



FILED

02-29-08

08:54 AM



**California Public Utilities Commission
Energy Division**

Staff Proposal for a

**California Solar Initiative
Low Income Multifamily Program**

February 29, 2008

Table of Contents

1. Overview	3
1.1 <i>Background</i>	3
1.2 <i>Low Income Multifamily Program Eligibility</i>	4
1.3 <i>Solar Technology Eligibility</i>	5
1.4 <i>Challenges for Low Income Multifamily Solar Program</i>	5
2. Other Low income Programs	7
2.1 <i>New Solar Homes Partnership</i>	7
2.2 <i>Low Income Solar Programs in Other States</i>	8
2.3 <i>Low Income Energy Programs in California</i>	9
3. Proposed Low Income Multifamily Solar Program	10
3.1 <i>Program Administration</i>	11
3.2 <i>Program Goals</i>	12
3.3 <i>Program Strategy</i>	13
3.4 <i>Incentive and Financing Structure</i>	15
3.5 <i>Low Income Multifamily Program Budget</i>	20
3.6 <i>Energy Efficiency</i>	21
4. Staff Metering Recommendations.....	22
4.1 <i>Master Metering</i>	23
4.2 <i>Virtual Net-Metering</i>	23
5. Evaluation	24
5.1 <i>Milestones and Evaluation Criteria</i>	25
6. Questions for Comment	27

1. Overview

This proposal describes a California Public Utilities Commission (CPUC or Commission) staff recommended structure and implementation strategy for a \$108 million solar photovoltaic (PV) incentive plan for qualified existing affordable multifamily housing developments as part of the California Solar Initiative (CSI). Staff recommendations herein describe a CSI Low Income Multifamily Program (LI MP) that would provide incentives that substantially subsidize solar energy systems in multifamily housing and which, in combination with energy efficiency measures, will offset energy loads and provide economic benefits for both affordable housing developments and low income tenants.

This proposal incorporates research and program design recommendations included in the CSI Program Administrator's (PAs) Recommended Low Income Multifamily Solar Program submitted to the CPUC on July 16, 2007. However, this proposal represents research and analysis performed by CPUC Energy Division staff and differs in significant ways from the PA proposal.

Please note that the CPUC established the policy framework for a CSI Single Family Low Income Incentive Program for qualifying low-income homeowners in Decision (D.) 07-11-045 approved on November 16, 2007. However, the Program is not yet available to consumers. As the first step towards implementation of the approved program for single family dwellings, the CPUC directed the Energy Division to prepare a Request for Proposals (RFP) for the Program Manager for the Single Family Low Income Incentive Program. More information on the RFP process and the approved CSI Single Family Low Income Program can be found at: www.cpuc.ca.gov/PUC/energy/solar/.

1.1 Background

The CPUC is committed to helping create a sustainable market for solar technology through the California Solar Initiative. The mainstream California Solar Initiative program, hereafter referred to as the General Market program provides incentives to all existing residences¹ and new and existing commercial, government and non-profit buildings.²

In August 2006, Governor Schwarzenegger signed Senate Bill (SB) 1 (Murray, 2006), which directed the CPUC to provide incentives for eligible "solar energy systems." Assembly Bill (AB) 2723 (Pavley, 2006) describes additional requirements specifically for low income solar incentive programs. It requires the CPUC to ensure that "not less than 10% of the overall funds for the California

¹ New residences are covered by the CEC's New Solar Homes Partnership, <http://www.gosolarcalifornia.ca.gov/nshp/>

² Additional background information on the California Solar Initiative can be found at: <http://www.cpuc.ca.gov/PUC/energy/solar/>. Click on the link to the January 2008 Staff Progress Report.

Solar Initiative are utilized for the installation of solar energy systems, as defined, on low income residential housing, as defined.”³ Public Utilities Code Section 2852(c)(1) allows the Commission to “modify the monetary incentives made available pursuant to the CSI to accommodate the limited financial resources of low income residential housing,” and to offer a loan program if appropriate.

The CPUC 10-year CSI program budget is \$2,167 million. Consistent with AB 2723, the CPUC has reserved 10 percent of the CSI’s funds for an incentive program for low income residences throughout California. As a result, \$216.7 million is designated to provide incentives and financing for existing low income single-family and multifamily residences. The February 5, 2007 “Assigned Commissioner’s Ruling Revising Schedule for Phase Two” directed that the low income incentive program budget be divided equally between a single-family incentive program and a multifamily incentive program. D. 07-11-045 established the Single Family Low Income Incentive Program with a budget of \$108.34 million. This proposal recommends that \$108.34 million be allocated to the CSI Low Income Multifamily Program (LI MP) described below.

CPUC Energy Division staff will hold a public workshop on March 17, 2008 at the CPUC in San Francisco to review this staff proposed strategy and gather input. The workshop will be publicly noticed on the CPUC’s Daily Calendar available at www.cpuc.ca.gov, and as a courtesy the workshop notice will be posted to the Service List for Rulemaking (R.) 06-03-004.

1.2 Low Income Multifamily Program Eligibility

Eligible affordable housing for the purposes of receiving financial incentives through the CSI Low Income Multifamily program (LI MP) for solar system installations was defined by AB 2723 and codified in Public Utilities Code Section 2852(a)(2) as either:

“(A) Residential housing financed with low income housing tax credits, tax-exempt mortgage revenue bonds, general obligation bonds, or local, state, or federal loans or grants, and for which the rents of the occupants who are lower income households, as defined in Section 50079.5 of the Health and Safety Code, do not exceed those prescribed by deed restrictions or regulatory agreements pursuant to the terms of the financing or financial assistance.

(B) A residential complex in which at least 20 percent of the total units are sold or rented to lower income households, as defined in Section 50079.5 of the Health and Safety Code, and the housing units targeted for lower income households are subject to a deed restriction or affordability covenant with a public entity that ensures that the units will be available at an affordable housing cost, as defined in Section 50052.5 of the Health and Safety Code, or at an affordable rent, as

³ Further explanation of “solar energy systems” and “low income residential housing” as defined in AB 2723 (Pavley, 2006) is provided in section 1.2 of this proposal.

defined in Section 50053 of the Health and Safety Code for a period of at least 30 years.”

