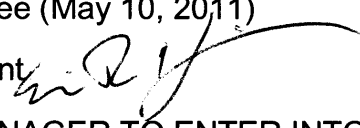


PASADENA WATER AND POWER

May 16, 2011

**TO:** Honorable Mayor and City Council

**THROUGH:** Municipal Services Committee (May 10, 2011)

**FROM:** Water and Power Department 

**SUBJECT:** AUTHORIZE THE CITY MANAGER TO ENTER INTO A CONTRACT WITH EDF TRADING NORTH AMERICA, LLC FOR THE PURCHASE OF BIOGAS UP TO AN AVERAGE AMOUNT OF 2,650 MMBTU PER DAY FOR A TERM OF 10 YEARS.

The Municipal Services Committee reviewed the staff recommendation on May 10, 2011, and recommends the following additional information to clarify and update the original Agenda Report dated May 16, 2011.

In addition, one of the potential buyers of the biogas has opted not to participate in this contract. As a result, Pasadena's share of the biogas will increase from 48% to 54.5%. This will increase Pasadena's minimum obligation to purchase biogas to 545 MMBtu per day and increase Pasadena's full contract share to 1,440 MMBtu per day, but will not affect the recommended maximum amount of 2,650 MMBtu per day. The impacts are summarized in an updated Table III and Fiscal Impact contained herein.

**ADDITIONAL INFORMATION REQUESTED BY MSC:**

Table MSC-I compares the cost of the biogas and associated renewable energy output under the proposed contract to that of conventional natural gas current market prices for a ten-year contract supply.

**Table MSC-I: Biogas vs. Conventional Gas Supply Costs**

Fuel Type	Contract Price (\$/mmbtu)	Energy Cost (¢/kWh)
Biogas Contract	11.15	8.4 - 11.2
Conventional Gas (10 year contract)	5.73	4.3 - 5.8
<b>Biogas Premium</b>	<b>5.42</b>	<b>4.1 - 5.4</b>

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Table MSC-II compares the cost of the renewable energy produced by the proposed biogas contract with other renewable resource contracts previously approved by the City Council. Based on current responses to requests for proposals, any alternative renewable resource available at this time would cost more than any of the resources shown and associated output under the proposed contract to that of conventional natural gas current market prices for a ten-year contract supply.

**Table MSC-II: Biogas vs. Alternative Renewable Resource Costs**

<b>Contract/ Offer</b>	<b>% of Retail Sales Supplied</b>	<b>Contract Price (¢/kWh)</b>	<b>Energy Profile</b>
Chiquita Canyon Landfill Gas	4 %	6.5	Base Load
Covina & Tulare Landfill Gas	< 5 %	6.5 - 8.5 *	Base Load (expires 2017)
La Paz Solar Tower	4.5 %	9.5	Peaking
Milford Wind Project	1 %	6.5 - 8 *	Intermittent
Ormat Heber Geothermal	1 - 1.5 %	6 - 9.7 *	Base Load
Solano Wind Project	1 - 1.3 %	5.5	Base Load (firmed/shaped)
Short Term Landfill Gas		7.7 - 9.1	Base Load
Base Load Offers**		7.7 - 9.1 *	Base Load
Solar/Solar Thermal Offers**		10 - 14 *	Peaking
<b>Biogas Contract</b>	<b>1 – 5.8 %</b>	<b>8.4 - 11.2</b>	<b>Peaking / Dispatchable</b>

\* Price range reflects current and final price as escalated over contract term.

\*\* Indicative pricing from responses to Southern California Public Power Authority RFP's.

**UPDATED BACKGROUND:**

The cities of Pasadena and Burbank are seeking additional potential supplies of biogas, and therefore have agreed to increase their respective shares of the gas available under the proposed contract. As a result, the contract maximum of up to 2,650 MMBtu per day of biogas will be shared by Pasadena (54.5%, or 1,440 MMBtu per day) and Burbank (45.5%). If Burbank does not take their project share PWP has the option, but not the obligation, to take the full project volume of up to 2,650 MMBtu per day, under the same contract terms.

Table III summarizes the biogas deliveries and associated energy, RPS, GHG, and cost impacts at the expected initial available supply volumes and PWP's full contract share.

