



New Solar Homes Partnership (NSHP)

Program Activity: Jan-Dec 2007

Feb.8 - James Folkman/Kurt Pisor

Feb. 1- Sandy Miller/Claudia Orlando



NSHP - Overview

- Program started January 2007 (resulting from SB 1)
- 400 MW goal by 2016
- New residential only:
 - Custom homes
 - Developments
 - Affordable housing
- Mixed use is eligible, but only for residential portion. However, entire project is eligible if non-residential portion is 10% or less of the total project (space).



NSHP – Eligibility

- System must be 1 kW AC or larger
- Must be interconnected to the utility grid
- Must generate electricity to offset the end-use consumer's on-site electrical load
- Energy Efficiency Requirements
 - Minimum: Tier 1 – 15% more energy efficient than current Title 24 Building Standards
 - Encouraged: Tier 2 – 35% more efficient than current Title 24 Building Standards (40% for AC)



CEC PV Calculator

Designed to achieve high quality system design/installation and reward with appropriate incentives

- Excel spreadsheet interface
- Calculator uses a library of certified Modules and Inverters that is updated regularly
- Simulates expected performance of system as specified



PV Calculator (cont'd)

- Calculates kWh and Time Dependent Valuation (TDV) kWh
 - Climate zone, weather, specific product performance, orientation, and shading considered in hourly performance calculation
- Expected kWh performance is compared to the reference system (San Jose, CA)
- Incentive is based not on capacity but a weighted kWh production of electricity



NSHP - Flexible Installation

- If certain criteria are met, a single calculator run may be submitted for a group of homes in a development.
 - Azimuth ranging from 150 to 270 degrees
 - Pitch ranges from 1:12 to 7:12
 - System is minimally shaded
 - No obstruction is closer than a distance of twice the height that the obstruction extends above the modules



NSHP – Incentive Structure

Market-Based Housing

- ~\$2.50/W: Base Incentive
 - Custom homes, solar as option, or developments where solar will be on less than 50% of homes)
 - 18 month reservation period
- ~\$2.60/W: Production housing with solar as a standard feature
 - 36 mo reservation period, with status checkpoints

