Exhibit No.: ________________
Commissioner: Henry M. Duque
Administrative Law Judge: Sarah R. Thomas
Witness: Irina Green

**BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA**

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| Application of Pacific Gas and Electric Company For a Certificate of Public Convenience and Necessity for the Northeast San Jose Transmission Reinforcement Project | ) ) ) ) ) | A. 99-09-029 (Filed September 9, 1999) |

**TESTIMONY OF IRINA GREEN ON BEHALF OF THE CALIFORIA INDEPENDENT SYSTEM OPERATOR**

**Submitted by the California Independent System Operator**

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August 27, 2001

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Q. Please state your name, employer, position, duties and qualifications.

A. My name is Irina Green, a Senior Grid Planning Engineer in the Grid Planning Department at the California Independent System Operator Corporation (CA ISO). My duties on behalf of the CA ISO and qualifications were submitted on July 14, 2000, and introduced into evidence as an attachment to Exhibit 600.

Q. On whose behalf are you submitting this testimony?

A. I am submitting this testimony on behalf of the CA ISO.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to provide updated information on the need for the Northeast San Jose Transmission Reinforcement Project (the Project) in response to the August 14 Second Scoping Memo and Ruling of Administrative Law Judge (August 14 Ruling). In that Ruling, Administrative Law Judge (ALJ) Thomas indicated that hearings scheduled for the week of September 4-7 would include an examination of the need for the Project "in view of recent developments in Silicon Valley that may affect a determination of whether the Project is still necessary" including "the decline in the Silicon Valley economy and the recent approval of the Metcalf Energy Center power plant in San Jose". August 14 Ruling at 4. The August 14 Ruling requests that the CA ISO "provide updated need data". The August 14 Ruling indicates that evidence on need may not include evidence that could, with reasonable diligence, have been presented in hearings held last fall. August 14 Ruling at 5.

Q. What topics will you address in your testimony?

A. The CA ISO has had little time to respond to the August 14 Ruling. In particular, because the CA ISO had limited time to receive and review Pacific Gas and Electric Company (PG&E) information on revised load forecasts, the CA ISO focussed its efforts on determining load levels at which transmission facilities become necessary, and the effect on the need for the Project of projected new generation in the San Jose area. In addition, the CA ISO has preliminarily considered whether and under what circumstances new generation would have to be made subject to Reliability Must Run (RMR) contracts if they are to replace the Project.

Q. Please summarize your conclusions.

A. It is difficult to reach definite conclusions without reviewing the information pending from PG&E regarding load forecasts. Once it has reviewed PG&E's testimony, the CA ISO will be in a better position to reach conclusions. The CA ISO can state that 1) the Project has been needed to maintain reliability, in accordance with ISO Grid Planning Criteria, during the past two summers and 2) if the California Public Utilities Commission (CPUC) determines to rely on new generation as a substitute for the Project, it must consider potential Reliability Must Run (RMR) contract costs from this choice.

Q. Do you use any specialized terms in your testimony?

A. Yes. Unless indicated otherwise, I use capitalized terms as defined in CA ISO Tariff Appendix A: Master Definitions Supplement.

Q. Please describe the Project that your testimony relates to.

A. The Project that my testimony relates to is described in detail in the "Testimony of Stephen Thomas Greenleaf and Irina Green on Behalf of the California Independent System Operator" served on July 14, 2000, Exhibit 600 at 8-9.

Q. What studies did the ISO undertake to assess the ongoing need for the Project?

A. The CA ISO performed power flow studies of the PG&E system for different load levels in the San Jose and surrounding areas. The studies assessed the load serving capability of the system between Newark and Metcalf substations under normal and contingency conditions for different transmission and new generation cases. The load serving capability of the system can be defined as the highest load, which can be served in the area without violating reliability criteria. The CA ISO studies also identified the limiting outage and limiting facility for each case.

Initial assumptions regarding load on each of the PG&E substations' were the same as in the PG&E 2001 Annual Transmission Expansion Plan with one change as to Silicon Valley Power load that will be described below. To determine the system load serving capability, all single facility outages and outages of one transmission line and one generator were studied first for the initial case. Then, if any reliability criteria violations were identified, the load in San Jose and the surrounding areas was uniformly decreased and all the contingencies modeled again to determine the load level at which there would be no criteria violations. If no violations were identified in the initial case for any of the contingencies studied, then the load was uniformly increased and all the studies repeated to determine the load level at which any criteria violations would start.

