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PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

I.D.# 6789

ENERGY DIVISION **RESOLUTION E-4098**

July 26, 2007

R E S O L U T I O N

Resolution E-4098. Pacific Gas and Electric's (PG&E) Permanent Load Shifting (PLS) proposals are approved. Southern California Edison's (SCE) PLS proposal is rejected as well as one of San Diego Gas and Electric's (SGD&E) PLS proposals. SCE and SDG&E are directed to re-evaluate their PLS RFP results and re-submit proposals to the Commission.

By Advice Letter (AL) 1878-E SDG&E filed on February 28, 2007. By Advice Letter (AL) 2997-E-A PG&E filed on March 29, 2007. By Advice Letter (AL) 2106-E SCE filed on February 28, 2007.

SUMMARY

PG&E's three thermal energy storage proposals are approved.

SCE's Non-Road Electric Vehicle (NREV) battery recharging technology proposal is rejected.

SDG&E's forklift battery recharging technology proposal is rejected.

SDG&E's fly wheeling refrigeration proposal and its air conditioning fuel switching proposal have merit but cannot be approved because of a flaw inherent in SDG&E's RFP.

SCE is directed to evaluate the remaining permanent load shifting proposals in its RFP and re-file new proposal(s) for Commission consideration using the full extent of its authorized budget for permanent load shifting projects.

SDG&E is directed to re-evaluate the permanent load shifting proposals in its RFP and re-submit its proposals for Commission consideration.

All three IOUs are directed to analyze in their next rate design proceeding the impact of their rate proposals on PLS technology, with the goal of establishing general purpose dynamic/TOU/time-variant rates that provide a customer incentive to invest in PLS technologies.

BACKGROUND

Permanent load shifting (PLS) occurs when a customer moves energy usage from one time period to another on an on-going basis. Existing time-of-use (TOU) rates may encourage some permanent load shifting, but investments in load shifting technologies can enable greater amounts of load shifting. Examples of permanent load shifting technologies include thermal energy storage, batteries, and the pumping and storage of water. Currently customers do not have access to incentives from utilities to lower the cost of installing permanent load shifting technologies, other than TOU rate differentials. In D.06-11-049, the Commission found that permanent load shifting can reduce the need for capacity investments, reduce the likelihood of shortages during peak periods and lower system costs overall by reducing the need for peaking units[1]. It thus encouraged the IOUs to pursue permanent load shifting by allowing the use of existing demand response budgets toward offsetting the initial costs of installation of PLS technology.

That same decision specifically ordered PG&E, SCE and SDG&E to pursue PLS via a Request for Proposal (RFP) process, and to file individual advice letters with their independently selected proposals by February 28, 2007[2]. The above named utilities complied by filing advice letters seeking Commission approval for their selected PLS program proposals. The Commission did not direct the utilities to limit their RFP process to any particular technology but requested the utilities to consider cost effectiveness, ease of implementation, amount of load shifting which can be obtained by the summer 2007, potential for growth and expansion, and the reliability of the technology.

On February 28, 2007 the Commission received advice letters from SCE and SDG&E detailing their choices for permanent load shifting. PG&E's advice letter

[1] D.06-11-049, Finding of Fact 21.

[2] D.06-11-049, Ordering Paragraph 8.

filing, also submitted on February 28, did not contain any PLS proposals, but rather a status report on their RFP process. On March 29, 2007 PG&E filed a supplemental advice letter 2997-E-A detailing their choices for PLS proposals[3].

SDG&E's PLS Proposals

Per D.06-11-049, the Commission authorized SDG&E to shift up to $4,000,000 of its existing demand response budget for its selected PLS projects. SDG&E's Advice Letter filing proposes three Permanent Load Shifting contracts totaling $3,857,000.00.

SDG&E proposes three types of technology. The first, submitted by Energy Power Solutions, Inc. (EPS) involves process called "fly wheeling" in freezer space where the thermal mass in freezer space would be used to shift the load during on-peak hours. The "fly wheeling" process allows the freezer to operate without mechanical cooling during the on-peak period using the energy stored in the thermal mass of the freezer space and product. The installed technology, called the EPS Zone Control Module operates to shut off the evaporator fans in the freezer, shut off the liquid solenoid in the freezer space and has the ability to control the freezer temperature set point control during off peak periods when the freezer is cooled by a few additional degrees to establish a sufficient float margin. This proposal will shift a total of 720 kW peak demand in year one (1) and 1,260 kW each of the following four subsequent years. The proposal outlines the kW shifting schedule for 2007 as: 180 kW by June 1 2007, 270 kW by July 1, 2007 and 270 kW by September 1, 2007.

