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September 10, 2003

VIA COURIER

The Honorable Magalie Roman Salas
Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, DC 20426

Re: *California Independent System Operator Corporation*
Docket Nos. ER00-2019-006, ER01-819-002, and ER03-608-000

Dear Secretary Salas:

Please find enclosed for filing an original and seven copies of the Supplemental Prepared Direct Testimony of Lonnie J. Rush and the Prepared Rebuttal Testimony of Keith Casey prepared on behalf of the California Independent System Operator Corporation in the above-referenced docket.

Respectfully submitted,

Michael E. Ward

Enclosures

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

California Independent System Operator Corporation	)))	Docket No. ER00-2019-006, ER01-819-002, and ER03-608-000

EXHIBITS ISO-26 THROUGH ISO-32

FILED ON BEHALF OF THE
CALIFORNIA INDEPENDENT SYSTEM
OPERATOR CORPORATION

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

California Independent System Operator Corporation	)))	Docket No. ER00-2019-006, ER01-819-002, and ER03-608-000

PREPARED DIRECT TESTIMONY OF
LONNIE J. RUSH
ON BEHALF OF THE
CALIFORNIA INDEPENDENT SYSTEM
OPERATOR CORPORATION

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

California Independent System Operator Corporation	)))	Docket No. ER00-2019-006, ER01-819-002, and ER03-608-000

SUMMARY OF PREPARED DIRECT TESTIMONY OF
LONNIE J. RUSH
ON BEHALF OF THE
CALIFORNIA INDEPENDENT SYSTEM
OPERATOR CORPORATION

Mr. Rush's testimony explains that "phantom Congestion" results mostly from the design of restructured California electricity markets, which provides for the management of Congestion through forward markets yet honors Existing Contracts and their often incompatible terms. In honoring Existing Contracts the ISO must accept Schedules within a timeframe too short—due to reasons of practicality and inter-regional coordination—for it to accommodate them in its Congestion Management and Scheduling process. Consequently, the entire capacity provided for in an Existing Contract must remain available for last-minute transactions after completion of the Congestion Management process, even though the result is that this capacity often goes unused.

This unused capacity is phantom Congestion, Congestion that is only apparent, not real, because the system actually is capable of accommodating greater power flows had the capacity been available to all Market Participants to use. Phantom Congestion accounts for a large portion of the significant Congestion costs on the ISO's system in recent years, and the problem will become more costly if usage levels return to or exceed that experienced in the late 1990s. Phantom Congestion also imposes indirect costs by reducing the operational flexibility of the system, increasing the opportunities for power suppliers to obtain and exercise market power, and exposing the system to abusive trading practices.

Phantom Congestion is not susceptible to the "quick fixes" proposed by some, such as a redesign of the ISO software or changes to the ISO's Operating Procedures. Even with an improved iterative Scheduling process, there would be insufficient flexibility for the market to create Schedules within a timeframe that would allow the ISO to manage the grid reliably. Neither is phantom Congestion likely to disappear over time, because significant amounts of the capacity tied up in Existing Contracts will not become available for decades.

Although an element of the ISO Market Redesign proposal, if approved and implemented, should greatly reduce the amount of unused capacity from Existing Contracts and eliminate phantom Congestion, it will not resolve certain economic inefficiencies in Congestion Management and the Energy markets because, among other things, the Existing Rights holders would retain a higher priority for transmission usage than other users without bearing the costs associated with this special treatment. Moreover, it is uncertain when, if ever, this vehemently contested portion of the ISO's Market Redesign can be implemented.

Q1. PLEASE STATE YOUR NAME, TITLE, AND BUSINESS ADDRESS.

A1. My name is Lonnie J. Rush and I am the Manager of Real Time Scheduling for the California Independent System Operator ("ISO"). My business address is 151 Blue Ravine Road, Folsom, California 95630.

Q2. IN WHAT CAPACITY ARE YOU EMPLOYED?

A2. As the Manager of Real Time Scheduling, I am responsible for real time Operations of import and export Energy Scheduled across ISO interconnections with other Control Areas.

Q3. DO YOU HAVE ANY OTHER RESPONSIBILITIES AT THE ISO?

A3. Yes. Since October 2002, I have been the Existing Contract Project Leader. My team was responsible for developing a proposal for treatment of Existing Contracts in the proposed market redesign filed with the Commission on July 22, 2003 ("Market Redesign").

Q4. PLEASE DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL QUALIFICATIONS.

A4. I received a Bachelor of Arts degree in Economics from Sacramento State University in Sacramento, California in May 1998. Additionally, I am enrolled in the Masters of Business Administration program at the University of California, Davis.

Q5. HAVE YOU TESTIFIED PREVIOUSLY BEFORE THIS COMMISSION?

A5. No.

Q6. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A6. The purpose of my testimony is to discuss the nature and causes of phantom Congestion and its impact on the operation of the ISO Controlled Grid.

Q7. AS YOU TESTIFY, WILL YOU BE USING ANY SPECIALIZED TERMS?

A7. Yes. I will be using terms defined in the Master Definitions, Appendix A of the ISO Tariff.

I. <u>BACKGROUND</u>

Q8. WHAT IS CONGESTION?

A8. Congestion occurs when there is insufficient transmission capacity on a path to implement all Schedules simultaneously or, in real time, to accommodate all Generation and Load.

Q9. WHAT IS PHANTOM CONGESTION?

A9. Phantom Congestion describes a particular situation in which there appears to be Congestion on the ISO Controlled Grid following the submittal of Day-Ahead and Hour-Ahead Schedules even though the actual planned use of the ISO Controlled Grid would not cause that Congestion. Specifically, my testimony discusses the phantom Congestion, i.e., the false appearance of Congestion, that arises from the difference in the Scheduling timelines set forth in the ISO Tariff and those included in various transmission contracts – known as Existing Contracts – that predate the ISO Operation Date.

Q10. HOW DOES THE DIFFERENCE IN SCHEDULING TIMELINES PRODUCE PHANTOM CONGESTION?

A10. The ISO manages Congestion using Day-Ahead and Hour-Ahead Schedules. The ISO Tariff requires that Preferred Day-Ahead Schedules be submitted by 10:00 a.m. on the day before the transaction is to occur ("Trading Day"). Hour-Ahead Schedules must be submitted two hours before the hour in which the transaction is to occur ("Trading Hour"). If the Preferred Day-Ahead and Hour-Ahead Schedules indicate Congestion, the ISO adjusts Schedules to eliminate the Congestion and includes the adjustments in Final Schedules.

The Scheduling timelines in most of the Existing Contracts, however, allow the recipient of transmission service ("Existing Rights holder") to Schedule transactions after the time specified for the submittal of Preferred Schedules – sometimes as late as twenty minutes before the Trading Hour. Under the ISO Tariff and the Commission's orders, the ISO must honor these Existing Contracts. When the ISO performs Congestion Management it therefore assumes that the Existing Rights holder will use the entire capacity in real time available under the Existing Contract. When the Existing Rights holder does not use the entire capacity, such that the ISO's analysis would have shown less Congestion if the ISO had known the actual Existing Contract Schedules at the time the Day-Ahead and Hour-Ahead Congestion Management was run, you have phantom Congestion.

Q11. HOW EXTENSIVE IS THE AMOUNT OF TRANSMISSION CAPACITY THAT GOES UNUSED BECAUSE OF PHANTOM CONGESTION?

A11. Historical data show that Existing Contract reservations have commonly been unscheduled (in the forward Schedules) and unused (in real-time) on major transmission paths. Forward Congestion (including phantom Congestion) often occurs on the California-Oregon Intertie in the inbound direction, on the Palo Verde Branch Group in the inbound direction, on Path 15 in the northbound direction, and on Path 26 in the southbound direction. Exhibit ISO-27 shows the unused and unscheduled Existing Contract reservation on these major paths in 2002. In each case, the unscheduled Existing Contract capacity in the Hour-Ahead Schedules and the unused Existing Contract capacity in real time did not differ noticeably; most of the changes in Existing Contract Schedules took place between the Day-Ahead and Hour-Ahead Schedules. The Existing Contract Schedules actually have limited ability to change on inter-ties in real time because the neighboring Control Area would not generally allow reservation of the capacity in real time (or 20 minutes before the operating hour) for the Existing Contracts.

II. <u>THE CAUSE OF PHANTOM CONGESTION</u>

Q12. WAS PHANTOM CONGESTION A PROBLEM PRIOR TO THE ISO'S COMMENCEMENT OF OPERATION?

A12. Congestion was a problem, although it was not as severe a problem as today because Loads were smaller; phantom Congestion, however, did not exist as such. The vertically integrated utilities that operated their individual transmission grids and executed the Existing Contracts did not need to operate an open market platform and consequently had more flexibility to adjust to differing time lines. Moreover, those utilities owned and had control of internal generation that they could Redispatch to offset last minute changes of the Existing Rights holder.

Q13. THEN IS IT FAIR TO SAY THAT THE ISO IS RESPONSIBLE FOR PHANTOM CONGESTION?

A13. Not really. Phantom Congestion is the product of three policy decisions that were not entirely compatible. The first was the separation of transmission control from generation ownership. The second was the decision to use markets to manage Congestion and to assign the use and cost of constrained interfaces to those that value it the most. The third, somewhat incompatible policy, was the decision to honor Existing Contracts and their often incompatible contract provisions and Scheduling time lines.

Q14. PLEASE EXPLAIN.

A14. Because the ISO does not own Generation, it must Redispatch Generation through its markets in order to manage Congestion. In order to Redispatch the Generation on a market basis, the ISO needs to know the magnitude and direction of Congestion sufficiently in advance for the ISO effectively to use its auction markets to manage the Congestion. Accordingly, the ISO must have deadlines for the submission of Schedules. The need to honor Existing Contracts that have shorter deadlines, as I previously discussed, causes phantom Congestion.

Q15. WHY CAN'T THE ISO SIMPLY SET DEADLINES THAT ARE CONSISTENT WITH THOSE IN THE EXISTING CONTRACTS?