**Table III: Biogas Supply and Impacts (Updated)**

Scenario	Expected Initial Deliveries	PWP's Full Contract Share
Biogas Volume (MMBtu/day)	545*	1,440
Energy (GWh/year)	19,000 - 26,000	55,000 - 70,000
Energy (% of Sales)	1.1 – 2.2 %	4.6 – 5.8 %
GHG Reduction (tonnes)	9,000 - 13,500	27,000 – 35,000
Contract Cost (\$000/yr)	\$2,217	\$5,860
Premium (\$000/yr)	\$1,079	\$2,849
Retail Rate Impact (¢/kWh)	0.09 ¢	0.23 ¢

\* At a 54.5% initial contract share, Pasadena's maximum "must take" obligation is 545 MMBtu/day. Additional amounts are subject to Pasadena's approval.

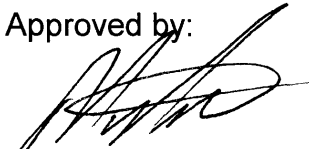
As shown, the proposed biogas contract is expected to increase PWP's RPS by 1.1 to 2.2% and decrease GHG emissions by 9,000 to 13,500 metric tons (tonnes) in calendar 2012, assuming biogas deliveries at the initial quantity of 545 MMBtu per day. At full deliveries, the biogas energy could increase PWP's RPS by up to 5.8% and decrease GHG emissions by up to 35,000 tonnes per year.

**UPDATED FISCAL IMPACT:**

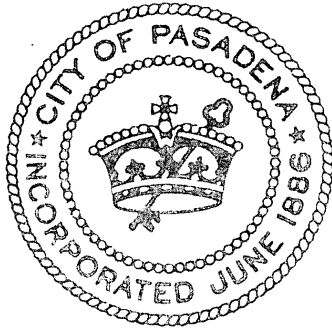
This renewable biogas resource purchase agreement is expected to cost approximately \$58.6 million over a ten year period. The current FY2011 and proposed FY2012 operating budgets include sufficient funds to accommodate the expected costs of this contract. All costs associated with this Contract will be recovered in the Power Cost Adjustment component of Pasadena's electric energy rates.

At PWP's full contract share of 1,440 MMBtu per day of biogas supply, the contract cost includes renewable gas premiums of about \$2.85 million annually above the market cost of natural gas. This translates to an average retail electric rate impact of approximately 0.23¢ per kWh. The cumulative rate impact of all approved renewable sources, including the proposed biogas contract, is estimated at 0.6 – 0.9 ¢ per kWh. Like other renewable energy contracts, approving this contract may result in a future electricity rate increase.

Approved by:



MICHAEL J. BECK  
 City Manager



# Agenda Report

May 16, 2011

**TO:** Honorable Mayor and City Council

**THROUGH:** Municipal Services Committee (May 10, 2011)

**FROM:** Water and Power Department

**SUBJECT:** AUTHORIZE THE CITY MANAGER TO ENTER INTO A CONTRACT WITH EDF TRADING NORTH AMERICA, LLC FOR THE PURCHASE OF BIOGAS UP TO AN AVERAGE AMOUNT OF 2,650 MMBTU PER DAY FOR A TERM OF 10 YEARS.

## **RECOMMENDATION:**

It is recommended that the City Council:

1. Find that the purchase of biogas fuel to generate renewable electricity is Categorically Exempt per Sections 15301 (Existing Facilities) and 15308 (Actions by Regulatory Agencies for the Protection of the Environment) of the California Environmental Quality Act (CEQA);
2. Authorize the City Manager to enter into a contract with EDF Trading North America, LLC (EDF) for a 10-year term to purchase up to an average amount of 2,650 million British thermal units (MMBtu) per day of biogas;
3. Find that the electricity generated using this biogas reduces Pasadena's greenhouse gas (GHG) emissions and qualifies as renewable energy to meet Pasadena's obligations under statutory and regulatory requirements pertaining to GHG emissions and renewable portfolio standard (RPS) obligations; and,
4. Find that this contract is exempt from competitive bidding pursuant to City Charter Section 1002(f), contracts for professional or unique services.

## **EXECUTIVE SUMMARY:**

Approximately 15% of the energy Pasadena Water and Power (PWP) uses to supply its retail electric customers comes from renewable resources, and PWP is required to increase this amount going forward. In 2009, the City Council adopted an Integrated Resource Plan (IRP) that established "voluntary" RPS goals of 15% by 2010, 33% by

2015, and 40% by 2020. With the recent enactment of Senate Bill X1 2 (SBX1-2), PWP now has statutory requirements to meet an average 20% RPS between 2011 and 2013, increasing to 33% by 2020. This bill includes financial penalties for failure to comply; however, penalty details have not yet been developed.

