

## Potential Near-Term Climate Action Items

ICLEI – Local Governments for Sustainability has developed this report to assist the City of Menlo Park in identifying, prioritizing and implementing near term actions to reduce greenhouse gas (GHG) emissions.

The City has recognized the importance of working to combat the threat of climate change, and is moving forward through a process of measuring and reducing local sources of GHG emissions. On June 26, 2007, the Menlo Park City Council adopted a resolution committing the City to taking action for climate protection. Through this resolution, the City recognized the “profound effect” that greenhouse gases emitted by human activity are having on the Earth’s climate, as well as the City’s opportunity to reduce these emissions, both through its municipal operations and by inspiring change throughout the community. Through energy efficiency in its facilities and vehicle fleet, alternative clean energy sources, waste reduction efforts, land use and transit planning, and other activities, the City of Menlo Park can achieve multiple benefits, including saving energy and money, reducing emissions, and preserving quality of life in our community. With the assistance of ICLEI – Local Governments for Sustainability, the City has begun its efforts to identify and reduce greenhouse gas emissions.

The City of Menlo Park can continue to achieve success and build momentum around its climate protection efforts by identifying and acting on near term strategies to reduce GHG emissions. The City has expressed a desire to lead by example by reducing GHG emissions associated with its municipal operations. The City has also recognized its opportunity to foster emissions reductions throughout the community.

This report summarizes ten potential near term greenhouse gas emissions reduction strategies. Three of these strategies would serve to reduce emissions related to the City’s own municipal operations, while the rest would create emissions reductions in other areas of the community.

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1. Green Procurement Policy
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7. Policy Requiring Businesses to Participate in Recycling and Compost Collection Programs
8. Build-It-Green Requirements for New Home Construction
9. Commercial Building Energy Ordinance
10. Participation in PG&E ClimateSmart Program

ICLEI presents brief summaries of each of these strategies in the pages that follow, based upon a cursory analysis of limited time and budget. Estimates of associated costs have been provided where possible. All figures presented herein should be considered very rough estimates and additional research may be needed before applying to further analysis.

## 1. Green Procurement Policy

### Overview

“Green procurement” or “environmentally preferable purchasing” policies and programs can create wide reaching benefits, including reduced material consumption, energy requirements, waste, air pollutants and greenhouse gas emissions, as well as improved comfort, health and safety for product users. A number of criteria are often applied under the umbrella of a green procurement policy toward advancing these objectives, and these criteria can serve as an important screen for any new procurement decision, helping to put the City’s green priorities into action.

While greenhouse gas emissions impact is often just one of the criteria applied under a green procurement policy, the inclusion of this criterion provides a new opportunity to ensure that GHG impacts are considered when procurement decisions are made. Ideally, both near term and full lifecycle GHG impacts will be considered, though in some cases these impacts can only be roughly estimated.

### Implementation Time and Costs

Developing and instituting a green procurement policy requires time to research green procurement options, identify vendors of green products, assemble information in a format accessible to purchasers, and educate and motivate purchasers regarding opportunities to procure green products. A number of model green procurement policies adopted by other institutions can be used for guidance. At minimum, approximately 200 hours should be allocated to establishing a green procurement policy. Ideally, an ongoing ¼ FTE should be allocated to coordinate with and support City purchasers in continuing to identify green products and vendors and to streamline the green procurement process.

The Center for a New American Dream’s Responsible Purchasing Network (RPN) provides a wealth of information and resources to assist in the identification and implementation of green procurement policies. RPN provides sample policy language, links to green certified products, and a plethora of advice on how to establish successful institutional green purchasing programs. RPN can also help to advise on opportunities to highlight greenhouse gas emissions impact as a key criterion of focus within a broader green procurement policy. This assistance can save substantial staff time in developing and launching a green procurement program. For more information, see <http://www.responsiblepurchasing.org/>.

### Greenhouse Gas Mitigation Opportunities

A green procurement policy can help to create significant reductions in greenhouse gas emissions in City operations by creating a more energy-efficient infrastructure. Savings could be large or small depending on the weight of GHG savings within the green procurement selection criteria and the range of purchasing issues to which it is applied.

From a climate lens, green procurement policies can be useful in advancing the procurement of:

- Renewable Electricity
  - Local generation
  - Power purchase agreements/community choice aggregation
- Building and Construction Materials
- Electronic Equipment
- Transportation Services

### Greenhouse Gas Reduction Potential

#### Renewable Electricity

By obtaining 100% of its electricity from a renewable source, the City of Menlo Park would reduce its annual GHG emissions by 918 metric tons of CO<sub>2</sub>e, which is equivalent to 39% of the emissions from all

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municipal operations (excluding the Marsh Road landfill). A number of cities have adopted aggressive renewable energy purchasing goals. This is an area that is well suited for progressive implementation, where the amount of renewable energy that is purchased can be increased over a multi-decadal time scale. Most cities with aggressive renewable electricity goals plan to meet their goals through a combination of installing renewable energy generation capacity on city buildings (for municipal targets) and on homes and businesses (for community-scale targets) and power purchase agreements or community choice aggregation.

San Jose, CA and Portland, OR have both set goals of achieving 100% of their electricity from renewable sources (San Jose by 2022 and Portland by 2010). San Jose has yet to develop this goal into a plan, though the San Jose Green Vision indicates that San Jose expects to accomplish this goal through a combination of State initiatives, such as the “Million Solar Roofs” program, power purchase agreements, and the availability of larger amounts of green power through the expansion of renewable electricity generation capacity throughout California. Portland has successfully achieved 100% renewable energy for their government operations through a purchase contract that involves Sempra Energy Solutions, land owners in Eastern Oregon, and a regional wind developer.

The Local Government Commission is assisting 12 pilot communities to undertake feasibility studies of launching community choice aggregation (CCA) projects. This includes developing a template for determining cost issues, and providing the pilot communities with the information they will need to file CCA implementation plans with the California Public Utilities Commission (CPUC). The twelve cities are: Berkeley, Beverly Hills, Emeryville, Los Angeles County, Marin County, Oakland, Pleasanton, Richmond, San Diego County, San Marcos, Vallejo, and West Hollywood.

### *Useful Links*

EPA Guide to Purchasing Green Power

[http://www.epa.gov/greenpower/documents/purchasing\\_guide\\_for\\_web.pdf](http://www.epa.gov/greenpower/documents/purchasing_guide_for_web.pdf)

Community Choice Aggregation California Fact Sheet

[http://www.lgc.org/cca/docs/cca\\_energy\\_factsheet.pdf](http://www.lgc.org/cca/docs/cca_energy_factsheet.pdf)

Community Choice Aggregation CPUC Ruling Summary

[http://www.lgc.org/cca/docs/cpuc\\_cca\\_process\\_final\\_report.pdf](http://www.lgc.org/cca/docs/cpuc_cca_process_final_report.pdf)

### Building and Construction Materials

Significant emissions reductions are most likely to be realized in this area in the near-term if construction or renovation projects are planned. This area has significant overlap with emission benefits that would be realized through requiring new and upgraded municipal facilities to be LEED certified.

### *Costs*

A 2007 study based on 2006 data by the consulting firm Davis Langdon (see “The Cost of Green Building Revisited” below) found that there is not a significant difference in average costs for green buildings as compared to non-green buildings. In 2003, California’s Sustainable Building Task Force completed the report “The Costs and Benefits of Green Buildings,” which found that an upfront investment of less than two percent of construction costs will yield life cycle savings of over ten times the initial investment.