A15. Permitting Schedule changes until twenty minutes before the Trading Hour would not allow for enough time to "run" the market and publish results to Market Participants. It would also give Market Participants and ISO Operations personnel insufficient time to coordinate changes in Schedules. Typically, the ISO has 1300 Schedule changes in the Hour-Ahead; it therefore requires significant computing time to produce Final Hour-Ahead Schedules for Scheduling Coordinators. Even if Final Hour-Ahead Schedules could be provided to Scheduling Coordinators within the twenty minutes prior to the Trading Hour, that time would be too short for Market Participants to modify and coordinate their Schedules. Moreover, Schedule changes twenty minutes before the Trading Hour would be incompatible with Control Area interchange Scheduling within the Western Electricity Coordinating Council ("WECC") and would thus be working at cross-purposes with region-wide Scheduling processes.

Q16. PLEASE EXPLAIN WHY 20 MINUTE SCHEDULING WOULD BE INCOMPATIBLE WITH WECC SCHEDULING PROCESSES.

A16. The WECC practice is to confirm Control Area interchange schedules twenty minutes prior to the start of each hour. Typically, changes to Schedules after 30 minutes prior to the hour cause Control Area checkout problems because of the communication that must take place to implement a Schedule. This is the reason why the ISO's notifications of Supplemental Energy Schedules are issued during non-emergency situations no later than 30 minutes before the hour. Control Areas (including the transaction's source and sink), marketers, and transmission providers must be informed of the Scheduled change. To initiate a Schedule change or request, the Purchasing and Selling Entity must create an Electronic Tag (E-Tag) describing the transaction. Each entity in the transaction must approve the tag. Tag approval or denial is based on available transmission as well as other factors in the Control Area. Each E-Tag must be evaluated by all Control Area Operators, transmission providers, and Scheduling Entities on the path and must be completed by 20 minutes prior to the top of the hour to be considered on time. E-Tags submitted later than 20 minutes prior to the top of the hour are considered late and will not become Schedules unless all entities are able to approve the tag in time. If the approval of one or more of the entities cannot be obtained, the E-Tag goes into a state of passive denial and the Schedule may not be -awarded. Control Area checkouts are typically completed 20 minutes prior to the top of the hour. Control Areas ramp Generation 10 minutes before the hour to meet the next hour's Load requirements so each Schedule discrepancy found during checkouts must be resolved between 20 minutes and 10 minutes before the start of the hour. Each unresolved discrepancy in Schedule checkouts results in frequency deviations on the system. Reliability is jeopardized as the volume of Scheduling increases closer to the operating hour. Under current circumstances, allowing changes up to 20 minutes before the operating hours is simply bad operating practice.

Q17. HOW DO YOU RESPOND TO ARGUMENTS THAT PHANTOM CONGESTION IS THE RESULT OF THE ISO'S SOFTWARE?

A17. It is true that the ISO's software was not designed to accommodate the Scheduling timelines of Existing Contracts. When the ISO began Operations, it expected that the need to accommodate Existing Contracts would be a short-term issue. The ISO Tariff called for the negotiation of revisions to Existing Contracts "to align the contract's Scheduling and operating provisions with the ISO's Scheduling and operational procedures, rules and protocols, to align Operations under the contract with ISO Operations . . . ." Because all other contractual provisions would have remained unchanged, it was hoped that these revisions would be accomplished reasonably quickly. As a result, it did not appear to make sense to design the ISO software to address Existing Contracts. Redesigning the software, however, would not and could not resolve phantom Congestion unless the ISO discontinued reservation of Existing Contract capacity or abandoned the practice of managing Congestion on a forward basis, or the Existing Contracts were modified. Different software will not tell the ISO on a Day-Ahead basis how much of the Existing Contract capacity will eventually be Scheduled. The Commission's conclusion in its order on Amendment No. 27 was directly on point: "Software that perpetuates the non-conforming schedules will not fix this problem of 'Phantom Congestion.' . . . [T]his approach simply suggests an iterative scheduling process that will not allow sufficient time for the market to respond and will leave the ISO with insufficient time to manage the grid reliably."

Q18. IT HAS ALSO BEEN ARGUED THAT PHANTOM CONGESTION IS DUE TO THE ISO'S OPERATING PROCEDURES THAT LIMIT THE ABILITY OF EXISTING RIGHTS HOLDERS TO SELL EXCESS TRANSMISSION CAPACITY SO THAT IT WILL NOT GO UNUSED. DO YOU AGREE?

A18. No. The Operating Procedure in question prohibits a Scheduling Coordinator from changing a contract reference number ("CRN") associated with capacity under an Existing Contract with less than seven days notice. The seven-day requirement is necessary because Scheduling Coordinators have the ability to Schedule seven days in advance. If the CRN were changed within this period it would affect the Schedule. The ISO does have the ability to manually override a Scheduling Coordinator-CRN relationship, but the manual override must be for the entire day and cannot be done hour-by-hour. Changes to Scheduling Coordinator-CRN relationships hour-by-hour would require new software at a substantial cost and additional labor to handle manual changes. Moreover, transferring CRNs to use more transmission does not prevent phantom Congestion from occurring unless or until the Existing Rights holders release all the transmission unused in the Day-Ahead and Hour-Ahead Schedules.

The only affect of the CRN limitation on cost allocation, however, is on that done by the ISO. Nothing in the ISO Tariff or Operating Procedures would prevent an Existing Rights holder from entering into a bilateral sale of the use of its transmission capacity and instructing its Scheduling Coordinator to Schedule a transaction that covers that use. The Settlement of costs would simply need to be arranged between the Existing Rights holder and the purchaser of the transmission without ISO involvement. For example, if Turlock Irrigation District purchased 50 MW from the Pacific Northwest, but had insufficient transmission rights from its ownership of the California Oregon Transmission Project ("COTP") for the transaction, it can request the use of unavailable from other project participants. Assuming, as an example, Modesto Irrigation District had 50 MW available on the COTP, it could notify its Scheduling Coordinator, Pacific Gas and Electric Company, of a 50 MW transaction from Captain Jack to Tracy. Since Modesto Irrigation District and Turlock Irrigation District are both connected at Tracy, the Settlements can be worked out between the two entities.

III. <u>THE CONSEQUENCES OF PHANTOM CONGESTION</u>

Q19. WHY IS PHANTOM CONGESTION UNDESIRABLE?

A19. Congestion is costly. When the ISO must manage Inter-Zonal Congestion, it must reduce the use of the Inter-Zonal Interface by adjusting Schedules within the Zones. The users of the Inter-Zonal Interface pay the cost of these adjustments through Usage Charges. As is shown in Exhibit ISO-28, Day-Ahead Congestion on the California-Oregon Intertie was in the import direction on monthly average in 1999. The monthly average unscheduled

Day-Ahead Existing Contract capacity is far above the average unmet Day-Ahead transmission capacity Demand. In other words, had the unscheduled Day-Ahead Existing Contract capacity been available for Day-Ahead Schedules, there would not been any Day-Ahead Congestion on average. Exhibit ISO-28 also shows total Usage Charges associated with the Day-Ahead Congestion. For the California-Oregon Intertie in the import direction, the congestion charges were over $34 million for 1999. Most or all of this Congestion cost, as well as the related higher cost of Energy in the ISO Control Area, could have been avoided had the unscheduled Day-Ahead Existing Contract capacity been released. Although Congestion has decreased recently, it remains significant and could easily return to prior levels if Load increases. Phantom Congestion has thus caused, and is likely to continue to cause, unnecessary Congestion Management and unnecessary costs to other Market Participants.

In addition, when the capacity does become available in real time, it often cannot be efficiently used because of various operational factors, such as Control Area interchange time lines and Ramping limits of some Generating Units. Importantly, phantom Congestion also prevents Market Participants from materializing gains from trading Energy between California and other Control Areas.

Q20. ARE THERE OTHER NEGATIVE CONSEQUENCES OF PHANTOM CONGESTION?

A20. Yes. Because a greater portion of the Load in a Zone must be served by Generation within the Zone, individual Generators command a greater portion of the available Generation, and greater market power, further increasing Usage Charges. Dr. Casey has evaluated this phenomenon and other aspects of the costs of phantom Congestion in his testimony.

Further, phantom Congestion can encourage bidding strategies that have detrimental effects. For instance, due to the potential that more capacity is available in real time, a Scheduling Coordinator may have an incentive to under-Schedule Load in order to reduce exposure to Usage Charges (Congestion costs) while, at the same time, another Scheduling Coordinator may have an incentive to over-Schedule Load to receive Day-Ahead Congestion payments. (Such strategy has been referred to as the "Fat Boy" or "Inc'ing Load" strategy). The inaccurate Load Schedules in terms of quantity and location have caused power flow and price inconsistencies between the forward and real time markets. Another strategy employed by Market Participants as a result of phantom Congestion involves the Scheduling of "non-firm export" transactions that the Market Participant does not intend to, or cannot, deliver. If the importing inter-tie appears congested because of phantom Congestion, the Scheduling Coordinator can receive Congestion revenue and then later cancel the export so no delivery takes place. The Scheduling Coordinator is thus paid for relieving Congestion that does not really exist.

IV <u>BENEFITS OF THE PROPOSED TRANSMISSION ACCESS CHARGE</u>

Q21. THE ISO HAS ARGUED THAT THE NEED TO REDUCE PHANTOM CONGESTION IS A REASON TO PROVIDE INCENTIVES, THROUGH THE TRANSMISSION ACCESS CHARGE, TO GAIN NEW PARTICIPATING TOS. DOESN'T THE ISO'S MARKET REDESIGN TAKE CARE OF PHANTOM CONGESTION?

A21. The ISO's current Market Redesign, as submitted to the Commission, does address, and would reduce, phantom Congestion. Under the proposal, Existing Rights holders will continue to submit Balanced Schedules to the ISO markets, which will be given Scheduling priority over other users of the ISO Controlled Grid in the Day-Ahead and Hour-Ahead Markets to the extent such Schedules conform to the Existing Contracts. In particular, in the Day-Ahead Congestion Management valid Existing Contract self-Schedules will be the last to be adjusted in the event that non-economic adjustments are required to relieve Congestion.

