



# Business Requirements Specification

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## EIM Enhancements Winter 2017

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 <b>California ISO</b>	<b>Technology</b>	<b>Template Version:</b>	<b>4.2</b>
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## Revision History

Date	Version	Description
7/31/2017	1.0	Create Document
8/15/2017	1.1	Include ESDER 1C for 9 BRQs that identified as ESDER 1C requirements related Generic NGR Model: BRQ161, BRQ162, BRQ163, BRQ321, BRQ322, BRQ324, BRQ465, BRQ466, BRQ516
11/13/2017	1.5	<p><b>Changes in RED</b></p> <p>Include NGR as Tie resource (TNGR). Related BRQs are identified with (TNGR): BRQ170, BRQ171, BRQ340, BRQ341, BRQ342, BRQ470, BRQ471, BRQ472, BRQ473, BRQ474, BRQ531</p> <p>Include Pseudo Tie Share Transfer PTST constraint. Related BRQs are identified with (PTST): BRQ172, BRQ173, BRQ174, BRQ175, BRQ360, BRQ365, BRQ366, BRQ367</p> <p>Clarification and update:</p> <p>auto-matching functionality: Modify BRQ070, BRQ080, BRQ090, BRQ250, BRQ251, BRQ252</p> <p>Access and Report: BRQ350, BRQ355 BRQ221, BRQ517, BRQ518, BRQ519, BRQ520, Remove BRQ460, BRQ510</p> <p>Update and clarification: BRQ480, BRQ040, BRQ060 BRQ220, BRQ270, BRQ351, BRQ430</p>

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# 1. Introduction

## 1.1 Purpose

The purpose of this document is to capture and record a description of what the Users and Business Stakeholders of the Energy Imbalance Market (EIM) Enhancements Winter 2017 project wish to obtain by providing high-level business requirements. This document establishes the basis for the agreement between the initiators and implementers of the project. The information in this document serves as input to determining the scope of projects and to all Business Process Modeling and System Requirements Specifications efforts.

# 2. Intellectual Property Ownership

Intellectual property covers a broad array of information and materials, including written works, computer programs, software, business manuals, processes, symbols, logos, and other work products. Determining ownership of intellectual property is very important in preserving rights of the California ISO and helps to avoid intellectual property infringement issues. In considering the business requirements or service requirements to be performed, the business owner of the project must determine intellectual property Ownership.

## 2.1 Checklist

The California ISO assumes the ownership of

1. Design of EIM;
2. Related Business Practice Manual;
3. Software codes to implement the EIM design

# 3. Details of Business Need/Problem

## 3.1 Description

The EIM enhancements winter 2017 will facilitate managing bilateral contracts and utilizing the residual capabilities of EIM entities. The functionality will support EIM participation by US and non- US EIM BAAs.

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**High level Scope:**

- Auto-matching for post T–40 Intertie and other EIM Non-Participating Resource (EIMNPR) schedule changes from a corresponding EIMNPR with the ability to generate or consume energy, **Auto-matching apply to multiple sets for a given EIM BAA.**
- Auto-mirroring for ISO import/export schedules at ISO Scheduling Points
- BASE ETSR imbalance energy settlement: LMP at specified financial location
- Exclude EIM administrative fee for non-US transactions after T–40 **for the Auto-Matched portion.**
- Suppress LMP publication for non-US PNodes
- Allow submission of Base Generation Distribution Factors (GDFs) for aggregate EIMNPR
- Allow EIM Entity control to enforce/not enforce EIM BAA internal transmission constraints
- Report resource ramp capability in CMRI for SCs
- Allow EIM and other resources modeled as an aggregation using the Generic NGR model that has the ability to generate or consume energy
- Allow resource using Generic NGR model as dynamic resource (TNGR) to provide energy and AS
- **Report constraint clearing outcome in CMRI for Transmission Operator (TO)**
- **Model Pseudo-Tie Share Transfer (PTST), define PTST shares at the same CNode/ANode, and enforce the upper/lower limits for the PTST.**

## 4. Business Process Impacts

### 4.1 Business Practice Manual (BPM):

**Market Instruments**

**Market Operations**

**Definitions & Acronyms**

**Settlements & Billing**

**Energy Imbalance Market (EIM)**

### 4.2 Justification

The EIM Enhancements Winter 2017 provide methods for all EIM entities to manage bilateral contracts. The enhancements will facilitate more entities, include non-US entities, to join the EIM and increase the EIM benefits.

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## 5. Business Requirements

The sections below describe the Business Processes and the associated Business Requirements involved in the project. These business requirements directly relate to the high level scope items determined for the project. **EIM Enhancements Winter 2017 requirements include the requirements for Energy Storage and Distributed Energy Resources 1C (ESDER 1C), identified in the BRQs.**

EIM Enhancements Winter 2017 and associated impacted Systems:

### Master File:

1. Define a EIM entity attribute **NO Congestion\_Management (Y/N)** for congestion management
2. Define a resource attribute NGR sub type Generic, operation range from negative to positive, no SOC
3. Define a new attribute **NO Apply EIM\_Fee (Y/N)** of EIM resource
4. Define a new EIM resource attribute: Auto\_Match (Y/N/M),
  - o N: by default,
  - o Y: for the resources submit post T40, not for VER
  - o M: for the resource to match the post T-40 change
5. Define **one-to-many association** between a set of multiple Auto\_Match(Y) resources and a Auto\_Match(M) resource at the same EIM BAA; **support multiple sets of auto-matched EIMNPR resources, only one Auto\_Match (M) for a given Auto\_Match (Y)**
6. Define BASE ETSR attributes to support BASE ETSR Imbalance Energy settlement with financial location and split ratio
7. Define all BASE ETSR resource IDs in a similar format as Static ETSRs
8. Define EIM Mirror System Resource (MSR) attribute: Auto\_Mirror (Y/N)
9. Define an association between a Auto\_Mirror resource (MSR) with registered intertie system resources at the same ISO Scheduling Point (SP) for the same EIM Entity SC
10. Define flag Price Public (Y/N) for each Pnode
11. Include Resource using Generic NGR Model in RDT,
12. Allow EIM resource modeled as aggregated Resource using Generic NGR Model
13. Resource using Generic NGR Model can be subject to Local Market Power Mitigation (LMPM)
14. **Allow Resource using Generic NGR Model as intertie dynamic resource (TNGR), provide energy and AS in DAM and RTM for ISO, provide energy for EIM**

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15. Define independent Res IDs for each Pseudo-Tie Share Transfer (PTST) of the same underlying unit at same CNode/ANode

