California Independent
System Operator Corporation

October 20, 2009

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

Re: California Independent System Operator Corporation
Docket Nos. ER08-1178-___, and EL08-88-___
120-Day Exceptional Dispatch Report

Dear Secretary Bose:

Pursuant to the Commission's September 2, 2009 order in the above referenced docket[1], the California Independent System Operator Corporation (ISO) submits the attached report. The September 2 Order directed the ISO to continue to file reports every 120 days that describe the status of the ISO's efforts to reduce the frequency of Exceptional Dispatch and the status of the ISO's development of operational and product enhancements that would reduce reliance on Exceptional Dispatch.

Respectfully submitted,

/s/ Sidney M. Davies

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[1] *Cal. Indep. Sys. Operator Corp.,* 128 FERC ¶ 61,218 (2008) (September 2 Order).

California Independent
System Operator Corporation

California ISO

120-Day Exceptional Dispatch Report

October 20 2009

120-Day Report on Exceptional Dispatch

Summary

In its September 2, 2009 Order[1] on exceptional dispatch, the Federal Energy Regulatory Commission ("FERC") stated the following regarding ongoing 120-day reports:

> *FERC acknowledges receipt of the 120-Day Status Report and directs the ISO to continue to report on the progress of the stakeholder processes at least every 120 days…. Accordingly, the next report should cover approximately the first six months of MRTU. By that time, the ISO and stakeholders should have a wealth of data to support meaningful stakeholder processes. FERC expects that stakeholder processes will be well underway by the time of the next update and working to develop any appropriate market products and/or modeling or software solutions that could limit the need for Exceptional Dispatch going-forward. (P 51)*

The California Independent System Operator ("ISO") is committed to reducing reliance on exceptional dispatch. The ISO's efforts to date have resulted in operational and modeling enhancements that have reduced exceptional dispatch and increased reliance on market mechanisms. The ISO activities included in this 120-day report are summarized below.

- The ISO has initiated a stakeholder process to discuss with stakeholders modeling and software solutions that can limit the need for exceptional dispatch going forward.
- The ISO has implemented several operational improvements that have reduced the frequency and magnitude of exceptional dispatch.
- Additional operational improvements to further reduce exceptional dispatch are planned over the next several months.
- The ISO met with stakeholders on July 16 and September 29 to review and explain exceptional dispatch data and reporting, explain the operational conditions that are leading to the need for exceptional dispatch, discuss operational measures taken to date and their effectiveness in reducing exceptional dispatch, and discuss future modeling and software solutions under consideration to further reduce exceptional dispatch.
- The ISO will hold a third stakeholder meeting in December to further discuss with stakeholders modeling and software solutions that can limit the need for exceptional dispatch. During the December meeting, the ISO will review the most recent exceptional dispatch data and solicit stakeholder input on whether ongoing issues related to exceptional dispatch can be addressed by further modeling and operational improvements or whether potential new market products may be warranted. A key focus will be to understand stakeholder concerns. The ISO plans to discuss with stakeholders the trends and causes of exceptional dispatch, what the ISO has been doing operationally to address exceptional dispatch, and operating conditions that the ISO cannot address through modeling or software solutions that may be candidates for market design enhancements.
- During the second quarter of 2010, the ISO will transition the current stakeholder process to focus on both modeling and software solutions and the potential development of new market products. In the second quarter the ISO plans to start a stakeholder process on enhancements to the ancillary services markets to address the integration of renewable resources and non-generation resources. This comprehensive review of the ancillary service markets and products will include potential products to address exceptional dispatch during this same time period.
- At the September 29 stakeholder meeting, and in other stakeholder forums since that time, some stakeholders have expressed a strong desire to begin stakeholder discussions of new products. While there is a significant amount of data currently available to review, the ISO has found that each operational season has presented the ISO with a different set of conditions that are leading to exceptional dispatch. Additional

[1] *Order Accepting Tariff Revisions, Subject to Modification,* 128 FERC P 61,218 (2009).

operational, modeling and software enhancements are currently underway that will further reduce the need for exceptional dispatch over the coming months. Without a full year of operational experience, and with modeling and software improvements still in progress, it is premature to begin a discussion now of new products. Once the ISO has a full year of operational experience and the identified modeling and software improvements have been implemented, the ISO and stakeholders will have the information necessary to determine what, if any, specific new products or market design enhancements can most effectively mitigate the volume of future exceptional dispatches. The ISO is committed to continuing discussions with stakeholders over the next several months to review and discuss operational needs and potential future drivers such as renewable integration that will inform a stakeholder discussion in the second quarter of 2010 regarding what if any new products may be needed.

