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BEFORE THE CALIFORNIA ENERGY COMMISSION

In the matter of the Design of the New Solar Homes Partnership	Energy Commission Docket No. 06-NSHP-1

**COMMENTS OF THE AMERICANS FOR SOLAR POWER
THE RENEWABLES COMMITTEE WORKSHOP ON THE DESIGN
OF THE NEW SOLAR HOMES PARTNERSHIP**

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June 20, 2006

BEFORE THE CALIFORNIA ENERGY COMMISSION

In the matter of the Design of the New Solar Homes Partnership	Energy Commission Docket No. 06-NSHP-1

COMMENTS OF THE AMERICANS FOR SOLAR POWER THE RENEWABLES COMMITTEE WORKSHOP ON THE DESIGN OF THE NEW SOLAR HOMES PARTNERSHIP

The Americans for Solar Power (ASPv)[1] respectfully comments on the Renewables Committee Workshop on the Design of the New Solar Homes Partnership which was held on June 12, 2006 (Workshop). These comments have been filed pursuant to the instructions of the Notice of Workshop.

INTRODUCTION

On June 12, 2006, the California Energy Commission's (CEC's) Renewables Committee held a Workshop to discuss the design of the CEC's New Solar Homes Partnership (NSHP) program. Associated with the Workshop is the CEC's Draft Solar Proposal on the NSHP (Draft Solar Proposal). ASPv appreciates and supports the Renewables Committee and CEC staff's efforts to ensure that the NSHP program is simple, transparent, well managed and easy for builders to use. We are also hopeful that the NSHP program will be as similar to the California Public Utilities Commission (CPUC) California Solar Initiative program as possible. ASPv's comments here are consistent with the Comments and Reply Comments filed on May 16 and May 26, 2006, respectively, at the CPUC in Rulemaking (R.) 06-03-004, the CPUC's California

[1] ASPv is an organization made up of a team of the nation's foremost companies, leaders, experts, and advocates having an extensive background in photovoltaic (PV) solar energy and a dedication to the advancement of the U.S. market. The companies that make up ASPv include: BP Solar; Kyocera Solar, Inc.; SPG Solar, Inc.; Sanyo Energy (USA) Corporation; Sun Edison, LLC; Renewable Ventures LLC; SMA America, Inc., and Kaco Solar. ASPv is committed to making on-site solar power economic, accessible, and convenient for American electricity consumers.

Solar Initiative (CSI) proceeding. Please find ASPv's CPUC comments, which are included as attachments in this filing for consideration and background for the NSHP proceeding.

I. Incentive Structure

The Draft Staff Proposal recommends an "expected" performance-based incentive (EPBI) program for the NSHP.[2] The Draft Staff Proposal goes on to state that EPBI:

> "will be an up-front payment approach that addresses those system design and installation factors that can be controlled at the time of installation, anticipating losses that are expected to occur, so as to provide both an accurate performance expectation for the installed system and an incentive for the builder to insure high performance designs and installations."[3]

It is ASPv's understanding that the CEC Staff will be developing EPBI software based on a photovoltaic (PV) reference system with a "no-shading" criterion based on the following assumptions:

- Sacramento – latitude, longitude, weather file and TDV
- Azimuth – South 180 degrees
- Tilt – 5:21 pitch (22.5 degrees)
- Modules/Number of/String/Inverter – Premier Gardens
- Mounting - BIPv
- Shading – none
- Default losses – dirt, dust and mismatched wiring

For purposes of the calculation of EPBI incentives, the NSHP program should use a reference based upon an optimally designed system. The CEC's EPBI incentive structure for the NSHP should reward proper design and optimal installation in terms of orientation and shading.

The following factors should be included in the EPBI structure:

System Rating:
Estimated Rating = Number and capacity of modules
x PV PTC module rating (PV USA test conditions)
x inverter efficiency
no "other losses"

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[2] Draft Staff Proposal at p. 15.
[3] Id. at p. 17.

Design Factor: Minimum Stimulated Output for Designed System/Simulated Output for a South Facing photovoltaic (PV) System Fixed at a Tilt Angle Equal to the Latitude Angle and Without Shading. The above definition provides a reference point against an optimized baseline and an unadjusted geographic location for available solar irradiance.

Finally, the only accurate approach to test a system's output is through installation of an output meter. ASPv, however, does not believe that a pure PBI incentive approach is appropriate at this time for the new home construction market. ASPv recommends that the CEC should consider PBI as an option for rewarding innovative technologies, such as bifacial modules, whose performance benefits would not be captured by the CEC ratings or and estimated performance model.

II. Incentive Levels

ASPv proposes an incentive level for EPBI that is equivalent to $2.80 per Watt (CEC AC) beginning 2007. This level is consistent with our CPUC CSI filing for the residential retrofit market segment of less than 10 kW. We believe that this level of incentive is necessary because the worldwide demand for PV has outmatched the supply resulting in cost increases in PV products. Over the past two years within the CEC's Emerging Program, the total installed MWs of PV systems in the residential market of less than 6 kW has been constant. This program has experienced in 2006 a slight downturn of installations in residential market for systems less than 6 kW. ASPv wants to be clear that the recommended incentive level proposed for the EPBI is conditioned upon ongoing review and analysis of the PV market. We believe that as a matter of public policy it is very important to pay close attention to the residential market as we do not want to develop a program that encourages only large systems in the residential market.

Consideration of varying incentive level should also be considered due to different electrical rates in the various utility service territories.

III. Incentive Trigger Mechanism

The Draft Staff Report states that an "incentive level and trigger mechanism was laid out for the CPUC program and the Energy Commission would attempt to be consistent with this schedule." [4] ASPv recommends that the CEC adopt a volume based trigger mechanism based on signed contracts, or equivalent proof that PV panels have been secured. ASPv appreciates that the CEC has always required signed contracts in order to confirm reservations.

IV. Third Party Verification

ASPv supports the Draft Staff Proposal's recommendation that there should be third-party verification of installed systems.[5] Field verification prior to the payment of incentives must be conducted by trained inspectors. This inspection should include the roof, design, and installation.

V. Energy Efficiency

ASPv supports the incorporation of energy efficiency measures into the NSHP program but does not believe that it should be an absolute requirement to receiving incentives. ASPv is concerned that additional required expenditures, like energy efficiency requirements, will deter and possibly prohibit new customers from investing in solar systems. For this reason, ASPv recommends that energy efficiency should not be a requirement for receiving incentives.

Enhancing energy efficiency in the new construction market is an important goal but solar incentives should not be contingent on energy efficiency measurements, beyond those required by Title 24. ASPv suggests that it would be far more effective to provide higher and

[4] Draft Staff Proposal at p. 19.

separate incentives for energy efficiency measures that go beyond Title 24. Builders and developers should be able to apply for both PV and energy efficiency measure through a statewide on-line web based application and data accumulation program that is simple and easy to use. Any kind of increased incentives for energy efficiency measures should be funded through a separate, energy efficiency program.

VII. Administration and Evaluation

The single most important application for the success of the NSHP program is the implementation of a statewide, web-base application processing and data accumulation system. The web-based application processing system must be easy to use, paid for by the customer and subject to ongoing review and improvement. The web-based data accumulation program must be coordinated with the web-based application and administration functions.

ASPv supports an independent, non-profit administrator for the NSHP program. Such an administrator would provide many benefits to the program, including freedom from conflicting objectives, efficiency and cost and more transparent data collection and reporting.

On going program evaluation that is open and transparent is critical to the success of the NSPHP. NSHP program and utility system data must be public in order to provide for reasoned analysis of this program.

CONCLUSION

ASPv respectfully submits these comments and respectfully requests the CEC to adopt its recommendations for the NSHP program.

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[5] Draft Staff Proposal at pp. 16 – 17.

Respectfully submitted,

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ATTACHMENT A

Comments Regarding Incentives for Non-PV Solar Technologies as part of The CEC's New Solar Homes Partnership

The Draft Staff Proposal states "eligible solar system technologies in a new program might include grid-connected photovoltaic systems, solar water heating systems, solar-thermal electric generating systems, and solar heating and cooling systems."[1] The Draft Staff Proposal also states that solar water heaters will be evaluated after the pilot program results have been evaluated.[2]

There is no policy reason to wait to allow new home construction to benefit from having solar thermal domestic hot water available as an option. As ASPv has previously noted, residential solar thermal domestic hot water systems are widespread worldwide and have been used in the U.S. for over twenty-five years. In addition, many countries are currently supporting more aggressive policies to promote residential solar thermal domestic hot water. For example, in May of this year Spain instituted a minimum requirement for homes to provide 30 – 70% (depending on climate zone) of domestic hot water and swimming pool heating from solar thermal.

Solar thermal space heating and cooling are a bit more complicated; however, there is increasing interest in promoting these applications due to the fact that buildings consume approximately 40-50% of the energy in most countries. Currently, the European Union (EU) is planning to get 25% of their CO2 reductions through renewable thermal heating and cooling and has an even higher goal that is being promoted of 50% solar thermal for building needs.

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[1] Draft Staff Proposal at p. 10.
[2] Id.

At this time, many homes in the EU include both solar thermal domestic hot water and solar thermal space heating, so-called “combi-systems.” Inclusion of residential solar thermal space heating should also be considered at this time. Although commercial solar cooling is commercially available, residential solar cooling will not be commercially viable for some years and should be addressed at that time.