SDG&E's second PLS proposal was submitted by Cypress LTD. This technology consists of the installation of a portfolio of gas absorption and gas engine-driven air conditioner systems in SDG&E's commercial markets. Gas absorption cooling and gas engine driven air-conditioning compressors will operate during on-peak hours to replace the operation of electrically driven air-conditioning compressors. Auxiliary loads, cooling water pumps and cooling tower fans will remain electrically driven. Cypress LTD proposal includes shifting a total of 402

[3] Pursuant to Commission procedure the protest period for PG&E's supplemental filing was extended to April 18, 2007.

kW peak demand in year one (1) and a total of 1,708 kW each of the following four subsequent years

SDG&E's third, PLS proposal was submitted by Matrix Energy Serviced, Inc. (Matrix). This technology involves installing time clocks to control the operation of the battery chargers for forklifts used in warehouses and industrial facilities in SDG&E's territory. The time clocks would control the times during the day when the chargers can be used. In particular, the time clocks are programmed to preclude electricity use during the peak hours of the day, thereby shifting the elcetricty use to off-peak hours. Matrix proposal includes shifting a total of 165 kW peak demand each year during the five year contract period

SCE's PLS Proposal
The Commission authorized SCE to shift up to $10,000,000 of its existing demand response budget to PLS.

SCE proposes one type of technology which entails the installation of Energy Management Systems (EMS) technology which will move non-road electric vehicles' (NREV) battery charging away from SCE on-peak period. SDG&E states that most NREV chargers are connected tot their charging circuits from 2:00 PM to 6:00 PM which may contribute as much as 170 MW to system peak demand. Most NREV chargers are connected for charging during the on-peak period immediately at the end of each work shift, with 70% - 80% of users being single shift. SDG&E states that a simple rescheduling of the load on a permanent basis with EMS technology can result in a substantial PLS benefit. The proposal program will supply 1.5 MW of load shifting in 2007 and 5 MW of load shift in each year thereafter.

PG&E's PLS Proposals
The Commission authorized PG&E to shift up to $10,000,000 of its existing demand response budget to PLS.

PG&E proposes one type of technology, thermal energy storage (TES) for roof top air conditioning units, from three different vendors. Each vendor supplies thermal energy storage or off-peak cooling for HVAC systems in the commercial, institutional and government sectors. This technology shifts load during peak periods by creating and storing chilled or iced water during off-peak periods to be used as a compressor substitute during on-peak periods to cooling building

space. PG&E's proposed TES programs will shift a total of 0.50 MW in 2007, 2.66 MW in 2008, 4.75 MW in 2009, 4.75 MW in 2010 and 4.75 MWin 2011.

In an attempt to further understand the choices made by the individual IOU's regarding their PLS proposals the Commission's Energy Division staff made three separate informational requests on each of the IOU's. Two informational requests sought cost effectiveness methodology clarification on processes used by the IOU's. The third informational request asked SCE and PG&E to submit copies of their individual RFPs. The Energy Division asked that SDG&E respond to protestors concern of a potential flaw in SDG&E's RFP.

NOTICE

Notice of AL 1878-E, 2106-E and 2997-E and supplemental AL 2997-E-A was made by publication in the Commission's Daily Calendar. SDG&E, SCE and PG&E state that copies of the Advice Letters were mailed and distributed in accordance with Section III-G of General Order 96-A including parties in A-05-06-017.

PROTESTS

Saddleback Church, Control Air Conditioning Corporation, Johnson Controls, Inc., the County of Riverside, the City of Victorville submitted letters of protest of SCE's Advice Letter 2106-E between March 19 and 21, 2007.

Indoor Environmental Services (IES) submitted a letter of protest of SDG&E's Advice Letter 1878-E on March 20, 2007.

Trane submitted a protest of PG&E's Advice Letter 2997-E on March 21, 2007.

California Community Colleges System Office, H&P Systems, Inc. , Aloha Systems, Ice Energy , TURN, the Los Angeles Community Colleges, the California Independent System Operator, Silicon Valley Leadership Group submitted letters of protest or comments on PG&E's Advice Letter 2997-E, SCE's Advice Letter 2106-E and SDG&E's Advice Letter 1878-E on March 19, 20, 21 and 27, 2007.

TURN submitted a response to protests to PG&E's Advice Letter 2997-E, SCE's Advice Letter 2106-E and SDG&E's Advice Letter 1878-E on March 26, 2007.

SCE and SDG&E submitted replies to the protests on March 27, 2007.

On April 18, 2007 DRA submitted a protest regarding PG&E's Supplemental Advice Letter 2997-E-A.

On April 25, 2007 PG&E submitted a response to DRA's protest letter.

DISCUSSION

TURN and DRA state their concern that Permanent Load Shifting is not a cost effective management of ratepayer monies to alleviate the problems posed by peak energy use.

DRA raises cost effectiveness concerns regarding PG&E's choice of TES technology. DRA argues that PG&E's proposal will not deliver megawatts of load shift for the summer of 2007, one of the criteria the Commission asked the IOU's to consider in their RFP process. DRA characterizes PLS and PG&E's TES proposals as expensive insurance given the significant reserve margin currently endorsed by the Commission and requests that the Commission reject PG&E's advice letter.

TURN noted that they were unable to reproduce SCE's cost figures and found a discrepancy between SDG&E and SCE's cost figures for their NREV battery charging programs. TURN points out that many of the programs are too costly, and funding them would have ratepayers over-subsidizing programs that provide significant benefits to the individual recipients. TURN requests that the Commission direct the utilities to issue new RFPs for permanent load shifting starting in 2008, with capped incentive levels and technical assistance payments that ensure that the PLS programs provide value not only to the individual customer who save money on time of use rates, but also to the ratepayers who subsidize the programs.

