

**Appendix M**

**Dynamic Scheduling Protocol (DSP)**

**1. DYNAMIC SCHEDULES OF IMPORTS TO THE CAISO BALANCING AUTHORITY AREA**

**1.1 CONSISTENCY WITH NERC/WECC POLICIES AND REQUIREMENTS**

**1.1.1** Scheduling and operation of Dynamic Schedule functionalities must comply with all applicable NERC and WECC reliability standards, policies, requirements, and guidelines regarding inter-Balancing Authority Area scheduling, in accordance with Section 4.5.4.3 of the CAISO Tariff.

**1.2 CONTRACTUAL RELATIONSHIPS**

**1.2.1** The Host Balancing Authority must execute an operating agreement with the CAISO particular to the operation of the functionality supporting dynamic imports of Energy, and/or Energy associated with non-Regulation Ancillary Services to the CAISO Balancing Authority Area.

**1.2.2** The Scheduling Coordinator for the System Resource must execute a Dynamic Scheduling Agreement for Scheduling Coordinators with the CAISO governing the operation of the Dynamic Schedule functionality, which agreement will include a provision for its termination based on failure to comply with these standards.

**1.2.3** The Scheduling Coordinator for the System Resource must have the necessary operational and contractual arrangements in place with the Host Balancing Authority to implement Section 1.3 and other provisions of this Appendix M. Such arrangements must include the Host Balancing Authority's ability to receive telemetry from the System Resource and to issue a Dynamic Schedule signal pertinent to that System Resource to the CAISO. Proof of such arrangements must be provided to the CAISO.

**1.3 COMMUNICATIONS, TELEMETRY, AND OTHER TECHNICAL REQUIREMENTS**

**1.3.1** The communication and telemetry requirements set forth in the CAISO's Standards for Imports of Regulation, or any successor CAISO standards regarding the technical arrangements for imports of Regulation posted on the CAISO Website, will apply to all Dynamic Schedules, except for (a) those dynamic functionalities established prior to the CAISO Operations Date, (b) the requirements that are specific solely to Regulation, and (c) the requirements set forth below.

**1.3.2** A dedicated primary communications link and a backup communications link between the CAISO's EMS and the Host Balancing Authority Area EMS are required.

**1.3.3** The primary circuit will be T1-class, or equivalent, utilizing the inter-control center communications protocol ("ICCP"). The backup communications link will be diversely routed between the Host Balancing Authority Area EMS and the CAISO Balancing Authority Area EMS on separate physical paths and devices, provided that the CAISO may approve an alternative means of providing backup communications if the circumstances warrant.

**1.3.4** A dedicated primary communications link and a backup communications link between the Host Balancing Authority Area EMS and any Intermediary Balancing Authority Area EMS are required, if requested by the Intermediary Balancing Authority Area.

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- 1.3.5** The Balancing Authority Area hosting a Dynamic System Resource must have a mechanism implemented to override the associated dynamic signal.
- 1.3.6** The dynamic signal must be properly incorporated into all involved Balancing Authority Areas' ACE equations.
- 1.3.7** The System Resource must have communications links with the Host Balancing Authority Area consistent with this Appendix M.
- 1.4** **LIMITS ON DYNAMIC IMPORTS**
- 1.4.1** The CAISO reserves the right to establish limits applicable to the amount of any Ancillary Services and/or Energy imported into the CAISO Balancing Authority Area, whether delivered dynamically or statically. Such limits may be established based on any one, or a combination, of the following considerations: a percentage of, or a specific import limit applicable to, total CAISO Balancing Authority Area requirements; a percentage at, or a specific import limit applicable to, a particular Intertie or a Transmission Interface; a percentage of, or a specific import limit applicable to, total requirements in a specific Ancillary Service Region; or operating factors which may include, but are not limited to, operating Nomograms, Remedial Action Schemes, protection schemes, scheduling and curtailment procedures, or any potential single points of failure associated with the actual delivery process. The CAISO may implement a moratorium on the establishment of new Dynamic Schedules associated with a particular Intertie in the event it determines that the volume of dynamic transfers could have an adverse effect on System Reliability. In the event the CAISO implements such a moratorium, the CAISO shall undertake studies to determine an appropriate allocation of the capacity of the affected Intertie to dynamic transfers.
- 1.4.2** The CAISO may, at its discretion, either limit or forego procuring Ancillary Services at particular Balancing Authority Area Interties to ensure that Operating Reserves are adequately dispersed throughout the CAISO Balancing Authority Area as required by NERC and WECC reliability standards and any requirements of the NRC.
- 1.4.3** A Dynamic System Resource and its Dynamic Schedules must be permanently associated with a particular CAISO Intertie (the CAISO may, from time to time and at its discretion, allow for a change in such pre-established association of the Dynamic System Resource with a particular CAISO Intertie).
- 1.5** **OPERATING AND SCHEDULING REQUIREMENTS**
- 1.5.1** For any Operating Hour for which Ancillary Services (and associated Energy) is scheduled dynamically to the CAISO from the System Resource, firm transmission service must be reserved across the entire Dynamic Schedule transmission path external to the CAISO Balancing Authority Area. For any Operating Hour for which only Energy is scheduled dynamically to the CAISO from the System Resource, transmission service must be reserved across the entire Dynamic Schedule transmission path external to the CAISO Balancing Authority Area, or must be available within the Operating Hour, sufficient to support the Schedule and Dispatch of the System Resource. In the event that the System Resource has not established a sufficient transmission reservation prior to the Operating Hour, and will not be able to use additional transmission within the Operating Hour, to support Dispatch up to its maximum available capacity, a derate must be reported in the CAISO's Outage management system to limit its Dispatch to its available transmission.

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- 1.5.2** All Dynamic Schedules associated with Dynamic System Resources must be electronically tagged (by use of an E-Tag).
- 1.5.3** Formal inter-Balancing Authority Area Dynamic Schedules may be issued only by the Dynamic System Resource's Host Balancing Authority Area and must be routed through the EMSs of any Intermediary Balancing Authority Area, if requested by the Balancing Authority for the Intermediary Balancing Authority Area.
- 1.5.4** The CAISO will treat dynamically scheduled Energy as a resource contingent firm import. The CAISO will procure (or allow for self-provision of) Operating Reserves for Loads served by Dynamic System Resources as required by NERC and WECC reliability standards and any requirements of the NRC.
- 1.5.5** All Energy Interchange Schedules associated with dynamically scheduled imports of Spinning Reserve and Non-Spinning Reserve will be afforded similar treatment (i.e., resource contingent firm).
- 1.5.6** The dynamic signal must be integrated over time by the Host Balancing Authority Area for every Operating Hour.
- 1.5.7** Notwithstanding any Dispatches of the System Resource in accordance with the CAISO Tariff, the CAISO shall have the right to issue operating orders as defined in Section 37.2.1.1 of the CAISO Tariff to the System Resource either directly or through the Host Balancing Authority Area for emergency or contingency reasons, or to ensure the CAISO's compliance with operating requirements based on WECC or NERC requirements and policies (e.g., WECC's Unscheduled Flow Reduction Procedure). However, such operating orders may be issued only within the range of the CAISO-accepted Energy and Ancillary Services, Bids for a given Operating Hour (or the applicable "sub-hour" interval).
- 1.5.8** If there is no Dynamic Schedule in the CAISO's Day-Ahead Market or HASP/RTM, the dynamic signal must be at "zero" ("0") except when in response to CAISO's Dispatch Instructions associated with accepted Ancillary Services or Energy Bids.
- 1.5.9** The Scheduling Coordinator for the Dynamic System Resource must have the ability to override the associated Dynamic Schedule in order to respond to the operating orders of the CAISO or the Host Balancing Authority.
- 1.5.10** Unless the Dynamic System Resource (1) is implemented as a directly-telemetered Load following functionality, (2) is base-loaded Regulatory Must-Take Generation, (3) responds to a CAISO intra-hour Dispatch Instruction, or (4) is an Eligible Intermittent Resource, the Dynamic Schedule representing such resource must follow WECC-approved practice of 20-minute ramps centered at the top of the hour. The CAISO does not provide any special Settlements treatment nor offer any CAISO Tariff exemptions for dynamic Load following functionalities.
- 1.5.11** In Real-Time the Dynamic Schedule may not exceed the CAISO's Dispatch Operating Point. The Dispatch Operating Point represents not only the estimated Dynamic System Resource's Energy but also, in combination with any Ancillary Service Award that has not been dispatched as Energy, the transmission reservation on the associated CAISO Intertie.
- 1.5.12** Only one Dynamic System Resource may be associated with any one physical generating resource, unless the CAISO approves an implementation plan to establish multiple Dynamic System Resources for that generating resource.

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**1.5.13** If the Scheduling Coordinator for the Dynamic System Resource desires to participate in CAISO's Regulation market, all provisions of the CAISO's Standards for Imports of Regulation, or any successor CAISO standards regarding the technical arrangements for imports of Regulation posted on the CAISO Website, shall apply.

**1.6 CERTIFICATION, TESTING, AND PERFORMANCE MONITORING OF DYNAMIC IMPORTS OF ANCILLARY SERVICES**

Scheduling Coordinators must be certified separately for each Ancillary Service. Scheduling Coordinators that wish to be certified for imports of Regulation shall be subject to certification under the Standards for Imports of Regulation, or any successor CAISO standards regarding the technical arrangements for imports of Regulation posted on the CAISO Website, subject to verification of consistency with the requirements of this Appendix M.

**1.6.1** The Scheduling Coordinator must request the certification of a System Resource to provide Ancillary Services for the CAISO Balancing Authority Area and cooperate, along with the Host Balancing Authority, in the testing of such System Resource in accordance with the CAISO Tariff and applicable CAISO Operating Procedures.

**1.6.2** Only CAISO tested and certified System Resources will be allowed to bid and/or self-provide Ancillary Services into the CAISO Balancing Authority Area.

**1.6.3** Dynamic Ancillary Services imports will be certified through testing, in accordance with the applicable CAISO Operating Procedures. All requests for certification of dynamic Ancillary Services imports will be reviewed and approved by the CAISO with respect to any technical limitations imposed by existing operational considerations, such as Remedial Action Schemes, operating Nomograms, and scheduling procedures. These reviews may impose certain Ancillary Services import limits in addition to those outlined in Section 1.4.1 of this Appendix M. Therefore, interested parties are advised and encouraged to contact the CAISO before they begin the process of the necessary systems design, preparation, and implementation for import of Ancillary Services to the CAISO Balancing Authority Area.

**1.6.4** The CAISO will measure the performance of the Dynamic Schedule of Energy associated with an accepted Ancillary Services Bid against (1) the awarded range of Ancillary Service capacity; (2) the certified limits; and (3) the bid Ramp Rate, which shall be validated by the CAISO against the certified Ramp Rate.

**1.6.5** The Scheduling Coordinator for the System Resource must notify the CAISO should any changes, modifications, or upgrades affecting control and/or performance of the System Resource be made. Upon such notification, the CAISO, at its discretion, may require that the System Resource be re-certified to import Ancillary Services into the CAISO Balancing Authority Area.

**1.7 COMPLIANCE, LOSSES, AND FINANCIAL SETTLEMENTS**

**1.7.1** Energy delivered in association with Dynamic System Resources will be subject to all provisions of the CAISO's Imbalance Energy markets, including Uninstructed Deviation Penalties (UDP) (just as is the case with CAISO intra- Balancing Authority Area Generating Units of Participating Generators).

**1.7.2** Dynamically scheduled and delivered Ancillary Services will be subject to the CAISO's compliance monitoring and remedies, just as any CAISO intra-Balancing Authority Area Generating Units of Participating Generators.

