

Go Solar California!

San Diego

Solar Water Heating Pilot Program

Andrew McAllister

California Center for Sustainable Energy

May 6, 2008





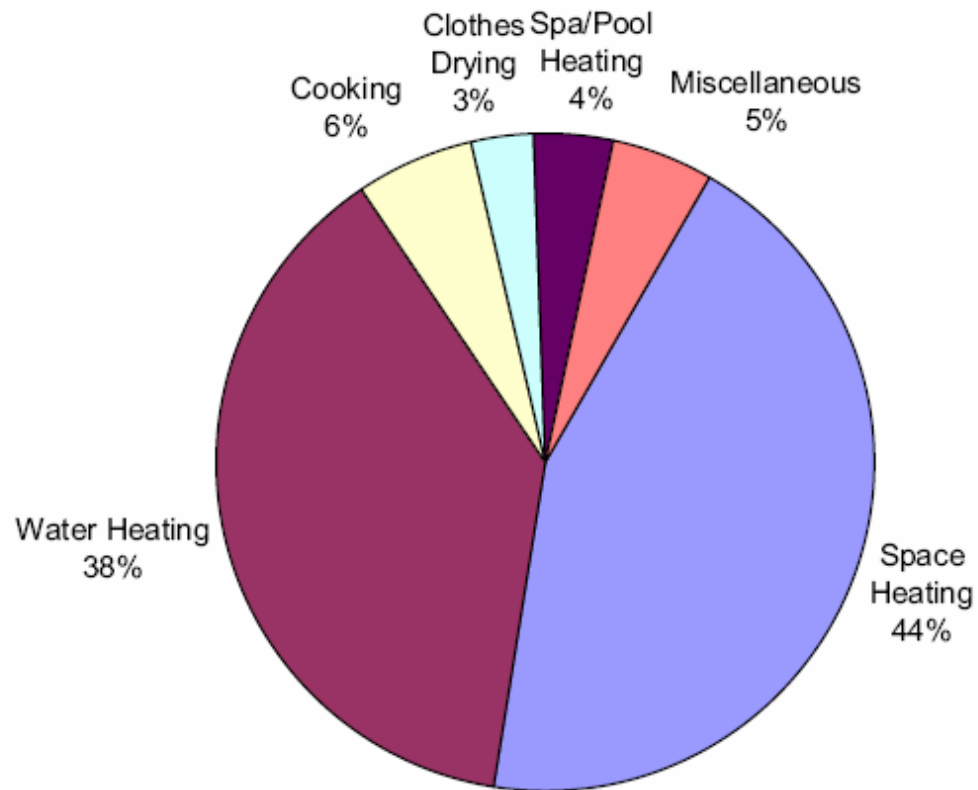
SWHPP Policy Context

- Approved by CPUC Ruling on February 15, 2007
- Part of the California Solar Initiative; Allocated \$2.6M from the overall \$2.1B CSI IOU budget
- Funded by SDG&E electric ratepayers
- Conceived and designed to gather information to enable the CPUC to evaluate the need for a statewide program