In response PG&E argues that DRA's cost effectiveness analysis is flawed because is does not consider the total amount of MW shift over the life of the contract. PG&E further argues that the Commission should not delay implementation of the PLS programs because quick implementation will allow the Commission to assess the performance of PLS and whether to direct the utilities to pursue more PLS in the future. Finally PG&E argues that PLS is

needed to strengthen grid reliability. PG&E confidentially submitted a revised cost effectiveness analysis which accounts for cost of their selected programs beyond the close of the contract to a time extended to the expected life of the technology. PG&E's cost effectiveness methodology also accounts for several factors that the other utilities did not utilize in the assessments of their proposed PLS programs.

In response to Energy Division inquiries, each IOU provided their cost-effectiveness methodologies for their PLS proposals[4]. As DRA and TURN assert, none of the PLS technologies are cost-effective using the methodologies employed by the IOUs, even PG&E's revised methodology referred to earlier. Energy Division also found that the IOU methodologies were not comparable and take into account different assumptions and inputs. TURN's protest that the SDG&E and SCE proposals for NREV technology are not comparable is further evidence that side-by-side comparisons of the proposals for purposes of cost-effectiveness is not feasible without further evidence and in-depth analysis which is not well-served by the advice letter process.

Currently the Commission does not have a standard or protocol to evaluate cost-effectiveness for Demand Response programs, nor one specifically for Permanent Load Shifting programs. Thus a rigorous, consistent cost-effectiveness evaluation across the IOU's PLS proposals is difficult to perform via the limited nature of the advice letter process. While the IOUs' analyses were helpful with each of the individual advice letters, such analyses did not translate well when comparing the individual IOU programs against each other. The Commission intends to address the issue of cost effectiveness of Demand Response programs in another proceeding[5]. Despite the absence of an adopted cost-effectiveness protocol, Energy Division recommends that the Commission approve PG&E's thermal energy storage proposals for the following reasons:

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[4] The IOUs' cost-effectiveness analyses were submitted under confidentiality per PU Code Section 583.

[5] In R.07-01-047, the Commission intends to develop cost-effectiveness protocols for demand response programs by 2008. Energy Division anticipates that PLS technology will be included in the process.

(1) PG&E's TES proposals addresses thermally-driven load, which enables it to have a significant impact on summer peak. Air conditioning load is a significant factor in system peak. Energy Division agrees with several protestors that California's electric peak demand is almost completely caused by summer air conditioning energy consumption as high as 50% of summer peak day system load.

PG&E's proposals encourages the market viability of a technology which could on a larger scale significantly impact system summer peak. TES systems are also expected to have a lifecycle far beyond the contract life offered in the RFP. As a benefit to the consumer, TES technology shows promise to lower a customer's cooling cost. This technology may also, if shown viable, be able to help create a market for off-peak wind power, possibly reducing the need for new sources of fossil fueled on-peak energy and potentially improving peak summer day air quality. These factors promise an expandability that Energy Division believes is very promising and therefore merits an initial investment of ratepayer funds.

(2) Energy Division agrees with several protestors[6] that while an initial investment in PLS may not initially seem cost effective, it would help developing PLS technologies generate the initial volume necessary to lower production costs and improve payback of the technology. As such, Energy Division believes that the Commission should regard developing PLS technologies as pilot programs. Aloha Systems equates an investment in TES with SCE's investment in the late 1980's of 2,000,000 compact fluorescent lamps. This initial investment, argues Aloha Systems, helped compact fluorescent lamp market viability. Aloha Systems argues a similar investment in TES will yield an increase in market viability.

TURN and H & P Systems dispute that TES is an emerging technology as they point to several examples of TES studies and programs dating back several years.[7] Energy Division believes that the term "TES" is a broad

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[6] Aloha Systems, ICE Energy, IES and County of Riverside.

[7] For example, TURN points out that the utilities provided incentives for thermal energy storage during the 1980's.

one, encompassing different types of technology, some of which are relatively new and emerging. The California Energy Commission has tested and approved a new category of ice storage air conditioning systems that have the ability to shift small commercial and residential air conditioning. This new technology could lead to the widespread use of time of use rates in the residential and small commercial market segments. This new technology has enabled smaller entities to utilize thermal energy storage, previously utilized only by large central plants typically found in large commercial and industrial markets. The City of Victorville recently installed Ice Energy's Ice Storage Air Conditioning systems on several buildings. Energy Division concludes that TES technology is evolving and therefore could be considered new and emerging.

(3) An effectively designed tariff will further improve the cost-effectiveness of PLS programs as the need for expensive incentives would diminish.

