

Redwood City Energy Efficiency and Conservation Block Grant

OVERVIEW

Redwood City's Energy Strategy has been designed to meet the community's greenhouse gas emission reduction goals and stimulate job growth through efforts that make energy efficiency and water conservation standard practice in new and existing buildings in the community. To achieve dual goals of emission reductions and job creation, Redwood City will implement an aggressive community energy education program that demonstrates the City's commitment to energy efficiency, incorporates free home energy audits, provides financing mechanisms for building retrofits and employs youth in the community.

Specific goals include:

- I. Promote energy efficiency in the community by using city facilities as role models
- II. Improve energy efficiency in the residential built environment and stimulate household demand for energy retrofits and upgrades
- III. Engage Redwood City youth in community energy education efforts and prepare youth for emerging jobs in the energy services and water conservation sectors

I. GOAL: Promote Energy Efficiency in the Community by Using City Facilities as Role Models

Market Buildings/Government

Program Year: 2009

Term: 09/2009-08/2012

Estimated CO2 Emissions Reduced:

82 Metric Tons (4% of current levels)

Description:

Redwood City has been a leader in environmental responsibility having been involved in a number of specific actions to reduce its energy consumption and greenhouse gas emissions including retrofitting traffic lights with LEDs, converting incandescent light fixtures to fluorescent, replacing machinery with more energy-efficient equipment, introducing substantial water conservation programs and an award winning recycled water project, supporting widespread tree-plantings, replacing fleet vehicles with hybrid models, utilizing the most efficient fuel options available, and incorporating smart growth principles in its planning functions. While greenhouse gas emissions from energy and water use in municipal buildings account for only about one and half percent of Redwood City's total community-wide emissions, the City's leadership role extends well beyond the magnitude of greenhouse gases reduced. That's why it is critical that the City continue to lead by example through specific actions aimed at improving the energy efficiency of city facilities. It is also critical that the City promote its own actions to galvanize conservation efforts community wide.

Redwood City will maximize its efforts through the following actions:

1. Establish systems to benchmark, identify, track and fund energy performance of public facilities

As a first step, the City will use ENERGY STAR's Portfolio Manager to benchmark and track City owned building performance and encourage large commercial building owners to follow the City's lead. ENERGY STAR Portfolio Manager is a free, web-based energy management tool that enables businesses to track and assess energy and water consumption across a building portfolio. Portfolio Manager can also help the City set investment priorities, identify under-performing buildings, verify efficiency improvements, and receive EPA recognition for superior energy performance.

Next, the City will create a revolving Municipal Energy Fund as a self-sustaining source of funds for investment in energy-efficient retrofits of city facilities. A revolving Municipal Energy Fund is a sum of money dedicated to energy efficiency, clean energy, or other energy reduction measures. Funds will be used to seed qualifying municipal energy efficiency projects. Once identified projects are implemented, energy and cost savings will be monitored for a pre- and post- implementation comparison. Energy efficiency cost savings will then be reinvested into the fund. This process enables the Fund to become a self-sustaining source of funding, creating a cycle whereby monies are constantly replenished by the reinvestment of energy efficiency cost savings.

A Municipal Energy Fund will help Redwood City:

- Facilitate energy management, energy retrofits and renewable energy systems
- Demonstrate the City's commitment to environmental stewardship and/or energy conservation
- Internalize energy conservation into existing operations
- Promote the implementation of innovative environmental projects
- Reduce operating expenses by installing more energy efficient measures

2. Increase energy efficiency and renewable energy use in public facilities

Of the total emissions accounted for in the City's 2005 Government Operations Greenhouse Gas Emissions Inventory, emissions from City buildings and facilities were the largest accounting for 27% of emissions. Focusing on buildings and facilities will therefore have the biggest impact on the reduction of emissions from government operations. To achieve its reduction goals, Redwood City will build off its energy management and investment strategies to begin the implementation of projects that increase energy efficiency and renewable energy use in public facilities.

Redwood City will implement two pilot projects in 2009 to launch and fine tune the Municipal Energy Fund. These two projects include retrofitting the lighting of the Jefferson and Marshall Street garages. The Jefferson and Marshall Street garages are the two largest city facilities with a combined 317,420 square feet. Lighting in these facilities is operational 24 hours a day, seven days a week. Retrofitting the lighting will have an immediate and quick pay back and represents a significant and immediate reduction in energy use.