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking Regarding Policies, Procedures and Rules for the California Solar Initiative, the Self-Generation Incentive Program and Other Distributed Generation Issues.	)	R.06-03-004

COMMENTS OF AMERICANS FOR SOLAR POWER REGARDING UPDATED PROPOSAL FOR THE CALIFORNIA SOLAR INITIATIVE AND SUPPLEMENTAL QUESTIONS

In accordance with the May 9, 2006 Administrative Law Judge's Ruling with Modification to Staff Proposal and Additional Guidance on Comments due May 15, 2006 ("ALJ Ruling"), Americans for Solar Power ("ASPv") submit the following comments and recommendations. The following comments address each of the sections in the April 24, 2006 CPUC Energy Division Staff Proposal For California Solar Initiative Design and Administration 2007-2016 ("Staff Report"). Per the ALJ Ruling's instruction, issues are addressed in the same order as presented in the Staff Report.

1. EXECUTIVE SUMMARY

ASPv appreciates the Commission's ongoing efforts to develop an effective framework for implementing the California Solar Initiative ("CSI"). ASPv submits the following comments and recommendations:

- The Commission should immediately initiate the process of establishing a simple and effective on-line application and data accumulation service that will be available for customer use January 1, 2007.
- ASPv conceptually supports reflecting consideration of state and Federal tax credits ("FTCs") in determining rebate levels. However, it appears that today's PV market has already incorporated the 30 percent Federal tax credit and the existence of this credit should not be used to further discount rebates at this time. Tax credit issues should, however, be considered as part of the annual market assessment process that ASPv recommends take place every November.

- The Commission should not create a transitional “hybrid” rebate structure for large commercial customers, but should rather establish Performance Based Incentives (“PBI”) for all commercial PV over 100 kW.
- The Commission should adopt the PBI rate schedule proposed by ASPv, which is based on a 5 year term payment schedule, including discount rate and financing costs.
- All PBI program participants should be required to have revenue quality dedicated meters that can be read remotely. However, non-PBI systems need only have meters accurate to plus or minus 5%. This is consistent with the requirements currently in place for the CEC’s residential program.
- In order to assist the Commission in managing funding over time, all PBI participants should provide as part of the application process an accurate estimate of the output of their system, and should adjust that estimate when necessary.
- New construction projects should be eligible for PBI.
- Small commercial projects should have the option of being paid on PBI, provided they meet applicable metering requirements.
- Residential and small commercial participants should receive rebates at the levels recommended by ASPv, subject to design factors that reflect performance as compared to an “expected performance” baseline. Factors affecting rebates should include shading, tilt and orientation.
- The Commission should revise the solar system size limit to 100 percent of historical annual energy consumption.
- The Commission should adopt ASPv’s recommendations with regard to non-PV solar technologies, which include support for PBI for solar thermal technologies and applications and rate decline proposal, incentive recommendations, suggestions for administration of solar thermal incentives, and distinction between the CPUC Solar Thermal Program and the SDREO DHW Pilot Program.
- The Commission should adopt volume based trigger mechanism based on signed contacts and confirmation that PV panels have been secured.
- The Commission should authorize the PV Market Assessment Group, representing a range of regulators, industry, utility, ratepayer and environmental interests, to meet annually in early November to evaluate whether market conditions, tax credits, utility rates and other relevant factors for purposes of determining whether the volume based trigger is tracking market conditions and other new conditions (tax credits, etc.).
- The Commission should encourage administration of the CSI by non-profit or third party administrator(s) to the extent possible.
- The Administrator Selection Panel should include a representative from the solar industry.
- The Commission should make data available to market participants on line as soon as possible.
- The Commission should continue supporting net metering (including an increase in the cap to 2.5%).

- Energy efficiency audits and retrofits should be incorporated into the CSI, but rebates should be separately funded through energy efficiency programs.

2. BRINGING PERFORMANCE DIMENSION TO INCENTIVE PAYMENTS

2.1 Objectives for Incentive Design and Principles to be Applied

2.1.1 ASPV agrees with the Staff's overall program objectives

The Staff Report identifies a number of principles underlying its recommendations regarding implementation of the California Solar Initiative.[1] For the most part, ASPv agrees with these principles. However, it is important to recognize that one objective may conflict with another. For example, the objective of introducing a PBI framework gradually (to avoid market disruption) may have to be balanced with the equally important objective of avoiding undue administrative costs and program complexity. Likewise, the objective of reflecting the value of tax incentives in rebate levels may need to be examined in light of the relative cost in program complexity for residential customers. ASPv discusses specific Staff objectives and additional objectives below.

2.1.2 The Commission must immediately address the need for administrative scale-up.

While the Staff Report and ALJ Ruling address administrative issues, there is no clear acknowledgement of the need for immediate action on essential administrative tasks, nor is there a schedule for completing such tasks. The Commission is currently anticipating consolidating incentives for residential retrofit and all non-residential solar projects into the statewide CSI program by January 1, 2007. Staff Report at 42. While ASPv appreciates that there is an unresolved legal question regarding non-profit

[1] Staff report at 10-11.

administration of the program,[2] the ultimate success of the CSI depends on the Commission's establishing a good administrative foundation as soon as possible. This means immediately identifying what the Commission needs to do in order to ensure a smooth transition in administration of the residential PV program, and effectively integrating the residential and commercial programs. ASPv specifically recommends that the Commission identify as high priority the following key tasks:

- Establishing a simple and effective on-line application service that is easy to use, paid for by the customers, and subject to ongoing review and improvement.
- Establishing a focused and integrated data accumulation program that is coordinated with web-based application and administration functions.

The entity selected as administrator of the <100 kW program must be capable of undertaking these crucial administrative tasks immediately. ASPv and other industry participants are able and willing to assist the Commission and the new program administrator in these tasks. Preparatory work should be undertaken immediately by Commission staff, even prior to selection of the administrator.

ASPv specifically recommends that Commission staff (in collaboration with SGIP program administrators, the CEC, and industry representatives) should begin work on administrative tasks now, so that the essential infrastructure is in place on January 1, 2007. These tasks should not be left for the new system administrator to deal with in late 2006. Rather, the Commission should immediately, with input from interested parties, assemble a list of infrastructure needs and administrative tasks required in order to implement the CSI program. Through whatever process is most expedient (workshop, CSI task force, etc.) the Commission should establish what needs to be done to set up an on-line application and data accumulation system, and a schedule for doing it.

[2] Administration issues are addressed in section 6.2 below.

To begin with, for example, the Commission or CSI task force should prepare and issue a request for proposals and select between available web-based tools such as PowerClerk that could be modified to serve the purposes of the CSI program. Once the selection is made, staff will initiate the modification process to ensure that the application processing database is up and running by January 1, 2007. As it is already May, this work needs to begin immediately.

2.1.3 The Commission should not underestimate the value of simplicity.

As the Commission moves toward consolidation of the CSI programs and implementing performance based rebates, it should place a high premium on simplicity. Given the program's ambitious goals, the relative immaturity of the market, and the need to explain incentives to relatively inexperienced and unsophisticated consumers, it is critical that the CSI be implemented in a manner that is as simple as possible.

ASPv views this as a fundamental objective, which is reflected in many of ASPv's recommendations below. For example, ASPv appreciates the good intentions underlying the Staff's recommendation to gradually transition to PBI, but views the cost in time, resources and administrative complexity as outweighing the benefit, and so recommends immediately going to PBI for all large commercial installations above 100 kW.

Simplicity should also be the main objective in designing the customer application and processing procedures. To the extent possible the Commission should ensure that each step of the process is as streamlined as possible, and that information is presented in a manner that is accessible and understandable to the average consumer. In addressing system design issues, ASPv encourages the Commission to continue taking into account the experience of programs in Europe and Japan. As California moves forward in designing the CSI, we should attempt to incorporate lessons learned from the mistakes and successes of others.

2.2 Factoring in Federal Tax Credits

2.2.1 Small residential market

ASPv agrees with the Staff's concern that without proper differentiation of incentive levels, the CSI program may be heavily dominated by commercial over residential systems. Staff Report at 14. However, ASPv disagrees that the Staff's proposal for establishing differentiated rebates across the board is the best mechanism for achieving this goal.

For small residential (<10 kW) customers differentiating residential credits is likely to be administratively complex. Id. Moreover, the FTC has only been authorized through 2007, which means that given the time needed for implementation and projected panel supply limitations during the 2006-07 period,[3] the effort spent developing and implementing a small residential tax-differentiated rebate appears not worth the effort.

As the Staff Report acknowledges (at 13), the value of the FTC to small residential customers is much less than the value to larger customers. And lastly, the Staff's proposal for accounting for the EPAct 2005 increase in FTC did not take into account California's removal of the 7% state tax credit. When the latter is netted against the former, the case for using undifferentiated rebates for small residential customers is even stronger.

[3] Worldwide demand for PV is outstripping supply, and shortages in PV panels (and in the raw materials needed to manufacture panels) are expected to limit new installations in California between now and approximately 2008 to 100 MW or less.

2.2.2 Commercial market

ASPv does not recommend differentiating commercial rebates on the basis of eligibility for FTC at this time. It appears that today's PV market has already incorporated the 30 percent Federal tax credit. It also appears to be too early in the CSI process to discern clearly whether and how to effectively differentiate rebates between the private and public sectors on the basis of the FTC. The 30 percent FTC is only going to be in effect through 2007. It does appear that financial markets are responding in a creative way so that the public sector can take advantage of tax credits. These questions should be reviewed as part of the annual November review process ASPv proposes in section 4 below.