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- 1.7.3 All Day-Ahead Market and HASP/RTM submitted Dynamic Schedules shall be subject to CAISO Congestion Management and as such may not exceed their transmission reservations in Real-Time (with the exception of intra-hour Dispatch Instructions of the Energy associated with accepted Ancillary Services Bids or Dispatch Instructions for Imbalance Energy).
- 1.7.4 All Dynamic Schedules and delivered Energy shall be subject to the standard CAISO Transmission Loss calculation as described in Section 27.5.1.1 and Appendix C of the CAISO Tariff.
- 1.7.5 Any transmission losses attributed to the Dynamic Schedule on transmission system(s) external to the CAISO Balancing Authority Area will be the responsibility of the owner(s)/operator(s) of the Dynamic System Resource.
- 1.7.6 A predetermined, mutually agreed, and achievable "PMax-like" fixed MW value will be established for every Dynamic System Resource to be used as the basis for the UDP calculation. Responsible Scheduling Coordinators will be able to report de-rates affecting the Dynamic System Resource via the CAISO's SLIC Outage reporting system.
- 1.7.7 Should there be any need or requirement, whether operational or procedural, for the CAISO to make Real-Time adjustments to the CAISO's inter-Balancing Authority Area Interchange Schedules (to include curtailments), Dynamic Schedules shall be treated in the same manner as similarly situated and/or effective static CAISO Interchange Schedules.

**2. DYNAMIC SCHEDULES OF EXPORTS OF ENERGY FROM GENERATING UNITS IN THE CAISO BALANCING AUTHORITY AREA**

**2.1 CONSISTENCY WITH NERC/WECC POLICIES AND REQUIREMENTS**

- 2.1.1 Scheduling and operation of Dynamic Schedule functionalities must comply with all applicable NERC and WECC reliability standards, policies, requirements, and guidelines regarding inter-Balancing Authority Area scheduling, in accordance with Section 4.5.4.3 of the CAISO Tariff.

**2.2 CONTRACTUAL RELATIONSHIPS**

- 2.2.1 A Balancing Authority receiving a Dynamic Schedule of an export of Energy from a Generating Unit in the CAISO Balancing Authority Area must execute an operating agreement with the CAISO particular to the operation of the functionality supporting dynamic exports of Energy from the CAISO Balancing Authority Area.
- 2.2.2 The Scheduling Coordinator for a Dynamic Schedule of an export of Energy from a Generating Unit must execute a Dynamic Scheduling Agreement for Scheduling Coordinators with the CAISO governing the operation of the Dynamic Schedule functionality, which agreement will include a provision for its termination based on failure to comply with these standards.
- 2.2.3 The Scheduling Coordinator for a Dynamic Schedule of an export of Energy from a Generating Unit must have the necessary operational and contractual arrangements in place with the Balancing Authority receiving the export Dynamic Schedule to implement Section 2.3 and other provisions of this Appendix M. Such arrangements must include the Balancing Authority's ability to receive telemetry from the Generating Unit and to

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receive a Dynamic Schedule signal pertinent to that Generating Unit from the CAISO. Proof of such arrangements must be provided to the CAISO.

**2.3 COMMUNICATIONS, TELEMETRY, AND OTHER TECHNICAL REQUIREMENTS**

**2.3.1** The communication and telemetry requirements set forth in the applicable CAISO Business Practice Manual will apply to a Generating Unit that is the source of the Energy for a Dynamic Schedule of exports of Energy, in addition to the requirements set forth in this Appendix M applicable to Dynamic Schedules of exports of Energy.

**2.3.2** A dedicated primary communications link and a backup communications link between the CAISO's EMS and the EMS of the Balancing Authority Area receiving the Dynamic Schedule are required.

**2.3.3** The primary circuit will be T1-class, or equivalent, utilizing the inter-control center communications protocol ("ICCP"). The backup communications link will be diversely routed between the EMS of the Balancing Authority Area receiving the Dynamic Schedule and the CAISO Balancing Authority Area EMS on separate physical paths and devices, provided that the CAISO may approve an alternative means of providing backup communications if the circumstances warrant.

**2.3.4** A primary dedicated communications link and a backup communications link between the EMS of the Balancing Authority Area receiving the Dynamic Schedule and any Intermediary Balancing Authority Area EMS are required, if requested by the Intermediary Balancing Authority Area.

**2.3.5** The CAISO shall have a mechanism implemented to override the associated dynamic signal for a Dynamic Schedule of an export of Energy from a Generating Unit.

**2.3.6** The dynamic signal must be properly incorporated into all involved Balancing Authority Areas' ACE equations.

**2.3.7** The Generating Unit must have communications links with the Balancing Authority Area receiving a Dynamic Schedule consistent with this Appendix M.

**2.3.8** The dynamic signal must be properly incorporated into the CAISO's market systems.

**2.4 LIMITS ON DYNAMIC EXPORTS**

**2.4.1** The CAISO reserves the right to establish limits applicable to the amount of any Energy exported from the CAISO Balancing Authority Area, whether delivered dynamically or statically. Such limits may be established based on any one, or a combination, of the following considerations: a percentage of, or a specific export limit applicable to, total CAISO Balancing Authority Area requirements; a percentage at, or a specific export limit applicable to, a particular Intertie or a Transmission Interface; a percentage of, or a specific export limit applicable to, total requirements in a specific Ancillary Service Region; or operating factors which may include, but are not limited to, operating Nomograms, Remedial Action Schemes, protection schemes, scheduling and curtailment procedures, or any potential single points of failure associated with the actual delivery process. The CAISO may implement a moratorium on the establishment of new Dynamic Schedules associated with a particular Intertie in the event it determines that the volume of dynamic transfers could have an adverse effect on System Reliability. In the event the CAISO implements such a moratorium, the CAISO shall undertake studies to determine an appropriate allocation of the capacity of the affected Intertie to dynamic transfers.

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- 2.4.2** A Dynamic Schedule of an export of Energy from a Generating Unit in the CAISO Balancing Authority Area must be permanently associated with a particular CAISO Intertie (the CAISO may, from time to time and at its discretion, allow for a change in such pre-established association of the Generating Unit with a particular CAISO Intertie).
- 2.5 OPERATING AND SCHEDULING REQUIREMENTS**
- 2.5.1** All Dynamic Schedules associated with exports of Energy from a Generating Unit must be electronically tagged (by use of an E-Tag).
- 2.5.2** Formal inter-Balancing Authority Area Dynamic Schedules of the export of Energy from a Generating Unit may be issued only by the CAISO as the Host Balancing Authority Area and must be routed through the EMSs of any Intermediary Balancing Authority Area, if requested by the Intermediary Balancing Authority Area.
- 2.5.3** The CAISO will treat dynamically scheduled exports of Energy from a Generating Unit Energy as a resource contingent firm export. The Balancing Authority receiving the Dynamic Schedule of the export of Energy from the CAISO Balancing Authority Area is responsible for Operating Reserves for loads served by such exports of Energy as required by NERC and WECC reliability standards and any requirements of the NRC.
- 2.5.4** The dynamic signal must be integrated over time by the CAISO for every Operating Hour.
- 2.5.5** Notwithstanding any Dispatches of the Generating Unit in accordance with the CAISO Tariff, the CAISO shall have the right to issue operating orders as defined in Section 37.2.1.1 of the CAISO Tariff to the Generating Unit either directly or through the receiving Balancing Authority Area for emergency or contingency reasons, or to ensure the CAISO's compliance with operating requirements based on WECC or NERC requirements and policies (e.g., WECC's Unscheduled Flow Reduction Procedure). However, such operating orders may be issued only within the range of the CAISO-accepted Energy Bids for a given Operating Hour (or the applicable "sub-hour" interval).
- 2.5.6** If there is no Dynamic Schedule in the CAISO's Day-Ahead Market or HASP/RTM, the dynamic signal must be at "zero" ("0").
- 2.5.7** The Scheduling Coordinator for a Dynamic Schedule of an export of Energy from a Generating Unit must have the ability to override the associated Dynamic Schedule in order to respond to the operating orders of the CAISO or the Host Balancing Authority.
- 2.5.8** Unless the Dynamic Schedule of an export of Energy from a Generating Unit (1) is implemented as a directly-telemetered load following functionality, (2) is base-loaded Regulatory Must-Take Generation, (3) responds to an intra-hour dispatch instruction from the receiving Balancing Authority, or (4) is an Eligible Intermittent Resource, the Dynamic Schedule representing such resource must follow WECC-approved practice of 20-minute ramps centered at the top of the hour. The CAISO does not provide any special Settlements treatment nor offer any CAISO Tariff exemptions for dynamic load following functionalities.
- 2.5.9** In Real-Time the Dynamic Schedule may not exceed the CAISO's Dispatch Operating Point, which reflects the dynamic signal received by the CAISO from the Balancing Authority receiving the dynamically-scheduled Energy. The CAISO's Dispatch Operating Point represents not only the estimated Energy from the Generating Unit for export but also the transmission reservation on the associated CAISO Intertie.

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**2.5.10** Only one Dynamic Schedule may be associated with any one physical Generating Unit, unless the CAISO approves an implementation plan to establish multiple Dynamic Schedules for that Generating Unit.

**2.6 COMPLIANCE, LOSSES, AND FINANCIAL SETTLEMENTS**

**2.6.1** Energy delivered in association with a Dynamic Schedule of an export of Energy from a Generating Unit will be subject to all provisions of the CAISO's Imbalance Energy markets, including Uninstructed Deviation Penalties (UDP) (just as is the case with CAISO intra-Balancing Authority Area Generating Units of Participating Generators).

**2.6.2** All Day-Ahead Market and HASP/RTM submitted Dynamic Schedules shall be subject to CAISO Congestion Management and as such may not exceed their transmission reservations in Real-Time (with the exception of intra-hour Dispatch Instructions for Imbalance Energy issued by the CAISO and responses to the dynamic signal from the Balancing Authority receiving the Dynamic Schedule of the export of Energy).

**2.6.3** All Dynamic Schedules and delivered Energy shall be subject to the standard CAISO Transmission Loss calculation as described in Section 27.5.1.1 and Appendix C of the CAISO Tariff.

**2.6.4** Any transmission losses attributed to the Dynamic Schedule on transmission system(s) external to the CAISO Balancing Authority Area will be the responsibility of the owner(s)/operator(s) of the Generating Unit associated with a Dynamic Schedule of an export of Energy.

**2.6.5** Should there be any need or requirement, whether operational or procedural, for the CAISO to make Real-Time adjustments to the CAISO's inter-Balancing Authority Area Interchange Schedules (to include curtailments), Dynamic Schedules shall be treated in the same manner as similarly situated and/or effective static CAISO Interchange Schedules.

**Appendix N**

**Pseudo-Tie Protocol**

**1. Pseudo-Ties of Generating Units to the CAISO Balancing Authority Area**

**1.1 Consistency with NERC/WECC Requirements**

**1.1.1** Operation of Pseudo-Tie functionalities must comply with all applicable NERC and WECC reliability standards, policies, requirements, and guidelines regarding inter-Balancing Authority Area scheduling. A Pseudo-Tie must be registered as a "Point Of Delivery" (POD) on NERC's Transmission Service Information Network (TSIN). All (off-system) static scheduling associated with Pseudo-Tie functionality must be consistent with NERC Reliability Standards for interchange scheduling and coordination.

