



August 30, 2017

The Honorable Kimberly D. Bose  
Secretary  
Federal Energy Regulatory Commission  
888 First Street, NE  
Washington, D.C. 20426

## **INFORMATIONAL FILING-NO NOTICE REQUIRED**

**Re: California Independent System Operator Corporation  
Informational Readiness Certification for Portland General Electric's  
Participation in the Energy Imbalance Market  
Docket No. ER15-861-000**

Dear Secretary Bose:

The California Independent System Operator Corporation (CAISO) submits this informational filing in compliance with section 29.2(b)(6) of the CAISO tariff.<sup>1</sup> The CAISO, in consultation with Portland General Electric Company (PGE), has determined that, following market simulation and an adequate period of parallel operations, the CAISO and PGE have met all readiness criteria specified in section 29.2(b)(7). In support of this determination the CAISO hereby submits the sworn CAISO affidavit of Mark Rothleder, Vice President of Market Quality and Renewable Integration, and the sworn PGE affidavit of Maria Pope, Senior Vice President of Power Supply and Operations and Resource Strategy. This filing certifies the readiness of the CAISO and PGE to proceed with PGE's participation in the CAISO's Energy Imbalance Market (EIM) on October 1, 2017, without exception, consistent with the requirement to do so at least 30 days prior.

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<sup>1</sup> The Commission has determined that readiness certifications are considered informational filings and will not be noticed for comment. See *Cal. Indep. Sys. Operator Corp.*, 153 FERC ¶ 61,205 at P 86 and n.173 (2015); see also *Cal. Indep. Sys. Operator Corp.*, 155 FERC ¶ 61,283 at P 8 (2016).

## I. Background

The EIM provides other balancing authority areas the opportunity to participate in the real-time market for imbalance energy that the CAISO operates in its own balancing authority area. PacifiCorp's balancing authorities were the first two balancing authorities to join the EIM beyond the CAISO balancing authority area. The CAISO's EIM tariff provisions went into effect on October 24, 2014, in time for the first trading day of November 1, 2014.<sup>2</sup> In a March 16, 2015 order,<sup>3</sup> the Commission concluded that certain readiness safeguards are necessary prior to activating a prospective EIM entity in production.<sup>4</sup> Accordingly, the Commission directed the CAISO to include provisions in its tariff to ensure the readiness of any new EIM entity. The Commission further required that the certification of market readiness include a sworn affidavit from an officer of the CAISO and an officer of the prospective EIM entity attesting that both have prepared and made ready the systems and processes for the new EIM entity to commence financially binding participation in the EIM.<sup>5</sup> These criteria appear in section 29.2(b)(7) of the CAISO tariff.

## II. Readiness Reporting, Determination, and Attestations

The CAISO and PGE ran market simulation scenarios from June 5, 2017 to July 17, 2017. Parallel (*i.e.*, financially nonbinding) operations, which began on August 1, 2017, will run through at least August 30, 2017 and, in any event, will continue to be supported and available to PGE until October 1, 2017. During market simulation and parallel operations the CAISO and PGE have engaged in daily discussions to track progress and confirm the status of each readiness criterion, and the CAISO has regularly reported on readiness status in market forum discussions and publicly posted a table or "dashboard," showing progress

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<sup>2</sup> See *Cal. Indep. Sys. Operator Corp.*, 147 FERC ¶ 61,231 (2014) (June 19 Order) (conditionally accepting tariff revisions to implement Energy Imbalance Market); *Cal. Indep. Sys. Operator Corp.*, 149 FERC ¶ 61,058 (2014) (order denying requests for rehearing, granting in part and denying in part requests for clarification, and conditionally accepting tariff revisions on compliance with regard to order listed above); Commission Letter Order, 149 FERC ¶ 61,005 (Oct. 2, 2014) (order granting CAISO request to extend effective date of Energy Imbalance Market tariff revisions from September 23, 2014, to October 24, 2014, for trading day November 1, 2014).

<sup>3</sup> *Cal. Indep. Sys. Operator Corp.*, 150 FERC ¶ 61,191 (2015) (March 16 Order).

<sup>4</sup> March 16 Order at P 30.

