Exh. No. ISO-29

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

California Independent System Operator Corporation	)	Docket Nos. ER01-313-000
	)	ER01-313-001
	)	
Pacific Gas and Electric Company	)	Docket Nos. ER01-424-000
	)	ER01-424-001

REBUTTAL TESTIMONY OF
A. DEANE LYON
ON BEHALF OF THE
CALIFORNIA INDEPENDENT SYSTEM
OPERATOR CORPORATION

Q. PLEASE STATE YOUR NAME, TITLE AND BUSINESS ADDRESS.

A. My name is A. Deane Lyon. I am Director of Operations Support and Training ("OSAT") for the California Independent System Operator ("ISO"). My business address is 151 Blue Ravine Road, Folsom, CA 95630.

Q. HAVE YOU PREVIOUSLY PROVIDED TESTIMONY IN A REGULATORY PROCEEDING?

A. No I have not.

Q. WHAT IS YOUR EDUCATIONAL BACKGROUND?

A. I am certified by the California Apprenticeship Council, the Western System Coordinating Council ("WSCC") and the North American Electric Reliability Council ("NERC") as a System Operator. I attended Ohlone Junior College, Fremont, California in 1976, taking business law, business administration and electronics courses. Since being employed first with Pacific Gas and Electric Company ("PG&E") from December 1976 through September 1997 and from October 1997 with the California ISO, I have completed several system operations, supervisory and management courses.

Q. PLEASE DESCRIBE YOUR WORK EXPERIENCE PRIOR TO THE WORK YOU ARE DOING TODAY.

A. I began my professional career with PG&E in 1976 as a System Operator. Through the course of my PG&E career, I worked as a System Operator at

both the distribution and transmission switching center levels, and supervised or managed distribution and transmission switching centers, regional transmission departments and a regional operator training program. I was an instructor at the PG&E System Operator Training Center and Power System simulator. The last seven years of my career with PG&E were spent in their Energy Control Center as a Transmission Dispatcher, Interchange Scheduler, Generation Dispatcher and Senior Operations Supervisor, in that order. As Senior Operations Supervisor, or Shift Supervisor, I was responsible for the safe and reliable operation of the PG&E Control Area grid which was, prior to its incorporation into the ISO Control Area, spanned from Bakersfield in the south to the California-Oregon border in the north, and from the California coast to the California-Nevada border in the east.

I joined the California ISO in October 1997 as a Shift Manager, assuming the same responsibilities as I had at PG&E, however with a considerably larger Control Area that includes most of the state of California, and with the added market component. I moved from Grid Operations to the Operations Support and Training department in late 1999 as an Operations Trainer. I became manager of Operations Support in June 2000, and recently have accepted the position of Director, Operations Support and Training.

Q. WHAT ARE YOUR CURRENT RESPONSIBILITIES AT THE ISO?

A. I am currently Director of the Operations Support and Training Department at the ISO. Personnel that report directly to me include managers for the

following groups: Operations Support, Operations Training, Operations Applications Support and Operations Engineering Special Projects. The primary role of OSAT is to provide support to all departments within the Operations Division, including the development of training programs, dispatch support and development of tools for operations. OSAT provides training and support to all groups within the Operations Division, to other departments within the ISO, and to Market Participants, to ensure and enhance system reliability as well as to facilitate and expand workably competitive markets.

As the Director of OSAT, I am responsible for overseeing preparation and administration of training across all operations groups, other groups in the ISO, and Market Participants; providing support for ISO efforts to interface with and incorporate markets and deregulation from an operations perspective as they develop inside and outside the ISO; updating, creating and maintaining all ISO Operating Procedures; implementing emergency response programs and procedures within the ISO and in coordination with state and federal agencies; providing presentation development and support for the Operations organization; reviewing ISO Tariff changes, legislation, and regional and national operating organization polices from an operations feasibility point-of-view; and for providing budget development and support for the Operations Division.

Q. AS YOU TESTIFY, WILL YOU BE USING ANY SPECIALIZED TERMS?

A. Yes, I will use capitalized terms as defined in the Master Definitions Supplement, Appendix A of the ISO Tariff.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to respond to certain issues raised in the direct and cross-answering testimony of Mr. James A. Ross on behalf of the Cogeneration Association of California and the Energy Producers and Users Coalition ("CAC/EPUC") and Dr. Laurence D. Kirsch on behalf of the Modesto Irrigation District ("MID"), and the cross-answering testimony of Mr. Mark R. Minick of Southern California Edison Company ("SCE"), Mr. Brian Jobson of the Sacramento Municipal Utility District ("SMUD"), and Mr. Manuel Ramirez of the California Public Utilities Commission ("CPUC") regarding Control Area Services ("CAS") and use of Control Area Gross Load in assessing the CAS component of the GMC. This is the so-called "gross versus net" issue.

In addition, I will respond to testimony submitted by Mr. Minick on behalf of SCE and by S. A. Yari on behalf of San Diego Gas & Electric Company ("SDG&E") regarding the assessment of the CAS component of the GMC on the Mohave Power Plant and specifically its allocation to Energy associated with the other joint participants' share of the Mohave Power Plant ("Mohave Participant Energy" or "MPE"). I will describe the Mohave Power Plant, and demonstrate that the ISO does perform services with regard to MPE. I will explain that since the ISO must perform certain activities with regard to MPE,

it is appropriate that this Energy should be assessed a share of the ISO's Control Area Services component of the GMC.

Finally, in response to Mr. Yari on behalf of SDG&E, I will explain that it is appropriate to assess the Market Operations component of the GMC on Energy schedules that SDG&E coordinates over the Southwest Power Link ("SWPL") on behalf of Arizona Public Service Corporation ("APS") and Imperial Irrigation District ("IID"). For convenience, I will refer to this as "SWPL Energy".

Q. HOW DOES YOUR TESTIMONY RELATE TO OTHER ISO TESTIMONY IN THIS PROCEEDING?

A. Ms. Deborah A. Le Vine is testifying in response to claims by CAC/EPUC that charging the Control Area Services component of the GMC to Loads currently located behind a meter will cause these Loads to island themselves or discourage entry into the market by these Loads. Exh. No. ISO-34. In response to the CPUC, both Ms. Le Vine and Mr. Philip R. Leiber (Exh. No. ISO-21) also address the feasibility of further breaking the CAS component of the GMC down into additional service categories. In addition, in his Direct Testimony, which accompanied the November 1, 2000 filing, Trent Carlson explained the ISO's responsibilities as Control Area operator, addressed cost-responsibility concerns, and described several of the services that the ISO provides under the Control Area Services element of the GMC from an

operations point of view. Exh. No. ISO-10. Ms. Le Vine also submitted Direct Testimony with that filing, which addressed how the CAS component of the GMC relates to the assessment of the ISO's transmission Access Charge on a Gross Load basis. Exh. No. ISO-14. Ms. Le Vine's Rebuttal Testimony also discusses the past treatment of Mohave Participant Energy and SWPL Energy, and the fact that such past treatment has no bearing on how this Energy should be treated under the unbundled GMC.

Q. ARE YOU SPONSORING ANY EXHIBITS IN CONNECTION WITH YOUR TESTIMONY?

A. Yes, I am sponsoring the following exhibits, which were prepared under my supervision:

- Exh. No. ISO-30 is a deposition given by WSCC Director of Dispatcher Training, James William Comish on February 14, 2001;
- Exh. No. ISO-31 is the transcript in FERC Docket No. ER98-997-000, et al. (the QF/PGA proceeding) on May 1, 2001, which includes testimony of Mr. Comish;
- Exh. No. ISO-32 is a diagram of the transmission system surrounding the Mohave Generating Plant;
- Exh. No. ISO-33 is an Excel spreadsheet containing information extracted from the ISO's Transmission Registry.

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. My testimony with regard to "gross versus net" is broken into three sections: A) The Nature of Control Area Services; B) The ISO's Load Responsibility; and C) The Non-discriminatory Nature of Control Area Services.

Because the dispute regarding CAS appears to be based on a misunderstanding of CAS by some parties as a charge for the transmission of Energy or for Ancillary Services, the first section of my testimony is a review of what CAS are, and to some extent, what they are not. This discussion is key because CAC/EPUC's and SCE's discussion of Outages and WSCC Minimum Operating Reliability Criteria ("MORC"),[1] which mistakes the provision of Ancillary Services (under consideration in Docket Nos. ER98-997-000, *et al*. (the "QF PGA proceeding")) for Control Area Services, has led to confusion regarding these issues in the GMC proceeding. I explain that CAS are undertaken to benefit all Loads within the ISO Control Area, or the ISO's "Load responsibility," and address claims that CAS does not provide a benefit for Load located behind-the-meter. I also address arguments that behind-the-meter Loads should not be charged for the planning element of CAS or that SMUD should not be charged for CAS that it claims to self-provide. In explaining that many CAS are undertaken for the benefit of all Load within the ISO Control Area regardless of how much one particular Load utilizes certain CAS in comparison with other Loads, I rebut the notion that CAS depend primarily upon Energy imbalances and transmission flows. In

response to an argument that behind-the-meter Loads should be charged only a portion of the CAS because they are less of a burden, I explain that behind-the-meter Loads are actually a greater burden in terms of resources and costs to the ISO than are similar metered Loads.

