



**California ISO**  
Your Link to Power

California Independent  
System Operator Corporation

March 20, 2007

The Honorable Philis J. Posey  
Acting Secretary  
Federal Energy Regulatory Commission  
888 First Street, N.E.  
Washington, D.C. 20426

**Re: California Independent System Operator Corporation  
Docket No. ER06-615-\_\_\_**

FILED  
OFFICE OF THE  
SECRETARY  
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ASSISTANT SECRETARY  
REGULATORY COMMISSION

Dear Acting Secretary Posey:

Enclosed for filing in the above-referenced docket please find the California Independent System Operator Corporation's filing in compliance with paragraphs 380 and 381 of the Commission's September 21, 2006 Order in the above-referenced proceeding.<sup>1</sup>

Thank you for your assistance in this matter.

Respectfully submitted,

*Sidney M. Davies*  
Sidney M. Davies, *MS*  
Assistant General Counsel

Counsel for the  
The California Independent System Operator  
Corporation  
151 Blue Ravine Road  
Folsom, CA 95630  
Tel: (916) 351-4400  
Fax: (916) 608-7296

<sup>1</sup> California Independent System Operator Corporation, 116 FERC ¶ 61,274 (September 21, 2006).



March 20, 2007

The Honorable Philis J. Posey  
Acting Secretary  
Federal Energy Regulatory Commission  
888 First Street, N.E.  
Washington, D.C. 20426

**RE: Filing in Compliance with Paragraphs 380 and 381 of the Commission's  
September 21, 2006 Order. Docket No. ER06-615-\_\_\_**

Dear Acting Secretary Posey:

Pursuant to the Federal Energy Regulatory Commission's ("FERC" or "Commission") Rule 1907, 18 C.F.R. § 385.1907 (2006), and the Commission's September 21, 2006 Order in the above-referenced proceeding,<sup>1</sup> the California Independent System Operator Corporation ("CAISO") hereby submits five copies of its filing in compliance with paragraphs 380 and 381 of the *September 21 Order*. The compliance filing pertains to the use of: (i) Ancillary Service Sub-Regions, and (ii) Reliability Must-Run ("RMR") resources and market resources, respectively, in the CAISO's procurement of Ancillary Services under its Market Redesign and Technology Upgrade Tariff ("MRTU Tariff").

**I. BACKGROUND.**

In response to several Commission orders regarding its market design, the CAISO filed proposed tariff revisions to implement the MRTU Tariff on February 9, 2006. The Commission conditionally approved the February 9, 2006 filing ("MRTU Filing") in its *September 21 Order*.<sup>2</sup>

**A. Paragraphs 380 and 381 of the September 21 Order.**

**1. Paragraph 380.**

In paragraph 380 of the *September 21 Order*, the Commission directed the Commission to: (1) to procure ancillary services on a more granular basis and to place the criteria for defining the granularity in the MRTU Tariff, (2) include a description of how the Full Network Model ("FNM") optimization applies to reserves as it does to energy, and (3) explain the circumstances

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<sup>1</sup> California Independent System Operator Corporation, 116 FERC ¶ 61,274 (September 21, 2006) ("September 21 Order").

<sup>2</sup> *Id.* at P 1.

under which it will become necessary to define more granular zones for ancillary services procurement.<sup>3</sup> The Commission directed that a filing in compliance with its directives be made within 180 days of the *September 21 Order*.

## 2. Paragraph 381.

In paragraph 381 of the *September 21 Order*, the Commission discussed the CAISO's proposal for addressing market power in the supply of ancillary services. The Commission indicated that while there were no mitigation measures proposed for market power in ancillary services other than the bid cap, it "believe[s] the CAISO's proposal to use a combination of RMR and market resources to manage ancillary services procurement is reasonable."<sup>4</sup> Notwithstanding its approval of the use of RMR resources and market resources as a reasonable means to manage procurement of ancillary services and mitigate market power, the Commission directed the CAISO to "include in its tariff the procedures for the use of RMR and market procurement for ancillary services."<sup>5</sup>

Under the MRTU Tariff, RMR costs are allocated to Responsible Utilities based on Participating Transmission Owner ("PTO") Service Territories.<sup>6</sup> Non-RMR ancillary service procurement costs are paid by Scheduling Coordinators using a load-based obligation.<sup>7</sup> Given these differing allocation rules, Commission also required the CAISO to clearly describe the granularity method that will be followed for allocating ancillary services costs.<sup>8</sup> Finally, the Commission noted that it expected the CAISO's Department of Market Monitoring to monitor for market power problems involving ancillary services, and to notify the Commission promptly if any problems arise.<sup>9</sup>

### B. Stakeholder Process

The stakeholder process included: (1) the development and issuance of a CAISO whitepaper regarding the compliance requirements in paragraphs 380 and 381 of the *September 21 Order*, including discussion of future procurement of Ancillary Services and (2) the development of the ancillary services section of the Business Practice Manual for Market Operations. The CAISO: (i) issued a whitepaper on February 14, 2007, (ii) held a stakeholder

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<sup>3</sup> *Id.* at P 380. The Commission noted that the CAISO stated in the MRTU Filing that the granularity for ancillary services procurement initially will correspond to the three zones that currently existed. *Id.*

<sup>4</sup> *Id.* at P 381. The Commission noted that the current bid cap for ancillary services was \$400/MWh, (see *California Independent System Operator Corporation*, 114 FERC ¶ 61,135 at Ordering Paragraph (B) (February 13, 2006)) and that under MRTU the bid cap was to be reduced to \$250/MWh. *Id.*

<sup>5</sup> September 21 Order at P 381.

<sup>6</sup> See § 41.7 of the MRTU Tariff.

<sup>7</sup> See § 11.10.2 of the MRTU Tariff. Non-RMR ancillary service procurement costs for the CAISO Control Area are allocated to all load in the CAISO Control Area. *September 21 Order* at P 309.

<sup>8</sup> September 21 Order at P 381.

<sup>9</sup> *Id.*

conference call to discuss the whitepaper on February 23, 2007, (iii) received comments from stakeholders on March 1, 2007,<sup>10</sup> (iv) posted draft tariff language on March 7, 2007, (v) posted revised draft tariff language on March 12, 2007, (vi) received stakeholder comments on the draft tariff language on March 14, 2007,<sup>11</sup> and (vii) held a stakeholder conference call on March 15, 2007 to discuss comments on the draft tariff language.

