

California Independent System Operator Corporation
Fifth Replacement Electronic Tariff

Table of Contents

[Appendix K Ancillary Service Requirements Protocol \(ASRP\) 3](#)

[PART A 3](#)

[CERTIFICATION FOR REGULATION 3](#)

[A 1..... 3](#)

[A 2..... 4](#)

[A 3..... 4](#)

[A 4..... 5](#)

[A 5..... 5](#)

[A 6..... 5](#)

[A 7..... 5](#)

[A 8..... 5](#)

[A 9..... 5](#)

[A 10..... 5](#)

[A 11..... 6](#)

[A 12..... 6](#)

[A 13..... 6](#)

[A 14..... 6](#)

[PART B 7](#)

[CERTIFICATION FOR SPINNING RESERVE 7](#)

[B 1..... 7](#)

[B 2..... 7](#)

[B 3..... 7](#)

[B 4..... 7](#)

[B 5..... 8](#)

[B 6..... 8](#)

[B 7..... 8](#)

[B 8..... 8](#)

[B 9..... 8](#)

[B 10..... 8](#)

[B 11..... 8](#)

[B 12..... 8](#)

[B 13..... 9](#)

[B 14..... 9](#)

[B 15..... 9](#)

[B 16..... 9](#)

[PART C 9](#)

[CERTIFICATION FOR NON-SPINNING RESERVE 9](#)

[C 1..... 9](#)

[C 2..... 9](#)

[C 3..... 9](#)

[C 4..... 10](#)

[C 5..... 10](#)

[C 6..... 10](#)

[C 7..... 10](#)

[C 8..... 10](#)

[C 9..... 10](#)

[C 10..... 10](#)

[C 11..... 10](#)

[C 12..... 10](#)

[C 13..... 11](#)

[C 14..... 11](#)

[C 15..... 11](#)

[C 16..... 11](#)

[C 17..... 11](#)

California Independent System Operator Corporation
Fifth Replacement Electronic Tariff

<u>PART D</u>	<u>11</u>
<u>[NOT USED]</u>	<u>11</u>
<u>PART E</u>	<u>11</u>
<u>CERTIFICATION FOR BLACK START</u>	<u>11</u>
<u>E 1</u>	<u>11</u>
<u>E 2</u>	<u>11</u>
<u>E 3</u>	<u>12</u>
<u>E 4</u>	<u>12</u>
<u>E 5</u>	<u>12</u>
<u>E 6</u>	<u>12</u>
<u>E 7</u>	<u>12</u>
<u>E 8</u>	<u>13</u>
<u>E 9</u>	<u>13</u>
<u>E 10</u>	<u>13</u>
<u>E 11</u>	<u>13</u>
<u>E 12</u>	<u>13</u>
<u>E 13</u>	<u>13</u>

Appendix K Ancillary Service Requirements Protocol (ASRP)

