



CITY COUNCIL SUSTAINABILITY COMMITTEE MEETING

Hayward City Hall – Conference Room 2A
777 B Street, Hayward, CA 94541-5007

January 7, 2009
4:30 p.m. – 6:00 p.m.

AGENDA

- I. Call to Order
- II. Roll Call
- III. **Public Comments:** *(Note: For matters not otherwise listed on the agenda. The Committee welcomes public comments under this section, but is prohibited by State Law from discussing items not listed on the agenda. Items brought up under this section will be taken under consideration and referred to staff for follow-up as appropriate. Speakers will be limited to 5 minutes each; organizations represented by more than one speaker are limited to 5 minutes per organization. All public comments are limited to this time period on the Agenda.)*
- IV. Approval of Minutes of December 3, 2008
- V. Solar and Energy Efficiency Financing, and Mandatory Solar for New Development
Arlyne J. Camire, Associate Planner
- VI. CityFIRST: Financing Initiative for Renewable and Solar Technology
Cisco DeVries, Managing Director, Renewable Funding
- VII. General Announcements and Information Items from Staff
- VIII. Committee Referrals and Announcements
- IX. Next Meeting: Wednesday, February 4, 2009
Obama Green Cities and Infrastructure Plan
Solar and Energy Efficiency Financing, and Mandatory Solar for New Development
- X. Adjournment



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CITY COUNCIL SUSTAINABILITY COMMITTEE MEETING
Hayward City Hall – Conference Room 2A
777 B Street, Hayward, CA 94541-5007

December 3, 2008
4:30 p.m. – 6:00 p.m.

MEETING MINUTES

I. Call to Order-4:33 pm

II. Roll Call

Members:

- Michael Sweeney, Mayor
- Olden Henson, Councilmember
- Bill Quirk, Councilmember
- Rodney Loché, Planning Commissioner
- Julie McKillop, Planning Commissioner (absent)
- Al Mendall, Planning Commissioner
- Doug Grandt, Keep Hayward Clean and Green Task Force Member

Staff:

- Fran David, Assistant City Manager
- David Rizk, Director of Development Services
- Robert Bauman, Director of Public Works
- Erik Pearson, Senior Planner
- Arlynne J. Camire, Associate Planner (recorder)

Others:

- Sandy Frost, Hayward Community Gardens
- Sherman Lewis, Hayward Area Planning Association
- Ernest Pacheco, Resident

III. Public Comments

Sherman Lewis distributed two letters, related to the Climate Change Planning Section of California Air Resources Board????? and from the Metropolitan Transportation Commission regarding. He also encouraged the Committee to review the California State University Master Plan parking garage plan and its impacts.

David Rizk, Development Services Director, informed everyone of the City Council Work Session on December 16th in which the CSU Master Plan will be discussed.

IV. Approval of Minutes of November 5, 2008- Revised minutes adopted.

V. Climate Action Plan (CAP) Update

Erik Pearson, Senior Planner, presented. He summarized the revised strategies and actions associated with the CAP, explaining that new revisions resulted from input from the July public meetings, Community Outreach meetings, on-line surveys, working group meetings, Planning Commission and City Council work sessions, and comments from the Sustainability Committee. He noted that the draft plan will be available in February, 2009.

A summary of the strategies is as follows.

- 1- Transportation - Reduce vehicle miles traveled. This strategy focuses on transportation oriented development (TOD), Intelligent Transportation Systems, such as signal priority to traffic; develop incentives for local employers to hire local employees; and provide affordable housing to allow employees to live by public transit and their jobs, all of which are designed to reduce vehicle miles traveled.
- 2- Transportation - Decrease green house gas intensity of vehicle fleet. This strategy also encourages introduction of incentives to purchase low carbon vehicles and to be an advocate for alternative and low emission fuels.
- 3- Improve energy efficiency of existing buildings by adopting a Residential Energy Conservation Ordinance (RECO) and a Commercial Energy Conservation Ordinance (CECO) that would require upgrades upon the sale of the property; in addition, reduce City wide energy consumption by 10 percent and develop an outreach program to install home energy meter/monitors that would enable residents to directly monitor their energy usage.
- 4- Improve energy performance of new building with enforcement of the Municipal and Private Green Building Ordinances.
- 5- Increase use of renewable energy by providing a photovoltaic (PV) financing program, and increase the City's use of renewable energy and add renewable energy requirements to the Green Building Ordinance.
- 6- Increase City-wide recycling and composting by expanding the City's current commercial recycling program, increase the residential food scrap collection program, institute a Waste to Energy program, and ban polluting materials, including plastic bags.
- 7- Purchase carbon offsets that result in carbon sequestration through planting of forests to create carbon "sinks" to absorb carbon dioxide; also encourage the planting of trees.
- 8- Institute a comprehensive community outreach program that would involve schools and create green businesses.

Mr. Pearson also noted that the timeline for the Climate Action Plan is:

December 2008

Continue outreach presentations through February

February 2009

Release the CAP for public comment and host a second community-wide meeting

April 2009

Release the final CAP

Planning Commissioner Mendall commented that carbon off-sets are a great idea; however, he indicated that if unregulated, they can be fairly unreliable and recommended that Strategy 7 not be too heavily relied upon. He continued that it is important with Strategies 1 and 2 that state and local government to do their part and urged the CAP to focus on things that the City can control, such as solar financing. He encouraged a focus on actions that can be controlled locally.

Councilmember Henson stated that he too was skeptical about the effectiveness of carbon off-sets, and that he also advocated local action. Regarding Strategy 6 he pointed out that the Waste Authority (Stopwaste.Org), introduced a report analyzing recycling and is adopting an Alameda County-wide ordinance to ban green debris from landfills. He pointed out that there is not a large market for green waste. He informed everyone that the second reading of such ordinance will be later in December 2008.

Public Works Director Bauman delivered an update on Hayward's green waste program. He stated that commercial gardeners' green waste goes to transfer stations.

Councilmember Henson encouraged the promotion of the use of alternative transportation to link people with job sectors and he recommended that existing systems be run more efficiently. He continued by suggesting that the City should focus on solar and do outreach for the composting program. He also suggested that the City discourage the 238 Corridor Improvement Project mini-loop, in order to reduce cut-through traffic, which would decrease auto emissions.

Councilmember Quirk stated that he had the same concerns about the effectiveness of carbon off-sets. He indicated he felt that transportation is a major issue to be dealt with at the State level. He suggested a change in our parking policies to reduce carbon emissions. He also suggested focusing on financing solar technologies. He stated that he liked how the newly adopted Green Building Ordinance gives builders a choice. He warned that a mandatory solar ordinance commits the City to a technology and would not allow choice.

Councilmember Quirk also warned about the adoption of an ordinance banning plastic bags. He shared the problems occurring in Ireland, which banned plastic bags, where consumers, who used them as trash bags, began to purchase trash bags that increased the consumption of less biodegradable plastic and paper bags.

