

DATE: November 3, 2009

TO: Mayor and City Council

FROM: Director of Public Works

SUBJECT: Authorization for the City Manager to Negotiate and Execute a Contract to Construct a 1000 Kilowatt Solar Energy System at the Water Pollution Control Facility and to Submit an Application for Financing; and Approval of the Associated Mitigated Negative Declaration for the Project

RECOMMENDATION

That Council adopts the attached resolutions:

1. Authorizing the City Manager to negotiate and execute a Contract with REC Solar for a 1000 kW photovoltaic-solar energy system to be located at the Water Pollution Control Facility (WPCF);
2. Authorizing the City Manager to submit an application for a California Energy Commission (CEC) low-interest loan; and
3. Approving the Initial Study and Draft Mitigated Negative Declaration prepared for the solar project.

SUMMARY

The Water Pollution Control Facility (WPCF) is the largest energy using entity owned by the City. Annually, about 6,300,000 kilowatt hours (kWh) of electric energy is purchased from PG&E to operate the treatment plant at a cost of about \$700,000. Energy not purchased from PG&E for treatment plant operations comes from on-site cogeneration that uses digester gas as fuel to power internal combustion engines.

Staff desires to further reduce commercial energy demand through development of renewable sources. With available incentives, an opportunity exists to reduce greenhouse gases and other air pollutants associated with "brown energy" by constructing photovoltaic (solar panels) to replace some of the energy now purchased from PG&E. Based on the information discussed in this report, staff recommends that a 1000 kW photovoltaic solar project be constructed at the WPCF. The project will cost \$5,433,260, and will be owned by the City.

BACKGROUND

Given the large amount of electric energy that is purchased from PG&E for use at the WPCF, City staff has been contemplating implementation of a solar photovoltaic project at the Plant to meet some of that need. The Capital Improvement Program approved by Council for FY 2010 contains a solar photovoltaic project to convert sun energy into usable electric energy for the WPCF. The project will be located at the west edge of the WPCF property and will occupy about five acres of land that has low usage for WPCF operations. There are several factors that affect such a project; each is discussed below.

The reasons for undertaking this project are:

1. To use solar energy to partially offset energy currently purchased from PG&E for wastewater treatment and to sell energy back to PG&E during periods of maximum solar conversion to minimize the overall impact of energy cost on sewer rates.
2. To reduce the carbon footprint associated with WPCF operations and to meet one of the objectives of the City's Climate Action Plan. According to the data provided by PG&E and included in the City's Climate Action Plan, CO₂ emissions for traditional power plant electricity production is about 478 lbs of CO₂ per megawatt hour of energy produced. Therefore, a 500 kW solar system generating about 1,000 MWh (megawatt hours) of energy, would offset 478,000 lbs of CO₂ each year that would otherwise be emitted into the atmosphere.

Planning for this solar development has included researching financial incentives and performing an environmental review pursuant to California Environmental Quality Act (CEQA) resulting in an Initial Study and Draft Mitigated Negative Declaration. The study has been available for public review for the regulatory required time; it is now recommended for Council's approval. Staff has also identified a low-interest loan program administered by the California Energy Commission (CEC) and the California Solar Initiative rebate that would be applied to the planned solar project. Application for the CEC loan will require a resolution approving and authorizing the application.

DISCUSSION

Development Options - There are two options available for the City to develop a solar project. The first option is to enter into a "Power Purchase Agreement (PPA)" with a private party, whereby the City would purchase all solar energy at an agreed upon price over a term of twenty years. In the PPA option, the third party would own and fund the generating facility that would be located on City property. The second option is for the City to build the solar facilities (turn-key project). The City would then own the generating facility and would not pay for the energy produced under the turn-key option.

On May 19, 2009, staff issued a request for proposals (RFP) seeking offers for a PPA development. A PPA approach was initially chosen because only private entities can take advantage of the tax write-off component of the incentives associated with this type of project. Additionally, several neighboring agencies had either recently entered into PPAs or were in the

process of doing so. Staff received five proposals from respondents on July 8, 2009. All proposals offered an initial year rate per kilowatt-hour of energy delivered to the City and an annual escalation that defined the increase in the initial rate with time over the twenty-year term. Overall, the best proposals could be cost effective only if the annual cost increases from PG&E over the next twenty years exceeded 3.5%. While this rate of escalation could occur, it is also possible that average annual increases may stay below 3.5% which has been the case for the past few years. Our technical consultant has indicated that 3.5% is a much more reasonable assumption versus the 6% suggested by some of the PPA proposers.

