

Memorandum

To: ISO Board of Governors
From: Eric Hildebrandt, Manager Market Analysis & Mitigation
Keith Casey, Director Market Monitoring
Date: January 18, 2007
Re: Decision Regarding Refinements to Load Scheduling Requirements

This memorandum requires Board action.

EXECUTIVE SUMMARY

In October 2005, the CAISO filed Tariff Amendment 72, which required Scheduling Coordinators (SCs) to submit day-ahead schedules equal to at least 95% of their forecast demand for each hour of the next day. The 95% day-ahead scheduling requirement was designed to enhance reliability and reduce the need for the CAISO to take actions to protect against under-scheduling, such as requiring additional capacity to be on-line through Must-Offer Waiver denials. In its filing on Amendment 72, the CAISO committed to examining the impact of these scheduling requirements after implementation of Amendment 72 and making further modifications if appropriate.

During 2006, overall compliance with the 95% scheduling requirement improved dramatically and has been extremely high since spring 2006, particularly during peak hours. However, numerous SCs have expressed concerns about the impacts and difficulty of compliance with the 95% scheduling requirement, particularly during off-peak and weekend hours. In addition, Grid Operations staff has indicated that it is important to retain the 95% scheduling requirement during peak hours for reliability reasons, but have expressed concern that during some off-peak hours the 95% scheduling requirement may exacerbate operational problems due to over-scheduling and over-generation. In response to these concerns, the CAISO initiated a stakeholder process to identify and consider potential refinements to Amendment 72.¹

Based on input from Grid Operations staff and this stakeholder process, management is recommending several key modifications to Amendment 72 scheduling requirements, which include:

- Reducing the minimum scheduling requirement during off-peak hours to 75% of each SC's load forecast.
- Establishing specific exemptions for small or infrequent scheduling deviations below the 95% on-peak/75% off-peak requirement for all SCs.

¹ Discussions of Amendment 72 compliance and concerns with Amendment 72 was provided in DMM's October 10, 2006 and December 6, 2006 Market Monitoring Report memos to the CAISO Board (<http://www.caiso.com/188d/188d792d5a4a10.pdf> and <http://www.caiso.com/188d/188d792d5a4a10.pdf>). A more detailed analysis was provided in a December 11, 2006 DMM whitepaper on *Potential Modifications to Amendment 72 Day Ahead Scheduling Requirements* (<http://www.caiso.com/18c9/18c9b9aa27f70.pdf>).

BACKGROUND

The modifications being proposed are designed to address a number of concerns with scheduling requirements established under Amendment 72 that have been identified by stakeholders, CAISO staff, and FERC Office of Enforcement (OE) staff.

- Numerous participants have indicated that the bulk of bilateral market supply is only available in standard multi-hour blocks (e.g., 16 peak hours or 8 off-peak hours), so that complying with the 95% scheduling requirement often requires SCs to over-procure energy and then over-schedule significant amounts of load particularly during off-peak hours.
- The over-scheduling of load in the off-peak hours due to block-hour purchases to comply with the 95% scheduling requirement may create additional costs to participants in cases when the price of procuring this energy in the bilateral market exceeds the real-time energy price received by the SC for over-scheduled load (which is settled as positive uninstructed energy). Some participants have indicated that limiting the 95% scheduling requirement only to peak hours may greatly reduce this problem.
- CAISO Grid Operations staff has expressed concern that any over-scheduling during these off-peak hours due to Amendment 72 may negatively affect system reliability by exacerbating over-generation conditions. This impact was particularly evident this spring, when over-scheduling that was attributed to the Amendment 72 requirements – combined with other sources of unscheduled energy and uninstructed generation – created significant over-generation during many hours. However, Grid Operations has also indicated that it is important to retain the 95% scheduling requirement during peak hours for reliability reasons.
- Numerous participants have expressed concern that, under current CAISO Tariff provisions, even infrequent and minor violations of the 95% scheduling requirement may be inadvertent and have no impact on reliability, but are nonetheless subject to investigation and potential sanction by FERC.