PART A
CERTIFICATION FOR REGULATION

- A 1** An Ancillary Service Provider wishing to provide Regulation as an Ancillary Service from a resource whether pursuant to a CAISO award or as part of a self-provision arrangement must meet the following operating characteristics and technical requirements in order to be certified by the CAISO to provide Regulation service unless granted a temporary exemption by the CAISO in accordance with criteria which the CAISO shall publish on the CAISO Website;
- A 1.1** **Operating Characteristics**
- A 1.1.1** the rated capacity of the resource must be 500 KW or greater (i.e. the resource must be capable of providing at least 500 KW of Regulation) unless the resource is participating in an aggregation arrangement approved by the CAISO;
- A 1.1.2** the maximum amount of Regulation to be offered must be reached within a period of ten (10) minutes;
- A 1.1.3** the resource must be able to increase or decrease real power levels immediately in response to signals from the CAISO's EMS control;
- A 1.1.4** Regulation capacity offered by a resource must be dispatchable on a continuous basis for at least sixty (60) minutes in the Day Ahead Market and at least thirty (30) minutes in the Real Time Market after issuance of the Dispatch Instruction, including (if necessary) attaining this capability using Regulation Energy Management. The CAISO will measure continuous Energy from the time a resource reaches its award capacity. Scheduling Coordinators for Non-Generator Resources located within the CAISO Balancing Authority Area that require Energy from the Real-Time Market to offer their full capacity as Regulation Energy Management may request the use of Regulation Energy Management as described in Section 8.4.1.2. The Scheduling Coordinators for a resource using Regulation Energy Management may submit a Regulation Bid for capacity (MW) of up to four (4) times the maximum Energy (MWh) the resource can generate or curtail for fifteen (15) minutes after issuance of the Dispatch Instruction.
- A 1.1.5** the resource must meet or exceed the minimum performance threshold for responding to the CAISO's EMS control signal.
- A 1.2** **Technical Requirements**
- A 1.2.1** **Control**
- A 1.2.1.1** a direct, digital, unfiltered control signal generated from the CAISO EMS through a standard CAISO direct communication and direct control system, must meet the minimum performance standards for communications and control which will be developed and posted by the CAISO on the CAISO Website;
- A 1.2.1.2** the resource response (in MW) to a control signal must meet the minimum performance standards for control and response which will be developed and

California Independent System Operator Corporation
Fifth Replacement Electronic Tariff

posted by the CAISO on the CAISO Website. As indicated by the resource response (in MW), the resource must respond immediately, without manual operator intervention, to control signals and must sustain its specified Ramp Rate, within specified Regulation Limits, for each minute of control response (MW/minute);

A 1.2.1.3 Ancillary Service Providers for Non-Generator Resources may define a Ramp Rate for operating as Generation and a Ramp Rate for operating as Load, respectively.

A 1.2.2 Monitoring:

the resource must have a standard CAISO direct communication and direct control system to send signals to the CAISO EMS to dynamically monitor, at a minimum the following:

A 1.2.2.1 actual real power level (MW);

A 1.2.2.2 high limit, low limit and rate limit values as selected by the resource operator; and

A 1.2.2.3 in-service status indication confirming availability of Regulation service.

A 1.2.2.4 Ancillary Service Providers for Non-Generator Resources (whether or not the resource uses Regulation Energy Management) shall provide CAISO the following additional telemetry data:

Resource Ramp Rate when operating as Generation (MW/min);

Resource Ramp Rate when operating as Load (MW/min);

The maximum instantaneous ability to produce or consume Energy in MW; and

The maximum capability to provide Energy as expressed in MWh over a fifteen (15) minute interval.

A 1.2.3 Voice Communications:

CAISO approved communication must be in place between the CAISO Control Center and the operator controlling the resource.

A 2 An Ancillary Service Provider wishing to be considered for certification for Regulation service by the CAISO must make a written request to the CAISO, giving details of the technical capability of the resource concerned and identifying the Scheduling Coordinator through whom the Ancillary Service Provider intends to offer Regulation service. The Ancillary Service Provider shall at the same time send a copy of its request to that Scheduling Coordinator. Technical review request forms will be available from the CAISO.

A 3 No later than one week after receipt of the Ancillary Service Provider's request, the CAISO shall provide the Ancillary Service Provider with a listing of required interface equipment for Regulation, including a standard CAISO direct communication and direct control system. The CAISO shall send a copy of the listing to the resource's Scheduling Coordinator.

