

tail below under policies b - d) to assist property owners and tenants to comply with the local energy standard.

- Partner with the Berkeley Association of Realtors and other real estate professional groups in an effort to conduct targeted outreach and education to new Berkeley homeowners.

b. Policy: Develop and provide comprehensive energy services for local residents

Implementing Actions:

- In collaboration with PG&E and state and federal government, provide financial incentives for compliance with local energy standards. PG&E uses ratepayer money, collected through the public goods charge, to fund various incentives for energy improvements. The public goods charge is a surcharge placed on the bills of all PG&E (and other investor-owned utilities) customers. While helpful, the incentives funded through the public goods charge are generally not structured to achieve the scale of savings required under Berkeley's Climate Action Plan. The City seeks to work with relevant agencies to establish additional incentives geared toward Berkeley's local energy standards, i.e., designed to encourage a deeper, more comprehensive set of energy improvements. Such incentives could include providing property owners and tenants with rebates that could be applied to energy services provided by independent service providers.
- **Launch the Smart Solar Program.** The purpose of the program is to make it as easy and inexpensive as possible to make a home (or business) energy efficient and to utilize a solar photovoltaic (PV) and/or solar thermal system. The program achieves this purpose by removing market barriers that inhibit the widespread adoption of these technologies.

Through the Smart Solar program, community agencies will conduct marketing and outreach and offer personalized consultations for potential customers. The consultations will provide guidance and resources to help property owners navigate through the multitude of technology options and incentives that are available. Qualified energy service providers that have experience and in-depth knowledge of the solar and energy efficiency markets will conduct the consultations. Customers will take away from each consultation a better understanding of the cost and benefits associated with potential energy saving solutions.

Smart Solar is modeled after the highly successful Smart Lights Program, operated locally by the Community Energy Services Corporation. Smart Solar is being funded through the U.S. Department of Energy's Solar America Initiative.

The program is scheduled to launch in pilot mode in April 2009.

- *Provide Berkeley FIRST (Financing Initiative for Renewable and Solar Technology) financing for solar photovoltaic energy systems and if feasible, expand the program to include financing for other renewable energy systems and energy efficiency improvements.* Berkeley FIRST is designed to address the financial hurdles facing property owners that wish to “go solar” and make significant investments in energy efficiency. The program enables the City to provide financing for the upfront cost of major energy improvements in privately owned buildings and recoup that cost through a 20-year assessment on the building owner’s tax bill. The City launched Berkeley FIRST as a pilot program in the fall 2008 for solar PV installations as a test of the concept. If successful, the goal is to expand the program to support solar thermal installations and energy efficiency measures.
- *Explore the feasibility of amending the existing program allowing a rebate of a portion of the City of Berkeley’s transfer tax for seismic safety upgrades to also include major energy efficiency and solar improvements.*
- *Partner with Rising Sun Energy Center and other community partners to implement a 3-tier energy efficiency and job-training program.* The program delivers energy efficiency services to residents and on-the-job training for youth and people with barriers to employment. Energy services are provided through three progressive tiers:
 - *Tier I: California Youth Energy Services (CYES) – Upon appointment, CYES sends two Youth Energy Specialists to a given home to do a basic check of household electricity, natural gas and water consumption and to provide free energy, water and cost savings devices. CYES serves as an energy reduction program as well as a valuable source of training and employment for local high school, community college and trade school students. According to program staff, on average CYES serves about 325 Berkeley households per year and achieves collective reductions of 150,000 kWh and 1,600 therms annually. This equates to an annual greenhouse gas emissions reduction of 43 metric tons and cost savings exceeding \$21,000.*
 - *Tier II: Green Energy Training Services (GETS) – GETS is an energy efficiency training program and internship geared toward young adults between the ages of 18-35 with barriers to employment. The GETS program will follow up where CYES leaves off by developing program participants’ analytical and installation skills, offering residents a comprehensive energy audit, and working with RSEC’s High Performance Homes (HPH) program to install advanced energy savings measures in homes.*

industrial properties generally have an account manager at PG&E who can provide up-to-date rebate and resource information. In collaboration with PG&E and relevant state agencies, the City can play a role to identify additional services and resources that make it easier for large commercial properties to save energy and money.

