Business information model

for

End of supply

C O N T E N T

A. About this document

This document contains the Business Information Model for End of supply. This model is based on the ebIX® Business Requirements for End of supply [9].

The model is drafted using the ebIX® Rules for the use of UN/CEFACT Modeling Methodology version 2.0 (UMM-2). UMM-2 uses UML as the Modeling Language.

This part of the ebIX® Model for the European Energy Market is made by ebIX® ETC and is based on business requirements as specified by ebIX® CuS (Change of Supplier) working group.

If you have comments or suggestions to the model please contact any member of the project group (see ebIX® website).

A.1. References

A.1.1. International open standards used

[1] UML Profile for UN/CEFACT's Modeling Methodology (UMM), Base Module, Candidate for 2.0. Draft for IMPLEMENTATION VERIFICATION, 2010-01-29 (http://www.untmg.org/specifications/)

[2] UML Profile for UN/CEFACT's Modeling Methodology (UMM), Foundation Module, Candidate for 2.0. Draft for IMPLEMENTATION VERIFICATION, 2010-01-29 (http://www.untmg.org/specifications/)

[3] UN/CEFACT Core Components Technical Specification Version 3.0, 29 September 2009 (http://www.unece.org/cefact/codesfortrade/CCTS/CCTS-Version3.pdf)

[4] UN/CEFACT UML Profile for Core Components Technical Specification 3.0 Open Development Process Step 5 "Public Review" NOT FOR IMPLEMENTATION 2010-01-29

[5] UN/CEFACT XML Naming and Design Rules Technical Specification Version 3.0, 17 December 2009 (http://www.unece.org/fileadmin/DAM/cefact/xml/UNCEFACT+XML+NDR+V3p0.pdf)

[6] UN/CEFACT Core Components Data Type Catalogue Version 3.0, 29 September 2009 (http://www.unece.org/cefact/codesfortrade/CCTS/CCTS-DataTypeCatalogueVersion3p0.pdf)

[7] Object Constraint Language, OMG Available Specification Version 2.0 formal, 1 May 2006 (http://www.omg.org/spec/OCL/2.0/)

A.1.2. ebIX® Document references

[8] Introduction to ebIX® Business Requirements and Information Models (www.ebix.org)

[9] ebIX® Business Requirements, including Business Requirements for End of supply (www.ebix.org)

[10] ebIX® Business Information Models for other business areas (www.ebix.org)

[11] The Harmonized Role Model (for the Electricity Market) by ebIX®, ENTSO-E, and EFET (www.ebix.org)

A.2.   Main changes since last version

	Subject	Old	New	Clarification	Date
				Version 2011.A	
				Minor textual clarifications and update of web addresses	20120401
				Update of OCL	20120124
				1st version, changes not tracked	20110720
				Version 2014.A	
				Restructured the entire document	20151109

1. Introduction

1.1.   Place in the overall model for the European Energy Market

This document contains the Business Information Model for the End of supply in the European Energy Market. This model is part of the overall ebIX® business domain for *Structure*, including change of consumer and maintenance of master data.

1.2.   About the ebIX® Model

The documents for the domain Structure describe a model for the exchange of master data in the European Energy Market. The model will, when the modelling project have been completed, be a part of a common ebIX® model for the European Energy Market. The model is important for having a common and agreed understanding on how the exchange of business information in the European Energy Market works.

In line with UMM-2 the ebIX® model contains 3 main parts:

1.   Business Requirements View

2.   Business Choreography View

3.   Business Information View

The Business Requirements for *Request end of supply* are specified in a separate document, see [9].

This document contains the Business Choreography View and the Business Information View for the *End of supply* processes.

In the annexes to this model document you will find the technology dependent specifications that are derived from the UML-model and that are required for actual implementations.

1.3.   Objectives

This ebIX® Business Information Model shall specify the *End of supply* business information in line with the ebIX® business requirements for the *End of supply* processes, see [9], in line with the UN/CEFACT Modelling Methodology version 2.0, see [1] and [2].

From the information specification in the Business Information View syntax dependent exchange formats are derived for publication as recommendation by ebIX®.

From the process specifications in the Business Choreography View web service definitions are derived for publication as recommendation by ebIX®.

1.4.   Scope

This model belongs to the *Structure* domain of the overall ebIX® model and focuses on End of supply.

1.5. Actors, parties and roles

In the model actors are either presented as <<Business Partner>> or as <<Harmonized Role>>.

A business partner type is an organization type, an organisational unit type or a person type that participates in a business process *(see [2]).*

A harmonized role represents a specific responsibility in the European Energy Market related to the exchange of information *(see [11]).*

In this document the following <<Business Partners>> are taken from the business requirements:

- New Balance Supplier
- Old Balance Supplier
- New Balance Responsible Party
- Old Balance Responsible Party
- New Transport Capacity Responsible Party
- Old Transport Capacity Responsible Party
- Metering Point Administrator

In the model the business partner is to be mapped to a <<Harmonized Role>> from the Role Model. In this document the following harmonized roles are used:

- Balance Supplier
- Balance Responsible Party
- Transport Capacity Responsible Party
- Metering Point Administrator

1.6. Annexes for mapping to technology of choice

Information on available mapping to technology of choice (XML, EDIFACT, web services) can be found in the document Introduction to ebIX® Business Requirements and Information Models (www.ebix.org) [8].

2. Business Choreography View: End supply

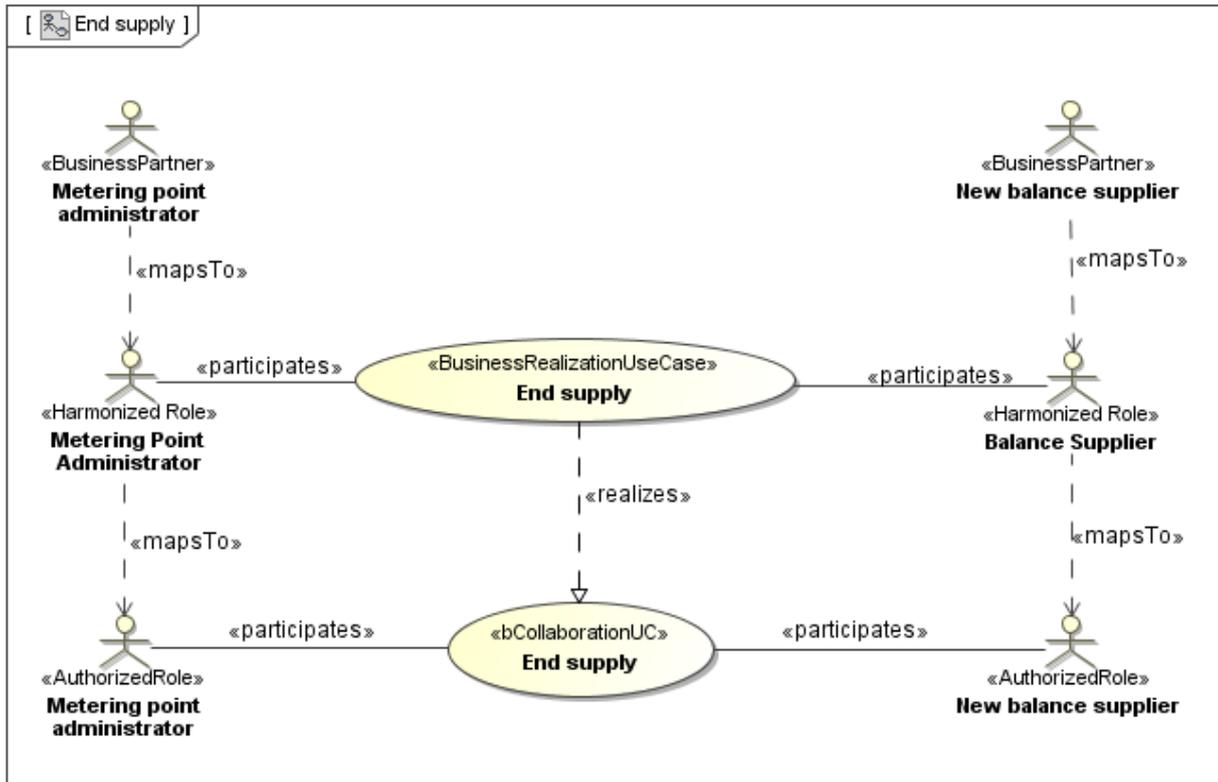## 2.1. UseCase End of Supply (Business Realization)

Figure 1 Realization: End supply

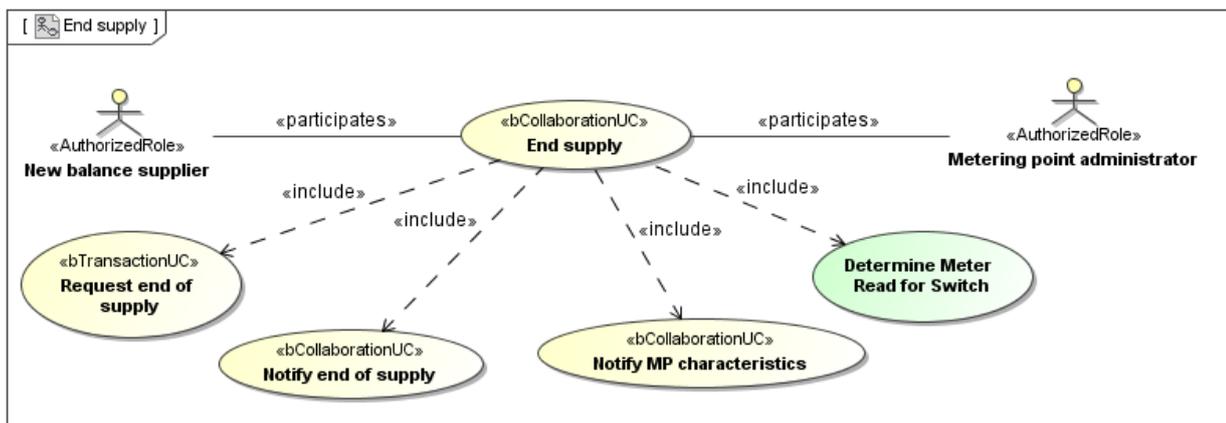### 2.1.1. UseCase End of Supply (Business Collaboration)

Figure 2 Collaboration UC: End supply

Notes to the diagram:

- The UseCases Notify MP characteristics and Determine Meter Read can be found in separate Business information models, see ebIX® Business Information Models for other business areas (www.ebix.org), [10].