California Independent System Operator Corporation
Fifth Replacement Electronic Tariff

- A 4** The Ancillary Service Provider may propose alternatives that it believes may provide an equivalent level of communication and control for consideration by the CAISO. Such proposals shall be in writing and contain sufficient detail for the CAISO to make a determination of suitability. The CAISO may request additional information, if required, to assist in its evaluation of the proposal.
- A 5** The CAISO shall respond by accepting the alternative proposal, rejecting the alternative proposal, or suggesting modifications to the alternative proposal. Such acceptance, rejection, or suggested revision must be provided not later than six (6) weeks after the proposal is received by the CAISO. The Ancillary Service Provider and the CAISO shall keep the Scheduling Coordinator informed of this process by each sending to the Scheduling Coordinator a copy of any written communication which it sends to the other.
- A 6** Upon agreement as to any alternative method of communication and control to be used by the Ancillary Service Provider, the CAISO shall provisionally approve the proposal in writing providing a copy to the Ancillary Service Provider's Scheduling Coordinator at the same time. If agreed by the CAISO, the Ancillary Service Provider may then proceed to procure and install the equipment and make arrangements for the required communication and control.
- A 7** Design, acquisition, and installation of the CAISO-approved communication and control equipment shall be under the control of the CAISO. The CAISO shall bear no cost responsibility or functional responsibility for such equipment, except that the CAISO shall arrange for and monitor the maintenance of the communication and control system at the Ancillary Service Provider's expense, unless otherwise agreed by the CAISO and the Ancillary Service Provider. The CAISO shall be responsible for the design, acquisition and installation of any necessary modifications to the CAISO EMS at its own cost.
- A 8** The CAISO, in cooperation with the Ancillary Service Provider shall perform testing of the communication and control equipment to ensure that the communication and control system performs to meet the CAISO requirements.
- A 9** When the CAISO is satisfied that the communication and control systems meet the CAISO's requirements, the Ancillary Service Provider shall request in writing that the CAISO conduct a certification test with a suggested primary date and time and at least two (2) alternative dates and times. The CAISO shall, within two (2) Business Days of receipt of the Ancillary Service Provider's request, accept a proposed time if possible or suggest at least three (3) alternatives to the Ancillary Service Provider. If the CAISO responds by suggesting alternatives, the Ancillary Service Provider shall, within two (2) Business Days of receipt of the CAISO's response, respond in turn by accepting a proposed alternative if possible or suggesting at least three (3) alternatives, and this procedure shall continue until agreement is reached on the date and time of the test. The Generator shall inform its Scheduling Coordinator of the agreed date and time of the test.
- A 10** Testing shall be performed by the CAISO, with the cooperation of the Ancillary Service Provider. Such tests shall include, but not be limited to, the following:
- (a) confirmation of control communication path performance;
 - (b) confirmation of voice circuit for receipt of Dispatch Instructions;

California Independent System Operator Corporation
Fifth Replacement Electronic Tariff

- (c) confirmation of the resource's control performance; and
- (d) confirmation of the CAISO EMS control to include changing the resource operating level over the range of Regulation proposed at different set points, from minimum to maximum, and at different rates of change from the minimum to the maximum permitted by the design of the resource.

- A 10.1** Testing for Non-Generator Resources requesting the use of Regulation Energy Management shall include a market simulation as described in the CAISO's Operating Procedures.
- A 11** Upon successful completion of the test, the CAISO shall certify the resource as being permitted to provide Regulation as an Ancillary Service Provider and shall provide a copy of the certificate to the Scheduling Coordinator at the same time. The Scheduling Coordinator shall request the CAISO to update its database to reflect the ability of the resource to provide Regulation.
- A 12** The Scheduling Coordinator may submit Bids for Regulation service from the certified resource into the CAISO Markets starting with the Day-Ahead Market for the hour ending 0100 on the second Trading Day after the CAISO's database reflects the resource's certificate.
- A 13** The certification to provide Regulation shall remain in force until:
- (a) withdrawn by the Scheduling Coordinator or the Ancillary Service Provider by written notice to the CAISO to take effect at the time notified in the notice, which must be the end of a Trading Day; or
 - (b) if the resource obtained CAISO certification on the basis of a prior communication and control technology, until revoked by the CAISO for failure to comply with the requirement set forth in A 13.1 that the resource install a CAISO-specified standard CAISO direct communication and direct control system (unless exempted by the CAISO).
- A 13.1** Unless exempted by the CAISO, if the resource obtained CAISO certification on the basis of a prior communication and control technology, the CAISO shall provide written notice to the Ancillary Service Provider of the Ancillary Service Provider's obligation to install a CAISO-specified standard direct communication and direct control system along with a required date for said work to be completed as mutually agreed upon by the CAISO and the Ancillary Service Provider. Failure to meet the completion date shall be grounds for the revocation of certification, provided that the CAISO must provide the Ancillary Service Provider with at least ninety (90) days advance notice of the proposed revocation.
- A 14** The certification may be revoked by the CAISO only under provisions of the CAISO Tariff.

