

STATE OF CALIFORNIA

Public Utilities Commission  
San Francisco

**M e m o r a n d u m**

**Date:** March 28, 2008

**To:** The Commission  
(Meeting of April 10, 2008)

**From:** Bryan Crabb, Legislative Liaison  
Office of Governmental Affairs (OGA) — Sacramento

**Subject:** **AB 2768 (Levine) – Solar energy systems: pricing.  
As amended: February 22, 2008**

**LEGISLATIVE SUBCOMMITTEE RECOMMENDATION: SUPPORT**

**SUMMARY OF BILL:**

This bill would make optional time-variant (TOU) pricing a permanent rate feature for California's solar energy system owners. SB 1 (Murray, Ch. 132, Statutes of 2006) originally required all solar customers to be on a TOU rate when they installed solar. Emergency legislation in May 2007 delayed solar customers from the mandatory TOU rates until after the next general rate case in each IOU territory after 2009. This bill would make "optional TOU" permanent.

Under AB 2768, the ratepayer installing a solar system would have the option of taking service under the new time-variant rate or a flat rate if there is a flat rate for which the ratepayer qualifies. This option allows residential solar energy system owners to choose whichever tariff would make solar the most economical, a flat rate or a TOU rate.

**SUMMARY OF SUPPORTING ARGUMENTS FOR RECOMMENDATION:**

This bill would remove a potential barrier to solar and give ratepayers an extra incentive to purchase and install solar energy systems on homes and businesses, furthering California's goal of creating 3,000 megawatts of new, solar produced electricity by 2017. The bill addresses the issue that some solar system owners might be worse off on time-variant rates – a problem that hindered earlier attempts to create this incentive – by making time-variant rates optional rather than mandatory for ratepayers who install solar systems. AB 2768 will create a strong market incentive toward the achievement of

California's goal of creating 3,000 megawatts of installed solar photovoltaic (PV) by 2017.

**SUMMARY OF SUGGESTED AMENDMENTS:**

None.

**DIVISION ANALYSIS (Energy Division):**

AB 2768 would help the California Public Utilities Commission (Commission)-administered California Solar Initiative (CSI) achieve its goal of creating a self-sustaining market for PV electricity systems. Because time-variant (TOU) rates can improve the economic attractiveness of solar PV from the consumer perspective, allowing consumers the option of taking service on such rates would motivate more potential customers to install solar panels without increasing subsidy payments. At the same time, by making TOU rates optional, AB 2768 eliminates the risk that some CSI participants would be made worse off than they would have been on a flat rate.

The Commission previously mandated TOU rates for CSI participants, in accordance with SB 1, but that requirement was temporarily lifted in June 2007 when it was discovered that for a small subset of customers, bills could actually be higher with a solar system and TOU rates than with no solar system and a flat rate. The customers hurt by the TOU rate mandate are generally those whose high daytime demand who solar systems do not meet 100 percent of that demand.<sup>1</sup> Current law states that the Commission may delay the implementation of TOU rates for CSI participants until the next general rate case of the three investor-owned utilities, scheduled to be completed after January 1, 2009. AB 2768 changes existing law by allowing solar customers the option of taking service on TOU rates immediately.

The bill would require the Commission to develop a TOU rate such that rates are highest when solar PV output peaks and California's electricity demand peaks. This rate would then be offered to all ratepayers who install solar energy systems on an optional basis.

One issue with requiring TOU rates of solar customers is that it is difficult for existing customers that are not already on TOU to have the ability to calculate a load profile. Customers not already on TOU do not have their usage data and therefore advisors can not determine whether a solar customer would be better off on a flat rate or a TOU rate. This issue is somewhat mitigated once the default for all customers is TOU, at that time, customers would have the ability to access their TOU specific load usage pattern.

