

A New Community Compact: How One Utility Plans to Meet Increasing Resource and Environmental Challenges

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ABSTRACT

Many utilities and their communities are adopting ambitious goals for reducing energy use and helping to address global environmental challenges. Meeting these goals requires a new paradigm: collaboration between the utility, local government agencies, community groups and customers. This paper describes the efforts and progress the Sacramento Municipal Utility District (SMUD) has made in working with their community and customers to achieve ambitious energy efficiency and environmental goals.

Introduction

For more than four decades, the Sacramento Municipal Utility District (SMUD) been meeting the Sacramento region's resource needs through comprehensive and innovative energy efficiency programs. Twenty-five years ago, SMUD took the bold step of shutting down an operating nuclear power plant and launching the "Conservation Power Plant" — a 540 MW commitment to demand-side resources that represented 25% of the utility's total peak load at that time. Today, however, the energy and environmental challenges facing the Sacramento region are greater than ever: deteriorating local air quality, increasing demand for critical summer peak resources, continued customer growth and global warming.

Once again, SMUD's Board of Directors has responded by adopting ambitious energy efficiency goals for the next ten years. Over the next decade, SMUD plans on meeting 15% of its customers' energy needs with demand side resources — the most aggressive targets set by any utility in the state of California. To meet these new energy efficiency and environmental goals, SMUD recognizes that it must go beyond program approaches that have been utilized in the past. Meeting these goals requires collaboration between SMUD, local government agencies, community groups and customers. This paper describes the progress SMUD has made in working with the community to achieve Sacramento's ambitious environmental and energy goals.

Background

SMUD is the nation's 6th largest community-owned electric utility and provides service to a 900 square mile area with a population 1.3 million. SMUD serves 491,000 residential customers and 62,236 commercial and industrial customers with a service territory encompassing all of Sacramento County, a small portion of neighboring Placer County, and the six independent cities of Sacramento, Rancho Cordova, Galt, Folsom, Citrus Heights and Elk Grove.

SMUD is a summer peaking utility, and in July of 2006 energy usage reached an all time high of 3,300 megawatts. Energy needs are met with a diverse mix of resources that includes hydroelectric, thermal, photovoltaic, wind, purchased power, as well as energy efficiency and load management.

In 2007, the SMUD Board formalized a *Compact with the Customer*— an agreement with its customer-owners and the larger community to reinvigorate its commitment to energy efficiency, renewables, and environmental stewardship, and to recognize the need to enlist the entire Sacramento community to embrace this commitment. SMUD is implementing this compact with a three-pronged approach:

- Working with local government agencies;
- Engaging SMUD’s community and customer-owners;
- Partnering with local business

Working with Local Governments

SMUD is a publicly owned, municipal utility governed by a 7-member Board of Directors who are elected on a geographic basis every two years. Unlike some public utilities that serve as a function of city government, SMUD independently operates and provides electric service across a multitude of independent jurisdictions, including two counties, several cities and numerous water districts. Increasingly, these government agencies are more than just large SMUD customers- they have become SMUD’s biggest partners in advancing energy efficiency efforts in the community. During this past year, SMUD efforts working with local governments have ranged from creating a public agency council focused on regional sustainability to influencing the region’s long-term general plans.

***Build It Green* Public Agency Council**

SMUD staff brought the *Build It Green* organization to Sacramento, to help establish a Public Agency Council in the Sacramento region for the purpose of bringing together city and county budget, planning and building officials on a quarterly basis to share information on sustainable development, green building components, costs, incentives, and rating systems. The objective is to promote regional consistency in permitting and inspection processes, codes, fees, and ordinances to promote energy efficient design and construction. According to feedback SMUD has received from local contractors, the ease of doing business in an area is a key factor in the decision of a business or builder to locate or remain in a particular jurisdiction. The formation of the *Build It Green* Public Agency Council will be of tremendous help going forward to achieve the goals of the Metro Chamber’s Partnership for Prosperity and the Sacramento Area Council of Governments (SACOG) Blueprint.