<sup>5</sup> *Id.* n.85; see also *Cal. Indep. Sys. Operator Corp.*, 153 FERC ¶ 61,205 (2015) (accepting the CAISO's proposed readiness criteria).

towards meeting the readiness criteria.<sup>6</sup> The process of updating the readiness dashboard through this joint effort involved representatives from both organizations, including the senior officers who have attested that the parties' processes and systems are ready for PGE's participation in the EIM.

The market simulation confirmed system functionality and connectivity by identifying issues and software variances in advance of implementation that have since been resolved. In addition, market simulation permitted the CAISO and PGE to validate performance of the systems and processes under a variety of structured scenarios. The market simulation dashboard dated June 27, 2017 demonstrated that the CAISO and PGE were ready to enter parallel operations. Having achieved the benefits from market simulation, the CAISO and PGE transitioned to parallel operations on August 1, 2017.

The parallel operations phase is designed to test performance of the systems and processes in a financially non-binding environment using historical data and information from production systems to the maximum extent possible. The CAISO and PGE have engaged in parallel operations to examine capabilities at different times and conditions (morning ramp, evening ramp, low load and peak load). Doing so has permitted PGE to understand the interaction between resource plans, base schedules, outage management, manual dispatch, and the CAISO full network model. This period has also allowed the CAISO to identify and resolve software issues. The dashboard dated August 17, 2017 showed the progress during initial parallel operations as additional readiness criteria were met. The final dashboard, dated August 28, 2017, is included as Attachment A. The dashboard sets forth each of the readiness criteria in the tariff, the metrics by which the CAISO measures satisfaction of the criteria, and the actions or status that demonstrate PGE's compliance with criteria. The dashboard shows satisfaction of all readiness criteria.

Section 29(b)(6) requires that a senior officer of the CAISO and a prospective EIM entity attest (1) that the processes and systems of the prospective EIM Entity have satisfied or will have satisfied the readiness criteria set forth in section 29.2(b)(7) as of the Implementation Date; (2) to any known issues requiring resolution prior to the Implementation Date in accordance with section 29.2(b)(8); (3) to any exceptions from the established thresholds specified in the Business Practice Manuals, and that despite such exceptions the criteria were met or will be met as specified in 29.2(b)(7); and (4) that the Implementation Date is conditional on the resolution of the known issues identified in the certificates and any unforeseen issues that undermine the

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<sup>6</sup> More information on the status of these other reports consistent with CAISO tariff section 29.2(b)(8) is available on the CAISO website under the EIM Entities PGE entry at: <http://www.caiso.com/informed/Pages/ReleasePlanning/Default.aspx>.

satisfaction of the readiness criteria. Attachments B and C, respectively, contain the sworn CAISO affidavit of Mark Rothleder, Vice President of Market Quality and Renewable Integration and the sworn PGE affidavit of Maria Pope, Senior Vice President of Power Supply and Operations and Resource Strategy in satisfaction of this requirement.

The affidavits are based upon the engagement by these senior officers in assessing the readiness criteria as reported in the dashboard, including supporting documentation. The CAISO believes that the market simulation and parallel operations to date demonstrate that PGE is prepared to enter financially binding production EIM operations on October 1, 2017. As discussed in the Market Quality Report included as Attachment D, any issues identified in the parallel operations have been resolved or will be resolved. Neither the CAISO nor PGE has identified any exception to any of the readiness criteria.

### **III. Market Quality Report on Parallel Operations**

Parallel operations allowed the CAISO and PGE to identify and resolve numerous input, process, and software issues prior to the commencement of financially binding operations.<sup>7</sup> The CAISO and PGE worked diligently during parallel operations to identify the cause of the infeasibilities that arose. The attached Market Quality Report demonstrates that the majority of the power balance infeasibilities identified during the period of parallel operations associated with the readiness determination were caused by input data issues, some of which are unique to the parallel operations environment and software issues, all of which have been or will be resolved by the implementation date.

The need to reflect Bonneville Power Administration (BPA) transmission system rate of change constraints associated with the use of PGE's transmission rights in the EIM is an important consideration with respect to PGE parallel operations. These rate of change constraints limit the 5-minute flow impact on certain BPA flowgates modeled in the market.<sup>8</sup> In production, the rate of change constraints will limit the five-minute dispatch changes of the combined set of participating resources. In parallel operations the actual movement of the currently participating resources is streamed from the production system that doesn't include PGE. Therefore, PGE resources are dispatched in parallel

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<sup>7</sup> The market quality report on parallel operations dated August 24, 2017 explains how each of these issues impacted the market results and how they were resolved by the CAISO and PGE.