**1.2 CAISO Operating, Technical, and Business Requirements**

**1.2.1 Operating Requirements**



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- 1.2.1.1** The CAISO shall establish and specify the location of any Pseudo-Tie between the CAISO Balancing Authority Area and the Native Balancing Authority Area. All Dynamic Schedules and delivered Energy from a Pseudo-Tie Generating Unit shall be subject to the standard CAISO Transmission Loss calculation as described in Section 27.5.1.1 and Appendix C of the CAISO Tariff.
- 1.2.1.2** A Pseudo-Tie Generating Unit must transfer dynamically its entire output of its Real-Time Generation production into the CAISO Balancing Authority Area at the associated pre-determined CAISO Intertie. A Pseudo-Tie Generating Unit must be permanently associated with a particular pre-determined CAISO Intertie. Any dynamic transfers of Energy, and/or Energy associated with Ancillary Services will be subject to Congestion mitigation at the associated pre-determined CAISO Intertie. The CAISO may, from time to time and at its discretion, allow for a change in such pre-established association of the Pseudo-Tie Generating Unit with a particular CAISO Intertie. Any change to the designated path is subject to approval by all applicable transmission providers.
- 1.2.1.3** A Pseudo-Tie Generating Unit shall operate under the terms of the CAISO Tariff applicable to the Generating Units of Participating Generators in the CAISO Balancing Authority Area except as expressly provided, including requirements to promptly follow CAISO Dispatch Instructions, Exceptional Dispatch Instructions, operating orders as defined in Section 37.2.1.1 of the CAISO Tariff, and other instructions, without limitation, pursuant to Sections 7.6 and 7.7 of the CAISO Tariff and any CAISO Operating Procedure established specifically for the Pseudo-Tie, including in the event of an overload condition at the associated pre-determined CAISO Intertie.
- 1.2.1.4** A Participating Generator with a Pseudo-Tie Generating Unit shall demonstrate the ability to deliver the Pseudo-Tie Generating Unit's maximum output to the associated pre-determined CAISO Intertie by providing the CAISO with a copy of its interconnection agreement with the Balancing Authority for its Native Balancing Authority Area.
- 1.2.1.5** Firm transmission for the Operating Hour in a form agreed to by the CAISO must be reserved for the Pseudo-Tie Generating Unit output transfers into the CAISO Balancing Authority Area across the entire transmission path external to the CAISO Balancing Authority Area sufficient to permit delivery of an amount equal to at least the self-scheduled Generation of a Pseudo-Tie Generating Unit. In the event that a sufficient transmission reservation has not been established prior to the Operating Hour to support Dispatch up to the Pseudo-Tie Generating Unit's maximum available capacity, and additional transmission will not be available within the Operating Hour, a derate must be reported in the CAISO's Outage management system to limit its Dispatch to its available transmission.
- 1.2.1.6** All Energy transfers associated with a Pseudo-Tie Generating Unit must be electronically tagged (E-tagged).
- 1.2.1.7** The CAISO will treat all dynamically transferred Pseudo-Tie Generating Unit Energy as internal CAISO Balancing Authority Area Generation (except that it will be subject to Congestion determined by the scheduling capacity of the associated pre-determined CAISO Intertie) and will procure, or ensure self-provision of, required Operating Reserves for the CAISO Balancing Authority Area Loads served by a Pseudo-Tie Generating Unit.
- 1.2.1.8** All dynamic Energy transfers associated with CAISO procurement of Spinning Reserve and Non-Spinning Reserve from a Pseudo-Tie Generating Unit will be afforded similar treatment (i.e., treatment as internal CAISO Balancing Authority Area Generation, except that it will be subject to Congestion determined by the scheduling capacity of the associated pre-determined CAISO Intertie).

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- 1.2.1.9** Off-system sales pursuant to a Pseudo-Tie Participating Generator Agreement shall only be delivered from the Pseudo-Tie Generating Unit. The maximum allowable off-system sales of Energy from a Pseudo-Tie Generating Unit may not exceed the Pseudo-Tie Generating Unit's scheduled output for the respective hour. Off-system sales shall be treated as a firm fixed static export from the CAISO Balancing Authority Area.
- 1.2.1.10** In Real-Time, the total output of a Pseudo-Tie Generating Unit shall be telemetered to the CAISO. If the Pseudo-Tie Generating Unit is an Eligible Intermittent Resource, telemetered data to the CAISO shall include appropriate operational data, meteorological data, and other data reasonably necessary to forecast Energy as specified in Appendix Q (Eligible Intermittent Resources Protocol) of the CAISO Tariff and applicable Business Practice Manuals.
- 1.2.1.11** The Real-Time dynamic transfer from a Pseudo-Tie Generating Unit may not exceed the CAISO's Dispatch Operating Point. The Dispatch Operating Point represents not only the estimated Dynamic System Resource's Energy but also, in combination with any Ancillary Service Award that has not been dispatched as Energy, the transmission reservation on the associated CAISO Intertie. In the event that a Pseudo-Tie Generating Unit's output creates an imminent reliability issue on the associated pre-determined CAISO Intertie, the Pseudo-Tie Generating Unit will be subject to immediate curtailment by the CAISO. A Pseudo-Tie Generating Unit may also be curtailed whenever its Generation output, less any off-system sales, is greater than the associated transmission reservation pursuant to Section 1.2.1.5 of this Appendix N.
- 1.2.1.12** The CAISO may, at its discretion, either limit or forego procuring any or all Ancillary Services at the particular pre-determined CAISO Intertie associated with a Pseudo-Tie Generating Unit to ensure that Operating Reserves are adequately dispersed throughout the CAISO Balancing Authority Area and its Interties as required by the WECC.
- 1.2.1.13** Unless a particular service is procured by the Participating Generator from some other source, the CAISO shall provide to a Pseudo-Tie Generating Unit all Balancing Authority services available to other Generating Units in the CAISO Balancing Authority Area, which may include the auxiliary load equipment needs of the Pseudo-Tie Generating Unit, provided firm transmission service is reserved across the transmission path from the CAISO Intertie to the Pseudo-Tie Generating Unit.
- 1.2.1.14** The CAISO and the Native Balancing Authority Area will develop a coordinated operating procedure to facilitate the continued delivery of Energy and Ancillary Services from a Pseudo-Tie Generating Unit to the desired delivery points in the event the primary contract path is unavailable or curtailed.
- 1.2.1.15** The CAISO may implement a moratorium on the establishment of new Pseudo-Ties associated with a particular Intertie in the event it determines that the volume of dynamic transfers could have an adverse effect on System Reliability. In the event the CAISO implements such a moratorium, the CAISO shall undertake studies to determine an appropriate allocation of the capacity of the affected Intertie to dynamic transfers.
- 1.2.2** **Technical Requirements**
- 1.2.2.1** All applicable communication and telemetry requirements of the WECC, the CAISO, and a Pseudo-Tie Generating Unit's Native Balancing Authority Area regarding generating units and inter-Balancing Authority Area Interties must be satisfied. These requirements include the requirements of Appendix M applicable to Dynamic Schedules of imports and the requirements of the CAISO Tariff applicable to Generating Units in the CAISO Balancing Authority Area.

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- 1.2.2.2** Proper incorporation of the dynamic signal into all involved Balancing Authority Areas' ACE equations will be required.
- 1.2.2.3** If there is no Scheduled Generation in the DAM, HASP, or Real-Time markets, a Pseudo-Tie Generating Unit shall not generate except when issued an Exceptional Dispatch or operating order as defined in Section 37.2.1.1 of the CAISO Tariff from the CAISO.
- 1.2.2.4** If a Participating Generator with a Pseudo-Tie Generating Unit desires to participate in the CAISO's Regulation market, all provisions of the CAISO's Standards for Imports of Regulation, or any successor CAISO standards regarding the technical arrangements for imports of Regulation posted on the CAISO Website, shall apply.
- 1.2.2.5** Only one dynamic transfer signal may be associated with any Pseudo-Tie Generating Unit.
- 1.2.3 Business Requirements**
- 1.2.3.1** For Settlements, the Energy transferred dynamically from a Pseudo-Tie Generating Unit during an Operating Hour will be settled based on the Generating Unit revenue meter value, and any static off-system sales represented as an export quantity will be deemed delivered at a Pseudo-Tie for that Operating Hour consistent with Section 1.2.1.9 of this Appendix N.
- 1.2.3.2** Any transmission losses and other transmission related costs attributable to a Pseudo-Tie Generating Unit on a non-CAISO transmission system will remain the responsibility of the Participating Generator.
- 1.2.3.3** Should there be any need or requirement, whether operational or procedural, for the CAISO to make real time adjustments to the CAISO's inter-Balancing Authority Area Interchange Schedules at the pre-determined CAISO Intertie associated with a Pseudo-Tie Generating Unit (including curtailments), the dynamic transfer from the Pseudo-Tie Generating Unit shall be treated in the same manner as any CAISO Interchange Schedule at that pre-determined CAISO Intertie.
- 1.2.3.4** A Pseudo-Tie Generating Unit will be eligible to set the Market Clearing Price in accordance with the CAISO Tariff in all applicable CAISO Markets.
- 1.2.3.5** The CAISO shall assess charges to the Scheduling Coordinator for a Participating Generator with a Pseudo-Tie Generating Unit on the same basis as they apply to any other CAISO intra-Balancing Authority Area Generating Unit, subject to the provisions of this Section 1.2.3.5.
- 1.2.3.5.1** Any transfers from a Pseudo-Tie Generating Unit scheduled into the CAISO Balancing Authority Area shall be subject to CAISO charges associated with the DAM and Real-Time Market, except that (1) Energy associated with the Pseudo-Tie Generating Unit will be subject to Intertie Congestion charges that are incorporated into the LMP, (2) Ancillary Services provided by the Pseudo-Tie Generating Unit will be assessed applicable Intertie Congestion charges pursuant to Section 11.10.1 of the CAISO Tariff, and (3) the transfers will be subject to any applicable transmission loss obligation charges in cases where the CAISO and another Balancing Authority have agreed on an assessment to the CAISO of supplemental losses incurred outside of the CAISO Balancing Authority Area.
- 1.2.3.5.2** Any off-system sales of Energy shall be subject to all export charges except the Wheeling Access Charge. A special export market Resource ID is required for this purpose for

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which the Participating Generator shall provide ninety (90) days advance notice prior to implementation.

**1.3 Operating Agreements**

**1.3.1** A Pseudo-Tie of a Generating Unit to the CAISO Balancing Authority Area shall be conditional on the facilitation by the Native Balancing Authority Area of the Pseudo-Tie functionality in accordance with an operating agreement between the Balancing Authority for the Native Balancing Authority Area and the CAISO specific to Pseudo-Tie functionality. The CAISO will request that any such operating agreement limit the ability of the Balancing Authority for the Native Balancing Authority Area to terminate the operating agreement or otherwise withdraw from the Pseudo-Tie functionality established pursuant to the operating agreement.

**1.3.2** A Participating Generator with a Pseudo-Tie Generating Unit shall comply with its contractual obligations to the owners of the facilities to which the Pseudo-Tie Generating Unit is interconnected and/or the Native Balancing Authority Area that affect in any way the ability of the Participating Generator to perform its obligations under its Pseudo-Tie Participating Generator Agreement.

**2. Pseudo-Ties of Generating Units out of the CAISO Balancing Authority Area**

**2.1 Consistency with NERC/WECC Requirements**

**2.1.1** Operation of Pseudo-Tie functionalities must comply with all applicable NERC and WECC reliability standards, policies, requirements, and guidelines regarding inter-Balancing Authority Area scheduling. A Pseudo-Tie must be registered as a "Point Of Delivery" (POD) on NERC's Transmission Service Information Network (TSIN). All interchange scheduling associated with Pseudo-Tie functionality must be consistent with NERC Reliability Standards for interchange scheduling and coordination.

**2.2 Operating, Technical, and Business Requirements**

**2.2.1 Operating Requirements**

**2.2.1.1** The CAISO and the Balancing Authority for the Attaining Balancing Authority Area will establish the terms of any Pseudo-Tie between the CAISO Balancing Authority Area and the Attaining Balancing Authority Area for a Pseudo-Tie of a generating unit out of the CAISO Balancing Authority Area, will specify the location of that Pseudo-Tie point, and will register that location as a point of delivery to the Attaining Balancing Authority Area.