After reviewing the submitted proposals, City staff decided to interview the three most qualified respondents: REC Solar, SPG Solar, and SunPower. The purpose of the interview was to better understand details of each proposal -- what would be provided and what would not be provided. Interviews were also used to explore ways to reduce the offered price for purchasing solar energy. During this time, staff became aware of the availability of the low-cost loan from California Energy Commission (CEC). As a result of further analysis based on the additional information, it became clear that owning the system with a twenty-year maintenance and operations contract from a third party may be a better economic choice than purchasing the generated energy from a private party, who would own the physical components of the solar system located on City property. If the expected life of twenty-five years is achieved and the photovoltaic system is still usable and not obsolete, under a PPA, the City would still be paying for electricity that, essentially, would be free of purchase costs under a turn-key project. Upon learning this, staff focused on negotiating with the three respondents for the turn-key option.

Another factor that emerged from discussions with proposal respondents and ongoing staff research was to determine the solar system size in relationship to the potential improvement in output of the existing WPCF cogeneration system. As identified in a prior study, a significant increase in cogeneration output could be realized by improving co-generating efficiency (new engines) and by producing more digester gas. Digester gas is a byproduct of the treatment process and currently results in providing about 30% of the total plant annual usage. Staff is currently evaluating two different alternatives to increase the efficiency of the co-generation process. Additional digester gas could be produced by initiating a program to accept off-site wastes that include some fats, oils, and grease (FOG), such as those from large restaurant grease interceptors. FOGs are the biodegradables principally responsible for digester gas creation. Other waste treatment facilities such as EBMUD in Oakland and Oro Loma Sanitary District are already taking in FOG from the companies that service these grease interceptor facilities.

Improving the cogeneration output with new engine generators and accepting offsite wastes is presently the most cost effective method to improve cogeneration and has the potential of providing at least 75% of the annual WPCF energy demand. Although there will be costs associated with the improved cogeneration facilities, staff estimates that the costs would be significantly lower than either PG&E rates or the effective rate for solar. Along with the solar project, the PG&E annual demand could be as low as 0% compared to our present day 70% PG&E usage, as shown in the table below.

Source	Annual Energy (kWh)	
	Presently	Solar and Cogeneration
Solar(1000kW)	---	2,000,000
Cogeneration	2,600,000	6,900,000
PG&E	6,300,000	0
Total	8,900,000	8,900,000

Financial Incentives - The CEC, through the California Solar Initiative (CSI), provides incentives, via rebates, for solar projects. The City submitted an application on February 25, 2009 to PG&E, administrator of the program in Northern California. PG&E notified the City on March 24, 2009 of a conditional reservation of a rebate for a City project, at a rate of \$0.26/kWh of energy generated over the first five years of operations. This rebate would be \$0.15/kWh if a PPA was used. Additionally, given that in a PPA arrangement the system is privately owned, there are significant tax advantages for the system owner. As part of the conditional reservation, the City has two hundred and forty days from March 24, 2009 to achieve the “project milestone” whereby the City must have executed a contract with a contractor for a solar project. The date for this project milestone is November 19, 2009. The project must be completed within 18 months after the date of reservation, which would be September 24, 2010. This construction deadline may be extended by PG&E if the project is substantially complete by this date.

The CEC also has several loan programs specific to energy conservation projects and projects that generate energy from renewable sources. Staff has been in contact with CEC staff and has identified CEC’s low-interest loan programs as an opportunity for realizing a feasible turn-key project. There are two available loan programs. The more desirable one, which staff is pursuing, has a 1% interest rate with a payback period of fifteen years. The other package is at 3% with the same payback period. For the 1% interest loan, the loan principal cannot exceed the first year’s energy savings times thirteen, plus the first year CSI rebate or \$3,000,000, whichever is less.

Environmental Review - City staff prepared an Initial Study and Mitigated Negative Declaration in compliance with CEQA (see Attachment II). The study identified potentially significant impacts related to Air Quality, due to dust during construction; encountering Cultural Resources during construction; and Water Quality during and after construction. The Initial Study determined that impacts were reduced to less than significant based on following standard construction and water quality mitigation measures as identified in the Mitigation Monitoring and Reporting Plan. The Initial Study was distributed for public review and comment on September 17, 2009, and a legal notice was published on September 19, 2009. Evidence of CEQA compliance is necessary to receive the CSI rebate and to acquire a low-interest loan from the CEC. No comments or inquiries were received during the review period for the Initial Study and Mitigated Negative Declaration. The document will be sent to the Alameda County Clerk for recordation upon approval by the City Council.