Ice Energy Inc., TURN, IES, California Community Colleges System Office, Aloha Systems Inc., and H & P Systems, Inc., note that TES remains un-served, in part, because of the lack of an appropriate tariff to generate end-user electric bill savings. Specifically IES notes that under the current AL-TOU and A6-TOU tariffs, SDG&E levies a fee of just over $11 per kW via its non-coincident demand charge, even if that peak is set from midnight to 6 a.m. In contrast SDG&E levies a fee of $4.78 per kW (AL-TOU) and $5.39 per kW (A6-TOU) for on-peak energy. EIS notes because of current tariff structures, incentives must pay for nearly the entire cost of the project including contractor profits and interest charges in order to attract PLS investment. The Los Angeles Community Colleges notes that current tariff structures throughout the state do not provide sufficient economic incentives to pursue PLS projects. Los Angeles Community Colleges note that SCE has recently flattened the differences between their peak and off-peak rates in its GS2 TOU Option B tariff. Los Angeles Community College also notes that the three IOUs levy non-coincident demand charges that act as a disincentive to shift peak load to off-peak. On the other hand, the Anaheim Public Utilities has a thermal energy storage program along with a time-of-use electric tariff to encourage participation. In July Redding Electric Utility plans to introduce PLS incentives in an effort to introduce TES technology to its service customers.

Johnson Controls states its belief that one of the largest contributors to summertime peak demand is conventional rooftop, split air conditioners and single package vertical units. Johnson Controls also notes that currently SCE does not offer a combination of rates and incentive programs that would enable customers to cover some of the costs associated with installation of PLS technologies. Johnson Controls goes on to state that SCE recently adjusted its rates and eliminated a TOU rate that would have provided a promising payback for installation of Permanent Load Shifting products.

TURN states that the Commission should direct the utilities to adopt PLS tariffs, "Rate design is the pragmatic reality that drives customer investment choices." TURN points out that in SCE's 1988 rate case the Commission adopted a "Super Off-Peak" rate option for both medium (200-500 kW peak demand) and large (over 500 kW) customers, explaining that such a rate design "will also help shift loads such as air conditioning from on-peak to off-peak by giving cost-effective incentives and promoting thermal storage systems." 26 CPUC 2d 392, 551 and 560 (D.87-12-066).

In its comment letter, the CAISO also encouraged the Commission to consider tariff designs that provide the appropriate price signals and incentives to encourage greater participation from load-shifting technologies.

SDG&E states that they "plan to pursue more-cost based rate proposals," in their next General Rate Case.

The steps taken by municipal utilities, such as City of Anaheim, to encourage permanent load shifting participation by their customers through a tariff is evidence that PLS programs are viable. Energy Division agrees with protesting parties that proper tariff structure is helpful toward encouraging cost effective participation in permanent load shifting and recommends that the Commission direct the IOUs to analyze in their next rate design proceeding the impact of their rate proposals on PLS technology, with the goal of establishing general purpose dynamic/TOU/time-variant rates that provide a customer incentive to invest in PLS technologies.

Several protestors raise concern regarding SDG&E's proposed Refrigeration Control Module.

California Community Colleges Service Office, IES and Ice Energy are all critical of SDG&E's proposed refrigeration control module or "fly wheeling." Protestors note that refrigeration storage units are not thermally driven and are lowered by decreasing the set point in the storage unit below normal, consuming additional mid-peak energy at the expense of on-peak energy. Protestors believe that this type of load shifting is inefficient because it requires additional energy to lower the temperature of the refrigeration unit beyond normal operating levels. Protestors argue obtaining these lower temperatures is not efficient as the unit attempts to lower the set point temperature to ride out the on-peak operating hours. This in turn may cause higher energy bills because mid-peak power is being used at a less efficient rate as might otherwise be used under normal operation.

SDG&E responded that it believes the fly wheeling proposal is an opportunity to explore a different type of technology. SDG&E notes that the proposed technology is already employed by many refrigeration warehouses to avoid on-peak energy charges. SDG&E further notes that refrigeration equipment will operate during cooler night time semi- and off-peak periods to produce lowered space temperatures. As the ambient temperature decreases, generally the performance of the refrigeration system increases, possibly completely offsetting any performance loss from producing lower space temperature.

Energy Division finds merit in SDG&E's fly wheeling proposal and agrees that this is a technology that is worth further exploration but cannot be approved at this time as explained in a later section of this resolution regarding SDG&E's RFP process. Flywheeling technology is the type of innovative technology the Commission should explore as it is novel, is affected by high summer temperatures and can utilize off-peak power.

Protestors do not believe that SDG&E's Air Conditioner Fuel Switching Program can be properly defined as a PLS program.

Ice Energy, IES, and the California Community Colleges Systems Office states that SDG&E's selection of fuel switching is inconsistent with the Commission's order because fuel switching is not acceptable for any electrical demand side management program.

In its reply, SDG&E argues that load shifting will result in the replacement of electric-powered air conditioning load. The net result of the fuel switching technology is 85-99% of the air conditioning load for the new units would be provided by a natural gas system, thus reducing the electric energy usage from peak-periods from 11:00 a.m. to 6:00 p.m. SDG&E states that the gas cooling technologies selected would out perform equivalent current electric Title 24 air conditioning equipment on a source BTU basis and that net energy consumption would decrease by employing these technologies. SDG&E reiterates its earlier point that this is another opportunity to explore a different type of technology. The Cypress LTD program relies on a proven market method to change customer behavior and expand the use of gas cooling technologies.