**2.2.1.2** The owner of a generating unit that will be a Pseudo-Tie out of the CAISO Balancing Authority Area must (a) transfer dynamically its entire output of its real time generation production and (b) submit Bids, including Self-Schedules, into the CAISO Markets to schedule the use of CAISO transmission associated with the export of the Pseudo-Tie generating unit Energy into the Attaining Balancing Authority Area at the associated pre-existing CAISO physical Intertie, as provided in Section 2.2.2.3 of this Appendix N.

**2.2.1.3** There will be no static imports from a Pseudo-Tie generating unit directly into the CAISO Balancing Authority Area.

**2.2.1.4** All Energy transfers associated with a Pseudo-Tie generating unit must be electronically tagged (e-tagged).

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- 2.2.1.5** The CAISO will treat all dynamically transferred Energy from a Pseudo-Tie of a generating unit out of the CAISO Balancing Authority Area as generation external to the CAISO Balancing Authority Area.
- 2.2.1.6** In case a generating unit that is a Pseudo-Tie out of the CAISO Balancing Authority Area is curtailed or forced out of service in real-time, the associated Pseudo-Tie Bids submitted into the CAISO Markets must be adjusted by the next available CAISO Market scheduling timeframe.
- 2.2.1.7** In real-time, the total output of a Pseudo-Tie generating unit shall be telemetered to the CAISO and to the Balancing Authority for the Attaining Balancing Authority Area.
- 2.2.1.8** In real-time, the total Energy from a Pseudo-Tie generating unit shall not exceed the capacity of the Pseudo-Tie generating unit as specified in the agreement between the CAISO and the owner of the Pseudo-Tie generating unit.
- 2.2.1.9** The CAISO, the Balancing Authority for the Attaining Balancing Authority Area, any affected Participating Transmission Owner, and the owner of the Pseudo-Tie generating unit will develop a coordinated operating procedure outlining the agreed upon framework among all parties for the operation of a Pseudo-Tie of the generating unit out of the CAISO Balancing Authority Area.
- 2.2.1.10** The output of a Pseudo-Tie generating unit may be subject to real-time curtailments and operating orders as defined in Section 37.2.1.1 of the CAISO Tariff as directed by the CAISO in accordance with Good Utility Practices.
- 2.2.1.11** The CAISO may implement a moratorium on the establishment of new Pseudo-Ties associated with a particular Intertie in the event it determines that the volume of dynamic transfers could have an adverse effect on System Reliability. In the event the CAISO implements such a moratorium, the CAISO shall undertake studies to determine an appropriate allocation of the capacity of the affected Intertie to dynamic transfers.
- 2.2.2 Technical Requirements**
- 2.2.2.1** All applicable communication and telemetry requirements of the WECC, the CAISO, and the Balancing Authority for the Attaining Balancing Authority Area regarding generating units and inter-Balancing Authority Area interties must be satisfied, provided that the CAISO's communications and telemetry requirements for Generating Units in the CAISO Balancing Authority Area shall not be applicable, except that the owner of a generating unit that is a Pseudo-Tie out of the CAISO Balancing Authority Area shall provide meteorological data and forecast information from any wind or solar resource in accordance with the requirements for Eligible Intermittent Resources in Appendix Q (Eligible Intermittent Resources Protocol) of the CAISO Tariff and applicable Business Practice Manuals.
- 2.2.2.2** Proper incorporation of the dynamic signal into all involved Balancing Authority Areas' ACE equations will be required.
- 2.2.2.3** A Pseudo-Tie generating unit must be permanently associated with a particular pre-existing CAISO Intertie. If for any reason delivery cannot be made to the associated pre-existing CAISO Intertie, the CAISO may still treat the Energy from a Pseudo-Tie of a generating unit out of the CAISO Balancing Authority Area as deemed delivered to the owner of the Pseudo-Tie generating unit at an alternate designated Intertie with available capacity. The Balancing Authority for the Attaining Balancing Authority Area will immediately request emergency wheeling service from the CAISO under provisions of the

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inter-Balancing Authority agreement between the CAISO and that Balancing Authority to maintain the Pseudo-Tie generating unit schedule via the alternate designated Intertie. The owner of the Pseudo-Tie generating unit, or its designated Scheduling Coordinator, will reschedule the Pseudo-Tie generating unit Energy in the next available CAISO scheduling timeframe through the CAISO scheduling system, until the transmission path to the associated pre-existing CAISO Intertie is re-established. The owner of the Pseudo-Tie generating unit, or its designated Scheduling Coordinator, will be charged and will pay for the requested emergency use transmission and all associated CAISO charges, in accordance with the CAISO Tariff, for this emergency service.

**2.2.2.4** Only one dynamic transfer signal may be associated with a Pseudo-Tie generating unit.

**2.2.2.5** Should there be any need or requirement, whether operational or procedural, for the CAISO or the Balancing Authority for the Attaining Balancing Authority Area to make real-time adjustments to the CAISO's inter-Balancing Authority Area schedules at the pre-existing CAISO Intertie associated with the Pseudo-Tie generating unit (including curtailments), the dynamic transfer from the Pseudo-Tie generating unit shall be treated in the same manner as any CAISO Interchange Schedule at that pre-existing CAISO Intertie, and in accordance with any applicable operating instructions from any affected Participating Transmission Owner.

**2.2.2.6** Energy delivered from the Pseudo-Tie generating unit will be subject to all provisions of the Balancing Authority Area procedures of the Balancing Authority for the Attaining Balancing Authority Area.

**2.2.3 Business Requirements**

**2.2.3.1** For settlements, the Energy transferred dynamically from the Pseudo-Tie generating unit during an operating hour will be deemed delivered, for that operating hour.

**2.2.3.2** All Energy from a Pseudo-Tie generating unit interchange shall be subject to the CAISO Tariff Transmission Loss construct and billed accordingly to the owner of the Pseudo-Tie generating unit or the designated Scheduling Coordinator for the Pseudo-Tie generating unit, including any applicable transmission loss obligation charges in cases where the CAISO and another Balancing Authority have agreed on an assessment to the CAISO of supplemental losses incurred for the Energy outside of the CAISO Balancing Authority Area.

**2.2.3.3** The ISO shall assess the owner of a Pseudo-Tie generating unit or its designated Scheduling Coordinator all applicable market charges and Grid Management Charges in accordance with the CAISO Tariff.

**2.2.3.4** In the event of a line outage and a subsequent request by the Balancing Authority for the Attaining Balancing Authority Area for emergency Wheeling service from the CAISO to maintain deliveries of power to the Attaining Balancing Authority Area from the Pseudo-Tie generating unit, all CAISO Tariff market and GMC charges applicable to the resulting use of CAISO transmission service shall be applied for the duration of these events, inclusive of any related HASP Schedules.

**2.2.3.5** All Pseudo-Tie generating unit export schedules from the Attaining Balancing Authority Area shall be submitted by a certified Scheduling Coordinator into the CAISO Markets as coordinated import and export Wheeling Through Bids, at the designated pre-existing Intertie with the Attaining Balancing Authority Area associated with the Pseudo-Tie.

**2.3 Operating Agreements**

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- 2.3.1** A Pseudo-Tie of a generating unit out of the CAISO Balancing Authority Area shall be conditional on the facilitation by the Balancing Authority for the Attaining Balancing Authority Area of the Pseudo-Tie functionality in accordance with an operating agreement to be entered into between the Balancing Authority for the Attaining Balancing Authority Area and the CAISO specific to Pseudo-Tie functionality.
- 2.3.2** The owner of a Pseudo-Tie generating unit shall comply with its contractual obligations with the owners of the facilities to which the Pseudo-Tie generating unit is interconnected and/or the Attaining Balancing Authority Area that affect in any way the ability of the owner of the Pseudo-Tie generating unit to perform its obligations under the CAISO Tariff and an agreement to be entered into between the owner of the Pseudo-Tie generating unit and the CAISO.

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**Appendix O**  
**CAISO Market Surveillance Committee**

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**1. Introduction and Purpose**

1.1 There shall be established a Market Surveillance Committee (MSC) as a market advisor, whose role it shall be to provide independent external expertise on the CAISO market monitoring process and, in particular, provide independent expert advice and recommendations to the CAISO CEO and Governing Board.

**2. Definitions**

2.1 This section intentionally left blank.

**3. Independence and Oversight**

3.1 This section intentionally left blank.

**4. Structure**

4.1 The MSC shall comprise a body of three or more independent and recognized experts whose combined professional expertise and experience shall encompass the following: (a) economics, with emphasis on antitrust, competition, and market power issues in the electricity industry; (b) experience in operational aspects of Generation and transmission in electricity markets; (c) experience in antitrust or competition law in regulated industries; and (d) financial expertise relevant to energy or other commodity trading.

4.2 Members of the MSC shall be compensated on such basis as the CAISO Governing Board shall from time to time determine. Members of the MSC shall receive prompt reimbursement for all expenses reasonably incurred in the execution of their responsibilities under this Appendix O.

4.3 Members of the MSC shall not be, and shall not be understood to be, employees or agents of the CAISO.

4.4 For each position on the MSC, the CAISO CEO shall conduct a thorough search and requisite due diligence to develop a nomination to the CAISO Governing Board, which nomination shall be consistent with meeting the combined professional expertise and experience of the MSC set forth in Section 4.1 of this Appendix O and with the criteria for independence set forth in Section 9 of this Appendix O. The CAISO Governing Board shall expeditiously consider such nominations. If the nomination is approved, the CAISO CEO shall appoint the candidate so nominated to the MSC. If the nomination is rejected, the CAISO CEO shall expeditiously proceed to develop another nomination.

4.5 No member of the MSC shall be liable to any Market Participant under any circumstances whatsoever for any matter, including but not limited to any financial loss or loss of economic advantage resulting from the performance or non-performance by the MSC of its functions under this CAISO Tariff.

**5. Duties of the Market Surveillance Committee**

5.1 The MSC may, upon request of DMM, the CAISO management or the CAISO Governing Board, or on its own initiative, evaluate information and data described in Section 7.1 of this Appendix O, including as may be collected by DMM on the basis of the evaluation criteria developed by DMM or on such further articulated evaluation criteria developed by the MSC.

5.2 The MSC may, upon request of DMM, the CAISO management or the CAISO Governing Board, or on its own initiative, recommend such changes as it believes are appropriate to the CAISO Tariff, any CAISO Business Practice Manual, any CAISO agreement or any Rules of Conduct applicable in accordance with Section 22.11 of this CAISO Tariff. The CAISO Governing Board shall consider and may adopt proposed CAISO Tariff changes in accordance with Section 22.11 of this CAISO Tariff.

5.3 Upon request of the MSC, the CAISO shall publish reports and recommendations of the MSC or incorporate them, if consistent, into the CAISO's own reports or recommendations.

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5.4 The MSC may on its own initiative recommend that the CAISO impose Sanctions and penalties for violations of the CAISO Tariff and related protocols. Upon recommendation of the MSC, the CAISO may impose such Sanctions or penalties as it believes necessary and as are permitted under the CAISO Tariff and related protocols approved by FERC.

5.5 The MSC may make such additional reports and recommendations as it sees fit relating to the monitoring program referred to in this CAISO Tariff, the analysis of information, the evaluation criteria or any corrective or enforcement actions proposed by DMM or proposed on its own initiative.

5.6 The MSC may review in draft form, and provide pre-publication comment on, all quarterly and annual reports DMM produces pursuant to Section 5.2 of Appendix P.

5.7 The MSC may review in draft form, and provide pre-submission comment on, all referrals to FERC pursuant to Sections 11 and 12 of Appendix P.

5.8 The MSC may not participate in the administration of CAISO's tariff or conduct prospective market mitigation.

#### **6. Duties of the CAISO.**

6.1 CAISO responsibilities not expressly assigned to the MSC, DMM, or any specific individual or entity in this Appendix O remain with the CAISO.