Environmental Attributes - Environmental attributes, sometimes referred to as renewable energy credits or REC, is the value of offsetting environmental impacts of brown energy, such as carbon or greenhouse gases that are not associated with the solar system. It is anticipated that in the future this

“carbon credit” will be a commodity with some monetary value. Under the City-owned project, these RECs will belong to the City. The potential value of these RECs can be seen in the PPA proposals, which increased their rates by \$0.015/kWh (about 12%) if the REC ownership transferred to the City.

Net Energy Metering – Most large solar projects also make use of net energy metering (NEM), which would allow the City to sell its unused solar energy to PG&E (spin the meter backwards) when advantageous for the City to do so, rather than purchase energy at peak cost. The City would receive credit based on time of use. With proper timing of our cogeneration operations, this is expected to occur mostly during summer at midday, the maximum period of solar energy. Converting to NEM metering would require the City to enter into a new contract with PG&E for the WPCF to effectuate the net metering.

NEM requires a “true up” at the end of each year, to verify that the value of energy placed into the PG&E grid does not exceed the value of energy received from the PG&E grid through the NEM meter. Otherwise, the excess energy is provided to PG&E at no cost. Recent legislation, AB 920, has addressed this issue and requires PG&E to pay a yet undetermined rate for excess energy sent to PG&E through the NEM meter. It is uncertain what this rate will be, as the legislation does not require it to be set until January 1, 2011; although initial indications are it will be around \$.06/kWh.

Recommended Construction Firm - After extended negotiation with REC Solar, SPG Solar, and SunPower, staff recommends negotiating two contracts with REC Solar to (1) construct a 1000 kW system and (2) provide for operation and maintenance over a twenty-year period as provided by the contractor. REC Solar would provide engineering and construct the system to applicable code standards, and provide interconnection with the WPCF electric distribution network.

REC Solar is a large company with operations in several countries besides the U.S. The company appears to be currently sound and solvent. The construction contract will include a performance bond, similar to other public works contracts. While staff does not have any indication to suggest the company might go out of business after construction, if that should occur, the City would have to find another company to provide future operations and maintenance services for the system.

The turn-key project with REC Solar would have an upfront cost of \$5,433,260. Operation and maintenance would be provided under a separate maintenance contract and would be billed annually, starting at \$7,000 per year, escalating at 1.5% per year. Because the project components would be City-owned, there would be no charges for energy to the City for either that used in the WPCF operations or sold to PG&E. This cost would be offset by the low-interest loan and by the CSI rebate. The project would enable the City to generate and use green energy to replace what would otherwise be purchased from PG&E and to sell some of the excess green energy back to PG&E.

FISCAL AND ECONOMIC IMPACT

Two sources of funding would be applied to the solar project. The first would be the CSI rebate, which is based upon the actual energy produced during the first five years the solar system is on-line. This CSI rebate is estimated at \$2,670,000. The second would be the low-interest loan

offered by the CEC. Based on the guidelines from the CEC, the maximum loan would be \$3,000,000. The CEC loan, if approved, would have an estimated debt service of \$216,371 per year for 15 years and would be paid from the Sewer operating fund, as it would pay for energy used at the wastewater treatment plant.

The total estimated project costs for the solar system are as follows:

Prior Consultant Services	\$ 65,000
Solar Construction including 20 yrs O&M	5,433,260
Staff Administration	<u>35,000</u>
Total:	\$ 5,533,260

As can be seen, the total project costs are less than the combined CSI rebate and CEC loan amount of \$5,670,000. Thus for the first 15 years, the effective cost for solar energy will be the debt service plus maintenance costs, which is less than what we would project to pay PG&E. Beyond year 15, the energy will be essentially free except for maintenance requirements. There may also be some value received from the renewable energy credits.

The FY 2010 Capital Improvement Program (CIP) includes \$8,000,000 in the Sewer Capital Improvement Fund for the Solar Power Design and Construction Project, which was based on our earlier estimates of costs to own a 1,000 kW facility. That appropriation is available for this project.

PUBLIC CONTACT

As discussed above, the CEQA Initial Study and Draft Mitigated Negative Declaration has been circulated and posted for public review and comment.