Biogas is produced by the anaerobic digestion or fermentation of biodegradable materials such as manure, sewage, municipal waste, green waste, or other plant material. Biogas can be used to generate renewable electric energy. It can also be purified and transported by natural gas pipelines to utility power plants that also use conventional natural gas. The portion of power produced using the biogas is considered renewable. PWP will use the biogas fuel procured under this contract to generate renewable electricity at its power plants or other generation plants certified to produce renewable energy. This electricity would be generated when needed and used to serve Pasadena's retail electric demand. With addition of renewable energy generated by this biogas supply to PWP's existing portfolio of renewable resources, PWP expects to reach an RPS level of approximately 17% during the 2011-2013 compliance period.

Under the proposed contract, up to 2,650 MMBtu per day of biogas will be shared by the cities of Pasadena (48%, or 1,272 MMBtu per day), Burbank (40%) and Cerritos (12%). Initially, EDF would supply 1,000 MMBtu per day of biogas from the Dos Rios Water Recycling Center (Dos Rios), San Antonio, Texas. Subject to PWP's approval, EDF is obligated to provide additional supplies of biogas when available from either the Dos Rios facility or other new sources to meet the maximum contract amount. Additionally, PWP may, at its sole discretion, take delivery of up to 2,650 MMBtu under this contract to the extent Burbank or Cerritos do not take their full shares.

The cost of the biogas is fixed at \$11.15 per MMBtu over a term of ten years. This translates to an estimated renewable energy cost of 8.4 - 11.2¢/kWh depending on the efficiency of the power plant used. This cost compares favorably to other renewable resources currently available to PWP to meet RPS obligations.

The contract price includes a premium of \$5.42 per MMBtu (4.1-5.4¢/kWh of energy produced) for the "Environmental Attributes" that enable energy produced by using the biogas to qualify for RPS requirements as well as any GHG emissions reduction obligations applicable to PWP. As a result of renewable price premium for the biogas, PWP's energy supply cost will increase by \$0.95 to \$2.5 million annually (depending upon actual biogas delivery volume) and result in an approximate increase of \$0.20 - \$1.05 per month on a 500 kWh per month customer's bill.

As the legislative and regulatory treatment of resources is continuously evolving, the City Council's finding that this biogas contract qualifies for GHG emission reductions and renewable energy requirements may help guard against future legislation affecting the RPS eligibility of such renewable resources.

**BACKGROUND:**

PWP must increase the renewable energy content of the supply used to meet PWP's electric loads as a result of state RPS and GHG reduction mandates and Pasadena's own environmental goals. This contract is a step forward in meeting those goals. Partnering with other cities provides PWP the opportunity to negotiate better terms and flexibility for managing its portion of biogas.

***RPS Requirements***

California's SBX1-2, the 2011 Renewable Energy Resources bill, was signed into law on April 12, 2011. It requires all electric utilities in the state to meet an average 20% RPS between 2011 and 2013 (calendar years), then steadily increase to 25% by 2016 and to 33% by 2020. Table I compares the annual RPS goals of Pasadena's IRP with those of SBX1-2.

**Table I: RPS Requirements**

Calendar Year	IRP Goal	Statutory Requirement
2010	<b>15</b>	None
2011	19	<b>20% (on average)</b>
2012	22	
2013	26	
2014	29	22
2015	<b>33</b>	24
2016	34	<b>25</b>
2017	36	27
2018	37	29
2019	39	31
2020 and annually thereafter	<b>40</b>	<b>33</b>

*Note: Bold numbers represent IRP targets or statutory requirements. Offset values are "soft" interim targets. SBX1-2 requires "annual progress" in interim years.*

PWP achieved a level of 15% RPS for calendar year 2010, but will need to secure additional long- and short-term qualifying renewable resource supplies to meet statutory requirements and IRP goals. SBX1-2 established a requirement for financial penalties to be imposed on utilities that do not meet the requirements; however, penalty details have not yet been developed.

In addition to setting forth overall RPS objectives, SBX1-2 established minimum or maximum allowable contributions to the RPS requirements for various types, or "buckets", of *future* qualifying resources, as summarized in Table II. The legislature has made it clear that in-state resources are preferred, and has placed strict limits on the amount of out-of-state or renewable energy credit (REC) energy that can be counted.

