

**UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION**

<b>California Independent System Operator Corporation</b>	)	<b>Docket Nos. ER01-313-004</b>
	)	
<b>Pacific Gas and Electric Corporation</b>	)	<b>Docket Nos. ER01-424-004</b>
	)	
	)	

**INITIAL BRIEF OF THE  
CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION**

**To: The Honorable Bobbie J. McCartney**

The California Independent System Operator Corporation (“ISO”) hereby submits its Initial Brief in this proceeding:

**I. STATEMENT OF THE CASE**

Pursuant to the Presiding Judge’s instruction, the Parties have submitted a joint procedural history.

**II. DISCUSSION OF ISSUES**

**Issue 1: What was the manner and extent to which the ISO modeled behind-the-meter generation during the time period at issue in the ISO’s transmission and operations planning studies, including a listing of generators that the ISO explicitly modeled in these studies?**

The ISO understands the Commission, in seeking evidence regarding this issue, to be soliciting data regarding the Generating Units that are represented in the models that the ISO uses in its transmission and operations planning studies. The ISO believes that this understanding is consistent not only with the plain language of the Commission’s statement of the issue, but also

with the Commission's purpose in establishing an exemption from the allocation of Control Area Services charges to Control Area Gross Load.

In Opinion No. 463,<sup>1</sup> the Commission determined that behind-the-meter Load imposes a lesser amount of Control Area Services costs on the ISO than Load that is scheduled on the ISO Controlled Grid, and implemented an exemption that is intended to serve as a measure of the lesser burden imposed by behind-the-meter Load.<sup>2</sup> In Opinion No. 463-A,<sup>3</sup> the Commission decided that it lacked sufficient support for the exemption it had directed, and directed a new exemption,<sup>4</sup> which is the subject of this hearing. The Commission did not, however, change the fundamental purpose of its exemption, which remains to serve as a measure of the lesser burden that behind-the-meter Load imposes on ISO Control Area Services.<sup>5</sup> Because information on Generation is more readily available than information on Load and Demand, *see, e.g.*, Tr. at 124:20-22 (Lyon), and because of the high correlation between Generation and Load and Demand, it would be reasonable for the Commission to consider the ISO's inclusion of Generation in its models as a surrogate for consideration of the Load served by the Generation in transmission and planning operations.

As explained in Mr. Lyon's prepared direct testimony and Mr. Arikawa's direct testimony, Exhibit ISO-55 contains the list of the Generating Units that were included in the models that the ISO used to conduct its transmission and operations planning studies between January 1, 2001, and December 31, 2003. Exh. ISO-54, 6:1-3 (Lyon Testimony); Tr. at 82:13-83:14 (Arikawa).

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<sup>1</sup> *California Independent System Operator Corp., et al.*, 103 FERC ¶ 61,114 (2003) ("Opinion No. 463").

<sup>2</sup> *Id.* at P 28.

<sup>3</sup> *California Independent System Operator Corp., et al.*, 106 FERC ¶ 61,032 ("Opinion No. 463-A").

<sup>4</sup> *Id.* at P 19-20.

<sup>5</sup> *Id.*

This list of Generating Units was prepared by the ISO in order to comply with the Commission's January 23, 2004 rehearing order in this proceeding.<sup>6</sup> The list identified all modeled Generating Units, Tr. at 82:5-14 (Arikawa), so that the ISO could undertake the calculations necessary for the compliance filing of the ISO in this proceeding, which was filed on November 15, 2004,<sup>7</sup> and rendered moot by the Commission's Order<sup>8</sup> issued the following day initiating the instant proceeding.

Because the ISO did not have information regarding Generation that it did not model (i.e., behind-the-meter Generation on the investor-owned utilities' systems and on municipal systems served by Generating Units within the investor-owned utilities' former Control Areas), it needed the investor-owned utilities' assistance identifying those Generating Units that are not included in the models supplied by the investor-owned utilities and used by the ISO (and that are, therefore, not identified in Exhibit ISO-55). Tr. at 112:19-22 (Arikawa). Therefore, in order to prepare its compliance filing, the ISO sent the list to each of the three investor-owned utilities that developed the models, (all three of which are now Participating Transmission Owners ("Participating TOs")), in order to obtain the necessary data. Tr. at 112:8-22 (Arikawa). In their review of the list, none of those Participating TOs indicated that any Generating Unit was either mistakenly included on or mistakenly excluded from the list. Accordingly, the ISO believes that the list accurately reflects the universe of Generating Units that were included in the models used to conduct its transmission and operations planning studies between January 1, 2001, and December 31, 2003. Tr.112:3-113:21 (Arikawa).

