R04007-Attachment 2

Electronic Scheduling Collaborative
Business Plan and Modeling Committee

OASIS II
Use Case Specification

Version 0.2.0

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Revision History

DATE	REVISION	DESCRIPTION	AUTHOR
Initial Draft	0		Dean Chapman
01-18-2003	0.1	Converted Document to standard Use Case Development Specification template format	Paul R. Sorenson
05-12-2003	0.1.1	Revise Introduction; update Actor Survey	Paul R. Sorenson
05-22-2003	0.1.2	Miscellaneous edits	Paul R. Sorenson
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10-01-2003	0.2.0	Inclusion of all Use Case Development Specifications into master document	Paul R. Sorenson

1 Introduction

1.1 *Purpose*

This Use Case Specification defines the various actors, actions and processes required to implement OASIS Phase II for the wholesale electric industry including provisions for both a physical and financial rights market. The Electronic Scheduling Collaborative (ESC) has developed these Use Cases to guide the standardization of wholesale electricity markets and their associated business practices.

These Use Cases, along with the OASIS Phase II System Requirements, are envisioned to be used by the Industry as a foundation for specifying the data communications protocols and standards to be adhered to in developing the specific information systems required by OASIS Phase II (OASIS II). Unlike the situation with OASIS Phase I where the term OASIS has been synonymous both with a standardized programmatic interface (i.e., templates) and the computer system implementing that standard interface, this document makes no assumption that OASIS II will be one or multiple computer systems or databases. In the context of this document, the term OASIS is meant only to refer to a single, common, standardized Market Participant interface for the exchange of information with the market.

1.2 *Scope*

The Use Cases defined in this specification are principally focused on those activities related to the interactions between Market Participants and Market Operators. Additional use cases have been included beyond participant-operator interaction when such use cases provide additional clarity on the activities or processes required to implement OASIS II.

1.3 *Introduction to Use Cases*

Use cases provide a foundation and design tool for modeling the functional, and electronic data communication requirements for OASIS II. It is assumed that OASIS II will be the principle interface between Market Participants and the ISOs/RTOs. It will therefore be required to supply all of the functionality necessary to support that interface, including Electronic Scheduling. This set of Use Cases was assembled according to those requirements. However, this Specification does not necessarily represent the detail or scope needed to fully specify OASIS II.

In its simplest form, a use case is a function performed as a part of a larger overall process. For example, "Submit DAM Bid" is a function performed in the Day Ahead Market. One or more "Actors" interact with this function. For example, Load-Serving Entities and Purchasing/Selling Entities are the Actors that submit bids in the Day-Ahead Market.

This Specification captures interactions between entities involved in the purchase and sale of wholesale electric energy, ancillary services, and the explicit or implied acquisition of associated transmission services. The Use Cases are designed to capture market interactions using both a physical and financial transmission rights model. Formation of the Use Cases related to financial transmission rights markets was largely influenced by the FERC's Standard Market Design Notice of Proposed Rulemaking, and by markets currently implemented by existing RTOs/ISOs. Not all functions represented in the Use Cases will necessarily apply to every market model, market implementation, or mode of operation.

The following subsections provide guidance on the organizational structure of this Use Case Specification and insight into the concepts applied in its development.

1.3.1 Organization of the Specification

The Use Case Specification is divided into the following major sections:
1. Introduction
2. Actor Survey
3. Use Case Model Survey
4. Use Case Catalog

Introduction – Provides background information and reference materials used in the development of this Specification.

Actor Survey – The Actor Survey identifies all of the Actors that participate in the Use Cases presented. It gives a brief description of the Actor's role in the process.

Use Case Model Survey – The Use Case Model Survey contains a brief description of each Use Case or function grouped by Use Case Category. For example, in the category known as "Day-Ahead Market", a description of the Use Case "Submit DAM Bid" is found.

Included in the Use Case Model Survey section, *Use Case Diagrams* are presented using the notation of the Universal Modeling Language (UML). Its purpose is to illustrate the interaction between the various actors and those functions that are represented by the Use Cases. Actors are denoted by *stick figures* and Use Cases are represented by *ellipses*. The connecting lines indicate that the Actor "uses" the Use Case. In the diagram, all of the Use Cases are contained within a box with the title of that category (i.e. "Day-Ahead Market"). In each diagram, a second box located within the larger box represents OASIS and contains those functions envisioned to be a part of OASIS II. Those Use Cases that are in the main box but outside the OASIS boundary are assumed to represent functions that will not be performed by OASIS.

Use Case Catalog – The Use Case Catalog contains a section for each of the Use Case Categories listed in the Use Case Model Survey section. Each Use Case within each of these Use Case Categories is documented in the following subsections:
1. Summary
2. Actor/Role
3. Participating Functions
4. Triggers

5. Pre-Conditions
6. Flow of Events
7. Alternative Flows
8. Post Conditions
9. Related Use Cases
10. Assumptions
11. Data Exchange
12. Comments
13. Revision History

Most of these terms are self-explanatory. For example, the *Flow of Events* is a detailed, step-by-step description of the normal flow of events during the execution of the function represented by the Use Case. *Alternative Flows* documents abnormal outcomes of one or more of the steps and the resulting alternate steps that are conditionally executed. *Data Exchange* will typically point to one or more Data Profiles contained in the Data Profile section of the Specification. Since many of the Use Cases employ the same sets of data, the use of a common Data Profile section prevents needless repetition.

1.3.2 Categorization of Use Cases

The Use Cases presented are grouped into one of six major "categories" of functions:
1. Registration
2. Operations
3. Transmission Rights Market
4. Energy Markets
5. Bilateral and Self Schedules
6. Coordination

These categories correspond to "packages" in the Universal Modeling Language (UML). Each Use Case Category was created with the purpose of grouping those Use Cases that most logically fit together. However, the grouping chosen may raise some questions. For example, the Day-Ahead Energy Market Process does not include the "Security-Constrained Unit Commitment" Function, normally a part of the Financial Transmission Market Model. Instead, this function is grouped, along with the "Real-Time Generation Dispatch" function, under the Operations Category. Although somewhat arbitrary, the choice was made to group these functions along with the functions associated with Load Forecast and Outage Scheduling in the Operations Category.

Similarly, the scheduling of Bilateral and Self Scheduled Transactions, a part of both the Day Ahead and Real-time Markets, was inserted in its own Category in order to provide a better representation of both the Physical and the Financial Transmission Rights Models.

The Transmission Rights Market Category is intended to serve both the Reservation-based Physical Transmission Models (e.g., OASIS Phase IA) as well as the Financial Transmission Rights (FTR Auction) Models.

1.4 *Assumptions and Dependencies*

These use cases are based on existing and proposed market designs such as the information embodied in the Notice of Proposed Rulemaking under FERC Docket RM01-12 as updated on August 12, 2002 (SMD NOPR), and information taken from existing wholesale electricity markets. It is assumed that regional differences in both the timeline for implementation as well as the market rules and market conduct will be present. It is also assumed that SMD-based financial transmission rights markets will develop alongside of the more traditional physical transmission rights markets. The existing FERC Order 888 Pro Forma Tariff and OASIS Phase I system were taken as the basic model for operating a physical transmission rights based market. The SMD NOPR and accompanying Pro Forma Tariff were taken as the basic model for operating a financial transmission rights based market.

Unforeseen changes in market designs may necessitate a review and modification of these Use Cases.

1.5 *References*

- Notice of Proposed Ruling Docket No. RM01-12-000

- Standard Market Design Pro Forma Open Access Transmission Tariff

- Order 888 Docket No. RM95-8-00

- Title 18 Code of Federal Regulations Part 37

- Standards and Communications Protocols for OASIS, Ver. 1.4

2 Actor Survey

The following Actors take part in the OASIS II Use Cases:

Actor	Definition
Public	Any entity that demonstrates a 'need-to-know' information regarding the wholesale electricity market. This would include all Market Participants, asset owners and operators, regulatory bodies, academic institutions, etc.
Market Operator (MO)	Entity that provides the means by which offers and bids are submitted and that is responsible for clearing the market and posting the results
Market Participant (MP)	Any entity entitled to participate in the wholesale electricity market, including GPEs, PSEs, LSEs, and in some cases End Users.
Transmission Customer (TC)	Any Market Participant or Transmission Owner, that has met the obligations necessary to receive or purchase transmission rights from the Transmission Service Provider. Transmission Owners would typically receive transmission rights in association with development of participant funded merchant transmission projects.
Generation Providing Entity (GPE)	Any entity that owns/operates generation capable of providing energy and/or regulation or reserves and is responsible for offering that generation to the market (i.e., Generator Owner, Generator Operator, or their agent). In some cases this may include End Users.

Actor	Definition
Load Serving Entity (LSE)	Secures energy and transmission service (and related generation services) to serve the end user, and in some cases as the End User.
Purchasing-Selling Entity (PSE)	Purchases or sells energy, capacity and all necessary Interconnected Operations Services (Ancillary Services) as required. Purchasing-Selling Entities may be Marketers, Customer Aggregators, and Merchant Affiliates, and in some cases End Users.
Independent Transmission Company (ITC)	Entity independent from all Market Participants that owns/operates transmission assets under the direction of an ITP or RTO.
Independent Transmission Provider (ITP)	Entity independent from all Market Participants that oversees operation of transmission assets and wholesale energy markets
Regional Transmission Operator (RTO)	Entity that is responsible for the overall operation of the transmission system and the Market in a defined geographic area
Market Monitor (MM)	Entity that is responsible for ensuring that the market is operating in a fair and equitable manner according to FERC regulations and the appropriate tariffs
FERC	Regulatory Agency that has jurisdiction over wholesale power transactions within the United States

Actor	Definition
Compliance Monitor (CM)	Reviews and ensures compliance with NERC Reliability Standards and Region-specific criteria, and administers sanctions or penalties for non-compliance to the standards.
Reliability Authority (RA)	Ensures the operational reliability of the interconnected bulk power electric transmission systems within its Reliability Area.
Planning Authority (PA)	Ensures a plan is available for adequate resources and transmission within its Planning Authority Area.
Interchange Authority (IA)	Authorizes valid and balanced Interchange Schedules between Balancing Authorities (or their Scheduling Agents).
Balancing Authority (BA)	Integrates resource plans ahead of time, and maintains load-interchange-generation balance within its metered boundary and supports system frequency in real time.
Transmission Service Provider (TSP)	Administers the transmission tariff. Provides transmission services to qualified market participants under applicable transmission service agreements (for example, the pro forma tariff).
Transmission Operator	Operates the transmission facilities, and executes switching orders.
Transmission Owner	Owns and maintains transmission facilities.

Actor	Definition
Generator Operator	Operates generating unit(s) and performs the functions of supplying energy and Interconnected Operations Services.
Generator Owner	Owns and maintains generating units.
Resource Planning	Plans for the resource adequacy of specific loads (customer demand and energy requirements) within a Planning Authority Area.
Transmission Planning	Plans for the reliability (adequacy) of the interconnected bulk electric transmission systems within its portion of the Planning Authority Area.
Distribution Provider	Provides and operates the "wires" between the transmission system and the customer.

3 Use-Case Model Survey

The following subsections provide a brief overview of the Use Cases developed for each of the major categories of functions required for OASIS II.

3.1 *Registration*

The Registration Use Cases document the activities and processes required of Market Participants and Market Operators to define the base information associated with the market. This type of registration is market specific and should not be confused with NERC registration, which supports industry-wide data for North America. However, market registration procedures may be coordinated and integrated with the NERC registration process were applicable.

Market Participants are required to register their Companies, and identify each of the Company's employees and/or agents that will be users of the Market Systems. Market Participants, including Generation and Transmission Owners, must register and maintain facility names, ratings, and other parameters associated with physical assets within the scope of the Market Operator or Transmission Service Provider. Market Participants must also register information associated with the Generation, Load, and Transmission Resources. These resources are the "commercial" representation of physical assets which may be bid into markets or from/over which services may be procured. The Market Operator performs an oversight and approval function to ensure the appropriateness and accuracy of all information supplied. In all cases, the Market Operator and/or Transmission Service Provider may act on behalf of any Market Participant to register any information necessary for the conduct of their markets.
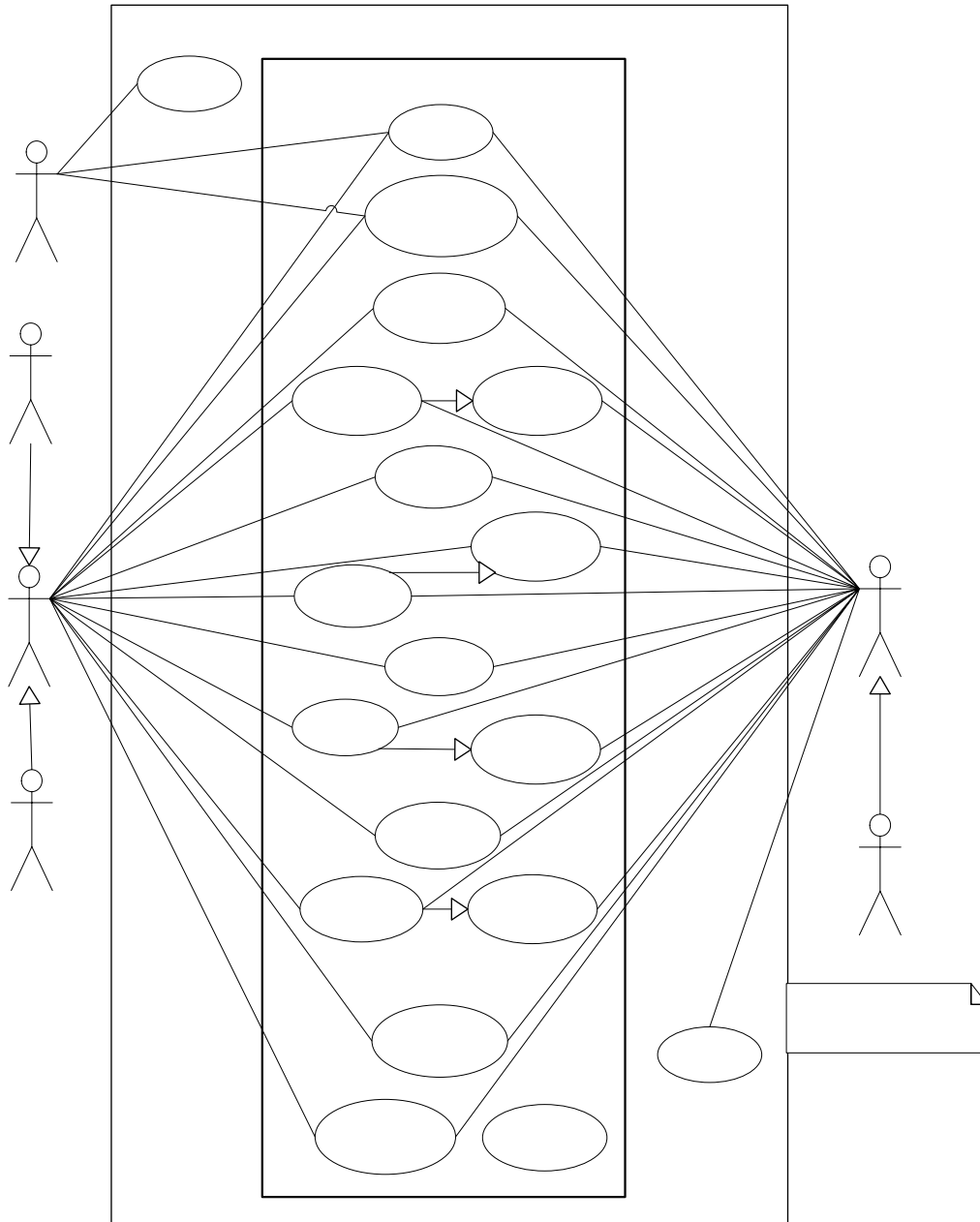
Request
Creder

Use Case 1.1 Request User Credentials

Prior to attempting access to any OASIS service or information, other than that information required to be made available to any individual for any reason, users (or programmatic interfaces) must obtain user authentication credentials in the form of x.509 V3 certificates as specified in the Energy Market Access and Reliability Certificate (e-MARC) policy. Possession of user credentials verifies that the identity and their need for access to OASIS have been certified by an Authorized Certification Authority.

User credentials are presented to the OASIS system as part of the mutual authentication process documented in the Login Use Case. Requesting user credentials does not confer any access rights to any OASIS system or information other than that required to be provided to electric energy industry professionals with a legitimate "need to know", i.e., the Public actor in these Use Cases. User access rights are managed through the Submit or Modify User Registration Use Cases.

This Use Case is out of the scope of OASIS II and is handled through e-MARC compliant processes and procedures established by the Authorized Certification Authority the user chooses to register with.

Use Case 1.2 Login

All users of the OASIS system, including programmatic interfaces, must execute the Login process to gain access to any of the systems implementing the business Use Cases specified for OASIS. Users must electronically present valid credentials which will be used by the OASIS systems to authenticate the identity of the user and establish the access controls which authorize or limit the user's access to information and ability to execute certain functions.

Use Case 1.3 Submit Participant Registration

Market Participants, or Market Operators acting on their behalf, submit registration information such as company name, address, contact information, proof of creditworthiness, etc., as an application to become a recognized participant in the market.

Use Case 1.4 Modify Participant Registration

Market Participants and Market Operators may make selective modification of existing participant registration information (e.g., credit credentials, etc.). MOs may also make changes to a registrant's information (e.g., credit watch,

activation/deactivation dates) based on actions taken in administration of the market.

Use Case 1.5　　Set Participant Registration State

Market Operators may accept or deny applications or modifications to Market Participant's registration request.

Use Case 1.6　　Submit User Registration

Market Participants, or Market Operators acting on their behalf, submit user registration information such as user name, contact information, roles to assume, etc., to become a recognized user in the market. A user must be mapped to a single registered Market Participant. A user may be an automated electronic application/interface that acts on behalf of the Market Participant.

Use Case 1.7　　Modify User Registration

Market Participants and Market Operators may make selective modification of existing user registration information (e.g., security credentials, authorized roles etc.). MOs may also make changes to a user's information (e.g., activation/deactivation dates) based on actions taken in administration of the market.

Deactivation of a User registration is considered a permanent change to the User and will require a new User registration request to be initiated to reinstate the User. A temporary "suspension" of the User may be supported by the removal of all access rights associated with that User. This suspension may be lifted by modifying the User registration to reinstate the appropriate access rights.

Use Case 1.8　　Set User Registration State

Market Operators, or suitable authorized Market Participant Users may accept or deny an application or modification to a User registration.

Use Case 1.9　　Submit Facility Registration

Market Participants, or Market Operators acting on their behalf, submit facility information associated with physical generation, transmission, or metering facilities such as facility name, ratings, ownership, etc., as an application to become a registered facility. Facilities may be mapped to multiple participants designating joint ownership but must be mapped to a single participant designated

as the facility operator. The facility operator is the entity responsible for physical operation of the facility from the Market Operator's perspective.

Use Case 1.10   Modify Facility Registration

Market Participants and Market Operators may make selective modification of existing facility registration information (e.g., emergency limits, etc.).

Use Case 1.11   Set Facility Registration State

Market Operators may accept or deny an application or modification to a Facility registration.

Use Case 1.12   Submit Resource Registration

Market Participants, or Market Operators acting on their behalf, submit registration information associated with the following classes of "resources":

- Generation

- Load

- Transmission

- Pricing

Generation or Load Resource registration would include such information as resource name, operating limits, ownership, etc., in the application to become a recognized resource that may be offered/bid into the market. Generation or Load Resources must be mapped to one or more registered physical Facilities, i.e., a generating plant with 4 units (4 facilities) could be offered and operated in the market as a single resource. Conversely, a single Facility may map to multiple Resources, e.g., in the case of jointly owned facilities. Each Resource must be mapped to a single participant authorized to offer/bid the resource. Market participants may request the Market Operator to aggregate generation or load resources into appropriately weighted pricing zones or hubs. The registrant may supply information in connection with a generation or load resource to be used as default offer/bid information if that information is not explicitly established in submitted offers/bids (e.g., startup cost, no load cost, minimum run time, etc.).

Transmission Resources must be registered by Transmission Owners or the Transmission Service Provider. Transmission resources represent the commercial delivery and receipt points, transmission paths, and/or flowgates over which physical or financial transmission rights may be procured.

Pricing Resources must be registered by Market Operators. These represent the nodes, zones, hubs or interfaces used to establish energy and ancillary service

pricing in LMP-based markets. Market rules may allow Market Participants to register their own pricing resources as aggregations of elemental pricing nodes.

Use Case 1.13   Modify Resource Registration

Market Participants and Market Operators may make selective modification of existing resource registration information (e.g., startup cost, etc.).

Use Case 1.14   Set Resource Registration State

Transmission Service Providers and/or Market Operators may accept or deny an application or modification to a Resource registration.

Use Case 1.15   Submit Subscription

Market Participants and Market Operators may subscribe to various OASIS data elements (e.g., Transmission Rights Deals, Energy Market clearing results, etc.) and be notified on the addition of new information or modification of existing information associated with those data elements. The subscriber must identify the particular OASIS information to which they are subscribing and provide information to OASIS that identifies the electronic means to be used to notify the subscriber of any new or modified information associated with the subscribed data (i.e., Delivery address and method).

Use Case 1.16   Modify Subscription

Market Participants or Market Operators may modify or remove their current subscription to OASIS data. Market Operators may remove subscriptions of Market Participants whose access rights to the information have been changed (e.g., deactivated) or whose abuse of the subscription facility jeopardizes system performance.

Use Case 1.17   Notify Subscribers

The OASIS system must implement the Notify Subscribers Use Case to be triggered from any other OASIS II Use Cases that insert new or modify existing data within OASIS that are eligible to be published to Market Participants through a publish/subscribe model. Market Participants must provide an online, accessible computer system that is able to respond to the unsolicited notification messages generated by OASIS on execution of this Use Case.

Use Case 1.18   Post Market Services

Market Operators and/or Transmission Service Providers must post all pertinent information with regard to the markets operated. This includes all applicable tariffs, products offered (e.g., transmission, energy, ancillary, etc.), market rules, timing requirements, etc. Information must also be posted on the data communication services provided to the Market Participants to interface with the Market Operator (e.g., web services registration).

This information may take the form of embedded documents, images, etc., of which there may be no programmatic interpretation made of the information returned. Because of this varied form of the information required to be posted, this Use Case is outside of OASIS and may use proprietary interfaces. Where practicable, it is recommended that an OASIS interface using standardized technologies (e.g., web services) be developed.

Use Case 1.19   View Registration

Market Participants, Market Operators, and the general Public may view registered information. Access control may limit a user's viewing of confidential or sensitive information (e.g., creditworthiness, login credentials, etc.).

3.2 *Operations*

The Operations Use Cases describe the various processes and interactions between Market Participants and those entities responsible for ensuring the reliable operation of the electrical system. Coordination for reliability is critical, and many Use Cases may involve the participation by all affected entities even if that involvement is not directly reflected in the Use Case diagram shown below. Collectively, the roles of Reliability Authority, Transmission Service Provider, Balancing Authority, and Market Operator are termed Operational Entities (OEs).

PSEs and LSEs submit load forecasts to OASIS. GPEs, dispatchable load LSEs, and TOs submit outage information to OASIS. RAs, BAs and MOs post operations data and reliability directives, etc., on OASIS. BAs and MOs post physical schedules for generation dispatch, load, and interchange based on unit commitment, bilateral and self schedules, and market clearing activities as appropriate. GPEs are responsible for following the generation dispatch orders from BAs and MOs. All entities are able to use the OASIS to view operations data based on their individual level of access control and the commercial sensitivity of the data.
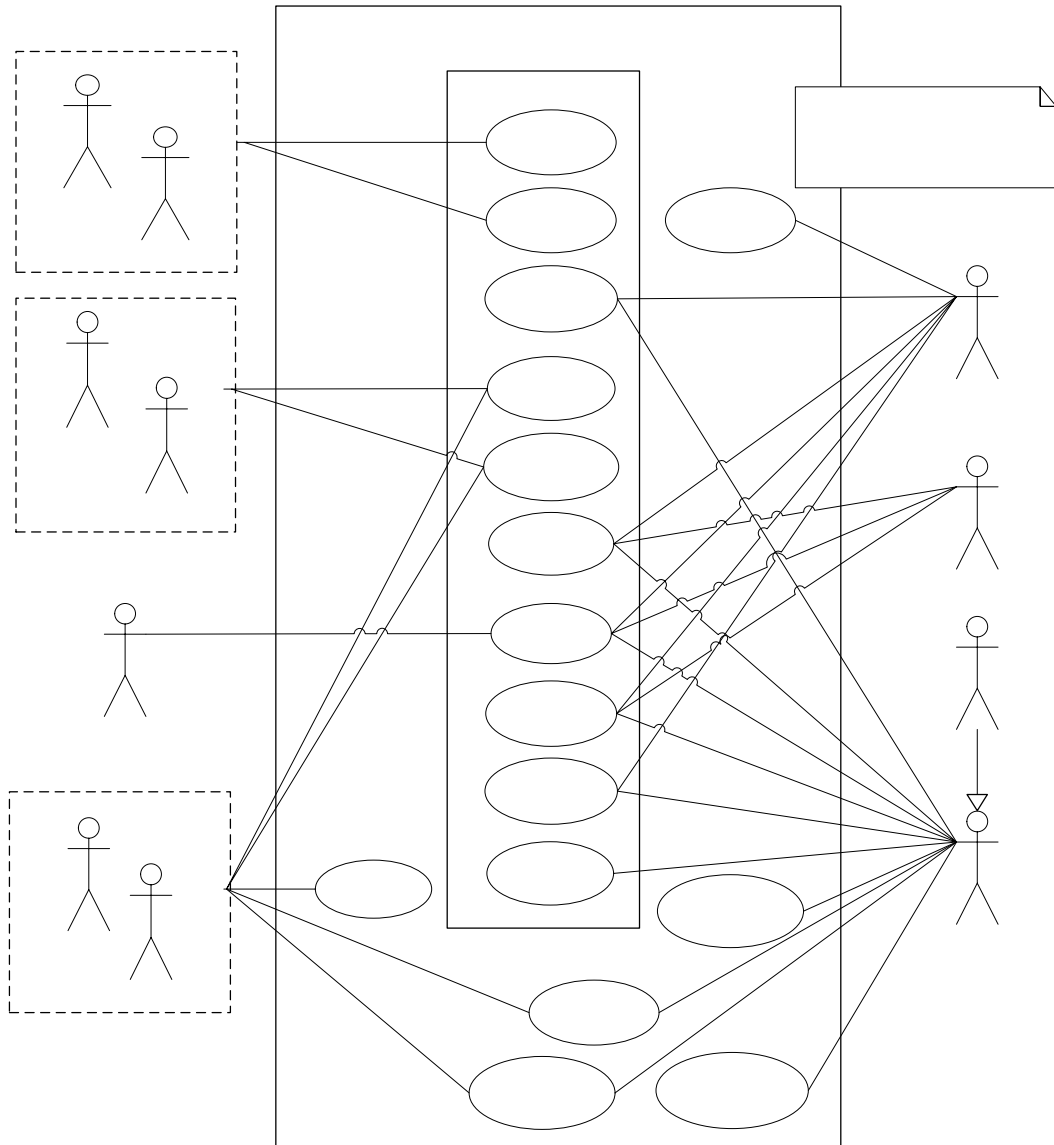
Use Case 2.1   Submit Outage

GPEs (Generation Owners or Operators), Dispatchable Load LSEs, and Transmission Owners or Operators are responsible for informing the Reliability Authority, Market Operator, Balancing Authority, and Transmission Service Providers of planned outages, unplanned outages and facility deratings. In some areas this will be an advisory action. In others, a request is made with the understanding that subsequent approval is needed (see "Set Outage State").

Use Case 2.2   Modify Outage

GPEs (Generation Owners or Operators), Dispatchable Load LSEs, and Transmission Owners or Operators may modify planned outages, unplanned outages, and facility deratings to reflect changing system conditions. Some modifications may be advisory in nature. Others may require review and approval by Reliability Authority, Market Operator, Balancing Authority, and/or Transmission Service Providers.

Use Case 2.3   Set Outage State

The Reliability Authority, Market Operator, Balancing Authority, and/or Transmission Service Provider may indicate their receipt and acknowledgement of facility outages or deratings. Certain of these parties may have the authority to approve or deny requests for facility outages based on operational security concerns.

Use Case 2.4   Submit Load Forecast

LSEs or their agents may be obligated to provide a forecast of its anticipated load to the Market Operator, Balancing Authority, Reliability Authority and/or Transmission Service Provider. Time horizon and granularity for submission of load forecast information may vary by market/region. The Reliability Authority, Market Operator, or Balancing Authority may indicate whether the LSEs load forecast is accepted and will be included in the creation of the system's total load forecast or whether other independent load forecast information will be used instead (see Set Load Forecast State).

Use Case 2.5   Modify Load Forecast

LSEs may be required to provide revised load forecasts to reflect changing system conditions. The Reliability Authority, Market Operator, or Balancing Authority may indicate whether the LSEs modified load forecast is accepted and will be

included in the creation of the system's total load forecast or whether other independent load forecast information will be used instead (see Set Load Forecast State). Time windows allowed for submission of revised load forecasts may vary by market/region.

Use Case 2.6   Set Load Forecast State

The Reliability Authority, Market Operator and/or Balancing Authority may be required to acknowledge receipt and acceptance of an LSE's load forecast. Depending on market rules, the Market Operators in coordination with the Balancing Authorities may be responsible for endorsing a given LSE's load forecast or in turn may post their own projection.

Use Case 2.7   Create System Load Forecast

The Market Operator in coordination with the Balancing Authorities are responsible for preparation of an accurate system load forecast including reserve requirements which may be based on LSE submitted load forecasts or their own internal assessments. The Reliability Authority has the responsibility to review this load forecast and operations plan for the next day.

Use Case 2.8   Create Unit Commitment

In a centralized market system, the Market Operator creates the unit commitment for all generation assets available to the market as part of its market clearing and resource adequacy assessment(s). The Balancing Authority and Reliability Authority are responsible for reviewing and refining unit commitment information to insure reliable operation. Generation Owners or Operators may be responsible for creating their own unit commitment (generator status and planned output) for their generation assets in regions where a centralized unit commitment/dispatch is not performed and communicating that commitment to the Balancing Authority (typically through the submission of self schedules).

Use Case 2.9   Determine Schedules

Market Operator or Balancing Authority is responsible for determining generation, load, and a net interchange schedules based on market clearing of bids and offers, Self Schedules, Bilateral Schedules, and unit commitments. Net interchange schedules are used in the Coordinate Interchange use case.

Determination of these schedules is performed outside of OASIS; however, most (if not all) of the input data comes from OASIS and the resulting schedules must be posted on OASIS. See Use Case 6.12 Post Schedules.

Schedules may be created or modified subsequent to market clearing. These schedules will be in the form of either generation schedules or load schedules. While generation and load schedules are not necessarily balanced by themselves, they may be combined into net interchange schedules which are balanced.

Any other type of schedule which may be required for operational reasons may also be determined through this use case. For instance schedules may be created to reflect the use of capacity and energy for ancillary commitments.

Use Case 2.10   Post Schedule

The Market Operator or Balancing Authority is responsible for posting all Schedules on OASIS by the time established for the market area. The Schedules posted on OASIS will be the source of dispatch instructions for the Market Participants (unless provided by real time telemetry or other automated mechanism). They will be used by the MO or BA for assessing energy imbalance, compliance with instructions, settlements, etc.

These Schedules are developed under Use Case 2.9 Determine Schedules, in which the MO or BA determines generation, load, and net interchange schedules based on market clearing of bids and offers, Self Schedules, and Bilateral Schedules. Net interchange schedules are used in Use Case x.1 Coordinate Interchange.

Use Case 2.11   Dispatch Generation

The Balancing Authority is responsible for balancing generation and load in real time for its metered area by direct telemetry/control of generating resources operating under the authority of the BA. Generators that are not under the authority of a Balancing Authority must have the necessary equipment to dispatch those resources based on dispatch orders from the Market Operator if applicable. Balancing Authorities operating within a market controlled by the Market Operator will typically receive economic dispatch targets from the Market Operator on a periodic basis as set by the Real Time Market clearing process. Between RTM clearing intervals, Automatic Generation Control (AGC) of regulating units is employed to maintain short-term balance.

Use Case 2.12   Follow Dispatch Orders

Generator owners or operators are responsible for following any dispatch orders directed by either the Balancing Authority or Market Operator. Base points may be telemetered to plants and automatically applied to units. Methods of communicating the dispatch and the format and content of the data will vary with area.

Use Case 2.13   Declare Abnormal Condition

The Reliability Authority in coordination with Balancing Authorities, Transmission Service Providers, Transmission Operators, Generation Operators, and Market Operators will determine the need for and declare any abnormal operating condition. Depending upon the nature and severity of this declaration, certain changes in market rules (or in fact the suspension of market activity) may take place.

Use Case 2.14   Post Reliability Directive

The Reliability Authority may issue directives during abnormal operating conditions or contingency conditions to direct the Balancing Authorities or Transmission Operators to take a particular action to ensure system reliability. Since these directives usually affect market operations to one degree or another, they are posted on OASIS for all to see. In addition, more direct non-OASIS means may be in place (such as direct ring-down telephone service) to notify critical facility operators of important reliability directives. Regional requirements may dictate that operational entities are automatically subscribed to receive electronic notifications (see Notify Subscribers) of each reliability directive issued.

Use Case 2.15   Post Operations Data

Various Operations Data may be posted during normal operations. This may include load forecasts, actual load history, current load, outages in effect, and other related material.

Use Case 2.16   View Operations Data

The Public (including Market Participants, Market Operators, Reliability Authorities, Balancing Authorities) may view Operations Data on OASIS consistent with their user access controls. Most data pertaining to current or past operations is generally available without restriction. Future outages, however, may be considered commercially sensitive and treated as proprietary information in order to prevent market gaming.

3.3 *Transmission Rights Market*

The Transmission Rights Market supports both financial rights and physical rights based models. The term Transmission Rights is used in this document to collectively represent either financial or physical rights dependent on market structure.

In general, financial rights markets are conducted through periodic auctions with congestion rents paid to rights holders based on differences in locational based marginal prices of energy. Physical rights markets have typically been conducted as a simple bilateral offer/purchase of transfer capability in the form of reservations (e.g., OASIS Phase I). Physical rights could also be auctioned under an appropriate set of market rules and tariff. Holders of physical transmission rights/reservations have the right to schedule energy transfers up to the amount of their reservations under the terms of the transmission rights purchased.

Both financial and physical transmission rights may be traded on the secondary market. This would be in the form of bilateral deals between any entity who holds transmission rights and the entity who desires to purchase those rights. However, there is no restriction on the conduct of a secondary market auction of transmission rights.

Based on the SMD Pro Forma Tariff, the following financial transmission rights in the form of Congestion Revenue Rights (CRRs) may be auctioned by the Market Operator for the term of the auction (e.g., seasonally, monthly, etc.). An initial allocation of transmission rights or allocation of auction revenue rights to Load-Serving Entities or their agents may be conducted by the Transmission Service Providers as Market Operator.

- Point-to-Point Congestion Revenue Right Obligations
- Point-to-Point Congestion Revenue Right Options
- Flowgate Congestion Revenue Right Options

Based on the Order 888 Pro Forma Tariff, the following physical transmission rights may be sold/purchased for various terms (e.g., hourly, daily, etc.).

- Firm Point-to-Point Transmission Service
- Non-Firm Point-to-Point Transmission Service
- Network Integration Transmission Service
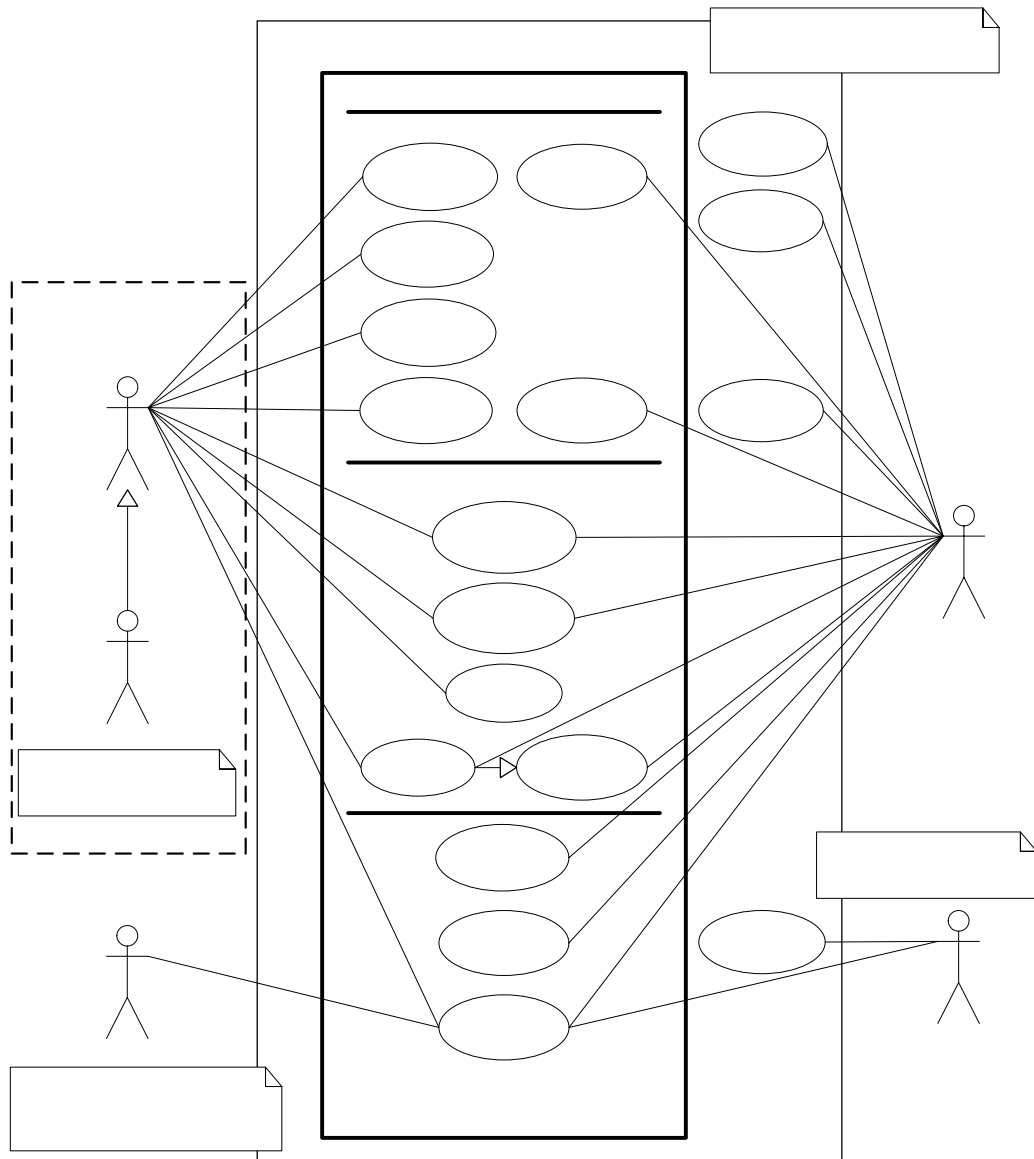
Use Case 3.1   Assess Transfer Capability

The Transmission Service Provider is responsible for determining total and available transfer capability of the transmission system based on outages, forecasts, transmission rights, unit commitment, and market activity. Transfer capability must be updated in a timely fashion to reflect outages, sale of transmission rights and other special conditions.   The results of this process must be posted on OASIS.