3. Capitalize on Redwood City’s energy conservation efforts to encourage energy efficiency in the commercial building sector

Redwood City will promote its own efforts to inspire energy and water conservation in the commercial building sector. Redwood City is a sponsor of the San Mateo County Green Business Certification program. To become green certified local businesses are required to have an energy and water conservation audit. Redwood City – City Hall has successfully completed the Green Business Certification as a leading example of what can be accomplished through participation in the program. Redwood City will continue to promote the Green Business Certification program to local businesses and will look to having additional city owned facilities green certified. Redwood City will also continue to partner with our local utility, Pacific Gas and Electric (PG&E) to promote rate payer rebates and incentives within the commercial building sector.

Milestones

- Enter City facility data into ENERGY STAR’s Portfolio Manager and begin tracking energy usage
- Establish guidelines for revolving Municipal Energy Fund
- Use Municipal Energy Fund and guidelines to implement and track two pilot energy efficiency projects
- Refine Municipal Energy Fund process based on results of pilot projects
- Promote participation in the Municipal Energy Fund across the City organization
- Use Portfolio Manager in tandem with Municipal Energy Fund to communicate energy efficiency results promote energy efficiency in the community

Standard Metrics (required)

Jobs Created: 7.5 (minimum investment of \$300,000 in energy efficiency)¹

Jobs Retained: 1

Specific Metric Activity

Metric Activity: Government Building Audits (or Government Energy Retrofits)

Number of facilities retrofitted:	5
Square footage of buildings retrofitted	500,000 square feet

Program Funds By Source

DOE ARRA Funds:	\$371,000
City of Redwood City Capital Improvement Funds:	\$150,000
Packard Foundation:	\$79,000

¹Using national statistics from the Bureau of Economic Analysis, an \$300,000 investment in efficiency construction related projects can create 7.5 jobs as reported in “Using Performance Contracting to Implement ARRA Projects” distributed by Johnson Controls, Inc. 2009

II. GOAL: Improve Energy Efficiency in the Residential Built Environment and Stimulate Household Demand for Energy Retrofits and Upgrades (energy audits, energy retrofits and renewable energy systems).

Market: Buildings/Residential

Program Year: 2009

Term: 09/2009-08/2012

Estimated Annual CO2 Emissions Reduced: 750 Metric Tons²

Description:

Electricity and natural gas consumption in Redwood City homes, businesses, industries and public institutions (including the City government) results in approximately 225,533 metric tons CO₂e (MTCO₂e) per year emitted into the atmosphere – about 43 percent of Redwood City’s total GHG emissions. The energy consumed in Redwood City homes contributes about 44 % of total emissions from building energy use. Natural gas consumption, mostly for space and water heating, is by far the largest source of emissions related to building energy use. Given this, achieving significant reductions in residential sector GHG emissions requires substantial public and private investment in energy efficiency. These initial investments will result in substantial cost savings, will encourage investment in the local economy and will create job opportunities over time.

To spur CO₂ reductions and stimulate job creation, Redwood City will implement a community energy education campaign. The Campaign will provide residents with education and tools to empower households to make informed choices that significantly reduce their energy consumption. Our strategies include free home energy audits, referrals to commercial home energy retrofit providers, and access to financing mechanisms for energy efficiency upgrades.

1. Implement Acterra’s Green @ Home –free home energy audit program

Green@Home is a program of Acterra, a local non-profit organization. Green@Home is a proven home energy efficiency program that addresses climate change by reducing residential energy use and thus CO₂ emissions. Utilizing social marketing approaches, Green@Home not only installs specific, measurable energy-saving devices, but it educates residents about the importance of conservation and creates a social motivation that encourages residents to take further action on their own.

The Green@Home program leverages the power of individuals to create a tipping point that shifts residential energy consumption habits. Volunteers are recruited from Redwood City neighborhoods and other nearby communities to perform simple energy-saving retrofits and provide free home

² Number based on actions taken by households participating in Green@Home audit program and related workshops, does not take into account those energy reductions taken in conjunction with other Redwood City sponsored programs.

energy audits to Redwood City residents. Before meeting with residents, each volunteer receives at least seven hours of free training by Green@Home on how to install simple energy conserving devices, how to perform a basic household energy audit, and how to inspire residents to conserve energy. Follow-up contacts further encourage the residents to take additional actions.