<sup>8</sup> The CAISO and BPA coordinate the exchange of information and limits associated with modeling and managing the impact of the EIM on BPA flowgates within the BPA balancing authority area in accordance with the Coordinated Transmission Agreement. See Docket No. ER17-1493-000, Letter Order dated June 20, 2017.

operations to meet the combined flow limit given the actual movement of participating resources from production. This puts more stringent constraints on the 5-minute dispatch changes of PGE resources in parallel operations compared to what will happen when PGE resources are in production. In production, the responsibility to meet the flow impact limit will be distributed among the combined set of participating resources.

Notwithstanding these differences and challenges, the CAISO validated both prices and schedules based on the data input to the market systems throughout the first 18 days of parallel operations. This validation demonstrates that the market solution produced is as expected and consistent with the market rules as designed based on the input data. The analysis conducted for the report accounts for the fact that input data may be influenced by limitations inherent in the parallel operations environment and these limitations may affect the quality of the solution. When factors affecting the input data are controlled for, the numerical quality of the market solution is good and indicates that the systems and processes of PGE are ready to operate in production.

## **V. Attachments**

The following attachments, in addition to this transmittal letter, are provided with the instant filing:

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| Attachment A | Readiness Dashboard Report;                |
| Attachment B | Affidavit of Mark Rothleder;               |
| Attachment C | Affidavit of Maria Pope; and               |
| Attachment D | Parallel Operations Market Quality Report. |

## VI. Conclusion

The CAISO respectfully requests that the Commission accept this certification as consistent with section 29.2(b)(6) of the CAISO tariff. The CAISO or PGE will notify the Commission in the event of any subsequent determination that the implementation of PGE into the EIM on October 1, 2017 should be delayed, the reason for the delay, the new implementation date if it can be determined, and whether a portion or all of this certification needs to be reissued.

Respectfully submitted,

**By: /s/ John C. Anders**

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Counsel for the California Independent System Operator Corporation

**Attachment A – Readiness Dashboard Report**  
**Portland General Electric EIM Readiness Certification**  
**California Independent System Operator Corporation**

Readiness Criterion Identifier	Readiness Category	Criteria	Measurable Elements	Threshold	Owner	Status	Evidence	Tariff Mapping
1	Prospective EIM Entity Full Network Model Integration	Generation, Interchange and Load comparison	Load, EIM Internal Intertie and EIM External Interties, and Generating Unit definition in the Full Network Model is consistent with the Load, EIM Internal Intertie and EIM External Interties, and Generating Unit definition in the exported prospective EIM Entity network model file that it delivered to the CAISO.	Data matches within 10%, measured in MW capacity to start parallel operation, and within 5% before full activation. Discrepancies, if any, are accounted for in terms of imbalance adjustment	CAISO	Complete	Market Sim data comparing PGE and ISO state estimator results were provided on 7/27.  The ISO provided a report comparing the state estimator results during parallel operations for gen, load, and interchanges. Khaled sent an email summarizing the results and confirmed completion.	Tariff section 29.2(b)(7)(A)(i)
2	Prospective EIM Entity Full Network Model Integration	Comparison of SCADA measurement	SCADA measurements used in prospective EIM Entity EMS model match the measurements observed by the CAISO through the CAISO EMS model	Critical and used SCADA measurements match 90% to start parallel operation and 95% before full activation, measured in MW, outside of any exception in EMS model	CAISO	Complete	Market Sim data comparing PGE and ISO SCADA were provided on 7/27.  The ISO provided a report comparing PGE and ISO SCADA during parallel operations. Khaled sent an email summarizing the results and confirmed completion.	Tariff section 29.2(b)(7)(A)(ii)
3	Prospective EIM Entity Full Network Model Integration	State Estimator solution	CAISO state estimator solution is equivalent or superior to the prospective EIM Entity state estimator solution for its Balancing Authority Area.	State Estimator solutions converge >90% of the time in two days before parallel operation and three days before full activation. Solution differences within 10% before parallel operation and 5% before full activation measured in MW or justified due to different external BAA modeling	CAISO	Complete	Market Sim state estimator data were provided on 7/27.  The ISO provided a report of the State Estimator results during parallel operations. Khaled sent an email summarizing the results and confirmed completion.	Tariff section 29.2(b)(7)(A)(iii)
4	Prospective EIM Entity Full Network Model Integration	Non-Conforming Load, Behind-the-Meter Generation, Pseudo Ties, and Dynamic Schedules	Physical representation of the prospective EIM Entity's network matches the Base Market Model that accounts for non-conforming load, behind-the-meter generation, pseudo-ties, and dynamic schedules, and third party transmission service provider and path operator information that supports EIM Transfers and Real-Time Dispatch in the Energy Imbalance Market, as applicable	Prospective EIM Entity major non-conforming loads > 5% of prospective EIM Entity total actual load in MW are modeled separately from conforming load in market model	CAISO	Complete	EIM Entity provided email confirming this criteria was N/A.  The ISO Executive Sponsor (Khaled) provided an email confirming that he is in agreement.	Tariff section 29.2(b)(7)(A)(iv)
5	Agreements	Execution of Necessary Agreements	The prospective EIM Entity has executed all necessary agreements.	The prospective EIM Entity will execute all agreements, as outlined in Section 5 of the EIM BPM within the required timelines outlined in Section 5.	JOINT	Complete	Don Light, PGE Assistant General Counsel, provided copies of all executed agreements.  Latisha Collins, ISO Customer Service - provided evidence EIM entity executed all agreements (the completed Agreements Checklist)	Tariff section 29.2(b)(7)(K)(i)



