



# ***Virtual Net Metering (VNM) for Multifamily Affordable Solar Housing***

*– or –*

*How one solar array can provide Net  
Energy Metering to many individually  
metered, low income/affordable housing  
electric customers*

Harold Hirsch  
Regulatory Relations  
Pacific Gas and Electric Company  
January 8, 2009

# *VNM Regulatory Background*

- **2005/6 CPUC/CEC establishes the \$2.17 Billion California Solar Incentive (CSI) program.**
- **SB1/AB2723 codifies requirement of at least 10% of overall CSI funds be reserved for low income residential housing**
- **CPUC adopts CSI budget with \$217M for low income solar incentives**
  - **50% (\$108M) for low income single family homes**
  - **50% (\$108M) for multifamily affordable solar homes**
- **2008 – CPUC issues Decision 08-10-036 directing PG&E, SCE & SDG&E to file tariffs for Virtual Net Metering (VNM) and implement the Multifamily Affordable Solar Housing (MASH) incentive program**

## *To Whom does VNM apply?*

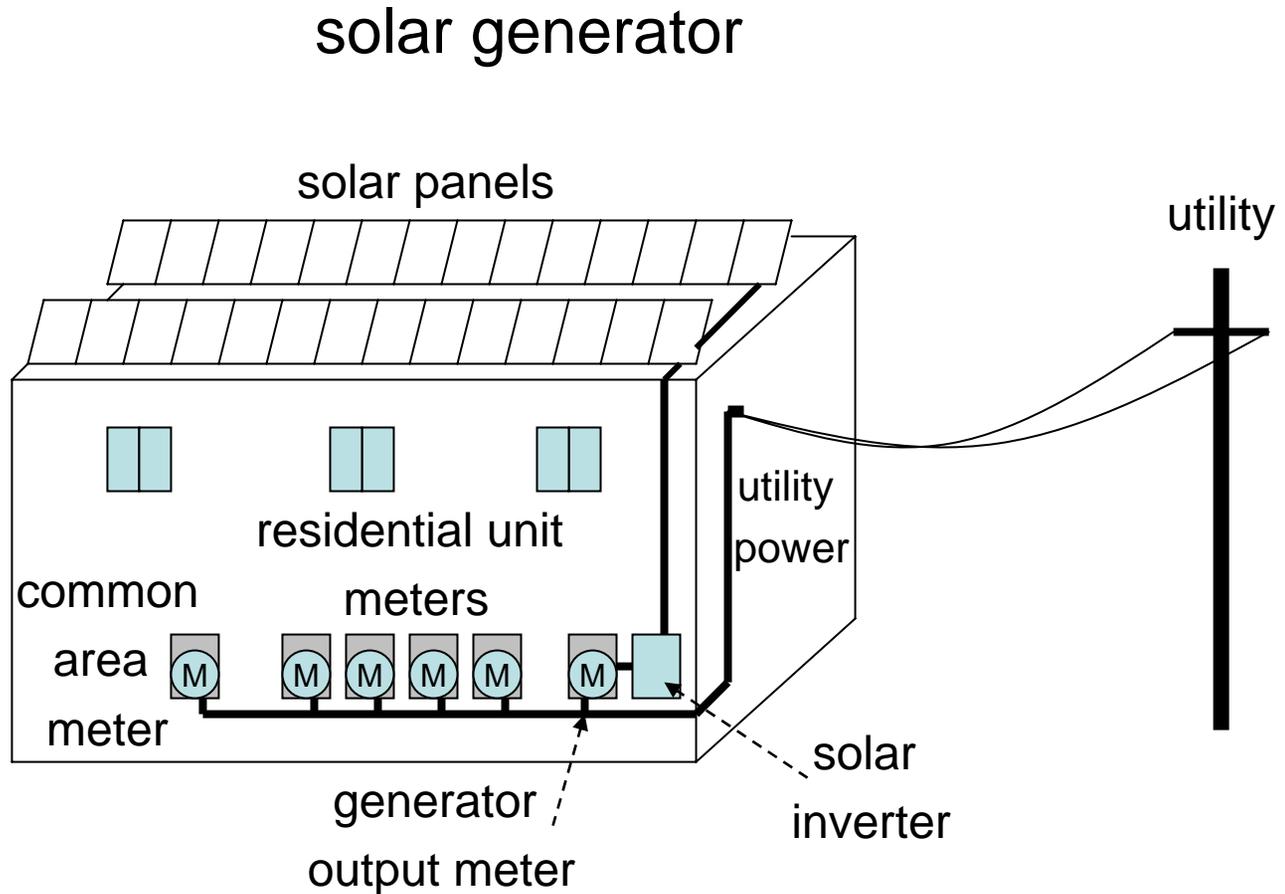
	<b>Multifamily Building Type</b>	
	<b>Retrofit</b>	<b>New Construction</b>
<b>Solar Incentive Program</b>	<b>Multifamily Affordable Solar Housing (MASH) Program</b>	<b>New Solar Homes Partnership (NSHP) Program</b>
<b>Eligibility Requirements</b>	<ul style="list-style-type: none"> <li>• <b>Occupancy permit of 2 years or more</b></li> <li>• <b>Project must meet prescribed income requirements per PUC 2852 (a)(2)</b></li> <li>• <b>See upcoming CSI Handbook and PUC 2852 for specifics of MASH eligibility</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Project must meet the affordable housing eligibility requirements detailed in Chapter 4, Section C of the NSHP Guidebook.</b></li> </ul>