2.1.1.1. Description

UseCase description: End of Supply	
definition	This is a process where the *Balance Supplier* requests end of supply to be registered by a given date at the *Metering Point* in the *Metering Point register*. The *Metering Point Administrator* makes all necessary updates for the end of supply, including distribution of master data for alignment of the business partner data bases.
beginsWhen	The *Balance Supplier* sends a request for end of supply to the *Metering Point Administrator*.
preCondition	The *Balance Supplier* has notified the *Energy consumer* that the contract between them will be ended and the end of supply process will be initiated. The end process should be within the rules of the legislation.
endsWhen	When the request end of supply has been confirmed or rejected. If confirmed; • Relevant parties have been informed about the end. • Master data have been distributed to relevant parties. • End meter reading has been determined.
postCondition	The *Balance Supplier* has given notice to terminate the contract with the *Energy consumer* and all involved parties have exchanged and synchronised their master data with the Metering Point register. The responsibility for supply of energy by the *Balance Supplier* has been ended, the MP Characteristics have been notified to relevant parties and an end meter reading has been determined and notified. The end of supply process may trigger other processes, based on national rules: • Change of *Administrative status of MP* to be set to inactive. • Change to supplier of last resort or default supplier. • Physical closure of the MP.
exceptions	Dependent on national rules, the end of supply process and the processes triggered by the end of supply process (see postConditions

	above) may stop if a request change of supplier or move in process is started before the confirmed end of supply date.
actions	See 2.1.2

2.1.2. End of Supply (Business Collaboration Protocol)
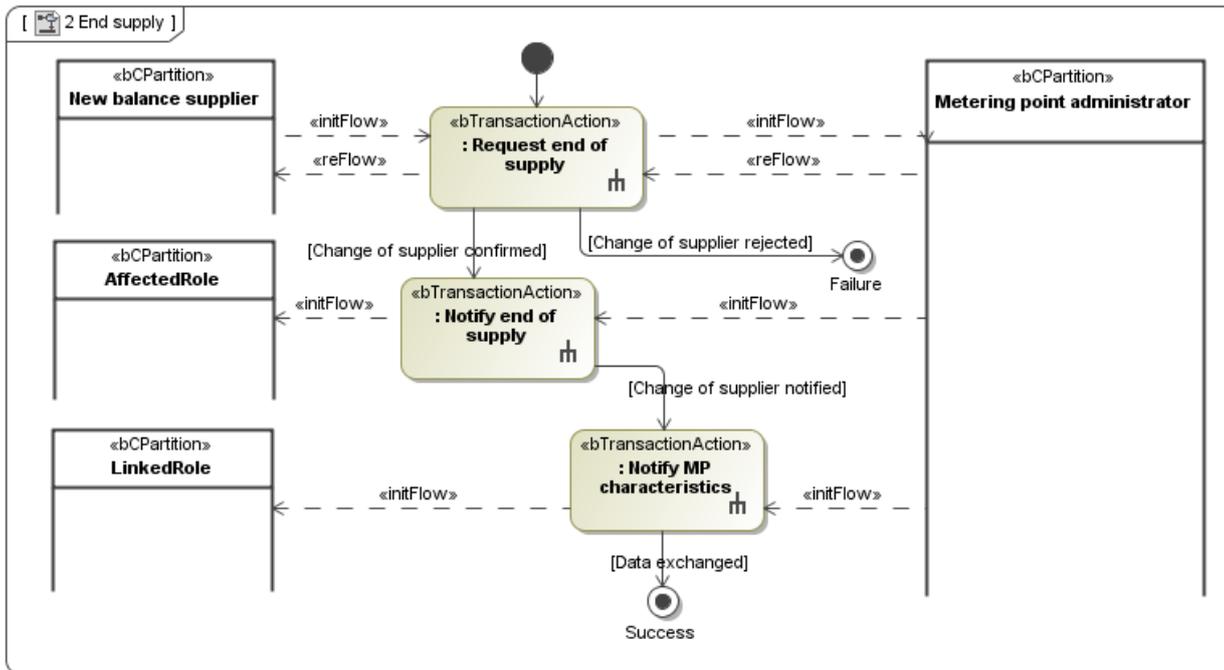
Figure 3 Collaboration protocol: End supply

2.2.   UseCase Request End of Supply

2.2.1.   UseCase Request End of Supply (Business Collaboration)

Figure 4 Business Collaboration UC: Request end of supply

2.2.1.1.   Description

No detailed description for the Collaboration. For detailed description, see 2.2.1.3.1.

2.2.1.2.   Request End of Supply (Business Collaboration Protocol)

Figure 5 Collaboration: Request End of Supply

2.2.1.3.   UseCase Request End of Supply (Business Transaction)
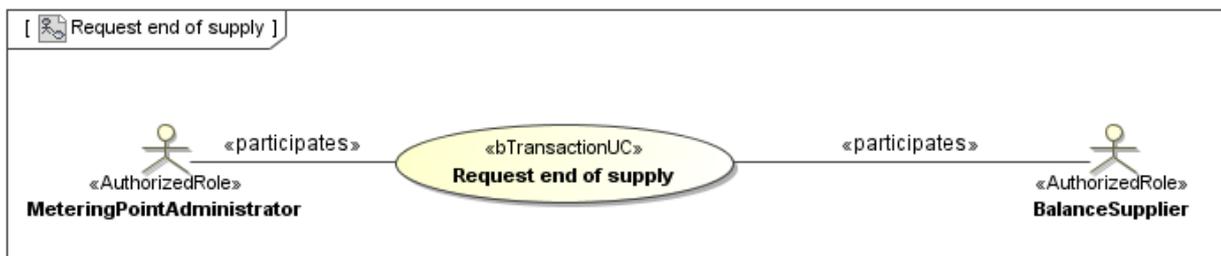
Figure 6 Transaction: Request End of Supply

2.2.1.3.1.   Description

UseCase description: Request End of Supply	
definition	In this process the *Balance Supplier* will request end of supply and the *Metering Point Administrator* confirms or rejects it. During the business process an end of supply is confirmed and the Metering Point register is updated, or the end of supply is rejected. In this model it is assumed that the Metering Point Administrator cannot change the end date in the confirmation.
beginsWhen	When the *Balance Supplier* sends a request for end of supply
preCondition	• Metering Point ID is known • Existing supply contract is in place • An end of supply date has been decided by the *Balance Supplier*
endsWhen	When the request for end of supply is confirmed or rejected
postCondition	The request end of supply, from the *Balance Supplier*, has been confirmed or rejected by the *Metering Point Administrator*.
exceptions	None
actions	See 0

2.2.1.3.2. Request End of Supply (Business Transaction)
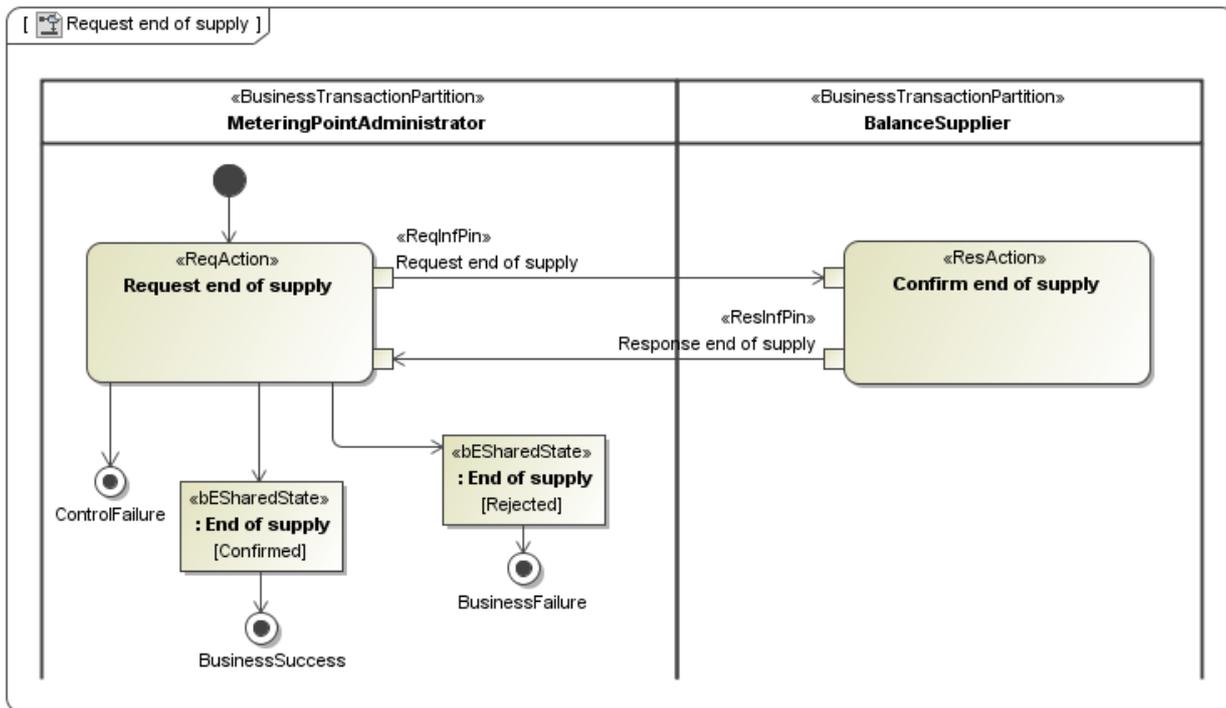
Figure 7 Business transaction: Request End of Supply