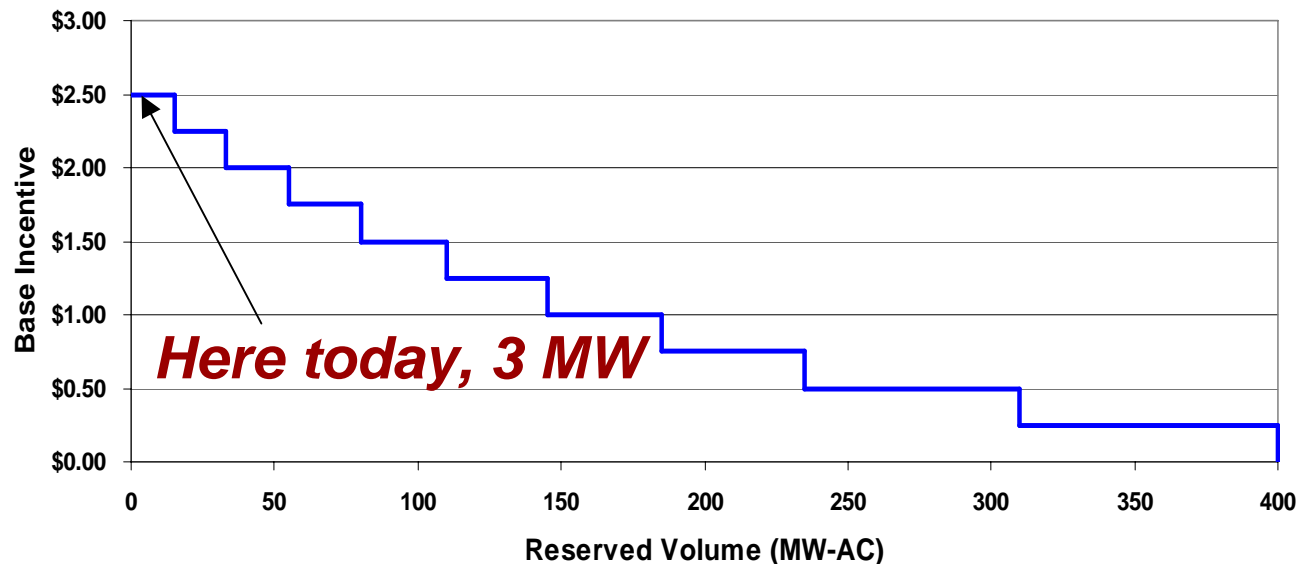
Affordable Housing

- \$3.50/watt – residential units
- \$3.30/watt – common areas



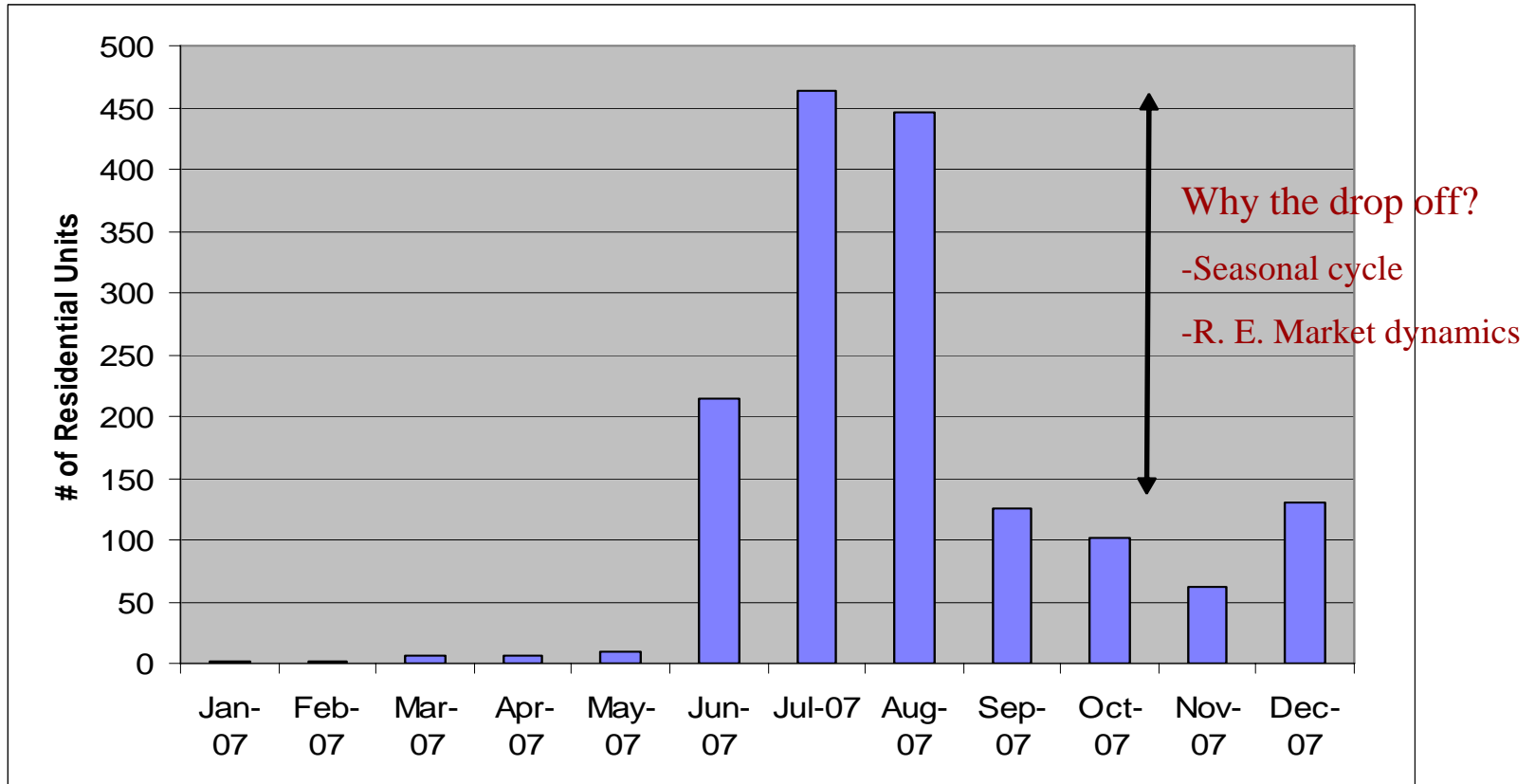
NSHP – Incentives Structure (Cont)

