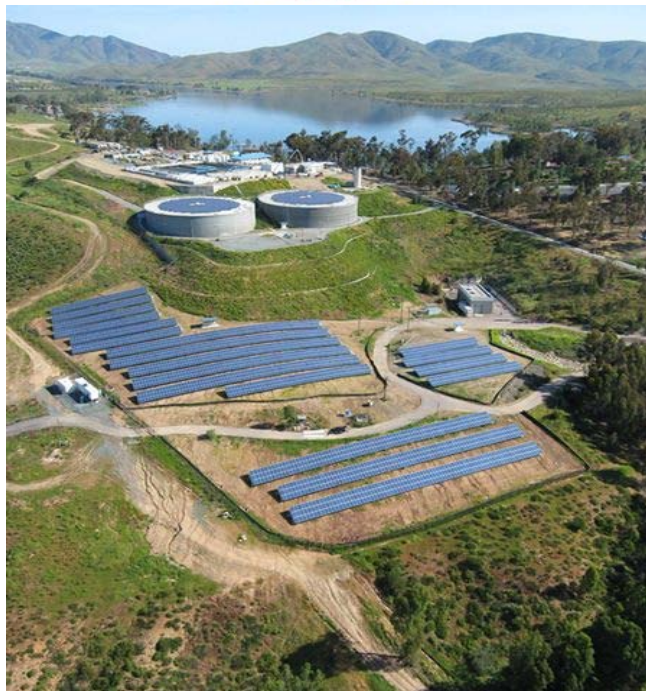


SOLAR PROGRAM ANNUAL MERIT REVIEW and PEER EVALUATION MEETING

U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy

CITY OF SAN DIEGO Sustainable Energy 2050 Plan and Solar America Cities Special Project Award



U.S. DEPARTMENT OF
ENERGY



NREL National Renewable Energy Laboratory
Innovation for Our Energy Future

U.S. DEPARTMENT OF
ENERGY



Center for
Sustainable Energy
CALIFORNIA

This presentation does not contain any proprietary, confidential, or otherwise restricted information.

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May 25, 2010

Focus of Presentation- Sustainable Energy 2050 Plan

- September 2007 through September 2010
- \$200,000 from DOE and approximately \$300,000 for in-kind services
- Market Transformation

Just Recently Launched- Solar America Cities Special Project Award- The Fire Safe & Energy Independent Communities Project

- March 2010 through December 2011
- Approximately \$500,000 with potentially \$400,000 from the CA Public Utilities Commission (pending) and an anticipated \$200,000 for in-kind of services.

- **Project Objective:** Objectives for achieving Market Transformation:
 - GIS analysis of solar installations and potential future sites
 - Performance analysis of approximately 12 MW of existing PV systems within the City, including rate analysis
 - Energy and financial impact analysis of three PV installations
 - Market research using surveys and focus groups
 - Education and outreach – Solar Map, Reports, Brochures, San Diego Solar Week (each year in September)
 - Citywide Solar Implementation Plan
- **Contract Issues:** Exceeded original cost-share requirement; final in-kind service is more than 60%

Solar America Cities Special Project Award 2010-2011

- **Fire Ready Communities Activity:** Project team submitted an Advice Letter to the CA Public Utilities Commission to petition the release of funds from the 2003 Rebuild San Diego Program to match DOE's funds. Once funding is released the project team will finalize its site selection and begin the RFP development process. (\$400,000)
- **MASH Research Activity:** Project is in the early stages of project implementation. During this phase, the analysis modeling tool is being created, the model inputs will be defined, and the coordination of the data collection process is underway. (\$100,000)

Three (3) objectives for the **FIRE SAFE COMMUNITIES**:

1. Improve community crisis response capability and enhance energy security at strategic facilities by integrating distributed generation into the region's emergency response infrastructure;
2. Provide key lessons—technical, economic and contractual — for the deployment of integrated solar photovoltaic and advanced energy storage projects in support of the Smart Green Grid; and
3. Leverage the City of San Diego's leadership position to create a powerful platform for renewable generation education and outreach by having demonstration projects at facilities within the community.

Two objectives (2) for the **MULTI-FAMILY AFFORDABLE SOLAR HOUSING RESEARCH** to remove barriers that prevent multifamily affordable housing developments from installing solar PV systems:

1. Generate and provide data to developers that demonstrate the expected benefits of installing solar PV systems, both for tenants and for building owners.
2. Conduct the first solar PV impact studies that incorporates the new Virtual Net Metering tariff

Timeline

- September 2007
- June 2010
- 99%

Budget

- Cumulative Funding to date: **\$191,611.06**
- In-Kind \$ **275,787.15**

Partners

- City of San Diego
- CA Center for Sustainable Energy
- National Renewable Energy Laboratory
- CH2MHill

Barriers

- **MARKETING**-Study the impact of solar on property values/resale;
- **TRACKING**-Update and expand GIS analysis of solar installations and potential future sites;
- **PERFORMANCE**-Conduct performance analysis of around 12MW of existing PV systems within the City's limits and determine best technology to gather data; and
- **PLANNING**-Develop Citywide Solar Implementation Plan.