The Program Administrators’ proposal, calculated the approximate size of the housing sector that meets these criteria. The proposal estimated that there are approximately 2,750 existing multifamily affordable housing buildings, representing about 190,000 families that meet the criteria of Section 2852(a)(2)(A). There would seem to be only a few projects not meeting the criteria of Section 2852(a)(2)(A) that would qualify under Section 2852(a)(2)(B).⁴

1.3 Solar Technology Eligibility

AB 2723 defined a solar energy system as a “solar energy device that has the primary purpose of providing for the collection and distribution of solar energy for the generation of electricity, that produces at least one kilowatt” of electricity. This proposal provides incentives only for solar photovoltaic (PV) systems that are at least one kW.

1.4 Challenges for Low Income Multifamily Solar Program

There are a number of challenges to installing solar on multifamily affordable housing. Many of these challenges are inherent in all multi-unit, renter-occupied buildings, others relate specifically to the affordable housing sector. The Program Administrators identified several of these challenges in their proposal. From our perspective, there are three key challenges, outlined below. Staff welcomes feedback on possible solutions to overcome the challenges described below, as well as challenges not described in this proposal.

While this proposal seeks to address many of these challenges, it will certainly not be able to address them all and it attempts to propose a program that can work for at least some projects within the existing constraints and challenges. The goal of this proposal, which is outlined below, is to make solar a viable energy savings solution for as many affordable housing properties as possible.

Key challenges to installing solar on multifamily affordable housing:

- Allocating benefits between building owner and tenants in multifamily housing;
- Multifamily housing metering issues which complicate system design, (e.g. the ban on sub metering); and
- The diversity of the affordable housing sector.

⁴ “Joint Proposal of the California Solar Initiative Program Administrators Recommending a Low Income Multifamily Solar Program”, p.2-5.

1.4.1 Allocating Benefits Between Building Owner and Tenants

In addition to the environmental benefits, one of the primary reasons for investing in solar technology is the financial payback. In the LI MP, the affordable housing developer/building owner incurs the costs of installing PV, even though the energy savings benefits may accrue not to the building owner, but to the tenant. While there is some motivation for affordable housing developers to invest in solar PV systems to offset electricity loads for common areas, which reduce building operating costs, the motivation for a developer/building owner to invest in solar PV systems to offset electricity loads for tenant units, when cost savings accrue to tenants, is less evident. This challenge is not limited to affordable housing residences, but rather to all multifamily rental properties.

Energy Division staff was challenged to find ways to motivate developers to invest in PV systems, which provide direct savings only to tenants if the tenants are not sharing the cost of the system. However, there are other steps that affordable housing developers can take, such as installing solar systems on common areas, which can provide financial incentives to building owners and also benefit tenants. By improving energy utilization and reducing building operating costs, these steps make it possible for affordable housing developers to better serve more low income tenants. Staff recognizes the value of this and seeks in this proposal to support small steps, such as installing solar systems on common areas, which can pave the way to more advanced solutions that share the benefits of solar technology between building owners and tenants.

1.4.2 Metering issues

The current law requires every residential building which has obtained a building permit on or after 1982 to be “be individually metered for electrical and gas service”.⁵ On multifamily buildings, common areas and each individual tenant unit must have separate meters. Only buildings that were built before 1982 can be “master-metered”, or have one meter that measures the electricity load of an entire multifamily building. In these cases the building owner may pay the electric bill jointly.

In a master-metered building, a building owner can have a single PV system installed to cover the load of the entire building. The cost of the system is less than installing multiple systems on a building because it only requires one set of system components. But, the statutory requirement prohibits newer buildings from being master-metered.

This statutory limitation creates an additional barrier to PV installation because in addition to separate meters, separate PV systems must be installed for each unit

⁵ PU Code 780.5.

which adds to the cost of the installation. While the installation of PV systems for each tenant unit can provide a direct benefit to the tenant, it means additional expense to the building owner.

1.4.3 The Diversity of the Affordable Housing Market

Affordable housing buildings are widely varied when it comes to building size and quality, as well as how the buildings are financed.

Building size can range from two units to hundreds of units. They often have complex financing structures that involve various public and private sources including Low Income Housing Tax Credits, tax exempt bonds, loans and other financial resources.

Some affordable housing buildings only house low income tenants, while others house tenants of varying income levels, low income households just make up a portion of the occupancy.

These variances in affordable housing stock and financing posed significant challenges for Energy Division staff to develop a model for a “typical” affordable housing building and affordable housing financing.

2. Other Low income Programs

2.1 New Solar Homes Partnership

The California Energy Commission (Energy Commission) implements the \$400 million, New Solar Homes Partnership (NSHP), which provides incentives in new home construction. The NSHP works with builders and developers to incorporate solar technology and energy-efficiency measures in newly constructed homes.

The NSHP also provides incentives on new multifamily affordable housing constructions. The incentives for affordable housing residences began at \$3.30 per watt for PV systems installed for common areas and \$3.50 per watt for PV systems installed for individual tenant units.

While the both the CPUC and the Energy Commission programs target single and multifamily affordable housing, the CPUC oversees programs for *existing* housing and the Energy Commission oversees programs for *new* housing.

For more information on the NSHP, please visit:

<http://www.gosolarcalifornia.ca.gov/nshp/index.html>.

2.2 Low Income Solar Programs in Other States

2.2.1 The Vermont Solar & Small Wind Incentive Program

The Vermont Solar and Small Wind Incentive Program, established in 2003, provides incentives to low income, multifamily projects for the installation of solar PV systems and solar hot water heaters in the State of Vermont. The program provides incentives from \$3.50 per watt with a maximum incentive of \$35,000. Incentives for low income multifamily project are twice as much as those in the general market program.

The program is currently in its third round of funding, with a total of \$839,450 of funding set-aside for incentives.⁶ For more information on the Vermont Solar and Small Wind Incentive Program, please visit: <http://www.nerc-vt.org/incentives/>.

2.2.2. The New Jersey SUNLIT Program

The New Jersey Housing and Mortgage Finance Agency (HMFA) administers the SUNLIT program, which was established in 2006. The program provides rebates for solar PV systems installed on affordable housing projects in New Jersey through set-aside funding from the Customer On-Site Renewable Energy (CORE) Program. Incentives range from \$3.50 per watt to \$1.85 per watt, depending on system size and customer sector (i.e., private sector, public sector, etc.). Incentives for affordable housing projects do not differ from those in general CORE program, however, in addition to providing rebates, the HMFA also provides technical assistance, including coordination with solar installers, and working with developers and project underwriters to size the system to ensure the installation is cost-effective.