#### **7. Data Access, Collection, and Retention**

7.1 The MSC shall review the initial catalogs of information and data and of evaluation criteria developed by DMM pursuant to Sections 7.4 and 7.5 of Appendix P and shall propose such changes, additions or deletions to such catalogs or items therein as it sees fit. In so doing, the MSC shall have full discretion to specify database items or evaluation criteria for inclusion in the pertinent catalog.

#### **8 Information Sharing**

8.1 All evaluations carried out by the MSC pursuant to Section 5.1 of this Appendix O, and any recommendations emanating from such evaluations, shall be embodied by the MSC in written reports to the CAISO CEO and CAISO Governing Board, and DMM, and shall be made publicly available subject to due restrictions on dissemination of confidential or commercially sensitive information. The MSC may submit any MSC report to FERC, subject to due restrictions on dissemination of confidential or commercially sensitive information.

#### **9. Ethics**

9.1 Members of the MSC shall have no professional or commercial affiliation with a Market Participant where such affiliation would tend to affect, or give the appearance of affecting, their judgment in the performance of their duties.

9.2 Members of the MSC shall not serve as officers, employees, or partners of a Market Participant.

9.3 Members of the MSC shall have no material financial interest in any Market Participant or affiliate, with the exception of mutual funds and non-directed investments.

9.4 Members of the MSC shall not engage in any market transactions other than in the performance of their duties under the CAISO Tariff.

9.5 Members of the MSC shall not be compensated, other than by CAISO, for any expert witness testimony or other commercial services in connection with any legal or regulatory proceeding or commercial transaction relating to the CAISO.

9.6 Members of the MSC shall not accept from a Market Participant any item with a value in excess of \$25.

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9.7 Members of the MSC shall advise the CAISO Governing Board in the event they seek employment with a Market Participant, and must disqualify themselves from participating in any matter that would have an effect on the financial interest of the Market Participant.

9.7.1 For the purposes of this provision, the term "seeking employment" shall have the same meaning it does in 5 CFR § 2635.603, or its successor provision.

**10. CAISO-Specific Provisions**

10.1 This section intentionally left blank.

**11 Protocol on Referrals of Investigations to the Office of Enforcement**

11.1 This section intentionally left blank.

**12. Protocol on Referrals of Perceived Market Design Flaws and Recommended Tariff Changes to the Office of Energy Market Regulation**

12.1 This section intentionally left blank.

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**Appendix P**

**CAISO Department of Market Monitoring**

## **1 Introduction and Purpose**

### **1.1 Establishment**

There shall be established within the CAISO a Department of Market Monitoring (DMM).

### **1.2 Mission Statement**

To provide independent oversight and analysis of the CAISO Markets for the protection of consumers and Market Participants by the identification and reporting of market design flaws, potential market rule violations, and market power abuses.

## **2 Definitions**

2.1 This section intentionally left blank.

## **3 Independence and Oversight**

### **3.1 Department of Market Monitoring**

DMM shall report to the CAISO Governing Board on all matters pertaining to the core monitoring duties specified under Section 5 of this Appendix P, and shall have direct access to the individual CAISO Governing Board members at any time. DMM shall report to the CAISO CEO or his or her designee for administrative purposes, including matters relating to the internal administration of DMM. DMM shall advise the CAISO Governing Board about DMM's independent analysis of the CAISO's markets and its independent identification of market design flaws and market power abuses, and DMM also shall inform CAISO management about such matters.

3.2 The CAISO may not alter any reports generated by DMM or dictate the conclusions reached by DMM. The CAISO may, however, comment upon drafts of DMM reports where such right is otherwise conferred by this CAISO Tariff.

3.3 The employment of the Director of DMM shall not be terminated without the approval of the CAISO Governing Board.

## **4 Structure**

4.1 DMM shall be adequately staffed by the CAISO with full-time CAISO staff with the experience and qualifications necessary to fulfill the functions referred to in this CAISO Tariff. Such qualifications may include professional training pertinent to and experience in the operation of markets analogous to CAISO Markets, in the electric power industry, and in the field of competition and antitrust law, economics and policy. Subject to the respective oversight responsibilities as defined in this CAISO Tariff of the CAISO Governing Board and the CAISO CEO, responsibility for overseeing the conduct and operations of DMM shall be conferred upon the Director of DMM.

4.2 Neither DMM nor any DMM employee shall be liable to any Market Participant under any circumstances whatsoever for any matter, including but not limited to any financial loss or loss of economic advantage resulting from the performance or non-performance by DMM of its functions under this CAISO Tariff.

4.3 CAISO shall provide DMM access to the resources, personnel, and consulting assistance (internal and external) sufficient to enable DMM to carry out its duties independently as defined under this Appendix P. The CAISO shall ensure DMM personnel meet the general employment requirements applicable to CAISO employees.

## **5 Duties of Market Monitor**

### **5.1 Review of Market Rules**

DMM shall review existing and proposed market rules, tariff provisions, and market design elements and recommend proposed rule and tariff changes to the CAISO, the CAISO Governing Board, FERC staff, the California Public Utilities Commission, {M}arket {P}articipants, and other interested entities.

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5.1.1 DMM's review shall include, but is not limited to, identification of flaws in the overall structure of the CAISO Markets that may reveal undue concentrations of market power or other structural flaws.

5.1.2 DMM's responsibility to propose market design changes shall not extend to effectuating its proposed market design itself.

5.1.3 DMM must limit distribution of its identifications and recommendations to CAISO, the CAISO Governing Board, and FERC staff in the event that DMM believes broader dissemination of its identifications and recommendations could lead to exploitation of the identified market rule or design flaw. Where DMM so limits the distribution, it shall explain to FERC staff why further dissemination should be avoided.

5.1.4 Section 5.1 of this Appendix P shall not be understood to impose upon DMM the obligation to conduct an independent evaluation of every existing market rule, tariff provision, and market design element. DMM need only report on market rule, tariff, or market design elements it otherwise believes merit evaluation and scrutiny.

5.1.5 Per a request from the CAISO, or on its own initiative, DMM may provide a draft version of any report DMM prepares under Section 5.1 of this Appendix P to the CAISO for comment. DMM may, but shall not be required to, amend its report in light of such comment.

5.1.6 Any report DMM makes under Section 5.1 of this Appendix P is advisory in nature and does not obligate the CAISO to effectuate the recommended market rule, tariff, or market design change.

5.1.7 Where the CAISO disagrees with DMM's recommendation pursuant to Section 5.1 of this Appendix P or DMM disagrees with a proposed market rule, tariff, or market design change, CAISO shall notify the FERC of such disagreement. Such notification shall be made in writing to FERC's Director of the Office of Energy Market Regulation.

## **5.2 Review of Market Trends and Performance**

DMM shall review and report on market trends and the performance of the wholesale markets to the CAISO, the CAISO Governing Board, FERC staff, the California Public Utilities Commission, Market Participants, and other interested entities, on at least a quarterly basis and submit a more comprehensive annual state of the market report. Unless urgency requires otherwise, all annual and quarterly reports shall first be submitted to the MSC for review.

5.2.1 In conjunction with the annual and quarterly reports issued under Section 5.2 of this Appendix P, DMM shall hold conference calls with FERC staff, staff of the California Public Utilities Commission, Market Participants, and other interested entities to discuss market trends and the performance of the wholesale markets.

5.3 With the exception of those CAISO Tariff provisions enumerated in Section 11.1.3 of this Appendix P, DMM shall identify and notify the FERC's Office of Enforcement staff of instances in which a Market Participant's behavior or the behavior of the CAISO itself is suspected to constitute a Market Violation.

5.4 DMM shall consider any information or complaint a Market Participant may make concerning any matter that it believes may be relevant to DMM's monitoring responsibilities. Such submissions or complaints may be made on a confidential basis in which case DMM shall preserve the confidentiality thereof. DMM, at its discretion, may request further information from such entity and carry out any investigation that it considers appropriate as to the concern raised. DMM shall periodically make reports to the CAISO CEO and CAISO Governing Board on complaints received.

5.5 Prohibition on Tariff Administration and Market Mitigation – DMM shall not participate in the administration of the CAISO's Tariff or conduct prospective market mitigation.

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5.5.1 For the purposes of Section 5.5 of this Appendix P, the term "prospective market mitigation" shall have the same meaning as provided in FERC Order No. 719, P 375.

5.5.2 DMM may conduct retrospective mitigation to the extent it is otherwise permitted to do so under this CAISO Tariff.

5.5.3 DMM may provide the inputs required for CAISO to conduct any prospective mitigation that is otherwise permitted under this CAISO Tariff. Such inputs may include, but are not limited to, Default Energy Bids, identification of competitive Transmission Constraints, and cost calculations.

## **6 Duties of the CAISO**

6.1 CAISO responsibilities not expressly assigned to the MSC, DMM, or any specific individual or entity in this Appendix P remain with the CAISO.

## **7. Data Access, Collection, and Retention**

7.1 The CAISO shall provide DMM access to the CAISO's databases of market information and any other market data necessary to enable DMM to carry out its duties as defined under this Appendix P.

7.2 Any data created by DMM, including, but not limited to, reconfiguring of the CAISO's data, will be kept within the exclusive control of DMM. This requires that the CAISO must ensure that DMM has control over which parties have access to the data, as well as control over the format and configuration of such data.

7.3 DMM shall be responsible for developing an information system and criteria for evaluation that will permit it to effectively monitor the CAISO Markets to identify and investigate abuses of that market, whether caused by exercises of market power or by other actions or inactions.

7.4 To develop the information system set forth in Section 7.3 of this Appendix P, DMM shall initially develop, and shall refine on the basis of experience, a detailed catalog of all the categories of data it will have the means of acquiring, and the procedures it will use (including procedures for protecting confidential data) to handle such data.

7.5 DMM shall initially develop, and shall refine on the basis of experience, a catalog of the CAISO Market monitoring indices that it will use to evaluate the data so collected.

7.6 DMM shall evaluate and reevaluate on an ongoing basis the data categories and market monitoring indices that it has developed under Sections 7.4 and 7.5 of this Appendix P, and the information it collects and receives from various other sources, including and in particular the CAISO's operation of the CAISO Markets. Such ongoing evaluations shall provide the basis for its reporting and publication responsibilities as set forth in this CAISO Tariff, for recommendations on proposed changes to this CAISO Tariff and CAISO Business Practice Manuals and other potential rules affecting the CAISO Markets, and for the development of criteria or standards for the initiation of proposed corrective or enforcement actions. In evaluating such information, the DMM may consult the MSC or such external bodies as may be appropriate.

## **8. Information Sharing**

8.1 Tailored Requests for Information from a State Commission to DMM – DMM shall consider requests from a State Commission for specifically identified information or data concerning general market trends and the performance of the wholesale markets. DMM may deny a request when it determines, in its sole discretion, that complying with a request would be unreasonably burdensome or if it would interfere with the core market monitoring functions of DMM as defined in Section 5 of this Appendix P. For the avoidance of doubt, this Section 8.1 of Appendix P shall not apply to otherwise enforceable subpoenas, court orders, or any other form of compulsory process issued by, or on behalf of, a State Commission.

8.1.1 DMM may agree to provide information about general market trends or performance. If DMM determines, in its sole discretion, that this information either is market sensitive or identifies an individual



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Market Participant, then the information may be shared only if the State Commission with which the information will be shared agrees in writing with the CAISO that the information will not be disclosed unless the State Commission has been directed to do so by a court of competent jurisdiction. The written agreement also must specify that if a State Commission is so directed to disclose such information, the State Commission will notify the CAISO before such information is disclosed. Once the CAISO receives such notification, the CAISO must notify the affected Market Participant promptly.

8.1.2 DMM may agree to release to a State Commission raw CAISO data, but only after the information is redacted to satisfy any concerns that DMM may have about the need to maintain confidentiality.