2.3. Notify End Of Supply

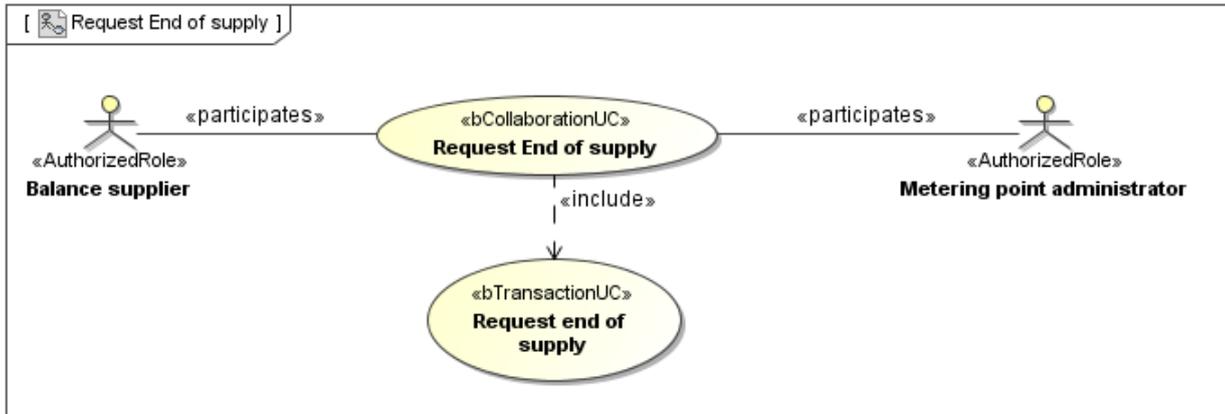### 2.3.1. UseCase Notify End of Supply (Business Collaboration)
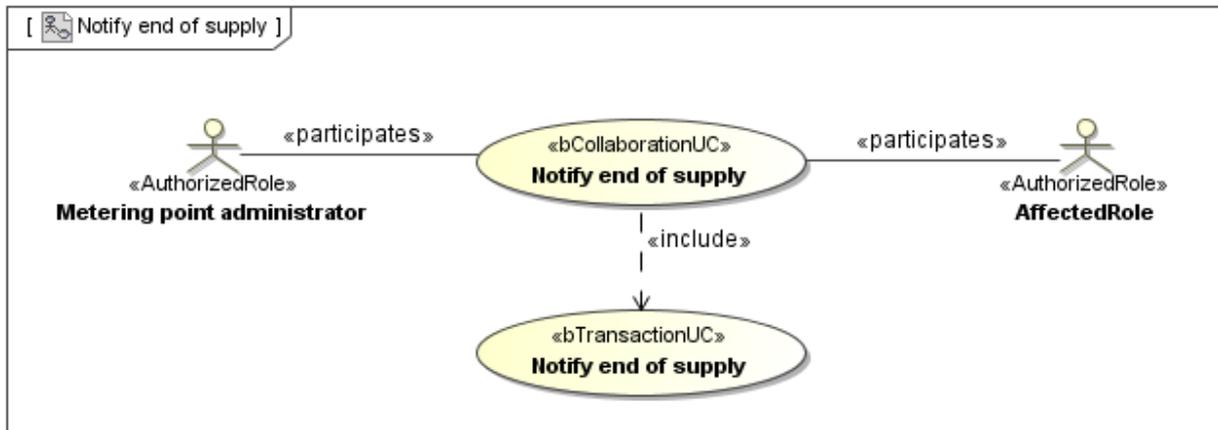
Figure 8 Collaboration UC: Notify end of supply

2.3.1.1. Description

No detailed description for the Collaboration. For detailed description, see 2.3.1.3.1.

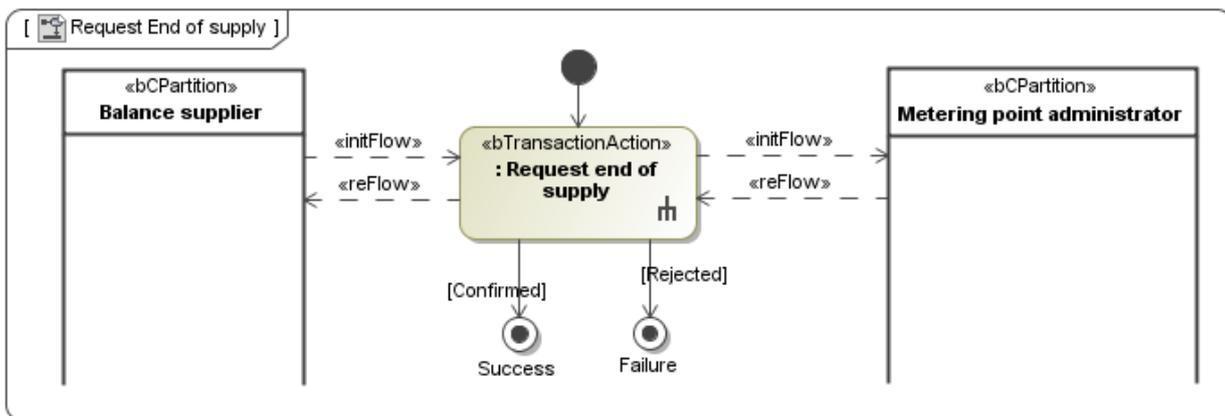#### 2.3.1.2. Notify End of Supply (Business Collaboration Protocol)
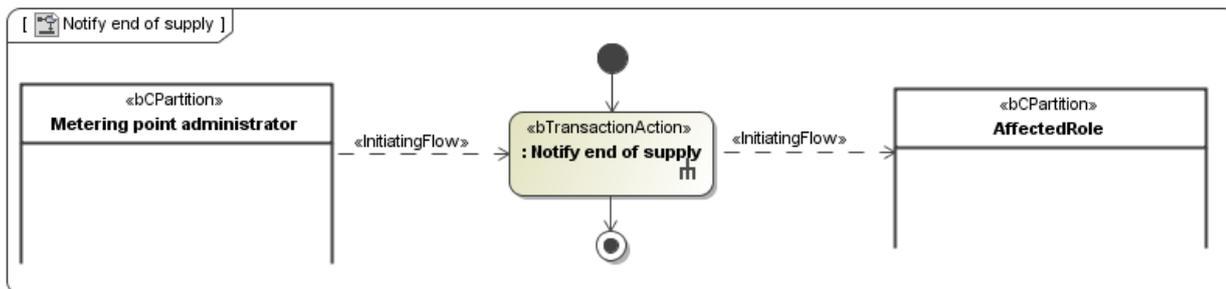
Figure 9 Collaboration protocol: Notify End of supply

2.3.1.3. UseCase Notify End of Supply (Business Transaction)
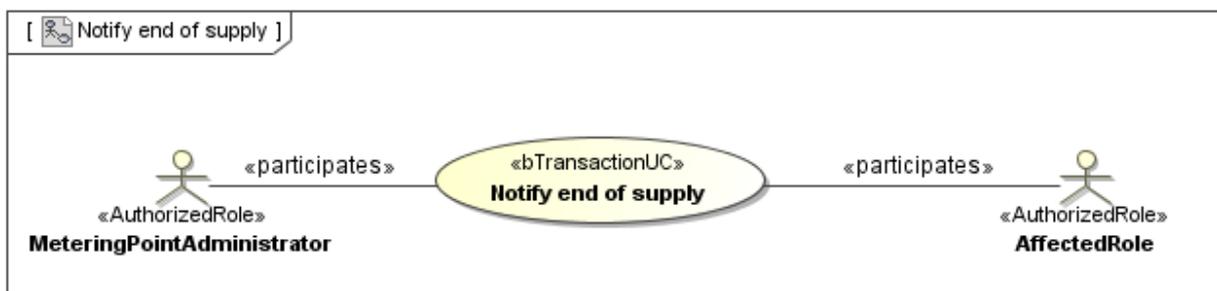
Figure 10 Business transaction UC: Notify End of Supply