2.3 Hybrid Performance-Based Incentive – Large Solar PV Systems > 100 KW

2.3.1 ASPv comments on Staff Recommendation

ASPv understands the intent underlying the Staff recommendation for a hybrid PBI program for large systems,[4] but ASPv believes that the benefits of a gradual transition are outweighed by the costs. The Staff proposes a transition to 100 percent PBI by 2009, which means that the hybrid would only be in effect for two years. Creating and implementing a hybrid payment structure for these two years would involve a considerable investment in staff time and effort. It does not appear to ASPv that the short transition for those projects that might desire a transition would be worth it.

In addition, given the demonstrable benefits of PBI as a purely performance driven compensation mechanism, it does not make sense to forego such benefits in exchange for the intangible benefit of a more gradual transition. If the Commission's

[4] Staff Report at 15-19.

goal is to encourage efficient systems, then the Commission should begin rewarding customers of PV systems, especially large commercial systems (100 kW and above), for efficiency as soon as possible.

EPBB payments structured in the manner proposed in the Staff Report (with important modifications as discussed herein) will reward proper design within existing parameters and optimal installation in terms of orientation and shading. PBI takes one additional step and pays on the basis of electrical output. As a result, PBI is designed to encourage and provide an incentive for innovation and increasing efficiency. For this reason, as well as the very substantial benefit of avoiding a messy and complicated two year transition, the Commission should go directly to PBI for all systems larger than 100 kW. ASPv's specific programmatic recommendations for PBI are outlined below.

2.3.2 ASPv Alternative Recommendation

Direct transition. The Commission should order that all systems 100 kW and larger should be paid on the basis of PBI beginning January 1, 2007. Unlike implementation of the hybrid, this is a reasonable and achievable goal. On November 10, 2005, ASPv submitted a motion to the Commission in Docket R.04-03-017 outlining a PBI proposal for commercial systems over 30 kW.[5] That filing outlined in detail the advantages of PBI in general as the best means of maximizing efficiency and encouraging innovations aimed at increasing output. ASPv initially suggested limiting the PBI structure to projects over 30 kW because in this size range most projects are financed, meaning that a change in payment methodology would likely not result in an adverse market reaction.

[5] Motion of the Americans For Solar Power For Adoption Of Performance-Based Incentives For Large Commercial Customers In the California Solar Initiative.

ASPv believes the reasons for going directly to PBI rather than trying to construct a hybrid remain compelling. PBI is based solely on kWh output and so rewards production of electricity and protects ratepayer investment because payments are based on performance. Going directly to PBI rather than the hybrid will allow the Commission to avoid substantial administrative scale up and associated costs.

PBI payment. ASPv proposes below a schedule of PBI payments based on its original recommendation, but incorporating the shorter 5-year term preferred by Staff. Specifically, the program is structured to be a ten year performance based incentive program with a 5-year term of fixed payments installed during those 10 years. The PBI payments take into account the 30% Federal tax credit available in 2006 and 2007, but assume that the Federal tax credit will return to 10 % for the remainder of the initial-year installment program period from 2008 to 2016.[6] The proposed PBI program, therefore, constitutes a conservative estimate of required funding, which could be reduced in the event the 30% Federal tax credit is extended past 2007. Table 1 sets forth the proposed PBI payment schedules ($/kWh) for each program year as follows:

Table 1:

Proposed PBI Payment Schedules ($/kWh) for Each Program Year

10-Year PBI Program: 10-Year Declining PBI Pay-out Schedule ($/kWh)

	Initial Year of Operation[7]									
Pay-out Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
1	0.492	0.492	0.492	0.414	.339	.269	.202	.138	.077	.022
2	0.492	0.492	0.492	0.414	.339	.269	.202	.138	.077	.022

[6] For the years in which a 10% Federal tax credit is in effect, the program structure supports the targeted 8% return for commercial customers and 7% return for government and non-profit customers. However, because the 30% Federal tax credit provides increased benefits to commercial customers than government customers, ASPv recommends consideration of additional low-interest sources of financing for government and non-profit customers in the event the 30% Federal tax credit is extended.

[7] This assumes CSI program start-up in 2007; initial incentive funding would be committed in 2006 but not paid out until installations are complete in 2007.

3	0.492	0.492	0.492	0.414	.339	.269	.202	.138	.077	.022
4	0.492	0.492	0.492	0.414	.339	.269	.202	.138	.077	.022
5	0.492	0.492	0.492	0.414	.339	.269	.202	.138	.077	.022

PBI Metering. For the reasons discussed in the Staff Report (at 50), the Commission should require that all participants in the PBI program should have a revenue-quality dedicated meter that can be read remotely.

PBI Payment term. As discussed above, ASPv recommends for purposes of this proposal a five-year term, based on a fixed kWh rate over the term and including a discount rate to reflect the time value of money and financing costs.[8]

Managing PBI funding. The Staff Report proposes capping PBI payments 10 percent above the kWh forecast for the system based on reference .2 and .3 capacity factors for flat PV and tracking systems, respectively. Staff Report at 17. The reasoning is that higher performing systems should be rewarded, but only up to the cap in order to manage incentive funds. The ALJ Ruling solicits alternative recommended approaches for rewarding even higher performance solar systems, while still managing the incentive funds budgeted, and not paying excessive incentives relative to the solar owner's economics. ALJ Ruling at i.

ASPv recommends that the Commission *not* establish an artificial 10 percent performance cap. First, by definition, PBI is intended to encourage maximum output by offering a straight per-kWh payment. It is contrary to the design of PBI to discourage

[8] ASPv strongly disagrees with the Staff recommendation (at page 17 of the Staff Report) not to apply a discount rate, financing costs, O&M etc. The Staff's justification that this is being done for the sake of "simplicity" ignores the impact of the proposal on project economics. As discussed above, ASPv views simplicity as a good thing if the same end can be achieved by simpler means. But proposing to simply ignore the time value of money substantively changes the value of payments over time, and so would in effect constitute an unjustified and unfair penalty charged against the group of customers that is willing to be paid on the basis of output rather than capacity.

output by limiting payment streams or by imposing any other type of artificial constraint on operation. The Commission should be paying incentives based on electrical output. KWh output is the simplest approach, because for every kWh output of solar energy added to the grid there are real ratepayer benefits. Second, administering the 10 percent cap would add an unnecessary degree of complexity to the process of calculating payments

That leaves the important question of how to manage the budget for projects being paid on PBI rates. ASPv recommends that the PBI incentive application provide an estimated output of the system over the life of the payment term in order to provide information on how much funding needs to be encumbered for the project. This can be accomplished by requiring every applicant to provide an estimate of maximum expected output, together with supporting documentation that can be verified in the course of processing the application. This output estimate will allow the Commission to budget appropriately for payments to each system under PBI, and since there is no incentive to provide anything but an accurate estimate, deviations above and below should be expected to cancel each other out over time. Customers should be required to update output forecasts if actual system performance is a designated percentage above or below the forecast on an annual basis. This should provide enough information to allow the Commission to budget with reasonable accuracy.

New construction projects. All new construction above 100 kW should be paid on the basis of PBI.

2.4 Expected Performance Buy Down Incentive – Small Solar PV Systems < 100 KW

2.4.1 ASPv comments on Staff Recommendation

ASPv agrees with the Staff Report that there should be a clear delineation between the residential market (which is generally identified as <10 kW) and the 10-100 kW small and medium commercial market. It is important for diversification of markets and to accurately reflect certain differences in the two markets that the Commission consider them separately for purposes of setting rebate levels and establishing other program parameters.

ASPv agrees conceptually with the Staff's proposal to use an EPBB incentive structure for <100 kW systems. Staff Report at 20. However, ASPv does not agree with the Staff's use of "system AC" for calculating CSI incentive payments.

While ASPv supports moving to a "system AC" rating when this technique is fully developed and approved by the Commission, simply reducing each system's output by 10% in order to have a placeholder for a performance rating is not appropriate. Before any such new rating system is implemented there must be an accurate and low cost verification process that certifies system output.

For these reasons, ASPv supports using the CEC AC rating system. However, the CEC AC and system AC approaches will require different incentive amounts. In addition, ASPv believes the incentive levels proposed in the Staff Report are too low, and do not reflect the current market regardless of the choice between rating system.

Specifically, the Staff Report's recommended incentives do not take into account significantly increased costs as worldwide demand has outstripped supply.

ASPv agrees that the EPBB incentive should incorporate a design factor that accounts for tilt, orientation and shading. The Staff Report correctly observes that there are options for estimating expected and optimal system output. Although ASPv offers a recommendation for design factor estimation tools below, ASPv believes that there may be equally effective options, and that such options should continue to be evaluated over time.

2.4.2 ASPv Alternative Recommendation

EPBB Incentive. ASPv recommends EPBB 2007 incentive payments as follows if the Commission adopts ASPv's recommendation for use of the AC CEC rating for purposes of determining incentive levels for <100 kW systems:

- Residential retrofit (0-10 kW): $2.80/watt AC CEC[9]
- Small commercial (10-100kW): $2.80/watt (PG&E service territory) AC CEC[10]
  $3.00/watt (SCE and SDG&E service territory) AC CEC[11]

System Rating. ASPv favors retaining the CEC AC rating until an accurate, low-cost verification protocol has been developed and approved by the Commission. Derating a system's output by 10% as the staff has proposed creates a sub-optimal baseline that is just a placeholder until system output can be verified. If it is determined that a

[9] If the Commission adopts "system" AC, adjust the proposed $2.80/watt AC CEC by .9 ($2.80/w/.9=$3.11/watt "system AC")
[10] Again, if "system" AC is used, adjust the proposed $2.80/watt by .9 (this results in $3.11/watt "system" AC).
[11] If the Commission adopts "system" AC, adjust the $3.00/watt AC CEC by .9 (resulting in $3.33/watt "system" AC)

placeholder for system output is so important that it must be put in place before the methodology can be verified, then a placeholder of 100% (i.e. no additional losses) should be used until actual system losses can be verified by a Commission-approved protocol.