Readiness Criterion Identifier	Readiness Category	Criteria	Measurable Elements	Threshold	Owner	Status	Evidence	Tariff Mapping
6	Operations Training	Completion of mandatory training courses	Prospective EIM Entity operators who will have responsibility for EIM operations, transactions and settlements, will complete CAISO training modules.	Prospective EIM Entity operators will complete training and close-of-training assessment in the appropriate timeframes as outlined in <ul style="list-style-type: none"> <li>· “100 series”– an introduction to Energy Imbalance Market training</li> <li>· “200 series”– the specific hourly and daily tasks and duties for normal operation training module; and</li> <li>· “300 series”– the assessment of market results and response to contingencies and abnormal situations training module.</li> </ul>	PGE	Complete	PGE sent an email confirming that the training was complete. The ISO replied with confirmation.	Tariff section 29.2(b)(7)(B)
7	Forecasting Capability	Load forecast capability	Definition of EIM demand forecast boundaries based on the conforming and non-conforming load characteristics, as applicable <ul style="list-style-type: none"> <li>· Accuracy of the CAISO forecast of EIM demand based on historical actual load data for the defined EIM demand forecast boundaries.</li> <li>· Identification of weather station(s) locations used in forecasting, if applicable.</li> </ul>	All Plant Information (PI) tags and historical data for defined load area(s), and non-conforming load, if applicable, compared with load forecasts provided from CAISO (if CAISO load forecast used).	CAISO	Complete	The ISO provided evidence via email with supporting data on 8/11	Tariff sections 29.2(b)(7)(C)(i)-(iii)
8	Forecasting Capability	Variable Energy Resource (VER) forecast capability	Identification of the source of VER forecasts. (If a participating wind or solar unit requires a CAISO forecast, then BPM and Tariff requirements apply.) <ul style="list-style-type: none"> <li>· Accuracy of the CAISO forecast of EIM demand based on historical actual load data for the defined EIM demand forecast boundaries.</li> </ul>	Forecasting entity must demonstrate delivery of Unit MW forecast at 5 min intervals for at least three hours ahead. Forecasting entity must also provide base schedule by T-75, T-55 and T-40. EIM Entity provides to CAISO real-time MW production PI tags.	CAISO	Complete	Confirmed Criteria is N/A for go-live. PGE’s VER resources will not be participating resources at go-live. PGE and the ISO short term forecasting team have agreed to a timeline for meeting these requirements before PGE’s VER resources become participating resources (December, 2017)	Tariff section 29.2(b)(7)(C)(iv)
9	Forecasting Capability	Flexible capacity requirements	CAISO has established flexible capacity requirements for the prospective EIM Entity Balancing Authority Area and the combined EIM Area including the prospective EIM Entity	The CAISO has received and stored all historical data from the prospective EIM Entity necessary and sufficient for the CAISO to perform the flexible ramp requirement.	CAISO	Complete	The ISO provided a report and stated that the data looks good via email on 8/11.	Tariff section 29.2(b)(7)(K)(iv)