PART B
CERTIFICATION FOR SPINNING RESERVE

- B 1** An Ancillary Service Provider wishing to provide Spinning Reserve as an Ancillary Service from a resource whether pursuant to a CAISO award or as part of a self-provision arrangement must meet the following requirements in order to be certified by the CAISO to provide Spinning Reserve service:
- B 1.1** the rated capacity of the resource must be 500 KW or greater (i.e. the resource must be capable of providing at least 500 KW of Spinning Reserve) unless the resource is participating in an aggregation arrangement approved by the CAISO;
- B 1.2** the resource must respond immediately and automatically in proportion to frequency deviations through the action of a governor or other control system in accordance with the following requirements:
- Minimum Governor Performance:
- 5 percent droop;
 - +/- 0.036 Hz deadband; and
 - Power output changes in one second for any frequency deviation outside of the deadband
- Minimum Frequency Responsive Device Performance:
- If frequency is less than or equal to 59.92 Hz, the resource must reach ten (10) percent of its awarded spinning capacity within eight (8) seconds; and
 - The resources must change the power it delivers or consumes in one (1) second if system frequency is less than or equal to 59.92 Hz
- B 1.3** the operator of the resource must have a means of receiving Dispatch Instructions to initiate an increase or decrease in real power (MW) within one (1) minute of the CAISO Control Center determination that Energy from Spinning Reserve capacity must be dispatched;
- B 1.4** the resource must be able to increase or decrease its real power (MW) by the maximum amount of Spinning Reserve to be offered within ten (10) minutes and be capable of maintaining its real power for thirty (30) minutes from the time the resource reaches its award capacity;
- B 1.5** CAISO approved voice communications services must be in place to provide both primary and alternate voice communication between the CAISO Control Center and the operator controlling the resource; and
- B 1.6** The communication system and the resource must pass a qualification test to demonstrate the overall ability to meet the performance requirements of the ASRP for Spinning Reserve.
- B 2** An Ancillary Service Provider wishing to be considered for certification for Spinning Reserve service by the CAISO must make a written request to the CAISO, giving details of the technical capability of the resource concerned and identifying the Scheduling Coordinator through whom the Ancillary Service Provider intends to offer Spinning Reserve service. The Ancillary Service Provider shall at the same time send a copy of its request to that Scheduling Coordinator. Technical review request forms will be available from the CAISO.
- B 3** No later than one week after receipt of the request, the CAISO shall provide the Ancillary Service Provider with a listing of acceptable communication options and interface equipment options for Spinning Reserve. The CAISO shall send a copy of the listing to the Ancillary Service Provider's Scheduling Coordinator.
- B 4** The Ancillary Service Provider may elect to implement any of the approved options defined by the CAISO, and, if it wishes to proceed with its request for

California Independent System Operator Corporation
Fifth Replacement Electronic Tariff

certification, shall give written notice to the CAISO of its selected communication option, with a copy to its Scheduling Coordinator.