Part B of my gross versus net testimony deals with the ISO's Load responsibility. Because CAS are the services through which the ISO is able reliably to provide other Control Area operator services, such as Ancillary Services, to its Load responsibility, the ISO's Load responsibility is the appropriate billing determinant for purposes of allocating the CAS component of the GMC. In this section, I explain the source of the ISO's obligations as Control Area operator. I also explain that the WSCC has authoritatively interpreted Load responsibility as including behind-the-meter Loads for reliability purposes and that – despite a concerted effort to cast doubt on that interpretation – there is no evidentiary basis to reject that interpretation and no other authoritative interpretation has been offered. I respond to several intervenors who raise historical operating procedure as a reason for the exclusion of behind-the-meter Loads from the ISO's Load responsibility, apparently arguing that WSCC regulations are invalid to the extent that they do not comport with past practices or arguing in favor of violating current reliability criteria. In addition, I point out that the CAS component of the GMC will be billed whether behind-the-meter Loads pay for their share or leave the

[1] For a description of WSCC MORC, please see the Direct Testimony of Trent A. Carlson, Ex.

entire cost to retail metered Loads, explaining that the allocation according to Gross Load is intended to differ from past operating practice by remedying inequitable cost shifts. Finally, I explain that, while some have raised Standby Service as a substitute for CAS, Standby Service has nothing to do with CAS and that these parties have confused Control Area Services and Ancillary Services with Energy provided by Utility Distribution Companies ("UDCs").

Part C of my gross versus net testimony addresses the misperception that some Loads are treated differently from others in the allocation of the CAS component of the GMC. I explain that behind-the-meter Load is considered the same as all other Loads in the ISO Control Area for the purpose of CAS. For example, for both behind-the-meter Loads and metered retail Loads, the Generation serving that Load – from on-site, or across the ISO Controlled Grid – must be monitored continuously by the ISO for an Outage of the Generation responsible to serve the Load. Finally, I explain that the allegation that the CAS component of the GMC assumes a simultaneous Outage of all qualifying facility ("QF") Generation is in error because the CAS component assumes no Outage of any Generation at any time, explaining that again CAS have been confused with Operating Reserve requirements and have nothing to do with the full or partial Outage of any Load.

No. ISO-10 at 8-11.

In the portion of my Rebuttal Testimony that deals with Mohave Participant Energy, I will discuss the many functions performed by the ISO that benefit MPE, and the fact that the ISO must take MPE into account in performing many functions. Therefore, I conclude that it is appropriate for the ISO to assess the Control Area Services Charge on MPE.

I. GROSS VERSUS NET

Q. COULD YOU PLEASE SUMMARIZE YOUR UNDERSTANDING OF THE DISPUTE CAC/EPUC AND SCE HAVE WITH THE ISO'S BILLING OF THE GMC CONTROL AREA SERVICES CHARGE BASED ON CONTROL AREA GROSS LOAD?

A. CAC/EPUC's and SCE's position appears to be based on the following fundamental misunderstandings: that the CAS component of the GMC is a charge for the delivery of actual Energy or the procurement of Ancillary Services, Exh. Nos. CAC-2 at 3, 5-6; CAC-4 at 7, 10-11; SCE-7 at 5, 7; that so-called behind-the-meter Load is not part of the ISO's Load responsibility and that therefore the ISO does not incur costs in providing CAS for those Loads, Exh. Nos. CAC-4 at 14-15; SCE-7 at 4:7-10; and that the ISO treats

retail metered Loads differently by billing them on a "net" basis, Exh. Nos. CAC-4 at 9-10; SCE-7 at 7-10.

A) <u>THE NATURE OF THE CONTROL AREA SERVICES COMPONENT</u>

Q. JAMES A. ROSS HAS TESTIFIED ON BEHALF OF CAC/EPUC THAT HE BELIEVES THE ISO CONTROL AREA SERVICES CHARGE VIOLATES THE COST-CAUSATION PRINCIPLE BY "ALLOCATING CHARGES TO CUSTOMERS WITH SELF-GENERATION FOR COSTS THAT SELF-GENERATION CUSTOMERS DO NOT CAUSE TO BE INCURRED." EXH. NO. CAC-2 AT 3. DO YOU AGREE THAT THE ISO'S CONTROL AREA SERVICES COMPONENT OF THE GMC VIOLATES COST CAUSATION?

A. No. Mr. Ross appears to misapprehend the fundamental nature of the Control Area Services component of the GMC as a charge to cover the cost of providing Energy requirements over the ISO Controlled Grid. Exh. Nos. CAC-2 at 5-6; CAC-4 at 7. Mr. Minick of SCE also appears to be laboring under this same misapprehension. Exh. No. SCE-7 at 5-7. As a result, Mr. Ross concludes, and Mr. Minick concurs, that using a billing determinant based on anything other than net Energy violates cost causation. Exh. Nos. CAC-2 at 11; SCE-7 at 5. The CAS component of the GMC, however, is not a charge for the delivery of Energy or Ancillary Services, but rather for the various administrative functions performed by the ISO as Control Area operator that are undertaken to serve its Control Area Load responsibility. As

briefly itemized in part in the Direct Testimony of Michael Epstein, Exh. No. ISO-1 at 19, and more fully described in the Direct Testimony of Trent Carlson, Exh. No. ISO-10 at 18-29, 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.

As I discuss in greater detail below, 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 WSCC 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. See the Direct Testimony of Trent Carlson, Exh. No. ISO-10 at 18. As Mr. Edward Gross of Commission Staff correctly points out, because of the physics of a transmission grid, "a system operator must constantly monitor, in real time, what is happening to the entire transmission grid to maintain the reliability and safety of the system." Exh. No. S-1 at 7. Because behind-the-meter Load is interconnected and served by Generation that is synchronized to the ISO Controlled Grid, the ISO's required monitoring activities benefit behind-the-meter Load. While the actual Energy used to

balance Generation and Load is not itself an element of CAS, 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 balance Generation and Load are a part of the CAS component. Monitoring behind-the-meter Loads is necessary to ensure not only that the industrial processes of a behind-the-meter Load are protected, but that the security of the ISO Controlled Grid is not placed in jeopardy if the behind-the-meter Load's Generation supply is lost.

The ISO CAS are not limited only to system monitoring and dispatching costs, however. Trent Carlson has described several other Control Area Service functions that the ISO undertakes to ensure safe and reliable use of the transmission system in the ISO Control Area by all Loads. Exh. No. ISO-10 at 18-19. A non-exclusive list of these functions includes:

- system security analysis
- setting transmission maintenance standards
- system planning to ensure overall reliability
- integration with other Control Areas
- emergency management
- Outage coordination
- scheduling Generation, imports, exports, and Wheeling in the Day-Ahead and Hour-Ahead of actual operations and after-the-fact reconciliation activities
- conducting annual and multi-year studies to determine the need for Reliability Must-Run Generation contracts
- performing operational studies
- real time monitoring and dispatching

Because behind-the-meter Load is interconnected and served by Generation synchronized to the ISO Controlled Grid, the types of Control Area Service activities listed above benefit behind-the-meter Load. All interconnected Loads cause the ISO to undertake the performance of Control Area Services regardless of the extent such Load uses certain aspects of these services more or less than other Loads. The extent to which the ISO undertakes these Control Area Services, however, does depend on the amount of Load in the ISO Control Area.

Q. MR. ROSS HAS STATED THAT STAFF HAS NOT SUPPORTED THEIR POSITION THAT BEHIND-THE-METER LOAD "SERVED BY SELF-GENERATION BENEFITS FROM ANY OF THE CAISO'S ACTIVITIES RELATED TO THE CONTROL AREA SERVICE CHARGE." EXH. NO. CAC-4 AT 7. DO YOU AGREE WITH MR. ROSS' POSITION?

R. No. Mr. Ross' statement results from his misunderstanding regarding the very nature of Control Area Services, which I address above. For example, if on-site Generation that is telemetered to the ISO fails, the ISO's Energy Management System ("EMS") will detect the failure and the Generating Units on Automatic Generation Control ("AGC") will respond immediately to provide Energy from Regulation provided by those Generating Units. If the loss of Generation is not detected, *i.e.*, if the on-site Generation is not telemetered to the ISO EMS, then it will be detected as a deviation from the scheduled value of the Control Area net interchange, and Generating Units on AGC will

likewise respond to return the Control Area net interchange to the scheduled value. The Energy provided by Generating Units on AGC then will be replaced by Energy from Operating Reserves, which the ISO will in turn replace to maintain the proper margin. The continuous monitoring of the Control Area and the balancing of real-time Load and Generation by the ISO ensures that any industrial process Load or other Load served behind-the-meter by a QF Generating Unit will not fail if the QF Generating Unit cannot serve that Load. Avoiding such failures is a clear benefit of CAS. Other benefits, such as planning, are perhaps less dramatic in any given moment, but over time ensure that Loads currently located behind-the-meter will receive Energy reliably and that a reliable system will exist for those behind-the-meter Generating Units that desire to sell excess Energy to other Loads.