16. Define PTST constraint and association of res IDs and Coefficients

**EMS:**

1. Consume Resource using Generic NGR Model, Ignore SOC

**Market System (SIBR/BSAP/RTM):**

1. Validate the resource defined as Auto\_Match(M)
2. Allow the Auto\_Match(M) to carry Available Balancing Capacity (ABC). The matching function of the Auto\_Match(M) shall have priority over the ABC
3. Support Congestion\_Management (N), EIM BAA internal transmission constraints **NOT** be enforced, **constraint is monitored**
4. Support EIM base schedule SC submit hourly GDF in BSAP. Support one set of GDF for each EIM resource, BSAP for EIMNPR, SIBR for EIMPR
5. Support the Auto-matching feature for the EIM entity SC: include an soft **equality** constraint that Auto\_Match(M) schedule deviations (from base schedule) shall balance the net imbalance energy deviations (from base schedules) of all Auto\_Match(Y) resources for the same EIM Entity SC
6. Support the auto-mirroring feature for the EIM entity SC: Include an **equality** constraint, automatically mirror the net ISO import/export schedules from DAM/FMM/RTD at ISO Scheduling Points to the associated Auto\_Mirror MSR
7. Calculate and publish LMP for BASE ETSR as the weighted average of the corresponding FROM and TO Location LMPs, weighted by the split ratio
8. Exclude the Auto\_Match(Y) system resources from calculation of the extra upward/downward capacity need due to the untagged base schedules.
9. Real time Telemetry, including calculated telemetry for the aggregated EIM resources, EIM participating resources (EIMPR) and non-participating resources (EIMNPR) will be provided via ICCP by the EIM entity. Ensure the consistent calculation for logical resource telemetry and meter.
10. For EIM participating resource NGR, the GHG bid adder and GHG award are only applicable for the positive generation.
11. Publish resource ramp capacity from Real Time Market Base Schedule Test
12. Allow SC to submit bids and GDFs for aggregate EIMPR using Generic NGR Model
13. Allow SC to submit Base Schedule and GDFs for EIMNPR Resource using Generic NGR Model
14. No SOC constraint for Resource using Generic NGR Model
15. Support Resource using Generic NGR Model subject to LMPM for the entire capacity (Pmax-Pmin)
16. **Include TNGR in the ITC and ISL**

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- 17. Associate export tag to TNGR negative generation, and import tag to TNGR positive generation
- 18. System shall **NOT** publish LMP of Pnode with Public (N)
- 19. System shall support ANode overlap for aggregated resources.
- 20. System shall include BAA in Constraint Clearing Outcome publish
- 21. System shall enforce the Right Hand Side (RHS) and Left Hand Side (LHS) Pseudo-Tie Share Transfer(PTST) constraints for resources
- 22. System shall calculate the SP-Tie LMP for each PTST resource defined at the same CNode/ANode
- 23. The shadow price of the PTST constraint shall be reflected in the LMPs and MCC decompositions

**MQS:**

- 1. Exclude the system resources with Auto\_Match(Y) in the calculation of the histogram of percentage of the difference between import and export base schedule at T-40 and Tagged schedule.

**OMS:**

- 1. Include Resource using Generic NGR Model Model outage/derate

**Metering and Settlement:**

- 1. Support Instructed Imbalance Energy (IIE) and Operating Adjustment (OA) settlement for BASE ETSRs flagged for IE settlement
- 2. Settle Resource with attribute Apply EIM\_Fee N, EIM fee shall be **exempted for the IIE which are identified by the Market or Manual Dispatched**
- ~~3. Publish APnode/Pnode LMP for Pnode with Public Flag set to Y~~
- 4. Settle Resource using Generic NGR Model as generation, not subject to load allocation charge
- 5. For TNGR, apply TG settlement rule based on after-the-fact e-Tag.

**OASIS**

- ~~1. Publish LMP with Pnode Public Flag set to Y~~

**CMRI**

- 1. Publish resource ramp capacity for EIM resource SC and EIM entity SC
- 2. Publish Constraint Clearing Outcome flowgate MW and PercentMW for transmission operator (TO)

## **5.1 Business Process: << Manage Entity and Resource Maintenance Updates (Master File), EMS and Full Network Model (FNM)>>**

### **5.1.1 Business Requirements**

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
EIMWNT17_BRQ040	<b>Define an EIM entity attribute for congestion management:</b> <ul style="list-style-type: none"> <li>• Set <del>No</del><b>_Congestion_Management</b> (Y/N), <b>Y</b> by default, Y to support suppressing congestion management for specific EIM Entities</li> <li>• Pass the EIM entity attribute to the market</li> </ul>	Core	Master File
EIMWNT17_BRQ060	<b>Define a new attribute of EIM resource for EIM fee:</b> <ul style="list-style-type: none"> <li>• <del>No</del><b>_Apply EIM_Fee</b> (Y/N), <b>Y</b> by default. <b>N</b> means exclude imbalance energy from these resources to the application of the EIM Administrative Fee, ex: can be set for a system resource outside US for import/export to/from a non-US Entity.</li> <li>• Pass the resource attribute to the downstream system</li> </ul>	Core	Master File

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
EIMWNT17_BRQ070	<p><b>Define a new EIM resource attribute: Auto_Match(Y) (Y/N/M), N by default,</b></p> <ul style="list-style-type: none"> <li>• The Resource must be EIM Non-Participating Resource (EIMNPR)</li> <li>• Identify Non-Participating EIM Resources associated with an EIM Entity SC so that their imbalance energy shall be matched automatically by a designated Non-Participating EIM Resource (the Auto_Match(M)) associated with the same EIM Entity SC.</li> <li>• Pass the resource attribute to the market system</li> </ul> <p>This attribute can set for:</p> <ul style="list-style-type: none"> <li>• System Resources in non_EIM BAAs for bilateral interchange transactions with these non-EIM BAAs, include Ghost system resources (GSR)</li> <li>• BASE ETSRs with EIM BAAs for bilateral interchange transactions with these EIM BAAs, and</li> <li>• Mirror System Resources (MSRs) for mirroring interchange transactions with CAISO at System Resources without Bids (self-schedules) at ISO Scheduling Points</li> <li>• <del>Non-participating, non-VER EIM generation resource</del></li> <li>• This attribute may not be set for VER with real-time forecast.</li> </ul>	Core	Master File

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
EIMWNT17_BRQ080	<p><b>Define a new EIM Resource attribute: Auto_Match(M) (Y/N/M), N by default,</b></p> <ul style="list-style-type: none"> <li>• Identify one or <b>more resources</b> with Auto_Match(M) associated with an EIM Entity SC that shall be used to balance imbalances from all the Auto_Match(Y) resources associated with the same EIM Entity SC</li> <li>• <b>Support multiple Auto_Match(M) resources for a given EIM BAA,</b></li> <li>• <b>Each Auto_Match(Y) resource shall only associate with one Auto_Match(M), multiple Auto_Match(Y) resources can associate with one Auto_Match(M),</b></li> <li>• Must be a EIM Non-participating resource,</li> <li>• Can be a single resource or an aggregate resource</li> <li>• It can be a NGR resource, subtype: generic, no SOC, the operation range is continuous from negative to positive</li> <li>• Allow Auto_Match(M) carry Available Balancing Capacity (ABC)</li> <li>• Pass the resource new attribute to the market system</li> </ul>	Core	Master File
EIMWNT17_BRQ090	<p><b>Define association Auto_Match(Y) and Auto_Match(M):</b></p> <ul style="list-style-type: none"> <li>• Define <b>one-to-many</b> association for <b>a specified set of Auto_Match(Y) resources and a specified corresponding Auto_Match(M) resource</b> at the same EIM BAA</li> <li>• <b>Ensure each Auto_Match (Y) resource only associate with one Auto_Match(M) resource</b></li> <li>• <b>Support multiple sets of associations for a given EIM BAA</b></li> <li>• Pass the association to the market system.</li> </ul>	Core	Master File

