



WS 3

**DATE:** March 10, 2009  
**TO:** Mayor and City Council and Planning Commission  
**FROM:** Director of Development Services  
**SUBJECT:** Proposed Solar and Energy Efficiency Financing for Residential and Commercial Development

**RECOMMENDATION**

Staff recommends that the City Council and Planning Commission review and comment on the report and provide staff direction for next steps.

**SUMMARY**

Included in the FY 2009 budget is an outcome to “develop a City-assisted solar fund to assist small residential and commercial buildings in installing photovoltaic (PV) energy systems.” Also, one of the recently adopted Council priorities for 2009 is “Residential Solar Funding and Commercial Solar Program.”

There are two general approaches for implementing a program that would fund/finance energy efficiency improvements, including solar photovoltaic (PV) systems: one involving Hayward developing a program and district on its own (utilizing the services of consultants), and the other scenario involving Hayward participating in a program administered over a larger geographical area, such as county-wide or regional.

This report provides an overview of the general process and approaches to establishing such a program, including the pros and cons of utilizing each approach. Background information related to what other cities are doing regarding financing and other relevant information is included in the attached January 7, 2009 Council Sustainability Committee staff report.

Staff seeks direction from the Council and Commission as to which general approach to pursue in establishing a program that would provide financing to allow residents and business owners to be able to afford to install energy efficiency measures. Based on available information, it appears that the county or regional participation program approach may make the most sense and be most cost-effective. However, until either of those programs are fully developed, it is premature in staff’s opinion to pursue a specific course of action at this time.

## **BACKGROUND**

On January 7, 2009, the City Council Sustainability Committee reviewed and discussed the information contained within the attached report. The Committee recognized that a direct way to help meet the goals of the City's Climate Action Plan is for the City to adopt a solar and energy efficiency improvements financing program, which when implemented, would result in the reduction of greenhouse gas emissions as required by AB 32 and as identified in the City's Draft Climate Action Plan. The Committee also recommended that the City launch an educational effort in tandem with a solar and energy efficiency improvements financing program. The Committee directed staff to schedule a City Council/Planning Commission joint study session on the topic.

On the matter of adoption of a mandatory solar program, the Committee expressed reservations, based on the current economic climate and concerns with the success of such a requirement without funding/financing programs in place. In addition, the Committee was reluctant to recommend the adoption of an ordinance that would limit homeowners and developers to one technology (such as installation of solar PV panels) and felt that it is important to have the ability to choose among various measures in order to meet the greenhouse gas emission reduction and energy efficiency goals of the Climate Action Plan and the GreenPoint rated certification requirements of the Hayward Green Building Ordinance.

Regarding education, the Committee directed staff to research forming a Solar Power Consortium with other jurisdictions that would identify and implement initiatives to promote, expand, and accelerate solar power and energy efficiency. Information regarding such collaboration is included later in this report.

## **DISCUSSION**

### **Summary of General Process for Establishing a Financing Program and District –**

There are four general steps to establishing a financing program.

#### **Develop an Ordinance -**

The first step would be to draft an ordinance that establishes the financing district and have it reviewed to ensure it is legal. There are certainly examples of ordinances that could be used as a template for drafting such an ordinance. The ordinance would also provide the opportunity to establish policy related to a financing program, including identifying for which properties the financing program would be available, what types of improvements would be eligible for funding, etc.

#### **Develop the Financing Program and District -**

Once a draft ordinance is established and adopted, the structure of the financing program would need to be developed. This process can take several months, and is typically done by a consultant, working with staff. This would require securing an energy block grant or other funding source, or using general funds for development of the program, estimated at around \$10,000. A consultant

would assist Hayward in the establishment of a financing district and aid with the determination of program components. Being a charter city, the City of Hayward can select a program structure involving establishing a district in the format of a community facilities district (like a Mello-Roos district), wherein a special tax would be levied on properties whose owners choose to participate in the district and make energy efficiency improvements to their properties. Those owners would pay off that assessment or tax over some established time period (Berkeley's program establishes a 20-year annuity payment period).

#### *Hire an Administrator to Oversee the Program -*

The program would require the City to issue bonds that would be used to finance low interest loans to program participants (see later discussion on the challenges of finding sources to purchase such bonds). The loans would be placed on the property tax roll as assessment liens. The consultant would administer the application process and program, maintain a website, and maintain a community education program. In addition, they would deliver the program funding (e.g. purchasing all program bonds on demand) and then distributing funding to the property owners participating in the voluntary program. Preparation and background work prior to launching the program is estimated to take between four to six months.

#### *Secure Funding Sources for Bonds -*

Probably the biggest challenge associated with fully implementing an energy efficiency improvements financing program is finding entities to provide funding/capital on purchase bonds that provide reliable, long-term financing for participants. Many banks, especially in today's market, are reluctant to purchase smaller bond amounts that would be typical for individual property improvements costs. Also, the rate of return on such bonds is challenging for many lending institutions. As indicated in later sections, one of the biggest advantages of participating in a multi-jurisdictional funding program is the increased likelihood of finding funding entities that would provide reliable, long-term financing, as well as the ability to share administrative costs for program administration and oversight.