Planning Commissioner Loché encouraged the adoption of using home energy meters. He stated that it is important to think in the long term when discussing programs. He reminded the Committee that the Hayward Unified School District

should be a large part of the outreach effort. He said that residents will listen to their children. It was suggested that staff meet with the Youth Commission to help students to get excited about the CAP. He continued that safe walkable communities are important.

Doug Grandt emphasized that it is important to get children educated and involved. He suggested City involvement with the Climate All-Stars, who present assemblies to youth.

Mayor Sweeney stated that the CAP should include a mission or vision statement. He emphasized that transportation should not be the first two strategies in the CAP and that Land Use is very important. He stated that local government financing has always been a problem for land use. He stated that the current tax structure and transportation alternatives encourage sprawl and undesirable land use patterns. In addition, safety is very important because if people don't feel safe, they will not walk.

Planning Commissioner Loché also pointed out that the appearance of an area is critical. He emphasized that people will not walk if it appears to be unsafe.

Mayor Sweeney agreed with Planning Commissioner Mendall's assessment of not emphasizing carbon off-sets as an important strategy of the CAP. He continued that he agrees with Commissioner Mendall's point that reducing carbon dioxide can be done more efficiently locally through the use of renewable energies.

Mayor Sweeney continued that Strategy 7 (Outreach) is critical to the success of the CAP. He said that feedback is needed in order to find out if the City is on the right track.

Councilmember Quirk stated that Strategy 3 (Improving Energy Efficiency of Existing Buildings) is also critical if anything is to get done.

Development Services Director Rizk requested that the Committee members e-mail any additional comments to staff.

Mayor Sweeney commended staff on a job well done.

Doug Grandt made a presentation - *The Importance of Hayward's Climate Action Plan*.

VI. General Announcements and Information Items from Staff

- Status of Green Building Ordinance -
Development Services Director David Rizk gave an update of the recently adopted ordinance, and indicated he would be meeting in the near future with developers to discuss incentives.

- 2009 Monthly Meeting Topics Schedule -
The Committee agreed that the schedule in the beginning of the year should be flexible to accommodate discussion of anticipated Green Cities program to be announced by President Obama. It was emphasized that the City of Hayward should apply for any funding that is made available.

Assistance City Manager David stated that staff, particularly Public Works staff, had been responsive to possible infrastructure funding.

Public Works Director Bauman informed the committee that one of the projects submitted was a possible \$8 million solar project associated with the wastewater treatment plant.

The Committee indicated that the February meeting should be a discussion of President Obama's Green Cities program and Solar Financing, if such information was available, and that SB375 should also be discussed. It was also suggested that a representative from ABAG be on hand to answer questions regarding that important legislation.

The committee agreed to defer discussion of CSU parking to the City Council. Mayor Sweeney and Councilmembers Quirk and Henson suggested that a citywide parking policy be discussed, and the Committee indicated that the schedule for May through September was acceptable. The Committee also indicated that the OptiSolar tour should be rescheduled for a non-Committee meeting day.

VII. Committee Referrals and Announcements

VIII. Next Meeting: Wednesday, January 7, 2009
Solar and Energy Efficiency Financing, and Mandatory Solar for New Development
Arlynn J. Camire, Associate Planner

IX. Adjournment: 5:58 pm

**Sustainability Committee
Monthly Meeting Topics
2009**

Presenting Department	Date	Topics
DS	January 7, 2009	-Solar and Energy Efficiency Financing, and Mandatory Solar for New Development
DS	February 4, 2009	-Obama Green Cities and Infrastructure Plan
DS	March 4, 2009	-SB 375 - Transportation Planning
	Non-Meeting Day	-OptiSolar Presentation and Tour (7:30-9:30 am)
DS MS	April-June, 2009	-Green Collar Jobs and Investment -Energy Audit for City Buildings -Facilities Discussion – New Steps Underway
DS		-Annual Review of Green Building Ordinances and Implementation; -Energy Efficiency of Existing Buildings
DS	July - September, 2009	-Update on State Codes (Water Efficiency, Green Building Code, Title 24, etc.) -No Meeting August
DS/PW		-Review of Sustainable Landscaping Measures and Implementation
DS/PW	October - December, 2009	-Summary of Education and Outreach Efforts (Permit Center-Green Display, Website, Water Efficiency, etc.)
PW DS		-Water Recycling Presentation -Citywide Parking Policy and Revised Standards -Community Choice Aggregation



CITY OF
HAYWARD
HEART OF THE BAY

DATE: January 7, 2009

TO: Mayor and City Council Sustainability Committee

FROM: Director of Development Services

SUBJECT: Proposed Solar and Energy Efficiency Financing for Residential and Commercial, and Mandatory Solar for New Residential, Commercial Development; and Industrial Development

RECOMMENDATION

Staff recommends that the City Council Sustainability Committee reviews and comments on this report.

SUMMARY

We are faced with increasing energy demands, rising energy prices, and climate change. According to the California Energy Commission, in 2007, only 11.8 percent of all electricity generated in California came from renewable resources such as solar, geothermal, biomass, and small hydroelectric facilities. Large hydroelectric plants generated another 11.7 percent of our electricity. Natural gas provided 45.2 percent of the power while nuclear and coal provided the remainder (Exhibit A). The recently adopted AB32 Scoping Plan indicates that at least 33 percent of the State's electricity shall come from renewable resources by 2020.

It is important that an energy source not contribute to global warming, and be safe and economical. Coal and natural gas produce carbon dioxide, which contributes to global warming. In addition, these fossil fuels are non-renewable. While nuclear power does not create carbon dioxide, new nuclear plants could not make a substantial contribution to reduce global warming emission for at least two decades. The energy source for nuclear energy is a scarce resource, there is potential for accidents and terrorist attacks, and waste disposal systems would need to safely contain the waste for over 10,000 years.

Solar photovoltaic (PV) systems have tremendous potential for harnessing an inexhaustible, freely distributed renewable energy source. Solar power and energy efficiency measures are crucial to meeting the growing need for electricity, while also cutting greenhouse gas emissions that contribute to global warming.

Advantages to a home or business equipped with a high energy-efficiency solar photovoltaic (PV) system include:

- Utility bill savings with predictable utility costs
- Protection against future rising electricity costs
- Federal Tax rebates
- Increase in property values
- Green Marketing opportunity for business

In summary, there is no debate on the benefits of utilizing solar energy. However, as encouraged by several professionals in the green building/sustainable development industry, to get the most “bang for the buck,” installing a solar PV system on existing structures should be done after less-costly energy efficiency measures are implemented. Such measures typically include sealing air ducts and doors and windows, and ensuring insulation and window energy efficiencies are sufficient. Lastly, the costs associated with residential solar PV systems can be substantial, averaging \$30,000 or more per single-family home, without rebates.

This report provides information on what solar PV systems entail, what financing programs are available and have been utilized by other cities, and presents staff’s recommendation for pursuing a solar financing system for the City of Hayward.