In contrast to today, however, the ISO will not reserve any transmission capacity for Existing Contracts beyond the capacity included in their Day-Ahead Schedules. In the Hour-Ahead Market, Existing Contract Schedule changes will be given priority over all other Hour-Ahead Schedule changes and will be accepted as fully as possible without modifying Final Day-Ahead Schedules. Because scheduling is only accomplished Day-Ahead and Hour-Ahead, the ISO will Redispatch non-Existing Contract resources in real time relative to their final Hour-Ahead Schedules as needed to accommodate all valid real-time Existing Contract Schedule changes. In addition, Existing Rights holders will be able to submit, and the ISO will accept, further Interchange Schedule changes after the Hour-Ahead Market closes in accordance with the Scheduling time lines embedded in the Existing Contract.

Market Redesign should thus eliminate phantom Congestion and greatly reduce the amount of Existing Contract capacity that remains unused.

Q22. IF THIS IS SO, WHY DOES MARKET REDESIGN NOT REPRESENT AN ENTIRELY SATISFACTORY RESOLUTION OF THE ISSUE?

A22. First, there is no certainty that this portion of the ISO's Market Redesign will actually be implemented as currently contemplated. The Existing Rights holders have vehemently opposed this proposal, as evidenced in their protests.

Second, although the ISO strongly advocates the proposed Market Redesign as far superior to the current situation if Existing Contract timelines remain in place, it is not the optimal solution. As the ISO noted when it submitted its Market Redesign to the Commission, it would be far preferable if Existing Rights holders became Participating TOs and converted their rights under the Existing Contracts.

Q23. WHY WOULD IT BE PREFERABLE IF EXISTING RIGHTS HOLDERS CONVERTED THEIR RIGHTS?

A23. Making the capacity represented by Existing Rights available to all Market Participants advances the Commission's policy goals and those of the California legislature when it established the ISO. The persistence of Existing Contracts that must be honored continues to interfere with achievement of the open and nondiscriminatory access to transmission that is necessary to the efficient operation of electricity markets. Existing Contracts perpetuate discriminatory treatment. Even under the Market Redesign, Existing Contracts have a higher priority for transmission usage. As a result, curtailments and derates of transmission cannot be implemented consistently across the markets based solely on market bids. Instead, regardless of whether it is the most economically efficient choice, new firm use is cut before Existing Contract Schedules. In addition, Existing Contract Schedules are often not curtailed to the level allowed under the Existing Contract because the ISO's systems are not automated to handle the various nuances of each Existing Contract. Yet the Existing Rights holders do not bear the costs of their special treatment.

Q24. ARE THERE ANY OTHER REASONS THAT IT WOULD BE PREFERABLE FOR EXISTING RIGHTS HOLDERS TO BECOME PARTICIPATING TRANSMISSION OWNERS?

A24. Yes. Providing special treatment to Existing Rights holders increases expenses for Market Participants. If Existing Rights holder retain transmission priority, as they would under the Market Redesign, there would be increased Redispatch costs that would have to be recovered from Market Participants. This need for real-time adjustments due to Existing Contract scheduling priorities could also lead to sub-optimal Generation Dispatch inefficiencies in the Day-Ahead and Hour-Ahead.

Existing Contracts affect the operation and efficiency of Congestion Management and Energy markets in other ways. As I discussed, because Existing Contracts were considered to be a short-term issue, the ISO's software system was not built to handle them; therefore, most work for Existing Contracts continues to be done manually. Operations uses spreadsheets to calculate each Existing Contract value for each hour of each day and manually transfers some of the data into the Existing Transmission Contract Calculator ("ETCC"), which is used to validate Existing Contract Schedules in the markets and in Settlements. The ETCC is able to calculate elementary contract calculations but the more complicated Existing Contracts must be done in Excel applications and transferred into the ETCC. Once the data is prepared daily and sometimes hourly in the ETCC, it is used to run the Day-Ahead and Hour-Ahead. Schedules are then transferred to real time Operations. Real time Operations is not able to distinguish between Existing Contract and other Schedules because of the complexity and the cost of programming for what was thought to be a short-term issue. As a result real time Operations personnel in real time manually determine Existing Contract Schedules by linking the Scheduling Coordinator on spreadsheets and in the ETCC to the Scheduling Coordinator on the Schedules in the market.

An internal ISO review indicated that it takes approximately 14 full-time employees to administer Existing Contracts. Manual work-arounds and additional workload are required in Grid Operations, Settlements, Metering, Operations Engineering, Market Quality, Contracts, Legal, and Client Relations. For example, Grid Operations has one full-time individual to maintain spreadsheets and administer all changes associated with Existing Contracts. In addition, three real time Operators working around the clock at all times monitor, administer, and perform manual workarounds associated with Existing Contracts. Calculating curtailments for new firm use and Existing Contract Schedules is laborious and inefficient in real time.

Q25. BUT WON'T PHANTOM CONGESTION DISAPPEAR AS AN ISSUE AS THE TRANSMISSION SYSTEM IS UPGRADED AND EXISTING CONTRACTS EXPIRE ON THEIR OWN ACCORD?

A25. The Congestion situation will almost certainly improve gradually if transmission is expanded faster than load grows. Dr. Casey's testimony, for example, shows the improvements attributable to an upgrade of Path 15. The problems caused by Existing Contracts are not going to disappear anytime soon, however.

Exhibit ISO-29 shows the current Existing Contracts that appear as Encumbrances in the various appendices to the Transmission Control Agreement. As is apparent, many Existing Contracts continue far into the future – some past 2040. Moreover, the capacity involved is significant. Although not all Participating Transmission Owners identified the capacity in their respective appendix, Southern California Edison and the Cities of Vernon, Anaheim, Azusa, Banning, and Riverside did. Southern California Edison has at least 3,500 MW of capacity Encumbered until 2007; it will still have over 1,500 in 2010, and over 1,100 MW in 2020 and beyond. Unless Existing Rights holders voluntarily modify the Existing Contracts or the Commission approves the ISO's Market Redesign, the only way that this capacity will become available to other Market Participants on a nondiscriminatory basis is if the Existing Rights holders become Participating TOs. Because the ability to implement other resolutions of phantom Congestion is uncertain and imperfect, and because of other benefits of increased ISO participation, providing the incentives for ISO participation is the most reasonable and prudent course of action.

Q26. THANK YOU, I HAVE NO MORE QUESTIONS.

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

City of Folsom County of Sacramento	)	Docket Nos. ER00-2019-006, ER01-819-002, and ER03-608-000

DECLARATION OF WITNESS

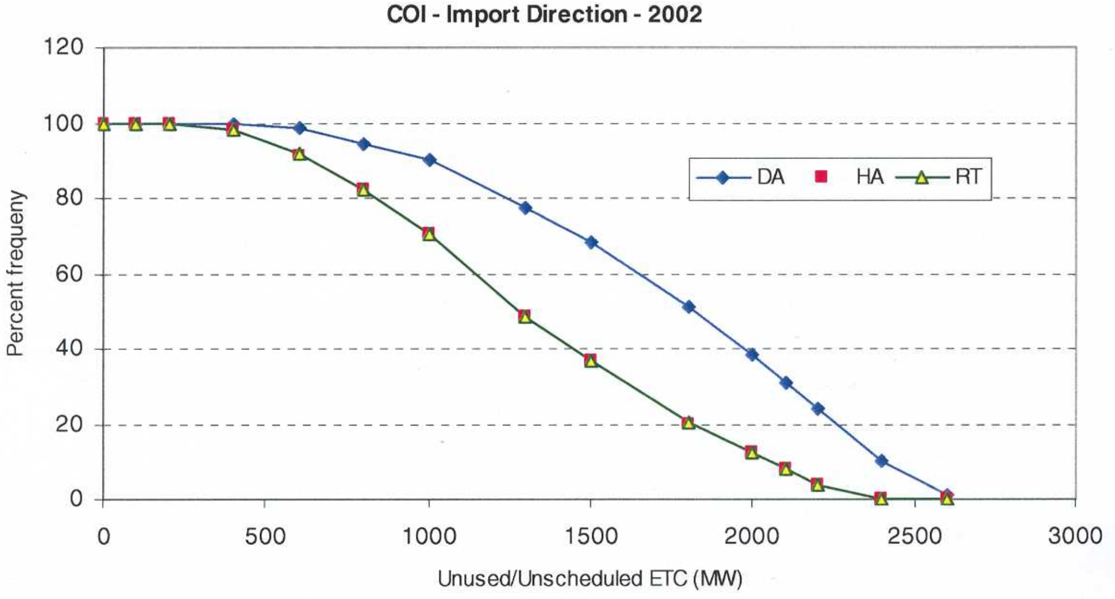
I, Lonnie J. Rush, declare under penalty of perjury that the statements contained in my Prepared Direct Testimony on behalf of the California Independent System Operator Corporation filed in this proceeding are true and correct to the best of my knowledge, information, and belief.