### *Useful Links*

U.S. Green Building Council Research and Publications

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<http://www.usgbc.org/DisplayPage.aspx?CMSPageID=77>

“The Cost of Green Buildings Revisited”

<http://www.davislangdon.com/upload/images/publications/USA/The%20Cost%20of%20Green%20Revisited.pdf>

“The Costs and Benefits of Green Buildings”

<https://www.usgbc.org/ShowFile.aspx?DocumentID=1992>

### Electronic Equipment

Green procurement policies often specify energy consumption performance of electronic equipment as a key purchasing criterion to be considered.

### *Useful Links*

ENERGY STAR

<http://www.energystar.gov>

City of Long Beach, Environmentally Preferable Purchasing Program

<http://www.longbeach.gov/civica/filebank/blobload.asp?BlobID=12446>

### Transportation Services

A number of opportunities exist to green municipal transportation services, including the procurement of vehicles that are smaller, more fuel-efficient, and/or that run on alternative fuels. A green procurement policy can mandate or encourage these strategies, and can also be used to require that purchasers demonstrate sufficient need for any purchase to begin with.

A quick scan of the “greenest” municipal fleets among large US cities, according to SustainLane’s annual report, shows that a number of large cities have converted a sizeable portion of their fleet over to alternative fueled vehicles and more fuel-efficient vehicles. By replacing 30% of its fleet with smaller, more fuel efficient vehicles, the City could reduce its annual GHG emissions by approximately 20 tons of CO<sub>2</sub>e and create ongoing fuel cost savings while potentially imposing no additional cost to the City following regular vehicle replacement schedules.

### *Useful Links*

- <http://www.metrokc.gov/procure/green/>
- [http://www.greenbiz.com/toolbox/essentials\\_third.cfm?LinkAdvID=32453](http://www.greenbiz.com/toolbox/essentials_third.cfm?LinkAdvID=32453)
- <http://www.iclei-europe.org/index.php?id=3113>
- <http://www.epa.gov/opptintr/epp/>

## 2. LEED Requirements for New Municipal Facilities

### Overview

Developed by the U.S. Green Building Council, the Leadership in Energy and Environmental Design (LEED) green building certification program has become the national standard for recognizing the green performance of buildings. Of the more than one thousand registered LEED projects around the country, approximately 25% were owned by local governments as of 2003. A number of local governments have adopted green building requirements in the form of LEED certification or based on the LEED standard for new municipal facilities.

### Energy, Cost and Greenhouse Gas Savings Potential

Instituting LEED green building requirements for new municipal facilities may impose no additional up-front cost burden at all depending on the quality of the design and construction team hired for the project, project timeline and other considerations. When properly factored into the project design and construction process, green building requirements can add minimal incremental costs. At the same time, cost savings potential can be quite significant.

The quantity of information regarding both first cost and life cycle cost differentials between green buildings and conventional buildings is growing. Research completed by Xenergy Inc for the City of Portland, OR found that the additional cost to build three sample buildings according to the LEED certified standard was -0.3 to 1.3 percent from a first cost perspective in comparison to developing the buildings without regard to LEED. This same study found that constructing these buildings to the LEED certified standard would save the city approximately 15 percent of the total construction costs over the life of the building.<sup>1</sup> The US Green Building Council has also collected information with regard to a variety of LEED certified buildings and has found that building to LEED resulted in from 0 percent to 2.2 percent increase in first costs.<sup>2</sup> The US Green Building Council is currently compiling information about the cost savings of building green over the life-cycle of a building.

Green buildings tend to pay for their green components quickly through reduced operating costs and improved performance. Even if one considers only the impact of going green on utility costs, the typical green building project will pay for all green components through lowered utility bills in four to eight years. New construction typically costs around \$200/per square foot for office space. Building to a LEED certification level can increase that cost by between \$2 and \$4 per square foot. However, incorporation of green building components can reduce utility costs from \$1.50 per square foot per year to less than \$1.00 per sq ft per year. Thus the payback on green building will average between four and eight years even if utility savings are the only item considered.

A 2000 study conducted by Xenergy for the Portland Energy Office showed that additional cost to upgrade municipal facilities that were not originally LEED certified varied largely from building-to-building. The additional costs to bring the buildings up to LEED certification standards would be small compared to the lifecycle costs savings due largely to reduced energy consumption.

The City of Menlo Park has expressed an interest in applying these data to a potential gymnasium project. There are currently hundreds of gymnasiums that have been LEED certified as a part of larger school complexes. Companies such as Draper Inc. now offer a line of green gymnasium products that can help a

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<sup>1</sup> Green City Buildings: Applying the LEED Rating System, XENERGY Inc., Portland Oregon, June 2000.

<sup>2</sup> Green Building Cost Premiums and Savings," USGBC, August 2001

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gymnasium to qualify for LEED certification by limiting off-gassing of indoor air pollutants and utilizing recycled materials.

Assuming that a typical new gymnasium project will cost on the order of \$12 million for design and construction, and assuming a somewhat conservative estimate that requiring LEED certification of this gymnasium project could add two percent to the project cost, the impact on total project budget would be an increase of \$240,000. Annual energy savings created by strategies utilized in the pursuit of achieving LEED certification would likely be on the order of \$80,000, for a payback period of approximately three years. The financial rate of return on such a project would most likely be seen as quite favorable.

### *Useful Links*

- [http://www.nyclimatesummit.com/casestudies/building/bldg\\_seattle.html](http://www.nyclimatesummit.com/casestudies/building/bldg_seattle.html)
- <http://www.seattle.gov/dpd/GreenBuilding/CapitalProjects/Overview/default.asp>
- <http://www.serapdx.com/resource/publ/Green%20City%20Buildings.pdf>

### 3. Subject All New City Projects to a Greenhouse Gas Emissions Filter

While the impact of any new project or policy on greenhouse gas emissions is certainly not the only criterion to be considered, the City has recognized the importance of reducing greenhouse gas emissions, and the impacts need to be known.

Greenhouse gas emissions are produced primarily from the consumption of electricity, natural gas, gasoline, diesel and other fuels, as well as the decomposition of waste in landfills, each of which causes the release of carbon dioxide, methane, and other greenhouse gas emissions into our atmosphere. Through its operation of facilities, lighting, fleet vehicles, and other systems, the City contributes to the creation of greenhouse gas emissions and shares in the responsibility and opportunity to reduce those emissions by improving efficiency and reducing waste. Improvements in energy efficiency, for example, can also lead to cost savings for the city and other benefits, while reducing emissions.

For any new project or policy, it is possible to quantify an estimate of the impact on energy, fuel and material consumption, and to translate this into a quantity of greenhouse gas emissions.

The first step will be to estimate the net energy or waste reduction or production created by the project or policy, as well as a separation of local and non-local emissions costs and benefits. This analysis can vary greatly in complexity and requirements of data, cost, technical knowledge and time on behalf of the staff person performing the analysis.

For example, a proposed replacement of 50 incandescent light bulbs with compact fluorescent light bulbs in a City facility can be quantified using a rather straightforward method requiring only a few basic data points and assumptions, as illustrated below:

	Before Scenario	Replacement Scenario
Light bulb type	Incandescent	Compact fluorescent
Number of bulbs	50	50
Power requirement per bulb	60 Watts	15 Watts
Use (hours per avg work day)	4 hours	4 hours
Use (hours per avg year)	1000 hours	1000 hours
Annual energy consumption	3000 kWh	750 kWh
Relative annual energy savings	n/a	2250 kWh

However, this analysis can be considerably more complicated. For example, a proposed policy requiring full lifecycle greenhouse gas emissions impacts to be analyzed and minimized would require a considerably more detailed analysis. In the above example, information on the mining and extraction, transport, manufacture and distribution of all product components for each type of light bulb would be needed. Lifecycle analysis is quite policy relevant, though data requirements are often difficult to meet with any degree of accuracy and time and resource intensive to obtain.