The CAISO's compliance filing also reflects the development of the ancillary services section of the Market Operations Business Practice Manual and stakeholder comments on that section. The CAISO issued drafts of the Market Operations Business Practice Manual on May 1, 2006, July 31, 2006, and January 19, 2007. On February 21, 2007 the CAISO posted an updated set of responses to stakeholder questions.<sup>12</sup>

## II. CONTENTS OF FILING

The CAISO's compliance filing consists of this transmittal letter and the following:

Attachment A	MRTU Clean Tariff Sheets
Attachment B	Attachment B MRTU Tariff Sheets Blacklined Against Filed MRTU Tariff

## III. COMMUNICATIONS

Correspondence and other communications regarding this filing should be directed to:

Sidney M. Davies\*  
Assistant General Counsel  
California Independent System Operator  
Corporation  
151 Blue Ravine Road  
Folsom, CA 95630  
Tel: (916) 351-4400  
Fax: (916) 608-7296  
[sdavies@caiso.com](mailto:sdavies@caiso.com)

Roger E. Smith\*  
Troutman Sanders LLP  
401 9th Street, N.W., Suite 1000  
Washington, D.C. 20004  
(202) 274-2950  
(202) 274-2994 (facsimile)  
[roger.smith@troutmansanders.com](mailto:roger.smith@troutmansanders.com)

\* Individual designated for service.

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<sup>10</sup> The CAISO received comments from the California Public Utilities Commission ("CPUC"); the Pacific Gas and Electric Company ("PG&E"); the Southern California Edison Company ("SCE"); Western Power Trading Forum ("WPTF"); and Williams Power Company ("Williams").

<sup>11</sup> The CAISO received comments on the draft tariff language from the California Department of Water Resources State Water Project ("CDWR-SWP"); the City of Santa Clara, California, the City of Palo Alto, California, and the City of Alameda, California (collectively, the "Bay Area Municipal Transmission Group," or "BAMx"); PG&E, and Williams.

<sup>12</sup> See Market Operations Business Practice Manual Questions and Comments document at: <http://www.caiso.com/1898/189889cc58970.pdf>

#### **IV. DESCRIPTION OF MODIFICATIONS TO THE MRTU TARIFF IN COMPLIANCE WITH SEPTEMBER 21 ORDER**

In response to the Commission directions, the CAISO proposes to amend Sections 8.2.3 and 8.3.3 of the MRTU Tariff. The following discussion describes how the proposed tariff provisions comply with the Commission's requirements in paragraphs 380 and 381 of the *September 21 Order*.

##### **A. Proposal to Procure Ancillary Services on a Sub-Regional Basis and Placement of the Defined Ancillary Service Sub-Regions in the MRTU Tariff.**

The Commission's first requirement in paragraph 380 of the *September 21 Order* directs the CAISO to procure ancillary services on a more granular basis and requires the criteria for defining this granularity be included in the MRTU Tariff. In compliance with this requirement the CAISO proposes to: (i) sub-divide the Expanded System Region and the System Region into eight Sub-Regions, and (ii) place the definition of the Sub-Regions in the MRTU Tariff.<sup>13</sup> The eight additional Sub-Regions are: (1) the South of Path 15 Sub-Region, (2) the Expanded South of Path 15 Sub-Region, (3) the South of Path 26 Sub-Region, (4) the Expanded South of Path 26 Sub-Region, (5) the North of Path 15 Sub-Region, (6) the Expanded North of Path 15 Sub-Region, (7) the North of Path 26 Sub-Region, and (8) the Expanded North of Path 26 Sub-Region.<sup>14</sup> Each of the "expanded" Sub-Regions includes the applicable Intertie Scheduling Points at the border of the Sub-Region (and the CAISO Control Area) and external control areas.<sup>15</sup>

The CAISO's use of an Ancillary Service Sub-Region occurs when the CAISO establishes a non-zero minimum and/or maximum limit for that Sub-Region.<sup>16</sup> The CAISO's use of minimum and/or maximum procurement limits for Ancillary Services help to ensure that the Ancillary Services required in the CAISO Control Area are dispersed appropriately throughout the CAISO Control Area and accurately reflect the system topology and deliverability needs.<sup>17</sup>

The factors the CAISO will look to in determining whether to establish or change minimum or maximum limits for Ancillary Service Sub-Regions include, but are not limited to, the following: (a) the CAISO Forecasts of CAISO Demand, (b) the location of Demand within the Control Area, (c) information regarding network and resource operating constraints that

<sup>13</sup> See Attachment A, proposed § 8.3.3.

<sup>14</sup> *Id.*

<sup>15</sup> See January 19, 2007 draft Business Practice Model for Market Operations, Section 4.1, Exhibit 4-1 at <http://www.caiso.com/17e9/17e9d7742f400.html>.

<sup>16</sup> See Attachment A, proposed § 8.3.3.2. The minimum Ancillary Service limit in the Expanded System Region is the quantity of each Ancillary Service required to meet the WECC and NERC requirements for the CAISO Control Area.

<sup>17</sup> Attachment A, proposed § 8.3.3.2.

affect the deliverability of Ancillary Services into or out of a Ancillary Service region, (d) the locational mix of generating resources, (e) generating resource Outages, (f) historical patterns of transmission and generating resource availability, (g) regional transmission limitations and constraints, (h) transmission Outages, (i) Available Transfer Capacity, (j) Day-Ahead Schedules or HASP Intertie Schedules, (k) whether any Ancillary Services provided from System Resources requiring a NERC tag fail to have a NERC tag, and (l) other factors affecting System Reliability.<sup>18</sup>

In addition, the CAISO will publish forecasted Ancillary Service requirements, regional constraints, and the minimum and/or maximum Ancillary Service limits for the Ancillary Service Regions and any Sub-Regions by 6:00 p.m. prior to the Day-Ahead Market (two days prior to the Operating Day).<sup>19</sup> After the completion of the DAM for a Trading Day, the CAISO will publish the limits that were used in the DAM.<sup>20</sup> If prior to the close of the HASP for a Trading Hour the CAISO makes a substantial change to a minimum and/or maximum limit for an Ancillary Service Region or Sub-Region, it will issue a Market Notice as soon as reasonably practicable after the occurrence of the circumstances that led to the change.<sup>21</sup> After the close of the HASP for a Trading Hour, the CAISO will publish the limits that were used in the HASP.<sup>22</sup>

In short, the definition and use of the eight Ancillary Service Sub-Regions will help to ensure that the CAISO's procurement accurately reflects the system topology and that the ancillary services needed to meet NERC, WECC, and CAISO requirements are appropriately distributed throughout the CAISO Control Area and are deliverable.

**B. How the Full Network Model Optimization Applies to Ancillary Services and Energy.**

The Commission's second requirement in paragraph 380 of the *September 21 Order* requires the CAISO to include in the MRTU Tariff a description of how the FNM optimization applies to Ancillary Services and Energy. The CAISO notes that a general description of the FNM is contained in Section 27.5.1 of the MRTU Tariff. However, in compliance with the Commission's requirement, the CAISO proposes to add a new Section 8.3.3.5 to the MRTU Tariff. Section 8.3.3.5 provides further detail in the tariff regarding how the FNM optimization applies to Ancillary Services and Energy.

The FNM and the Security Constrained Unit Commitment ("SCUC") application together co-optimize the provision of Ancillary Services and Energy in order to meet Ancillary Service

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<sup>18</sup> Attachment A, proposed § 8.3.3.2.

