# Agenda Report

December 6, 2010

**TO:** Honorable Mayor and City Council

**THROUGH:** Municipal Services Committee (November 30, 2010)

**FROM:** Water and Power Department

**SUBJECT: DIRECT THE CITY ATTORNEY TO DRAFT AN ORDINANCE AND RETURN WITHIN 60 DAYS APPROVING THE ENVIROMISSION, LLC LA PAZ SOLAR GENERATION PROJECT POWER SALES AGREEMENT AND AUTHORIZE THE CITY MANAGER TO ENTER INTO THIS AGREEMENT WITH THE SOUTHERN CALIFORNIA PUBLIC POWER AUTHORITY FOR THE PURCHASE OF 10 MEGAWATTS OF THE PROJECT'S OUTPUT**

## RECOMMENDATION:

It is recommended that the City Council:

1. Find that the La Paz Solar Tower Project is exempt from the California Environmental Quality Act (CEQA) pursuant to State CEQA Guidelines Section 15277, Projects Located Outside California;
2. Direct the City Attorney to draft an ordinance and return within 60 days approving the Enviromission, LLC Solar Generation Project Power Sales Agreement (Agreement); and
3. Authorize the City Manager to enter into the Agreement with the Southern California Public Power Authority (SCPPA) to purchase a 10MW share of the project.

## EXECUTIVE SUMMARY:

Under the proposed Agreement with SCPPA, Pasadena Water and Power (PWP) would secure a long term source of renewable energy from the La Paz Solar Tower Project (Project) in Arizona. Other municipal utilities and public entities, including the Cities of Anaheim, Azusa, Burbank, Colton, Glendale, and Riverside, and the Imperial Irrigation District (Participants) also intend to purchase energy from the Project. Approval of the ordinance will give the City Manager authorization to enter into the Agreement.

The Project will be built by Enviromission, LLC in the State of Arizona. It will produce renewable energy using solar convection technology which captures energy produced when a draft is created in a tower due to the temperature differential between its base and top. Unlike many renewable resources, the pattern of electricity output from the Project is expected to align favorably with PWP's energy needs at a competitive price.

SCPPA will enter into a 30-year agreement with Enviromission, subject to approval of all participating entities. At present, SCPPA's participation share in the project is 96 to 102 MW of the 200MW facility. The percentage share in the facility can increase should the SCPPA participants revise their respective MW interests. PWP's current preferred level of interest in the facility is for 10MW. SCPPA and PWP will only pay for energy delivered with no up front capital or annual fixed cost commitment.

At full production, the Project would deliver renewable energy equivalent to approximately 4.5 percent of PWP's retail energy sales, enabling the City of Pasadena (Pasadena) to take a significant step towards achieving the goal of having 40 percent of its energy coming from renewable resources by 2020 and reducing greenhouse gases emission.

**BACKGROUND:**

Since 2003, the City has pursued a goal to be a model of environmental stewardship:

A. On October 13, 2003, the City Council adopted a Renewable Portfolio Standard (RPS) for PWP;

B. On September 18, 2006 the City of Pasadena adopted the United Nations Urban Environmental Accords (UEA) and endorsed the US Mayors' Climate Protection Agreement. One of Pasadena's goals under the UEA is to reduce greenhouse gas (GHG) emissions to 7% below 1990 levels by 2012;

C. In 2009, the City adopted revised RPS goals and a new comprehensive Integrated Resource Plan (IRP); and

D. The City also fully supports and actively strives to meet regulatory and legislative requirements.

Over the last several years, PWP has been working with other SCPPA members to jointly negotiate power purchase and development agreements for renewable energy. This arrangement has provided PWP the means and opportunity to participate in large projects to which PWP would not otherwise have had access and to take advantage of economies of scale. To identify suitable opportunities for renewable energy, the SCPPA members have solicited bids through a series of Requests for Proposals (RFP) beginning in 2002 and extending into 2010. Enviromission's proposal was received in response to SCPPA's 2008 RFP. Like other large projects in which PWP has a participating share, SCPPA will be the actual purchaser through a Power Purchase Agreement (PPA) with Enviromission. PWP will then purchase its 10MW share of the energy, capacity, and environmental attributes from SCPPA through the proposed Agreement.

PWP's proposed 10 MW share of the Project will help increase the diversity and volume of Pasadena's renewable energy resources portfolio. Upon successful completion and operation of this solar project in FY2015, PWP's renewable energy portfolio will increase by approximately 52,600 MWh per year, representing about 4.5 percent of Pasadena's retail energy sales when fully operational.

The energy price is fixed at $95.5/MWh for the first fifteen years of operation, and would escalate by $1.00/MWh per year for the next fifteen years. The price of available renewable resources is increasing due to higher demand and the energy price under this agreement will be the highest of all renewable resource agreements executed to date, as shown in Table 1. This price, however, is among the lowest of any alternative renewable resources currently available to PWP and the daytime output has higher value than continuous generation such as geothermal and landfill gas (LFG) or intermittent wind resources. Despite the competitive pricing, PWP is recommending a modest level of participation due to the innovative and uncertain nature of this solar convection technology.