Q. IN HIS CROSS-ANSWERING TESTIMONY, MR. ROSS ARGUES THAT ONE OF THE FUNCTIONS LISTED ABOVE, TRANSMISSION PLANNING, IS NOT UNDERTAKEN ON BEHALF OF BEHIND-THE-METER LOADS. EXH. NO. CAC-4 AT 4-6. WHAT IS YOUR VIEW ON THIS?

R. Mr. Ross argues that because the ISO models use coincident peak Load, these models do not take into account Loads currently located behind-the-meter. Exh. No. CAC-4 at 7. Mr. Ross' arguments, however, are based on past practices and are partially incorrect. PG&E, SCE, and SDG&E provide system modeling data to the ISO for Operations Engineering and System Planning studies. PG&E includes approximately 1000 MW of behind-the-

meter Load in their model. SCE and SDG&E currently do not include behind-the-meter Load. While the CAS component of the GMC does not require metering and can be assessed in the absence of metering by either the estimation methodology described by Mr. Price in his Direct Testimony, Exh. No. ISO-12, or by behind-the-meter Loads simply providing this information to the ISO as described by Mr. Epstein, Exh. No. ISO-1 at 12, the ISO's intent is that eventually there will be no "unseen" Loads. The ISO Tariff Section 5.1.3(d) and Technical Standards (see e.g., ISO Monitoring And Communications Requirements For Non-AGC Units Providing Ancillary Services) and ISO Metering Protocol Sections 2.2.4.3 and 2.3.5 require the telemetry and metering of gross Generation and metering of gross Load for all but the very smallest facilities (behind-the-meter Generating Units less than 1 MW in capacity and the Loads they serve). Coincident peak should now, and will in the future, therefore, include those Loads. Again, however, the CAS component of the GMC does not require metering and is not metering dependent.

Q. MR. JOBSON OF SMUD LISTS SEVERAL CONTROL AREA FUNCTIONS AND STATES THAT THESE ARE SELF-PROVIDED, EXH. NO. SMUD-8 AT 5. DOES SMUD STILL CAUSE THE ISO TO UNDERTAKE THESE CAS?

A. Yes. SMUD outlines several Control Area Services, including in part operational studies, system security analyses, Outage coordination, and transmission planning, and states that SMUD provides these services for the

Load located within its service area off the ISO controlled transmission grid. However, it is the ISO as Control Area Operator that performs these services on a Control Area-wide basis for the benefit of its Load responsibility. For example, the sudden loss of a Generating Unit within the SMUD service territory is detected by the ISO in at least three ways: 1) as an immediate decrease to zero MW on the Generating Unit as may be indicated by telemetry, 2) as a corresponding MW deviation in the ISO Area Control Error ("ACE"), and 3) as additional MW flow to SMUD on transmission lines that connect the SMUD service area to the ISO Controlled Grid. ISO ACE will return to zero when Control Area Generation and imports again match Control Area Load. SMUD may have regulating and manually dispatched units to respond to the loss of Generation and which may assist in the recovery, but the ISO ACE is impacted negatively as a whole by the event. Simply put, ACE is a measure of how well a Control Area is meeting its Load responsibility. An ACE value of zero MW means that a Control Area's supply and demand are matched exactly. A value of greater or less than zero MW indicates that inadvertent Energy is flowing across a Control Area's interconnections with adjacent Control Areas, *i.e.*, the Control Area is supplying inadvertent Energy to the interconnection (an ACE greater that zero) or receiving it from the interconnection (an ACE less than zero).

SMUD's position is based in large part on an assumption that other behind-the-meter Loads are not a part of the ISO's Load responsibility and that,

therefore, these other Loads will not pay the CAS component of the GMC. As I discuss below, however, under WSCC criteria, behind-the-meter Load is part of the ISO's firm Load and, therefore, part of the ISO's Load responsibility.

Q. DR. KIRSCH PRESENTS A HYPOTHETICAL IN HIS TESTIMONY WHEREIN MANY OF THE CONTROL AREA SERVICES DESCRIBED BY MR. CARLSON IN HIS DIRECT TESTIMONY ARE UNDERTAKEN BY SCHEDULING COORDINATORS. EXH. NO. MID-1 AT 8. MAY SCHEDULING COORDINATORS PERFORM THE FUNCTIONS DR. KIRSCH DESCRIBES?

A. No. As Edward Gross of Commission Staff notes, Dr. Kirsch is in error in concluding that a Scheduling Coordinator may perform the duties listed by Dr. Kirsch. Mr. Gross accurately states that the listed duties are in "the exclusive domain of the Control Area Operator." Exh. No. S-1 at 19.

Q. DR. KIRSCH TESTIFIED THAT CONTROL AREA SERVICES COSTS DEPEND PRIMARILY UPON ENERGY IMBALANCES AND TRANSMISSION FLOWS AND THAT BECAUSE THIS IS THE CASE, "THE PROPOSED CHARGE WOULD NOT RECOVER CONTROL AREA SERVICES COSTS IN ACCORDANCE WITH THE WAYS THAT MARKET PARTICIPANTS CREATE THESE COSTS." EXH. NOS. MID-1 AT 2; MID-4 at 7. DO YOU AGREE WITH THIS ASSESSMENT?

A. No. As Edward Gross of Commission Staff correctly points out, Control Area Services involve more than "resolving energy imbalances and managing transmission flows." Exh. No. S-1 at 17. As mentioned above, the Direct Testimony of Trent Carlson, Exh. No. ISO-10 at 18-29, lists and describes several of the Control Area Services that the ISO undertakes in its role as Control Area operator. These functions are undertaken by the ISO regardless of the extent to which one Market Participant or another utilizes certain aspects of CAS.

Q. DR. KIRSCH ALSO ARGUES THAT JUST BECAUSE RELIABILITY STANDARDS ARE BASED ON GROSS LOAD DOES NOT MEAN THAT CAS COSTS ARE BASED ON GROSS LOAD. EXH. NO. MID-4 AT 6. DO YOU AGREE?

A. No. Allocation of CAS to the Load that the ISO is responsible for is logical, as CAS are the primary means of ensuring the reliability of service to such Load. As I previously noted, Dr. Kirsch errs in his understanding of CAS costs as only the costs of Energy balancing. As I have also explained, many CAS are undertaken regardless of the degree to which they are used by one party or another. As Philip Leiber and Deborah Le Vine testify, while it may be attractive to some to break up CAS into any number of additional service categories, it is not feasible at this time and is contrary to the simplification the ISO is attempting. *See* Exh. Nos. ISO-21 at 59-60 and ISO-34 at 4-5.

Q. MR. RAMIREZ OF THE CPUC STATES THAT WHILE HE DOES NOT AGREE THAT BEHIND-THE-METER LOADS SHOULD PAY THE ENTIRE CAS CHARGE, IT SHOULD PAY SOME AMOUNT FOR ITS RELIANCE ON THE ISO CONTROLLED GRID. EXH. NO. PUC-1 AT 15-16. DO YOU AGREE THAT BEHIND-THE-METER LOADS ARE LESS COSTLY TO THE ISO THAN METERED LOADS FOR SIMILAR CAS?

A. No. In fact, the ISO must, because of the lack of telemetered information, employ a variety of extreme manual measures in an attempt to account for those invisible facilities behind the meter. Unfortunately, it is difficult to estimate the additional costs associated with the extra efforts it must undertake when trying to account for these behind-the-meter facilities. One such example of this effort, however is the manual accounting of all municipal-owned Generating Units obtained by “phone-polling” the individual entities. This is accomplished literally by having one or more real-time ISO dispatchers calling each entity to get some idea of available capacity on Generating Units within each entity’s respective area. The results of such a poll are then added up, and used as proxy values for each entity. There is currently no way, short of actually visiting each entity’s monitoring facility, or worse, each resource site, to determine the accuracy of any information supplied by each entity. This is an especially difficult process during a peak Control Area Load day. And yet, each entity, as part of the ISO Control Area benefits directly by its interconnection with the ISO Controlled Grid, regardless of whether it has to pay on an estimated or an actual basis. The

ISO, at a minimum, must in this example dedicate additional individuals to such manual processes like this. It is impossible, however to fully estimate the ancillary costs associated with the impact these manual processes have, for instance on inter-related ISO efforts to minimize Ancillary Service procurement during the same time frame.

B) <u>THE ISO IS RESPONSIBLE FOR ALL LOADS WITHIN ITS CONTROL AREA</u>

Q. MARK MINICK OF SCE CONTENDS THAT GROSS LOAD IS AN INAPPROPRIATE BILLING DETERMINANT FOR THE CAS COMPONENT OF THE GMC BECAUSE BEHIND-THE-METER LOADS ARE NOT PART OF THE ISO'S RESPONSIBILITY. EXH. NO. SCE-7 AT 4. ARE BEHIND-THE-METER LOADS A PART OF THE ISO'S LOAD RESPONSIBILITY FOR THE CONTROL AREA?

A. Yes. Behind-the-meter Loads are part of the ISO's Load responsibility as Control Area operator both as defined by the WSCC and in everyday ISO operations. The provision of CAS allows the ISO to provide more reliably the services it is required to provide for its Load responsibility as Control Area operator, such as adequate reserve capacity, but such services, listed by Trent Carlson at pages 8-11 of his Direct Testimony (Exh. No. ISO-10), should not be confused for CAS themselves.