<sup>19</sup> Attachment A, proposed § 8.3.3.3.

<sup>20</sup> *Id.*

<sup>21</sup> *Id.*

<sup>22</sup> *Id.*

requirements and Energy requirements.<sup>23</sup> The FNM incorporates transmission losses and models and enforces all network constraints, which are reflected in the Ancillary Service Awards as well as the other results from each of the CAISO market processes.<sup>24</sup>

The key point in response to the Commission's directives is recognizing that the Ancillary Service requirements, the definition of Ancillary Service Regions and Sub-Regions, and any minimum or maximum limits used within an Ancillary Service Region or Ancillary Service Sub-Region are all *inputs* to the Full Network Model and are incorporated into the market clearing optimization process in both the IFM and the Real-Time Market ("RTM").<sup>25</sup> For example, in the *January BPM for the FNM*, the CAISO explains that the FNM is created with data from three sources: (i) CAISO Energy Management System ("EMS") Common Information Model ("CIM") data;<sup>26</sup> (ii) CAISO Master File data;<sup>27</sup> and (iii) Supplemental Market Data.<sup>28</sup>

Stated differently, the FNM data is a combination of three different types of data: static data, dynamic data, and supplemental data.<sup>29</sup> The definitions of two Ancillary Service Regions and eight Ancillary Service Sub-Regions are static information contained in the CAISO Master File and are inputs to the FNM.<sup>30</sup> Changes in the use of the defined Ancillary Service Regions and Ancillary Service Sub-Regions based on system conditions (*i.e.*, changes in the minimum

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<sup>23</sup> See Attachment A, proposed § 8.3.3.5. For references to the FNM and the co-optimization of Energy and Ancillary Services within the various MRTU processes *see, e.g.*, § 8.5.5, § 31.3.1.1, § 33.1, § 33.2, § 34, § 34.1, and 34.16.3.3(a) of the MRTU Tariff. *See also* January 19, 2007 draft Business Practice Model for Managing Full Network Model ("January BPM for the FNM") stating in relevant part that: "[t]he SCUC optimizes Generation, Load, import and export schedules and clears Energy and A[ncillary] S[ervice] supply and Demand Bids to optimiz[e] Energy scheduling and Dispatch, and reservation of Ancillary Service capacity while respecting transmission constraints and inter-temporal constraints (*e.g.*, Minimum Up Time/Down Time of a Generating Unit) in order to arrive at an optimal solution. The optimal solution results in Energy Supply and Demand Schedules, A[ncillary] S[ervice] awards, and Locational Marginal Prices." *January BPM for the FNM* at § 3.3.1.1. The January BPM for the FNM can be found at: <http://www.caiso.com/1840/1840b27422f60.html>.

<sup>24</sup> See § 27.5.1 of the MRTU Tariff.

<sup>25</sup> Attachment A, proposed § 8.3.3.5.

<sup>26</sup> The EMS is a computer system that primarily supports the CAISO's reliability-related functions. *January BPM for the FNM* at § 2.1, p.14. To facilitate real-time monitoring and operation of the CAISO Control Area, the EMS requires a model of the physical power system network as well as real-time information on the status of power system components represented in the model. The network model and real-time data are used to support applications that determine the operational state of the system at all times. *Id.* at § 2.1, p.14-15. CIM is a non-proprietary information format for exchanging network model data using a node-breaker model. *January BPM for the FNM* at § 4.1, n.19.

<sup>27</sup> The CAISO Master File ("Master File") is a permanent data base used to maintain data needed to support a number of CAISO applications including MRTU Market applications. *January BPM for the FNM* at § 4.1, n.21.

<sup>28</sup> See January BPM for FNM at § 4.1, p.26.

<sup>29</sup> January BPM for FNM at § 4.1.3.

<sup>30</sup> See January BPM for FNM at § 4.1.2.

and/or maximum limits for a region) are inputs into the FNM as Supplemental Market Data.<sup>31</sup> The CAISO operators will change the supplemental data based upon the latest system conditions.<sup>32</sup>

In sum, the FNM optimization applies to both Energy and Ancillary Services. In accordance with the Commission's direction, the CAISO has revised the MRTU Tariff to include a description of the FNM optimization and procurement of ancillary services in proposed Section 8.3.3.5.

**C. Description of the Circumstances under Which the CAISO Will Use Ancillary Service Sub-Regions.**

The Commission's final requirement in paragraph 380 of the *September 21 Order* directs the CAISO to explain in its compliance filing the circumstances under which it will become necessary to define more granular zones for ancillary services procurement. There likely are two aspects to the Commission's requirement. First, the Commission acknowledged that the granularity for ancillary services procurement will initially correspond to the zones that currently exist: NP15, SP15 and ZP26.<sup>33</sup> Accordingly, as the CAISO explained in Section VI.A. of this transmittal letter, the CAISO: (i) has formally defined Ancillary Service Sub-Regions based on the existing zones, and (ii) has described the factors it will use in determining whether to establish or change a minimum and/or maximum limit for an Ancillary Service Region or Sub-Region.<sup>34</sup> Second, the Commission's requirement also requires the CAISO to explain how and when it would establish additional more granular zones (*e.g.*, an eleventh zone) beyond the ten zones the CAISO is proposing to use for procurement of ancillary services. This requirement is discussed in the next section.

**D. Description of the Circumstances under Which the CAISO Will Consider Creating New Ancillary Service Regions or Sub-Regions.**

The CAISO process and criteria the CAISO will use to consider establishing new Ancillary Service Regions or Sub-Regions are set forth in proposed tariff section 8.3.3.4.<sup>35</sup> First, the CAISO will not establish new Ancillary Service Regions or Sub-Regions without consulting with its stakeholders. Second, the CAISO will consider adjusting the boundaries of the existing Ancillary Service Regions or creating a new Ancillary Service Region through a stakeholder process only if two conditions are met. The first condition is that CAISO has experienced a persistent difficulty in obtaining an appropriate distribution of Ancillary Services in the CAISO

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<sup>31</sup> See January BPM for FNM at § 4.1.3. Supplemental Market data and the Supplemental Market Data Management ("SMDM") function are key inputs in developing the FNM for the IFM and HASP/RTM processes.

<sup>32</sup> See the criteria set forth in Attachment A, proposed § 8.3.3.2.

<sup>33</sup> See *September 21 Order* at P 380 (noting that the CAISO stated that granularity for ancillary services procurement will initially correspond to the existing zones).

<sup>34</sup> See Attachment A, proposed § 8.3.3.2.

<sup>35</sup> See Attachment A, proposed § 8.3.3.4.