# *What does VNM do?*

**VNM allows the benefit of on-site solar generation to low income or affordable housing multifamily buildings without requiring the generator to be physically connected to each billing meters.**

- **The common area and each residential unit has its own utility electric account and meter, and**
- **the common area and each residential unit receives retail electric service so that any applicable generation credits (kilowatt-hour) can be applied to reduce its electricity usage (kilowatt-hour) charges.**

# Illustration of a Typical Multifamily Building



# *What type of financing structure?*

## **MASH Provides Upfront Incentives**

### **Track 1: Incentives**

<b>Track1A: Portion of PV system output that offsets Common Area Load</b>	<b>Track1B: Portion of PV system output that offsets Tenant Area Load</b>
<b>\$3.30/watt</b>	<b>\$4.00/watt</b>

**Based on the allocation of solar credits (discussed on page 9)**

### **Track 2: Incentives**

- **Provides a higher incentive if applicants can justify the need for a higher incentive and prove the system will provide quantifiable “direct tenant benefit”.**

# *What types of meters are needed?*

- **Solar Generator:** A utility grade, bi-directional output meter on the solar generator, capable of recording the electricity exported to the utility's electric system in 15 minute increments.
- **Common Area:** A common area meter, used to measure the electricity used by the common area. If the owner takes service on a time-of-use rate schedule, the meter will measure the usage for each time-of-use period.
- **Residential Unit:** A residential unit meter on each residential unit, used to measure the electricity used by each residential unit. If the residential unit takes service on a time-of-use rate schedule, the meter will measure the usage for each time-of-use period.

# *Generator Account*

- **The generator account must have no other load except that directly related to the generating facility**
- **The meter is bi-directional to measure any load.**
- **The generator account will be on its own otherwise applicable tariff.**
- **Any measured usage will be charged at the otherwise applicable tariff. (typically, a residential or small commercial rate)**
- **All other terms of the otherwise applicable tariff will apply.**

# *How is the Solar Electricity Allocated for a typical Multifamily Building?*

## The Solar Credit Allocation Percentage

### Building allocation determined by building owner

- When the solar generator is installed, the multifamily building owner establishes the percentages for how the solar credit will be divided up between
  - (1) the common area account and
  - (2) the residential load of the building

These solar credit allocation percentages are fixed for 5 years. <sup>1</sup>

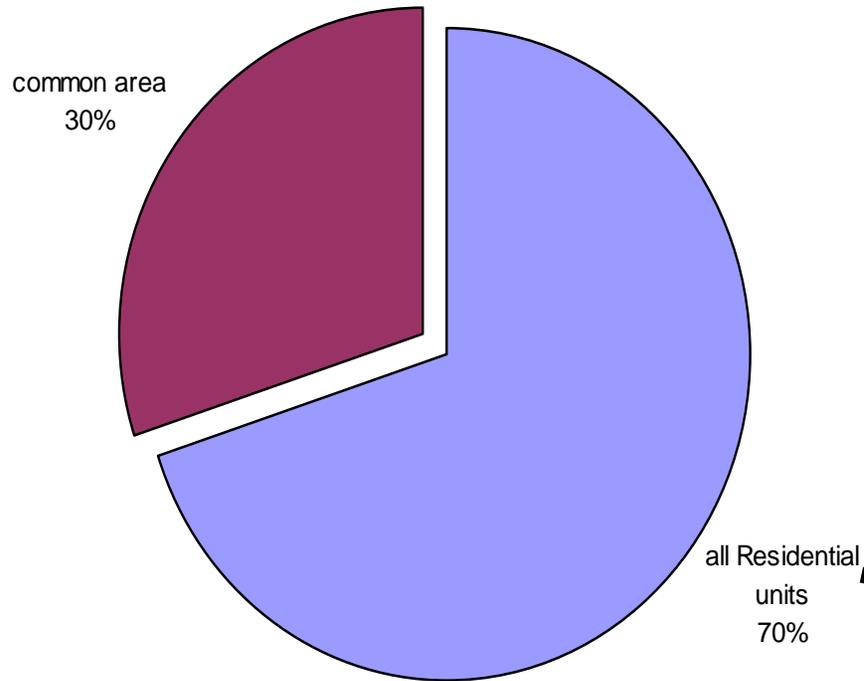
### Individual residential unit allocation determined by relative unit size

- The electricity allocation percentage to all of the residential units is then divided up for each residential unit by a percentage based on the relative size of each residential unit, consistent with the manner in which affordable housing rents are established
- The building owner must provide this allocation information to the utility.