- B 5** When it receives the Ancillary Service Provider notice, the CAISO shall notify the Ancillary Service Provider and the Scheduling Coordinator in writing no later than two weeks after receipt of the notice confirming receipt of the notice and issuing provisional approval of the selected options. Upon receipt of the CAISO acknowledgment, the Ancillary Service Provider may proceed as indicated below to secure the necessary facilities and capabilities required.
- B 6** The Ancillary Service Provider may also propose alternatives that it believes may provide an equivalent level of control for consideration by the CAISO. Such proposals shall be in writing and contain sufficient detail for the CAISO to make a determination of suitability. The CAISO may request additional information, if required, to assist in its evaluation of the proposal.
- B 7** The CAISO shall respond by accepting the alternative proposal, rejecting the alternative proposal, or suggesting modifications to the alternative proposal. Such acceptance, rejection, or suggested revision must be provided not later than six weeks after the proposal is received by the CAISO. The Ancillary Service Provider and the CAISO shall keep the Scheduling Coordinator informed of this process by each sending to the Scheduling Coordinator a copy of any written communication which it sends to the other.
- B 8** Upon agreement as to the method of communication and control to be used by the resource, the CAISO shall provisionally approve the Ancillary Service Provider's proposal in writing providing a copy to the resource's Scheduling Coordinator at the same time. The Ancillary Service Provider may then proceed to procure and install the equipment and make arrangements for the required communication.
- B 9** Design, acquisition, and installation of the resource's equipment shall be under the control of the respective Ancillary Service Provider. The CAISO shall bear no cost responsibility or functional responsibility for such equipment. The CAISO shall be responsible for the design, acquisition and installation of any necessary modifications to its own equipment at its own cost.
- B 10** The Ancillary Service Provider shall perform its own testing of its equipment to ensure that the control system performs to meet the CAISO requirements.
- B 11** When it is satisfied that its plant, equipment and communication systems meet the CAISO's requirements, the Ancillary Service Provider shall request in writing that the CAISO conduct a certification test with a suggested primary date and time and at least two alternative dates and times. The CAISO shall, within two Business Days of receipt of the request, accept a proposed time if possible or suggest at least three alternatives to the Ancillary Service Provider. If the CAISO responds by suggesting alternatives, the Ancillary Service Provider shall, within two Business Days of receipt of the CAISO's response, respond in turn by accepting a proposed alternative if possible or suggesting at least three alternatives, and this procedure shall continue until agreement is reached on the date and time of the test. The Ancillary Service Provider shall inform its Scheduling Coordinator of the agreed date and time of the test.
- B 12** Testing shall be performed under the direction of the CAISO. Such tests shall include, but not be limited to, the following:
- B 12.1** confirmation of control communication path performance for Dispatch Instruction;
- B 12.2** confirmation of primary and secondary voice circuits for receipt of Dispatch Instructions;

California Independent System Operator Corporation
Fifth Replacement Electronic Tariff

- B 12.3** confirmation of the resource performance to include changing the resource's real power over the range of Spinning Reserve proposed from minimum to maximum, and at different rates of change from the minimum to the maximum permitted by the design of the resource; and
- B 12.4** testing the resource's governor or other control system performance characteristics by simulating frequency excursions outside the allowed deadband and measuring the response of the resource.
- B 13** Upon successful completion of the test the CAISO shall certify the resource as being permitted to provide Spinning Reserve as an Ancillary Service Provider and shall provide a copy of the certificate to the Scheduling Coordinator at the same time. The Scheduling Coordinator shall request the CAISO to update its database to reflect the ability of the resource to provide Spinning Reserve.
- B 14** The Scheduling Coordinator may bid Spinning Reserve from the certified resource into the CAISO Markets starting with the Day-Ahead Market for the hour ending 0100 on the Second Trading Day after the CAISO's database reflects the resource's certificate.
- B 15** The certification to provide Spinning Reserve shall remain in force until withdrawn by the Scheduling Coordinator or the Ancillary Service Provider by written notice to the CAISO to take effect at the time notified in the notice, which must be the end of a Trading Day.
- B 16** The certification may be revoked by the CAISO only under provisions of the CAISO Tariff.