- A further consideration is that the ISO and its stakeholders are actively involved in many other market design initiatives right now, and the ISO and its stakeholders, and their respective contractors, all have limited resources to take on significant new market design efforts at this time.
- The ISO believes that the most prudent approach at this time is to continue to focus resources on operational and modeling improvements first, so that the ISO and stakeholders can then better determine what, if any, new products or product enhancements are needed.

1. The ISO has made progress in reducing exceptional dispatch.

The ISO is committed to reducing exceptional dispatch. In keeping with that commitment, the ISO formed an exceptional dispatch strike team that is focused on:

- Analyzing processes and tools;
- Evaluating potential software changes;
- Determining process changes;
- Assessing changes to tariff or business practice manuals; and
- Emphasizing continuous improvement in data quality.

The team has focused on potential improvements to reduce day-ahead exceptional dispatch, with particular emphasis on reducing exceptional dispatch prior to the day-ahead market. The team has identified reliability constraints that have been incorporated into the market process. Incorporating these reliability constraints into the market process has reduced day-ahead exceptional dispatch and increased automation of the process and enhanced reliance on market mechanisms.

(a) Seasonal Differences

The ISO continually reviews data to identify recurring causes for exceptional dispatch. Significant seasonal differences have been found in the data. For example, the percentage of transmission outage-related exceptional dispatch was high in May and June, but not in the summer months when the number of outages is reduced. While some underlying causes were present in varying measures year-round, other causes were more seasonal. Some measures will work to reduce exceptional dispatch consistently throughout the year. But as operating conditions change, additional issues may surface and need to be resolved.

(b) Process Improvements

The strike team has proposed several potential process improvements relative to consistency and data quality. In cases in which the team has expected a process change to be effective, the change was implemented and the team monitored the impacts of the change. Where possible, the team looks for solutions that are based in market mechanisms to decrease the chance for error and increase

consistency. The team has sought to enhance the overall process by continuous improvement in logging.

(c) Enforcing Capacity Requirements

Many exceptional dispatches are related to generating minimum online capacity requirements associated with specific ISO operating procedures, i.e., for transmission and generation constraints. These operating procedures specify capacity requirements that must be met in certain areas due to outages or necessary to meet voltage imitations in case of a contingency event. If the market mechanisms cannot be utilized, then operators must issue exceptional dispatches to ensure the capacity is available.

Currently, the ISO does not have a means to enforce these capacity requirements in the integrated forward market, though the strike team continues to explore this option. However, the ISO has made significant progress in bringing this capacity into the market by enforcing nomograms in the residual unit commitment ("RUC") market. Since online capacity constraints are different from spin or non-spin operating reserve capacity, simply defining more granular operating reserve regions would not address the operational needs. While operating reserves need to be able to be deployed in 10 minutes, operational procedures identify minimum online capacity to ensure that sufficient resources are online satisfy voltage, stability and other reliability concerns in the event of certain contingencies. These operational procedure do not require the capacity by available in 10 minute, but rather just identifies the minimum amount of specific resources that must be online. Furthermore, the procedures oftentimes are indifferent if the online capacity is already loaded and delivering energy or unloaded. Currently, if the ISO were to enforce these operational procedure constraints in the integrated forward market, the only option would be to create an energy constraint such that the resources would be loaded and delivering energy to meet the operational procedure. However, energy is not what is necessarily needed. Rather the operational need is that the resource only needs to be online. Since RUC commits capacity but not energy, RUC ensures that sufficient resource capacity is available to meet reliability needs. RUC is, therefore, the appropriate market mechanism in which to satisfy these operational needs.