The Green@Home program offers its services to renters and homeowners free of charge. During scheduled household visits, known as HouseCalls, volunteers look for ways that residents can save on their utility bills. With resident permission, the volunteers are trained to carry out the following energy efficiency upgrades:

- Install a retractable clothesline
- Install up to three compact fluorescent lightbulbs (CFLs)
- Install a low flow showerhead and faucet flow restrictors (supplied by City of Redwood City)
- Install power strip and advise on its use
- Install electric socket insulating gaskets
- Test for appropriate hot water and refrigerator temperatures and adjust as needed
- Teach the resident how to properly pump up their car tires to improve gas mileage

In addition, volunteers perform a basic home energy audit using an extensively researched checklist. Participating households also receive free energy-saving devices to achieve measurable results. Residents work with the volunteers to create a personalized Energy Savings Plan that lists the upgrades that have been made and makes specific energy-saving suggestions that the residents agree to implement on their own.

Talking with the resident for 20-30 minutes to develop this personal Energy Savings Plan is a key element of the HouseCall. Social science researchers have found that such one-on-one conversations are the most effective method in creating behavior changes; written materials, media campaigns and internet-based information are helpful, but much less effective than giving people an opportunity to talk with others. During the HouseCall, the volunteer reviews the resident's utility bill and, based on what's been seen in the home, recommends further energy-saving retrofits such as insulation, power strips or new appliances, as well as suggests changes in habits such as washing clothes in cold water. Residents are then asked to make a written commitment to follow through with the recommendations – another proven social marketing technique. To further encourage follow through, Green@Home volunteers phone residents two months after the HouseCall to check on their progress. Data from these calls, including information about CO2 reductions that result from the follow up actions, is presented to the city.

In addition to the specific measurable benefits achieved at each HouseCall, Green@Home is also a community awareness program. Social scientists have found that people are more likely to adopt environmentally positive behaviors when they perceive that others are doing so, too. Therefore, Green@Home distributes colorful yard/window signs that say, "We're saving energy – and money, too!" to all HouseCall recipients. The sign invites others to participate and, although the results are

not as easily measured as the actions completed during the HouseCall, creating an “energy-saving bandwagon” effect among residents is another important outcome.

Community outreach actions, including door-to-door flyer distribution, attendance at community events and neighborhood meetings, etc., are another important component of Green@Home. These activities work synergistically with the visibility of yard/window signs to promote a neighborhood culture that generates interest in changing to more sustainable lifestyles.

During the performance period, Green@Home staff will also offer two do-it-yourself (DIY) workshops for the Redwood City community. DIY workshops will present the basic information provided to Green@Home trainees, and will also provide training on weather-stripping and appliance maintenance techniques that improve efficiency.

Green@Home is an important first step toward improved energy efficiency. For homeowners to reach deep reductions in their CO2 emissions, it will require further habit changes, home energy upgrades (cool roofs, insulation, double paned windows) and installation of water conservation measures in their landscaping (appropriate irrigation systems, native plants, xeriscapes). In addition to Green@Home, Redwood City will implement the following efforts:

Going Deeper With Habit Changes

Building off Redwood City’s very successful Neighborhood Liaison program and participation in the Green@ Home program, Redwood City will organize neighborhood Eco Teams.

Neighborhood Eco Teams will be comprised of 5-8 households. Armed with a tool kit of home energy saving devices, Eco Teams, will gather three times in the course of a given month to motivate each other to make deep habit changes that result in significant household energy reduction. They will also be tasked with identifying and carrying out neighborhood based energy education events and activities to further educational efforts at the grassroots level.

Referrals to Commercial Building Performance Companies

Green @ Home volunteers are trained to provide non-biased referral information to commercial building performance and energy retrofit companies. Building performance companies provide a range of diagnostic and building contract services designed to significantly reduce energy consumption and improve indoor air quality. Services can include sealing a building’s envelop, improving insulation, optimizing heating and cooling systems, and installing renewable energy systems. Going beyond building performance, households will also be encouraged to consider energy and water conservation savings in their landscaping.