ASPv proposed system rating:

Estimated Rating = Number and capacity of modules
x PV PTC module rating (PV USA test conditions)
x inverter efficiency
no "other losses"

Design Factor. ASPv proposes to modify the definition of the Commission's proposed Design Factor as follows: Minimum Simulated Output for Designed System/Simulated Output for a South Facing PV System Fixed at a Tilt Angle Equal to the Latitude Angle and Without Shading. This definition provides a reference against a baseline that is optimized at that geographical location without adjustment for available solar irradiance. We further recommend that the Design Factor be calculated using either Clean Power Estimator, or the combination of the Solar Pathfinder and PV Watts, or other equivalent approved methodology for modeling shading and orientation.

PBI Option. ASPv agrees with the Staff Report recommendation (at 20, 25) that small commercial (which should be defined as 10-100 kW) systems may opt in to the PBI payment system.

Verification. ASPv supports random sampling verification in the residential market (0-10 kW). For the commercial market 10-100 kW, ASPv recommends a post-construction inspection within 14 days of the notice of completion to verify representations in the customer's incentive application.

2.5 System Size Adjustment

The Staff Report recommends that the Commission revise the solar system size limit to 100% of historical annual energy consumption. Staff Report at 26. ASPv strongly agrees and appreciates staff's recommendations on system size as the CSI final decision limiting system size to 100 % of peak load effectively negated retail net metering which allows a customer to offset their annual energy use.

3. INCENTIVES FOR NON-PV SOLAR TECHNOLOGIES

3.1 Scope of Program

ASPv supports the Staff Report's recommendation that incentives up to 5 MW be made available to non-PV solar technologies. Solar thermal DG technologies for hot water, space heating, space cooling and industrial processes are abundant across the globe but not in California. ASPv, restricts its comments on this section only to these solar thermal displacement technologies, not to the concentrating PV or concentrating solar power (CSP) technologies; except, however, in response to a specific Staff question at the end of this section. We wish to clarify first that, based on Commission order, the list of non-PV solar technologies that qualify under this program should be as follows:

- Concentrating PV
- Parabolic dish/engine
- Parabolic trough
- Power tower
- *Solar Thermal Heating, which includes production of hot water for domestic hot water (DHW) applications, space heating applications, and process heating applications,*
- *Solar Thermal Cooling, which includes production of hot water for space cooling applications and process cooling applications, and*
- *Solar Thermal HVAC, which combines space heating or cooling with any other of the above applications.*
- *Solar Thermal DHW for residential and small commercial customers under the SDREO Solar DHW Program.*

The Staff Report uses the term “solar thermal water heaters.” ASPv interprets this term to mean solar thermal systems that exclusively produce hot water for use in hand washing, bathing, dishwashing and other similar activities commonly referenced as “domestic hot water” (DHW) use. Because all solar thermal applications (cooling, space heating, process heating, etc.) require solar thermal water heating, the use of the term “solar thermal water heaters” may prove confusing when trying to reference DHW applications. For clarity, ASPv suggests that the term solar DHW be substituted for “solar thermal water heaters” and that other applications be referred to as Solar Thermal Technologies (STC), or in particular Solar Thermal Cooling (STC) Solar Thermal Heating (STH), or Solar HVAC depending upon their particular usage as outlined in the list above.

Staff has suggested that all solar thermal applications, except certain solar thermal water heater applications (solar DHW), be addressed in the CPUC Solar Thermal Program. ASPv supports Staff’s inclusion of Solar Thermal Technologies, but believes that stand alone commercial solar DHW should be able to choose the CPUC Solar Thermal Program and receive incentives under a PBI mechanism. The distinction from the SDREO DHW Program will be discussed further at the end of this section.

3.2 Cost and Performance Factors

In order to assist the Commission in establishing incentives, ASPv would like to provide additional information regarding technology costs; however, thermal technologies are measured in different terms and thus the table of technologies will be modified and supplemented as follows:

	Capacity Range kW*th* (1)	Annual kWh*th* per kW	Capital Cost ($)/kW/th (3,4,5)	Unsubsidized Power Cost Cents/kWh*th* (5,6)
'STC'	70-1500 (10 tons-200 tons+)	617	1900	30.8
'STH'	35-10,000	1159	1000	8.6

Notes:

1) One kW thermal (kW*th*) = 3,412 Btus. Capacity size is for existing systems; range can be as small as 1 ton and a large as thousands of tons of cooling.
2) Based on collector area and using International Energy Agency (IEA) standard of .7 kW*th* per square meter.
3) Based on average solar radiation for ten California cities of 5.6 kWh/meter square/day from NREL solar radiation data and assuming an 8 month cooling season. A factor of .70 is applied to STC to account for chiller efficiency.
4) Initial cost of system without financing.
5) Solar Thermal systems are systems developed through extensive engineering design to achieve optimum solar size and best fit with conventional central HVAC systems and other thermal systems. The costs, therefore, vary widely.
6) This is the cost of producing 1 kWh*th* of energy using Solar Thermal systems. For the majority of Solar Thermal applications, a kWh*th* cannot be directly compared to a kWh of electricity. For Solar Thermal Cooling, it includes a factor of .70 for chiller efficiency. This assumes a 10 year economic system life and financing costs and annual operating and maintenance costs are not included. System life is 25 years, but 10 year economic life is utilized to depict financing requirement to cover system costs during a 10-year period for energy sales contracts.

3.3 Proposed Incentive Structure

Staff proposes that Solar Thermal Cooling, Heating, and HVAC applications receive incentives under a PBI structure, an approach ASPv supports. ASPv also supports the Staff proposal to provide market certainty during the beginning of this program and, therefore, to keep the incentives constant for a period of three years while re-visiting incentive levels in 2008 for Solar Thermal systems. We also agree that, at that time, a higher incentive decline of 15% for Solar Thermal systems seems appropriate.

During the 2008 analysis, ASPv proposes to also address the following issues which will not be analyzed for Solar Thermal technologies at this time: market trigger mechanism, federal tax credits, on-bill credits, remote metering.

3.4 Solar Heating, Ventilation, and Cooling (HVAC)

Incentive Level. ASPv provides the following approach to determining the incentives for all Solar Thermal applications:

- Separate cooling applications (STC) from heating and hot water applications (STH).
- Extrapolate from Arizona program to determine specific rates. The Arizona program was developed by the Commission, the utilities, and industry to provide sufficient incentive to allow distributed solar thermal commercial projects to be built in Arizona and to assist in the development of a market in Arizona for these technologies. The current program in Arizona provides - 1) a 10-year term for PBI contracts, 2) $0.07 per kWh equivalent for heating and/or hot water of any type, 3) $0.016 per kWh equivalent for cooling functions, 4) kWh equivalent based 3,412 = 1 kWh.
- Incentive numbers in Arizona were developed based on electric costs of $.10/kWh and natural gas costs of $10 per MMBTU.
- Although energy rates in California are higher, we believe that the initial incentive rates for California need to be close to but higher than Arizona due to a) higher construction and operating costs, b) lower average solar radiation, and c) development of a much larger market to serve California.
- From this premise, we must also factor in the reduction of the payment stream from 10 years to 5 years. Therefore, we propose rates as follows: a) $0.14 per kWh equivalent for heating and hot water applications (STH) and $0.39 per kWh equivalent for cooling applications (STC). As discussed previously, the heating/hot water rate would include all commercial solar DHW applications, such as stand alone systems for DHW for a prison or dormitory. The only restriction on incentives for heating/hot water would be that municipal/commercial pool heating would be included only when combined with Solar Thermal HVAC projects that utilize solar thermal for heating, cooling, or domestic hot water purpose. This restriction is similar to that proposed for solar electric functions. To insure consistency across programs, ASPv believes that the SDREO DHW Program should not include municipal/commercial pool heating as is currently being proposed by SDREO.
- The higher rates for cooling reflect both the value of electric displacement to the State but also the more complex and expensive task for developing this much newer segment of the industry. Projects that combine cooling with heating and/or hot water will have an average project kWh rate lower

> than the cooling incentive; however, the higher incentive should also allow cooling only projects to move forward.

Industry has provided Staff with information regarding development of the Arizona program and would be happy to provide a plan specific to California during this process.

Incentive Administration. ASPv supports the Staff Report's recommendation that incentives up to 1 MW be made available to non-PV solar technologies. Solar thermal DG technologies for hot water, space heating, space cooling and industrial processes are abundant across the globe but not in California. While we are not sure that all of the Concentrating Solar Power (CSP) technologies identified by staff for incentives can be scaled back to a smaller DG unit, we do support their inclusion as long as they are customer-owned DG projects. It does not, however, make sense to base CSP incentive levels and structure on the same levels and structure as adopted for PV. There are important differences between solar DG technologies, and there should be a technology-specific schedule of declining incentives and structure for each technology as well as a plan that will take each technology to retail competitiveness. That declining incentive schedule should be developed on the basis of current market information and input from the subject industry.