Using the Clean Air and Climate Protection software provided by ICLEI, City staff can estimate the greenhouse gas emissions associated with any given amount of energy consumption or waste production. Once the quantity of energy, fuel or waste has been estimated, the process of estimating associated emissions impacts takes less than one additional hour of staff time.

To facilitate community efforts to reduce greenhouse gas emissions, ICLEI developed the Clean Air and Climate Protection (CACP) software package in partnership with the State and Territorial Air Pollution Program Administrators (STAPPA), the Association of Local Air Pollution Control Officials

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(ALAPCO)<sup>3</sup>, and Torrie Smith Associates. This software calculates emissions resulting from energy consumption and waste generation. The CACP software determines emissions using specific factors (or coefficients) according to the type of fuel used. Greenhouse gas emissions are aggregated and reported in terms of equivalent carbon dioxide units, or CO<sub>2</sub>e. Converting all emissions to equivalent carbon dioxide units allows for the consideration of different greenhouse gases in comparable terms. For example, methane is twenty-one times more powerful than carbon dioxide on a per weight basis in its capacity to trap heat, so the CACP software converts one metric ton of methane emissions to 21 metric tons of carbon dioxide equivalents.

The emissions coefficients and quantification method employed by the CACP software are consistent with national and international inventory standards established by the Intergovernmental Panel on Climate Change (1996 Revised IPCC Guidelines for the Preparation of National Inventories) and the U.S. Voluntary Greenhouse Gas Reporting Guidelines (EIA form 1605).

The CACP software has been and continues to be used by over 160 U.S. cities and towns to reduce their greenhouse gas emissions. However, it is worth noting that, although the software provides Menlo Park with a sophisticated and useful tool, calculating emissions from energy use with precision is difficult. The model depends upon numerous assumptions, and it is limited by the quantity and quality of available data. With this in mind, it is useful to think of any specific number generated by the model as an approximation of reality, rather than an exact value.

### **Implementation Time and Costs**

Using the example provided earlier, a City staff person could relatively quickly enter the annual energy savings value of 2,250 kWh into the CACP software to calculate an estimated associated greenhouse gas emissions reduction produced by the conversion from incandescent to compact fluorescent light bulbs. This portion of the analysis will generally take less than an hour.

Thus subjecting new City decisions to this type of greenhouse gas emissions analysis screen will primarily add cost in the area of estimating the energy, fuel or waste impacts of the policy decision. In some cases, this will add only a couple of hours of staff time to the analysis. In others, multiple days of time may be needed in order to make even a rough estimate of the impacts.

### Sustainability Filter

The City of Olympia, Washington, has developed another interesting model to consider in applying a sustainability screen to all proposed City projects and policies. In the early 1990's, a taskforce of community members in Olympia developed a sustainability vision for the City of Olympia. This vision drove a number of City initiatives, including adopting a resolution to reduce harmful emissions that lead to global warming, experimenting with alternative fuel vehicles; and pursuing compact, high density development. As these and other initiatives have made gradual progress over time, the City Council in 2005 enacted a new goal of "putting sustainability to action." This goal was intended to reinvigorate the City's sustainability efforts with a focus that is more on tangible actions.

A group of Department Directors gathered to develop a sustainability strategy to achieve the Council's goals. The group called themselves the Sustainability Super Team (SST), and presented the sustainability strategy to the City Council for approval on March 14, 2006. The key element of the strategy is focusing on decision-making. The team felt that sustainable action starts with sustainable decision-making. The team identified that a successful decision model is one that:

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<sup>3</sup> Now the National Association of Clean Air Agencies (NACAA)

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- Will help identify balanced solutions.
- Will help decision-makers see the trade-offs and opportunities, not just the pros and cons.
- Will be simple and user friendly.
- Will tell a story, be visual, and easy for the average person to understand and see the connections between seemingly unrelated things.
- Can be replicated in any City Department.

To assist the development of this decision model, the City teamed up with the Evergreen State College. A team of six undergraduate students designed a sustainable decision model as part of a class project. The students named themselves STARS, or Students Toward Achieving Realistic Sustainability. After ten weeks of work, what emerged was the Sustainable Action Map (SAM) that achieved the principles set out early by the Sustainability Super Team.

The City now requires that this one-page Sustainable Action Map be completed for each new proposed project or policy. The SAM requires that strengths, weaknesses, opportunities and threats posed by any new decision be considered as they apply to the environment, economy, individuals and community. Threats must be minimized before any new decision is adopted.

For further information, see <http://www.ci.olympia.wa.us/community/sustainability/SAM/>.

## 4. Time-of-Sale Energy Efficiency Improvement/Weatherization Policy

### Overview

Requiring energy and water audits and minimum implementation levels of energy and water conservation measures at the point of sale is an effective way to improve the efficiency of existing housing and commercial building space. In addition to reducing greenhouse gas emissions, it can help insulate residents and commercial building owners from energy price increases by reducing the amount of energy used for heat, hot water, and lighting. Programs can be designed to only require measures which are low or no cost and include a spending limit for meeting upgrade requirements.

### Startup Time and Costs

#### Program Design

Approximate cost: \$75,000

The City should allow approximately 18 months to establish the program and hire a consultant to design the program requirements and process. An extensive effort must be made to educate realtors in the area and garner support for the program.

#### Program Administration and Implementation

Approximate cost: \$120k per year or 1.5 FTE

Rather than conduct the audits itself, the City of Berkeley refers property owners to a local service provider that conducts the audits and can also perform any required upgrades and retrofits. Allow nine months to establish the program and half of one FTE to administer the program on an ongoing basis.

### The Most Effective Measures

- **Toilets** -- 1.6 gal/flush, or flow reduction devices; **\$25 to \$100 rebate** on low-flow toilets available through [EBMUD](#) (510-287-1900 for an application); devices save \$3.50/year on water bills.
- **Showerheads** -- 3.0 gal./minute flow rate; **saves \$10.00-\$52.00/year per unit installed.** Available free from [EBMUD](#).
- **Faucet aerators** -- 2.75 gal./minute flow rate for kitchens and bathrooms; **saves ~\$4.00/year per unit installed.** Available free from [EBMUD](#).
- **Water heater blankets** -- Insulation wrap of R-12 value; **saves \$12.00- \$66.00/year**
- **Hot & Cold Water Piping** -- Insulate the first two feet from the heater to R-3 value; **saves \$10.00- 70.00/year**
- **Hot Water Piping in Pumped, Re-circulating Heating Systems** -- Insulate all pipes to R-3 value; **saves \$10.00 - \$70.00/year**
- **Exterior Door Weatherstripping** -- Permanently affix weather stripping, and door sweeps or door shoes; **saves \$10.00 - \$70.00/year PER DOOR.**
- **Furnace duct work** -- Seal duct joints add insulation wrap to R-3 value; **saves \$88.00+/year**
- **Fireplace chimneys** -- Must have dampers, doors or closures; **saves \$165.00+/year**
- **Ceiling insulation** -- Insulate to R-30 value or greater; **saves \$280.00+ /year**
- **Common Area Lighting (multi-unit buildings)** -- Replace incandescent bulbs with compact fluorescent lamps (CFL) of at least 25 lumens; these cost \$10-15 each, but last up to 10,000 hours versus 750 hours for incandescent bulbs. Payback period is 6-10 months at current electricity rates.

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### **Greenhouse Gas Reduction Potential\***

- Electricity: 720 kWh per residence or 352.08 lbs CO<sub>2</sub> per residence
- Natural Gas: 120 therms or 633.42 kg CO<sub>2</sub> per residence

\*Assumptions based on estimated reductions cited in the City of Berkeley's Draft Climate Action Plan

### **Resources**

- <http://www.ci.berkeley.ca.us/sustainable/residents/ResSidebar/RECO.html>
- <http://www.ebenergy.org/>
- <http://www.risingsunenergy.org/>

## 5. Residential Energy Audit Program

### Overview

There are a number of programs in the Bay Area that assist residents in making energy efficiency retrofits to their homes, all of which have been shown to significantly reduce energy consumption and greenhouse gas emissions.