To address these concerns, the CAISO has conducted a stakeholder process and developed a series of modifications to scheduling requirements established under Amendment 72. In developing these recommendations, the CAISO has sought to balance a variety of considerations, including:

- The potential reliability and operational impacts of changes to the day-ahead scheduling requirements based on input from CAISO Grid Operations staff.
- Input from different stakeholder groups on the difficulty and costs to participants of complying with day-ahead scheduling requirements during different time periods and conditions.
- A desire to balance the potential additional difficulty of compliance for relatively small Load Serving Entities (LSEs) with the principle that all participants should be subject to the same rules and requirements. For example, SCs serving relatively small amounts of load may find it difficult or more costly to procure the small “odd lots” of energy in bilateral markets that may be necessary to “shape” their hourly supply schedules to meet 95% of forecasted load each hour. However, if scheduling requirements are less stringent for smaller LSEs, it may be argued that this allows smaller LSE’s to “lean” on the CAISO’s real-time energy market and causes larger LSEs to bear a greater share of the cost associated with enhancing system reliability through greater day-ahead scheduling.
- The feasibility and complexity of the administration and enforcement of scheduling requirements by the CAISO and FERC OE staff. For example, since assessing hourly scheduling requirements of each SC within each UDC

area is highly data-intensive and involves an extremely large volume of scheduling “events,” automated mechanisms and highly objective criteria are needed in order for the evaluation of compliance to be feasible.

PROPOSED MODIFICATIONS

Based on the various considerations described above – combined with input received from Grid Operations staff and a stakeholder process – management recommends the following modifications to Amendment 72 scheduling requirements:

1. Reduce the minimum scheduling requirement during off-peak hours to 75% of each SC’s load forecast.

This modification addresses concerns that application of the 95% scheduling requirement during off-peak hours may – under some load and system conditions – provide little reliability or operational benefits, and may actually exacerbate problems associated with over-scheduling and over-generation.

The specific scheduling requirement proposed for off-peak hours (75%) is designed to provide sufficient protection against excessive under-scheduling during off-peak hours, while still allowing SCs to meet this scheduling requirement through standard 8-hour blocks of off-peak energy without over-scheduling of load or relying on any load-shaping resources or hourly bilateral purchases. Analysis of actual CAISO load data used to develop the 75% level for off-peak hours is presented in an addendum to DMM’s whitepaper developed for the stakeholder process.²

This specific option was developed during the stakeholder process as an alternative to several other options that were examined for providing some protection against excessive under-scheduling during off-peak hours and days, by allowing the CAISO flexibility to require a minimum level of scheduling during off-peak hours in response to projected system conditions. However, most participants and Grid Operations staff preferred a constant 75% off-peak scheduling requirement to these other options due to the potential operational uncertainty and added complexity of other options considered.

Due to concerns by Grid Operations staff that a 75% scheduling requirement may provide insufficient protection against excessive under-scheduling on Sundays during peak day time hours, the 95% peak requirement would apply to hours 7 through 22 all days of the week (including holidays), rather than only during the standard WECC definition of peak hours (Monday through Saturday, HE 7-22, excluding holidays).

2. Establish a threshold for *de minimis* deviations below 95% on-peak/75% off-peak scheduling requirement applicable to all hours.

This modification is designed to address concerns that, under current CAISO Tariff provisions, *de minimis* deviations below the 95% scheduling requirement may be inadvertent and have no impact on reliability, but may nonetheless be subject to potential investigation and sanction by FERC.

The proposed threshold for *de minimis* deviations is the minimum of (a) 3 MWh or (b) 5% of the SC’s Load Forecast. All deviations below the 95% on-peak/75% off-peak scheduling requirement that are less than this *de minimis* deviation level are considered compliant with the hourly scheduling requirement. Analysis by DMM based on the historical peak load of

² Addendum: Potential Modifications to Amendment 72 Day Ahead Scheduling Requirements, prepared by the Department of Market Monitoring, December 11, 2006, pp.3-4. (<http://www.caiso.com/18d4/18d489af50e80.pdf>).