#### *Local versus County or Regional Program -*

##### *City of Hayward Solar and Energy Efficiency Financing Assessment District -*

Following a solar and energy efficiency improvements financing presentation by Mr. Cisco DeVries, Managing Director of the firm, *Renewable Funding*, and former City of Berkeley employee, the Sustainability Committee recommended that the City further explore establishing a program similar to *BerkeleyFIRST*, managed by *Renewable Funding*.

The pilot *BerkeleyFIRST* program was funded by \$1.5 million in bonds to finance low interest loans to 40 residents to install solar and/or energy efficiency improvements to their homes. The loans are paid back through 20-year tax assessments, which are 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 paid 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. In order to move forward with the next stage of the program, analysis of the 40 residential solar installations must occur. Therefore, the program has not been expanded beyond the initial pilot stage.

Region or County-wide Green Improvement Special Assessment District -

There are currently efforts underway to establishing a countywide program through StopWaste.Org, as well as a regional program through the Association of Bay Area Governments (ABAG). StopWaste.Org is actively pursuing the formation of a countywide special assessment financing district. They are working with *Renewable Funding* to establish the requirements for financing various green improvements to existing homes. The assessment district would not be limited to solar and energy efficiency improvements, and would be an "opt-in" program sponsored by the California Statewide Communities Development Authority (CSCDA). Cities, once they have formally agreed to participate in such a program, could offer the program to their residents and businesses, but CSCDA would handle the district formation and bonding on the behalf of the cities. CSCDA is a 20-year-old statewide Joint Powers Authority (JPA) that has contributed approximately \$40 billion in financing for cities and counties. The JPA was created by the California League of Cities and Association of Counties. Currently, this project is a high priority for StopWaste.Org's 2009 Green Building Program. It is anticipated that jurisdictions who wish to participate will commit by August 2009. It is the goal of StopWaste.Org to enable interested Alameda County jurisdictions to roll out an initial phase of the special assessment district by October/November 2009.

A StopWaste.Org meeting and workshop explaining the countywide special assessment financing district was held on March 3, 2009. During that workshop, it was requested that jurisdictions who may wish to participate go back to their decision making boards and councils and provide an overview of the proposed approach.

Also, there are efforts underway to establishing a regional program that would be administered through ABAG and possibly funded through PG&E. Such a program formation is in the very initial stages and the details of such program have not been established.

Pros and Cons of a City Program versus a Region or County-Wide Program -

Generally, the advantages to forming a local program relate to being able to establish specific program parameters, including identifying which properties would be eligible to participate, what type of improvements would be available for financing, etc. The disadvantage of establishing a local program relate to additional costs for establishing it, as well as difficulties in finding funding sources for the program.

A county or regional program in which Hayward would participate would be advantageous in that the City of Hayward would likely not incur costs for the establishment of a district, the management of bonds, administration of the program, and the administration of a website. The City of Hayward website would link to the StopWaste.Org or ABAG website for information and program details.

The disadvantages of participating in such a program would be the lack of control in establishing program components. Establishment of a City solar and energy efficiency improvements financing program would further stretch the City of Hayward budget and staff.

Staff recommends that the City consider participating in the countywide green improvements special assessment financing district or the ABAG program whenever one or the other is fully developed and available. However, until details of those programs are developed, in staff's opinion, it is premature to pursue a specific course of action at this time.

### **Education Outreach - Solar Power Consortium -**

The Sustainability Committee also directed staff to explore forming a Solar Power Consortium similar to Solar Sonoma County, which is an educational consortium of local governments and businesses working to identify and implement initiatives to promote, expand, and accelerate solar and energy efficiency. It was suggested to StopWaste.Org that the countywide financing program being developed fund a new position for a coordinator that can be shared by the member agencies. Also, at the March 3, 2009 StopWaste.Org meeting, one of the presenters suggested that each jurisdiction who participates in the countywide green improvements special assessment district could contribute a portion of their energy efficiency block grants to fund an aggressive existing home green improvements program that would include targeting the highest leverage properties and provide consumer education, which could be one component of a consortium and collaborative effort.

Given staff is already distributing information related to solar and energy efficiency and is participating with other jurisdictions in sharing information (see discussion below), and because a countywide or regional program would likely encompass formation of such an education consortium, staff is recommending that the City defer pursuing forming such a consortium at this time. However, staff will continue to participate in discussions related to forming a countywide financing program and continue to work with other agencies' staffs to encourage development of an education consortium as part of the county financing program development.

In terms of collaborating with other jurisdictions, the City of Hayward is a member of the South Alameda County Green Coalition (SACGC), which includes representatives from Alameda County, San Leandro, Fremont, Union City and StopWaste.Org. At the January 30, 2009 Coalition meeting, the members discussed development of a consortium and felt it would be beneficial to Alameda County jurisdictions. However, based on limited staffing, the lack of funding, and limited resources, the Coalition would not be able to staff a position needed to coordinate a consortium.