Purely financial transmission rights markets are typically only concerned with assessment of Total Transfer Capability. The concept of Available Transfer Capability has little meaning under such a market structure. Financial transmission rights markets will have less stringent requirements for the assessment, updating and posting of transfer capability for the transmission system than a physical transmission rights market.

This functionality is outside the scope of OASIS but is included here for completeness. The output of this function is required input to the Post Transfer Capability use case which is within the scope of OASIS.

Use Case 3.2   Create TR Allocation

Transmission Service Providers may perform an initial allocation of transmission rights or an allocation of auction revenue rights to Load-Serving Entities and/or Transmission Owners. Allocation may be based on such factors as historic usage, transmission asset investments, peak load, grandfathered contracts, etc. The results of any initial allocation of transmission rights or of auction revenue rights will be posted on OASIS (see Post Transmission Rights).

This functionality is outside the scope of OASIS but is included here for completeness. The output of this function is required input to the Post Transmission Rights use case which is within the scope of OASIS.

Use Case 3.3   Post TR Auction Announcement

Transmission Service Providers must post an announcement of any upcoming Transmission Rights Auction. This announcement typically includes information on the conduct of the auction, bid/offer data and timing requirements, any multi-tiered auction information, the types of rights to be auctioned, as well as any historic information related to congestion patterns, network model and assumptions to be used, and any pre-auction allocation of rights.

Use Case 3.4   Submit TR Auction Offer

Transmission Customers submit offers to sell transmission rights in the auction at any time from opening of the auction to closing of the auction. In some markets, participants are permitted to "exchange" their existing rights either for different types of rights or for rights on different facilities. This is accomplished by submitting an offer to sell the existing rights and a bid to purchase the desired rights in the auction. Clearing of these "exchange" offers/bids is contingent on each other; that is, they must both clear or neither clears. All submitted offers must pass validity checks including verification that the Transmission Customer actually holds the transmission rights being offered for sale.

Use Case 3.5   Modify TR Auction Offer

Up until the transmission rights auction is closed, Transmission Customers may modify their existing offers subject to any restrictions that may be enforced based on market rules specific to the auction being conducted.

Use Case 3.6   Submit TR Auction Bid

Transmission Customers submit bids to purchase transmission rights in the auction at any time from opening of the auction to closing of the auction. In some markets, participants are permitted to "exchange" their existing rights either for different types of rights or for rights on different facilities. This is accomplished by submitting an offer to sell the existing rights and a bid to purchase the desired rights in the auction. Clearing of these "exchange" offer/bids is contingent on each other; that is, they must both clear or neither clears. All submitted bids must pass basic validity checks.

Use Case 3.7   Modify TR Auction Bid

Up until the transmission rights auction is closed, Transmission Customers may modify their existing bids subject to any restrictions that may be enforced based on market rules specific to the auction being conducted. Existing bids may also be withdrawn from the market.

Use Case 3.8   Clear TR Auction

Transmission Service Providers clear the bids and offers for transmission rights at the close of the auction. Financial Congestion Revenue Rights are cleared using the objective function of maximizing auction revenue while meeting a simultaneous feasibility test to ensure revenue adequacy. Markets that conduct auctions for physical transmission rights may limit the amount of rights available in the auction process to an amount that can be physically accommodated by the

transmission system. All cleared transactions are subsequently posted for the Market Participants to view.

This functionality is outside the scope of OASIS but is included here for completeness. The output of this function is required input to the Set TR Auction Bid/Offer State and Post Transmission Rights use cases which are within the scope of OASIS.

Use Case 3.9   Set TR Auction Bid/Offer State

The Transmission Service Provider will update all bids and offers submitted into the TR Auction to indicate whether the particular bid or offer was cleared, in whole or in part, in the auction. This is in addition to the posting of the transmission rights granted to each auction participant.

Use Case 3.10   Submit TR Proposal

Transmission Service Providers and any holder of Transmission Rights may submit a "proposal" for the sale of Transmission Rights. Market Participants wishing to purchase Transmission Rights may submit a "proposal" to purchase those rights. There is no implied process or action taken to match proposals for sale with proposals for purchase. Market participants are required to review all such proposals and initiate the purchase or sale (deal) with their desired counter-party through the Submit TR Deal Use Case.

In the context of OASIS Phase I, the Submit TR Proposal is analogous to the TSPs posting of offers and the Transmission Customers posting of rights for resale on the secondary market. Proposals for purchase are analogous to a Transmission Customers use of the "want ads" to advertise their willingness to purchase rights on the secondary market.

Use Case 3.11   Modify TR Proposal

Transmission Service Providers and Transmission Customers may modify certain parameters (e.g., price, quantity, etc.) associated with their existing proposals of transmission rights for sale or purchase. Buyers and Sellers of transmission rights should update any posted TR Proposals as bilateral deals for sale/purchase of these rights are consummated.

Use Case 3.12   Submit TR Deal

Market Participants submit a "deal" 1) as buyer to request the purchase of transmission rights from either the Transmission Service Provider or another Market Participant (the seller), or 2) as seller to request the sale of transmission

rights to another Market Participant (the buyer). There is no requirement that there be a "proposal" (offer to sell or offer to purchase) posted to the market for a participant to submit a request to buy or sell transmission rights to a counter-party. Submission of a TR deal initiates the negotiation and confirmation process between the counter-parties. Note that a Market Participant may be negotiating deals for sale of a given set of transmission rights with multiple counter-parties for the same transmission rights simultaneously. Similarly, a Market Participant may be negotiating deals with multiple counter-parties for purchase of rights to meet a given portion of their needs.

Market Participants will be required to post information related to off-OASIS secondary market sales of their transmission rights using the Submit and Modify TR Deal Use Cases. Off-OASIS sales are still required to be accepted by the counter-party.

Existing physical transmission rights holders may request an "exchange" of those rights by submitting a "redirect" deal to the TSP.

In the context of OASIS Phase I, the Submit TR Deal is analogous to the Transmission Customers posting of a reservation request to either the TSP or to another Transmission Customer on the secondary market. OASIS Phase I did not support the concept of a seller initiating the reservation request or negotiation process.

Use Case 3.13   Modify TR Deal

Transmission Customer and Transmission Service Providers, as counter-parties to a deal for the bilateral sale/purchase of transmission rights, may change certain attributes of the deal as part of the negotiation and confirmation process to buy or sell transmission rights. These changes are limited to such actions as altering the MW quantity, adjusting purchase price, etc. The range of possible actions that may be taken on the deal is determined by the Participant's role (i.e., seller or buyer) in the deal. The Transmission Customers and Transmission Service Providers may also change the state of the deal (e.g., accepted or denied) as part of the Modify TR Deal process.

Use Case 3.14   Set TR Deal State

This use case is called by the Modify TR Deal use case to change the state of a TR Deal.

Transmission Service Providers may have limited approval rights over TR deals conducted through the bilateral market, and may change the state of a deal directly. One example would be the TSPs refusal to accept transfer of financial liability to the buyer of transmission rights if that buyer cannot meet the TSPs creditworthiness requirements. The TSP indicates their refusal to honor the terms

of the Deal CONFIRMED by the counter-parties by setting the Deal state to ANNULLED with an appropriate reason code and text.

Use Case 3.15   Post Transmission Rights

Transmission Service Providers must post pertinent information regarding ownership of transmission rights acquired through auctions, allocations, grand-fathered agreements, secondary market sales, etc. for public and private viewing. Information determined to be commercially sensitive or of a confidential nature will be made accessible only to the party owning the transmission right and the Market Monitor.

In the context of OASIS Phase I, the Post Transmission Rights use case is analogous to the functionality of the "reduction" template. This template shows the original rights held by the Transmission Customer as well as any changes or reduction in those rights over time as a result of secondary market sales, redirection of rights to a different transmission path, TSP initiated recalls, etc.

Use Case 3.16   Post Transfer Capability

Transmission Service providers must post information reflecting the total and available transfer capability, and other pertinent attributes of the transmission system in accordance with market rules and regulatory orders.

In the context of OASIS Phase I, the Post Transfer Capability use case is analogous to the "systemdata" template which is used by Transmission Customers to view the TSPs assessment of transfer capability.

Use Case 3.17   View TR Market

The Public, Transmission Customers, Transmission Service Providers and Market Monitors have the ability to see pertinent information regarding all the physical and/or financial transmission rights procured from the transmission market including the ability for selective querying of information. Transmission Customers, Transmission Service Providers and Market Monitors will be able to view commercially sensitive information that may not otherwise be made available to the Public or prior to its being made available (e.g., 90 days after the fact) to the Public. Transmission Customer access to commercially sensitive information will be limited to only that information or transactions to which the Transmission Customer is a direct party.

Use Case 3.18   Monitor Market Compliance

This activity is assumed to take place internally within an ITP, RTO, or ISO. It would most likely be performed by a Market Monitoring function. It is assumed to involve privileged access to any data needed to assure that the market is operating properly and that no market power or other abuses are taking place.

This functionality is outside the scope of OASIS but is included here for completeness.

3.4 *Energy Markets*

Use Cases for the Energy Markets describe the various processes and interactions taken by and between Market Participants, Market Operators, and various reliability and market oversight entities. The design of the Energy Markets is patterned after both existing and planned market designs. Regional variations in the data requirements and conduct of the Energy Markets are anticipated. Key components of the Energy Markets are the establishment of locational clearing prices for energy, ancillary services (e.g., regulation and operating reserves), congestion and marginal losses.

Energy Markets
Use Case Diagram

Energy Markets

OASIS

Submit Market Offer

Modify Market Offer

Post Market Announcement

Post Market Results

Post Market Mitigation Invocation

Assess Resource Adequacy

Clear DAM Market

Clear RTM Market

Invoke Market Mitigation Measures

Balancing Authority

Reliability Authority

Market Operator

Balancing Authority, Reliablility Authority, and Market Operator may roll up into functions of an RTO, ISO or ITP

Generator Owner

Generator Operator

PSE

Dispatchable Load LSE

View Market Results

Public

Submit Market Bid

Modify Market Bid

PSE

LSE

Monitor Market Compliance

Market Monitor

September 9, 2003
V0.2.0

Use Case 4.1   Submit Energy Market Offer

The purpose of this function is to allow generation-providing entities (owners, operators), LSEs or PSEs to inform the market operator of their desire to supply energy and related products from qualified resources (generation or dispatchable load) and to communicate the prices at which they are willing to sell these products. Energy Market offerings typically take the form of blocks of energy at a fixed price for a period of time (i.e. 50 MW at $25/MW in hour X). The most general form includes a table of start-up prices as a function of down time, a price for running at minimum generation level, a piece-wise linear curve of incremental energy price as a function of output level, blocks of reserve capacity and prices, and blocks of regulation capacity with prices. For the Day-Ahead Market, the latter three products could each be different for each of the 24 hours of the following day. In addition, certain types of generators such as Gas Turbines will have a minimum run time and a minimum down time before restart. There may also be parameters unique to energy-limited resources such as pond-limited hydro generators or wind farms. The Energy Market may also support "virtual" supply offers to provide a financial tool to hedge against day ahead and real-time market clearing price differentials.

Use Case 4.2   Modify Energy Market Offer

The purpose of this function is to modify or withdraw an existing offer prior to market closing to the extent that such changes are permitted in a market. Business rules will govern what can be changed and when.

Use Case 4.3   Submit Energy Market Bid

The purpose of this function is to allow LSEs (or their agents) and PSEs to inform the market operator of their desire to purchase energy and the price they are willing to pay. In its simplest form, DAM bids consist of a profile by hour for the following day of the portion of their anticipated load to be purchased in the DAM. In the Real-Time Market, these bids typically indicate interruptible load available for the next hour. Blocks of energy bid into the market may have a strike price associated with them or may indicate the bidder's willingness to purchase energy at the market clearing price (price taker). For certain types of interruptible load, the option to purchase or shut down is available. The Energy Markets may also support "virtual" load bids to provide a financial tool to hedge against day ahead and real-time market clearing price differentials.

Use Case 4.4   Modify Energy Market Bid

The purpose of this function is to modify or withdraw an existing bid prior to market closing to the extent that such changes are permitted in a market. Business rules will govern what can be changed and when.

Use Case 4.5   Clear DAM

Immediately following the close of the DAM, the Market Operator is responsible for collecting all generation and transmission outage information, the system load forecast, all bilateral and self-schedules, and all valid bids and offers made into the DAM. The Market Operator in coordination with the Reliability Authority and Balancing Authority may then process this information to select and commit those units to run that meet all of the criteria for serving the load, loading the transmission system, providing reserves, providing regulation, and minimizing total production cost. Some markets may iterate through this process several times in order to arrive at a final Day Ahead Market settlement. The Day Ahead Market may then be cleared by dispatching those selected units against the load that was bid into the DAM for each hour of the following day and establishing the market clearing price for energy and related products (reserves, etc.) at each pricing location (node, zone, hub, etc.). All offers and bids cleared day ahead are financially binding. In some markets, the Market Operator is responsible for insuring that the solutions arrived at are the most economic for the given set of operational constraints. Results of the DAM clearing are posted to OASIS to notify all Market Participants and operational entities of the planned operation of the system.

Use Case 4.6   Clear RTM

The Market Operator, in coordination with the Balancing Authority and Reliability Authority, may be responsible for the clearing of the Real-Time Market, performed periodically throughout the hour. This process is designed to assure that the needs of the system are met with a set of resources that minimizes the incremental cost of the next increment of generation. RTM clearing may be accomplished through a security constrained economic dispatch that factors in current system operating conditions, new or revised bilateral and self schedules and all bids and offers submitted for the interval to be cleared. RTM clearing results in new unit target dispatch information and any applicable dispatchable load instructions along with market clearing prices at each pricing location (node, zone, hub, etc.). Generation Operators and LSEs may be notified of dispatch targets directly, or through their Balancing Authority dependent on market implementation. Results of the RTM clearing are also posted to OASIS to notify all Market Participants and operational entities of the actual operation of the system.

Use Case 4.7   Assess Resource Adequacy

The Market Operator, in coordination with the Reliability Authority and Balancing Authority, is responsible for insuring that all forecasted load may be reliably served. The Market Operator may direct generation resources not selected in the DAM clearing to come on-line as necessary based on DAM offers and/or offers submitted or modified subsequent to DAM clearing. Resource adequacy assessment may be performed earlier than day ahead based on the generator characteristics made available to the Market Operator. Resource adequacy assessment may be integrated and solved simultaneously in the DAM clearing process dependent on the market design/implementation. Resource adequacy assessment may be re-executed multiple times prior to the operating day based on changing circumstances, e.g., unplanned outages, revised load forecasts, etc. For those markets that operate a Security-Constrained Economic Dispatch in real time, the resources adequacy check is a continuous and integral part of the SCED solution. This function is typical not performed on OASIS.

Use Case 4.8   Post Market Results

The Market Operator will post the results of the Energy Markets clearing prices in OASIS. This information will be comprised of public data such as hourly Market prices for each pricing location (node, zone, hub, etc.) and Market Participant proprietary data such as bids and offers.

Use Case 4.9   View Energy Market Results

Market Participants may access Energy Market Clearing Results according to their unique permission profiles. Data such as market clearing prices are generally available without restriction. Access to Market Participant proprietary offer and bid data are generally restricted to that Market Participant. Regulatory agencies may also access data consistent with permission levels agreed to by the OASIS operator. Regulatory agencies may include FERC, Regional Reliability Organizations, NERC, and state Public Utility Commission personnel. Operational entities, e.g., Reliability Authority, Balancing Authority, Interchange Authority, etc., may also access market information as it relates to reliable operation of the interconnection.

Use Case 4.10   Monitor Market Compliance

Market monitoring will take place outside of OASIS II. Market Monitors will have privileged access to all OASIS data.

Use Case 4.11　　Invoke Market Mitigation Measures

Where conditions may have created a market power situation, the Market Operator invokes certain pre-approved measures to mitigate the market power leverage that might otherwise exist. These measures may take the form of price caps on offers in a given geographic area, out of merit bid selection, penalty assessment, etc based on the filed tariff. This function takes place outside of OASIS II.

Use Case 4.12　　Post Market Mitigation Invocation

Whenever Market Mitigation Measures are invoked, the Market Operator will post on OASIS the specific measures taken, including areas and time periods affected.

3.5 *Bilateral and Self Schedules*

Bilateral Schedules, Self Schedules, and Bilateral Contracts may be submitted by Market Participants. These are typically the result of forward market contracts entered into by GPEs, PSEs, and LSEs.

Bilateral Schedules reflect a balanced delivery of energy from generation resource(s) to load resource(s), either internal or external to the market area. They are submitted in order to schedule energy delivery for financial transactions, which were entered into outside of the Day Ahead or Real Time energy markets.

Bilateral Schedules may also be submitted to document the provision of certain ancillary services (e.g., operating reserves) contracted for between counter-parties. These Bilateral Schedules represent a commitment of capacity from qualified generation resources or dispatchable load resources to meet all or a portion of a Market Participant's ancillary service obligation.

Self Schedules reflect a generator's intent to inject energy into the system at a given location, or to notify the Market Operator of the provision of certain ancillary services (e.g., operating reserves) from qualified generation resources or dispatchable load resources. Self Schedules do not cross MO or BA boundaries and do not involve any other MPs. Self Schedules may be submitted to implement tariff or regulation obligations and may include price information. Where markets exist, Self Schedules that have no explicit bid information are considered to be "price takers" when they are considered in the market clearing processes. The resulting schedule is the same whether an entity submits a Self Schedule, or submits a "price taker" offer in the Energy Market. In some situations, entities may not be able to submit offers, either because of regulation or because Energy Markets do not exist. However, the entities must submit schedule requests. The Self Schedule use cases are intended to accommodate such scheduling needs.

Bilateral Contracts are purely financial transactions documented electronically for incorporation into the market settlement process. Bilateral Contracts have no implied relation to Bilateral Schedules or Self Schedules.

Bilateral & Self Schedules
Use Case Diagram

Bilateral & Self Schedules

OASIS

Public

SubmitBilateral Schedule

View Schedules & Contracts

Distribute Schedule

event triggered

Modify Bilateral Schedule

«uses»

«uses»

Adjust Bilateral Schedule

Set Bilateral Schedule State

«uses»

TSP

Reliability Authority

InterchangeAuthority

BalancingAuthority

Submit Self Schedule

Coordinate Interchange

«uses»

Modify Self Schedule

«uses»

«uses»

Adjust Self Schedule

GPE, PSE, or LSE

Set Self Schedule State

OperationalEntity

SubmitBilateral Contract

ClearEnergy Market

GPE

Modify Bilateral Contract

«uses»

Market Operator

DispatchableLoadLSE

Set Bilateral ContractState

MonitorMarket Compliance

Market Monitor

Sept 12, 2003
v0.2.8

Use Case 5.1   Submit Bilateral Schedule

Parties may enter into transactions to buy and sell energy outside of the Day Ahead and Real Time energy markets. The Market Operator is typically unaware of these transactions. Therefore, in order for a transaction to be scheduled, a Bilateral Schedule must be submitted. The data may be used for the Assess Resource Adequacy, Clear Market, Create Schedule, and/or reliability processes. Because the energy has already been bought and sold outside of the markets, Bilateral Schedules do not need to contain an energy price, but they may contain a bid price the parties are willing to pay for congestion charges and losses.

Market Participants submit Bilateral Schedules reflecting a balanced scheduled delivery of energy, either internal or external to the market area. Where markets are established, bilateral transactions submitted for the Day Ahead Market will be cleared as part of the DAM clearing process; bilateral transactions submitted subsequent to closing of the DAM will be cleared as part of the Real Time Market clearing process.

The Bilateral Schedule must be submitted to the OASIS designated by the sink BA. That OASIS will function as the IA for the Bilateral Schedule.

The specific generation and load resources used to satisfy the scheduled energy delivery may not need to be supplied with the initial schedule submittal. However, either the MP submitting the schedule or the respective GPE or LSE responsible for the generation and load, must modify the schedule to identify the specific generation resources and load resources associated with the scheduled energy delivery prior to market closing or defined time limits. When multiple generation resources are designated, they must all be owned/operated by a single named GPE and operated under the authority of a single Market Operator, or, where there is no MO, a single Balancing Authority. Likewise, all load resources must be owned/operated by a single named LSE and operated under the authority of a single MO or BA.

Transmission usage charges may apply to Bilateral Schedules so parties may have price sensitive bidding options. Transmission usage charges may include congestion charges and financial loss charges. Some markets allow profiling of the bids, i.e., the bid price may be different for each time interval. Some markets may also grant physical transmission rights, which exempt parties from paying congestion charges.

Examples of price sensitive bidding options that may be submitted with a Bilateral Schedule follow:

- Up-to Congestion — transaction will clear (be scheduled) in the market provided the transmission congestion charge from generation resources (or boundary interface for imports) to load resources (or boundary interface for exports) does not exceed the bid price.

- Up-to Congestion plus Losses — transaction will clear (be scheduled) in the market provided the total of both congestion charge and loss charge from generation resources (or boundary interface for imports) to load

> resources (or boundary interface for exports) does not exceed the bid price.

- Parties may agree to pay any congestion or loss charges regardless of price.

Congestion/loss bidding options are typically not available in the Real Time Markets for Bilateral Schedules that cross multiple markets. This functionality is not envisioned to be supported by OASIS at the present time.

Provision of certain ancillary services (e.g., operating reserves) may also be communicated to the Market Operator through a special type of Bilateral Schedule called an ancillary commitment. Schedules would be created against the commitment only if and when the commitments are called on by the MO or BA. Ancillary commitment requests are typically restricted to being wholly within the footprint of the Market Operator but they may also involve more than one market. The basic handling of these bilateral ancillary commitments is identical to the handling of other Bilateral Schedules, except that the resulting commitment represents the obligation of the GPE or Dispatchable Load LSE to provide capacity for the ancillary service(s).

Use Case 5.2   Modify Bilateral Schedule

Market Participants, Transmission Service Providers, and Operational Entities, such as MOs or BAs, may submit select modifications of existing Bilateral Schedules subject to certain limitations, such as submittal time, etc. Each modification may require acknowledgement or approval by one or more entities.

Common modifications include:

- GPEs identifying or approving specific generation resources to be scheduled.

- LSEs identifying or approving the specific load resources to be served.

- MPs changing the bid price for congestion or financial losses.

- MPs or Operational Entities changing the MW profile of either an energy schedule or ancillary commitment. (Market rules may govern the amount by which an MP may change the MW profile.)

- MPs identifying or changing Transmission Right ID(s) or profiles.

- MPs or Operational Entities changing the profile date/times.

- TSPs entering data for Transmission Rights that support the energy schedule. These may be generated on behalf of the MP if they have not identified Transmission Rights they already own.

Use Case 5.3   Adjust Bilateral Schedule

Market Operators and Balancing Authorities may need to adjust existing Bilateral Schedules.

Adjust can only be used by Operational Entities and only at the point where a Market Participant no longer has the right to act on the schedule. If an MP still has the right to accept, modify, deny, or withdraw a Bilateral or Self Schedule, then the Operational Entity must use the Modify Bilateral Schedule use cases instead of the Adjust Bilateral Schedule use case to communicate with the MP.

Use Case 5.4   Set Bilateral Schedule State

Market Participants, Market Operators, Transmission Service Providers, and Balancing Authorities may be required to explicitly acknowledge and/or approve Bilateral Schedules and subsequent modifications depending on their role and the type of schedule or modification.

Market participants will access this use case through the Modify Bilateral Schedule use case. TSPs, Market Operators and Balancing Authorities may also access it through the Modify Bilateral Schedule or Adjust Bilateral Schedule use cases, or they may access it directly.

All Bilateral Schedule state changes are coordinated by OASIS.

Use Case 5.5   Distribute Schedule

OASIS, as the Interchange Authority (IA), is responsible for distributing each schedule to all entities involved, such as BAs, TSPs, MOs, GPEs, LSEs, and PSEs. Any modification to a schedule must also be distributed to all affected entities. Certain entities may have approval rights over schedules. OASIS is responsible for maintaining information related to each such entity's approval or denial of the schedule and distributing that information to all affected entities.

Use Case 5.6   Submit Self Schedule

Generation Providing Entities may submit Self Schedules for injection of energy at a given generation resource(s). Where energy markets exist, the Market Operator will typically treat all acknowledged Self Schedules as being "price takers" as part of the market clearing process.

GPEs and Dispatchable Load LSEs may also submit Self Schedules for ancillary commitments to meet all or a portion of the Market Participant's ancillary service obligation. These are a special type of Self Schedules for the provision of certain ancillary services (e.g., operating reserves). The basic handling of these ancillary commitments is identical to the handling of other Self Schedules, except that the

resulting commitment represents the obligation of the GPE or Dispatchable Load LSE to provide capacity for the ancillary service(s).

The Self Schedule must be submitted to the OASIS designated by the generator's BA.

Use Case 5.7   Modify Self Schedule

GPEs and Dispatchable Load LSEs may make selective modifications to existing Self Schedules subject to possible limitations on submittal times, modifiable fields, etc. Modifications may be made up until market clearing. Some modifications may require explicit acknowledgement or approval from the Market Operator.

Use Case 5.8   Adjust Self Schedule

Market Operators and Balancing Authorities may need to adjust existing Self Schedules.

Adjust can only be used by Operational Entities and only at the point where a Market Participant no longer has the right to act on the schedule. If an MP still has the right to accept, modify, deny, or withdraw a Self Schedule, then the Operational Entity must use the Modify Self Schedule use case instead of the Adjust Bilateral Schedule use case to communicate with the MP.

Use Case 5.9   Set Self Schedule State

Where energy markets exist, the Market Operator communicates the results of market clearing in Day Ahead and Real Time by setting the state of all submitted Self Schedules to indicate whether they are cleared. Where energy markets do not exist, Balancing Authorities set the state in order to acknowledge the Self Schedule.

Market participants will access this use case through the Modify Self Schedule use case. Market Operators and Balancing Authorities may also access it through the Modify Self Schedule or Adjust Self Schedule use cases, or they may access it directly.

All schedule state changes are coordinated by the OASIS.

Use Case 5.10   Clear Energy Market

This use case is out of scope for OASIS but is referenced for completeness.

See Use Case <mark>Insert # link</mark> Clear Energy Market

Use Case 5.11   Coordinate Interchange

This use case is documented in another area but is referenced here for completeness.

See Use Case <mark>Insert # link</mark> Coordinate Interchange

Use Case 5.12   Submit Bilateral Contract

Market Participants may submit Bilateral Contracts to document contracts, which were entered into outside of OASIS, for the market settlement process. Bilateral Contracts are purely financial instruments submitted to the Market Operator, and may be submitted after the fact as permitted by market business rules. The Bilateral Contract pricing information or other contractual terms and conditions between the counter-parties are not communicated to the Market Operator; the MO only requires contract information related to the financial responsibility of each counter-party as it relates to market settlements. The counter-party to a submitted Bilateral Contract may be required to approve or acknowledge the transaction. (See the Set Bilateral Contract State use case).

The data typically submitted in a Bilateral Contract is start/stop time, MW, source, sink, entities involved, designation of which entity is responsible for payment of which charges.

Use Case 5.13   Modify Bilateral Contract

Market Participants may make select modifications to existing Bilateral Contracts subject to possible limitations on submittal times, modifiable fields, etc. Some modifications may require explicit acknowledgement or approval from the Market Operator or other counter-parties.

Use Case 5.14   Set Bilateral Contract State

Market Participants (usually counter-parties) and Market Operators may be required to explicitly acknowledge and/or approve submission and subsequent modification of Bilateral Contracts depending on their role and the type of submission/modification performed.

Use Case 5.15   View Bilateral & Self Schedules

The public has the ability to see pertinent information regarding all physical and/or financial schedules and contracts, including the ability for selective querying of information.

The ability to view information is based on the viewer's identity and timing; business rules will govern who can see what information and when they can see it. Market Participants may always view their own data. Others may view select data after it has been made publicly available in accordance with regulatory requirements. Market Operators may view data necessary to operate the markets. Market Monitors will be able to view commercially sensitive information that may not otherwise be made publicly available or prior to this information being made publicly available.

Use Case 5.16   Monitor Market Compliance

This use case is out of scope for OASIS but is referenced for completeness.

See Use Case <mark>Insert # link</mark> Monitor Market Compliance.

3.6 *Coordination*

The Coordination Use Cases document the activities and processes required to coordinate actions taken by Reliability Authorities, Interchange Authorities, Balancing Authorities and Market Operators. Most of these activities are outside the scope of OASIS and are only identified here for completeness and to recognize that effective coordination processes will need to be developed between the various Actors. The exception is Coordinate Interchange which will be developed as a standard OASIS II process due to its critical role in both reliable and commercial operation of the electrical system.

This category of Use Cases is likely to grow in time to reflect efforts underway to mitigate seams issues between adjacent markets/regions.

Coordination
Use Case Diagram

Coordination

OASIS

Coordinate
Reliability

Reliability Authority

Interchange Authority

Coordinate
Interchange

Balancing Authority

Coordinate Markets

Market Operator

September 4, 2003
V0.1.0
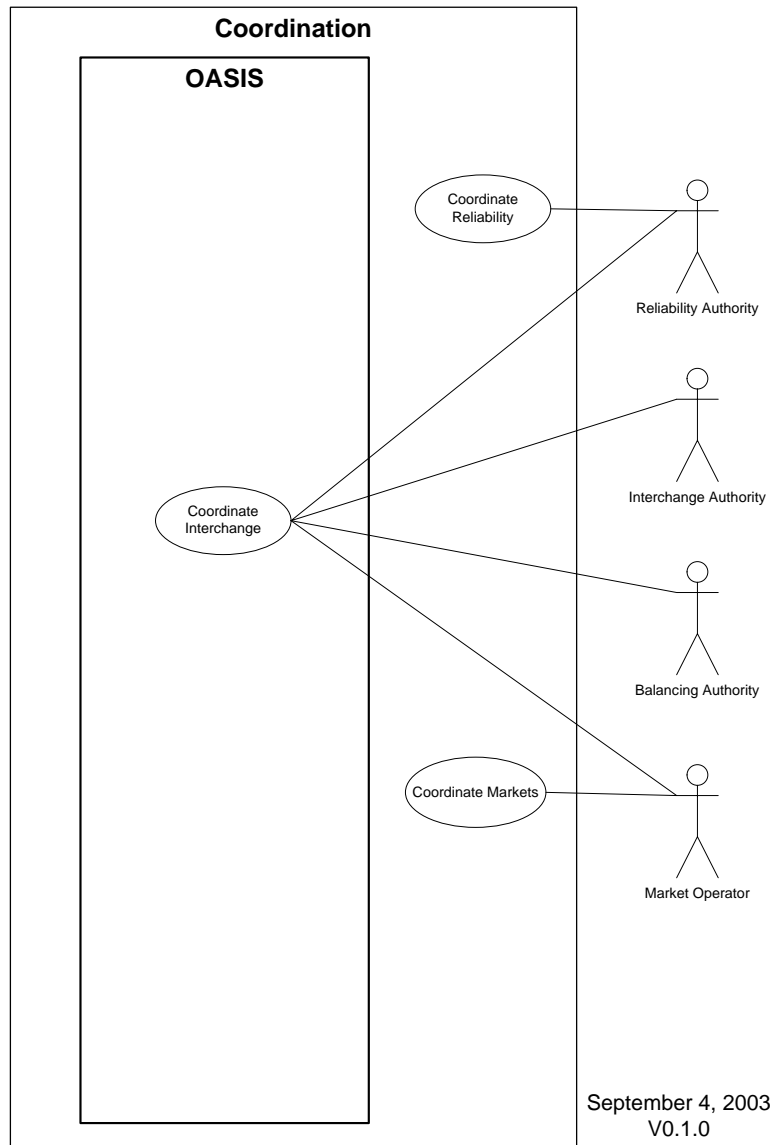
Use Case 6.1   Coordinate Interchange

Reliability Authorities, Interchange Authorities, Balancing Authorities and Market Operators use Coordinate Interchange to exchange information regarding the set of final, confirmed interchange schedules that are expected to be included in each Balancing Authority's net scheduled interchange. Any party may execute this use case with any other party. However, the following interactions are envisioned to be the typical cases:

- Balancing Authorities coordinate interchange with their designated Interchange Authority.

- Interchange Authorities coordinate interchange with ALL other Interchange Authorities (i.e., the concept of "adjacent IAs" nor "intermediary BAs/IAs" is not part of current NERC Functional Model)

- Reliability Authorities verify interchange with all Interchange Authorities operating within their Reliability Area

- Market Operators verify interchange with all Interchange Authorities and Balancing Authorities within their Market Area

Use Case 6.2   Coordinate Markets

Market Operators should coordinate their markets with other Market Operators. This coordination may involve iterations on market clearing operations in order to recognize the impact of loop and parallel flows induced on one another's transmission systems as a result of security constrained unit commitment and economic dispatch solutions. Coordination may also allow for the automated bidding of generation not selected in one market to be offered into other markets that have a higher marginal clearing price subject to limitations on transmission transfer capability, etc.

This Use Case is outside the scope of OASIS II.

Use Case 6.3   Coordinate Reliability

Reliability Authorities must coordinate all actions with each other and all other operational entities under their direct authority. This includes the notification of any reliability directives issued to Market Operators or Balancing Authorities, execution of any line loading relief procedures, coordination of market redispatch, etc. (see Declare Abnormal Condition Use Case). The Operational Entities that are ultimately responsible for taking remedial action based on a declared abnormal condition may vary by market or region and by event/condition. For example, declaration of the Unscheduled Flow procedure in the Western Interconnection is mitigated by merchant entities adjusting scheduled interchange.

The Transmission Loading Relief procedure in the Eastern Interconnection is declared by the Reliability Authority who also directs the adjustment of scheduled interchange.

This Use Case is outside the scope of OASIS II.

4 Use Case Catalog

4.1 *Registration*

In processing registration requests made by Market Participants, or Market Operators on their behalf, OASIS will manage the "state" associated with each registration request. The following diagram shows the valid states and their definitions that may be associated with the registration of Participants, Users, Facilities, or Resources. The valid state transitions and Actors associated with each state transition are indicated. A definition for each state is also included.
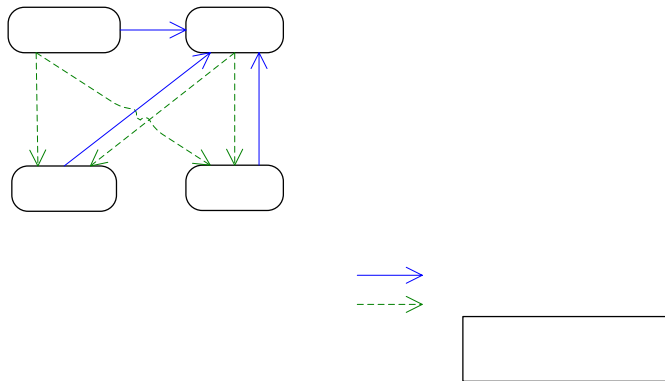
Registration State Definitions:

SUBMITTED: The Registration information is valid and has been recorded on OASIS

MODIFIED: The Market Participant modifies one or more facets of the registered information.

ACCEPTED: The Market Operator acknowledges acceptance of the Registration information.

DENIED: The Market Operator denies one or more facets of the registered information.

Use Case 1.1   Request User Credentials

1.1.1   Summary

Prior to attempting access to any OASIS service or information, other than that information required to be made available to any individual for any reason, users (clients, or programmatic interfaces) must obtain user authentication credentials in the form of x.509 V3 certificates as specified in the Energy Market Access and

Reliability Certificate (e-MARC) policy. Possession of user credentials verifies that the identity and their need for access to OASIS have been certified by an Authorized Certification Authority.

User credentials are presented to the OASIS system as part of the mutual authentication process documented in the Login Use Case. Requesting user credentials does not confer any access rights to any OASIS system or information other than that required to be provided to electric energy industry professionals with a legitimate "need to know", i.e., the Public actor in these Use Cases. User access rights are managed through the Submit or Modify User Registration Use Cases.

This Use Case is out of the scope of OASIS II and is handled through e-MARC compliant processes and procedures established by the Authorized Certification Authority the user chooses to register with.

1.1.2 Actor Role

Name	Role description
Public	Any entity that demonstrates a 'need-to-know' information regarding the wholesale electricity market obtains user credentials from an Authorized Certification Authority.

1.1.3 Triggers

None.

1.1.4 Pre-Conditions

None.

1.1.5 Flow of Events

Step	Description	Information Content
1	User selects their preferred e-MARC Authorized Certification Authority from those entities identified by the e-MARC Policy Authority.	
2	User requests an e-MARC x.509 certificate from the selected Certification Authority under the terms specified by the Certification Authority.	Certificate Request

3	User receives the signed certificate from the Certification Authority, and installs the public and private keys associated with their issued certificate for use in accessing OASIS via the Login Use Case.	e-MARC x.509 Certificate

1.1.6 Alternative Flows

Step	Description	Information Content
2a	If the User fails to provide the necessary information or agree to the terms and conditions of use of the e-MARC certificate, the Certification Authority denies the request.	Error message
2b	User corrects any deficiency and reapplies for a certificate.	

1.1.7 Post-Conditions

User has an e-MARC compliant x.509 certificate issued by an Authorized Certification Authority.

1.1.8 Related Use Cases

None.

1.1.9 Assumptions

None.

1.1.10 Data Exchange

Specific data exchange requirements are dependent on the Authorized Certificate Authority's policies and procedures.

1.1.11 Comments

None.

1.1.12 Revision History

DATE	REVISION	DESCRIPTION	AUTHOR
08-27-2003	0.2.0	Original edit	Paul R. Sorenson

Use Case 1.2   Login

1.2.1 Summary

All users of the OASIS system, including programmatic interfaces, must execute the Login process to gain access to any of the systems implementing the business Use Cases specified for OASIS. Users must electronically present valid credentials which will be used by the OASIS systems to authenticate the identity of the user and establish the access controls which authorize or limit the user's access to information and ability to execute certain functions.

1.2.2 Actor Role

Name	Role description
Market Participant Market Operator Public	Users (or programmatic interfaces) associated with any Market Participant, Market Operator, or Public entity with "need to know", attempting to access any system implementing an OASIS II business Use Case.

1.2.3 Triggers

Login process is triggered by user's (client) attempt to establish an SSL V3 (TLS V1) compliant session with an OASIS II server.

1.2.4 Pre-Conditions

User must possess valid authentication credentials to access OASIS.

