

Southern California Edison
09-IEP 09-IEP

DATA REQUEST SET CEC-SCE-PaloVerde-01

To: CEC

Prepared by: Russell N. Harding

Title: Manager

Dated: 07/01/2009

Question I.01:

I. PLANT PERFORMANCE (Diablo Canyon; SONGS 2&3; Palo Verde)

Please provide hourly generation data for each unit for 2001-2008.

Response to Question I.01:

Attached file includes the hourly generation for Palo Verde Unit1, Unit 2, and Unit 3 for the period 2001 through 2008.

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To: CEC

Prepared by: Russell N. Harding

Title: Manager, Co-Owner and Regulatory Affairs

Dated: 07/01/2009

Question I.02:

I. PLANT PERFORMANCE (Diablo Canyon; SONGS 2&3; Palo Verde)

Please include GADS (Generating Availability Data Systems) Data for 2001-2008 on availability and outages.

Response to Question I.02:

Please refer to the attached file.

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DATA REQUEST SET CEC-SCE-PaloVerde-01

To: CEC

Prepared by: Jose Luis Perez

Title: Manager, Generation Strategy

Dated: 07/01/2009

Question I.03:

I. PLANT PERFORMANCE (Diablo Canyon; SONGS 2&3; Palo Verde)

For each of the periods in which one or more of the units were operating at reduced output during 2001-2008, please provide an estimate of the cost of replacement power (\$/MWh).

Response to Question I.03:

Estimates of the cost of replacement power for periods of operation at reduced output were prepared for 2006. No other estimates have been developed.

The estimated replacement power costs for refueling outages at Palo Verde for 2006 was \$15.04 Million (SCE share). The estimated replacement power cost for non-refueling outages at Palo Verde for 2006 was \$27.3 million (SCE share). In addition to these outages, Palo Verde unit 1 operated at reduced output for a period of time during 2006 while an investigation into vibration of a shutdown cooling line was conducted. This reduced output resulted in estimated replacement power costs of \$10.98 million (SCE share).

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DATA REQUEST SET CEC-SCE-PaloVerde-01

To: CEC
Prepared by: Mark Minick
Title: Manager 3
Dated: 07/01/2009

Question I.05:

I. PLANT PERFORMANCE (Diablo Canyon; SONGS 2&3; Palo Verde)

Please provide any studies or reports that describe the characteristics of the resources that would be needed to replace the plant in the 2020s (when current operating licenses for the plants are scheduled to expire) in terms of baseload capacity and energy, ancillary services, transmission support, grid stability, and local reliability.

Response to Question I.05:

SCE has not conducted any recent studies regarding the issues requested herein for Palo Verde.

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DATA REQUEST SET CEC-SCE-PaloVerde-01

To: CEC

Prepared by: Marc L. Ulrich

Title: Director of Energy Planning

Dated: 07/01/2009

Question I.06:

I. PLANT PERFORMANCE (Diablo Canyon; SONGS 2&3; Palo Verde)

Please describe plans for replacing power from the plant if an outage lasts longer than 90 days.

Response to Question I.06:

Planning Process

SCE is required to meet its customer's energy, ancillary service, and capacity needs for electrical energy. SCE takes guidance on those needs from various sources including the CPUC, the CEC, and the CAISO. Examples of guidance are (1) the CPUC Planning Reserve Margin (PRM) which is currently in debate in an open proceeding at the CPUC but for now is set at 15% above the average-year peak hour load in a given month, (2) annual CEC load forecasts, (3) Local Area Requirements (LAR) from the CAISO's annual Local Capacity Requirement (LCR) studies. The LCR study takes into account various outage contingencies as does the PRM including extended generation outages. Currently, it may require multiple years to replace generation due to permitting, regulatory, and construction timelines and the CPUC's review of the PRM should take this into account as well as any other state policy development.

To the extent that any of SCE bundled customers energy needs are unmet if Palo Verde has an outage longer than 90 days SCE may need to go to the wholesale energy markets to procure replacement power. The timing and method of procurement may vary. In addition to reviewing the cost of replacement power SCE does financial modeling to measure the procurement cost risk associated with portfolio changes, including changes in SCE's "must-take" resources such as run-of-river hydro, intermittent resources, and nuclear resources.

