



# Energy-Efficiency and Solar Energy – More Successful Together!

U.S. Department of Housing and Urban Development: New  
Foundations for Community-based Energy Efficiency 2009



SOUTHERN CALIFORNIA  
**EDISON**

An *EDISON INTERNATIONAL*<sup>SM</sup> Company

**Presented by Gary Barsley  
Manager of Solar Initiatives  
and Self-Generation Programs  
Southern California Edison**

**June 17, 2009**

# Overview: Integrating Energy Efficiency and Solar Energy at Southern Cal. Edison

- **About Southern California Edison (SCE)**
- **SCE's Solar Programs**
- **The California Solar Initiative (CSI) Program**
- **The California "Loading Order" for Energy Resources**
- **SCE's Energy Efficiency (E.E.) Programs**
- **SCE's Community Partnerships in EE and Solar**
- **The Economic Results of Bundled EE and Solar**





# About Southern California Edison

# About Southern California Edison

- One of the country's largest investor-owned utilities
  - ✓ 50,000 Sq. Miles and 13 Million customers, serviced through 4.8 Million accounts in 430 cities; this includes 5 of the 25 fastest growing U.S. cities
  
- Environmental leadership
  - ✓ We partner with our customers to save more electricity through energy efficiency than any U.S. utility for the last 6 years



**Top U.S. Utility Energy-Efficiency Programs, 1992-2005**  
 Savings shown in megawatt-hours (MWh) or thousands of kWh.

Utility	Total MWh Saved
Southern California Edison	8,901,686
Pacific Gas & Electric	6,232,939
Northern States Power	3,787,182
Florida Power & Light	3,663,877
Connecticut Light & Power	2,118,687
Puget Sound Energy	2,086,208
PacifiCorp	2,052,368
Massachusetts Electric	1,990,984
Boston Edison	1,346,101
Interstate Power & Light	1,136,646
Minnesota Power	892,802
MidAmerican Energy	657,216

# About Southern California Edison (continued)

- Supporting Customer Solar Energy
  - ✓ SCE has over 4,100 customers with new solar systems installed through the state CSI programs.
  - ✓ In the May 2009 report, SCE was named by SEPA as “the nation’s most solar-integrated utility”, with the most cumulative total solar capacity (in MW).
- Environmental leadership
  - ✓ SCE has the largest Demand Response (DR) portfolio in California.
  - ✓ SCE has the largest private Electric Vehicle (EV) fleet in the U.S.
  - ✓ SCE is the leading U.S. purchaser of renewable energy, including more than 80% of all U.S. solar generation.

**SOLAR ELECTRIC POWER  
ASSOCIATION**



**SEPA “2008 Top Ten Utility Solar  
Integration” RANKING**



# SCE's 3 Solar Programs:

- o SCE has our CSI Customer-owned solar program that is targeting a total of 893 MW over the 10-year CSI Program. The **CSI Program** attracts residential and non-residential customers with relatively high electric loads and/or higher electric bills, on all kinds of homes and buildings. Two affordable solar programs were also launched earlier this year.
- o SCE has also requested CPUC approval of a pending SCE Utility-owned solar program (called **Solar PV Rooftops Program**) which has a goal of 250 MW over 5 years. The SCE Solar Rooftops Program targets customers with very large roofs and relatively low electric loads.
- o SCE also has its **Power Procurement Program**, which attracts the largest scale solar power plants, totaling thousands of MWs, which sell energy to SCE under long-term power contracts.



# The California Solar Initiative (CSI) Program

The CSI: Authorized by the CPUC and Senate Bill (SB1)

- o Offers rebates to homes and businesses that decide to “go solar”
- o CSI also has special category programs for Low-income housing (Single-Family, and Multi-Unit) and New Home-Builders
- o Program total of \$3.3 Billion CSI Program Budget, over 10 years, funded by utility ratepayers
- o Amount of CSI incentive depends on how large & efficient system is and how soon you apply
- o Eligible technology: solar photovoltaic (PV) (roof-mounted, ground-mounted, & building-integrated)
- o Two kinds of incentives paid:
  - o PBI (Performance-based incentives) to PV projects  $\geq$  50 kilowatts (kW)
  - o EPBB (Expected Performance Based Buy-down incentives) to PV projects  $<$  50 kW