Readiness Criterion Identifier	Readiness Category	Criteria	Measurable Elements	Threshold	Owner	Status	Evidence	Tariff Mapping
10	Balanced Schedules	Base schedule balancing capability	The prospective EIM Entity \ Scheduling Coordinator demonstrates its ability to pass the flexible ramping sufficiency test	90% or greater of base schedules balance tests during monitored hours are within 10% average imbalance of load forecast over one day period before parallel operation, and 5% average over five full days before full activation. The CAISO will provide examples of MW thresholds for each prospective EIM Entity to indicate a reasonable threshold as it applies to a given EIM Entity and indicate the potential implications of a swing from 5% over to 5% under forecast in one hour to the next.	PGE	Complete	The following days have passed the 95% balancing criteria: 8/5, 8/9, 8/10, 8/11, 8/12, 8/13, 8/14, 8/15, 8/16.	Tariff section 29.2(b)(7)(D)(i)
11	Balanced Schedules	Flexible ramping sufficiency test capability	The prospective EIM Entity \ Scheduling Coordinator demonstrates its ability to pass the flexible ramping sufficiency test.	Passes 90% of the time or greater over monitored hours of one day before parallel operation and five non-consecutive days before full activation.	PGE	Complete	The following days have passed the 90% flexible ramping sufficiency test criteria: 8/6, 8/11, 8/12, 8/14, 8/15.	Tariff section 29.2(b)(7)(D)(iii)
12	Balanced Schedules	Capacity test capability	The prospective EIM Entity Scheduling Coordinator demonstrates its ability to pass capacity test	Passes 90% of the time or greater over monitored hours of one day before parallel operation and five non-consecutive days before full activation. The CAISO will explain the implications of any potential issues with the reliability of an EIM Entity to meet its capacity requirements.	CAISO	Complete	The following days have passed the 90% flexible capacity test criteria: 8/5, 8/6, 8/7, 8/8, 8/9, 8/10, 8/11, 8/12, 8/14, 8/15, 8/16.	Tariff section 29.2(b)(7)(D)(ii)
13	Operating Procedures	CAISO operating procedures (relevant to EIM operations)	The prospective EIM Entity signs CAISO non-disclosure agreement and receives appropriate CAISO “public” and “restricted” operating procedures	Operating procedures NDA signed by the prospective EIM Entity.  The prospective EIM Entity receives CAISO operating procedures four months prior to the parallel operations date.	JOINT	Complete	PGE provided date NDA was executed and receipt of operating procedures.	Tariff section 29.2(b)(7)(K)(i)
14	Operating Procedures	Prospective EIM Entity operating procedures	The prospective EIM Entity operating procedures are defined, updated, and tested for the EIM Entity Scheduling Coordinator	The prospective EIM Entity operating procedures are updated tested and implemented prior to parallel operations date.	PGE	Complete	PGE sent email confirming this is complete. ISO sent email confirming.	Tariff section 29.2(b)(7)(K)(ii)
15	System Readiness & Integration	Functional Testing	The prospective EIM Entity and the CAISO will test the functional and system elements in accordance with functional and system testing documentation posted on the CAISO website	All tasks identified in the functional and system testing documentation are completed and will not have any issues deemed significant.  Any exceptions will be explained or have an interim solution that is functionally equivalent.	PGE	Complete	PGE sent email and documentation stating this is complete. Jamil sent confirmation email.	Tariff section 29.2(b)(7)(E)(i)

