

# Market Simulation Structured Scenarios

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## Energy Imbalance Market with Full Network Model Expansion

Version 1.2

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## Location of Document

[\*EIM with FNM Expansion Structures Scenarios\*](#)

## Revision History

Date	Version	Description	Author
11/08/13	Draft	Initial Draft	Christopher McIntosh
12/04/13	Draft	Updated with feedback from SME's	Christopher McIntosh
12/16/13	Draft	Updated with additional feedback from SME's	Christopher McIntosh
01/23/14	Draft	Initial Publication	Christopher McIntosh
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# 1. Introduction

The objective of this document is to provide the information needed by market participants in order to engage in the structured scenario portion of the EIM and FNM Expansion initiatives, thereby enabling them to pose questions and request additional details if necessary. For the scope of this initiative, please refer to the EIM and FNM Expansion - External Business Requirements Specification at – [\(link\)](#)

# 2. Structured Scenario Approach

## 2.1 High Level Overview

These identified scenarios will be executed during the structured scenario portion of the EIM and FNM Expansion market simulation.

## 2.2 Structured Scenarios Conditions and Setup

The following additional setup will be used by the ISO during the scenario execution.

1. ISO will use June 30<sup>th</sup>, 2014 Production TD as its base inputs for Market Simulation, ISO will augment this data with the relevant EIM data and use the TD's bids as the base bid set. This will also include base schedules for EIM and demand forecast for non EIM entities from WECC. Interchange Schedules will be pulled from WIT for this TD as well.
2. Determined by the scenario specifics ISO may seed MP's bids or allow the MP's to bid in whatever resources they see fit for the scenario.

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## 2.4 Structured Scenarios

Scenario Number	EIM with FNM Expansion Structured Scenarios - 7/30	
<b>1</b>	Description	FNM Expansion DAM – Base Schedule Calculation, Transaction ID and Hubs
	ISO Actions	ISO will load standard bid set for ISO resources from production save case; for non EIM entities we will create base schedules based on interchange data, and demand forecast. For EIM entities ISO will validate that submitted base schedules are balanced and feasible. ISO will run DAM and Real Time markets and publish results. Publish Settlements Statements.
	SC Actions	EIM entity submits base schedules and verifies outcome DAM results, Expected Energy and Settlements Statements.
	Expected Outcome	Published results will be based on EIM entity base schedules and non EIM ISO generated base schedules.
	Anticipated Settlement Outcome	CC 64750

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Scenario Number	EIM with FNM Expansion Structured Scenarios - 7/31	
<b>2</b>	Description	FNM Expansion DAM – Binding Physical Flow and Scheduling Constraints
	ISO Actions	ISO will obtain information from EIM entities for transmission interface constraints (TCOR/TIE). ISO will de-rate the transmission interface according to the information provided to cause congestion. ISO will load standard bid set for ISO resources from production save case; for non EIM entities we will create base schedules based on interchange data, and demand forecast. For EIM entities ISO will validate that submitted base schedules are balanced and feasible. ISO will run DAM and Real Time markets and publish results. Publish Settlements Statements.
	SC Actions	Provide ISO transmission interface constraints (TCOR/TIE). EIM entities will review base schedules and resubmit for real time based on DAM results. Verify outcome DAM results, Expected Energy and Settlements Statements.
	Expected Outcome	Identified interfaces of the EIM entities will be congested and final results including congestion will be available.
	Anticipated Settlement Outcome	CC 64750, If dispatched in FMM CC 64600 or RTM CC64700. Congestion for CC 67740 and CC 64770

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Scenario Number	EIM with FNM Expansion Structured Scenarios - NA	
<b>3</b>	Description	FNM Expansion DAM – High Voltage DC- model congestion
	ISO Actions	ISO will de-rate the PDCI interface to a value that ensures congestion. ISO will run the DAM market and publish results. Later the ISO will publish Settlements Statements.
	SC Actions	Submit bids at Scheduling Points with PDCI as primary intertie. Review OASIS and CMRI results including shadow prices, nodal LMPs and final schedules. Review Settlements Statements.
	Expected Outcome	In the DAM, flow across the PDCI is consistent with the de-rated capacity value. Nodal pricing is consistent with the shadow price of congestion. Bids are awarded consistent with the price signals.
	Anticipated Settlement Outcome	CC 6011