BACKGROUND

In January 2008, the City Council adopted an objective to develop a City-assisted solar fund to assist small residential and commercial builders in installing photovoltaic (PV) systems. In July 2008, staff expanded the objective to include energy efficiency improvements and systems to support the overall objective of the Climate Action Plan (CAP) to reduce green house gas emissions. In addition, the program could potentially serve more customers if the financing of energy efficiency measures are included.

The City Council Sustainability Committee also has directed staff to bring forward alternatives for solar financing and the inclusion of mandatory solar PV on all new development. This Committee recognizes that a direct way to meet the goals of the CAP is to facilitate the adoption of requirements, which when implemented would result in the reduction of GHG emissions as required by AB 32.

In addition, a policy of the General Plan is to incorporate measures to improve air quality in the design of new development. This will be accomplished through the implementation of the Green Building Ordinance. Adoption of a solar and energy efficiency improvements financing program would further implement this policy.

Solar Photovoltaic (PV) Systems Overview:

There are three types of solar energy: passive solar (designing a building to be oriented toward the sun); solar thermal (which includes hot water systems); and photovoltaic (or PV, which uses the sun's energy to create electricity to power a home or business).

A solar PV system enables the generation of a portion or all of the daily electricity demand. The residence or business remains connected to the electric utility at all times. Any power needed above what the PV solar system can produce can be drawn from the utility grid. The main components of PV systems are solar panels built from solar cells, a meter, and an inverter and batteries. Solar panels are usually made from silicon and are mounted on roof tops or shade covers. Recent technologies may lead to enhanced and/or less costly panels that utilize other materials besides silicon. Solar cells create electricity when sunlight strikes the cell and electrons are released to form a current of electricity. A meter measures power and excess power can be stored in batteries or sent to the utility grid. PV power systems convert sunlight directly into direct current (DC) electricity and an inverter converts it to alternating current (AC), which is the type of electricity that is received from the power grid and used in homes and businesses. PV systems can also include battery backup or an uninterruptible power supply (UPS) to operate selected circuits in a building for hours or days during a utility outage.

If a solar PV system is under consideration, a home or business owner should begin with determining how much electric power is needed by checking utility bills of the past 6 to 12 months and determining what energy efficiency improvements are required by completing a free PG&E energy efficiency audit. According to Hayward's 2005 Greenhouse Gas Emissions Inventory Report, the average Hayward household used 5,253 kilowatt (kW) hours of electricity per year. A standard 3kW PV system will produce an average of 5,475kW hours of electricity per year in the Hayward area, based on estimates of annual solar radiation exposure produced by the National Renewable Energy Laboratory.

Costs and Financing:

Consumer costs for installing a solar PV system on a single-family home range from \$8,000-\$12,000 per kW before rebates. The typical California state rebate for a 3kW, \$30,000 system would be around \$7,000, and the federal tax credit would be \$2,000. The final price for the PV system for a typical single-family home after state and federal rebates would be \$21,000, or \$7,000 per kW.

The primary obstacle to increased use of solar PV systems is the high initial cost. Few families or small businesses can afford the initial costs, which are equivalent to buying twenty years' worth of electricity costs up front. Fortunately, consumers have many options to finance solar and/or energy efficiency improvements, many of which are addressed in this report.

New Technologies:

With the development of new solar technologies, the cost of solar energy is decreasing. Dow Corning is developing silicon-based materials that would provide higher watt efficiency, longer

module life, and optimum UV resistance, which would increase the production rate of solar panels and lower the cost per watt of solar power. IBM and Harvard University scientists are searching organic materials that could replace the more expensive silicon. MIT researchers are using computer modeling to boost the output and efficiency of solar cells while cutting the cost of solar power. In addition, MIT researchers have developed a prototype silicon solar cell that is 15 percent more efficient at converting light into electricity than commercial thin-film silicon solar cells. Several patents are pending on devices to more efficiently track and collect solar radiation. Large scale solar facilities are also being built. Near Bakersfield, Palo Alto-based Ausra Inc. is completing the first solar thermal facility in 20 years. Also, Hayward-based OptiSolar has entered into an agreement with PG&E to develop a 550-megawatt solar power PV solar plant (Topaz Solar Farm) in San Luis Obispo County, which will be the largest PV solar project in the world.

DISCUSSION

Overview of Federal and State Rebate/Incentive Programs:

Federal Tax Credit

The *Energy Policy Act of 2005* created federal income tax credits for solar energy projects installed in 2006-2007. The federal government provides a federal tax credit equal to 30 percent of the solar system cost. For residential systems, there is a \$2,000 limit per system. For commercial systems, there is no ceiling. Businesses are also allowed to accelerate the depreciation of their PV systems. Credits can be carried forward or back if the credits will lower the businesses' tax burden below the minimum tax.

California Solar Initiative - Go Solar California

In January 2006, the California Public Utilities Commission (CPUC) created the California Solar Initiative (CSI) as part of the Go Solar California campaign, which has a statewide budget of \$3.3 billion in funding allocated to encourage a variety of programs, including building integrated solar PV systems, non-solar PV technologies, solar water heater programs, single- and multi-family low-income programs, and research development and demonstration. The goal is to install 3,000 megawatts (MW) of new solar electricity capacity by 2016. The CSI offers financial incentives for solar installations based on the expected performance of a given solar installation. The CSI offers cash incentives on solar PV systems of up to \$2.50 a watt. These incentives, combined with federal tax incentives, can cover up to 50 percent of the total cost of a solar panel system. The intent is to move the state toward a cleaner energy future while lowering the cost of solar systems for consumers (<http://www.gosolarcalifornia.org/communities/index.html>). The State has created a "Go Solar California" website which simplifies the process for securing rebates, incentives, and funding (<http://www.gosolarcalifornia.org/>).

The Go Solar California has three distinct program components, each with a portion of the statewide budget and solar installation goals:

- *California Solar Initiative:* Provides solar incentives through rebates to customers in the investor-owned utility territories of PG&E, Southern California Edison, and San Diego

Gas & Electric. These three utilities represent about 75-80 percent of California's electric use. The California Solar Initiative provides cash-back rebates for solar for existing homes, and existing and new commercial, industrial, government, non-profit, and agricultural properties. This program component has a budget of \$2.167 billion over 10 years, and the goal is to create 1,940 MW by 2016. This goal includes 1,750 MW from the general market program and 190 MW (ten percent or \$216 million) from the low-income residential incentive program. Training for utility installers is also funded by CSI. The rebate amount depends on the type and size of the solar PV system:

- Commercial & Residential Systems smaller than 100 kW: The CSI program will pay incentives to solar PV projects through an up-front incentive known as an expected performance-based buydown (EPBB). EPBB is based on an estimate of the system's future performance. EPBB rebates decline over time based on the number of megawatts that have already reserved rebates.
- Commercial & Residential Systems equal or larger than 100 kW: The CSI program will pay performance-based incentives (PBI) with monthly payments based on recorded kWh of solar power produced over a 5-year period. These PBI will be a flat per-kWh payment for PV system output. PBI rebates decline over time based on the number of megawatts that have already reserved rebates.
- Systems Installed on Non-profit Facilities. The CSI offers an up-front cash incentive of up to \$3.25/watt and a performance-based incentive of up to \$0.50/megawatt-hour (MWh) for solar systems installed on tax-exempt facilities that are ineligible for federal solar tax credits.

