



PG&E and Renewable Energy


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Solar and Customer Generation**



PG&E and our Business

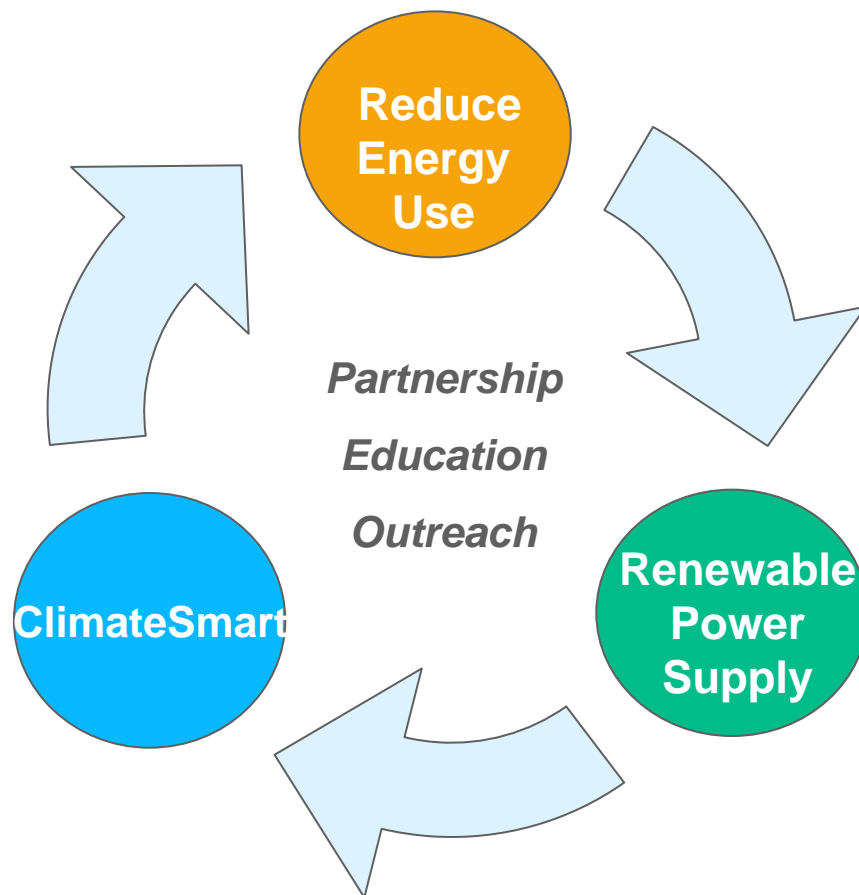
What we do:

- Deliver safe, reliable, and environmentally responsible gas and electricity to approximately 15 million Californians

	Electric and gas distribution customers	5.1 MM electric 4.2 MM gas
	Electric transmission circuits	18,610 miles
	Gas transmission backbone	6,136 miles
	Electric generation capacity	6,000 MW