ASPv wishes to propose that incentive administration for the CPUC Solar Thermal Program be handled separately from administration of the PV, concentrating PV, and CSP technologies in years 1-3. ASPv proposes that SDREO administer the CPUC Solar Thermal Program for the entire State. The logic behind this proposal two-fold: 1) a program handbook can be developed separately for solar displacement technologies, an initially somewhat different process that would be vastly complicated by trying to incorporate these technologies into the existing electric generation handbook, and 2) SDREO will presumably be administering the Solar DHW Program for residential and small commercial; therefore, SDREO will be in a unique position to assist the Commission in evaluation of both programs in 2008. To accomplish this, SDREO would be required to expend funds collected in a service territory into the same service territory. To insure that this proposal for administration does not somehow unfairly favor Solar Thermal technologies through streamlined administration, ASPv also suggests that program funds for the CPUC Solar Thermal Program not exceed 10% of program funds in these first three years.

As to administration specifics, we believe that the program should parallel the PV portion of the program in as many details as possible. For example, each PBI contract would guarantee the same level of payment to a customer for a period of five years by deposit of funds into an account in the year in which the installation is completed. In addition, evaluation of on-line credits and other mechanisms would be explored.

For contracts entered into in the first three years, ASPv suggests the following additional processes: 1) reservations for funds should include both the utility customer and the project developer signatures to insure protection of the process, 2) reservations will include preliminary system design and projected energy production but not a contract, to accommodate the need for certainty of funding early in the project design process, 3) incentive payments would be made quarterly based on meter readings.

3.5 Questions and Unresolved Issues Proposed by Staff

Integration of SDREO Solar DHW Program with CPUC Solar Thermal Program. Traditionally, the term solar water heater has referred to domestic hot water (DHW), primarily in homes. Solar DHW in the U.S. is typically provided by flat-plate collectors. The SDREO DHW Program draft (SDREO Draft) addresses only solar DHW, and we believe the proposal is restricted to residential and small commercial systems. Since the proposal is in a buy-down format and not PBI, we believe that is should be limited to residential and small commercial; however, ASPv also requests that any commercial customer have the opportunity to choose either the SDREO DHW Program or the CPUC Solar Thermal Program being developed herein.

The reason that we believe the SDREO Draft addresses only residential and small commercial is based on the structure under which incentives would be paid as follows: 1) based on certification from the Solar Rating and Certification Corporation (SRCC), 2) up to a maximum of $75,000 per project, 3) for systems where design is completed before application for funds is made and installed within two months of application approval. These elements are self-limiting.

First, SDREO SRCC only has a certification method for 'standard' flat-plate collectors, collectors commonly seen in residential and small commercial applications and, historically, to provide SDHW. Second, a $75,000 maximum incentive allows only smaller commercial solar DHW projects to be covered under this proposal. For example, a solar DHW system for a typical hotel or hospital would cost between $300,000 and $500,000. An incentive of $75,000 is probably not sufficient to have these types of users move forward with a solar project. Stand alone solar DHW systems can range from this size up to millions of dollars for large systems providing domestic hot water to prisons, hospital, hotels, etc. Finally, most medium to large commercial stand alone SDHW systems are engineered to work in conjunction with somewhat sophisticated existing hot water systems. After approval of preliminary applications under the program, final engineering, production, and installation of such systems still must occur. In most instances, this process can take anywhere from 3-12 months depending upon the size and complexity of the particular system.

Therefore, for purposes of a distinction between the SDREO DHW Program and the Solar Thermal Program, ASPv recommends that the PBI incentive be made available to all solar thermal installations. Any small commercial solar DHW system can choose the SDREO DHW Program instead.

Technical Solar HVAC Specifications for Handbook. As suggested, we recommend that program handbook specifications for Solar Thermal Technologies be developed in conjunction with SDREO. As an alternative, ASPv will be happy to provide specific program handbook suggestions to Staff prior to beginning of modifications to the handbook.

Certification Process or Btu Rating. The proposed conversion formula for determining kWh equivalents is a well-known, universally accepted one. It is 1 kWh = 3,412 Btus. Requiring meters that meet industry standards and provide data in kWh format should be sufficient to insure accuracy and accountability. Any additional requirements can be signified in the handbook.

Incentive Level for CSP Technologies. While we are not sure that all of the Concentrating Solar Power (CSP) technologies identified by staff for incentives can be scaled back to a smaller DG unit, we do support their inclusion as long as they are customer-owned DG projects. It does not, however, make sense to base CSP incentive levels and structure on the same levels and structure as adopted for PV. There are important differences between solar DG technologies, and there should be a technology-specific schedule of declining incentives and structure for each technology as well as a plan that will take each technology to retail competitiveness. That declining incentive schedule should be developed on the basis of current market information and input from the subject industry.

4. INCENTIVE LEVEL TRIGGER ADJUSTMENT MECHANISM OVER 10-YEAR PERIOD

ASPv supports the Staff's decision to reject the various complex modeling approaches discussed at pages 34-37 of the Staff Report as too complicated and bureaucratic. ASPv recommends, in the alternative, that the Commission adopt a volume-based trigger mechanism based on confirmed reservations that have provided a contract or equivalent proof that panels have been confirmed, and subject to analysis of relevant market factors.

ASPv proposes that the Commission establish a PV Market Assessment Group, which will meet early in November each year in order to evaluate all relevant market factors related to the trigger mechanism, and also to make recommendations on any other needed adjustment to the administration of the CSI program. The PV Market Assessment Group will include at least one representative of all major parties involved in the PV market, including the PV industry, CPUC and CEC staff, utilities, program administrators, environmental and ratepayer groups. The PV Market Assessment Group's recommendation regarding annual adjustments to PV incentives will be based on the Group's examination of tax credits, utility rates, market acceptance of PV, and other relevant factors.

The PV Market Assessment Group will make a recommendation to the assigned ALJ. Any interested party will have the right to comment on the Group's recommendation, and the ALJ will issue a proposed decision based on the Group recommendation and comments. The Commission will vote on the proposed decision and it will take effect on January 1 of the next year.

5. FUNDING LEVELS

ASPv generally supports the Staff recommendation that annual budgets will follow the revenue requirement schedule published in the January 2006 decision. Staff Report at 38. ASPv also supports the allocation to each utility service area's prorated share of funding collection. Id. It should be noted that this allocation will change if SB 1 is passed in the current form, insofar as SB 1 eliminates funding allocation to gas distribution customers.

ASPv does *not* agree with Staff's proposal that in the first half of the calendar year the administrator should be free to move funds downward to small customer or system size categories if demand warrants or that during the second half of the calendar year, administrators should be free to transfer funds across customer groups or sizes in any direction on a first come first-served basis. *See* Staff Report at 38.

In response to the ALJ's question of whether and how incentive "buckets" could be reserved by type of customer or size of solar system, ASPv continues to support allocating 50% of the CPUC's funding to the residential market (defined as <10 kW), and 50% to the commercial market. This allocation should be firm, and protected by firewall, except for an annual review at the PV Market Assessment Group's November meeting. If, considering all relevant information, the Group recommends changing the allocation or temporarily moving funds from one bucket to another, the Commission may do so, subject to the procedural requirements (comments by parties, PD, etc.) outlined above.

The firewall approach is necessary in order to maintain equilibrium between the residential and commercial classes, and balance in program priorities. It also mitigates the overall impact of any imbalance between the residential and commercial markets that may arise as a result of differing tax benefits or rebate levels. At the same time, an annual evaluation by the PV Market Assessment Group will act as a check and a means of correcting for unforeseen market forces.

6. INCENTIVE ADMINISTRATION

6.1 Large systems

ASPv supports maintaining the current administrators for the SGIP program for now. Staff Report at 41. ASPv would ultimately like to see the entire CSI program administered by a non-profit or third party organization such as SDREO.

6.2 Small systems

6.2.1 ASPv supports non-profit administration of the <100 program.

ASPv supports the Staff recommendation that the administrator for the residential retrofit and small commercial program (i.e. all installations <100 kW) should be a non-profit or third party organization if possible. Staff Report at 42. Per the modified Staff recommendation in the ALJ Ruling, the Commission should oversee the selection and retain exclusive responsibility for all policy matters and interpretation of Commission decisions. ALJ Ruling at ii. ASPv also generally supports the procedures proposed for identifying candidates and selecting the non-profit administrator, subject to the following recommendations.

6.2.2 The Commission should obtain necessary IRS ruling, but should avoid delaying implementation in the meantime.

As discussed in section 2.1.2 above, the Commission needs to make selection of a program administrator a very high priority. The process should proceed as quickly as possible. However, the Staff has raised concerns that using a non-profit administrator may create uncertainty under the tax exemption in Section 136 of the IRS Code. ALJ Ruling at 2. If the Commission believes there is any serious legal question regarding third-party administration affecting tax status, the Commission should seek a formal ruling from the Internal Revenue Service to determine whether non-utility third party administration would result in the IRS treating CSI incentives as taxable income. However, if concerns regarding this tax exemption question can be allayed in the meantime through informal communication with the IRS and the Commission's own legal analysis, the Commission should not postpone moving forward with the process of choosing a non-profit administrator. In other words, to the extent possible the Commission should balance the need for legal assurance on any legitimate question regarding non-profit administration with the goal of moving forward as soon as possible with the process of selecting an administrator.