The value of the electricity generated from the PV system is directly applied to the development's 15-year operating budget. The program also provides equity and financing through various HMFA programs.

In 2007, the annual budget for the SUNLIT program was \$6,000,000.⁷ For more information on the SUNLIT Program, please visit: <http://www.state.nj.us/dca/hmfa/biz/devel/gho/sunlit.shtml>.

2.2.3 The Colorado ClimateSmart Solar Grant

The city of Boulder, CO's ClimateSmart Solar Grant provides funding for the installation of solar systems on affordable housing projects. The program has

⁶ *Vermont Solar & Small Wind Incentive Program, Round II-Progress Report*. April 15, 2006. Available: <http://www.nerc-vt.org/incentives/Statistics/March%202006%20Overall%20Program%20Activity%20Summary.pdf>

⁷ *Customer On-site Renewable Energy Program Market Manager Report.*, December 31, 2007. Available: <http://www.njcleanenergy.com/files/file/COREBudgetReport123107.xls>.

two grant cycles per year. There is no set incentive for the ClimateSmart Solar Grant. Applicants request an incentive amount that will make their solar installation cost-effective. Grant applicants are evaluated on various criteria, including site suitability of the solar system (i.e., system efficiency based on shading and orientation), total solar project cost and cost effectiveness of the system, energy efficiency of the residence, and need of the applicant.

About \$55,000 is earmarked for the Solar Grants.⁸ For more information on the ClimateSmart Solar Grant program, please visit:
http://www.bouldercolorado.gov/index.php?option=com_content&task=view&id=7700&Itemid=2845.

Staff seeks input on other examples of solar incentives programs targeted towards multifamily buildings in California.

2.3 Low Income Energy Programs in California

The CPUC also oversees two existing programs that target low income homes with energy assistance. The first is the California Alternative Rates for Energy (CARE) program, a program that provides discounts on electricity and gas bills. The second program is the Low Income Energy Efficiency (LIEE) program, which provides fully-subsidized weatherization and installation of energy efficient appliances in low income homes at no cost to the customer. To be eligible for either LIEE or CARE, a customer must have a gross household income that is within 200% of the federal poverty guidelines. The breakdown of income limits for CARE and LIEE programs are as follows:

• **Table 1: CARE/LIEE Income Limits**

Household Size	CARE/LIEE Income Limit
1 to 2	\$29,300
3	\$34,400
4	\$41,500
5	\$48,600
6	\$55,700
Each additional	\$7,100

At the Federal level, the Low Income Home Energy Assistance program (LIHEAP) is administered by the Department of Community Services and Development (CSD) in California. Through local and state government agencies and non-profits, eligible low income individuals can receive financial assistance

⁸ “City releases application and criteria for renewable energy grant fund”, press release-January 16, 2008. Available:
http://joomla.ci.boulder.co.us/index.php?option=com_content&task=view&id=8602&Itemid=2935.

and weatherization services such as insulation and weather-stripping to lower and pay energy bills.

2.4 Characteristics of the Low Income Population based on an LIEE/CARE study

In October 2007, KEMA, Inc. released a “Final Report of its Low Income Needs Assessment for Phase II of the LIEE and CARE Programs” (Needs Assessment)⁹. The needs assessment found that a quarter of California’s low income households live in the Central Valley. About half live in Southern California. About 16 percent live in the North Coast climate region, 5 percent live in the Desert climate region, and 2% live in the Mountain climate region.¹⁰

Based on the Needs Assessment findings, homeownership is less common among the state’s low income households. Only about 35 percent of low income households own their homes. This number is small compared to the statewide population as a whole. About 65 percent of all California households own their homes. About 50 percent of low income households live in multifamily dwellings. Only about 3 percent of low income households live in master-metered dwellings. Two-thirds of low income dwellings live in housing units that are less than 1,000 square feet.¹¹ When it comes to occupant tenure, about 38 percent of California’s low income households have lived in their current home for two years or less, and about 11 percent have lived in their current home for 20 or more years.¹²

The Needs Assessment found that annual energy costs of California’s low income population was lower than the general population. The average low income household spends nearly \$950 per year (about \$80 per month) on energy costs, as compared to the general population which spends an average of \$1,200 per year (\$100 per month).¹³

3. Proposed Low Income Multifamily Solar Program

The following proposal includes an administrative structure, program strategy, incentive structure, energy efficiency requirements, budget and evaluation requirements for a CSI Low Income Multifamily Program (LI MP). The CSI General Market program strategy aims to create a self sustaining solar market by 2016. To the extent possible, the LI MP should work within this framework to help

⁹ The *KEMA Phase II Low Income Needs Assessment Volume 1 Final Report* is available at: www.liob.org.

¹⁰ *KEMA Phase II Low Income Needs Assessment Volume 1 Final Report*, October 12, 2007, p. 4-6.

¹¹ *Ibid*, pp. 4-7 - 4-8.

¹² *Ibid*, pp. 4-24.

¹³ *KEMA Phase II Low Income Needs Assessment Volume 1 Final Report*, October 12, 2007, p. 4-26.

reach qualified affordable properties that most likely do not have the financial means to purchase and benefit from solar technology at the incentive levels available through the General Market program.

3.1 Program Administration

3.1.1 Recommended Institutional Structure

Staff recommends that the Program Administrators of the General Market CSI Program, PG&E, SCE and CCSE, serve as Program Administrators for the Multifamily Program.

The administrative structure of the Low Income Multifamily Program will differ from the single-family program, which will be administered by a single, statewide Program Manager. Staff recommends low income Single-Family and Multifamily programs have differing administration structures because the program participants in the two programs are very different and the Commission found one statewide Program Manager preferable due to the high cost of reaching that population. The Single-Family Low Income Incentive Program participants will be low income homeowners. Low Income Multifamily Program (LI MP) participants will be building owners and affordable housing developers more analogous to the non-residential sector already handled by the CSI PAs.