In summary, the State of California installed 280 MW of grid-tied PV solar capacity statewide by the end of 2007, including 81 MW installed in 2007. In the first six months of 2008, the CSI program has added an additional 59.4 MW of new solar, of which investor-owned utility territories equals the total amount of PV installed statewide in all of 2006.

- *New Solar Homes Partnership (NSHP)*: Authorizes \$400 million over 10 years with a goal of 360 MW associated with new home construction. To qualify as a partner and receive incentives from the California Energy Commission, a developer/builder must demonstrate that homes will be served by an eligible investor-owned utility, must exceed Title 24 energy efficiency requirements by either 15 or 35 percent, which determines the incentive level, and each new home is to include a solar PV roof either as a standard feature or as an available option. NSHP rebates decline over time based on the number of megawatts that have already reserved rebates. Incentives are provided through an up-front rebate, at two different incentive levels:
 - The Expected Performance-Based Incentive (EPBI) amount is \$2.50/watt. This incentive level applies to custom homes, small developments (less than six homes),

and all residential applications where solar will be installed on less than 50 percent of the homes in a development.

- The EPBI incentive level is \$2.60/watt for new homes/dwellings in subdivisions or multi-family housing developments with 6 or more homes/dwelling units, and where a minimum of 50 percent of the homes/dwellings will have solar systems offer solar as a standard feature.

Developers who build solar PV roofs as a standard feature will receive higher financial incentives and more marketing support. The state offers a *New Solar Homes Partnership Guidebook* to assist developers with completion of program requirements, available at: (<http://www.gosolarcalifornia.org/documents/nsph.html>). The Go Solar website also features an interactive map to assist homebuyers with finding new solar homes.

- *The Publicly Owned Utilities (POU) Program*: Requires each municipal utility to offer an equivalent incentive program, an aggregate commitment of \$784 million over 10 years, toward a goal of 700 MW (see later discussion regarding rebate programs through PG&E).

Million Solar Roofs Program Expansion

In August 2007, Governor Schwarzenegger signed Senate Bill 1, Million Solar Roofs Program, setting a goal of one million solar roofs by 2018, which will result in the reduction of greenhouse gasses by 3 billion tons. A total of over \$2 billion was allocated to implement the California Solar Initiative. The program aims to make solar technology a mainstream energy source by building a self-sustaining PV solar power market. SB 1 implements the portions of the Million Solar Roofs Program that the California Public Utilities Commission did not have the authority to mandate, including:

- Funding availability to allow the expansion of the California Solar Initiative program to include all California municipal utilities customers, such as SMUD and LADWP.
- Credits to consumers for excess power produced from residential and business solar panels. Excess solar power produced can be sold back to power companies for credit on their monthly bills. This credit is a key incentive for consumers to install solar panels. The legislation increased the cap on the number of customers who can use this credit from a half percent to 2.5 percent. Raising the ceiling is meant to provide financial incentive to bring more solar power onto the grid.
- Making solar power a standard option on new single-family homes in developments of 50 or more single-family homes beginning January 1, 2011. One million solar roofs will greatly increase the state's rooftop solar energy capacity, providing the output equivalent of five modern electric power plants. This program's 3,000 MW goal, taken together with other aggressive solar initiatives, such as requiring utilities to acquire 20 percent of the power used within the state from renewable sources, will make California a world leader in solar power.

Property Tax Exclusion for Solar Energy Systems

This program allows property tax exclusion for certain types of solar energy systems installed between January 1, 1999, and December 31, 2009. All solar water heat, solar space heat, solar thermal electric, solar thermal process heat, photovoltaics, and solar mechanical energy are eligible for 100 percent exemptions to all commercial, industrial, and residential users. This solar exclusion includes the construction of an active solar energy system incorporated by an owner-builder in the initial construction of a new building that the owner-builder does not intend to occupy or use. This only applies if the owner-builder did not already receive exclusion for the same active solar energy system and only if the initial purchaser purchased the new building prior to that building becoming subject to reassessment to the owner-builder.

Energy Efficiency Financing Program

This \$26 million state loan program was established for schools, hospitals, and local governments for the installation of energy-saving measures or for energy audits and studies. Interest rates are fixed at 3.95 percent for the term of the loan. The maximum loan amount is \$3 million and there is no minimum loan. Loans must be paid back within 15 years for energy costs savings, or in 2 years for energy audits. Common projects include lighting and equipment upgrades and heating systems, but can also include other energy-saving measures and renewable energy systems.

Self-Generation Incentive Program

This is a state rebate program for customers who produce electricity with wind turbines and fuel cells. Commercial, industrial and residential structures, nonprofit agencies, schools, and government agencies and institutions are eligible. A \$1.50 per watt incentive for wind and \$2.50 to \$4.50 incentive on fuel cells is available. The maximum incentive is capped at three megawatts. For projects with capacities greater than 1 MW, the first 1 MW receives 100 percent of the incentive rate, the next capacity increment above 1 MW up to 2 MW receives 50 percent of the incentive rate, and the last capacity increment above 2 MW up to 3 MW receives 25 percent of the incentive rate. Systems must be sized according to customer's electricity demand, with maximum system size of 5 MW, and a minimum of 30 kW for wind turbines and fuel cells using renewable fuels. The system must be grid-connected and installed by a licensed contractor.

Emerging Renewables Program

This state rebate program of cash incentives was established to promote installation of grid-connected small wind and fuel cell renewable energy electric-generation systems through its Emerging Renewables Program. Commercial, industrial, and residential structures, schools, low-income residential uses, agricultural, and institutional customers are eligible to participate. Effective January 1, 2007, funding levels for the Emerging Renewables Program are:

- Small Wind Turbines (up to 50 kW): \$2.50/W for first 7.5 kW and \$1.50/W for increments smaller than 7.5 kW and larger than 30 kW
- Fuel cells (larger than 30 kW) using renewable fuels: \$3.00/W.

Rebate Programs through PG&E:

Non-Residential Energy Efficiency Rebate and Incentives Program

This program was established to increase the energy efficiency of commercial and industrial structures, non-profit agencies, schools, agricultural uses and institutions. In addition to covering equipment and other energy efficient improvements, PG&E offers incentives for efficient building design.