To date, the ISO has implemented nomograms in RUC for the following two operating procedures: G-217 South of Lugo Generation Requirements, and G-219 SCE Local Area Generation Requirement for Orange County. These operating procedures correlate the magnitude of area load and the amount of generating capacity needed in the respective areas. The ISO created these nomograms to maintain the appropriate relationship between available local generation and capacity requirements. The strike team has evaluated the effectiveness of using these two nomograms to procure this capacity in the RUC market and has determined that the use of the G-217 and G-219 nomograms is successful and should be continued.

In the first three months of new market operation, market participants expressed concern regarding exceptional dispatch that occurred prior to the day-ahead market. Their position was that the market should be allowed to run and that exceptional dispatch ought to be made afterward if the market results reveal a need for exceptional dispatch. The exceptional dispatch issued prior to the day-ahead market were primarily issued to ensure sufficient capacity south of Lugo and in Orange County, i.e., relative to the G-217 and G-219 operating procedures. On July 26, 2009 the ISO was able to implement nomograms in RUC that reflect the capacity constraints associated with these two areas. Upon implementation of these nomograms the ISO greatly reduced issuing exceptional dispatch instructions to resources associated with the G-217 and G-219 operating procedures prior to the day-ahead market. As a result, the frequency of day-ahead exceptional dispatch has been significantly reduced without significantly increasing the amount of capacity committed in the RUC market.

(d) Software Fixes

After making progress in reducing the frequency of exceptional dispatch in the day-ahead timeframe, the strike team broadened its focus to analyze of the causes of real-time exceptional dispatch. A large share of the real-time exceptional dispatch was due to software issues and market disruptions that occurred in the hour-ahead scheduling process ("HASP") and in the real-time market. Many software variances have been identified and corrected and the volume of market disruptions has decreased.

In late August the ISO did observe an increase in the HASP failure rate that did increase the amount of exceptional dispatches on the interties during the period. In September, the issues causing the increased HASP failure rate were addressed.

In October, an automated compensating injection process was turned on in real-time to address issues related to unscheduled flows. This process will better match market flows with actual flows at the interfaces with neighboring balancing authorities and should improve consistency between internal market flows and actual flow which may help reduce exceptional dispatch in some cases.

(e) Results of Efforts to Date[2]

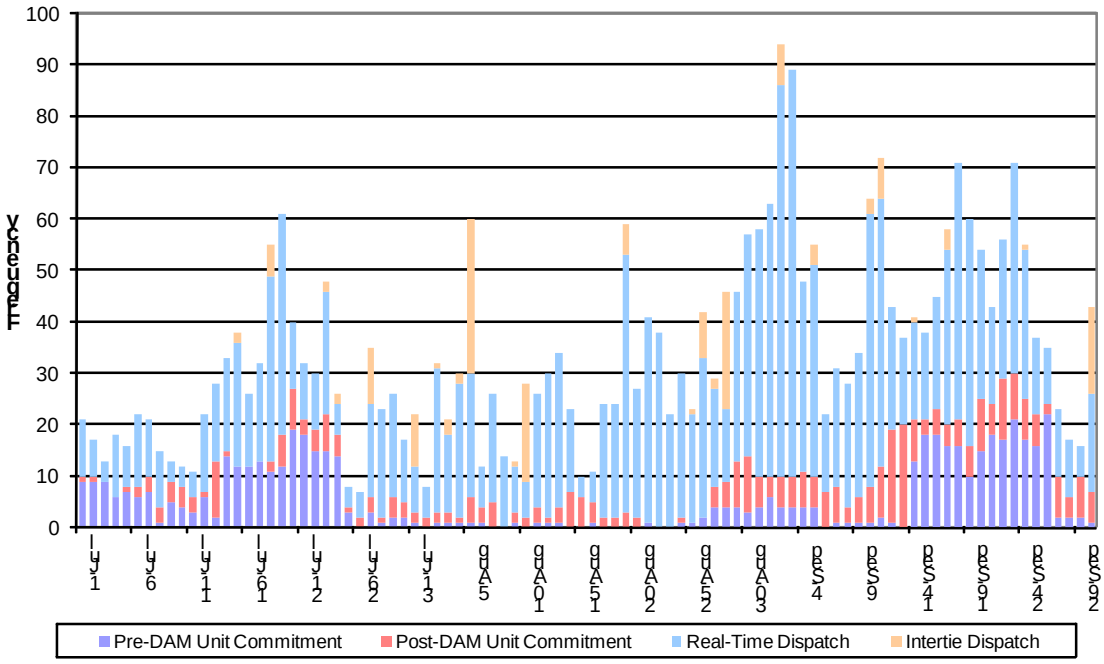
Progress has been made in reducing reliance on exceptional dispatch in the day-ahead market. Figure 1 shows the frequency of exceptional dispatch since July 1 and indicates a reduction in the pre-day-ahead market commitments after the late-July implementation of the G-217 and G-219 nomograms in RUC. However, there was increased exceptional dispatch in late August and September, which is shown in Figures 1 through 3, for the following reasons.