Q. COULD YOU PLEASE EXPLAIN THE ISO'S OBLIGATIONS AS CONTROL AREA OPERATOR AND WHY THOSE OBLIGATIONS EXIST?

A. Yes. The ISO's obligations derive from a combination of state law and operational rules and standards set by the WSCC and NERC, and the regulations and orders of the Commission. Under California Public Utilities Code Section 345, the ISO has the responsibility to "ensure the efficient use and reliable operation of the transmission grid consistent with the achievement of planning and operating reserve criteria no less stringent than those established by the Western Systems Coordinating Council and the North American Electric Reliability Council." In Order No. 888, the Commission directed that ISOs be compliant with applicable standards set by NERC and the regional reliability councils (in this case, WSCC). Order No. 888, FERC Stats. and Regs. ¶ 31,048 at 31,731 (1987). The ISO's FERC-approved Tariff also obligates the ISO to operate in conformance with these standards.

Q. WHAT ARE THE POLICIES, STANDARDS AND CRITERIA THAT DEFINE THE ISO'S CORE SET OF RESPONSIBILITIES WITH RESPECT TO MAINTAINING RELIABILITY?

A. As Trent Carlson has testified in Exh. No. ISO-10, at 8, the WSCC and NERC, as reliability organizations, develop standards, policies and criteria that apply to all members in relation to each member's particular roles and responsibilities. These standards, policies, and criteria apply to the ISO, as a member of both of these organizations, in relation to its responsibilities

pertaining to the management and Operational Control of the ISO Controlled Grid as well as its standing as operator of the ISO Control Area.

Q. HOW IS THE ISO RESPONSIBLE FOR CONTROL AREA GROSS LOAD, INCLUDING BEHIND-THE-METER LOADS, AS CONTROL AREA OPERATOR?

A. The WSCC MORC, included as an Exhibit to the November 1, 2000 filing, state that:

"All generation, transmission and load operating within the Western Interconnection shall be included within the metered boundaries of a WSCC Control Area. Control areas are ultimately responsible for ensuring that the total generation is properly matched to the total load in the Interconnection." Exh. No. ISO-11 at 29.

Q. MR. ROSS OF CAC/EPUC ARGUES THAT THE "LOAD" REFERRED TO IN THE WSCC MORC DOES NOT INCLUDE BEHIND-THE-METER LOAD BECAUSE, MR. ROSS CONTENDS, SUCH "LOAD" IS NOT "FIRM LOAD." EX. NO. CAC-4 AT 14-15. IS MR. ROSS' CONCLUSION SUPPORTED?

A. No. Mr. Ross first cites the WSCC definition of "load responsibility," which specifies that a Control Area operator's Load responsibility includes "firm load." Mr. Ross then turns to a different set of definitions, this time from NERC, to find a definition of Load that he uses to argue that the WSCC definition does not apply to QFs and other Loads currently located behind-

the-meter. Mr. Ross thus picks and chooses from two separate sets of standards in an attempt to demonstrate that "NERC definitions clarify that the 'Control Area's firm load' … refers solely to firm load delivered and metered at the customer's site boundary … and not electric energy consumption served by DG … as advocated by the CAISO and Mr. Gross." Exh. No. CAC-4 at 15.

Q. IF THE NERC DEFINITION OF LOAD IS NOT HELPFUL IN UNDERSTANDING THE WSCC DEFINITION OF LOAD RESPONSIBILITITY, WHY DOES THE ISO ASSERT THAT BEHIND-THE-METER LOAD IS PART OF ITS LOAD RESPONSIBILITY?

A. As I will explain later, the ISO's responsibilities as Control Area operator require it to take behind-the-meter Load into account, and behind-the-meter Load benefits from the CAS the ISO provides. It is only logical, therefore, that behind-the-meter Load be considered a part of the ISO's Load responsibility. In an effort to clarify the WSCC definition, however, CAC subpoenaed the WSCC to testify on this matter in the QF PGA proceeding before the Commission. The witness provided by WSCC, Mr. Joseph William Comish, in deposition and in testimony, confirmed the ISO's understanding of its Load responsibility. I include both Mr. Comish's QF PGA testimony (Exh. No. ISO-30) and his February 14, 2001 deposition (Exh. No. ISO-31) as exhibits to my Rebuttal Testimony.

Q. DID MR. COMISH STATE THAT THE WSCC REQUIRED CONTROL AREA OPERATORS TO INCLUDE BEHIND-THE-METER LOAD IN THEIR LOAD RESPONSIBILITY?

A. Yes, Mr. Comish testified that a behind-the-meter Load *is firm* for the purposes of Control Area reliability unless it automatically and simultaneously disconnects in the event of a Generating Unit failure. (See *e.g.*, Exh. No. ISO-31at 48. Behind-the-meter Loads are firm from a reliability perspective because the ISO must, *at all times*, have Operating Reserves available to serve that Load if Generation serving it becomes unavailable. In addition, Mr. Comish testified in his deposition in the QF PGA proceeding that behind-the-meter Generation that is interconnected and synchronized to the ISO Controlled Grid serving behind-the-meter Load is to be included in the ISO's calculation of its Load responsibility. (Exh. No. ISO-31 at 12-13).

Q. SCE DEPICTS MR. COMISH AS A WSCC EMPLOYEE WITH NO AUTHORITY TO SPEAK ON BEHALF OF THE WSCC. EXH. NO. SCE-7 AT 16-17. WHAT IS MR. COMISH'S AUTHORITY TO TESTIFY ON WSCC'S BEHALF IN THE QF PGA PROCEEDING?

A. As I mentioned, Mr. Comish was designated by WSCC to interpret its criteria in both a deposition and hearing context. Contrary to SCE's representation that Mr. Comish was espousing his own personal views, Exh. No. SCE-7 at 16, Mr. Comish stated that he was one of the persons authorized to interpret WSCC criteria and had the concurrence of the WSCC's Executive Director,

who is also so authorized, as to the interpretation of the WSCC MORC regarding firm Load and Operating Reserves. (Exh. No. ISO-31 at 82-83). Neither Mr. Minick nor any other witness has presented *any* evidence that Mr. Comish lacks such authority. Mr. Minick implies that unless the WSCC Board or Directors or Operations Committee votes to approve Mr. Comish's testimony and deposition, it is unauthorized. Exh. No. SCE-7 at 17. There is simply no basis for such a conclusion. I note that Mr. Minick did not submit a record of a vote by SCE's Board of Directors indicating that the positions he took in his testimony were those of SCE.

CAC/EPUC attempts to discredit the WSCC criteria by stating that there is no corroborating evidence that the interpretation of Commission Staff's Mr. Gross – which is the same interpretation as that stated by Mr. Comish – has ever been employed by Control Area operators within the WSCC. Mr. Ross, however, was present when Mr Comish testified that he had begun to make inquiries of other Control Areas and none of them "net metered," *i.e.*, failed to meter Generation and Load separately.

Moreover, to argue, as Mr. Ross does, that a current WSCC criterion is not valid because it differs from historical operating procedures of an industry controlled by vertically integrated utilities prior to the existence of "markets", Exh. No.CAC-4 at 15-16, is to argue that new standards are always invalid to the extent they differ from past practices. In addition, CAC/EPUC

disingenuously attempts to portray the interpretation of the MORC criteria given by the WSCC's Mr. Comish under oath, at a deposition and hearing that Mr. Ross attended, as "Mr. Gross' interpretation". Exh. No. CAC-4 at 14.

Q. BOTH MR. ROSS AND MR. MINICK ARGUE THAT ALTHOUGH THE ISO STATES THAT IT BASES ITS CONTROL AREA GROSS LOAD BILLING DETERMINANT ON ITS RESPONSIBILITY FOR ALL LOAD, INCLUDING BEHIND-METER-LOAD, THIS RESPONSIBILITY IS NOT BORNE OUT IN PRACTICE BECAUSE THE ISO DOES NOT PROCURE OPERATING RESERVES FOR BEHIND-THE-METER LOAD. EXH. NOS. CAC-4 AT 16; SCE-7 AT 15-16. DOES THE ISO PROCURE OPERATING RESERVES FOR THIS LOAD?

A. The ISO must procure Ancillary Services sufficient to cover 5 percent of the Control Area Load served by hydroelectric generation, plus 7 percent of Control Area Loads served by thermal generation currently located behind a meter in order to comply with the WSCC reliability criteria and operationally ensure reliability. Unfortunately, because it currently lacks telemetry of most behind-the-meter Generation, the ISO does not have the constantly updated information necessary to ensure that it is accurately meeting that criterion. Instead, the ISO has compensated by slightly over-procuring Ancillary Services. The issue of procurement and cost allocation for Ancillary Services is the subject of the QF PGA proceeding and is only addressed here to rebut testimony given that the purported lack of procurement is somehow evidence

that the ISO does not in practice consider behind-the-meter Loads as within its responsibility and therefore that Control Area Services do not take them into account.

Q. WHAT IS YOUR UNDERSTANDING OF DR. KIRSCH'S POSITION WITH REGARD TO THE ISO'S INCLUSION OF BEHIND-THE-METER LOAD IN ITS CALCULATION OF CONTROL AREA GROSS LOAD?

A. Dr. Kirsch appears to believe that as the ISO has been operating the power system without comprehensive information regarding behind-the-meter Load, this information is "not essential to the ISO's management of the power system." Exh. No. MID-1 at 18.