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
EIMWNT17_BRQ100	<p><b>Define BASE ETSR attributes to support BASE ETSR Imbalance Energy settlement with financial location and split ratio</b></p> <ul style="list-style-type: none"> <li>• Settlement (Y/N), N by default, to indicate BASE ETSRs subject to IE settlement.</li> <li>• FROM_Location, the PNode/APNode ID deemed as the source/sink location of the base transfer in the FROM_BAA.</li> <li>• FROM_Location_Type: PNode or APNode.</li> <li>• TO_Location, the PNode/APNode ID deemed as the source/sink location of the base transfer in the TO_BAA.</li> <li>• TO_Location_Type: PNode or APNode.</li> <li>• split ratio: A number between zero (0) and unity (1), inclusive, to indicate the marginal loss and congestion cost split between the FROM and TO BAAs.</li> <li>• Financial_Location: A financial location with no network representation (a name, one option is a logical APNode with from/to ETSR location pnodes) for LMP publication.</li> <li>• These attributes must be consistent for the BASE ETSR pairs</li> <li>• Pass the attributes to the downstream systems</li> </ul>	Core	Master File
EIMWNT17_BRQ110	<p><b>Define all BASE ETSR resource IDs the same format as Static ETSRs</b></p> <p>Define all ETSR with Settlement Flag and Financial Location same format specified in EIMWNT17_BRQ100</p>	Core	Master File

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
EIMWNT17_BRQ120	<b>Define EIM Mirror System Resource (MSR) attribute: Auto_Mirror (Y/N), N by default</b> <ul style="list-style-type: none"> <li>• Auto_Mirror(Y) to Identify MSRs used to auto-mirror CISO import/export schedules at ISO Scheduling Points (SP) from specified System Resources (SRs) and Tie-Generators (TGs).</li> <li>• These MSRs may also be specified as Auto_Match(Y) to participate in the Auto-matching feature, but only if the mirrored schedules are self-schedules without bids.</li> <li>• Pass the resource attribute to the market</li> </ul>	Core	Master File
EIMWNT17_BRQ130	<b>Define an association between a Auto_Mirror resource (MSR) with registered system resources</b> <ul style="list-style-type: none"> <li>• MSR and registered system resources must be at the same ISO Scheduling Point (SP) for the same EIM Entity SC</li> <li>• An import MSR (ITIE) may only be associated with multiple export system resources (ETIES) at the same SP. The system resource IDs (ETIES) must be registered in the Master File.</li> <li>• An export MSR (ETIE) may only be associated with multiple import System resources (ITIES) and dynamic tie generator resources (TGs) at the same ISO Scheduling Point. The resource IDs must be registered in Master File</li> <li>• Pass auto mirror association to the market</li> </ul>	Core	Master File

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
EIMWNT17_BRQ140	<p><b>Allow register MSR without Auto_Mirror attribute:</b></p> <p>Different mirror resource MSRs without the Auto_Mirror attribute may be registered at the same ISO Scheduling Points for manual mirroring of ISO import/export schedules from inertie resources not associated with an Auto_Mirror MSR, such as those from Intertie Transactions.</p>	Core	Master File
EIMWNT17_BRQ150	<p><b>Define flag Price Public (Y/N) for each Pnode, default is Y</b></p> <ul style="list-style-type: none"> <li>• Set Pnode Price Public N inside the Non-US EIM BAA if applicable:</li> <li>• Apnodes for the Aggregated EIM market resources used in EIM market is Price Public Y</li> <li>• The underlying pnode price shall not be published in the OASIS and in settlement</li> <li>• Pass the Price Public Flag to downstream system</li> </ul>	Core	Master File

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EIMWNT17_BRQ161  (ESDER 1C)	<p><b>Define NGR resource with subtype Generic:</b></p> <ul style="list-style-type: none"> <li>• Define Generic, new subtype of NGR, in addition to LESR and DDR, of distributed generation and/or generation</li> <li>• Resource using Generic NGR Model can be a resource at one cnode or an aggregate resource at multiple cnodes</li> <li>• The Generic and DDR must be defined at different anode, but can have the same set of cnodes</li> <li>• Resource using Generic NGR Model shall have operating range from negative Pmin to positive Pmax,</li> <li>• Resource using Generic NGR Model shall have a continuous generating operating range</li> <li>• Resource using Generic NGR Model can participate Energy and AS markets in DAM and RTM</li> <li>• Resource using Generic NGR Model can share the same cnode with other resources</li> <li>• Define the distribution factors (GDF) for a aggregate Resource using Generic NGR Model</li> <li>• Define one segment ramp rate from Pmin to 0 and one segment ramp rate from 0 to Pmax for Resource using Generic NGR Model</li> <li>• No State of Charge (SOC) limit and constraint</li> <li>• Resource using Generic NGR Model, without inter-temporal constraints and discontinuity:   No start-up cost, No start up time, No minimum up time, No minimum down time, No forbidden regions, and No transition time; is not a MSG,</li> <li>• Resource using Generic NGR Model can be a RA resource, but system not support bid insertion or RUC</li> <li>• Resource using Generic NGR Model can be subject to LMPM</li> <li>• Resource using Generic NGR Model cannot be REM</li> <li>• include the new enumeration Generic for RDT</li> <li>• Pass the Resource using Generic NGR Model to the downstream systems</li> </ul>	Core	MF, RDT (enumeration), Integration (Enumeration)
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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
	<ul style="list-style-type: none"> <li>Resource using Generic NGR Model must have generating capability (Pmax&gt;0); DDR may not be modeled as Generic NGR</li> </ul>		
EIMWNT17_BRQ162  (ESDER 1C)	<b>Allow NGR meet eligibility requirements maximum operating capacity 0.5 MW by sum of a Resource using Generic NGR Model and a DDR</b> <ul style="list-style-type: none"> <li>Allow a SC register a Generic and a DDR (they are both NGR types).</li> <li>The sum of the magnitudes for the two resources must be no less than 0.5 MW</li> <li>The system will treat Generic and DDR resources independently (separate registration, bids, outages, dispatch, metering, and settlement).</li> <li>The Generic and DDR shall have separate distribution factors.</li> </ul>	Core Business rule	MF
EIMWNT17_BRQ163  (ESDER 1C)	Consume Resource using Generic NGR Model from MF and Ignore SOC constraint while proving regulation under AGC.  Calculate unloaded capacity and 10 min reserve for LESR, DDR and Generic	Core	MF, EMS
EIMWNT17_BRQ165  (ESDER 1C)	<b>Allow EIM resource modeled as aggregated Resource using Generic NGR Model:</b> <ul style="list-style-type: none"> <li>Allow EIM participating resource (EIMPR) modeled as aggregated Resource using Generic NGR Model.</li> <li>Allow EIM non-participating resource (EIMPR) modeled as aggregated Resource using Generic NGR Model.</li> <li>Allow EIM non-participating resource (EIMNPR) Auto_Match(M) modeled as aggregated Resource using Generic NGR Model</li> </ul>	Core	MF