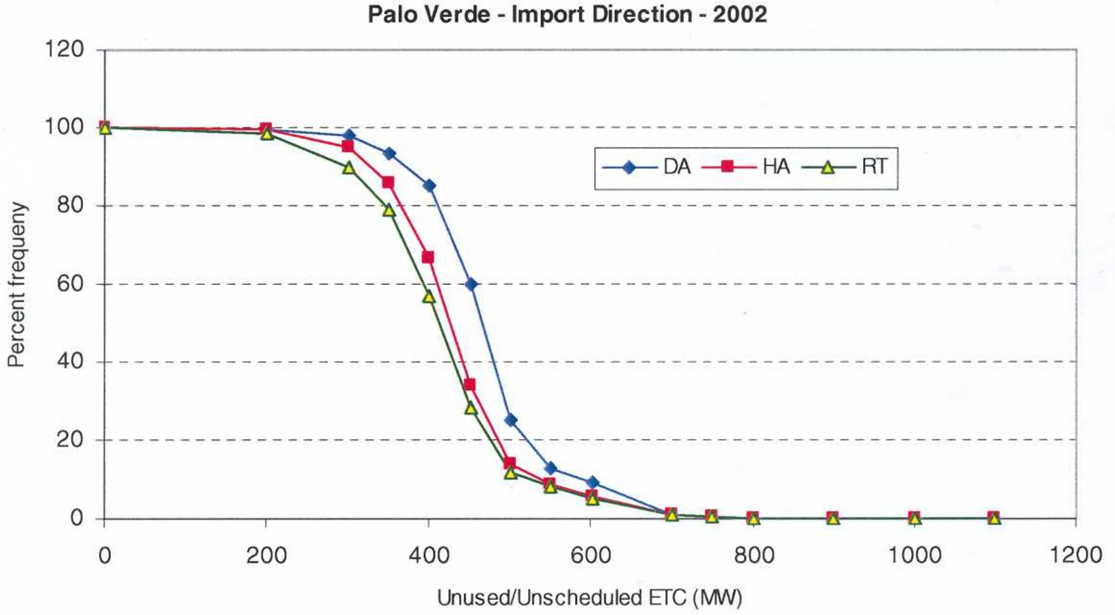
Executed on this 9th day of September, 2003.