The Menlo Park Citizen's Green Ribbon Committee and Menlo Park City Staff have identified the Peninsula-based non-profit organization Acterra and their Green@Home program as a likely candidate for carrying out residential energy audits in Menlo Park. The Acterra program functions by training volunteers from the community to help residents conduct basic energy efficiency retrofits (such as installing CFL light bulbs, programmable thermostats, weather stripping, etc.) and to create a detailed energy saving plan for broad-reaching energy and emission reductions.

The Acterra Green@Home program is designed to build a groundswell of energy conservation behavior throughout the community, as neighbors witness one another taking action to reduce their energy consumption. Green@Home volunteers are trained to conduct neighborhood outreach during their visits by distributing fliers and outfitting Green@Home participants with lawn signs that advertise program participation.

### Startup Time and Costs

The Menlo Park Citizen's Green Ribbon Committee has identified that, with Acterra facilitating the ramp-in of this project, it would be operational after a 3 month phase of hiring a volunteer coordinator and training the volunteers.

The Green Ribbon Committee has also identified a strategy whereby "Menlo Park could contract with Acterra and provide the funds (\$35,000 half time staff for a year) and in-kind services such as, office space, access to community communication media, access to city maps and relevant data, copying/printing services and integration with other city climate protection initiatives."

Alternatively, the Committee points out that "Menlo Park could contract with Acterra and ask Acterra to find grant money for staff and still provide in-kind services."

If, after one year, 150 homes were engaged in this program, the cost to the City would be approximately \$235 per home. Savings to home owners would lie in a range between \$100 and \$1000, depending on current energy use patterns and the intensity of their energy reduction efforts.

### Greenhouse Gas Reduction Potential

Under involvement in the Green@Home program, residential emissions are estimated to decrease 3 to 4.5 metric tons of CO<sub>2</sub> per house per year. Assuming 150 new members per year, and ongoing participation of existing members, emissions reductions would be:

Year	CO <sub>2</sub> emission reductions (metric tons)
1	563
2	1125
3	1688
4	2251
5	2814

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### Case Studies<sup>4</sup>

[Albuquerque, NM](#) - *Multifamily energy-efficient lighting & water conservation with no first cost*

Performance contracting allowed Albuquerque, New Mexico, to upgrade its public housing without any upfront costs. The \$1.4 million project focused on installing both energy-efficient lighting and low-flush toilets in 28 buildings around the city. The upgrades will save an estimated 1.14 million kilowatt hours of electricity, 7,656 therms of natural gas and 166,422 gallons of water per year.

[City of Boulder Housing Authority](#) - *Multifamily energy-efficient lighting*

Through an Energy Performance Contract, the City of Boulder Housing Authority installed energy-efficient lighting at Canyon Pointe, an 82-unit complex for seniors. The project, which cost \$11,927, saves nearly \$4,000 each year.

[Danbury Public Housing Authority](#) (Connecticut) - *Combined Heat and Power (CHP) in HUD public housing*

A cogeneration system supplies up to 60 kW of electricity, heating to four of seven residential floors, and all domestic water for the 100-unit Wooster Manor building. The CHP system was installed in 1998, and Wooster Manor's energy costs dropped by \$40,000, or almost 50%.

[Rachel Anne Apartments, Gresham \(Oregon\)](#) - *Insulation, lighting and windows*

The 1970s-vintage apartment complex wasn't as marketable as its newer counterparts. With financial incentives from Energy Trust of Oregon, Inc. and Oregon Business Energy Tax Credits, all units were upgraded with new energy-efficient windows, increased insulation levels, and energy-efficient lighting. The units are more comfortable and less prone to window condensation and mold, and residents save over \$250/unit each year in energy costs.

[LaSalle County Housing Authority](#) - *Lighting retrofits, boiler replacement, water meter improvements*

The LaSalle County (Illinois) Housing Authority has undertaken a project to implement energy-saving improvements at 927 sites at 19 of its developments. The project will include lighting retrofits, boiler replacement, and water meter consolidation, saving an estimated \$150,000 each year. The project is funded through an Energy Performance Contract.

[Minneapolis Housing Authority Energy-Efficiency Program](#) - *High rise water, sewer, heating and cooling improvements*

The Minneapolis Public Housing Authority (MPHA) used an Energy Performance Contract to rehabilitate the water, sewer, heating, and cooling systems of 40 high-rise developments. During the first 18 months of the program, MPHA saved more than \$1 million and anticipates saving approximately \$3 million over the 10-year program period.

[New York City Housing Authority - Refrigerator Replacement](#)

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<sup>4</sup> Case Studies drawn from: <http://rehabadvisor.pathnet.org/sp.asp?id=10772>

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The New York Power Authority replaced more than 180,000 old, inefficient refrigerators in the New York City Housing Authority with smaller, more efficient units that use just one-third the energy of the older models, saving \$7.2 million annually in electricity costs. The new refrigerators rely on a more environmentally friendly refrigerant. Also, an appliance recycler in Syracuse removes all salvageable components from the older units and recycles millions of pounds of aluminum, copper, steel and cardboard.

### [Oakland Housing Authority](#) - *Multifamily energy conservation*

Oakland Housing Authority implemented a number of conservation measures and practices throughout its buildings in order to reduce costs and improve resident comfort. With technical assistance from Rebuild America, Oakland Housing Authority developed a prototype for renovating small public housing sites. The result was a model that improves resident comfort while improving energy efficiency.

### [Housing Authority of the City of Pittsburgh](#) - *Multifamily lighting, water and heating improvements*

A comprehensive energy plan undertaken at the Housing Authority of the City of Pittsburgh (Pennsylvania) will reduce energy consumption and save the Authority more than \$4 million over 10 years. The plan includes a host of measures for eight properties, including a lighting retrofit, water-conservation measures, and installation of radiator control valves, boiler controls, and domestic hot water temperature controls. The project is funded through an energy performance contract.

### [Portsmouth Metropolitan Housing Authority](#) - *Multifamily water saving measures*

A water-efficiency program implemented at the Portsmouth (Ohio) Metropolitan Housing Authority is saving \$100,000 in water costs each year. The program installed low-flush toilet and low-flow shower heads in 776 units, as well as repairing any leaking faucets.

### [Richmond Housing Authority](#) - *Multifamily water saving and energy-efficiency*

The Richmond (Virginia) Housing Authority (RHA) is saving nearly \$800,000 annually on its water bills after installing water- and energy-saving devices in its housing. The Authority installed 3,350 new water-saving 1.6-gallon toilets; 6,700 faucet aerators; and 3,350 showerheads in its tenant units. Other efforts at RHA include an energy-efficient lighting retrofit, refrigerator replacement, and boiler replacement.

### [20th Street Apartments - Santa Monica, California](#) - *Comprehensive Energy Efficiency Retrofit*

When the inefficient radiant ceiling heating system needed replacing, the City of Santa Monica and the Community Corporation of Santa Monica used the opportunity to include repair of solar-assisted hot water heating system, Energy Star refrigerators, increased attic and wall insulation, double-glazed windows and sliding glass doors, compact fluorescent lighting, setback thermostats, and skylights. The measures will collectively reduce electricity consumption by 39% and natural gas consumption by 22%, totaling some \$10,000 each year.