City staff currently provides information for solar financing programs in its *Living Green* kiosk in the Permit Center, and will provide such information on the City's website, as feasible, via public education through the website, television, ads in publications and water bill inserts, and Green Building and Solar and Energy Efficiency Financing workshops. Such information is related to

various programs, such as those through PG&E's New Solar Homes Partnership (NSHP) Program, Single-Family and Multi-Family Affordable Solar Housing (SASH and MASH) Programs.

## **PUBLIC CONTACT/NEXT STEPS**

If so directed, staff will follow the progress of the StopWaste.Org countywide green improvements special assessment district and, if timely, the ABAG program, and will return to the City Council with an appropriate ordinance to formally accept participation in either of those programs when they are developed. Staff would also conduct a community workshop to inform the community residents and business owners/operators of the details and parameters such program would offer to them for energy efficiency improvements financing.

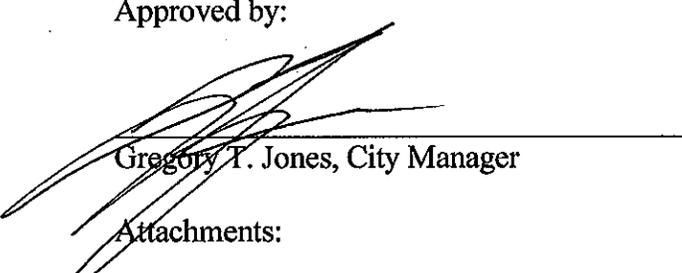
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Attachments:

- Exhibit A: Sustainability Committee staff report dated January 7, 2009
- Exhibit B: Sustainability Committee minutes dated January 7, 2009
- Exhibit C: The Energy Improvement and Extension Act of 2008



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/nshp.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](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 CO<sub>2</sub> 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](http://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.

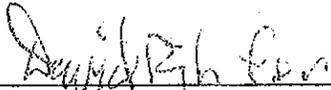
### *Mandatory Solar*

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:



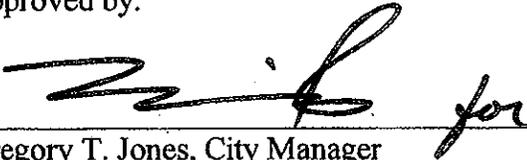
Arlynn J. Camire, AICP  
Associate Planner

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%
<b>Renewables</b>	<b>28,463</b>	<b>6,393</b>	<b>688</b>	<b>35,545</b>	<b>11.8%</b>
<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%
<i>Solar</i>	668	0	7	675	0.2%
<i>Wind</i>	5,723	857	222	6,802	2.3%
<b>Total</b>	<b>209,856</b>	<b>24,669</b>	<b>67,547</b>	<b>302,072</b>	<b>100.0%</b>

\*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

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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

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.

**MEETING MINUTES**

I. Call to Order-4:37 pm

II. Roll Call

**Members:**

- Michael Sweeney, Mayor
- Olden Henson, Councilmember
- Bill Quirk, Councilmember
- Rodney Loché, Planning Commissioner (absent)
- Julie McKillop, Planning Commissioner
- 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
- Erik Pearson, Senior Planner
- Tiffany Roberts, Administrative Intern (recorder)

**Others:**

- Sandy Frost, Hayward Community Gardens
- John Morra, Hayward Community Gardens
- Avalon Schultz, Associate Planner, City of Union City

III. Public Comments: No public comments.

VI. Approval of Minutes of December 3, 2008- Revised minutes adopted.

V. Solar and Energy Efficiency Financing, and Mandatory Solar for New Development.

Development Services Director Rizk presented an overview of financing options, indicating that benefits are indisputable and includes reducing greenhouse gas emissions, savings on utility bills, and assisting in meeting three City of Hayward Climate Action Plan strategies that focus on solar photovoltaic (PV) power. He reviewed typical costs of a PV system before and after rebates. Tax credit, state financing, and PG&E rebate information was presented in the presentation. In addition, he highlighted programs

from a several cities; gave a brief overview of AB811 and reviewed considerations for adopting a mandatory program. He also summarized staff's recommendation.

Councilmember Henson inquired if staff found consistency between cities and if mandatory solar had the potential to discourage development. He also inquired if there is a consortium of several cities.

Development Services Director Rizk answered that Sonoma County cities formed a Solar Power consortium, and that Hayward needs to engage other agencies and cities in the area to form a similar consortium.

Councilmember Henson directed staff to look into the possibilities to forming a Solar Power consortium with other cities.

Planning Commissioner Mendall referenced the staff report and questioned the City of Culver City Building Official's information regarding the number of years it takes for a solar PV system to pay back when installed on a commercial project.

Task Force Member Grandt said that he's seen payback in 16 years.

Planning Commissioner Mendall stated that his PV system will pay for itself in 13 years and requested that staff verify the information in the staff report.