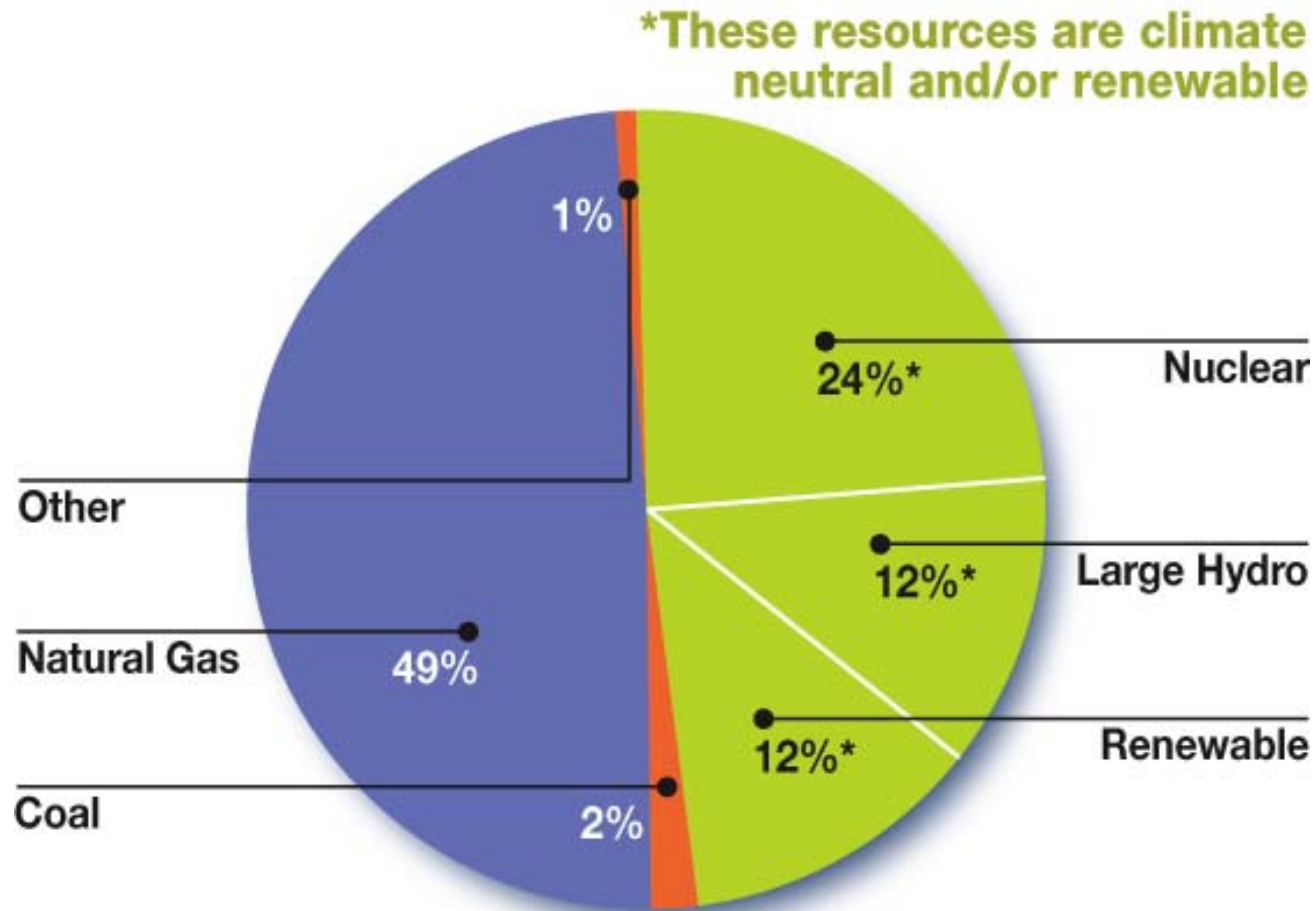
PG&E as a Partner and Solutions Provider