### [Summit Plaza](#) (New Jersey) - *Combined Heat and Power (CHP) in HUD-assisted multifamily housing*

A HUD demonstration site where, since 1975, a cogeneration system supplies up to 3 megawatts of electricity, heating and cooling to four residential towers with 485 units, a grade school, a pool, and commercial property. The CHP system has delivered 99.8% power reliability and saves 160,000 gallons

## Community Scale Action Items

of fuel annually. The property manager says, "If we had to do it all over again and it were up to me, I'd definitely do it...."

[Wilmington Housing Authority](#) (Delaware) - *Multifamily energy-efficiency improvements and resident rewards*

Through an Energy Performance Contract, the Wilmington Housing Authority has implemented an energy efficiency project that includes the installation of efficient heat pumps, refrigerators, lighting, toilets, insulation, and thermostats. The project will save an estimated \$3.5 million over the length of the 12-year contract. In addition, in recognition of their efforts to conserve energy, residents have been awarded funds to pay for school scholarships, school supplies, emergency hardship funds, and cultural events.

### Resources

- <http://www.acterra.org/greenathome/index.html>
- <http://rehabadvisor.pathnet.org/index.asp>
- <http://www.risingsunenergy.org/index.htm>
- <http://www.gridalternatives.org/>
- <http://www.habitatsf.org/gridAltern.php>

## **6. Financing Program for Residential and Commercial Solar Energy Systems**

### **Overview**

Though currently available state and federal subsidies for solar photovoltaic and solar hot water systems are effective incentives for many residential and commercial property owners, there are two remaining hurdles to solar and energy efficiency installation – the high up-front cost and the possibility that those costs will not be recovered if the property is sold. The City of Berkeley is planning to become the first city to eliminate these barriers by utilizing the same financing mechanism used for “underground utility districts” in which the City serves as the financing agent for a neighborhood when they move utility poles and wires underground. In this case, individual property owners would contract directly with qualified private solar installers and contractors for energy efficiency and solar projects on their building. The City provides the funding for the project from a bond or loan fund that it repays through assessments on participating property owners’ tax bills for 20 years. Under this plan, there is little or no up-front cost to the property owner, and if the property owner sells the property prior to the end of the repayment period, the new owner takes over the assessment payments which will continue on the property’s annual tax bill. The overall cost to the property owner will likely be reduced compared to traditional financing because the City is able to borrow at lower rates via well secured bonds in large increments.

The Mello-Roos Community Facilities Act of 1982 (the “Mello-Roos Act”) authorizes creation of community facilities districts, the issuance of bonds and the levy of special taxes to finance public facilities and certain improvements to private property. The Mello-Roos Act does not currently authorize local agencies to finance the Energy Projects for private property. As a charter city, the City has power over municipal affairs when the subject matter has not been preempted by State law. State law has not preempted the financing of Energy Projects for private property and, accordingly, the City may adopt the Code for that purpose. The Code will incorporate most of the provisions of the Mello-Roos Act, and make changes to the Mello-Roos Act to the extent necessary for purposes of the program.

### **Startup Time and Costs**

#### Program Design

Approximate cost: \$75,000

The City should allow approximately 18 months to establish a similar program and hire a consultant to design the program. Though much of the background research conducted by staff at the City of Berkeley and researchers at UC Berkeley will not need to be replicated, the city will need to locate initial funding via private bank or municipal bonds, establish agreements with local solar installers and energy efficiency service providers.

New code must be drafted and added as a new chapter in the City’s Municipal Code that allows the city to (a) issue bonds to pay the costs of Energy Projects for privately owned residential and commercial buildings and (b) levy special taxes on properties that choose to participate in the program.

The City Council must then adopt the Code and, utilizing the authority provided by the Code, form the “Energy Financing Special Tax District” (the “Special Tax District”). A general election is not required. The Special Tax District would encompass the entire City of Menlo Park.

#### Program Administration and Implementation

Approximate cost: \$80k per year or 1 FTE

## Community Scale Action Items

### Greenhouse Gas Reduction Potential

	Solar Photovoltaic	Solar Thermal (Hot Water)
<b>Residential</b>	Approx. financing needed for 40 3kw systems after rebates and federal tax credit - \$840,000 Approx energy savings – 175200 kwh Approx CO <sub>2</sub> savings – 38.8 metric tons CO <sub>2</sub>	Approx. financing needed for 20 80 sq. ft. systems after federal tax credit - \$78,400 Approx. energy savings – 7,200 therms/yr Approx. CO <sub>2</sub> savings – 38 metric tons CO <sub>2</sub>
<b>Commercial</b>	Approx. financing needed for 5 20kw systems after rebates and federal tax credit - \$462,000 Approx. energy savings – 164250 kwh Approx. CO <sub>2</sub> savings – 36.4 metric tons CO <sub>2</sub>	Approx. financing needed for 5 1000 sq/ft systems after federal tax credit - \$210,000 Approx. energy savings – 22,540 therms/year Approx. CO <sub>2</sub> savings – 119 metric tons CO <sub>2</sub>

### Assumptions

#### Commercial Solar PV

Approx. cost for a 20kw system after rebates and federal tax credit - \$92,400

Approx energy savings – 20kw x 4.5 hrs /day = 32850 kwh

Approx CO<sub>2</sub> savings – 2142 lbs CO<sub>2</sub>

\$8.50/watt installed

As of 2/18 the CSI Expected Performance Based Buydown payment per watt is at step four or \$1.90/watt for commercial customers, \$2.65 for gov and non-profit (Assuming a design factor of 100% through the [EPBB Calculator](#))

5 commercial projects per year, on average 20kw each

#### Residential Solar PV

Approx. cost for a 3kw system after rebates and federal tax credit - \$21,000

Approx energy savings – 3kw x 4.5 hrs/day = 4380kwh

Approx CO<sub>2</sub> savings – 2142 lbs CO<sub>2</sub>/year

As of 2/18 the CSI Expected Performance Based Buydown payment per watt is at step three or \$2.20/watt for residential customers (Assuming a design factor of 100% through the [EPBB Calculator](#))

30% fed tax credit (\$2000 max)

\$10/watt installed, \$7/watt after rebate and tax credit,

40 residential systems per year, on average 3kw each

#### Commercial Solar Thermal

Approx. cost for a 1000 sq/ft system after federal tax credit - \$42,000

Approx energy savings – 4508 therms/year

Approx CO<sub>2</sub> savings – 23.8 metric tons CO<sub>2</sub>

\$60/sq ft, 30% fed tax credit (no cap)

5 projects/yr

#### Residential Solar Thermal

Approx. cost for an 80 sq/ft system after federal tax credit - \$3,920

Approx energy savings – 360 therms/year

Approx CO<sub>2</sub> savings – 1.9 metric tons CO<sub>2</sub>/year

\$70/sq ft, 30% fed tax credit (\$2,000 limit)

20 projects, on average 80 sq/ft each

## Community Scale Action Items

### **The Most Effective Measures**

Because the energy sources used to generate the energy consumed in Menlo Park contains relatively little fossil fuels, solar thermal projects will result in greater greenhouse gas reductions than solar PV projects. To prevent a bottleneck in program implementation, Menlo Park may also wish to streamline the solar permit review process by working with local solar installers to pre-approve solar design standards and fast-track designs that meet these standards. This will alleviate staff time needed for design review and allow the City to consider reducing or waiving the permit fee for solar projects.