VI. City FIRST: Financing Initiative for Renewable and Solar Technology  
Cisco DeVries, Managing Director, Renewable Funding

Mr. De Vries gave his presentation. He noted that the biggest issue is the upfront costs for programs like Berkeley FIRST. He continued to describe the CityFIRST program and similar programs that can be established so that a city's general fund is not exposed to liability. The process would require revenue bonds for funding and establishment of an assessment or Mello-Roos district, where residents voluntarily participate in the program and pay back loan through an assessment on their property taxes. Thirty-seven cities currently are working on similar financing programs including San Diego, Santa Cruz, San Francisco, and Boulder, Colorado.

He proceeded to discuss the services that Renewable Funding offer, which includes assistance with the program adoption process, education and administration, an on-line system for residents of participating cities, and financing, including an incremental bond purchase agreement. In addition, the program guarantees a seamless flow of capital where money is available on demand.

Planning Commissioner Mendall inquired why a 20 year pay-back period was established, and asked if the arrangement would be revenue neutral or revenue positive.

Mr. DeVries explained that there is no magic in 20 years; that although AB811 may cap at 20 years, the payback period can't be longer than the expected life of the equipment, making 20 years for financing a PV solar system an easy sell. Also, Mr. DeVries indicated that 20 years spreads payments out to be affordable. He indicated that cash flow depends on the property. In Berkeley, for example, he stated there is not a positive cash flow, but Palm Desert has a positive cash flow, because they use so much power to cool their homes in the summer.

Planning Commissioner Mendall inquired if the target of the program is single-family homes as opposed to townhomes, condos, etc.?

Mr. DeVries responded yes for PV solar systems.

Planning Commissioner Mendall asked if energy efficiency improvements would be covered by the program.

Mr. DeVries responded yes, but in Berkeley there is a \$5,000 minimum.

Councilmember Henson expressed concern of the timing of a solar and energy efficiency improvements financing program due to the current economic climate.

Mr. DeVries responded that bond markets are a disaster, so obviously, it makes everything more expensive. He continued that two years ago this program would have been cheaper and added that one of the challenges is to work to find the resources.

Councilmember Henson asked for confirmation that Berkeley received grants to start- up the program.

Mr. DeVries replied that Berkeley received a Bay Area Air District grant and EPA grant. He pointed out that there will be energy block grants available. The funding that Berkeley received was used for the pilot program. He also pointed out that the EPA grant doesn't support on-going operation of program, but that the Air District grant does.

Councilmember Henson asked how Berkeley engaged its community regarding this program.

Mr. DeVries replied that Berkeley is not that different than Hayward; however, Berkeley traditionally has an on-going effort to engage and

educate. He indicated that when you try to get people to make these changes, it's more about what peoples' neighbors are doing. The City of Berkeley is looking for ways to solve this climate crisis, but specifically with this program, he stated that solar companies were out there promoting it as well. It was also advertised on the City of Berkeley's website well in advance of implementation.

Taskforce member Grandt asked if there is anything in the program that suggests looking at the incremental return on an investment. He also inquired if there are provisions in the program to allow the installation of a larger PV system after installing a smaller system.

Planning Commissioner Mendall mentioned that solar companies calculated the appropriate size of the PV system.

Mr. DeVries continued to answer that rebate programs require system size to match last year's utility bill. The program doesn't monitor or enforce the system; however, the program requires residents to use the state rebate program. However, that being said, he said a resident could execute a new lien on the tax bill, for example, if the PV system installed did not meet required energy needs.

Development Services Director Rizk asked if participants have to provide evidence of the size of system needed.

Mr. DeVries replied that participants don't receive funding until the system has been installed. The program pays property owners directly; not the installers. Mr. DeVries indicated that Berkeley doesn't want the responsibility to decide when that contract between the owner and installer has been fulfilled, which could represent a liability issue for Berkeley.

Councilmember Quirk asked if it is a big deal to remove an old roof to have solar installed.

Mr. DeVries responded that it's not insignificant and may cost \$1,000 or more. Mayor Sweeney inquired if residents prefer to remove old roofs prior to the installation of a PV system. Everyone agreed that this is preferred.

Mayor Sweeney directed staff to work on the next steps to move this forward on a financing program. He pointed out that there are different issues regarding mandatory solar. He also felt that the Committee has more questions than answers. He suggested that staff do some work to get more questions and observations on the table.

Planning Commissioner Mendall inquired about the cons of mandatory solar and pointed out that the expense to a homeowner would not be like a

regressive tax if there is a financing mechanism. He indicated he favored a Mello-Roos type district, if it covered new and existing homes and he recommend that financing be put in place for new and existing.

Councilmember Quirk pointed out that most of the projects that will be built in 2011 already have vested tentative maps, but if the City has a funding program in place, we may be able to convince the developers to go ahead and participate in the program.

Mayor Sweeney commented that there are issues about orientation of PV systems. He question what the City should do about a tree that blocks access. He requested that Committee members provide comments to direct staff.