Q. DO YOU AGREE WITH THIS POSITION?

A. No. Dr. Kirsch appears to be making an argument regarding the procurement of Ancillary Services and does not appear to understand the nature of Control Area Services. As I have explained, the ISO undertakes several functions based on its role as Control Area operator and the scope of these functions is based on the Control Area Gross Load, including behind-the-meter Load. The Control Area Services component covers the cost of the several functions that the ISO undertakes to ensure the safe and reliable operation of the power system within its Control Area, not only the ISO's moment-to-moment management of the ISO Controlled Grid. Estimation of behind-the-meter Load for the purposes of CAS is not done because it is "essential to

the ISO's management of the power system." As discussed in the Rebuttal Testimony of Ms. Le Vine, it is done in order to better allocate the costs associated with the provision of these services, so that metered Loads are not unfairly asked to assume the costs of CAS provided for behind-the-meter Loads.

Q. MR. ROSS SIMILARLY ARGUES THAT THE ISO'S GMC DEVIATES FROM HOW BEHIND-THE-METER LOAD HISTORICALLY HAS BEEN TREATED AND THAT THIS IS EVIDENCE OF THE CONTROL AREA SERVICES CHARGE'S FLAWED DESIGN. EXH. NO. CAC-2 AT 14-17. WHAT IS YOUR VIEW ON THIS?

A. The ISO's GMC does differ from past practices. As Deborah Le Vine testifies, the CAS component of the GMC is designed to reduce the inequitable cost shifts that have existed under prior operating practices. Exh. No. ISO-34 at 7. The bottom line is that, as a revenue-neutral entity, the ISO must recover the expense it incurs for monitoring the Control Area, transmission planning, operational studies and the host of other CAS I have listed above. These costs are caused by both metered Loads and behind-the-meter Loads. See Direct Testimony of Trent Carlson, Exh. No. ISO-10 at 18. The full measure of the CAS component will be paid whatever the outcome of this issue, whether it is by metered Load alone or in conjunction with behind-the-meter Loads. The ISO believes, however, that allowing behind-the-meter Loads to avoid paying the CAS component or to pay only a

fraction of it, as if it were an Energy delivery charge, creates an improper cost shift to metered Loads, for which it actually is cheaper to provide several CAS, as I have explained above. Therefore, while the ISO's allocation of the CAS component of the GMC does vary from prior operating practices in California, the ISO believes that it is an equitable change that will eliminate unfair cost shifts.

Q. MR. JOBSON OF SMUD TESTIFIES THAT A FERC ALJ HAS HELD THAT "WHERE AN ENTITY MINIMIZES ITS BURDEN ON A CONTROL AREA BY SELF-PROVIDING FOR STANDBY SERVICE…THAT ENTITY SHOULD NOT BE CHARGED ANY BUCKET OF THE GMC ON A GROSS LOAD BASIS." EXH. NO. SMUD at 4. IS THIS ACCURATE?

A. No, SMUD misrepresents the holding of the initial decision in the QF PGA proceeding. In the initial QF PGA proceeding decision, Presiding Judge Leventhal found that existing standby service satisfies the WSCC reliability criteria for reserves. *California Independent System Operator Corporation*, 96 FERC ¶ 63,015 at 65,138 (2001). The Commission has not approved that finding, however, which is contrary to the testimony in that proceeding regarding the WSCC criteria. Briefs on Exceptions are due October 1, 2001. Regardless of whether the result is upheld in the QF PGA proceeding, that is a different case, and I understand from counsel that it does not dictate the outcome here.

As I have explained, the CAS component of the GMC is not a charge for Ancillary Services. An entity can, for example, reduce or eliminate invoices for Ancillary Services by self-providing. An entity will not, however, be able to alleviate the ISO's WSCC mandated monitoring of those self-provided assets, or the other on-going Control Area Services described earlier. For example, if an entity self-provides Ancillary Services, the ISO must still monitor and deploy those Ancillary Services (if required), transmission planning will still be necessary, Outage coordination will still be necessary, and system security analysis will still be necessary.

C) THE NON-DISCRIMINATORY NATURE OF THE CONTROL AREA SERVICES COMPONENT

Q. MR. ROSS AND MR. MINICK HAVE IN THEIR TESTIMONY DESCRIBED BEHIND-THE-METER LOAD AS "POTENTIAL" LOAD. EXH. NOS. CAC-4 at 10; SCE-7 at 17. DO YOU AGREE WITH THIS CHARACTERIZATION?

R. No. Behind-the-meter Load is identical to other Load on the system in that the ISO must be prepared to serve that Load if Generation fails, whether the Generation is located on-site or across the state. In other words, a Load is not merely "potential" for Control Area purposes if, when the Generation serving it on-site or across the network fails, it will result in an ACE and a response from Generating Units on AGC supplying Regulation.

An example is given in the Cross-Answering Testimony of Mr. Minick of SCE in which a hypothetical retail Load, a factory, receives all of its Energy

requirements over the ISO Controlled Grid and operates only 10 MW of its potential 20 MW Load. Exh. No. SCE-7 at 9-10. Mr. Minick argues that even though the unused 10 MW potential Load of the factory benefits, the factory is required only to pay the CAS component of the GMC on the 10 MW of actual Load. Mr. Minick then compares this to a 10 MW behind-the-meter Load, a factory that is served by behind-the-meter Generation. As long as the Generating Unit is operating, Mr. Minick argues, the 10 MW of factory Load is only "potential", like a light that has not been switched on but may be at any moment. The comparison is flawed, however. To the ISO, the 10 MW Load served by on-site Generation is just as real as the 10 MW Load served from off-site. Both Loads are actual Loads in that at any moment Generation from across the ISO serving the factory in the first example, or located next to the factory in the second example, may go off-line. The ISO constantly monitors the ISO Controlled Grid and continually provides the various CAS, which I have already described, to ensure that the industrial process continues in both cases.

To better understand the fallacy of Mr. Minick's example, consider two identical factories. Factory A is served from off-site Generation and has 10 MW of Load operating and 10 MW of additional operating capacity that is idle. Factory B is served by on-site Generation, and also has 10 MW of Load operating and 10 MW of additional capacity that is idle. In *both* cases actual Loads should pay the CAS Charge based on 10 MW of Load. In *both* cases,

the 10 MW of unused potential factory Load may theoretically benefit by the provision of CAS; yet, neither Load will be assessed the CAS based on the 10 MW that is not used and that is therefore not capable of causing an ACE or causing AGC to react in the event of an off-site or on-site Generating Unit Outage. Only the non-operating Load, not the Load served by the on-site Generation, is comparable to the light that has not been switched on: if Generation serving the light were to fail, reserve Generation would not be brought on-line to serve the non-existent Load because the light is not on. In the absence of appropriate metering, a behind-the-meter Load may ensure that it is not charged for Load that is not in use by supplying this information to the ISO.

Q. MR. ROSS AND MR. MINICK TESTIFY THAT THE CONTROL AREA SERVICES CHARGE IS AN UNDULY DISCRIMINATORY RATE DESIGN. EXH. NOS. CAC-2 AT 8; CAC-4 AT 9-11; SCE-7 AT 6-11. DOES THE ISO'S CONTROL AREA SERVICE CHARGE DISCRIMINATE AGAINST SCHEDULING COORDINATORS THAT REPRESENT BEHIND-THE-METER LOAD?

A Mr. Ross and Mr. Minick both appear to believe that Control Area Services component of the GMC is discriminatory because they appear to believe that it treats behind-the-meter Load differently than Load that receives its regular Energy requirements from an off-site Generation source. Part of this stems from a misunderstanding that the CAS component of the GMC is a

transmission charge assessed by the ISO. Mr. Minick, for example, states in his testimony that as the CAS Charge is based on a kWh billing determinant, the charge only should be allocated to Energy actually transmitted as opposed to Energy that could be transmitted. Exh. No. SCE-7 at 6-7. The kWh basis of the CAS component is simply the measurement used to gauge the size of a given Load consistent with the ISO's settlement systems. Because Loads currently located behind a meter cannot be assessed on the basis of a meter reading if the facility is net metering, these Loads are estimated for their kWh size. As I have described above, the CAS component of the GMC is not a charge for the transmission and delivery of Energy requirements, but is based on the several functions the ISO undertakes as Control Area operator to ensure safe reliable operation of the Control Area for its Load responsibility.

CAC/EPUC's and SCE's testimony make much of behind-the-meter Loads being billed on a gross basis, while other Loads are billed on a "net" basis. The syntax that CAC/EPUC and SCE employ may be the cause of some of their confusion. Loads that receive their Energy requirements over the ISO Controlled Grid could be described as being billed in a "net" or "gross" manner with equal meaning as these Loads do not have anything against which to net out their delivered Energy. In fact, both types of Load are billed in the same manner on a gross basis.

As I note above, SCE and CAC also have tried to paint behind-the-meter Load as merely "potential" Load as opposed to actual Load. Mr. Minick's factory example, which I reviewed above, provides a good example of how Loads currently located behind a meter and metered Loads should be treated the same. As Mr. Michael Epstein has testified, most Loads currently located behind-the-meter have refused to provide the ISO with Load data on which to make assessments of charges. Exh. No. ISO-1 at 12. In the absence of this information, the estimation described by Mr. Price in his Direct Testimony will be employed. Exh. No. ISO-12.