D.07-11-045 established a single-statewide Program Manager for the single-family program because the Program Manager would be managing “a network of service providers, namely solar installers, community-based organizations, and loan providers”. The Commission reasoned “it will be simpler for both the Program Manager and the Commission to manage a network of service providers statewide than for three utilities to duplicate this effort in each of its service territories.”¹⁴

In the LI MP, outreach is primarily focused not on low income homeowners but rather on the affordable housing sector. While low income tenants may share in the benefits of solar, it is the owner/developer who will be paying for the system, as well as applying for and receiving the incentive. While the affordable housing sector does have unique characteristics, it bears more similarity to the commercial and nonprofit sectors in the General Market program than to the participants of the Single Family Low Income Incentive Program. Therefore, staff believes the PAs possess the expertise to successfully work with affordable housing developers and building owners in the LI MP.

An integral piece of the network of service providers in the single-family program are the loan providers. A major factor in the administration of the single-family program was financing. The Commission wanted to facilitate access to low-

¹⁴ D.07-11-045, pp. 27-8.

interest, lower risk financing options for low income solar incentive recipients. A single-statewide administrator likely had the most flexibility to manage the necessary network partnerships with financial institutions to create financing options for low income homeowners.

In the multifamily program, it is the building owner/developer who is responsible for the capital outlay needed to purchase the PV system, not the low income tenant. The affordable housing sector already has existing financial resources to draw from to help finance PV systems. Staff believes there is no need for the CPUC to provide any additional financial assistance beyond providing the solar incentive. Therefore, the need for a single organization with the flexibility to partner with financial entities is eliminated.

Staff recommends having the Program Administrators from the General Market CSI program, and not the Single Family Low Income Incentive Program Manager, administer the LI MP for all the reasons stated above. Staff believes having the CSI PAs administer the program will expedite the delivery and implementation of the LI MP. It would be more efficient to adapt the current CSI administrative infrastructure to include LI MP, than to create a new administrative structure separate from either the General Market program or the Single Family Low Income Incentive Program administrative structures.

3.2 Program Goals

The staff proposed goals of the Low Income Multifamily Program are to:

1. Stimulate the adoption of solar power in the affordable housing sector;
2. Improve the energy utilization and overall quality of affordable housing through the application of solar and energy efficiency technologies;
3. Decrease electricity use and costs without increasing monthly household expenses of low income tenants;
4. Increase awareness of and appreciation for the benefits of solar among low income tenants and affordable housing developers.

By creating incentives for the installation of solar power coupled with energy efficiency, this proposal aims to improve the energy utilization of affordable housing properties in California with benefits accruing to owners and tenants.

The objective of having benefits accrue to tenants is not stated explicitly in statute. However, staff feels that this is the intent of the statute. This proposal seeks to create a program that provides benefits to tenants as a result of solar incentives for multifamily affordable housing. Because of the challenges inherent in installing solar on multifamily dwellings, outlined in section 1.4 above, this proposal encourages the installation of solar that provides either direct or indirect tenant benefits. In seeking to stimulate the adoption of solar in the affordable housing sector, staff wants to reward small steps that improve energy utilization

and reduce operating costs of affordable multifamily buildings. These small steps, which may not result in direct financial savings for individual tenants, can make it possible for affordable housing developers to better serve more low income tenants, and pave the way for more advanced solar solutions that provide direct tenant benefits. In no instance, under this program proposal, shall the installation of solar result in an increase in monthly expenses for tenants, low income or otherwise, in qualifying affordable housing developments.

3.3 Program Strategy

This proposal seeks to achieve the above mentioned goals through the following strategies.

3.3.1 Stimulate the adoption of solar power in the affordable housing sector (Goal #1) by establishing a predetermined solar incentive and simple application process and providing flexibility in the program to stimulate innovation

Affordable housing developers face a number of challenges financing and operating their buildings, and solar, with its added complexities, has not been easy to incorporate. By creating a program with a guaranteed incentive for qualifying systems and building on the process of the successful General Market CSI program, staff seeks to make solar a choice, and less of a challenge for affordable housing.

As with all solar installations, the economics of solar on affordable housing will vary based on the architecture of the building, its energy usage and the availability of low income tax credit financing. The proposed incentives are based on incorporating solar into existing affordable housing during tax credit refinancing window and leveraging the additional money available during these events. Last year, 76 affordable housing developments took advantage of Low Income Housing Tax Credits (LIHTC) for acquisition/rehab projects.¹⁵

The proposed incentives are intended to make solar cost effective for as many affordable housing developments as possible. In some cases the incentives, when combined with other financing sources such as the federal Solar Investment Tax Credit (ITC) and Low Income Housing Tax Credits (LIHTC), will allow building owners/developers to cover 100% of PV system costs, without taking on additional debt. In other cases, the incentives will reduce the capital cost of solar so that with minimal debt, affordable housing developers will be able to install solar as an operating cost savings measure. By promoting solar as an investment with little or now payback period, staff hopes to stimulate solar installation in the affordable housing sector.

¹⁵ <http://www.treasurer.ca.gov/ctcac/>

Staff has sought to establish incentive levels that make solar cost effective for a wide cross-section of the multifamily affordable housing sector. However, we are aware that even these incentive levels will not make solar cost effective for all. Therefore, staff recommends that a minority portion of the budget for this program be set aside for creative proposals designed to address this sector that require a higher incentive than what is proposed.

This alternative track recognizes the diversity of affordable housing in California, and appreciates that there is no single solution to promoting solar in this sector. By offering increased incentives for proposals that meet certain additional requirements, we hope to spur innovative solutions.

3.3.2 Improve the energy utilization and overall quality of affordable housing through the application of solar and energy efficiency technologies (Goal #2) by establishing energy efficiency requirements within the program

Staff recognizes that overall energy savings in the affordable housing sector will be maximized through the integration of energy efficiency and the adoption of solar technology. Therefore, staff recommends including energy efficiency requirements into the LI MP.

By installing energy efficiency measures in tandem with solar PV, affordable housing developers can improve the quality of their buildings as well as realize cost savings through reduced energy consumption.

3.3.3 Decrease electricity use and costs without increasing monthly household expenses of low income tenants (Goal #3) by encouraging the installation of solar to offset individual tenant loads.

It is the intent of this proposal that direct financial savings will accrue to low income tenants as a result of solar incentives for multifamily affordable housing. The clearest way to achieve this is through the installation of solar to offset individual tenant loads, thereby reducing monthly electricity costs for these tenants. This proposal offers a higher incentive for solar systems installed to offset tenant loads.