8.1.2.1 If DMM agrees to provide a State Commission with raw data that pertains to a specific Market Participant, DMM shall notify the affected Market Participant and give it the opportunity to contest the accuracy of the data. The affected Market Participant may provide to DMM a written statement providing context to the data. So long as the process of providing such a written statement does not unduly delay release of the data to the State Commission, DMM shall provide an unedited copy of such written statement to the State Commission concurrently with DMM's submission of the data to the State Commission.

8.1.2.2. If the affected Market Participant asserts that the data to be provided is commercially sensitive, DMM shall share such sensitive information or data only if the State Commission with which the information will be shared agrees in writing with the CAISO that the information shared will not be disclosed unless the State Commission has been directed to do so by a court of competent jurisdiction. The written agreement also must specify that if a State Commission is so directed to disclose such information, the State Commission will notify the CAISO before such information is disclosed. Once the CAISO receives such notification, the CAISO must notify the affected Market Participant promptly.

8.1.3 DMM shall not provide any requested information or data that is designed to aid an enforcement action by an instrumentality or political subdivision of any state of the United States of America.

8.1.4 DMM shall not provide any requested information or data that would impinge on FERC's confidentiality rules regarding referrals to FERC pursuant to Sections 11 or 12 of this Appendix P.

8.2 When publicly available reports are made to one regulatory agency with competent jurisdiction, such as the FERC, DMM may simultaneously make such reports available to other regulatory agencies with legitimate interests in their contents, such as the California Public Utilities Commission, the California Energy Commission and/or the California Attorney General.

8.3 The final results of DMM's ongoing evaluations under Section 7.6 of this Appendix P shall routinely and promptly be submitted to the MSC for comment.

8.4 The catalogs of data and indices developed pursuant to Sections 7.4 and 7.5 of this Appendix P shall be duly published on the CAISO Website and disseminated to all Market Participants.

**8.5 Collection and Dissemination of Information Specific to a Market Participant**

8.5.1 DMM may request that Market Participants or other entities whose activities may affect the operation of the CAISO Markets submit any information or data determined by DMM to be potentially relevant. This data will be subject to due safeguards to protect confidential and commercially sensitive data. Failures by Market Participants to provide such data shall be treated under Section 37 of the CAISO Tariff. In the event of failures by other entities to provide such data, the CAISO may take whatever action is available to it and appropriate for it to take, including reporting the failure to the pertinent regulatory agency, after providing such entity the opportunity to respond in writing as to the reason for the alleged failure and may include possible exclusion from the CAISO Markets or termination of any relevant CAISO agreements or certifications. Before any such action is taken, the CAISO Market Participant shall be provided the opportunity to respond in writing as to the reason for the alleged failure.

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8.5.2 Any Market Participant may request that the CAISO provide data, including data that DMM has collected under Section 8.5.1 of this Appendix P, that the CAISO has collected concerning that Market Participant. Subject to constraints on the CAISO's resources, subject to Section 7.2 of this Appendix P, and at the CAISO's sole discretion, such data may be provided by the CAISO subject to due safeguards to protect confidential and commercially sensitive data. Where such activity imposes a significant burden or expense on the CAISO, the data may be provided on the condition that a reasonable contribution to the cost incurred by the CAISO is made to the CAISO by the requesting party.

8.6 Information related to the Transmission Planning Process in accordance with Section 24 of the CAISO Tariff the release of which DMM determines may harm competitive markets shall be deemed confidential.

**9. Ethics.**

9.1 DMM employees shall have no professional or commercial affiliation with a Market Participant where such affiliation would tend to affect, or give the appearance of affecting, their judgment in the performance of their duties.

9.2 DMM employees shall not serve as officers, employees, or partners of a Market Participant.

9.3 DMM employees shall have no material financial interest in any Market Participant or affiliate, with the exception of mutual funds and non-directed investments.

9.4 DMM employees shall not engage in any market transactions other than in the performance of their duties under the CAISO Tariff.

9.5 DMM employees shall not be compensated, other than by CAISO, for any expert witness testimony or other commercial services in connection with any legal or regulatory proceeding or commercial transaction relating to the CAISO.

9.6 DMM employees shall not accept from a Market Participant any item with a value in excess of \$25.

9.7 DMM employees shall advise a supervisor (or in the case of the Director of DMM, the CAISO CEO) in the event they seek employment with a Market Participant, and must disqualify themselves from participating in any matter that would have an effect on the financial interest of the Market Participant.

9.7.1 For the purposes of this provision, the term "seeking employment" shall have the same meaning it does in 5 CFR § 2635.603, or its successor provision.

9.8 DMM employees shall comply with the CAISO Employee Code of Conduct, as amended from time to time.

**10. CAISO-Specific Provisions.**

10.1 This section intentionally left blank.

**11. Protocol on Referrals of Investigations to the Office of Enforcement.**

11.1 DMM shall make a non-public referral to FERC in all instances where DMM has reason to believe that a Market Violation has occurred. DMM's non-public referral shall provide sufficient credible information to warrant further investigation by FERC. Once DMM has obtained sufficient credible information to warrant referral to FERC, DMM shall immediately refer the matter to FERC and desist from independent action related to the alleged Market Violation. DMM may, however, continue to monitor for any repeated instances of the activity by the same or other entities, which would constitute new Market Violations. DMM shall respond to requests from FERC for any additional information in connection with the alleged Market Violation it has referred.

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11.1.1 The decision to make such a referral is committed to the sole discretion of DMM. In all such cases of direct referral, DMM shall promptly inform the CAISO Governing Board, the MSC and the CAISO CEO of the fact of and the content of the referral.

11.1.2 For the avoidance of doubt, the CAISO itself is subject to referral by DMM.

11.1.3 Section 11.1 of this Appendix P notwithstanding, DMM shall not refer to FERC a suspected violation of the following provisions of Section 37 of this CAISO Tariff: 37.4.1, 37.4.2, 37.4.3, 37.5.2, 37.6.1, 37.6.2, and 37.6.3. Where conduct constitutes a Market Violation that DMM shall not refer to FERC and DMM has reason to believe that the same conduct also represents a Market Violation other than a Market Violation that, per this Section 11.1.3, DMM shall not refer to FERC, then DMM shall make a non-public referral to FERC only of the Market Violation that it is not prohibited from referring to FERC.

11.2 All referrals to FERC of alleged Market Violations are to be in writing, whether transmitted electronically or by fax, mail, or courier. DMM may alert FERC orally in advance of the written referral.

11.3 The referral is to be addressed to FERC's Director of the Office of Enforcement, with a copy also directed to both the Director of the Office of Energy Market Regulation and the General Counsel.

11.4 The referral is to include, but need not be limited to, the following information.

11.4.1 The name[s] of and, if possible, the contact information for, the entity[ies] that allegedly took the action[s] that constituted the alleged Market Violation[s];

11.4.2 The date[s] or time period during which the alleged Market Violation[s] occurred and whether the alleged wrongful conduct is ongoing;

11.4.3 The specific rule or regulation, and/or tariff provision, that was allegedly violated, or the nature of any inappropriate dispatch that may have occurred;

11.4.4 The specific act[s] or conduct that allegedly constituted the Market Violation;

11.4.5 The consequences to the market resulting from the acts or conduct, including, if known, an estimate of economic impact on the market;

11.4.6 If DMM believes that the act[s] or conduct constituted a violation of the anti-manipulation rule of Part 1c, a description of the alleged manipulative effect on market prices, market conditions, or market rules;

11.4.7 Any other information DMM believes is relevant and may be helpful to FERC.

11.5 Following a referral to FERC, DMM is to continue to notify and inform FERC of any information that DMM learns of that may be related to the referral but DMM shall not undertake any investigative steps regarding the referral except at the express direction of FERC or FERC Staff.

**12 Protocol on Referrals of Perceived Market Design Flaws and Recommended Tariff Changes to the Office of Energy Market Regulation.**

12.1 DMM is to make a referral to FERC in all instances where it has reason to believe market design flaws exist that it believes could effectively be remedied by rule or tariff changes. DMM must limit distribution of its identifications and recommendations to CAISO, the CAISO Governing Board, and to FERC in the event it believes broader dissemination could lead to exploitation of the market design flaw, with an explanation of why further dissemination should be avoided at that time.

12.2 All referrals to FERC relating to perceived market design flaws and recommended tariff changes are to be in writing, whether transmitted electronically or by fax, mail, or courier. DMM may alert FERC orally in advance of the written referral.

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12.3 The referral should be addressed to FERC's Director of the Office of Energy Market Regulation, with copies directed to both the Director of the Office of Enforcement and the General Counsel.

12.4 The referral is to include, but need not be limited to, the following information.

12.4.1 A detailed narrative describing the perceived market design flaw[s];

12.4.2 The consequences of the perceived market design flaw[s], including, if known, an estimate of economic impact on the market;

12.4.3 The rule or tariff change(s) that DMM believes could remedy the perceived market design flaw;

12.4.4 Any other information DMM believes is relevant and may be helpful to FERC.

12.5 Following a referral to FERC, DMM is to continue to notify and inform FERC of any additional information regarding the perceived market design flaw, its effects on the market, any additional or modified observations concerning the rule or tariff changes that could remedy the perceived design flaw, any recommendations made by DMM to CAISO, stakeholders, Market Participants or state commissions regarding the perceived design flaw, and any actions taken by CAISO regarding the perceived design flaw.

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**Appendix Q**

**Eligible Intermittent Resources Protocol (EIRP)**

## **1 SCOPE**

### **1.1 Scope of Application to Parties**

This EIRP applies to the CAISO and to:

- (a) Scheduling Coordinators (SCs);
- (b) Eligible Intermittent Resources; and
- (c) Participating Intermittent Resources.

### **1.2 Liability of the CAISO**

Any liability of the CAISO arising out of or in relation to this EIRP shall be subject to Section 14 of the CAISO Tariff as if references to the CAISO Tariff were references to this EIRP.

## **2 REQUIREMENTS FOR ELIGIBLE AND PARTICIPATING INTERMITTENT RESOURCES**

### **2.1 No Mandatory Participation**

Eligible Intermittent Resources may elect to be scheduled and settled as the CAISO Tariff provides for Generating Units, and are not required to seek certification as Participating Intermittent Resources.

### **2.2 Minimum Certification Requirements**

Those Eligible Intermittent Resources and Participating Intermittent Resources must meet the following requirements, as applicable.

#### **2.2.1 Agreements**

The following agreements must be executed by the owner or operator of any Eligible Intermittent Resource, unless that resource is not subject to any of these agreements pursuant to the CAISO Tariff, such as an Eligible Intermittent Resource of an MSS Operator:

- (a) A Participating Generator Agreement, QF PGA, Dynamic Scheduling Agreement for Scheduling Coordinators, or Pseudo-Tie Participating Generator Agreement that, among other things, binds the Eligible Intermittent Resource to comply with the CAISO Tariff; and
- (b) A Meter Service Agreement for CAISO Metered Entities, for all Eligible Intermittent Resources other than Dynamic System Resources.

If an Eligible Intermittent Resource intends to become a Participating Intermittent Resource, it must also execute a letter of intent, which when executed and delivered to the CAISO shall initiate the process of certifying the Participating Intermittent Resource. The form of the letter of intent shall be specified by the CAISO in a Business Practice Manual.

#### **2.2.2 Composition of a Participating Intermittent Resource**

The CAISO shall develop criteria to determine whether one or more Eligible Intermittent Resources may be included within a Participating Intermittent Resource. Such criteria shall include:

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- (a) A Participating Intermittent Resource must be at least one (1) MW rated capacity.
- (b) A Participating Intermittent Resource may include one (1) or more Eligible Intermittent Resources that have similar response to weather conditions or other variables relevant to forecasting Energy, as determined by the CAISO.
- (c) Each Participating Intermittent Resource shall be electrically connected at a single point on the CAISO Controlled Grid, except as otherwise permitted by the CAISO on a case-by-case basis as may be allowed under the CAISO Tariff. Interconnection to a portion of the CAISO Controlled Grid outside or not contiguous to the CAISO Balancing Authority Area does not make an Eligible Intermittent Resource that is a Dynamic System Resource or Pseudo-Tie Generating Unit eligible to be included within a Participating Intermittent Resource.
- (d) The same Scheduling Coordinator must schedule all Eligible Intermittent Resources aggregated into a single Participating Intermittent Resource.