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<sup>6</sup> See Opinion No. 463-A, at P 19-20.

<sup>7</sup> California Independent System Operator Corporation, Compliance Refund Report, filed November 15, 2004 in Docket ER01-313-000.

<sup>8</sup> *Order Deferring Rehearing Requests And Establishing Limited Hearing Procedures*, 109 FERC ¶ 61,162 (2004).

In evaluating “the manner and extent to which the ISO modeled behind-the-meter generation during the time period at issue in the ISO’s transmission and operations planning studies,” one must keep in mind that the ISO does not actually model Generating Units. Instead, it adopts the power flow models, including the representations of Generating Units, that are developed by the investor-owned Participating TOs. Exh. ISO-54, 8:8-9 (Lyon Testimony); Tr. 120:1-121:2 (Lyon). A model is a quantitative representation of the facilities that constitute the grid, and their physical limitations. The initial accumulation of data that constitutes the model may be referred to as a “base case.” Tr. 163:12–14 (Shockey); Exh. S-79, 5:25 – 6:10 (Gross Testimony).

Not only does the ISO not develop the models that it uses to conduct its studies, it does not even modify the models without direction from the Participating TOs that developed them. In practice, the ISO modifies models only when directed to make such changes by the Participating TOs in response to certain conditions, such as to add proposed or newly constructed units to the models. In such circumstances, the ISO receives power flow model “change files” from the Participating TO to which the unit will be connecting. These incremental modeling changes are then applied to the ISO’s current resident Planning and Operating study cases, where appropriate. Exh. ISO-54, 8:11-15 (Lyon Testimony); Exh. S-79, 9:8-12 (Gross Testimony).

While the ISO does not model Generating Units, it does use the models provided to it by the Participating TOs to conduct studies that examine the effects of different conditions under which the transmission system may have to operate and to determine the effects of the conditions on the transmission system. Exh. ISO-54, 6:16-18 (Lyon Testimony). Using specialized software, the ISO may alter the data and test different scenarios to determine their effect on the transmission system. Tr. 166:7-11 (Shockey); Exh. S-79, 5:25-6:10 (Gross Testimony). For instance, the ISO could adjust the data to simulate low rain years with resultant low levels of hydroelectric

Generation, and examine the consequences of that change from the baseline assumption on the operation and reliability of the transmission system. Tr. 153:10-22 (Lyon). Similarly, the ISO could simulate the failure of either a Generating Unit or transmission line to understand the consequences of such a failure, and use that information to enhance the reliability of the transmission system. The examination of different scenarios would help the ISO to better understand the most significant vulnerabilities of the transmission system. Exh. S-79, 7:19-8:6 (Gross Testimony). It also should be noted that not every ISO study uses all of the data in the base cases. The selection of the data used in running a particular model depends upon the purpose of a given study project. Tr. at 153:10-22 (Lyon); Exh. S-79, 9:14-22 (Gross Testimony). Thus, while all of the Generating Units identified in Exhibit ISO-55 were included in the base case models that the ISO received from the Participating TOs, not every ISO study used all of the data in the base cases. Exh. S-79, 9:14-22 (Gross Testimony).

Accordingly, the Presiding Judge should find that the ISO uses models that include the units identified in Exhibit ISO-55 in its transmission planning and operations studies. These studies facilitate the ISO's ability to plan and operate the ISO Control Area transmission system in a reliable manner.

**Issue 2: What are all the relevant factors the ISO has considered when modeling behind-the-meter generators in its transmission and operations planning studies, including: (1) WECC requirements for modeling; (2) the generator size and location on the transmission and/or distribution system; (3) load associated with that generation; (4) voltage, stability, and short-circuit concerns; and (5) the impact of the generator on the transmission system?**

As noted both above and in Mr. Lyon's testimony, the ISO does not model Generating Units. Rather, the ISO relies upon power flow models developed by the Participating TOs to perform studies to fulfill its grid planning, operations engineering and other operations reliability responsibilities. Exh. ISO-54, 8:8-9 (Lyon Testimony); Tr. 120:1-121:2 (Lyon).