Energy Division agrees with SDG&E that this technology is worth exploring further and does not agree with the protestors that fuel-switching is not acceptable. Energy Division finds merit in SDG&E's proposed fuel switching program for air conditioning units but cannot be approved at this time as explained in a later section of this resolution regarding SDG&E's RFP process. The Cypress LTD technology is one of the least expensive proposed technologies among the three IOU proposals.

Energy Division recommends that the Commission reject SCE and SDG&E's all Non-Road Electric Vehicle (NREV) battery charging PLS system proposals.

Saddleback Church, the County of Riverside, Johnson Controls, Ice Energy and the City of Victorville state that NREV vehicles are not a significant contributor to peak load problems. Protestors note that NREV loads are largely non-coincident with system peak nor is their demand directly increased by ambient temperatures.

Johnson Controls criticizes SCE's NREV proposal as a minimal contributor to the state's aggregate peak demand, does not address the root cause of California's peak demand crisis, has little scalability, provides no path for community members to follow, and raises concerns of freeridership.

Ice Energy states that load associated with NREV loads are non-coincidental with system peak. Ice Energy describes this technology as "trickle charge," which occurs over night as opposed to SCE's peak period. Ice Energy also points out that SCE states that the entire market size for their territory for NREV is 100-170

MWs which represents 0.7% of it system load. Ice Energy requests that Commission reject SCE's Advice Letter and order SCE to re-evaluate the responses to its RFP. Ice Energy also requests that the Commission order SCE to include other proposals up to the full $10 million that was authorized.

The City of Victorville is critical of SCE NREV proposal because they are unsure on how SCE will determine the magnitude of the load shift and question the practicality of the solution.

SCE states that most of the protesting parties were unsuccessful bidders in SCE's RFP and that among the six bids received SCE found only one proposal best satisfied the criteria adopted by the Commission in D.06-11-049. SCE defends its choice of NREV battery charging PLS in part by emphasizing a California Energy Commission (CEC) sponsored program delivered by SCE in 2001 and 2002, which shifted 9.1 MW of NREV battery charging load permanently to off-peak. SCE found that nearly all of the controls and Energy Management Systems from the 2001-2002 CEC program are still in use today. SCE states that since 2002 the NREV customer base has grown dramatically. Responding to protestors comments that the batteries are not charged until the end of the workday and therefore, such a program as proposed, would only deliver minimal peak load reduction, SCE states that its Electric Transportation Department has monitored over 200 large NREV customers from 2002 to present and has compelling evidence that battery charging in most cases is done 24 hours a day, and often during peaks in the afternoon.

Energy Division concludes that the NREV proposal for SCE and the battery charging technology for SDG&E should not be approved for the following reasons. NREV or forklift battery charging has little or no direct correlation to system peak nor is battery charging for such vehicles thermally driven. Thus NREV/forklift battery charging is a minimal contributor to the state aggregated peak and therefore promises only an inconsequential impact on peak impact. Energy Division recognizes that any load shifting from peak to off- peak is helpful however, the potential for growth of these two programs and their potential to have an overall impact on system peak is significantly limited. SCE states that within its territory there is a market of over 70,000 existing NREV vehicles, which may contribute to as much as 170 MW to system peak demand. Energy Division is not convinced by SCE's NREV proposal and questions whether participation in the program would ever truly reach 170 MW. Energy Division also is concerned about the possibility of freeridership, in that there

exists a significant possibility that many of NREV vehicles users are already responding to time-of-use rates and a program such as the ones proposed by SCE and SDG&E may only measure and verify energy usage patterns that are already in effect. Energy Division concludes that the proposed NREV programs do not carry the potential for expandability and similar results can be accomplished by time-of-use rates.

Energy Division recommends that the Commission reject SCE's NREV battery charging proposal and SDG&E's forklift battery charging proposal. Because the NREV proposal is SCE's only PLS proposal, Energy Division recommends that the SCE be directed by the Commission to re-submit other PLS proposals for the Commission's consideration.

Several parties state that SCE's and SDG&E's RFP process failed to consider several factors such as lowering production costs for emerging technologies, addressing thermally driven load, targeting underserved markets, and creating a market for off-peak wind energy. Various parties argue that the Commission direct SCE and SDG&E to give such factors more weight in their evaluations of the proposals. Energy Division disagrees.

Control Air Conditioning Corporation, Ice Energy, California Community Colleges System Office, Los Angeles Community Colleges, and Silicon Valley Leadership Group argue that SCE and SDG&E have failed to consider: underserved markets, market segments directly responsible for peak load increase, developing or emerging technologies, creating a market for off-peak wind energy resources, thermally driven load, lowering production costs of developing technologies, statistical significance of PLS benefits.

Saddleback Church, the County of Riverside, Johnson Controls, Ice Energy and the City of Victorville request that the PLS RFP process give greater weight to technologies that can shift thermally driven load.

The County of Riverside and the City of Victorville requested that the Commission order SCE to re-evaluate the responses to its RFP allowing greater weight for emerging TES technologies that address large under-served markets, such as packaged roof top air conditioning permanent load shifting.