In the absence of widely understood information on this topic, a University of California Energy Institute (UCEI) study looked at the effect of TOU rates on the solar PV market. The study found that TOU tariffs in PG&E's territory "would benefit nearly all customers who would consider installing solar PV. " Moreover, the study notes that the data do not

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<sup>1</sup> [http://docs.cpuc.ca.gov/published/News\\_release/68820.htm](http://docs.cpuc.ca.gov/published/News_release/68820.htm)

support the conclusion that mandatory TOU rates significantly harmed demand for solar PV in early 2007, as some media reports indicated. However, the study did not have access to a large volume of residential rate profiles, and instead relied on some load profile data from a critical peak pricing pilot from some years ago. Regardless, AB 2768 would avoid the possibility that some solar PV customers would be hurt by time-variant rates by making those rates optional rather than mandatory.

In addition to its goal of increasing solar PV output, California has a separate goal of increasing demand response – a reduction of electricity demand at times when supplies are tight. Beyond furthering the goal of incentivizing solar PV installation, introducing time-variant rates for solar customers would also further the state's demand response goals, since rates that increase the value of solar PV production also create incentives for reduced electricity consumption at times of high demand.

By providing a strong incentive for the installation of solar PV on California homes and businesses without the use of any government subsidies, AB 2768 would further state energy policy goals with minimal cost to the citizens of California and therefore should be adopted. The possibility for negative consequences from the legislation is minimized by its voluntary nature.

#### **PROGRAM BACKGROUND:**

- California policy states that the development of renewable energy in general and solar energy in particular is a high priority for the state. Renewable energy is third in the state's loading order for resources to meet growing energy demand, after energy efficiency and demand response. Moreover, California has set ambitious targets for the installation of rooftop solar PV systems, setting a goal of 3,000 megawatts of new solar-produced electricity by 2017. Although solar electricity has many advantages, including zero greenhouse gas emissions, the cost of installing such systems is a deterrent for many potential buyers. Besides the fact that solar power systems require a large up-front investment in contrast to taking utility service, which is paid gradually over time, the energy produced by a solar energy system costs roughly three times the electricity provided by the utilities in California.<sup>2</sup>
- In order to incentivize consumers to purchase solar energy systems in spite of the up front cost, California has established a program, the California Solar Initiative (CSI) that provides incentive payments to ratepayers who purchase those systems. Ratepayers have responded positively to these incentives, submitting applications for 208 megawatts of new solar in 2007.<sup>3</sup> The ultimate goal of the CSI is to stimulate market demand for solar PV, which will create economies of scale and eventually

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<sup>2</sup> See <http://www.solarbuzz.com/SolarPrices.htm> and <http://www.eia.doe.gov/bookshelf/brochures/rep/>

<sup>3</sup> See **California Solar Initiative Staff Progress Report** January 2008, [http://www.cpuc.ca.gov/NR/rdonlyres/5C9DDC79-3E96-4241-BEEC-46D3F34254F4/0/080117\\_Jan\\_ED\\_CSI\\_Staff\\_Progress\\_Report.pdf](http://www.cpuc.ca.gov/NR/rdonlyres/5C9DDC79-3E96-4241-BEEC-46D3F34254F4/0/080117_Jan_ED_CSI_Staff_Progress_Report.pdf)

reduce the cost of the technology. Rate design that makes solar PV even more attractive for homes and businesses can further this goal without any additional subsidy costs to other ratepayers or taxpayers.

- Under current flat rates, owners of solar PV systems actually subsidize other users of electricity. This is because electricity produced by solar PV systems at times of peak production is valued at less than the actual market cost of power during those times, when demand tends to be high and the cost of electricity production is higher than flat retail rates. Since residential and other small solar PV systems are paid the retail rate for power, owners of these systems are paid less than the true market value of their energy – in effect a subsidy to other electricity consumers. This subsidy creates a perverse incentive that actually confounds the state’s goal of creating more solar energy. Removing that subsidy by implementing time-variant rates would thus be an easy way to incentivize solar PV installation without any extra burden on ratepayers or taxpayers.
- The effect of rate design on the economics of solar PV has been studied by UCEI and found to be an effective way of increasing the value of PV systems. According to a 2005 UCEI study of the value of time-varying solar photovoltaic electricity production, setting TOU rates that take into account real-time prices as well as the long-term fixed costs of natural gas peaking plants could increase the value of solar power by nearly 50 percent. The study notes that “correctly accounting for the time-varying electricity production of solar panels could increase its value substantially compared to a flat-rate tariff.”<sup>4</sup>
- Other States’ or Federal Information: The federal government currently offers a tax credit of up to \$4,000 for homeowners who install solar PV systems. This policy will not conflict with the provisions of AB 2768.