Implementing Actions:

- *Partner with local community agencies to encourage large commercial businesses to retire old HVAC systems. The success of this effort depends on access to state-level subsidies and incentives.*
- *Partner with local community agencies to implement commissioning and re-commissioning for new development, major renovations, and existing buildings.*
- *Improve marketing of rebates. Rebates from entities such as PG&E and the California Energy Commission should be better marketed through City and partner agency websites and outreach.*
- *Market Demand Response programs to large businesses in order to reduce high-carbon peak load. Demand Response programs are designed to encourage and assist consumers to reduce electricity demand during times when demand for electricity is at its peak. During times of peak electricity demand, utilities often must utilize “dirtier” sources of energy in order to meet consumer demand.”*
- *Encourage local large businesses to track the energy consumption in their facilities through ENERGY STAR Portfolio Manager. 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.*

4. Goal: Increase residential and commercial renewable energy use

The energy efficiency actions outlined above represent an irreplaceable step toward meeting the Measure G goals. It is also critical to “green” the energy supply we consume through increased utilization of renewable energy sources.

Essentially, the community has two main options for changing the composition of its energy supply:

- *Develop a local, clean, decentralized, renewable energy supply, mostly in the form of residential and commercial solar PV and solar thermal installations. The City’s goal is to achieve an annual GHG reduction of 11,600 metric tons by 2020 as a result of local solar installations. This goal is based on a preliminary analysis of unshaded*

rooftops in Berkeley. The analysis indicates that there is more than two million square feet of roof space that is unshaded by adjacent structures. About 30% of this space is shaded by trees or otherwise unavailable for solar. The 2020 goal is to cover 70% of the available roof space with solar thermal or solar electric panels.

- *Add more renewable energy sources to the electricity grid.* This option can be accomplished by either working with PG&E and relevant State agencies to achieve a higher Renewable Portfolio Standard or through Community Choice Aggregation, also known as Community Choice Energy (CCE). Under CCE, the City government would be empowered to choose the community's energy provider and the source of electricity.

The City of Berkeley is committed to implementing the first option. It is not mutually exclusive with the second. The City must decide in the short term how best to implement the second option given existing and future policy priorities, market conditions, and risks to taxpayers and ratepayers.

Each of these options, along with policies and implementation actions for increased wind generation and other renewable technologies, is outlined in more detail below.

a. Policy: *Implement targeted assistance and outreach to increase decentralized solar installations in homes and businesses*

The first solar electric cell was created in 1954. Solar technology has come a long way since then. The basic principles of the technology have not changed, but the cost of installing a solar electric or solar thermal or hot water system has become increasingly competitive with conventional forms of energy. Globally, the use of solar electric systems has experienced growth rates of about 30% per year over the last decade and the cost of the technology has dropped at least three percent per year for the last 20 years.

Solar radiation can be captured to produce emissions-free electricity and heat for our homes, businesses and public institutions. Decentralized, solar generated power has a number of important advantages, including:

- *It reduces our reliance on fossil fuels and the greenhouse gas emissions that result from fossil fuel consumption*
- *Decentralized energy production is less vulnerable than grid energy during natural disasters*
- *It reduces stress on our local electricity infrastructure by reducing peak load*
- *Local production reduces electricity distribution costs and increases distribution efficiency by being installed close to energy loads, such*

as on a roof (10-20% of energy can be lost in the transmission of grid energy)

- *It eventually pays for itself and subsequent energy cost savings can go straight to one's bottom line*

In Berkeley, a hundred square feet of solar photovoltaic panels can save about 1,500 pounds (680 kg) CO₂e per year. On a per capita basis, Berkeley has the highest number of solar photovoltaic (PV) installations of any large city in Northern California. According to the California Energy Commission (CEC), there is 2,070 kilowatts (DC kW) worth of solar PV systems installed or approved for installation at 527 different sites within the City of Berkeley, including 22 kW at two municipal sites. While these installations represent a good start, it is still only a start.

