – Autre
TE	TE – Export de transport
TI	TI – Import de transport
CVR	CVR – Contrat converti.

6.5.7.20 Enumération CostBasis

Par exemple:

Coût soumission

Coût proxy

Coût enregistré

Le Tableau 364 montre tous les libellés de CostBasis.

Tableau 364 – Libellés de MktDomain::CostBasis

libellé	description
BIDC	
PRXC	
REGC	

6.5.7.21 Enumération CRRCategoryType

Types de catégorie des droits à revenu de congestion

Le Tableau 365 montre tous les libellés de CRRCategoryType.

Tableau 365 – Libellés de MktDomain::CRRCategoryType

libellé	description
NSR	Service réseau (<i>Network service</i>)
PTP	Point à point (<i>Point to Point</i>)

6.5.7.22 Enumération CRRHedgeType

Type de couverture des droits à revenu de congestion

Le Tableau 366 montre tous les libellés de CRRHedgeType.

Tableau 366 – Libellés de MktDomain::CRRHedgeType

libellé	description
OBLIGATION	
OPTION	

6.5.7.23 Enumération CRRRoleType

Types de rôle qu'une organisation peut jouer vis-à-vis d'un droit à revenu de congestion.

Le Tableau 367 montre tous les libellés de CRRRoleType.

Tableau 367 – Libellés de MktDomain::CRRRoleType

libellé	description
SELLER	
BUYER	
OWNER	

6.5.7.24 Enumération CRRSegmentType

Type de CRR, dans les définitions types possibles du système de CRR (ex. "LSE","ETC").

Le Tableau 368 montre tous les libellés de CRRSegmentType.

Tableau 368 – Libellés de MktDomain::CRRSegmentType

libellé	description
AUC	
CAP	
CF	
CVR	Droits convertis.
ETC	Contrat de transport existant.
LSE	Société d'approvisionnement.
MT	Transport commercial.
TOR	Droits de propriété de transport.

6.5.7.25 Enumération DispatchResponseType

Par exemple:

NON_RESPONSE

ACCEPT

DECLINE

PARTIAL.

Le Tableau 369 montre tous les libellés de DispatchResponseType.

Tableau 369 – Libellés de MktDomain::DispatchResponseType

libellé	description
NON_RESPONSE	
ACCEPT	
DECLINE	
PARTIAL	

6.5.7.26 Enumération EnergyPricelndexType

Par exemple:

WHOLESALE

RETAIL

BOTH

Le Tableau 370 montre tous les libellés de EnergyPricelndexType.

Tableau 370 – Libellés de MktDomain::EnergyPriceIndexType

libellé	description
WHOLESALE	
RETAIL	
BOTH	

6.5.7.27 Enumération EnergyProductType

Type de produit énergétique

Le Tableau 371 montre tous les libellés de EnergyProductType.

Tableau 371 – Libellés de MktDomain::EnergyProductType

libellé	description
FIRM	Ferme
NFRM	Non ferme
DYN	Dynamique
WHL	Transit

6.5.7.28 Enumération EnergyTransactionType

Définit le statut d'une transaction.

Le Tableau 372 montre tous les libellés de EnergyTransactionType.

Tableau 372 – Libellés de MktDomain::EnergyTransactionType

libellé	description
approve	Approbation
deny	Négation
study	Etude

6.5.7.29 Enumération EquipmentStatusType

Statut de l'équipement

Le Tableau 373 montre tous les libellés de EquipmentStatusType.

Tableau 373 – Libellés de MktDomain::EquipmentStatusType

libellé	description
In	L'équipement est en marche.
Out	L'équipement n'est pas en marche.

6.5.7.30 Enumération ExecutionType

Types d'exécution des processus de marché

Le Tableau 374 montre tous les libellés de ExecutionType.

Tableau 374 – Libellés de MktDomain::ExecutionType

libellé	description
DA	J-1
HASP	Exécution heure d'avant en temps réel
RTPD	Pré-répartition en temps réel
RTD	Répartition en temps réel

6.5.7.31 Enumération FlagTypeRMR

Indique si l'unité est de type RMR et son type de condition, par exemple:

'N' – l'unité n'est pas de type RMR

'1' – Unité RMR de condition 1

'2' – Unité RMR de condition 2

Le Tableau 375 montre tous les libellés de FlagTypeRMR.

Tableau 375 – Libellés de MktDomain::FlagTypeRMR

libellé	description
N	'N' – L'unité n'est pas de type RMR
1	'1' – Unité RMR de condition 1
2	'2' – Unité RMR de condition 2

6.5.7.32 Enumération FlowDirectionType

Indique le sens du flux d'énergie dans le Flowgate.

Le Tableau 376 montre tous les libellés de FlowDirectionType.