1.2.5 Flow of Events

Step	Description	Information Content
1	Client initiates negotiation of a SSL V3 secured HTTP session.	
2	OASIS II server presents server's authentication certificate and requests client's certificate.	e-MARC x.509 Certificate
3	Client validates server credentials to verify: • Server certificate has been issued by an Authorized Certification Authority; • Server certificate has not been revoked by checking the latest available Certificate Revocation List issued by the Authorized CA. Client sends client authentication credentials to server.	e-MARC x.509 Certificate
4	OASIS II server validates client credentials to verify: • Client certificate has been issued by an Authorized Certification Authority; • Client certificate has not been revoked by checking the latest available Certificate Revocation List issued by the Authorized CA.	e-MARC x.509 Certificate
5	OASIS II server completes negotiation of symmetric key pair for secured communication. SSL V3 compliant HTTP communication session established.	Symmetric encryption keys
6	Client certificate credentials are used to identify the associated registered User account and grant OASIS II access rights as appropriate.	
7	User is logged on to OASIS II server.	

1.2.6 Alternative Flows

Step	Description	Information Content
3a	If the server e-MARC certificate has not been issued by an Authorized CA, or has been revoked, client terminates SSL negotiation.	e-MARC x.509 Certificate
4a	If the client e-MARC certificate has not been issued by an Authorized CA, or has been revoked, server terminates SSL negotiation.	e-MARC x.509 Certificate
6a	If the client credentials cannot be associated with a registered User, default "guest" access is granted to the client as a member of the Public (i.e., OASIS public read-only access as required by regulation).	

1.2.7 Post-Conditions

A secure HTTP (i.e., HTTPS) session is established between the client and server for data communication.

1.2.8 Related Use Cases

All OASIS II business Use Cases require execution of the Login Use Case as a precondition.

1.2.9 Assumptions

The e-MARC Certificate Policy has been adopted by the wholesale electric industry as the means to secure access to OASIS. The identity of those entities qualified as Authorized Certification Authorities are available through a public registry maintained by the e-MARC Policy Authority. The specific procedures and information required for issuance of an e-MARC certificate is dependent on the Authorized CA choosen by the client/user.

1.2.10 Data Exchange

SSL V3 specifications dictate the specific data exchanges necessary for mutual authentication of client and server using x.509 compliant digital certificates. The Energy Market Access and Reliability Certificate (e-MARC) Certificate Policy dictates the processes and procedures necessary for issuance and usage of e-MARC certificates.

1.2.11 **Comments**

None.

1.2.12 **Revision History**

DATE	REVISION	DESCRIPTION	AUTHOR
07-10-2003	0.1.2	Original edit	Paul R. Sorenson
08-27-2003	0.2.0	Incorporate comments from peer review	Paul R. Sorenson

Use Case 1.3   Submit Participant Registration

1.3.1 **Summary**

Market Participants, or Market Operators acting on their behalf, submit registration information such as company name, address, contact information, proof of creditworthiness, etc., as an application to become a recognized participant in the market.

1.3.2 **Actor Role**

Name	Role description
Market Participant	Users (or programmatic interfaces) associated with any Market Participant submit Participant registration information to gain access to the Market.
Market Operator	Users (or programmatic interfaces) associated with the Market Operator (or Transmission Service Provider as Transmission Market Operator) submit Participant registration information on behalf of the Market Participant.

1.3.3 **Triggers**

None.

1.3.4 Pre-Conditions

None.

1.3.5 Flow of Events

Step	Description	Information Content
1	Market Participant or Market Operator submits initial Participant registration information. Minimum information required includes: • Legal name of Participant's organization • Address • Contact information	Participant Information
2	OASIS receives Submit Participant Registration request.	
3	OASIS validates all submitted information for completeness or duplication with existing registrations.	
4	OASIS assigns the Participant a Unique ID, inserts the registration information into the database with a state of SUBMITTED.	
5	If submission was made by the Market Operator, OASIS invokes the Set Participant Registration State use case to change registration state from SUBMITTED to ACCEPTED.	Participant ID State
6	Success message is returned to submitter	Participant ID State
7	If submitter is not recognized as a registered User, User Information is extracted from the submitter's e-MARC certificate and the Submit User Registration Use Case is triggered on their behalf.	User Information
8	OASIS triggers Notify Subscribers to notify interested parties of the new Participant registration	

1.3.6 Alternative Flows

Step	Description	Information Content
3a	If Submit Participant Registration fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits registration.	

1.3.7 Post-Conditions

Initial Participant registration information is made available to the Market Operator for verification and authorization.

1.3.8 Related Use Cases

- Set Participant Registration State – called for participant registrations submitted by the MO to set registration state to ACCEPTED.

- Submit User Registration – triggered on behalf of the submitter for initial registration of the submitter as a User if the submitter is not already registered.

- Notify Subscribers – Triggered on completion of this Use Case to notify any Market Participants/Operator with a registered Subscription for this information.

1.3.9 Assumptions

None.

1.3.10 Data Exchange

Following information may be associated with a registered Participant:

- Participant ID
- State

- Activation date/time

- Deactivation date/time

- Legal business name of the Participant organization

- Industry recognized business identifier (e.g., DUNS number, etc.)

- Address

- Contact information (phone, FAX, etc.)

- Method(s) of establishing creditworthiness

- Roles played in the market:

    o PSE

    o LSE

    o GPE

    o Transmission Customer

    o Transmission Owner

    o Transmission Operator

    o Generation Owner

    o Generation Operator

    o Reliability entity

        ▪ Reliability Authority

        ▪ Balancing Authority

- Market services being requested; initial service agreement application. (May be inferred by market role, e.g., GPE must execute interconnection agreement(s), TCs must execute pro-forma service agreements, etc.).

- Other market-dependent information requirements

1.3.11 Comments

Initial registration of a Participant will require special handling of the User associated with submission of this information. Prior to Participant registration, there will most likely be no user accounts to associate with the submitter and therefore no way to grant appropriate access privileges to the User. The initial application should, therefore, initiate registration of both the Participant and the User subject to final verification and authorization by the Market Operator.

1.3.12 Revision History

DATE	REVISION	DESCRIPTION	AUTHOR
07-10-2003	0.1.2	Original edit	Paul R. Sorenson
07-31-2003	0.1.3	Add trigger of Notify Subscribers	Paul R. Sorenson
08-27-2003	0.2.0	Incorporate comments from peer review	Paul R. Sorenson

Use Case 1.4   Modify Participant Registration

1.4.1 Summary

Market Participants and Market Operators may make selective modification of existing participant registration information (e.g., credit credentials, etc.). MOs may also make changes to a registrant's information (e.g., credit watch, activation/deactivation dates) based on actions taken in administration of the market.

1.4.2 Actor Role

Name	Role description
Market Participant	Users (or programmatic interfaces) associated with any Market Participant submit modifications to their Participant registration information.
Market Operator	Users (or programmatic interfaces) associated with the Market Operator (or Transmission Service Provider as Transmission Market Operator) submit modifications to Participant registration information on behalf of the Market Participant.

1.4.3 Triggers

None.

1.4.4 Pre-Conditions

None.

1.4.5 Flow of Events

Step	Description	Information Content
1	Market Participant or Market Operator submits modified Participant registration information with unique Participant ID.	Participant ID Participant Information
2	OASIS receives Modify Participant Registration request.	
3	OASIS validates all submitted information including: • Unique Participant ID matches registered Participant; • Submitter is authorized User associated with Participant with appropriate access rights, or is associated with the Market Operator; • Only information subject to modification is specified.	
4	OASIS updates the modified fields of the Participant in the database and sets the Participant state to MODIFIED.	
5	If submission was made by the Market Operator, OASIS invokes the Set Participant Registration State Use Case to change state from MODIFIED to ACCEPTED.	Participant ID State
6	Success message is returned to submitter	Participant ID State
7	OASIS triggers Notify Subscribers to notify interested parties of the modified Participant registration.	

1.4.6 Alternative Flows

Step	Description	Information Content
3a	If Modify Participant Registration fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message

3b	User corrects data and resubmits registration.	

1.4.7 Post-Conditions

Participant registration information is updated in the database.

1.4.8 Related Use Cases

- Set Participant Registration State – called for any modifications submitted by the Market Operator to set state to ACCEPTED.

- Notify Subscribers – Triggered on completion of this Use Case to notify any Market Participants/Operator with a registered Subscription for this information.

1.4.9 Assumptions

None.

1.4.10 Data Exchange

Participant information subject to modification includes:

- Activation date/time

- Deactivation date/time

- Address

- Contact information (phone, FAX, etc.)

- Method(s) of establishing creditworthiness

- Addition/deletion of Roles played in the market

- Addition/deletion of Market services being requested

- Other market-dependent information requirements

1.4.11 Comments

None.

1.4.12 Revision History

DATE	REVISION	DESCRIPTION	AUTHOR
07-10-2003	0.1.2	Original edit	Paul R. Sorenson
07-31-2003	0.1.3	Added Notify Subscribers Use Case	Paul R. Sorenson
08-27-2003	0.2.0	Incorporate comments from peer review	Paul R. Sorenson

Use Case 1.5   Set Participant Registration State

1.5.1 Summary

Market Operators may accept or deny applications or modifications to Market Participant's registration request.

1.5.2 Actor Role

Name	Role description
Market Operator	Users (or programmatic interfaces) associated with the Market Operator (or Transmission Service Provider as Transmission Market Operator) indicate acceptance or denial of initial or modified Participant registrations.

1.5.3 Triggers

None.

1.5.4 Pre-Conditions

Participant registration is either SUBMITTED or MODIFIED.

1.5.5 Flow of Events

Step	Description	Information Content
1	Market Operator reviews Participant registration information for completeness and accuracy then either accepts or denies the Participant's	Participant ID State

	registration request as identified by unique Participant ID.	
2	OASIS receives Set Participant Registration request.	
3	OASIS verifies that requested state change is valid.	
4	OASIS updates state of the Participant registration.	
5	If the Participant's Deactivation date/time has been modified, OASIS calls the Modify User Registration Use Case to modify all associated User registrations to be deactivated at the same time.	User ID Deactivation date/time
6	Success message is returned to submitter	Participant ID State
7	OASIS triggers Notify Subscribers to notify interested parties of the change in Participant registration status.	

1.5.6 Alternative Flows

Step	Description	Information Content
3a	If Set Participant Registration fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits registration state.	

1.5.7 Post-Conditions

Participant registration state is updated in the database.

1.5.8 Related Use Cases

- Modify User Registration – Called when MO accepts modification to Participant's Deactivation date/time to deactivate all associated Users.

- Notify Subscribers – Triggered on completion of this Use Case to notify any Market Participants/Operator with a registered Subscription for this information.

1.5.9 Assumptions

None.

1.5.10 Data Exchange

Updated state of Participant's registration

1.5.11 Comments

None.

1.5.12 Revision History

DATE	REVISION	DESCRIPTION	AUTHOR
07-10-2003	0.1.2	Original edit	Paul R. Sorenson
07-31-2003	0.1.3	Add trigger of Notify Subscribers	Paul R. Sorenson
08-27-2003	0.2.0	Incorporate comments from peer review	Paul R. Sorenson

Use Case 1.6   Submit User Registration

1.6.1 Summary

Market Participants, or Market Operators acting on their behalf, submit user registration information such as user name, contact information, roles to assume, etc., to become a recognized user in the market. A user must be mapped to a single registered Market Participant. A user may be an automated electronic application/interface that acts on behalf of the Market Participant.

1.6.2 Actor Role

Name	Role description
Market Participant	Users (or programmatic interfaces) associated with any Market Participant submit User registration information to gain access to the Market.
Market Operator	Users (or programmatic interfaces) associated with the Market Operator (or Transmission Service Provider as Transmission Market Operator) submit User registration information on behalf of the Market Participant.

1.6.3 Triggers

None.

1.6.4 Pre-Conditions

None.

1.6.5 Flow of Events

Step	Description	Information Content
1	Market Participant or Market Operator submits initial User registration information. Minimum information required would include: • Legal name of Participant's organization, or Participant's Unique ID • Name • User's e-MARC certificate information	User Information
2	OASIS receives Submit User Registration request.	
3	OASIS validates all submitted information for completeness or duplication of existing user registration. User being registered must match the identity of the submitter as determined by the user's login credentials unless the User has User Administrator access rights for the Participant. Submissions by a User of the MO that has User	

	Administrator accessr rights amy submit user registrations for any participant.	
4	OASIS assigns the User a Unique ID, and inserts the registration information into the database with a state of SUBMITTED.	
5	If submission was made by the Market Operator, OASIS calls the Set User Registration State use case to set to ACCEPTED.	
6	Success message is returned to submitter	User ID State
7	OASIS triggers Notify Subscribers to notify interested parties of the new Participant registration.	

1.6.6 Alternative Flows

Step	Description	Information Content
3a	If Submit User Registration fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits registration.	

1.6.7 Post-Conditions

Initial User registration information is made available to the Market Operator for verification and authorization.

1.6.8 Related Use Cases

- Set Participant Registration State – Called for any submissions made by the Market Operator or authorized Market Participant to set state to ACCEPTED.

- Notify Subscribers – Triggered on completion of this Use Case to notify any Market Participants/Operator with a registered Subscription for this information.

1.6.9 Assumptions

Valid user roles and associated access rights (privileges) have been defined to control access to OASIS applications and functions.

1.6.10 Data Exchange

Following information may be associated with a User registration:

- User ID
- Activiation date/time
- Deactivation date/time
- Legal business name of the User's Participant organization (or Participant ID)
- User name
- Address
- Contact information (phone, FAX, etc.)
- e-MARC certificate information (one or more):
  - user's distinguished name
  - certificate issuer's distinguished name
- Roles played in the market (access rights/privileges):
  - User Administrator
  - Energy Market Participant
  - Transmission Rights Market Participant
  - Scheduler
  - Reliability operator
  - Etc.
- Other market dependent user registration information

1.6.11 Comments

None.

1.6.12 Revision History

DATE	REVISION	DESCRIPTION	AUTHOR
07-10-2003	0.1.2	Original edit	Paul R. Sorenson
07-31-2003	0.1.3	Add trigger of Notify Subscribers	Paul R. Sorenson
08-27-2003	0.2.0	Incorporate comments from peer review	Paul R. Sorenson

Use Case 1.7   Modify User Registration

1.7.1   Summary

Market Participants and Market Operators may make selective modification of existing user registration information (e.g., security credentials, authorized roles etc.). MOs may also make changes to a user's information (e.g., activation/deactivation dates) based on actions taken in administration of the market.

Deactivation of a User registration is considered a permanent change to the User and will require a new User registration request to be initiated to reinstate the User. A temporary "suspension" of the User may be supported by the removal of all access rights associated with that User. This suspension may be lifted by modifying the User registration to reinstate the appropriate access rights.

1.7.2   Actor Role

Name	Role description
Market Participant	Users (or programmatic interfaces) associated with any Market Participant submit modifications to User registration information.
Market Operator	Users (or programmatic interfaces) associated with the Market Operator (or Transmission Service Provider as Transmission Market Operator) submit modifications to User registration information on behalf of the Market Participant or other Market Operator Users.

1.7.3   Triggers

None.

1.7.4 Pre-Conditions

None.

1.7.5 Flow of Events

Step	Description	Information Content
1	Market Participant or Market Operator submits modified User registration information with unique User ID.	User ID User Information
2	OASIS receives Modify User Registration request.	
3	OASIS validates all submitted information including: • Unique ID of User matches a registered User; • Submitter is either: o Identical to the User whose information is being modified (i.e., updating own information), o A User with User Administrator access rights for the Participant of the User whose information is being modified, or o A User with User Administrator access rights associated with the MO. • Only information subject to modification is specified.	
4	OASIS updates the modified fields of the User in the database. If the modification requires approval of the Market Operator, OASIS sets the Participant state to MODIFIED, otherwise the state is left unchanged.	
5	If submission was made by the Market Operator, or a Market Participant with User Administrator access rights, OASIS calls the Set User Registration State to update the state from MODIFIED to ACCEPTED.	User ID State
6	Success message is returned to submitter	User ID State

6	OASIS triggers Notify Subscribers to notify interested parties of the new Participant registration.	

1.7.6 Alternative Flows

Step	Description	Information Content
3a	If Modify User Registration fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits registration.	

1.7.7 Post-Conditions

User registration information is updated in the database.

1.7.8 Related Use Cases

- Set Participant Registration State – Called for any modifications submitted by the Market Operator or authorized Market Participant to set state to ACCEPTES

- Notify Subscribers – Triggered on completion of this Use Case to notify any Market Participants/Operator with a registered Subscription for this information.

1.7.9 Assumptions

Valid user roles and associated access rights (privileges) have been defined to control access to OASIS applications and functions

1.7.10 Data Exchange

User information subject to modification includes:

- Activation date/time

- Deactivation date/time

- Address

- Contact information (phone, FAX, etc.)

- Addition/deletion of e-MARC certificate information

- Addition/deletion of Roles played in the market (access privileges)

- Other market dependent User registration information

Modification of most User information is not subject to review/approval by the Market Operator, with the exception of granting certain administrator privileges to a Market Participant's Users.

1.7.11 Comments

Suitably authorized Users of a Market Participant (i.e., User Administrators) may submit and modify User registration information on behalf of any of the Users associated with that Market Participant. Controls must be inforced to not allow these Users from having the ability to grant OASIS access rights to a User which are beyond their authority to control, e.g., they should not be allowed to grant rights which they, themselves, do not have.

1.7.12 Revision History

DATE	REVISION	DESCRIPTION	AUTHOR
07-10-2003	0.1.2	Original edit	Paul R. Sorenson
07-31-2003	0.1.3	Add trigger of Notify Subscribers	Paul R. Sorenson
08-27-2003	0.2.0	Incorporate comments from peer review	Paul R. Sorenson

Use Case 1.8   Set User Registration

1.8.1 Summary

Market Operators, or suitable authorized Market Participant Users may accept or deny an application or modification to a User registration.

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1.8.2 Actor Role

Name	Role description
Market Participant	Authorized Users (or programmatic interfaces) associated with the Market Participant indicate acceptance or denial of initial or modified User registrations for their Market Particpant.
Market Operator	Users (or programmatic interfaces) associated with the Market Operator (or Transmission Service Provider as Transmission Market Operator) indicate acceptance or denial of initial or modified User registrations.

1.8.3 Triggers

None.

1.8.4 Pre-Conditions

User registration is either SUBMITTED or MODIFIED.

1.8.5 Flow of Events

Step	Description	Information Content
1	Market Operator, or Market Participant, reviews User registration information for completeness and accuracy then either accepts or denies the User's registration request as identified by unique User ID.	User ID State
2	OASIS receives Set User Registration request.	
3	OASIS validates User ID matches registered User in SUBMITTED or MODIFIED state and submitter has sufficient access rights/privileges to set the User registration state.	
4	OASIS updates state of the USER registration to ACCEPTED or DENIED.	

5	If the User has been deactivated as of an effective date or nay of the User's access rights/privileges have been modified, OASIS calls the Modify Subscription use case to check all subscriptions for data associated with that User to either deactivate or suspend those subscriptions; modify subscription deactivation date/time to match User's deactivation date/time.	Subscription ID Deactivation date/time
6	Success message is returned to submitter	User ID State
6	OASIS triggers Notify Subscribers to notify interested parties of the change in User registration status.	

1.8.6   Alternative Flows

Step	Description	Information Content
3a	If Set User Registration fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits registration.	

1.8.7   Post-Conditions

User registration state is updated in the database.

1.8.8   Related Use Cases

- Modify Subscription – Called for each subscription to data associated with a user whose access rights have changed or who has been deactivated.

- Notify Subscribers – Triggered on completion of this Use Case to notify any Market Participants/Operator with a registered Subscription for this information.

1.8.9 Assumptions

None.

1.8.10 Data Exchange

- Updated status of User registration

1.8.11 Comments

Any time a User's access rights change, all active subscriptions to data registered by that user must be rechecked to insure they are still valid/allowed. If the User has lost the necessary access right(s), those affected subscriptions will be placed in a "suspended" state. If the User subsequently has those access right(s) restored, the registered subscriptions will be unsuspended. If a User is deactivated, all subscriptions to data associated with that user will be deactivated, and will need to be re-registered after that User has successfully re-registered as a new user..

1.8.12 Revision History

DATE	REVISION	DESCRIPTION	AUTHOR
07-10-2003	0.1.2	Original edit	Paul R. Sorenson
07-31-2003	0.1.3	Add trigger of Notify Subscribers	Paul R. Sorenson
08-27-2003	0.2.0	Incorporate comments from peer review	Paul R. Sorenson

Use Case 1.9   Submit Facility Registration

1.9.1 Summary

Market Participants, or Market Operators acting on their behalf, submit facility information associated with physical generation, transmission, or metering facilities such as facility name, ratings, ownership, etc., as an application to become a registered facility. Facilities may be mapped to multiple participants designating joint ownership but must be mapped to a single participant designated as the facility operator. The facility operator is the entity responsible for physical operation of the facility from the Market Operator's perspective.

1.9.2 Actor Role

Name	Role description
Market Participant	Users (or programmatic interfaces) associated with any Market Participant submit Facility registration information as required by the Market Operator.
Market Operator	Users (or programmatic interfaces) associated with the Market Operator (or Transmission Service Provider as Transmission Market Operator) submit Facility registration information on behalf of the Market Participant.

1.9.3 Triggers

None.

1.9.4 Pre-Conditions

None.

1.9.5 Flow of Events

Step	Description	Information Content
1	Market Participant or Market Operator submits initial Facility registration information. Minimum information required would include: • Facility name • Facility type (e.g., generator, station, meter, etc.) • Facility specific sub-type, if applicable (e.g., coal fired, nuclear, etc. for generators) • Owner(s) • Operator • Operational status (e.g., construction, in-service, decommissioned, etc.) • Ratings	Facility Information
2	OASIS receives Submit Facility Registration request.	

3	OASIS validates all submitted information for completeness and internal consistency (e.g., emergency limits exceed normal limits, etc.), or duplication with existing registrations.	
4	OASIS assigns the Facility a Unique ID, and inserts the registration information into the database with a state of SUBMITTED	
5	If submission was made by the Market Operator, OASIS calls the Set Facility Registration State use case to change registration state from SUBMITTED to ACCEPTED.	Facility ID State
6	Success message is returned to submitter	Facility ID State
7	OASIS triggers Notify Subscribers to notify interested parties of the new Participant registration.	

1.9.6 Alternative Flows

Step	Description	Information Content
3a	If Submit Facility Registration fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits registration.	

1.9.7 Post-Conditions

Initial Facility registration information is made available to the Market Operator for verification and authorization.

1.9.8 Related Use Cases

- Set Facility Registration State – Called for Market Operator submissions to change registration state from SUBMITTED to ACCEPTED.

- Notify Subscribers – Triggered on completion of this Use Case to notify any Market Participants/Operator with a registered Subscription for this information.

1.9.9 Assumptions

The types of facilities that must be registered and the associated information required for those facilities has been established/defined by the Market Operator.

1.9.10 Data Exchange

Nature of facility registration information may already be part of EPRI Common Information Model or CIM Market Extensions, and should adopt that form. Minimum type of information required for a facility may include:

- Activation date/time

- Deactivation date/time

- Facility name

- Facility type (e.g., generator, station, meter, etc.)

- Facility sub-type, if applicable (e.g., coal fired, nuclear, etc.)

- Owner(s)

- Operator

- Operational status (e.g., construction, in-service, decommissioned, etc.)

- Ratings

- Other market dependent facility specific information

- Model data as required to support the market/network model

1.9.11 Comments

None.

1.9.12 Revision History

DATE	REVISION	DESCRIPTION	AUTHOR

07-10-2003	0.1.2	Original edit	Paul R. Sorenson
07-31-2003	0.1.3	Add trigger of Notify Subscribers	Paul R. Sorenson
08-27-2003	0.2.0	Incorporate comments from peer review	Paul R. Sorenson

Use Case 1.10   Modify Facility Registration

1.10.1 Summary

Market Participants and Market Operators may make selective modification of existing facility registration information (e.g., emergency limits, etc.).

1.10.2 Actor Role

Name	Role description
Market Participant	Users (or programmatic interfaces) associated with any Market Participant submit modifications to their Facility registration information.
Market Operator	Users (or programmatic interfaces) associated with the Market Operator (or Transmission Service Provider as Transmission Market Operator) submit modifications to Facility registration information on behalf of the Market Participant.

1.10.3 Triggers

None.

1.10.4 Pre-Conditions

None.

1.10.5 Flow of Events

Step	Description	Information Content
1	Market Participant or Market Operator submits modified Facility registration information with unique Facility ID.	Facility ID Facility

		Information
2	OASIS receives Modify Facility Registration request.	
3	OASIS validates all submitted information including: • Facility ID matches registered Facility; • Submitter is authorized User associated with the Facility's owner(s) or operator, or is associated with the Market Operator, and has appropriate access rights/privileges; • Only information subject to modification is specified.	
4	OASIS updates the modified fields of the Facility in the database. If the modified information is subject to review and approval by the Market Operator, OASIS sets the Facility state to MODIFIED, otherwise the Facility state is left unmodified.	
5	If submission was made by the Market Operator, OASIS calls the Set Facility State use case to change registration state from MODIFIED to ACCEPTED.	Facility ID State
5	Success message is returned to submitter	Facility ID State
6	OASIS triggers Notify Subscribers to notify interested parties of the new Facility registration.	

1.10.6 Alternative Flows

Step	Description	Information Content
3a	If Modify Facility Registration fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits registration.	

1.10.7 Post-Conditions

Facility registration information is updated in the database.

1.10.8 Related Use Cases

- Set Facility Registration State – Called when submitter is the Market Operator to change registration state from MODIFIED to ACCEPTED.

- Notify Subscribers – Triggered on completion of this Use Case to notify any Market Participants/Operator with a registered Subscription for this information.

1.10.9 Assumptions

None.

1.10.10 Data Exchange

Facility information subject to modification includes:

- Owner(s)

- Operator

- Operational status (e.g., construction, in-service, out-of-service, decommissioned, etc.)

- Ratings

- Other market dependent facility registration information

1.10.11 Comments

None.

1.10.12 Revision History

DATE	REVISION	DESCRIPTION	AUTHOR
07-10-2003	0.1.2	Original edit	Paul R. Sorenson

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Use Case 1.11   Set Facility Registration

1.11.1 Summary

Market Operators may accept or deny an application or modification to a Facility registration.

1.11.2 Actor Role

Name	Role description
Market Operator	Users (or programmatic interfaces) associated with the Market Operator (or Transmission Service Provider as Transmission Market Operator) indicate acceptance or denial of initial or modified Facility registrations.

1.11.3 Triggers

None.

1.11.4 Pre-Conditions

Facility registration is either SUBMITTED or MODIFIED.

1.11.5 Flow of Events

Step	Description	Information Content
1	Market Operator reviews Facility registration information for completeness and accuracy then either accepts or denies the Facility's registration request as identified by the Facility's Unique ID.	Facility ID State
2	OASIS receives Set Facility Registration request.	

3	OASIS validates Facility ID matches registered Facility in SUBMITTED or MODIFIED state.	
4	OASIS updates state of the Facility registration to ACCEPTED or DENIED.	
5	Successmessage is returned to submitter	Facility ID State
6	OASIS triggers Notify Subscribers to notify interested parties of the change in Facility registration status.	

1.11.6 Alternative Flows

Step	Description	Information Content
3a	If Set Facility Registration fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits offer.	

1.11.7 Post-Conditions

Facility registration status is updated in the database.

1.11.8 Related Use Cases

- Notify Subscribers – Triggered on completion of this Use Case to notify any Market Participants/Operator with a registered Subscription for this information.

1.11.9 Assumptions

None.

1.11.10 Data Exchange

- Updated status of Facility registration

1.11.11 Comments

None.

1.11.12 Revision History

DATE	REVISION	DESCRIPTION	AUTHOR
07-10-2003	0.1.2	Original edit	Paul R. Sorenson
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Use Case 1.12   Submit Resource Registration

1.12.1 Summary

Market Participants, or Market Operators acting on their behalf, submit registration information associated with the following classes of "resources":

- Generation

- Load

- Transmission

- Pricing

Generation or Load Resource registration would include such information as resource name, operating limits, ownership, etc., in the application to become a recognized resource that may be offered/bid into the market. Generation or Load Resources must be mapped to one or more registered physical Facilities, i.e., a generating plant with 4 units (4 facilities) could be offered and operated in the market as a single resource. Conversely, a single Facility may map to multiple Resources, e.g., in the case of jointly owned facilities. Each Resource must be mapped to a single participant authorized to offer/bid the resource. Market participants may request the Market Operator to aggregate generation or load

resources into appropriately weighted pricing zones or hubs. The registrant may supply information in connection with a generation or load resource to be used as default offer/bid information if that information is not explicitly established in submitted offers/bids (e.g., startup cost, no load cost, minimum run time, etc.).

Transmission Resources must be registered by Transmission Owners or the Transmission Service Provider. Transmission resources represent the commercial delivery and receipt points, transmission paths, and/or flowgates over which physical or financial transmission rights may be procured.

Pricing Resources must be registered by Market Operators. These represent the nodes, zones, hubs or interfaces used to establish energy and ancillary service pricing in LMP-based markets. Market rules may allow Market Participants to register their own pricing resources as aggregations of elemental pricing nodes.

1.12.2 Actor Role

Name	Role description
Market Participant	Users (or programmatic interfaces) associated with any Market Participant submit Resource registration information as required by the Market Operator.
Market Operator	Users (or programmatic interfaces) associated with the Market Operator (or Transmission Service Provider as Transmission Market Operator) submit Resource registration information on behalf of the Market Participant.
	Transmission Service Providers may submit Transmission Resource registration information.
	Market Operators may submit Pricing Resource registration information.

1.12.3 Triggers

None.

1.12.4 Pre-Conditions

None.

1.12.5 Flow of Events

Step	Description	Information Content
1	Market Participant or Market Operator submits initial Resource registration information. Minimum information required would include: • Resource name • Resource type (e.g., generation, load, transmission, pricing, etc.) • Resource type specific sub-type, if applicable (e.g., POR, POD, Flowgate, etc., for transmission; node, zone, hub, etc. for pricing) • Associated Facility(ies) or Resources, if applicable (e.g., generator facilities and weighting factors for generation resources; price nodes and weighting factors for zone pricing resources) • Owner (i.e., whose allowed to bid/offer the Resource) • Resource limits, default bid parameters, etc., if applicable	Resource Information
2	OASIS receives Submit Resource Registration request.	
3	OASIS validates all submitted information for completeness and internal consistency (e.g., emergency limits exceed normal limits, etc.) or duplication of existing Resources.	
4	OASIS assigns the Resource a Unique ID, and inserts the registration information into the database with a state of SUBMITTED.	
5	If submission was made by the Market Operator, OASIS calls Set Resource Registration State Use Case to change registration state from SUBMITTED to ACCEPTED.	Resource ID State
5	Success message is returned to submitter	Resource ID State
6	OASIS triggers Notify Subscribers to notify interested parties of the new Resource registration.	

1.12.6 Alternative Flows

Step	Description	Information Content
3a	If Submit Resource Registration fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits registration.	

1.12.7 Post-Conditions

Initial Resource registration information is made available to the Market Operator for verification and authorization.

1.12.8 Related Use Cases

- Set Resource Registration State – Called on submissions from the Market Operator to change registration state from SUBMITTED to ACCEPTED.

- Notify Subscribers – Triggered on completion of this Use Case to notify any Market Participants/Operator with a registered Subscription for this information..

1.12.9 Assumptions

Market requirements with regards to the Market Participant responsibilities and information required to be registered for market Resources have been established/defined.

1.12.10   Data Exchange

Resource registration information may include:

- Resource ID

- Activation date/time

- Deactivation date/time

- Resource name

- Resource type (e.g., generation, load, transmission, pricing, etc.)

- Resource type specific sub-type, if applicable (e.g., POR, POD, Flowgate, etc., for transmission; node, zone, hub, etc. for pricing)

- Associated Facility(ies) or other Resources, if applicable (e.g., generator facilities and weighting factors for generation resources; price nodes and weighting factors for zone pricing resources)

- Market Participant allowed to bid/offer the Resource (i.e., owner)

- Resource limits, default bid parameters, etc., if applicable

- Other market dependent Resource registration information

1.12.11 Comments

None.

1.12.12 Revision History

DATE	REVISION	DESCRIPTION	AUTHOR
07-10-2003	0.1.2	Original edit	Paul R. Sorenson
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Use Case 1.13   Modify Resource Registration

1.13.1 Summary

Market Participants and Market Operators may make selective modification of existing resource registration information (e.g., startup cost, etc.).

1.13.2 Actor Role

Name	Role description
Market Participant	Users (or programmatic interfaces) associated with any Market Participant submit modifications to their Resource registration information.

Market Operator	Users (or programmatic interfaces) associated with the Market Operator (or Transmission Service Provider as Transmission Market Operator) submit modifications to Resource registration information on behalf of the Market Participant.
	Transmission Service Providers may modify Transmission Resource registration information.
	Market Operators may modify Pricing Resource registration information.

1.13.3 Triggers

None.

1.13.4 Pre-Conditions

None.

1.13.5 Flow of Events

Step	Description	Information Content
1	Market Participant or Market Operator submits modified Resource registration information with unique Resource ID.	Resource ID Resource Information
2	OASIS receives Modify Resource Registration request.	
3	OASIS validates all submitted information including: • Resource ID matches registered Resource; • Submitter is authorized User associated with the Resource's owner with appropriate access rights/privileges, or is associated with the Market Operator; • Only information subject to modification is specified.	
4	OASIS updates the modified fields of the Resource in the database. If	

	the modified information is subject to review and approval by the Market Operator, OASIS sets the Resource state to MODIFIED, otherwise the Resource state is left unmodified.	
5	If submission was made by the Market Operator, OASIS calls the Set Resource Registration State to change registration state from MODIFIED to ACCEPTED.	Resource ID State
6	Success message is returned to submitter	Resource ID State
7	OASIS triggers Notify Subscribers to notify interested parties of the new Participant registration.	

1.13.6 Alternative Flows

Step	Description	Information Content
3a	If Modify Resource Registration fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits registration.	

1.13.7 Post-Conditions

Resource registration information is updated in the database.

1.13.8 Related Use Cases

- Set Resource Registration State – Called for submissions made by the Market Operator to change state from

- Notify Subscribers – Triggered on completion of this Use Case to notify any Market Participants/Operator with a registered Subscription for this information.

1.13.9 Assumptions

None.

1.13.10   Data Exchange

Resource information subject to modification includes:

- Associated Facility(ies) or Resources, if applicable (e.g., generator facilities and weighting factors for generation resources; price nodes and weighting factors for zone pricing resources)

- Owner (i.e., whose allowed to bid/offer the Resource)

- Resource limits, default bid parameters, etc., if applicable

1.13.11   Comments

None.

1.13.12   Revision History

DATE	REVISION	DESCRIPTION	AUTHOR
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Use Case 1.14   Set Resource Registration

1.14.1 Summary

Transmission Service Providers and/or Market Operators may accept or deny an application or modification to a Resource registration.

1.14.2 Actor Role

Name	Role description

Market Operator	Users (or programmatic interfaces) associated with the Market Operator (or Transmission Service Provider as Transmission Market Operator) indicate acceptance or denial of initial or modified Resource registrations.

1.14.3 Triggers

None.

1.14.4 Pre-Conditions

Resource registration is either SUBMITTED or MODIFIED.

1.14.5 Flow of Events

Step	Description	Information Content
1	Market Operator reviews Resource registration information for completeness and accuracy then either accepts or denies the Resource's registration request as identified by the unique Resource ID.	Resource ID State
2	OASIS receives Set Resource Registration request.	
3	OASIS validates Resource ID as matching registered Resource in SUBMITTED or MODIFIED state.	
4	OASIS updates state of the Resource registration to ACCEPTED or DENIED.	
5	Success message is returned to submitter	Resource ID State
6	OASIS triggers Notify Subscribers to notify interested parties of the change in Resource registration status.	

1.14.6 Alternative Flows

Step	Description	Information Content
3a	If Set Resource Registration fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits registration.	

1.14.7 Post-Conditions

Resource registration status is updated in the database.

1.14.8 Related Use Cases

- Notify Subscribers – Triggered on completion of this Use Case to notify any Market Participants/Operator with a registered Subscription for this information.

1.14.9 Assumptions

None.

1.14.10   Data Exchange

- Updated status of Resource registration

1.14.11   Comments

None.

1.14.12   Revision History

DATE	REVISION	DESCRIPTION	AUTHOR
07-10-2003	0.1.2	Original edit	Paul R. Sorenson
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Use Case 1.15   Submit Subscription

1.15.1 Summary

Market Participants and Market Operators may subscribe to various OASIS data elements (e.g., Transmission Rights Deals, Energy Market clearing results, etc.) and be notified on the addition of new information or modification of existing information associated with those data elements. The subscriber must identify the particular OASIS information to which they are subscribing and provide information to OASIS that identifies the electronic means to be used to notify the subscriber of any new or modified information associated with the subscribed data (i.e., Delivery address and method).

1.15.2 Actor Role

Name	Role description
Market Participant	Users (or programmatic interfaces) associated with any Market Participant submit requests to receive unsolicited notification on new or updated information in OASIS.
Market Operator	Users (or programmatic interfaces) associated with the Market Operator (or Transmission Service Provider as Transmission Market Operator) submit requests to receive unsolicited notification on new or updated information in OASIS.

1.15.3 Triggers

None.

1.15.4 Pre-Conditions

None.

1.15.5 Flow of Events

Step	Description	Information Content

1	Market Participant or Market Operator submits initial Subscription registration information. Minimum information required would include:
	
	• OASIS Data type being subscribed to
	
	• Delivery location/method
	    o Electronic coordinates (e.g., URL)
	    o Mechanism to be used to notify the subscriber of new or updated information (e.g., HTTPS, email, etc.)
		Subscription Information

2	OASIS receives Submit Subscription request.	
3	OASIS validates all submitted information for completeness and verifies that the User has appropriate access rights/privileges to receive notification of the subscribed information.	
4	OASIS assigns the Subscription a Unique ID, and inserts the subscriber's information into the database.	
5	Success message is returned to submitter	Subcription ID

1.15.6 Alternative Flows

Step	Description	Information Content
3a	If Submit Subscription fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits regisrtation.	

1.15.7 Post-Conditions

Initial Subscription information is available to OASIS to implement the Notify Subscribers Use Case.

1.15.8 Related Use Cases

None.

1.15.9 Assumptions

None.

1.15.10 Data Exchange

Subscription information would include:

- Activation date/time

- Deactivation date/time

- Delivery Status (normal/suspended)

- Delivery location/method

    o Uniform Resource Identifier or Locator (URI/URL) of system to be notified

    o Protocol (e.g., HTTP(S); email, etc.)

- Identification of data being subscribed to:

    o "Category", e.g., Transmission, Registration, etc.

    o "Type", e.g., Deals, Participant, etc.

- Optional data filter qualifiers (nature dependent on data subscribed to)

    o Market Participant(s)

    o Resource(s)

- Optional Subscriber specific context information to be included in each notification message sent to Subscriber.

1.15.11 Comments

Notification may take the form of a simple notification that a change to data in OASIS has occurred which then requires the subscriber to fetch the information.