## More about the CSI Program:

- o Goal is to install 3,000MW (megawatts) of solar-produced, grid-connected electricity statewide in 10 years (2007-2016)
- o 3,000 MW will produce 4,700,000 MWh in one year, or enough on average to provide electricity to 600,000 homes
- o The CSI is designed for both retrofit and new construction solar projects on homes, businesses, and public agencies.
- o CSI requires metering and audits to verify program effectiveness



# More about the CSI Program – Affordable Housing:

- o There are two solar programs that provide incentives for solar PV system installation on eligible affordable housing (single-family and multifamily).
- o \$216 M (10% of the ratepayer funded CSI Budget) was set aside for these programs.
  - o \$108M for Multifamily Affordable Solar Housing Program (MASH)
    - Administered by SCE, PG&E and CCSE
  - o \$108M for Single Family Affordable Solar Housing Program (SASH)
    - Administered by Grid Alternatives



# More about the CSI Program – Affordable Housing:

- o MASH program launched on February 17, 2009
- o SCE's incentive budget is **\$43,856,032**
- o Runs through December 31, 2015 or until funds are exhausted
- o Incentive Rates do not decline over time
- o MASH requested dollars received to date: **\$3,041,073**

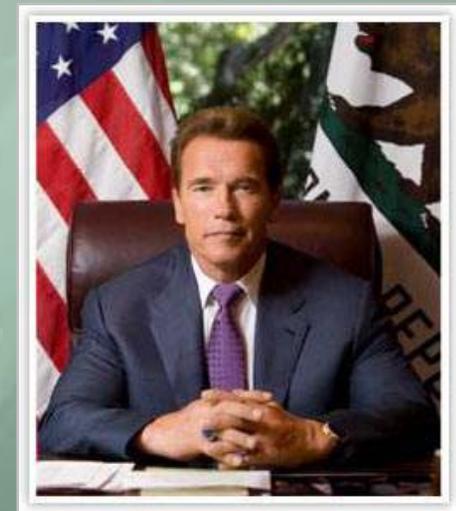
## And more Goals of the CSI Program:

- o Transform market for solar energy by reducing cost of solar through this large MW volume and 10- year continuous funding.
- o Take peak pressure off the utility power grid
- o Help contribute to a cleaner environment
- o Promote energy resource diversification
- o Encourages cost-effective solar, and requires energy efficiency measures for most CSI customers.



# California's Energy Loading Order: the official state policy for preferences in Energy Resources

- CA is World's 7<sup>th</sup> largest economy
  - California's Energy Action Plan first adopted in 2003, specifies Energy Efficiency and Demand Response as the first resource in California's energy "loading order"
    - ✓ Cost-effective EE and DR must be pursued **before** supply-side options
    - ✓ After EE and DR, Renewable resources such as solar and wind energy, are California's **first** supply-side options
    - ✓ Traditional power resources, like fossil-fuel plants, come **after** EE and Renewable resources





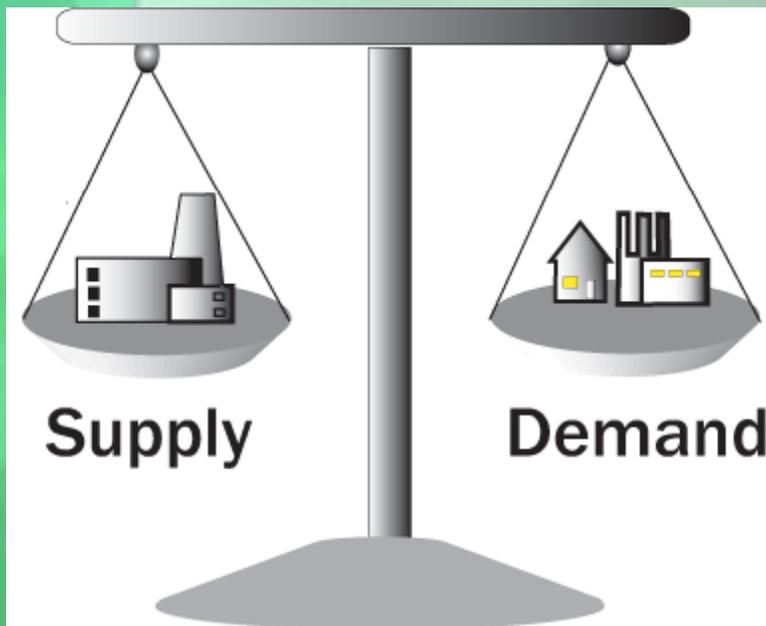
## What is Demand-Side Management (DSM)?