Readiness Criterion Identifier	Readiness Category	Criteria	Measurable Elements	Threshold	Owner	Status	Evidence	Tariff Mapping
16	System Readiness & Integration	System Integration	The prospective EIM Entity and CAISO will test system integration testing in accordance with the system integration testing documentation posted on the CAISO website	All tasks identified in the system integration testing documentation are completed and will not have any issues deemed significant.  Any exceptions will be explained or have an interim solution that is functionally equivalent.	PGE	Complete	All system integration tests completed successfully in CAISO simulation environment. PGE provided a completed EIM Testing Timeline Summary noting all interfaces were successfully tested.	Tariff section 29.2(b)(7)(E)(ii)
17	System Readiness & Integration	The prospective EIM Entity system access complete	All prospective EIM Entity employees who require system access to perform EIM-related job functions identified and have necessary certificates.	All prospective EIM Employees performing job functions for EIM market are identified.  All CAISO issued certificates are requested within the appropriate timeframes.  All identified employees provided the necessary EIM system access certificates.	PGE	Complete	The ISO provided an email confirming ISO believes this is complete.  PGE confirmed that all requested access is in place.	Tariff section 29.2(b)(7)(E)(iii)
18	System Readiness & Integration	ISO - prospective EIM Entity interfaces	Data interfaces between prospective EIM Entity's systems and CAISO systems are tested	ISO and prospective EIM Entity identify significant data interface issues. EIM Entity and CAISO executives to approve exceptions.	JOINT	Complete	Portland General Electric submitted testing timeline summary verifying criteria was met.	Tariff section 29.2(b)(7)(E)(i)
19	Market Simulation	Day in the life simulation	The prospective EIM Entity operators are able to meet the market timelines	The prospective EIM Entity grid operations staff complete end-to-end daily market workflow with no critical defects.	JOINT	Complete	Portland General Electric submitted testing timeline summary verifying criteria was met.	Tariff section 29.2(b)(7)(I)(ii)
20	Market Simulation	Structured scenarios simulation	The prospective EIM Entity operators execute and pass all structured scenarios provided by CAISO	All significant issues resolved or have an interim solution that is functionally equivalent.	JOINT	Complete	Portland General Electric PM provided email evidence this criteria was met.	Tariff section 29.2(b)(7)(I)(iii)
21	Market Simulation	Unstructured scenarios simulation	The prospective EIM Entity operators execute and pass all unstructured scenarios provided by prospective EIM Entity	All significant issues resolved or have an interim solution that is functionally equivalent.	JOINT	Complete	Portland General Electric PM provided email evidence this criteria was met.	Tariff section 29.2(b)(7)(I)(iv)
22	Market Simulation	Market results reports	Market results are appropriate based on inputs	The prospective EIM Entity and CAISO executive project sponsors approve the market results reports during market simulation	PGE	Complete	Khaled provided email evidence. PGE completed additional analysis to supplement along with similar email.	Tariff section 29.2(b)(7)(I)(v)
23a	Market Simulation	Market quality review	Prices are validated based on input data	Market simulation prices and MWs schedules/dispatches are validated by CAISO market quality team for entry into parallel operations	CAISO	Complete	The ISO Market Quality provided a report and it was approved by Khaled and verified by PGE.	Tariff section 29.2(b)(7)(I)(vi)
23b	Parallel Operations	Market quality review	PO Market quality review	Parallel operations prices and MWs schedules/dispatches are validated by the CAISO market quality team	CAISO	Complete	The ISO provided a Market Performance Validation report on 8/24 including Market Results and Trends during Parallel Operations.	Tariff section 29.2(b)(7)(I)(vi)