PART C
CERTIFICATION FOR NON-SPINNING RESERVE

- C 1** An Ancillary Service Provider wishing to provide Non-Spinning Reserve as an Ancillary Service from a resource whether pursuant to the CAISO's auction or as part of a self-provision arrangement must meet the following requirements in order to be certified by the CAISO to provide Non-Spinning Reserve service:
- C 1.1** the rated capacity of the resource must be 500 KW or greater (i.e. the resource must be capable of providing at least 500 KW of Non-Spinning Reserve) unless the resource is participating in an aggregation arrangement approved by the CAISO;
- C 1.2** the resource must be able to increase or decrease its real power (MW) as soon as possible to the value indicated in a Dispatch Instruction, reaching the indicated value within ten (10) minutes after issue of the instruction and be capable of maintaining output for thirty (30) minutes from the time the resource reaches its award capacity.
- C 2** An Ancillary Service Provider wishing to provide Non-Spinning Reserve as an Ancillary Service, whether pursuant to a CAISO award or as part of a self-provision arrangement, must also meet the following requirements in order to be certified by the CAISO to provide Non-Spinning Reserve service:
- C 2.1** the operator of the resource must have a means of receiving a Dispatch Instruction to initiate an increase or decrease in its real power (MW) within one (1) minute of the CAISO Control Center's determination that Non-Spinning Reserve capacity must be dispatched; and
- C 2.2** the communication system and the resource must pass a qualification test to demonstrate the overall ability to meet the performance requirements for Non-Spinning Reserve.
- C 3** An Ancillary Service Provider wishing to be considered for certification for Non-Spinning Reserve service must make a written request to the CAISO, giving

California Independent System Operator Corporation
Fifth Replacement Electronic Tariff

details of the technical capability of the resource concerned and identifying the Scheduling Coordinator through whom the Ancillary Service Provider intends to offer Non-Spinning Reserve. The Ancillary Service Provider shall at the same time send a copy of the request to that Scheduling Coordinator. Technical review request forms will be available from the CAISO.

- C 4** No later than one week after receipt of the Ancillary Service Provider's request, the CAISO shall provide the Ancillary Service Provider with a listing of acceptable communication options and interface equipment options for Non-Spinning Reserve. The CAISO shall send a copy of the listing to the Ancillary Service Provider's Scheduling Coordinator.
- C 5** The Ancillary Service Provider may elect to implement any of the acceptable communication options and interface equipment options. The Ancillary Service Provider shall give written notice to the CAISO of its selected communication option and interface equipment option, with a copy to its Scheduling Coordinator.
- C 6** When it receives the Ancillary Service Provider's notice, the CAISO shall notify the Ancillary Service Provider and the Scheduling Coordinator in writing no later than two weeks after receipt of the notice confirming receipt of the notice and issuing provisional approval of the selected options. Upon receipt of the CAISO acknowledgment the Ancillary Service Provider may proceed as indicated below to secure the necessary facilities and capabilities required.
- C 7** The Ancillary Service Provider may also propose alternatives that it believes may provide an equivalent level of control for consideration by the CAISO. Such proposals shall be in writing and contain sufficient detail for the CAISO to make a determination of suitability. The CAISO may request additional information, if required, to assist in its evaluation of the proposal.
- C 8** The CAISO shall respond by accepting the alternative proposal, rejecting the alternative proposal, or suggesting modifications to the alternative proposal. Such acceptance, rejection, or suggested revision must be provided not later than six weeks after the proposal is received by the CAISO. The Ancillary Service Provider and the CAISO shall keep the Scheduling Coordinator informed of this process by each sending to the Scheduling Coordinator a copy of any written communication which it sends to the other.
- C 9** Upon agreement as to the method of communication and control to be used by the Ancillary Service Provider, the CAISO shall provisionally approve the proposal in writing providing a copy to the Ancillary Service Provider's Scheduling Coordinator at the same time. The Ancillary Service Provider may then proceed to procure and install the equipment and make arrangements for the required communication.
- C 10** Design, acquisition, and installation of the Ancillary Service Provider's equipment shall be under the control of the Ancillary Service Provider. The CAISO shall bear no cost responsibility or functional responsibility for such equipment. The CAISO shall be responsible for the design, acquisition and installation of any necessary modifications to the CAISO's equipment at its own cost.
- C 11** The Ancillary Service Provider shall perform its own testing of its equipment to ensure that the control system performs to meet the CAISO requirements.
- C 12** When it is satisfied that its plant, equipment and communication systems meet the CAISO's requirements, the Ancillary Service Provider shall request in writing that the CAISO conduct a certification test with a suggested primary date and time and at least two alternative dates and times. The CAISO shall, within two Business Days of receipt of the Ancillary Service Provider's request, accept a proposed time if possible or suggest at least three alternatives. If the CAISO responds by suggesting alternatives, the Ancillary Service Provider shall, within two Business Days of receipt of the CAISO's response, respond in turn by