3.3.4 Increase awareness of and appreciation for the benefits of solar among low income tenants and affordable housing developers (Goal #4) by promoting outreach and education

The Program Administrators will coordinate outreach materials to educate affordable housing community on PV technology, financing, and maintenance that are unified statewide. The Program Administrators should work with

representatives from affordable housing community, including CTCAC, to develop these materials and help developers understand the suite of financing and services available to them.

In addition, the PAs will be responsible for developing training and education materials on solar system ownership in the affordable housing sector. Solar systems require monitoring and maintenance to achieve full optimization. Since affordable housing developers and their maintenance staff may be unfamiliar with solar technology, the Program Administrators will be responsible for creating materials and a plan for training and educating this community. The PAs will present CSI opportunities at relevant conferences and events.

Staff also recommends an education plan for low income tenants. Its purpose should be to help low income tenants understand how solar PV systems and energy efficiency measures can help reduce their energy bills and benefit the environment. This plan should also inform tenants of additional energy savings actions they can take. D.07-11-045 requires the low income, single-family Program Manager incorporate a similar plan that educates low income homeowners on the benefits of solar technology and energy efficiency in the program's outreach efforts.¹⁶ Staff recommends the PAs coordinate with the single-family Program Manager in developing an education plan for low income tenants in the LI MP.

Staff welcomes input on the development and implementation of this plan. We foresee that it could be the responsibility of the affordable housing developer and required in the LI MP application or the PAs.

3.4 Incentive and Financing Structure

Staff recognizes the complex challenges of installing solar on multifamily affordable housing, and the difficulty of a one-size fits all solution. Therefore we propose a two-track CSI Low Income Multifamily Program. The first track mirrors the General Market CSI program and offers a fixed, up-front \$/watt rebate for solar systems that meet CSI requirements. The fixed payment will be analogous to the Expected Performance Based Buydown (EPBB)¹⁷ in the mainstream program. A one time payment will be made to qualifying projects upon solar system installation based on expected performance. The second track provides qualifying affordable housing buildings the opportunity to apply for a higher incentive, up to 100% of total system costs not covered by tax credits or other incentives, if they can prove direct tenant benefit. Staff hopes that this alternative will encourage creative approaches to addressing the challenges inherent in installing solar on multifamily affordable housing while making solar possible for more people.

¹⁶ D.07-11-045, p. 39.

¹⁷ "California Solar Initiative Program Handbook", January 2008, p.7, http://www.cpuc.ca.gov/PUC/energy/Solar/061228_csihandbook.htm

3.4.1 LI MP Track 1: Fixed Incentives Based on CSI EPBB

This proposal recommends allocating \$75.3 million of the LI MP to Track 1 incentives (see Table 5). The system requirements for Track 1 incentives will mirror the General Market CSI. In addition, multifamily affordable housing projects must prove that they meet the requirements in section 1.2. Multifamily affordable housing projects that meet these requirements will receive a one-time up-front incentive (\$/watt) based on a system’s estimated future performance using the EPBB methodology.

Proposed incentive levels under Track 1 are intended to serve a broad subset of the multifamily affordable housing sector. Track 1 offers two incentive levels to qualifying affordable housing developments.

- Track 1A: for solar systems installed to offset common area loads, and
- Track 1B: a higher incentive for solar systems installed to offset individual tenant loads.

Table 2: Incentive Structure

Track 1A: PV system offsets Common Area Load	Track 1B: PV System offsets Individual Tenant Load
\$3.00/watt	\$4.00/watt

Staff seeks comments from parties on these proposed incentive levels.

The proposed incentives, combined with LIHTC and the Solar ITC, are aimed at fully subsidizing solar systems for affordable housing buildings in certain cases, and providing up to 85% of system cost in a majority of cases. Staff feels that, given the challenges mentioned in Section 1.4, it is necessary to subsidize solar at these levels in order to motivate affordable housing developers to participate in the program. Affordable housing developments often operate on thin margins and therefore have little tolerance for additional debt. By leveraging additional financial resources and providing incentives that significantly reduce the costs of installing solar, this proposal aims to make solar an attractive investment for affordable housing developers.

The proposed incentives are based on installing solar on an “average” multifamily affordable housing development with the following characteristics:

Table 3: “Average” Affordable Housing Building Characteristics

“Average” Affordable Housing Building	Average # of meters¹⁸	Estimated Average Load (kW)¹⁹
Tenant units	70	2.5
Common areas	4	10
Total Building	74	215

The proposed incentives seek to leverage additional funding available to affordable housing properties primarily through Low Income Housing Tax Credits (LIHTC).²⁰ Because of the complexity of financing affordable housing, the magnitude of LIHTC can vary significantly even for a single building with the characteristics in Table 3, depending on where in the state it is located and a variety of other factors. The proposed incentives are intended to fully subsidize solar in certain circumstances, and significantly reduce system cost in most circumstances. However, staff acknowledges that there is no perfect affordable housing model, and recognizes that these incentive levels may not achieve their intentions in all cases.

3.4.1.2 Track 1A incentives for common area load

Common area load solar systems are easier and more affordable to install than individual tenant load systems, because they result in direct operating cost savings for affordable housing property owners. In some cases, common area load systems may be affordable with the incentives offered under the General Market CSI program. When the incentives offered under the LI MP are exhausted, the General Market program will remain a viable option for many affordable housing developments.

In no instance will the LI MP incentives provided, which combined with other available funding, exceed total system costs. As part of the application process,

¹⁸ The figures for the average number of tenant and common area units comes from the “Joint Proposal of the California Solar Initiative Program Administrators Recommending a Low Income Multifamily Solar Program”, p.3-7, which is based on partial utility billing data from the California Tax Credit Allocation Committee (TCAC).

¹⁹ Estimated Average Load data is generally based on annual energy usage for affordable housing buildings drawn from partial utility billing data from the California Tax Credit Allocation Committee (TCAC) and input from affordable housing experts. This proposal assumes PV systems are installed to 100% of load.