each SC in each UDC area indicates that, at an aggregate level, this threshold equates to an effective scheduling requirement of about 94.7% of the aggregate load forecast by SCs.³

The specific formula proposed reflects a desire to balance the potential additional difficulty of compliance for relatively small LSEs with the principal that all participants should be subject to the same rules and requirements. Table 1, provided as Attachment A, provides an illustrative calculation of this threshold for various levels of forecasted load (see Columns A-F). As shown in Table 1, for an SC with a load forecast up to 60 MWh within any UDC area, the deviation threshold equals 5% of the SC's load forecast, so that the effective scheduling requirement is 90% (that is, 95% - 5% allowance = 90%). For an SC with a load forecast greater than 60 MWh within any UDC area, that allowance equals 3 MWh, so that the effective scheduling requirement begins to exceed 94% as load forecast increases to 300 MWh.

The specific concept of exemption for *de minimis* deviation applicable to all hours was suggested by stakeholders. While numerous stakeholders – particularly small LSEs – advocated larger deviation allowances (5 to 25 MWh), a smaller threshold is being proposed for several reasons:

- First, since this exemption would be applicable during all hours for all SCs and would be applied to the quantity of load served by each SC within each separate UDC area, a larger threshold could have significant cumulative effects on overall scheduling.
- Second, the CAISO is concerned that a higher threshold level could create an incentive for LSEs to circumvent the intent of this threshold by creating multiple SC identification codes and dividing up their load under different SC identification codes.⁴
- Finally, higher thresholds would represent a very large percentage (or all) of load served by smaller LSEs within each UDC area, which would be inconsistent with the principal that all participants should generally be subject to the same rules and requirements.

3. Provide each SC with an allowance for up to six (6) other minor deviations below 95% scheduling requirement per calendar month.

This modification is designed to address deviations which are larger than the *de minimis* threshold described above, but are relatively infrequent and are unlikely to affect reliability if occurring infrequently (and not simultaneously by all SCs in all UDC areas). The proposed threshold for *minor* deviations is the maximum of (a) 25 MWh or (b) 2% of the SC's load forecast. Within each month, each SC's first six deviations below the scheduling requirement that are less than this *minor* deviation level are considered compliant with the hourly scheduling requirement. Specifically, each SC will be allowed a total of six one-hour instances each calendar month in which its schedule drops below the applicable scheduling requirement – 75% of forecast load during the off-peak, 95% during the peak.

Again, the specific formula proposed for minor deviations reflects a desire to balance the potential additional difficulty of compliance for relatively small LSEs with the principle that all participants should be subject to the same rules and requirements. Table 1, provided as Attachment A, shows a sample calculation of this threshold for various levels of load (see Columns G-J). As shown in Table 1, the threshold for minor deviations equals 25 MWh for all SCs with load forecast

³ In other words, if all SCs scheduled below 95% of their forecast but at the applicable threshold for *de minimis* deviations, total day-ahead scheduling by all SCs would equal 94.7% of the aggregated forecast of all SCs.

⁴ Currently, the CAISO allows SCs to request multiple SC identification codes for scheduling different loads and resources in order to facilitate accounting or other business purposes of the SC.

up to 1,250 MWh within any UDC area. All SCs except the state's three major Investor Owned Utilities (IOUs) fall in this category. For these three largest LSEs, the threshold for minor deviations equals 2% of forecasted load.

Due to concern about the potential cumulative impact of deviations of this magnitude, this exemption applies to only the first six hourly deviations within each calendar month for each SC within each UDC area. Thus, the exemption is designed to cover infrequent deviations that may occur due to exceptional circumstances, rather than lowering the target that SCs strive to meet during peak periods. It should also be noted that FERC retains discretion with respect to enforcement activities relating to any deviations not covered by this exemption, and may consider any mitigating circumstances that lead to such deviations.

4. Establish an exemption from the current \$500 penalty for failure to submit load forecast data for the first violation by each SC during each calendar month.