- **MARKETING-** What are the barriers for increasing installation of solar? There is a lack of understanding by those who could be community champions, such as real estate industry, and a concern about investment in something with an ROI of 15 years.
- **TRACKING-** How can solar installations be tracked and measured in a meaningful way to the public and to policy-makers? Need to expand GIS analysis of solar installations and potential future sites using the Solar Map and other tools.
- **PERFORMANCE-**What is the best technology to gather data? Conduct performance analysis of around 12 MW of existing PV systems within the City's limits
- **PLANNING-**What are the City's goals and objectives and what action will deliver the anticipated goals for 2050? Develop Citywide Solar Implementation Plan with approval from the Mayor and City Council.

MT aims to comprehensively identify and overcome the largest remaining obstacles to widespread solar technology adoption.

- **Traditional media does not appear to be very effective in promoting installation of solar power.**
- **Subsidies and tax incentives continue to be a critical factor in deciding whether to purchase solar.**
- **Three key barriers identified in the solar installation process: 1) permitting & inspections; 2) technical issues; and 3) availability of solar panels.**
- **Incentives for residents and businesses to produce beyond 100% of their electricity needs would be extremely useful.**
- **Greater emphasis needs to be placed on performing energy efficiency audits and upgrades in conjunction with solar PV system installation.**

Multifaceted Approach

Technical

Case Studies

Rate and Tariff
Analysis

Integrated GIS Data
Analysis

Outreach and Education

Solar Map

Solar Survey

Focus Group Meetings

Publications

Elected Official Participation

Solar Implementation
Plan

Press Events

Media Coverage

Letters of Support

Demonstration

Nearly 2 MW of Solar
Installations at City
Facilities (Alvarado,
South Bay, many
buildings) and 33.3
MW solar in region

PACE

Public Meetings

Distribution of
Publications

Increased Media
Attention



➤ Contractual with the Department of Energy



➤ Contractual with the City of San Diego

NREL DOE TIGER TEAM and CH2MHill

- **DATA MANAGEMENT:** developed a map of existing solar installations and optimum potential locations for residents, commercial, industrial and large open spaces within the City of San Diego.
- **TECHNICAL ASSISTANCE:** evaluate the City's Real-Time Meter Data Collection System and assisted in determining the best strategies for its expansion.
- **LONG-RANGE IMPLEMENTATION:** using existing satellite photography, provided technical assistance for matching large roof structures with geographic information system (GIS) data and property tax information, thereby identifying owners within the City limits that may benefit from self-generation in their operations

CITY OF SAN DIEGO and CCSE

- **ADVANCING INFORMATION TO ALL SECTORS OF THE COMMUNITY:**
Solar Map; Solar Survey and Focus Group Report; Solar Implementation Plan
- **INSTALLATION OF NEARLY 2 MW of SOLAR on CITY FACILITIES**

Budget Status and Potential for Expansion- 2007-2010

Categories	Approved Budget	Project Expenditures	Cumulative to Date
	Phase I	This Quarter	
a. Personnel	81,110	0	112,990.49
b. Fringe Benefits	38,500	0	54,589.46
c. Travel	9,000	0	
			241,048.63
f. Contractual	201,080	4,645.02	
h. Other	18,000	0.00	
i. Total Direct Charges	347,690	4,645.02	408,628.58
j. Indirect Charges	52,310	150.00	58,769.63
k. Totals	400,000	4,795.02	467,398.21
DOE Share	200,000	1,663.64	191,611.06
Cost Share	200,000	3,131.38	275,787.15
Calculated Cost Share Percentage	50%	65%	59%
	Project Period:	09/15/07 to	09/14/10

- **Solar Implementation Plan** and the **Solar Survey Report** will be presented throughout the Public Outreach for the Community Review of the Climate Mitigation and Action Plan (July 2010-December 2010)
- Use of **Solar Map** continues to increase
- Tailored outreach to **Real Estate Industry** (Beginning September 2010)
- Additional collaboration between **Fire Departments and Building Permit Review Departments** Countywide (ongoing)
- **Expansion of solar installations** on residential, commercial and government buildings

The City of San Diego generates more solar power than any other City in the United States!



The seed money and acknowledgement from DOE increased the City's ability to expand the number of initiatives and increase public outreach and education efforts.

The Solar America Cities Special Project Award will delve deeper into two barriers that were highlighted in the first SAC Award.