Several protestors including Ice Energy, Inc, Johnson Controls, Inc, City of Victorville, Indoor Environmental Services, and The County of Riverside state that SCE's and SDG&E's RFP processes failed to consider the enabling nature of TES technology with regard to wind power. Protestors note that wind generation resources in southern California are predominantly off-peak resources and the failure of the IOU's to award funds to their proposal has a direct and negative impact on the state's ability to develop additional wind generation resources.

Ice Energy and California Community Colleges Service Office argue that the IOU's application of the least cost/ best fit is appropriate for mature technologies of which PLS is not. In particular these protestors believe that the least cost/best fit approach used by SCE does not properly address the un-served market of permanent load shifting.

In its response SCE states that the Commission did not direct SCE to consider the aforementioned criteria. The Commission required the IOUs to consider cost effectiveness, ease of implementation, the amount of load shift that can be obtained by summer 2007, potential for growth and expansion, and the reliability of the technology. SCE explained that it pursued a least cost/ best fit method, meaning SCE selected the proposal that satisfied the criteria at the least cost to SCE's ratepayers. SCE believes that least cost/ best fit was a reasonable approach to satisfy the cost effectiveness criterion articulated by the Commission in D.06-11-049.

In its response SDG&E states that the Commission requested the IOUs to consider cost effectiveness, ease of implementation, amount of load shifting which can be obtained by the summer of 2007, potential for growth and expansion, and the reliability of the technology. Further SDG&E states that there was no specific direction from the Commission requesting that the IOU's RFP for PLS be targeted to the under-served markets.

The Energy Division does not agree with the protesting parties' characterization that the IOU's "failed" to consider the additional several factors outlined in their protest. In D.06-11-049 the Commission did not direct the IOUs to consider those factors in their RFP processes. Energy Division recommends that the Commission not compel SCE and SDG&E to consider the aforementioned factors in a weighted fashion as the IOUs should have the flexibility to design and implement their RFP processes as they see fit, assuming the process is reasonably

fair, that there is a rationale for factors they consider, and that they at a minimum, consider the factors the Commission has set in D.06-11-049.

Several of the protesting parties request that the Commission compel SCE to spend all unallocated funds authorized, and SCE be compelled to select thermal energy storage technology. Energy Division agrees that SCE should use the extent of its authorized PLS budget, but does not agree that the Commission should direct SCE to select a particular technology.

Control Air Conditioning Corporation, Ice Energy, California Community Colleges System Office, Los Angeles Community Colleges, and Silicon Valley Leadership Group request the Commission compel SCE to spend unallocated funds authorized by the Commission, and that in future PLS Orders, the IOU's be limited to selecting technologies that address thermally driven PLS projects.

Saddleback Church, the County of Riverside, Johnson Controls, Ice Energy and the City of Victorville also request that the Commission direct SCE to spend the full $10 million authorized by the Commission and that the remaining sum, if the Commission approves SCE's NREV proposal, to be spent on Thermal Energy Storage.

SCE and SGD&E responded by noting that several of the protesting parties were unsuccessful bidders in the RFP process. SCE believes that these protesting parties appear to argue that SCE should be required to fund PLS programs irrespective of cost. In their response to the protestors SDG&E states that it has made an effort to explore different types of PLS technology.

After receiving requested data from the SCE and SDG&E on cost of each of the proposed programs and all bidder programs received by SCE and SDG&E during their RFP process the Energy Division concurs that many of protestors were also bidders in either SCE of SDG&E RFP process. The Energy Division agrees with the protestors that SCE should use the full amount of funding allocated to PLS projects but does not agree that the SCE and SDG&E be compelled to choose one type of PLS technology over another. Energy Division recommends that the Commission direct SCE to submit a supplemental advice letter utilizing to the fullest extent possible the monies allocated for Permanent Load Shifting.

Several protestors alert the Energy Division to a flaw in SDG&E's RFP process that may have adversely affected particular RFP bidders.

Ice Energy, Inc, Indoor Environmental Services protest SDG&E's Advice Letter identifying a perceived barrier for TES inherent in SDG&E's RFP process. These protestors note that SDG&E's RFP process imposed minimum requirements for TES technologies that 1) constant load must be shifted, 2) only regulated partial storage systems will be considered, and 3) that storage be controlled to discharge continuously and at the same rate during the load shift period. In its protest of SDG&E's Advice Letter, Ice Energy notes that SDG&E's RFP requires the same amount of partial load be shifted each and every peak day from May through October which effectively eliminates all load shifting solutions from the RFP process that are thermally driven. These protestors ask that the Commission investigate this further and determine why SDG&E imposed these conditions.

The Energy Division evaluated SDG&E Request for Proposals for Permanent Load Shifting[8]. SDG&E's RFP *Section IV. Technical Requirements: Subsection B Load shift equipment operating criteria* were reviewed specifically. The Energy Division also evaluated Attachment E, *Permanent Load Shifting RFP Questions & Answers – January 18, 2007* of SDG&E's Advice Letter filing. Energy Division concludes that SDG&E's RFP indeed requires that constant load be shifted regardless of temperature through the months of May through October, as the protestors allege.