#### **LEGISLATIVE HISTORY:**

- AB 1X (Keeley and Migden, Ch. 4, Statutes of 2001) prohibits the Commission from increasing electric rates for customers of up to 130% of existing baseline quantities from their existing level on January 19, 2002, until the Department of Water Resources has recovered the cost of the power it procured during the electricity crisis. AB 1X does not conflict with A.B. 2768, however, since under A.B. 2768 ratepayers would not be forced to change their rate structure but would only have the option of doing so. In the past, the Commission has viewed AB 1X as allowing customers to choose any new rates they feel could reduce their bill, even if this choice technically raises their rates for a few hours each summer.
- SB 1 required previously required all CSI incentive recipients to take service on a TOU rate. Assembly Bill 1714 (2007) allowed the PUC to delay implementation of

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<sup>4</sup> See Borentein, **Valuing the Time-Varying Electricity Production of Solar Photovoltaic Cells**, University of California Energy Institute, March 2005, available at <http://www.ucei.berkeley.edu/PDF/csemwp142.pdf>

mandatory TOU rates until the next general rate case of the three investor-owned utilities, scheduled to be completed after January 1, 2009.

**FISCAL IMPACT:**

None.

**STATUS:**

AB 2768 will be heard in the Assembly Committee on Utilities and Commerce on April 14, 2008.

**SUPPORT/OPPOSITION (verified 3/20/08):**

None on file.

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**Date:** March 28, 2008

**BILL LANGUAGE:**

BILL NUMBER: AB 2768    INTRODUCED  
                  BILL TEXT

INTRODUCED BY    Assembly Member Levine

FEBRUARY 22, 2008

An act to amend Section 2851 of the Public Utilities Code,  
relating to solar energy.

LEGISLATIVE COUNSEL'S DIGEST

AB 2768, as introduced, Levine. Energy: solar energy systems:  
pricing.

Under existing law, the Public Utilities Commission (PUC) has regulatory authority over public utilities, including electrical corporations. A decision of the PUC adopted the California Solar Initiative. Existing law requires the PUC to undertake certain steps in implementing the California Solar Initiative, including requiring time-variant pricing for all ratepayers with a solar energy system, as defined, pursuant to a time-variant tariff developed by the PUC. Existing law authorizes the PUC to delay implementation of time-variant pricing for ratepayers with a solar energy system, until the effective date of the rates established in the next general rate case of the state's 3 largest electrical corporations. If the commission delays implementation of time-variant pricing, existing law requires that ratepayers required to take service under time-variant pricing between January 1, 2007, and January 1, 2008, and that would otherwise qualify for flat rate pricing, be given the option to take service under flat rate or time-variant pricing.

This bill would delete that authorization to delay implementation and revise those requirements to, instead, require that a ratepayer who installs a solar energy system be given the option to take service under flat rate or time-variant pricing, if there is a flat rate pricing schedule for which the ratepayer would have qualified if the ratepayer had not installed the system.

Vote: majority. Appropriation: no. Fiscal committee: yes.  
State-mandated local program: no.