Q. MR. ROSS ARGUES THAT THE ISO IMPLICITLY ASSUMES THAT ALL QFS WILL FAIL SIMULTANEOUSLY. EXH. NOS. CAC-2 AT 9; CAC-4 AT 12-13. ARE THE CAS CHARGES BASED ON SUCH AN ASSUMPTION?

A. Mr. Ross' and Mr. Minick's arguments regarding discrimination are based in part on the conclusion that the Control Area Services component of the GMC assumes a simultaneous Outage of all behind-the-meter Generation. Exh. Nos. CAC-2 at 9; CAC-4 at 12-14, SCE-7 at 10, 18. As I have explained above, because the CAS component of the GMC is neither a charge for the delivery of Energy or Ancillary Services, it has very little to do with whether a particular Generating Unit is on-line – whether in full or in part. The CAS will be undertaken by the ISO whether Load is being served by the Generation intended to serve it or by some other source.

Q. DOES THE CONTROL AREA SERVICES CHARGE ASSUME, AS ALLEGED BY MR. ROSS, A SIMULTANEOUS OUTAGE OF ALL QF GENERATION? EXH. NOS. CAC-2 AT 9; CAC-4 AT 12-14.

A. No, the CAS component does not assume a simultaneous Outage – or any Outage - of behind-the-meter Generation serving behind-the-meter Load in the same manner that it does not assume a simultaneous – or any – Outage of the Generation serving retail metered Load over the ISO Controlled Grid.

Mr. Ross is relying on a statement in the ISO's December 2000 Answer, which stated that the ISO's proposal "merely assumes a given QF could fail completely." Answer of the CAISO to Motions to Intervene, Comments, Requests for Hearing, Requests for Consolidations, Requests for Suspension, Motions to Reject Filing, and Protests at 19 (December 7, 2000). Mr. Ross then says that the ISO assumes that all QFs could fail completely. Exh. No. CAC-4 at 12-13. The ISO's statement in the December 2000 Answer may not have clearly described the ISO's assumptions. The ISO actually only assumes that a certain portion of Generation, including QF Generation, may fail at a given time. In accordance with WSCC MORC, the ISO must procure Operating Reserves of 5 percent of its Load responsibility served by hydroelectric Generation and 7 percent of its Load responsibility served by non-hydroelectric Generation — including on-site Load – to meet that contingency. If the ISO assumed a 100 percent failure for the provision of reserve capacity, CAC/EPUC would see the ISO procuring 100 percent

reserves to accommodate that failure. As I mentioned above, however, any assumption of failure, however, affects the amount of Operating Reserves the ISO must procure, not the CAS the ISO must provide. Once again, CAC/EPUC is confusing CAS with Ancillary Services.

Q. MR. ROSS ALSO TESTIFIES THAT THE ISO HAS VIOLATED THE COMMISSION'S REGULATIONS REGARDING THE SALE OF BACK UP POWER BY ASSUMING A SIMULTANEOUS OUTAGE OF QF GENERATION. EXH. NO. CAC-2 AT 9. DOES THE GMC CONTROL AREA SERVICES COMPONENT VIOLATE THE COMMISSION'S REGULATIONS REGARDING SUCH SALES?

A. No. First, as I have explained, the ISO's Control Area Services component does not assume a simultaneous Outage of all QF Generation or any other Generation and Mr. Ross appears to be confusing Ancillary Services with Control Area Services. Second, the Control Area Services component recovers the ISO's costs resulting from numerous functions the ISO performs as Control Area operator that benefits all interconnected Load as outlined in the Direct Testimony of Trent Carlson, Exh. No. ISO-10 at 18-29, and is not a charge for the sale of back up and maintenance power.

II. MOHAVE

Q. PLEASE SUMMARIZE YOUR TESTIMONY ON THE ISSUE OF MOHAVE PARTICIPANT ENERGY.

A. In this section of my testimony, I will discuss the many functions performed by the ISO that benefit MPE, and the fact that the ISO must take MPE, and, in fact, the entire Mohave Plant output, into account in performing many functions for which the ISO, as Control Area operator, is responsible. Therefore, I conclude that it is appropriate for the ISO to assess the Control Area Services Charge on MPE.

Q. SCE WITNESS MARK MINICK ARGUES THAT THE MPE "DOES NOT CONTRIBUTE TO THE CONTROL AREA RESPONSIBILITIES OF THE CAISO", EXH. NO. SCE-1 at 7, THAT "THE PLANT IS OUTSIDE THE GEOGRAPHIC BOUNDARY OF THE CAISO CONTROL AREA", EXH. SCE-1 AT 3, AND THAT MOHAVE PARTICIPANT ENERGY "DOES NOT UTILIZE THE ISO CONTROLLED GRID." EXH. NO. SCE-1 AT 7. MR. MINICK CONTENDS THAT THE ENERGY IN QUESTION IS DYNAMICALLY SCHEDULED OUTSIDE THE ISO CONTROL AREA, AND, THIS BEING THE CASE, IT IS INAPPROPRIATE FOR THE ISO TO ASSESS THE CONTROL AREA SERVICE CHARGE ON MOHAVE PARTICIPANT LOAD. EXH. NO. SCE-1 at 8-9. DO YOU AGREE WITH THESE STATEMENTS?

A. As I will describe below, I do not.

Q. SDG&E WITNESS S. A. YARI SUPPORTS THE ARGUMENTS OF SCE, AND STATES THAT SINCE THE OWNERSHIP SHARES OF THE NON-SCE ELDORADO TRANSMISSION LINE FACILITIES HAVE NOT BEEN TRANSFERRED OVER TO ISO CONTROL, THE NON-SCE MOHAVE PARTICIPANTS SHOULD NOT BE REQUIRED TO PAY GMC, AND SCE SHOULD NOT BE REQUIRED TO PAY GMC ON THEIR BEHALF. EXH. NO. SDO-1 AT 4. MR. YARI ALSO STATES THAT THE RETAIL LOADS OF THE NON-MOHAVE PARTICIPANTS RECEIVE NO BENEFIT FROM ISO SERVICES. EXH. NO. SDO-1 AT 5. FINALLY, MR. YARI STATES THAT THE ISO'S ASSESSMENT OF CONTROL AREA SERVICES ON THESE RETAIL LOADS RESULTS IN THE RETAIL LOADS PAYING BOTH THE ELDORADO OWNERS AND THE ISO FOR THE SAME SERVICES. EXH. NO. SDO-1 AT 5. DO YOU AGREE WITH THESE ARGUMENTS?

A. I do not, as I will describe further below.

Q. PLEASE DESCRIBE THE MOHAVE GENERATING PLANT.

A. The Mohave Plant, located in Nevada, is made up of two 790 MW coal-fired units, together with their related facilities and structures. Among the related facilities is a 500 kV switchyard. SCE owns 56 percent of the plant, and is the operating agent of the plant, as well. A diagram of the Mohave Plant and its surroundings is included with my Rebuttal Testimony as Exh. No. ISO-32.

Q. WHO OWNS THE REMAINDER OF THE PLANT?

A. The Los Angeles Department of Water and Power ("LADWP") owns 20 percent of the plant; Nevada Power ("NEVP") owns 14 percent of the plant; and the Salt River Project ("SRP") owns 10 percent of the plant.

Q. IS THE MOHAVE PLANT IN THE ISO'S CONTROL AREA?

A. Yes. The Mohave Plant is located within the ISO's Control Area electrical boundaries, which are defined by interchange metering with adjacent Control Areas such as Bonneville Power Administration, Sierra Pacific Power Company, Los Angeles Department of Water and Power, Arizona Public Service Company, and others. The ISO Control Area includes the Distribution Systems of the California Investor Owned Utilities, and other transmission and distribution systems within California, including the systems of municipal, state, and federal governmental entities.

Q. HOW DOES THE WSCC DEFINE "CONTROL AREA"?

A. The WSCC defines a Control Area as "An area comprised of an electric system or systems, bounded by interconnection metering and telemetry, capable of controlling generation to maintain its interchange schedule with other control areas, and contributing to frequency regulation of the interconnection." *WSCC Reliability Criteria Definitions, August 2000*.

Q. DOES THIS MEAN THAT THE MOHAVE PLANT IS WITHIN THE ISO CONTROL AREA?

A. The Mohave Plant is within the metered boundaries of the ISO Control Area, and as such, the ISO Control Area includes the Mohave Plant.

Q. MR. MINICK ARGUES THAT "THE PLANT IS OUTSIDE THE GEOGRAPHIC BOUNDARY OF THE CAISO CONTROL AREA." EXH. NO. SCE-1 AT 3. DO YOU AGREE WITH THIS STATEMENT?

A. No. As I noted above, the WSCC defines a Control Area as "An area comprised of an electric system or systems, bounded by interconnection metering and telemetry, capable of controlling generation to maintain its interchange schedule with other control areas, and contributing to frequency regulation of the interconnection". It is not a meaningful statement to characterize the Mohave Plant as being located "geographically" in another Control Area. Control Areas are defined electrically, not geographically, and are based on the operation of and operational responsibility for facilities within the metered boundaries.