Control Area using existing market procurement mechanisms.<sup>36</sup> The second condition is that adjusting the boundaries of the existing Ancillary Service Regions or creating a new Ancillary Service Region will reduce the persistent difficulty experienced by the CAISO described in the first condition.<sup>37</sup>

The CAISO will look at a number of factors in determining whether to consider adjusting the boundaries of the existing Ancillary Service Regions or creating a new Ancillary Service Region. The conditions include, but are not limited to, operational reliability needs, the pattern of the growth of Demand in the CAISO Control Area, the addition of new generating resources, the retirement of existing generating resources, the addition of new transmission facilities, changes in regional transmission limitations, changes in Available Transfer Capacity, and extended transmission or generating resource outages.<sup>38</sup>

Finally, if the CAISO considers adjusting the boundaries of the existing Ancillary Service Regions or creating a new Ancillary Service Region, it will conduct an analysis to determine whether the adjustments being considered create market power issues in either the new Ancillary Service Regions being considered or the pre-existing Ancillary Service Regions.<sup>39</sup> The CAISO's analysis will be included in the stakeholder process and stakeholders will be able to comment on any new market mitigation measures proposed for the CAISO's procurement of Ancillary Services.<sup>40</sup>

**E. Description of Tariff Procedures for the Use of RMR and Market Procurement for Ancillary Services.**

Pursuant to the Commission's direction in paragraph 381 of the *September 21 Order*, the CAISO is to: (i) include in the MRTU Tariff the procedures for the use of RMR and market resources in procuring ancillary services, and (ii) clearly describe the allocation of ancillary service costs with the use of RMR and market resources in the CAISO's procurement of ancillary services.<sup>41</sup> As described in more detail below, existing tariff provisions and the RMR Contract distinguish the use of RMR and market resources in procuring ancillary services.

**1. Use of RMR Resources in the Day-Ahead Market.**

In the Day-Ahead Market, RMR Condition 1 Units compete to supply Energy and Ancillary Services on the same footing as non-RMR Units through the submission of economic Bids or Self-Schedules. In addition, RMR Condition 1 and Condition 2 units can be dispatched

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<sup>36</sup> *Id.*

<sup>37</sup> *Id.*

<sup>38</sup> *Id.*

<sup>39</sup> *Id.*

<sup>40</sup> *Id.*

<sup>41</sup> September 21 Order at P 381.

for Energy, but not Ancillary Services, under the RMR Contract as a result of the Market Power Mitigation-Reliability Requirements Determination (“MPM-RRD”) processes.<sup>42</sup> The MPM-RRD process consists of the Competitive Constraint Run (“CCR”) and the All Constraints Run (“ACR”).<sup>43</sup> The only RMR units considered in the CCR are Condition 1 Units that have provided market bids for Energy.<sup>44</sup>

Both Condition 1 and Condition 2 RMR units are considered in the ACR.<sup>45</sup> For Condition 2 RMR Units and for Condition 1 RMR Units that either did not submit DAM Bids or submitted DAM Bids but were not cleared in the CCR, the CAISO will use the RMR Proxy Bids in the ACR to determine whether additional Energy is required from RMR Units to meet the CAISO Forecast of CAISO Demand. If the dispatch level cleared through the ACR for a Condition 1 RMR Unit is greater than the dispatch level cleared through the CCR, the resource will be flagged as an RMR Dispatch in the Day-Ahead Schedule and shall constitute a Dispatch Notice pursuant to the RMR Contract.<sup>46</sup> Dispatch levels that clear in the IFM above the CCR level will be settled as RMR Energy in accordance with RMR contract.<sup>47</sup> Similarly, for a Condition 2 RMR Unit that is dispatched through the ACR the resource will be flagged as an RMR Dispatch in the Day-Ahead Schedule and shall constitute a Dispatch Notice pursuant to the RMR Contract.<sup>48</sup>

In summary, if a Condition 1 or Condition 2 RMR unit is providing Ancillary Services in the DAM it is pursuant to competitive Bids for Ancillary Services submitted by Condition 1 Units or contractually generated market bids submitted by Condition 2 RMR Units that have been issued a manual RMR Dispatch Notice pursuant to the RMR Contract prior to the Day-

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<sup>42</sup> See § 31.2.1 of the MRTU Tariff. The CAISO also has a right to issue manual RMR Dispatch Notices under the RMR Contract outside of the MPM-RRD processes.

<sup>43</sup> *Id.*

<sup>44</sup> RMR units operating under Condition 2 of their RMR Contracts are prohibited from submitting market bids unless and until the CAISO issues an RMR Dispatch Notice, in which case the resources must submit Energy and/or Ancillary Services bids in the next available CAISO market. Therefore, in rare cases, market bids could include ancillary service bids from RMR resources operating under Condition 2 of their RMR Contracts in the event the CAISO issued an RMR Dispatch Notice for Energy prior to the Day-Ahead Market. In this case, the resource would be required to submit Energy and/or Ancillary Services Bids into the next available market, which would be the Day-Ahead Market. Such bids are defined as “Market Transactions” pursuant to Section 6.1(b) of the RMR Contract and the resources will be paid market price and the costs for those services will be allocated pursuant to the tariff as market charges to all load in the CAISO Control Area. Payments received by the resource, however, will offset RMR contractual rates paid for by the Responsible Utility in accordance with the RMR Contract.

<sup>45</sup> See § 31.2.1 of the MRTU Tariff.

<sup>46</sup> *Id.*

<sup>47</sup> See 31.2.2.1 of the MRTU Tariff. The RMR resources will be paid the market rate and the costs will be allocated to the market as market charges, but the revenues received by the RMR resources will be allocated to the RMR Owner or the Responsible Utility depending on whether market revenues exceed the contractual rates provided for in the RMR Contract.

<sup>48</sup> *Id.*

Ahead Market and which are defined as “market transactions” under the RMR Contract. The settlement or allocation of such Ancillary Service costs is the same as the market settlement for allocation of Ancillary Services costs from non-RMR resources.<sup>49</sup>

## 2. Use of RMR Resources in the HASP/RTM Market.

The CAISO uses the same procedure to dispatch RMR Energy in the HASP/RTM, *i.e.* through the MPM-RRD process. RMR Condition 1 Units may also submit market Bids for Energy and Ancillary Services. In addition, RMR Condition 2 Units may have a contractual obligation to submit market bids for Energy and Ancillary Services in the event they have been issued an RMR Dispatch in the Day-Ahead Market.

The circumstances under which the CAISO can issue a RMR Dispatch Notice for Ancillary Services (as opposed to Energy) generally can only occur following the close of the HASP/RTM and is narrowly limited to circumstances of an Ancillary Services Bid insufficiency. This can only occur in instances where an RMR Unit has not been dispatched at all or has been dispatched only as a result of the MPM-RRD process (or manual RMR Dispatch Notice) and, thus, is providing RMR Energy solely in accordance with the RMR Contract. The test is described in Section 4.1(c) of the RMR Contract and also described in detail in MRTU Tariff Section 41.5.3. In brief summary, as described in Section 41.5.3, the CAISO may not call upon RMR units to provide Ancillary Services unless after the issuance of the Day-Ahead Schedules for the Trading Day the CAISO finds: (i) that it needs more Ancillary Services than were procured in the Day-Ahead and (ii) the CAISO has issued a market notice to Scheduling Coordinators that a bid insufficiency exists in the HASP.<sup>50</sup> The CAISO can only determine that a bid insufficiency exists after the Market Close of the HASP.<sup>51</sup> Therefore, after the Market Close of HASP, if the CAISO still determines that additional Ancillary Services resources are needed, it may issue an RMR Dispatch notice for Ancillary Services under the RMR Contract.<sup>52</sup>

As set forth in Section 41.5.3, the existing MRTU Tariff language describes the process through which the CAISO procures Ancillary Services from RMR units in contrast with market procurement from market Bids of Ancillary Services.