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Scenario Number	EIM with FNM Expansion Structured Scenarios - 8/7	
<b>4</b>	Description	EIM Real Time – Flexible Ramping Sufficiency Test PACE and PACW
	ISO Actions	ISO will load an ISO standard bid set; for non EIM entities ISO will create base schedules based on interchange data, and demand forecast. For EIM entities ISO will validate the schedules are balanced and feasible. ISO will set the Flex Ramp requirements (FRR) above available flex ramp capability in the EIM BAA. Broadcast the ISO, EIM BAA, and EIM footprint total load forecast, broadcast the FRR for the ISO, EIM BAAs, and EIM footprint to the Market. Perform flexible ramping requirement sufficiency test. T-75, T-55, T-40.
	SC Actions	Verify outcome Real Time results, Expected Energy and Settlements Statements.
	Expected Outcome	EIM PACE and the PACW fails the flex ramp sufficiency test for some hours; NSI constraint will be binding leading to price separation between the EIM BAA and rest of EIM Area. Flex Ramp price will be set by penalty price in the EIM BAA.
	Anticipated Settlement Outcome	CC 7050, CC 7024, and CC 7056

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Scenario Number	EIM with FNM Expansion Structured Scenarios - 8/6	
<b>5</b>	Description	EIM Real Time – Congestion Management within EIM Entity BAAs
	ISO Actions	ISO will obtain information from EIM entities for transmission interface constraints. ISO will de-rate the transmission flowgates according to the information provided. ISO will load our standard bid set, for non EIM entities we will create base schedules based on interchange data, and demand forecast. For EIM entities ISO will validate the schedules are balanced and feasible. ISO will run DAM and Real Time markets and publish results. Publish Settlements Statements.
	SC Actions	Provide ISO transmission interface constraints. Verify Congestion Information on OASIS, Real Time results, Expected Energy and Settlements Statements.
	Expected Outcome	Units will be dispatched and or committed/decommitted to relieve congestion. LMP will include congestion component.
	Anticipated Settlement Outcome	CC 67740 and CC 64770

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Scenario Number	EIM with FNM Expansion Structured Scenarios - 8/21	
<b>6</b>	Description	EIM Real Time – Manual Dispatches for EIM Resources
	ISO Actions	ISO will load the ISO standard bid set; for non EIM entities ISO will create base schedules based on interchange data, and demand forecast. For EIM entities ISO will validate the schedules are balanced and feasible. ISO will run DAM and Real Time markets and publish results. Publish Settlements Statements.
	SC Actions	EIM BAA will exceptionally dispatch selected EIM participating resources notifying the ISO accordingly.
	Expected Outcome	The market application will dispatch the resources in accordance with the ED instructions.
	Anticipated Settlement Outcome	CC 64600, CC 64700, CC 67740, CC 69850, and CC 64770

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Scenario Number	EIM with FNM Expansion Structured Scenarios - 8/20	
<b>7</b>	Description	EIM Real Time – EIM Specific Resource Mitigation
	ISO Actions	ISO to create a local constraint in the EIM BAA to trigger local market power mitigation.
	SC Actions	Submit expensive bids on the EIM participating resources that are expected to be mitigated.
	Expected Outcome	Resource with market power will be mitigated using their default energy bid and reported on CMRI.
	Anticipated Settlement Outcome	CC 64600, CC 64700, CC 66200 and CC 66780
Scenario Number	EIM with FNM Expansion Structured Scenarios - 8/21	
<b>8</b>	Description	EIM Real Time – GHG Charges
	ISO Actions	ISO to increase the Load Forecast for the ISO BA. EIM specific energy bids are cheaper than other imports to ISO BA. ISO will include GHG bid adder for selected participating resources in the EIM BAA.
	SC Actions	Review Settlements Statements.
	Expected Outcome	GHG payments will be properly awarded to the exporting resources based on their export allocation values.
	Anticipated Settlement Outcome	CC 64600, CC 64700, CC 491, CC 67740, CC 69850, CC 64770, and CC 66200