Q. WHAT IS MOHAVE PARTICIPANT ENERGY OR "MPE?"

A. As defined by Mr. Minick, Mohave Participant Energy or "MPE" is the energy of the non-SCE Mohave Participants (*i.e.*, LADWP, NEVP, and SRP) that is dynamically scheduled to Control Areas outside of the ISO Control Area.

Q. HOW IS THE MPE TRANSMITTED TO THE LOAD IT SERVES?

A. The energy is transmitted via the Eldorado Transmission System, which also is owned by the Mohave Participants in the same proportions as is the Mohave Plant. Exh. No. SCE-2 at 2. *See also* Exh. No. ISO-32, which is a diagram of the Mohave Plant and the electrical system around it.

Q. PLEASE DESCRIBE THE ELDORADO TRANSMISSION SYSTEM.

A. The Eldorado Transmission System consists of a 500 kV transmission line between the Mohave Plant and the Eldorado Substation, the 500 kV and 220 kV switchyards of Eldorado Substation, two 220 kV transmission lines between the Mead and Eldorado Substations, and related switching and transformation facilities at Eldorado Substation. This is described in Exh. No. SCE-2 at 2, and shown on Exh. No. ISO-32.

Q. MR. MINICK CLAIMS THAT THE MPE "DOES NOT CONTRIBUTE TO THE CONTROL AREA RESPONSIBILITIES OF THE CAISO". EXH. NO. SCE-1 at 7. DO YOU AGREE?

A. No. MPE originates from the Mohave Plant within the ISO Control Area, and is transmitted over ISO controlled transmission facilities. While it is true that the ISO need not procure any Ancillary Services on behalf of the MPE, the ISO must still consider the MPE in the same manner as other exports for purposes of interchange schedule coordination and reconciliation of schedules with external Control Areas after-the-fact. Further, the MPE must

be considered in real time for the purpose of monitoring thermal and stability limits on not only the facilities emanating from the plant, but on other transmission facilities in and about the Southern California area.

Q. WHAT SPECIFIC ACTIVITES DOES THE ISO PERFORM WITH REGARD TO MPE?

A. The ISO must consider the entire Mohave output for purposes of generation and transmission facility outage planning. The ISO must reconcile Mohave export energy after-the-fact. The entire Mohave output must be considered for the performance of operational studies. The ISO must ensure that the MPE transmission facilities, and not just the percentage of them owned and used by SCE, maintain the proper planning and operational standards. The ISO must monitor the entire plant output and the surrounding transmission system in coordination with the monitoring and adjustment of the Sub-Synchronous Resonance ("SSR") protection system based on the real-time transmission system and Mohave Plant conditions. As well, in circumstances when both Mohave units are offline, either as planned or unplanned outages, the ISO would be required to serve its usual portion of the auxiliary power plant Load together with MPE for a short period of time. The dynamic scheduling of the Mohave auxiliary load occurs instantaneously and automatically at the Mohave Plant under any condition in which both Mohave units are offline simultaneously. The individual MPE export energy interchange with NEVP, SRP and LADWP must be known in order for the

ISO EMS computer to calculate properly Control Area Load and ACE in real-time, and to reconcile Mohave output Energy (including MPE) hourly Energy interchange with NEVP, SRP and LADWP after the fact. The ISO must monitor MPE in case the Eldorado-Mohave 500 kV line is planned or forced out of service. The ISO must model total Mohave exports in order to include them in the Scheduling Application to identify transmission facility operational constraints.

Q. PLEASE DESCRIBE THE ACTIVITIES LISTED ABOVE, AND EXPLAIN WHY THE ISO MUST PERFORM THEM.

A.

1. The ISO must account for the entire Mohave output for purposes of generation and transmission facility outage planning.

The entire Mohave output must be known in order for the ISO Outage Coordination department to determine the impact of generation and transmission facility outages on the Mohave output, on the Mohave transmission system, and on adjacent facilities that have been determined, through operations studies, to be impacted by the plant output or the scheduled or forced removal from service of adjacent generation and transmission facilities.

2. The ISO needs to pre-schedule Energy in the forward markets and reconcile Mohave export Energy with Mohave Participants after-the-fact.

The ISO must perform several functions to schedule MPE. Prescheduled estimates of Mohave shares to SRP, LADWP, and NEVP are entered into the ISO Scheduling Infrastructure ("SI") system and then entered into the ISO Interchange Transaction Scheduler ("ITS") in the day-ahead scheduling process. These estimates also are entered into pre-scheduling/real-time check sheets in the day-ahead scheduling process. The ISO real-time scheduler updates the estimates in ITS and on the check sheets on an hourly basis in accordance with actual dynamic metered values, and then checks these values periodically and at the end of the day with SCE's real time personnel. ISO after-the-fact Scheduling Support personnel update the schedules in ITS for settlements purposes based on after-the-fact reports received from SCE. At that time, the estimated LADWP schedules on the Eldorado – McCullough path, the estimated SRP schedules at Mead, and the estimated NEVP schedules at Mead are updated with actual metered values. After-the-fact check sheets for Control Area checkout are also updated. Control Area Checkout is a process that the ISO must engage in as part of its responsibilities as Control Area operator. A new wheeling schedule from Mead to Mohave and then from the Mohave 500 kV bus to Laughlin (NEVP), based on NEVP Laughlin meter reads sent at the end of the month, is entered into check sheets for end-of-month Control Area checkout purposes, but is not entered in ITS.

3. The ISO must consider the entire Mohave output for the performance of operational studies.

This goes hand-in-hand with the explanation in item 2 above. For this, I refer to Trent Carlson's Direct Testimony in this proceeding, which accurately explains the need for the ISO to know the status and output of the Mohave Plant in order to perform operational studies:

> The operation of the power system is dynamic with respect to the balance of supply and demand and with respect to the configuration of the power system. . . . Planned and forced outages of major Generation and transmission facilities also affect the nature of power delivery. The relative locations of Generating Units and Loads must be considered in light of available transmission capacity (including with respect to planning for what is to happen when the next Generating Unit or transmission line is forced out of service). Operation studies rely on large databases and advanced computer applications to model and simulate the power system. Operations Engineers perform several types of studies with these databases and computer applications, including but not limited to steady-state power flow, transient stability, and post-transient stability. These studies are aimed at determining the performance and expected response of the system under normal and contingency conditions. Unlike grid planning studies, which evaluate the performance and response of the power system one or more years in advance, operation studies evaluate the expected performance and response of the power system in the nearer-term (*e.g.*, seasonal nomogram studies, or studies to determine minimum loading requirements for Reliability Must-Run Units, or studies supporting outage coordination). Like grid planning, however, many of these studies are coordinated with other transmission operators and neighboring Control Areas within the WSCC interconnection. Of chief concern in this study coordination effort is accuracy of the data used to model the system in each respective area in the interconnection. The results of many of these studies are reflected in updated, or new, operating procedures used by system operators to maintain the security and reliability of the interconnected power systems.

Exh. No. ISO-10 at 19-20.

4. The ISO needs to ensure that the MPE transmission facilities, and not just the percentage of them used by SCE, maintain the proper standards.

The ISO is a WSCC designated Control Area operator. As such, the ISO must ensure that it satisfies all applicable operating and planning criteria as detailed in the NERC operating policies and WSCC MORC in order to perform its role in maintaining the stability and reliability of the ISO Controlled Grid and the Western Interconnection responsibly. Additionally, with the advent of the WSCC Reliability Management System ("RMS"), the ISO also is held more closely accountable to the MORC, with a failure to meet the performance measures described potentially resulting in sanctions being assessed to the ISO by the WSCC.

5. The ISO must monitor the entire Mohave Plant output and the surrounding transmission system in coordination with the monitoring and adjustment of the Sub-Synchronous Resonance ("SSR") protection system based on the real-time transmission system and Mohave Plant conditions.

This system is designed for the prevention of turbine shaft damage on the Mohave generating units brought on by SSR, which is an inherent characteristic of a large, interconnected transmission grid with long transmission lines such as the Western Interconnection. It does not consider the ownership portion of the units in such monitoring and operation of the system.

6. The ISO must be prepared to serve its portion of the Mohave auxiliary plant load should the Mohave Plant trip (that is, go off-line unexpectedly):

In the event that both of the Mohave generators separate from the grid, electrical Load consumed by auxiliary equipment at the plant would continue to be served through the transmission system. The SCE portion of the Load would be served by the ISO based on the dynamic schedule calculation at the Mohave Plant.

7. The ISO must know the individual values of Mohave export Energy interchange with NEVP, SRP, and LADWP in order for the ISO Energy Management System ("EMS") computer to calculate Control Area Load and ACE properly in real time, and to reconcile Mohave hourly Energy interchange with NEVP, SRP and LADWP after the fact.

Consistent with the NERC and WSCC requirements and obligations of a Control Area operator, without this information, the ISO could not properly calculate the Control Area Load or ACE. Improper calculation of ACE leads to the creation in real-time of inadvertent Energy between Control Areas, reduced performance in our requirement to contribute to regulation of interconnection frequency, increased incidence of WSCC-wide manual time error correction, and a general degradation in the reliability and stability of the ISO Controlled Grid and the Western Interconnection. Additionally, RMS

sanctions may be imposed for failure to perform the requirements and obligations of a Control Area operator properly.