Or, notification may include all or portions of the new or modified data as part of the notification. Exact implementation details will need to be determined at a later date. If new or modified data is included as part of the notification to the subscriber, access control checks must be made at the time of subscribing to that data or as part of the Notify Subscribers Use Case to assure that the subscriber still has the rights to view the data being delivered.

1.15.12   Revision History

DATE	REVISION	DESCRIPTION	AUTHOR
07-31-2003	0.1.3	Original edit	Paul R. Sorenson
08-27-2003	0.2.0	Incorporate comments from peer review	Paul R. Sorenson

Use Case 1.16   Modify Subscription

1.16.1 Summary

Market Participants or Market Operators may modify or remove their current subscription to OASIS data. Market Operators may remove subscriptions of Market Participants whose access rights to the information have been changed (e.g., deactivated) or whose abuse of the subscription facility jeopardizes system performance.

1.16.2 Actor Role

Name	Role description
Market Participant	Users (or programmatic interfaces) associated with any Market Participant submit modifications to their Subscription information.
Market Operator	Users (or programmatic interfaces) associated with the Market Operator (or Transmission Service Provider as Transmission Market Operator) submit modifications to Subscription information.
OASIS	On behalf of the Market Operator, deactivation of a User or modifications to a User's access rights revalidates that the user continues to have access to the subscribed data (or suspends such access).

1.16.3 Triggers

None.

1.16.4 Pre-Conditions

Initial Subscription must have been completed.

1.16.5 Flow of Events

Step	Description	Information Content
1	Market Participant or Market Operator submits modified Subscription information with unique Subscription ID.	Subscription ID Subscription Information
2	OASIS receives Modify Subscription Registration request.	
3	OASIS validates all submitted information including: • Subscription ID matches existing Subscription; • Submitter is authorized User associated with the Subscription's owner, or the Market Operator, with appropriate access rights/privileges; • Only information subject to modification is specified: o Deactivation date/time o Delivery location/method o Optional data subscription qualifiers o Optional Subscriber context information	
4	If Subscribing User is no longer authorized to receive the information subscribed to, the subscription registration is marked as "suspended". If the Subscribing User has been deactivated, the subscription registration is deactivated.	
5	OASIS updates the modified fields in the Subscription database.	

6	Success message is returned to submitter	Subscription ID

1.16.6 Alternative Flows

Step	Description	Information Content
3a	If Modify Subscription fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits registration.	

1.16.7 Post-Conditions

Subscription information is updated in the database.

1.16.8 Related Use Cases

None.

1.16.9 Assumptions

None.

1.16.10   Data Exchange

Subscription information subject to modification includes:

- Deactivation date/time
- Delivery status (normal/suspended)
- Delivery location/method
- Optional data filter qualifiers (nature dependent on data subscribed to)
  - o Market Participant(s)
  - o Resource(s)

- Uniform Resource Identifier (URI) of system to be notified

- Optional Subscriber specific context information to be included in each notification message sent to Subcriber.

1.16.11 Comments

[restate comments from submit subscription]

1.16.12 Revision History

DATE	REVISION	DESCRIPTION	AUTHOR
07-31-2003	0.1.3	Original edit	Paul R. Sorenson
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Use Case 1.17   Notify Subscribers

1.17.1 Summary

The OASIS system must implement the Notify Subscribers Use Case to be triggered from any other OASIS II Use Cases that insert new or modify existing data within OASIS that are eligible to be published to Market Participants through a publish/subscribe model. Market Participants must provide an online, accessible computer system that is able to respond to the unsolicited notification messages generated by OASIS on execution of this Use Case.

1.17.2 Actor Role

Name	Role description
None	

1.17.3 Triggers

This Use Case is triggered by any other OASIS II Use Case that inserts new or updates existing data within OASIS that is to be made available through the OASIS publish/subscribe model. This would include information related to Registrations, Market Actions, Transmission Rights Proposals and Deals, etc.

1.17.4 Pre-Conditions

None.

1.17.5 Flow of Events

Step	Description	Information Content
1	OASIS notified of new or updated information.	Data Dependent
2	OASIS retrieves all existing Subscriptions to the data that has been added or updated from the database	
3	If Subscription has been marked "suspended", OASIS checks if the subscription has been suspended for more than a configurable "time to live". If so, OASIS deactivates the Subscription.	

4	For each active, non-suspended, registered Subscription, OASIS:
	
	• Formats notification message consisting of:
	
	   o any optional Subscriber context information as specified in the Subscrption
	
	   o pertinent information related to the information added or updated in OASIS
	
	• Sends notification message to the registered location using the registered protocol/method.
		Data Dependent

1.17.6 Alternative Flows

Step	Description	Information Content
4a	If OASIS fails to successfully deliver the notification to the Subscriber, OASIS will re-queue the notification for the subscriber after a configurable time delay (i.e., retry).	Error message
4b	If OASIS fails to successfully deliver the notification to the Subscriber	

	after a configurable number of retry attempts, an error log must be generated and the notification attempts are discontinued.	

1.17.7 Post-Conditions

Subscriber's system has received an unsolicited notification message from OASIS, or retry initiated, or an error log produced.

1.17.8 Related Use Cases

None.

1.17.9 Assumptions

None.

1.17.10 Data Exchange

Specific data to be exchanged is dependent on the class/type of OASIS information subscribed to. Any subscriber supplied "context" information registered with the Subscription will be included in the notification message for their reference.

1.17.11 Comments

None.

1.17.12 Revision History

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07-31-2003	0.1.3	Original edit	Paul R. Sorenson
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Use Case 1.18   Post Market Services

1.18.1 Summary

Market Operators and/or Transmission Service Providers must post all pertinent information with regard to the markets operated. This includes all applicable tariffs, products offered (e.g., transmission, energy, ancillary, etc.), market rules, timing requirements, etc. Information must also be posted on the data communication services provided to the Market Participants to interface with the Market Operator (e.g., web services registration).

This information may take the form of embedded documents, images, etc., of which there may be no programmatic interpretation made of the information returned. Because of this varied form of the information required to be posted, this Use Case is outside of OASIS and may use proprietary interfaces. Where practicable, it is recommended that an OASIS interface using standardized technologies (e.g., web services) be developed.

1.18.2 Actor Role

Name	Role description
Market Operator	Users (or programmatic interfaces) associated with the Market Operator (or Transmission Service Provider as Transmission Market Operator) must post all applicable tariffs, market rules, timing requirements, etc., for access by the Market Participants.

1.18.3 Triggers

None.

1.18.4 Pre-Conditions

None.

1.18.5 Flow of Events

Step	Description	Information Content

1	Market Operator assembles all pertinent information related to any number of types of information related to the conduct of markets, products or services provided, filed tariffs, service agreements, creditworthiness standards, etc. and submits that information to OASIS to be made available to all Market Participant. This information may take the form of embedded documents, images, etc.	Market Services Information
2	OASIS receives Post Market Services request.	
3	OASIS updates all databases, datastores, pointers and access controls to make the posted information available to the Market Participants. Market Services information may not necessarily be made available to Market Participants through the programmatic interface implementing the View Registration Use Case	
4	Success message is returned to submitter	

1.18.6 Alternative Flows

Step	Description	Information Content
3a	If Post Market Services fails to be updated in OASIS, an error message is returned stating the reason for failure.	Error message
3b	User corrects data and resubmits the information.	

1.18.7 Post-Conditions

Market Services information is updated on OASIS.

1.18.8 Related Use Cases

None.

1.18.9 Assumptions

None.

1.18.10   Data Exchange

Market Services data consists of mainly free-form documents, images, etc.

1.18.11   Comments

Certain types of Market Services information may be required to be provided through the OASIS standard API, e.g., definition of transmission services offered, programmatic interfaces supported (e.g., web service definitions), etc. Wherever possible, the technical implementation of OASIS II Use Cases should support a standardized programmatic interface for that information which would be used to dynamically configure data mining or support other automated data interfaces.

1.18.12   Revision History

DATE	REVISION	DESCRIPTION	AUTHOR
07-10-2003	0.1.2	Original edit	Paul R. Sorenson
08-27-2003	0.2.0	Incorporate comments from peer review	Paul R. Sorenson

Use Case 1.19   View Registration

1.19.1 Summary

Market Participants, Market Operators, and the general Public may view registered information. Access control may limit a user's viewing of confidential or sensitive information (e.g., creditworthiness, login credentials, etc.).

1.19.2 Actor Role

Name	Role description
Public	May submit requests to view all publicly accessible registration information.
Market Participants	May submit requests to view all publicly accessible registration information and all registration

	information to which it is a party.
Market Operators	May submit requests to view all registration information.

1.19.3 Triggers

None.

1.19.4 Pre-Conditions

None.

1.19.5 Flow of Events

Step	Description	Information Content
1	Public, MPs or MOs submit the set of query parameters to selectively report specific information from the Registration information in a View Registration request	Registration Query
2	OASIS receives View Registration request.	
3	OASIS validates all query parameters specified and executes desired query against the Registration database. OASIS may enforce limitations on the volume of data that may be selected in a single request to preserve system performance.	
4	OASIS formats results selected by the query .	
5	SUCCESS message is returned to submitter	Registration Data

1.19.6 Alternative Flows

Step	Description	Information Content
3a	If View Registration request fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits query.	

1.19.7 Post-Conditions

Requested Registration information is returned to the submitter.

1.19.8 Related Use Cases

None.

1.19.9 Assumptions

None.

1.19.10 Data Exchange

View Registration query parameters may include:

- Registration information class
    - o Participant
    - o User
    - o Facility
    - o Resource
    - o Market Services
- Registration class specific types or sub-types
- Owner(s) associated with registered information

- Operator(s) associated with registered information

- Name(s) associated with registered information

- Registration state (i.e., SUBMITTED, MODIFIED, ACCEPTED, DENIED)

- Activation date/time

- Deactivation date/time

- Submission date/time

- Update date/time

Certain combinations of query parameters may be mutually exclusive. Logical inter-relationship (e.g., AND, OR, NOT, etc.) between the various query parameters, number of instances a given query parameter may be supplied, and default values for certain query variables not specified will be developed in the OASIS technical standards or associated business practices.

1.19.11 Comments

None.

1.19.12 Revision History

DATE	REVISION	DESCRIPTION	AUTHOR
07-10-2003	0.1.2	Original edit	Paul R. Sorenson
08-27-2003	0.2.0	Incorporate comments from peer review	Paul R. Sorenson

4.2 *Operations*

Load Forecasts and Outages submitted by Market Participants may be subject to approval or denial by one or more Operational Entities (e.g., RA, BA, MO, TSP). The following diagram shows the valid states and their definitions that may be associated with Load Forecasts and Outages. The valid state transitions and Actors associated with each state transition are indicated. A definition for each state is also included.
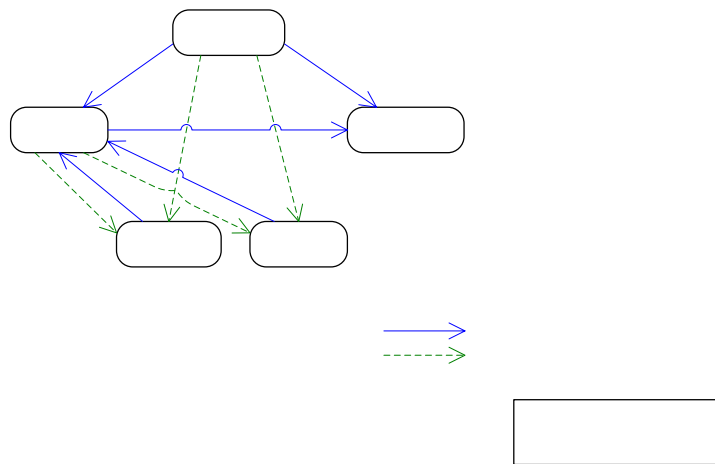
Load Forecast and Outage State Definitions:

SUBMITTED: The submitted information is valid and has been recorded on OASIS.

MODIFIED: The submitted information has been modified and updated on OASIS.

WITHDRAWN: The submitted information has been withdrawn from consideration – Final State.

ACCEPTED: The submitted information was reviewed by the appropriate Operational Entity(ies) and was accepted – Final State. Operations information not subject to review and approval/denial will automatically be set to this state.

DENIED: The submitted information was reviewed by the appropriate Operational Entity(ies) and was not accepted – Final State.

Use Case 2.1   Submit Outage

2.1.1 **Summary**

GPEs (Generation Owners or Operators), Dispatchable Load LSEs, and
Transmission Owners or Operators are responsible for informing the reliability

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Authority, Market Operator, Balancing Authority, and Transmission Service Providers of planned outages, unplanned outages and facility deratings. In some areas this will be an advisory action. In others, a request is made with the understanding that subsequent approval is needed (see "Set Outage State").

2.1.2 **Actor Role**

Name	Role description
Generation-Providing Entity (GPE)	GPEs may submit outage information for their facility(ies).
Dispatchable Load LSE	Dispatchable Load LSEs may submit outage information for their facility(ies).
Transmission Operator	Transmission Operators may submit outage information for their facility(ies).
Transmission Owner	Transmission Owners may submit outage information for their facility(ies).

2.1.3 **Triggers**

None.

2.1.4 **Pre-Conditions**

None.

2.1.5 **Flow of Events**

Step	Description	Information Content
1	Facility owner or operator submits required data such as facility name, type of request (derate, planned outage, unplanned outage), start date and time, estimated return date and time, etc.	Outage Data

2	OASIS receives Submit Outage request.	
3	OASIS validates the submitted data against market rules such as: • User is authorized to submit this request • Request includes all data required at this time • Request complies with all business rules re: submittal times, etc.	
4	OASIS assigns the request a unique identifier and stores the information in operations database. If the outage request requires approval by one or more operational entity(ies), the outage state will be set to SUBMITTED. Otherwise, the outage state will be set to ACCEPTED.	
5	Success message is returned to user	Outage ID State
6	OASIS triggers Notify Subscribers to notify all interested parties of the outage request.	Outage ID State

2.1.6 **Alternative Flows**

Step	Description	Information Content
3a	If Submit Outage request fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits outage.	

2.1.7 **Post-Conditions**

Valid Outage request is stored in operations database.

2.1.8 **Related Use Cases**

None.

2.1.9 **Assumptions**

Referenced facilities have been registered with their corresponding ratings and operational characteristics and identification of the entities responsible for submission of facility outages. Business rules have been established identifying which outages require approval by one or more operational entities (e.g., BA, RA, MO, etc.). Business rules have been established regarding time lines for submittal of outages.

2.1.10 **Data Exchange**

Outage information includes:

- Facility name

- Outage type (e.g., planned, unplanned, etc.)

- Outage start date/time

- Outage stop date/time

- Updated facility ratings during outage

- General terms for deferring or accelerating outage including costs

2.1.11 **Comments**

None.

Use Case 2.2   Modify Outage

2.2.1 **Summary**

GPEs (Generation Owners or Operators), Dispatchable Load LSEs, and Transmission Owners or Operators may modify planned outages, unplanned outages, and facility deratings to reflect changing system conditions. Some modifications may be advisory in nature. Others may require review and approval by Reliability Authority, Market Operator, Balancing Authority, and/or Transmission Service Providers.

2.2.2 **Actor Role**

Name	Role description

Generation-Providing Entity (GPE)	GPEs may submit modifications to their outage requests.
Dispatchable Load LSE	Dispatchable Load LSEs may submit modifications to their outage requests.
Transmission Operator	Transmission Operators may submit modifications to their outage requests.
Transmission Owner	Transmission Owners may submit modifications to their outage requests.

2.2.3 **Triggers**

None

2.2.4 **Pre-Conditions**

None.

2.2.5 **Flow of Events**

Step	Description	Information Content
1	Facility owner or operator submits modifications to an existing outage request. Modifications could include: • Outage state (e.g., WITHDRAWN) • Outage start/stop date/time • Updated ratings	Outage ID Outage Data
2	OASIS receives the Modify Outage request	
3	OASIS validates the submitted data against market rules such as: • Outage ID matches existing Outage request • User is authorized to submit this request • Request includes all data required at this time	

	• Request complies with all business rules re: submittal times, etc.	
4	OASIS updates the modified information in database. If the outage request requires approval by one or more operational entity(ies), the outage state will be set to MODIFIED. Otherwise, the outage state will be set to ACCEPTED.	
5	Success message is returned to user	Outage ID State
6	OASIS triggers Notify Subscribers to notify all interested parties of the outage request.	Outage ID State

2.2.6 **Alternative Flows**

Step	Description	Information Content
3a	If Submit TR Auction Offer request fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits offer.	

2.2.7 **Post-Conditions**
Valid Updated Outage Request stored in OASIS data base.

2.2.8 **Related Use Cases**
None.

2.2.9 **Assumptions**
None.

2.2.10 **Data Exchange**

TBD

2.2.11 **Comments**

Business rules have been established to identify what outage information may be subject to modification.

Use Case 2.3   Set Outage State

2.3.1 **Summary**

The Reliability Authority, Market Operator, Balancing Authority, and/or Transmission Service Provider may indicate their receipt and acknowledgement of facility outages or deratings. Certain of these parties may have the authority to approve or deny requests for facility outages based on operational security concerns.

2.3.2 **Actor Role**

Name	Role description
Market Operator (MO)	The Market Operator may review and submit approve/deny decision over an Outage request.
Balancing Authority (BA)	The Balancing Authority may review and submit approve/deny decision over an Outage request.
Transmission Service Provider (TSP)	The Transmission Service Provider may review and submit approve/deny decision over an Outage request.
Reliability Authority (RA)	The Reliability Authority may review and submit approve/deny decision over an Outage request.

2.3.3 **Triggers**

None.

2.3.4 **Pre-Conditions**

None.

2.3.5 **Flow of Events**

Step	Description	Information Content
1	Operational Entity with approval rights over the Outage request reviews Outage information for completeness and accuracy then either accepts or denies the Outage request as identified by the unique Outage ID.	Outage ID State Reason Code Reason Text
2	OASIS receives Set Outage State request.	
3	OASIS validates the request: • Outage ID matches an existing Outage request in SUBMITTED or MODIFIED state; • Submitter is authorized to update the Outage state.	
4	OASIS updates state of the Outage request to ACCEPTED or DENIED.	
5	Success message is returned to submitter	Outage ID State
6	OASIS triggers Notify Subscribers to notify interested parties of the change in Outage state.	Outage ID State Reason Code Reason Text

2.3.6 **Alternative Flows**

Step	Description	Information Content
3a	If Set Outage State request fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits update to Outage state.	

2.3.7 **Post-Conditions**

Each Outage, Derating, or Update Request will be posted with the State of the Request. If Operational Entity approval is not required, the Request will be automatically posted as ACCEPTED.

2.3.8 **Related Use Cases**

None.

2.3.9 **Assumptions**

None.

2.3.10 **Data Exchange**

State associated with each Outage request includes:

- Outage ID
- State (e.g., ACCEPTED, DENIED, etc.)
- Reason Code
- Reason Text (e.g., operational entity reason for denial or instructions for modifying outage to be accepted)

2.3.11 **Comments**

None.

Use Case 2.4   Submit Load Forecast

2.4.1 **Summary**

LSEs or their agents may be obligated to provide a forecast of its anticipated load to the Market Operator, Balancing Authority, Reliability Authority and/or Transmission Service Provider. Time horizon and granularity for submission of load forecast information may vary by market/region. The Reliability Authority, Market Operator, or Balancing Authority may indicate whether the LSEs load forecast is accepted and will be included in the creation of the system's total load forecast or whether other independent load forecast information will be used instead (see Set Load Forecast State).

2.4.2 **Actor Role**

Name	Role description
Load-Serving Entity (LSE)	Load Serving Entities may be obligated to submit load forecast information.

2.4.3 **Triggers**

None.

2.4.4 **Pre-Conditions**

None.

2.4.5 **Flow of Events**

Step	Description	Information Content
1	LSE submits load forecasts for the appropriate time horizon and granularity per business/market rules. Depending upon the size of the LSE, this may be single aggregated load or it may be broken down by zones.	Load Forecast

2	OASIS receives Submit Load Forecast request	
3	OASIS validates the submitted data against market rules such as: • User is authorized to submit load forecast • Load forecast includes all data required • Load forecast complies with all applicable business rules	
4	OASIS assigns the Load Forecast a unique identifier and stores the information in the database. If there is no requirement for review and approval of Load Forecast information by one or more Operational Entities the state of the request is set to ACCEPTED; otherwise the request is set to a state of SUBMITTED.	
5	Success message is returned to user	Load Forecast ID State
6	OASIS triggers Notify Subscribers to notify all interested parties of the load forecast request.	Load Forecast ID State

2.4.6 **Alternative Flows**

Step	Description	Information Content
3a	If Submit Load Forecast request fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits Load Forecast.	

2.4.7 **Post-Conditions**

Valid Load Forecast record is stored in the operations database.

2.4.8 **Related Use Cases**

- Notify Subscribers – Triggered to notify all interested parties of the submitted Load Forecast

2.4.9 **Assumptions**

Business rules have been defined within OASIS to specify the time horizon (e.g., 24 hours day ahead), granularity (e.g., hourly), locational granularity (e.g, zone, node, bus, etc.) and submission requirements (e.g., by noon day ahead) for entities to submit their load forecast information.

2.4.10 **Data Exchange**

Load forecast information includes:

- Load Forecast ID
- Load Forecast State
- Load Identifier (e.g., name)
- Load Location (e.g., node, zone, etc.)
- Load Profile
    - MW
    - Start date/time
    - Stop date/time

2.4.11 **Comments**

None.

Use Case 2.5   Modify Load Forecast

2.5.1 **Summary**

LSEs may be required to provide revised load forecasts to reflect changing system conditions. The Reliability Authority, Market Operator, or Balancing Authority may indicate whether the LSEs modified load forecast is accepted and will be included in the creation of the system's total load forecast or whether other independent load forecast information will be used instead (see Set Load Forecast State). Time windows allowed for submission of revised load forecasts may vary by market/region.

2.5.2 **Actor Role**

Name	Role description
Load-Serving Entity (LSE)	Load Serving Entities may be required to modify their Load Forecast information based on changes to system conditions or more up-to-date information (e.g., weather forecasts).

2.5.3 **Triggers**

None.

2.5.4 **Pre-Conditions**

None.

2.5.5 **Flow of Events**

Step	Description	Information Content
1	LSE submits modified Load Forecast data; LSEs may withdraw previously submitted load forecasts. Modified data includes: • Load Forecast State • Load Profile	Load Forecast ID Modified Data
2	OASIS receives Modify Load Forecast request	
3	OASIS validates the submitted data against market rules such as: • Load Forecast specified exists • User is authorized to modify Load Forecast • Request includes all Load Forecast data required • Request complies with all applicable business rules (e.g., submission deadlines, etc.)	
4	OASIS modifies the Load Forecast data in the database. If there is no requirement for review and approval of Load Forecast information by one or more Operational Entities the state of the request is set to ACCEPTED; otherwise the request is set to a state of MODIFIED.	

5	Success message is returned to user	Load Forecast ID State
6	OASIS triggers Notify Subscribers to notify all interested parties of the outage request.	Load Forecast ID State

2.5.6 **Alternative Flows**

Step	Description	Information Content
3a	If Modify Load Forecast request fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits modified Load Forecast.	

2.5.7 **Post-Conditions**

Valid updated Load Forecast data is stored in the operations database.

2.5.8 **Related Use Cases**

None.

2.5.9 **Assumptions**

Business rules have been defined in OASIS regarding requirements for submitting modifications to load forecasts including data allowed to be modified, time horizon, granularity, locational granularity and submission time requirements.

2.5.10 **Data Exchange**

See Submit Load Forecast.

2.5.11 **Comments**

None.

Use Case 2.6   Set Load Forecast State

2.6.1 **Summary**

The Reliability Authority, Market Operator and/or Balancing Authority may be required to acknowledge receipt and acceptance of an LSE's load forecast. Depending on market rules, the Market Operators in coordination with the Balancing Authorities may be responsible for endorsing a given LSE's load forecast or in turn may post their own projection.

2.6.2 **Actor Role**

Name	Role description
Market Operator (MO)	Market Operators may review and approve/deny Load Forecasts.
Balancing Authority (BA)	Balancing Authorities may review and approve/deny Load Forecasts.
Reliability Authority	Reliability Authorities may review and approve/deny Load Forecasts.

2.6.3 **Triggers**

None.

2.6.4 **Pre-Conditions**

None.

2.6.5 **Flow of Events**

Step	Description	Information

		Content
1	Operational Entity with approval rights over the Load Forecast reviews the Load Forecast information for completeness and accuracy then either accepts or denies the Load Forecast as identified by the unique Load Forecast ID.	Load Forecast ID State Reason Code Reason Text
2	OASIS receives the Set Load Forecast State request.	
3	OASIS validates the request: • Load Forecast ID matches an existing forecast in SUBMITTED or MODIFIED state; • Submitter is authorized to update the Load Forecast state.	
4	OASIS updates state of the Load Forecast to ACCEPTED or DENIED.	
5	Success message is returned to submitter	Load Forecast ID State
6	OASIS triggers Notify Subscribers to notify interested parties of the change in Load Forecast state.	Load Forecast ID State Reason Code Reason Text

2.6.6 **Alternative Flows**

Step	Description	Information Content
3a	If Set Load Forecast State request fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message

3b	User corrects data and resubmits update to Load Forecast state.	

(add flows)

2.6.7 **Post-Conditions**

State associated with the Load Forecast is updated in OASIS and any interested parties have been notified of the state change.

2.6.8 **Related Use Cases**

- Notify Subscribers – Triggered to notify interested parties of the change in Load Forecast state.

2.6.9 **Assumptions**

None.

2.6.10 **Data Exchange**

Load Forecast State data includes:

- Load Forecast ID
- State
- Reason Code
- Reason Text (e.g., reason Load Forecast state was set to DENIED)

2.6.11 **Comments**

None.

Use Case 2.7   Create System Load Forecast

The Market Operator in coordination with the Balancing Authorities are responsible for preparation of an accurate system load forecast including reserve requirements which may be based on LSE submitted load forecasts or their own internal assessments. The Reliability Authority has the responsibility to review this load forecast and operations plan for the next day.

This functionality is outside the scope of OASIS but is included here for completeness. The Create Unit Commitment Use Case uses the information from this Use Case in determining unit commitment.

Use Case 2.8   Create Unit Commitment

In a centralized market system, the Market Operator creates the unit commitment for all generation assets available to the market as part of its market clearing and resource adequacy assessment(s). The Balancing Authority and Reliability Authority are responsible for reviewing and refining unit commitment information to insure reliable operation. Generation Owners or Operators may be responsible for creating their own unit commitment (generator status and planned output) for their generation assets in regions where a centralized unit commitment/dispatch is not performed and communicating that commitment to the Balancing Authority (typically through the submission of self schedules).

This function will be carried out outside of the OASIS environment. Where centralized commitment is performed, load forecasts, reserve requirements, regulation requirements and all resource offers are processed over a period of the following 24 hours to select and commit those units that can most economically meet the combined requirements while respecting limits on the transmission system and other related constraints.

This Use Case uses results of the Create System Load Forecast as one of the inputs into the unit commitment process.

Use Case 2.9   Determine Schedules

Market Operator or Balancing Authority is responsible for determining generation, load, and a net interchange schedules based on market clearing of bids and offers, Self Schedules, Bilateral Schedules, and unit commitments. Net interchange schedules are used in the Coordinate Interchange use case.

Determination of these schedules is performed outside of OASIS; however, most (if not all) of the input data comes from OASIS and the resulting schedules must be posted on OASIS. See Use Case 6.12 Post Schedules.

Schedules may be created or modified subsequent to market clearing. These schedules will be in the form of either generation schedules or load schedules. While generation and load schedules are not necessarily balanced by themselves, they may be combined into net interchange schedules which are balanced.

Any other type of schedule which may be required for operational reasons may also be determined through this use case. For instance schedules may be created to reflect the use of capacity and energy for ancillary commitments.

The following table lists schedule classifications and examples of the input data they could be derived from.

Classification:	Inputs:
Generation schedule	- cleared Offers - Self Schedules from generator - generation side of Bilateral Schedules - generation side for implementation of Bilateral Ancillary Commitments (e.g. calling reserves) - unit commitment
Load schedule	- cleared Bids - load side of Bilateral Schedules - load side for implementation of Bilateral Ancillary Commitments (e.g. calling reserves)
Interchange schedule	export or import from Bilateral Schedules
Net interchange schedule	sum of interchange schedules
Generation Ancillary commitment	- Self Schedule Ancillary Commitments from generator - generation side of Bilateral Ancillary Commitments
Load Ancillary commitment	- Self Schedule Ancillary Commitments from dispatchable load - load side of Bilateral Ancillary Commitments

Use Case 2.10   Post Schedule

2.10.1 Summary

The Market Operator or Balancing Authority is responsible for posting all Schedules on OASIS by the time established for the market area. The Schedules posted on OASIS will be the source of dispatch instructions for the Market Participants (unless provided by real time telemetry or other automated mechanism). They will be used by the MO or BA for assessing energy imbalance, compliance with instructions, settlements, etc.

These Schedules are developed under Use Case 2.9 Determine Schedules, in which the MO or BA determines generation, load, and net interchange schedules based on market clearing of bids and offers, Self Schedules, and Bilateral Schedules. Net interchange schedules are used in Use Case x.1 Coordinate Interchange.

2.10.2 Actor Role

Name	Role description
Market Operator	Market Operators may be obligated to post all schedules resulting from the Determine Schedules Use Case.
Balancing Authority	Balancing Authorities may be obligated to post all schedules resulting from the Determine Schedules Use Case.

2.10.3 **Triggers**

None.

2.10.4 **Pre-Conditions**

Schedule input data has been produced (see Use Case 2.9 Determine Schedules).

2.10.5 **Flow of Events**

Step	Description	Information Content
1	The MO or BA submits Schedule data to OASIS. This could be an automated process initiated from the Use Case 2.9 Determine Schedules use case.	Schedule Data
2	OASIS receives Post Schedule request.	
3	OASIS validates the Schedule Data such as • Submitter is authorized to pos schedules • Schedule is valid based on registered resources, resource operating parameters, etc. • Schedule complies with all business rules	
4	OASIS assigns the Schedule a unique identifier, and stores it in the database.	

5	Success message is sent to user.	Schedule ID
6	OASIS triggers Notify Subscribers to notify any interested parties of the Schedule.	Schedule ID

2.10.6 **Alternative Flows**

Step	Description	Information Content
3a	If Post Schedule request fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits the Schedule.	

2.10.7 **Post-Conditions**

A Schedule with a unique Schedule ID has been recorded in the operations database.

2.10.8 **Related Use Cases**

- Determine Schedule – Provides the input data needed for this use case
- Notify Subscriber – Triggered by this use case to notify interested parties of the Schedule

2.10.9 **Assumptions**

Timing requirements for posting Schedules have been established for the market area. All pertinent "input" bids and offers, Self Schedules, and Bilateral Schedules exist in OASIS. Market and/or Reliability procedures have been defined for handling any errors in posting of Schedules.

2.10.10　**Data Exchange**

Schedule data includes:

- Entity(ies) (the entity(ies) responsible for the operating the resource)
- Resource (if interchange, the resource is the point of interconnection)
- Resource type (generation, load or interchange)
- Schedule type (energy schedule or ancillary commitment)
- Ancillary type (regulation, reserve, VAR, market defined [null for energy schedules])
- Profile:
  - MW
  - Start date/time
  - Stop date/time
- Ramp rate
  - Ramp rates may need to be stated as both ramp up and ramp down
- Input Ids (These would be the Unique Ids of all the Offers, Bids, Bilateral Schedules, or Self Schedules that were used to determine this schedule. These will need to be associated with profile segments.)

2.10.11　**Comments**

If a change is needed in a Schedule, it would be recalculated under Use Case 2.9 Determine Schedules and then reposted, overwriting the previously posted Schedule for the appropriate time frame.

States for Schedules are not addressed because there is no reason for an MO or BA to post a schedule they do not intend to implement. Therefore, the assumed state of all Schedules posted under this use case is CONFIRMED. If the Coordinate Interchange use case requires states, this will need to be changed. The only pertinent states would be APPROVED, and CONFIRMED.

It may be desirable to trigger the execution of this use case off of either time (i.e. specified number of minutes prior to the next scheduling increment) or the receipt of Schedule data from Use Case 2.9 Determine Schedules. However, the MO or BA must also be able to execute this use case whenever they choose to.

If posting of the Schedule fails, it is the MO's or BA's responsibility to communicate the correct Schedule by some other means. The MO or BA is still required to post the Schedule on OASIS after the fact. This will enable it to be used in settlements.

Use Case 2.11 Dispatch Generation

The Balancing Authority is responsible for balancing generation and load in real time for its metered area by direct telemetry/control of generating resources operating under the authority of the BA. Generators that are not under the authority of a Balancing Authority must have the necessary equipment to dispatch those resources based on dispatch orders from the Market Operator if applicable. Balancing Authorities operating within a market controlled by the Market Operator will typically receive economic dispatch targets from the Market Operator on a periodic basis as set by the Real Time Market clearing process. Between RTM clearing intervals, Automatic Generation Control (AGC) of regulating units is employed to maintain short-term balance.

This functionality is outside the scope of OASIS but is included here for completeness.

Use Case 2.12 Follow Dispatch Orders

Generator owners or operators are responsible for following any dispatch orders directed by either the Balancing Authority or Market Operator. Base points may be telemetered to plants and automatically applied to units. Methods of communicating the dispatch and the format and content of the data will vary with area.

This functionality is outside the scope of OASIS but is included here for completeness.

Use Case 2.13 Declare Abnormal Condition

The Reliability Authority in coordination with Balancing Authorities, Transmission Service Providers, Transmission Operators, Generation Operators, and Market Operators will determine the need for and declare any abnormal operating condition. Depending upon the nature and severity of this declaration, certain changes in market rules (or in fact the suspension of market activity) may take place.

This functionality is outside the scope of OASIS but is included here for completeness. The output of this function is required input to the Post Reliability Directive Use Case which is within the scope of OASIS.

Use Case 2.14 Post Reliability Directive

2.14.1 Summary

The Reliability Authority may issue directives during abnormal operating conditions or contingency conditions to direct the Balancing Authorities or

Transmission Operators to take a particular action to ensure system reliability.
Since these directives usually affect market operations to one degree or another,
they are posted on OASIS for all to see. In addition, more direct non-OASIS
means may be in place (such as direct ring-down telephone service) to notify
critical facility operators of important reliability directives. Regional
requirements may dictate that operational entities are automatically subscribed to
receive electronic notifications (see Notify Subscribers) of each reliability
directive issued.

2.14.2 **Actor Role**

Name	Role description
Reliability Authority (RA)	Reliability Authorities are responsible for posting information for any reliability directives issued.

2.14.3 **Triggers**

None.

2.14.4 **Pre-Conditions**

None.

2.14.5 **Flow of Events**

Step	Description	Information Content
1	Reliability Authority assembles Directive Information as required and submits to OASIS	Reliability Directive
2	OASIS receives the Post Reliability Directive request	
3	OASIS validates Reliability Directive information, including: • Submitting entity has authority to issue the directive • Facilities directed to change operation are registered and under the authority of the submitter	
4	OASIS assigns a unique identifier to the reliability directive data and inserts the data in the database.	Directive ID

5	OASIS triggers Notify Subscribers to notify any interested parties of the Reliability Directive.	Directive ID

2.14.6 **Alternative Flows**

Step	Description	Information Content
3a	If Post Reliability Directive request fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits the directive.	

2.14.7 **Post-Conditions**

Reliability Directive is posted on OASIS and available to the Public subject to access controls.

2.14.8 **Related Use Cases**

- Notify Subscribers – Triggered to notify subscribers of the reliability directive

2.14.9 **Assumptions**

Submitting entity has authority to issue the directive. Facilities directed to change operation are registered and under the authority of the submitter.

2.14.10 **Data Exchange**

Reliability Directive information includes:

- Reliability Authority identifier
- Impacted location(s)
- Impacted Facility(ies)
- Emergency or contingency conditions (e.g., capacity deficiency)

- Operating directive (e.g., shed load, execute operating procedure, etc.)
- Start date/time
- Stop date/time

2.14.11 **Comments**

None.

Use Case 2.15   Post Operations Data

2.15.1 **Summary**

Various Operations Data may be posted during normal operations. This may include load forecasts, actual load history, current load, outages in effect, and other related material.

2.15.2 **Actor Role**

Name	Role description
Transmission Service Provider (TSP)	Transmission Service Providers may post Operations data related to the facility(ies) under their authority.
Market Operators	Market Operators may post Operations data related to the facility(ies) under their authority.
Balancing Authority (BA)	Balancing Authorities may post Operations data related to the facility(ies) under their authority.
Reliability Authority (RA)	Reliability Authorities may post Operations data related to the facility(ies) under their authority.

2.15.3 **Triggers**

None.

2.15.4 **Pre-Conditions**

None.

2.15.5 **Flow of Events**

Step	Description	Information Content
1	Operations Data is assembled as required and submitted to OASIS	Operations Data
2	OASIS receives Post Operations Data request	
3	Operations information is posted on OASIS	

2.15.6 **Alternative Flows**

None.

2.15.7 **Post-Conditions**

Operations Data is posted on OASIS and available to the Public subject to access controls.

2.15.8 **Related Use Cases**

None.

2.15.9 **Assumptions**

None.

2.15.10 **Data Exchange**

Data format and content will be market/region specific. Operations data may include various objects that are already defined or may be free form text.

2.15.11 **Comments**

None.

Use Case 2.16   View Operations Data

2.16.1 **Summary**

The Public (including GPEs, LSEs, PSEs, etc.) and all Operational Entities have the ability to see pertinent information regarding operations information posted on OASIS, including the ability for selective querying of information. Operational Entities will also be able to view commercially sensitive information that may not otherwise be made available to the Public or view this information prior to its being made available (e.g., 90 days after the fact) to the Public. Market Participant access to commercially sensitive information will be limited to only that information to which the Market Participant is a direct party.

2.16.2 **Actor Role**

Name	Role description
Public	May submit requests to view all publicly accessible operations data including audit reports. If representing a Market Participant (e.g., GPE, LSE, PSE, etc.), may requests to view all operations data to which it is a party including audit reports.
Operational Entities (e.g., RA, TSP, BA or MO)	May submit requests to view all operations data including audit reports.

2.16.3 **Triggers**

None.

2.16.4 **Pre-Conditions**

None.

2.16.5 **Flow of Events**

Step	Description	Information

		Content
1	Public or Operational Entity submits the set of query parameters to selectively report specific information from the operations database in a View Operations Data request	Operations Query
2	OASIS receives View Operations Data request.	
3	OASIS validates all query parameters specified and executes desired query against the operations database. OASIS may enforce limitations on the volume of data that may be selected in a single request to preserve system performance.	
5	Success message with query results is returned to submitter	Operations Data

2.16.6 **Alternative Flows**

Step	Description	Information Content
3a	If View Operations Data request fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits query.	

2.16.7 **Post-Conditions**

Results of the query have been sent to the user.

2.16.8 **Related Use Cases**

None.

2.16.9 **Assumptions**

None.