- Solar energy technologies (like Solar PV, or Solar Thermal) are so-called “**Supply-Side**” generation resources, meaning that they are methods to generate more energy to supply to consumers.
  - Energy Efficiency technologies are so-called “**Demand-Side**” measures, meaning that they are methods to reduce the amount of energy demanded by consumers.
- We need **BOTH** Supply-Side and Demand-Side solutions to solve our energy problems in CA, the US and the rest of the world.



# Background: What is Demand Side Management

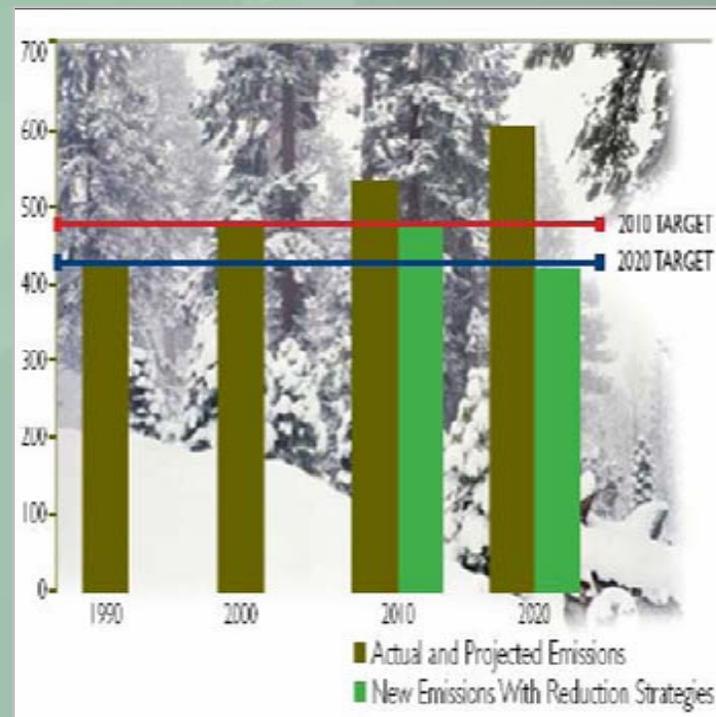
## □ Three Types of DSM



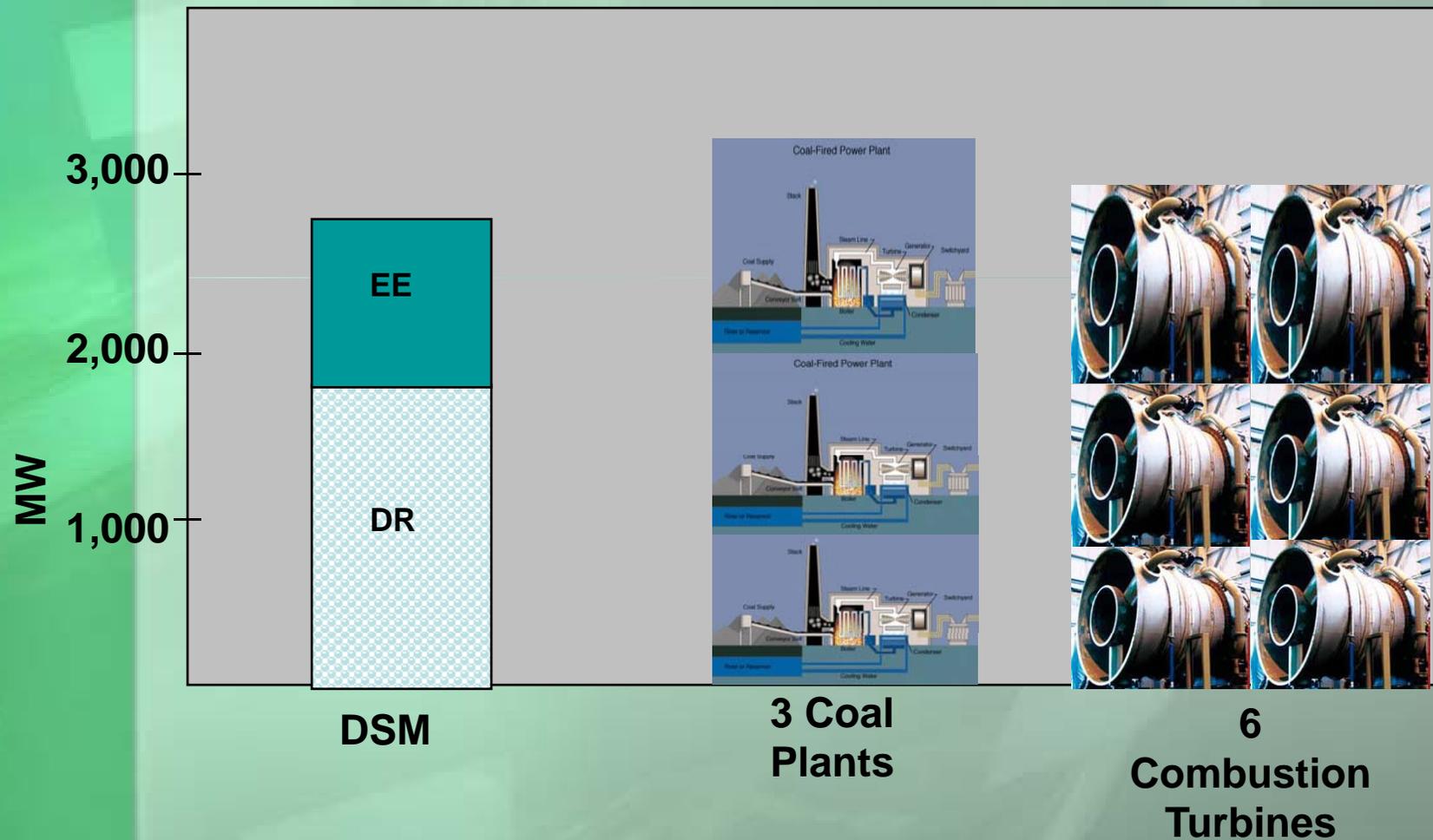
- **Conservation** typically involves using less of a resource, usually by making a behavioral choice or change. The change may last for a short duration or may be incorporated into a habit or lifestyle.
- **Energy Efficiency** typically refers to the permanent installation of energy efficient technologies or the elimination of energy losses in existing systems. The aim of energy efficiency is to maintain a comparable level of service and customer value, while reducing energy usage through high-efficiency equipment and building design.
- **Demand Response & Load Management** focuses on changing the patterns of energy use, primarily at times of peak demand.

# Why does California have these Policy Objectives?

- CA Economy is World's 12<sup>th</sup> largest source of carbon dioxide
- California Global Warming Solutions Act = Reduce California GHG levels to:
  - ✓ 2000 levels by 2010 (11% below business as usual)
  - ✓ 1990 levels by 2020 (25% below "business as usual")
  - ✓ Both Renewable Generation (like Solar Energy) and Energy Efficiency together will be required to hit these targets.