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<sup>49</sup> As noted above in footnote 47, market revenues received by an RMR Unit operating under Condition 2 of an RMR Contract are offset against contractual payments provided by the Responsible Utility under the RMR Contract.

<sup>50</sup> See Attachment A, proposed § 41.5.3. Since any unused AS Bids from the Day Ahead do not carry over into HASP, the CAISO is proposing to delete the pre-existing requirement to procure any unused AS Bids from the Day Ahead Market as an anachronistic feature of the pre-MRTU world.

<sup>51</sup> *Id.*

<sup>52</sup> The one exception is if the CAISO determines it needs Ancillary Services from a resource with operating constraints that require additional notice for dispatch.

**F. Allocation of Ancillary Services Costs.**

In paragraph 381 the Commission required the CAISO to clearly describe the allocation of ancillary service costs with the use of RMR and market resources in the CAISO's procurement of ancillary services. Specifically, the Commission noted that the CAISO should "also clearly describe the granularity method that will be followed for allocating ancillary services costs."<sup>53</sup>

Under the MRTU Tariff, RMR costs are allocated to Responsible Utilities as defined by the RMR Contract based on Participating Transmission Owner ("PTO") Service Territories.<sup>54</sup> In contrast, non-RMR ancillary service procurement costs are paid by Scheduling Coordinators using a load-based obligation.<sup>55</sup> Using the Commission's terms, all "market procurement" of ancillary services will be charged to all load in the CAISO Control Area as approved by the Commission in P 309 of the *September 21 Order*. This is appropriate and consistent with cost causation principles.<sup>56</sup> The Ancillary Services procured within a Sub-Region count toward satisfying the Ancillary Service requirements for the Expanded System Region.<sup>57</sup>

As for the rare instance when the CAISO would issue an RMR Dispatch Notice for Ancillary Services, those costs would be paid by the Responsible Utility in accordance with the RMR Contract. Finally, if and when the CAISO finds it necessary to consider more granular procurement of ancillary services beyond the ten defined Ancillary Service Regions and Sub-Regions, it will consider whether more granular cost allocation is appropriate.

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<sup>53</sup> September 21 Order at P 381.

<sup>54</sup> See § 41.7 of the MRTU Tariff.

<sup>55</sup> See § 11.10.2 of the MRTU Tariff.

<sup>56</sup> See comments of BAMx at 1 (supporting the allocation of ancillary service procurement costs to serve the CAISO Control Area to all load in the CAISO Control Area).

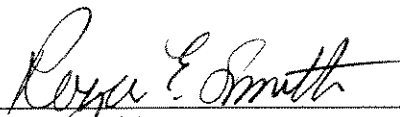
<sup>57</sup> See Attachment A, proposed § 8.3.3.2. CDWR-SWP alleges that the CAISO procurement of ancillary services does not match the allocation of ancillary service costs. See CDWR-SWP at 1. CDWR-SWP appears to believe that the use of Ancillary Service Regions and Ancillary Service Sub-Regions means that ancillary services procured in a Sub-Region will only satisfy the ancillary service requirements for that Sub-Region. However, it is incorrect to conclude that the appropriate dispersion of ancillary services to a Sub-Region means that the procured ancillary services do not serve the CAISO's system needs for the CAISO Control Area.

**V. CONCLUSION.**

Wherefore, for the reasons expressed herein, the CAISO respectfully requests that the Commission accept the CAISO's compliance filing as proposed and as discussed herein.

Respectfully submitted,

  
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Sidney M. Davies  
Assistant General Counsel  
California Independent System Operator  
Corporation  
151 Blue Ravine Road  
Folsom, CA 95630  
Tel: (916) 351-4400  
Fax: (916) 608-7296  
[sdavies@caiso.com](mailto:sdavies@caiso.com)

  
\_\_\_\_\_  
Roger E. Smith  
TROUTMAN SANDERS LLP  
401 9th Street, N.W., Suite 1000  
Washington, D.C. 20004  
(202) 274-2950  
(202) 274-2994 (facsimile)  
[roger.smith@troutmansanders.com](mailto:roger.smith@troutmansanders.com)

**CERTIFICATE OF SERVICE**

I hereby certify that I have this day electronically served a copy of the foregoing document on each party named in the official service list in this proceeding.

Dated at Folsom, CA this 20th day of March, 2007.

  
Sidney Davies

**Attachment A – Clean Sheets**  
**MRTU Compliance Filing for Ancillary Services**

### **8.2.3 Quantities of Ancillary Services Required and Use of Ancillary Service Regions.**

For each of the Ancillary Services, the CAISO shall determine the quantity and location of the Ancillary Service which is required using Ancillary Service Regions as described in Section 8.3.3. For each of the Ancillary Services, the CAISO shall determine the required locational dispersion in accordance with CAISO Controlled Grid reliability requirements. The Ancillary Services provided must be under the direct Dispatch control of the CAISO on a Real-Time Dispatch Interval basis. The CAISO shall determine the quantities it requires as provided for in Sections 8.2.3.1 to 8.2.3.3

#### **8.2.3.1 Regulation Service.**

The CAISO shall maintain sufficient Generating Units immediately responsive to AGC in order to provide sufficient Regulation service to allow the CAISO Control Area to meet WECC and NERC control performance criteria by continuously balancing Generation to meet deviations between actual and scheduled Demand and to maintain interchange schedules. The quantity of Regulation Down and Regulation Up capacity needed for each Settlement Period of the Day-Ahead Market, the HASP, and in each 15 minute period in Real-Time shall be determined by the CAISO as a percentage of the applicable CAISO Forecast of CAISO Demand for the Day-Ahead, HASP, and Real-Time Markets. The CAISO's determination is based upon its need to meet the WECC and NERC control performance criteria.

The CAISO will publish on OASIS the estimated quantity, or the percentage used to determine the estimated quantity, of Regulation Reserves required for each hour of the Day-Ahead Market, each hour in the HASP, and in each 15 minute period in Real-Time for the Trading Day.