2.16.10 **Data Exchange**

View Operations Data query parameters include:

- Query type (standard or audit)
- Operations data type
  - o Outages
  - o Load Forecasts
  - o Reliability Directives
  - o Schedules
- Market Participant Identifier
- Operational Entity Identifier
- Impacted Facility(ies)
- Start date/time
- Stop date/time
- Submission date/time
- Update date/time

Certain combinations of query parameters may be mutually exclusive. Logical inter-relationship (e.g., AND, OR, NOT, etc.) between the various query parameters, number of instances a given query parameter may be supplied, and default values for certain query variables not specified will be developed in the OASIS technical standards.

2.16.11 **Comments**

It is understood that very large queries can have negative impacts on the OASIS system. OASIS system operators are expected to manage this. For instance, they may require minimum parameters (i.e., users may not request all schedules, for all locations, for all time). However, there will be situations where users have valid reasons to run large queries. These must be accommodated. A combination of methods for returning data should be considered. For instance, on-line processes could be used for shorter queries and batch processes for longer queries. Technical standards should be developed for this.

4.3 *Transmission Rights Market*

In processing requests made by Transmission Customers for the procurement of transmission rights, either at auction or through a bilateral market, OASIS will manage the "state" associated with each request.   The following diagram shows the valid states and their definitions that may be associated with Transmission Rights Auction Bids and Offers. The valid state transitions and Actors associated with each state transition are indicated. A definition for each state is also included.
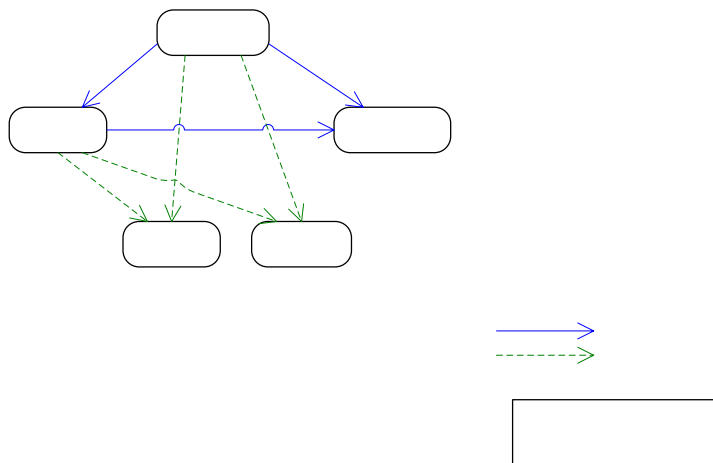
TR Auction Bid/Offer State Definitions:

SUBMITTED: The auction bid/offer is valid and has been recorded on OASIS.

MODIFIED: The auction bid/offer has been modified by the Transmission Customer.

WITHDRAWN: The auction bid/offer was withdrawn by the Transmission Customer prior to closing of the auction – Final State.

CLEARED: The auction bid/offer was successfully cleared/accepted when the market cleared – Final State.

REJECTED: The auction bid/offer was not cleared/accepted when the market cleared – Final State.

TR A

The following states apply to T

(Machine-to-machine communication

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The following diagram shows the valid states associated with the handling of negotiations and consummation of bilateral Transmission Rights Market Deals. The valid state transitions and Actors associated with each state transition are indicated. A definition for each state is also included. Note that these bilateral deals may be initiated by either the buyer or seller. As such the states and state transitions are associated with either the submitter (which may be buyer or seller) and their deal counter-party.

TR Deal State Diagram

The following states apply to Transmission Rights Market "Deals".
(Machine-to-machine communication states (e.g., successful, invalid, commfail) are not included.)

Key:
State changes made by Deal Counter-party:
State changes made by Deal Submitter:
State changes made by Deal Seller or TSP:

version: 0.2.0
last edited: 08/08/03
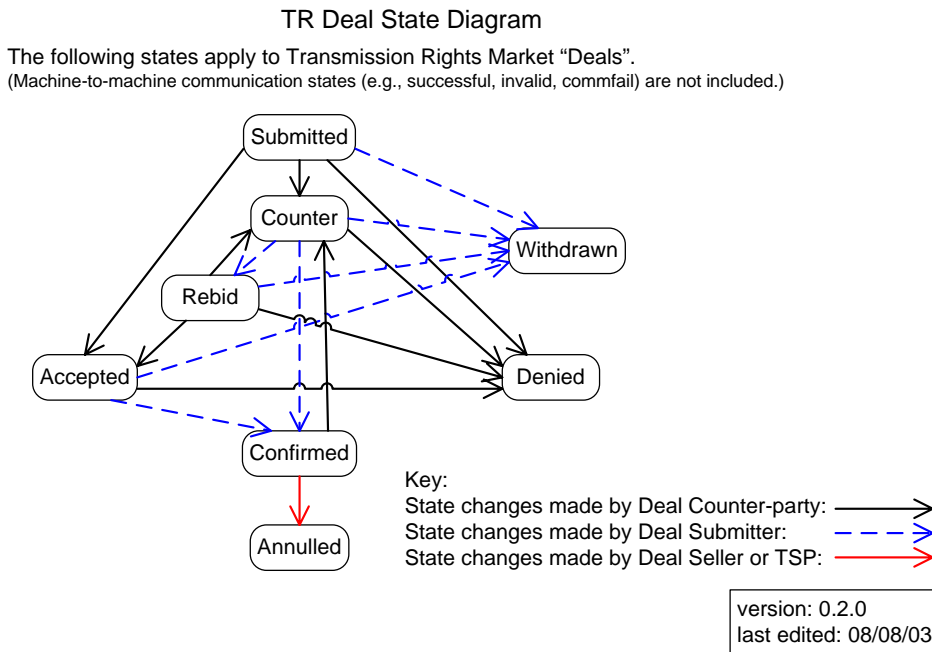
TR Deal State Definitions:

SUBMITTED: The deal is valid and has been recorded on OASIS.

ACCEPTED: The Counter-party agrees to the terms stated in the Deal

COUNTER: The Counter-party proposes alternative terms to the Deal.

REBID: The Submitter responds to Counter with revised terms to the Deal.

WITHDRAWN: The Submitter may withdraw the deal request at any point prior to confirmation – Final State.

DENIED: The Counter-party may deny the deal request at any point prior to confirmation – Final State.

CONFIRMED: The Submitter confirms the Counter-party's acceptance (Accepted) or revised (Counter) terms to the deal.

ANNULLED: The Seller in the deal (or TSP for secondary market deals) may, on mutual agreement, release the buyer from all obligations of the confirmed deal by setting state to annulled – Final State.

The following is a description of the flow of state transitions during the processing of TR Deals:

- Submit TR Deal results in Deal being assigned the initial state of SUBMITTED

- Counter-party (re)evaluates terms of the Deal set by the submitter (SUBMITTED or REBID) and uses the Modify TR Deal to set Deal state to one of:

  - ACCEPTED if terms of the Deal are acceptable to counter-party, or

  - COUNTER along with revised terms of Deal for evaluation by the Submitter (e.g., negotiation of Price).

- Submitter evaluates any revised terms of the Deal as COUNTERed by the Counter-party and uses the Modify TR Deal to set Deal state to one of:

  - CONFIRMED if revised terms of the Deal are acceptable to Submitterand concluding negotiations and closing the Deal, or

  - REBID along with additional revised terms of Deal for reevaluation by the Counter-party

- Counter-party ACCEPTED terms of the Deal require Submitter to use Modify TR Deal to set Deal state to CONFIRMED concluding negotiations and closing the Deal; if Submitter indicates that the Deal is "preconfirmed", OASIS will take this final confirmation step automatically.

- Once CONFIRMED, TR Deal may still be conditional in physical transmission rights markets with prioritized rights and "right of first refusal" clauses. If the TR Deal is subject to displacement by a higher priority TR Deal, the Counter-party (always Seller and TSP) may move TR Deal back to COUNTER with new terms of purchase required to retain ownership of transmission rights. Buyer is required to meet or exceed new terms of purchase and reconfirm the purchase/sale.

- At any point prior to Deal confirmation, Submitter may WITHDRAW the proposed Deal from further consideration.

- At any point prior to Deal confirmation, Counter-party may deny (DENIED) the terms of the proposed Deal removing it from further consideration.

- Finally, with mutual agreement between the Counter-parties, the Seller in the Deal may use Modify TR Deal state to set the Deal to ANNULLED and releasing all obligations between buyer and seller. This action is limited to being performed by the Seller, since they are basically releasing the Buyer from all financial obligation associated with the Deal.

Use Case 3.1   Assess Transfer Capability

3.1.1 Summary

The Transmission Service Provider is responsible for determining total and available transmission system capability based on outages, forecasts,

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transmission rights, unit commitment, and market activity. Transfer capability must be updated in a timely fashion to reflect outages, sale of transmission rights and other special system conditions.   The results of this process must be posted on OASIS.

This functionality is outside the scope of OASIS but is included here for completeness. The output of this function is required input to the Post Transfer Capability use case which is within the scope of OASIS.

3.1.2 **Actor Role**

Name	Role description
TSP	Transmission Service Providers must assess the transfer capability of the transmission system.

3.1.3 **Triggers**

Assess Transfer Capability is triggered on any one of the following events:

- Periodically – time based trigger is a function of the forward interval being assessed (e.g., hour-ahead, day-ahead, month-ahead, year-ahead, etc.). More frequent assessments are triggered approaching the operating hour.

- TR Auction Clearing – clearing of any TR auction triggers assessment of transfer capability to factor in new rights bought and sold via the Post Transmission Rights Use Case.

- TR Deal Confirmation – confirmation of bilateral purchases/sales of transmission rights triggers assessment of transfer capability to factor in new rights bought and sold via the Post Transmission Rights Use Case.

- Bilateral Schedule Confirmation – confirmation of bilateral energy schedules in physical transmission rights based markets may impact available transfer capability for purchase of economic/non-firm transmission service.

- Operational state changes due to unscheduled facility outages and deratings via Set Outage State Use Case.

3.1.4 **Pre-Conditions**

Current and anticipated system conditions (e.g., outages, facility status, equipment ratings, network configuration), scheduled use of the transmission system, and all transmission rights allocated or purchased must be available to assess transfer capability.

3.1.5 **Flow of Events**

Step	Description	Information Content
1	TSP collects all supporting information required over the period of time transfer capability is to be assessed, including: • Network model/configuration • List of transmission contingencies to consider • Current system conditions (in real-time) • Facility outages (planned and unplanned in real-time) • Forecasted load • Reliability margins (e.g., CBM, TRM) • Transmission rights already allocated/sold • Bilateral schedules; pending and confirmed	Transfer Capability
2	TSP assesses transmission system's transfer capability.	
3	TSP triggers the Post Transfer Capability use case to post total and available transfer capabilities on OASIS.	Transfer Capability

3.1.6 **Alternative Flows**

None.

3.1.7 **Post-Conditions**

The transfer capability is calculated and posting of the information on OASIS is initiated.

3.1.8 **Related Use Cases**

• Set Outage State – triggers Assess Transfer Capability to reflect impact of transmission or generation outages on transfer capability

- Create System Load Forecast - triggers Assess Transfer Capability to reflect impact of load on transfer capability

- Create Schedules - triggers Assess Transfer Capability to reflect impact of scheduled usage on transfer capability

- Post Transmission Rights – triggers Assess Transfer Capability to reflect impact on assignment of transmission rights through allocation, auction or bilateral deals.

- Post Transfer Capability – triggered to post the output of this Use Case on OASIS

3.1.9 **Assumptions**

Standards may need to be developed on:

- calculation methodology

- practices related to establishing reliability margins (e.g., CBM, TRM)

- coordination of calculations between neighboring TSPs.

3.1.10 **Data Exchange**

See Post Transfer Capability.

3.1.11 **Comments**

None.

Use Case 3.2   **Create TR Allocation**

3.2.1 **Summary**

Transmission Service Providers may perform an initial allocation of transmission rights or an allocation of auction revenue rights to Load-Serving Entities and/or Transmission Owners.

This functionality is outside the scope of OASIS but is included here for completeness. The output of this function is required input to the Post Transmission Rights use case which is within the scope of OASIS.

3.2.2 **Actor Role**

Name	Role description
TSP	Transmission Service Providers allocate transmission rights or auction revenue rights based on local market rules and contractual agreements.

3.2.3 **Triggers**

Create TR Allocation is triggered by market rules which establish when the TSP will make the appropriate allocations of transmission rights or auction revenue rights. Allocation, if any, must occur prior to the announcement of the first transmission rights auction.

3.2.4 **Pre-Conditions**

TSP must have the results of the Assess Transfer Capability Use Case to determine the total transfer capability that may be made available or subject to allocation.

3.2.5 **Flow of Events**

Step	Description	Information Content
1	TSP collects all information related to grandfathered transmission contracts, historic use by transmission customers, contractual arrangements for participant funded transmission expansion projects, etc., for the period of time transmission rights are to be allocated. TSP converts all contract and related information into a set of equivalent transmission rights to be considered for allocation to each Transmission Customer	Transmission contracts
2	TSP receives transfer capability information from Assess Transfer Capability Use Case	Transfer Capability
3	TSP performs simultaneous feasibility assessment on the rights to be allocated. Rights may take on the form of Transmission Rights or Auction Revenue Rights based on market implementation.	
4	TSP triggers Post Transmission Rights use case to post allocated rights	Transmission

	on OASIS	Rights or Auction Revenue Rights

3.2.6 **Alternative Flows**

Step	Description	Information Content
3a	If the set of rights to be allocated do not meet the simultaneous feasibility test, market rules will dictate how to apportion that subset of rights which do meet the simultaneous feasibility test (e.g., pro-rata allocation).	

3.2.7 **Post-Conditions**

The set of allocated rights, either as transmission rights or auction revenue rights, which meet the simultaneous feasibility test are calculated and posting of this information on OASIS is initiated. The Assess Transfer Capability Use Case is triggered to factor the allocated transmission rights into the determination of transfer capability.

3.2.8 **Related Use Cases**

- Assess Transfer Capability – provides input to this Use Case.

- Post Transmission Rights – accepts output from this Use Case to be posted on OASIS.

- Assess Transfer Capability – accepts output from this Use Case to update Transfer Capability based on the rights allocated.

3.2.9 **Assumptions**

Market rules have been developed for the apportionment of rights when the total set of rights considered for allocation cannot be accommodated.

3.2.10 **Data Exchange**

See Post Transmission Rights.

3.2.11 **Comments**

None.

Use Case 3.3　　　Post TR Auction Announcement

3.3.1 **Summary**

Transmission Service Providers must post an announcement of any upcoming Transmission Rights Auction. This announcement typically includes information on the conduct of the auction, bid/offer data and timing requirements, any multi-tiered auction information, the types of rights to be auctioned, as well as any historic information related to congestion patterns, network model and assumptions to be used, and any pre-auction allocation of rights.

3.3.2 **Actor Role**

Name	Role description
TSP	Transmission Service Providers must post an announcement for public viewing prior to auctioning of transmission rights.

3.3.3 **Triggers**

- Predefined time to post the auction announcement has been reached.
- Post auction announcement has been manually initiated.

3.3.4 **Pre-Conditions**

None.

3.3.5 **Flow of Events**

Step	Description	Information Content
1	TSP collects all supporting information required over the period of time transmission rights are to be allocated. Supporting information includes the network model to be used, assumptions regarding system conditions that might affect the availability of transfer capability, total transfer capability available to be auctioned, historic congestion or binding	Transfer Capability

	constraints on the transmission system, etc.	
2	TSP posts on OASIS market rules regarding conduct of this specific auction, including timing for submission of bids/offers, and the amount of transfer capability eligible for auction (for multi-tiered auctions). OASIS assigns a unique identifier for the auction.	Auction Rules
3	OASIS triggers Notify Subscribers to notify any interested parties of the auction announcement.	Auction ID

3.3.6 **Alternative Flows**

None

3.3.7 **Post-Conditions**

The announcement of the auction of Transmission Rights is posted on OASIS.

3.3.8 **Related Use Cases**

- Assess Transfer Capability – provides input to this Use Case

- Notify Subscribers – Triggered by this Use Case to notify any interested parties of the auction announcement.

3.3.9 **Assumptions**

Market rules for conduct of the auction have been established.

Market rules will dictate the lead time required for the TSP to post an announcement of the Transmission Rights Auction prior to conduct of the auction.

3.3.10 **Data Exchange**

Information regarding Transmission Rights Auctions is expected to be "free-form" and may include:

- Network Model information

- Assumptions regarding system conditions:
  - Total load forecasts
  - Major facility outages
  - Contingent elements
- Transfer Capability eligible for auction
- Auction rules:
  - Time period for rights to be auctioned
  - Time of auction opening and closing
  - Handling of apportioning rights on oversubscription

3.3.11 Comments

None.

Use Case 3.4   Submit TR Auction Offer

3.4.1 Summary

Transmission Customers submit offers to sell transmission rights in the auction at any time from opening of the auction to closing of the auction. In some markets, participants are permitted to "exchange" their existing rights either for different types of rights or for rights on different facilities. This is accomplished by submitting an offer to sell the existing rights and a bid to purchase the desired rights in the auction. Clearing of these "exchange" offers/bids is contingent on one another; that is, they must both clear or neither clears.

3.4.2 Actor Role

Name	Role description
TC	Transmission Customers submit offers to sell or exchange their existing transmission rights in the auction.

3.4.3 Triggers

None.

3.4.4 **Pre-Conditions**

3.4.5 **Flow of Events**

Step	Description	Information Content
1	TC submits offer to sell existing transmission rights in the auction.	TR Auction Offer
2	OASIS receives Submit TR Auction Offer request.	
3	OASIS validates all submitted information, including: • Auction identifier matches a currently open auction; • Time period of offer matches period of right's being auctioned (may be implied); • Type of rights being offered (product) allowed to be auctioned; • Transmission Resource – Receipt Point and Delivery Point for point-to-point type products, or Flowgate for Path specific type products; • Quantity (MWs) • Seller owns all rights being offered, e.g., MWs over time on same Transmission Resource; • Price complies with any market restrictions (e.g., market price cap); • If an "exchange", id of corresponding Bid to purchase must be valid and associated with same TC.	
4	OASIS assigns the TR Auction Offer a unique identifier, inserts the offer into the database with a state of SUBMITTED. TC's existing transmission rights in the amount of the offer over the time period of the rights being auctioned is marked as "committed" to prevent submission of multiple offers to sell the same transmission rights. If an "exchange", OASIS creates an association between the TR Auction Offer and the corresponding TR Auction Bid.	

5	Success message is returned to TC (submitter)	TR Auction Offer ID
		State

3.4.6 **Alternative Flows**

Step	Description	Information Content
3a	If Submit TR Auction Offer request fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits offer.	

3.4.7 **Post-Conditions**

Valid TR Auction Offer and link to TR Auction Bid (if appropriate) are inserted into the transmission rights database.

3.4.8 **Related Use Cases**

None.

3.4.9 **Assumptions**

None.

3.4.10 **Data Exchange**

TR Auction Offer includes:

- Customer Identifier (Seller)
- Auction ID
- TR type offered (product) (e.g. annual point-to-point CRR obligation, monthly flowgate CRR option)
- Price
- Quantity offered, MWs

- Start time of offer (may be implied by Auction)

- Stop time of offer (may be implied by Auction)

- Receipt Point (Injection); for point-to-point products

- Delivery Point (Withdrawal); for point-to-point products

- Transmission Resource (i.e., Flowgate or Path)

- Exchange Bid ID (if applicable)

3.4.11 Comments

Exchanges as defined in the SMD NOPR are supported through the auction process. There is no facility provided to allow for the exchange of financial transmission rights through the TR Deal process, (i.e., an exchange on customer demand).

Use Case 3.5   Modify TR Auction Offer

3.5.1 Summary

Up until the transmission rights auction is closed, Transmission Customers may modify their existing offers subject to any restrictions that may be enforced based on market rules specific to the auction being conducted. Existing Offers may also be withdrawn from the market.

3.5.2 Actor Role

Name	Role description
TC	Transmission Customers submit modifications to their offers to sell or exchange transmission rights in the auction.

3.5.3 Triggers

None.

3.5.4 Pre-Conditions

None.

3.5.5 **Flow of Events**

Step	Description	Information Content
1	TC submits modification to an offer to sell existing transmission rights in the auction.	TR Auction Offer
2	OASIS receives Modify TR Auction Offer request.	
3	OASIS validates all submitted information. Market rules may restrict which elements of an offer may be modified. Minimally, the following information is validated: - TR Auction Offer ID matches valid offer made by the TC; - Quantity (MWs); - Seller owns all rights being offered, e.g., MWs over time, of same type (product), and on same Transmission Resource(s); - Price – complies with any market restrictions (e.g., market price cap); - If an "exchange", TR Auction Bid ID of bid to purchase must be valid and associated with same TC. Modification of the following offer elements subject to market rules and validation: - Auction identifier matches a currently open auction; - Time period of offer matches period of right's being auctioned; - Type of rights being offered (product) allowed to be auctioned; - Transmission Resources (Receipt Point and Delivery Point for point-to-point type products, or Flowgate for path specific type products.	
4	OASIS updates the modified fields of the Offer in the database, sets the Offer state to MODIFIED (or WITHDRAWN). TC's existing transmission rights in the amount of the offer over the time period of the rights being auctioned must be marked as "committed" to prevent submission of multiple offers to sell the same transmission rights (this frees up or commits additional rights based on modified quantity). If an "exchange", OASIS creates an association between the TR Auction Offer and the corresponding TR Auction Bid.	

	If an existing "exchange" association with a TR Auction Bid is modified or deleted, OASIS modifies existing offer/bid association and creates (if necessary) association to new bid.	
5	Success message is returned to TC (submitter)	TR AuctionOffer ID State

3.5.6 **Alternative Flows**

Step	Description	Information Content
3a	If Modify TR Auction Offer request fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits modification.	

3.5.7 **Post-Conditions**

Existing TR Auction Offer and associated link to TR Auction Bid (if appropriate) are updated in the transmission rights database.

3.5.8 **Related Use Cases**

None.

3.5.9 **Assumptions**

Market rules must define what, if any, modifications to an existing bid are allowed.

3.5.10 **Data Exchange**

Modification of a TR Auction Offer would minimally include:

- Customer Identifier (Seller)

- TR Auction Offer ID (existing Offer)

- Quantity offered

- Price

- Exchange TR Auction Bid ID

3.5.11 Comments

None.

Use Case 3.6   Submit TR Auction Bid

3.6.1 Summary

Transmission Customers submit bids to purchase transmission rights in the auction at any time from opening of the auction to closing of the auction. In some markets, participants are permitted to "exchange" their existing rights either for different types of rights or for rights on different facilities. This is accomplished by submitting an offer to sell the existing rights and a bid to purchase the desired rights in the auction. Clearing of these "exchange" offer/bids is contingent on each other; that is, they must both clear or neither clears.

3.6.2 Actor Role

Name	Role description
TC	Transmission Customers submit bids to purchase or exchange their existing transmission rights in the auction.

3.6.3 Triggers

None.

3.6.4 Pre-Conditions

None.

3.6.5 **Flow of Events**

Step	Description	Information Content
1	TC submits bid to purchase transmission rights in the auction.	TR Auction Bid
2	OASIS receives Submit TR Auction Bid request.	
3	OASIS validates all submitted information, including: • Auction ID matches a currently open auction; • Time period of bid matches period of right's being auctioned (may be implied); • Type of rights being offered (product) allowed to be auctioned; • Transmission Resource(s) (e.g., Receipt Point and Delivery Point for point-to-point type products, or Flowgate for path specific type products); • Quantity (MWs); • Price complies with any market restrictions (e.g., market price cap); • Price*Quantity meets TCs creditworthiness criteria; • If an "exchange", id of corresponding Offer to sell must be valid and associated with same TC.	
4	OASIS assigns the TR Auction Bid a unique identifier, inserts the bid into the database with a state of SUBMITTED. If an "exchange", OASIS creates an association between the TR Auction Bid and the corresponding TR Auction Offer.	
5	Success message is returned to TC (submitter)	TR Auction Bid ID State

3.6.6 **Alternative Flows**

Step	Description	Information Content

3a	If Submit TR Auction Bid request fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits offer.	

3.6.7 **Post-Conditions**

Valid TR Auction Bid and link to TR Auction Offer (if appropriate) are inserted into the transmission rights database.

3.6.8 **Related Use Cases**

None.

3.6.9 **Assumptions**

None.

3.6.10 **Data Exchange**

TR Auction Bid includes:

- Customer Identifier (Customer)
- Auction ID
- TR type being bid (product) (e.g. annual point-to-point CRR obligation, monthly flowgate CRR option)
- Price
- Quantity bid, MWs
- Start time of bid (may be implied by Auction)
- Stop time of bid (may be implied by Auction)
- Receipt Point (Injection); for point-to-point products
- Delivery Point (Withdrawal); for point-to-point products
- Transmission Resource (i.e., Flowgate) for path type products
- Exchange TR Auction Offer ID

3.6.11 **Comments**

None.

Use Case 3.7   Modify TR Auction Bid

3.7.1 **Summary**

Up until the transmission rights auction is closed, Transmission Customers may modify their existing bids subject to any restrictions that may be enforced based on market rules specific to the auction being conducted. Existing bids may also be withdrawn from the market.

3.7.2 **Actor Role**

Name	Role description
TC	Transmission Customers submit modifications to their bids to purchase or exchange transmission rights in the auction.

3.7.3 **Triggers**

None.

3.7.4 **Pre-Conditions**

None.

3.7.5 **Flow of Events**

Step	Description	Information Content
1	TC submits modification to a bid to purchase existing transmission rights in the auction.	TR Auction Bid
2	OASIS receives Modify TR Auction Bid request.	
3	OASIS validates all submitted information. Market rules may restrict	

	which elements of a bid may be modified. Minimally, the following information is validated:	
	• TR Auction Bid ID matches valid Bid made by the TC;	
	• Quantity (MWs);	
	• Price – complies with any market restrictions (e.g., market price cap);	
	• Price*Quantity meets TC's creditworthiness criteria;	
	• If an "exchange", id of corresponding offer to sell must be valid and associated with same TC.	
	Modification of the following Bid elements subject to market rules and validation:	
	• Auction ID matches a currently open auction;	
	• Time period of Bid matches period of right's being auctioned;	
	• Type of rights being Bid (product) allowed to be auctioned;	
	• Transmission Resource(s) (e.g., Receipt Point and Delivery Point for point-to-point type products, or Flowgate for path specific type products).	
4	OASIS updates the modified fields of the Bid in the database, sets the Bid state to MODIFIED (or WITHDRAWN). If an "exchange", OASIS creates an association between the TR Auction Bid and the corresponding TR Auction Offer. If an existing "exchange" is modified or deleted, OASIS modifies existing offer/bid association and creates (if necessary) association to new offer.	
5	Success message is returned to TC (submitter)	TR Auction Bid ID State

3.7.6 **Alternative Flows**

Step	Description	Information Content
3a	If Modify TR Auction Bid request fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to	Error message

	the business rule violated.	
3b	User corrects data and resubmits offer.	

3.7.7 **Post-Conditions**

Existing TR Auction Bid and associated link to TR Auction Offer (if appropriate) are updated in the transmission rights database.

3.7.8 **Related Use Cases**

None.

3.7.9 **Assumptions**

Market rules must define what, if any, modifications to an existing bid are allowed.

3.7.10 **Data Exchange**

Modification of a TR Auction Bid would minimally include:

- Customer Identifier (Seller)
- TR Auction Bid ID (existing Bid)
- Quantity bid, MWs
- Price
- Exchange TR Auction Offer ID (if applicable)

3.7.11 **Comments**

Since there is no direct tie between submission of a bid and an offer in the auctions, there may be a case where a TC has entered a bid (offer) for exchange of rights but fails or cannot enter the corresponding offer (bid) in time for auction closing. This may result in an unintended purchase (or release/sale) of rights. This situation should be prevented in the final technical implementation.

Use Case 3.8   Clear TR Auction

3.8.1 **Summary**

Transmission Service Providers clear the bids and offers for transmission rights at the close of the auction. Financial Congestion Revenue Rights are cleared using the objective function of maximizing auction revenue while meeting a simultaneous feasibility test to ensure revenue adequacy. Markets that conduct auctions for physical transmission rights may limit the amount of rights available in the auction process to an amount that can be physically accommodated by the transmission system. All cleared transactions are subsequently posted for the Market Participants to view.

This functionality is outside the scope of OASIS but is included here for completeness. The output of this function is required input to the Set TR Auction Bid/Offer State and Post Transmission Rights use cases which are within the scope of OASIS.

3.8.2 **Actor Role**

Name	Role description
TSP	Transmission Service Providers must clear the transmission rights auction market based on submitted bids/offers.

3.8.3 **Triggers**

Clearing of the TR Auction is triggered at the close of the auction period.

3.8.4 **Pre-Conditions**

All TR Auction Offers and Bids to be considered in the clearing of the market must be submitted prior to the closing of the auction.

3.8.5 **Flow of Events**

Step	Description	Information Content
1	TSP collects all supporting information required over the period of time transmission rights are to be allocated, including: • Network model/configuration	Transfer Capability

Step	Description	Information Content
	• List of transmission contingencies to consider • Facility outages • Forecasted load • Reliability margins (e.g., CBM, TRM) • Total transfer capability • Existing transmission rights not offered for sale in auction	
2	TSP executes market clearing function, runs simultaneous feasibility assessment, and awards transmission rights to successful bidders.	
3	Trigger Set TR Auction Bid/Offer State to update bid/offer states and post information on current holder of transmission rights cleared in the auction on OASIS.	

3.8.6 Alternative Flows

Step	Description	Information Content
2a	If TSP fails to clear all bids/offers while meeting simultaneous feasibility test, all bids (or offers) that fail to clear that are an exchange of existing transmission rights and their associated offers (or bids) will be removed from the auction and market clearing re-executed.	
2b	If TSP fails to clear all bids/offers after removal of failed exchange bids, identical competing bids at the market clearing price will be apportioned to the competing bidders per market rules to satisfy the simultaneous feasibility test.	

3.8.7 Post-Conditions

The Transmission Rights awarded in the auction are posted on OASIS via triggering of Set TR Auction Bid/Offer State.

3.8.8 **Related Use Cases**

- Assess Transfer Capability – provides input to this Use Case for use in simultaneous feasibility test

- Set TR Auction Bid/Offer State – triggered to update bid/offer state and post the output of this Use Case on OASIS

3.8.9 **Assumptions**

The auction clearing process must remove all exchange bid/offer pairs if either the bid or offer did not clear. This may be problematic as removal of one exchange pair might have allowed another failed exchange bid/offer to clear. A fair and equitable method to handle this contingency should be addressed. For instance, exchange bids/offers may be removed from the auction sequentially in order of increasing market value, i.e., remove lowest valued exchanges first.

3.8.10 **Data Exchange**

None.

3.8.11 **Comments**

None.

Use Case 3.9 **Set TR Auction Bid/Offer State**

3.9.1 **Summary**

The Transmission Service Provider updates all bids and offers submitted into the TR Auction to indicate whether the particular bid or offer was cleared, in whole or in part, in the auction. This is in addition to the posting of the transmission rights granted to each auction participant.

3.9.2 **Actor Role**

Name	Role description
TSP	Transmission Service Providers must update all bids/offers cleared in the transmission rights auction.

3.9.3 **Triggers**

Set TR Auction Bid/Offer State is triggered by the Clear TR Auction process.

3.9.4 **Pre-Conditions**

Transmission rights auction has been cleared.

3.9.5 **Flow of Events**

Step	Description	Information Content
1	TSP collects results from Clear TR Auction for the auction being conducted.	
2	TSP updates each bid/offer cleared in the auction to reflect: • State of CLEARED or REJECTED; • Auction clearing price; • Quantity of rights bought/sold (may be different from original bid/offer amount).	
3	OASIS triggers Notify Subscribers to notify any interested parties of the updated state of auction bids/offers	Auction ID
4	OASIS triggers Post Transmission Rights to post on OASIS information on current transmission rights holders for all rights acquired through the auction and update all existing transmission rights which were sold through the auction.	Auction ID

3.9.6 **Alternative Flows**

None.

3.9.7 **Post-Conditions**

Updated bid/offer information and the Transmission Rights awarded in the auction are posted on OASIS.

Notify Subscribers and Post Transmission rights have been triggered.

3.9.8 **Related Use Cases**

- Clear TR Auction - provides input to this Use Case identifying cleared bids/offers

- Notify Subscribers – triggered to notify all interested parties of updates to bids/offers

- Post Transmission Rights – triggered to post/update information for each cleared bid to purchase and offer to sell transmission rights

3.9.9 **Assumptions**

None.

3.9.10 **Data Exchange**

None.

3.9.11 **Comments**

None.

Use Case 3.10 Submit TR Proposal

3.10.1 **Summary**

Transmission Service Providers and any holder of Transmission Rights may submit a "proposal" for the sale of Transmission Rights. Market Participants wishing to purchase Transmission Rights may submit a "proposal" to purchase those rights. There is no implied process or action taken to match proposals for sale with proposals for purchase. Market participants are required to review all such proposals and initiate the purchase or sale (deal) with their desired counter-party through the Submit TR Deal Use Case.

3.10.2 **Actor Role**

Name	Role description
TSP	Transmission Service Providers must post transmission rights available for sale in accordance with their OATT.
TC	Existing transmission rights holders may post a proposal to sell all or a portion of those rights. Transmission Customers may post a proposal to purchase specific transmission rights from existing rights holders.

3.10.3 **Triggers**

None.

3.10.4 **Pre-Conditions**

None.

3.10.5 **Flow of Events**

Step	Description	Information Content
1	TC submits proposal to buy or sell transmission rights. TSPs are limited to only posting proposals to sell.	TR Proposal
2	OASIS receives Submit TR Proposal request.	
3	OASIS validates all submitted information, including: • Proposal must be for BUY or SELL; • Type of transmission rights being offered (product) is valid; • Time period of rights proposed to be bought/sold is valid for product being proposed; • Proposal submission time complies with market rules established for the product (i.e., no earlier than, no later than,	

	etc.) • Transmission Resource(s) are valid (e.g., Receipt Point and Delivery Point for point-to-point type products, or Flowgate for path specific type products); • Quantity (MWs) • If type is SELL and Seller is not TSP, Seller must own all rights being offered, MWs over time, of same type (product), on same Transmission Resource(s); • Proposed price complies with any market restrictions (e.g., market price cap);	
4	OASIS assigns the TR Proposal a unique identifier, inserts the proposal into the database with a state of SUBMITTED.	
5	Success message is returned to TC/TSP (submitter)	TR Proposal ID State
6	OASIS triggers Notify Subscribers to notify any interested parties of the new Proposal information	TR Proposal ID State

_____

3.10.6 **Alternative Flows**

Step	Description	Information Content
3a	If Submit TR Proposal request fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits proposal.	

3.10.7 **Post-Conditions**

Valid TR Proposal is inserted into the transmission rights database.

3.10.8 **Related Use Cases**

- Notify Subscribers – Triggered to notify any interested parties of the new Proposal

3.10.9 **Assumptions**

None.

3.10.10 **Data Exchange**

TR Proposal data includes:

- Customer Identifier (Buyer/Seller)

- Proposal type: (BUY/SELL)

- Type of transmission rights proposed to be bought/sold (product) (e.g. annual point-to-point CRR obligation, monthly flowgate CRR option)

- Price per unit or Total Price (only one may be specified)

- Proposal's opening time (time after which deals will be accepted for BUY/SELL; default to submission time)

- Proposal's closing time (time after which deals will no longer be accepted for BUY/SELL)

- Receipt Point (Injection); for point-to-point products

- Delivery Point (Withdrawal); for point-to-point products

- Transmission Resource(s) (i.e., Flowgate or Path)

- Rights Proposal Profile:
  - Quantity proposed, MWs
  - Start time of rights in proposed BUY/SELL
  - Stop time of rights in proposed BUY/SELL

3.10.11 **Comments**

None.

Use Case 3.11 Modify TR Proposal

3.11.1 Summary

Transmission Service Providers and Transmission Customers may modify certain parameters (e.g., price, quantity, etc.) associated with their existing proposals of transmission rights for sale or purchase. Buyers and Sellers of transmission rights should update any posted TR Proposals as bilateral deals for sale/purchase of these rights are consummated. Existing TR Proposals may also be withdrawn from the market.

3.11.2 Actor Role

Name	Role description
TSP	Transmission Service Providers must update all proposals for sale of transmission rights from available transfer capability as new transfer capability data is computed and/or deals to sell those transmission rights are consummated.
TC	Transmission Customers may submit modifications to their proposals to buy or sell existing transmission rights.

3.11.3 Triggers

None.

3.11.4 Pre-Conditions

None.

3.11.5 Flow of Events

Step	Description	Information Content
1	TC submits modification to a proposal to buy/sell existing transmission rights. TSPs are limited to only modifying proposals to sell.	TR Proposal

2	OASIS receives Modify TR Proposal request.	
3	OASIS validates all submitted information. Market rules may restrict which elements of a proposal may be modified. Minimally, the following information is validated: • Unique TR Proposal ID matches an existing proposal made by the TC/TSP; • Quantity (e.g., MWs) • If proposal is a SELL submitted by TC, Seller must own all rights being offered: MWs over time, of same type (product), and on same Transmission Resource; • Price complies with any market restrictions (e.g., market price cap);	
4	OASIS updates the modified fields of the Proposal in the database, sets the Proposal state to MODIFIED (or WITHDRAWN).	
5	Success message is returned to TC (submitter)	TR Proposal ID State
6	OASIS triggers Notify Subscribers to notify any interested parties of the modification to the Proposal	TR Proposal ID State

3.11.6 **Alternative Flows**

Step	Description	Information Content
3a	If Modify TR Proposal request fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits proposal.	

3.11.7 **Post-Conditions**

Existing TR Proposal is updated in the transmission rights database.

3.11.8 **Related Use Cases**

- Notify Subscribers – Triggered to notify any interested parties of the modified Proposal

3.11.9 **Assumptions**

None.

3.11.10 **Data Exchange**

See Submit TR Proposal data exchange.

3.11.11 **Comments**

Market rules must have been defined/established as to which data elements within the proposal may be modified.

Use Case 3.12 **Submit TR Deal**

3.12.1 **Summary**

Transmission Customers submit a "deal" 1) as buyer to request the purchase of transmission rights from either the Transmission Service Provider or another Transmission Customer (the seller), or 2) as seller to request the sale of transmission rights to another Transmission Customer (the buyer). There is no requirement that there be a "proposal" (offer to sell or bid to purchase) posted to the market for a participant to submit a TR Deal request to buy or sell transmission rights with a counter-party. Submission of a TR deal initiates the negotiation and confirmation process between the counter-parties. Note that a Market Participant may be negotiating deals for sale of a given set of transmission rights with multiple counter-parties for the same transmission rights simultaneously. Similarly, a Market Participant may be negotiating deals with multiple counter-parties for purchase of rights to meet a given portion of their needs.

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Transmission Customers will be required to post information related to off-OASIS secondary market sales of their transmission rights using the Submit and Modify TR Deal Use Cases. Off-OASIS sales are still required to be accepted by the counter-party.

Existing physical transmission rights holders may request an "exchange" of those rights by submitting a "redirect" deal to the TSP.