Solar Water Heating Pilot Program



Breakdown of Residential Gas Consumption by End Use



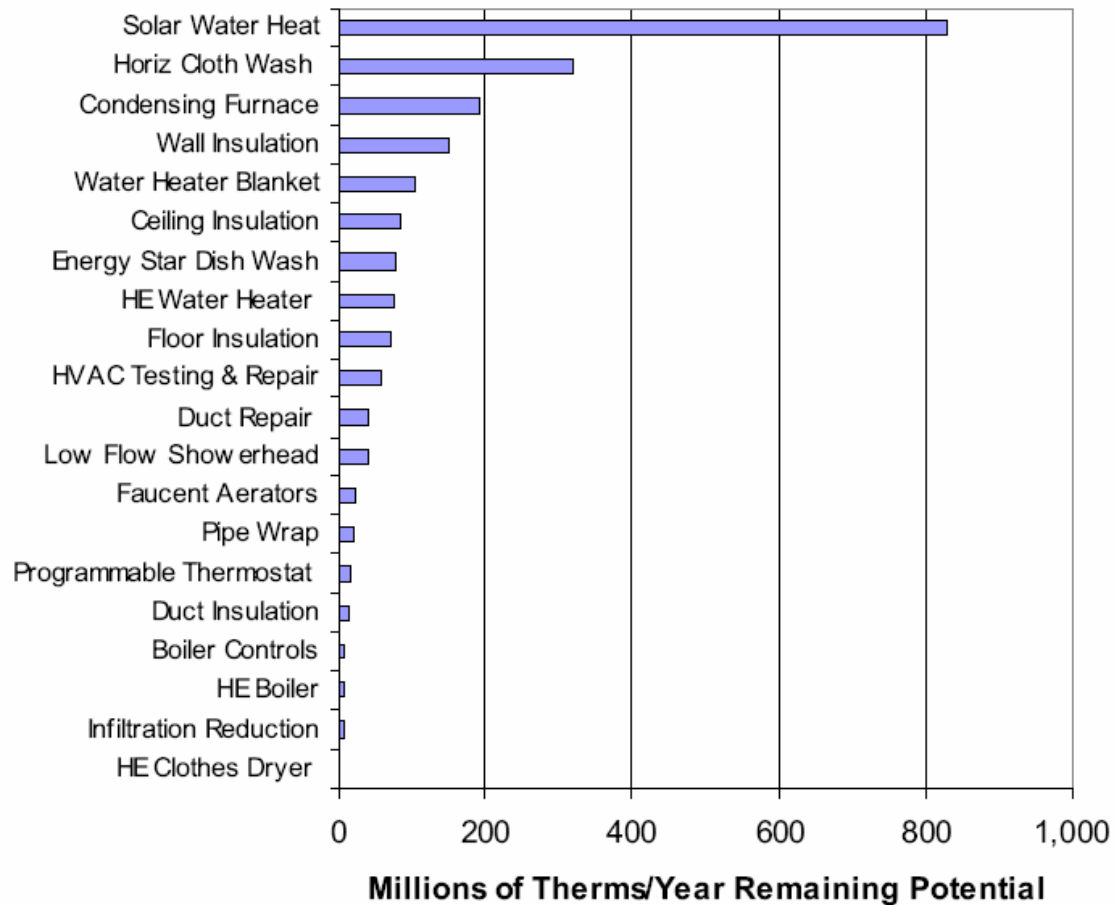
Total ~ 5,000 Mth

Source: CEC 2000. *California Energy Demand: 2000-2010*.

Solar Water Heating Pilot Program



Residential Gas Energy Savings Potential by Measure





The SWHPP – Basics

- Provides one-time incentives for qualifying SWH systems on first-come, first-served basis. Incentive totals:
 - \$900k for residential systems
 - \$600k for larger systems
- Program rolled out on July 2, 2007
- Applications will be accepted through Dec. 31, 2008
- All installations to be complete by June 30, 2009
- One year of performance data to be collected on a sample of installed systems (up to 100)
- Goal of 750 residential systems and ~30 commercial systems



Incentive Options

1. Prescriptive Method

- MUST use an SRCC **OG-300** rated system
- Residential and small commercial systems
- \$1,500 or less based on Solar Orientation Factor (SOF) and SRCC Annual Savings Rating
- Minimum Rating: 60 therms or 1200 kWh annual savings
- No post-install M&V for incentive collection

2. Area Method

- For larger/innovative systems
- Collectors must be SRCC **OG100** certified.
- \$15 - open loop, \$20 - closed loop, adjusted for SOF and SRCC rating
- Maximum \$75,000 per installation
- One month post-install M&V required for incentive



Quality Control is Key

- Contractor must qualify for participation
- Permits required
- Minimum Warranty Requirements:
 - Collectors: 10 years
 - Balance of System: 1-5 years per manufacturers' warranties
 - Labor and installation: 1 year minimum
 - 5 year warranty for parts and labor for recirculation freeze protection in CZ7
- System Standards
 - All new equipment - SRCC certified
 - Freeze protection appropriate for Climate Zone
- Comprehensive inspections by CCSE– ALL systems
- Technical Advisory Board:
 - Installers, Manufacturers, CPUC, SRCC, CalSEIA, Utilities, NREL/DOE, Consultants



Program Participants

- 23 Approved Contractors
- 260 attendees at contractor workshops
- 300+ attendees at the homeowners educational workshop
- 83 Program Applications received through April 2008
 - 33 Prescriptive incentives paid or pending, \$40,125

	Number of Reservations	Incentive \$ Amount
Prescriptive	70	\$86,629
Area	13	\$37,530
TOTAL	83	\$124,159



Challenges – *SWH Industry*

- Customer awareness, education and trust
- Installer training – workforce development
- Sales training
- Flexible, scalable business models
- Education, outreach and enforcement of SRCC guidelines and standards throughout industry
- Equipment innovation (tankless, hybrid)



Jurisdictional Barriers

- Permitting: non-uniform procedures and costs
- SRCC and Uniform Solar Energy Code not typically recognized by local building departments
- Specific equipment may require additional UL/IAPMO certification
- Uncertainty on seismic, fire codes



Cost and Price Barriers

- Additional costs for permits, more reliable freeze protection, and administration
- Natural gas-displacing SWH systems have a long payback



What's to come...

- Program Modifications, under consideration at PUC:
 - Expand geographic area of Pilot
 - Extend for 6 additional months
 - Make new construction eligible
- Metered system data
- Mid-Year '08 Evaluation
 - Participant and Non-Participant Surveys
 - SWH market analysis
- Final Evaluation ('09)



The SWHPP Team

- Annie Henderson – SWH Program Manager
annie.henderson@energycenter.org
- Skip Fralick – SWH Energy Engineer
skip.fralick@energycenter.org
- Andrew McAllister – CCSE Director of Programs
andrew.mcallister@energycenter.org

www.swh.energycenter.org

Thank You!