- In late August there was an increase in HASP failures that have since been addressed (see discussion above under "Software Fixes" section).
- From September 14-26, there was an increase in pre day-ahead market exceptional dispatch commitment due to a combination of a forced outage of a key 500-KV import line as well as a lack of availability of a major resource in southern California.
- During August and September additional real-time exceptional dispatch in the Fresno area was necessary due to transmission constraints related to remedial action schemes for which the market constraints are not fully modeled. These did result in exceptional dispatches, limiting some pump run time and constraining some hydroelectric generation online. The ISO expects some additional transmission upgrades to relieve some of these constraints prior to next summer.
- For Figure 3, the levels shown are determined by the three factors listed above and that total load is lower in a month like September than it is in June or July.

[2] Data contained in this report are the best available and includes raw preliminary and settlement quality data.

Figure 1 – Exceptional Dispatch Frequency

Daily Exceptional Dispatch Frequency by Market Type and Resource



Based on efforts to date, the overall MWh volume of exceptional dispatch has been reduced. Further, exceptional dispatch is a small portion of total load, and a smaller percentage as load increases. In addition, in many cases only one or two resources are responsible for a large number of exceptional dispatches due to the need for operations to move the unit from interval to interval for relatively small amounts of energy. This is especially true in real-time exceptional dispatches. Figures 2 and 3 show the MW volumes of exceptional dispatch for total minimum load (day-ahead market and reat-time) plus real-time-incremental and decremental dispatches, and total exceptional dispatch as a percent of total system load. Figures 2 and 3 confirm that the overall magnitude and volume of exceptional dispatch are decreasing. This fact may not be obvious by considering only the frequency of dispatches.

Figure 2 - MW volumes of Exceptional Dispatch for total minimum load (DAM and RT), Plus RT-Incremental and Decremental dispatches

