California Independent System Operator Corporation

Compliance Assessment Relating to Specified Control Room Operational Procedures

Report of Independent Accountants
November 28, 2016

pwc

Report of Independent Accountants

To the Board of Governors of the
California Independent System Operator Corporation

We have examined management's assertion, included in the accompanying Management Assertion Regarding Compliance with Selected Operating Procedures, that the Operating Procedure Elements related to the real-time exceptional dispatch procedures listed in Table 2 in management's assertion were applied to the events that occurred during the hours observed listed in Table 1 in management's assertion during August 22, 2016 through August 26, 2016 and September 19, 2016 through September 23, 2016. The California Independent System Operator Corporation's management is responsible for the assertion. Our responsibility is to express an opinion on the assertion based on our examination.

Our examination was conducted in accordance with attestation standards established by the American Institute of Certified Public Accountants and, accordingly, included examining, on a test basis, evidence supporting management's assertion and performing such other procedures as we considered necessary in the circumstances. We believe that our examination provides a reasonable basis for our opinion.

Management has provided additional information in a Management Narrative to Provide Additional Context to the Process. This information was not subject to the examination engagement and we make no comment as to its completeness, accuracy, or appropriateness.

As discussed in management's assertion, there were no events occurring with respect to the Operating Procedure Elements related to Steps 4, 5, 8, 9 and 10 listed in Table 3 in management's assertion during the hours listed in Table 1 in management's assertion during August 22, 2016 through August 26, 2016 and September 19, 2016 through September 23, 2016. Therefore, we did not perform any procedures related to Steps 4, 5, 8, 9, or 10.

In our opinion, management's assertion referred to above is fairly stated, in all material respects.

PricewaterhouseCoopers LLP

November 28, 2016

Management Assertion Regarding Compliance with Selected Operating Procedures

November 28, 2016

Overview

The management of the California Independent System Operator Corporation (the "ISO") is responsible for the design and implementation of procedures necessary to comply with the real-time exceptional dispatch requirement of the California Independent System Operator Corporation Fifth Replacement FERC Electric Tariff ("Tariff").

The "Operating Procedure Element" in the first column of Table 2 represent a subset of the operational procedures designed and implemented by management to meet the requirements of the ISO's Tariff and to carry out its real-time exceptional dispatch procedures. These selected Operating Procedure Elements are not intended to represent the entire set of procedures designed and implemented for management to meet its Tariff and real-time exceptional dispatch requirements. The selected Operating Procedure Elements are excerpts from Operating Procedure 2330, Real-Time Exceptional Dispatch, effective July 14, 2016, included as Appendix 1 to this management assertion. The selected Operating Procedure Elements comprise only the real-time exceptional dispatch procedures selected by management on the basis that they could be objectively compared against actual operating practice.

Management Assertion

Management asserts the Operating Procedure Elements related to the real-time exceptional dispatch procedures for Steps 6 and 7 as listed in Table 2 were applied without exception to the events that occurred during the hourly operating periods listed in Table 1 for August 22, 2016 through August 26, 2016 and September 19, 2016 through September 23, 2016.

Table 1

Observation Period	Date	Hourly Operating Periods
1	August 22, 2016	0600 - 1100
2	August 23, 2016	1200 – 1700
3	August 24, 2016	1600 – 1100
4	August 25, 2016	0000 – 0500
5	August 26, 2016	0600 – 1100
6	September 19, 2016	0500 – 1000
7	September 20, 2016	1900 – 2400
8	September 21, 2016	1500 – 2000
9	September 22, 2016	1100 – 1600
10	September 23, 2016	0700 - 1200

Table 2

Operating Procedure Element	Management Narrative to Provide Additional Context to the Process (unaudited)
Procedure #2330, Version No. 11.9, Effective Date 07/14/16 *Real-Time Exceptional Dispatch* **3.1.3 RT ED** **Step 6** If an ED is required within the ISO Balancing Authority and time does <u>not</u> allow for entering ED in the RTM Software, **communicate** the following instructions verbally to the SC: • **Dispatch** MW amount, "the ISO is issuing a min/max/fixed MW verbal/ADS Exceptional Dispatch for resource X. Please follow/ignore your ADS instruction." • **Specify** this is an Exceptional Dispatch Instruction. • **Communicate** start and end times of instruction. *Note: At the point of initial contact, the dispatcher may not yet know the desired end time of the instruction in this instance, the end time will be communicated via subsequent contact with the SC.* For purposes of this assertion, 'if an ED is required' means those specific situations described in Section 3.1 of Operating Procedure 2330, effective July 14, 2016. For purposes of this assertion, 'time does not allow for entering ED in the RTM Software' means that the Generation Dispatcher has concluded in accordance with requirements of the Tariff that a verbal ED is required. The decision to issue a verbal ED is outside the scope of this assertion.	The ISO operators access available information about resources and bids through the ISO's market applications and related tools. Depending upon the context of the operational need, either specific or multiple resources will need Exceptional Dispatch ("ED") instructions. In some cases, when a resource needs to begin moving to a new Mega Watt (MW) dispatch operating target (e.g., min/max/fixed MW) set point quicker than the real-time market (RTM) software is capable of moving the resource, the generation dispatcher issues a verbal ED instruction to the applicable Scheduling Coordinator(s) (SC). All verbal ED instructions are recorded and available for subsequent verification. Otherwise, relying on the electronic dispatch communication alone may delay moving one or more resources which could negatively impact grid reliability. Some resources automatically respond to the dispatches sent by the Automated Dispatch System (ADS), but others require adjustment by the Generator Operator. For a more detailed description of Exceptional Dispatch, refer to the Business Practice Manual (BPM) for Market Operations which is publicly available at www.caiso.com, the ISO's website.