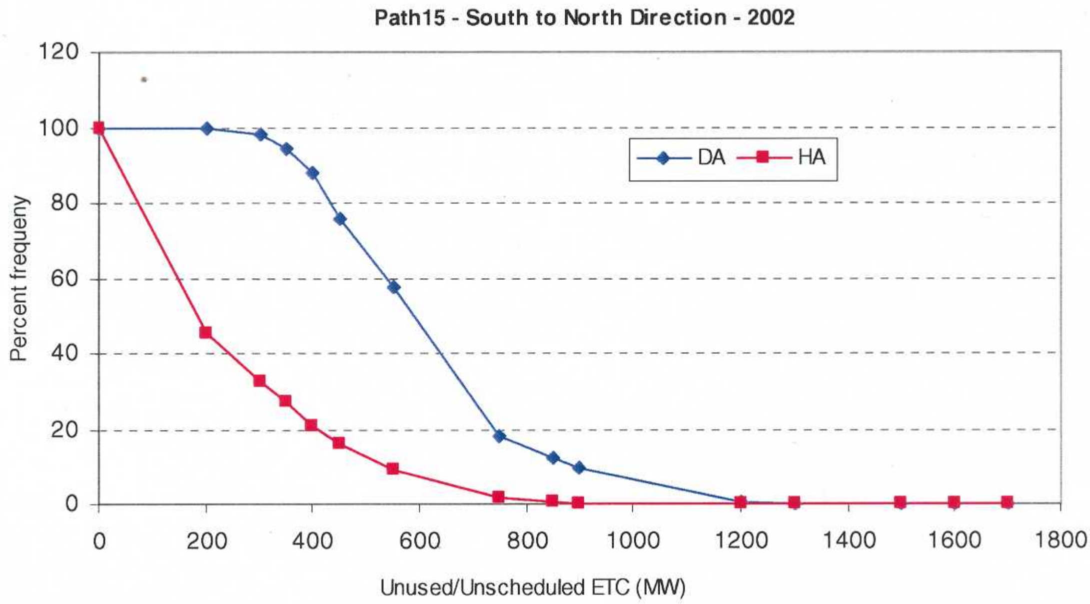
Lonnie J. Rush

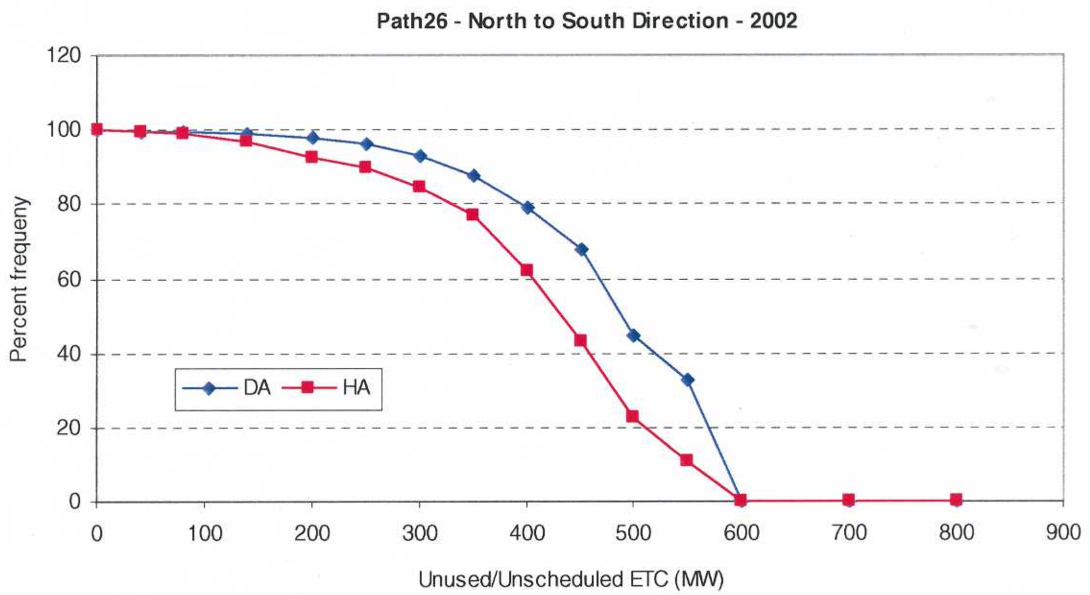
3081215v1

Unused/Unscheduled ETC Duration Curves of Major Paths in 2002

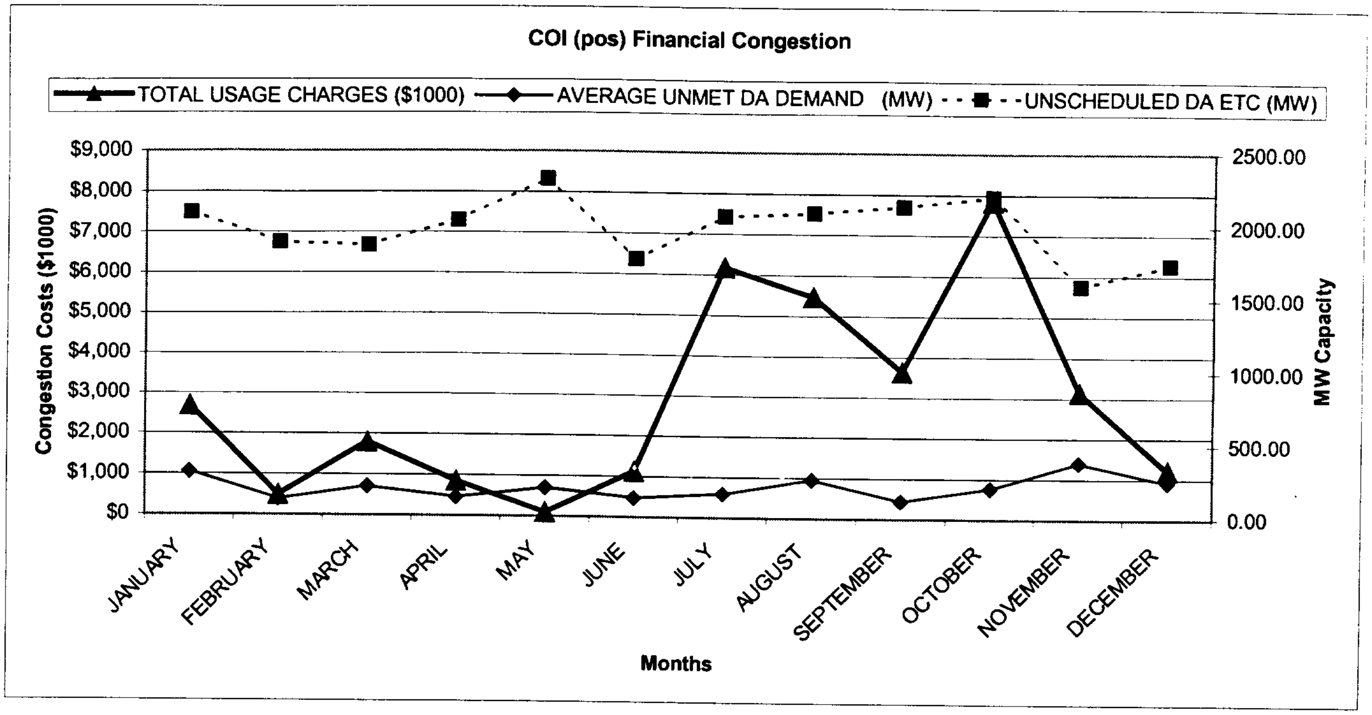


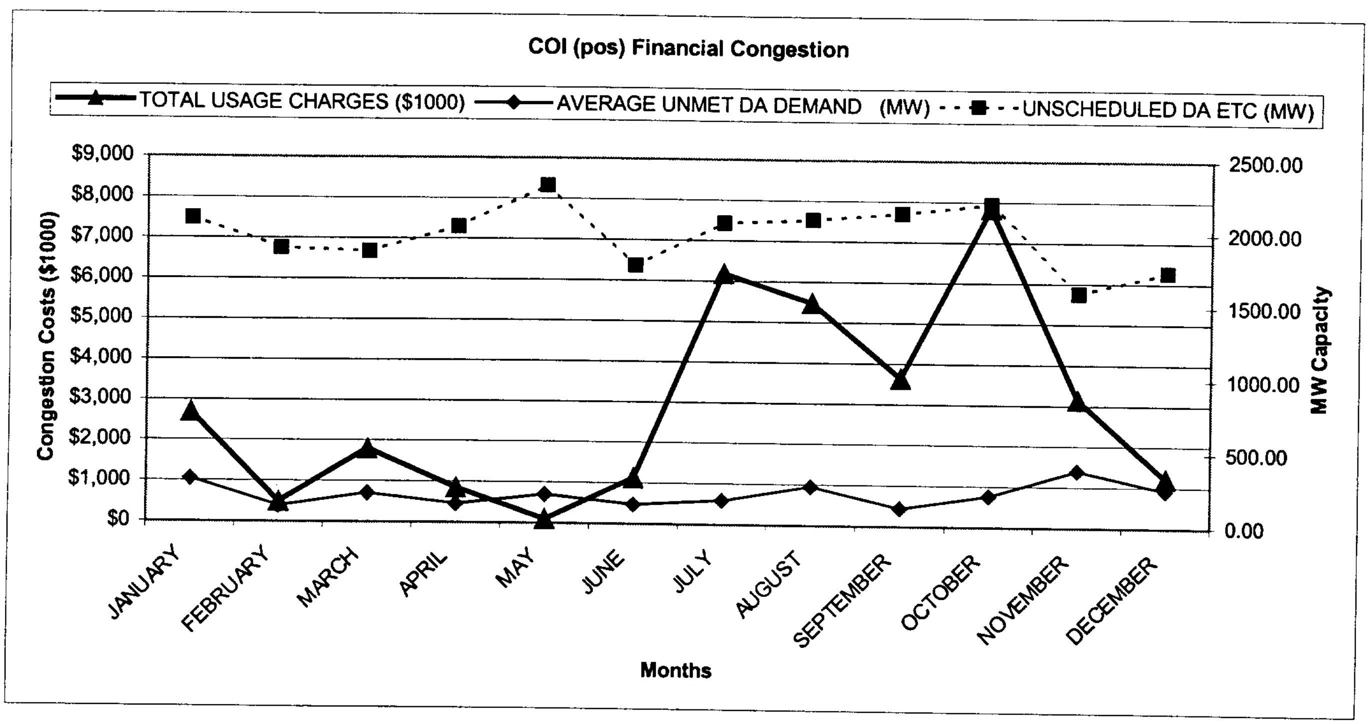



Path15 - South to North Direction - 2002
DA
HA
Percent frequeny
120
100
80
60
40
20
0
0
200
400
600
800
1000
1200
1400
1600
1800
Unused/Unscheduled ETC (MW)


Path26 - North to South Direction - 2002
DA
HA
Percent frequeny
120
100
80
60
40
20
0
0
100
200
300
400
500
600
700
800
900
Unused/Unscheduled ETC (MW)

The Unused Capacity Due to ETC Reservation Vs. Un-served Transmission Demand on COI Import Direction and Palo Verde Import Direction (1999)





Summary of Existing Contracts
Number and Capacity of Existing Contract Terminating

ER00-2019-006
Exhibit No. ISO-29

	Transmission Control Agreement Filing March 31, 1997					
	PG&E		SCE		SDG&E	
	#	MW[1/]	#	MW	#	MW[1/]
1994						
1995						
1996						
1997	1		1	24		
1998			5	101		
1999	4		3	475		
2000	1		6	100 [2/]		
2001						
2002	2					
2003	1		1	422		
2004	3		5	1913		
2005	12		2	310		
2006						
2007	4		8	2223		
2008	2					
2009	1		6	594		
2010	1		2	208		
2011						
2012						
2013	2					
2014	1					
2015	2					
2016	2		1	60		
2017	1		7	425		
2018						
2019			1	[3/]		
2020+	2		12	905 [4/]	5	
Unknown	52		16	1871 [5/]	1	
Total	94		76	6755	6	

NOTES:

PG&E listed the WSPP Agreement with 137 parties.

1/ PG&E and SDG&E did not include capacity amounts for their agreements.

2/ Only one contract had capacity amount listed.

3/ Capacity amount not listed.

4/ Two contracts did not list capacity.

5/ Three contracts did not list capacity.

09/05/2003

Summary of Existing Contracts
Number and Capacity of Existing Contract Terminating

ER00-2019-006
Exhibit No. ISO-29

	Transmission Control Agreement Filing December 1997					
	PG&E		SCE		SDG&E	
	#	MW 1/	#	MW	#	MW
1994	1					
1995						
1996	1					
1997	6					
1998			6	151		
1999	4		3	240		
2000	2		2	100 2/		
2001			2	55		
2002	1		3	578		
2003	1		9	490		
2004	3		9	3012.043		
2005	12		2	310		
2006			2	3/		
2007	4		8	2223		
2008	2					
2009	1		3	898		
2010	1		3	253		
2011						
2012			1	100		
2013	2					
2014	1		1	24		
2015	1					
2016	3		1	60		
2017	1		6	173 4/		
2018						
2019			1	5/		
2020+	3		11	1186 6/		
Unknown	67		24	1762 7/		
Total	117		97	8394.043		

NOTES:

PG&E listed the WSPP Agreement with 172 parties.
1/ PG&E did not include capacity amounts for their agreements.
2/ Only one contract had capacity amount listed.
3/ Capacity amount not listed.
4/ Two contracts did not list capacity.
5/ Capacity amount not listed.
6/ Two contracts did not list capacity.
7/ Four contracts do not list capacity.

Summary of Existing Contracts
Number and Capacity of Existing Contract Terminating

ER00-2019-006
Exhibit No. ISO-29

	Transmission Control Agreement Filing February 20, 1998					
	PG&E		SCE		SDG&E	
	#	MW 1/	#	MW	#	MW 1/
1994	1					
1995						
1996	1					
1997	6					
1998			6	151		
1999	3		3	240		
2000	2		2	100 2/		
2001			2	55		
2002	2		3	578		
2003	1		9	490		
2004	3		9	3012.043		
2005	12		2	310		
2006			2	3/		
2007	4		8	2223		
2008	2					
2009	1		3	898		
2010	1		3	253		
2011						
2012			1	100		
2013	2					
2014	1		1	24		
2015	1					
2016	3		1	60		
2017	1		6	173 4/		
2018						
2019			1	5/		
2020+	2		11	1186 6/	5	
Unknown	68		24	1762 7/	3	
Total	117		97	8394.043	8	

NOTES:

PG&E listed the WSPP Agreement with 175 parties.
1/ PG&E and SDG&E did not include capacity amounts for their agreements.
2/ Only one contract had capacity amount listed.
3/ Capacity amount not listed.
4/ Two contracts did not list capacity.
5/ Capacity amount not listed.
6/ Two contracts did not list capacity.
7/ Four contracts do not list capacity.

Summary of Existing Contracts
Number and Capacity of Existing Contract Terminating

ER00-2019-006
Exhibit No. ISO-29

	Transmission Control Agreement Filing December 21, 2000							
	PG&E		SCE		SDG&E		Vernon	
	#	MW [1/]	#	MW	#	MW [1/]	#	MW
1994	1							
1995								
1996	1							
1997	6							
1998			6	151				
1999	4		3	240				
2000	2		2	100 [2/]				
2001			2	55				
2002	1		3	578				
2003	1		9	490				
2004	3		9	3012.043				
2005	12		2	310				
2006			2	[3/]				
2007	4		8	2223			1	121
2008	2							
2009	1		3	898				
2010	1		3	253				
2011								
2012			1	100				
2013	2							
2014	1		1	24				
2015	1							
2016	3		1	60				
2017	1		6	173 [4/]				
2018								
2019			1	[5/]				
2020+	3		11	1186 [6/]	5			
Unknown	67		24	1762 [7/]	3		1	
Total	117		97	8394.043	8		2	

NOTES:

PG&E listed the WSPP Agreement with 175 parties.
1/ PG&E and SDG&E did not include capacity amounts for their agreements.
2/ Only one contract had capacity amount listed.
3/ Capacity amount not listed.
4/ Two contracts did not list capacity.
5/ Capacity amount not listed.
6/ Two contracts did not list capacity.
7/ Four contracts do not list capacity.

Summary of Existing Contracts
Number and Capacity of Existing Contract Terminating

	Transmission Control Agreement Filing November 25, 2002															
	PG&E		SCE		SDG&E		Vernon		Anaheim		Azusa		Banning		Riverside	
	#	MW 1/	#	MW	#	MW 1/	#	MW	#	MW	#	MW	#	MW	#	MW
1994																
1995																
1996																
1997																
1998																
1999																
2000	1															
2001	1															
2002			3	228												
2003	1		14	125												
2004			12	3901.043												
2005	9		3	810												
2006	1		2	1076												
2007	3		7	1993			1	121								
2008	2															
2009	3								1	20						
2010			1	215											1	20
2011																
2012			1	100												
2013																
2014	1															
2015	1															
2016	4															
2017	1		3	136 2/												
2018																
2019			1	3/												
2020+	3		9	1098 4/	5											
Unknown	7		14	1675	3		1				1	10				
Total	38		70	10123.043	8		2	121	1	20	1	10			1	20

NOTES:

1/ PG&E and SDG&E did not include capacity amounts for their agreements.
2/ One contract did not list the capacity amount.
3/ Capacity amount not listed.
4/ Two contracts did not list capacity.

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

California Independent System Operator Corporation	)))	Docket No. ER00-2019-006, ER01-819-002, and ER03-608-000

PREPARED REBUTTAL TESTIMONY OF KEITH CASEY ON BEHALF OF THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

California Independent System Operator Corporation	)))	Docket No. ER00-2019-006, ER01-819-002, and ER03-608-000

SUMMARY OF PREPARED REBUTTAL TESTIMONY OF
KEITH CASEY
ON BEHALF OF THE
CALIFORNIA INDEPENDENT SYSTEM
OPERATOR CORPORATION

Dr. Casey's testimony responds to the testimony of Berton Hansen on behalf of Southern California Edison Company. Mr. Hansen contends Dr. Casey's estimate of the magnitude of phantom Congestion costs included in his testimony is invalid. None of Mr. Hansen's criticisms survive scrutiny.