### **Resources**

- <http://www.ci.berkeley.ca.us/Mayor//GHG/SEFD-summary.htm>
- <http://www.ci.berkeley.ca.us/Mayor//PR/pressrelease2007-1023.htm>
- <http://rael.berkeley.edu/berkeleysolar>
- <http://rael.berkeley.edu/files/berkeleysolar/FE-FAQ-12-4-07.pdf>
- [http://www.sdreo.org/uploads/Selfgen\\_Statewide\\_Data\\_Nov06.xls](http://www.sdreo.org/uploads/Selfgen_Statewide_Data_Nov06.xls)
- [http://www.theclimategroup.org/reducing\\_emissions/case\\_study/san\\_francisco/](http://www.theclimategroup.org/reducing_emissions/case_study/san_francisco/)

## 7. Commercial Recycling/Compost Collection Requirements

### Overview

Requiring businesses and residents to recycle and compost organic material can be an effective way of increasing waste diversion rates and complying with state laws mandating specified waste diversion performance targets. While mandatory recycling programs have been around since the late 1980s, most municipalities opt to use financial incentives, convenience, and education to increase recycling rather than mandates and enforcement. However, requiring recycling and/or composting can be a cheap, easy, and effective way to increase a community's recycling participation and diversion rate.<sup>5</sup>

### Startup Time and Costs

Compared to other methods for increasing recycling rates, mandatory recycling imposes relatively little overhead or capital costs. Switching to a mandatory system in which waste generators at the residential or commercial level are required to recycle all recyclable material, for example, would require the development and distribution of informational materials, some degree of compliance inspection, and administration of fees or other penalties. Recycling is more efficient with higher volumes, which could be achieved through mandatory programs, and larger quantities of recyclables can bring a higher salvage price. In a study by the research firm SERA, Inc, mandatory recycling was identified as one way to reduce costs of recycling programs by an estimated 10-25%.

The net cost or benefit of a mandatory recycling program is calculated as follows:

$$\begin{aligned} \text{Recycling Cost} &= \text{Recycling Collection} + \text{Processing} + \text{Enforcement Cost} \\ &\quad - \text{Enforcement Revenues} - \text{Material Salvage} \\ &\quad - \text{Avoided Refuse Collection} - \text{Avoided Refuse Disposal} \end{aligned} \quad ^6$$

The financial benefits of recycling can be improved by influencing any component in this calculation.

Durham, North Carolina implemented a ban on the disposal of target recyclables (cardboard, newspaper, glass and aluminum). Initial expenses were incurred for an education program estimated at \$50,000 for the first year. The need for additional staff to conduct enforcement activities was anticipated as the program evolved, but at the time of start up, existing solid waste supervisory staff were to perform these duties.

Collier County, Florida projected that it could preserve up to 30,000 cubic yards of landfill capacity through its new recycling program over five years, which translates to more than \$1.2 million in avoided disposal costs.

### Example Ordinances & Policies

Some mandatory commercial recycling programs require businesses to recover a certain number of recyclable commodities, such as paper, cardboard, aluminum, glass, and in some cases, fluorescent light bulbs and other items. Peoria County, Illinois' Commercial Recycling Ordinance requires businesses to recycle two of their most quantified recyclables from their waste stream. Tredyffrin Township, Pennsylvania requires commercial and institutional establishments to recycle at least three commodities.

Other programs seek to establish a minimum percentage of the waste stream that must be diverted through

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<sup>5</sup> ICLEI Resource Guide – Recycling and Solid Waste Management, 2008.

<sup>6</sup> Adapted from Jim Morris, "Does Recycling Pay?", Waste Age, Sept 1, 1996, [http://wasteage.com/mag/waste\\_recycling\\_pay/](http://wasteage.com/mag/waste_recycling_pay/) Note that some of these costs may be bundled by your waste collection service. For example, recycling collection fees may already account for sorting and salvage.

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recycling. Ann Arbor, Michigan requires businesses to recover 50% of their waste stream or to recover the top two materials in their waste stream, whichever is greater. In Seattle, commercial refuse cans containing more than 10% of recyclable materials are not picked up and a notice is left. Cambridge, Massachusetts requires that all commercial establishments separate designated recyclable materials generated on the premises, which represent greater than 5% by weight of the establishment's total refuse, and they must arrange for the collection for recycling of these materials.

### Greenhouse Gas Reduction Potential<sup>7</sup>

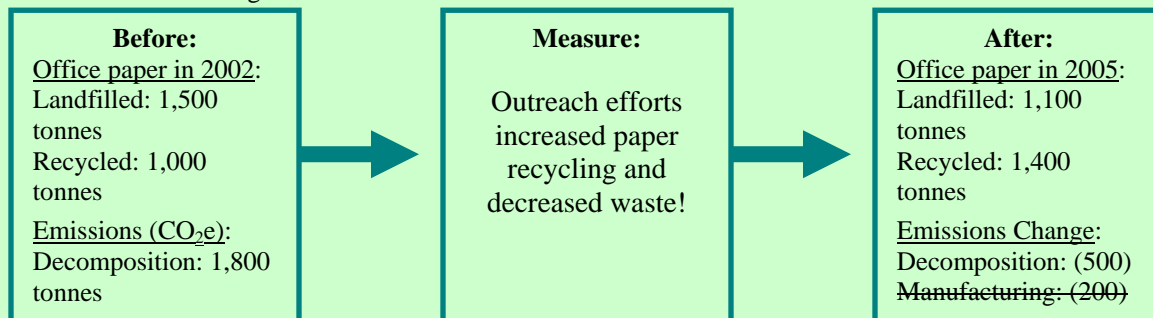
The complexity of recycling practices can make it challenging to accurately determine the benefits they yield. Using the results from Menlo Park's baseline emissions inventory, it is possible to estimate the reduction in greenhouse gas emissions from recycling and composting all of the recyclable and compostable materials that are in the waste stream.

By increasing the recycling rate for paper to 100%, 9,100 metric tons of CO<sub>2</sub>e can be avoided annually. Composting all food waste will reduce emissions by 1,332 metric tons of CO<sub>2</sub>e annually.

### Before & After

*When comparing emissions before and after a waste management measure, be sure to compare apples to apples.*

When analyzing waste for purposes of showing an overall emissions reduction, it is important to be careful which stages of a lifecycle analysis are included. Many municipalities want to demonstrate the benefits of waste management measures but including emissions reductions for areas that weren't included in the original inventory results in double counting.



In this example, 880 tonnes of CO<sub>2</sub>e were avoided through the measures. While these reductions are real, the community's total emissions have only been reduced by 500 tonnes because manufacturing and transportation phases of paper's lifecycle were not included in the original inventory.

### Resources

CalMAX is a free, on-line materials exchange service designed to help businesses, organizations, local governments, industry, schools and individuals find markets for non-hazardous materials that may otherwise be discarded.

<http://www.ciwmb.ca.gov/CalMAX/>

Santa Barbara's mandatory business recycling program

[http://www.lessismore.org/Programs/bsnss\\_recycling\\_complete.html](http://www.lessismore.org/Programs/bsnss_recycling_complete.html)

<sup>7</sup> ICLEI Resource Guide – Recycling and Solid Waste Management, 2008.

## Community Scale Action Items

Lee County Florida's mandatory business recycling ordinance

[http://lee-county.com/Ordinances/07\\_25\\_Mandatory\\_Business\\_Recycling.pdf](http://lee-county.com/Ordinances/07_25_Mandatory_Business_Recycling.pdf)

Honolulu, Hawaii's mandatory commercial recycling program

[http://envhonolulu.org/solid\\_waste/archive/Mandatory\\_Recycling\\_Laws.html](http://envhonolulu.org/solid_waste/archive/Mandatory_Recycling_Laws.html)

## 8. Build-It-Green Requirements for New Home Construction

### Overview

Build It Green is a professional non-profit membership organization whose mission is to promote healthy, energy and resource-efficient buildings in California. With a foundation of outreach and education, Build It Green connects consumers and building professionals with the tools and technical expertise they need to build quality green buildings. Build It Green fosters collaboration with key stakeholder groups to accelerate the adoption of green building practices, policies, and programs through its network of councils.