2.3.1.3.1. Description

Definition	In this process the *Metering Point Administrator* will notify the *Balance Responsible Party* or the *Transport Capacity Responsible Party* of the End of supply in the Metering Point and the related end date.
Begins when	Defined by national rules after the End of supply has been confirmed by the *Metering Point Administrator*
Preconditions	• The related request End of supply process has been confirmed • The Metering Point register has been updated with the End of supply
Ends when	The *Balance Responsible Party* or the *Transport Capacity Responsible Party has been informed* of the End of supply in the Metering Point and the related end date.
Post condition	The End of supply has been notified to the *Balance Responsible Party* or the *Transport Capacity Responsible Party.*
Exceptions	The process is only run if required by national rules.
Actions	See 2.3.1

2.3.1.3.2. Notify End of Supply (Business Transaction)
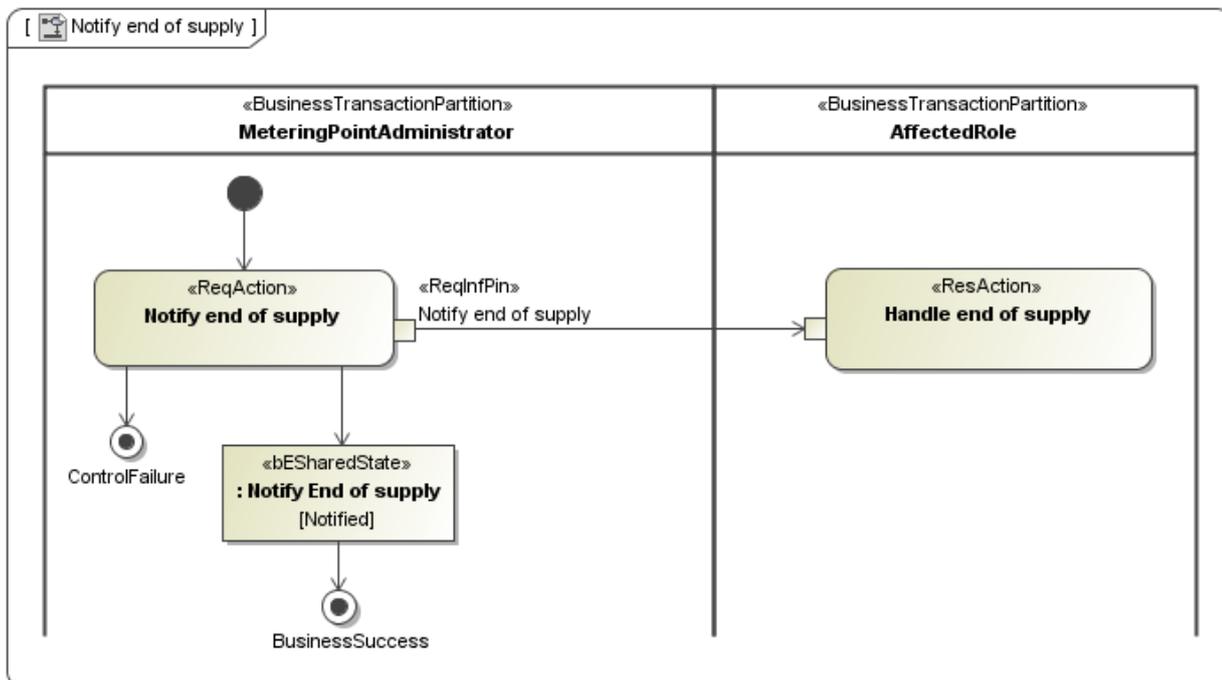
Figure 11 Business transaction: Notify End of Supply

3. End of supply (Business Information View)

3.1. Request End of Supply (Business Information)
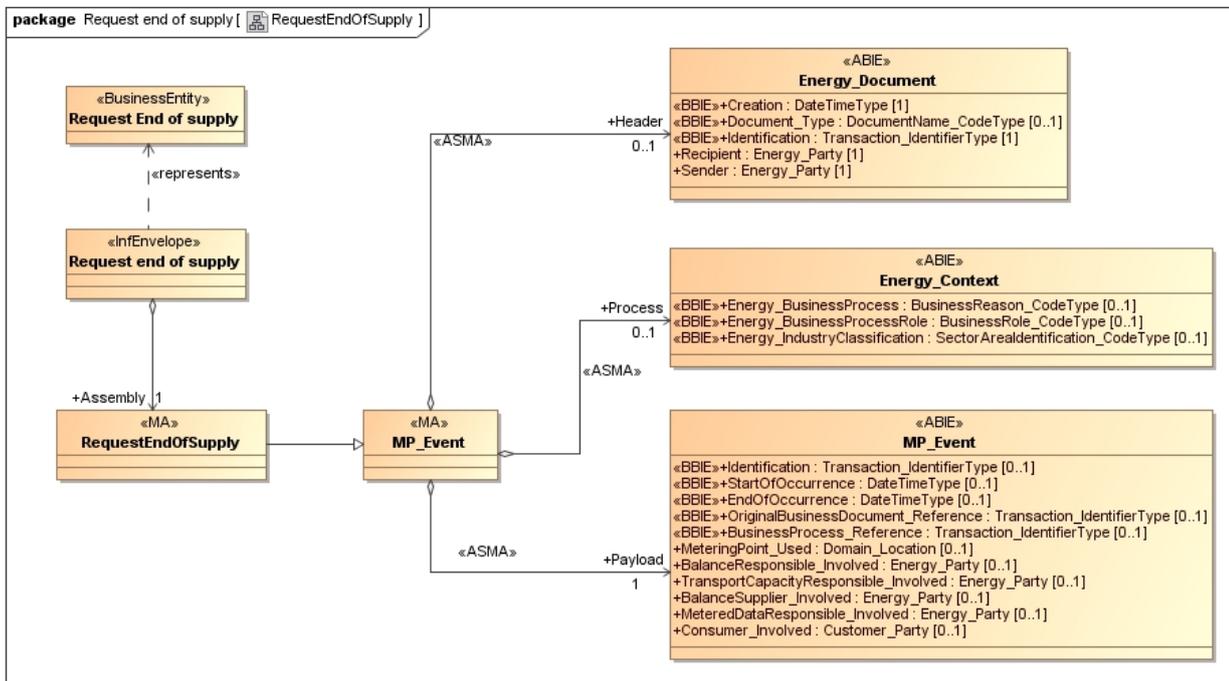
Figure 12 Class diagram: Request End of Supply

3.1.1. OCL constraints for Request End of Supply <<MA>>

#	Specification	Constrained Element	Applied Stereotype
1	-- Structure Document -- Request end of supply self.Header->size()=1 inv: self.Process->size()=1	RequestEndOfSupply	«» abie [Constraint] «» document [Constraint] «» invariant [Constraint]
2	-- Structure Energy_Document -- Request end of supply self.Header.Identification->size()=1 inv: self.Header.Creation->size()=1 inv: self.Header.Document_Type->size()=1 inv: self.Header.Sender.Identification->size()=1 inv: self.Header.Sender.Role->size()=0 inv: self.Header.Sender.Name->size()=0 inv: self.Header.Recipient.Identification->size()=1 inv: self.Header.Recipient.Role->size()=0 inv: self.Header.Recipient.Name->size()=0	RequestEndOfSupply	«» abie [Constraint] «» document [Constraint] «» invariant [Constraint]
3	-- BDT Energy_Document -- Request end of supply self.Header.Document_Type.content=DocumentNameCode::432 inv: self.Header.Document_Type.listIdentifier->size()=0 inv: self.Header.Document_Type.listAgencyIdentifier->size()=0 inv: self.Header.Creation.timeZoneCode->size()=0	RequestEndOfSupply	«» bdt [Constraint] «» document [Constraint] «» invariant [Constraint]

#	Specification	Constrained Element	Applied Stereotype
	inv: self.Header.Sender.Identification.schemeIdentifier->size()=0 inv: self.Header.Sender.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::9 or self.Header.Sender.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::305 inv: self.Header.Sender.Role.content=BusinessRoleCode::DDQ inv: self.Header.Sender.Role.listIdentifier->size()=0 inv: self.Header.Sender.Role.listAgencyIdentifier->size()=0 inv: self.Header.Sender.Name.languageCode->size()=0 inv: self.Header.Sender.Name.languageCode->size()=0 inv: self.Header.Recipient.Identification.schemeIdentifier->size()=0 inv: self.Header.Recipient.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::9 or self.Header.Recipient.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::305 inv: self.Header.Recipient.Role.content=BusinessRoleCode::MDR inv: self.Header.Recipient.Role.listIdentifier->size()=0 inv: self.Header.Recipient.Role.listAgencyIdentifier->size()=0 inv: self.Header.Recipient.Name.languageCode->size()=0 inv: self.Header.Recipient.Name.languageCode->size()=0		
4	-- Structure Energy_Context -- Request end of supply self.Process.Energy_BusinessProcess->size()=1 inv: self.Process.Energy_BusinessProcessRole->size()=1 inv: self.Process.Energy_IndustryClassification->size()=1	RequestEndOfSupply	«» abie [Constraint] «» invariant [Constraint] «» document [Constraint]
5	-- BDT Energy_Context -- Request end of supply		«» bdt [Constraint] «» invariant