This modification is designed to address concerns that under current CAISO Tariff provisions, infrequent violations of load forecasting requirements may be inadvertent, but are nonetheless subject to a \$500 penalty by the CAISO. While compliance with the load forecast submission requirements has improved dramatically and virtually no violations have occurred since October 2006, periodic violations may continue to occur. As discussed in DMM's October 10, 2006 *Market Monitoring Report*, DMM does not have the discretion under the CAISO Tariff to waive or reduce penalties for identified violations subject to this \$500 penalty. Rather, DMM may only submit a filing at FERC recommending that the Commission waive or reduce a penalty based on mitigating circumstances. With this proposed modification, however, an exemption from the \$500 penalty would be provided to each SC in each calendar month for the first violation of load forecast submission requirement.

5. Clarify that scheduling requirement applies to Revised Preferred Schedule submitted by SC (by 12:00 pm)

This revision would modify Tariff Section 2.2.7.2.1.1 to clarify that the 95% on-peak/75% off-peak scheduling requirement applies only to "Revised Preferred Schedules" (submitted by 12:00 pm), as defined in Tariff Section 30.3.4. The CAISO's initial Amendment 72 filing included Tariff language requiring that each SC "shall submit to the CAISO" day-ahead schedules that equal at least 95% of the SC's forecasted demand for each hour (2.2.7.2.1.1). In practice, under the CAISO Tariff, SCs may first submit Initial Preferred Schedules by 10:00 am (30.3.1), and may submit Revised Preferred Schedules by 12:00 pm (30.3.4). Thus, some ambiguity may exist as to whether Amendment 72 scheduling requirements apply to Initial or Revised Preferred Schedules (or both). However, DMM has determined that the CAISO's Scheduling Infrastructure (SI) does not currently retain the data necessary to assess compliance with any scheduling requirement applicable to Initial Preferred Schedules (submitted by 10:00 am).⁵ Virtually all participants appear to support this modification.

6. Specify that SCs serving less than 1 MWh within a UDC area exempted from 95% scheduling requirement.

The CAISO's MRTU Tariff provisions defining "Load Serving Entity" for purposes of administering Resource Adequacy (RA) provisions include an exemption for LSEs serving *de minimis* load, defined as load with actual metered peak demand during the preceding twelve months of less than 1 MWh. For the sake of consistency with this provision, this modification would specify that LSEs whose peak metered demand during the preceding twelve months was less than 1 MWh would be exempt from the 95% on-peak/75% off-peak scheduling requirements. Based on DMM's analysis of LSEs' peak

⁵ Specifically, if an SC submits adjustment bids following the Day Ahead Market's first congestion run, and their Initial Preferred Schedule is altered accordingly, then this "Revised Preferred" Schedule overwrites the Initial Preferred Schedule. If no adjustments are made to the Initial Preferred Schedule in response to the congestion management run, then the Initial Preferred Schedule is retained.

metered demand during 2006, this exemption would apply to only three cases, representing a total combined peak demand of less than 1 MWh.

While some LSEs have argued that exemptions from day-ahead scheduling requirements should be provided for LSEs with load levels higher than 1 MWh, the CAISO believes that attempting to establish and administer such an exemption may create significant additional complexity. Additionally, DMM's analysis of all peak loads over the past year shows that there is a notable break in the frequency of peak loads less than 1 MWh and those greater than 3 MWh. Thus, 1 MWh represents a natural break point. There is not such a natural break at higher MWh peak loads. Finally, it is worth again noting that there is the potential to circumvent the scheduling requirement by dividing up load amongst multiple SC identification codes, and that the higher the *de minimis* exemption, the greater the incentive for such behavior.

7. Eliminate Unused Tariff Forecast Submittal Requirements

Section 19 of the CAISO Tariff includes a variety of longer term forecast submission requirements that appear to have existed in the CAISO Tariff since its inception, but do not appear to have been implemented or utilized by the CAISO. In order to reduce uncertainty concerning participants' obligations to meet these other requirements, these other load forecast requirements will be eliminated.

IMPLEMENTATION ISSUES

The potential revisions to Amendment 72 noted above could be implemented without any modification to the CAISO's operational or market software systems, and would only require minimal adjustments to data analysis programs used by DMM to calculate and report potential non-compliance with day-ahead scheduling requirements on an *ex-post* basis.