Readiness Criterion Identifier	Readiness Category	Criteria	Measurable Elements	Threshold	Owner	Status	Evidence	Tariff Mapping
24	Market Simulation	The prospective EIM Entity Identification	Validation of SCID's and Resource ID's	The CAISO has established and the prospective EIM Entity has tested all necessary SCIDs and Resource IDs established for the prospective EIM Entity's Balancing Authority Area	JOINT	Complete	The ISO provided list of all SCID's and Resource ID's, final schedule 1 and the roles matrix. Portland General Electric responded verifying accuracy.	Tariff section 29.2(b)(7)(I)(i)
25	Settlements	ISO Settlement Statements and Invoices published to the prospective EIM Entity and EIM Participating Resources	The CAISO Settlement statements and invoices match the operational data published to stakeholders or fed into settlement system and the resulting calculations correspond to the formulas defined in ISO's tariff and BPMs	Monthly settlement statement and invoice with corresponding daily statements produced during market simulation and parallel operations are verifiably accurate against available data.	JOINT	Complete	Portland General Electric provided a summary of the results of their Settlement statement and invoice validation and an email confirming that the criteria has been met.	Tariff section 29.2(b)(7)(F)(i)
26	Settlements	The prospective EIM Entity settlement statements and invoices reflect accurate allocations to the prospective EIM Entity customers prior to financially binding operations.	Verification that settlement statements and invoices accurately reflects system and market data	The prospective EIM Entity settlement statements and invoices that allocate charges and credits to its customers accurately reflect system and market data during parallel operations.	JOINT	Complete	Portland General Electric provided a summary of the results of their Settlement statement and invoice validation and an email confirming that the criteria has been met.	Tariff section 29.2(b)(7)(F)(ii)
27	Monitoring	Data monitoring	Sufficient and adequate data is available to the CAISO and the Department of Market Monitoring	All required market monitoring data is available during testing and during post go-live for the key metrics (any exceptions will be addressed).  CAISO will provide a market report that will provide publicly available information to all market participants.	CAISO	Complete	Market Quality and DMM provided an email that the data was available during testing and Parallel Operations. ISO provides daily market reports.	Tariff section 29.2(b)(7)(K)(v)
28	Parallel Operations Plan	Deployment plan	Parallel operations run consistently and in accordance with the timeframe set forth in the prospective EIM Entity specific parallel operation plan	Parallel operations runs consistently within normal production CAISO Market disruption tolerances.	CAISO	Complete	The ISO provided reports as evidence that Parallel Operations ran consistently from 8/18 – 8/21. Khaled provided a summary email confirming that the criteria has been met.	Tariff section 29.2(b)(7)(J)
29	Outage Management System	Transmission and generation outage submittal and retrieval	The prospective EIM Entity will verify its ability to submit and retrieve outage information with the CAISO	The prospective EIM Entity validate their ability to submit and retrieve transmission out-of-service outages, generation Pmax derates, generation Pmin rerates, and generation out-of-service outage tickets within the required timelines.	JOINT	Complete	PGE provided the outage ids. The ISO provided reports verifying the gen and transmission outages submitted by PGE were received and processed at ISO.	Tariff section 29.2(b)(7)(G)

Readiness Criterion Identifier	Readiness Category	Criteria	Measurable Elements	Threshold	Owner	Status	Evidence	Tariff Mapping
30	Communications between the CAISO and the prospective EIM Entity	Voice and/or electronic messaging	Implemented process and procedures used for voice and/or electronic messaging	The process and procedures are incorporated into the prospective EIM Entities business processes before the start of market simulation.	PGE	Complete	Portland General Electric PM provided documentation of business processes and communications testing.	Tariff section 29.2(b)(7)(H)(i)
31	Communications between the CAISO and the prospective EIM Entity	Communication tools	Staff are trained on communication procedures and tools	The prospective EIM Entity operations staff who will have responsibility for EIM operations, transactions and settlements are trained on the relevant operating procedures and tools used for EIM related communications before the start of parallel operations	PGE	Complete	PGE sent email with evidence that the staff were trained on communication procedures and tools. The ISO sent an email confirming this.	Tariff section 29.2(b)(7)(H)(ii)
32	Communications between the CAISO and the prospective EIM Entity	3 <sup>rd</sup> party transmission service provider	The third party transmission service provider information that supports EIM Transfers and Real-Time Dispatch included in the Full Network Model is available during parallel operations	The CAISO provides third party transmission service provider and path operator information to the prospective EIM Entity through parallel operations	PGE	Complete	Khaled provided an email summarizing the evidence that the criteria has been met.	Tariff section 29.2(b)(7)(H)(iii)
33	EIM Available Balancing Capacity	Identification of EIM Available Balancing Capacity	Participating resources and non-participating resources for EIM Available Balancing Capacity.	The prospective EIM Entity has identified EIM participating resources and non-participating resources that it intends to designate in the EIM Resource Plan as EIM Available Balancing Capacity	PGE	Complete	Portland General Electric PM provided screen shot evidence stating this criteria was met.	Tariff section 29.2(b)(7)(K)(iii)