First, Mr. Hansen argues that the conclusions of the Path 15 study do not apply to future years because market suppliers will be less likely to exercise market power in the future. Mr. Hansen incorrectly concludes that the use in the Path 15 study of year 2000 data results in a significant overstatement of phantom congestion costs in future years. The purpose of the study was to determine the relationship between price-cost mark ups and market conditions, not to predict market conditions in the future. Once this relationship is understood, it can be applied to market conditions predicted on the basis of data from periods with low and high market power. Mr. Hansen's contention that the Path 15 study is irrelevant because market power will be more difficult to exercise in future years due to the addition of new generation and long-term contracts fails to recognize that these scenarios were considered. Further, none of these market power mitigation measures have been tested and there is reason to doubt they will remain effective indefinitely. Mr. Hansen also fails to consider that some market mitigation measures were in effect (price caps from $250-$750) during the period studied.

Second, Mr. Hansen contends that the Path 15 study is not relevant because Congestion is no longer as severe. Although relatively moderate energy demands and favorable hydro conditions have contributed to an overall decline in Congestion, it cannot be assumed that these conditions will persist.

Third, Mr. Hansen concludes that since the Path 15 Study only examined the cost of phantom Congestion to Northern California load, it overstates the value of eliminating phantom Congestion by ignoring the higher costs that Southern California would experience. When the potential impacts of market power are fully considered, it is not clear that a reduction in Congestion will necessarily raise costs in the manner Mr. Hansen anticipates.

Fourth, Mr. Hansen places excessive reliance on the expiration of Existing Contracts to eliminate phantom Congestion. The Path 15 analysis considered such expirations, and, even so, the expected benefits of complete elimination to problem range from $67 and $130 million.

Fifth, Mr. Hansen also places too much weight on speculation about the implementation of the ISO's proposed market redesign proposal. This approach is very controversial and its future is unclear. Moreover, because this approach leaves the Existing Contracts intact, it does not eliminate all of the costs and problems that result from honoring the scheduling timelines.

Dr. Casey also disagrees with Mr. Hansen's assessment the "indirect benefits" for Original Participating Transmission Owners from reducing phantom Congestion are minimal. Mr. Hansen assumes that a reduction in phantom Congestion would have no impact on bidding behavior; yet one of the major benefits of eliminating phantom Congestion is that it reduces the ability of Market Participants to exercise market power on both sides of the transmission constraint.

Another significant problem with Mr. Hansen's approach is his assumption that only a fraction of the Original Participating Transmission Owners' Load would be exposed to spot market prices in future years, and therefore any indirect benefits from eliminating phantom congestion would only accrue to this portion of the PTO's load. This fails to recognize that the terms of supply contracts signed in lieu of reliance on the spot market to serve large portions of an OPTO's load will be heavily influenced by the suppliers' expectations of future spot market prices.

With respect to whether a Path 15 expansion would eliminate phantom Congestion, a Path 15 expansion would reduce the estimated annual cost impact of phantom Congestion by approximately 30%, the costs, as demonstrated in the Path 15 study, would remain quite significant (at $ 46 - $89 million). If one also considers the potential additional benefit of eliminating phantom Congestion on other paths and when one factors in the potential market power impacts to load in southern California, overall savings may well be in the hundred million dollars order of magnitude.

Q1. PLEASE STATE YOUR NAME.

A1. My name is Keith Casey.

Q2. ARE YOU THE SAME KEITH CASEY THAT PREVIOUSLY FILED TESTIMONY IN THIS PROCEEDING ON BEHALF OF THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION ("ISO")?

A2. Yes.

Q3. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A3. The purpose of my testimony is to respond to critiques of my February 14 testimony set forth in the testimony of Southern California Edison Company ("SCE"). In addition, to the extent that other witnesses have raised similar arguments, my testimony responds to those arguments.

Q4. AS YOU TESTIFY, WILL YOU BE USING ANY SPECIALIZED TERMS?

A4. Yes. I will be using terms defined in the Master Definitions, Appendix A of the ISO Tariff.

Q4: **HAVE YOUR REVIEWED THE TESTIMONY OF MR. BERTON HANSEN ON BEHALF OF SOUTHERN CALIFORNIA EDISON WHICH DISCUSSES YOUR FEBRUARY 14, 2003 TESTIMONY?**

A.4 Yes, I have. Mr. Hansen contends that the statement in my February 14 testimony that the cost of phantom Congestion could be in the "hundreds of millions of dollars order of magnitude" is invalid.

Q5. ON WHAT BASIS DOES MR. HANSEN CONTEND THAT THIS STATEMENT IS INVALID?

A5. Mr. Hansen listed five reasons for why he believes my estimate of the magnitude of phantom Congestion costs is invalid (SCE-5, Page 11-12). I disagree with his arguments and will address each of them below.

The five arguments put forward by Mr. Hansen are as follows:

1) "The Path 15 Study was based on a period of time during which the ability of suppliers to exert market power was much greater than it is likely to be in the future. Therefore, the estimated statistical relationship demonstrating how suppliers are able to exert market power is not applicable to the future years."
2) "There is less Congestion and therefore less phantom Congestion currently than there was in the year 2000 timeframe. Therefore, the costs associated with phantom Congestion should be commensurately lower."
3) "The Path 15 Study did not consider offsetting phantom Congestion costs associated with Southern California load in estimating the value of reducing phantom Congestion."
4) "Several [Existing Contracts ("ETCs")] that previously contributed to phantom Congestion have been revised, have expired, or are expiring soon."

5) There is a significant probability that all phantom Congestion will be eliminated when the ISO implements its Comprehensive Market Design Proposal.

Q6. IS MR. HANSEN CORRECT THAT THE ESTIMATED STATISTICAL RELATIONSHIP ESTABLISHED IN THE PATH 15 STUDY IS NOT APPLICABLE IN FUTURE YEARS BECAUSE SUPPLIERS WILL BE LESS LIKELY TO BE ABLE TO EXERCISE MARKET POWER IN THE FUTURE?

A6. No. Mr. Hansen correctly points out that the regression analysis that I used to estimate market power in 2005 is based on data from November 1999 through October 2000 and that year 2000 was a "period of extremes in the California energy market with prices reaching never-before-seen levels". However, he incorrectly concludes from this that "[u]sing the results of the Path 15 Study to estimate phantom Congestion costs in future years based on this period significantly overstates phantom Congestion costs" (SCE-5, Page 7).

Q7. WHY IS MR. HANSEN'S CONCLUSION INCORRECT?

A7. The study period was purposely chosen to include both periods of moderate market power and periods of extreme market power. As shown in Exhibit ISO-31, during the first 6-months of the study period (November 1999 through April 2000), the market was fairly stable with very few price spikes. It was not until May 2000 that market power became significant. Moreover, November and December 2000 were omitted from the regression analysis and replaced with November and December 1999 because I concluded that the market was too dysfunctional during these months to be included in the study. For purposes of the regression analysis, it was important to choose a study period that captured a wide range of market conditions including conditions with very little price-cost markups (e.g. the first half of the study period) and conditions with very high price-cost markups (e.g. the second half of the study period). This range of conditions allowed for a more comprehensive assessment of the relationship between market power, as measured by Lerner Index ("LI"), and market conditions (as measured by Residual Supplier Index ("RSI") values and system loads). If the regression analysis had been based solely on a period where very little market power was exercised, the analysis would not be representative and would likely bias the regression results towards under-predicting market power.

Q8. PLEASE EXPLAIN THE INDICES TO WHICH YOU REFERRED.

A8. The LI measures the proportion of the market-clearing price (Pt) that is above the estimated competitive price (Ct) (i.e. LI = (Pt – Ct)/(Pt)). The RSI is a measure of whether the largest seller in a particular market is pivotal in the sense that total market demand could not be met absent that seller's supply (i.e. RSI = (Total Supply – Largest Seller's Supply)/(Total Demand)). An RSI value less than 100% would indicate the largest supplier is pivotal and thus would have the ability to set the market clearing price. When RSI is marginally higher than 100%, the largest supplier, or a few of the large suppliers jointly, still have significant market power.

Q9. DOES THE FACT THAT THE REGRESSION ANALYSIS WAS BASED ON A STUDY PERIOD THAT INCLUDED MONTHS IN WHICH THERE WAS SIGNIFICANT MARKET POWER MEAN THAT THE REGRESSION ANALYSIS WOULD ALWAYS PREDICT A HIGH AMOUNT OF MARKET POWER IN FUTURE YEARS?

A9. No. The study did not use 2000 data to predict market conditions in the future; rather it estimated the relationship between price-cost mark ups and market conditions, and applied this estimated relationship to predicted market conditions. As explained above, the relationship was estimated using data from periods with low market power and high market power.

Thus, whether or not the regression analysis would predict a high amount of market power depends solely on projected future market conditions (i.e. generation ownership concentration, hydro conditions, demand levels, transmission capacity, etc). Under relatively favorable market conditions (i.e. high RSI values and low load values), the model would predict very little market power.

The Path 15 analysis assessed the ability of suppliers to exercise market power in year 2005 under a wide range of possible system conditions from relatively favorable system conditions (normal hydro, high new generation entry, no phantom Congestion) to adverse conditions (low hydro, low new generation entry, significant phantom Congestion). Under relatively favorable system conditions, the model predicted very little market power as evident in Table 4 of the Path 15 study, Exhibit No. ISO-25 at 20.

Q10. DO YOU AGREE WITH MR. HANSEN'S ARGUMENT THAT THE PATH 15 STUDY IS NOT RELEVANT BECAUSE MARKET POWER WILL BE MORE DIFFICULT TO EXERCISE IN THE FUTURE?

A10. No. Mr. Hansen argues that the Path 15 study is not relevant because market power will be more difficult to exercise in future years due to the addition of new generation and long-term contracts signed with many existing generators. However, as I described above, the Path 15 analysis assessed potential market power in scenarios with different expected levels of new generation (as well as retirements). Moreover, it assessed scenarios in which the load served by Department of Water Resources ("DWR") long-term energy contracts was deducted from the total net-load in NP15 that would be potentially exposed to spot market prices.