THE PEOPLE OF THE STATE OF CALIFORNIA DO ENACT AS FOLLOWS:

SECTION 1. Section 2851 of the Public Utilities Code is amended to read:

2851. (a) In implementing the California Solar Initiative, the

commission shall do all of the following:

(1) The commission shall authorize the award of monetary incentives for up to the first megawatt of alternating current generated by solar energy systems that meet the eligibility criteria established by the State Energy Resources Conservation and Development Commission pursuant to Chapter 8.8 (commencing with Section 25780) of Division 15 of the Public Resources Code. The commission shall determine the eligibility of a solar energy system, as defined in Section 25781 of the Public Resources Code, to receive monetary incentives until the time the State Energy Resources Conservation and Development Commission establishes eligibility criteria pursuant to Section 25782. Monetary incentives shall not be awarded for solar energy systems that do not meet the eligibility criteria. The incentive level authorized by the commission shall decline each year following implementation of the California Solar Initiative, at a rate of no less than an average of 7 percent per year, and shall be zero as of December 31, 2016. The commission shall adopt and publish a schedule of declining incentive levels no less than 30 days in advance of the first decline in incentive levels. The commission may develop incentives based upon the output of electricity from the system, provided those incentives are consistent with the declining incentive levels of this paragraph and the incentives apply to only the first megawatt of electricity generated by the system.

(2) The commission shall adopt a performance-based incentive program so that by January 1, 2008, 100 percent of incentives for solar energy systems of 100 kilowatts or greater and at least 50 percent of incentives for solar energy systems of 30 kilowatts or greater are earned based on the actual electrical output of the solar energy systems. The commission shall encourage, and may require, performance-based incentives for solar energy systems of less than 30 kilowatts. Performance-based incentives shall decline at a rate of no less than an average of 7 percent per year. In developing the performance-based incentives, the commission may:

(A) Apply performance-based incentives only to customer classes designated by the commission.

(B) Design the performance-based incentives so that customers may receive a higher level of incentives than under incentives based on installed electrical capacity.

(C) Develop financing options that help offset the installation costs of the solar energy system, provided that this financing is ultimately repaid in full by the consumer or through the application of the performance-based rebates.

(3) By January 1, 2008, the commission, in consultation with the State Energy Resources Conservation and Development Commission, shall require reasonable and cost-effective energy efficiency improvements in existing buildings as a condition of providing incentives for eligible solar energy systems, with appropriate exemptions or limitations to accommodate the limited financial resources of low-income residential housing.

(4) (A) Notwithstanding subdivision (g) of Section 2827, the commission shall ~~require time variant pricing for all ratepayers with a solar energy system. The commission shall~~ develop a time-variant tariff that creates the maximum incentive for ratepayers to install solar energy systems so that the system's peak electricity production coincides with California's peak electricity demands and that assures that ratepayers receive due value for their

contribution to the purchase of solar energy systems and customers with solar energy systems continue to have an incentive to use electricity efficiently. In developing the time-variant tariff, the commission may exclude customers participating in the tariff from the rate cap for residential customers for existing baseline quantities or usage by those customers of up to 130 percent of existing baseline quantities, as required by Section 80110 of the Water Code. Nothing in this paragraph authorizes the commission to require time-variant pricing for ratepayers without a solar energy system.

~~(B) The commission may delay implementation of time variant pricing pursuant to subparagraph (A), until the effective date of the rates subject to the next general rate case of the state's three largest electrical corporations, scheduled to be completed after January 1, 2009. A ratepayer who installs a solar energy system shall have the option to take service under a flat rate tariff or a time-variant tariff, if there is a flat rate pricing schedule for which the ratepayer would have qualified if the ratepayer had not installed the solar energy system~~

~~(C) If the commission delays implementation of time variant pricing pursuant to subparagraph (B), ratepayers required to take service under time variant pricing between January 1, 2007, and January 1, 2008, shall be given the option to take service under flat rate or time variant pricing and shall be credited any difference between the time variant rate and the otherwise applicable flat rate, provided there is a flat rate pricing schedule for which the ratepayer would qualify if the ratepayer had not installed the solar energy system.~~

(b) Notwithstanding subdivision (a), in implementing the California Solar Initiative, the commission may authorize the award of monetary incentives for solar thermal and solar water heating devices, in a total amount up to one hundred million eight hundred thousand dollars (\$100,800,000).