California Independent System Operator Corporation
Fifth Replacement Electronic Tariff

accepting a proposed alternative if possible or suggesting at least three alternatives, and this procedure shall continue until agreement is reached on the date and time of the test. The Ancillary Service Provider shall inform its Scheduling Coordinator of the agreed date and time of the test.

- C 13** Testing shall be performed under the direction of the CAISO. Such tests shall include, but not be limited to, the following:
- C 13.1** confirmation of control communication path performance;
 - C 13.2** confirmation of primary and secondary voice circuits for receipt of Dispatch Instructions;
 - C 13.3** confirmation of the resource control performance; and
 - C 13.4** confirmation of the range of resource control to include changing the real power (MW) over the range of Non-Spinning Reserve proposed.
- C 14** Upon successful completion of the test, the CAISO shall certify the resource as being permitted to provide Non-Spinning Reserve as an Ancillary Service and shall provide a copy of the certificate to the Scheduling Coordinator at the same time. The Scheduling Coordinator shall request the CAISO to update its database to reflect the permission for the resource to provide Non-Spinning Reserve.
- C 15** The Scheduling Coordinator may bid Non-Spinning Reserve service from the certified resource into the CAISO Markets starting with the Day-Ahead Market for the hour ending 0100 on the second Trading Day after the CAISO database reflects the resource's certificate.
- C 16** The certification to provide Non-Spinning Reserve shall remain in force until withdrawn by the Scheduling Coordinator or the Ancillary Service Provider by written notice to the CAISO to take effect at the time notified in the notice, which must be the end of a Trading Day.
- C 17** The certification may be revoked by the CAISO only under provisions of the CAISO Tariff.

PART D
[NOT USED]

PART E
CERTIFICATION FOR BLACK START

- E 1** A Generator wishing to provide Black Start capacity from a Generating Unit as an Ancillary Service must meet the requirements stated in Appendix D of the CAISO Tariff in order to be certified by the CAISO to provide Black Start capacity. In addition, the Generating Unit must have a rated capacity 1 MW or greater unless the Generating Unit is participating in an aggregation arrangement approved by the CAISO.
- E 2** A Generator wishing to be considered for certification for Black Start service by the CAISO must make a written request to the CAISO. Such request must clearly identify the facilities related to the Generating Unit from which the Generator wishes to provide Black Start and shall identify the Scheduling Coordinator through whom the Generator wishes to offer Black Start service. The Generator shall send a copy of its request to its Scheduling Coordinator at the same time as it sends it to the CAISO. The Generator's written request must include at least the following:

California Independent System Operator Corporation
Fifth Replacement Electronic Tariff