Tableau 376 – Libellés de MktDomain::FlowDirectionType

libellé	description
Forward	Le flux va dans le sens aval.
Reverse	Le flux va dans le sens amont.

6.5.7.33 Enumération FuelSource

Par exemple:

Bio Gas (décharge, eaux usées, méthanisation, etc.)

Biomass (Biomasse)

Coal (Charbon)

DIST

Natural Gas (Gaz naturel)

Geothermal (Energie géothermique)

HRCV

None (Aucun)

Nuclear (Energie nucléaire)

Oil (Pétrole)

Other (Autre)

Solar (Energie solaire)

Waste to Energy (Transformation des déchets en énergie)

Water (Energie hydraulique)

Wind (Energie éolienne)

Le Tableau 377 montre tous les libellés de FuelSource.

Tableau 377 – Libellés de MktDomain::FuelSource

libellé	description
NG	Gaz naturel
NNG	Gaz non naturel
BGAS	Biogaz (décharge, eaux usées, méthanisation, etc.)
BIOM	Biomasse
COAL	Charbon
DIST	
GAS	
GEOT	Energie géothermique
HRCV	
NONE	aucun
NUCL	Energie nucléaire
OIL	Pétrole
OTHR	Autre
SOLR	Energie solaire
WAST	Transformation des déchets en énergie
WATR	Energie hydraulique
WIND	Energie éolienne

6.5.7.34 Enumération InterTieDirection

Sens d'une ligne d'interconnexion.

Le Tableau 378 montre tous les libellés de InterTieDirection.

Tableau 378 – Libellés de MktDomain::InterTieDirection

libellé	description
E	Export.
I	Import.

6.5.7.35 Enumération LoadForecastType

Types de zone de prévision de charge.

Le Tableau 379 montre tous les libellés de LoadForecastType.

Tableau 379 – Libellés de MktDomain::LoadForecastType

libellé	description
LFZ	Zone de prévision de charge.
LZMS	Zone du sous-système mesuré.

6.5.7.36 Enumération MarketProductSelfSchedType

Types d'offre de à programmation automatique de produits du marché

Le Tableau 380 montre tous les libellés de MarketProductSelfSchedType.

Tableau 380 – Libellés de MktDomain::MarketProductSelfSchedType

libellé	description
ETC	Contrat de transport existant.
TOR	Droit de propriété de transport.
RMR	Marché Obligatoire pour Fiabilité (<i>must run</i>)
RGMR	Marché Obligatoire pour Régulation (<i>must run</i>)
RMT	Prise Obligatoire pour Fiabilité (<i>must take</i>)
PT	Preneur de prix.
LPT	Preneur de prix inférieur.
SP	Alimentation automatique
RA	Adequation de la ressource.

6.5.7.37 Enumération MarketProductType

Par exemple:

Energie, régulation à la hausse, régulation à la baisse, réserve tournante, réserve non tournante, RUC, suivi de charge (ascendant et descendant).

Le Tableau 381 montre tous les libellés de MarketProductType.

Tableau 381 – Libellés de MktDomain::MarketProductType

libellé	description
EN	Type d'énergie
RU	Régulation à la hausse
RD	Régulation à la baisse
SR	Réserve tournante
NR	Réserve non tournante
RC	Engagement de l'unité résiduelle
LFU	Suivi de charge ascendant
LFD	Suivi de charge descendant
REG	Régulation

6.5.7.38 Enumération MarketType

Type de marché.

Le Tableau 382 montre tous les libellés de MarketType.

Tableau 382 – Libellés de MktDomain::MarketType

libellé	description
DAM	Marché à J-1
RTM	Marché en temps réel
HAM	Marché à H-1
RUC	Engagement de l'unité résiduelle.

6.5.7.39 Enumération MktAccountKind

Type de compte de marché.

Le Tableau 383 montre tous les libellés de MktAccountKind.

Tableau 383 – Libellés de MktDomain::MktAccountKind

libellé	description
normal	
reversal	
statistical	
estimate	

6.5.7.40 Enumération MktBillMediaKind

Type de support de facturation.

Le Tableau 384 montre tous les libellés de MktBillMediaKind.

Tableau 384 – Libellés de MktDomain::MktBillMediaKind

libellé	description
paper	
electronic	
autre	

6.5.7.41 Enumération MktInvoiceLineItemKind

Type d'élément de ligne de facturation.

Le Tableau 385 montre tous les libellés de MktInvoiceLineItemKind.

Tableau 385 – Libellés de MktDomain::MktInvoiceLineItemKind

libellé	description
initial	
recalculation	
autre	

6.5.7.42 Enumération MPMTTestIdentifierType

Type d'identifiant d'essai d'atténuation de l'emprise sur le marché, par exemple:

- 1 ? Essai de tarification globale
- 2 ? Essai de conductivité globale
- 3 ? Essai d'impact global
- 4 ? Essai de tarification locale
- 5 ? Essai de conductivité locale
- 6 ? Essai d'impact local

Le Tableau 386 montre tous les libellés de MPMTTestIdentifierType.