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Scenario Number	EIM with FNM Expansion Structured Scenarios - 8/26	
<b>9</b>	Description	EIM Real Time – Neutrality
	ISO Actions	ISO to increase the Load Forecast for the ISO BA. EIM specific bids are cheaper than other imports to ISO BA.
	SC Actions	Review Settlements Statements.
	Expected Outcome	Transfer of RT neutrality between BAA and allocation to relevant SC's based on the EIM transfer.
	Anticipated Settlement Outcome	CC 64600, CC 64700, CC 491, CC 67740, CC 69850, and CC 64770
Scenario Number	EIM with FNM Expansion Structured Scenarios - 8/27	
<b>10</b>	Description	EIM Real Time – Contingency Event in the EIM BAA
	ISO Actions	ISO to verify the receipt of the contingency event notification from the EIM Entity. ISO will freeze the EIM transfer of the EIM Entity BAA at the last optimal solution.
	SC Actions	EIM Entity performs contingency dispatch using manual dispatch instructions that are communicated to the ISO. EIM resources to follow ADS instructions which reflect the manual dispatch.
	Expected Outcome	EIM entity takes appropriate actions to resolve their contingency. Contingency does not affect dispatch or prices in the ISO area.
	Anticipated Settlement Outcome	CC 64600, CC 64700, CC 67740, CC 69850, and CC 64770

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Scenario Number	EIM with FNM Expansion Structured Scenarios - 8/27	
<b>11</b>	Description	EIM Real Time – Contingency Event in the ISO BAA
	ISO Actions	ISO will obtain information from EIM entities for transmission interface constraints. ISO will de-rate the transmission flowgates according to the information provided. ISO will load our standard bid set, for non EIM entities we will create base schedules based on interchange data, and demand forecast. For EIM entities ISO will validate the schedules are balanced and feasible. ISO will run DAM and Real Time markets and publish results. Publish Settlements Statements.
	SC Actions	EIM resources receive dispatch instructions through ADS.
	Expected Outcome	Contingency event in CAISO area does not affect dispatches or prices in the EIM BAAs.
	Anticipated Settlement Outcome	CC 64600, CC 64700, CC 67740, CC 69850, and CC 64770

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Scenario Number	EIM with FNM Expansion Structured Scenarios - 8/19	
<b>12</b>	Description	EIM Entity BAA Isolation
	ISO Actions	ISO to set EIM Transfer to zero(small threshold)
	SC Actions	
	Expected Outcome	ISO and EIM Entity BAAs are dispatched separately.
	Anticipated Settlement Outcome	CC 64600, CC 64700, CC 491, CC 67740, CC 69850, and CC 64770
Scenario Number	EIM with FNM Expansion Structured Scenarios - 8/19	
<b>13</b>	Description	100 MW EIM Transfer limit for EIM Entity BAA
	ISO Actions	ISO to set EIM Transfer low/high limits to -100/+100.
	SC Actions	
	Expected Outcome	Limit EIM transfers to 100 MW.
	Anticipated Settlement Outcome	CC 64600, CC 64700, CC 491, CC 67740, CC 69850, and CC 64770

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Scenario Number	EIM with FNM Expansion Structured Scenarios - 8/19	
<b>14</b>	Description	400 MW EIM Transfer limit for EIM Entity BAA
	ISO Actions	ISO to set EIM Transfer low/high limits to -400/+400.
	SC Actions	
	Expected Outcome	Limit EIM transfers to 400 MW.
	Anticipated Settlement Outcome	CC 64600, CC 64700, CC 491, CC 67740, CC 69850, and CC 64770
Scenario Number	EIM with FNM Expansion Structured Scenarios - 8/19	
<b>15</b>	Description	800 MW EIM Transfer limit for EIM Entity BAA
	ISO Actions	ISO to set EIM Transfer low/high limits to -800/+800.
	SC Actions	
	Expected Outcome	Limit EIM transfers to 800 MW.
	Anticipated Settlement Outcome	CC 64600, CC 64700, CC 491, CC 67740, CC 69850, and CC 64770