#### **8.2.3.2 Spinning And Non-Spinning Reserves.**



### **8.3.3 Ancillary Service Regions and Regional Limits**

The CAISO will procure Ancillary Services using Ancillary Service Regions and Ancillary Service Sub-Regions. There are two Ancillary Services Regions and eight Ancillary Service Sub-Regions. The two Ancillary Service Regions are the System Region (*i.e.*, the CAISO Control Area) and the Expanded System Region (*i.e.*, the System Region and intertie Scheduling Points with adjacent Control Areas). As defined by a Business Practice Manual, the eight identified Ancillary Service Sub-Regions are (1) the South of Path 15 Sub-Region, (2) the Expanded South of Path 15 Sub-Region, (3) the South of Path 26 Sub-Region, (4) the Expanded South of Path 26 Sub-Region, (5) the North of Path 15 Sub-Region, (6) the Expanded North of Path 15 Sub-Region, (7) the North of Path 26 Sub-Region, and (8) the Expanded North of Path 26 Sub-Region. The eight Ancillary Service Sub-Regions are embedded within either the System Region or the Expanded System Region. The CAISO may use Ancillary Service Sub-Regions within the System Region or the Expanded System Region to ensure appropriate distribution of the Ancillary Services procured for the CAISO Control Area. The definition of the Expanded System Region, the System Region, and the eight Sub-Regions shall apply collectively to the following Ancillary Services: Regulation Up, Regulation Down, Spinning Reserves and Non-Spinning Reserves.

#### **8.3.3.1 Use of Ancillary Service Regions and Ancillary Service Limits.**

Within the Expanded System Region, the System Region, and the Sub-Regions, the CAISO may establish limits on the amount of Ancillary Services that can be provided from each region or can be provided within each region. When used, these limits identify either a maximum or a minimum (or both a maximum and a minimum) amount of Ancillary Services to be obtained within the region. The minimum Ancillary Service limit in the Expanded System Region shall be the quantities of each Ancillary Service required to meet the WECC and NERC requirements for the CAISO Control Area. The CAISO may establish a restriction on the amount of Ancillary Services to be procured from outside the CAISO Control Area by establishing a minimum limit for the System Region. The CAISO may also establish a maximum limit for Ancillary Services procured at any single import Scheduling Point.

**8.3.3.2 Criteria For Use of Ancillary Service Regions and Sub-Regions.**

The CAISO's use of an Ancillary Service Sub-Region occurs when the CAISO establishes a minimum or maximum limit for that Sub-Region. The CAISO's use of minimum and maximum procurement limits for Ancillary Services help to ensure that the Ancillary Services required in the CAISO Control Area are dispersed appropriately throughout the CAISO Control Area and accurately reflect the system topology and deliverability needs. The factors the CAISO will look to in determining whether to establish or change minimum or maximum limits, include but are not limited to, the following: (a) the CAISO Forecast of CAISO Demand, (b) the location of Demand within the Control Area, (c) information regarding network and resource operating constraints that affect the deliverability of Ancillary Services into or out of an Ancillary Service Region, (d) the locational mix of generating resources, (e) generating resource Outages, (f) historical patterns of transmission and generating resource availability, (g) regional transmission limitations and Constraints, (h) transmission Outages, (i) Available Transfer Capacity, (j) DA Schedules or HASP Intertie Schedules, (k) whether any Ancillary Services provided from System Resources requiring a NERC tag fail to have a NERC tag, and (l) other factors affecting System Reliability. Ancillary Services procured within a Sub-Region count toward satisfying the Ancillary Service requirements for the System Region or the Expanded System Region.

**8.3.3.3 Notice to Market Participants.**

Pursuant to Section 6.5.2.3.3, the CAISO will publish forecasted Ancillary Service requirements, regional constraints, and the minimum and/or maximum Ancillary Service limits for the Ancillary Service Regions and any Sub-Regions by 6:00pm prior to the Day-Ahead Market (two days prior to the Operating Day). After the completion of the DAM for a Trading Day, the CAISO will publish the limits that were used in the DAM. If prior to the close of the HASP for a Trading Hour the CAISO makes a substantial change to a minimum and/or maximum limit for an Ancillary Service Region or Sub-Region, it will issue a Market Notice as soon as reasonably practicable after the occurrence of the circumstances that led to the change. After the close of the HASP for a Trading Hour, the CAISO will publish the limits that were used in the HASP.

**8.3.3.4 Establishment of New Ancillary Service Regions or Sub-Regions.**

The CAISO will consider adjusting the boundaries of the existing Ancillary Service Regions or creating a new Ancillary Service Region through a stakeholder process if: (a) there is a persistent difficulty in obtaining an appropriate distribution of Ancillary Services in the CAISO Control Area using market procurement mechanisms, and (b) adjusting the boundaries of the existing Ancillary Service Regions or creating a new Ancillary Service Region would reduce the persistent difficulty in obtaining an appropriate distribution of Ancillary Services in the CAISO Control Area using market procurement mechanisms. Factors that would affect the CAISO's determination to consider adjusting the boundaries of the existing Ancillary Service Regions or creating a new Ancillary Service Region include, but are not limited to operational reliability needs, the pattern of the growth of Demand in the CAISO Control Area, the addition of new generating resources, the retirement of existing generating resources, the addition of new transmission facilities, changes in regional transmission limitations, changes in Available Transfer Capacity, and extended transmission or generating resource Outages. If the CAISO considers adjusting the boundaries of the existing Ancillary Service Regions or creating a new Ancillary Service Region, the CAISO will conduct an analysis to determine whether the adjustments being considered create market power issues in either the new Ancillary Service Regions being considered or the pre-existing Ancillary Service Regions. The CAISO's analysis will be included in the stakeholder process and stakeholders will be able to comment on any new market power mitigation measures proposed for the CAISO's procurement of Ancillary Services.

**8.3.3.5 Use of the Full Network Model and Procurement of Ancillary Services.**

The Full Network Model and the SCUC application optimize the provision of Ancillary Services and Energy in order to meet Ancillary Service requirements and Energy requirements. The Full Network Model incorporates Transmission Losses and models and enforces all network constraints, which are reflected in the Ancillary Services Awards as well as the other results from each of the CAISO Market Processes. The Ancillary Service requirements, the definition of Ancillary Service Regions and Ancillary Service Sub-Regions, and any minimum or maximum limit that is used within an Ancillary Service Region or Ancillary Service Sub-Region are all inputs to the Full Network Model and are incorporated into the CAISO Market Processes.