Build It Green provides strategic assistance to local governments for developing, promoting, and implementing their green building policies and programs. Build It Green works at the state and local level to establish credible, effective policies and programs that will provide the foundation for green building to become standard practice. They define their policy principles as:

- **Complementary and Consistent.** Build It Green's green building guidelines, policies and programs are intentionally crafted to be consistent and complementary with California's energy and water utility programs, building and energy codes, and reputable national green building programs such as ENERGY STAR® and LEED™.
- **Comprehensive.** Build It Green promotes policies that provide credible minimum thresholds for all categories of green building, including energy, water, health and natural resources.
- **Inclusive and Transparent.** Build It Green develops guidelines and policies in a nonadversarial, open process with all interested stakeholders.
- **Flexible.** The policies they recommend are flexible enough to be adapted to regional needs and contexts without weakening their integrity.

Build It Green has developed an Implementation Toolkit to help local governments adopt green building policies. Build It Green's staff works with local government staff and officials to help them take advantage of all the resources in the Toolkit. Services provided by Build It Green include:

- Establishing and supporting Public Agency Councils in priority regions around the state
- Conducting training for local government officials, policy makers, and staff
- Benchmarking and tracking local government policies, programs, and incentives to tap into emerging best practices and avoid "reinventing the wheel"

Build It Green also offers expert customized responses to a variety of green building questions, has arranged self-guided green building tours throughout the Bay Area, maintains a public reference library of books, periodicals, and other references related to green building, and provides an extensive listing of green products and technologies available in the 9-County San Francisco Bay Area and City of Anaheim.<sup>8</sup>

Build It Green's **GreenPoint Rated** program provides an objective, third-party verification system. Trained and certified raters evaluate whether new building construction projects meet program standards. Conservation of natural resources, increased energy efficiency and improved indoor air quality are just a few of the benchmarks a new home must reach to qualify.

The GreenPoint Rated evaluation framework is similar to the USGBC's LEED for Homes standard, which does not operate widely in California primarily due to the existence of the similar Build It Green offering. The Leadership in Energy and Environmental Design (LEED) Green Building Rating System™ is the nationally accepted benchmark for the design, construction and operation of high performance

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<sup>8</sup> Much of the above text is drawn directly from the BuiltItGreen website: <http://www.builditgreen.org/programs-services>

## Community Scale Action Items

green buildings, developed by the U.S. Green Building Council. LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality.

### **Startup Time and Costs**

Requiring Build It Green certification of new residential development would involve establishing a policy, ideally providing some educational training to local developers, and ensuring enforcement of compliance. Given the number of local governments in the region that have adopted local green building programs, the costs associated with developing such a program in Menlo Park will probably be on the order of \$30,000 to establish the program and an ongoing annual investment on the order of \$40-70,000 to ensure compliance with the standard, relying on the Build It Green infrastructure to assist with program verification and administration.

### **The Most Effective Measures**

A number of emissions reduction strategies are typically incorporated in homes rated through Build It Green's GreenPoint Rated program. Although the program provides flexibility in achieving certification via various combinations of strategies, GreenPoint Rated homes will typically feature reduced energy consumption through use of more energy-efficient furnaces, air conditioners, lighting, appliances and other equipment. These homes also tend to feature tighter construction, high performance windows, and more effective insulation, creating overall home energy efficiency improvements that often result in energy savings of 20-30% relative to standard homes.

### **Greenhouse Gas Reduction Potential**

Constructing residential homes to the Build It Green standard can reduce annual greenhouse gas emissions significantly by encouraging the construction of significantly more energy-efficient homes. Assuming that housing turnover will cause this requirement to affect approximately twenty percent of homes in Menlo Park over the next few decades, this could yield annual emissions reductions of approximately 4,000 tons of CO<sub>2</sub>e.

### **Example Bay Area Green Building Policy Standards<sup>9</sup>**

#### [Alameda County](#)

The Alameda County Waste Management Authority (ACWMA) was one of the original stakeholders in the formation of the Green Resource Center, which later became Built It Green. The county actively promotes GreenPoint Rated to homeowners, builders and local jurisdictions.

#### [City and County of San Francisco](#)

In July 2007, the [Mayor's Green Building Task Force](#) released a report recommending what, if adopted, would be the most progressive green building standards for private sector development of any city in the United States. Over five years increasing LEED and GreenPoint Rated standards would apply to new commercial and residential construction.

#### [City of Albany \(Standards of Compliance-.pdf\)](#)

The City of Albany Green Building Standards of Compliance mandate minimum thresholds for civic, commercial and residential projects with levels of stringency set according to building size or number of dwelling units. New single family residential and remodels subject to design review must achieve at least 50 Green Points and be verified by a third party GreenPoint Rater. New Multifamily developments must

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<sup>9</sup> From BuildItGreen website: [http://www.builditgreen.org/taxonomy\\_menu/3/5/52/55](http://www.builditgreen.org/taxonomy_menu/3/5/52/55)

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be the maximum GreenPoints practicable if less than 5 units and the minimum standard if more than 5 units.

### [City of Berkeley](#)

Every builder applying for a Use or Administrative Use permit for new construction and major remodels or involves demolition must consult with a Build It Green expert under the Berkeley's Best Builders program and submit a GreenPoint checklist with the application. All new non-residential buildings over 10,000 sq. ft. must conduct an Energy Conservation Analysis under PG&E's Savings by Design Program.

### [City of Brisbane](#)

Brisbane requires that all new single dwellings and multifamily residential projects of 20 units or more must achieve at least 50 GreenPoints with the minimum achievements in all categories according to the most recent GreenPoint Rated Guidelines.

### [City of Cotati](#)

Cotati's Sustainable Building Program mandates that every new residential development must achieve at least 60 points from the Greenpoint Rated checklist.

### [City of Hayward](#)

Hayward requires that all multifamily developments with 20 units or more are required to submit a Green Point Rated checklist to the Planning Commission, and obtain at least 50 points. Additionally, all municipal buildings exceeding \$3 million in cost must achieve a LEED Silver rating.

### [City of Los Altos](#)

Los Altos mandates that all new single and multifamily homes must be GreenPoint Rated, new municipal buildings be LEED certified, and new commercial developments be 15% more efficient than Title 24.

### [City of Novato](#)

The City of Novato requires that each new residential building achieve at least 50 GreenPoints with a minimum of ten points in each category. Major renovations must achieve 30 points with a minimum of five points in each category. Completed GreenPoints checklists must be submitted to the Planning Department and the Building Department.

### [City of Petaluma](#)

Petaluma's Community Development Department has partnered with Build It Green to launch a voluntary green building program in which Green Point Rated homes will be eligible for a \$500 rebate, and the first five projects to be Green Point Rated will receive plaques and citywide recognition.

### [City of Richmond](#)

Richmond requires that all city-funded commercial projects exceeding 5,000 sq. ft. must meet at LEED Silver rating and all city-funded residential projects exceeding 5,000 sq. ft. must achieve 70 points on the GreenPoint Rated checklist.

### [City of Rohnert Park](#)

The City of Rohnert Park has developed a tiered system for green building requirements. New buildings are subject to different GreenPoint Rated thresholds according to type (single dwelling, multiple dwelling and commercial), size and density. Single dwelling units must achieve between 90 and 110 points and new multifamily dwellings must achieve at least 80 points. All new commercial buildings are required to meet LEED for Commercial Interiors or Core and Shell.

### [City of San Rafael](#)

## Community Scale Action Items

San Rafael has developed a rigorous policy in which all new single- and multi-family residences, as well as residential additions over 500 sq. ft. must achieve 60 points on the GreenPoint Rated checklist. In addition, all commercial and civic buildings over 5,000 sq. ft. must be LEED certified and all those over 30,000 sq. ft. must achieve a LEED Silver rating.