**Table 1 -- Energy Price Comparison**

| Resource Name/Type | Contract Execution | Energy Price by Calendar Year ($/MWh) | | | | | |
|---|---|---|---|---|---|---|---|
| | | 2011 | 2012 | 2013 | 2015 | 2020 | 2025 |
| La Paz | 2010 | | | | 95.50 | 95.50 | 95.50 |
| Ormat Geothermal Phase 2 | 2008 | 78.43 | 79.60 | 80.80 | 83.24 | 89.67 | 96.60 |
| UPC (Milford) Wind | 2007 | 66.79 | 67.68 | 68.58 | 70.42 | 75.23 | 80.36 |
| Chiquita Canyon LFG | 2006 | 65.25 | 65.25 | 65.25 | 65.25 | 65.25 | 65.25 |
| Ormat Geothermal Phase 1 | 2006 | 61.95 | 62.88 | 63.82 | 65.75 | 70.84 | 90.41 |
| IPP Coal (no carbon tax) | | 58.30 | 60.50 | 60.99 | 62.80 | 65.68 | 52.40 |
| 2010 Market Forecast | | 44.12 | 47.79 | 49.85 | 61.49 | 79.99 | 95.87 |
| Current offers under negotiations | | $72 ~ $110 per MWh with 1.5% annual escalators | | | | | |

Table 2 shows how the Project will help fill PWP's renewable energy resources portfolio:

**Table 2 -- Current Renewable Energy Portfolio Summary (GWh)**

| Calendar Year | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2020 |
|---|---|---|---|---|---|---|---|
| Azusa Hydro | 0 | 5 | 5 | 5 | 5 | 5 | 5 |
| PPM Wind | 14 | 18 | 18 | 18 | 18 | 18 | 18 |
| Minnesota Methane LFG | 55 | 63 | 63 | 63 | 63 | 63 | 0 |
| Ormat Geothermal | 16 | 17 | 18 | 17 | 17 | 17 | 17 |
| UPC (Milford) Wind Phase 1 | 8 | 12 | 12 | 12 | 12 | 12 | 12 |
| Chiquita Canyon LFG | | 56 | 56 | 56 | 56 | 56 | 56 |
| La Paz Solar Thermal | | | | | 9 | 53 | 53 |
| Short Term Contracts | 81 | 35 | | | | | |
| **Total Renewable Supply** | **174** | **206** | **172** | **171** | **180** | **224** | **161** |
| Retail Sales | 1,153 | 1,236 | 1,220 | 1,200 | 1,178 | 1,156 | 1,149 |
| % Renewable | 15.1% | 16.7% | 14.1% | 14.3% | 15.3% | 19.4% | 14.0% |

To reduce costs, an option to buy out the project after ten years of operation was negotiated. While ownership of renewable energy generating facilities is desirable for reliability and stability reasons, authority to execute the buyout option is not being requested at this time. Because purchasing the project will include real property through leases with a private entity and possibly the United States Bureau of Land Management, counsel for SCPPA has advised the Participants that each City must adopt an ordinance approving this agreement per Government Code Section 54241. Therefore, it is prudent to approve the Agreement by ordinance, as provided by this statute. At this time, the future value and effectiveness of the Project, terms of any bond financing, and even the desirability of owning the Project are not known. When all facts are known, however, and as the tenth anniversary of commercial operation approaches, Staff will evaluate the option to buy, and if the Project is found worthwhile, staff will apprise the City Council and request authorization to exercise the buyout option.

**REASONS FOR CHOOSING LA PAZ**

Three major reasons make the Project a highly preferred renewable resource:

1. Output profile: The power production profile of this facility correlates very well with the electrical demand profile of PWP; that is, high during the day and low during the night;
2. Cost: The cost of power from this resource is more attractively priced than other renewable alternatives and, over its 30 year life, is less expensive than fossil-fueled energy;
3. Transmission: The point of delivery for the energy will be at the Marketplace Substation which connects directly to the California Independent System Operator (CAISO) grid providing transmission access to bring the electricity to Pasadena. The Agreement allows an option for PWP to select the McCullough 500kV Substation as an alternate delivery point.

Other highlights of the proposed transaction are as follows:

1. Price:
   a. For energy up to a 63% annual capacity factor (equal to 55,188MWh per year), the delivered price is $95.50/MWh for the first 15 years. The price then escalates by $1/MWh each year thereafter;
   b. For energy in excess of the 63% annual capacity factor, the price is reduced by 40%;
2. Guaranteed Energy: Failure to achieve a minimum 48% annual capacity factor starting in year 3 for two consecutive years of operation can be cause for SCPPA to terminate their PPA with Enviromission;
3. Ongoing Performance Guarantee & Security: A $15 million security fund (prorated based on the SCPPA subscription level) will be established to provide

funds to ensure seller compliance with the performance parameters specified in the PPA;

4. Options:
   a. SCPPA will have the option to purchase its share of the facility after 10 years at fair market value;
   b. SCPPA will have the option to purchase a second facility on comparable terms with standard escalators;
5. Favored Nation Clause: All favorable terms and conditions of any agreement(s) the developer enters into with a third party for a period longer than two years in duration for the balance of the plant output will also be offered to SCPPA.