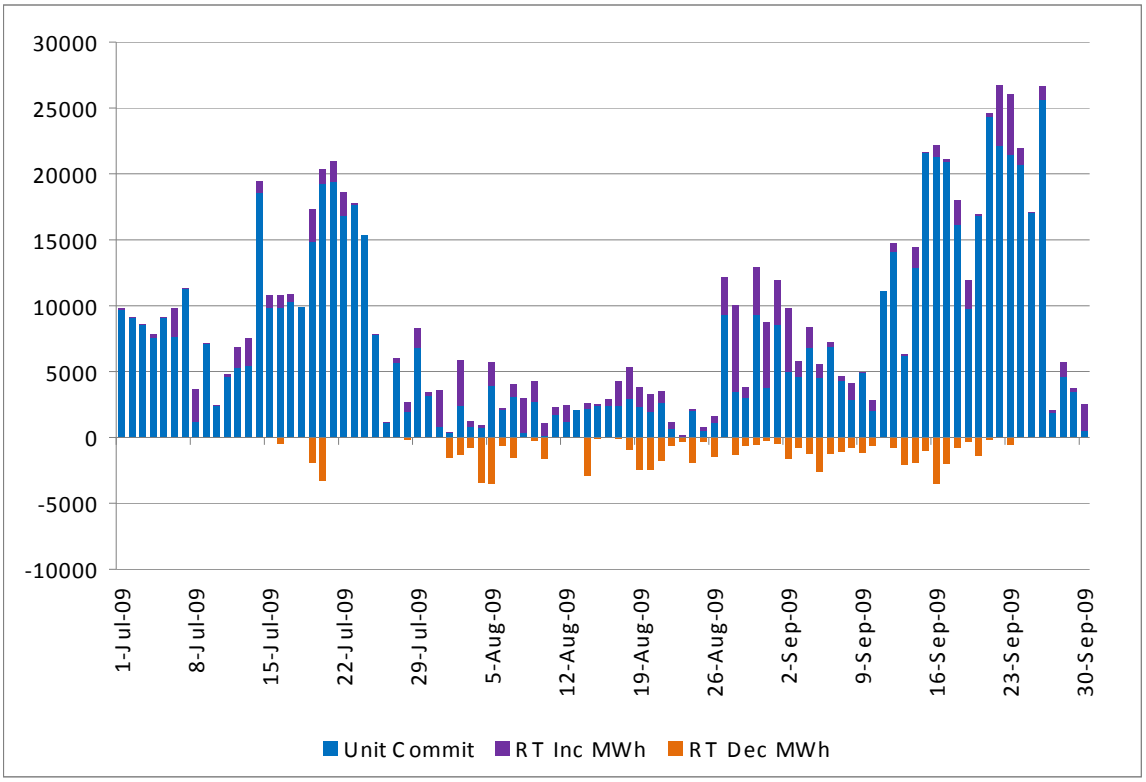
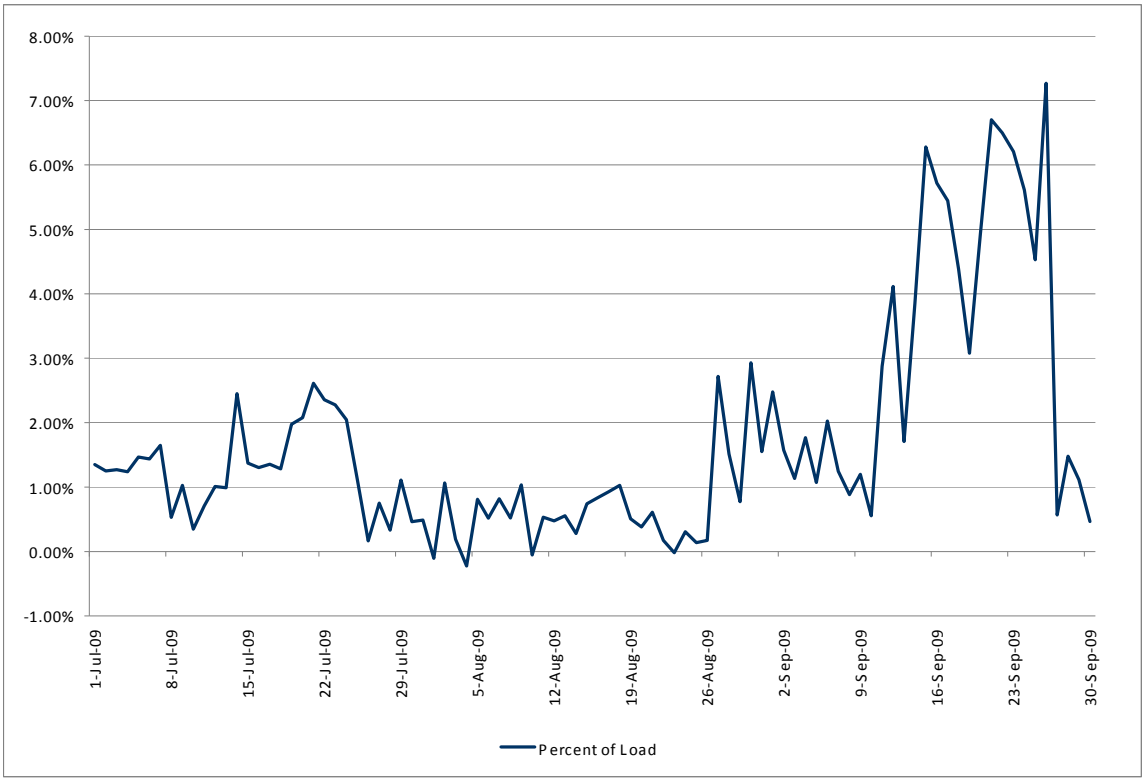


Figure 3 - Total Exceptional Dispatch as a Percent of Total Load



For comparison, it is useful to compare the percentage of energy for exceptional dispatch that occurs at the ISO with the generation from out-of-merit reliability commitments that occur in other ISOs. Table 1-3 below shows the out-of-merit generation by year and commitment category for ISO-NE. Note that the percentage of total energy is generally comparable to the ISO.