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
EIMWNT17_BRQ170 (TNGR)	<p><b>Allow the Resource using Generic NGR Model as a dynamic inertia resource (TNGR):</b></p> <ul style="list-style-type: none"> <li>• Register resource ID for the resource using Generic NGR Model as a dynamic inertia resource (TNGR) at one cnode or an aggregated resource at multiple CNodes</li> <li>• Map the TNGR to the ISO or EIM inertia</li> <li>• Allow SC to update the TNGR through RDT</li> <li>• Allow the TNGR to provide Energy and the Ancillary Services, Spin, Non-Spin, Upward and Downward Regulation in DAM and RTM for ISO</li> <li>• Allow TNGR to provide energy in RTM and to specify AS base schedules in RTM for EIM BAA</li> </ul>	Core	MF
EIMWNT17_BRQ171 (TNGR)	<p><b>Allow TNGR be eligible for using alternative tie when the primary tie is out:</b></p> <p><b>Associate eligible TNGR with</b></p> <ul style="list-style-type: none"> <li>• Primary Inertia Id, used for schedule tagging, and</li> <li>• Alternative Inertia Id, if applicable, used only if the primary inertia is out of service.</li> </ul>	Core	MF
EIMWNT17_BRQ172 (PTST)	<p><b>System shall define independent Res IDs for each Pseudo-Tie Share Transfer (PTST) of the same underlying unit:</b></p> <ul style="list-style-type: none"> <li>• Define different RES ID for the share of different entities PTST,</li> <li>• Define independent characteristics for each res ID and associated BAA. Different resource share can associate with different BAA.</li> </ul>	Core	MF

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted										
EIMWNT17_BRQ173 (PTST)	<p><b>System shall allow multiple RES ID defined at the same CNode/ANode</b></p> <ul style="list-style-type: none"> <li>Allow multiple RES ID defined on the same CNode or ANode</li> <li>Allow resources and CNode associate to different BAAs</li> <li>Allow multiple system resources, include mirror resources defined at same CNode/ANode</li> <li>Each resource ID can map to different tie for import/export, therefore each SP-Tie price can be different</li> </ul>	Core	MF										
EIMWNT17_BRQ174 (PTST)	<p><b>System shall define specific ETSR ID (Base and/or dynamic) from PTST EIM BAA to adjacent PTST embedded EIM BAA</b></p> <ul style="list-style-type: none"> <li>Define specific ETSR export ID for the different PTST from PTST EIM BAA to adjacent PTST embedded EIM BAA</li> </ul> <p>Example: For a Pseudo-Tie Unit Share (BAA2PTS) that locate at BAA1, owned by BAA2, ETSR ID can be: BAA2_BAA2PTS_BAA1_E_EIMDYN</p>	Core	MF										
EIMWNT17_BRQ175 (PTST)	<p><b>System shall define PTST constraint and association of res IDs and parameters:</b></p> <p><b>Example:</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">BAA ID</th> <th style="text-align: center;">PTST constraint ID</th> <th style="text-align: center;">Associated res id <math>R_i</math></th> <th style="text-align: center;">Coefficient <math>a_i</math></th> </tr> </thead> <tbody> <tr> <td rowspan="2" style="text-align: center;">BAA2</td> <td rowspan="2" style="text-align: center;">BAA2PTST</td> <td style="text-align: center;">BAA2_BAA2PTS_BAA1_E_EIMDYN</td> <td style="text-align: center;">-1</td> </tr> <tr> <td style="text-align: center;">BAA2PTS</td> <td style="text-align: center;">1</td> </tr> </tbody> </table>	BAA ID	PTST constraint ID	Associated res id $R_i$	Coefficient $a_i$	BAA2	BAA2PTST	BAA2_BAA2PTS_BAA1_E_EIMDYN	-1	BAA2PTS	1	Core	MF
BAA ID	PTST constraint ID	Associated res id $R_i$	Coefficient $a_i$										
BAA2	BAA2PTST	BAA2_BAA2PTS_BAA1_E_EIMDYN	-1										
		BAA2PTS	1										

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## 5.2 Business Process: <Manage Default Energy Bids (ECIC)>

### 5.2.1 Business Requirements

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
EIMWNT17_BRQ180	System shall obtain the Indices support EIM resource DEB calculation.	Core	ECIC
EIMWNT17_BRQ186	System will include the negotiated DEB for EIM participating resource using Generic NGR Model for the entire capacity (Pamx-Pmin)	Core	ECIC

## 5.3 Business Process: < Manage Day Ahead Market and Real Time Market (BSAP/SIBR/DAM/RTM)>

### 5.3.1 Business Requirements

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
EIMWNT17_BRQ210	<p><b>System shall ensure Auto_Match(M) has higher priority than ABC:</b></p> <ul style="list-style-type: none"> <li>The Auto_Match(M) may carry Available Balancing Capacity (ABC) that can be dispatched using its Default Energy Bid (DEB) when needed.</li> <li>The balancing function of the Auto_Match(M) shall have priority over the ABC, i.e., the ABC shall slide up and down around the Auto_Match(M) schedule and shall be adjusted as needed to fit within the resource operating limits.</li> </ul>	Core	MF, BSAP, RTM
EIMWNT17_BRQ220	<p><b>System shall support EIM BAA Congestion_Management (Y/N)</b></p> <p>If Congestion_Management is N, for the EIM BAA:</p> <ul style="list-style-type: none"> <li>EIM BAA internal transmission constraints shall be <b>monitored but NOT</b> enforced</li> <li>ETSR limits, ITCs, and ISLs, shall be enforced</li> <li>Local Market Power Mitigation (LMPPM) shall be applied because ETSR limits enforced</li> <li>LMP for EIM BAA can have non zero MCC because constraints enforced in other EIM areas and ETSR/ITC/ISL.</li> <li><b>BAA Congestion_Management flag override the individual transmission constraint enforce flag.</b></li> </ul>	Core	MF, FNM, SMDM, RTM
EIMWNT17_BRQ221	<p><b>System shall report the monitored transmission constraints for binding and advisory intervals for each EIM BAA</b></p> <p>System shall update the Constraint Clearing Outcome publish, add BAAID for each transmission constraint System shall publish constraint flow and overload percentage for binding and advisory intervals in RTM</p>	Core	RTM, Integration