SCHEDULE

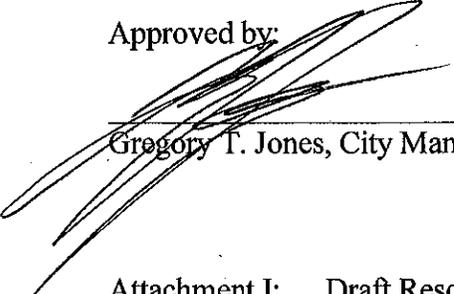
The estimated schedule for this project is summarized as follows:

Complete Construction Contract	November 18, 2009
Complete project construction and begin operation	September 18, 2010

Prepared by:
Alex Ameri, Deputy Director of Public Works

Recommended by:
Robert A. Bauman, Director of Public Works

Approved by:



Gregory T. Jones, City Manager

- Attachment I: Draft Resolution – Authorizes City Manager to Negotiate and Execute Construction Contract
- Attachment II: Draft Resolution – Authorizes City Manager to Submit Application to CEC
- Attachment III: Draft Resolution – Approves Initial Study and Draft Mitigated Negative Declaration
- Attachment IV: Initial Study /Draft Mitigated Negative Declaration

DRAFT

HAYWARD CITY COUNCIL

RESOLUTION NO. 09-

Introduced by Council Member _____

RESOLUTION AUTHORIZING THE CITY MANAGER TO NEGOTIATE AND EXECUTE A CONTRACT WITH REC SOLAR FOR A 1000 KILOWATT PHOTOVOLTAIC SOLAR ENERGY SYSTEM AT THE WATER POLLUTION CONTROL FACILITY, PROJECT NO. 7512

WHEREAS, the Water Pollution Control Facility (WPCF) is the largest energy using entity owned by the City of Hayward, annually consuming in excess of 9,000,000 kilowatt-hour (kWh) of electric energy of which more than 6,300,000 kWh is purchased from PG&E,

WHEREAS, staff has identified a solar renewable energy project to partially offset electric energy purchased from PG&E in order to minimize the overall impact of energy cost on sewer rates and to reduce the carbon footprint associated with WPCF operations, and to realize renewable energy credits (REC) for carbon and green-house gases,

WHEREAS, sufficient low-use land, about 8 acres, is available at the WPCF to site the proposed solar collectors, and generated power and energy can be assimilated into the WPCF operating grid and exported to the PG&E grid,

WHEREAS, it has been determined the most feasible financial structure is for the City of Hayward to own the solar project components rather than to purchase the solar energy through a Power Purchase Agreement,

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Hayward that the City Manager is authorized to negotiate and execute a contract with REC Solar, Incorporated for the design, construction and operation/maintenance of a 1000 kilowatt (kW) photovoltaic-solar energy system to be located at and interconnected with the WPCF and the WPCF PG&E meter.

BE IT FURTHER RESOLVED that the contract with REC Solar be executed prior to November 20, 2009 in order to satisfy requirements of the California Solar Initiative incentive rebate.

IN COUNCIL, HAYWARD, CALIFORNIA _____, 2009

ADOPTED BY THE FOLLOWING VOTE:

AYES: COUNCIL MEMBERS:

NOES: COUNCIL MEMBERS:

ABSTAIN: COUNCIL MEMBERS:

ABSENT: COUNCIL MEMBERS:

ATTEST: _____
City Clerk of the City of Hayward

APPROVED AS TO FORM:

City Attorney of the City of Hayward

DRAFT

HAYWARD CITY COUNCIL

RESOLUTION NO. 09-

Introduced by Council Member _____

RESOLUTION AUTHORIZING THE CITY MANAGER TO SUBMIT AN APPLICATION FOR A LOW INTERST LOAN FROM THE CALIFORNIA ENERGY COMMISSION FOR A 500 KILLOWATT PHOTOVOLTAIC SOLAR ENERGY SYSTEM PROJECT, PROJECT NO. 7512 AT THE WATER POLLUTION CONTROL FACILITY

WHEREAS, the City of Hayward's Water Pollution Control Facility (WPCF) is the largest energy using entity owned by the City of Hayward, annually consuming in excess of 9,000,000 kilowatt-hour (kWh) of electric energy of which more than 6,300,000 kWh is purchased from PG&E,

WHEREAS, it has been determined the most feasible financial structure for developing the project is for the City of Hayward to own the solar project components rather than to purchase the solar energy through a Power Purchase Agreement,

WHEREAS, the City of Hayward had identified a low interest loan program administered by the California Energy Commission to assist in construction costs,

WHEREAS, the California Energy Commission provides loans to schools, hospitals, local governments, special districts, and public care institutions to finance renewable energy systems;

NOW THEREFORE, BE IT RESOLVED, that the City of Hayward City Council authorizes its City Manager to apply for a low-interest loan from the California Energy Commission to construct a renewable (photovoltaic solar) energy system.