Residential Energy Efficiency Rebate Programs

This is a utility rebate program to single- and multi-family residential customers to install energy efficient equipment and appliances in their homes. A number of prescriptive rebates are available for energy efficiency improvements through the Standard Energy Efficiency Rebate Program, including lighting improvements, heating and cooling improvements, remodeling projects and pool improvements. Through the Rebates for Multi-Family Properties Program, PG&E offers prescriptive rebates for owners and managers of multi-family properties of five or more units. Insulation, appliances, HVAC, and lighting improvements are among the eligible products for rebates; and owners or managers can receive up to \$1,500 in incentives per property. Residential New Construction Rebates are available for builders of residential dwellings that incorporate energy efficient features. Incentives are available if builders meet the Energy Star requirements – 15% more efficient than required by the 2005 Title 24 Energy Code. For those homes that do not meet the Energy Star label, but still include energy conserving features, PG&E offers prescriptive rebates to builders.

Residential New Construction Program

This incentive provides rebates to homebuilders that construct energy efficient homes. There are three separate programs, each with their own requirements and incentive structure, which builders can choose from: The ENERGY STAR Performance Method, The New Solar Homes Partnership Performance Method, and the Prescriptive Method. To qualify, builders of single-family homes can qualify for this incentive by constructing homes that exceed 2005 Title 24 Energy Code requirements by at least 15 percent, and also meet the ENERGY STAR Thermal Bypass Checklist and the California Energy Commissions Quality Insulation Installation (TBC/QII) requirements. Homes which meet these requirements are eligible for a rebate of \$400 if they are built in Coastal Climate Zones 1-7, or \$500 if they are built in Inland Climate Zones 8-16.

Programs of Other Bay Area Municipalities:

Solar Richmond

Solar Richmond is a non-profit agency that serves the Richmond community through green-collar job training and education, providing solar energy to low-income families. The goal is to provide 5 megawatts of installed solar in Richmond by 2010. The programs include: 10 weeks of paid Solar Installation Training with partners RichmondBUILD, Solar Living Institute, and Grid Alternatives; a solar financing program for low-income home owners, which allows deferred low-interest loans

though the Richmond Redevelopment Agency; and free labor for installation of solar projects. Solar Richmond also works with the City of Richmond to create "Green Economy" policy. Furthermore, Solar Richmond promotes solar by participating in Richmond's annual Earth Day and conducts Richmond solar homes tours.

City of Sebastopol

The City of Sebastopol has converted its City Hall building to a grid-tied, roof mounted PV solar power system. The new 10.6kW solar system is expected to annually generate 18,520kWh (kilowatt hours), which will meet 97 percent of the building's current electrical needs. In its first month of production (July/August 2007), the City only needed to buy one kWh of grid power, or 0.07 percent of its pre-solar average monthly requirement. The City is also working on reducing its electrical demand through increased energy efficiency, particularly in its HVAC system. The City of Sebastopol was awarded a \$75,000 grant from the Bay Area Quality Management District, which is being used to expand solar programs. The City of Sebastopol is also a member of Solar Sonoma County, which is an expansion of Solar Sebastopol. A Solar Sebastopol icon link (<http://www.solarsebastopol.com/>).

Solar Sonoma County

Solar Sonoma County is an educational consortium of local governments, businesses, and other local entities and individuals working collaboratively to identify and implement initiatives to promote, expand, and accelerate solar photovoltaic and solar thermal energy generation and energy efficiency throughout Sonoma County.

In March 2008, the City of Santa Rosa was awarded one of the twelve \$200,000 Department of Energy (DOE) Solar American Cities grants for its proposal to expand the Solar Sebastopol program to a countywide effort, called Solar Sonoma County. The City of Santa Rosa administers the grant in partnership with the other cities of Sonoma County and the County of Sonoma, and the International Brotherhood of Electrical Workers. In addition to the DOE grant, Solar Sonoma received a \$75,000 Bay Area Air Quality Management District grant, and cities membership fees paid by PG&E and Sonoma County Water Agency. Memberships are an additional form of funding. A business or organization membership is between \$500 and \$2,000, a non-profit agency membership is \$100 to \$500, and an individual membership is \$20 to \$50. Major sponsors contribute \$5,000 to \$10,000 or more. According to Marty Roberts, Project Co-Director, Solar Sonoma County staff is currently exploring new sources of funding to continue their educational programs. In addition, Solar Sonoma County is in the process of becoming a non-profit agency.

A goal of Solar Sonoma County is to increase the amount of solar installations in the County by 25 MW over the next three years. A county-wide Solar Implementation Plan will be developed and launched, which will provide guidance to significantly and sustainably reduce the financial, regulatory, and educational market barriers to the installation of solar PV and solar thermal systems in Sonoma County. Financial incentives address market barriers, such as tax assessment district financing and/or partnering with Global Legacy's Green Energy Loan (GEL) Program for homeowners in Sonoma County. The Plan will also recommend a standardization of the

planning and building permitting processes, adoption of ordinances for solar, and the use of energy conservation elements in General Plans for the cities and the County.

The City of Santa Rosa provides education and outreach via their website and through a public relations campaign, a countywide Solar Fair, and the promotion of solar installations on municipal buildings (http://ci.santa-rosa.ca.us/environmental_stewardship/Pages/ssc.aspx). Santa Rosa and its partners in Solar Sonoma County aim to increase the amount of solar energy generating capacity in the County by 25 megawatts over the next three years. It is estimated that this target will reduce the County's CO₂ emissions by 8,500 tons annually.

Cities of Livermore and Pleasanton

The cities of Livermore and Pleasanton entered into a joint agreement and contributed \$20,000 each for the design of a Solar Cities Program similar to the City of Sebastopol's current PV buying program. *Spectrum Energy, Inc.* was hired to prepare and design the program. *Spectrum Energy* is an energy services consultant that specializes in designing and installing energy-efficient measures. The program provides a community-wide, customer-friendly system that assists residents and businesses in making the decision in purchasing and installation of a PV solar system. The two cities do not require residents and businesses to participate and solar financing is not offered by the city. The program was implemented in May of 2008.

City of San Jose

The City of San Jose is a 2007 recipient of a \$200,000 federal Solar American Cities grant, by which it adopted a solar energy partnership program that includes the establishment of a municipal solar utility program chapter in its municipal code to facilitate the leasing of solar energy equipment, and to establish regulatory authority for any solar leasing operation. During the 2008 California Clean Tech Open on April 9, 2008, the mayor of San Jose issued a challenge to solar companies to develop ways for San Jose residents to install solar energy systems on their homes at no up-front cost. By June 8, 2008, five companies responded with offers. The no-upfront costs option offers a 12- to 15-year lease or purchase agreement that can be paid for with the saving from the resident's monthly energy bill. Reasonable fees will be established to cover the costs of administering the solar utility program.