- One time, up-front incentive, expected performance-based incentive
- Incentives decline as megawatt targets are achieved
- Incentives decline to zero over 10 year program duration



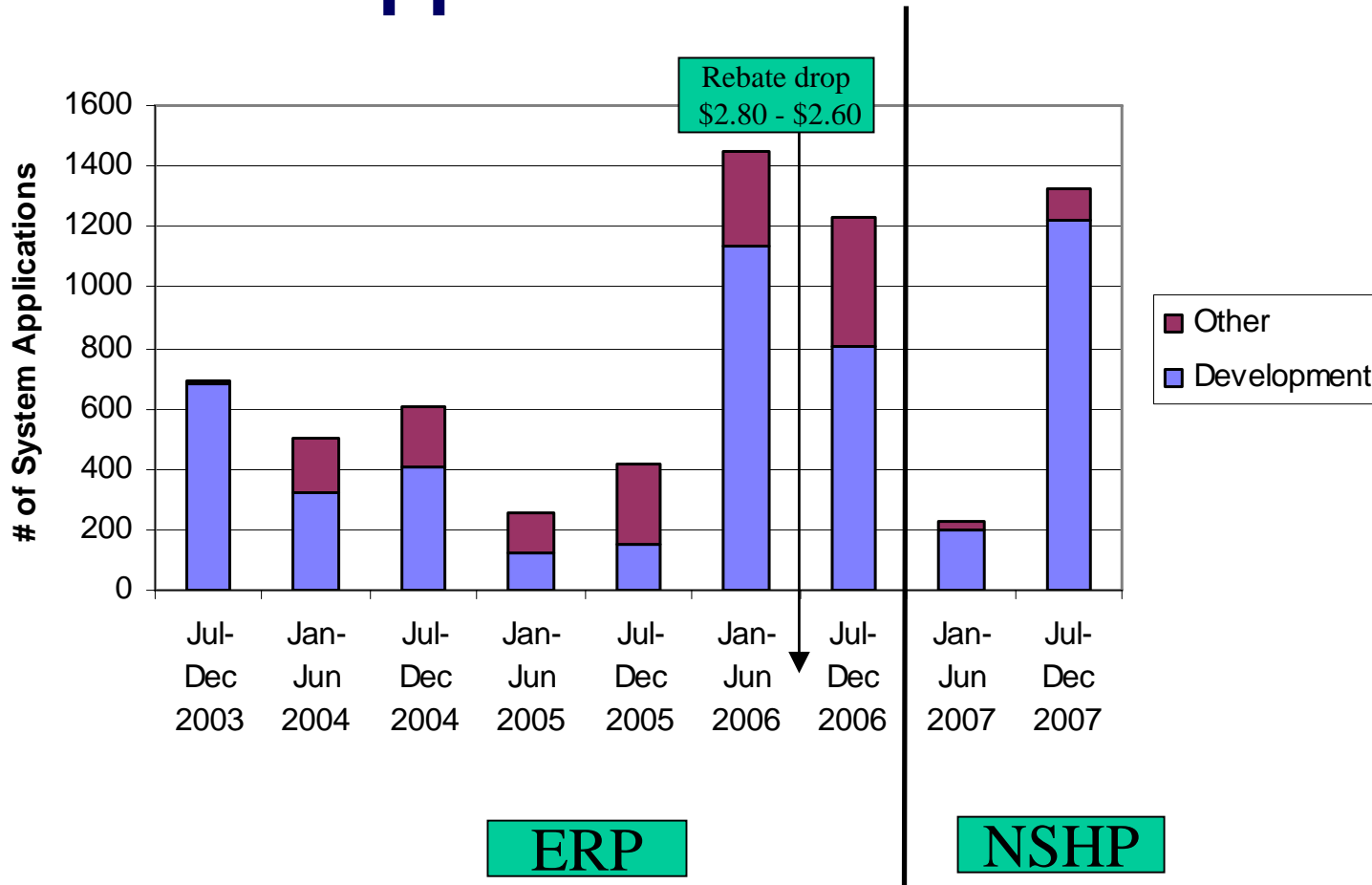


NSHP Residential Volume