The studies assumed than a section of the San Jose B-Kifer 115 kV transmission line between the San Jose B Substation and the FMC tap line is reconductored to the 477 ASCC conductor. A project to reconductor this short one-span section is planned to be implemented by PG&E in early 2002.

Q. How did the ISO account for adjustments to load forecasts in the San Jose area in preparation for this testimony?

A. As described above, the ISO focussed on identifying the load levels at which transmission system constraints materialize. To undertake this exercise however, it was necessary for the ISO to make assessments about the distribution of load among substations.

Q. What assumptions did the ISO make about the distribution of load in the San Jose area for purposes of determining load levels at which transmission system constraints emerge?

A. Generally, the ISO used the 2001 load base cases developed by PG&E for its 2001 Annual Transmission Expansion Plan to determine the distribution of loads. The ISO made one adjustment to the base cases.

In the San Jose area, the majority of loads are served by PG&E. However, Silicon Valley Power (SVP) serves loads within the City of Santa Clara from Kifer and Scott 115 kV substations. In its studies, PG&E relies on the SVP's load forecast for these substations. In the base cases for PG&E's 2001 Annual Transmission Expansion Plan, the SVP loads at Kifer and Scott were increased to 700+ MW to account for anticipated new loads from server farms. This compares to a mere 500 MW modeled in the 2000 Annual Transmission Expansion Plan cases. Actual peak loads encountered thus far in 2001 amount to just under 450 MW for SVP. See Attachment "City of Santa Clara Load Per SCADA".

Given the aggressive assumptions about load growth in the SVP service area used by PG&E in the 2001 Annual Expansion Plan, particularly in light of recent actual loads, the ISO reviewed the load forecast for SVP more closely. Prior to the dot-com meltdown, SVP representatives had indicated (in conversations), that they expected 400 to 450 MW of new server farm loads to come on line in Santa Clara's area alone. Given that the health of the dot-com industry appears to be at risk, the ISO reduced the load for SVP at Scott and Kifer by 25%. Admittedly, this predicted reduction in load is somewhat arbitrary, but the future of the dot-com businesses and its impact on load is difficult to predict. Thus, SVP load was modeled at 599 MW in the base case with the total San Jose area load between Newark and Metcalf Substations at 2200 MW. With this one revision, to determine load serving limits in various transmission / generation scenarios, all of the loads within the San Jose area were scaled by uniform ratios. These loads are indicated on Attachment "Zone 330 Total Load (Between Newark and Metcalf)".

Q. Please describe the results of the studies regarding the on-going need for the Project absent new generation.

A. The ISO modeled facilities in the San Jose area with and without the Project to determine the additional load serving capability the Project would provide. The study results are included in the attached Table 1. As can be seen from the table in the Exhibit, the addition of the Project would increase the system load serving capability under normal conditions with all facilities in service by over 400 MW (from 1886 MW without the Project to 2290 MW with the Project). Overloading on the Newark 230/115 kV transformer banks, which currently is the limiting factor, will be mitigated when the Northeast San Jose Project is built. With the Northeast San Jose Project, the limiting facility would be the Metcalf 230/115 kV transformers, but its overload is not expected until the load between Newark and Metcalf Substation reaches the 2290 MW level. Under a single transmission line outage condition, the Project will increase the system load serving capability of the system by 324 MW (from 1886 MW to 2210 MW), and under a single transformer outage condition by 291 MW (from 1595 to 1886 MW).

Q. What were peak load levels in summer 2000 and peak load levels to date in summer 2001?

A. According to information received from PG&E, peak load levels in the San Jose system between the Newark and Metcalf substations during summer 2000 were as high as 1870 MW. See Attachment "Loading on the Newark 230/115 kV Transformers on June 13-15, 2000" for the load on June 14, 2000, which was the peak load day in summer 2000. It was not clear from the information provided by PG&E whether the IBM Cottle generator was in service that day, but if the generator was on, the load could have been up to 50 MW higher than 1870. We do not have reliable data to determine conclusively the peak load during 2001, but we assume that due to the mild weather load was slightly lower than in 2000.

Q. Was the Project needed to maintain reliability the past two summers?

A. As can be seen from the summary of the CAISO study results in Table 1, under normal system conditions with all transmission facilities in service not more than 1886 MW in San Jose can be served reliably. Furthermore, with one transformer out of service, not more than 1595MW in San Jose can be served reliably.