BE IT FURTHER RESOLVED, that in compliance with the California Environmental Quality Act (CEQA), the City of Hayward City Council finds that the activity funded by the loan is a project and an Initial Study and Draft Mitigated Negative Declaration report was prepared.

BE IT FURTHER RESOLVED, that if recommended for funding by the California Energy Commission, the City of Hayward City Council authorizes its City Manager to accept a loan up to \$3,000,000.

BE IT FURTHER RESOLVED, that the amount of the loan will be paid in full, plus interest, under the terms and conditions of the Loan Agreement, Promissory Note and Tax Certificate of the California Energy Commission.

BE IT FURTHER RESOLVED, that the City of Hayward City Manager is hereby authorized and empowered to execute in the name of the City of Hayward all necessary documents to implement and carry out the purpose of this resolution, and to undertake all actions necessary to undertake and complete the solar energy generation project.

IN COUNCIL, HAYWARD, CALIFORNIA _____, 2009

ADOPTED BY THE FOLLOWING VOTE:

AYES: COUNCIL MEMBERS:

NOES: COUNCIL MEMBERS:

ABSTAIN: COUNCIL MEMBERS:

ABSENT: COUNCIL MEMBERS:

ATTEST: _____
City Clerk of the City of Hayward

APPROVED AS TO FORM:

City Attorney of the City of Hayward

DRAFT

HAYWARD CITY COUNCIL

RESOLUTION NO. 09-

Introduced by Council Member

RESOLUTION APPROVING THE INITIAL STUDY AND
DRAFT MITIGATED NEGATIVE DECLARATION FOR THE
1000 KILOWATT PHOTOVOLTAIC SOLAR ENERGY
SYSTEM PROJECT, PROJECT NO. 7512 AT THE WATER
POLLUTION CONTROL FACILITY

WHEREAS, Staff has identified a solar renewable energy project to partially offset electric energy purchased from PG&E in order to minimize the overall impact of energy cost on sewer rates and to reduce the carbon footprint associated with Water Pollution Control Facility (WPCF) operations, and to realize renewable energy credits (REC) for carbon and greenhouse gases,

WHEREAS, a photovoltaic solar energy system will be constructed at the WPCF and will occupy about 8 acres of land,

WHEREAS, , City staff prepared an Initial Study and Draft Mitigated Negative Declaration in compliance with CEQA entitled Water Pollution Control Facility 1,000 kW Photovoltaic Renewable Energy Project,

WHEREAS The Initial Study was distributed for public review and comment on September 17, 2009, and a legal notice was published on September 19, 2009,

WHEREAS no comments or inquiries were received during the review period for the Initial Study and Draft Mitigated Negative Declaration,

WHEREAS, the City Council of the City of Hayward hereby finds and determines that the City Council has independently reviewed and considered the information contained in the Initial Study upon which the Draft Mitigated Negative Declaration and Mitigation Monitoring program is based, certifies that the Draft Mitigated Negative Declaration and Mitigation Monitoring program has been completed in compliance with the requirements of the California Environmental Quality Act, and finds that the Draft Mitigated Negative Declaration and Mitigation Monitoring program reflects the independent judgment of the City of Hayward;

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Hayward hereby approves the Draft Mitigated Negative Declaration and Mitigation Monitoring program prepared in connection with development of a photovoltaic energy system at the Water Pollution Control Facility

IN COUNCIL, HAYWARD, CALIFORNIA _____, 2009

ADOPTED BY THE FOLLOWING VOTE:

AYES: COUNCIL MEMBERS:

NOES: COUNCIL MEMBERS:

ABSTAIN: COUNCIL MEMBERS:

ABSENT: COUNCIL MEMBERS:

ATTEST: _____
City Clerk of the City of Hayward

APPROVED AS TO FORM:

City Attorney of the City of Hayward

**Due to the color and length of the attachment
IV: Initial Study/Draft Mitigated Negative Declaration,
it has been included as a separate link**