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
EIMWNT17_BRQ230	<p><b>System shall support EIM base schedule SC to submit hourly GDF for EIM resource base schedule:</b></p> <ul style="list-style-type: none"> <li>• Submit Base schedule GDF in the same time line as base schedule, at T-75, T-55, T-40</li> <li>• Only allow EIM non-participating resource to submit Base schedule GDF.</li> <li>• Only allow the aggregated resource to submit Base schedule GDF</li> <li>• The sum of the GDF for an aggregated resource must be 1.</li> <li>• If no base schedule GDF submitted, fall back to default GDF defined in MF.</li> <li>• Normalize GDF for outages</li> </ul>	Core	BSAP
EIMWNT17_BRQ240	<p><b>System shall support one set of GDF for each EIM resource:</b></p> <ul style="list-style-type: none"> <li>• For EIM non-participating resource, use base schedule GDF to distribute energy for base schedule, and imbalanced energy, include Auto_Match(M) energy and ABC energy</li> <li>• For EIM Participating resource, use GDF submitted in SIBR to distribute energy for base schedule, market award imbalanced energy, and ABC energy</li> </ul>	Core	BSAP, SIBR, RTM

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
EIMWNT17_BRQ250	<p><b>System shall support the Auto-matching feature for the EIM entity SC:</b></p> <ul style="list-style-type: none"> <li>• Receive Auto_Match(M) resource, Auto_Match(Y) resources and association of Auto_Match(M) and Auto_Match(Y) defined in MF</li> <li>• The feature shall be activated for an EIM Entity SC and a given Trading Hour only if the Auto_Match(M) and at least one Auto_Match(Y) resource for that EIM Entity SC are active (with base schedules)</li> <li>• Receive updated Auto_Match(Y) resource schedules, obtained by Manual Dispatch instructions and real-time interchange schedule changes on the relevant Auto_Match(Y) resources</li> <li>• In RTUC/RTD include a soft equality constraint that Auto_Match(M) schedule shall match the net imbalance energy deviations (from base schedules) of all Auto_Match(Y) resources for the same EIM Entity SC</li> <li>• <b>System shall ensure the Auto_Match(M) resource use the capacity deviation from base schedule for auto-match</b></li> <li>• After the Auto_Match(M) schedule is determined, any ABC on it shall be allocated and adjusted accordingly.</li> <li>• No consideration of losses;</li> </ul>	Core	RTSI, RTM
EIMWNT17_BRQ251	<p><b>System shall designate Auto_Match(M) schedule changes as MD so that IIE shall be MDE</b></p> <p>In RTUC/RTD, system shall designate Auto_Match(M) schedule changes from the base schedule (MW) of the Auto_Match (M) resource as Manual Dispatched (MD) instructions:</p> <p><b>Constraint MW: MW that auto-Matched (From RTM Market)</b></p>	Core	ED, RTM

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
EIMWNT17_BRQ252	<p><b>System shall not allow operator Manual dispatch on Auto_Match (M) resource</b></p> <ul style="list-style-type: none"> <li>• Operator shall not be able to manually dispatch Auto_Match (M) resources.</li> <li>• All the Auto_Match (M) resources shall not be included in the resource list eligible for manual dispatch.</li> </ul>	Core	ED, RTM
EIMWNT17_BRQ260	<p><b>System shall support the auto-mirroring feature for the EIM entity SC:</b></p> <ul style="list-style-type: none"> <li>• Receive Auto_Mirror MSR for a ISO Scheduling Point and associated system resources and TGs defined in MF</li> <li>• In RTUC/RTD, include an <b>equality constraint</b>, automatically mirror the net ISO import/export schedules from DAM/FMM/RTD at ISO Scheduling Points from System Resources and TGs to the corresponding associated Auto_Mirror MSR.</li> <li>• Allow multiple auto mirror MSR at same ISO SP, auto mirroring different set of system resource schedules.</li> <li>• Allow non-auto mirror MSR for mirroring inertia transactions.</li> <li>• Auto_Mirror MSR may also specified as Auto_Match(Y); however, the application should drop it from the Auto-matching function if any of the associated mirrored system resources have bids, therefore, Auto_Mirror MSR may only be Auto_Match(Y) if the mirrored resources are self-scheduled.</li> </ul>	Core	RTM

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
EIMWNT17_BRQ270	<p><b>System shall calculate and publish LMP for BASE ETSR settlement:</b></p> <ul style="list-style-type: none"> <li>• Receive BASE ETSR and new attributes defined in MF</li> <li>• Include BASE ETSR in the Market ETSR calculation, publish BASE ETSR and other ETSR schedules in the Resource Awards.</li> <li>• <b>Support multiple Base ETSRs per BAA pair per intertie, same as static and dynamic ETSRs.</b></li> <li>• RTUC/RTD shall calculate FMM/5min LMP, LMP components, and MCC components for the Financial Location of each BASE ETSR flagged for IE settlement as the weighted average of the corresponding FROM and TO Location LMPs, weighted by the split ratio, as follows:  <math display="block">\text{BASE ETSR LMP} = \text{FROM\_Location LMP} * \text{Split\_Ratio} + \text{TO\_Location LMP} * (1 - \text{Split\_Ratio}).</math> </li> <li>• The LMP and associated components shall be published for the BASE ETSR in Resource Awards and for the corresponding Financial Location in PNode Clearing.</li> </ul>	Core	RTM, integration
EIMWNT17_BRQ280	<p><b>The Auto_Match(Y) system resources shall not increase the requirement for resource sufficiency for each EIM BAA:</b></p> <ul style="list-style-type: none"> <li>• <b>Exclude</b> the system resources with Auto_Match(Y) from the gross import or export base schedule for the purpose of calculate requirement associated intertie over/under scheduling.</li> </ul>	Core	BSAP
EIMWNT17_BRQ291	<p><b>System shall receive the telemetry value for the aggregated logical EIM resources via ICCP to the EMS</b></p>	Core	EMS, ICCP,

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
EIMWNT17_BRQ296	For EIM participating resource modeled as NGR, the GHG bid adder and GHG award shall only apply to the positive generation.	Core	RTM
EIMWNT17_BRQ297	Publish resource ramp capacity, include Ramp Up and Ramp Down, at the time of publishing Base Schedule test results	Core	BSAP Integration
EIMWNT17_BRQ321  (ESDER 1C)	<b>System shall allow SC to submit bids for Resource using Generic NGR Model:</b> <ul style="list-style-type: none"> <li>• Accept the Resource using Generic NGR Model energy bids with operation range from negative Pmin to positive Pmax</li> <li>• Accept the eligible Resource using Generic NGR Model AS bids</li> <li>• Support the Resource using Generic NGR Model to submit distribution factors (GDF) for each trading hour</li> <li>• Publish the clean bids for Resource using Generic NGR Models to the downstream systems</li> </ul>	Core	SIBR
EIMWNT17_BRQ322  (ESDER 1C)	<b>System shall allow SC to submit EIM Base Schedule for Resource using Generic NGR Model:</b> <ul style="list-style-type: none"> <li>• Accept the Resource using Generic NGR Model base schedule,</li> <li>• Support the eligible Resource using Generic NGR Model ABC capacity</li> <li>• Support the Resource using Generic NGR Model aggregated resource to submit distribution factors (GDF) for each trading hour</li> <li>• Publish the base schedule for Resource using Generic NGR Models to the downstream systems</li> </ul>	Core	BSAP