### **2.2.3 Equipment Installation**

An Eligible Participating Intermittent Resource must install and maintain the communication equipment required pursuant to Section 3 of this EIRP, and the equipment supporting forecast data required pursuant to Section 6 of this EIRP.

### **2.2.4 Forecast Model Validation**

The CAISO must determine that sufficient historic and real-time telemetered data are available to support an accurate and unbiased forecast of Energy generation by a Participating Intermittent Resource, according to the forecasting process validation criteria described in Section 4 of this EIRP.

### **2.2.5 Information Requirements For Participating Intermittent Resource Export Fee**

In order for the CAISO to administer, implement and calculate the Participating Intermittent Resource Export Fee, each Participating Intermittent Resource jointly with, and through, its Scheduling Coordinator must provide the CAISO with the following information and documents under the schedule and conditions set forth in this section.

The CAISO will maintain the confidentiality of all information and documents received under this section in accordance with CAISO Tariff Section 20 et seq.

- A. A certification, in the form set for in a Business Practice Manual, signed by an officer of the Participating Intermittent Resource and its Scheduling Coordinator, identifying (1) the PIR Export Percentage under Section 5.3.2 of this EIRP, if any, and basis thereof, and (2) each contract to sell Energy or capacity from the Participating Intermittent Resource, including for each such contract, the counterparty, start and end dates, delivery point(s), quantity in MW, other temporal terms, i.e., seasonal or hourly limitations.

The certification must be updated by resubmission to the CAISO (1) upon a request to modify the composition of the Participating Intermittent Resource under Section 2.4.2 of this EIRP; or (2) within ten (10) calendar days of final execution of a new contract or any change in counterparty, start and end dates, delivery point(s), quantity in MW, or other temporal terms, as described above, for any prior certified contract. All other contractual changes will not trigger the obligation for recertification;

- B. Copies of all contracts, including changes, identified in the above-referenced certification; however, price information may be redacted from the contracts provided.

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Each Participating Intermittent Resource, as of November 1, 2006, must initially provide the information requested by this Section 2.2.5 in accordance with a Market Notice provided by the CAISO to Participating Intermittent Resources. All other Eligible Intermittent Resources must satisfy this Section 2.2.5 in order to become a Participating Intermittent Resource after November 1, 2006.

**2.3 Notice of Certification of a Participating Intermittent Resource**

When all requirements described in Section 2.2 of this EIRP applicable to Participating Intermittent Resources have been fulfilled, the CAISO shall notify the Scheduling Coordinator and the representatives of the Eligible Intermittent Resources comprising the Participating Intermittent Resource that the Participating Intermittent Resource has been certified, and is eligible for the settlement terms provided under Section 11.12 of the CAISO Tariff, as conditioned by the terms of this EIRP.

**2.4 Additional Requirements**

**2.4.1 Forecast Fee**

An Eligible Intermittent Resource must pay the Forecast Fee for all metered Energy generated by the Eligible Intermittent Resource, as specified in CAISO Tariff Appendix F, Schedule 4.

**2.4.2 Modification of Participating Intermittent Resource Composition**

A Participating Intermittent Resource may seek to modify the composition of the Participating Intermittent Resource (e.g., by adding or eliminating an Eligible Intermittent Resource from the Participating Intermittent Resource). Such changes shall not be implemented without prior compliance with the written approval by the CAISO. The CAISO will apply consistent criteria and expeditiously review any proposed changes in the composition of a Participating Intermittent Resource.

**2.4.3 Changes in Scheduling Coordinator**

This EIRP does not impose any additional requirement for CAISO approval to change the Scheduling Coordinator for an approved Participating Intermittent Resource than would otherwise apply under the CAISO Tariff to changes in the Scheduling Coordinator representing a Generating Unit.

**2.4.4 Continuing Obligation**

A Participating Intermittent Resource or Eligible Intermittent Resource must meet all applicable obligations established for Participating Intermittent Resources or Eligible Intermittent Resources under the CAISO Tariff and this EIRP, and must fully cooperate in providing all data, other information, and authorizations the CAISO reasonably requests to fulfill its obligation to validate forecast models, explain deviations, and implement the Participating Intermittent Resource Export Fees.

**2.4.5 Failure to Perform**

If the CAISO determines that a material deficiency has arisen in the Participating Intermittent Resource's fulfillment of its obligations under the CAISO Tariff and this EIRP, and such Participating Intermittent Resource fails to promptly correct such deficiencies when notified by the CAISO, then the eligibility of the Participating Intermittent Resource for the settlement accommodations provided in Section 11.12 of the CAISO Tariff shall be suspended until such time that the unavailable data is provided or other material deficiency is corrected to the CAISO's reasonable satisfaction. Such suspension shall not relieve the Scheduling Coordinator for the



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deficient Participating Intermittent Resource from paying the Forecast Fee over the duration of the period covered by the letter of intent described in Section 2.2.1(c) of this EIRP.

### **3 COMMUNICATIONS**

#### **3.1 Forecast Data**

The CAISO may require various data relevant to forecasting Energy from the Eligible Intermittent Resource to be telemetered to the CAISO, including appropriate operational data, meteorological data or other data reasonably necessary to forecast Energy.

#### **3.2 Standards**

The standards for communications shall be the monitoring and communications requirements for Generating Units providing only Energy; as such standards may be amended from time to time, and published on the CAISO Website.

#### **3.3 Cost Responsibility**

An Eligible Intermittent Resource is responsible for expenses associated with engineering, installation, operation and maintenance of required communication equipment.

### **4 FORECASTING**

The CAISO is responsible for overseeing the development of tools or services to forecast Energy for Participating Intermittent Resources. The CAISO will use its best efforts to develop accurate and unbiased forecasts, as limited by the availability of relevant explanatory data. Objective criteria and thresholds for unbiased, accurate forecasts shall be set forth in a Business Practice Manual, and shall be used to certify Participating Intermittent Resources in accordance with Section 2.2.4 of this EIRP.

#### **4.1 Hour-Ahead Forecast**

The CAISO shall develop expert, independent hourly forecasts of Energy generation for each Participating Intermittent Resource. A forecast shall be published each hour for each of the next seven operating hours. Other forecasts, including a Day-Ahead forecast, may be developed at the CAISO's discretion. The Scheduling Coordinator representing the Participating Intermittent Resource must use the hour-ahead forecast that is available thirty minutes prior to the deadline for submitting the HASP/RTM Bids. The CAISO shall use best efforts to provide reliable and timely forecasts. However, if the CAISO fails to deliver the hour-ahead forecast to the Scheduling Coordinator prior to fifteen minutes before the deadline for submitting HASP/RTM Bids, then the hour-ahead forecast shall be the most recent Energy forecast provided by the CAISO to the Scheduling Coordinator for the operating hour for which Bids are next due.

#### **4.2 [Not Used]**

#### **4.3 Confidentiality**

The CAISO shall maintain the confidentiality of proprietary data for each Participating Intermittent Resource in accordance with Section 20 of the CAISO Tariff.

### **5 SCHEDULING AND SETTLEMENT**

#### **5.1 Schedules**

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Scheduling Coordinators shall be required to submit HASP/RTM Bids(MWh) for the Generating Units that comprise each Participating Intermittent Resource that are identical, in the aggregate, to the hour-ahead forecast published for that Participating Intermittent Resource (MWh).

## **5.2 Settlement**

After a Participating Intermittent Resource is certified, Settlement shall be determined for each Settlement Period based on consistency of Bids submitted on behalf of such Participating Intermittent Resource with the rules specified in the CAISO Tariff and this EIRP.

## **5.3 Participating Intermittent Resource Export Fee**

### **5.3.1 Exemptions**

After November 1, 2006, Participating Intermittent Resources shall be subject to the Participating Intermittent Resource Export Fee, as set forth in Schedule 4 of Appendix F, for Energy generated, except to the extent the Participating Intermittent Resource is exempt under one or more of the following conditions:

- The owner of a Participating Intermittent Resource, as of November 1, 2006, utilizes the Energy generated from the Participating Intermittent Resource to meet its own Native Load outside the CAISO Balancing Authority Area. Should any Participating Intermittent Resource subject to this exemption increase its PMax set forth in the CAISO's Master File by modification under Section 2.4.2 of this EIRP, the exemption will not apply to the added capacity unless exempt under another subsection of this Section 5.3.1.

If the Participating Intermittent Resource subject to this exemption changes ownership, the Participating Intermittent Resource Export Fee will apply, except where the prior exempt owner demonstrates that the entire output of the Participating Intermittent Resource continues to be delivered to the exempt owner under a power purchase agreement for the purpose of serving the prior exempt owner's Native Load. The exemption will then continue only for the period of the power purchase agreement as provided in accordance with Section 2.2.5 of this EIRP and cannot exceed the MW quantity originally exempted.

- A Participating Intermittent Resource demonstrates in its certification under Section 2.2.5(a) of this EIRP an export contract with a starting term prior to November 1, 2006. An export contract is any power purchase agreement to sell Energy to any entity other than a Load Serving Entity with an obligation under law or franchise to serve Demand within the CAISO Balancing Authority Area.

The exemption will apply to any extension of the current export contract through an evergreen or other existing extension provision. The exemption terminates upon termination of the export contract. Should any Participating Intermittent Resource subject to this exemption increase its PMax set forth in the CAISO's Master File by modification under Section 2.4.2 of this EIRP, the exemption will apply only to Energy generated up to the contract quantity, unless the Participating Intermittent Resource demonstrates a basis for exemption under subsection (c) for the expanded capacity.

- (c) A Participating Intermittent Resource demonstrates in its certification under Section 2.2.5(a) of this EIRP a contract to sell Energy to a Load Serving Entity with Native Load within the CAISO Balancing Authority Area. Energy service providers with contractual obligations with customers within the CAISO Balancing

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Authority Area would be deemed a Load Serving Entity with an obligation to serve Native Load within the CAISO Balancing Authority Area.

The exemption will apply to any extension of the current contract through an evergreen or other existing extension provision. The exemption terminates upon termination of the contract. Should any Participating Intermittent Resource subject to this exemption increase its PMax set forth in the CAISO's Master File by modification under Section 2.4.2 of this EIRP, the exemption will continue to apply only to Energy generated up to the contract quantity unless the Participating Intermittent Resource demonstrates a basis for exemption under this subsection (c) for the expanded capacity.

**5.3.2 Participating Intermittent Resource Export Percentage**

Based on the information required in Section 2.2.5 of this EIRP and application of the exemptions to the Participating Intermittent Resource Export Fee in Section 5.3.1 of this EIRP, the CAISO will determine a PIR Export Percentage for each Participating Intermittent Resource that will be calculated as the ratio of the Participating Intermittent Resource's PMax in the CAISO Master File minus the MW, subject to an exemption under Section 5.3.1 of this EIRP on a MW basis to the Participating Intermittent Resource's PMax in the CAISO Master File. For example, a Participating Intermittent Resource with a PMax of 100 MW and a contract with a CAISO Balancing Authority Area Load Serving Entity for 40 MW would have a PIR Export Percentage of  $(100-40)/100 = 60\%$ . A Participating Intermittent Resource with a PIR Export Percentage greater than zero (0) will be deemed an Exporting Participating Intermittent Resource. The CAISO will notify the Participating Intermittent Resource and its Scheduling Coordinator of the facility's PIR Export Percentage. Any dispute regarding the CAISO's determination of the PIR Export Percentage shall be subject to the dispute resolution procedures under Section 13 of the CAISO Tariff.