City of San Francisco

On June 10, 2008, the San Francisco Board of Supervisors adopted the Solar Energy Incentive Program. The voluntary 10-year program has an annual budget of \$3 million dollars to be used as rebates in the form of tax incentives for private solar installations. The program grants a \$3,000 to \$6,000 rebate to individuals and a \$10,000 rebate to businesses on solar installations. The one-year pilot program budgets \$1.5 million to buildings owned and operated by nonprofit organizations and low-income single- and multifamily-residential applicants. The City hopes that the \$3 million in public funding will leverage some \$1.5 million in private investment to boost the city's solar capacity to 55 MW on some 15,000 rooftops over the next 10 years. Currently, there are fewer than 700 solar rooftops in the city generating less than 5 MW of power.

City of Berkeley

In November 2006, 81 percent of Berkeley residents voted for Measure G. The measure targets an 80 percent reduction in Berkeley's greenhouse gas emissions by 2050, and directs the city to develop an emissions reduction action plan in partnership with the community. Solar power is one component of the plan.

On May 6, 2008, the City of Berkeley amended its municipal code by developing a Special Tax Financing Law, created under the City's Charter authority, which incorporates by reference the provisions of the Mello-Roos Act. It includes the legal authority to finance solar and energy efficiency improvements for private property, which is not currently allowed under the Mello-Roos Act. The City of Hayward's Charter authority would allow a Special Tax Financing Law.

The Special Tax Financing Law is the implementing legislation that allowed for the creation of Berkeley's city-wide Sustainable Energy Financing District (CFD), and related voluntary solar program, Berkeley FIRST. The program allows residents to secure financing to be paid over a 20-year period through property taxes. The program allows both residential and commercial proponents to install solar systems and make energy efficiency improvements to their buildings, payable through a 20-year assessment on their property tax bills. Only property owners who have been chosen to participate would pay an assessment when work is completed on their property as part of the program.

Here's how it works: a property owner would hire a city-approved solar installer, who would determine the best solar system and/or energy efficiency improvements for the property, depending on energy use. The city would pay the contractor directly, minus any applicable state and federal rebates, and would add an assessment to the property owner's tax bill to pay for the system. The assessment tax would include administrative fees and interest, which would be lower than what the property owner could obtain, because the city would secure low-interest bonds.

The pilot \$1.5-million program funded by bonds allows 40 residents to install solar and/or energy efficiency improvements to their homes. The program is administered by an entity called *Renewable Funding*, which provided the funding for the program through the sales of bonds. The property owner pays a \$25 application fee. The 20-year tax assessment is transferable between property owners, allowing the next owner to assume the assessment as part of the property tax bill.

The City of Berkeley received two grants that support development and administration of this program: a federal Environmental Protection Agency (EPA) grant for \$115,000 over two years, and a grant from the Bay Area Air Quality Management District (BAAQMD) for \$75,000. These funds pay for consultant costs and a portion of a staff position to manage program implementation during its first year. The City of Berkeley is also a 2008 recipient of a \$200,000 DOE Solar American Cities grant.

Financing Programs:

Assembly Bill 811

On July 21, 2008, Assembly Bill 811 (AB811) was adopted. The intent of the bill is to provide an incentive to encourage the construction of renewable energy facilities and energy efficiency

improvements in California. The law allows municipalities to establish an assessment district and sell bonds to fund “permanently fixed improvements” by providing low-cost loans to property owners for the purpose of installing solar energy systems and/or installing energy efficient improvements. The loan is placed on the property's tax roll as an assessment lien. The loan is paid-off over a 20 to 30 year period and can be paid-off early if desired. If a homeowner sells their home during the repayment period, the assessment can be paid-off at transfer, or the new owner can assume the assessment.

Although AB 811 doesn't specifically address the issue of general fund liability, it relies on collection procedures established by the State Streets & Highways Code. When bonds are issued, payment of the bond principal and interest obligation is limited to the revenue generated by the property assessments.

SolarCity - SolarLease Program

SolarCity, a private company, has a unique lease program that allows customers lease a PV system by paying a monthly fee, resulting in a lower utility bill, while *SolarCity* retains ownership of the PV panels. There are no upfront costs. In a typical scenario for a 2.8-kilowatt system, a customer with a \$150-a-month electric bill before installing solar would pay a \$60-a-month bill, with an \$80 or \$90 monthly lease payment resulting in a positive cash flow of \$10. Since this is a fixed rate lease program, savings can increase over time as utility rates continue to increase over the life of the lease agreement. At the end of the lease agreement, the homeowner can choose to extend the lease with the same system, upgrade to the newest technology, or ask that the panels be removed for no charge.

Energy Efficiency Mortgages

Using a mortgage loan for the purchase and installation costs of a solar PV or solar hot water system will allow a homeowner to take full advantage of federal tax deductions. Several energy efficiency mortgages exist that apply to solar power systems. In addition, Federal Housing Authority and Veterans Administration energy efficient mortgages are available to those who qualify. Fannie Mae offers home loans for solar PV electricity systems and solar water and space heating systems. The Environmental Protection Agency, through its ENERGY STAR program, offers home loans for solar PV and space heating systems that exceed existing code energy efficiency standards by at least 30 percent. The United States Department of Energy publishes a consumer guide for financing solar energy systems that describes the various resources available to finance residential solar power systems (<http://www.nrel.gov/docs/fy99osti/26242.pdf>)

Solar Home Equity Financing

Several financial institutions offer home equity loans for home improvements. San Francisco-based New Resource Bank and SunPower (www.sunpowercorp.com) have partnered to provide easy residential solar financing in California. New Resources Bank offers a 15- and a 25-year fixed interest rate home equity loan designed to add value to a home while controlling energy cost. The advantage of the loan is that a homeowner pays a fixed monthly loan bill while the utility bill

amount decreases. The loan amount to be paid is potentially cheaper than the current utility bill after the rebate and after-tax deductions. The solar PV system adds to the value of the home. There are no application fees and the loan applicant receives a free assessment to match product options to their needs and preferences.

Renewable Energy Certificates (RECs)

Also known as Green Tags, Renewable Energy Credits, or Tradable Renewable Certificates, are the property rights to the environmental benefits from generating electricity from solar and other renewable energy sources. RECs incentivize carbon-neutral renewable energy by providing a subsidy to electricity generated from renewable sources. REC providers are credited with one REC for every MWh of electricity they produce. The green energy is then fed into the electrical grid (by mandate), and the accompanying REC can then be sold on the open market by companies called aggregators (<http://www.green-e.org/>.)

Protecting Access to Solar Power and Sunlight:

The solar access issue is separated into two distinct areas: solar easements and solar rights. "Solar easements" refers to the ability of one property to continue to receive sunlight across property lines without obstruction from another's property (e.g., buildings, foliage, or other impediments). "Solar rights" refers to the ability to install solar energy systems on residential and commercial property that is subject to private restrictions (e.g., covenants, conditions, restrictions, bylaws, condominium declarations, and local government ordinances and building codes).

The United States Supreme Court has held that there is no common law right to sunlight. This requires that specific statutory authority be established to protect the rights of solar users in terms of their ability to install a solar energy system on their property, and after that system is installed, to protect their access to sunlight so the system remains operational.