In its response SDG&E argues that ice storage systems can be operated to extract energy at a constant rate, but SDG&E failed to explain why this criteria is necessary. Energy Division concludes that SDG&E's criteria is not necessary and has in effect created a flaw in its RFP process. Energy Division therefore recommends that the Commission direct SDG&E to re-evaluate its RFP results without the operational requirement that constant load be shifted regardless of the temperature from May through October and re-submit its proposals to the Commission in a supplemental advice letter filing.

[8] Submitted to the Commission as Confidential Attachment A of their Advice Letter 1878-E

PG&E should follow Commission procedure should it need additional time to meet Commission-set deadlines.

In its initial advice letter filing, PG&E provided a status report on its RFP process, rather than proposing PLS projects for the Commission's consideration. In their protests on PG&E's initial filing, Trane, Control Air Conditioning Corporation, Ice Energy, California Community Colleges System Office, Los Angeles Community Colleges, and Silicon Valley Leadership Group request the Commission to compel PG&E to select PLS programs and spend funds authorized by the Commission.

The protests regarding PG&E's original AL filing were made moot by PG&E's supplemental advice letter which proposed three vendors with one type of PLS technology. In response to Energy Division inquiries, PG&E explained that its RFP process did not enable it to file PLS proposals by the February 28 deadline, and therefore it chose to provide a status report at that time. Energy Division reminds PG&E that following Commission procedure for deadline extensions is important and that PG&E, per Commission rules, should have requested a deadline extension for its PLS proposals if it was not able to submit its proposals by the February 28 deadline.

COMMENTS

Public Utilities Code section 311(g)(1) provides that this resolution must be served on all parties and subject to at least 30 days public review and comment prior to a vote of the Commission. Section 311(g)(2) provides that this 30-day period may be reduced or waived upon the stipulation of all parties in the proceeding.

The 30-day comment period for the draft of this resolution was neither waived or reduced. Accordingly, this draft resolution was mailed to parties for comments, and will be placed on the Commission's agenda no earlier than 30 days from today.

FINDINGS

1. In D.06-11-049, the Commission found that permanent load shifting can reduce the need for capacity investments, reduce the likelihood of

shortages during peak periods and lower system costs overall by reducing the need for peaking units.

2. In D.06-11-049, the Commission ordered PG&E, SCE and SDG&E to pursue PLS via a Request for Proposal (RFP) process, and to file individual advice letters with their independently selected proposals.

3. The Commission did not direct the utilities to limit their PLS RFP process to any particular technology but requested the utilities to consider cost effectiveness, ease of implementation, amount of load shifting which can be obtained by the summer 2007, potential for growth and expansion, and the reliability of the technology.

4. The Commission currently does not have a standard or protocol to evaluate cost-effectiveness for Demand Response programs, nor one specifically for Permanent Load Shifting programs.

5. The Commission should approve PG&E's TES proposals because they encourage the market viability of a technology which could on a larger scale significantly impact system summer peak.

6. TES technology shows promise to lower a customer's cooling cost and may also, if shown viable, be able to help create a market for off-peak wind power, possibly reducing the need for new sources of fossil fueled on-peak energy and potentially improving peak summer day air quality.

7. The term "thermal energy storage" is a broad one, encompassing different types of technology, some of which are relatively new and emerging.

8. An initial investment in TES technology, which may not initially seem cost-effective, would be helpful for developing technologies to generate the amount of initial volume needed to lower production costs and improve payback of the technology. The Commission should regard developing PLS technologies as pilot programs.

9. An effectively designed tariff will further improve the cost-effectiveness of PLS programs as the need for expensive incentives would diminish.

10. TES technology may also, if shown viable, be able to help create a market for off-peak wind power, possibly reducing the need for new sources of fossil fueled on-peak energy and potentially improving peak summer day air quality. These factors promise an expandability that Energy Division believes is very promising and therefore merits an initial investment of ratepayer funds.

11. The Commission should direct the IOUs to analyze in their next rate design proceeding the impact of their rate proposals on PLS technology, with the goal of establishing general purpose dynamic/TOU/time-variant rates that provide a customer incentive to invest in PLS technologies

12. SDG&E's proposed refrigeration control module technology is the type of innovative technology the Commission should explore as it is novel, is affected by high summer temperatures and can utilize off-peak power.

13. SDG&E's air conditioning fuel switching program will result in the replacement of electric-powered air conditioning load and is another opportunity to explore a different type of technology.

14. Energy Division finds merit with SDG&E's refrigeration control module technology proposal and air conditioner fuel-switching proposal but recommends that the Commission should not approve these proposals at this time because of a flaw in SDG&E's RFP process.

15. SCE's NREV and SDG&E's forklift battery charging proposals has little or no direct correlation to system peak nor is battery charging for such vehicles thermally driven. Many NREV vehicle users may already be responding to time-of-use rates. These proposals should not be approved by the Commission.