²⁰ LIHTC, administered by the California Tax Credit Allocation Committee (TCAC) are available for affordable rental housing that meets certain income requirements. LIHTC are available for the construction of new affordable housing as well as for the rehabilitation of existing affordable housing and the acquisition of properties that will become affordable housing. Since the CSI is available only to existing residential buildings, LI MP incentives are targeted at leveraging additional funding available during acquisition/rehabilitation financing. According to TCAC, 76 acquisition/rehab projects were awarded LIHTC in 2007, <http://www.treasurer.ca.gov/ctcac/>.

all applicants to the LI MP must provide documentation showing all of the tax credits and other incentives available to them for financing solar.

Staff hopes that the possibility of financing 100% of the costs of solar through LI MP incentives, the Solar ITC, and LIHTC, will encourage affordable housing developers into the program. Once building owners appreciate the value of solar to offset common area loads, we hope that they will begin to pursue more comprehensive tenant load solutions.

3.4.1.3 Track 1B incentives for individual tenant load

The differentiated incentives, for solar systems installed to offset individual tenant loads account for the added costs of installing solar on individual tenant meters, and the difficulty for building owners to recover these costs. Based on data from the General Market CSI program and previous solar incentive programs in California, the costs of installing systems less than 3 kW can be \$0.25/watt - \$0.75/watt higher than the costs of installing systems larger than 10kW. This very simple fact is part of the reason the LI MP offers a higher incentive for tenant load systems. Additionally, building owners often cannot recover the costs of solar systems that offset tenant loads when tenants pay their electricity bills directly. Therefore, the proposed incentives are intended to allow full subsidization of a solar system when combined with the Solar ITC and LIHTC so that building owners do not have to invest or borrow to cover an expense that they will not be able to recover. Staff seeks to encourage the installation of solar to offset individual tenant loads as the best way to provide direct benefits to low income tenants.

While there is no budget set-aside for either 1A or 1B incentives, staff proposes that neither 1A nor 1B be allowed to consume more than 90% of the Track 1 budget.

3.4.2 Track 2 – Affordable Housing Solar Grants

Staff proposes that \$20 million of the Low Income Multifamily Solar Program be set aside for qualifying affordable housing projects that require additional incentives to install solar and can prove an added direct benefit to low income tenants. Track 2 participants will be eligible to apply for incentives up to 100% of total system cost minus all tax credits and additional incentives from other sources. In addition, Track 2 participants must justify the higher incentive by proving the additional direct benefit that will accrue to low income tenants as a result.

A “direct tenant benefit” for purposes of this proposal is any operating cost savings from solar that is shared with tenants of affordable housing buildings through a recurring payment or financial credit. Affordable housing building owners must be able to prove the extent and duration of the direct tenant benefit.

The total direct tenant benefit must exceed 70% of the additional incentive sought above Track 1 and must occur in no more than five years. A direct tenant benefit must be absolute and cannot be accompanied by a commensurate increase in any other tenant expense.

*Example: A building owner seeks to install 100 KW of solar to offset tenant load. The Track 1 benefit for that load is $\$4.00/\text{watt} * 100,000 \text{ watts} = \$400,000$. In order to apply for a higher incentive totaling $\$500,000$ ($\$5.00/\text{watt}$), the building owner must demonstrate that at least 70% of $\$100,000$ ($\$500,000 - \$400,000$), or $\$70,000$ will be passed on to building tenants through a direct tenant benefit during the first five years of the operation of the solar system.*

Staff proposes that Track 2 incentives be available on a first-come, first-served basis through a rolling application process. The Program Administrators will be responsible for jointly developing a Track 2 application and a transparent application evaluation process, which should be submitted to the CPUC Energy Division for approval. Program Administrators will be expected to review Track 2 applications as they are submitted on an ongoing basis and provide a reservation decision in a timely manner, not to exceed twice the average reservation determination time for Track 1 applications. After a reservation confirmation is issued, Track 2 applications will be processed according to the procedures established for Track 1.

Staff recommends that the Commission reserve the right to amend the structure of the LI MP to provide more or less Track 2 funding based on program participation. Staff also recommends the Commission reserve the right to adjust the proposed incentive levels over time.

3.4.3 Application Process

Staff intends for the application process for LI MP Track 1 incentives to be simple and straightforward and as much as possible to correspond to the General Market CSI program. Under this proposal, the Program Administrators will be responsible for developing a LI MP application process and submitting it to the CPUC Energy Division for approval. The PAs will be responsible for incorporating the LI MP into the CSI Program Handbook. The LI MP will be independent of the General Market program. Future changes to the General Market CSI will not necessarily impact the LI MP and vice versa. Since staff recommends that the PAs from the General Market CSI program also administer the LI MP, it is our intent that administrative processes developed in one program be applied to the other when applicable and relevant.

3.4.4 Database

Data for all projects that apply for incentives through the LI MP will be made available publicly on the CSI database. The PAs will be responsible for

incorporating this data into the existing CSI database, and adapting that database as necessary to include specific data fields relevant for LI MP projects.

3.5 Low Income Multifamily Program Budget

In accordance with D. 06-12-033, which sets out CSI program budgets per IOU, the proposed breakdown of the Low Income Multifamily Program budget by utility is as follows:

Table 4: CSI Program Budget by Utility

Utility	Percent of total budget	CSI Budget (in millions)	Low Income Budget (in millions)	LI MP Budget (in millions)
PG&E	43.7%	\$ 947	\$ 94.7	\$ 47.34
SCE	46.0%	\$ 997	\$ 99.7	\$ 49.84
SDG&E	10.3%	\$ 223	\$ 22.3	\$ 11.16
Total	100%	\$ 2,167	\$ 216.7	\$ 108.34

The LI MP will be available until all incentives are exhausted or until December 31, 2015. Any funds that are set aside for this program and unspent as of January 1, 2016, will be used for low-income energy efficiency programs as set forth in Pub. Util. Code Section 2852(c)(3). There is no annual allocation of funds or annual MW goals for the LI MP. The intent of the program is to stimulate solar installation on affordable multifamily housing buildings immediately. Once LI MP incentives are exhausted, affordable housing developments will continue to be able to participate in the General Market CSI program.

This proposal aims to reduce administrative costs for the LI MP in order to stretch incentive dollars further. Since we propose that the LI MP be managed by the Program Administrators of the General Market CSI program, and since the administrative requirements of this program mirror the General Market program, we suggest that the administrative portion of the budget not exceed 6% of the overall budget.²¹ Staff recommends that 4% be used for marketing and outreach and 2% be contracted to an independent evaluator for the biennial program evaluation, described in Section 5 of this proposal. PAs will track General Administration and Marketing and Outreach expenses separately from other expenses and report these to the CPUC Energy Division as a part of the semi-annual CSI expense reporting.