6.2.3 The Administrator Selection Panel should include a representative from the solar industry.

ASPv recommends that at least one representative from the solar industry be included in the CSI non-IOU administrator selection panel recommended at page 2 of the ALJ Ruling. While the CEC and the Commission staff are certainly able and knowledgeable, it is likely that administrative questions will arise that may require input from the industry. For example, the industry has extensive knowledge of how programs in other countries have set up and administered their programs. The industry has detailed knowledge of what is needed to set up an efficient and effective online application and data accumulation system. Participation by one representative of the industry that can serve as a conduit for information necessary to make an effective choice of administrator will help streamline the information gathering and selection process.

General administrative requirements

ASPv supports adoption of the following general requirements for administration of the integrated CSI program:

Web-based application and processing system. As discussed previously in this proceeding, ASPv recommends that the Commission immediately move to an electronic application, processing and data accumulation web-based program for CSI. The staff should put out a bid and request proposals in order to evaluate these options and select the best web-based program that can be modified to meet the CSI program's needs. In any event, there should be a workable system for processing electronic applications, making incentive payments including PBI, and accumulating CSI program data in place by January 2007.

Program and IOU system data. The Commission should as soon as possible undertake to make CSI program and utility system data available on-line. With regard to program data, the Commission should determine in consultation with industry representatives what types of data are necessary in order to maximize market participants' understanding of program operation on a real time basis, and to use that information in making system improvements.

6. METERING REQUIREMENTS

7.1 Large systems

ASPv agrees with the Staff that participants in the CSI program should be required to install a revenue-quality solar system dedicated meter for those systems that are over 100 kW.

7.2 Small systems

The Staff Report recommends that all CSI applicants be required to obtain “revenue grade” meters. Staff Report at 51. This recommendation requires clarification. because it could be interpreted as requiring a system accurate to plus or minus 2%, a degree of accuracy that is not required under the EPBB rate structure.

For systems under 100 kW, ASPv urges the Staff to adopt a system that is accurate to plus or minus 5%. There is no need for a more accurate meter in the smaller residential market unless and until a customer opts to be paid on the basis of PBI. Under the existing CEC residential program, the CEC allows participants to use inverter meters that meet program requirements, namely UL 1741 certification, testing by qualified laboratories, etc. ASPv is not aware of any problems with this level of metering for non-PBI customers, and therefore urges the Commission not to impose an unnecessary and costly requirement on smaller customers.

7.3 Net Energy Metering Considerations

ASPv supports the proposal to increase the retail net metering cap to 2.5% of statewide aggregate installed capacity. The solar industry’s support for declining rebates was based on the key conditions of continuation of the net metering program, REC ownership, and exemption from exit and standby fees.

7. ENERGY EFFICIENCY REQUIREMENTS TIED TO SOLAR INCENTIVES

8.1 Funding

ASPv is concerned that additional required expenditures will deter and possibly prohibit new customers from investing in solar systems. Therefore, ASPv supports the implementation of energy efficiency auditing procedures, but only to the extent that additional rebates are provided to cover the costs of such procedures. No other state requires an energy efficient audit for solar systems. For example, in New Jersey, customers are given an additional rebate if they perform an energy audit in conjunction with solar installation. If auditing procedures are implemented for California, they should be done only if they will not add to the costs of solar systems.

Recognizing that the California Legislature and this Commission have made energy efficiency a high priority, the Commission should provide additional incentives to encourage customers investing in solar installations to include an energy audit and cover the costs of such audits. If the Commission wants to further encourage customers to implement the results of the audit, there should be separate rebates available for this as well.

8.2 Integrating energy efficiency audits and implementation

Administration of the rebates for energy audits and implementation should be separate from, but integrated with, the administration of the CSI. For example, the online application process for solar rebates should link to an equally simple and accessible online application process for energy audits and implementation. The two systems should complement each other, but the funding, administration, and evaluation of the two programs should be separate.

More specifically, ASPv recommends the following, with the understanding that some of these efficiency-related tasks may best be assigned to the separate Commission proceedings dealing with energy efficiency:

Certify auditors. The Commission should approve a list of qualified auditors that are demonstrably experienced, objective, and knowledgeable in solar technologies as well as energy efficiency generally.

Establish scope of audit. For purposes of audits performed in conjunction with solar retrofits, the Commission should establish a clear checklist establishing the scope and extent of audits that will qualify for audit incentive payments.

Establish audit incentive payment level. The Commission should examine audit costs and establish a reasonable rebate amount (accounting for building size and type of customer and any other necessary considerations) for audits conducted in conjunction with solar installation.

Establish implementation incentive payment level. If the Commission wants to encourage customers to implement recommendations resulting from the audit, the Commission should establish a schedule of incentive payments at levels that are likely to maximize effective program participation.

8. CONCLUSION

For the reasons discussed above, ASPv requests that the Commission adopt its recommendations for implementation of the California Solar Initiative.

Dated: May 16, 2006

Respectfully submitted,

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PROOF OF SERVICE

I declare that:

I am employed in the County of Sacramento, State of California. I am over the age of eighteen years and am not a party to the within action. My business address is ELLISON, SCHNEIDER & HARRIS; 2015 H Street; Sacramento, California 95814-3109; telephone (916) 447-2166.

On May 16, 2006, I served the attached *Comments of Americans for Solar Power Regarding Updated Proposal for the California Solar Initiative and Supplemental Questions* by electronic mail or, if no e-mail address was provided, by United States mail at Sacramento, California, addressed to each person shown on the attached service list.

I declare under penalty of perjury that the foregoing is true and correct and that this declaration was executed on May 16, 2006, at Sacramento, California.

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BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking Regarding Policies, Procedures and Rules for the California Solar Initiative, the Self-Generation Incentive Program and Other Distributed Generation Issues.	)))))	R.06-03-004

REPLY COMMENTS OF AMERICANS FOR SOLAR POWER REGARDING UPDATED PROPOSAL FOR THE CALIFORNIA SOLAR INITIATIVE AND SUPPLEMENTAL QUESTIONS

In accordance with the May 9, 2006 Administrative Law Judge's Ruling with Modification to Staff Proposal and Additional Guidance on Comments due May 15, 2006 ("ALJ Ruling"), Americans for Solar Power ("ASPv") submit the following reply comments. Per the ALJ Ruling, the following reply comments are organized by subject in the same order as the Staff Report.

I. Introduction

ASPv addresses below a number of issues raised in the opening comments of various parties to this proceeding. There are three crucial points that should be highlighted.

First, the Commission should not wait until it issues a final decision on the CSI program as a whole before authorizing funding and staffing for start-up tasks. The most critical start-up task is developing a web-based system for application processing and data accumulation. This system needs to be up and running statewide on January 1, 2007. In order for that to happen, the Commission needs to start the process now.

Second, ASPv urges the Commission to be realistic in its program implementation decisions. The good intentions and cautious assumptions underlying the Staff's proposal for incremental implementation of a pure PBI rate for large customers is understandable, but the proposed “hybrid” phase in is cumbersome and complicated compared to a simple shift over to PBI for the >100 kW program.

Lastly, the current transitional state of the market, along with backlogs in applications, shortages in materials, and lack of information regarding customer response to current market changes (including the decrease in commercial rebates just approved at yesterday’s Commission meeting) make it difficult to recommend with certainty appropriate EPBB rebate and PBI incentive levels for 2007. ASPv and some other parties have made proposals based on information available to date, but the question of rebate levels and incentives will need to be examined based on real time information.

II. Program Objectives

A. Administrative scale-up.

ASPv agrees with SDREO that the Commission needs to begin the process of establishing parameters for and seeking bids on application and data accumulation systems as soon as possible.[1] There is no greater administrative risk within the CSI program than not being able to process applications and provide real time data on the progress of the CSI program. While some other aspects of the CSI program can be sorted out over time, this item needs to be an immediate priority and if necessary should be authorized through an interim decision. The number of applications processed through the residential retrofit CSI program beginning in 2007 will be on a different scale than the SGIP program. The Commission can and should initiate the process of obtaining the necessary infrastructure without waiting to make a final decision on the administrator.

[1] SDREO Opening Comments at 12-13.

B. The Commission has a critical need for accurate data reflecting real projects.

As several parties note in opening comments, up-to-date and detailed program subscription data is necessary in order for the Commission to make key decisions regarding allocation of funding and rebate levels, and for market participants to plan for changes.[2] In the absence of complete information, many parties (including ASPv) are finding it difficult to address with confidence some of the most important questions posed in the Staff Report. The opening comments seem to reflect a range of carefully qualified and conditional recommendations and a number of parties note the need for ongoing evaluation of the market and adjustment of incentive levels up or down to address changes in the market as necessary.

Without a basic understanding of how many customers are committed to purchase systems at a particular rebate level, it is difficult to provide a reasoned recommendation of how funding should be allocated between programs and what the rebates should be for 2007. We have some information, but it is not complete and it is not reliable, given the number of applicants that are dropping out prior to actually committing to purchase solar installations. This problem is discussed below. However, it highlights the absolutely critical need for transparent, up-to-date and reliable program data that is based on actual

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[2] *See e.g.* Joint Solar Parties Opening Comments at 11-12; Sun Light and Power Co. Opening Comments at 7-10. *See also* Californians for Renewable Energy ("CARE") Opening Comments recommending that Staff provide "a general prediction of funding levels and kilowatt/megawatt increases" and "incentive funding levels for each year and consequent growth in California's solar capacity under different incentive and market reaction scenarios…." CARE Opening Comments at 8-9. ASPv agrees, but unfortunately the data needed for the kind of analysis CARE requests is not currently available, and attempting such analysis on the basis of anecdotal information and extrapolation is likely to yield erroneous results.

contracts that have secured panels and not merely initial applications with refundable deposits.[3]

ASPv specifically recommends that the application processing and data accumulation program developed for use beginning January 1, 2007 should include all relevant public data on completed, active and wait list applications including, size, application holder, location, module, inverter, application dates, progress dates, interconnection date, approval dates, payment date, size of payment and rebate amount per watt or kWh posted in real time within 24 hours.