The actual load during last summer came very close to 1886MW. Attachment "Loading on the Newark 230/115 kV Transformers on June 13-15, 2000" shows actual loading on the Newark 230/115 kV transformers on June 14, 2000 recorded by the CA ISO Plant Information (PI) system. As can be seen from the plots, the transformers were loaded very heavily. If one of these or one of the Metcalf 230/115 kV transformer banks had come out of service, the remaining banks would have became overloaded. Moreover, because it appears that the Project has been needed to meet load in a single transformer outage condition during the past two summers, consistent with ISO Grid Planning Criteria, the Project has been needed for reliability these past two summers.

Also, unacceptably low voltages were observed in the San Jose area on June 14, 2000, which triggered involuntary load curtailments in the Bay Area on that day. With the Project, the voltages would have been higher, and the blackouts could have been reduced or avoided.

Q. What scenarios regarding new generation were studied?

A. Several scenarios regarding new generation were studied. The new generation projects considered in the study included:

- Calpine’s Gilroy peaker generation (146 MW) in the City of Gilroy,

- Calpine's Metcalf Energy Center (600 MW) located close to the Metcalf 500/230/115 kV Substation south of San Jose,
- Calpine's C*Power Los Esteros Critical Energy Facility at the USDataport campus in Northeast San Jose adjacent to the Los Esteros substation site (195 MW),
- A Milpitas power plant in the City of Milpitas close to the Milpitas 115 kV substation (200 MW), and
- Spartan I Energy Center located in South San Jose connected to the Evergreen-San Jose B 115 kV transmission line (100 MW).

A summary of the study results is provided in Table 1.

Q. Please describe the results of your studies assessing the impact of new generators located or planned to locate south of downtown San Jose.

A. Three of the generation projects assessed are proposed in the San Jose area south of downtown San Jose: Spartan I Energy Center, which is proposed to be located at South 7th Street north of Tully Road; and the Metcalf Energy Center which is proposed to be located about half mile west of PG&E's Metcalf Substation south of San Jose; and Calpine's Gilroy peaker generation which is presently under construction in Gilroy.

Q. Please describe the effect of adding the Spartan Energy Center.

A. As can be seen in Table 1, the addition of 100 MW of generation from the Spartan Energy Center would provide 64 MW in load serving capability under system normal conditions and 90 MW with a single transformer outage. Generation from the Spartan Energy Center will increase loading on the Evergreen-San Jose B 115 kV transmission line to which this project will be connected and could cause it to overload following several different single transmission line outages. However, since the Spartan Energy Center generation can be reduced in case of these outages, overloading on the Evergreen-San Jose B line will not be an obstacle in the load serving capability of the system.

In the absence of the Project, overloading on the Newark 230/115 kV transformers would be the first reliability criteria violation caused by the load growth. Due to this overload, load serving capability in the San Jose area between the Newark and Metcalf Substations is limited to 1886 MW under normal system conditions with all facilities in service and to 1595 MW with a single transformer outage. The addition of the Spartan Energy Center increases this load serving capability to 1950 MW under normal conditions and to 1685 MW with a single transformer outage.

Q. Please describe the effect of adding the Metcalf Energy Center.

A. The addition of the 600 MW Metcalf Energy Center will decrease the system load serving capability if no transmission reinforcements are implemented because it will increase loading of the Metcalf 230/115 kV transformers and may cause their overload. The study results showed that without the Project or any other reinforcements, the system load serving capability would decrease by 48 MW under normal conditions or with a single transmission line outage and by 80 MW for the case of a single transformer outage. These impacts can be partially mitigated by the addition of a fourth 230/115 kV transformer at the Metcalf Substation. The addition of a fourth Metcalf transformer would help to increase load serving capability under normal system conditions and following a transformer outage. However, there would be increased loading on the 115 kV transmission lines in South San Jose and, for a single transmission line outage, these lines would overload at lower system load levels than without the Metcalf Energy Center and without a fourth Metcalf transformer. These study results show that the addition of the Metcalf Energy Center will not defer or eliminate the need for the Project.

With the Project, the benefits of the Metcalf Energy Center to the San Jose Area are apparent. Although the addition of the Metcalf Energy Center alone would decrease load serving capability due to overloading on the Metcalf 230/115 kV transformers, together with the addition of a fourth Metcalf transformer bank, it will increase load serving capability under normal system conditions by 215 MW.