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
EIMWNT17_BRQ324  (ESDER 1C)	<p><b>Combine the distributed schedules from multiple aggregated resources that have overlapping aggregation in NA:</b></p> <p>Combine multiple aggregated resource schedules from SCUC to form nodal injection at each cnode/pnode based on GDF in network application (NA) for power flow solution (IFM/RTM)</p>	Core	NA, DAM, RTM
EIMWNT17_BRQ325	<p><b>Market shall support Resource using Generic NGR Model subject to Local Market Power Mitigation (LMPM):</b></p> <p>For dynamic competitive path designations (DCAP):</p> <ul style="list-style-type: none"> <li>• Supply for counter flow (SCF) calculation: Include Resource using Generic NGR Model entire capacity (Pmax-Pmin)</li> <li>• Withheld Capacity (WC) calculation: Include Resource using Generic NGR Model entire capacity (Pmax-Pmin)</li> </ul> <p>For Bid mitigation:</p> <ul style="list-style-type: none"> <li>• bid mitigation: Include Resource using Generic NGR Model that subject to LMPM for entire capacity (Pmax-Pmin)</li> </ul>	Core	DAM, RTPD, PTD

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
EIMWNT17_BRQ340 (TNGR)	System shall support sign convention for the TNGR: <ul style="list-style-type: none"> <li>• Support TNGR to submit energy bids for operation range from negative to positive</li> <li>• Support eligible TNGR to submit AS bids</li> <li>• Support eligible TNGR to submit RUC bids</li> <li>• Support bidirectional flow across the intertie: Include TNGR energy award and AS awards in the ITC and ISL constraints. The ITC/ISL constraints sign convention shall support the NGR operation range from negative to positive.</li> <li>• Energy awards for TNGR energy can be positive or negative</li> <li>• AS/RUC awards for TNGR are positive.</li> <li>• Include TNGR in Open-Tie logic in SIBR and the market</li> </ul>	Core	SIBR, DAM, RTPD, RTD
EIMWNT17_BRQ341 (TNGR)	Market shall support alternative tie function for TNGR For the eligible TNGR, if primary tie is out, the TNGR can be scheduled on alternative tie, for import and export.	Core	DAM, RTPD, RTD
EIMWNT17_BRQ342 (TNGR)	System shall convert pre-hour/curtailment tags consistent with TNGR sign convention: <ul style="list-style-type: none"> <li>• Associate the import tag to the positive generation of TNGR</li> <li>• Associate the export tag to the negative generation for TNGR</li> </ul>	Core	ITS, integration, DAM, RTPD, RTD
EIMWNT17_BRQ350	<p><b>Non-TO EIM entity shall only view the generator data not transmission data:</b></p> <p>The system shall accommodate new application roles for CAISO applications for EIM entities, that are non-Transmission Operators (Non-TO), to be able to view EIM entity generation related data, while not viewing transmission data</p>	core	AIM, BAAOP

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
EIMWNT17_BRQ351	<p><b>In the event of a contingency in an EIM entity area, non-TO EIM entity shall act same as EIM entity :</b></p> <p>The non-TO EIM entity shall be responsible to send contingency signal to the Real time Market through BAAOP.</p>	core	BAAOP, RTM, AIM
EIMWNT17_BRQ355	<p><b>System shall not include LMP of Pnode in publish with Public Price (N)</b></p> <ul style="list-style-type: none"> <li>• Receive Pnode Public Price(Y/N) flag from MF</li> <li>• For the pnode Public Price (N), system shall not include its LMP in the PNode Clearing publish</li> <li>• The flag is only for publish. The flag shall not impact the Pnode LMP calculation, save case and EDR.</li> </ul>	core	DAM, RTM, integration, EDR
EIMWNT17_BRQ360 (PTST)	<p><b>For multiple resources that defined at same CNode/ANode, system shall calculate the LMP for each resources:</b></p> <ul style="list-style-type: none"> <li>• Receive the multiple resources defined at the same CNode/ANode from MF</li> <li>• Allow the resources that share the same CNode/ANode be system resources include mirror resources, Pseudo Tie Share Transfer resources, Generating Resources, NGR, PDR</li> <li>• Receive the resources and CNode/ANode associate with different BAAs</li> <li>• Receive the resources that map to different interties</li> <li>• Calculate the network power flow to accommodate that multiple resources share the same CNode</li> <li>• Calculate the LMP for each resource, if the resource associate intertie for import/export, the resource LMP shall be consistent with the SP-TIE price.</li> </ul>	core	DAM, RTM, NA

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
EIMWNT17_BRQ365 (PTST)	<p><b>System shall enforce PTST constraint for each PTST share</b></p> <ul style="list-style-type: none"> <li>• Receive MF defined PTST constraint and associated Resources, coefficients.</li> <li>• Receive PTST constraint limits submitted by the EIM entity through existing payload EIM Dynamic Limit Data. The PTST limits data for LHS is the import limit, RHS is the export limit, submitted under Intertie Constraint.</li> <li>• Enforce the constraint for each PTST:</li> </ul> $LHS \leq \sum_{i \in PTST} a_i R_i \leq RHS$ <p>Where <math>R_i</math> is a Resource (Generating Resource, NGR, SR, MSR, ETSR) and <math>a_i</math> is a coefficient; the set <math>PTST</math> includes the relevant resources that are constrained; these resources must belong to the same BAA (same BAA ID) that must match the BAA ID of the PTST. The PTST will be a new constraint with type PTST.</p> <p>Example:</p> $LHS_{BAA2} \leq BAA2PTS - BAA2\_BAA2PTS\_BAA1\_E\_EIMDYN \leq RHS_{BAA2}$	core	MF, DAM, RTM, RTIS
EIMWNT17_BRQ366 (PTST)	<p>The shadow price of the PTST constraint will be reflected in the LMPs and MCC decompositions through the MCC decomposition of the shadow price of EIM BAA power balance constraint (<math>\varphi</math>)</p> <p>See BPM for Energy Imbalance Market section 11.3.3.4</p>	core	MF, DAM, RTM, RTIS
EIMWNT17_BRQ367 (PTST)	<p>Publish PTST resource LMP in the same manner as other resources. Publish PTST constraint shadow price in the same manner as other constraints</p>	core	DAM, RTM, Integration, OASIS

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## 5.4 Business Process: < Manage Outage, Settlements and Metering >

### 5.4.1 Business Requirements

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
EIMWNT17_BRQ410	<p><b>Support Instructed Imbalance Energy (IIE) and Operating Adjustment (OA) settlement for BASE ETSRs flagged for IE settlement</b></p> <p>Receive BASE ETSR new attribute Settlement (Y/N), if Settlement (Y/N) is Y, settlement based on existing logic for system resources</p> <ul style="list-style-type: none"> <li>• Settle BASE ETSR <b>IIE</b>, using LMP at Financial Location, based on Base schedule and the tag submitted real-time base schedule changes after T-40' via the real-time interchange schedule web service</li> <li>• Settle BASE ETSR <b>OA</b>, using LMP at Financial Location, based on the tag submitted after-the-fact final hourly interchange energy via the real-time interchange schedule web service</li> <li>• EIM Administrative fees and GMC shall apply to BASE ETSR</li> <li>• The BASE ETSR shall be <b>excluded</b> from ETSR in Real-time imbalance offset contribution calculation from ETSRs</li> </ul>	core	Master File Settlement