²¹ The administration budget in the General Market CSI program is 5%. The proposed administration budget for the LI MP is slightly higher to account for the additional complexities of the Track 2 process.

The proposed breakdown of the total budget is as follows:

Table 5: LI MP Budget by Program Administrator

	PG&E	SCE	CCSE	Total
Incentive Budget (88%)				
Track 1	\$32,923,230	\$34,656,032	\$7,759,938	\$75,339,200
Track 2	\$8,740,000	\$9,200,000	\$2,060,000	\$20,000,000
Admin. Budget (12%)				
General Administration – 6%	\$2,840,675	\$2,990,184	\$669,541	\$6,500,400
Marketing and Outreach – 4%	\$1,893,783	\$1,993,456	\$446,361	\$4,333,600
Evaluation – 2%	\$946,892	\$996,728	\$223,180	\$2,166,800
Total Budget	\$47,344,580	\$49,836,400	\$11,159,020	\$108,340,000

Assuming Track 1 incentive levels, staff estimates that based on the average building size presented in Table 3 above, the proposed LI MP would serve approximately 116 building and 8,139 tenant units, or 4% of the expected population as shown in Table 6 below.

Table 6: Low Income Multifamily Population Served by LI MP

	Market Size ²²	LI MP	LI MP %
Estimated Capacity (kW)	606,375	24,997	4%
Number of Buildings	2,750	116	4%
Number of Units	192,500	8,139	4%

3.6 Energy Efficiency

SB 1 requires the Commission, in consultation with the CEC, to require “reasonable and cost-effective energy efficiency improvements” as a condition of receiving solar incentives, although it allows “appropriate exemptions or limitations to accommodate the limited financial resources of low income residential housing.” Consistent with this requirement, staff recommends all solar incentive applicants must have an energy efficiency audit as part of the application process. The audit will allow customers and the Program

²² Market size data from the “Joint Proposal of the California Solar Initiative Program Administrators Recommending a Low Income Multifamily Solar Program”

Administrators to compare the costs of a solar installation against the savings from energy efficiency measures.

In addition to the energy audit, staff recommends all applicants must enroll in an IOU energy-efficiency program that facilitates the installation of energy efficiency measures prior to receiving a solar incentive, unless there is no program that is suitable for the applicant based on the measures identified in the audit. Staff recommends the Commission does not specify in which programs an applicant participate because the energy efficiency program funding cycle ends at the end of 2008. It is unknown at this time which programs will continue through 2009 and what new energy efficiency programs will be available.

While staff recognizes the benefits of the LIEE program, we do not recommend the Commission require participation in the LIEE program, because tenants, not applicants (i.e., building owners/developers), are eligible for and participate in LIEE. Staff believes it would place undue burden on the building owner to identify LIEE-eligible tenants and require them to participate in LIEE in order to receive a solar incentive, and it is unclear if they have legal authority to do so. Staff recommends instead that all applicants are required provide information on the LIEE program, such as distributing LIEE marketing materials to low income tenants. This way, low income tenants are made aware of energy efficiency measures they can install in their units at no cost to them.

Staff recommends applicants whose buildings meet Title 24 standards are exempted from the above energy efficiency requirements beyond the energy audit. We recognize that few existing buildings will be able to document that they meet Title 24 since it is a building code that applies at the time of construction. Likewise, if it is determined through an energy audit that the building meets these standards, then the buildings are already highly energy efficient and need not enroll in an energy efficiency program.

4. Staff Metering Recommendations

In addition to the above proposed program structure, staff would like to add several metering suggestions that would compliment the LI MP by helping to overcome some of the challenges that multifamily affordable housing developments face to installing solar. The proposed program structure above is neither dependent upon these recommendations nor would these recommendations alter the basic framework of the LI MP. Staff appreciates comments on these recommendations and seeks input regarding potential legal or technical barriers that may not have been considered in this proposal.

4.1 Sub Metering Exemption for Master Metered Buildings

Staff proposes that the Commission offer an exemption from sub metering rules to master metered multifamily affordable housing buildings. This exemption would allow building owners in master metered buildings²³ to sub meter tenant units in order to facilitate the direct transfer of energy savings benefits to tenants. Staff expects that this exemption would increase the tenant benefit from the installation of solar on affordable multifamily buildings; but the proposal is not dependent on the exemption taking place. By allowing sub metering in master metered multifamily affordable housing buildings, building owners would be able to size solar systems up to total building load on a single master meter, and pass the energy savings directly to tenants through sub metering.

In D.07-09-004, the Commission allowed commercial office buildings in PG&E territory to sub meter their tenants as part of a Master Meter Settlement. Sub metering is a structure through which billing for energy usage is measured through one master meter and costs are allocated to individual tenants based on their individual usage. The decision allowed for sub metering because it serves as a price incentive for tenants to manage their energy usage. The decision only allowed sub metering to cover tenant loads, and required a separate meter for common areas.

Staff proposes that the Commission allow for a similar exemption for the LI MP. This would allow a building owner to install one PV system to cover all tenant loads, while providing a direct benefit to tenants. Staff believes that by allowing building owners in master metered buildings to sub meter tenant loads, solar will be made more cost-effective and, thereby, more attractive to building owners.

4.2 Virtual Net-Metering

In parallel to the master metering suggestion above, staff recommends the IOUs, SCE, PG&E and SDG&E provide “virtual” net-metering to LI MP participants.

Virtual net metering would function similarly to master metering, however, it would not involve any changes to building meters or electrical wiring. Under virtual net-metering, a single PV system, installed on a single meter, could be sized up to no more than total building load. Electricity produced by the PV system would be net-balanced against total building energy consumption (as if the building had a single master meter) and savings would be allocated to all units (tenant and common areas) in a pre-determined proportion. The utility would create separate billing accounts for the common area and each tenant unit, and provide bill credits each month for the electricity produced by the PV system.

²³ As discussed in section 1.4.2, PU Code 780.5 only allows buildings who've obtained permits before 1982 to be master-metered.

If virtual net-metering were implemented in the LI MP, staff recommends that the credits be allocated proportionally between total historical common area load and cumulative historical tenant load. The tenant load portion would then be allocated equally among each tenant unit.