Excerpt from ISO-NE Report:[3]

Table 1-3 shows the out-of-merit generation by year and commitment category. All categories of out-of-merit generation decreased in 2008 compared with 2007. Out-of-merit generation as a percentage of total energy dropped below 2%, to 1.9%, for the first time since 2003.

Table 1-3
Generation from Out-of-Merit
Reliability Commitments Paid NCPC, by Type, GWh

Year	Second Contingency	Voltage	Distribution	First Contingency	Total	% of Total Energy
2003	598.59	322.16	44.68	743.94	1,709.37	1.6
2004	454.01	1,183.82	127.50	1,661.85	3,427.18	2.6
2005	1,785.35	977.40	142.39	1,266.51	4,171.64	3.1
2006	2,282.82	327.77	177.36	436.95	3,224.89	2.4
2007	2,704.53	645.06	11.41	528.16	3,889.16	2.9
2008	1,658.05	427.45	4.65	458.75	2,548.91	1.9

2. The ISO plans to make additional improvements to further reduce the need for exceptional dispatch.

While progress has been made in reducing exceptional dispatch, the ISO is focused on additional improvements. The ISO will continue to emphasize market-based solutions for reducing exceptional dispatch.

The ISO has identified additional longer term improvements that are expected to yield positive results both in the day-ahead market and in real-time. These include a multi-day commitment, resolving the impact of differences between the five-minute real-time dispatch and the hourly pre-dispatch, better ramping options, multi-stage generation modeling, the ability to model remedial action schemes, and pump modeling. Table 1 summarizes the additional actions to be taken to further reduce exceptional dispatch.

[3] The ISO-NE report with data on out-of-merit dispatches can be found at http://www.iso-ne.com/markets/mktmonmit/rpts/other/amr08_final_061709.pdf (see page 11).

Table 1
Additional Actions Planned to further reduce Exceptional Dispatch

Action	Implementation Timing
Additional use of RUC	60-90 days
More complex modeling in IFM	60-90 days will be able to implement enforce a minimum online constraint in integrated forward market
True-up market to real flows	Ongoing
Multi-stage generation	Currently scheduled for spring 2010[4]
Multi-day bridging	1 to 2 years
Transmission upgrades	Dependent on Participating Transmission Owners (upgrade for some 115 line drops in Fresno area will help before summer 2010)
Software enhancements	Undetermined

3. The ISO believes that the most prudent approach at this time is to continue to focus resources on operational and modeling improvements first, so that the ISO and stakeholders can then better determine what, if any, new products or market design enhancements are needed.

The ISO believes that it is premature to identify specific new products solely targeted toward reducing exceptional dispatches. The reasons for not developing new products at this time include the following.

- The ISO continues to work with stakeholders on operational and modeling improvements to reduce the amount of exceptional dispatch. The realized effects of these efforts are not yet fully known which makes it difficult to clearly identify what, if any, new products are necessary to further reduce the amount of exceptional dispatches. The ISO and stakeholders need more time to gauge the effects of the improvements implemented to date and the upcoming improvements currently under development.
- There is a seasonal nature to exceptional dispatch. The fall maintenance season is underway, which will likely reveal important information regarding the need for exceptional dispatch. The ISO needs to look at data over a longer time horizon to account for the spring and fall outage/maintenance seasons.
- The ISO is still in the process of fixing modeling issues. The results of these efforts should be evaluated and discussed with stakeholders before the need for a new product is assessed.
- The ISO continues to refine and implemented more detailed reports on the causes and magnitudes of exceptional dispatch. The ISO plans to evaluate this data over the coming months and will meet with stakeholders in December 2009 and during the second quarter of 2010 to discuss this information. Analyzing the data over a several-month time frame will inform the discussion. It would be premature to dive into developing a new market product at this juncture as the exact need that the new product would fill is not yet determined.
- As FERC is well aware the ISO is working diligently on a number of market features that are to be in place after the new market is implemented. Both stakeholders and the ISO

[4] The ISO is currently evaluating internal development and testing schedules and stakeholder input that may extend the release of this modeling initiative to fall 2010, to allow enough time to evaluate market outcomes and solution quality.

have limited resources available at this time to undertake additional stakeholder processes for new products due to the market design and implementation initiatives that are already underway. Furthermore, the contractors that develop new systems for stakeholders and the ISO are fully booked as well, far out into 2010. The ISO and stakeholders need to stay focused on those in-progress initiatives to ensure that they are implemented within the targeted timeframes.