- E 2.1** identification of the Generating Unit including Location Code;
- E 2.2** a single-line electrical diagram of the Generating Unit connections including auxiliary power busses and the connection to the station switchyard;
- E 2.3** a description of the fuel supply used for Black Start including on-site storage and resupply requirements;
- E 2.4** a single-line electrical diagram showing the transmission connection from the Generating Unit station switchyard to a connection point on the CAISO Controlled Grid;
- E 2.5** a description of the Generating Unit capability to provide both real and reactive power, any Start-Up and Shut-Down requirements, any staffing limitations; and
- E 2.6** a description of the primary, alternate and emergency back-up communications systems currently available to the Generator for communications to the CAISO Control Center.
- E 3** Upon receipt of the Generator's written request the CAISO shall review the information provided and respond in writing within two weeks of receipt of the request, providing a copy of its response to the Generator's Scheduling Coordinator. The CAISO response may be any of the following:
 - E 3.1** acceptance of the proposal as presented;
 - E 3.2** rejection of the proposal as presented with a rationale for such rejection; or
 - E 3.3** a request for additional information needed by the CAISO to properly evaluate the request.
- E 4** A Generator receiving a rejection may submit a written request for reconsideration by the CAISO within 60 days of the date of the rejection notice. A request for reconsideration must address the rationale provided by the CAISO. The CAISO shall respond to a request for reconsideration within 60 days of the date of that request.
- E 5** A Generator receiving a request for additional information shall provide such information within 60 days of such request providing a copy at the same time to its Scheduling Coordinator. The CAISO shall review the information and respond within 120 days of the date of the CAISO's request for additional information providing a copy at the same time to the Generator's Scheduling Coordinator.
- E 6** Upon acceptance by the CAISO of the Generator's request and agreement as to the method of communication and control to be used by the Generator, the CAISO shall provisionally approve the proposal in writing providing a copy at the same time to the Generator's Scheduling Coordinator. The Generator may then proceed to procure and install the equipment and make arrangements for the required communication.
- E 7** Design, acquisition, and installation of the Generator's equipment shall be under the control of the Generator. The CAISO shall bear no cost responsibility or functional responsibility for such equipment. The CAISO shall be responsible for

California Independent System Operator Corporation
Fifth Replacement Electronic Tariff

the design, acquisition and installation of any necessary modifications to its own equipment at its own cost.

- E 8** The Generator shall perform its own testing of its equipment to ensure that the Black Start system performs to meet the CAISO requirements.
- E 9** When it is satisfied that its plant, equipment and communication systems meet the CAISO's requirements, the Generator shall request in writing that the CAISO conduct a certification test with a suggested primary date and time and at least two alternative dates and times. The CAISO shall, within two Business Days of receipt of the Generator's request, accept a proposed time if possible or suggest at least three alternatives to the Generator. If the CAISO responds by suggesting alternatives, the Generator shall, within two Business Days of receipt of the CAISO's response, respond in turn by accepting a proposed alternative if possible or suggesting at least three alternatives, and this procedure shall continue until agreement is reached on the date and time of the test. The Generator shall inform its Scheduling Coordinator of the agreed date and time of the test.
- E 10** Testing shall be performed under the direction of the CAISO. Such tests shall include, but not be limited to, the following:
- E 10.1** confirmation of control communication path performance;
- E 10.2** confirmation of primary, secondary, and emergency voice circuits for receipt of Dispatch Instructions;
- E 10.3** confirmation of the Generating Unit performance; and
- E 10.4** simulation of a Black Start event.
- E 11** Upon successful completion of the test, the CAISO shall certify the Generating Unit as being permitted to provide Black Start capacity as an Ancillary Service and shall provide a copy of the certificate to the Scheduling Coordinator at the same time. The CAISO shall change its Generating Unit data base to reflect the permission for the Generating Unit to provide Black Start service.
- E 12** The certification to provide Black Start shall remain in force until withdrawn by the Scheduling Coordinator or the Generator by written notice to the CAISO to take effect at the time noticed in the notice, which must be the end of a Trading Day.
- E 13** The certification may be revoked by the CAISO only under provisions of the ASRP or other provisions of the CAISO Tariff.