In the scenarios that contain reasonable assumptions about new generation and the impacts of the DWR contracts, the study found that significant market power could still be exerted under normal to adverse system conditions, particularly if transmission capacity associated with ETCs is under-utilized. It should also be noted that the portion of the Path 15 analysis used to conclude that the benefits of eliminating phantom Congestion could be in the hundreds of millions of dollars order of magnitude was based on scenarios that assumed 100% of the DWR contracts were firm in 2005. A closer look at the specifics of these contracts indicates that only 50% of the contracted capacity is firm. Thus, the assumption that the DWR contracts provided 100% firm coverage will tend to under-state the costs of phantom Congestion.

Q11. DO YOU AGREE WITH MR. HANSEN THAT THE PATH 15 STUDY IS NOT APPLICABLE BECAUSE IT DID NOT ASSESS THE CURRENT MARKET POWER MITIGATION MEASURES?

A11. No. Mr. Hansen argues that current market power mitigation measures (Automated Mitigation Procedure ("AMP"), the Must-Offer requirement, a lower bid cap, and local market power mitigation measures) that were not in effect in year 2000 collectively reduce the ability of suppliers to exert market power going forward. However, it is my view that these market power mitigation measures have not been truly put to the test since they were implemented in November 2001. Fortunately, system conditions (near normal hydro levels, moderate demand, and significant amounts of new generation capacity) have created a relatively competitive environment for the past two years. Therefore, I believe it is premature to state that the current market power mitigation measures are effective in mitigating market power.

Moreover, it is not clear that the current market power mitigation measures will remain in place in future years. Not all of the eastern independent system operator's have AMP and all have bid caps of

$1,000/MWh, which is considerably higher than the ISO's current "soft bid cap" of $250/MWh. In the past, FERC has viewed the elements of ISO's market power mitigation measures as temporary provisions until the structural conditions necessary to support a workably competitive market are in place. Therefore, it is possible and I believe likely that FERC will relax some of the current market power mitigation measures in future years.

Finally, I note that during the time period used to establish the relationship between price-cost mark ups and market conditions, there were price caps in effect that ranged from $250-$750. Thus, there were some market mitigation measures in effect during the study period.

Q12. DO YOU AGREE WITH MR. HANSEN THAT THE PATH 15 STUDY IS NOT RELEVANT BECAUSE THERE IS LESS CONGESTION AND THEREFORE LESS PHANTOM CONGESTION CURRENTLY THAN THERE WAS IN THE YEAR 2000 TIME FRAME?

A12. No. While it is true that Congestion and phantom Congestion have in aggregate declined since 2000, it is also true that Congestion patterns are largely driven by overall system conditions. For example, although Congestion has moderated in the south to north direction on Path 15 in the late Summer and Fall of 2001 and 2002 as compared to the same period in 2000 (see Exhibit ISO-24), it should also be noted that hydro conditions in northern California and the Northwest have been relatively favorable in the past 2-years compared to the severely low hydro conditions experienced in 2000. In very low hydro years, northern California is more dependent on thermal generation from the south, which tends to increase the amount of south to north Congestion on Path 15. Conversely, in relatively favorable hydro years, Path 15 south to north Congestion is more moderate and import Congestion on the Pacific Northwest paths tends to increase. These patterns are evident in the charts contained in Exhibit ISO-24. Thus, hydro conditions have a significant impact on the level of Congestion and its location.

Overall demand levels also affect Congestion patterns. Total energy consumption within the ISO control area has declined since 2000 due in large part to a very weak economy. This is evident by the monthly energy consumption levels presented in Exhibit ISO-32. Lower demand levels within California have decreased the need for imports, which in turn tends to reduce Congestion. However, as demand grows, additional Congestion can be expected.

I do agree that the addition of new generation within California since 2000 will likely reduce Congestion into California. Whether this would offset any potential increase in import demand in future years due to load growth and less favorable hydro conditions within California is unclear. I also agree that the Path 15 expansion will certainly help to reduce Congestion on Path 15 but it will not eliminate it. Moreover, if annual load growth in northern California exceeds the pace of new generation entry, the level of Congestion on Path 15 could actually increase in future years despite the transmission upgrade.

In summary, I believe that relatively moderate energy demands and favorable hydro conditions have contributed significantly to the overall decline in Congestion observed in the past two years. However, Congestion could increase in future years under higher demand levels and less favorable hydro conditions. While I agree that the addition of new generation and transmission may, under particular circumstances, tend reduce Congestion in future years, load growth and less favorable hydro conditions could offset these reductions. Therefore, I do not believe it is correct to conclude that the decline in overall Congestion observed in the past two years can be expected to continue in future years.

Q13. DO YOU AGREE WITH MR. HANSEN THAT THE PATH 15 STUDY OVER ESTIMATED THE COST OF PHANTOM CONGESTION BECAUSE IT DID NOT CONSIDER THE IMPACTS OF RELIEVING CONGESTION ON SOUTHERN CALIFORNIA LOAD?

A13. No. Mr. Hansen argues that, "In general, if reduction in Congestion reduces costs to load on one side of a constraint such as Path 15, it is expected that it will increase the cost to load on the other side of the constraint." Based on this argument he concludes that since the Path 15 Study only examined the cost of phantom Congestion to Northern California load, it overstates the value of eliminating phantom Congestion by ignoring the higher costs that Southern California would experience.

I disagree with Mr. Hansen's premise that if additional transmission capacity reduces cost to load on the importing side of a constraint, that it will necessarily raise costs to load on the exporting side of the constraint. This is because in a market environment, additional transmission capacity will tend to increase competition on both sides of the constraint. I do agree that adding additional transmission capacity to a congested path will likely result in additional output from units in the exporting zone and therefore would raise the "marginal cost" of serving load in the exporting zone. However, suppliers in a deregulated market do not necessarily bid their true marginal costs, particularly if they are able to exercise some degree of market power.

The addition of more transmission capacity will make exercising market power more contestable on both sides of the constraint. If a supplier on one side of the constraint bids too high, a transmission expansion will further enable suppliers on the other side of the constraint to under-cut the high bid by offering more exports at a lower price. Since each supplier understands this, it has less of an incentive to raise its bids. Thus, when the potential impacts of market power are considered, it is not accurate to assume that a transmission addition will necessarily increase the costs to one of the zones.

Q14. ISN'T IT TRUE THAT PHANTOM CONGESTION WILL BE REDUCED BECAUSE SEVERAL ETCS HAVE BEEN REVISED, HAVE EXPIRED OR ARE EXPIRING SOON?

A14. Although this is true, this does not mean that phantom Congestion will soon be eliminated without proactive steps by the Commission. For example, the Path 15 analysis considered ETC expirations on Path 15 in determining the benefit of eliminating phantom Congestion on that Path in 2005. After accounting for the expiration of certain ETCs on Path 15, including ETCs that expire in 2007, the analysis estimates the expected benefits of relieving phantom Congestion on Path 15 in 2005 to be between $67 and $130 million annually, depending on whether it is a normal or drought year (see Exhibit ISO-23, page 11).

Q15. WON'T THE ISO'S PROPOSAL FOR A COMPREHENSIVE MARKET DESIGN ELIMINATE PHANTOM CONGESTION.

A15. Not necessarily. The ISO has proposed an approach for eliminating phantom Congestion under MD02. However, this approach is very controversial and has not yet been accepted by FERC. Moreover, while the MD02 approach eliminates phantom Congestion, as is discussed in the testimony of Mr. Rush that is being filed concurrently with this testimony, it does not eliminate all of the costs and problems that result from honoring the scheduling timelines of ETCs.

Q16. IN SUMMARY, DO YOU BELIEVE THE FIVE ARGUMENTS MADE BY MR. HANSEN REFUTE YOUR ASSERTION THAT THE COST OF PHANTOM CONGESTION COULD BE IN THE "HUNDREDS OF MILLIONS OF DOLLARS ORDER OF MAGNITUDE?

A16. No I do not.

Q17. DO YOU HAVE ANY COMMENTS ON THE METHODOLOGY AND DATA USED BY MR. HANSEN TO ESTIMATE THE BENEFITS TO ORIGINAL PARTICIPATING TRANSMISSION OWNERS ("OPTOS") OF ELIMINATING PHANTOM CONGESTION?

A17. Yes. In section IV.A. of his testimony, entitled "Benefits to the OPTOs of Reduced Phantom Congestion", Mr. Hansen describes two potential benefits to OPTOs from reducing phantom Congestion, "direct benefits" and "indirect benefits." As he defines them, "direct benefits" pertain to benefits resulting from a reduction in the Congestion Usage Charges paid by OPTOs. Mr. Hansen's "indirect benefits" relate to the effect a reduction in Congestion has on the Energy prices that are charged to OPTOs.

Mr. Hansen concludes that the direct benefit to OPTOs from reducing phantom Congestion is zero because under the current ISO market structure, all Congestion revenues collected by the ISO, including those paid by the Participating Transmission Owner ("Participating TO"), are credited against the Participating TO's Transmission Revenue Requirement ("TRR"). Since the Participating TO is limited to recovering just its TRR, regardless of the level of Congestion revenues, there are no cost savings to the Participating TO from reduced Congestion Usage Charges. He further states that when the ISO implements its Comprehensive Market Design Proposal, he expects Load Serving Entities will receive Firm Transmission Rights ("FTRs") sufficient to completely hedge against Congestion Usage Charges; thus, there would be no benefit from reducing Congestion Usage Charges to the OPTOs. Finally, he argues that even if the OPTOs do not receive sufficient FTRs to hedge against Congestion Usage Charges, "there is no potential for any significant benefit accruing to the OPTOs due to a reduction in the direct costs of phantom Congestion" because the magnitude of annual Congestion costs is relatively small.

I agree with Mr. Hansen that, because Congestion revenues are netted against TRR, there may be few "direct benefits" for OPTOs from reducing phantom Congestion. However, this is also an unreasonably narrow perspective on the problem of phantom Congestion. Based on such a perspective, there would never be any "direct benefits" to any undertaking that reduces transmission Congestion. Based on Mr. Hansen's definition, even necessary transmission upgrades never have any "direct benefits" to a PTO because reduced Congestion would simply reduce the amount of revenue credits netted against TRR.