Operating Procedure Element	Management Narrative to Provide Additional Context to the Process (unaudited)
Procedure #2330, Version No. 11.9, Effective Date 07/14/16 *Real-Time Exceptional Dispatch* **3.1.3 RT ED** **Step 7** When time allows, **enter** ED into RTM for the entire ED period. For purposes of this assertion, 'when time allows' means within 24 hours of the operating hour when the ED was issued. The Operating Procedure Element does not specify a deadline for entry; however, ED's are typically entered into RTM prior to the beginning of the next operating hour.	With respect to the verbal instructions discussed in the management narrative for Step 6, the generation dispatcher enters into the RTM software incremental or decremental "go to" min/max/fixed Exceptional Dispatch instructions. Such instructions specify when an ED should start and end, as well as whether the resource is not to exceed either a minimum or maximum operating level, or whether a resource needs to operate at a fixed level. Exceptional Dispatches are manually determined but then are entered in RTM and sent to the Automated Dispatching System (ADS) when they are issued.

There were no events that occurred related to the Operating Procedure Elements for Steps 4, 5, 8, 9 and 10 as listed in Table 3 during the hourly operating periods listed above in Table 1 for August 22, 2016 through August 26, 2016 and September 19, 2016 through September 23, 2016.

Table 3

Operating Procedure Element

Procedure # 2330, Version No. 11.9, Effective Date 07/14/16
Real-Time Exceptional Dispatch

3.1.3 RT ED

Step 4
Determine the preferred resource based on available information including start-up costs, minimum load costs and existence of capacity contracts using MrED in RTM.

Procedure # 2330, Version No. 11.9, Effective Date 07/14/16
Real-Time Exceptional Dispatch

3.1.3 RT ED

Step 5
Follow the priority in Section 3.2 – Exceptional Dispatch Priority

3.2 ED Priority

Take the following actions when a resource is required to meet area reliability Capacity requirements, prior to issuing an ED:

3.2.1 Unit Commitment Priority – ISO Generation Desk, ISO Shift Supervisor Desk

Warning: If an ED commitment is needed, Real-Time Operations personnel have decision making authority to commit non-RA units as required to maintain system reliability

1. **Commit** a full RR unit or partial RR unit as appropriate considering Capacity and/or Energy needs, economics, and/or effectiveness with preference to full RR if all other criteria are equal. **Note:** *Multiple units should be considered based on Start-Up and min-Load costs.*
   o If there are no RR units available and time permits.
      ▪ **Discuss** with/ **Notify** the RT Operations Management Team the need to commit a non-RA unit to meet the reliability requirement
        and
      ▪ **Commit** the non-RA unit.
   o If need is immediate, **take** all necessary actions to ensure reliability up to and including committing units subject to CPM.
2. **Consider** committing a <u>non</u>-use-limited unit that has elected Supplemental Revenue (SR)
3. **Consider** committing a <u>non</u>-use-limited unit that has elected CPM
4. **Consider** committing a use-limited unit that has elected Supplemental Revenue (SR)

Consider committing a use-limited unit that has elected CPM

Operating Procedure Element

Procedure # 2330, Version No. 11.9, Effective Date 07/14/16
Real-Time Exceptional Dispatch

3.1.3 RT ED

Step 10
If there is no longer a need for an ED
o **Contact** the SC to inform them to follow ADS dispatches

Update the end time in RTM ED

Procedure # 2330, Version No. 11.9, Effective Date 07/14/16
Real-Time Exceptional Dispatch

3.1.3 RT ED

Step 8
If an ED needs to be edited up to T+4
o **Correct** the data in RTM
o **Create** a Generation Notes Log with trade date, ED#, resource and data edited

Email log to ISO Post Process Group

Procedure # 2330, Version No. 11.9, Effective Date 07/14/16
Real-Time Exceptional Dispatch

3.1.3 RT ED

Step 9
If an ED needs to be edited after T+4
o **Create** a Generation Notes Log with trade date, ED#, resource and data edited

Email log to ISO Post Process Group

The scope of this management assertion is limited to the Operating Procedure Elements described above and does not extend to any other procedures or functions of the ISO.

_____
Mr. Eric Schmitt, Vice President Operations

_____
Ms. Nancy Traweek, Executive Director System Operations

Appendix A