Demystifying Solar and Renewable Energy Systems

Before installing a photovoltaic or renewable energy system, it is recommended that property owners first optimize their home’s energy efficiency. Redwood City will offer workshops for homeowners to help them better understand the importance of optimization (and resources to support energy retrofits), types of renewable energy systems available on the market, what to

consider when selecting a system, what to look for in an installer, and available financing and incentives for installation.

2. Recognize Households for Their Energy Saving Accomplishments

Recognition for a job well done inspires individuals and groups to take bolder steps to reduce their energy consumption. Recognition is also an effective marketing tool that builds momentum and community wide involvement. Redwood City will recognize residents with awards presented at City Council meetings, periodic newsletter and newspaper articles highlighting “community energy saving heroes” and with prize drawings for energy saving appliances for households that have participated in City sponsored energy saving programs.

3. Offer Energy-Saving Resources and Financing Mechanisms

Consumer education and recognition are critical to involving a broad cross-section of the community in making sound energy conservation decisions. Another identified barrier to action is access to financing, particularly for large scale home energy retrofits and installation of renewable energy and photovoltaic systems. As part of our community wide energy conservation efforts, Redwood City will identify and offer a suite of energy-saving resources and financing mechanisms to assist property owners to implement their household energy conservation plans including:

- Support collaboration among providers of home energy efficiency programs in the community.
- Identify and articulate a continuum of services based on income eligibility
- Support joint marketing efforts of existing energy conservation and weatherization services currently offered to low income community members as part of the City’s community wide energy education campaign
- Partner with Pacific Gas and Electric (PG&E) and San Mateo County Energy Watch to inform residents about rate payer rebates and energy conservation programs
- Partner with local businesses to offer coupons to Green @ Home participants to purchase energy efficiency appliances, weatherization materials, rain catchment systems, etc.
- Partner regionally on the development of a financing district and offer property owners financing for energy efficiency retrofits, solar photovoltaic and renewable energy systems

Education and financing combined will provide local residents with the tools they need to weatherize and retrofit their homes for improved energy efficiency. Improving home energy efficiency requires an investment in the local economy and will generate local jobs as the demand for home energy services increases.

Milestones

- Map energy efficiency programs and services. Develop a matrix of services and income eligibility requirements
- Develop public education campaign and marketing materials

- Launch public education, outreach and Green @ Home, home energy saving campaign
- Train volunteer home energy auditors
- Deploy team of home energy audit volunteers
- Conduct 500 Green @ Home audits
- Conduct two Do It Yourself Workshops annually
- Conduct two Demystifying Solar workshops annually
- Conduct prize drawings for every 100 households audited
- Train volunteer neighborhood Eco Team leaders
- Organize 12 neighborhood Eco Teams in years two and three
- Partner regionally on the development of a financing district and begin offering financing to property owners

Standard Metrics

Jobs retained: 2

Jobs created: 0.5

Specific Metric Activity

Metric Activity: Residential Building Audits

Number of buildings audited:	500
Square footage of buildings audited:	750,000

Metric Activity: Workshops, Training and Education

Number of workshops, training and education sessions held:	6
Number of people attending workshops, training and education sessions	290

Program Year Funds By Source

DOE ARRA Funds:	\$275,000
City of Redwood City Funds	\$75,000
San Francisco Foundation Funds	\$18,000

III. GOAL: Engage Redwood City Youth in Community Energy Education Efforts and Prepare Youth for Emerging Jobs in the Energy Services and Water Conservation Sectors.

Market: Education

Program Year: 2009

Term: 09/2009-08/2010

Estimated CO2 Emissions Reduced: 0

Description:

Redwood City recognizes that youth can play a critical role in our planned community energy education efforts. Redwood City also has a demonstrated commitment to engaging young people as community planners and decision makers. A recent community level strategic plan identified youth workforce development as a key youth development strategy. Environmental organizations who have been meeting in partnership with the City have emphasized the importance of preparing youth for green careers. This confluence of interest in positive youth development, climate change and growth in the energy services and water conservation sector led Redwood City to identify the need to create a targeted youth workforce development strategy. A youth workforce strategy is particularly important in this area where there is a large population of low income youth, few summer job opportunities to meet the demand for work and a lack of Redwood City based job training and placement programs.