#### **8.3.4 Certification and Testing Requirements.**

Each Generating Unit, System Unit, or Load, that is allowed to submit a Bid or self-provide Ancillary Services under this Tariff, and each System Resource that is allowed to submit a Bid to provide Ancillary Services under this Tariff, must comply with the CAISO's certification and testing requirements as contained in the Business Practice Manual. Each Generating Unit and System Unit used to bid Regulation or used to self-provide Regulation must have been certified and tested by the CAISO using the process defined in Part A of Appendix K. Each Dynamic System Resource offering Regulation must comply with the Dynamic Scheduling Protocol in Appendix X. Spinning Reserve may be provided only from Generating Units, System Resources that submit Bids to provide Spinning Reserve from imports, or System Units, which have been certified and tested by the CAISO using the process defined in Appendix K. Non-Spinning Reserve may be provided from Loads, Demand which can be reduced by Dispatch, on-demand rights from other entities or Control Areas, Generating Units, System Resources that submit Bids to provide Non-Spinning Reserve from imports, or System Units, which have been certified and tested by the CAISO using the process defined in – Parts C of Appendix K, respectively. Voltage Support may only be provided from resources including Loads, Generating Units and System Units which have been certified and tested by the CAISO using the process defined in Part D of Appendix K. Black Start capability may only be provided from Generating Units which have been certified and tested by the CAISO using the process defined in Part E of Appendix K. CAISO certification to provide Ancillary Services may be revoked by the CAISO under the provisions of this Tariff and Parts A-E of Appendix K.

considered as a Market Transaction in accordance with the RMR Contract. RMR Units operating under Condition 2 may not submit Bids until and unless the CAISO issues an RMR Dispatch Notice or issues an RMR Dispatch in the IFM, in which case a Condition 2 RMR Unit shall submit Bids in accordance with the RMR Contract in the next available market for the Trading Hours specified in the RMR Dispatch Notice or Day-Ahead Schedule.

**41.5.2 RMR Payments.**

RMR Units operating under Condition 1 or Condition 2 that receive a RMR Dispatch Notice will be paid in accordance with the RMR Contract.

**41.5.3 RMR and Ancillary Services Requirements.**

CAISO may call upon RMR Units in any amounts that the CAISO has determined is necessary at any time after the issuance of Day-Ahead Schedules for the Trading Day if: (i) the CAISO determines that it requires more of an Ancillary Service than it has been able to procure, except that the CAISO shall not be required to accept Ancillary Services Bids that exceed the price caps specified in Section 39 or any other FERC-imposed price caps; and (ii) the CAISO has notified Scheduling Coordinators of the circumstances existing in this Section 41.5.3, and after such notice, the CAISO determines that a bid insufficiency condition in accordance with the RMR Contract exists in the HASP and the CAISO requires more of an Ancillary Service. The CAISO must provide the notice specified in sub paragraph (ii) of this Section 41.5.3 as soon as possible after the CAISO determines that additional Ancillary Services are needed for which Bids are not available. The CAISO may only determine that a bid insufficiency exists after the Market Close of the HASP, unless an earlier determination is required in order to accommodate the RMR Unit's operating constraints. For the purposes of this Section 41.5.3, a bid insufficiency exists in HASP if, and only if: (i) Bids in the HASP for the particular Ancillary Service that can be used to satisfy that particular Ancillary Services requirement that remain after first procuring the megawatts of the Ancillary Service that the CAISO had notified Scheduling Coordinators it would procure in the HASP ("remaining Ancillary Services requirement") represent, in the aggregate, less than two times such remaining Ancillary Services requirement; or (ii) there are less than two unaffiliated bidders to provide

**Attachment B – Blacklines**  
**MRTU Compliance Filing for Ancillary Services**

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### **8.2.3 Quantities of Ancillary Services Required and Use of Ancillary Services Regions.**

For each of the Ancillary Services, the CAISO shall determine the quantity and location of the Ancillary Service which is required using Ancillary Services Regions as described in Section 8.3.3. For each of the Ancillary Services, the CAISO shall determine the required locational dispersion in accordance with CAISO Controlled Grid reliability requirements. ~~The actual location of Ancillary Services on a daily and hourly basis shall depend on the locational spread of Demand within the CAISO Control Area, regional transmission limitations, available transmission capacity, transmission outages, the locational mix of Generation, generation outages and historical patterns of transmission and Generation availability so that Ancillary Services are distributed appropriately across the CAISO Control Area.~~ The Ancillary Services provided must be under the direct Dispatch control of the CAISO on a Real-Time Dispatch Interval basis. The CAISO shall determine the quantities it requires as provided for in Sections 8.2.3.1 to 8.2.3.3

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### **8.3.3 Ancillary Service Regions and Regional Limits**

The CAISO will procure Ancillary Services using Ancillary Services Regions and Ancillary Service Sub-Regions. There are two Ancillary Services Regions and eight Ancillary Service Sub-Regions. The two Ancillary Service Regions include the System Region (i.e., the CAISO Control Area) and the Expanded System Region (i.e., the System Region and intertie sScheduling pPoints with adjacent Control Areas). As defined by a Business Practice Manual, the eight identified Ancillary Service Sub-Regions are (1) the South of Path 15 Sub-Region, (2) the Expanded South of Path 15 Sub-Region, (3) the South of Path 26 Sub-Region, (4) the Expanded South of Path 26 Sub-Region, (5) the North of Path 15 Sub-Region, (6) the Expanded North of Path 15 Sub-Region, (7) the North of Path 26 Sub-Region, and (8) the Expanded North of Path 26 Sub-Region. The eight Ancillary Service Sub-Regions are embedded within either the System Region or the Expanded System Region. ~~The CAISO also may identify and use Ancillary Service Sub-Regions within the System Region or the Expanded System Region to ensure appropriate distribution of the Ancillary Services procured for the CAISO Control Area.~~ The definition of the Expanded System Region, the System Region, and the eight any Sub-Regions shall apply collectively

to the following Ancillary Services: Regulation Up, Regulation Down, Spinning Reserves and Non-Spinning Reserves.

### **8.3.3.1 Use of Ancillary Service Regions and Ancillary Service Limits.**

Within the Expanded System Region, the System Region, and any ~~the~~ Sub-Regions, the CAISO may establish limits on the amount of Ancillary Services that can be provided from each region or can be provided within each region. When used, these limits identify either a maximum or a minimum (or both a maximum and a minimum) amount of Ancillary Services to be obtained within the region. The minimum Ancillary Service limit in the Expanded System Region shall be the quantities of each Ancillary Service required to meet the WECC and NERC requirements for the CAISO Control Area. The CAISO may establish a restriction on the amount of Ancillary Services to be procured from outside the CAISO Control Area by establishing a minimum limit for the System Region. The CAISO may also establish a maximum limit for Ancillary Services procured at any single import Scheduling Point.

~~The considerations and criteria the CAISO will use to establish Sub-Regions and regional limits include, but are not limited to, an assessment of resource operating constraints, the locational mix of Generating Units, generation outages, historical patterns of transmission and Generating Unit availability, regional transmission limitations and constraints, Available Transmission Capacity, and other factors affecting reliability.~~

~~If the CAISO establishes Sub-Regions or changes the use of existing Ancillary Services Regions, it will issue a Market Notice as soon as reasonably practicable after the occurrence of circumstances that leads the CAISO to establish Sub-Regions or change the use of existing Ancillary Services Regions. If for example, the circumstance leading to a change is an extended planned outage of a transmission line or generating resource, the CAISO notice can be prior to submission of Bids in the Day-Ahead Market on the day in which the outage is to occur. If a transmission outage or generating unit outage is a Forced Outage, the CAISO will give notice of any change in the use of Ancillary Services Regions as soon as reasonably practicable after the occurrence of the Forced Outage.~~

~~Details regarding: (a) how the CAISO establishes Sub-Regions and the Ancillary Service limits (i.e., a maximum or a minimum amount (or both a maximum and minimum amounts) of Ancillary Services to be~~



procured within a region) for the System Region and/or Sub-Regions, and (b) the process the CAISO will use to notify Market Participants of any change in Ancillary Services Regions, are contained in the Business Practice Manual for Ancillary Services.