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
EIMWNT17_BRQ420	<p><b>If Settlement (Y/N) is N, BASE ETSR shall be treated similar as other ETSRs</b></p> <ul style="list-style-type: none"> <li>• IE settlement and GMC fees shall not apply for BASE ETSRs</li> <li>• BASE ETSR shall be included in Real-time imbalance offset contribution calculation from ETSRs</li> <li>• Use the SMEC</li> </ul>	core	Settlement
EIMWNT17_BRQ430	<p><b>Settle Resource with attribute <b>Apply EIM_Fee (Y/N)</b></b></p> <p>For Resource with <b>Apply EIM_Fee is N</b>, EIM administrative charge shall not apply:</p> <ul style="list-style-type: none"> <li>• Exempted IIE transaction of the identified intertie resource (ex: NON-US) transactions which are identified by the Market or Manual Dispatched</li> <li>• Exempt IIE instructions for NGR-NPR that are Auto-Matched to the identified intertie resource transactions that were Identified by Market Dispatched</li> <li>• Charge for any deviation for the identified intertie resource transactions and the Auto-Matched NGR-NPR</li> <li>• During 6 month of exit, apply minimum charge of 5% load and exports plus 5% generation and imports , exclude the resource with <b>Apply EIM_fee N</b></li> </ul>	core	Master File Settlement

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<del>EIMWNT17_BRQ460</del>	<del><b>Publish LMP for the Pnode with Public Flag set to Y</b></del> <ul style="list-style-type: none"> <li><del>• Receive Anode/Pnode price from the market</del></li> <li><del>• Receive Pnode Price Public Flag from MF</del></li> <li><del>• Publish LMP for the Pnode with Public Flag set to Y</del></li> </ul>	<del>core</del>	<del>Master File Settlement</del>

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
EIMWNT17_BRQ465  (ESDER 1C)	<p><b>Apply the settlement calculation at Resource using Generic NGR Model Models:</b></p> <ul style="list-style-type: none"> <li>• Resource using Generic NGR Model is <b>not subject to load allocation charges</b>, treated as generation, wholesale rate is applicable.</li> <li>• If the Resource using Generic NGR Model negative generation subject to retail load settlement, then SC should not submit negative meter</li> <li>• If the Resource using Generic NGR Model negative generation not subject to retail load settlement, then SC should submit load meter <b>portion</b> under wholesale load at load channel.</li> <li>• Resource using Generic NGR Model Pmin cannot be more negative than the wholesale load</li> <li>• Calculate expected energy for Resource using Generic NGR Model Model independently, based upon positive or negative generation</li> <li>• Receive MF defined Resource using Generic NGR Model Model underlying pnode</li> <li>• settle and calculate at Resource using Generic NGR Model Model LMP</li> </ul>	Core	Metering, MQS  Settlement

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
EIMWNT17_BRQ466  (ESDER 1C)	<b>Include Resource using Generic NGR Model outage/derate in the market</b> <ul style="list-style-type: none"> <li>Receive Resource using Generic NGR Model from MF</li> <li>Allow SC to submit Resource using Generic NGR Model outage/derate in outage system for out service, de-rate of Pmax, re-rate Pmin, de-rate ramp rate</li> </ul>	Core	WebOMS, DAM, RTM
EIMWNT17_BRQ470  (TNGR)	<b>System shall associate applicable import or export tags with TNGR registered resource ID:</b>  Recognize the TNGR from MF for dynamic resource (TG) and NGR flag  Use import tag for the schedule if TNGR schedule/award is positive  Use export tag for the schedule if TNGR schedule/award is negative	Core	DAM, RTM  Integration  ITS

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
EIMWNT17_BRQ471 (TNGR)	<p><b>System shall calculate the logical meter (LMC) for TNGR as positive or negative import based on after-the-fact tags:</b></p> <ul style="list-style-type: none"> <li>• TNGR SC shall submit separate after-the-fact hour schedule tags for import tags and export tags per flow direction for each TNGR</li> <li>• ITS/LMC shall sum the tags by direction for each TNGR, one total import tag and one total export tag for the hour.</li> <li>• System shall allocate total import tag to the intervals with positive generation telemetry</li> <li>• allocate export to the intervals with negative generation telemetry</li> <li>• System shall net the value of import and export for each interval, and send the net logical meter of each interval as (positive or negative) <b>import</b> to the downstream system for settlement</li> <li>• For any interval without telemetry, System will assign a nominal value (same as other TG) for the intervals, calculate Logical meter accordingly.</li> <li>• For EIM, the EIM entity SC shall follow the same rule for TNGR Logical meter as ISO. EIM entity shall submit the after-the fact net logical meter of each interval as (positive or negative) import for EIM settlement.</li> </ul>	Core	ITS, LMC, RTIS  Integration

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
EIMWNT17_BRQ472 (TNGR)	<p><b>System shall receive TNGR Logical meter (LMC) for import, dynamic resource (TG) settlement rule is applicable to TNGR:</b></p> <ul style="list-style-type: none"> <li>• System shall map TNGR as Import Resource, same as TG</li> <li>• System shall treat LMC positive value as the import meter</li> <li>• System shall treat LMC negative value as negative import</li> <li>• TG settlement rule based on after-the-fact e-Tag is applicable for TNGR</li> </ul>	Core	ITS, integration, Settlement
EIMWNT17_BRQ473 (TNGR)	<p><b>System shall apply applicable settlement rules for NGR and TNGR that using Generic NGR model:</b></p> <ul style="list-style-type: none"> <li>• NGR negative generation and the TNGR negative import do not get Measured Demand Allocations</li> <li>• AS no pay Insufficient Stored Energy is not applicable for Generic NGR</li> <li>• Other Settlement rules for NGR LESR are applicable for Generic NGR and TNGR</li> </ul>	Core	Settlement
EIMWNT17_BRQ474 (TNGR)	<p>Apply the same rule for dynamic generation intertie resource (TG) and TNGR regarding the HASP reversal.</p>	Core	Settlement

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
EIMWNT17_BRQ480	System shall <b>not</b> allocate uplift costs to Base ETSR: <ul style="list-style-type: none"> <li>• System shall not allocate FRP Uncertainty to Base ETSRs</li> <li>• System shall not allocate any uplift costs to BASE ETSR OA</li> </ul>	core	Settlement

## 5.5 Business Process: <Manage market results in ADS, CMRI and OASIS>

### 5.5.1 Business Requirements

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
EIMWNT17_BRQ510	Publish LMP for Apnodes defined at US border, not publish LMP for Pnodes inside the Non-US BAA <ul style="list-style-type: none"> <li>• <del>Receive Apnode/Pnode price from the market</del></li> <li>• <del>Receive Pnode Price Public Flag from MF</del></li> <li>• <del>Only Publish LMP for the Pnode with Public Flag set to Y</del></li> </ul>	core	MF OASIS