New Residential Buildings Applications Received





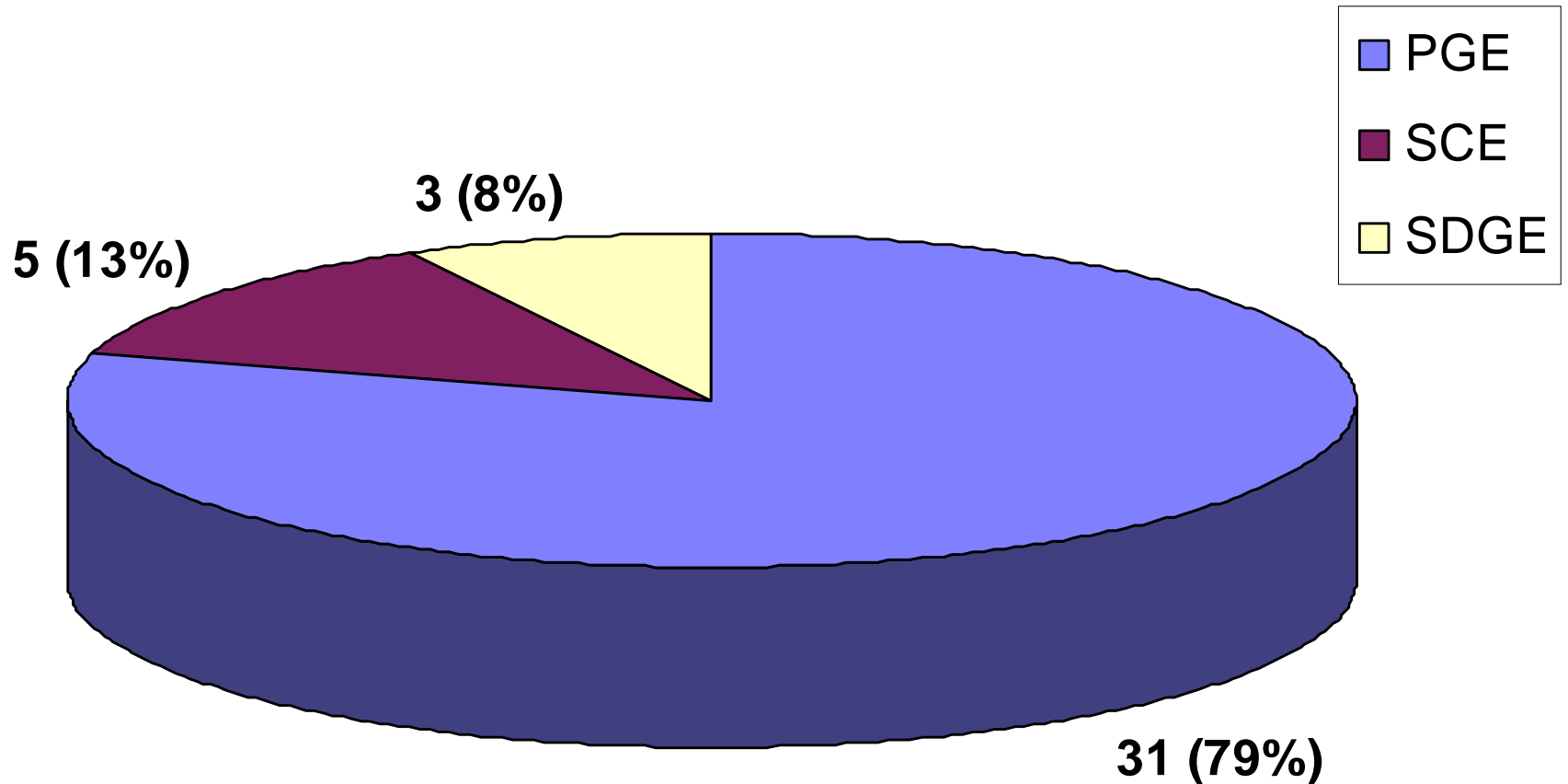
NSHP Status

	<u>Apps.</u>	<u>Bldgs.</u>
▪ Total to date:	155	1522
▪ Breakdown:		
– Lg. Development*:	26	1377
– Sm. Development:	13	29
– Custom homes:	116	116
▪ 35 systems are affordable housing projects		