3.12.2 **Actor Role**

Name	Role description
TC	Transmission Customers submit TR Deals to initiate purchase or sale of transmission rights with a specified counter-party (TC or TSP).

3.12.3 **Triggers**

None.

3.12.4 **Pre-Conditions**

None.

3.12.5 **Flow of Events**

Step	Description	Information Content
1	TC submits TR Deal to either purchase or sell transmission rights from a specified counter-party.	TR Deal
2	OASIS receives Submit TR Deal request.	
3	OASIS validates all submitted information, including: • Identification and role (seller/buyer) of counter-party is a valid Transmission Customer or the TSP; • Counter-party is valid for type of Deal submitted; • Type of deal being submitted is valid for type of rights being bought/sold and type of market (financial or physical)	

	implemented;	
	• Type of rights being bought/sold are valid;	
	• Submission time complies with market rules associated with the type of rights being bought/sold;	
	• Transmission Resources are valid (e.g., Receipt Point and Delivery Point for point-to-point type products, or Flowgate for path specific type products);	
	• Quantity is valid (MWs);	
	• Price complies with any market restrictions (e.g., market price cap);	
	Certain validation rules are deal-type specific (e.g., limited to purchase from TSP, etc.):	
	• If a "redirect" or "renewal", counter-party must be the TSP and submitter must supply reference to existing rights being offered in exchange for new rights identified or being renewed. Existing rights must be verified as being owned by TC/submitter, and be of sufficient quantity and type to support the Deal.	
	• If a "reassignment" or "resale" and submitter is Seller, submitter must supply reference to existing rights being offered for sale. Existing rights must be verified as being owned by TC/submitter, and be of sufficient quantity and type to support the Deal.	
4	OASIS assigns the TR Deal a unique identifier, inserts the deal into the database with a state of SUBMITTED. If a "redirect" or "renewal", OASIS creates an association between the existing rights held and the new rights being purchased. If a "reassignment" or "resale" and submitter is Seller, OASIS creates an association between the existing rights being sold and new rights being purchased.	
5	Success message is returned to TC (submitter)	TR Deal ID State
6	OASIS triggers Notify Subscribers to notify any interested parties of the new Deal submitted.	TR Deal ID State

3.12.6 **Alternative Flows**

Step	Description	Information Content
3a	If Submit TR Deal request fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits deal.	

3.12.7 **Post-Conditions**

Valid TR Deal and link to existing transmission rights (if appropriate) are inserted into the transmission rights database.

3.12.8 **Related Use Cases**

- Notify Subscribers – Triggered to notify counter-party and/or TSP of the new deal.

3.12.9 **Assumptions**

Tariffs and/or market rules have been established and OASIS validates that the deal information complies with those tariffs/rules.

3.12.10 **Data Exchange**

TR Deal data includes:

- Submitter's Identifier
- Submitter's Role (BUYER or SELLER)
- Submitter pre-confirmation – eliminates final confirmation step in negotiating deals
- Counter-party's Identifier
- Counter-party's Role (BUYER or SELLER)
- Deal type

- o Physical Rights Markets
    - Original – standard buy from TSP (counter-party must be TSP)
    - Redirect – release of existing rights in exchange for new rights (counter-party must be TSP)
    - Release – request to release existing rights back to TSP (counter-party must be TSP)
    - Renewal – extension of existing rights (counter-party must be TSP)
    - Reassignment– secondary market buy/sell deal between counter-parties with transfer of all tariff rights and obligations (including financial liability to TSP) to Buyer
    - Resale– secondary market buy/sell deal between counter-parties conveying only scheduling rights to Buyer
- o Financial Rights Markets
    - Reassignment– secondary market buy/sell deal between counter-parties with transfer of all tariff rights and obligations (including financial liability to TSP) to Buyer
- Deal state (see State Diagram in Section 4.3)
- Deal state reason code – predefined set of enumerated codes used to communicate the reason a particular deal state transition was taken; only applicable in setting a final state
- Deal state reason text – free form comment
- Buyer's Terms of purchase
    - o Type of transmission rights proposed to be purchased (product) (e.g. annual point-to-point CRR obligation, monthly flowgate CRR option)
    - o Receipt Point (Injection); for point-to-point products
    - o Delivery Point (Withdrawal); for point-to-point products
    - o Transmission Resource(s) (i.e., Flowgate or Path)
    - o Purchase Price per unit or Total Price (only one may be specified)
    - o Deal Profile:
        - Start date/time of rights to be purchased
        - Stop date/time of rights to be purchased
        - Purchase Quantity, MWs

- o If Deal is a "Redirect", "Renewal" or "Release", profiled reference to one or more existing rights held by Buyer to be redirected (exchanged), renewed, or released:
    - Rights ID
    - Start date/time
    - Stop date/time
    - Quantity
- o Additional terms of purchase – free form text

- Seller's Terms of sale

    - o Type of transmission rights proposed to be sold (product) (e.g. annual point-to-point CRR obligation, monthly flowgate CRR option)

    - o Receipt Point (Injection); for point-to-point products

    - o Delivery Point (Withdrawal); for point-to-point products

    - o Transmission Resource(s) (i.e., Flowgate or Path)

    - o Sale Price per unit or Total Price (only one may be specified)

    - o Deal Profile

        - Start date/time of rights to be sold
        - Stop date/time of rights to be sold
        - Sale Quantity, MWs

    - o If Deal is a "Reassignment" or "Resale", profiled reference to one or more existing rights held by Seller to be conveyed to Buyer on confirmation

        - Rights ID
        - Start date/time
        - Stop date/time
        - Quantity

    - o Additional terms of sale – free form text

- Submission date/time

- Confirmation date/time

- Date/time of last update

Purchase/Sale Quantity may be time varying values, e.g., an on-peak hourly profile.

Buyer's and Seller's terms of purchase/sale must come to agreement through negotiation process prior to TR Deal being set to state of CONFIRMED.

3.12.11 **Comments**

Transmission Rights Deals are roughly analogous to the OASIS Phase I transmission reservation process between the TC and TSP, and the secondary transmission rights market conducted between TCs. Deals are submitted, modified, and ultimately consummated or dropped. The process of negotiating terms of purchase and sale are tracked by Deal "state". The valid states associated with Transmission Rights Deals and a discussion of state transition flow is presented at the beginning of the Transmission Rights Market section.

Use Case 3.13   Modify TR Deal

3.13.1 **Summary**

Transmission Customer and Transmission Service Providers, as counter-parties to a deal for the bilateral sale/purchase of transmission rights, may change certain attributes of the deal as part of the negotiation and confirmation process to buy or sell transmission rights. These changes are limited to such actions as altering the MW quantity, adjusting purchase price, etc. The range of possible actions that may be taken on the deal is determined by the submitter's role (i.e., seller or buyer) in the deal. The Transmission Customers and Transmission Service Providers may also change the state of the deal (e.g., accepted or denied) as part of the Modify TR Deal process.

3.13.2 **Actor Role**

Name	Role description
TC	Transmission Customers submit modifications to their Deals to purchase or sell transmission rights.
TSP	Transmission Service Providers implementing physical transmission rights markets submit modifications to their Deals to sell transmission rights.

3.13.3 **Triggers**

None.

3.13.4 **Pre-Conditions**

None.

3.13.5 **Flow of Events**

Step	Description	Information Content
1	TC or TSP submits modification to a Deal to purchase or sell existing transmission rights. Deal to be modified is identified by unique TR Deal ID established by Submit TR Deal. Role played by the submitter in the Deal determines which information is to be modified. Modification of certain fields may be limited by Market Rules, but could include: • New Deal state • Type of transmission rights to be bought/sold • Receipt Point (Injection); for point-to-point products • Delivery Point (Withdrawal); for point-to-point products • Transmission Resource(s) (i.e., Flowgate or Path) • Start time of rights to be bought/sold • Stop time of rights to be bought/sold • Purchase/Sale Quantity, MWs • Purchase/Sale Price • Reference to the existing rights held by Buyer or Seller related to Deal (e.g., to be renewed, redirected, reassigned, etc.) • Additional terms of purchase/sale	TR Deal
2	OASIS receives Modify TR Deal request.	
3	OASIS validates all submitted information. Market rules may restrict which elements of a bid may be modified. Minimally, the following	

	information is validated:	
	• TR Deal ID matches valid Deal to which submitter is a party.	
	• Deal state, if changed, must comply with valid Deal state transitions based on current and proposed states and role of submitter in the Deal	
	• Type of rights being bought/sold are valid;	
	• Submission time complies with market rules associated with the type of rights being bought/sold;	
	• Transmission Resources are valid (e.g., Receipt Point and Delivery Point for point-to-point type products, or Flowgate for path specific type products);	
	• Quantity (MWs);	
	• Price complies with any market restrictions (e.g., market price cap);	
	Certain validation rules are deal-type specific (e.g., limited to purchase from TSP, etc.):	
	• If a "redirect" or "renewal" and submitter is Buyer and submitter is modifying current references to existing rights, submitter must supply modified reference to existing rights being offered in exchange for new rights identified or being renewed. Existing rights must be verified as being owned by TC/submitter, and be of sufficient quantity and type to support the Deal.	
	• If a "reassignment" or "resale" and submitter is Seller and submitter is providing/modifying current references to existing rights, submitter must supply reference to existing rights being offered for sale. Existing rights must be verified as being owned by TC/submitter, and be of sufficient quantity and type to support the Deal.	
4	OASIS updates the modified fields of the Deal in the database . If a "redirect" or "renewal" and reference information to existing transmission rights has been modified, OASIS must undo the current association to existing rights and create a new/updated association between the existing rights held and the new rights being purchased. Potential exchange of rights must be flagged as "committed" such that TC can't attempt to exchange the same rights multiple times. If a "reassignment" or "resale" and reference information to existing transmission rights has been modified, OASIS must undo the current association to existing rights and create a new/updated association	TR Deal ID State

	between the existing rights being sold and the new rights being purchased. Potential transfer of rights must be flagged as "committed" such that Seller can't attempt to sell the same rights multiple times.	
5	If required, Set TR Deal State is called to update the Deal state.	TR Deal ID State Reason Code Reason Text
6	Success message is returned to submitter	TR Deal ID State Reason Code Reason Text
7	If Set TR Deal State was not called, OASIS triggers Notify Subscribers to notify all interested parties of the modified Deal	TR Deal ID State Reason Code Reason Text

3.13.6 **Alternative Flows**

Step	**Description**	**Information Content**
3a	If Modify TR Deal request fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits deal.	

3.13.7 **Post-Conditions**

Existing TR Deal information is updated in the transmission rights database.

3.13.8 Related Use Cases

- Set TR Deal State – Called to update TR Deal state

- Notify Subscribers – Triggered to notify TSP of confirmation of the deal

3.13.9 Assumptions

Market rules have been defined/established as to what Deal information may be modified.

3.13.10 Data Exchange

See Submit TR Deal data exchange.

3.13.11 Comments

None.

Use Case 3.14   Set TR Deal State

3.14.1 Summary

This use case is called by the Modify TR Deal use case to change the state of a Deal.

Transmission Service Providers may have limited approval rights over TR deals conducted through the bilateral market, and may change the state of a deal directly. One example would be the TSPs refusal to accept transfer of financial liability to the buyer of transmission rights if that buyer cannot meet the TSPs creditworthiness requirements. The TSP indicates their refusal to honor the terms of the Deal CONFIRMED by the counter-parties by setting the Deal state to ANNULLED with an appropriate reason code and text.

3.14.2 Actor Role

Name	Role description
TSP	Transmission Service Providers may perform final validation of terms of certain secondary market TR Deals and ultimately reject a CONFIRMED Deal.

3.14.3 **Triggers**

None.

3.14.4 **Pre-Conditions**

None.

3.14.5 **Flow of Events**

Step	Description	Information Content
1	TSP may review the terms of any TR Deal that has reached a state of CONFIRMED: • Transmission Customer – Buyer • Transmission Customer - Seller • Nature of rights bought/sold • Time frame of rights bought/sold • Transmission resource(s) on which rights bought/sold • Value of rights bought/sold If the TSP has grounds to refuse to honor the terms of the Deal between counter-parties, the TSP submits a Set TR Deal State request with a State of ANNULLED	TR Deal ID State Reason Code Reason Text
2	OASIS receives the Set Deal State Request	
3	OASIS validates that the requested TR Deal state is valid in the context of current Deal state and the role of the submitter.	
4	OASIS updates the TR Deal state in the database.	
5	If Deal state has been set to DENIED, or WITHDRAWN, and the TR Deal involves transfer/exchange of existing rights, the commitment of the rights being sold must be released such that they are free to be sold in another TR Deal.	
6	If Deal state has been CONFIRMED or ANNULLED, the Post	

	Transmission Rights Use Case is triggered.	
7	OASIS triggers Notify Subscribers to notify any interested parties of the change in Deal state.	

3.14.6 **Alternative Flows**

Step	Description	Information Content
3a	If Set TR Deal State request fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits deal.	

3.14.7 **Post-Conditions**

The TR Deal State is updated in the transmission rights database. Depending on the new state, there may be a transfer of rights from Seller to Buyer, or reinstatement of rights to the Seller.

3.14.8 **Related Use Cases**

- Modify TR Deal - triggers Set TR Deal State to update Deal state

- Notify Subscribers – triggered to notify any interested parties of the change in Deal state

- Post Transmission Rights – triggered by Set TR Deal State to update transmission rights posted on OASIS

3.14.9 **Assumptions**

Market rules have been established to define what TR Deals the TSP has ultimate approval rights over and is, therefore, allowed to set confirmed TR Deal state to ANNULLED.

3.14.10 **Data Exchange**

See Submit TR Deal.

3.14.11 **Comments**

None.

Use Case 3.15   Post Transmission Rights

3.15.1 **Summary**

Transmission Service Providers must post pertinent information regarding ownership of transmission rights acquired through auctions, allocations, grand-fathered agreements, secondary market sales, etc. for public and private viewing. Information determined to be commercially sensitive or of a confidential nature will be made accessible only to the party owning the transmission right and the Market Monitor.

3.15.2 **Actor Role**

Name	Role description
TSP	Transmission Service Providers must post information reflecting the current ownership of transmission rights.

3.15.3 **Triggers**

Post Transmission Rights is triggered by the assignment of new transmission rights to a Transmission Customer through either allocation (Create TR Allocation), auction (Set TR Auction Bid/Offer State), or bilateral purchases/deals (Set TR Deal State).

3.15.4 **Pre-Conditions**

With the exception of rights allocated by the TSP, OASIS already contains all information related to auction clearing or bilateral purchases/deals prior to execution of this Use Case. The only information required by this Use Case for these cases is the method, auction or deal, by which the rights were acquired. Since Create TR Allocation is outside the scope of OASIS,

the mechanism used by the TSP to communicate that information to OASIS may not be part of a standardized OASIS interface.

3.15.5 **Flow of Events**

Step	Description	Information Content
1	TSP posts information related to the ownership of transmission rights on OASIS in connection with the following transactions: • Allocation of rights by TSP (see Create TR Allocation) • CLEARED TR Auction Bids (see Set TR Auction Bid/Offer State) • CONFIRMED/ANNULLED TR Deals (see Set TR Deal State) Information posted in association with Transmission Rights includes: • Transmission Customer (Buyer) • Nature of rights held • Time frame of rights held • Transmission resource(s) on which rights held • Value of rights held	Acquisition Method Transmission Rights
2	OASIS receives the Post Transmission Rights request	
3	Based on the nature of the trigger to Post Transmission Rights (i.e., Allocation, Auction Clearing or Deal Confirmation) OASIS updates information on current rights held. For Allocations: • Information on the rights allocated are posted/updated in the transmission rights database. For Auctions: • Existing rights associated with each cleared Offer (sale) are updated to reflect the loss of rights sold in the auction. • New rights associated with each cleared Bid (purchase) are inserted into the transmission rights database to reflect the rights purchased in the auction. For Deals:	Transmission Rights

	• If Deal state has been set to CONFIRMED, and the TR Deal involves transfer/exchange of existing rights, OASIS must transfer those rights (i.e., release the rights from the Seller and convey those rights to the Buyer). • If Deal state has been set to ANNULLED and the TR Deal involves transfer/exchange of existing rights, the rights transferred when the TR Deal was CONFIRMED must be reinstated.	
4	OASIS triggers the Assess Transfer Capability to reflect the new rights conveyed to the Buyer(s).	
5	If the rights were acquired as a result of an allocation (Create TR Allocation), OASIS triggers Notify Subscribers to notify any interested parties of the new transmission rights posted. Note that Set Auction Bid/Offer State and Set TR Deal State have already issued notification to subscribers.	

3.15.6 **Alternative Flows**

None.

3.15.7 **Post-Conditions**

The Transmission Rights awarded to Transmission Customers are posted on OASIS. All sales of rights at auction or on the bilateral secondary market are reflected in updated postings. A reassessment/update of transfer capability has been initiated if required.

3.15.8 **Related Use Cases**

• Create TR Allocation - triggers Post Transmission Rights to reflect rights allocated by the TSP

• Set TR Auction Bid/Offer State – triggers Post Transmission Rights to reflect rights awarded at auction

• Set TR Deal State – triggers Post Transmission Rights to reflect rights awarded through bilateral Deals

- Assess Transfer Capability – triggered by Post Transmission Rights to factor newly awarded transmission rights into the Transfer Capability postings.

- Notify Subscribers – triggered to notify any interested parties of the allocation of transmission rights.

3.15.9 **Assumptions**

None.

3.15.10   **Data Exchange**

Transmission Rights (including auction revenue rights) data includes:

- Customer Identifier (Owner)

- Type of rights held (Product) (e.g. annual point-to-point CRR obligation, monthly flowgate CRR option)

- Purchase Price (if applicable)

- Rights Profile

    o Quantity (MWs)

    o Start time of rights

    o Stop time of rights

- Receipt Point (Injection); for point-to-point products

- Delivery Point (Withdrawal); for point-to-point products

- Transmission Resource (i.e., Flowgate or Path)

- Information tracking how and from where rights acquired:

    o At auction

    o From TSP

    o From secondary market resale

    o From secondary market reassignment

"Quantity" may be represented by multiple data elements to reflect:

- Quantity purchased/sold – used for settlements

- Quantity held – reflects current rights less any auction or bilateral secondary market resales/reassignments

- Quantity committed – reflects rights currently being used or otherwise not available for resale (i.e., scheduled use in physical rights markets, offered into auction for financial rights markets, pending resale/reassignment, etc.)

3.15.11 **Comments**

None.

Use Case 3.16 Post Transfer Capability

3.16.1 Summary

Transmission Service providers must post information reflecting the total and available transfer capability, and other pertinent attributes of the transmission system in accordance with market rules and regulatory orders.

3.16.2 Actor Role

Name	Role description
TSP	Transmission Service Providers must post information reflecting the total and available transfer capabilities of the transmission system.

3.16.3 Triggers

Post Transfer Capability is triggered by the Assess Transfer Capability use case.

3.16.4 Pre-Conditions

None.

3.16.5 Flow of Events

Step	Description	Information Content
1	TSP collects information related to transmission system transfer capability and supporting information determined through the Assess	Transfer Capability

	Transfer Capability Use Case and submits that data to OASIS, including: • Type of transfer capability value posted (e.g., TTC, ATC, CBM, TRM, etc.) • Transmission resource(s) on which capability was computed • Transfer capability value • Time frame of assessment • Time assessment was performed	
2	OASIS receives Post Transfer Capability request	
3	OASIS validates all submitted data to verify: • User has rights to post transfer capability • Valid type of capability is specified • Valid transmission resource(s) associated with capability value is specified	
4	OASIS updates transmission transfer capability data in the database.	
5	OASIS triggers Notify Subscribers to notify any interested parties of the new transfer capability information posted.	

3.16.6 **Alternative Flows**

None.

3.16.7 **Post-Conditions**

The transfer capability values determined through the Assess Transfer Capability use case are posted on OASIS.

3.16.8 **Related Use Cases**

• Assess Transfer Capability – provides output of information to be posted by this use case

- Notify Subscribers – triggered to notify any interested parties of the posting of transfer capability information

3.16.9 **Assumptions**

None.

3.16.10 **Data Exchange**

Transfer Capability data includes:

- Type of transfer capability data to be posted
    - Total Transfer Capability (TTC)
    - Firm and Non-firm Available Transfer Capability (ATC)
    - Capacity Benefit Margin (CBM)
    - Transmission Reserve Margin (TRM)
- Receipt Point (Injection); for point-to-point transfer capabilities
- Delivery Point (Withdrawal); for point-to-point transfer capabilities
- Transmission Resource (i.e., Flowgate or Path); for facility transfer capabilities
- Transfer capability (MWs)
- Start time
- Stop time
- Date/time capability was assessed

3.16.11 **Comments**

None.

Use Case 3.17   View TR Market

3.17.1 **Summary**

The Public, Transmission Customers, Transmission Service Providers and Market Monitors have the ability to see pertinent information regarding all the physical and/or financial transmission rights procured from the transmission market including the ability for selective querying of information. Transmission Customers, Transmission Service Providers and Market Monitors will be able to view commercially sensitive

information that may not otherwise be made available to the Public or prior to its being made available (e.g., 90 days after the fact) to the Public. Transmission Customer access to commercially sensitive information will be limited to only that information or transactions to which the Transmission Customer is a direct party.

3.17.2 **Actor Role**

Name	Role description
Public	May submit requests to view all publicly accessible transmission market data including audit reports.
TC	May submit requests to view all publicly accessible transmission market data and all transmission market data to which it is a party including audit reports.
TSP	May submit requests to view all transmission market data, including full audit reports, transaction logs, etc.
MM	May submit requests to view all transmission market data, including full audit reports, transaction logs, etc.

3.17.3 **Triggers**

None.

3.17.4 **Pre-Conditions**

None.

3.17.5 **Flow of Events**

Step	Description	Information Content
1	Public, TC, TSP or MM submit the set of query parameters to	TR Query

	selectively report specific information from the Transmission Rights Market in a View TR Market request	
2	OASIS receives View TR Market request.	
3	OASIS validates all query parameters specified and executes desired query against the transmission rights database. OASIS may enforce limitations on the volume of data that may be selected in a single request to preserve system performance.	
5	Success message with query results is returned to submitter	TR Data

3.17.6 **Alternative Flows**

Step	Description	Information Content
3a	If View TR Market request fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits query.	

3.17.7 **Post-Conditions**

Results of the query have been sent to the user.

3.17.8 **Related Use Cases**

None.

3.17.9 **Assumptions**

None.

3.17.10 **Data Exchange**

View TR Market query parameters include:

- Query type (standard or audit)
- TR Market data type
    - TR Auction bids/offers
    - TR Proposals
    - TR Deals
    - Transfer Capability
    - Transmission Rights
- Buyer Identifier
- Customer Identifier
- Transmission rights type (product, e.g., annual CRR obligation) (by product attributes?)
- Transmission rights start date/time
- Transmission rights stop date/time
- Receipt Point
- Delivery Point
- Transmission Resource (e.g., flowgate or path)
- Submission date/time
- Update date/time

Certain combinations of query parameters may be mutually exclusive. Logical inter-relationship (e.g., AND, OR, NOT, etc.) between the various query parameters, number of instances a given query parameter may be supplied, and default values for certain query variables not specified will be developed in the OASIS technical standards.

3.17.11 **Comments**

It is understood that very large queries can have negative impacts on the OASIS system. OASIS system operators are expected to manage this. For instance, they may require minimum parameters (i.e., users may not request all schedules, for all locations, for all time). However, there will be situations where users have valid reasons to run large queries. These must be accommodated. A combination of methods for returning data

should be considered. For instance, on-line processes could be used for shorter queries and batch processes for longer queries. Technical standards should be developed for this.

Use Case 3.18   Monitor Market Compliance

See Use Case x.xx Monitor Market Compliance.

4.4   Energy Market

Energy Market State Diagram

The following states apply to Day-Ahead or Real-Time Market Bids and Offers. Machine-to-Machine communication states (e.g., successful, invalid, comm.-fail) are not included.
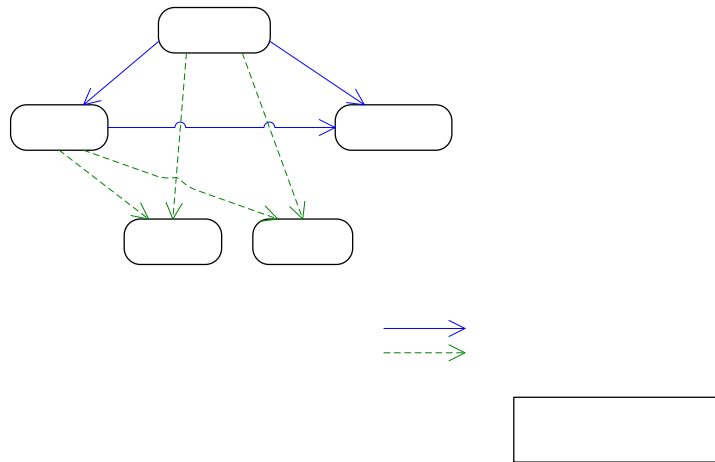
Bid and Offer State Definitions

Submitted: The market bid or offer is valid and has been recorded on OASIS.

Modified: The market bid or offer has been modified by the Market Participant.

Withdrawn: The market bid or offer was withdrawn by the Market Participant prior to closing of the Market – Final State.

Cleared: The market bids or offers that are accepted – Final State.

Rejected: Bids or offers that remained in the submitted or modified state and whose time limit has expired – Final State.

Bids and Offers that are submitted to the Market and that pass the verification process are initially set to state SUBMITTED. Bids or Offers that are in the state SUBMITTED may, under certain circumstances, be changed prior to market closing. If the bid or offer with submitted changes then passes the verification process, it is set to state MODIFIED. Under certain circumstances, a SUBMITTED or MODIFIED bid or offer may be withdrawn. If a request for withdrawal is submitted and passes the verification process, the bid or offer is set to WITHDRAWN.

Upon market closing, bids and offers in either the SUBMITTED or MODIFIED states are considered for clearing. If a bid or offer clears the market, it is set to state CLEARED. Those that fail to clear and whose time limit has expired are set to state REJECTED.

Use Case 4.1   Submit Energy Market Offer

4.1.1 Summary

The purpose of this function is to allow generation-providing entities (owners, operators), LSEs or PSEs to inform the market operator of their desire to supply energy and related products from qualified resources (generation or dispatchable load) and to communicate the prices at which they are willing to sell these products. Energy Market offerings typically take the form of blocks of energy at a fixed price for a period of time (i.e. 50 MW at $25/MW in hour X). The most general form includes a table of start-up prices as a function of down time, a price for running at minimum generation level, a piece-wise linear curve of incremental energy price as a function of output level, blocks of reserve capacity and prices, and blocks of regulation capacity with prices. For the Day-Ahead Market, the latter three products could each be different for each of the 24 hours of the following day. In addition, certain types of generators such as Gas Turbines will have a minimum run time and a minimum down time before restart. There may also be parameters unique to energy-limited resources such as pond-limited hydro generators or wind farms. The Energy Market may also support "virtual" supply offers to provide a financial tool to hedge against day ahead and real-time market clearing price differentials.

4.1.2 Actor Role

Name	Role description
Generation-Providing Entity (GPE)	Submits Offers to sell energy products
Purchasing/Selling Entity (PSE)	Submits Offers to sell energy products. The products are based on either generation or the reduction of load
Load-Serving Entity (LSE)	Submits Offers to sell energy products. The products are based on the reduction of load.

4.1.3 Triggers

None.

4.1.4 **Pre-Conditions**

None.

4.1.5 **Flow of Events**

Step	Description	Information Content
1	User supplies all data required at the time of submission according to market rules	Energy Market Offer
2	Offer is received by OASIS	
3	OASIS validates the submitted data against market rules such as: • Is User authorized to submit this offer? • Is offer submitted on time? • Does offer include all data required at this time?	
4	OASIS assigns the offer a unique ID and stores the offer in database. State is set to SUBMITTED	
5	Success message is returned to user	Offer ID, State

4.1.6 **Alternative Flows**

Step	Description	Information Content
3a	If offer fails validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule.	error message
3b	User corrects data and resubmits offer	

4.1.7 **Post-Conditions**

Valid offer exists in database

4.1.8 **Related Use Cases**

None.

4.1.9 **Assumptions**

None.

4.1.10 **Data Exchange**

Generator Offer

A Generator Offer may include the following fields:

Parameter	Description
Generator	Name or PTID for the generator
Date & time	Starting time of bid
Duration	Number of hours the bid is good for.
Expiration	Time generator bid is no longer available for consideration in DAM supplemental commitments
Upper operating limit	Maximum MWs that the generator can supply.
Zero start-up cost	A flag indicating a start-up cost of zero should be substituted for the normal start-up cost supplied in the commitment bid for times specified with this bid.
On-dispatch	A flag indicating if the generator will be following SCD basepoints (Y or N)
Fixed min. gen. (MW)	Lower operating limit for the unit.
Fixed min. gen. Cost ($)	Bid cost for the unit to reach the minimum operating point.
Bid curve format	Indicate if curve supplied is of a block bid or energy cost curve format
Dispatch curve MW(1-n)	1-n MW points of a dispatch curve.
Dispatch curve $/MW(1-n)	1-n $/MW points of a dispatch curve

10 min non-synch mw	MWs of non-synchronous capacity bid to satisfy 10 minute total reserve requirement.
10 min non-synch cost	Cost / MW of non-synchronous capacity bid to satisfy 10 minute total reserve requirement.
10 min spinning mw	MW of spinning capacity bid to satisfy 10 minute spinning reserve requirement.
10 min spinning cost	Cost per MW of spinning capacity bid to satisfy 10 minute spinning reserve requirement.
30 min non-synch mw	MWs of non-synchronous capacity bid to satisfy operating reserve requirement.
30 min non-synch cost	Cost / MW of non-synchronous capacity bid to satisfy operating reserve requirement.
30 min spinning mw	MW of spinning capacity bid to satisfy operating reserve requirement.
30 min spinning cost	Cost per MW of spinning capacity bid to satisfy operating reserve requirement.
Regulation MWs	MW of generation bid to respond to AGC signals.
Regulation cost	Cost per MW of generation bid to respond to AGC signals.
Min. run time	Minimum hours in a dispatch day a unit must run once started
Min. down time	Minimum hours in a dispatch day a unit must be down once decommitted.
Max. stops per day	Number of times a unit can be decommitted in a dispatch day.
Start-up notification	The time it takes for a generator to reach its min gen level after notification to start.
Start-up bid time (1-n)	Start-up cost curve, hours off-line.
Start-up bid cost (1-n)	Start-up cost curve, $ to start.
Notification hours to start (1-n)	Start-up notification time curve, hours to start.
Notification hours off line (1-n)	Start-up notification time curve, hours off-line.

Load Offer

A Load Offer may include the following fields:

Parameter	Description
Load	Name or PTID for a load
Date & time	Starting time of bid
Forecast MW	Forecasted MWs to be consumed.
Fixed MW	Fixed MWs that are to be procured from the DAM
Price cap 1 MW	Fixed block of dispatchable load based on associated price.
Price cap 1 dollar	Dispatchable load dollars per MW.
Price cap 2 MW	Fixed block of dispatchable load based on associated price.
Price cap 2 dollar	Dispatchable load dollars per MW.
Price cap 3 MW	Fixed block of dispatchable load based on associated price.
Price cap 3 dollar	Dispatchable load dollars per MW.
Interruptible type	Flag indicating load will interrupt in 10 or 30 minutes for purpose of satisfying ISO reserve requirement (10MIN or 30MIN)
Interruptible fixed MW	Interruptible load bid MW, associated with the fixed MW bid, available for satisfying reserve requirement.
Interruptible fixed cost	Cost for interruptible fixed load bid.
Interruptible capped MW	Interruptible load bid MW, associated with the price capped MW bid, available for satisfying reserve requirement.
Interruptible capped cost	Cost for interruptible capped load bid.

4.1.11 Comments

None.

Use Case 4.2   Modify Energy Market Offer

4.2.1   Summary

Market Participants may submit modifications to their Energy Market offers or withdraw them subject to market rules.

4.2.2   Actor Role

Name	Role description
Generation-Providing Entity (GPE)	Modifies Offers to sell energy products
Purchasing/Selling Entity (PSE)	Modifies Offers to sell energy products. The products are based on either generation or the reduction of load
Load-Serving Entity (LSE)	Modifies Offers to sell energy products. The products are based on the reduction of load.

4.2.3   Triggers

None.

4.2.4   Pre-Conditions

None.

4.2.5   Flow of Events

Step	Description	Information Content
1	User modifies certain fields as desired for offer or withdraws offer and submits to OASIS	Offer ID of offer to be modified, Modified data, Requested

		State
2	OASIS receives Modify Offer request	
3	• OASIS validates the request against market rules such as:Does the Offer exist? • Is user authorized to modify this offer? • Is modification submitted on time? • Does offer include all data required at this time?	
4	OASIS updates previously submitted offer in database. State is set to MODIFIED or WITHDRAWN	
5	User receives confirmation that offer has been accepted as a valid modification	Offer ID, Modification ID, state

4.2.6 **Alternative Flows**

Step	Description	Information Content
3a	If modified offer fails validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule.	error message
3b	User corrects data and resubmits Modify Offer request	

4.2.7 **Post-Conditions**

Valid Modified Offer with a unique ID has been recorded and applied to the Offer.

4.2.8 **Related Use Cases**

None.

4.2.9 **Assumptions**

None.

4.2.10 **Data Exchange**

The data profile for "Energy Market Offer" is contained in "Submit Energy Market Offer" use case

4.2.11 **Comments**

None.

Use Case 4.3   Submit Energy Market Bid

4.3.1 **Summary**

The purpose of this function is to allow LSEs (or their agents) and PSEs to inform the market operator of their desire to purchase energy and the price they are willing to pay. In its simplest form, DAM bids consist of a profile by hour for the following day of the portion of their anticipated load to be purchased in the DAM. In the Real-Time Market, these bids typically indicate interruptible load available for the next hour. Blocks of energy bid into the market may have a strike price associated with them or may indicate the bidder's willingness to purchase energy at the market clearing price (price taker). For certain types of interruptible load, the option to purchase or shut down is available. The Energy Markets may also support "virtual" load bids to provide a financial tool to hedge against day ahead and real-time market clearing price differentials.

4.3.2 **Actor Role**

Name	Role description
Load-Serving Entity (LSE)	Submits Bid to purchase energy
Purchasing/Selling Entity (PSE)	Submits Bid to purchase energy

4.3.3 **Triggers**

None.

4.3.4 **Pre-Conditions**

None.

4.3.5 **Flow of Events**

Step	Description[*change table to agree with OFFER*]	Information Content
1	User supplies all data required at the time of submission according to market rules	Energy Market Bid
2	Bid is received by OASIS	
3	OASIS validates the submitted data against market rules such as: • Is User authorized to submit this Bid? • Is Bid submitted on time? • Does bid include all data required at this time?	
4	OASIS assigns the bid a unique ID and stores the bid in database. State is set to SUBMITTED	
5	Success message is returned to user	Bid ID, State

4.3.6 **Alternative Flows**

Step	Description	Information Content
4a	If Bid fails validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule.	Error message
4b	User corrects data and resubmits Bid	

4.3.7 **Post-Conditions**

Valid Bid is resident in OASIS Database

4.3.8 **Related Use Cases**

None.

4.3.9 **Assumptions**

None.

4.3.10 **Data Exchange**

The data profile for "DAM Bid" is contained in [*specify location in document for common data profile catalog*]

4.3.11 **Comments**

None

Use Case 4.4   Modify Energy Market Bid

4.4.1 **Summary**

Market Participants may submit modifications to their Energy Market bids or withdraw them subject to market rules.

4.4.2 **Actor Role**

Name	Role description
Load-Serving Entity (LSE)	Submits Bid to purchase energy
Purchasing/Selling Entity (PSE)	Submits Bid to purchase energy

4.4.3 **Triggers**

None.

4.4.4 **Pre-Conditions**

None.

4.4.5 **Flow of Events**

Step	Description	Information Content

1	User modifies certain fields as desired for bid or withdraws bid and submits to OASIS	Bid ID of bid to be modified, Modified data, Requested State
2	OASIS receives Modify Bid request	
3	• OASIS validates the request against market rules such as:Does the Bid exist? • Is user authorized to modify this bid? • Is modification submitted on time? • Does bid include all data required at this time?	
4	OASIS updates previously submitted bid in database. State is set to MODIFIED or WITHDRAWN	
5	User receives confirmation that bid has been accepted as a valid modification	Bid ID, Modification ID, state

4.4.6 **Alternative Flows**

Step	Description	Information Content
4a	If Bid fails validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule.	error message
4b	User corrects data and resubmits modified Bid	

4.4.7 **Post-Conditions**

None.

4.4.8 **Related Use Cases**

None.

4.4.9 **Assumptions**

None.

4.4.10 **Data Exchange**

The data profile for "Energy Market Bid" is contained in [*specify location in document for common data profile catalog*]

4.4.11 **Comments**

None.

Use Case 4.5   Clear DAM

Immediately following the close of the DAM, the Market Operator is responsible for collecting all generation and transmission outage information, the system load forecast, all bilateral and self-schedules, and all valid bids and offers made into the DAM. The Market Operator in coordination with the Reliability Authority and Balancing Authority may then process this information to select and commit those units to run that meet all of the criteria for serving the load, loading the transmission system, providing reserves, providing regulation, and minimizing total production cost. Some markets may iterate through this process several times in order to arrive at a final Day Ahead Market settlement. The Day Ahead Market may then be cleared by dispatching those selected units against the load that was bid into the DAM for each hour of the following day and establishing the market clearing price for energy and related products (reserves, etc.) at each pricing location (node, zone, hub, etc.). All offers and bids cleared day ahead are financially binding. In some markets, the Market Operator is responsible for insuring that the solutions arrived at are the most economic for the given set of operational constraints. Results of the DAM clearing are posted to OASIS to notify all Market Participants and operational entities of the planned operation of the system.

 [*Note: This process takes place external to the OASIS*]

Use Case 4.6   Clear Real Time Market

The Market Operator, in coordination with the Balancing Authority and Reliability Authority, may be responsible for the clearing of the Real-Time Market, performed periodically throughout the hour. This process is designed to assure that the needs of the system are met with a set of resources that minimizes the incremental cost of the next increment of generation. RTM clearing may be

accomplished through a security constrained economic dispatch that factors in current system operating conditions, new or revised bilateral and self schedules and all bids and offers submitted for the interval to be cleared. RTM clearing results in new unit target dispatch information and any applicable dispatchable load instructions along with market clearing prices at each pricing location (node, zone, hub, etc.). Generation Operators and LSEs may be notified of dispatch targets directly, or through their Balancing Authority dependent on market implementation. Results of the RTM clearing are also posted to OASIS to notify all Market Participants and operational entities of the actual operation of the system.