#	Specification	Constrained Element	Applied Stereotype
	self.Process.Energy_BusinessProcess.content=BusinessReasonCode::E20 inv: self.Process.Energy_BusinessProcess.listIdentifier->size()=0 inv: self.Process.Energy_BusinessProcess.listAgencyIdentifier=CodeListResponsibleAgencyCode::260 inv: self.Process.Energy_BusinessProcessRole.content=BusinessRoleCode::DDQ inv: self.Process.Energy_BusinessProcessRole.listIdentifier->size()=0 inv: self.Process.Energy_BusinessProcessRole.listAgencyIdentifier->size()=0 inv: self.Process.Energy_IndustryClassification.content=SectorAreaIdentificationCode::23 or self.Process.Energy_IndustryClassification.content=SectorAreaIdentificationCode::27 inv: self.Process.Energy_IndustryClassification.listAgencyIdentifier->size()=0	RequestEndOfSupply	[Constraint] «» document [Constraint]
6	-- Structure Payload -- Request end of supply self.Header->size()=0 inv: self.Process->size()=0	RequestEndOfSupply	«» invariant [Constraint] «» payload [Constraint] «» abie [Constraint]
7	--Structure MP_Event --Request end of supply self.Payload.StartOfOccurrence->size()=0 inv: self.Payload.EndOfOccurrence->size()=1 inv: self.Payload.MeteringPoint_Used->size()=1 inv: self.Payload.BalanceSupplier_Involved->size()=1 inv: self.Payload.BalanceSupplier_Involved.Role->size()=0 inv: self.Payload.BalanceSupplier_Involved.Name->size()=0 inv: self.Payload.TransportCapacityResponsible_Involved.Role->size()=0 inv: self.Payload.TransportCapacityResponsible_Involved.Name->size()=0	RequestEndOfSupply	«» invariant [Constraint] «» abie [Constraint] «» document [Constraint] «» payload [Constraint]

#	Specification	Constrained Element	Applied Stereotype
	inv: self.Payload.BalanceResponsible_Involved.Name->size()=0 inv: self.Payload.BalanceResponsible_Involved.Role->size()=0 inv: self.Payload.MeteredDataResponsible_Involved->size()=0 inv: self.Payload.BusinessProcess_Reference->size()=0 inv: self.Payload.OriginalBusinessDocument_Reference->size()=0 inv: self.Payload.Consumer_Involved->size()=0		
8	-- BDT MP_Event -- Request end of supply self.Payload.StartOfOccurrence.timeZoneCode->size()=0 inv: self.Payload.EndOfOccurrence.timeZoneCode->size()=0 inv: self.Payload.OriginalBusinessDocument_Reference->size()=0 inv: self.Payload.MeteringPoint_Used.Identification.schemeIdentifier->size()=0 inv: self.Payload.MeteringPoint_Used.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::9 inv: self.Payload.BalanceResponsible_Involved.Identification->size()=1 inv: self.Payload.BalanceResponsible_Involved.Identification.schemeIdentifier->size()=0 inv: self.Payload.BalanceResponsible_Involved.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::9 or Payload.BalanceResponsible_Involved.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::305 inv: self.Payload.BalanceSupplier_Involved.Identification->size()=1 inv: self.Payload.BalanceSupplier_Involved.Identification.schemeIdentifier->size()=0 inv: self.Payload.BalanceSupplier_Involved.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::9 or Payload.BalanceSupplier_Involved.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::305	RequestEndOfSupply	«» invariant [Constraint] «» bdt [Constraint] «» document [Constraint] «» payload [Constraint]

#	Specification	Constrained Element	Applied Stereotype
	inv: self.Payload.TransportCapacityResponsible_Involved.Identification->size()=1 inv: self.Payload.TransportCapacityResponsible_Involved.Identification.schemeIdentifier->size()=0 inv: self.Payload.TransportCapacityResponsible_Involved.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::9 or Payload.TransportCapacityResponsible_Involved.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::305		

3.1.2. Mapping BRS-BIM for Request End of Supply

	+Identification : ebix:org::B...	+Energy_BusinessProcess : ...	+Energy_BusinessProcessRol...	+Document_Type : ebix:org:...	+Identification : ebix:org::B...	+BalanceResponsible_Involv...	+BalanceSupplier_Involved : ...	+EndOfOccurrence : ebix:or...	+Identification : ebix:org::B...	+MeteringPoint_Used : ebix:...	+TransportCapacityResponsi...
⊟ 📁 Metering Point	1									1	
⊟ 🟦 Metering Point	1									1	
○ +Identification [1]	↗									↗	
⊟ 📁 Request End of supply		1	1	1	4	1	1	1	1		1
⊟ 🟦 Request End of supply - Additions										1	
○ +Transaction ID [0..1]										↗	
⊟ 🟦 Header and Context Information		1	1	1	1						
○ +Ancillary Business Process Role [1]			↗		↗						
○ +Business Reason : ebix:org::BDT::BusinessReason_CodeType [1]		↗									
○ +Document Type : ebix:org::BDT::DocumentName_CodeType [1]				↗							
⊟ 🟦 Request End of supply					3	1	1	1			1
○ +Balance Responsible Party ID [0..1]					↗	↗					
○ +Balance Supplier ID [1]					↗		↗				
○ +End date [1]								↗			
○ +Transport Capacity Responsible Party ID [0..1]					↗						↗

Figure 13 Mapping BRS-BIM for Request End of Supply

3.2. Response End of Supply (Business Information)
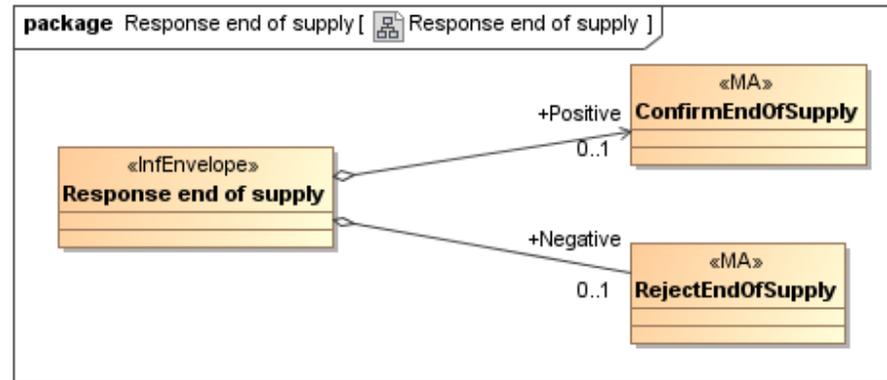
Figure 14 Class diagram: Response end of supply

3.2.1. OCL constraints for Response End of Supply <<InfEnvelope>>

#	Specification	Constrained Element	Applied Stereotype
1	-- Dependency Response end of supply self.Positive->size()=1 implies self.Negative->size()=0 inv: self.Negative->size()=1 implies self.Positive->size()=0	▤ Response end of supply	«» invariant [Constraint] «» dependency [Constraint]