**6 or more buildings within a single development*



Development Applications



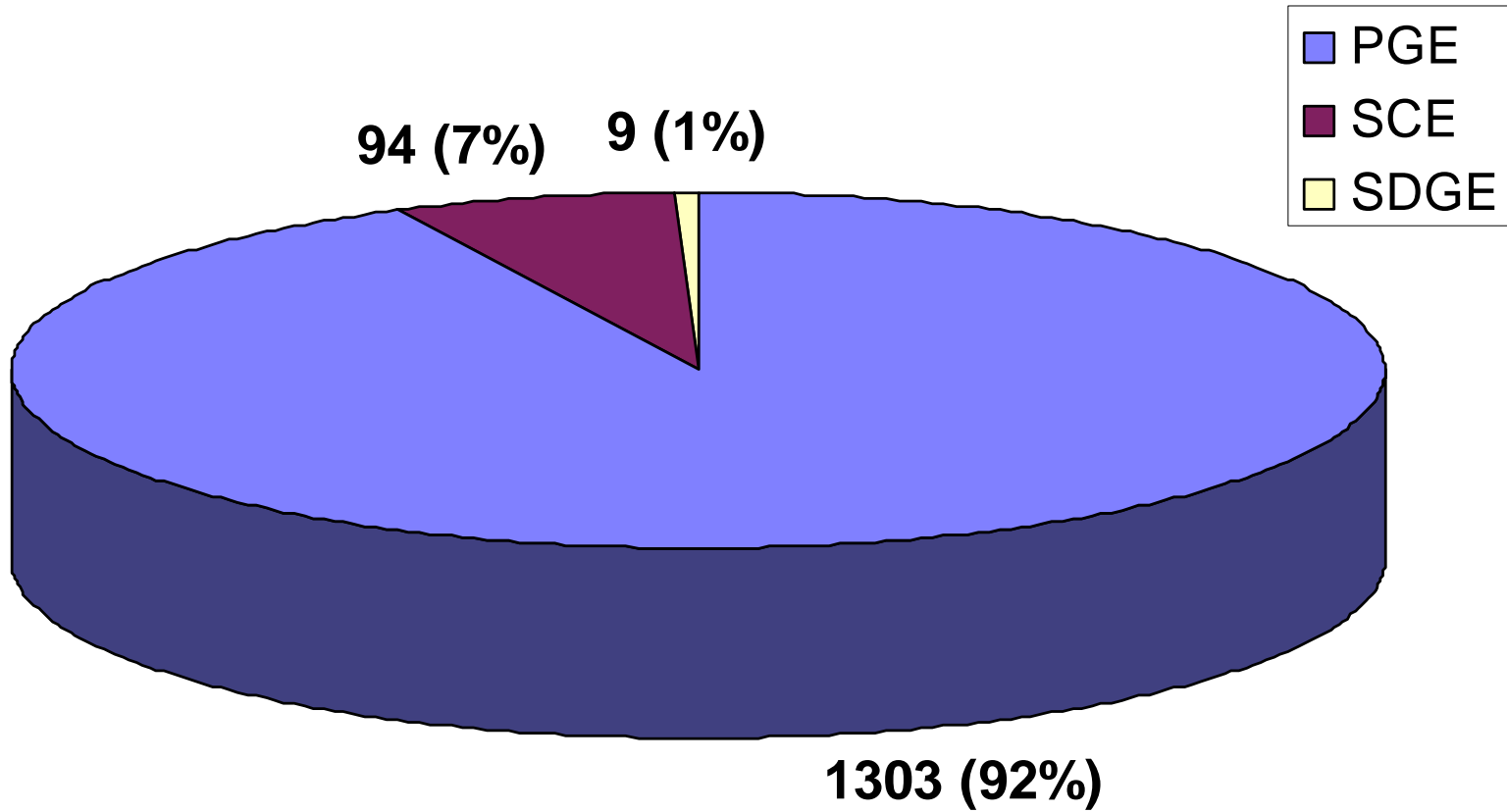
Large Developments: 26

Small Developments: 13



California Energy Commission

Development Systems (Number of Homes)