**Attachment B – Affidavit of Mark Rothleder**  
**Portland General Electric EIM Readiness Certification**  
**California Independent System Operator Corporation**

Affidavit of Mark Rothleder Certifying Readiness of  
Portland General Electric (PGE) to Operate as an EIM Entity

I, Mark Rothleder, Vice President of Market Quality and Renewable Integration for the California Independent System Operator Corporation (CAISO), hereby certify as follows:

1. As the Vice President of Market Quality and Renewable Integration, I am familiar with the systems and processes that support and enable the Energy Imbalance Market and, as such, I share responsibility for the implementation of PGE into that market.
2. I have reviewed the readiness dashboard and find that it is accurate and complete. All readiness criteria set forth in the CAISO's tariff and business practice manual have been satisfied.
3. Based on the readiness dashboard and other materials and my own review of relevant information and direct involvement with the readiness efforts, including testing, market simulation, training and parallel operations, and barring unforeseen developments, the systems and processes of the CAISO and PGE will be ready to implement PGE into the Energy Imbalance Market on October 1, 2017.
4. I will ensure that the CAISO maintains resource commitments necessary to sustain readiness through October 1, 2017 and address any unexpected conditions that may arise before October 1, 2017 that could undermine grid operation or market operation within the existing EIM Area. I will continue to monitor progress and resolve any unexpected conditions that may arise.
5. Actual implementation of PGE on October 1, 2017 is conditioned upon the lack of any unexpected and unresolved issues that could undermine grid operation or market operation within the existing EIM Area. I will update this certification in the event any unexpected issues are not resolved as of October 1, 2017.

I hereby declare under penalty of perjury that the foregoing statements are true and correct to the best of my knowledge, information, and belief:



Mark Rothleder, Vice President of Market Quality and Renewable Integration

August 28, 2017

**Attachment C – Affidavit of Maria Pope**  
**Portland General Electric EIM Readiness Certification**  
**California Independent System Operator Corporation**



Affidavit of Maria Pope Certifying Readiness of  
Portland General Electric (PGE) to Operate as an EIM Entity

I, Maria Pope, Senior Vice President of Power Supply and Operations and Resource Strategy of PGE, hereby certify as follows:

1. As the Senior Vice President of Power Supply and Operations and Resource Strategy, I am responsible for the systems and processes that support and enable the Energy Imbalance Market for PGE. As such, I have overall responsibility for the implementation of PGE's entry into that market.
2. I have reviewed the readiness dashboard and find that it is accurate and complete. All readiness criteria set forth in the CAISO's tariff and business practice manual have been satisfied.
3. Based on the readiness dashboard and other materials prepared for me or for those that report directly to me and my own review of relevant information and direct involvement with readiness efforts, including testing, market simulation, training and parallel operations, and barring unforeseen developments, the systems and processes of the CAISO and PGE will be ready to implement PGE into the Energy Imbalance Market on October 1, 2017.
4. I will ensure that PGE maintains resource commitments necessary to sustain readiness through October 1, 2017 and address any unexpected conditions that may arise before October 1, 2017 that could undermine grid operation or market operation within the existing EIM Area. I will continue to monitor progress and resolve any unexpected conditions that may arise.
5. Actual implementation of PGE on October 1, 2017 is conditioned upon the lack of any unexpected and unresolved issues that could undermine grid operation or market operation within the existing EIM Area. I will update this certification in the event any unexpected issues are not resolved as of October 1, 2017.

I hereby declare under penalty of perjury that the foregoing statements are true and correct to the best of my knowledge, information, and belief.



Senior Vice President of Power Supply and Operations and  
Resource Strategy  
August 28, 2017

**Attachment D – Parallel Operations Market Quality Report**

**Portland General Electric EIM Readiness Certification**

**California Independent System Operator Corporation**

## CERTIFICATE OF SERVICE

I hereby certify that I have served the foregoing document upon the parties listed on the official service list in the captioned proceedings, in accordance with the requirements of Rule 2010 of the Commission's Rules of Practice and Procedure (18 C.F.R. § 385.2010).

Dated at Folsom, CA this 30<sup>th</sup> day of August, 2017.

/s/ Grace Clark  
Grace Clark  
California Independent System  
Operator Corporation  
250 Outcropping Way  
Folsom, CA 95630