SCE engages in a review of its fleet of energy resources and adjusts its procurement activity on a daily basis. Included in the fleet is Palo Verde, which is a major element. The fleet, or portfolio, of energy resources changes quite often due various factors such as planned or forced outages. In addition, other frequently-changing elements affect SCE's customer needs such as load or price forecast. SCE's procurement process calculates need taking in to account all of these factors for the next hour, next day, next month, next year, and several years out in the future and adjusts its procurement as necessary.

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To: CEC

Prepared by: Marc L. Ulrich

Title: Director of Energy Planning

Dated: 07/01/2009

Question I.07:

I. PLANT PERFORMANCE (Diablo Canyon; SONGS 2&3; Palo Verde)

If there is a prolonged outage (one year or more) at the plant, what are the contingency plans for replacement power?

Response to Question I.07:

See response to Question No. I.06.

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DATA REQUEST SET CEC-SCE-PaloVerde-01

To: CEC

Prepared by: Marc L. Ulrich

Title: Director of Energy Planning

Dated: 07/01/2009

Question I.09:

I. PLANT PERFORMANCE (Diablo Canyon; SONGS 2&3; Palo Verde)

How would portfolio needs and “best fit” criteria change in the absence of the nuclear facility for short-term (up to 90 days) and mid-term (91 days – five years) procurement?

Response to Question I.09:

SCE reviews its energy needs on a daily basis. A major element of the portfolio SCE uses to meet its customers need is Palo Verde. Analysis reviewing "Best Fit" criteria is considered when searching for the appropriate substitutes for Palo Verde's absence. If there was an absence of the Palo Verde nuclear facility, SCE would need to secure some level of capacity and generation. This is guided by the CPUC's Resource Adequacy (RA) requirements. Thus, the "Best Fit" would now require a resource, or sets of resources, that would provide capacity up to SCE's Palo Verde share and provided similar energy benefits. These "Best Fit" needs would be applied in both the short-term (up to 90 days) and mid-term (91 days - five years) period. The main difference in the term (short versus mid) would be the method of procurement.

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DATA REQUEST SET CEC-SCE-PaloVerde-01

To: CEC

Prepared by: Mark Minick

Title: Manager of Resource Planning

Dated: 07/01/2009

Question I.10:

I. PLANT PERFORMANCE (Diablo Canyon; SONGS 2&3; Palo Verde)

What resources might be needed to provide grid stability to the system in the absence of the nuclear plants for an extended outage during the summer? Would replacement power purchased by the utility be likely to come from those resources?

Response to Question I.10:

Palo Verde is a remote resource. As a result, a summer outage at Palo Verde is unlikely to cause grid stability issues in Southern California. Such an outage may change import limits but Edison is not familiar with any regional or WECC studies that have studied an outage of all the Palo Verde units simultaneously and the effects of such an outage. To replace Palo Verde energy and capacity, SCE would most likely purchase the required capacity and energy from the market.

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DATA REQUEST SET CEC-SCE-PaloVerde-01

To: CEC

Prepared by: Russel N. Harding

Title: Manager, Co-Owner and Regulatory Affairs

Dated: 07/01/2009

Question M.01:

M. OTHER ISSUES (Diablo Canyon; SONGS 2&3; Palo Verde)

Please describe any major fires or safety related events occurring at the plant (2005-2009) that were reported to the NRC, for example, transformer fires. Please describe the cause of the event and corrective action taken. (Diablo Canyon, SONGS)

Response to Question M.01:

Palo Verde did not have any fires at Units 1, 2, or 3 during the 2005 - 2009 period. Palo Verde, however, did submit to the NRC a series of Licensee Event Reports (LER) from 2005 to 2009. The attached LER's are classified as a Safety System Functional Failure (SSFF), where a SSFF is defined as:

An event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to:

- (a) Shut down the reactor and maintain it in a safe shutdown condition;
- (b) Remove residual heat;
- (c) Control the release of radioactive material; or
- (d) Mitigate the consequences of an accident.