### City of Sebastopol

The City of Sebastopol has a green building policy wherein every new residential and commercial buildings and commercial remodels over 1,800 sq. ft. achieve at least 60 Green Points in total and at least 15 points in Indoor Air Quality, Energy Efficiency and Resource Efficiency from the GreenPoint Rated guidelines. A third-party GreenPoint Rater must verify compliance.

### Marin County

Marin County's GreenPoint Rated-based policy requires that new buildings subject to discretionary review must achieve a predetermined number of Green Points according to the size of the building. All single family dwellings larger than 3,500 sq. ft. are subject to the energy efficiency budget of a 3,500 sq. ft. building.

### San Mateo County

The County encourages builders to use the voluntary Countywide Sustainable Building Guide and Checklist for new construction and major renovations targeting both residential and commercial projects. San Mateo County Recycleworks maintains a Green Building Materials Guide and Professionals Database tailored to the County, and actively promotes the GreenPoint Checklist and Build It Green's Ask an Expert service.

### **Resources**

- <http://www.builditgreen.org/>
- <http://www.usgbc.org/>

## 9. Commercial Buildings Energy Ordinance

Title 24 of the California Code—The Energy Efficiency Standards for Residential and Nonresidential Buildings—was established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically by the California Energy Commission to allow consideration and possible incorporation of new energy efficiency technologies and methods. The most recent complete update occurred in 2005. The next major revision will occur in 2008. An initial draft of the proposed changes has been released and is open for public comment. A number of the changes that are proposed for the 2008 Title 24 amendments are directly designed to help the state meet its emission reduction targets. An impact analysis report prepared by the CEC estimates that the proposed Title 24 amendments will result in annual emission reductions of more than 400,000 metric tons statewide.

Detailed information on the proposed Title 24 changes can be viewed through the following link:

<http://www.energy.ca.gov/title24/2008standards/rulemaking/documents/index.html>

Because of the forthcoming substantive changes to Title 24, ICLEI recommends that the City of Menlo Park looks closely at the stringent energy codes that other cities have adopted while waiting to see what the final Title 24 changes will encompass.

The California Energy Commission has recognized the following communities for adopting energy codes that are more stringent than the 2005 Building Energy Efficiency Standards Title 24, Part 6.

Local Ordinances	Date Approved	Application PDF
La Quinta	June 8, 2005	<a href="#">La Quinta Local Ordinance</a>
Los Altos Hills	October 11, 2006	<a href="#">Los Altos Local Ordinance</a>
Marin County	September 21, 2005	<a href="#">Marin County Local Ordinance</a>
Mill Valley	March 15, 2005	<a href="#">Mill Valley Local Ordinance</a>
Palm Desert	October 24, 2005	<a href="#">Palm Desert Local Ordinance</a>
Rohnert Park	March 14, 2007	<a href="#">Rohnert Park Local Ordinance</a>
Santa Barbara	January 30, 2008	<a href="#">Santa Barbara Local Ordinance</a>
Santa Monica	September 21, 2005	<a href="#">Santa Monica Local Ordinance</a>
Culver City	June 20, 2007	<a href="#">Culver City Local Ordinance</a>

### Cost

Two of the most recently adopted ordinances from this, those for Santa Barbara and Rohnert Park, were crafted by the same consulting firm: Gabel Associates, LLC in Berkeley, CA. It is possible that Menlo Park could hire this same consultant for somewhere in the range of \$50,000 to layer the same analysis for the City that was done for Santa Barbara and Rohnert Park. Rohnert Park's local energy ordinance provides several examples of the short payback period associated with the new requirements, albeit only for residential facilities (see example Table 1b below). Santa Barbara's analysis specifies local requirements for non-residential indoor lighting and that total energy consumption of non-residential buildings and additions to buildings greater than 500 square feet fall at least 10% below that required under the 2005 Title 24 code.

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*Table 1b: Summary of Simple Payback for Rohnert Park Energy Measures*

Home Design	Incremental First <sup>2</sup> Cost Compared w/ Title 24 House (\$) Min / Max	Effective <sup>1</sup> Incremental Annual Energy Cost Saving (\$)	Simple Payback (Years) Min / Max
1,418 sf (A)	\$939	\$56	16.8
1,418 sf (B)	\$727	\$56	13.0
1,775 sf	\$472 - \$900	\$53 - \$73	6.5 / 17.0
2,682 sf	\$472 - \$900	\$87 - \$107	4.4 / 10.3
3,024 sf	\$472 - \$900	\$120 - \$140	3.4 / 7.5
3,356 sf	\$1051 - \$1479	\$97 - \$113	9.3 / 15.2

*Note 1: The Effective Incremental Annual Energy Cost Saving includes a reduction in energy cost savings to account for the after-tax carrying cost of increasing a 6.0% APR home mortgage amount by the Incremental First Cost.*

*Note 2: The Minimum Incremental First Cost assumes that HERS inspections can be done through the use of sampling 1 of 7 homes; while the Maximum assumes that each house requires the specified HERS inspections.*

## 10. Participation in PG&E ClimateSmart Program

### Overview

ClimateSmart is a carbon dioxide offset program that allows PG&E customers to pay a monthly fee that is used to fund greenhouse gas reduction projects that are certified by the California Climate Action Registry (CCAR). ClimateSmart does not reduce the amount of emissions that the utility is producing, but serves to offset this quantity through the establishment of sequestration and emission reduction projects elsewhere in the state of California.

According to PG&E, a formal, competitive process has been put in place to select offset projects in which to invest ClimateSmart funds. PG&E will only invest in greenhouse gas reduction projects for which there is an approved project protocol from CCAR, a nonprofit organization established by California law as the voluntary registry for greenhouse gas emissions, and accepted by the [California Public Utilities Commission \(CPUC\)](#). Currently, the CCAR's only approved protocols are for forestry-based carbon sequestration and livestock manure management projects.

For all projects, the greenhouse gas emission reductions will be independently certified and registered with the CCAR. All of ClimateSmart's certified greenhouse gas emission reductions will be permanently "retired," so that the reductions cannot be used for other emissions reductions commitments or credits by PG&E or anyone else.

ClimateSmart is designed to be flexible and is intended to expand over time to enable investments in other types of projects as the Registry completes and approves a broader range of project measurement protocols. To support this goal, ClimateSmart will fund the Registry-led development of four additional protocols.

### Startup Time and Costs

Startup spans one month, following the registration process.

PG&E claims that typical residential users will pay about \$5 extra per month. The exact amount will vary with actual energy use—with a cost of \$0.00254 per kilowatt-hour (for electricity) and \$0.06528 per therm (for natural gas).

### Greenhouse Gas Reduction Potential

According to PG&E, enrolling with ClimateSmart will enable PG&E to effectively render each customer's electricity and natural gas consumption climate neutral. This 100% reduction functions solely during periods when the customer is enrolled in the program, and must be continued on an ongoing basis. Thus participation with ClimateSmart by the City for its own municipal operations could offset emissions by over 2,000 tons annually at a cost of approximately \$12,500. Participation on a full community-wide basis could offset emissions by over 170,000 tons at an annual cost of approximately \$3 million.

While PG&E has taken a number of steps to address the concerns that critics have expressed about carbon offset programs up to this point—including rigorous third party certification and taking steps to prevent double counting—several concerns can still be raised:

- Carbon that is sequestered from forest-management based carbon offset programs can be easily released into the atmosphere through fire or a change in management practices because of external political, economic, or legal influences.
- Carbon offset programs promote the idea that emissions that be reduced without changing the emission causing behaviors/activities.

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- Carbon offset programs are used to fund “best practice” management of natural resources in rural areas while allowing “business-as-usual” to persist in cities.

## Resources

- [http://www.pge.com/about\\_us/environment/features/climatesmart.html](http://www.pge.com/about_us/environment/features/climatesmart.html)