3.2.2. Confirm End of Supply (Business Information)
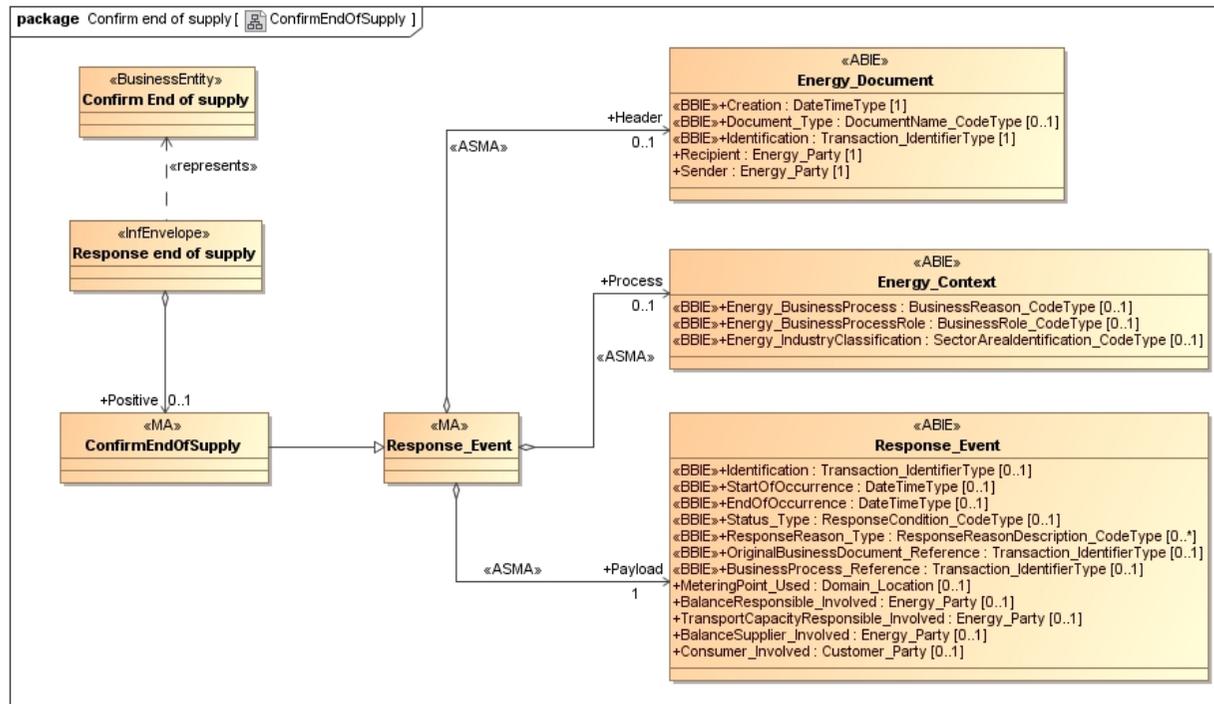

Figure 15 Class diagram: Confirm end of supply

3.2.3. OCL constraints for Confirm End of Supply <<MA>>

#	Specification	Constrained Element	Applied Stereotype
1	-- Structure Document -- Confirm end of supply self.Header->size()=1 inv: self.Process->size()=1	� ConfirmEndOfSupply	«» abie [Constraint] «» document [Constraint] «» invariant [Constraint]
2	-- Structure Energy_Document -- Confirm end of supply self.Header.Document_Type->size()=1 inv: self.Header.Sender.Identification->size()=1 inv: self.Header.Sender.Role->size()=0 inv: self.Header.Sender.Name->size()=0 inv: self.Header.Recipient.Identification->size()=1 inv: self.Header.Recipient.Role->size()=0 inv: self.Header.Recipient.Name->size()=0	� ConfirmEndOfSupply	«» abie [Constraint] «» document [Constraint] «» invariant [Constraint]
3	-- BDT Energy_Document -- Confirm end of supply self.Header.Document_Type.content=DocumentNameCode::406 inv: self.Header.Document_Type.listIdentifier->size()=0 inv: self.Header.Document_Type.listAgencyIdentifier->size()=0 inv: self.Header.Creation.timeZoneCode->size()=0 inv: self.Header.Sender.Identification.schemeIdentifier->size()=0 inv: self.Header.Sender.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::9 or self.Header.Sender.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::305	� ConfirmEndOfSupply	«» bdt [Constraint] «» document [Constraint] «» invariant [Constraint]

#	Specification	Constrained Element	Applied Stereotype
	inv: self.Header.Sender.Role.content=BusinessRoleCode::MDR inv: self.Header.Sender.Role.listIdentifier->size()=0 inv: self.Header.Sender.Role.listAgencyIdentifier->size()=0 inv: self.Header.Sender.Name.languageCode->size()=0 inv: self.Header.Sender.Name.languageCode->size()=0 inv: self.Header.Recipient.Identification.schemeIdentifier->size()=0 inv: self.Header.Recipient.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::9 or self.Header.Recipient.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::305 inv: self.Header.Recipient.Role.content=BusinessRoleCode::DDQ inv: self.Header.Recipient.Role.listIdentifier->size()=0 inv: self.Header.Recipient.Role.listAgencyIdentifier->size()=0 inv: self.Header.Recipient.Name.languageCode->size()=0 inv: self.Header.Recipient.Name.languageCode->size()=0		
4	-- Structure Energy_Context -- Confirm end of supply self.Process.Energy_BusinessProcess->size()=1 inv: self.Process.Energy_BusinessProcessRole->size()=1 inv: self.Process.Energy_IndustryClassification->size()=1	ConfirmEndOfSupply	«» abie [Constraint] «» invariant [Constraint] «» document [Constraint]
5	-- BDT Energy_Context -- Confirm end of supply self.Process.Energy_BusinessProcess.content=BusinessReasonCode::E20 inv: self.Process.Energy_BusinessProcess.listIdentifier->size()=0	ConfirmEndOfSupply	«» bdt [Constraint] «» invariant [Constraint] «» document

#	Specification	Constrained Element	Applied Stereotype
	inv: self.Process.Energy_BusinessProcess.listAgencyIdentifier=CodeListResponsibleAgencyCode::260		[Constraint]
	inv: self.Process.Energy_BusinessProcessRole.content=BusinessRoleCode::DDQ inv: self.Process.Energy_BusinessProcessRole.listIdentifier->size()=0 inv: self.Process.Energy_BusinessProcessRole.listAgencyIdentifier->size()=0		
	inv: self.Process.Energy_IndustryClassification.content=SectorAreaIdentificationCode::23 or self.Process.Energy_IndustryClassification.content=SectorAreaIdentificationCode::27 inv: self.Process.Energy_IndustryClassification.listAgencyIdentifier->size()=0		
6	-- Structure Payload -- Confirm end of supply self.Header->size()=0 inv: self.Process->size()=0	ConfirmEndOfSupply	«» invariant [Constraint] «» payload [Constraint] «» abie [Constraint]
7	--Structure Response_Event --Confirm end of supply self.Payload.StartOfOccurrence->size()=0 inv: self.Payload.EndOfOccurrence->size()=1 inv: self.Payload.MeteringPoint_Used->size()=1 inv: self.Payload.BalanceSupplier_Involved->size()=1 inv: self.Payload.BalanceSupplier_Involved.Role->size()=0 inv: self.Payload.BalanceSupplier_Involved.Name->size()=0 inv: self.Payload.TransportCapacityResponsible_Involved.Role->size()=0 inv: self.Payload.TransportCapacityResponsible_Involved.Name->size()=0 inv: self.Payload.BalanceResponsible_Involved.Name->size()=0 inv: self.Payload.BalanceResponsible_Involved.Role->size()=0 inv: self.Payload.Status_Type->size()=0	ConfirmEndOfSupply	«» invariant [Constraint] «» abie [Constraint] «» document [Constraint] «» payload [Constraint]

#	Specification	Constrained Element	Applied Stereotype
	inv: self.Payload.ResponseReason_Type->size()=0 inv: self.Payload.Consumer_Involved->size()=0		
8	-- BDT Response_Event -- Confirm end of supply self.Payload.StartOfOccurrence.timeZoneCode->size()=0 inv: self.Payload.EndOfOccurrence.timeZoneCode->size()=0 inv: self.Payload.MeteringPoint_Used.Identification.schemeIdentifier->size()=0 inv: self.Payload.MeteringPoint_Used.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::9 inv: self.Payload.BalanceResponsible_Involved.Identification->size()=1 inv: self.Payload.BalanceResponsible_Involved.Identification.schemeIdentifier->size()=0 inv: self.Payload.BalanceResponsible_Involved.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::9 or Payload.BalanceResponsible_Involved.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::305 inv: self.Payload.BalanceSupplier_Involved.Identification->size()=1 inv: self.Payload.BalanceSupplier_Involved.Identification.schemeIdentifier->size()=0 inv: self.Payload.BalanceSupplier_Involved.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::9 or Payload.BalanceSupplier_Involved.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::305 inv: self.Payload.TransportCapacityResponsible_Involved.Identification->size()=1 inv: self.Payload.TransportCapacityResponsible_Involved.Identification.schemeIdentifier->size()=0 inv: self.Payload.TransportCapacityResponsible_Involved.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::9 or Payload.TransportCapacityResponsible_Involved.Identification.schemeAgencyIdentifier=CodeListResponsibleAgency	ConfirmEndOfSupply	«» invariant [Constraint] «» bdt [Constraint] «» document [Constraint] «» payload [Constraint]