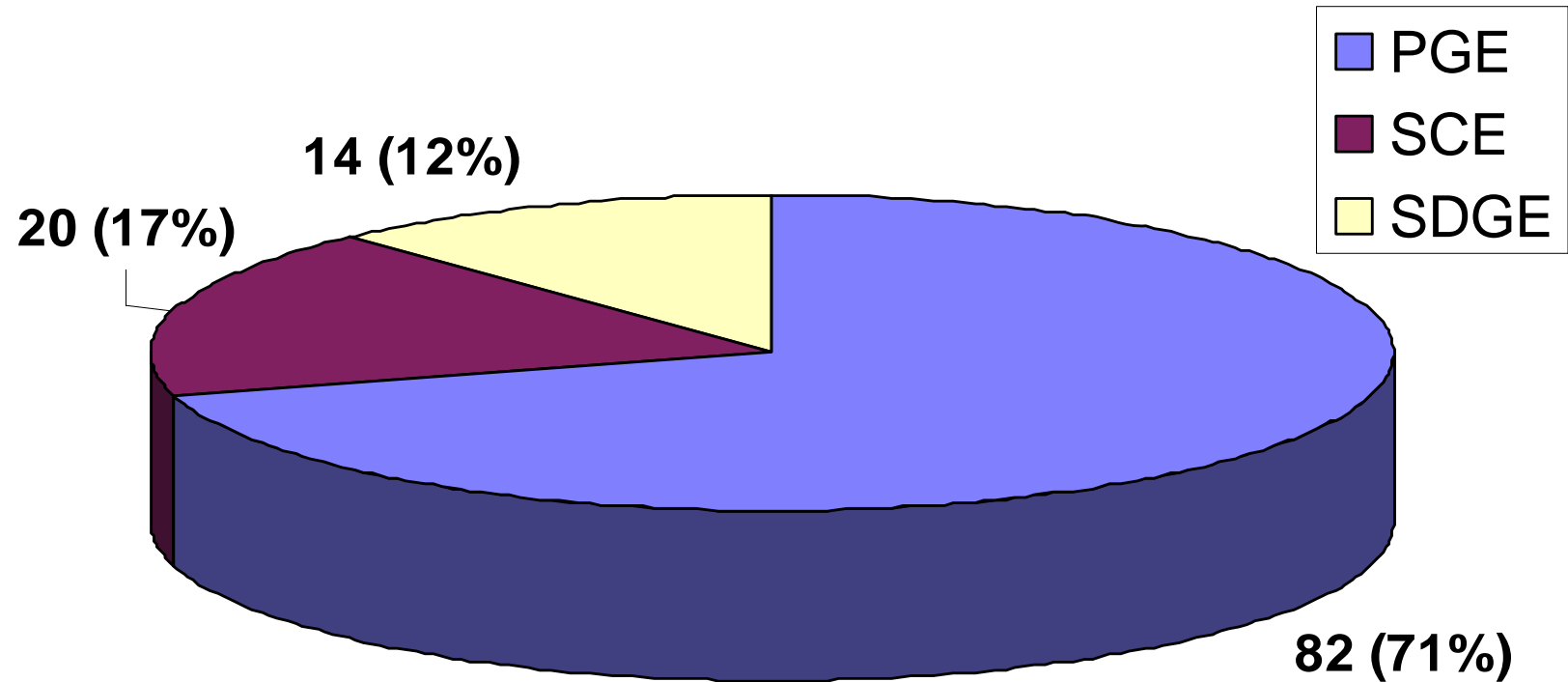
Large Developments: 1377

Small Developments: 29



California Energy Commission

Custom Home Applications



Total Applications: 116



Fire Code Issues

Fire code issues: Many fire districts have implemented new standards on the installation of PV systems

- create difficulties in system design
- proper system sizing impossible.

■ Restrictions

- distance a system must be from the roof's edges,
- total continuous size of individual strings of panels,

Impacts: increase total system cost and decrease system payback marginalizing the value of PV systems.



Fire Code Issues (continued)

The Office of the State Fire Marshall has formed a PV fire standards working group

Goal: Develop a single PV fire standard.

Standards would be voluntary for individual jurisdictions to adopt while the Office of the State Fire Marshal proceeds through the year long process of adding the PV standards to code.

Participants:

- directors of engineering and installation from the top PV manufacturing and installations companies
- fire officials from several different localities
- CEC, SMUD, UL, DOE, CALSEIA

Last meeting: January 24, 2008 and may be the last if all remaining issues are agreed upon.