PG&E Portfolio Solution



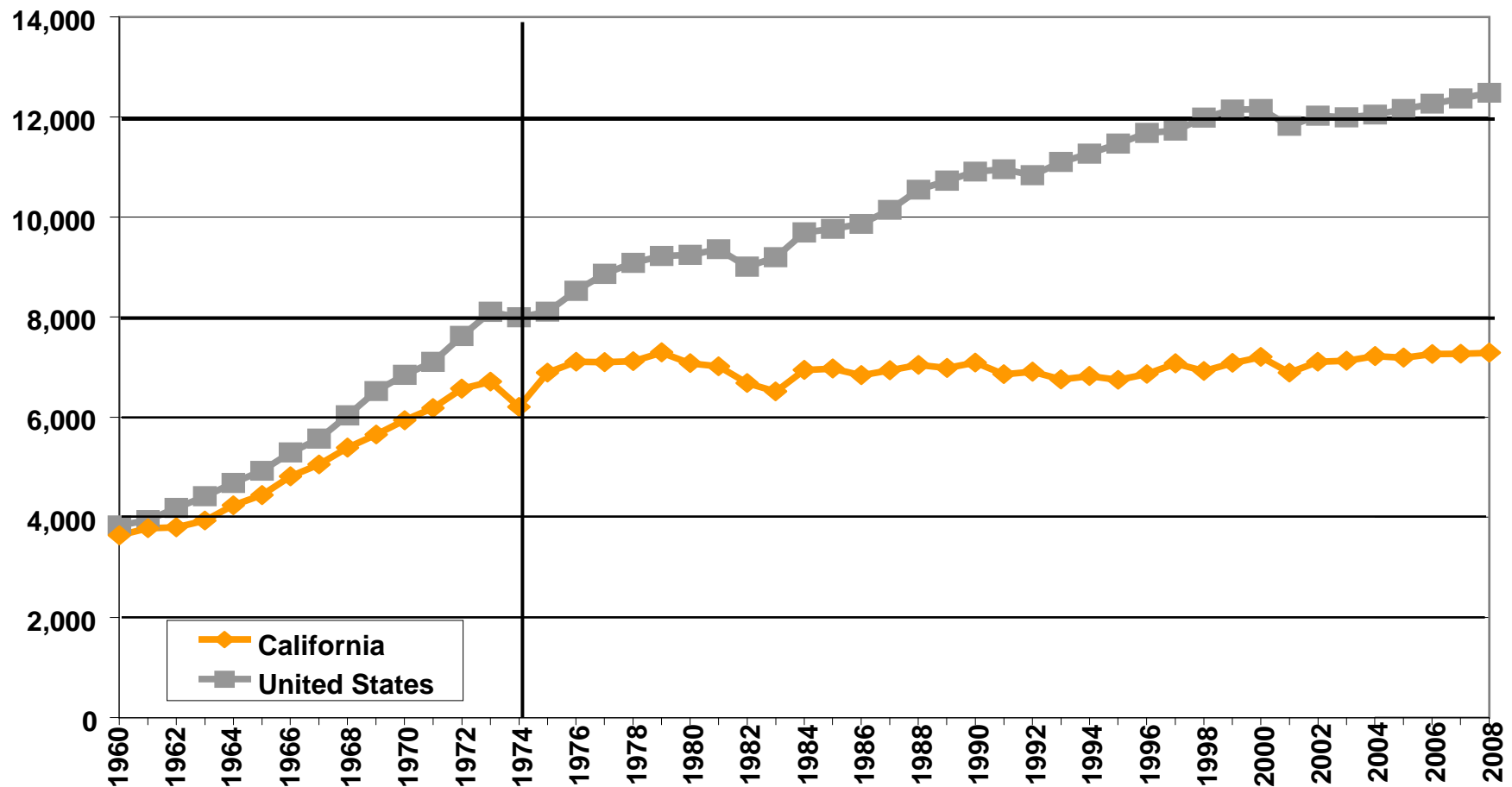
PG&E's 2008 Electric Delivery Mix

--on average over 50% of the energy PG&E delivers comes from sources that emit almost no carbon dioxide



We're Committed to Energy Efficiency

Over the past 30 years, California per capita energy use has remained relatively flat compared to the 50% increase in U.S. per capita energy use.



Pacific Gas and Electric Company™

Source: California Energy Commission

Support of Renewables

- Large systems
 - RPS procurement
 - 500 MW Solar Program
- Small Systems
 - Small Generator Feed in Tariff
- Self Generation
 - CSI/SGIP/NEM
 - AB 811
- Testing Services

Greening our Energy Supply: Existing Renewable Resources

Biomass Energy



Wind Energy



Small Hydropower (<30MW)