#	Specification	Constrained Element	Applied Stereotype
	Code::305		

3.2.4. Mapping BRS-BIM for Confirm End of Supply

Figure 16 Mapping BRS-BIM for Confirm End of Supply

3.2.5. Reject End of Supply (Business Information)
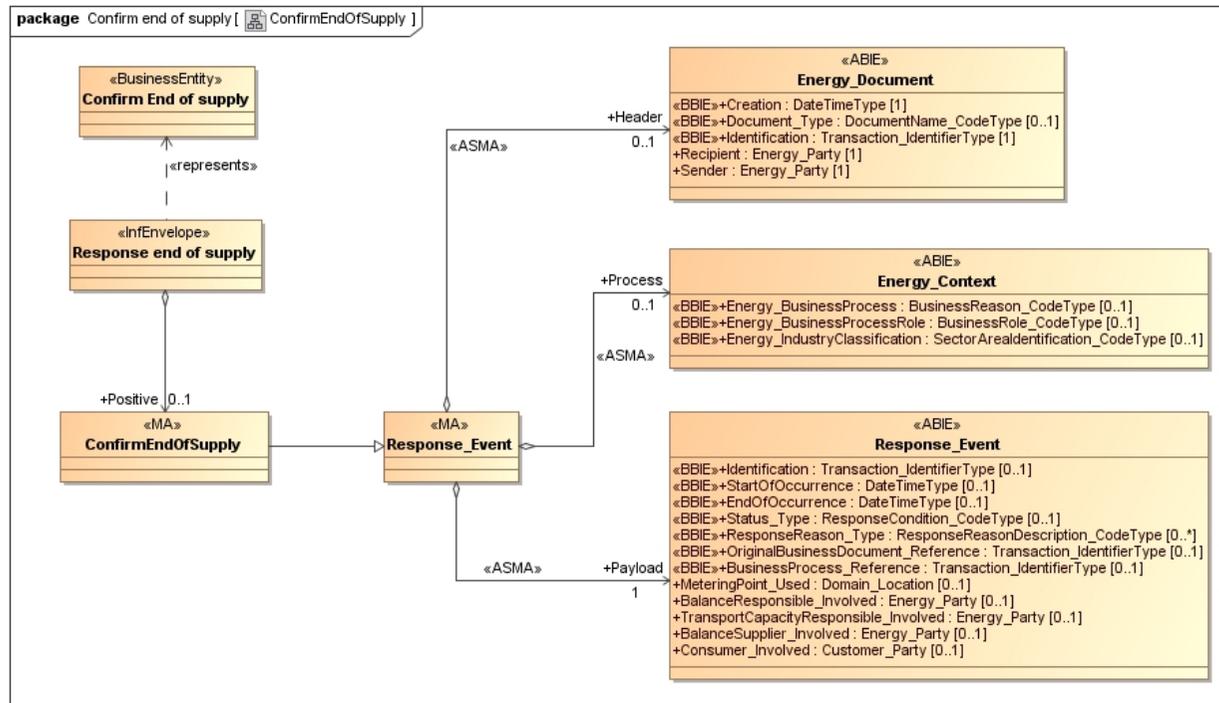

Figure 17 Class diagram: Reject End of Supply

3.2.6.   OCL constraints for Reject End of Supply <<MA>>

#	Specification	Constrained Element	Applied Stereotype
1	-- Structure Document -- Reject end of supply self.Header->size()=1 inv: self.Process->size()=1	▤ RejectEndOfSupply	«» abie [Constraint] «» document [Constraint] «» invariant [Constraint]
2	-- Structure Energy_Document -- Reject end of supply self.Header.Identification->size()=1 inv: self.Header.Creation->size()=1 inv: self.Header.Document_Type->size()=1 inv: self.Header.Sender.Identification->size()=1 inv: self.Header.Sender.Role->size()=0 inv: self.Header.Sender.Name->size()=0 inv: self.Header.Recipient.Identification->size()=1 inv: self.Header.Recipient.Role->size()=0 inv: self.Header.Recipient.Name->size()=0	▤ RejectEndOfSupply	«» abie [Constraint] «» document [Constraint] «» invariant [Constraint]
3	-- BDT Energy_Document -- Reject end of supply self.Header.Document_Type.content=DocumentNameCode::406 inv: self.Header.Document_Type.listIdentifier->size()=0 inv: self.Header.Document_Type.listAgencyIdentifier->size()=0 inv: self.Header.Creation.timeZoneCode->size()=0	▤ RejectEndOfSupply	«» bdt [Constraint] «» document [Constraint] «» invariant [Constraint]

#	Specification	Constrained Element	Applied Stereotype
	inv: self.Header.Sender.Identification.schemeIdentifier->size()=0 inv: self.Header.Sender.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::9 or self.Header.Sender.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::305 inv: self.Header.Sender.Role.content=BusinessRoleCode::MDR inv: self.Header.Sender.Role.listIdentifier->size()=0 inv: self.Header.Sender.Role.listAgencyIdentifier->size()=0 inv: self.Header.Sender.Name.languageCode->size()=0 inv: self.Header.Sender.Name.languageCode->size()=0 inv: self.Header.Recipient.Identification.schemeIdentifier->size()=0 inv: self.Header.Recipient.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::9 or self.Header.Recipient.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::305 inv: self.Header.Recipient.Role.content=BusinessRoleCode::DDQ inv: self.Header.Recipient.Role.listIdentifier->size()=0 inv: self.Header.Recipient.Role.listAgencyIdentifier->size()=0 inv: self.Header.Recipient.Name.languageCode->size()=0 inv: self.Header.Recipient.Name.languageCode->size()=0		
4	-- Structure Energy_Context -- Reject end of supply self.Process.Energy_BusinessProcess->size()=1 inv: self.Process.Energy_BusinessProcessRole->size()=1 inv: self.Process.Energy_IndustryClassification->size()=1	▦ RejectEndOfSupply	«» abie [Constraint] «» invariant [Constraint] «» document [Constraint]
5	-- BDT Energy_Context -- Reject end of supply	▦ RejectEndOfSupply	«» bdt [Constraint] «» invariant [Constraint]

#	Specification	Constrained Element	Applied Stereotype
	self.Process.Energy_BusinessProcess.content=BusinessReasonCode::E20 inv: self.Process.Energy_BusinessProcess.listIdentifier->size()=0 inv: self.Process.Energy_BusinessProcess.listAgencyIdentifier=CodeListResponsibleAgencyCode::260 inv: self.Process.Energy_BusinessProcessRole.content=BusinessRoleCode::DDQ inv: self.Process.Energy_BusinessProcessRole.listIdentifier->size()=0 inv: self.Process.Energy_BusinessProcessRole.listAgencyIdentifier->size()=0 inv: self.Process.Energy_IndustryClassification.content=SectorAreaIdentificationCode::23 or self.Process.Energy_IndustryClassification.content=SectorAreaIdentificationCode::27 inv: self.Process.Energy_IndustryClassification.listAgencyIdentifier->size()=0		«» document [Constraint]
6	-- Structure Payload -- Reject end of supply self.Header->size()=0 inv: self.Process->size()=0	▤ RejectEndOfSupply	«» invariant [Constraint] «» payload [Constraint] «» abie [Constraint]
7	--Structure Response_Event --Reject end of Supply self.Payload.StartOfOccurrence->size()=0 inv: self.Payload.EndOfOccurrence->size()=1 inv: self.Payload.Status_Type->size()=0 inv: self.Payload.MeteringPoint_Used->size()=1 inv: self.Payload.ResponseReason_Type->size()=1 inv: self.Payload.BusinessProcess_Reference->size()=0 inv: self.Payload.BalanceResponsible_Involved->size()=0 inv: self.Payload.TransportCapacityResponsible_Involved->size()=0 inv: self.Payload.BalanceSupplier_Involved->size()=0 inv: self.Payload.Consumer_Involved->size()=0	▤ RejectEndOfSupply	«» invariant [Constraint] «» abie [Constraint] «» document [Constraint] «» payload [Constraint]

#	Specification	Constrained Element	Applied Stereotype
8	-- BDT Response_Event -- Reject end of supply self.Payload.MeteringPoint_Used.Identification.schemeIdentifier->size()=0 inv: self.Payload.MeteringPoint_Used.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::9 inv: self.Payload.ResponseReason_Type.content=ResponseReasonDescriptionCode::E10 or Payload.ResponseReason_Type.content=ResponseReasonDescriptionCode::E16 or Payload.ResponseReason_Type.content=ResponseReasonDescriptionCode::E17 or Payload.ResponseReason_Type.content=ResponseReasonDescriptionCode::E18 or Payload.ResponseReason_Type.content=ResponseReasonDescriptionCode::E22 or Payload.ResponseReason_Type.content=ResponseReasonDescriptionCode::E54 inv: self.Payload.ResponseReason_Type.listIdentifier->size()=0 inv: self.Payload.ResponseReason_Type.listAgencyIdentifier=CodeListResponsibleAgencyCode::260	RejectEndOfSupply	«» invariant [Constraint] «» bdt [Constraint] «» document [Constraint] «» payload [Constraint]

3.2.7. Mapping BRS-BIM for Reject End of Supply

Figure 18 Mapping BRS-BIM for Reject End of Supply

3.3.   Notify End of Supply (Business Information)
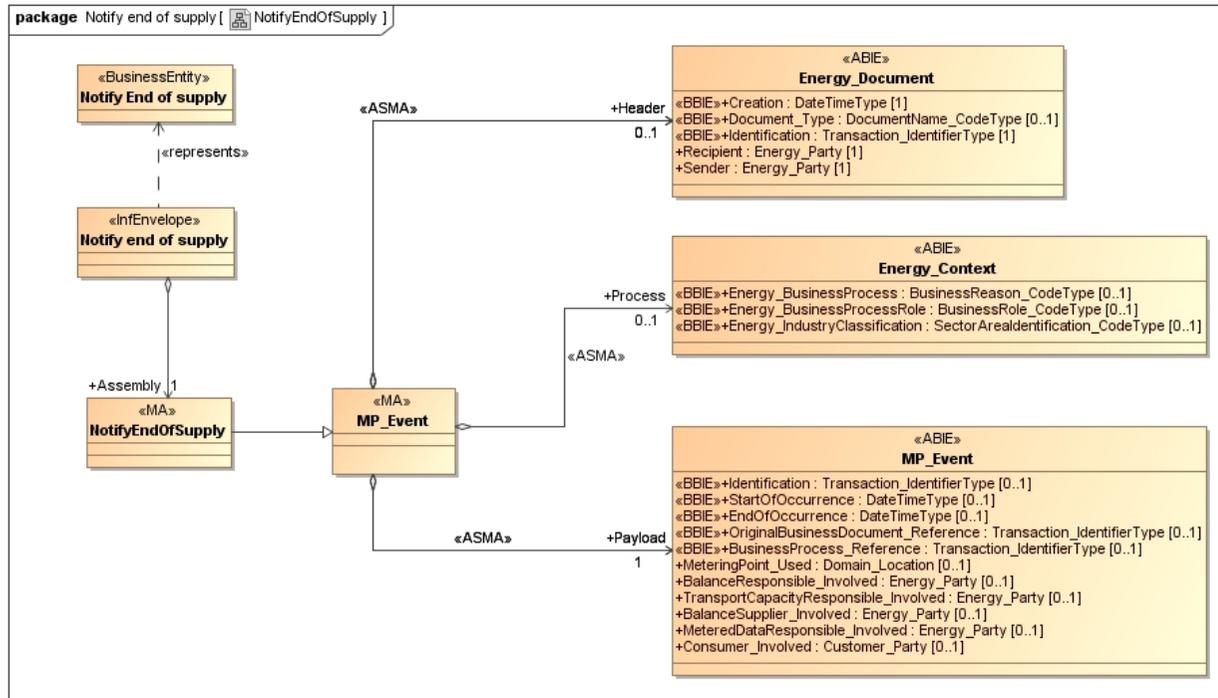
Figure 19 Class diagram: Notify End of Supply