8. The ISO must monitor MPE in case the Eldorado-Mohave 500 kV line is planned or forced out of service.

In this case the MPE is rescheduled across non-Mohave participant transmission facilities, most likely facilities also under the full Operational Control of the ISO, yet lacking any Mohave participant ownership. In certain instances, depending on system conditions (including available capacity) on these non-Mohave participant facilities, this may require curtailment of MPE.

9. The ISO must model Mohave exports in order to include them in the Scheduling Application:

The Mohave participants have bilateral transmission rights associated with MPE. When one of the transmission paths becomes constrained, the ISO Scheduling Application ("SA") reallocates available transmission usage on the remaining paths. The purpose of this is to ensure the reliable operation of the Control Area by recognizing the thermal and stability limitations of the Mohave Project lines and of other transmission facilities interconnected with the Mohave Project. To facilitate this the ISO must model the MPE exports as well as monitor the total output of the Mohave plant, inclusive of MPE exports, to determine potential Control Area impacts resulting from the entire plant output.

For example, Appendix B of the ISO Transmission Control Agreement, a portion of which documents SCE's contract encumbrances, states the following regarding the Mohave-Eldorado 500 kV line:

> If Mohave-Eldorado line is curtailed, pro-rata back up is provided on Mohave-Lugo and Eldorado-Lugo lines. If Mohave-Lugo is curtailed, pro-rata back up is provided on Mohave-Eldorado. Amount of back up is up to participant's Mohave share. Pro-rata percentages are: Edison-56%, LADWP-20%, NPC-14%, SRP-10%.

Thus, it is crucial that the ISO monitor not only the Mohave-Eldorado line, but other transmission facilities in the area in order to be prepared to undertake necessary back up.

Q. WHAT DOES "DYNAMIC SCHEDULE" MEAN?

A. The NERC Glossary of Terms, prepared by the NERC Glossary of Terms Task Force in 1996, defines a dynamic schedule as "A telemetered reading or value that is updated in real time and used as a schedule in the AGC/ACE equation and the integrated value of which is treated as a schedule for interchange accounting purposes. Commonly used for "scheduling" jointly owned generation to or from another Control Area."

Essentially, the Control Areas' respective EMS computers take into account the dynamic nature of the interchange schedule to calculate the ACE/AGC equation accurately.

Q. WOULD LOAD DYNAMICALLY SCHEDULED OUTSIDE THE ISO CONTROL AREA REQUIRE DIFFERENT TREATMENT FROM THE ISO WITH REGARD TO THE COSTS RECOVERED THROUGH THE CONTROL AREA SERVICES CHARGE?

A. No. Although the ISO need not procure additional operating reserves to meet WSCC MORC on behalf of the MPE, the cost of procuring Ancillary Services is not a part of the Control Area Services Charge, nor of any other component of the GMC.

Q. HOW DO YOU RESPOND TO MR. MINICK'S ARGUMENT (EXH. NO. SCE-1 AT 8-9) THAT ORDER NO. 888 DEMONSTRATES THAT DYNAMICALLY SCHEDULED ENERGY IS THE RESPONSIBILITY OF THE CONTROL AREA TO WHICH IT IS DISPATCHED, RATHER THAN THE CONTROL AREA IN WHICH IT ORIGINATES?

A. The order quoted by Mr. Minick does not support his contention with regard to facilities that are partially dynamically dispatched and partially dispatched to the "home" Control Area. As described above, the physics of the flow of Energy dictates that the ISO must take all of the MPE into account.

Q. WHAT IS THE ONE SCHEDULING COORDINATOR PER METER RULE?

A. Only one SC may register with the ISO for a generating resource's meter or meter point. *See* Scheduling Coordinator Application Protocol of the ISO Tariff, Section 2.3. The ISO Tariff limitation of one SC per Generating Unit

(or meter) is essential. The ISO has determined that reliability and system security require a single point of contact to receive ISO dispatch instructions for each Generating Unit accessing the ISO Controlled Grid. It is for these reasons that the ISO assigns a unique ISO resource identification number ("ISO Resource ID") for each Generating Unit. This facilitates accurate and reliable tracking of that Generating Unit within the ISO's several scheduling, dispatch, settlement and outage coordination programs. Each ISO Resource ID may be associated or linked with only one SC. Thus, while an SC may Schedule for multiple Generating Units, each Generating Unit may have only one SC at a time in order to permit the ISO systems to dispatch, track and settle transactions associated with that Generating Unit.

Q. MR. MINICK STATES THAT "[A]BSENT THE ONE SCHEDULING COORDINATOR PER METER RULE, I WOULD KNOW OF NO REASON FOR THE CAISO TO KNOW THE TOTAL MOHAVE PROJECT OUTPUT." EXH. NO. SCE-1 AT 10. DO YOU AGREE WITH THIS STATEMENT?

A. No, as I described earlier in outlining the activities the ISO must perform with regard to MPE, there are several important reasons for the ISO to keep track of the total Mohave project output.

Q. ARE THERE SOME ADDITIONAL REASONS FOR THE ISO TO KNOW THE MOHAVE PROJECT'S TOTAL OUTPUT?

A. The ISO needs to consider the total Mohave output in order to comply with our responsibility as a Control Area operator with regard to outage planning, reconciliation of Mohave exports after-the-fact, performing operational studies, coordination of interchange schedules, contribution to interconnection frequency control, and the reduced incidence, to the extent possible, of manual time error corrections.

Q. MR. MINICK CLAIMS THAT MPE "DOES NOT UTILIZE THE ISO CONTROLLED GRID." EXH. NO. SCE-1 AT 7. DO YOU AGREE WITH THIS STATEMENT?

A. No. As demonstrated in the ISO's Transmission Registry (data from which is included with this testimony in spreadsheet form as Exh. No. ISO-33), significant elements of the Mohave Plant and the Eldorado transmission system are under ISO Operational Control, and contained within the ISO Controlled Grid and Control Area. *See* Exh. No. ISO-32. A non-exclusive list of elements pertaining to Mohave and Eldorado that were placed under ISO Operational Control includes the following 500 kV and 230 kV lines:

- Eldorado-Mohave 500 kV Line
- Laughlin-Mohave 500 kV Line
- Lugo-Mohave 500 kv Line
- Eldorado-Lugo 500 kV Line
- Eldorado-McCullough 500 kV Line
- Eldorado-Mead No. 1 and No. 2 230 kV Lines.

Q. WHAT IS THE TRANSMISSION REGISTRY?

A. The Transmission Registry is a database listing the transmission facilities placed under ISO Operational Control by the Participating Transmission Owners ("PTOs"). It contains the identity of each PTO and the equipment rating for each transmission facility.

Q. HOW DO FACILITIES BECOME A PART OF THE TRANSMISSION REGISTRY?

A. PTOs propose modifications to their transmission facilities by submitting such proposals through a secure ISO web interface. The ISO personnel responsible for reviewing component modifications, who have technical expertise with regard to transmission facilities, then review proposed changes for general technical reasonableness. The ISO may ask a PTO to resubmit a proposed change if it appears that the proposed change is in error or may result in a reduction in system reliability or capability. After the ISO completes the review and approves the PTO-proposed modifications, the modifications become part of the database.

Q. WHEN WERE THE ELEMENTS OF THE ELDORADO SYSTEM ADDED TO THE TRANSMISSON REGISTRY?

A. The elements of the Eldorado transmission system were not added to the Transmission Registry as a single facility, but rather as a series of individually added elements in the form of circuit breakers, disconnect switches,

conductors, transformers, reactors, capacitors and other equipment typically included in substation and transmission system design. This occurred on various dates beginning on December 19, 1997, with updates occurring as late as May 26, 2000.

Q. WOULD A CONTRACTUAL ARRANGEMENT AMONG THE MOHAVE PARTICIPANTS AND SCE HAVE AN IMPACT ON WHETHER THE TRANSMISSION FACILITIES ARE UNDER THE CONTROL OF THE ISO?

A. No. While a contractual arrangement might spell out who had the right to a certain amount of MW Energy, a dynamic, interconnected electrical grid under the operational control of a Control Area operator does not operate in that manner. Most electrical power flows from the point of origin (generator) to the point of use (consumer) over the path of least resistance. However, power will, in varying quantities, also flow over any available path, depending on the degree of electrical impedance on those paths. The ISO is responsible for monitoring this electrical power flow and the impact that all Generation and transmission system changes occurring on the ISO Controlled Grid, planned or unplanned, have on this power flow.

Q. WHAT IS YOUR RESPONSE TO SDG&E WITNESS MR. YARI'S ASSERTION THAT THE ISO'S ASSESSMENT OF CONTROL AREA SERVICES ON MPE RETAIL LOADS RESULTS IN THE RETAIL LOADS

PAYING BOTH THE ELDORADO OWNERS AND THE ISO FOR THE SAME SERVICES? EXH. NO. SDO-1 AT 5.

A. Mr. Yari is incorrect. The ISO assesses charges to recover the costs of the services that the ISO performs. No payment to others, whatever its ostensible purpose, would recompense the ISO for the Control Area Services it performs, nor do others perform these services with regard to the entire ISO Control Area.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes it does.