Geothermal Energy



Greening our Future Energy Supply: Emerging Renewable Technologies

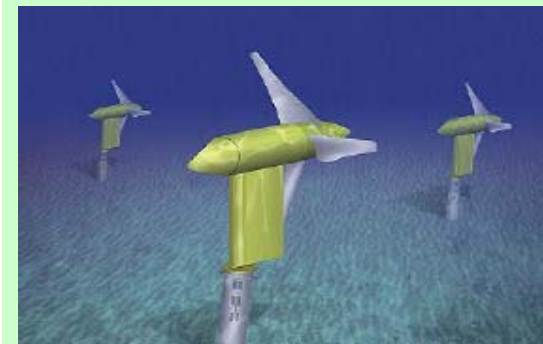
Bio-methane Capture



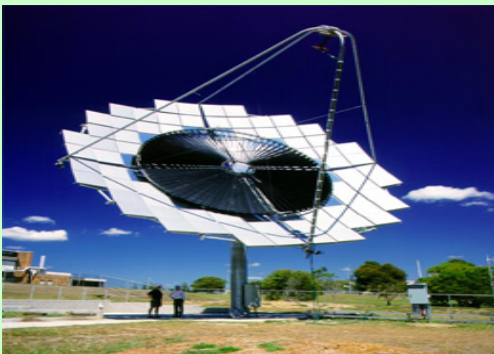
Wave Energy



Tidal Energy



Solar Dish



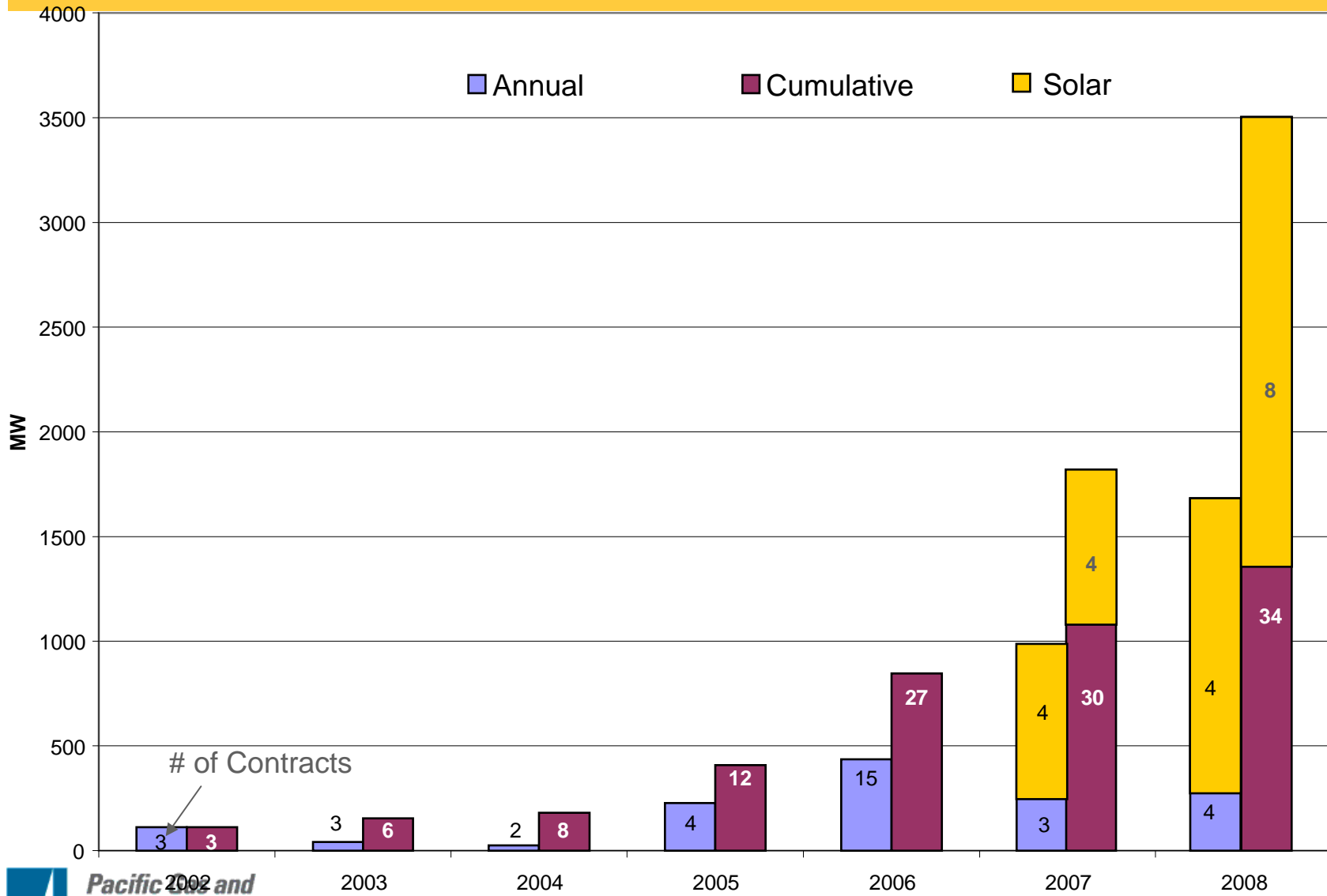
Solar Trough



Solar Power Tower



Aggressive Contracting for Renewables



PG&E's New PV Program

- 5-Year Program starting in January 2010
- 500 MW_(AC) of 1 to 20 MW photovoltaic generation installations in northern California.
 - Up to 250 MW (305 MW_(DC)) utility-owned generation (UOG), with an anticipated capital cost of \$1.45 billion, and
 - Up to 250 MW of PPAs with renewable resource developers
- Capital cost of \$4.28 per Watt_(DC) assumed
- PG&E-owned projects would be mounted primarily on the ground, but possibly also on rooftops.
- Where feasible, projects developed and owned by PG&E would be built on land already owned by the utility or near its substations to minimize the cost and delays of interconnecting them to the power grid.