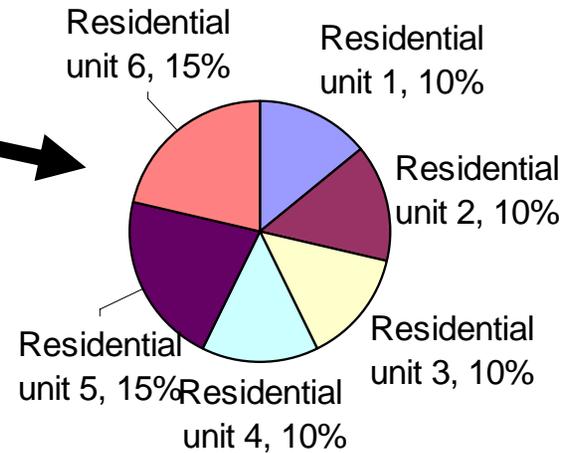
1. *The initial credit allocations are determined by which MASH incentive a customer receives. Track 1A incentives are for common load and Track 1B are for tenant load*

# Illustration of Solar Credit Allocation an example

percent of solar output



All Residential units  
(percentages total to 70%)



## *How are monthly credits issued for typical Multifamily Arrangement?*

- **The generator meter measures how much solar electricity is sent every 15 minutes to the utility's electric system for "credit".**
- **Using the solar credit allocation percentage, the solar electricity credit (in kilowatt-hours) is calculated for the each account (common area and the residential units).**
- **The solar electricity credit allocated to each account is then subtracted from the account's usage; The net (in kilowatt-hours) is then customer is charged according to their otherwise applicable rate schedule for their net usage.**
- **If the rate schedule is time-of-use, the solar electricity credit for a time-of-use period is subtracted from the electricity used during that same time-of-use period; the difference (in kilowatt-hours) is then valued at the "energy charge" (in \$/kilowatt-hour) of the account's rate schedule, and time-of-use period. Baseline tier credit levels also factored in if appropriate.**
- **If there is excess credit in the current month, it is rolled over to the next month in dollars. (see next page)**

# *What will a residential unit customer be billed for each month?*

## **If the monthly difference between electric usage and the allocated solar credit is:**

- **Positive:** the customer was a net consumer of electricity. If the value of the difference is over the minimum charge, (and there was no prior credit on the account) their bill will include this value of the difference as the energy charge along with any other applicable monthly charges in the rate schedule.
- **Neutral:** If the difference is zero or valued less than the minimum charge, the customer will be billed for the minimum charge along with any other applicable monthly charges in the rate schedule.
- **Negative:** the customer was a net generator of electricity. The value of the difference represents left over “generation credits” for that month. The customer only has to pay any minimum charges and any other applicable monthly charges in the rate schedule and the credit will be carried forward.

# An example - flat rate

	Common Area Account	Residential Unit 1	Residential Unit 2	Residential Unit 3	Residential Unit 4	Residential Unit 5	Residential Unit 6		
<b>Allocation</b>	30%	70%							
	30%	15%	15%	10%	10%	10%	10%		
<b>10,000</b>	3000	1500	1500	1000	1000	1000	1000	<b>kilowatt-hours</b>	
<b>Usage</b>	5000	2000	1500	1010	500	250	10	<b>kilowatt-hours</b>	
<b>difference</b>	2000	500	0	10	-500	-750	-990	<b>kilowatt-hours</b>	
<b>charge / credit</b>	\$ 200	\$ 50	\$ -	\$ 1	\$ (50)	\$ (75)	\$ (99)	<b>0.10000</b>	<b>\$/kilowatt-hour</b>
<b>net charge</b>	\$ 200.00	\$ 50.00	\$ -	\$ 1.00	\$ -	\$ -	\$ -		
<b>net credit</b>	\$ -	\$ -	\$ -	\$ -	\$ 50.00	\$ 75.00	\$ 99.00		
<b>Minimum Charge</b>	\$5	\$5	\$5	\$5	\$5	\$5	\$5	<b>Per meter per day</b>	
<b>Other Charge</b>	\$5	\$5	\$5	\$5	\$5	\$5	\$5	<b>Per meter per day</b>	
<b>Amount Due</b>	<b>\$205</b>	<b>\$55</b>	<b>\$10</b>	<b>\$10</b>	<b>\$10</b>	<b>\$10</b>	<b>\$10</b>		