Each LER submitted to the NRC provides a summary cause to the NRC as well as corrective actions taken to address the issue.

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Title: Manager, Co-Owner and Regulatory Affairs

Dated: 07/01/2009

Question M.04:

M. OTHER ISSUES (Diablo Canyon; SONGS 2&3; Palo Verde)

Operators of nuclear power plants are expected to face a critical shortage of plant workers in the coming years as the current labor force retires. Nearly half of all employees in the nuclear industry are over 47 years old. What is the estimated percent of the employees at Diablo Canyon and SONGS that will be eligible for retirement over the next five? Please update information provided on what PG&E and SCE are doing to recruit and train plant workers, for example, engineers, technical workers, and managers, to replace these retiring workers. (Diablo Canyon, SONGS, Palo Verde)

Response to Question M.04:

Palo Verde estimates the percentage of employees expected to retire over the next five years to be approximately 15%. The number of eligible employees for retirement is greater than that number but is not considered to be realistic. A key strategy for recruiting employees is the Hiring Model used at Palo Verde. Their model ensures that there is a mix of people hired from the outside infused at various levels in the organization. For Engineering specifically, the Legacy Program is an industry recognized strength - taking a degreed, inexperienced Engineer through a two year training program prior to a permanent assignment. Palo Verde is committed to comprehensive hiring and talent management strategies for long term skills and knowledge, retention and growth for their people. This includes workforce planning and hiring for the future, increasing the talent level of the staff by developing their own talent, and retaining and growing high performers.

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Question M.05:

M. OTHER ISSUES (Diablo Canyon; SONGS 2&3; Palo Verde)

Nuclear power plants also are expected to face shortages in key reactor materials and components for which the supply and production worldwide is limited. Please describe how these shortages might affect currently operating plants, if specialized reactor components need to be replaced through plant retirement. What is the lead time for delivery of key reactor components, for example, reactor vessel heads? (Diablo Canyon, SONGS, Palo Verde)

Response to Question M.05:

The expected shortages in key reactor materials will not impact Palo Verde. Long lead time key reactor replacement components have either already been installed (Steam Generators) or are scheduled to be installed (Reactor Heads starting in 2010).

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Question M.07:

M. OTHER ISSUES (Diablo Canyon; SONGS 2&3; Palo Verde)

Please describe the current status of worker recruitment and training programs (plant operation and maintenance manuals, etc.) to help ensure that knowledge and experience with the plant, particularly with respect to plant operation and maintenance and strong safety cultures are instilled in new workers. (Diablo Canyon; SONGS, Palo Verde)

Response to Question M.07:

All new hires to Palo Verde attend a one week new hire orientation class. In that class, the Chief Nuclear Officer spends time talking about the importance of knowledge and training, and the need to know the plant. He specifically discusses safety culture with the new hires, as do individuals from Human Performance and Employee Concerns. All new hires now attend a Systems training class. Operations and Engineering new hires attend Systems training class through their normal qualification process, and all other disciplines attend the four week Systems Class. These classes anchor the Leadership Model and values with the new employees, and focus the employee on the Palo Verde Mission to "Safely and Efficiently generate Electricity for the Long Term."

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Question M.08:

M. OTHER ISSUES (Diablo Canyon; SONGS 2&3; Palo Verde)

Please provide an update of efforts you have made to maintain and enhance effective safety culture and equipment maintenance programs at your plants, including worker training, transfer of institutional knowledge to newer employees, maintaining adequate staffing levels and other program areas. (Diablo Canyon, SONGS, Palo Verde)

Response to Question M.08:

The Palo Verde Leadership Model maintains and enhances the safety culture and equipment maintenance program at Palo Verde. This model trains both new and existing employees on the core mission and Site Integrated Business Plan (SIBP). The SIBP ensures that institutional knowledge about Plant Equipment, People, Safety, and the Corrective Action Program is understood by all employees. Training programs include areas such as equipment maintenance programs. Employees also learn and practice the Line of Sight program that enhances Safety Culture. Please refer to the response to Question M.07 regarding programs to maintain adequate staffing levels.