I also disagree with Mr. Hansen's assessment that there also are the minimal "indirect benefits" for OPTOs from reducing phantom Congestion.

Q18. WHY DO YOU DISAGREE WITH MR. HANSEN'S ASSESSMENT THAT THE "INDIRECT BENEFITS" FROM REDUCING PHANTOM CONGESTION ARE "MINIMAL?"

A18. Mr. Hansen provides an estimate of the "indirect benefits" to OPTOs of reducing phantom Congestion that is based on data provided by the ISO in response to a data request (SWP-ISO-101 (Exh. SCE-7)) for the years 1999 and 2000. This estimate is incorrect and vastly understates the true benefits. One reason that his estimate underestimates the true benefits is that the data that Mr. Hansen based his analysis on are estimates of the cost impact of phantom Congestion assuming that a reduction in phantom Congestion would have no impact on bidding behavior. As I stated in my direct testimony, one of the major benefits of eliminating phantom Congestion is that it reduces the ability of market participants to exercise market power on both sides to the transmission constraint.

This major benefit is not captured in the data used by Mr. Hansen. Instead, the analysis used to produce these data assumed no changes in bidding behavior when phantom Congestion is eliminated. Specifically, the analysis estimated the impact of Congestion on energy prices by taking the difference between the day-ahead PX zonal price and unconstrained price and multiplying this difference by the zonal load. If in a particular hour, eliminating phantom Congestion would have completely eliminated Congestion, then this analysis assumes that this would result in a PX zonal market price equal to the PX unconstrained price. In other words, Mr. Hansen assumes that the cost savings from eliminating the phantom Congestion would be only the difference between the actual zonal price under Congestion and the assumed zonal price in the absence of Congestion (i.e. PX unconstrained price) multiplied by the quantity of zonal load.

Q19. WHAT IS THE PROBLEM WITH THIS APPROACH FOR ESTIMATING THE BENEFIT OF ELIMINATING PHANTOM CONGESTION?

A19. The problem with this approach is that it assumes that the PX unconstrained price would be the prevailing price in the absence of Congestion (i.e., that Market Participants would have submitted the same bids into the PX market regardless of expectations about Congestion). I believe this assumption is incorrect and would result in seriously underestimating the costs of phantom Congestion. It was for this reason that I elected not to include these data in my testimony. Given that the data seriously understate the costs of phantom Congestion, I believe the estimated benefits that Mr. Hansen derives from them also seriously understate the true benefits.

Q20. ARE THERE OTHER PROBLEMS WITH MR. HANSEN'S APPROACH FOR ESTIMATING THE BENEFIT OF ELIMINATING PHANTOM CONGESTION?

A20. Yes, another very significant problem with Mr. Hansen's approach is his assumption that only 10% of the OPTOs' load would be exposed to spot market prices in future years. He therefore assumes that any indirect benefits from eliminating phantom Congestion would only accrue to 10% of the PTO's load. The problem with this assumption is that it ignores the fact that in order for OPTOs to limit their spot market purchases to 10% or less in future years, they will have to sign additional long-term contracts. Any future long-term contracts will also reflect the suppliers' expectations of future Congestion patterns and spot market prices. To the extent eliminating phantom Congestion causes suppliers to expect lower Congestion charges and lower future spot market prices, they should be willing to enter into long-term contracts at a lower price then they would otherwise. Therefore, I think that the amount of OPTOs' load that could benefit from lower spot market prices is much larger than 10%. In fact, as pre-existing long-term contracts roll over, *all* of a PTO's load in excess of its own generation could be expected to benefit from the reduced Congestion charges and lower spot market prices.

Q21. IF PATH 15 IS EXPANDED, WOULD THIS CHANGE YOUR CONCLUSION THAT THE COST OF PHANTOM CONGESTION COULD BE IN THE "HUNDREDS OF MILLIONS OF DOLLARS ORDER OF MAGNITUDE"?

A21. No. The Path 15 study (ISO Exhibit ISO-25) provides data to compute the estimated costs of phantom Congestion assuming that the Path 15 is expanded. For example, Table 4 of Exhibit ISO-25 contains the data used in my testimony to estimate the annual cost of phantom Congestion on Path 15 in 2005 to be in the range of $ 67 million to $130 million (depending on whether it was a normal or dry hydro year). As noted in my testimony, this estimate was based on a reasonable assumption (based on an analysis of historical usage and contract expirations) that 29% of the capacity reserved for Existing Contracts would continue to remain unused by the Existing Rights holders in 2005. This same table provides the necessary data to calculate the annual cost of phantom Congestion under the assumption that Path 15 is expanded. In the medium generation, normal hydro scenario, this amount would still be $ 46 million annually (.29 x (206-49)). In the medium generation, drought hydro scenario, the amount would be $89 million annually (.29 x (407-102)).

Thus, while the Path 15 expansion reduces the estimated annual cost impact of phantom Congestion by approximately 30%, the costs are still quite significant at $ 46 - $89 million. This cost estimate is only for phantom Congestion on Path 15 and its impact to northern California load. When one considers the potential additional benefit of eliminating phantom Congestion on other paths and when one factors in the potential market power impacts to load in southern California, it is still reasonable to expect that the potential annual cost impact of phantom Congestion could well be in the hundred million dollars order of magnitude despite the Path 15 expansion.

Q22. THANK YOU, I HAVE NO MORE QUESTIONS.

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

City of Folsom County of Sacramento	Docket Nos. ER00-2019-006, ER01-819-002, and ER03-608-000

DECLARATION OF WITNESS

I, Keith Casey, declare under penalty of perjury that the statements contained in my Prepared Rebuttal Testimony on behalf of the California Independent System Operator Corporation filed in this proceeding are true and correct to the best of my knowledge, information, and belief.

Executed on this 10 day of September, 2003.

Keith Casey

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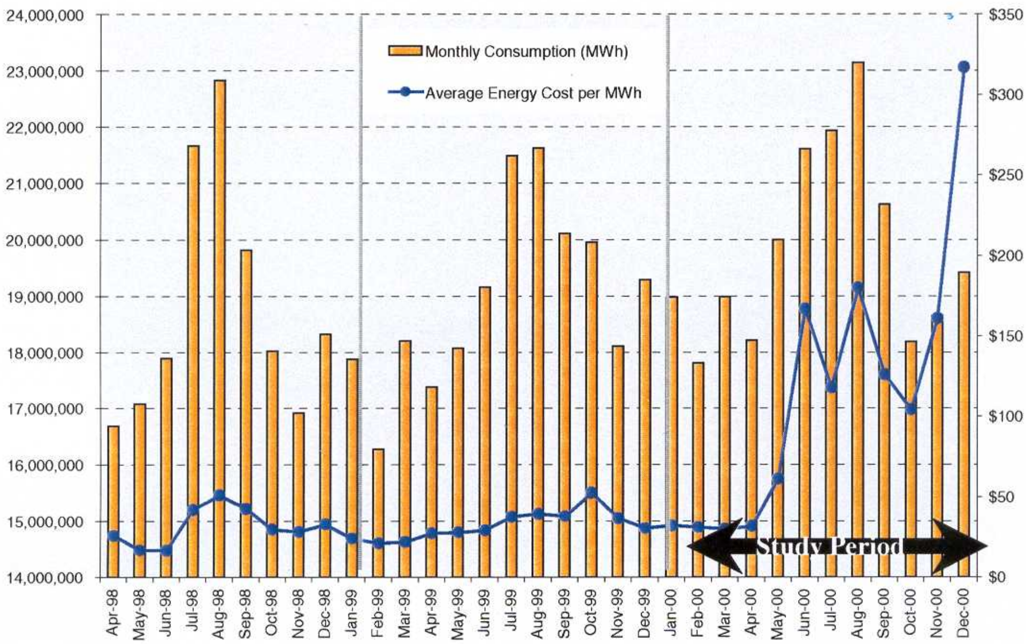
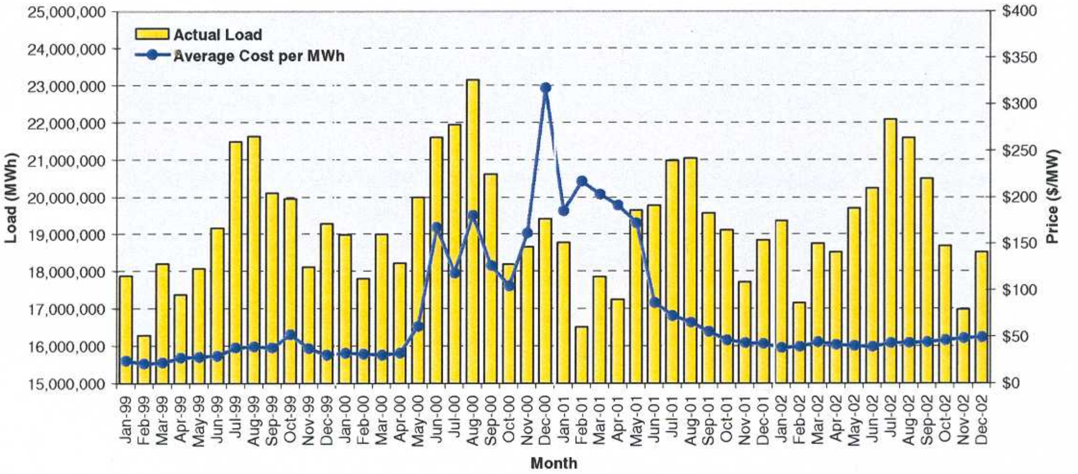
Exhibit ISO-31: Chart of Monthly Average Energy Costs and Consumption April 98 – December 2000[1]



[1] Taken from CAISO Department of Market Analysis, "Summary of Market Issues and Performance, 1999-2000".

Exhibit ISO-32: ISO Actual load 1999-2002



CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in the above-captioned dockets.

Dated at Folsom, California, on this 10th day of September 2003.

Jeanne Sole'