#### **8.3.3.2 Criteria For Use of Ancillary Service Regions and Sub-Regions.**

The CAISO's use of an Ancillary Service Sub-Region occurs when the CAISO establishes a minimum or maximum limit for that Sub-Region. The CAISO's use of minimum and maximum procurement limits for Ancillary Services help to ensure that the Ancillary Services required in the CAISO Control Area are dispersed appropriately throughout the CAISO Control Area and accurately reflect the system topology and deliverability needs. The factors the CAISO will look to in determining whether to establish or change minimum or maximum limits, include but are not limited to, the following: (a) the CAISO Forecast of CAISO Demand, (b) the location of Demand within the Control Area, (c) information regarding network and resource operating constraints that affect the deliverability of Ancillary Services into or out of an Ancillary Service Region, (d) the locational mix of generating resources, (e) generating resource Outages, (f) historical patterns of transmission and generating resource availability, (g) regional transmission limitations and Constraints, (h) transmission Outages, (i) Available Transfer Capacity, (j) DA Schedules or HASP Intertie Schedules, (k) whether any Ancillary Services provided from System Resources requiring a NERC tag fail to have a NERC tag, and (l) other factors affecting System Reliability. Ancillary Services procured within a Sub-Region count toward satisfying the Ancillary Service requirements for the System Region or the Expanded System Region.

#### **8.3.3.3 Notice to Market Participants.**

Pursuant to Section 6.5.2.3.3, the CAISO will publish forecasted Ancillary Service requirements, regional constraints, and the minimum and/or maximum Ancillary Service limits for the Ancillary Service Regions and any Sub-Regions by 6:00pm prior to the Day-Ahead Market (two days prior to the Operating Day). After the completion of the DAM for a Trading Day, the CAISO will publish the limits that were used in the DAM. If prior to the close of the HASP for a Trading Hour the CAISO makes a substantial change to a minimum and/or maximum limit for an Ancillary Service Region or Sub-Region, it will issue a Market Notice as soon as reasonably practicable after the occurrence of the circumstances that led to the

change. After the close of the HASP for a Trading Hour, the CAISO will publish the limits that were used in the HASP.

#### **8.3.3.4 Establishment of New Ancillary Service Regions or Sub-Regions.**

The CAISO will consider adjusting the boundaries of the existing Ancillary Service Regions or creating a new Ancillary Service Region through a stakeholder process if: (a) there is a persistent difficulty in obtaining an appropriate distribution of Ancillary Services in the CAISO Control Area using market procurement mechanisms, and (b) adjusting the boundaries of the existing Ancillary Service Regions or creating a new Ancillary Service Region would reduce the persistent difficulty in obtaining an appropriate distribution of Ancillary Services in the CAISO Control Area using market procurement mechanisms.

Factors that would affect the CAISO's determination to consider adjusting the boundaries of the existing Ancillary Service Regions or creating a new Ancillary Service Region include, but are not limited to operational reliability needs, the pattern of the growth of Demand in the CAISO Control Area, the addition of new generating resources, the retirement of existing generating resources, the addition of new transmission facilities, changes in regional transmission limitations, changes in Available Transfer Capacity, and extended transmission or generating resource Outages. If the CAISO considers adjusting the boundaries of the existing Ancillary Service Regions or creating a new Ancillary Service Region, the CAISO will conduct an analysis to determine whether the adjustments being considered create market power issues in either the new Ancillary Service Regions being considered or the pre-existing Ancillary Service Regions. The CAISO's analysis will be included in the stakeholder process and stakeholders will be able to comment on any new market power mitigation measures proposed for the CAISO's procurement of Ancillary Services.

#### **8.3.3.5 Use of the Full Network Model and Procurement of Ancillary Services.**

The Full Network Model and the SCUC application optimize the provision of Ancillary Services and Energy in order to meet Ancillary Service requirements and Energy requirements. The Full Network Model incorporates Transmission Losses and models and enforces all network constraints, which are reflected in the Ancillary Services Awards as well as the other results from each of the CAISO Market Processes. The Ancillary Service requirements, the definition of Ancillary Service Regions and Ancillary Service Sub-Regions, and any minimum or maximum limit that is used within an Ancillary Service Region

or Ancillary Service Sub-Region are all inputs to the Full Network Model and are incorporated into the CAISO Market Processes.

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#### **41.5.3 RMR and Ancillary Services Requirements.**

CAISO may call upon RMR Units in any amounts that the CAISO has determined is necessary at any time after the issuance of Day-Ahead Schedules for the Trading Day if: (i) the CAISO determines that it requires more of an Ancillary Service than it has been able to procure; ~~(ii) all additional Day-Ahead Ancillary Services Bids (including any unused Bids that can be used to satisfy that particular Ancillary Services requirement) have been selected,~~ except that the CAISO shall not be required to accept Ancillary Services Bids that exceed the price caps specified in Section 39 or any other FERC-imposed price caps; and (iii) the CAISO has notified Scheduling Coordinators of the circumstances existing in this Section 41.5.3, and after such notice, the CAISO determines that a bid insufficiency condition in accordance with the RMR Contract exists in the HASP and the CAISO requires more of an Ancillary Service. The CAISO must provide the notice specified in sub paragraph (iii) of this Section 41.5.3 as soon as possible after the CAISO determines that additional Ancillary Services are needed for which Bids are not available. The CAISO may only determine that a bid insufficiency exists after the Market Close of the HASP, unless an earlier determination is required in order to accommodate the RMR Unit's operating constraints. For the purposes of this Section 41.5.3, a bid insufficiency exists in HASP if, and only if: (i) Bids in the HASP for the particular Ancillary Service (including any unused Bids that can be used to satisfy that particular Ancillary Services requirement that remain after first procuring the megawatts of the Ancillary Service that the CAISO had notified Scheduling Coordinators it would procure in the HASP ("remaining Ancillary Services requirement") represent, in the aggregate, less than two times such remaining Ancillary Services requirement; or (ii) there are less than two unaffiliated bidders to provide such remaining Ancillary Services requirement. If the CAISO determines that a bid insufficiency condition exists as described in this Section 41.5.3, the CAISO may nonetheless accept available Bids if it determines in its sole discretion that the prices specified in the Bids and the Energy Bid Curves created by the Bids indicate that the Scheduling Coordinators were not attempting to exercise market power.

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