NSHP Program Administration

- The CEC has been working to hand-off program administration to investor-owned utilities
- Web Based Application System
- Contract with SDG&E signed. Final contract details with SCE and PG&E.
- Anticipated hand-off is imminent



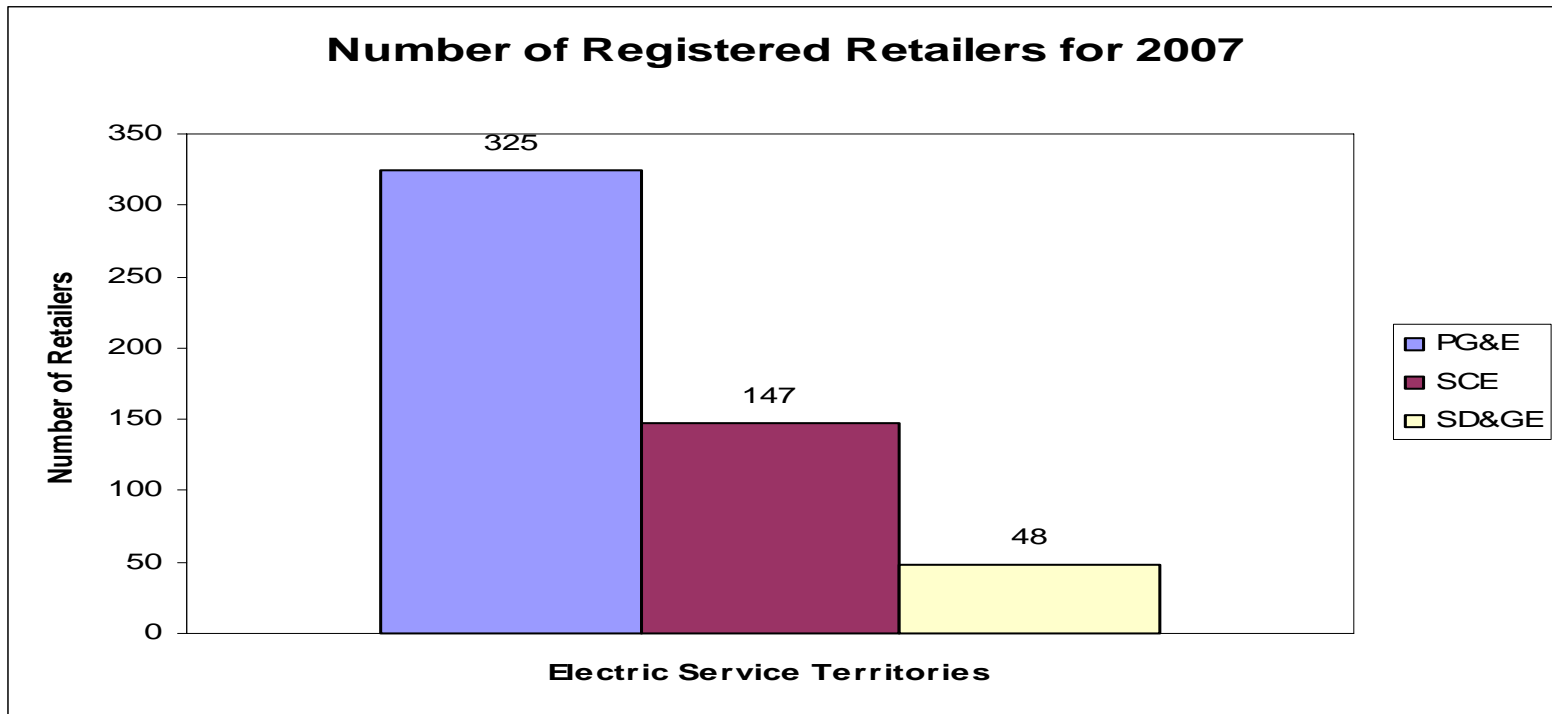
Possible Reasons for More Solar in N. Calif.?