Tableau 386 – Libellés de MktDomain::MPMTTestIdentifierType

libellé	description
1	1 – Essai de tarification globale.
2	2 – Essai de conductivité globale.
3	3 – Essai d'impact global.
4	4 – Essai de tarification locale.
5	5 – Essai de conductivité locale.
6	6 – Essai d'impact local.

6.5.7.43 Enumération MPMTTestMethodType

Type de méthode d'essai d'atténuation d'emprise sur le marché.

Essais avec les seuils normalisés (par défaut) ou essais avec les seuils alternatifs.

Le Tableau 387 montre tous les libellés de MPMTTestMethodType.

Tableau 387 – Libellés de MktDomain::MPMTTestMethodType

libellé	description
NORMAL	Normal.
ALTERNATE	Alternatif.

6.5.7.44 Enumération MPMTTestOutcome

Par exemple:

Succès

Echec

Désactivé

Ignoré

Le Tableau 388 montre tous les libellés de MPMTTestOutcome.

Tableau 388 – Libellés de MktDomain::MPMTTestOutcome

libellé	description
P	Succès
F	Echec
D	Désactivé
S	Ignoré

6.5.7.45 Enumération MQSCHGType

Par exemple:

ADD – ajouter

CHG – modifier

Le Tableau 389 montre tous les libellés de MQSCHGType.

Tableau 389 – Libellés de MktDomain::MQSCHGType

libellé	description
ADD	
CHG	

6.5.7.46 Enumération MQSInstructionSource

Valeurs valides, par exemple:

INS – Instruction de RTM

ACT – Instruction réelle après les faits

Le Tableau 390 montre tous les libellés de MQSInstructionSource.

Tableau 390 – Libellés de MktDomain::MQSInstructionSource

libellé	description
INS	
ACT	

6.5.7.47 Enumération OnOff

ON

OFF

Le Tableau 391 montre tous les libellés de OnOff.

Tableau 391 – Libellés de MktDomain::OnOff

libellé	description
ON	
OFF	

6.5.7.48 Enumération OutageType

Type d'indisponibilité: IN (disponible), OUT (indisponible), DERATE (réduit).

Le Tableau 392 montre tous les libellés de OutageType.

Tableau 392 – Libellés de MktDomain::OutageType

libellé	description
OUT	Le statut de l'équipement est indisponible.
IN	Le statut de l'équipement est à nouveau disponible.
DERATE	L'équipement possède une limite réduite définie par l'attribut derateP.

6.5.7.49 Enumération ParticipationCategoryMPM

Par exemple:

'Y' - Participe à LMPM et à SMPM

'N' - N'est pas inclus dans les mesures de tarification LMP

'S' - Participe aux mesures de tarification SMPM

'L' - Participe aux mesures de tarification LMPM

Le Tableau 393 montre tous les libellés de ParticipationCategoryMPM.

Tableau 393 – Libellés de MktDomain::ParticipationCategoryMPM

libellé	description
Y	
N	
S	
L	

6.5.7.50 Enumération PassIndicatorType

Définit les acceptations individuelles qui produisent des résultats par type d'exécution/type de marché.

Le Tableau 394 montre tous les libellés de PassIndicatorType.

Tableau 394 – Libellés de MktDomain::PassIndicatorType

libellé	description
MPM-1	Acceptation de l'atténuation de l'emprise sur le marché 1
MPM-2	Acceptation de l'atténuation de l'emprise sur le marché 2
MPM-3	Acceptation de l'atténuation de l'emprise sur le marché 3
MPM-4	Acceptation de l'atténuation de l'emprise sur le marché 4
RUC	Engagement de l'unité résiduelle
RTPD	Pré-répartition en temps réel
RTED	Répartition économique en temps réel
HA-SCUC	Engagement d'unité à contrainte de sécurité à 1 h
DA	J-1

6.5.7.51 Enumération PurposeFlagType

Indicateur d'objectif MPM, par exemple:

Nature des données de seuil:

'M' - Seuil d'atténuation

'R' - Seuil de rapport

Le Tableau 395 montre tous les libellés de PurposeFlagType.

Tableau 395 – Libellés de MktDomain::PurposeFlagType

libellé	description
M	
R	

6.5.7.52 Enumération RampCurveType

Par exemple:

0 – Taux de rampe fixe indépendant de la fonction de taux de la sortie MW de l'unité

1 – Taux de rampe statiques comme fonction de la sortie MW de l'unité uniquement

2 – Taux de rampe dynamiques comme fonction de la sortie MW de l'unité uniquement

Le Tableau 396 montre tous les libellés de RampCurveType.