# An Example – Time-of-Use rate

	Common Area Account	Residential Unit 1	Residential Unit 2	Residential Unit 3	Residential Unit 4	Residential Unit 5	Residential Unit 6	Notes	
<b>Allocation</b>	30%	70%							
<b>Generation</b>	30%	15%	15%	10%	10%	10%	10%		
<b>10,000</b>	3000	1500	1500	1000	1000	1000	1000	<b>kilowatt-hours</b>	
<b>peak</b>	1,800	900	900	600	600	600	600	<b>60%</b>	
<b>off</b>	1,200	600	600	400	400	400	400	<b>40%</b>	
<b>Customer Usage</b>	5000							<b>kilowatt-hours</b>	
<b>peak</b>	2,000	500	500	400	300	200	100		
<b>off</b>	100	1,000	100	200	300	4,000	500		
<b>Net (usage-gen)</b>									
<b>peak</b>	200	-400	-400	-200	-300	-400	-500	<b>kilowatt-hours</b>	
<b>off</b>	-1,100	400	-500	-200	-100	3,600	100	<b>kilowatt-hours</b>	
<b>peak</b>									
<b>charge</b>	\$ 50.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	<b>0.25000</b>	
<b>credit</b>	\$ -	\$ 100.00	\$ 100.00	\$ 50.00	\$ 75.00	\$ 100.00	\$ 125.00	<b>0.25000</b>	
<b>Off</b>									
<b>charge</b>	\$ -	\$ 40.00	\$ -	\$ -	\$ -	\$ 360.00	\$ 10.00	<b>0.10000</b>	
<b>credit</b>	\$ 110.00	\$ -	\$ 50.00	\$ 20.00	\$ 10.00	\$ -	\$ -	<b>0.10000</b>	
<b>Minimum Charge</b>	\$5.00	\$5.00	\$5.00	\$5.00	\$5.00	\$5.00	\$5.00	<b>Per meter per month</b>	
<b>Other Charge</b>	\$5.00	\$5.00	\$5.00	\$5.00	\$5.00	\$5.00	\$5.00	<b>Per meter per month</b>	
<b>Amount Due</b>	<b>\$10.00</b>	<b>\$10.00</b>	<b>\$10.00</b>	<b>\$10.00</b>	<b>\$10.00</b>	<b>\$265.00</b>	<b>\$10.00</b>		
<b>Left over Credit</b>	<b>\$60.00</b>	<b>\$60.00</b>	<b>\$150.00</b>	<b>\$70.00</b>	<b>\$85.00</b>	<b>\$0.00</b>	<b>\$115.00</b>		

## *What is a Relevant Period?*

- **Within a relevant period, excess credit from a current month is rolled over to the next month. At the end of a relevant period all MASH credits are zeroed out.**
- **A relevant period consists of twelve monthly billing cycles**
- **If an Owner or Tenant terminates service prior to the end of any 12 month billing cycle, the relevant period is from the anniversary date to the effective date of that termination.**
- **The subsequent Customer after a Change of Party at an installed service number will start a new Relevant Period commencing on next regularly scheduled read date follows the date the customer takes service under this rate**

# *Account Changes*

- **If a residential unit customer moves out, a true-up will occur for that customer.**
- **A new customer (or the building owner) may assume the residential unit service and will continue to receive the allocation credits. If the unit becomes unoccupied (account is closed), the allocation credits to that unit during the time it is unoccupied will be lost. However, if the owner advises the utility that a residential unit becomes unavailable for occupation (for example, due to damage), the allocation of credit between the other residential units can be adjusted.**
- **If the building owner changes hands, the common area will be trued-up but the residential units will not be trued-up unless the owner requests it.**
- **When an account changes, the true-up date changes based on the new account start date.**

# *Costs*

- **Metering:** All costs necessary to install bi-directional metering on the generating account are the responsibility of the building owner.
- **Interconnection:** Costs are as provided for under Rule 21.
- **Implementation:** Utilities will seek reasonable cost recovery through Low Income CSI administration budget.
- **Administration:** Utilities will seek a means to effect reasonable cost recovery.

# *Community Choice Aggregation Direct Access*

- **If the CCA or ESP provides service to the Generating Account, then all of the Common area and Residential units accounts have to take commodity service from the same provider. The Utility would still bill for non-generation component of service.**
- **If the utility provides bundled service to the Generating Account, and some or all of the common area and/or residential unit accounts take service under CCA or DA:**
  - The account's CCA or ESP would be provided monthly with the kilowatt-hour's of generation for the account and their CCA or ESP would provide the generation credit to the customer.