1. Engage Youth in Community Energy Education Efforts

Redwood City will launch a summer youth “Redwood City Verde Youth Ambassador Program”. The program will train and employ youth to conduct outreach and education to Redwood City residents. Youth will receive training on energy efficiency, renewable energy systems and water conservation. Hands-on training activities will provide youth with opportunities to work alongside adults to conduct home energy audits, install water saving irrigation systems and assess solar photovoltaic placements. Youth will also be engaged in the creation of marketing materials and the implementation of public education campaigns.

Verde Youth Ambassadors will:

- Design marketing and communication materials
- Staff Redwood City Verde educational booth at all City summer events – concert series, downtown family days, Fourth of July Parade, North Fair Oaks Festival, etc.
- Lead special energy education and water conservation activities for younger youth in partnership with elementary school district summer school program
- Receive training on energy efficiency and water conservation
- Conduct household energy audits alongside adult volunteers
- Actively participate in additional activities to be designed by collaborative program design team

2. Prepare youth for emerging jobs in the energy services and water conservation sectors

The Redwood City Verde Youth Ambassador program will lay the foundation for the creation of a summer Green Job Corp. Creating a robust and sustainable Green Job Corp program will require time and extensive collaboration among multiple partners – community college, high school district, county human services agency, Workforce Investment Board and other youth serving organizations. Redwood City has a history of collaboration and will take a leadership role in bringing partners together to pilot the Verde Ambassador program and assess the feasibility of scaling the program into a comprehensive Green Job Corp program. Collaboration will include working together to identify opportunities to link youth workforce development to in-school learning, out of school training programs and community based internships and job placements. Collaborative partners will work together to identify and leverage additional federal, state, municipal and private resources to strengthen and sustain green job opportunities for young people well into the future.

Milestones:

- Convene collaborative partners to develop Redwood City Verde Youth Ambassador program
- Work with partners on program design and implementation, resource coordination, recruitment/hiring of Youth Ambassadors, and oversight of summer 2010 implementation
- Introduce and integrate training classes on energy efficiency, energy systems, water conservation and sustainability into the Sequoia High School After School program
- Coordinate with the proposed Sequoia High School Youth Action environmental research program on the design and development of community energy education marketing materials
- Launch summer 2010 Youth Ambassador Program
- Assess program for ongoing implementation, including identifying opportunities to transition the program into a Green Job Corp program for youth

Standard Metrics:

Jobs retained: 0

Jobs Created: 0.5 FTE Coordinator and 14 summer youth jobs

Specific Metric Activity:

Workshops, Training and Education

Metric Activity:

Number of workshops, training and education sessions held:	10
Number of people attending workshops, training and education sessions	64

Program Year Funds by Source:

DOE ARRA Funds:	\$90,000
Silicon Valley Community Foundation:	\$100,000

Energy Efficiency and Conservation Block Grant proposals are required to demonstrate how municipalities are coordinating regionally and with the State. In addition, it is the intention that funding be used to put systems in place that promote long term sustainability of energy efficiency efforts. Redwood City is effectively addressing each of these areas.

Coordination Regionally and with the State of California: Redwood City has inventoried both its City operations and community scale greenhouse gas emissions. The City is now developing a Climate Action Plan that will be integrated into the City's new General Plan. Through these processes the City is aligning its climate action goals and strategies with the California AB32 Global Warming Solutions Act Scoping Plan. Redwood City is also a member of the Joint Venture Silicon Valley Climate Task Force and the County Association of Governments Utilities Sustainability Task Force. Through these associations Redwood City works with regional municipal partners to track greenhouse gas emissions and identify opportunities to implement effective, coordinated strategies to reduce emissions.

Sustainability: While ARRA funds are needed to launch Redwood City's community energy campaign each of our goals and related strategies was designed with sustainability in mind. Implementing a revolving municipal energy fund and putting systems in place for tracking progress creates a sustainable mechanism for ongoing funding of energy efficiency upgrades of city facilities and operations. In the community, our motivation is to create the market for efficiency improvements through education and then provide financing mechanisms so that community members can continue to upgrade their homes. It takes more than building improvements and technology to make change in the community. Therefore, this plan was designed to encourage habit changes as well. The Redwood City Verde Youth Ambassador program is a first step toward the creation of a robust summer green job corps for youth. To achieve sustainability for this goal, Redwood City will reach out, collaborate, and partner with public and private organizations to leverage resources and expand on programs and structures to build and sustain summer youth workforce development opportunities.