ASPv also continues to believe that applicants should be required to provide proof (in the form of contract or equivalent evidence of binding obligation) that panels have been secured in order to receive a confirmed reservation. In addition, ASPv supports SDREO's recommendation for a non-refundable application fee to address the drop out problem and send a signal discouraging applications from projects not likely to be completed.[4]

C. The Commission should clarify that the program goal is maximum output and retail competitiveness.

PG&E and SCE have suggested in their opening comments that the EPBB orientation factors should encourage west-facing orientation in order to increase production during the IOUs' peak periods.[5] PG&E Opening Comments at 6-7; SCE Opening Comments at 7. This proposal should be rejected because encouraging west-facing rather than (or as

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[3] ASPv appreciates ALJ Duda's taking the first step in this direction by providing at page 4 of the Proposed Decision approved at the May 25, 2006 Commission meeting that the Program Administrators must update the public website daily when reservations are within 20 percent of the trigger point, and recognizing the need for consistent information.

[4] SDREO Opening Comments at 7.

[5] PG&E Opening Comments at 3-4; SCE Opening Comments at 7.

an equal alternative to) south-facing installation would result in less output under CSI overall.

There appears to be no dispute that output from PV is maximized when panels are oriented to the south. With south-facing orientation, PV provides a significant contribution during peak periods. But peak production should not be the overriding goal, and should not dictate key performance factors such as panel orientation.[6] The Commission needs to clarify that, while PV provides peak shaving benefits, the program objective is to obtain maximum output per dollar of program investment, in order to lower installed cost of PV systems and bring them to retail competitiveness over the next decade.

III. CSI Incentives

A. Incentives for >100 kW

ASPv agrees with parties advocating direct move to PBI for all large commercial installations under the CSI.[7] As several parties have explained, a pure PBI payment will ensure that rebates are based on output, will eliminate opportunities for cheating, and will cost less than EPBB (or a hybrid) to administer.[8] PBI also encourages innovation by rewarding increased output.[9] ASPv remains convinced that a pure PBI approach for the large commercial market is workable and much simpler from an administrative point of

[6] The Commission has traditionally understood the important distinction between peaking resources and other resources that contribute to meeting peak demand but are not purchased solely for that purpose. Likewise, as a matter of state policy the Commission has separate programs supporting both demand side management, which are aimed specifically at peak shaving, and energy efficiency programs, which are designed to reduce *overall* energy demand.

[7] *See* SCE Opening Comments at 4-6; PG&E Opening Comments at 6; Consumer Federation Opening Comments at 4, 19-21.

[8] *See* Fat Spaniel Technologies, Inc. Opening Comments at 9-13 (discussing benefits of using PBI/metered output); Consumer Federation of California ("Consumer Federation") Opening Comments at 4 ("Payments based on actual measured use will provide an incentive to monitor effectiveness and do necessary maintenance.")

[9] *See* Attachment 1, Declaration of Benjamin S. Collinwood.

view than a hybrid. A significant portion of the world market is moving in this direction, and California should too.[10]

It appears that parties advocating a more gradual phase in or hybrid approach are mainly motivated by a desire to avoid market disruption. ASPv believes such concerns are either based on misunderstanding or can be addressed through careful attention to program administration and ensuring that rebates are set at the right level.

For example, the Joint Solar Parties are concerned that a pure PBI for large commercial customers would "force all but the largest system owners to rely solely on third-party system ownership…."[11] It is ASPv's understanding that that most projects >100kW are already being third party financed (which is different from "third party ownership"). Many customers prefer third party financing, for a variety of reasons. Today there are a variety of financial products available to support investment in solar installations by both private and public entities. It is expected that financing options will be further expanded if PBI is adopted.

The other concern cited by parties advocating a gradual transition is the fear that a sudden change in the pricing mechanism will raise fears of market disruption and scare off new customers. However, it is important to realize that the current backlog in the application processing queue will provide a *de facto* transition. In December 2005 the Commission added $200 million in funding for the SGIP backlog and $100 million for 2006 projects.[12] This backlog is likely to extend beyond 2006. ASPv agrees with Consumer Federation that customers who have reservations based on the current

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[10] *See* Attachment 2, "European PV Association's Position Paper on a Feed-In Tariff For Photovoltaic Solar Electricity."
[11] Joint Solar Parties Opening Comments at 22.
[12] D.05-12-044.

incentive structure can be grandfathered in to minimize market disruption in the move to PBI.[13]

Moreover, if the >100 kW PBI rates are correctly calibrated to the level of the capacity-based EPBB rates offered to customers in the <100 kW market, there should be no concern about establishing an unfair difference in payment levels between customers slightly above and below 100 kW.

To address the latter issue, ASPv has slightly revised the PBI rates proposed in its opening comments to 39 cents/kWh CEC-AC for 2007. This number corresponds to the rebate levels ASPv is recommending below for <100 kW customers paid under the EPBB system.

10-Year PBI Program: 10-Year Declining PBI Pay-out Schedule ($/kWh)

	Initial Year of Operation*									
Pay-out Year	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
1	0.390	0.325	0.255	0.400	0.320	0.250	0.180	0.120	0.060	0.030
2	0.390	0.325	0.255	0.400	0.320	0.250	0.180	0.120	0.060	0.030
3	0.390	0.325	0.255	0.400	0.320	0.250	0.180	0.120	0.060	0.030
4	0.390	0.325	0.255	0.400	0.320	0.250	0.180	0.120	0.060	0.030
5	0.390	0.325	0.255	0.400	0.320	0.250	0.180	0.120	0.060	0.030
6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

To be clear, these relatively low proposed PBI rates are not a negotiating position. They are based on what we know about the current market and assume that customers are buying systems at the new $2.50/W rate. The rates assume optimized design, plus predicted customer response to the incentive under PBI to optimize location, orientation,

[13] Consumer Federation Opening Comments at 19; *see also* SCE Opening Comments at 6.

etc. Most importantly, ASPv believes incentive levels should be reviewed periodically and calibrated up or down based on market forces, including information regarding customer response to the most recent adjustments in rebate levels.

B. Incentives for <100 kW

Having reviewed the opening comments of other parties and available (albeit incomplete) information from SGIP project managers, ASPv has adjusted its proposed incentive levels for the <100 kW program as follows:

Comparison of current rebate with ASPv proposed EPBB optimized system

	Current Rebates	ASPv EPBB Rebate(Optimized Design)	Expected Rebate under ASPv proposal
Residential	$2.80/W CEC AC	$3.11/W CEC AC[14]	$2.80/W
Commercial	$2.50/W CEC AC	$2.78/W CEC AC[15]	$2.60-$2.70

For the same reasons discussed above with respect to the proposed rates for PBI, ASPv wants to be clear that this recommendation is conditioned on ongoing review and analysis per the process suggested below.

[14] If the Commission uses the Staff's proposed "system" AC rating, adjust the proposed $3.11/watt AC CEC by .9 (this results in $3.46/w "system" AC).

[15] If the Commission uses the Staff's proposed "system" AC, adjust the proposed $2.78/watt AC CEC by .9 (this results in $3.09/w "system" AC).

C. Ongoing review and analysis.

The commercial PV market in the middle of transition, with systems being installed in 2006 at either $3.50/W (backlog customers) or $2.80 W (new 2006 confirmed reservations) and potentially at a $2.50/W level (per the Commission's decision yesterday, May 25, 2006, affirming ALJ Duda's April 24, 2006 ruling). Reflecting this fact and the lack of clear information on program response at various rebate levels, a number of parties have recognized in opening comments that the Commission must incorporate a review process into whatever decisions are made in the proceeding regarding rebates for both commercial and residential systems in 2007. To that end ASPv suggested in its opening comments that a working group that includes representatives from all classes of interested parties meet in November of each year, including 2006, to review updated program information and if necessary make appropriate adjustments in incentive levels to ensure that the CSI program's fundamental objectives are not lost to faulty forecasting on the basis of insufficient or out-of-date information.[16]

ASPv further recommends that the Commission schedule a final workshop *prior* to issuing its proposed decision in this proceeding (currently scheduled for July, 2006) in order to update information discussed in comments. This is an unorthodox proposal, but the current unsettled state of the market (including product constraints, speculative nature of the waiting list, high drop out rates, refundable deposits) plus the lack of data on response within each service territory to very recent incentive changes, including yesterday's decision affirming the ALJ's reduction of the rebate level to $2.50, has put

[16] Joint Solar Parties similarly recommend that the Commission establish an inclusive CSI working group. Joint Solar Parties at 38-40.

the Commission in a difficult position. It is extremely important that decisions regarding rebate levels made between now and January 1, 2007 be based on the best available information, and reviewed in an all-party workshop involving regulators, program administrators and industry participants.