In order for the ISO to fulfill its Control Area responsibilities, it is necessary that those studies take into consideration all Generation -- both Generation with associated behind-the-meter Load and all other Generation -- based on the impact on the Control Area transmission system and the ISO Controlled Grid, not based on differing criteria according to the type of Load served. Accordingly, the ISO would expect the Participating TOs to model (1) behind-the-meter Generation that may deliver excess Energy to the transmission system in the wholesale market arena, (2) behind-the-meter Load served by the behind-the-meter Generation that would remain connected and continue to draw power from the transmission system in the event the behind-the-meter generation tripped or was curtailed, and (3) behind-the-meter Generation that is of such size, nature, and character or connected at a critical point within the transmission system such that the Generation could have a pronounced and significant effect on the transient or dynamic performance of the transmission system with respect to transient stability, voltage collapse, local area power quality, fault current contribution, or coordination of protective devices. Exh. ISO-54, p. 7:10 – 8:4 (Lyon Testimony).

Accordingly, the Presiding Judge should conclude that the models included in the ISO's studies should appropriately include all Generating Units, the failure of which would significantly affect the operation or compromise the integrity of the ISO Controlled Grid, ISO Control Area operations or the ability of the ISO to meet its reliability obligation to the Western Interconnection.

**Issue 3: How and to what extent does behind-the-meter load netted against unmodeled generation impose CAS costs, as delineated by ISO witness Lyon, on the ISO?**

As the Commission has recognized, because behind-the-meter Load benefits from the ISO's Control Area Services, it causes the ISO to incur costs to provide those services.<sup>9</sup> This finding is consistent with “established Commission policy”<sup>10</sup> that “an ‘integrated transmission grid is a cohesive network moving electricity in bulk’ so that ‘all customers using that grid share in all costs of the grid, because they all benefit.’”<sup>11</sup>

The ISO is charged with ensuring the safe, reliable operation of the Control Area, including the dispatch of bulk power supplies in accordance with NERC and WECC standards. It is therefore the ISO’s responsibility, subject to monetary penalty, to ensure that it provides system balancing and to arrange for adequate Operating Reserves for all Loads within the ISO Control Area, which include those Loads served by on-site Generation interconnected and synchronized to the ISO Controlled Grid and capable of drawing Energy in the event of an on-site Outage of Generation.<sup>12</sup> The physics and dynamic nature of an interconnected transmission grid require that a system operator must continuously monitor the system status in real time, and be both proactive and reactive as required by forecast and current system conditions to maintain the reliability and safety of the system. While the actual Energy used to balance Generation and Load is not itself an element of Control Area Services, the monitoring efforts by the ISO to ensure the safe and reliable operation of the ISO Control Area, and the administrative costs of dispatching of the Energy to

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<sup>9</sup> *California Independent Sys. Operator Corp.*, 99 FERC ¶ 63,020 at 65,109-10, *aff’d* 103 FERC ¶ 61,114 at P 25-26.

<sup>10</sup> Opinion No. 463 at P 25.

<sup>11</sup> *Id.* (internal cite omitted).

<sup>12</sup> The ISO recognizes that the Commission has concluded that its Load responsibility with regard to Operating Reserves does not include Load served behind-the-meter by Qualifying Facilities that has arranged for Standby Service. *California Independent System Operator Corp.*, 104 FERC ¶ 61,196 (2004).

balance Generation and Load are a part of the CAS component. Exh. ISO-54, 10:6-20 (Lyon Testimony).

The ISO, as Control Area operator, performs numerous administrative functions beyond the moment-to-moment monitoring and operation of the ISO Controlled Grid and real-time delivery of Energy requirements. A non-comprehensive listing of these functions was included in Mr. Lyon's testimony. Exh. ISO-54, 10:6-11:30 (Lyon Testimony).