Numerous stakeholder comments concern various requested changes to the CAISO's System Infrastructure (SI) interface to facilitate entering and verifying forecast data. DMM communicates these comments and requests to appropriate other departments within the CAISO, but notes that any changes to the SI system are difficult due to MRTU implementation efforts. Specific steps that have been taken to address potential forecast data entry problems include the following:

- The CAISO has worked closely with participants to explain the template used to enter and submit forecasts to the CAISO SI system, and proactively educate participants on potential problems or mistakes they may make.
- Although the SI system does not allow SCs to retrieve and view forecast data at any time after it is submitted, the CAISO has developed an automated routine that emails each SC a "snapshot" of forecast data they have entered into the SI system as of 9:00 am each day – one hour prior to the 10:00 am deadline for submission of final day-ahead forecasts.
- Reports showing any deviations below the 95% scheduling requirement based on scheduling and forecast data in the SI system are made available to SCs for review on a weekly basis. SCs may contact the CAISO with any questions or to resolve any discrepancies. Several days after these reports are made available to SCs for review, reports are forwarded to FERC.
- On a weekly basis, SCs also submit a weekly summary report of hourly forecasts and schedules based on each SCs own records, along with any notes or explanations the SC may provide. These reports are provided to FERC along with the reports developed by the CAISO based on scheduling and forecast data in the SI system.
- DMM works with FERC Office of Enforcement staff in an effort to ensure that prior to undertaking any enforcement action, FERC works with the CAISO and SCs to resolve any specific data discrepancies that FERC may observe.

In sum, DMM believes that the current data systems, compliance tracking and reporting processes provide a reasonable and sufficient mechanism for compliance with Amendment 72 requirements.

Finally, it should be noted that the modifications described in this memo would only apply to day-ahead scheduling requirements in effect until implementation of MRTU. Pursuant to FERC's September 21, 2006 Order on MRTU, a separate stakeholder process is being conducted later in 2007 to address potential provisions to address under-scheduling under MRTU prior to successful implementation of convergence bidding.⁶

STAKEHOLDER PROCESS AND FEEDBACK

The process for developing any changes to Amendment 72 was conducted on a relatively accelerated timeframe, so that any changes may be effective prior to the spring months when problems related to over-generation tend to be highest. However, the process included development and distribution of a comprehensive whitepaper and addendum on potential revisions to Amendment 72, two rounds of written stakeholder comments, and a two-hour conference call with stakeholders to discuss the straw proposal and stakeholder comments.

Many of the key issues raised by participants have been briefly mentioned and addressed in the preceding sections of this memorandum. A detailed listing of stakeholder comments and the CAISO's response to these comments is provided as Attachment B. As noted in Attachment B and throughout this stakeholder process, the range of potential modifications proposed, considered and ultimately adopted by the CAISO was limited to modifications that would not compromise the fundamental reliability goals of the 95% scheduling requirement based on assessment from Grid Operations staff.

CONCLUSION

CAISO Management requests authority to file necessary tariff language to implement the modifications described in this memorandum.

MOVED,

That the CAISO Board of Governors authorize CAISO Management to file a Tariff Amendment at FERC to modify Day Ahead Market scheduling and forecast submission requirements as described in this memorandum.

⁶ The CAISO's filing on Amendment 72 indicated that the day-ahead scheduling requirement was viewed as a "stop gap" measure that the CAISO expects would be unnecessary and not be extended under MRTU once the Integrated Forward Market (IFM) and Residual Unit Commitment (RUC) processes were in place. However, FERC's September 21 Order on MRTU indicated that the FERC is concerned about the potential for day-ahead under-scheduling by LSEs in the absence of convergence bidding and/or any explicit day-ahead scheduling requirement. Consequently, the Order directs the CAISO to develop and file interim measures, no later than 180 days prior to the effective date of MRTU Release 1, to address the potential economic incentive for LSEs to under-schedule in the Day Ahead Market until the successful implementation of convergence bidding has been achieved. (September 21 Order at 452, p.132).