General Plans of Local Jurisdictions

SMUD developed model language for various elements of the long-term general plans developed by each of the local municipalities. This language would commit a local jurisdiction to involve SMUD infrastructure and energy efficiency specialists “*upstream*”, early in the planning process, before a developer has invested heavily in architectural and engineering services. Much of this model language has been adopted by one of the largest municipalities in the SMUD service territory and is reflected in their General Plan vision and goals for development over the next ten to fifteen years. SMUD staff is working with long-range planners for the cities of Sacramento, Galt, and Folsom, and the County of Sacramento to get similar

commitments to energy efficiency, renewables, and distributed generation in updates of their General Plans. For the first time, for instance, the County of Sacramento's Land Use Element includes language that signals the County's commitment to sustainable resources:

...New development in existing communities in new growth areas and improvements to existing buildings and housing stock that are designed and constructed to be energy efficiency and incorporate renewable energy technologies where cost-effective and feasible.

Specific Plans and Developer Agreements

In addition to collaborating with local area governments on their long-range plans, SMUD is working with county and city planners to include energy efficient design principles and guidelines in detailed, area specific plans. For example in the northern part of Sacramento County, there are 1,744 acres which will be developed under the Elverta Specific Plan – a negotiated agreement between the County and developers which requires builders and contractors to demonstrate compliance to energy efficiency standards that exceed Title 24 (California's statewide efficiency standards for buildings) by 25% before they can get a certificate of occupancy (i.e., before home buyer can move in). The agreement provides guidelines for achieving the savings but does not mandate specific measures or approaches such as the California Green Building Program. Local city and county building departments will be responsible for conducting inspections to determine compliance.

Climate Change / Carbon Reduction

SMUD is developing and planning a "Climate Change Discussion" for elected officials in the region to raise awareness of climate change issues. This collaborative effort will promote environmental protection, energy efficiency, and advanced renewable technologies in the region. The goal of the effort is to complement other regional development efforts and ensure that the Sacramento region will attract and retain businesses and a customer base that will contribute to both environmental protection and economic development. The initial discussions will focus on education and outreach activities with future efforts aimed at developing specific recommendations and guidelines for the region.

City of Sacramento's Sustainability Agenda

The City of Sacramento has adopted a Sustainability Agenda and SMUD is an active participant in making this happen. SMUD staff is working with Heather Fargo, the Mayor of Sacramento and arranged for her to make an Earth Day announcement that the City of Sacramento was signing onto the national Energy Freedom Challenge. SMUD met early on with City of Sacramento planners to get energy efficiency and commitment to renewables high on their Sustainability Agenda, as well as prominent in their general plan update. SMUD has worked closely with Mayor Fargo and City of Sacramento Council Member McCarty and their staff to include a SMUD presentation by SMUD Board Director Genevieve Shiroma as part of the city staff's presentation of the draft Sustainability Agenda.

Solar Partners

SMUD has persuaded all seven of the major independent government jurisdictions in its service territory- the cities of Citrus Heights, Elk Grove, Folsom, Galt, Rancho Cordova, Sacramento and the County of Sacramento - to waive their varying permit fees and standardize the process for installing solar photovoltaic systems. Staff worked with elected officials, city managers and building officials to get local governments to join the *Solar Partners* program and agree to:

- Waive permit fees of \$200 to \$800
- Standardize the application submittal package to include: providing a plan view of the installation, mounting details, electrical schematic, definition of conduit type and size, and a cut sheet for equipment
- Provide on-the-spot permit review
- Conduct government-building departments' final inspections within 24 hours.

The publicity surrounding the fee waivers and Sacramento County being “fee free” has increased awareness and interest in residential solar applications as evidenced by increased inquiries to SMUD. But given the overall downturn in the economy and slow growth in Sacramento’s housing market, it is difficult to develop accurate estimates of the increase in the number of PV installations due to these measures.

Community Engagement Activities

In addition to stepping up local government partnerships, SMUD has significantly increased its’ alliances with community organizations and agencies during the past year. These efforts range from working with small neighborhood groups to area wide efforts to reach Sacramento customers.