A 1978 California state law, the Solar Shade Act, protects homeowners' investments in rooftop solar panels and considers trees that impede solar panels' access to the sun to be a nuisance. The owners of trees that block sunlight can be fined up to \$1,000 a day. Enforcement of this law can result in the removal of mature trees, contrary to the goal of tree preservation. In addition, trees assist in cooling homes and yards and reduce green house gasses.

Mature trees have been required by a court to be removed. For example, the Santa Clara County District Attorney cited a Sunnyvale couple, because redwood trees in their backyard cast a shadow over their neighbor's solar panels. The eight trees were planted in 1996 and the solar PV panels were installed in 2001. The couple appealed and the Santa Clara County Superior Court found the couple guilty of one count of violating the Solar Shade Control Act. In a partial victory for each side, the ruling allowed six of the trees to remain and that the two creating the most shade were required to be removed. Fines were waived.

Passed on July 2, 2008, Senate Bill 1399 amended the Public Resources Code to exempt trees and shrubs planted prior to the installation of a solar PV system. SB1399 also exempted trees and

shrubs that are subject to a local ordinance, or the replacement of trees or shrubs that had been growing prior to the installation of the solar device.

Examples of Mandatory Solar Requirements:

Culver City

As of March 2008, Culver City has implemented a mandatory solar program for all new construction and major renovations of 10,000 square feet or greater. The requirement states that 1kW of solar photovoltaic power must be installed for every 10,000 square feet. Major renovations are defined as a renovation that is valued at over 50 percent of the value of the applicable portion of the existing building. Single-family homes, duplexes, garages, and parking structures are excluded from the requirement.

As an alternative, with prior approval from city staff, a project developer may choose to install the required amount of solar on a different building or structure located within the jurisdiction's boundaries. The developer also has the option to pay an in-lieu fee in an amount equal to the installed cost of the photovoltaic system. The in-lieu fees are to be used to fund solar systems on City facilities or other local non-profit entities.

The Culver City Building Official completed a cost/benefit analysis of 1 kW solar photovoltaic system per 10,000 square feet of new commercial or multifamily construction. It was found that the estimated installed cost of a grid system (not including any rebates) would be \$12,000.00; \$9,300 after a \$2,700 Federal tax credit. The estimated operation and maintenance costs over 30 years are projected to be \$4700.00. Total costs over the life of the system would be \$16,700.00. The expected energy savings over 30 year life expectancy is projected to be \$24,900 including Federal depreciation of \$40, State depreciation of \$200, Income tax electricity savings of \$10,100, Income tax on rebates \$200, and total savings over the life of the system is \$175,000. Payback would occur in 29 years.

As would Hayward's recently adopted Green Building Ordinance for Private Developments, the ordinance required California Energy Commission approval as a revision to a locally-adopted energy standard. There has only been one mixed-use (residential and commercial) project submitted for review.

Chula Vista

The City of Chula Vista has adopted several measures that were designed to reduce greenhouse gas emissions. One of the measures is a Solar and Energy Efficiency Conversion Program that has the goal to lower costs for installation of renewable energy systems on new homes by requiring all new residential buildings to include pre-wiring and pre-plumbing for solar. This measure also requires the creation of a community program to provide residents and businesses a streamlined, cost-effective opportunity to implement energy efficiency improvements and to install solar/renewable energy systems on their properties. The City of Chula Vista also proposes to develop a funding mechanism to allow program participants to voluntarily choose to place the improvement costs on their property's tax rolls, thereby avoiding large upfront capital costs. In

addition, the program will promote vocational training, local manufacturing, and retail sales opportunities for environmental products and services.

Proposed Mandatory Solar Program for Hayward:

The proposal from the Committee for mandatory installation of solar PV panels on all new developments requires the developer to install solar in the most optimal location for generation. In cases where onsite location is infeasible, a waiver may be granted, allowing the panels to be installed elsewhere in Hayward. Alternatively, a solar in-lieu fee equaling the installation cost can be paid. The fee is used on energy efficiency projects in the city at the discretion of City Council (see Exhibit B).

Pros and Cons for Requiring Solar PV Systems:

Pros

A mandate to install solar PV panels on all new development or major remodels would assist in meeting Hayward's goal of greenhouse gas emissions reduction. In addition, it would help create local green jobs and result in lower utility bills for consumers. Hayward would acquire a reputation as a green city and in turn, help attract solar businesses to the City. The City tax base would increase with the increase in appraised property values, resulting from the increase in the installation of permanent solar PV panels and systems on buildings.

A positive "cascade effect" would result, as people using solar PV panel electricity over time would naturally become more interested and seek information about energy conservation, solar PV power, and other alternative energies. Children would also see PV solar panels and learn the importance of using clean energy and having energy self-sufficiency, increasing the chances they would integrate such features into their future lives.

Local energy security would increase, since most of the generating capacity for electric power would be within city limits, which is desirable in the case of economic catastrophe or natural disasters. Hayward's carbon footprint would decrease with less burning of natural gas and vehicle fuels, which would also aid in compliance with AB32. As a result of Hayward's commitment to solar, a stronger case would be made to secure federal and state funds as a "Solar City".

Cons

Required installation of solar PV increases up-front costs of new construction. In economically difficult times, the added expense of panels or an in-lieu fee equal to the value of the PV panels could slow down the securing of financing for new construction. The requirement could also discourage development in Hayward, if surrounding cities did not have similar requirements. Property owners could also be discouraged from remodeling or making additions, since the extra initial expense may make planned upgrades financially infeasible. Also, property owners who may want the flexibility to choose alternative energies or energy efficiency improvements as an alternative to solar PV panels, which would also decrease their carbon footprints, may be

discouraged from doing so. Finally, projects with vested tentative maps may be exempt under current state law.

It is unlikely, but not impossible, that too many panels would be installed for a property's needs. With present PG&E policies, the extra power is simply taken by the utility company, with no compensation to the panel owners.

Mandatory Solar - Regressive Tax: As local governments ponder the merits of legislation that would mandate energy retrofits and solar installations, economic impacts of mandates should be examined. What are most critical to examine are the impacts on those individuals at the lower end of the economic scale. By its very nature, a mandatory ordinance is uniform legislation that requires participation, no matter an individual's economic standing. As such, a mandatory energy retrofit or mandatory solar program is a regressive tax. The primary problem with a regressive tax is that such legislation imposes a greater burden, relative to resources, on homeowners at the lower end of the economic scale. This means that it hits lower-income individuals harder. In summary, a mandatory program would result in a disproportionate impact on individuals who are least able to afford it.

Staff's Recommendation:

Solar and Energy Efficiency Improvements and Financing

Promotion and implementation of solar and energy efficiency improvements and financing are two steps toward an overall program to meet the goals and strategies of Hayward's Draft Climate Action Plan. As stated in the draft Plan, staff recommends the implementation of a program that would promote improving energy efficiency of existing buildings, improving energy performance of new buildings and increase use of renewable energy. This would be accomplished through the implementation of the newly adopted Green Building Ordinance and implementation of public education outreach.