16. SCE and SDG&E should not be compelled to consider the additional factors proposed by the protestors in a weighted fashion as the IOUs should have the flexibility to design and implement their RFP processes as they see fit, assuming the process is reasonably fair, that there is a rationale for the factors they consider, and that they at a minimum, consider the factors the Commission has set in D.06-11-049

17. SCE and SDG&E should not be compelled to choose one type of PLS technology over another

18. The Commission should direct SCE to re-submit other PLS proposals for the Commission's consideration via a supplemental advice letter utilizing to the fullest extent possible the monies allocated for Permanent Load Shifting.

19. SDG&E failed to provide a basis for its RFP requirement that TES technologies must demonstrate the same amount of partial load be shifted each and every peak day from May through October. SDG&E provides no rationale for this requirement and its inclusion created a flaw in its RFP process.

20. The Commission should direct SDG&E to re-evaluate its RFP results without the operational requirement that constant load be shifted regardless of the temperature from May through October and re-submit its proposals to the Commission in a supplemental advice letter filing.

21. PG&E should follow Commission procedure for deadline extensions.

THEREFORE IT IS ORDERED THAT:

1. PG&E's proposed TES projects, as described in Advice Letter 2997-E-A, are approved.

2. SCE's proposed NREV battery re-charging technology proposal is rejected.

3. SDG&E's proposed forklift battery re-charging technology proposal is rejected.

4. SDG&E shall re-evaluate and re-score its PLS proposals without the operational requirement that constant load be shifted regardless of the temperature from May through October and re-file a supplemental Advice Letter with its PLS proposals within 30 days of the effective date of this resolution.

5. SCE shall re-evaluate the remaining proposals in its PLS RFP and file new PLS proposal(s) via a supplemental Advice Letter within 30 days of the effective date of this resolution that uses to the full extent the authorized budget allocated for PLS projects.

6. PG&E, SCE and SDG&E shall analyze in their next rate design proceeding, the impact of their rate proposals on PLS technology, with the goal of establishing general purpose dynamic/TOU/time-variant rates that provide a customer incentive to invest in PLS technologies.

This Resolution is effective today.

I certify that the foregoing resolution was duly introduced, passed and adopted at a conference of the Public Utilities Commission of the State of California held on July 26, 2007; the following Commissioners voting favorably thereon:

_____
Paul Clanon
Executive Director

STATE OF CALIFORNIA ARNOLD SCHWARZENEGGER, *Governor*

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

June 26, 2007 Commission Meeting Date: July 26, 2007
I.D.# 6789

TO: PARTIES TO SDG&E ADVICE LETTER 1878-E; SCE ADVICE LETTER 2106-E; PG&E ADVICE LETTER 2997-E-A:

Enclosed is draft Resolution Number E-4098 of the Energy Division. It is in response to SDG&E AL 1878-E; SCE AL 2106-E; PG&E 2997-E-A and will appear on the agenda at the next Commission meeting held 30 days after the date of this letter. The Commission may vote on this Resolution at that time or it may postpone a vote until a later meeting. When the Commission votes on a draft Resolution, it may adopt all or part of it as written, amend, modify or set it aside and prepare a different Resolution. Only when the Commission acts does the Resolution become binding on the parties.

All comments on the draft Resolution are due by **July 12, 2007**. Comments shall be served on parties, as outlined below.

1) An original and two copies, along with a certificate of service to:

Honesto Gatchalian
Energy Division
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94102

2) Parties described above (attached).

3) Jason R. Salmi Klotz
Energy Division
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94102
Email: jk1@cpuc.ca.gov

Comments shall be limited to five pages in length plus a subject index listing the recommended changes to the draft Resolution, a table of authorities and an appendix setting forth the proposed findings and ordering paragraphs.

Comments shall focus on factual, legal or technical errors in the proposed draft Resolution.

Replies to comments on the draft resolution may be filed (i.e., received by the Energy Division) on **July 17, 2007**, and shall be limited to identifying misrepresentations of law or fact contained in the comments of other parties. Replies shall not exceed five pages in length, and shall be filed and served as set forth above for comments.

Late submitted comments or replies will not be considered.

An accompanying declaration under penalty of perjury shall be submitted setting forth all the reasons for the late submission.

Please contact Jason R. Salmi Klotz at 415.703.2421 if you have questions or need assistance.

Sincerely,

Bruce Kaneshiro
Demand Response Programs, Supervisor
Energy Division

Enclosure; Service List
Certificate of Service

CERTIFICATE OF SERVICE

I certify that I have by electronic mail this day served a true copy of Draft Resolution E-4098 on all parties on the service list for SDG&E Advice Letter 1878-E; SCE Advice Letter 2106-E and PG&E Advice Letter 2997-E-A or their attorneys or representatives as shown on the attached list.

Dated June 26, 2007 at San Francisco, California.

_____

Bruce Kaneshiro

NOTICE

Parties should notify the Energy Division, Public Utilities Commission, 505 Van Ness Avenue, Room 4002 San Francisco, CA 94102, of any change of address to insure that they continue to receive documents. You must indicate the Resolution number on the service list on which your name appears.

Parties to SDG&E Advice Letter 1878-E; SCE Advice Letter 2106-E; PG&E Advice Letter 2997E-A

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