Neighborhood Energy Stars

SMUD’s *Energy Stars* program is designed to promote energy efficiency and participation in one of SMUD’s renewable energy programs (*Greenergy*) by having energy SMUD specialists work through neighborhood associations. SMUD began working with community activists in Curtis Park, a small urban neighborhood in the Sacramento downtown area. At neighborhood meetings and through the community newsletter, Curtis Park residents were recruited to become *Energy Stars*. SMUD staff attended community meetings, developed energy efficiency how-to articles for the newsletter and worked one on one with the residents to implement energy efficiency measures.

Initial results from this first neighborhood in which the *Energy Stars* program was implemented indicate that the Curtis Park program participants reduced their energy usage by at least 10% less energy compared to their non-participating neighbors. In addition, 46% percent of these *Energy Stars* purchased renewable energy through SMUD’s *Greenergy* program compared to just 14% of the rest of the neighborhood. This approach is being replicated in other Sacramento neighborhoods.

Chamber Energy All-Stars

Efforts are now underway to develop and test a pilot program to extend the neighborhood Energy Stars concept to promote energy efficiency and purchase of renewable energy by businesses through local area Chambers of Commerce. Under this *Chamber Energy All-Stars* program, businesses will take a pledge to use less energy and purchase renewable energy. To support their pledge, SMUD will provide both technical expertise such as an energy audit, and financial incentives for installing energy efficient measures. SMUD's first Chamber partner is the Sacramento Asian Pacific Chamber of Commerce (SACC). They have agreed to:

- Include a monthly column in their newsletter on the Energy All-Stars program
- Develop space on the SACC website to describe the program and have the pledge form available on-line
- Utilize "constant contact" a minimum of once per month to send out a reminder about the Chamber Energy All-Stars with the application. An incentive, such as free admission to a chamber mixer or 90 second networking mixer (valued at \$20 per person) will accompany the application.
- Promote the Chamber Energy All-Stars at each of the Sacramento Asian Pacific Chamber of Commerce functions
- Provide applications as part of the New Members Orientation package.

SMUD and SACC are working together to develop procedures for tracking applications, determining where and how applications will be processed and follow-up steps needed.

Sacramento College and University Partnerships

Expanding SMUD's energy efficiency and community sustainability efforts requires resources, both financial and human. To that end, SMUD is actively working with local area colleges with the goal of training future practitioners in the community. As a first step, SMUD developed and presented a series of one-day workshops for university educators, counselors and facilities staff. These workshops provide an overview and introduction to energy efficiency, renewable resources and community sustainability. The seminars have been well attended and according to attendee evaluation forms, well received.

The next step in SMUD's partnership with Sacramento colleges is the development of energy efficiency courses and curriculum. After visiting and researching similar programs, SMUD staff has been working with the Los Rios Community College District to develop a two-year degree program in community sustainability and energy efficiency. To date, an introductory course in energy sustainability has been developed. SMUD is working with both the Los Rios Community College District and the California State University at Sacramento (CSUS) to allow this course to be used to meet the general requirements for a degree.

Neighborhood CFL Bulb Exchange

SMUD worked with many community partners to conduct a very successful door-to-door CFL bulb exchange in the Oak Park community to promote energy efficiency and overcome some of the typical barriers to installing energy efficiency measures. Oak Park is an older

residential neighborhood with many low-income residents. The bulb exchange program appeared to be an effective means for reaching many of SMUD's ethnic, low-income, and non-English speaking households with the message of energy efficiency by introducing them to a new type of lighting. SMUD volunteers worked with community activists, area businesses, churches, and high-school students to exchange a compact fluorescent bulb for an incandescent one. Residents were able to exchange up to four bulbs on a one-for-one basis. Volunteers also provided residents with information on how to dispose of compact fluorescent bulbs through the County of Sacramento's collection facilities. With the success of this pilot program, it is being expanded to more low-income neighborhoods and low-income multi-family units.

Our Green Community

SMUD has developed a website -- "Our Green Community" -- that allows customers to calculate and track their "carbon footprint", the sum of all the greenhouse-gas emissions associated with their home energy use, fuel burned in their transportation, and production of their food and other consumer goods. Customers who want to take a step further, or do all they can to compensate for emissions they cannot eliminate, can enroll in SMUD's Carbon Offset program. Their dollars go to build local emission reduction projects. The website also serves as a forum for the community to share, disseminate and discuss sustainability and global warming issues and links users to other green programs and services available to them in the community.