8690 Balboa Ave, Suite 100
San Diego, CA 92123
1-866-SDENERGY
www.energycenter.org

May 6, 2008



Solar Water Heating Pilot Program

Project Characteristics - Residential

- System Averages

	#	Cost	Incentive	Savings
NG	31	\$6,426	\$1,211	128
Elec.	25	\$6,073	\$1,265	2688
Propane	14	\$6,677	\$1,241	127





CCSE: Who we are

California-based, 501(c)(3) not-for-profit organization

Vision: Creating a sustainable energy future

Mission: Providing relevant, credible, unbiased information in:

- Transportation Green Building
- Climate Change Renewable Energy
- Energy Efficiency

Serves as the region's independent voice on energy issues and is a trusted resource for businesses, consumers and public agencies.

Website: www.energycenter.org



Policy Context - FUTURE

- AB 1470 authorizes the CPUC to begin a statewide program based on data from the Pilot Program.
- Signed on October 12, 2007 to create the Solar Water Heating and Efficiency Act of 2007
- \$250 million to install 200,000 systems over 10 years.
- To be funded by natural gas ratepayers



Water Heating in California

- 95% of domestic water heaters (DWH) in California are gas-fired
- San Diego: DWH is the second largest area source of CO2 emissions, after transportation
- 50-75% of WH NG usage could be avoided with SWH – 5% of residential sector's overall CO2 emissions
- Avoided NG usage could have a stabilizing effect on NG prices
- The Domestic Solar WH market has been stagnant in California
 - only ~2000 installs in 2006 statewide
- Focus groups made clear that quality assurance is a huge concern for customers—at least as much as cost-effectiveness.
- Quality Control is a major focus of the program



Eligibility

- Host site must be an SDG&E electrical customer
- Residential and commercial retrofit installations are eligible
- Installation must use Solar Rating and Certification Corporation (SRCC) certified equipment and complete certified systems
- New Construction, Pools and Spas not eligible
- Solar system must offset energy used by an existing water heater or boiler
- New solar systems only, but allow replacement of existing systems if all components are replaced except for copper piping

Solar Water Heating Pilot Program


Program Information

Available online:

www.swh.energycenter.org

Or call CCSE SWH Hotline:

(877)333-SWHP

 **SAN DIEGO SOLAR WATER HEATING PILOT PROGRAM PROGRAM APPLICATION** Project #: _____
(For CCSE use only)

CUSTOMER INFORMATION Residential Commercial

Name _____ Telephone _____ Fax _____

SITE INFORMATION Owner occupied? Yes No

Address _____ City _____ State _____ Zip code _____

Contact Name _____ Title _____ Telephone _____

Email _____ Website _____ SDG&E Account Numbers: Electric _____ Gas _____

Internet Access: DSL/Cable Broadband Dialup Other - Wireless Network? Yes No Meter #: _____
Is the system within 20 feet of a 110V power outlet? Yes No Electric _____ Gas _____

CONTRACTOR INFORMATION Self-Installed

Company Name _____ Telephone _____ Fax _____

Address _____ City _____ State _____ Zip code _____

Project Officer _____ Email _____ Website _____

SELLER INFORMATION (If different from Contractor) (Use additional pages if needed)

Name _____ Telephone _____ Fax _____

Address _____ City _____ State _____ Zip code _____

EXISTING SYSTEM Water Heater: Electric Natural Gas Propane

Make _____ Model _____ Capacity (Gallons) _____

PROPOSED SYSTEM

System Name/Model: _____ SRCC System Number: _____ Pick One: SRCC OG300 Rating SRCC OG100 Rating : _____

System Type: Active Passive Other: _____
 2 Tank Gas 2 Tank Thermosyphon
 2 Tank Electric 2 Tank Electric Thermosyphon
 1 Tank Gas 1 Tank Electric Thermosyphon
 1 Tank Electric 2 Tank Gas ICS
 2 Tank Electric ICS

Is there a recirculation loop? Yes No
Is this part of a hydronic heating system? Yes No

Collectors: Name/Model	Number	Storage (gallons)	Type of Freeze Protection

Estimated Rebate \$ _____ Installed Cost \$ _____ Estimated Completion Date _____

Go Solar California! The CA Solar Water Heater Pilot Program is brought to you by the California Solar Initiative, a partnership between the State of California's Public Utilities Commission and the CA Center for Sustainable Energy (CCSE). For information on this and other California Solar Initiative Programs, please visit www.gosolarcalifornia.ca.gov or www.energycenter.org

Training, Marketing and Outreach

- Workshops (contractors, building officials, homeowners, apartment managers....)
- Community events
- TV ads – targeted cable (500)
- Radio spots (150)
- Extensive earned media
 - TV News
 - Radio interviews
 - Newspaper articles
- Print
 - Direct mail 250,000+
 - Regional/Community newspapers and newsletters
- Partnering
 - Fire Districts, Sierra Club, League of Women Voters, SustainSanDiego, Kiwanis, Green Plumbers, Apartment Associations...





Challenges - *Manufacturers*

- Manufacturer network articulation
- Dealer/Installer Training – technical and sales
- Manufacturer design assistance
- Manufacturer endorsement and enforcement of OG300 certification