To ensure that the workshop proposed above is a useful exercise and not just a debate based on speculation, the Commission should instruct program administrators to update all relevant program information and make it available to parties before the workshop. Among other things, the Commission needs to understand whether the current requirement for a confirmed reservation is ensuring that projects in the queue are real, or if they are proving to be speculative. In order to inform this workshop, ASPv also recommends that the ALJ formally poll the SGIP program administrators on their recommendation for incentive levels, given that they have been closer to market participants and have better access to program data than other parties. This information should be made public before the workshop. Other participants should likewise be invited to share relevant information and market analysis.

If the Commission holds the workshop described above this summer and the working group meets again in November, the Commission will at least have done its best to ensure that whatever rebate levels and incentive rates are adopted for 2007 reflect any changes in the market or new information. Further review and adjustments will certainly be required over time in order to maintain balance in the market.

D. AC Rating

The EPBB rates proposed above for the <100 kW program assume existing CEC AC ratings. As noted above and in ASPv's Opening Comments, the CEC AC rating approach has serious shortcomings when used as a means of estimating actual system output, but at this point it is better for use in an EPBB calculation than the untested and complicated "system" AC rating proposed by Staff. Other parties' opening comments support ASPv's position on this issue.[17]

The Commission needs to acknowledge that *both* the current CEC AC rating and "system" AC rating approaches are flawed as a means of predicting actual output. First, the CEC AC inverter ratings have proven inaccurate when compared to the actual performance of inverters. *See* Declaration of John Berdner (Attachment 3). Unfortunately, the proposed "system" AC approach does not address this problem.

Second, the CEC AC module ratings are incapable of estimating output from newer PV technologies such as BIPV and bifacial modules. *See* Declaration of Benjamin S. Collinwood (Attachment 1). Again, the proposed "system" AC approach does not address the fundamental problem, which is that the rating method does not account for the approximately 10-15 percent increase in electrical output provided by the second side of bifacial installations (tests show that this increase could be as much as 20% with optimal siting and installation).

ASPv supports use of the EPBB approach in the less than 100 kW market. If the EPBB calculations are properly designed they should reward optimal system design, installation, orientation and shading. The Commission should stick with the CEC AC rating system for systems under 100 kW for the reasons discussed above. However, the Commission should also authorize PBI as an option for innovative technologies such as bifacial panels. The Commission should *not* spend its time and resources developing a new "system" AC rating system. If such a system is desired, it should not be

[17] *See* Joint Solar Parties Opening Comments at 21.

implemented until a verification protocol has been developed, vetted and approved by the Commission. The Commission should transition as rapidly as possible to paying customers based on metered output for systems >100 kW. This approach ensures that payments reward actual production. By happy coincidence, it is also the payment methodology that will be simplest to administer, most cost-effective in use of staff resources, and easiest to verify.

IV. Funding Levels

There appears to be relatively solid support among commenting parties for a 50/50 division of funding between the commercial and residential programs. Using this assumption and the Staff's proposed allocation among the IOU service territories, ASPv's recommended budget allocation is summarized below:

	3. Total Funding Requirement								
						Direct Incentive Sub-Totals			
Initial Year of Operation*	Total Direct Incentives Budget	Admin Costs	Total Annual Funding Available to Projects	Interest Earned on Escrow Account	Cumulative Rolling Funding Carried Forward	Commercial (Larger than 10 kW)	Residential New Home	Residential (Smaller than 10kW)	Average Cost to CA Retail Consumers ($/kWh)
2007	$280,000,000	$45,000,000	$235,000,000	4.0%	$100,255,629	$75,368,659	$14,126,112	$84,000,000	$0.00093
2008	$280,000,000	$45,000,000	$235,000,000	$4,010,225	$189,808,899	$68,450,203	$21,652,240	$80,850,000	$0.00092
2009	$280,000,000	$45,000,000	$235,000,000	$7,592,356	$266,353,701	$59,628,204	$27,838,594	$83,160,000	$0.00091
2010	$280,000,000	$45,000,000	$235,000,000	$10,654,148	$295,754,099	$112,290,261	$35,792,478	$89,100,000	$0.00090
2011	$280,000,000	$45,000,000	$235,000,000	$11,830,164	$291,402,390	$126,462,619	$44,740,597	$92,584,913	$0.00089
2012	$280,000,000	$45,000,000	$235,000,000	$11,656,096	$261,972,248	$137,495,624	$53,688,717	$96,787,359	$0.00088
2013	$280,000,000	$45,000,000	$235,000,000	$10,478,890	$217,670,234	$144,535,400	$60,399,806	$92,652,994	$0.00086
2014	$280,000,000	$45,000,000	$235,000,000	$8,706,809	$168,794,404	$142,608,262	$41,474,534	$106,174,746	$0.00085
2015	$280,000,000	$45,000,000	$235,000,000	$6,751,776	$123,797,703	$124,782,229	$28,202,683	$120,331,379	$0.00084
2016	$280,000,000	$45,000,000	$235,000,000	$4,951,908	$3,181,201	$82,299,526	$14,383,368	$84,957,293	$0.00083
Subtotals:	$2,800,000,000	$450,000,000	$2,350,000,000			$1,073,920,988	$342,299,128	$930,598,683	
Avg. Annual Totals (2007-2016)	**$280,000,000**	$45,000,000	$235,000,000	$107,392,099	$34,229,913	$93,059,868	$0.00079		
			$2,800,000,000	**TOTAL FUNDING REQUIREMENT (2007-2025)**					
* **Reflects actual payment schedule; incentives and rebates will be reserved 6 months to 1 year prior to being paid.**									

The underlying spreadsheet is appended as Attachment 4.

V. Incentive Administration

A. Opening comments show that there is broad support for a non-profit administrator.

ASPv continues to strongly support an independent non-profit administrator for the CSI program. No party's opening comments have offered any convincing argument to counter the clear benefits of obtaining an administrator that is independent of self-interest or potential conflicts of interest, and that has a demonstrated commitment to solar and the ability to perform administrative tasks.

As SDREO and the Northern California Solar Energy Association ("NorCal") correctly point out,[18] an independent non-profit administrator provides numerous benefits over IOU administration, including:

<u>Freedom from conflicting objectives.</u> Staff has stated correctly that the program administrator should have a "demonstrated history of supporting solar development and innovation in California, and without perceived or inherent conflicts to discourage solar installations."[19] ASPv agrees with the opening comments of NorCal (at 2-3) that an IOU administrator would have both perceived and inherent conflicts, given the IOUs competing priorities.

<u>Efficiency and cost.</u> ASPv agrees with the parties that have pointed out in opening comments that a non-profit administrator will almost certainly operate more efficiently and at a lower cost than an IOU or private sector administrator.[20] A non-profit focused on program administration within clear budget parameters will have clear incentives to maximize efficiency while minimizing administrative costs. ASPv shares the concern of

[18] *See* NorCal Opening Comments at 1-4; SDREO Opening Comments at 8-9.
[19] Staff Report at 44.
[20] NorCal Opening Comments at 3-4.

other parties that IOU administrators have been slow in performing basic programmatic tasks such as processing applications and administering payments. This increases customer and program costs. SDREO, in contrast, has performed well in trying to minimize delay and streamline bureaucratic processes. ASPv recommends that in addition to selecting an independent non-profit administrator, the Commission establish clear performance objectives for program management. For example, the late payment problem (which is a serious issue for small dealers and manufacturers, and increases program costs), by establishing explicit requirements for processing payments (net 30 days would be reasonable) and pay interest at market rates for late payments.

Data collection and reporting. As parties have pointed out in opening comments, the IOUs have been reluctant to share data and slow in disseminating program information.[21] ASPv agrees with this observation and views this as an important reason for the Commission to adopt the Staff's recommendation to seek a non-profit CSI administrator.

B. The Commission should move ahead with non-profit administrator selection process.

While an issue has been raised regarding a potential impact of non-profit administration on tax exemption, no party has provided any convincing evidence that the issue is ultimately likely to derail the Staff's recommendation for selecting a non-profit administrator for the CSI small residential/commercial program. Moreover, as SDREO notes, the fact that SDREO is currently functioning in a similar capacity is good evidence that there is likely no problem.[22]

Therefore, ASPv recommends that the Commission obtain clarification on the tax exemption issue if necessary, but continue to move forward with the selection process in

[21] NorCal Opening Comments at 2,4.
[22] SDREO Opening Comments at 11-12.

accordance with the recommendation in the Staff Report, with two important exceptions. First, as discussed in ASPv's opening comments, the Advisory Panel for administrator selection (see Staff Report at 46) should include at least one representative of the solar industry. In addition, ASPv agrees with NorCal that the selection of a non-profit administrator should *not* be delegated to PG&E.[23]

VI. Conclusion

ASPv appreciates the Commission's ongoing efforts to create an effective integrated CSI program. ASPv views the process as an ongoing process, and is available to discuss the issues addressed above and in ASPv's opening comments.

Respectfully submitted,

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[23] NorCal Opening Comments at 5.

PROOF OF SERVICE

I declare that:

I am employed in the County of Sacramento, State of California. I am over the age of eighteen years and am not a party to the within action. My business address is ELLISON, SCHNEIDER & HARRIS; 2015 H Street; Sacramento, California 95814-3109; telephone (916) 447-2166.

On May 26, 2006, I served the attached *Reply Comments of Americans for Solar Power Regarding Updated Proposal for the California Solar Initiative and Supplemental Questions* by electronic mail or, if no e-mail address was provided, by United States mail at Sacramento, California, addressed to each person shown on the attached service list.

I declare under penalty of perjury that the foregoing is true and correct and that this declaration was executed on May 26, 2006, at Sacramento, California.

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