**PROJECT RISKS AND RISK MITIGATION**

The Project, like most other yet-to-be-built renewable projects, has uncertainties that pose potential financial risks and affects PWP's ability to meet its renewable energy goals and compliance obligations. PWP and SCPPA will not have any capital investment or fixed cost obligations associated with the Project prior to exercising the buyout option. The major risks and mitigation measures are listed below:

1. Technology Risk: Enviromission has built a small pilot project proving its solar convection concept but the technology remains untested at the commercial level. SCPPA has negotiated terms to partially mitigate financial risks such as liquidated damages for missing progress milestones starting November 2011;
2. Small Participation Share: PWP seeks diversity in technology, fuel, and geographic locations when selecting renewable projects to minimize risks due to projects not developing in time or under performing, reduced availability of fuels, or disruptions in delivery to Pasadena due to geographic reasons. Given the relatively high technology risk, staff recommends contracting for 10 MW in the Project. There may be an opportunity in the future to sign up for additional capacity should the Project prove to be successful;
3. Weather: If the climate changes such that the solar intensity diminishes, the output from the Project would be adversely affected. Such a drastic weather change however, is not expected during the term of the Agreement;
4. Financial Risk: It is possible that Enviromission may not be able to develop the Project within the projected time schedule or remain financially solvent after the Project is operational. In these situations, Pasadena would not get renewable energy anticipated from this Project and would be exposed to market prices to procure equivalent energy from the spot market to fulfill its renewable energy goals or mandatory obligations. To partially offset financial risk, the PPA provides for Enviromission to pay penalties for not meeting crucial milestones as listed below in Table 3:

**Table 3**
**Milestones Calendar**

| Milestone | Deadline | Overall Penalty | Pasadena Share of Penalty |
|---|---|---|---|
| Obtain financing | Nov 1, 2011 | $0.75 million | $37,500 |
| Permit | Feb 1, 2012 | $1.00 million | $50,000 |
| Transmission Interconnection | May 1, 2012 | $2.00 million | $100,000 |
| Construction Start | Nov 1, 2012 | $3.00 million | $150,000 |
| Commercial Operation Date | Nov 1, 2014 | $15.00 million | $750,000 |

Based on the timeliness of participants' approvals, the milestones may be shifted to future dates accordingly. In the event a milestone is not met, SCPPA would have an option to terminate the PPA.

**COUNCIL POLICY CONSIDERATION**

The proposed ordinance is consistent with the City's Urban Accords Goals with respect to renewable energy and GHG emission reduction goals, the General Plan Energy Element, the City Council's Strategic Planning Goals, and the 2009 Power Integrated Resource Plan. The Project will help PWP achieve regulatory compliance as well as City Council goals in a cost-effective manner.

**ENVIRONMENTAL ANALYSIS:**

The proposed ordinance and authorization to enter into the Agreement are exempt from the California Environmental Quality Act ("CEQA") pursuant to State CEQA Guidelines Section 15277, Projects Located Outside California. This exemption applies to a project or portions of that project that are located outside of California which are subject to NEPA (National Environmental Policy Act) or an equivalent review as required under the law of that State. The facility that will generate the power used by Pasadena and the other Southern California jurisdictions is located in La Paz County Arizona and is subject to review under Arizona law

**FISCAL IMPACT:**

The Project is expected to commence operation in FY 2015 and add an average of $1.1 million per year or $0.0008 per KWh to the retail energy cost in the first five years of operations. Over this same period, the Project will increase the monthly bill for a typical residential customer using 500 KWh per month by an average of $0.40 per month from $83.95 to $84.35. After the twelfth year of operation, the market energy price is projected to exceed the Agreement price for every year thereafter which will make the net cost of the Project insignificant over the 30-year contract period.

Currently, the cumulative impact of all existing renewable contracts in the energy portfolio is about $2.5 million per year or 0.2¢ kWh. With this Agreement, the cumulative impact will increase by about $1.1 million per year to $3.6 million per year or 0.28¢ per KWh in fiscal year 2015.

The Project developer has agreed to bear all developmental risks associated with the Project. Should the Project prove to be unsuccessful, Pasadena will receive penalty amounts from Enviromission but would likely incur higher costs of purchasing replacement renewable energy. The cost of replacement renewable energy, however, is not known at this time. All costs associated with these contracts will be recovered in the Energy Charge component of Pasadena's electric energy rates.

Respectfully submitted,

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