Mow Down

In one of SMUD's most successful efforts, the District partnered with Sacramento County, Placer County and the Sacramento Air Quality District to provide incentives to customers to turn in their old gas lawn mowers in exchange for a new electric mower.

Business Partnerships & Economic Development

If Sacramento is to be successful in its goal of energy sustainability for the region, local governments and agencies, including SMUD, will have to foster the development of technologies and businesses which promote regional energy efficiency and sustainability. SMUD is providing technical expertise, financial incentives and promotional support to local entrepreneurs and companies committed to advancing energy efficient and green technologies.

Wireless Sensor Technology for Data Sensors

SMUD has partnered with a local manufacturer, SynapSense, and a venture capital firm to demonstrate and promote the development of a new wireless sensor technology for data centers. Most data centers are overcooled significantly to compensate for hot and cold spots within the building. This technology allows facilities managers to evaluate and monitor real-time energy use within a data center and then provides a report of recommendations for increasing energy efficiency and the corresponding green house gas reduction.

SMUD and SynapSense installed the first demonstration project of this wireless technology at SMUD's data facility. After four weeks of monitoring and data collection, results indicated SMUD could save 7% of energy annually, or over 140,000 kWh a year with a payback of just a year. Based on these results at SMUD's data facility, the District is working with

SynapSense to install this wireless technology in two more customer sites. SMUD will help SynapSense develop agreements with these businesses as well as provide financial incentives to the customers. The final step will be to develop, promote and launch a full-scale program for Sacramento data centers.

Aqua Kool

SMUD is working with the largest installer of residential new construction air-conditioning units (90% of the Sacramento new home market), Beutler, to manufacture and install energy efficient water-cooled air conditioning systems. Preliminary lab tests showed impressive energy efficiency ratings (EERs) of 15 during hot climate conditions. The 2008 research project will consist of field-testing 30 units. A full report will be released during the fourth quarter of 2008 to determine overall energy efficiency of the unit, peak demand performance, operability issues and customer satisfaction. With successful results, SMUD will work with Beutler directly to promote the manufacturing and wide-scale installation of these units in the Sacramento area.

SolarSmart Homes

SMUD has signed agreements with local residential developers to build over 4,000 super energy efficient, solar powered homes in the Sacramento area by 2011. SMUD is partnering with 11 home builders in 46 different communities. These agreements represent the largest solar new home partnership in the nation. The first phase of 1200 homes are expected to shave nearly two megawatts off SMUD's peak demand and could reduce carbon emissions that are equivalent to taking 620 cars off the road or planting 980 acres of trees. Builders have agreed to install 2kW PV systems on each house and additional energy efficiency measures that represent savings of almost 40% beyond California Title-24 building standards. These measures include additional insulation, radiant barriers, A/C SEER of 14 with TXV (3.1 ton), duct testing and fluorescent lighting in all fixtures.

SMUD has agreed to pay \$3 per watt for the solar systems and varying incentives for the energy efficiency measures. Including the solar system rebates, builders will receive total financial packages per home of \$6,000 to \$9,000.

Conclusion

If a utility is going to meet the serious energy and environmental challenges confronting their region, they must enlist and engage the community as full partners and participants in the process. The Sacramento Municipal Utility District is committed to a sustainable energy future, but making this happen requires significant coordination and cooperation among the multitude of independent government and community agencies that operate in the region. SMUD customers are willing and eager to be active participants in energy sustainability solutions. But for these residents, homeowners, builders and businesses to participate, the process must be easy, inexpensive and efficient. Area leaders and policy-makers have come to realize this wide-scale energy efficiency effort can only be achieved through government and agency partnerships that eliminate bureaucratic red-tape, provide readily available education and information, and combine resources and expertise. In this time of shrinking municipal budgets and limited financial resources, it is critical that the community unite in its goal of achieving energy sustainability for Sacramento. Future generations are depending on it.