# Demand-Side Management Investments Reduce Need for New Power Plants





## Southern California Edison's Energy Efficiency Programs:

- **SCE has a comprehensive portfolio of EE programs, with over 70 different specific program offerings available to our customers.**
- **The programs include many technologies including lighting retrofits; lighting controls; HVAC; “Cool-roofs”; Refrigeration; Forklift programs; etc.**
- **Some programs have very attractive economics for customers, with 12 month Pay-Back Periods.**

# California Results: Energy Savings

- ***The Benefits of California Investor-Owned Utilities' 2006-08 EE Programs***
  - “The utilities project that ratepayer investment in energy efficiency will be capable of avoiding **three giant (500 MW) power plants** over the next three years.”
  - Over the 2006-08 timeframe, the California utilities' energy efficiency programs are expected to save over 7 billion kWh and reduce peak load by over 1,500 MW



# California Results: Environment

- ***Environmental Benefits of California Investor-Owned Utilities' 2006-08 EE Programs***
  - “[T]he lifetime electricity savings that result from measures installed during that period will reduce global warming pollution by an estimated **3.4 million tons of carbon dioxide** in 2008, equivalent to taking about 650,000 cars off the road.”



# California Results: Economy

## Benefits of Investor-Owned Utilities' EE Programs for Ratepayers and customers:

- The total investment in Energy Efficiency during 2006-08 is projected to produce **\$2.8 billion in net resource benefits** (resource benefits minus costs) to Ratepayers.
- Customers who want to “Go Solar” and perform Energy Efficiency measures first, will achieve greater overall savings and a better economic return.



20% less energy use  
+ 20% more savings  
= Big Savings

**SCE's 20/20 Summer Savings Program**  
The numbers all add up in your favor.

With SCE's **20/20 Summer Savings Program**, save energy between June and September this year and receive a 20% discount.

Just lower your average electricity use this summer to **20% below** last summer. You'll save by using less, plus, SCE will reward you with **20% off** your total summer charges.

For more information, call 1-800-799-4209, or visit [www.sce.com](http://www.sce.com).

**SCE's 20/20 Summer Savings Program**  
Smart. Simple. Everybody wins.

The 20/20 Summer Savings Program is for qualifying SCE residential and business customers. Program terms and conditions apply.

SOUTHERN CALIFORNIA EDISON  
A DIVISION OF SOUTHERN CALIFORNIA GAS COMPANY  
[www.sce.com](http://www.sce.com)

FOR OVER 100 YEARS. . . LIFE. POWERED BY EDISON.

# The Results for Customers :



## **Solar Systems and Energy Efficiency are Complementary to each other.**

- **Solar fits well into a customer's overall Energy Efficiency strategy, with similar goals, incentives, and economic savings.**
- **Energy Efficiency measures allow customers to gain better overall project economics when “bundled” with a solar system installation.**

# The Results for Customers:

## Examples:



- **Residential customers who also participate in programs like CFLs and energy-efficient appliance rebates, can afford a smaller PV system that still covers the same relative % of their total utility bill, at a significantly reduced installed cost.**
- **Commercial building customers who also participate in lighting fixtures / controls retrofit EE project will be able to buy a solar system and “bundle” it in the overall project, for more attractive total economics.**

# The Results for Customers:



## Additional Benefits:

- **Commercial customers who also are taking advantage of Energy Efficiency measures in their project may be more likely to qualify for affordable project financing, as these efforts can reduce the total loan size needed for a (smaller) solar system.**