**5.3.3 Quarterly Application of Participating Intermittent Resource Export Fee**

Each quarter the CAISO will charge Exporting Participating Intermittent Resources the Participating Intermittent Resource Export Fee, as set forth in Schedule 4 of Appendix F.

**5.3.4 Allocation of Credit for Participating Intermittent Resource Export Fees Received**

Payments received by the CAISO from application of the Participating Intermittent Resource Export Fee in accordance with this Section 5.3 shall be allocated as a credit on a quarterly basis to Scheduling Coordinators with Net Negative Uninstructed Deviations in proportion to the to the amount of Net Negative Uninstructed Deviations that each Scheduling Coordinator was assessed for Participating Intermittent Resources Settlement charges for the applicable CAISO Charge Code during the prior quarter.

**5.3.5 Recording of Exemptions and Notice of Termination**

The CAISO will record any exemption period ending date, if applicable, for each Participating Intermittent Resource. At the conclusion of the exemption period, the CAISO will notify the Scheduling Coordinator for the Participating Intermittent Resource that the facility is no longer exempt from the Participating Intermittent Resource Export Fee.

**5.3.6 Annual Confirmation**

On December 31 of each calendar year, each Participating Intermittent Resource shall confirm in the form set forth in a Business Practice Manual, signed by an officer of the Participating Intermittent Resource, that the operations of the Participating Intermittent

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Resource are consistent with any certification(s) provided to the CAISO under Section 2.2.5 of this EIRP.

### **5.3.7 Audit Rights**

In addition to the rights set forth in CAISO Tariff Section 4.6.9, the CAISO shall have the right to contact any counterparty to a contract relied upon under Section 5.3.1 of this EIRP for purposes of determining compliance with this EIRP.

## **6 DATA COLLECTION FACILITIES**

An Eligible Intermittent Resource not otherwise exempt must install and maintain equipment to collect, record and transmit data that the CAISO reasonably determines is necessary to develop and support a forecast model that meets the requirements of Section 4 of this EIRP.

### **6.1 Wind Resources**

An Eligible Intermittent Resource powered by wind must install at least one meteorological tower at a project location that is representative of the microclimate within the project boundary.

The meteorological tower must rely on equipment typically used in the wind industry to continuously monitor weather conditions at a wind resource site. Data collected shall be consistent with requirements set forth in a Business Practice Manual. Such data must be gathered and telemetered to the CAISO in accordance with Section 3 of this EIRP.

If objective standards developed by the CAISO indicate that the meteorological data may not be sufficiently representative of conditions affecting Energy output or changes in Energy output by that Eligible Intermittent Resource, then the CAISO may require that additional meteorological equipment be temporarily installed at another location within the project boundary. The cost of such equipment, which may be temporarily installed by the Eligible Intermittent Resource or the CAISO, shall be the responsibility of the Eligible Intermittent Resource.

If objective standards indicate that the data collected from such a temporary site contribute significantly to the development of an accurate and unbiased forecast, then the Eligible Intermittent Resource shall be responsible for installing and arranging for the telemetry of data from an additional permanent meteorological tower at such site, and for the reasonable cost, if any, that the CAISO may have incurred to install and remove the temporary equipment. Relocation of the original meteorological tower to the new site will be allowed if the CAISO determines that a sufficiently accurate and unbiased forecast can be generated from a single relocated meteorological tower.

The CAISO may establish exemptions from requirements of this Section 6.1 in a Business Practice Manual.

### **6.2 Other Eligible Intermittent Resources**

Eligible Intermittent Resources other than wind projects will be required to provide data of comparable relevance to estimating Energy generation. Standards will be developed as such projects are identified and will be specified in a Business Practice Manual.

## **7 PROGRAM MONITORING**

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The CAISO shall monitor the operation of these rules, and will in particular seek to eliminate any gaming opportunities provided by the flexibility provided Participating Intermittent Resources to self-select participation on an hourly basis.

Participating Intermittent Resources are expected to bid, schedule, and otherwise perform in good faith, and not seek to act strategically in a manner that causes financial gain through systematic behavior, where such gain results solely from the settlement accommodations provided under CAISO Tariff Section 11.12.

If requirements specified in this EIRP are not met, then Participating Intermittent Resource certification may be revoked pursuant to Section 2.4.5 of this EIRP. Any patterns of strategic behavior by Participating Intermittent Resources will be tracked, and the statistical significance of such deviations will be used by the CAISO to evaluate whether changes in the rules defined in this EIRP are appropriate.

The CAISO will monitor the impact of rules for Participating Intermittent Resources on Imbalance Energy and Regulation costs to the CAISO.

## **8 AMENDMENTS**

If the CAISO determines a need for an amendment to this EIRP, the CAISO will follow the requirements as set forth in Section 15 of the CAISO Tariff.

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**Appendix R**  
**UDP Aggregation Protocol**

## **1 SCOPE**

There are two types of UDP Aggregation classifications:

- (1) Basic UDP Aggregations: composed of Generating Units connected at the same substation and stepping up to the same voltage level bus bar, or
- (2) Custom UDP Aggregations: composed of Generating Units connected at different substations and/or different voltage levels, particularly where the Generating Units to be aggregated are separated by CAISO Controlled Grid facilities. Examples of a proposed custom UDP Aggregation include hydroelectric units operating on a common watershed (but having multiple different interconnection points), or geothermal units fed from a common geothermal steam supply.

## **2 SUBMITTAL OF A REQUEST FOR UDP AGGREGATION**

Requests for UDP Aggregation are submitted to the CAISO and must include the following documentation:

- (1) A completed UDP Aggregation request form, which is available for downloading on the CAISO Website;
- (2) A simplified electrical one-line diagram, which illustrates each resource, the connection of the resources to each other and to the CAISO Balancing Authority Area;
- (3) For custom UDP Aggregations, a detailed description that explains physical operating interrelationships between the units, or, if there are no interrelationships, how the units are compatible and why an aggregation of these units for the purpose of calculating Uninstructed Deviation Penalties is reasonable.

## **3 CAISO REVIEW OF A UDP AGGREGATION REQUEST**

Upon receipt of a completed request form and accompanying attachments, the CAISO shall review the request according to the criteria outlined herein. For basic UDP Aggregations, the CAISO shall review and approve or reject it within one week of receipt. The CAISO shall review and approve or reject a request for a custom UDP Aggregation within thirty (30) days of receipt.

### **3.1 Criteria for Reviewing a Request**

#### **3.1.1 Scheduling Coordinator and Interconnection Point**

Uninstructed Deviations may be aggregated for resources that are:

- (1) Represented by the same Scheduling Coordinator and
- (2) Connected to the same CAISO Controlled Grid bus and voltage level. The CAISO will consider, on a case-by-case basis, requests to aggregate Uninstructed Deviations among resources represented by the same Scheduling Coordinator but not sharing a common CAISO Controlled Grid bus and voltage level based on a CAISO review of impact on the CAISO Controlled Grid. In particular, the CAISO will consider whether the request concerns resources related by a common flow of fuel which cannot be interrupted without a

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substantial loss of efficiency of the combined output of all components; whether the Energy production from one resource necessarily causes Energy production from other resource(s); and whether the operational arrangement of resources determines the overall physical efficiency of the combined output of all of the resources.

**3.1.2 Additional Criteria**

Additional eligibility criteria for a UDP Aggregation are as follows:

- (1) Only Generating Units shall be eligible for UDP Aggregation. As a general rule, pump-generating Units (or a Physical Scheduling Plant [PSP] containing a pump-generating Unit) cannot be part of a UDP Aggregation. However, it is possible that Generating Units could form a UDP Aggregation comprised entirely of pump-generating Units whose operation is uniform, that is, units all operating in either Generation mode or all in pump mode, but never mixed.
- (2) UDP Aggregations cannot include any of the following:
  - (a) Load;
  - (b) Condition 2 Reliability Must-Run (RMR) Units;
  - (c) Participating Intermittent Resources; or
  - (d) Generating Units less than five (5) MW.
- (3) The resources must have CAISO direct telemetry and must be fully compliant with the CAISO's direct telemetry standards.
- (4) The Generating Units must have the same relative effect on all network elements for which the Generating Units have at least a five percent (5%) effectiveness factor, that is, for those network elements for which a one (1) MW change in the output of the Generating Unit changes the flow across that element by at least 0.05 MW. For the purposes of this item (4), the "same relative effect" means that the effectiveness factors of any Generating Unit relative to a network element cannot differ by more than ten percent (10%) from the midpoint effectiveness factor of all the units. The midpoint effectiveness is the arithmetic mean of the two most different effectiveness factors to be aggregated.
- (5) Custom UDP Aggregations involving units not directly connecting to the CAISO Controlled Grid must recognize the transfer limits and status of the intermediate local facilities.
- (6) The applicable PMax of aggregated groups of resources will exclude units that are not operating.

**3.1.3 Approval of a Request**

If a UDP Aggregation request is approved, the CAISO shall create a new unique Resource ID, which reflects the identity or location of the units and stipulates the UDP Aggregation, but which cannot be used for scheduling purposes. The CAISO shall inform the Scheduling Coordinator of the approval and ask the Scheduling Coordinator to confirm the desired start date of the UDP Aggregation. When that confirmation has been received, the new aggregation will be entered into the CAISO systems. Unless otherwise



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agreed to by the Scheduling Coordinator and the CAISO, the UDP Aggregation will become effective on the first day of the month following approval. The units in an approved UDP Aggregation are obligated to follow their individual Schedules and instructions at all times.

**3.1.4 Rejection of a Request**

If the CAISO determines that the proposed UDP Aggregation is likely to impact grid reliability or the reliability of transmission systems or equipment of intermediate entities between the relevant resources and the CAISO Controlled Grid, the request will be rejected. If the CAISO rejects a request, the CAISO shall inform the Scheduling Coordinator, and forward to it the reason for the rejection. The CAISO may suggest alternative solutions if it has adequate time and data. The Scheduling Coordinator may choose to resubmit based on the CAISO's recommendations, or to close the request.

**4 MODIFICATIONS TO AN EXISTING UDP AGGREGATION**

**4.1 Status of UDP Aggregation**

An approved UDP Aggregation shall be considered active until otherwise requested by the Scheduling Coordinator.

**4.2 Suspension by the CAISO**

The CAISO may temporarily suspend any UDP Aggregation as needed to ensure reliability. The CAISO may also suspend previously approved UDP Aggregations if, due to changes to the grid, to the aggregated Generating Units, or to the facilities connecting aggregated Generating Units to the grid, the UDP Aggregation no longer meets the criteria set forth in Sections 3.1.1 and 3.1.2 of this Appendix R.

If the CAISO must suspend the UDP Aggregation due to a Forced Outage or other unanticipated event, the CAISO shall provide notice that the UDP Aggregation has been suspended as soon as practical after the affecting event, but in no case longer than seventy-two (72) hours after that event. If the CAISO must suspend the UDP Aggregation due to future changes, the CAISO shall notify the affected Scheduling Coordinator (1) that the UDP Aggregation will be suspended and (2) when the UDP Aggregation will be suspended as soon as practical after the CAISO determines the UDP Aggregation must be suspended.

The CAISO shall write a report that explains the reason for the suspension and that specifies the effective date and time. The CAISO will forward the report to the Scheduling Coordinator and take steps to have the UDP Aggregation removed from the CAISO systems.

In the event that a resource in a UDP Aggregation changes from one Scheduling Coordinator to another, the UDP Aggregation will be suspended. In order to reinstate the aggregation, the new Scheduling Coordinator must submit a new request reflecting the change.

**4.3 Request for Modification by a Scheduling Coordinator**

A Scheduling Coordinator may request a modification to an existing UDP Aggregation up to once per calendar month. A request for modification will follow the same procedures as a new request.