Example: A 100kW PV system is installed on a 20 unit affordable housing residence, of which 40kW covers common area load and 60kW covers cumulative tenant load. The utility credits 40% of the electricity produced and sold by the solar system each month to the common area and then credits the remaining 60% to the tenants in equal proportion, so that each unit receives a credit for 3% (60%/20units) of the electricity produced by the PV system.

Staff recommends that the portion of the PV system installed to offset common load would receive the Track 1A incentive, \$3.00/watt, while the portion of the PV system installed to offset tenant load would receive the Track 1B incentive, \$4.00/watt. In the case of the above example, the total incentive under virtual net metering would be \$360,000.

5. Evaluation

Staff proposes that the low income incentive program be evaluated on an ongoing basis and in a formal biennial evaluation.

Ongoing Evaluation:

During program implementation, the administrator will evaluate the strengths and weakness of the program, and report to the CPUC on the progress of the program quarterly.

The program administrators will be required to integrate the LI MP into the existing program database, and make the data available to the Energy Division, and to the public as appropriate.

Biennial Evaluation:

Every two years, Energy Division will select an independent evaluator to review both the Program Manager and the incentive program against evaluation criteria. Working closely with the Energy Division, one IOU will issue an RFP for the evaluator. The IOU would collect evaluator proposals and together with Energy Division staff will review and evaluate proposals. Energy Division will select the evaluator with input from the IOU. The evaluator may rely on the following in its review, or other information as determined by Energy Division: program data obtained from a sampling of projects, interviews with applicants and stakeholders, individual project progress reports provided by the PAs, prior

program evaluation results, issues identified by Commission staff for further investigation and new information about technologies or the marketplace. If suggested in the evaluation, the Commission may consider directing the PAs to refocus program milestones and alter administrative processes.

Staff recommends the first evaluation cover the two years after the commencement of the LI MP. The evaluation should begin two years after the date of the final decision of the LI MP, and be completed within 6 months.

5.1 Milestones and Evaluation Criteria

The low income solar program should reach the following milestones:

1. Within 4 months from the date of the final decision:
 - a. The LI MP shall be implemented in the service areas of PG&E, SCE and SDG&E.
 - b. The PAs will have filed an Advice Letter on the LI MP Handbook.
 - c. The LI MP Handbook will have been approved.
 - d. The PAs will have filed an Advice Letter on marketing and outreach.
 - e. Applications for the LI MP will be made available to the public.
2. By the end of 2012, 50 affordable housing buildings will have installed PV systems.
3. By the end of 2010, the Program Manager shall have made reasonable efforts to identify the eligible population across the state within the PG&E, SCE and SDG&E territories, and have attempted to contact them about the low income incentive program.

In addition to the semi-annual expense reporting, staff recommends PAs submit quarterly reports to the Director of the Energy Division on progress of the low income incentive program. The quarterly reports should include the following items, but Energy Division may modify this list as it deems appropriate:

- Number of applications received
- Number of applications accepted
- Incentives paid under Tracks 1A, 1B, and 2
- Size of installations and expected annual output
- Total system cost in \$/kW before subsidy
- Progress of installations
- Geographic areas served
- Incentive dollars paid by each utility
- Installer used (if applicable)
- Administrative and marketing expenditures

Every two years, Energy Division shall select an independent evaluator through an RFP process to review both the PAs and the low income incentive program. The evaluation should include, but is not limited to, the following factors:

- Number of multifamily buildings served
- Number of low income households served
- Cost of program per multifamily building (both incentive costs and total costs including program administration)
- Overall cost of program and cost of program components (i.e., administration, marketing, and incentives)
- The average amount energy bill is reduced per residence/tenant (both in dollars and kWh)
- Other, non-solar energy saving measures building owners/tenants have implemented along with their solar installation
- Customer satisfaction
- Turnover of low income tenants within participating multifamily buildings
- Location of buildings served
- Location of eligible buildings not served
- Geographic coverage across the state
- The effectiveness of tenant education programs on solar and energy efficiency
- The effectiveness of marketing and outreach efforts
- The effectiveness of energy efficiency measures as related to PV systems
- System performance and maintenance adequacy

Staff proposes that the M&E contractor draft an evaluation plan that the CPUC will issue for public comment. Staff will work with the PAs and evaluator to draft the plan.

The CPUC staff, PAs, and evaluator will rely upon CPUC evaluation protocols which are already established for the utility energy efficiency programs in the 2006-2008 funding cycle. Specifically, we will draw upon evaluation protocols for:

- The “Impact Evaluation” protocols
- The “Process Evaluation” protocols

6. Questions for Comment

Staff welcomes comments on this proposed CSI Low Income Multifamily Program. Specific questions that we seek feedback on are summarized below and organized by section in the same order as the proposal. Staff asks that all comments follow the same order.

1.4 Challenges for Low Income Multifamily Solar Program

- Staff welcomes feedback on our characterization of the challenges to installing solar on affordable housing, as well as feedback on ways to address these challenges..
- Are there additional challenges that the affordable sector faces that were not addressed in this report? If so, what are these specific challenges and how can they be addressed within the program?

2. Other Low Income Programs

- Are there other multifamily solar programs in California that were not included in this proposal?
- Are there examples from California of existing multifamily affordable housing buildings that have installed solar that offer insights that could be useful for this proposal?

3.4 Incentive and Financing Structure

- How can the program further incentivize building owners/developers to pass on benefits to low income tenants?
- Are there additional benefits, not described in this proposal that can be passed on to low income tenants? If so, what are they? How does the Commission ensure that low income tenants receive these benefits?

3.4.1 LI MP Track 1

- Staff seeks input on the proposed incentive levels. Are these incentive levels sufficient? Are they excessive?
- Do affordable housing developers installing solar to offset common area loads need an incentive higher than what is offered in the General Market CSI program?

3.6 Energy Efficiency

- Will program participants be able to meet the energy efficiency requirements?
- Are the energy efficiency requirements in this proposal too onerous? Too simple? What alternative or additional requirements should be included?

4. Metering Recommendations

- Staff seeks input on the proposed metering recommendations. Are there any legal or technical barriers to these recommendations that require further consideration?

4.2 Virtual Net-Metering

- Is Virtual Net-Metering a feasible option for the LI MP?

(END OF APPENDIX A)