Councilmember Henson commented that financing as an incentive works better for developers with large developments. He pointed out that there may be new incentives at the federal level that the City will need to consider. He stated that staff needs to work on some of the details. He stated that he likes the idea of a hybrid policy.

Taskforce member Grandt stated that the California Energy Commission allows cities to create their own energy ordinances which can allow a resident who doesn't have good access to light have their project installed on, for example, a factory roof. He inquired if the City FIRST program addresses those types of projects.

Mr. DeVries answered that it is his understanding of state law that residents are not currently allowed to do that, because the energy generation system has to be on the roof of the home. The exception is for municipal governments, and is very restrictive otherwise.

Planning Commissioner McKillop stated that she has reservations with adopting mandatory requirements of any kind, but is very excited about a solar and energy efficiency improvements financing program. She inquired what the lead time would be to initiate this program. Mr. DeVries answered four to six months.

Planning Commissioner McKillop pointed out the City could start social marketing in tandem with the adoption of a financing program.

Planning Commissioner Mendall stated that the key is to put in enough flexibility within any solar program so residents have options.

Councilmember Quirk stated that he has reservations about adopting a mandate, particularly for a specific technology. He pointed out two constraints: limited staff time and the time it takes to get financing going. He advocated starting with education, including working with homeowners

and developers, then look at mandates later. He recommended concentrating first on financing and education.

Mayor Sweeney asked Mr. De Vries if he has any comments about new construction. Mr. DeVries stated so far, the financing program has been used for existing buildings. There are cities looking at it for new construction.

Mayor Sweeney inquired how a consumer would be protected if the cost of a system is misquoted. Mr. DeVries answered that some protections are built into state program regulations, but the city can exercise a great deal of discretion over the program if it feels the state system is not sufficient enough to protect the consumer.

Taskforce member Grandt point out as a matter of education, that the financing program should not just be solar PV, but solar thermal and other alternative energies.

Mayor Sweeney summarized by indicating the Committee's desire to move forward with financing, and stated there appears to be some reluctance on mandating solar right now. He suggested that the City work with developers to provide solar on projects that have been approved. He also suggested that staff examine consumer protections. He continued that for new construction, the Committee needs to think of more programs and suggested bringing these issues to future meetings.

Development Services Director Rizk stated that he agrees with Councilmember Quirk that the focus on a financing structure is probably most important. He stated that staff could propose a funding mechanism/program.

Mayor Sweeney stated that the item should move forward to a joint work session. He asked for announcements. He then reminded everyone that the next meeting scheduled for Wednesday, February 4<sup>th</sup> will examine President Obama's Green Initiative.

Adjourned at 6:10 pm

# *The Energy Improvement and Extension Act of 2008*

September 17, 2008

## I. RENEWABLE ENERGY INCENTIVES

**Extension and Modification of Production Tax Credit.** The bill extends the placed-in-service date for the Section 45 credit through December 31, 2009 in the case of wind and refined coal, and through December 31, 2010 in the case of other sources. The bill expands the types of facilities qualifying for the credit to new biomass facilities and to those that generate electricity from marine renewables (e.g., waves and tides). The bill updates the definition of an open-loop biomass facility, the definition of a trash combustion facility, and the definition of a non-hydroelectric dam. The bill also increases emissions standards on the refined coal credit and removes its market value test. *The estimated cost of this proposal is \$5.817 billion over 10 years.*

**Long-term Extension of Energy Credit.** The bill extends the 30% investment tax credit for solar energy property and qualified fuel cell property, as well as the 10% investment tax credit for microturbines, through 2016. The bill increases the \$500 per half kilowatt of capacity cap for qualified fuel cells to \$1,500 per half kilowatt of capacity, and adds small commercial wind as a category of qualified investment. The bill also provides a new 10% investment tax credit for combined heat and power systems and geothermal heat pumps. The bill allows these credits to be used to offset the alternative minimum tax (AMT). *The estimated cost of this proposal is \$1.942 billion over 10 years.*

**Long-term Extension and Modification of the Residential Energy-Efficient Property Credit.** The bill extends the credit for residential solar property for eight through 2016, and removes the credit cap (currently \$2,000) for solar electric investments. The bill adds residential small wind investment, capped at \$4,000, and geothermal heat pumps, capped at \$2,000, as qualifying property. The bill allows the credit to be used to offset the AMT. *The estimated cost of this proposal is \$1.294 billion over 10 years.*

**Sales of Electric Transmission Property.** The bill extends the present-law deferral of gain on sales of transmission property by vertically integrated electric utilities to FERC-approved independent transmission companies. Rather than recognizing the full amount of gain in the year of sale, this provision allows gain on such sales to be recognized ratably over an 8-year period. The rule applies to sales before January 1, 2010. *This proposal is estimated to be revenue-neutral over 10 years.*