Q. Please describe the effect of adding the Calpine peaking generation in Gilroy.

A. The addition of the 146 MW power plant in Gilroy south of San Jose will reduce loading of the Metcalf 230/115 kV transformers and may defer or eliminate the need for the addition of a fourth Metcalf 230/115 kV transformer bank. However, the additional generation at Gilroy will increase loadings on the 115 kV transmission lines in South San Jose. Without the Project, the limiting conditions would be overloading on the Newark 230/115 kV transformers under normal conditions or with one of the Newark 230/115 kV banks out of service, and overloading on the Metcalf-El Patio 115 kV transmission lines with a single transmission line outage. The Gilroy power plant would increase the system load serving capability by approximately 70-80 MW.

Q. In summary, how does the addition of generation south of downtown San Jose affect the need for the Project?

A. The study results show that generation additions south of downtown San Jose cause increase of loading on the transmission lines in South San Jose. In addition, if the new generation is connected to the 230 kV system (as Metcalf Energy Center), it would also increase loading on the Metcalf 230/115 kV transformers. On the other hand, the Project will off-load 115 kV lines in South San Jose as well as both the Newark and the Metcalf 230/115 kV transformers. Therefore, the net impact of the planned generation additions south of downtown San Jose is not to decrease the need for the Project but instead to likely make the Project even more necessary.

Q. Please describe the results of your studies assessing the impact of new generators located or planned to locate north of downtown San Jose.

A. Presently, two power plants are planned in the North San Jose area: a 200 MW plant in Milpitas and the 195 MW Calpine C* Power Los Esteros Critical Energy Facility on a site adjacent to the proposed Los Esteros Substation. The studies showed that these projects would help to increase the system load serving capability in the San Jose area. The Los Esteros Facility would add 152 MW to the system capacity and the Milpitas plant would add 120 MW. However, without the Northeast San Jose Transmission Project, the Milpitas plant will increase loading on the Montague-Trimble 115 kV transmission line and may cause its overload during peak hours. To preserve system reliability, the Milpitas generation would have to be dropped following some outages. See Table 1 for system load serving capability with these projects.

Q. What is the status of these two plants?

A. Neither of these plants is in construction at this time. The Calpine C* Power Los Esteros Critical Energy Facility has applied for a California Energy Commission (CEC) permit and presently is going through the permitting process, but has not yet been permitted. The Milpitas project has not filed an application for a permit with the CEC yet.

Q. Can the Project be delayed if all the proposed new generating plants are constructed?

A. Based on the study results, it can be concluded that if all the proposed generation projects in the San Jose area are constructed and in service by 2002, and all available generation is in service during peak load hours, a slight delay in the Project may be possible without jeopardizing system reliability depending on forecast load.

Q. Would the ISO require additional Reliability Must Run (RMR) contracts in the absence of the Project?

A. Probably. Although the new generation projects planned in the San Jose area north of downtown San Jose will increase the load serving capability of the system and may help to maintain system reliability until the Project is built, they cannot displace the transmission reinforcements provided by the Project. The studies performed by the CA ISO showed that not only the sizes, but also locations of the plants and the way they are connected to the system have a significant impact on the transmission system. To provide the benefit to the system provided by the Project, the proposed generation projects would have to be in service during peak load hours. Without the Project, absence of one or more generators in the San Jose area during peak hours could be detrimental to local area reliability. Thus, if the Project is not built due to reliance on new generation in the area, some of the new generating units would have to be categorized as "Reliability Must Run" (RMR), to ensure that the these generators are in service when needed.

Presently, the San Jose area is not considered to be RMR pocket area. If the Northeast San Jose Project is not constructed, it is anticipated that as loads in the area increase, the San Jose area would became an RMR pocket. In the long run, costs of the RMR contracts could exceed the cost of the Project.

Q. Can you state what RMR costs would be if the Project is not built?

A. Not at this time. However, I can state that the annual fixed reliability must run payment to the 50 MW FMC generator in downtown San Jose is $3.8 million a year. This figure does not include payments for the costs of operation. If the Project is not constructed, not just one, but several generating units would have to be designated as RMR units, and therefore the costs would be higher. Moreover, with continued load growth, the Project could be required in several years even with all new generation in service.

Q. Thank you. I have no further questions.