[*Note: This function is performed external to OASIS*]

Use Case 4.7   Assess Resource Adequacy

The Market Operator, in coordination with the Reliability Authority and Balancing Authority, is responsible for insuring that all forecasted load may be reliably served. The Market Operator may direct generation resources not selected in the DAM clearing to come on-line as necessary based on DAM offers and/or offers submitted or modified subsequent to DAM clearing. (Check wording with Survey)

[*Note – This process takes place outside the OASIS. In fully functioning two settlement markets, this process is an integrated part of the SCUC solution process. The specific steps in this process will be highly market-dependent.*]

Use Case 4.8   Post Market Results

4.8.1 Summary

The Market Operator will post the results of the Energy Markets clearing prices in OASIS. This information will be comprised of public data such as hourly Market prices for each pricing location (node, zone, hub, etc.) and Market Participant proprietary data such as bids and offers.

4.8.2 Actor Role

Name	Role description
Market Operator	Posts DAM Results on OASIS

4.8.3 **Triggers**

Clear DAM Use Case completes successfully and triggers Post DAM Results.

4.8.4 **Pre-Conditions**

None.

4.8.5 **Flow of Events**

Step	Description	Information Content
1	Market Operator assembles Energy Market prices and other public information	
2	Information is received by OASIS for posting	
3	Market Information is posted on OASIS. Bids and Offers that have cleared the market are set to state CLEARED. Those that are not cleared are set to state REJECTED when appropriate. Bids and Offers considered in the Clearing Process are time-stamped for the market cycle(s) for which they were evaluated.	(Specific format and content will vary by market)
4	OASIS triggers Notify Subscribers to notify any interested parties of the Market Clearing	Market ID

4.8.6 **Alternative Flows**

None.

4.8.7 **Post-Conditions**

Market Data is posted on OASIS and available to market participants.

4.8.8 **Related Use Cases**

Clear DAM Market

4.8.9 **Assumptions**

None.

4.8.10 **Data Exchange**

Data Format and Content will be market-specific.

4.8.11 **Comments**

None.

Use Case 4.9   **View Energy Market Results**

4.9.1 **Summary**

Market Participants may access Energy Market Clearing Results according to their unique permission profiles. Data such as market clearing prices are generally available without restriction. Access to Market Participant proprietary offer and bid data are generally restricted to that Market Participant. Regulatory agencies may also access data consistent with permission levels agreed to by the OASIS operator. Regulatory agencies may include FERC, Regional Reliability Organizations, NERC, and state Public Utility Commission personnel. Operational entities, e.g., Reliability Authority, Balancing Authority, Interchange Authority, etc., may also access market information as it relates to reliable operation of the interconnection.

4.9.2 **Actor Role**

Name	Role description
Public	Views DAM results on OASIS
Monitoring Agencies	Monitor OASIS for compliance

4.9.3 **Triggers**

None.

4.9.4 **Pre-Conditions**

None.

4.9.5 **Flow of Events**

The specific method of access and presentation (preformatted pages, ad hoc query results) will vary by market.

Step	Description	Information Content
1	Public, MPs or MOs submit the set of query parameters to selectively report specific information from the Energy Market Results information in a View the Energy Market Results request	Registration Query
2	OASIS receives View the Energy Market Results request.	
3	OASIS validates all query parameters specified and executes desired query against the Energy Market Results database. OASIS may enforce limitations on the volume of data that may be selected in a single request to preserve system performance.	
4	OASIS formats results selected by the query .	
5	SUCCESS message is returned to submitter	Energy Market Results Data

4.9.6 **Alternate Flows**

Step	Description	Information Content
3a	If View Energy Market Results request fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits query.	

4.9.7 **Post-Conditions**

Requested Energy Market Results information is returned to the submitter.

4.9.8 **Related Use Cases**

None.

4.9.9 **Assumptions**

None.

4.9.10 **Data Exchange**

Data Requests must comport with the permissions profile for the requesting user. Certain market results such as offer or bid awards are generally limited to certain users from the entity who originally submitted the offer. Other data such as clearing prices are generally available to all users.

Certain combinations of query parameters may be mutually exclusive. Logical inter-relationship (e.g., AND, OR, NOT, etc.) between the various query parameters, number of instances a given query parameter may be supplied, and default values for certain query variables not specified will be developed in the OASIS technical standards or associated business practices.

Use Case 4.10   Monitor Market Compliance

Market monitoring will take place outside of OASIS II. Market Monitors will have privileged access to all OASIS data.

Use Case 4.11   Invoke Market Mitigation Measures

Where conditions may have created a market power situation, the Market Operator invokes certain pre-approved measures to mitigate the market power leverage that might otherwise exist. These measures may take the form of price caps on offers in a given geographic area, out of merit bid selection, penalty assessment, etc based on the filed tariff. This function takes place outside of OASIS II.

 [*note – this activity takes place outside of OASIS*]

Use Case 4.12   Post Market Mitigation Invocation

Whenever Market Mitigation Measures are invoked, the Market Operator will post on OASIS the specific measures taken, including areas and time.

4.5 *Bilateral and Self Schedules*

Many of the use cases in Section 4 refer to state changes. These states and the allowed transitions are described in the following State Diagram, State Definitions, and State Change Description.   (Machine-to-machine communication states, such as successful, invalid, and commfail, are not included.)

Bilateral and Self Schedule State Diagram
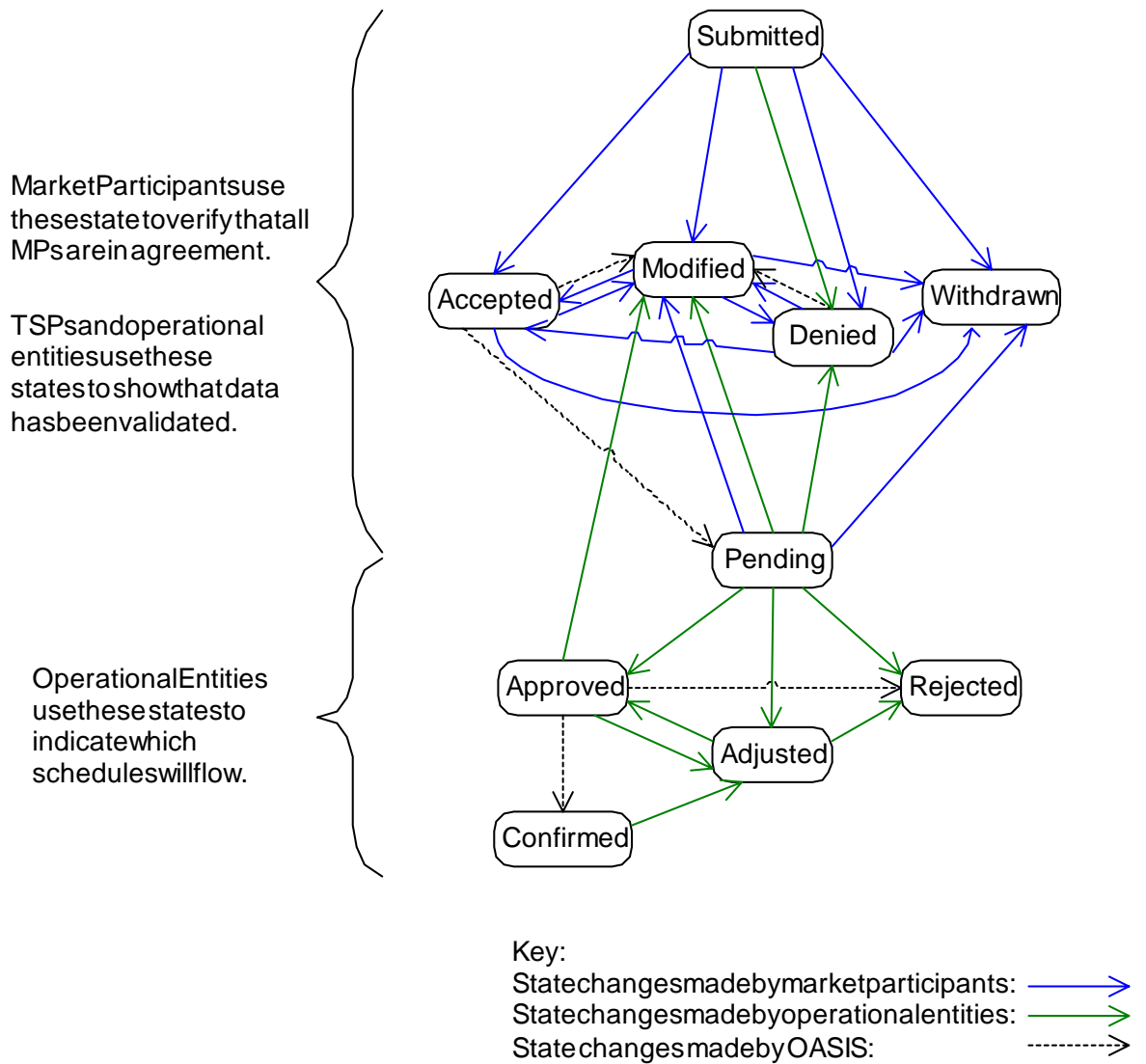
State Definitions

The state definitions as they apply to Bilateral and Self Schedule use cases follow.

SUBMITTED: The schedule or contract is valid and has been recorded on OASIS.

ACCEPTED: The Market Participant has acknowledged that the schedule or contract data, for which they are responsible, is entered and correct. OASIS validates that required data is entered before allowing this state change.

MODIFIED: A Market Participant or an Operational Entity has changed some data previously submitted or agreed to by others.

DENIED: A Market Participant or an Operational Entity disagrees with all or part of the schedule or contract.

WITHDRAWN: Original submitter of the schedule or contract has removed it from consideration. This is a final state.

PENDING: All Market Participants involved in the schedule or contract have agreed that it is correct. This state is automatically set by OASIS.

APPROVED: The appropriate Operational Entity (such as MO, BA, or TSP) has acknowledged their intent to implement the schedule or to include the contract in their settlement process.

REJECTED: The appropriate Operational Entity (such as MO, BA, or TSP) has rejected the schedule or contract. This is a final state.

CONFIRMED: All Operational Entities have agreed to implement the schedule.

ADJUSTED: The previously CONFIRMED schedule has been changed.

Bilateral and Self Schedule State Change Description

This description pertains to the Bilateral and Self Schedule State Diagram. It is intended to describe how a typical schedule or contract moves through the approval process, but does not capture every possible permutation.

Schedules may have long terms, which may be broken down into shorter duration segments. For instance, a schedule may be a year long, but a Market Operator may only approve one day at a time. Each segment has its own state. When there are multiple entities involved, each entity also has its own state for each segment.

The following groups of actors are used in this description:

- MP = Market Participant. This could be a GPE, PSE, or LSE.

- OE = Operational Entity. This could be an MO, BA, or, in some cases, a TSP.

MP sends schedule/contract to OASIS. OASIS performs validation. If it is valid, it is added to database with state of SUBMITTED.

Each MP indicates their agreement that the schedule/contract is correct by setting the state (for that MP) to ACCEPTED.

Any party to the schedule/contract (MP or OE) may change it. OASIS will then reset the state for all parties to MODIFIED. (The MP making the change may set their state to ACCEPTED if all required data is entered.)

Any party to the schedule/contract (MP or OE) may set the state to DENIED to indicate disagreement with all or part of the schedule/contract. This state is used to communicate what information is incorrect or incomplete.

Original submitter may remove the schedule/contract from consideration by setting the state to WITHDRAWN.

Once the state for all MP parties has reached ACCEPTED, OASIS will set the state to PENDING. (Note: If the state is PENDING for any entity, it must be PENDING for all entities.) At this point, the OE(s) for this market area considers the schedule for clearing/implementation, and the MO considers the contract for settlement.

If OE can implement the schedule as stated, they set the state to APPROVED.

If MO will use the contract for settlement, they set the state to APPROVED.

Both Self Schedules and Bilateral Contracts default to CONFIRMED after they are APPROVED. This is because only one balancing area or market area is involved.

If OE can implement part of the schedule, they change it accordingly. There are two options for the state change at this point. It is controlled by a flag previously set by the MPs:

If MPs want to review OE changes, the state is set to MODIFIED.

If MPs have agreed to accept whatever is available, the state is set to APPROVED.

If OE cannot implement the schedule, they set the state to REJECTED.

OASIS monitors APPROVED schedules to determine whether they can be CONFIRMED.

If the schedule is internal (handled by a single OE), it is immediately set to CONFIRMED.

If the schedule is external (handled by multiple OEs), OASIS will set the state to CONFIRMED when all responsible OEs have set the state to APPROVED for their area.

If an Operational Entity needs to change a CONFIRMED schedule, they set the state to ADJUSTED. If other OEs are involved, they need to change and re-approve the schedule for their area.

Use Case 5.1   Submit Bilateral Schedule

5.1.1 Summary

Parties may enter into transactions to buy and sell energy outside of the Day Ahead and Real Time Energy Markets. The Market Operator is typically unaware of these transactions. Therefore, in order for a transaction to be scheduled, a Bilateral Schedule must be submitted.

Market Participants submit Bilateral Schedule reflecting a balanced, scheduled delivery of energy, either internal or external to the market area. Where markets are established, bilateral transactions submitted for the Day Ahead Market will be cleared as part of the DAM clearing process; bilateral transactions submitted subsequent to closing of the DAM will be cleared as part of the Real Time Market clearing process. However, this does not imply any restriction on the length of a Bilateral Schedule. Bilateral Schedules may also contain profiles, which vary over time. Duration, lead times, scheduling increment granularity, etc. are defined by market rules.

The Bilateral Schedule must be submitted to the OASIS designated by the sink BA. That OASIS will function as the IA for the Bilateral Schedule.

Since a Bilateral Schedule is balanced by definition, it contains two parts: a generation schedule and a load schedule. The generation schedule is the responsibility of the GPE or a PSE acting its behalf. The load schedule is the responsibility of the LSE or a PSE operating on its behalf.

Specific generation resources and load resources may not need to be entered when the Bilateral Schedule is originally submitted; however, they must be entered prior to the market closing time or other time limit specified by the Market Operator.

Provision of certain ancillary services (e.g., operating reserves) may also be communicated to the Market Operator through a special type of Bilateral Schedule called an ancillary commitment. Schedules would be created against the commitment only if and when the commitments are called on by the MO or BA. Ancillary commitment requests are typically restricted to being wholly within the footprint of the Market Operator but they may also involve more than one market. The basic handling of these bilateral ancillary commitments is identical to the handling of other Bilateral Schedules, except that the resulting commitment represents the obligation of the GPE or Dispatchable Load LSE to provide capacity for the ancillary service(s).

In some areas there may be a need to submit certain schedules early in order to consider them during market clearing. This is a special type of Bilateral Schedule called a "pre-schedule".

5.1.2 **Actor Role**

Name	Role description
GPE or PSE	GPE, or PSE acting on the behalf of GPE, submits a Bilateral Schedule.
LSE or PSE	LSE, or PSE acting on the behalf of LSE, submits a Bilateral Schedule.

5.1.3 **Triggers**

None.

5.1.4 **Pre-Conditions**

None.

5.1.5 **Flow of Events**

Step	Description	Information Content
1	PSE, GPE, or LSE submits Bilateral Schedule to the OASIS designated by the sink BA. On submission, the required data is: GPE, LSE, any involved PSEs, BAs the energy will be flowing from and to, and the MW profile over time. Generation and load resources may be entered at submission time or later.	Bilateral Schedule
2	Bilateral Schedule is received by OASIS.	
3	OASIS validates submitted data against market rules such as: • Is user authorized to submit Bilateral Schedule? • Is Bilateral Schedule submitted on time? • Does Bilateral Schedule include all data required at this time? • Is Transmission Usage Bid Option valid in this market? • Are location references valid in this market?	
4	OASIS assigns the Bilateral Schedule a Unique ID, sets the state for all entities to SUBMITTED and stores the schedule in database. Exception: If submitter has provided all data necessary for final consideration, they should be able to set the state to ACCEPTED immediately.	
5	Success message is returned to user.	Bilateral Schedule ID

		State
6	Trigger Use Case 5.5 Distribute Schedule to send the Schedule to any other entities involved in it.	Bilateral Schedule

5.1.6 **Alternative Flows**

Step	Description	Information Content
3a	If schedule fails validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule.	Error message
3b	User corrects data and resubmits schedule.	

5.1.7 **Post-Conditions**

A Bilateral Schedule with a Unique ID has been recorded in the database.

The Bilateral Schedule has a state of either SUBMITTED or ACCEPTED for the original submitter, and SUBMITTED for all other entities.

5.1.8 **Related Use Cases**

Use Case 5.5 Distribute Bilateral Schedule – triggered by this use case.

5.1.9 **Assumptions**

Business rules for this market have been defined within OASIS. Examples:

- Transmission usage bid options
- Submission time deadlines
- Scheduling granularity

5.1.10 **Data Exchange**

A Bilateral Schedule includes:

GPE (Unique ID)
LSE (Unique ID)

PSE(s) (Unique ID)
Entity(ies) responsible to pay congestion (by area)
Source BA
Sink BA

Flags necessary based on business rules. For instance, a flag indicating whether MPs want to auto-accept part of the schedule if the whole thing cannot clear.

Schedule type:

- energy schedule

- pre-schedule (for energy)

- ancillary commitment

Energy/Capacity Profile (segments):

- MW

- Start date/time

- Stop date/time

Gen resource(s)
   It is possible that there could be pricing data associated with generator.

Load resource(s)
   It is possible that there could be pricing data associated with load.

Ramp rate (if not standard for market)
   ramp rates may need to be stated as both ramp up and ramp down

State Profile:

- State (by entity)

- Reason code - for state change (e.g. when state is set to DENIED or REJECTED)

- Reason text

- Start date/time

- Stop date/time

Transmission Profile:

- Supporting Transmission Rights (Unique ID)

- Transmission resource(s) (e.g. receipt point, delivery point, flowgate)

- MW

- start date/time
- stop date/time

Transmission Usage bid option (see examples below)

- Transmission Usage bid price ($/MW)

Transmission Usage bid option examples:

- Exempt   (bid price will be null)
- Congestion Price-taker   (bid price will be null)
- Up-to Congestion
- Up-to Congestion Plus Losses
- market definable

Bilateral Schedule ID (Unique ID assigned by OASIS)

5.1.11 **Comments**

None.

Use Case 5.2   **Modify Bilateral Schedule**

5.2.1 **Summary**

Market Participants (MPs), Transmission Service Providers, and Operational Entities, such as MOs or BAs, may submit select modifications of existing Bilateral Schedules subject to certain limitations, such as submittal time, etc. Each modification may require acknowledgement or approval by one or more entities.

Common modifications include:

- GPEs identifying or approving specific generation resources to be scheduled.
- LSEs identifying or approving the specific load resources to be served.
- MPs changing the bid price for congestion or financial losses.
- MPs or Operational Entities changing the MW profile of either an energy schedule or ancillary commitment. (Market rules may govern the amount by which an MP may change the MW profile.) MPs identifying or changing Transmission Right ID(s) or profiles.
- MPs or Operational Entities changing the profile date/times.

- TSPs entering data for Transmission Rights that support the energy schedule. These may be generated on behalf of the MP if they have not identified Transmission Rights they already own.

Modifications may also include a state change.

5.2.2 **Actor Role**

Name	Role description
GPE or PSE	GPE or PSE acting on the behalf of GPE submits a modification to a Bilateral Schedule.
LSE or PSE	LSE or PSE acting on the behalf of LSE submits a modification to a Bilateral Schedule.
MP	PSE submits modification to a Bilateral Schedule.
TSP	TSP submit modifications of Transmission Rights data.
MO	In areas that have energy markets, the MO submits modifications to a Bilateral Schedule.
BA	In areas that do not have energy markets, the BA submits modifications to a Bilateral Schedule.

5.2.3 **Triggers**

None.

5.2.4 **Pre-Conditions**

None.

5.2.5 **Flow of Events**

Step	Description	Information Content
1	MP or Operational Entity submits modifications of an existing Bilateral Schedule to the OASIS where the Bilateral Schedule was originally submitted.	Unique ID of the Bilateral Schedule to be modified. Modified data. Requested State
2	Modification is received by OASIS.	

3	OASIS performs general validation. • Does the referenced Bilateral Schedule exist. • Is user authorized to submit modification to that Bilateral Schedule? (The entity must be involved in the Bilateral Schedule in order to modify it.) OASIS validates submitted data against market rules such as: • Are the data elements being changed allowed to be changed? • Is modification submitted on time? • Are resource and loads valid in this market? • Is modification allowed based on state? (E.g., A WITHDRAWN Bilateral Schedule cannot be modified)	
4	OASIS assigns the modification a Unique ID and stores the modified data.	
5a	Modifying a Bilateral Schedule will require a state change for that entity. It may default to MODIFIED, but the entity should be allowed to request any valid state. For instance, a GPE may want to request a state of ACCEPTED after entering generation resources. Use Case 5.4 Set Bilateral Schedule State is called.	Output: Bilateral Schedule ID Modification ID Entity profile segment Requested State Reason code Reason text
5b	Use Case 5.4 returns the state of the Bilateral Schedule. Note: The state returned from Use Case 5.4 may not be the same as the state requested. For instance, a GPE may submit a modification to the profile without specifying the generation resource. If the GPE requests a state of ACCEPTED, that state will not be granted because required data is missing. However, Use Case 5.4 may return a state of MODIFIED to indicate that the profile was changed.	Input: Bilateral Schedule ID Modification ID profile segment State
6	Modification to the Bilateral Schedule is stored in the database.	
7	Success message is returned to user.	Bilateral Schedule ID Modification ID State
8	Trigger Use Case 5.5 Distribute Schedule to send the modified Schedule to any other entities involved in it. (This step is skipped for internal Schedules)	Bilateral Schedule

5.2.6 Alternative Flows

Step	Description	Information Content

3a	If modification fails validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule.	Error message
3b	User corrects data and resubmits modification.	

5.2.7 **Post-Conditions**

A modification with a Unique ID has been recorded and applied to the Bilateral Schedule.

Appropriate state changes have been made for appropriate entity(ies).

5.2.8 **Related Use Cases**

Use Case 5.4 Set Bilateral Schedule State – is called by this use case

Use Case 5.5 Distribute Schedules – is called by this use case

5.2.9 **Assumptions**

Market rules have been defined that specify which types of entities may change what data.

Standard "reason codes" have been defined for final states.

5.2.10 **Data Exchange**

Data structure will follow the Bilateral Schedule data structure.

Additional data:

- Modification ID (Unique ID assigned by OASIS.)

5.2.11 **Comments**

None.

Use Case 5.3   Adjust Bilateral Schedule

5.3.1 Summary

Market Operators and Balancing Authorities may need to adjust existing schedules. Adjustments may be made before, during, or after the scheduled energy flow.

Adjust Schedules differs from the Modify Bilateral Schedule and Modify Self Schedule use cases in two primary ways:

- Adjust can only be used by Operational Entities and only at the point where a Market Participant no longer has the right to act on the schedule. If an MP still has the right to accept, modify, deny or withdraw a Bilateral or Self Schedule, then the Operational Entity must use the Modify use cases instead of the Adjust Schedules use case to communicate with the MP.

- Adjust can be used to change any type of Schedule, regardless of how it was created. The two Modify use cases mentioned above only apply to those specific types of schedules.

5.3.2 Actor Role

Name	Role description
MO or BA (collectively referred to as Operational Entity)	Adjusts the schedule.

5.3.3 Triggers

None.

5.3.4 Pre-Conditions

Either an Operational Entity or insert cross reference UC # here Coordinate Interchange is initiating an adjustment to a schedule.

5.3.5 Flow of Events

Step	Description	Information Content
1	Operational Entity submits an adjustment to an existing Bilateral Schedule.	Bilateral Schedule ID Adjusted data. Requested State Reason code Reason text
2	Adjustment is received by OASIS.	
3	OASIS performs general validation. • Does the referenced Bilateral Schedule exist? • Is user authorized to submit adjustment to that Bilateral Schedule? (The entity must be involved in the Schedule in order to modify it.)	
4	OASIS assigns the adjustment a Unique ID and stores the adjusted data.	
5a	Call Use Case 5.4 Set Bilateral Schedule State. Adjusting a Schedule will require a state change for that entity. It may default to ADJUSTED, but the entity should be allowed to request any valid state. For instance, they may want to set their state to APPROVED immediately.	Output: Bilateral Schedule ID Adjustment ID Entity submitting the adjustment. profile segment. Requested State Reason code Reason text
5b	Use Case 5.4 returns the state of the Schedule.	Input: Bilateral Schedule ID Adjustment ID profile segment State
6	Adjustment to the Bilateral Schedule is recorded.	
7	Success message is returned to user.	Bilateral Schedule ID Adjustment ID State

5.3.6 **Alternative Flows**

Step	Description	Information Content
3a	If adjustment fails validation, an error message is returned stating the reason for failure. Message must include the field name and incorrect value.	Error message
3b	User corrects data and resubmits adjustment.	

5.3.7 **Post-Conditions**

An adjustment with a Unique ID has been recorded and applied to the Bilateral Schedule.

Appropriate state changes have been made for appropriate entity(ies).

5.3.8 **Related Use Cases**

Use Case 5.4 Set Bilateral Schedule State – is called by this use case.

Insert UC# cross reference Coordinate Interchange – may call this use case.

5.3.9 **Assumptions**

Market and/or reliability rules for adjusting schedules have been defined.

Standard "reason codes" have been defined for final states.

5.3.10 **Data Exchange**

Data structure will follow the Bilateral Schedule data structure.

Additional data:

- Adjustment ID

5.3.11 **Comments**

None.

Use Case 5.4　　　Set Bilateral Schedule State

5.4.1　**Summary**

Market Participants, Market Operators, Transmission Service Providers, and Balancing Authorities may be required to explicitly acknowledge and/or approve Bilateral Schedules and subsequent modifications depending on their role and the type of Schedule or modification.

All MP must accept the Bilateral Schedule before Operational Entities will consider it for market clearing or implementation. TSP has acceptance rights over physical transmission rights usage. MO (or BA for non-markets) verifies request for matched generation, load, valid resources, within limits, etc.

Market participants will access this use case through Use Case 5.2 Modify Bilateral Schedule. TSPs, MOs, and BAs may also access it through Use Case 5.2 Modify Bilateral Schedule, Use Case 5.3 Adjust Bilateral Schedule, or may access it directly.

5.4.2　**Actor Role**

Name	Role description
GPE, LSE, or PSE (collectively referred to as Market Participants)	Individually indicate their acceptance, modification, or denial of the Bilateral Schedule. The original submitter may also withdraw the Bilateral Schedule.
MO or BA (collectively referred to as Operational Entity)	Individually indicate their approval or rejection of this Bilateral Schedule as required by the business rules for this market area.
TSP	Individually indicate their acceptance of the Bilateral Schedule. This will typically be verification that any referenced transmission rights are valid.
	OASIS also performs certain automated state changes based on internal triggers.

5.4.3　**Triggers**

1. An entity changes the state of a Bilateral Schedule, either directly or through a modification or adjustment.

2. All MP's states reach ACCEPTED for a profile segment.

3. An OE approves a Bilateral Schedule.

5.4.4 **Pre-Conditions**

Bilateral Schedule exists.

5.4.5 **Flow of Events**

Step	Description	Information Content
1	User submits state change or this use case is called by either Use Case 5.2 Modify Bilateral Schedule or Use Case 5.3 Adjust Bilateral Schedule.	Input: Bilateral Schedule ID Modification or Adjustment ID Entity Profile segment Requested state Reason code Reason text
2	State change request is received by OASIS.	
3	OASIS determines whether state is valid. Examples: • Only entities involved in the Bilateral Schedule may change its state. • Only the original submitter may change state to WITHDRAWN. • GPE can only set the state to ACCEPTED if generation resources have been specified.	
4	OASIS determines what other state changes are necessary and sets them as appropriate. Examples: • If this use case was called by Use Case 5.2 Modify Bilateral Schedule: • The states are changed to MODIFIED for all entities. • The state has changed to ACCEPTED for one MP: • OASIS checks the states for all other MPs. • If state has reached ACCEPTED for all MPs and no OE has set the state to DENIED, then OASIS sets all states to PENDING. • Otherwise no further state changes are made. • The <u>requested</u> state is APPROVED in conjunction with a modification (e.g. change in MWs due to market clearing): The following two options are controlled by a flag previously set by the MPs. • If MPs want to review changes made by the Operational Entity, the state is set to MODIFIED. • If MPs are willing to accept whatever is available, the state is set to APPROVED. • The state has changed to APPROVED:	

	• OASIS checks the states for all Operational Entities.
	  • If the state has reached APPROVED for all Operational Entities, then OASIS sets the state to CONFIRMED.
	  • Otherwise, no further state changes are made.	

5	State changes are recorded for each entity for each profile segment of the Bilateral Schedule.	
6	Success message returned to user or calling use case.	Output: Bilateral Schedule ID Modification or Adjustment ID Profile segment State

5.4.6 **Alternative Flows**

Step	Description	Information Content
3a	If modification fails validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule.	Error message
3b	User corrects data and resubmits modification.	

5.4.7 **Post-Conditions**

Appropriate state changes have been made for appropriate entity(ies).

5.4.8 **Related Use Cases**

Use Case 5.2 Modify Bilateral Schedule – calls this use case

Use Case 5.3 Adjust Bilateral Schedule – calls this use case

5.4.9 **Assumptions**

Required data for each state change is defined in OASIS.

Business rules for state changes are defined in OASIS.

Standard "reason codes" have been defined for final states.

Market and/or Reliability procedures have been defined for notification failure.

5.4.10 **Data Exchange**

Data structure will follow the Bilateral Schedule data structure.

- Bilateral Schedule ID
- Modification ID
- Profile segment
- Entity making change
- State
- Reason code
- Reason text

5.4.11 **Comments**

None.

Use Case 5.5   Distribute Schedule

5.5.1 **Summary**

OASIS, as the Interchange Authority (IA), is responsible for distributing each schedule to all entities involved, such as BAs, TSPs, MOs, GPEs, LSEs, and PSEs. Any modification to a schedule must also be distributed to all affected entities. Certain entities may have approval rights over schedules. OASIS is responsible for maintaining information related to each such entity's approval or denial of the schedule and distributing that information to all affected entities.

5.5.2 **Actor Role**

Name	Role description
	OASIS provides the Bilateral or Self Schedule and subsequent modifications or adjustments to all entities involved.
Recipients	Has access to the Bilateral or Self Schedule.
May include: GPEs, LSEs, PSEs, BAs, TSPs, MOs	(Note: The recipients' relationship to this use case is not shown on the use case diagram in order to

	preserve readability. Their role is self-evident and negligible.)

5.5.3 **Triggers**

A new or changed schedule has been entered on OASIS. This includes state changes.

5.5.4 **Pre-Conditions**

Schedule has been submitted or changed.

5.5.5 **Flow of Events**

Step	Description	Information Content
1	Compare schedule data to distribution business rules in order to identify the entities that need to receive data. This would involve determining which types of entities should receive data based on the location, state, timing, etc. Examples: MPs may want to be notified as soon as a Bilateral Schedule was submitted or modified. An MO may not want to be notified until the Bilateral Schedule reaches the state of PENDING for a specific time period, such as next day. A TSP may need to be notified if the Bilateral Schedule impacts their area. • An MP wants to receive Bilateral or Self Schedule even though another entity is performing the scheduling function on their behalf.	Bilateral Schedule or Self Schedule or any other type of schedule
2	Send schedule data to appropriate entities and track the communication status (success/failure).	

5.5.6 **Alternative Flows**

Step	Description	Information Content
2a	If distribution fails, retry. It should be possible to configure the number of retries and the time between them.	
2b	If distribution is not successful after specified retries, produce an error report.	Error message Schedule ID Entity that did not receive notification.

5.5.7 **Post-Conditions**

Schedule data has been made available to appropriate entities;

and/or

errors have been reported if distribution fails.

5.5.8 **Related Use Cases**

The following use cases trigger this use case:

- Use Case 5.1 Submit Bilateral Schedule
- Use Case 5.2 Modify Bilateral Schedule
- Use Case 5.3 Adjust Bilateral Schedule
- Use Case 5.6 Submit Self Schedule
- Use Case 5.7 Modify Self Schedule
- Use Case 5.8 Adjust Self Schedule

5.5.9 **Assumptions**

Entities and their notification addresses have been defined in a master registry.

Types of entities and notification business rules for this market have been defined in OASIS.

Market and/or Reliability procedures have been defined for notification failure.

5.5.10 **Data Exchange**

Appropriate type of schedule.

5.5.11 **Comments**

This use case is primarily envisioned to be used for distributing Bilateral and Self Schedules but could also be used to distribute other types of schedules.

Use Case 5.6   Submit Self Schedule

5.6.1 **Summary**

Generation Providing Entities may submit Self Schedules for injection of energy at a given generation resource(s). Where energy markets exist, the Market Operator will typically treat all acknowledged Self Schedules as being "price takers" as part of the market clearing process.

GPEs and Dispatchable Load LSEs may also submit Self Schedules for ancillary commitments to meet all or a portion of the Market Participant's ancillary service obligation. These are a special type of Self Schedules for the provision of certain ancillary services (e.g., operating reserves). The basic handling of these ancillary commitments is identical to the handling of other Self Schedules, except that the resulting commitment represents the obligation of the GPE or Dispatchable Load LSE to provide capacity for the ancillary service(s).

5.6.2 **Actor Role**

Name	Role description
GPE or Dispatchable Load LSE	Submits Self Schedule

5.6.3 **Triggers**

None.

5.6.4 **Pre-Conditions**

None.

5.6.5 **Flow of Events**

Step	Description	Information Content
1	GPE or Dispatchable Load LSE submits Self Schedule to the OASIS designated by the resource's BA. On submission, the required data is: GPE or LSE, generation or dispatchable load resources, and the MW profile over time.	Self Schedule
2	Self Schedule is received by OASIS.	
3	OASIS validates submitted data against market rules such as: • Is user authorized to submit the Self Schedule? • Is the Self Schedule submitted on time? • Does the Self Schedule include all data required at this time? • Are the resource references valid? • Is the Self Schedule valid based on registered resource operating parameters?	

4	OASIS assigns the Self Schedule a Unique ID, sets the state to PENDING and stores the schedule in database.	
5	Success message is returned to user.	Self Schedule ID State
6	Trigger Use Case 5.5 Distribute Schedule.	

5.6.6 **Alternative Flows**

Step	Description	Information Content
3a	If schedule fails validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule.	Error message
3b	User corrects data and resubmits schedule.	

5.6.7 **Post-Conditions**

A Self Schedule with a Unique ID has been recorded in the database.

The Self Schedule has a state of PENDING.

5.6.8 **Related Use Cases**

Use Case 5.5 Distribute Schedule – is triggered by this use case

5.6.9 **Assumptions**

There are no MPs, other than the submitting GPE or Dispatchable Load LSE, who can act on a Self Schedule; that is, there are no other MPs who have approval rights.

GPE or LSE submitting the Self Schedule will provide all data with the original submission.

Self Schedules do not need to be approved by a TSP.

Because of the above three assumptions, a Self Schedule may go directly to the state of PENDING.

Business rules for this market have been defined within OASIS. Examples:

- Submission time deadlines
- Scheduling granularity

- Standard "reason codes" have been defined for final states.

5.6.10 **Data Exchange**

A Self Schedule includes:

GPE or Dispatchable load LSE (Unique ID)

Source BA

Flags necessary based on business rules. For instance, a flag indicating whether the MP wants to auto-accept part of the schedule if the whole thing cannot clear.

Schedule type:

- energy schedule
- pre-schedule (for energy)
- ancillary commitment

Energy/Capacity Profile (segments):

- MW
- Start date/time
- Stop date/time

Generation or dispatchable load resource(s)

- It is possible that there could be pricing data associated with generator.

Ramp rate (if not standard for market)

- ramp rates may need to be stated as both ramp up and ramp down

State Profile:

- State (by entity)
- Reason code - for state change (e.g. when state is set to DENIED or REJECTED)
- Reason text
- Start date/time
- Stop date/time

Self Schedule ID (Unique ID assigned by OASIS)

5.6.11 **Comments**

None.

Use Case 5.7 Modify Self Schedule

5.7.1 **Summary**

GPEs and Dispatchable Load LSEs may make select modifications to existing Self Schedules subject to possible limitations on submittal times, modifiable fields, etc. Modifications may be made up until market clearing. Some modifications may require explicit acknowledgement or approval from the Market Operator.

5.7.2 **Actor Role**

Name	Role description
GPE or Dispatchable Load LSE	GPE or Dispatchable Load LSE submits a modification to a Self Schedule.
MO	In areas that have energy markets, the MO submits modifications to a Self Schedule.
BA	In areas that do not have energy markets, the BA submits modifications to a Self Schedule.

5.7.3 **Triggers**

None.

5.7.4 **Pre-Conditions**

None.

5.7.5 **Flow of Events**

Step	Description	Information Content
1	GPE, Dispatchable Load LSE or Operational Entity submits modifications of an existing Self Schedule.	Unique ID of the Self Schedule to be modified. Modified data. Requested State
2	Modification is received by OASIS.	
3	OASIS performs general validation.	

	• Does the referenced Self Schedule exist? • Is user authorized to submit modification to that Self Schedule? OASIS validates submitted data against market rules such as: • Are the data elements being changed allowed to be changed? • Is modification submitted within the timing rules established for this market? • Are resource valid in this market? • Is modification allowed based on state? (E.g., A WITHDRAWN Self Schedule cannot be modified.)	
4	OASIS assigns the modification a Unique ID and stores the modified data.	
5a	Modifying a Self Schedule may require a state change for that entity. Use Case 5.9 Set Self Schedule State is called.	Output: Self Schedule ID Modification ID Entity Profile segment Requested State Reason code Reason text
5b	Use Case 5.9 returns the state of the Self Schedule.	Input: Self Schedule ID Modification ID Profile segment State
6	Modification to the Self Schedule is recorded.	
7	Success message is returned to user.	Self Schedule ID Modification ID State
8	Trigger Use Case 5.5 Distribute Schedule.	

5.7.6 **Alternative Flows**

Step	Description	Information Content
3a	If modification fails validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule.	Error message
3b	User corrects data and resubmits modification.	

5.7.7 **Post-Conditions**

A modification with a Unique ID has been recorded and applied to the Self Schedule.

Appropriate state changes have been made for appropriate entity(ies).

5.7.8 **Related Use Cases**

Use Case 5.9 Set Self Schedule State – is called by this use case

Use Case 5.5 Distribute Schedule – is triggered by this use case

5.7.9 **Assumptions**

There are no MPs, other than the submitting GPE or Dispatchable Load LSE, who can act on a Self Schedule; that is, there are no other MPs who have approval rights.

GPE or LSE submitting the Self Schedule will provide all data with the original submission.

Self Schedules do not need to be approved by a TSP.

Because of the above three assumptions, a Self Schedule may go directly to the state of PENDING when it is originally submitted. Likewise, any modifications submitted by the GPE or LSE may stay in the state of PENDING. The state of MODIFIED would only be used if an MO or BA submitted the modification.

Business rules for this market have been defined within OASIS. Examples:

- Modification time deadlines
- Scheduling granularity
- Standard "reason codes" have been defined for final states.

5.7.10 **Data Exchange**

Data structure will follow the Self Schedule data structure.

Additional data:

- Modification ID (Unique ID assigned by OASIS.)

5.7.11 **Comments**

None.