3.3.1. OCL constraints for Notify End of Supply <<MA>>

#	Specification	Constrained Element	Applied Stereotype
1	-- Structure Document -- Notify end of supply self.Header->size()=1 inv: self.Process->size()=1	NotifyEndOfSupply	« » abie [Constraint] « » document [Constraint] « » invariant [Constraint]
2	-- Structure Energy_Document -- Notify end of supply self.Header.Identification->size()=1 inv: self.Header.Creation->size()=1 inv: self.Header.Document_Type->size()=1 inv: self.Header.Sender.Identification->size()=1 inv: self.Header.Sender.Role->size()=0 inv: self.Header.Sender.Name->size()=0 inv: self.Header.Recipient.Identification->size()=1 inv: self.Header.Recipient.Role->size()=0 inv: self.Header.Recipient.Name->size()=0	NotifyEndOfSupply	« » abie [Constraint] « » document [Constraint] « » invariant [Constraint]
3	-- BDT Energy_Document -- Notify end of supply self.Header.Document_Type.content=DocumentNameCode::406 inv: self.Header.Document_Type.listIdentifier->size()=0 inv: self.Header.Document_Type.listAgencyIdentifier->size()=0 inv: self.Header.Creation.timeZoneCode->size()=0 inv: self.Header.Sender.Identification.schemeIdentifier->size()=0	NotifyEndOfSupply	« » bdt [Constraint] « » document [Constraint] « » invariant [Constraint]

#	Specification	Constrained Element	Applied Stereotype
	inv: self.Header.Sender.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::9 or self.Header.Sender.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::305 inv: self.Header.Sender.Role.content=BusinessRoleCode::MDR inv: self.Header.Sender.Role.listIdentifier->size()=0 inv: self.Header.Sender.Role.listAgencyIdentifier->size()=0 inv: self.Header.Sender.Name.languageCode->size()=0 inv: self.Header.Sender.Name.languageCode->size()=0 inv: self.Header.Recipient.Identification.schemeIdentifier->size()=0 inv: self.Header.Recipient.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::9 or self.Header.Recipient.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::305 inv: self.Header.Recipient.Role.content=BusinessRoleCode::DDK or self.Header.Recipient.Role.content=BusinessRoleCode::TCR inv: self.Header.Recipient.Role.listIdentifier->size()=0 inv: self.Header.Recipient.Role.listAgencyIdentifier->size()=0 inv: self.Header.Recipient.Name.languageCode->size()=0 inv: self.Header.Recipient.Name.languageCode->size()=0		
4	-- Structure Energy_Context -- Notify end of supply self.Process.Energy_BusinessProcess->size()=1 inv: self.Process.Energy_BusinessProcessRole->size()=1 inv: self.Process.Energy_IndustryClassification->size()=1	NotifyEndOfSupply	«» abie [Constraint] «» invariant [Constraint] «» document [Constraint]
5	-- BDT Energy_Context -- Notify end of supply		«» bdt [Constraint] «» invariant

#	Specification	Constrained Element	Applied Stereotype
	self.Process.Energy_BusinessProcess.content=BusinessReasonCode::E20 inv: self.Process.Energy_BusinessProcess.listIdentifier->size()=0 inv: self.Process.Energy_BusinessProcess.listAgencyIdentifier->size()=0 inv: self.Process.Energy_BusinessProcessRole.content=BusinessRoleCode::DDK or self.Process.Energy_BusinessProcessRole.content=BusinessRoleCode::TCR inv: self.Process.Energy_BusinessProcessRole.listIdentifier->size()=0 inv: self.Process.Energy_BusinessProcessRole.listAgencyIdentifier->size()=0 inv: self.Process.Energy_IndustryClassification.content=SectorAreaIdentificationCode::23 or self.Process.Energy_IndustryClassification.content=SectorAreaIdentificationCode::27 inv: self.Process.Energy_IndustryClassification.listAgencyIdentifier->size()=0	NotifyEndOfSupply	[Constraint] «» document [Constraint]
6	-- Structure Payload -- Notify end of supply self.Header->size()=0 inv: self.Process->size()=0	NotifyEndOfSupply	«» invariant [Constraint] «» payload [Constraint] «» abie [Constraint]
7	--Structure MP_Event -- Notify end of supply self.Payload.StartOfOccurrence->size()=0 inv: self.Payload.EndOfOccurrence->size()=1 inv: self.Payload.MeteringPoint_Used->size()=1 --inv: self.Payload.BalanceSupplier_Involved->size()=1 inv: self.Payload.BalanceSupplier_Involved.Role->size()=0 inv: self.Payload.BalanceSupplier_Involved.Name->size()=0 --inv: self.Payload.TransportCapacityResponsible_Involved->notEmpty() implies self.Payload.BalanceResponsible_Involved->size()=0	NotifyEndOfSupply	«» invariant [Constraint] «» abie [Constraint] «» document [Constraint] «» payload [Constraint]

#	Specification	Constrained Element	Applied Stereotype
	--inv: self.Payload.BalanceResponsible_Involved->notEmpty() implies self.Payload.TransportCapacityResponsible_Involved->size()=0 inv: self.Payload.TransportCapacityResponsible_Involved.Role->size()=0 inv: self.Payload.TransportCapacityResponsible_Involved.Name->size()=0 inv: self.Payload.BalanceResponsible_Involved.Name->size()=0 inv: self.Payload.BalanceResponsible_Involved.Role->size()=0 inv: self.Payload.MeteredDataResponsible_Involved->size()=0 inv: self.Payload.OriginalBusinessDocument_Reference->size()=0 inv: self.Payload.Consumer_Involved->size()=0		
8	-- BDT MP_Event -- Notify end of supply self.Payload.StartOfOccurrence.timeZoneCode->size()=0 inv: self.Payload.EndOfOccurrence.timeZoneCode->size()=0 inv: self.Payload.OriginalBusinessDocument_Reference->size()=0 inv: self.Payload.MeteringPoint_Used.Identification.schemeIdentifier->size()=0 inv: self.Payload.MeteringPoint_Used.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::9 inv: self.Payload.BalanceResponsible_Involved.Identification->size()=1 inv: self.Payload.BalanceResponsible_Involved.Identification.schemeIdentifier->size()=0 inv: self.Payload.BalanceResponsible_Involved.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::9 or Payload.BalanceResponsible_Involved.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::305 inv: self.Payload.BalanceSupplier_Involved.Identification->size()=1 inv: self.Payload.BalanceSupplier_Involved.Identification.schemeIdentifier->size()=0 inv: self.Payload.BalanceSupplier_Involved.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::9 or Payload.BalanceSupplier_Involved.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::305 inv: self.Payload.TransportCapacityResponsible_Involved.Identification->size()=1 inv: self.Payload.TransportCapacityResponsible_Involved.Identification.schemeIdentifier->size()=0 inv:	NotifyEndOfSupply	«» invariant [Constraint] «» bdt [Constraint] «» document [Constraint] «» payload [Constraint]

#	Specification	Constrained Element	Applied Stereotype
	self.Payload.TransportCapacityResponsible_Involved.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::9 or Payload.TransportCapacityResponsible_Involved.Identification.schemeAgencyIdentifier=CodeListResponsibleAgencyCode::305		

3.3.2. Mapping BRS-BIM for Notify End of Supply

	+Identification : ebix:org::BDT::Domai...	+Energy_BusinessProcess : ebix:org::...	+Energy_BusinessProcessRole : ebix:...	+Document_Type : ebix:org::BDT::Do...	+Identification : ebix:org::BDT::Party...	+BalanceResponsible_Involved : ebix:...	+BalanceSupplier_Involved : ebix:org:...	+EndOfOccurrence : ebix:org::BDT::D...	+Identification : ebix:org::BDT::Trans...	+MeteringPoint_Used : ebix:org::ABIE...	+TransportCapacityResponsible_Invol...
⊟ 📁 Metering Point	1									1	
⊟ 🟦 Metering Point	1									1	
⭘ +Identification [1]	↗									↗	
⊟ 📁 Notify End of supply		2	1	1	4	1	1	1	1		1
⊟ 🟦 Notify End of supply					3	1	1	1			1
⭘ +Balance Responsible Party ID [0..1]					↗	↗					
⭘ +Balance Supplier ID [1]					↗		↗				
⭘ +End date [1]								↗			
⭘ +Transport Capacity Responsible Party ID [0..1]					↗						↗
⊟ 🟦 Notify End of supply Additions	1									1	
⭘ +Business process ID [0..1]	↗										
⭘ +Transaction ID [0..1]									↗		
⊟ 🟦 Header and Context Information	1	1	1	1							
⭘ +Ancillary Business Process Role [1]		↗	↗								
⭘ +Business Reason : ebix:org::BDT::BusinessR...	↗										
⭘ +Document Type : ebix:org::BDT::DocumentN...				↗							

Figure 20 Mapping BRS-BIM for Notify End of Supply