**New Clean Renewable Energy Bonds (“CREBs”).** The bill authorizes \$800 million of new clean renewable energy bonds to finance facilities that generate electricity from wind, closed-loop biomass, open-loop biomass, geothermal, small irrigation, qualified hydropower, landfill gas, marine renewable and trash combustion facilities. This \$800 million authorization is subdivided into thirds: 1/3 for qualifying projects of State/local/tribal governments; 1/3 for qualifying projects of public power providers; and 1/3 for qualifying projects of electric cooperatives. The bill also extends the termination date for existing CREBs by one year. *The estimated cost of this proposal is \$267 million over 10 years.*

## **II. CARBON MITIGATION AND COAL**

**Carbon Capture and Sequestration (CCS) Demonstration Projects.** The bill provides \$1.5 billion in new tax credits for the creation of advanced coal electricity projects (Section 48A) and certain coal gasification projects (Section 48B) that demonstrate the greatest potential for carbon capture and sequestration (CCS) technology. Of these \$1.5 billion of incentives, \$1.25 billion will be awarded to advanced coal electricity projects, and \$250 million will be awarded to coal gasification projects. These tax credits will be awarded by Treasury through an application process, with applicants that demonstrate the greatest CO<sub>2</sub> sequestration percentage receiving the highest priority. Applications will not be considered unless they can demonstrate that either their advanced coal electricity project would capture and sequester at least 65% of the facility’s CO<sub>2</sub> emissions or that their coal gasification project would capture and sequester at least 75% of the facility’s CO<sub>2</sub> emissions. Once these credits are awarded, recipients failing to meet these minimum levels of carbon capture and sequestration would forfeit these tax credits. The bill also clarifies that gasification projects producing transportation grade liquid fuels are eligible under Section 48B. *The estimated cost of this proposal is \$1.424 billion over 10 years.*

**Solvency for the Black Lung Disability Trust Fund.** The bill would enact the President’s FY 2009 proposal to bring the Black Lung Disability Trust Fund out of debt. Under current law, an excise tax is imposed on coal at a rate of \$1.10 per ton for coal from underground mines and \$0.55 per ton for coal from surface mines (the aggregate tax per ton capped at 4.4% of the amount sold by the producer). Receipts from this tax are deposited in the Black Lung Disability Trust Fund, which is used to pay compensation, medical and survivor benefits to eligible miners and survivors and to cover costs of program administration. The Trust Fund is permitted to borrow from the General Fund any amounts necessary to make authorized expenditures if excise tax receipts do not provide sufficient funding. Reduced rates of excise tax apply after the earlier of December 31, 2013 or the date on which the Black Lung Disability Trust Fund has repaid, with interest, all amounts borrowed from the general fund of the Treasury. The President’s Budget proposes that the current excise tax rate should continue to apply beyond 2013 until all amounts borrowed from the general fund of the Treasury have been repaid with interest. After repayment, the reduced excise tax

rates of \$0.50 per ton for coal from underground mines and \$0.25 per ton for coal from surface mines would apply (aggregate tax per ton capped at 2 percent of the amount sold by the producer). The bill also includes the President's proposal to restructure Black Lung Trust Fund debt. *The proposal is estimated to raise \$1.287 billion over 10 years.*

**CO<sub>2</sub> Capture Credit.** The bill provides a \$10 credit per ton for the first 75 million metric tons of CO<sub>2</sub> captured and transported from an industrial source for use in enhanced oil recovery and \$20 credit per ton for CO<sub>2</sub> captured and transported from an industrial source for permanent storage in a geologic formation. Qualifying facilities must capture at least 500,000 metric tons of CO<sub>2</sub> per year. The credit applies to CO<sub>2</sub> stored or used in the United States. *The estimated cost of this proposal is \$1.119 billion over ten years.*

**Refund of Coal Excise Taxes Unconstitutionally Collected from Exporters.** The Courts have determined that the Export Clause of the Constitution prevents the imposition of the coal excise tax on exported coal and, therefore, taxes collected on such exported coal are subject to a claim for refund. The bill creates a new procedure under which certain coal producers and exporters may claim a refund of these excise taxes that were imposed on coal exported from the U.S. Under this procedure, coal producers or exporters that exported coal during the period beginning on or after 1/1/90 and ending on or before the date of enactment of the bill, may obtain a refund from Treasury of excise taxes paid on such exported coal and any interest accrued from date of overpayment. *The estimated cost is \$199 million over 10 years.*

**Steel Industry Fuel:** The bill adds a credit for coal used in the manufacture of coke, a feedstock used in steel production. The credit amount is \$2 per barrel-equivalent of oil, available for facilities that place in service before January 1, 2010. *The estimated cost of this proposal is \$61 million over 10 years.*

**Carbon Audit of the Tax Code.** The bill directs Treasury to request that the National Academy of Sciences undertake a comprehensive review of the tax code to identify tax provisions with the largest effect on carbon and other greenhouse gas emissions, and to estimate the magnitude of those effects. *This proposal has no revenue effect.*