4. The ISO has held stakeholder meetings in July and September and will continue to engage stakeholders with meetings in December and in the second quarter of 2010.

On July 16, 2009 the ISO briefed stakeholders regarding exceptional dispatch since the start of the new market. The ISO reviewed exceptional dispatch statistics for the day-ahead market and in real-time, analyzed the root causes, and outlined the software enhancements and process improvements planned to reduce the frequency of exceptional dispatch over the next several months.

The ISO held a workshop on September 29 to present its current findings, discuss the efforts taken to date to decrease exceptional dispatch and discuss proposed enhancements. The ISO reviewed the implementation of the G-219 and G-217 nomograms in the RUC market and explained why the addition of capacity requirements to the RUC market has reduced exceptional dispatch. In addition, a list of actions was provided to reduce exceptional dispatch through improved market modeling.

As discussed elsewhere in this report, the ISO will continue the stakeholder process in coming months. As additional operational improvements are implemented and additional information on the causes and effects of exceptional dispatch is available from the enhanced reports the ISO is now producing, the ISO will meet with stakeholders to share that information, hear their views and solicit ideas.

Further, FERC's October 2, 2009 Order[5] directs the ISO to engage with market participants to improve transparency and information sharing concerning constraint enforcement; and develop guidelines explaining ISO's constraint management practices. The ISO is in the process of planning a new stakeholder initiative to address visibility of transmission constraint management. Nomogram enforcement is one element that can be discussed in this forum. A plan for a stakeholder process is being prepared and a white paper on this topic is expected to be issued on October 28, 2009 with completion of this topic around the end of 2009.

5. There is no indication at this time that a 30-minute ancillary service product and a voltage support product are critical new market products that are immediately needed.

As discussed in the Summary section of this report, the ISO plans to continue to discuss with stakeholders during the current ongoing stakeholder process operational issues and what new market products might be useful. A voltage support product and possibly a 30-minute ancillary service product will be included in that discussion. The ultimate decision on what products are needed will be based on the operational issues that the ISO is facing.

The ISO has had numerous discussions with stakeholders over the past several years regarding the potential need for a 30-minute ancillary services product. It has had similar discussions with stakeholders regarding a voltage support product.

The ISO completed a stakeholder process to discuss the merits of developing a 30-minute ancillary services product in November 2008. At that time the ISO found that a 30-minute ancillary services product may not reduce the level of exceptional dispatch under the new market

[5] *Order Conditionally Accepting Tariff Revisions, Subject to Modification,* 129 FERC P 61,009 (2009).

design and the ISO would wait until after the new market had been implemented to revisit this topic.[6] Furthermore, the efficiency of the commitment of capacity resources in the RUC market continues to be improved as the modeling enhancements discussed above are being incorporated into the full network model.

In order to use the market design and stakeholder processes efficiently, the ISO, along, with stakeholders, will focus first on fully defining market shortcomings, and then evaluate possible solutions rather than focusing exclusively on one initiative. To reflect this approach, in the latest version of the market design catalogue the 30-minute operating reserves topic has been revised to "Products/Solutions to Address Exceptional Dispatch Concerns" to acknowledge the need to specifically identify what, if any products are needed to address exceptional dispatch concerns.

Finally, the data on exceptional dispatch show that exceptional dispatch is seldom used exclusively to address voltage support problems. It is generally true that exceptional dispatches address myriad system needs at the same time rather than pinpointing a more specific problem such as a transmission constraint or transmission or generator outage.

In summary, there is no compelling evidence at this time that the development of these specific products should take priority over other design enhancements and implementation activities that are expected to have a greater impact on improving market efficiency and grid reliability.

[6] See http://www.caiso.com/2078/2078e6c063780.pdf

CERTIFICATE OF SERVICE

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

Dated at Folsom, California this 20th day of October, 2009.

/s/ Anna Pascuzzo

Anna Pascuzzo