- PG&E's tail block rates are higher
- Is N.C. Greener? ICF/Maryland Marketing Research (2001) & Edelman (2007 draft):
 - Greater inclination by N. Calif. to purchase green.
- N. Calif higher activity has been jump-started by several factors:
 - Slightly higher ecology minded
 - SMUD's push
 - More retailers pounding the pavement
 - Differences in style preferences



California Energy Commission

Number of Registered Retailers for 2007





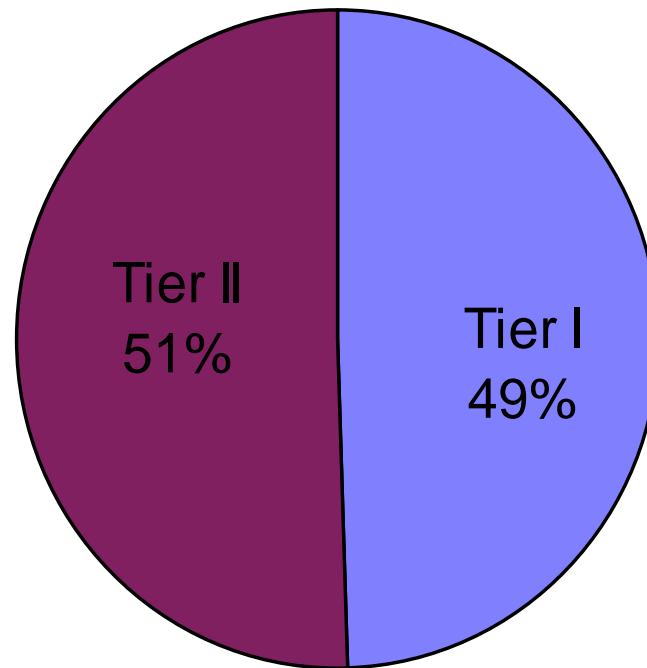
NSHP Marketing

Stay tuned!



Energy Efficiency

Tier I vs Tier II - Approved Systems



~675



Common Features Used Among Example Tier II Applications:

- **HVAC**
 - Higher efficiency
 - Proper sizing
- **Windows**
 - Depends on Climate Zone
 - 'warm' climate zones benefit from lower SHGC and U-factor and window area
- **DHW**
 - Higher efficiency
- **Radiant Floor (hydronic)**
 - Paired with an efficient DHW
 - Projects using this tend to show much higher compliance margins.
- **Thermal Mass**
 - Requires more forethought than just upgrading appliance efficiencies, plan ahead.
 - Projects using this tend to show much higher compliance margins.
- **HERS verifications**
 - Several different verification credits are available. Some easier than others.



Common Features Used Among Example Tier II Applications:

- **HERS verification frequently used:**
 - Duct testing
 - High EER

- **HERS verification less frequently used:**
 - QII (requires coordination between installation of insulation and drywall)
 - Other verification credits are available, but these are most commonly used.

- **Recommendations to achieve Tier II:**
 - Coordinate efforts and communicate your desire to attain Tier II early on.
 - Don't make trade offs. Small improvements everywhere make it easier to reach Tier II without over-designing the building.
 - Consult with someone with experience in the energy code, they may have recommendations on achieving Tier II.
 - Follow through, many of the ways to reach Tier II require third party verification or installation of specialty equipment/devices. Make sure everyone is aware that there are certain features they cannot make in-field decisions to tradeoff.



California Energy Commission

Project	CZ	% above T24	# of systems	Features
Chateau at Blackstone	12	36.4%	107	HVAC, Windows, HERS
Shenandoah at Blackstone	12	35.1%	176	HVAC, Windows, HERS
Wisteria	11	35.9%	35	HVAC, Windows, HERS
Hagadorn	11	35.6%	1	Windows, HERS (QII), DHW, Thermal Mass
Soady	6	38.2%	1	HVAC, Windows, Radiant Floor (hydronic)
Lincoln Way Condominiums	3	36.1%	2	HVAC, Windows, Radiant Floor (hydronic), Conditioned space on all sides
Sutton	2	48.4%	1	HVAC, Windows, Radiant Floor (hydronic), Thermal Mass
Clear Lake (Habitat for Humanities)	2	36.0%	1	HVAC, Windows (N&S facing only), DHW
Griffin	1	50.5%	1	Radiant Floor (hydronic), Thermal Mass



Questions?

- Kurt Pisor
kpisor@energy.state.ca.us
- Jim Folkman
jfolkman@energy.state.ca.us
- Claudia Orlando
corlando@energy.state.ca.us
- Sandy Miller
smiller@energy.state.ca.us