Because neither the WECC nor the ISO distinguish between behind-the-meter Load and other Load with respect to ensuring that all Load continues to be served, the ISO incurs the same Control Area Services costs for behind-the-meter Load that it incurs for Load served using the ISO Controlled Grid. Exh. ISO-54, 13:13-16 (Lyon Testimony). Further, to the extent the behind-the-meter Load has not self-provided or made appropriate arrangements (for example though an adequate standby service arrangement) for the required amount of Operating Reserve, and to the extent that such standby service arrangements are not directly associated with a proportional share of Operating Reserve, in all cases the ISO must be prepared to maintain continuity of service to such Load, and, therefore, must procure the required amount of Operating Reserve. Exh. ISO-54, 13:20–14:2 (Lyon Testimony).

The Commission has nonetheless concluded that behind-the-meter Load imposes a lesser amount of Control Area Services costs on the ISO and has established this proceeding in furtherance of its effort to develop an exemption that properly reflects that lesser amount.<sup>13</sup> If one can conclude that Load served by modeled Generation is an approximation of Load considered in the ISO's transmission and operations planning studies, then the Commission would appear to be seeking information on the cost imposed by Load that is not considered in the ISO's transmission

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<sup>13</sup> Opinion No. 463, at P 28.



and operations planning studies. No witness presented quantifiable evidence on this subject. Mr. Lyon's testimony regarding the manner in which behind-the meter Load benefits from Control Area Services, however, is directly relevant to the Commission's consideration of this issue. Mr. Lyon distinguished between the direct benefits that behind-the-meter Load receives and the benefits that are indirect. Behind-the-meter Load directly benefits from the ISO's assurance of adequate reserves and the monitoring and operating efforts by the ISO to ensure the safe and reliable operation of the ISO Control Area, Exh. ISO-54, 12:15-19, and the administrative costs of dispatching the Energy to balance Generation and Load. Exh. ISO-54, 10:16-20 (Lyon Testimony). Even if the Generating Unit serving the Load is not modeled, a failure of the Generation will still result in an immediate imbalance of supply and demand on the system, to which the ISO will respond. Exh. ISO-54, 12:13-19 (Lyon Testimony).

Behind-the-meter Load benefits less directly from transmission planning and maintenance and outage coordination, which help maintain a robust grid necessary to provide California with reliable electric service. Exh. ISO-54, 14:2-6 (Lyon Testimony) and from the numerous administrative functions apart from the ongoing monitoring and operation of the ISO Controlled Grid and real-time delivery of Energy requirements.

Accordingly, the Presiding Judge should find that behind-the-meter Load netted against unmodeled Generation imposes the same Control Area Services costs on the ISO as other Load with regard to the ISO assurance of adequate Operating Reserve and the ISO's monitoring and operating efforts to ensure to safe and reliable operation of the Control Area transmission system. The Presiding Judge should find that such Load imposes lesser costs with regard to Control Area Services directed toward transmission planning and maintenance and outage coordination.

**Issue 4: How and to what extent does behind-the-meter generation that is not explicitly modeled by the ISO in its transmission and operations planning studies impose CAS costs on the ISO?**

Control Area Services costs are costs incurred to serve Load reliably. Otherwise such costs would not properly be allocated to Load consistent with cost causation. To the extent costs are imposed on the ISO by a particular Generating Unit or type of Generating Unit, those costs should be borne by the Generator or by the entity that specifically purchases from the Generator, as through the Market Operations charge. The Commission did not identify this issue as one for which it sought information and rightly so. The purpose of the Commission's exemption is to quantify the lesser amount of costs that behind-the-meter *Loads* impose on the ISO's Control Area Services. The Presiding Judge should find that this issue is not relevant to the proceeding.

**III. CONCLUSION**

WHEREFORE, the Presiding Judge should make findings as discussed above.

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Counsel for the California Independent  
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Date: March 14, 2005

### **Certificate of Service**

I hereby certify that I have this day served a copy of this document upon all parties listed on the official service list compiled by the Secretary in the above-captioned proceedings, in accordance with the requirements of Rule 2010 of the Commission's Rules of Practice and Procedure (18 C.F.R. 5 385.2010). Dated this 14<sup>th</sup> day of March in the year 2005 at Folsom in the State of California.

/s/ Sidney Mannheim Davies  
Sidney Mannheim Davies