Use Case 5.8   Adjust Self Schedule

5.8.1 Summary

Market Operators and Balancing Authorities may need to adjust existing schedules.   Adjustments may be made before, during, or after the scheduled energy flow.

Adjust Schedules differs from the Modify Bilateral Schedule and Modify Self Schedule use cases in two primary ways:

- Adjust can only be used by Operational Entities and only at the point where a Market Participant no longer has the right to act on the schedule. If an MP still has the right to accept, modify, deny or withdraw a Bilateral or Self Schedule, then the Operational Entity must use the Modify use cases instead of the Adjust Schedules use case to communicate with the MP.

- Adjust can be used to change any type of Schedule, regardless of how it was created. The two Modify use cases mentioned above only apply to those specific types of schedules.

5.8.2 Actor Role

Name	Role description
MO or BA (collectively referred to as Operational Entity)	Adjusts the schedule.

5.8.3 Triggers

None.

5.8.4 Pre-Conditions

Either an Operational Entity or insert cross reference UC # here Coordinate Interchange is initiating an adjustment to a schedule.

5.8.5 Flow of Events

Step	Description	Information Content
1	Operational entity submits an adjustment to an existing Schedule.	Self Schedule ID Adjusted data.

		Requested State Reason code Reason text
2	Adjustment is received by OASIS.	
3	OASIS performs general validation. • Does the referenced Self Schedule exist? • Is user authorized to submit adjustment to that Self Schedule? (The entity must be involved in the Self Schedule in order to modify it.)	
4	OASIS assigns the adjustment a Unique ID and stores the adjusted data.	
5a	Call Use Case 5.9 Set Self Schedule State. Adjusting a Self Schedule will require a state change for that entity. It may default to ADJUSTED, but the entity should be allowed to request any valid state. For instance, they may want to set their state to APPROVED immediately.	Output: Self Schedule ID Adjustment ID. Entity submitting the adjustment Profile segment Requested State Reason code Reason text
5b	Use Case 5.9 returns the state of the Schedule.	Input: Schedule ID Adjustment ID Profile segment State
6	Adjustment to the Self Schedule is recorded.	
7	Success message is returned to user.	Self Schedule ID Adjustment ID State
8	Trigger Use Case 5.5 Distribute Schedule.	

5.8.6 **Alternative Flows**

Step	Description	Information Content
3a	If adjustment fails validation, an error message is returned stating the reason for failure. Message must include the field name and incorrect value.	Error message
3b	User corrects data and resubmits adjustment.	

5.8.7 **Post-Conditions**

An Adjustment with a Unique ID has been recorded and applied to the Self Schedule.

Appropriate state changes have been made for appropriate entity(ies).

5.8.8 **Related Use Cases**

Use Case 5.9 Set Self Schedule State – is called by this use case.

<mark>Insert UC# cross reference</mark> Coordinate Interchange initiate this use case.

5.8.9 **Assumptions**

Market and/or Reliability rules for adjusting schedules have been defined.

Standard "reason codes" have been defined for final states.

5.8.10 **Data Exchange**

Data structure will follow the Self Schedule data structure.

Additional data:

- Adjustment ID

5.8.11 **Comments**

None.

Use Case 5.9   Set Self Schedule State

5.9.1 **Summary**

Where energy markets exist, the Market Operator communicates the results of market clearing in Day-ahead and Real-time by setting the state of all submitted Self Schedules to indicate whether they are cleared. Where energy markets do not exist, Balancing Authorities set the state in order to acknowledge the Self Schedule.

Market participants may access this use case through Use Case 5.7 Modify Self Schedule. Market Operators and Balancing Authorities may also access it through the Use Case 5.7 Modify Self Schedule or Use Case 5.8 Adjust Self Schedule, or they may access it directly.

5.9.2 **Actor Role**

Name	Role description
GPE or Dispatchable Load LSE	Indicate their acceptance of a modification to, or their withdrawal of, a Self Schedule.
MO or BA (collectively referred to as Operational Entity)	Indicate their approval, modification, or rejection of a Self Schedule as required by the business rules for this market area.
	OASIS also performs certain automated state changes based on internal triggers.

5.9.3 **Triggers**

An entity changes the state of a Self Schedule, either directly or through a modification.

5.9.4 **Pre-Conditions**

Self Schedule exists.

5.9.5 **Flow of Events**

Step	Description	Information Content
1	User submits state change or this use case is called by either Use Case 5.7 Modify Self Schedule or Use Case 5.8 Adjust Self Schedule.	Input: Self Schedule ID Modification or Adjustment ID entity Profile segment Requested state Reason code Reason text
2	State change request is received by OASIS.	
3	OASIS determines whether requested state is valid. Examples: • Only entities involved in the Self Schedule may change its state. • Only the original submitter may change state to Withdraw. • State change is submitted within the timing rules established for this market.	
4	OASIS determines what other state changes are necessary and sets them as appropriate. Examples:	

	• The submitter has modified the Self Schedule:
	  • OASIS automatically sets the state to PENDING.
	• The state has changed to APPROVED in conjunction with a modification:
	The following two options are controlled by a flag previously set by the submitter.
	  • If submitter wants to review changes made by the Operational Entity, the state is set to MODIFIED.
	  • If submitter is willing to accept whatever is available, the state is set to APPROVED.
	• The state has changed to ACCEPTED:
	  • OASIS automatically sets the state to PENDING.
	• The state has changed to APPROVED:
	  • OASIS automatically sets the state to CONFIRMED.	

5	State changes are recorded for each profile segment of the Self Schedule.	
6	Success message returned to user or calling use case.	Output: Self Schedule ID Modification or Adjustment ID Profile segment State

5.9.6 **Alternative Flows**

Step	Description	Information Content
3a	If modification fails validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule.	Error message
3b	User corrects data and resubmits modification.	

5.9.7 **Post-Conditions**

Appropriate state changes have been made for appropriate entity(ies).

5.9.8 **Related Use Cases**

Use Case 5.7 Modify Self Schedule – calls this use case

Use Case 5.8 Adjust Self Schedule – calls this use case

5.9.9 **Assumptions**

There are no MPs, other than the submitting GPE or Dispatchable Load LSE, who can act on a Self Schedule; that is, there are no other MPs who have approval rights.

GPE or LSE submitting the Self Schedule will provide all data with the original submission.

Self Schedules do not need to be approved by a TSP.

Because of the above three assumptions, a Self Schedule may go directly to the state of PENDING when it is originally submitted. Likewise, any modifications submitted by the GPE or LSE may stay in the state of PENDING. The state of MODIFIED would only be used if an Operational Entity submitted the modification.

By definition, Self Schedules are internal to a market area. Therefore, all approved Self Schedules may go directly to the state of CONFIRMED.

Standard "reason codes" have been defined for final states.

5.9.10 **Data Exchange**

Data structure will follow the Self Schedule data structure.

- Self Schedule ID
- Modification or Adjustment ID
- Profile segment
- Entity making change
- State
- Reason code
- Reason text

5.9.11 **Comments**

None.

Use Case 5.10   Clear Energy Market

This use case is out of scope for OASIS but is referenced for completeness.

See Use Case Insert # link Clear Energy Market.

Use Case 5.11   Coordinate Interchange

This use case is documented in another area but is referenced here for completeness.

See <mark>insert UC # cross reference</mark> Coordinate Interchange

Use Case 5.12   Submit Bilateral Contract

5.12.1 Summary

Market Participants may submit Bilateral Contracts to document contracts, which were entered into outside of OASIS, for the market settlement process. Bilateral Contracts are purely financial instruments submitted to the Market Operator, and may be submitted after the fact as permitted by market business rules. The Bilateral Contract pricing information or other contractual terms and conditions between the counter-parties are not communicated to the Market Operator; the MO only requires contract information related to the financial responsibility of each counter-party as it relates to market settlements. The counter-party to a submitted Bilateral Contract may be required to approve or acknowledge the transaction.

5.12.2 Actor Role

Name	Role description
GPE, PSE, or LSE	Submits a Bilateral Contract

5.12.3 Triggers

None.

5.12.4 Pre-Conditions

None.

5.12.5 Flow of Events

Step	Description	Information Content
1	PSE, GPE, or LSE submits Bilateral Contract.	Bilateral Contract
2	Bilateral Contract is received by OASIS.	

3	OASIS validates submitted data against market rules such as: • Is user authorized to submit Bilateral Contract? • Is Bilateral Contract submitted on time? • Does Bilateral Contract include all data required at this time? • Are location references valid in this market?	
4	OASIS assigns the Bilateral Contract a Unique ID, sets the state for all entities to SUBMITTED and stores the contract in database. Exception: If the submitter has provided all data necessary for final review, they should be able set their state to ACCEPTED immediately.	
5	Success message is returned to user.	Bilateral Contract ID state
6	Trigger insert UC # cross reference Notify Subscriber to notify the counter-party that the Bilateral Contract has been submitted.	

5.12.6 **Alternative Flows**

Step	Description	Information Content
3a	If contract fails validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule.	Error message
3b	User corrects data and resubmits contract.	

5.12.7 **Post-Conditions**

A Bilateral Contract with a Unique ID has been recorded in the database.

The Bilateral Contract has a state of either SUBMITTED or ACCEPTED for the original submitter, and SUBMITTED for all other entities.

5.12.8 **Related Use Cases**

Insert UC# cross reference Notify Subscriber – is triggered by this use case

5.12.9 **Assumptions**

Business rules for this market have been defined within OASIS. Example:

Submission time deadlines for settlement related data.

Bilateral Contracts do not cross a Market Operator boundary.

5.12.10 **Data Exchange**

Bilateral Contract includes:

    buying entity

    selling entity

    receipt point

    delivery point

    settlement point (which of the above to points is used for settlement)

    list of charge(s)

    type of charge (congestion, losses)

    entity responsible for payment (buyer or seller)

    Profile

- MW
- start date/time
- stop date/time

    State Profile

- state
- entity
- reason code - for state change (e.g. when state is set to DENIED or REJECTED)
- reason text
- start date/time
- stop date/time

5.12.11 **Comments**

It is understood that this use case will not capture all possible types of contracts that may affect settlement.

Use Case 5.13   Modify Bilateral Contract

5.13.1 **Summary**

Market Participants may make select modifications to existing Bilateral Contracts subject to possible limitations on submittal times, modifiable fields, etc.   Some modifications may require explicit acknowledgement or approval from the Market Operator or other counter-parties.

5.13.2 **Actor Role**

Name	Role description
GPE, PSE, or LSE	Modifies and existing Bilateral Contract.

5.13.3 **Triggers**

None.

5.13.4 **Pre-Conditions**

None.

5.13.5 **Flow of Events**

Step	Description	Information Content
1	GPE, PSE or LSE submits modifications of an existing Bilateral Contract.	Bilateral Contract ID. Modified data. Requested State Reason code Reason text
2	Modification is received by OASIS.	
3	OASIS performs general validation. • Does the referenced Bilateral Contract exist? • Is user authorized to submit modification to that Bilateral Contract? (The entity must be a party to the Bilateral Contract in order to modify it.) OASIS validates submitted data against market rules such as: • Is modification submitted on time for settlement process? • Is locational data valid in this market?	

	• Is modification allowed based on state? (E.g., A WITHDRAWN Bilateral Contract cannot be modified.)	
4	OASIS assigns the modification a Unique ID and stores the modified data.	Modification ID
5a	Modifying a Bilateral Contract will require a state change for that entity. It may default to MODIFIED, but the entity should be allowed to request any valid state. Use Case 5.14 Set Bilateral Contract State is called.	Output: Bilateral Contract ID Modification ID Entity Modified data Requested state Reason code Reason text
5b	Use Case 5.14 returns the state of the Bilateral Contract. Note: The state returned from Use Case 5.14 may not be the same as the state requested. For instance, the entity may request a state of ACCEPTED; however, if all other parties already have a state of ACCEPTED, OASIS will automatically set the state to PENDING.	Input: Bilateral Contract ID Modification ID State
6	Modification to the Bilateral Contract is recorded.	
7	Success message is returned to user.	Bilateral Contract ID Modification ID State
8	Trigger insert UC # cross reference Notify Subscriber to notify the counter-party that the Bilateral Contract has been submitted.	

1.19.13   Alternative Flows

Step	Description	Information Content
3a	If modification fails validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule.	Error message
3b	User corrects data and resubmits modification.	

5.13.6 **Post-Conditions**

A modification with a Unique ID has been recorded and applied to the Bilateral Contract.

Appropriate state changes have been made for appropriate entity(ies).

5.13.7 **Related Use Cases**

Use Case 5.14 Set Bilateral Contract State – is called by this use case

<mark>insert UC # cross reference</mark> Notify Subscriber – is triggered by this use case

5.13.8 **Assumptions**

Bilateral Contracts do not cross a Market Operator boundary.

Preliminary settlements may be run against either PENDING or CONFIRMED contracts. Contracts will be placed in APPROVED/CONFIRMED states as part of the final settlement process.

Business rules for this market have been defined within OASIS. Example:

- Submission time deadlines for settlement related data.

5.13.9 **Data Exchange**

Data structure will follow the Bilateral Contract data structure.

Additional data:

- Modification ID (Unique ID assigned by OASIS.)

5.13.10 **Comments**

None.

Use Case 5.14   Set Bilateral Contract State

5.14.1 **Summary**

Market Participants (usually counter-parties) and Market Operators may be required to explicitly acknowledge and/or approve submission and subsequent modification of Bilateral Contracts depending on their role and the type of submission/modification performed.

5.14.2 **Actor Role**

Name	Role description
GPE, LSE, or PSE	Individually indicate their acceptance, modification, or denial of the Bilateral Contract. The original submitter may also withdraw the Bilateral.

MO	Indicates their approval or rejection of this Bilateral Contract as required by the business rules for this market area.

5.14.3 **Triggers**

1. An entity changes the state of a Bilateral Contract, either directly or through a modification.

2. All MP states reach ACCEPTED, or states reach APPROVED.

5.14.4 **Pre-Conditions**

Bilateral contract exists.

5.14.5 **Flow of Events**

Step	Description	Information Content
1	User submits state change.	Input: Bilateral Schedule ID Modification ID Entity Requested state Reason code reason text
2	State change request is received by OASIS.	
3	OASIS determines whether requested state is valid. Examples: • Only entities involved in the Bilateral Contract may change its state. • Only the original submitter may change state to WITHDRAWN.	
4	OASIS determines what other state changes are necessary and sets them as appropriate. Examples: • If this use case was called by Use Case 5.13 Modify Bilateral Contract: • The states are changed to MODIFIED for all parties. • The state has changed to ACCEPTED for one party: • OASIS checks the states for all other parties. • If state has reached ACCEPTED for all parties, then OASIS sets the composite state to PENDING. • Otherwise no further state changes are made.	

	• The state has changed to APPROVED: • OASIS immediately sets the state to CONFIRMED.	
5	State changes are recorded for each entity.	
6	Success message returned to user or calling use case.	Output: Bilateral Contract ID Modification ID State

5.14.6 **Alternative Flows**

Step	Description	Information Content
3a	If modification fails validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule.	Error message
3b	User corrects data and resubmits modification.	

5.14.7 **Post-Conditions**

Appropriate state changes have been made for appropriate entity(ies).

5.14.8 **Related Use Cases**

Use Case 5.13 Modify Bilateral Contract – calls this use case

5.14.9 **Assumptions**

Preliminary settlements may be run against either PENDING or CONFIRMED contracts. Contracts will be placed in APPROVED/CONFIRMED states as part of the final settlement process.

Required data for each state change is defined in OASIS.

Business rules for state changes are defined in OASIS.

Standard "reason codes" have been defined for final states.

5.14.10   **Data Exchange**

Data structure will follow the Bilateral Contract data structure.

5.14.11 **Comments**

It is assumed that preliminary settlements may be run against either PENDING or CONFIRMED contracts. Contracts will be placed in APPROVED/CONFIRMED states as part of the final settlement process.

Use Case 5.15 View Schedules & Contracts

5.15.1 **Summary**

The Public has the ability to see pertinent information regarding all physical and/or financial schedules and contracts, including the ability for selective querying of information.

The ability to view information is based on the viewer's identity and timing; business rules will govern who can see what information and when they can see it. Market Participants may always view their own data. Others may view select data after it has been made publicly available in accordance with regulatory requirements. Market Operators may view data necessary to operate the markets. Market Monitors will be able to view commercially sensitive information that may not otherwise be made publicly available or prior to this information being made publicly available.

5.15.2 **Actor Role**

Name	Role description
Public	View Bilateral Schedules, Bilateral Contracts, Self Schedules, or any other type of schedule.

5.15.3 **Triggers**

None.

5.15.4 **Pre-Conditions**

None.

5.15.5 **Flow of Events**

Step	Description	Information Content
1	User requests schedule or contract data.	Query

	The entity that is requesting data must always be included as a query parameter. Other common parameters include: start/stop date/times, other entities involved, locational data, etc. Maximum number of records to return should also be an option.	parameters
2	Query request is received by OASIS.	
3	OASIS evaluates the parameters and selects appropriate records. This step must always include evaluation of whether the requesting entity is allowed to see the data at the time the request is made.	
4	Data is sent to user.	Schedule or contract data.

5.15.6 **Alternative Flows**

Step	Description	Information Content
3a	If results cannot be returned, an error message is returned stating the reason for failure. Message must include the reason why the query cannot be processed, and, whenever possible, a reference to the business rule restricting the query and which parameters are involved.	Error message.
3b	User corrects query parameters and resubmits.	

5.15.7 **Post-Conditions**

Requested data has been returned to the user.

5.15.8 **Related Use Cases**

None.

5.15.9 **Assumptions**

Business rules controlling who can see what data at what time are defined for this market and specified in OASIS.

5.15.10 **Data Exchange**

Schedule or contract data.

5.15.11 **Comments**

It is understood that very large queries can have negative impacts on the OASIS system. OASIS system operators are expected to manage this. For instance, they

may require minimum parameters (i.e., users may not request all schedules, for all locations, for all time). However, there will be situations where users have valid reasons to run large queries. These must be accommodated. A combination of methods for returning data should be considered. For instance, on-line processes could be used for shorter queries and batch processes for longer queries. Technical standards should be developed for this.

5.15.12   **Monitor Market Compliance**

This use case is out of scope for OASIS but is referenced for completeness.

See <mark>Insert UC# cross reference</mark> Monitor Market Compliance.

4.6 *Coordination*

Use Case 6.1   Coordinate Interchange

6.1.1 **Summary**

Reliability Authorities, Interchange Authorities, Balancing Authorities and Market Operators use Coordinate Interchange to exchange information regarding the set of final, confirmed interchange schedules that are expected to be included in each Balancing Authority's net scheduled interchange. Any party may execute this use case with any other party. However, the following interactions are envisioned to be the typical cases:

- Balancing Authorities coordinate interchange with their designated Interchange Authority.

- Interchange Authorities coordinate interchange with ALL other Interchange Authorities (i.e., the concept of "adjacent IAs" nor "intermediary BAs/IAs" is not part of current NERC Functional Model)

- Reliability Authorities verify interchange with all Interchange Authorities operating within their Reliability Area

- Market Operators verify interchange with all Interchange Authorities and Balancing Authorities within their Market Area

6.1.2 **Actor Role**

Name	Role description
Interchange Authority (IA)	Requests coordination of interchange with all other recognized Interchange Authorities.
Balancing Authority (BA)	Requests coordination of interchange with their designated Interchange Authority.
Reliability Authority (RA)	Requests verification of interchange with each of the Interchange Authorities operating within their Reliability Area.
Market Operator (MO)	Requests verification of interchange with each of the Interchange Authorities and Balancing Authorities operating within their Market Area.

6.1.3 **Triggers**

Coordinate Interchange should be executed on a periodic basis by all Actors. The frequency of execution should increase as one approaches the operating hour. Triggering of execution of Coordinate Interchange based on the receipt of Coordinate Interchange requests that results in a change in coordination status (or cooridinated MW level, etc.) of one or more counter-parties to the interchange may optimize the flow of information between the BAs and IAs.

6.1.4 **Pre-Conditions**

None.

6.1.5 **Flow of Events**

Step	Description	Information Content
1	IAs and BAs submit a request with the following information for coordination with a designated counter party: • Submitting entity and role (IA or BA) • Target (receiving) entity and role (IA or BA) • Coordination time interval (start/stop) • Schedule profile information for each CONFIRMED schedule in their possession over the coordination interval o Source/Sink BA o Start/Stop o MW level o Ramp o Coordination status of source/sink BA and their IA (See Comments and Data Exchange for discussion of the data that might be exchanged via this message) RAs and MOs verify interchange schedules by specifying the following information: • Submitting entity and role (RA or MO)	Coordination Request

	• Target entity and role (IA or BA) • Coordination time interval (start/stop)	
2	OASIS receives Coordinate Interchange request.	
3	OASIS validates all submitted information: • Submitter is authorized to execute Coordinate Interchange • Receiving OASIS represents the coordination target entity • Coordination time interval is within configured limits	

4	OASIS retrieves locally stored information for all CONFIRMED schedules identifying the target (receiving) entity and submitting entity as "interested" counter-parties to the schedule. For example:
	
	 • If submitter is BA and receiver is IA:
	
	     o Receiving IA retrieves all CONFIRMED schedules where the submitting BA is either the source or sink
	
	 • If submitter is IA and receiver is IA:
	
	     o Receiving IA retrieves all CONFIRMED schedules where the submitting IA is the designated IA for any source or sink BA
	
	 • If submitter is MO or RA and receiver is IA:
	
	     o Receiving IA retrieves all CONFIRMED schedules where the submitting MO or RA is the designated MO or RA for any source or sink BA
	
	 • If submitter is IA and receiver is BA:
	
	     o Receiving BA retrieves all CONFIRMED schedules where submitting IA is the designated IA for any source or sink BA	

5	If submitter has supplied schedule information in the request, OASIS compares the information to its locally stored copy of the schedule. • If they match, the coordination status for the submitting entity is set to COORDINATED. • If they do not match, the coordination status for the submitting	

	entity is set to UNCOORDINATED.	
	If there is locally stored schedule information associated with the submitting entity for the time interval, but the submitter did not supply corresponding schedule information, the coordination status for the submitting entity is set to UNCOORDINATED.	
6	OASIS constructs a response message containing all schedule information specified in the Coordinate Interchange request as well as all corresponding schedule information retrieved locally (i.e., the union of all schedules). Duplicate schedules (those appearing in both the submitted list and those retrieved locally) that match will only be listed in the response message once. Mismatched schedules in either submittal or local store will also be listed. • Schedules specified by submitter and verified against identical schedule associated with target entity (i.e., coordinated schedules) are flagged with a status of COORDINATED. • Schedules specified by submitter but not verified against identical schedule associated with target entity (i.e., schedules disagreeing or missing in receiving entity) are flagged with a status of UNCOORDINATED. • Schedules not specified by submitter but that appear as a CONFIRMED schedule for the target entity (i.e., schedules disagreeing or missing in submitting entity) are flagged with a status of UNCOORDINATED. For requests initiated by MOs or RAs, the (UN)COORDINATED status will be strictly based on the state associated with the schedule stored locally.	
7	OASIS returns response to submitter	Coordination Response
8	If submitter is an IA or BA, the Coordination Response message is processed to update the coordination status associated with the coordination target entity in each schedule held locally.	Coordination Response
9	If any schedules are in disagreement or are missing, OASIS triggers Notify Subscribers to initiate notification to any interested parties.	Schedule ID

6.1.6 **Alternative Flows**

Step	Description	Information Content
3a	If Coordinate Interchange fails OASIS validation, an error message is returned stating the reason for failure. Message must include the field name, incorrect value, and, whenever possible, a reference to the business rule violated.	Error message
3b	User corrects data and resubmits coordination request.	

6.1.7 **Post-Conditions**

Coordination status of source and sink BAs and their respective IAs are updated in all schedules held in both the receiver's OASIS and the submitter's OASIS (see Comments for expected propagation of coordination status between BAs and IAs).

6.1.8 **Related Use Cases**

- Insert link Notify Subscribers – Triggered to notify all interested parties of the change in schedule coordination status.

6.1.9 **Assumptions**

Information necessary to identify every potential Balancing Authority and their associated/designated Interchange Authority, Reliability Authority and Market Operator (if appropriate) must be available in each Actor's OASIS. This information is effectively maintained and published today by NERC as registry administrator for the OASIS and tagging applications.

The industry must determine the disposition of interchange schedules that have not been coordinated through this Use Case and incorporate that practice into the Determine Schedules Use Case. It is assumed that Determine Schedules would only create corresponding interchange schedules from those flagged as COORDINATED by all BAs and IAs party to the schedule effective at the scheduling deadline.

6.1.10 **Data Exchange**

The following information is included in the Coordinate Interchange request/response:

- Submitting entity

- Submitting entity role (e.g., IA or BA)

- Target entity (i.e., receiver)

- Target entity role (e.g., IA or BA)

- Coordination interval start date/time

- Coordination interval stop date/time

- Globally unique schedule ID Source BA

- Sink BA

- Schedule profile information:

    o Start date/time

    o Stop date/time

    o MW level

    o Ramp

    o Source BA (IA) coordination status (i.e., Source BA coordinated with Source IA; values are COORDINATED or UN COORDINATED)

    o Sink BA (IA) coordination status (i.e., Sink BA coordinated with Sink IA; values are COORDINATED or UNCOORDINATED)

    o IA coordination status (i.e., Source IA coordinated with Sink IA; values are COORDINATED or UNCOORDINATED)

Alternatively, more information that may help to reconcile schedule differences between BAs and IAs could be conveyed through the maintenance of separate schedule profiles that each of the Source BA and IA and the Sink BA and IA may have in their possession for a given schedule. The data exchange for the Schedule profile information shown above would be changed to include the following:

- Source BA schedule profile information:

    o Start date/time

    o Stop date/time

    o MW level

    o Ramp

- Source IA schedule profile information:
    - Start date/time
    - Stop date/time
    - MW level
    - Ramp
- Sink IA schedule profile information:
    - Start date/time
    - Stop date/time
    - MW level
    - Ramp
- Sink BA schedule profile information:
    - Start date/time
    - Stop date/time
    - MW level
    - Ramp

Under this scenario, COORDINATED status would be recognized when each entity (BAs or IAs) holds identical MW Level and Ramp information over a given interval in time for all four principal scheduling entities (i.e., Source BA, Source IA, Sink IA, and Sink BA). See Comments for examples of how MW discrepancies would propagate between the principal scheduling entities.

6.1.11 **Comments**

Coordinate Interchange is executed as a confirmation step that all critical operational entities agree on scheduled interchange. This Use Case is executed periodically by BAs and IAs to track coordination status as they approach the operating hour, or otherwise agreed upon interchange scheduling interval.

IAs must periodically execute Coordinate Interchange with ALL other recognized IAs regardless of the presence of known schedules with those entities as an integrity check to verify that no communication or system failures have resulted in missing of a CONFIRMED interchange schedule. This may be an increasingly important issue if business rules are established that allow for "passive approval/confirmation" of schedules.

While Coordinate Interchange may be executed at anytime by any valid Actor, Balancing Authority and Interchange Authority OASIS systems may benefit from implementing a programmatic trigger of Coordinate Interchange to other counter-party entities based on 1) receipt of a Coordinate Interchange request from any

other counter-party (IA or BA) AND 2) a change in the coordination status of any schedules as a result of that Coordinate Interchange request.

The following tables illustrates how schedule coordination status would propagate between the principal scheduling entities (i.e., Source BA, Source IA, Sink IA and Sink BA) if this programmatic trigger rule where to be implemented.

Scenario 1 – Coordinate Interchange initiated by the Source BA assuming that all agree to the schedule (C=COORDINATED, UC=UNCOORDINATED):

Message Exchange	Source BA State	Source IA State	Sink IA State	Sink BA State
Initial State	Source BA – UC IA - UC Sink BA - UC	Source BA – UC IA – UC Sink BA - UC	Source BA – UC IA – UC Sink BA – UC	Source BA – UC IA – UC Sink BA - UC
SourceBA -> Source IA	Source BA – C IA – UC Sink BA - UC	Source BA – C IA – UC Sink BA - UC	Source BA – UC IA – UC Sink BA – UC	Source BA – UC IA – UC Sink BA – UC
Source IA -> Sink IA	Source BA – C IA – UC Sink BA - UC	Source BA – C IA – C Sink BA - UC	Source BA – C IA – C Sink BA – UC	Source BA – UC IA – UC Sink BA - UC
Sink IA -> Sink BA	Source BA – C IA – UC Sink BA - UC	Source BA – C IA – C Sink BA - UC	Source BA – C IA – C Sink BA – C	Source BA – C IA – C Sink BA - C
Sink IA -> Source IA	Source BA – C IA – UC Sink BA - UC	Source BA – C IA – C Sink BA - C	Source BA – C IA – C Sink BA – C	Source BA – C IA – C Sink BA - C
Source IA -> Source BA	Source BA – C IA – C Sink BA - C	Source BA – C IA – C Sink BA - C	Source BA – C IA – C Sink BA – C	Source BA – C IA – C Sink BA - C

Scenario 2 – Coordinate Interchange initiated by the Sink BA assuming that all agree to the schedule (C=COORDINATED, UC=UNCOORDINATED):

Message Exchange	Source BA State	Source IA State	Sink IA State	Sink BA State
Initial State	Source BA – UC IA – UC Sink BA - UC	Source BA – UC IA – UC Sink BA - UC	Source BA – UC IA – UC Sink BA - UC	Source BA – UC IA – UC Sink BA - UC
Sink BA -> Sink IA	Source BA – UC IA – UC Sink BA - UC	Source BA – UC IA – UC Sink BA - UC	Source BA – UC IA – UC Sink BA - C	Source BA – UC IA – UC Sink BA – C

Message Exchange	Source BA State	Source IA State	Sink IA State	Sink BA State
Source BA -> Source IA	Source BA – C IA – UC Sink BA - UC	Source BA – C IA – UC Sink BA - UC	Source BA – UC IA – UC Sink BA - C	Source BA – UC IA – UC Sink BA - C
Sink IA -> Source IA	Source BA – C IA – UC Sink BA - UC	Source BA – C IA – C Sink BA - C	Source BA – C IA – C Sink BA - C	Source BA – UC IA – UC Sink BA - C
Sink IA -> Sink BA	Source BA – C IA – UC Sink BA - UC	Source BA – C IA – C Sink BA - C	Source BA – C IA – C Sink BA - C	Source BA – C IA – C Sink BA - C
Source IA -> Source BA	Source BA – C IA – C Sink BA - C	Source BA – C IA – C Sink BA - C	Source BA – C IA – C Sink BA - C	Source BA – C IA – C Sink BA - C

Scenario 3 – Coordinate Interchange intiated by the Sink IA assuming that all agree to the schedule (C=COORDINATED, UC=UNCOORDINATED):

Message Exchange	Source BA State	Source IA State	Sink IA State	Sink BA State
Initial State	Source BA – UC IA – UC Sink BA - UC	Source BA – UC IA – UC Sink BA - UC	Source BA – UC IA – UC Sink BA - UC	Source BA – UC IA – UC Sink BA - UC
Sink IA -> Source IA	Source BA – UC IA – UC Sink BA - UC	Source BA – UC IA – C Sink BA - UC	Source BA – UC IA – C Sink BA - UC	Source BA – UC IA – UC Sink BA – UC
Source IA -> Source BA	Source BA – C IA – C Sink BA - UC	Source BA – C IA – C Sink BA - UC	Source BA – UC IA – C Sink BA - UC	Source BA – UC IA – UC Sink BA - UC
Sink IA -> Sink BA	Source BA – C IA – C Sink BA - UC	Source BA – C IA – C Sink BA - UC	Source BA – UC IA – C Sink BA - C	Source BA – UC IA – C Sink BA - C
Source IA -> Sink IA	Source BA – C IA – C Sink BA - UC	Source BA – C IA – C Sink BA - C	Source BA – C IA – C Sink BA - C	Source BA – UC IA – C Sink BA - C
Source IA -> Source BA	Source BA – C IA – C Sink BA - C	Source BA – C IA – C Sink BA - C	Source BA – C IA – C Sink BA - C	Source BA – UC IA – C Sink BA – C

Message Exchange	Source BA State	Source IA State	Sink IA State	Sink BA State
Sink IA -> Sink BA	Source BA – C IA – C Sink BA - C	Source BA – C IA – C Sink BA - C	Source BA – C IA – C Sink BA - C	Source BA – C IA – C Sink BA – C

As an alternative to tracking simply a COORDINATE or UNCOORDINATED status for each of the pairs of principal scheduling entities (Source BA and IA, Source and Sink IAs, and Sink IA and BA), OASIS could be implemented to track and propagate the actual schedule profiles as viewed by each of these entities. If such a system were implemented and a similar programmatic trigger of Coordinate Interchange instituted as above, a schedule discrepancy between entities would be detected and information made available to each entity that may aid in final reconciliation of the "to-be-implemented" scheduled interchange.

The following tables show how such an information exchange might propagate through the principal scheduling entities where there is 1) agreement and 2) disagreement on the scheduled amount. COORDINATED status would be inferred when all the scheduled amounts, ramps, etc., match for all four principal scheduling entities over a given interval in time.

Scenario 1 – Coordinate Interchange initiated by the Source BA assuming that all agree to the schedule:

Message Exchange	Source BA State	Source IA State	Sink IA State	Sink BA State
Initial State	Source BA – MW Source IA - ? Sink IA - ? Sink BA - ?	Source BA – ? Source IA - MW Sink IA - ? Sink BA - ?	Source BA – ? Source IA - ? Sink IA - MW Sink BA - ?	Source BA – ? Source IA - ? Sink IA - ? Sink BA - MW
SourceBA -> Source IA	Source BA – MW Source IA - MW Sink IA - ? Sink BA - ?	Source BA – MW Source IA - MW Sink IA - ? Sink BA - ?	Source BA – ? Source IA - ? Sink IA - MW Sink BA - ?	Source BA – ? Source IA - ? Sink IA - ? Sink BA - MW
Source IA -> Sink IA	Source BA – MW Source IA - MW Sink IA - ? Sink BA - ?	Source BA – MW Source IA - MW Sink IA - MW Sink BA - ?	Source BA – MW Source IA - MW Sink IA - MW Sink BA - ?	Source BA – ? Source IA - ? Sink IA - ? Sink BA - MW
Sink IA -> Sink BA	Source BA – MW Source IA - MW Sink IA - ? Sink BA - ?	Source BA – MW Source IA - MW Sink IA - MW Sink BA - ?	Source BA – MW Source IA - MW Sink IA - MW Sink BA - MW	Source BA – MW Source IA - MW Sink IA - MW Sink BA - MW

Message Exchange	Source BA State	Source IA State	Sink IA State	Sink BA State
Sink IA -> Source IA	Source BA – MW Source IA - ? Sink IA - ? Sink BA - ?	Source BA – MW Source IA - MW Sink IA - MW Sink BA - MW	Source BA – MW Source IA - MW Sink IA - MW Sink BA - MW	Source BA – MW Source IA - MW Sink IA - MW Sink BA - MW
Source IA -> Source BA	Source BA – MW Source IA - MW Sink IA - MW Sink BA – MW	Source BA – MW Source IA - MW Sink IA - MW Sink BA - MW	Source BA – MW Source IA - MW Sink IA - MW Sink BA - MW	Source BA – MW Source IA - MW Sink IA - MW Sink BA - MW

Scenario 2 – Coordinate Interchange initiated by the Sink BA assuming that there are disagreements to the schedule:

Message Exchange	Source BA State	Source IA State	Sink IA State	Sink BA State
Initial State	Source BA – MWx Source IA - ? Sink IA - ? Sink BA - ?	Source BA – ? Source IA - MWy Sink IA - ? Sink BA - ?	Source BA – ? Source IA - ? Sink IA - MWy Sink BA - ?	Source BA – ? Source IA - ? Sink IA - ? Sink BA - MWz
SourceBA -> Source IA	Source BA – MWx Source IA - MWy Sink IA - ? Sink BA - ?	Source BA – MWx Source IA - MWy Sink IA - ? Sink BA - ?	Source BA – ? Source IA - ? Sink IA - MWy Sink BA - ?	Source BA – ? Source IA - ? Sink IA - ? Sink BA - MWz
Source IA -> Sink IA	Source BA – MWx Source IA - MWy Sink IA - ? Sink BA - ?	Source BA – MWx Source IA - MWy Sink IA - MWy Sink BA - ?	Source BA – MWx Source IA - MWy Sink IA - MWy Sink BA - ?	Source BA – ? Source IA - ? Sink IA - ? Sink BA - MW
Sink IA -> Sink BA	Source BA – MWx Source IA - MWy Sink IA - ? Sink BA - ?	Source BA – MWx Source IA - MWy Sink IA - MWy Sink BA - ?	Source BA – MWx Source IA - MWy Sink IA - MWy Sink BA - MWz	Source BA – MWx Source IA - MWy Sink IA - MWy Sink BA – MWz
Sink IA -> Source IA	Source BA – MWx Source IA - MWy Sink IA - ? Sink BA - ?	Source BA – MWx Source IA - MWy Sink IA - MWy Sink BA - MWz	Source BA – MWx Source IA - MWy Sink IA - MWy Sink BA - MWz	Source BA – MWx Source IA - MWy Sink IA - MWy Sink BA - MWz

Message Exchange	Source BA State	Source IA State	Sink IA State	Sink BA State
Source IA -> Source BA	Source BA – MWx Source IA - MWy Sink IA - MWy Sink BA - MWz	Source BA – MWx Source IA - MWy Sink IA - MWy Sink BA - MWz	Source BA – MWx Source IA - MWy Sink IA - MWy Sink BA - MWz	Source BA – MWx Source IA - MWy Sink IA - MWy Sink BA - MWz

The principal scheduling entities are still left with the problem of reconciliation of the amount to be scheduled, but in this case there is more information regarding who has what information at the expense of tracking multiple profiles for each of the principal scheduling entities.

Use Case 6.2   Coordinate Markets

Market Operators should coordinate their markets with other Market Operators. This coordination may involve iterations on market clearing operations in order to recognize the impact of loop and parallel flows induced on one another's transmission systems as a result of security constrained unit commitment and economic dispatch solutions. Coordination may also allow for the automated bidding of generation not selected in one market to be offered into other markets that have a higher marginal clearing price subject to limitations on transmission transfer capability, etc.

This Use Case is currently envisioned to be outside the scope of OASIS II. The data, communications and business practices associated with coordinating "seams" issues is being addressed by the industry.

Use Case 6.3   Coordinate Reliability

Reliability Authorities must coordinate all actions with each other and all other operational entities under their direct authority. This includes the notification of any reliability directives issued to Market Operators or Balancing Authorities, execution of any line loading relief procedures, coordination of market redispatch, etc. (see Declare Abnormal Condition Use Case). The Operational Entities that are ultimately responsible for taking remedial action based on a declared abnormal condition may vary by market or region and by event/condition. For example, declaration of the Unscheduled Flow procedure in the Western Interconnection is mitigated by merchant entities adjusting scheduled interchange. The Transmission Loading Relief procedure in the Eastern Interconnection is declared by the Reliability Authority who also directs the adjustment of scheduled interchange.

This Use Case is outside the scope of OASIS II.