### **III. TRANSPORTATION & DOMESTIC FUEL SECURITY**

**Plug-in Electric Drive Vehicle Credit.** The bill establishes a new credit for plug-in electric drive vehicles. The credit for passenger vehicles and light trucks ranges from \$2500 to \$7500. Taxpayers may claim the full amount of the allowable credit up to the end of the first calendar quarter after the quarter in which the total number of qualified plug-in electric drive vehicles sold in the U.S. exceeds 250,000. The credit is available against the alternative minimum tax (AMT). *The estimated cost of this proposal is \$758 million over 10 years.*

**Incentives for Idling Reduction Units and Advanced Insulation for Heavy Trucks.** The bill provides an exemption from the heavy vehicle excise tax for the cost of idling reduction units, such as auxiliary power units (APUs), which are designed to eliminate the need for truck engine idling (e.g., to provide heating, air conditioning, or electricity) at vehicle rest stops or other temporary parking locations. The bill also exempts the installation of advanced insulation, which can reduce the need for energy consumption by transportation vehicles carrying refrigerated cargo. Both exemptions are intended to reduce carbon emissions in the transportation sector. *The estimated cost of this proposal is \$95 million over 10 years.*

**Bicycle Commuters.** The bill allows employers to provide employees who commute to work by bicycle limited fringe benefits to offset the costs of such commuting (e.g., storage). *The estimated cost of this proposal is \$10 million over 10 years.*

**Expansion of Allowance for Cellulosic Biofuels Property.** Taxpayers are allowed to immediately write off 50% of the cost of facilities that produce cellulosic biofuels ethanol if such facilities are placed in service before January 1, 2013. The bill makes this benefit available for the production of other cellulosic biofuels in addition to cellulosic ethanol. *This proposal is estimated to be revenue neutral over 10 years.*

**Extension of Biodiesel Production Tax Credit; Extension and Modification of Renewable Diesel Tax Credit.** The bill extends the \$1.00 per gallon production tax credit for biodiesel and the 10¢/gallon credit for small biodiesel producers through 2009. The bill also extends the \$1.00 per gallon production tax credit for diesel fuel created from biomass. The bill eliminates the current-law disparity in credit for biodiesel and agri-biodiesel, and eliminates the requirement that renewable diesel fuel must be produced using a thermal depolymerization process. As a result, the credit will be available for any diesel fuel created from biomass without regard to the process used, so long as the fuel is usable as home heating oil, as a fuel in vehicles, or as aviation jet fuel. Diesel fuel created by co-processing biomass with other feedstocks (e.g., petroleum) will be eligible for the 50¢/gallon tax credit for alternative fuels. Biodiesel imported and sold for export will not be eligible for the credit effective May 15, 2008. *The estimated cost of this proposal is \$451 million over 10 years.*

**Extension and Modification of Alternative Fuels Credit.** The bill extends the alternative fuel excise tax credit under Section 6426 through December 31, 2009 for all fuels except hydrogen (which maintains its current-law expiration date of September 30, 2014). Beginning 10/1/09, qualified fuel derived from coal through the Fischer-Tropsch process must be produced at a facility that separates and sequesters at least 50% of its CO<sub>2</sub> emissions. This sequestration requirement increases to 75% on 12/31/09. The proposal further provides that biomass gas versions of liquefied petroleum gas and liquefied or compressed natural gas, and aviation fuels qualify for the credit. *The estimated cost of this proposal is \$61 million over 10 years.*

**Extension and Expansion of the Alternative Refueling Stations Credit.** The bill extends the 30% credit for alternative refueling property, such as natural gas or E85 pumps, through 2010. The bill also adds electric vehicle recharging property to the types of property eligible for the credit. The credit for hydrogen refueling property is unchanged. *The estimated cost of this proposal is \$87 million over 10 years.*

**Publicly Traded Partnership Income Treatment of Alternative Fuels.** The proposal permits publicly traded partnerships to treat income derived from the transportation, or storage of certain alternative fuels, as well as anthropogenic CO<sub>2</sub>, as qualifying income for purposes of the publicly traded partnership rules. *The estimated cost of this proposal is \$119 million over 10 years.*

**Percentage Depletion for Marginal Wells.** The proposal extends for 2009 the suspension on the taxable income limit for purposes of depreciating a marginal oil or gas well. *The estimated cost of this proposal is \$124 million over 10 years.*

**Refinery Expensing.** The Energy Policy Act of 2005 established a temporary expensing provision for refinery property which increases total capacity by 5% or which processes nonconventional feedstocks at a rate equal or greater to 25% of the total throughput of the refinery. This bill extends both the refinery expensing contract requirement and the placed-in-service requirement for this expensing provision for two years. The bill also qualifies refineries directly processing shale or tar sands for this provision. *The estimated cost of this proposal is \$894 million over 10 years.*

#### **IV. ENERGY CONSERVATION AND EFFICIENCY**

**Qualified Energy Conservation Bonds.** The bill creates a new category of tax credit bonds to finance State and local government initiatives designed to reduce greenhouse emissions. There is a national limitation of \$800 million, allocated to States, municipalities and tribal governments. *The estimated cost of this proposal is \$276 million over 10 years.*