(c) (1) In implementing the California Solar Initiative, the commission shall not allocate more than fifty million dollars (\$50,000,000) to research, development, and demonstration that explores solar technologies and other distributed generation technologies that employ or could employ solar energy for generation or storage of electricity or to offset natural gas usage. Any program that allocates additional moneys to research, development, and demonstration shall be developed in collaboration with the Energy Commission to ensure there is no duplication of efforts, and adopted by the commission through a rulemaking or other appropriate public proceeding. Any grant awarded by the commission for research, development, and demonstration shall be approved by the full commission at a public meeting. This subdivision does not prohibit the commission from continuing to allocate moneys to research, development, and demonstration pursuant to the self-generation incentive program for distributed generation resources originally established pursuant to Chapter 329 of the Statutes of 2000, as modified pursuant to Section 379.6.

(2) The Legislature finds and declares that a program that provides a stable source of monetary incentives for eligible solar energy systems will encourage private investment sufficient to make solar technologies cost effective.

(3) On or before June 30, 2009, and by June 30th of every year thereafter, the commission shall submit to the Legislature an

assessment of the success of the California Solar Initiative program. That assessment shall include the number of residential and commercial sites that have installed solar thermal devices for which an award was made pursuant to subdivision (b) and the dollar value of the award, the number of residential and commercial sites that have installed solar energy systems, the electrical generating capacity of the installed solar energy systems, the cost of the program, total electrical system benefits, including the effect on electrical service rates, environmental benefits, how the program affects the operation and reliability of the electrical grid, how the program has affected peak demand for electricity, the progress made toward reaching the goals of the program, whether the program is on schedule to meet the program goals, and recommendations for improving the program to meet its goals. If the commission allocates additional moneys to research, development, and demonstration that explores solar technologies and other distributed generation technologies pursuant to paragraph (1), the commission shall include in the assessment submitted to the Legislature, a description of the program, a summary of each award made or project funded pursuant to the program, including the intended purposes to be achieved by the particular award or project, and the results of each award or project.

(d) (1) The commission shall not impose any charge upon the consumption of natural gas, or upon natural gas ratepayers, to fund the California Solar Initiative.

(2) Notwithstanding any other provision of law, any charge imposed to fund the program adopted and implemented pursuant to this section shall be imposed upon all customers not participating in the California Alternate Rates for Energy (CARE) or family electric rate assistance (FERA) programs as provided in paragraph (2), including those residential customers subject to the rate cap required by Section 80110 of the Water Code for existing baseline quantities or usage up to 130 percent of existing baseline quantities of electricity.

(3) The costs of the program adopted and implemented pursuant to this section may not be recovered from customers participating in the California Alternate Rates for Energy or CARE program established pursuant to Section 739.1, except to the extent that program costs are recovered out of the nonbypassable system benefits charge authorized pursuant to Section 399.8.

(e) In implementing the California Solar Initiative, the commission shall ensure that the total cost over the duration of the program does not exceed three billion three hundred fifty million eight hundred thousand dollars (\$3,350,800,000). The financial components of the California Solar Initiative shall consist of the following:

(1) Programs under the supervision of the commission funded by charges collected from customers of San Diego Gas and Electric Company, Southern California Edison Company, and Pacific Gas and Electric Company. The total cost over the duration of these programs shall not exceed two billion one hundred sixty-six million eight hundred thousand dollars (\$2,166,800,000) and includes moneys collected directly into a tracking account for support of the California Solar Initiative and moneys collected into other accounts that are used to further the goals of the California Solar Initiative.

(2) Programs adopted, implemented, and financed in the amount of

seven hundred eighty-four million dollars (\$784,000,000), by charges collected by local publicly owned electric utilities pursuant to Section 387.5. Nothing in this subdivision shall give the commission power and jurisdiction with respect to a local publicly owned electric utility or its customers.

(3) Programs for the installation of solar energy systems on new construction, administered by the State Energy Resources Conservation and Development Commission pursuant to Chapter 8.6 (commencing with Section 25740) of Division 15 of the Public Resources Code, and funded by nonbypassable charges in the amount of four hundred million dollars (\$400,000,000), collected from customers of San Diego Gas and Electric Company, Southern California Edison Company, and Pacific Gas and Electric Company pursuant to Article 15 (commencing with Section 399).