Thank you from the City of San Diego!

U.S. DEPARTMENT OF ENERGY

Energy Efficiency & Renewable Energy

San Diego Solar Map - Windows Internet Explorer

http://sd.solarmap.org/solar/index.php

File Edit View Favorites Tools Help

Google search bar with "san diego solar map" and various search tools.

Browser tabs: San Diego Solar Map



SAN DIEGO SOLAR MAP

Solar Activity Around the City



Solar Map | Blog | Forum | Electric Rate Analyzer

Map Type: Hybrid

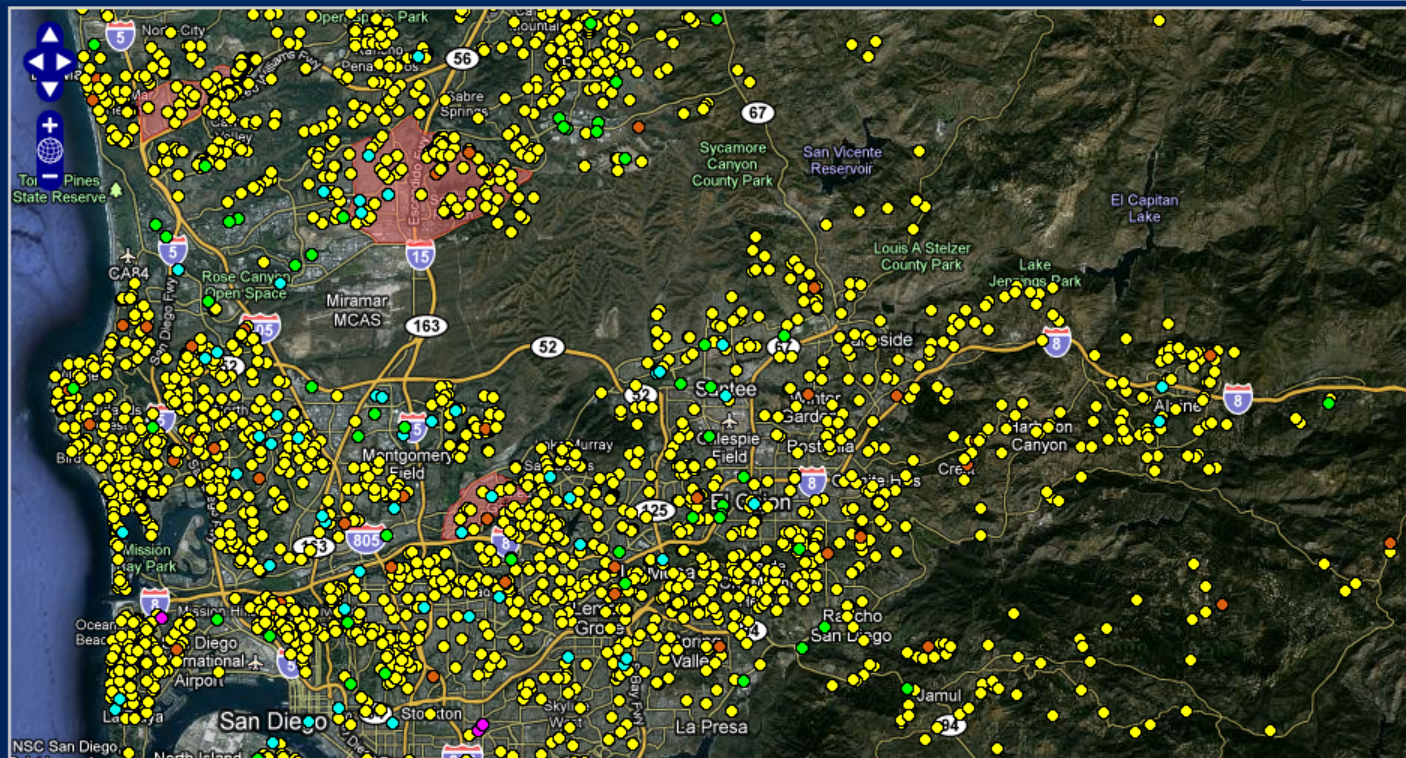
About

Tools

Solar Installation Markers

- Residential PV
- Residential SWH
- Commercial PV
- Government/Non-Profit PV
- Commercial & Government/Non-Profit SWH
- Areas with Detailed Solar Estimates
- Installed PV by Zip Code
 - 0 - 83 kW
 - 84 - 236 kW
 - 237 - 460 kW
 - 461 - 789 kW
 - > 789 kW

Get A Detailed Solar Estimate



Done

Windows taskbar showing open applications: San Diego Solar Map, Barriers and Solutions fin..., City of San Diego power..., Presentation4

System tray showing time: 9:15 AM