**Extension and Modification of Credit for Energy-Efficiency Improvements to Existing Homes.** The bill extends the tax credit for energy-efficient existing homes for 2009, and includes energy-efficient biomass fuel stoves as a new class of energy-efficient property eligible for a consumer tax credit of \$300. The proposal also clarifies the efficiency standard for water heaters. *The estimated cost of this proposal is \$827 million over 10 years.*

**Extension of Energy-Efficient Buildings Deduction.** Current law allows taxpayers to deduct the cost of energy-efficient property installed in commercial buildings. The amount deductible is up to \$1.80 per square foot of building floor area for buildings achieving a 50% energy savings target. The energy savings must be accomplished through energy and power cost reductions for the building's heating, cooling,

ventilation, hot water, and interior lighting systems. This bill extends the energy-efficient commercial buildings deduction for five years, through December 31, 2013. *The estimated cost of this proposal is \$891 million over 10 years.*

**Extension of Credit for Energy-Efficiency Improvements to New Homes.** Under current law, contractors receive a credit for the construction of energy-efficient new homes that achieve a 30% or 50% reduction in heating and cooling energy consumption relative to a comparable dwelling. The credit equals \$1,000 for homes meeting a 30% efficiency standard, \$2,000 for homes meeting a 50% standard. The bill extends the new energy efficient home tax credit through 2009. *The estimated cost of this proposal is \$61 million over 10 years.*

**Modification and Extension of Energy-Efficient Appliance Credit.** Manufacturers receive a tax credit for the production of energy-efficient dishwashers, clothes washers and refrigerators. Credit is provided only for appliances that are U.S.-produced. The bill increases the credit's standards and amounts, and extends the credit for appliances manufactured through 2010. *The estimated cost of this proposal is \$322 million over 10 years.*

**Accelerated Depreciation for Smart Meters and Smart Grid Systems.** The bill provides accelerated depreciation for smart electric meters and smart electric grid equipment. Under current law, taxpayers are generally able to recover the cost of this property over a 20-year period. The bill allows taxpayers to recover the cost of this property over a 10-year period, unless the property already qualifies under a shorter recovery schedule. *The estimated cost of this proposal is \$915 million over 10 years.*

**Extension and Modification of Qualified Green Building and Sustainable Design Project Bond.** The bill extends the authority to issue qualified green building and sustainable design project bonds through the end of 2012. The bill also clarifies the application of the reserve account rules to multiple bond issuances. *The estimated cost of this proposal is \$45 million over 10 years.*

**Investments in Recycling.** The bill allows taxpayers to claim accelerated depreciation for purchase of equipment used to collect, distribute or recycle a variety of commodities. *The estimated cost of this proposal is \$162 million over 10 years.*

## V. REVENUE PROVISIONS

**Modification to Section 199.** Section 199 provides a deduction -- currently 6% -- equal to a portion of the taxpayer's qualified production activities income. The Section 199 deduction is scheduled to increase to 9% in 2010. This bill would freeze the Section 199 deduction at 6% for gross receipts derived from the sale, exchange or other disposition of oil, natural gas, or any primary product thereof. *This proposal is estimated to raise \$4.906 billion over 10 years.*

**Basis Reporting by Brokers on Sales of Stock.** This provision creates mandatory basis reporting measures to the IRS by brokers for transactions involving publicly traded securities, such as stock, debt, commodities, derivatives and other items as specified by Treasury. *The proposal is estimated to raise \$6.67 billion over 10 years.*

**FUTA Surtax.** The Federal Unemployment Tax Act ("FUTA") imposes a 6.2 percent gross tax rate on the first \$7,000 paid annually by covered employers to each employee. In 1976, Congress passed a temporary surtax of 0.2 percent of taxable wages to be added to the permanent FUTA tax rate. The temporary surtax subsequently has been extended through 2008. The President's FY 2009 Budget proposes extending the FUTA surtax. The Treasury Department states that "extending the surtax will support the continued solvency of the Federal unemployment trust funds and maintain the ability of the unemployment system to adjust to any economic downturns." The bill would enact the President's proposal for one year (through 2009). *This proposal is estimated to raise \$1.474 billion over 10 years.*

**Modification of Section 907.** The proposal eliminates the distinction between foreign oil and gas extraction income ("FOGEI") and foreign oil related income ("FORI"). FOGEI relates to upstream production to the point the oil leaves the wellhead. FORI is defined as all downstream processes once the oil leaves the wellhead (i.e. transportation, refining). Currently, FOGEI and FORI have separate foreign tax credit limitations. This proposal combines FOGEI and FORI into one foreign oil basket, and applies the existing FOGEI limitation. *This proposal is estimated to raise \$2.23 billion over ten years.*

**Oil Spill Liability Trust Fund.** The proposal extends the oil spill tax through December 31, 2017, increases the per barrel tax from 5 cents to 8 cents from 2009 through 2016, and to 9 cents in 2017. The bill also repeals the requirement that the tax be suspended when the unobligated balance exceeds \$2.7 billion. *This proposal is estimated to raise \$1.715 billion over 10 years.*