PG&E's New PV Program (cont.)

- PG&E may hire contractors to build the projects or choose to build them on its own.
- PG&E would finance half of the overall project's costs through debt, and the other half with equity.
- Pricing for the PPAs will be derived from the cost-of-service of the UOG PV projects, currently assumed to be \$246 per MWh with Time of Delivery pricing adjustments.
- The terms and pricing of the PPAs will be pre-approved by the Commission, enabling a developer to execute the form contract with streamlined regulatory review, avoid the need for negotiations, and immediately commence development.
- 2 MW pilot UOG PV project starting in 2009, to speed deployment of the larger PV Program once approved.

PG&E Program Schedule

- Regulatory Filing: February 24, 2009
- Regulatory Decision: September 2009 requested (later date possible)

If approved:

- First request for supplier information in 2009
- 2-MW pilot project operational in 2010
- 25 MW operational by the end of 2010
- Install 50 MW per year in 2011 through 2014
- Finish with 75 megawatts in 2015.
- The independent developer portion of the program would be implemented over five years, with an annual allocation determined by the strength of the submissions to an annual request for offers.
- Expect to issue the first request for developer offers in early 2010.

What are the Feed-in Tariffs?

- Effective February 14, 2008, PG&E can purchase power from eligible renewable generators with a total effective generation capacity of not more than **1.5 MW**.
- Examples of Eligible Renewable Resources*:
 - Solar PV or thermal
 - Biomass
 - Wind
 - Geothermal
 - Fuel cells using renewable fuels
 - Small hydroelectric
 - Digester or landfill gas, municipal solid waste, and others

* *PU Code Section 399.12 and Public Resources Code 25741*

Introduction to the Feed-in Tariffs (cont.)

- An eligible renewable generator may:
 - Sell ALL his/her power to PG&E, or
 - Sell only his/her excess power, after serving own load first
- In either case, PG&E will pay the customer the CPUC-determined Market Price Referent, times a Time of Delivery Factor for the power it buys

Introduction to the Feed-in Tariffs (cont.)

- There are 2 tariff schedules available, depending on the type of customer
 - **E-PWF**: for public water and wastewater customers
 - **E-SRG**: for all other eligible customers
- Service on either schedule is on a first-come-first-served basis and shall be closed to new customers once the combined generating capacity reaches 104.6 MW (per CPUC).

How Do Feed-in Tariff Power Sales Work?

- Electricity imports and exports measured separately
 - Imported power: customer pays regular tariff rate
 - Exported power: customer (seller) is paid TOD-adjusted MPR for generation exported to grid (in excess of usage)
- Contract terms:
 - 10, 15, or 20 years
- Contracts to date
 - 9.6 MW
 - Wind/biomass/hydro

RECs, Rebates, and Rules...

- **Who owns the Renewable Energy Credits? (RECs)**
 - The customer owns the RECs for the power generated and used at his/her own site
 - PG&E owns the RECs for the power it buys
- **Rebates & Incentives not eligible**
 - Customers *may not* obtain or have obtained benefits from SGIP or CSI
- **Other Rules**
 - For E-SRG, customers may not have had another contract/PPA with PG&E in prior 3 years, unless allowed under PG&E's sole discretion.