# The Results for Customers:

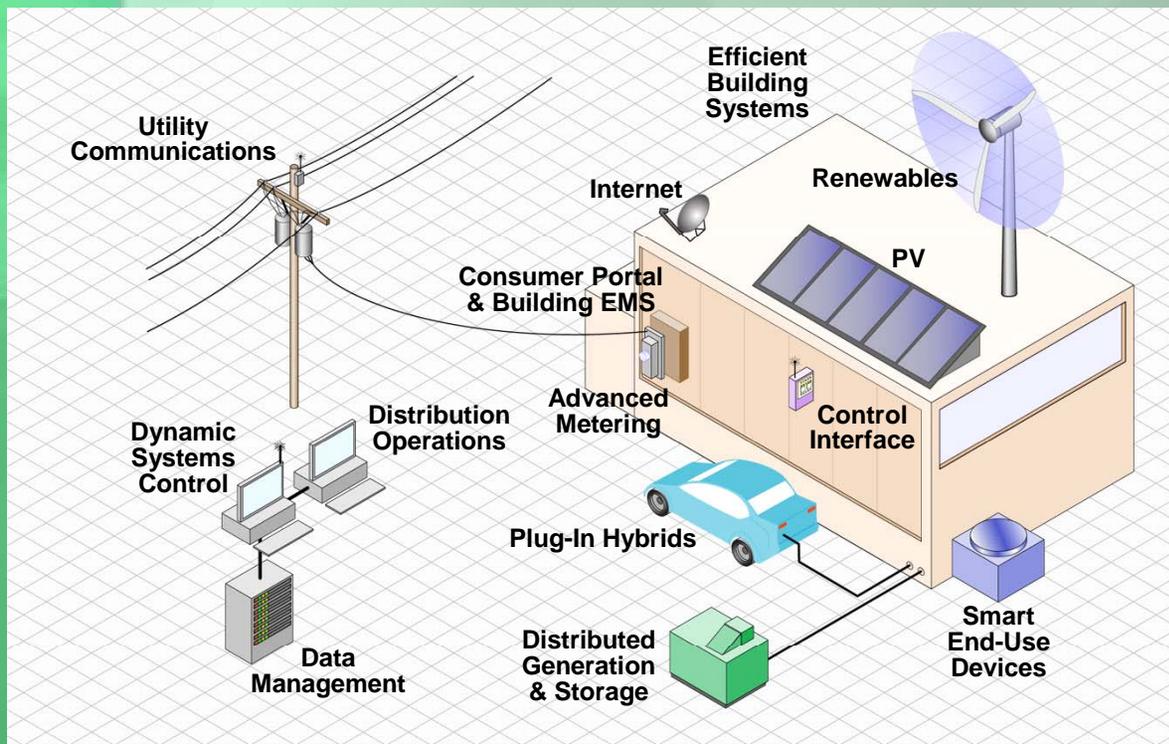


## Community Partnerships:

- **SCE has a program of Community Partnerships with cities in certain Southern California geographical areas. The Partnerships work to identify and offer bundled packages of Energy Efficiency measures to residents in a participating city. These packages can also include education on Solar PV and the CSI.**
- **The Partnerships also now are working with cities who can offer financing for solar systems and EE to residents and businesses, funded by Local Property Tax Assessments (called AB-811 Finance Programs).**

# Where do we go in the Future: Next Generation Programs

- ❑ Maximize Savings by Integrating Demand-Side Offerings for the Customer
- ❑ Implement “Next Generation” California Energy Efficiency Programs
- ❑ “Big & Bold” Long-Term Initiatives



- All new residential construction in California will be zero net energy by 2020
- All new commercial construction in California will be zero net energy by 2030



## A Logical Conclusion:

**Integrating Solar Energy systems and Energy Efficiency measures successfully make economic and strategic sense for our customers and our long-term utility energy outlook.**

# Thank You.

For more information, please contact:

**Gary Barsley**  
Manager of Solar Initiatives and Self-  
Generation Programs  
Southern California Edison  
[gary.barsley@sce.com](mailto:gary.barsley@sce.com)

- **Additional information about energy efficiency and solar in California available at:**

Southern California Edison  
[www.sce.com/csi](http://www.sce.com/csi)

Grid Alternatives (for SASH program)  
[www.gridalternatives.org](http://www.gridalternatives.org)

California Public Utilities Commission  
[www.cpuc.ca.gov/](http://www.cpuc.ca.gov/)

California Energy Commission  
[www.energy.ca.gov/](http://www.energy.ca.gov/)

Go Solar California  
[www.gosolarcalifornia.ca.gov](http://www.gosolarcalifornia.ca.gov)



Solar Information	Solar for NEW Homes	Solar for Your EXISTING Home	Solar for NON-Residential Buildings	Solar for Low-Income & Affordable Housing	Solar for Municipal Utility Customers	News, Calendar & Search
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## Go Solar California!

**Current Program Updates**

California has set a goal to create 3,000 megawatts of new, solar-produced electricity by 2017. From this page, you'll be able to go to the websites for solar on new or existing homes and solar for businesses, schools and public buildings.

Three small images showing different residential roofs with solar panels installed. The first shows a suburban neighborhood with many houses. The second shows a close-up of a house with solar panels. The third shows a large commercial or public building with solar panels.