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
EIMWNT17_BRQ515	Publish Resource Ramp Capacity for EIM resource SC and EIM Entity SC: <ul style="list-style-type: none"> <li>• Publish hourly resource ramp capacity Up/Down for SC from Base Schedule Test Results</li> <li>• Allow SC request the resource ramp capacity through UI and API</li> </ul>	core	Integration CMRI, API, UI
EIMWNT17_BRQ516  (ESDER 1C)	Publish Resource using Generic NGR model market results same as generation resource <ul style="list-style-type: none"> <li>• Market publish Resource using Generic NGR Model market awards</li> <li>• Publish Resource using Generic NGR Model DOT in ADS same as generation resource</li> <li>• Publish Resource using Generic NGR Model market results in CMRI same as generation resource</li> <li>• Include Resource using Generic NGR Model result in OASIS total generation and resource bids</li> </ul>	core	DAM, RTM Integration ADS, CMRI, OASIS
EIMWNT17_BRQ517	System shall create new role: non-TO EIM Entity, similar to EIM entity except no access to transmission violation test results	core	AIM
EIMWNT17_BRQ518	System shall create new role: BAA TO role, access to Transmission constraint flow and load factor report	core	AIM

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
EIMWNT17_BRQ519	CMRI shall receive and publish report of transmission flow and load factor for DAM, HASP, RTPD and RTD for binding interval and advisory intervals: <ul style="list-style-type: none"> <li>• Receive the constraint clearing result for each BAA</li> <li>• Publish report each constraint transmission flow and load factor</li> <li>• Override with incoming binding and advisory values for the intervals in market horizon.</li> <li>• Apply same data repository rule for market clearing result</li> <li>• Allow certified user to request the report through UI and API.</li> </ul>	core	DAM, RTM Integration CMRI, EDR, AIM UI API
EIMWNT17_BRQ520	System not allow non-TO EIM entity to access the transmission reports: <ul style="list-style-type: none"> <li>• System shall allow non-TO EIM entity access the EIM results same as EIM entity except following transmission related reports</li> <li>• System shall not allow non-TO EIM entity to see the EIM BAA Transmission Violation Test Results in CMRI.</li> <li>• System shall not allow non-TO EIM entity to see the EIM BAA report of constraint transmission flow and load factor in CMRI.</li> </ul>	core	CMRI, AIM

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## 5.6 Business Process: <Market Quality System (MQS)>

### 5.6.1 Business Requirements

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
EIMWNT17_BRQ530	The Auto_Match(Y) system resources shall not increase the requirement for resource sufficiency for each EIM BAA: <ul style="list-style-type: none"> <li>Exclude the system resources with Auto_Match(Y) in the calculation of the histogram of percentage of the difference between import and export base schedule at T-40 and Tagged at T-20.</li> <li>Calculate the histogram for the remaining system resources that not be Auto_Match(Y).</li> </ul>	Core	MQS
EIMWNT17_BRQ531 (TNGR)	System shall calculate Mileage for the applicable Generic NGR and TNGR Resource that has regulation up and/or regulation down awards in the same manner as NGR LESR	Core	MQS

## 6. Appendix:

### 6.1 Acronym Definition

Acronym	Definition
ABC	Available Balancing Capacity
AGC	Automatic Generation Control
Anode	Aggregate Node

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<b>Acronym</b>	<b>Definition</b>
API	Application Program Interface
Apnode	Aggregate Pricing Node
AS	Ancillary Services
BAA	Balancing Authority Area
BAAOP	Balancing Authority Area Operations Portal
BASE	Base Scheduled Energy
BCR	Bid Cost Recovery
BPM	Business Process Manual
BRS	Business Requirement Specifications
BSAP	Base Schedule Aggregation Portal
BSC	Base Schedule Coordinator
CAISO	California Independent System Operator
CISO	California Independent System Operator
CMRI	Customer Market Results Interface
Cnode	Connectivity Node
DA	Day-Ahead
DAM	Day-Ahead Market
DCPA	Dynamic Competitive Path Assessment
DDR	Dispatch able Demand Response
DEB	Default Energy Bid

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<b>Acronym</b>	<b>Definition</b>
DGAP	Default Generation Aggregation Point
DLAP	Default Load Aggregation Point
ECIC	Energy Costs and Index Calculator
ED	Exceptional Dispatch
EDR	Enterprise Data Repository
EE	Expected Energy
EIM	Energy Imbalance Market
ELAP	EIM Load Aggregation Point
EMS	Energy Management System
ETIE	Export Intertie
ETSR	Energy Transfer System Resources
FMM	Fifteen Minute Market
FNM	Full Network Model
GDF	Generation Distribution Factor
GHG	Green House Gas
GMC	Grid Management Charge
IE	Imbalance Energy
IFM	Integrated Forward Market
IIE	Instructed Imbalance Energy
ISL	Intertie Schedule Limit

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<b>Acronym</b>	<b>Definition</b>
ISO	California Independent System Operator
ITC	Intertie Constraint
ITIE	Import Intertie
ITS	Interchange Transaction Scheduler
<b>LMC</b>	<b>Logical Meter Calculator</b>
LMP	Locational Marginal Price
LMPM	Locational Market Power Mitigation
LOL	Lower Operating Limit
MCC	Marginal Congestion Component
MCL	Marginal Cost of Losses
MF	Master File
MP	Market Participant
MPM	market Power Mitigation
MQS	Market Quality System
MSG	Multi-Stage Generator
MSR	Mirror System Resource
NA	Network Application
NGR	Non-Generating Resource
NGR DDR	Non-Generating Resource Dispatchable Demand Response
Resource using Generic NGR Model	Non-Generating Resource Generic

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Acronym	Definition
NGR LESR	Non-Generating Resource Limited Energy Storage Resource
<b>Non-TO</b>	<b>Non Transmission Operator</b>
NSI	Net Scheduled Interchange
OA	Operating Adjustment
OASIS	Open Access Same-time information System
OMS	Outage Management System
PCA	Price Correction Admin
PDR	Proxy Demand Resource
Pmax	Maximum Generation Capacity
Pmin	Minimum Generation Capacity
Pnode	Pricing Node
RA	Resource Adequacy
RDT	Resource Data Template
RTD	Real-Time Dispatch
RTPD	Real-Time Pre-Dispatch
RTM	Real-Time Market
RTUC	Real-Time Unit Commitment
RUC	Residual Unit Commitment
SC	Scheduling Coordinator
SCME	Scheduling Coordinator Meter Entity

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<b>Acronym</b>	<b>Definition</b>
SIBR	Scheduling Infrastructure and Business Rules
SMEC	System Marginal Energy Cost
SR	System Resource
STUC	Short-Term Unit Commitment
TAC	Transmission Access Charges
TG	Tie Generator
<b>TO</b>	<b>Transmission operator</b>
UEL	Upper Economic Limit
UI	User Interface
UIE	Uninstructed Energy Imbalance
UOL	Upper Operating Limit
VER	Variable Energy Resource
WebOMS	Web-based Outage Management System
XML	Extensible Markup Language
XSD	XML Schema Definition