Interconnection/Metering/Contacts

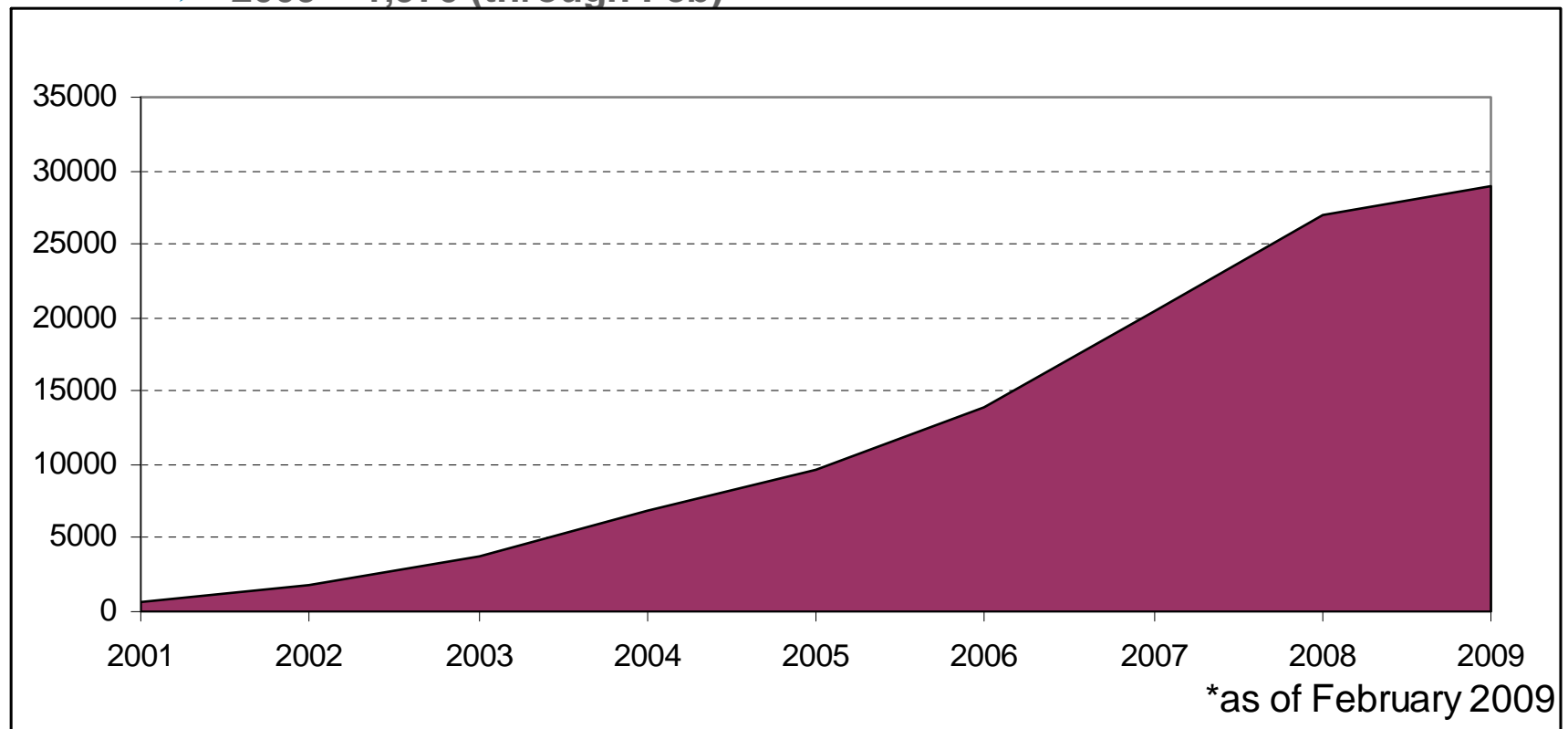
- Interconnections for the small renewable PPAs are under Federal Energy Regulatory Commission (FERC) jurisdiction
 - PG&E has a FERC-approved Small Generator Interconnection Agreement (SGIA)
 - All documents and requirements can be found on website
- Revenue-quality interval meter to account for hourly exports (for TOD adjustments)
- More information
 - www.pge.com/feedintariffs
 - Feed-inTariffs@pge.com

PG&E Other Solar Activities

- Management of the California Solar Initiative
 - General market, Low Income
- Management of the New Solar Homes Partnership
- Partnering with Habitat for Humanity to build solar communities
- Teaching children through our Solar Schools program
- Creating clean solar energy at our own facilities
- Helping create Major League Baseball's first solar ballpark
- Connected more solar customers than any other utility in the county – more than 40% of total solar installed

Cumulative PG&E Solar Interconnections Customer Side of the Meter

- Almost 29,000 grid tied solar installations
 - 2006 = 6,300
 - 2007 = 8,498
 - 2008 = 8,487
 - 2009 = 1,970 (through Feb)
- More than 40% of all grid tied in US
- More than 290 MW



Support for Solar

- Net Metering
 - Exports to utility grid are valued at retail electricity rate
 - Capped at 2.5% of utility peak
- No standby charges
- No interconnection study fees
- Exemption from Nonbypassable Charges
- Renewable Energy Credits