A hundred square feet of solar thermal panels for hot water can save about 3,000 pounds (1,360 kg) CO₂e per year. Increasing the number of solar thermal installations in Berkeley is a particularly effective GHG reduction measure since the emissions that result from natural gas consumption in Berkeley buildings are more than double the emissions that result from electricity consumption. Solar thermal installations on a home or business can eliminate or greatly reduce the natural gas consumed to heat our water and our buildings. The cost for solar thermal installations is generally less than half the cost of a solar electric system for residential buildings; moreover, the technology is very simple, and long lasting. Many systems that were installed in Berkeley in the 1970s are still in operation today. Because of its low installation and operational costs, solar thermal is also an excellent choice for many small commercial applications that use significant amounts of hot water, such as laundromats, restaurants, hair salons, and fitness centers, as well as larger institutions, such as hospitals, schools, hotels and conference centers.

Implementing Actions:

- *Launch Smart Solar program. As is described above under Goal #2, the purpose of the program is to make it as easy and inexpensive as possible to make one's home or business energy efficient and to utilize a solar photovoltaic (PV) and/or solar thermal system. See additional detail under Goal #2.*
- *Provide Berkeley FIRST (Financing Initiative for Renewable and Solar Technology) financing for solar photovoltaic energy systems and if feasible, expand the program to include financing for other renewable energy systems and energy efficiency improvements. As is described above under Goal #2, the program enables the City to provide financing for the upfront cost of major energy improvements in privately owned buildings and recoup that cost through a 20-year assessment on the building owner's property tax bill. See additional detail in previous section.*

- *Launch an on-line Solar Map.* The application estimates the solar energy potential for commercial and residential structures and allows building owners to estimate the potential environmental benefits and monetary savings that would result from installing solar energy panels on their property. The user enters an address and sees a map view of that location.
- *Identify funding sources to subsidize and eliminate solar permit fees (including solar thermal) for residential dwellings and lower fees for solar permits for commercial buildings.*

b. Policy: *Partner with the State government and utilities to green the energy mix that supplies the region's grid electricity*

Should the City of Berkeley continue to rely on PG&E for its electricity supply, then that electricity supply will have to become significantly "greener." Achieving a green electricity supply relies heavily on the Renewable Portfolio Standard (RPS), a standard set at the state-level that is designed to gradually increase the portion of electricity produced or purchased by PG&E and other utilities from renewable energy sources such as solar, wind, geothermal and biomass.

The current RPS is 20% renewable energy by 2010. Governor Schwarzenegger set a goal of achieving 33% renewable sources by 2020 and the State Air Resources Board included that goal in its adopted Scoping Plan as part of implementation of AB 32 (Global Warming Solutions Act).

In 2007, PG&E received about 11.4% of its power supply from renewable sources.

Implementing Actions:

- *Support the California Air Resources Board recommendation to increase the Renewable Portfolio Standard to 33% by 2020. Urge PG&E to achieve that standard.*
- *Urge Congress to maintain tax credits for renewable power developers. Such tax credits increase the supply of renewable energy sources, thereby making it easier for utilities such as PG&E to achieve the RPS.*
- *Urge the State to revise net metering rules to enable residential and commercial customers to earn refunds for excess energy generated.*
- *Urge the State to allow utilities to count decentralized energy sources toward the RPS requirement and to raise the RPS a commensurate amount.*

c. Policy: *Consider Community Choice Energy*

Community Choice Energy (CCE) would involve the City of Berkeley partnering with other cities to form a joint powers authority to purchase electricity. CCE