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Scenario Number	EIM with FNM Expansion Structured Scenarios - 8/28	
<b>16</b>	Description	EIM Entity Separation from EIM market
	ISO Actions	ISO will update EIM entity daily separation flag in Master File. ISO to set the Flex Ramp requirement to zero for the EIM BAA. ISO to set Flex Ramp Requirement Test to failed for the EIM BAA. ISO to set the EIM Transfer limits equal to zero (NSI=base NSI) for the EIM BAA. ISO does not enforce EIM BAA transmission constraints. ISO verifies SIBR rejects any energy bids from resources belonging to the EIM entity. UFE Inclusion Flag will be set to zero in Settlements.
	SC Actions	EIM entity must submit base schedules. EIM entity SC must submit meter data equal to base schedules.
	Expected Outcome	No Unit Commitment/Economic Dispatch for EIM resources from the real time market.
	Anticipated Settlement Outcome	No Charges should Trigger

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Scenario Number	EIM with FNM Expansion Structured Scenarios - 8/27	
<b>17</b>	Description	EIM Real Time – BPA Flowgate Constraints (Entitlement Constraints)
	ISO Actions	ISO will load our standard bid set, for non EIM entities we will create base schedules based on interchange data, and demand forecast. For EIM entities ISO will validate the schedules are balanced and feasible. ISO will run DAM and Real Time markets and publish results. ISO will publish to BPA the base schedule and 15-min market flow contributions from PACW EIMPR on the specified BPA flowgates. ISO will receive from BPA 5-min market flow contribution limits to enforce in RTD. Publish Settlements Statements.
	SC Actions	Specify the flowgates for entitlement constraints. After receiving from ISO the 15-min market flow contributions from PACW EIMPR on the specified BPA flowgates, BPA will send to ISO incremental and decremental 5-min market flow contribution limits for RTD. Verify Congestion Information on CMRI, Real Time results, Expected Energy and Settlements Statements.
	Expected Outcome	PACW EIMPR will be dispatched in RTD without violating entitlement constraints. LMP will include congestion component contribution from binding entitlement constraints.
	Anticipated Settlement Outcome	CC 64600, CC 64700, CC 67740, CC 69850, and CC 64770

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Scenario Number	EIM with FNM Expansion Structured Scenarios - 8/20	
<b>18</b>	Description	Real Time Price Elevation due to Capacity shortage
	ISO Actions	CAISO will create a scenario in which PACE/PACW are short of real time energy across peak hours. The shortage causes EIM resources to be dispatched at elevated cost to provide energy into Pac area. This scenario should be repeated with various EIM transmission limits to test PAC's ability to manage its market exposure by managing the transmission limit.
	SC Actions	SC will provide real time energy bids placing high cost units into the market at high prices.
	Expected Outcome	The capacity shortage will cause bid prices to be higher in PACE and PACW than CAISO. With high cost units setting marginal prices, market power mitigation may not occur.
	Anticipated Settlement	CC 64600, CC 64700, CC 67740, CC 69850, and CC 64770

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Scenario Number	EIM with FNM Expansion Structured Scenarios - 8/20	
<b>19</b>	Description	Local RT Congestion Resolved by Out-of-Area resources
	ISO Actions	ISO will create a real time reduction in the transmission limit on CAISO internal transmission that can be resolved by EIM resources outside of CAISO. ISO to constrain internal transmission and in the remaining area ISO to insure load exceeds available generation.
	SC Actions	SC will submit cost-based bids on resources that can resolve the congestion
	Expected Outcome	CAISO will dispatch out of area resource to resolve congestion problem
	Anticipated Settlement	CC 64600, CC 64700, CC 66200; CC 6774, CC 6985, CC 6477 and CC 6678

Scenario Number	EIM with FNM Expansion Structured Scenarios - 8/26	
<b>20</b>	Description	Impact of Real Time Unit Commitment on EIM Entity
	ISO Actions	ISO will create scenario in which either EIM BAA load forecast falls short or a forced outage or similar circumstance induces the CAISO system to commit a short-start unit in the EIM area. Ideally, the unit will be started but will not be economical over its entire minimum running time, creating a bid cost recovery impact.
	SC Actions	SC submits bids for a short start unit with a zero base schedule, including startup and minimum run costs. Minimum up time should be set to the max allowable for a short start unit, to keep it running under uneconomical conditions.
	Expected Outcome	CAISO commits the unit. If possible, the unit should be uneconomical for part of its run time. Bid cost recovery payments will be due to the unit

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	Anticipated Settlement	CC 66200 and CC 66780
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### 3. ISO Market Simulation Contact

Please contact [MarketSim@caiso.com](mailto:MarketSim@caiso.com) if you have any questions or concerns regarding these scenarios.