Since the City of Hayward is a charter city, a citywide Solar and Energy Efficiency Financing District can be established through a Mello-Roos Community Facilities District (CDF) or through AB811. Similar to the City of Berkeley's BerkeleyFIRST program, Hayward can establish a Sustainable Energy Financing District through the use of AB811, which is more streamlined than the process required when setting up a Mello-Roos Community Facilities District. City Council would adopt an ordinance of intent to issue bonds and hold a public hearing.

At this time, the City is projecting a \$5 to \$7 million dollar deficit for FY 2008-2009. This makes it difficult to fund the start-up costs for a solar and energy efficiency improvements financing program. The benefits of such a program would aid the city to meet the Climate Action Plan's goal to increase the renewable energy content within the community. A solar and energy efficiency improvements financing program would also help residents with the upfront costs of solar PV systems and even energy efficiency improvements. Therefore, when financing is available, staff recommends establishing a Sustainable Energy Financing District, assuming the community would support it, and implementation of a CityFIRST program, similar to Berkeley's program or AB811. Staff recommends applying for grants from regional, state and federal sources for seed money for public education and a CityFIRST solar and energy efficiency financing program. The initial grant

would fund the staff and administration costs necessary to implement the initial stages of the program. In addition, the grant would fund the consultant who would administer the program and bond process.

Public Education

Regardless of the direction of the City in terms of establishing a solar PV financing program, or mandating such systems, the City should provide information through a comprehensive public education outreach effort. This would include distributing information on energy efficiency and solar PV systems improvements, and energy conservation in the City Hall Permit Center and to potential developers and project applicants. A series of free workshops on Green Building and Solar and Energy Efficiency Financing would be given in conjunction with Build It Green, StopWaste.Org, and PG&E. In addition, the City of Hayward website would add a new Solar and Energy Efficiency icon and information page. Public television, ads in *The Daily Review*, distribution of information within water bills, and mailings to stakeholders and developers can be used as outreach tools.

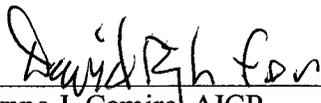
Mandatory Solar

Staff does not recommend establishment of a mandatory solar program until a financing structure is established, to mitigate the impacts of the high initial costs for such systems. Also, once such system is in place, any mandatory program should be focused on new, larger developments, should include various options to comply with the ordinance standards (e.g., building a PV system elsewhere in the City or paying an in-lieu fee that would go into a fund to support education outreach efforts or to assist disadvantaged individuals in their efforts to go solar, etc.), and should allow for alternative renewable energy systems.

NEXT STEPS

Staff has scheduled a joint City Council/Planning Commission work session on February 17, 2009, during which it will share the Sustainability Committee's comments and recommendation. Following this work session, staff would conduct a community workshop. If the Council so directs, staff would return to the Planning Commission and City Council with a draft ordinance and proposed funding program for consideration of adoption.

Prepared by:



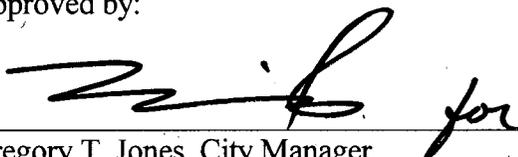
Arlyne J. Camire, AICP
Associate Planner

Recommended by:



David Rizk, AICP
Director of Development Services

Approved by:



Gregory T. Jones, City Manager

Attachment:

Exhibit A: 2007 Total System Power in Gigawatt Hours

Exhibit B: Mandatory Solar Program proposed by Planning Commissioner Al Mendall

2007 Total System Power in Gigawatt Hours

Fuel Type	In-State Generation	Northwest Imports	Southwest Imports	Total System Power	Percent of Total System Power
Coal*	4,190	6,546	39,275	50,012	16.6%
Large Hydro	23,283	9,263	2,686	35,232	11.7%
Natural Gas	118,228	1,838	16,363	136,063	45.2%
Nuclear	35,692	629	8,535	44,856	14.8%
Renewables	28,463	6,393	688	35,545	11.8%
<i>Biomass</i>	5,398	837	1	6,236	2.1%
<i>Geothermal</i>	12,999	0	440	13,439	4.5%
<i>Small Hydro</i>	3,675	4,700	18	8,393	2.8%
Solar	668	0	7	675	0.2%
<i>Wind</i>	5,723	857	222	6,802	2.3%
Total	209,856	24,669	67,547	302,072	100.0%

*Note: In earlier years the in-state coal number included coal fired power plants owned by California utilities

Source: gosolarcalifornia.ca.gov

Photovoltaic Solar Power Requirement

Under this proposal, all new developments in Hayward (business, residential, commercial and public) will be required to install photovoltaic solar electric power generating systems.

Calculating the Solar Requirement

The amount of solar power production that must be installed is 1 watt of capacity per square foot. Thus a 2,000 square foot house would require 2,000 watts (2 kilowatts) of solar power capacity. A typical California home requires around 4 kw of solar capacity in order to be energy neutral, so this requirement equates to ~50% of a home's total power use.

Where Would It Be Installed?

The solar requirement is calculated on a per-development, not per building basis. And the solar can be installed anywhere in the development. This gives the developer some flexibility to install the solar generating capacity in the most cost-effective manner. In cases where on-site installation is infeasible, a waiver may be granted allowing the panels to be installed elsewhere in Hayward (e.g. atop a nearby school).

Solar Power In Lieu Fee

A developer who chooses not to install their allotment of solar capacity, can opt instead to pay a solar power in lieu fee to the City of Hayward. The fee will be equal to the installation cost (around \$5 to \$10 per watt). All solar power in lieu fees collected will be deposited in a fund controlled by the City. Money from that fund can only be spent on energy efficiency projects in Hayward at the discretion of the City Council.

An Example

A developer that proposes to build one hundred 2,000 square foot homes in Hayward would have their solar requirement calculated thusly...

$$\begin{aligned} \text{Total square footage} &= 100 \text{ homes} \times 2,000 \text{ sq ft/home} = 200,000 \text{ sq ft} \\ \text{Solar requirement} &= 200,000 \text{ sq ft} \times 1 \text{ w/sq ft} = 200,000 \text{ w} = 200 \text{ kw} \end{aligned}$$

Meeting the 200kw requirement can be accomplished in a variety of ways.

1. By installing a 5kw solar array on 40% of the homes.
2. By installing a 4kw solar array on 50% of the homes.
3. By installing a 2kw solar array on 100% of the homes.
4. By paying a \$2,000,000 solar power in lieu fee to the City.
5. By installing a 200kw solar array elsewhere in Hayward (subject to a waiver).
6. Or by a combination of methods...
 - By installing a 4kw solar array on 25 homes = 100kw
 - By installing a 40kw array at a Hayward public school = 40kw
 - By paying a \$600,000 in lieu fee to Hayward = 60kw