California Solar Initiative - www.pge.com/csi

- PG&E began administering in 2007
- \$950 million in PG&E solar incentives over the next decade
- Statewide goal is to install 3,000 MW by 2016
- Customers must perform energy efficiency audit to be eligible for incentives



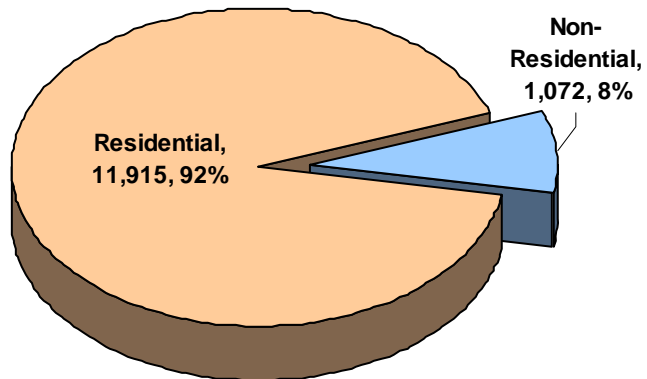
PG&E has connected roughly 28,500 solar-generating customers to the grid.

CSI Snapshot

RECEIVED

- **12,987 applications**

TOTAL CSI
APPLICATIONS



COMPLETED

- **8,988 applications**
- **Represents 87 MW**
- **Garnering \$207,000 in incentives**
- **Offsetting roughly 39,000 tons of CO₂**

Solar and PPAs/Solar leases

- Popular mechanism to finance solar
- Predominately used with non-residential systems
 - 76 MW of non-res owned by third party
 - 316 systems
 - Total non-res 156 MW and 1,072 systems
- Residential
 - 9% of total systems under PPA or lease
 - Higher percentage recently than at beginning of CSI program

Low Income Solar Programs: Single and Multifamily

- \$216 million (10% of CSI Budget) set aside for Low Income, split between single family and multifamily
- PG&E, SCE, SDG&E ratepayer funded
- GOAL -
Promote participation by low income households living in existing housing structures
- PURPOSE -
Provide incentives for and education about installing eligible solar photovoltaic systems on existing low income homes

MASH Overview

- Budget of \$108 million
- PG&E, SCE and CCSE
- Higher incentives available to low income building owners
 -
 - \$3.30/watt to offset common load (Track 1a)
 - \$4.00/watt to offset tenant load (Track 1b)
 - Third incentive type that offers grants to building owners who can demonstrate significant tenant benefit
- Virtual Net Metering -- allows credits from one solar system to be applied to multi-tenant low income accounts

New Solar Homes Partnership (NSHP)

- Incentive program for installing eligible solar photovoltaic systems on new homes;
- 400 MW; Budget of \$400 million
- Goal to create a self sustaining market for solar homes where builders incorporate high levels of energy efficiency and high performing solar systems
- Begun January 2007, ends December 2016
- PG&E; SCE; SDG&E and BVES Electric

NSHP Incentives

- One time, up-front, expected performance based incentive payment
- Levels decline over 10 years as MWs achieved
- Higher incentives available for affordable housing
 - Start at \$3.50/watt for residential units and systems servicing common areas
- Market rate base incentive
 - 2.50/watt; \$2.60/watt – production housing with solar standard

Self Generation Incentive Program (SGIP)

- Program initiated in 2001
- Scheduled to continue accepting applications through 2012 – with modifications beginning in 2008
- Provides incentives for the installation of new, qualifying self-generation equipment installed to meet all or a portion of the electric energy needs of a facility (advanced energy storage, small wind and fuel cell)
- PG&E, SCE, SoCal Gas, California Center for Sustainable Energy (CCSE) for SDG&E

Applied Technology Services: Modular Generation Test Facility

- ATS has unique capabilities for testing and evaluating distributed generation and storage equipment and their interactions with a utility grid
- Our facility is designed for testing grid-connected and off-grid power generation and storage technologies
- It complies with all PG&E interconnection requirements for an independent power producer (IPP) at its 500 kVA facility rating
- Measurement systems are designed based on the needs of the system under test and can include temperature, pressure, flow, electrical properties, power quality, vibration, acoustics, and emissions.
- Contact www.pge.com/b2b or valueadd@pge.com



Thank you

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