SBX1-2 grandfathers existing resources, thus PWP’s entire share of the Solano Wind Farm in Northern California (a “firmed and shaped” resource) and the Milford Wind Project in Utah will not be counted against the limitations for Buckets 2 and 3, respectively.

**Table II: RPS Qualifying Resource Limitations**

Bucket	Resource Type	Percent of RPS Limitations	Current Market Price “Premium”
1	In-state or dynamically scheduled power import	Minimum amount: 50% in 2011-2013; 65% in 2014–2016; 75% thereafter	\$45/MWh
2	Firmed and shaped* power resources	Maximum amount: 100% - (Bucket 1 minimum + Bucket 3 actual)	TBD
3	Tradable RECs (TRECs) or other eligible contracts.	Maximum amount: 25% in 2011-2013; 15% in 2014 – 2016; 10% thereafter.	\$15-\$18

\* *Firmed and shaped resources involve contractual arrangements whereby a third party receives the power as it is produced by the generator, then redelivers an equivalent amount of energy to a buyer on a firm, scheduled basis.*

**RPS And GHG Impacts of Proposed Biogas Supply**

Table III summarizes the biogas deliveries and associated energy, RPS, GHG, and cost impacts at the expected initial available supply volumes and PWP’s full contract share.

**Table III: Biogas Supply and Impacts**

Scenario	Expected Initial Deliveries	PWP’s Full Contract Share
Biogas Volume (MMBtu/day)	480	1,272
Energy (GWh/year)	17,000 - 23,000	46,000 - 62,000
Energy (% of Sales)	1 – 2 %	3.5 – 5 %
GHG Reduction (tonnes)	8,000 - 12,000	23,000 – 31,000
Contract Cost (\$000/yr)	\$1,953	\$5,177
Premium (\$000/yr)	\$950	\$2,516

As shown, the proposed biogas contract is expected to increase PWP’s RPS by 1 to 2% and decrease GHG emissions by 8,000 to 12,000 metric tons (tonnes) in calendar 2012, assuming biogas deliveries at the initial quantity of 480 MMBtu per day. At full deliveries, the biogas energy could increase PWP’s RPS by up to 5% and decrease GHG emissions by 23,000 to 31,000 tonnes per year.

### ***Renewable Energy Challenges***

PWP, like most other utilities is facing a multitude of challenges in procuring renewable energy that can be delivered in Pasadena. Such challenges include delayed commissioning or abandonment of contracted projects, unavailability of operational or "shovel-ready" projects, barriers to out of state wind and solar energy, transmission and operational constraints, limited supply of viable future projects with appropriate transmission access, constricted financing, rapidly escalating costs and regulatory uncertainty.

### ***Benefits of Biogas as Renewable Resource:***

While PWP has in the past acquired wind, solar-wind, geothermal and landfill to energy resources, the biogas proposal provides the following benefits:

1. Flexible Energy Deliveries: Biogas fuel provides PWP the ability to generate renewable energy at its existing power plants located in Pasadena and Burbank in the amount and time when it needs the power to support PWP's electrical demand. In other words, biogas provides flexibility to maximize the economic and operational value while generating renewable energy. This type of flexibility does not exist with any other renewable resource. As PWP adds more renewable resources, the existing take-or-pay type fossil energy contracts, such as the Intermountain Power Plant, will increasingly become surplus. The flexibility of biogas generation "at will" would help sell surplus power (i.e., coal) during high price periods, therefore, reducing the financial impact on PWP's rate payers;
2. No Additional Transmission Needed: The ability to generate renewable energy in Pasadena eliminates the need for transmission and associated costs. The energy generation in the Magnolia power plant provides higher efficiency (i.e., more power output for the same amount of biogas) and relatively lower transmission costs;
3. Enhanced Resource Diversification: This biogas contract will help PWP diversify its energy supply portfolio by technology and geography; and,
4. Value: Using the biogas at existing generation facilities will provide renewable energy at an estimated cost of 8.4-11.1¢ per kWh. This cost is lower than the delivered cost of any other long-term renewable resource alternatives currently available to meet PWP's RPS goals.

### ***Biogas Contract Summary:***

The major terms of the proposed biogas fuel contract include:

1. Seller will procure waste water digester biogas treated to commercial natural gas pipeline grade, transport and deliver it to PWP at Socal Citygate (a trading location). PWP will transport the biogas from Socal Citygate to its power plants to generate renewable energy.
2. The term of the contract expires after 120 months from the month in which the contract is executed.



3. The price of the biogas will be fixed at \$11.15 per MMBtu (Tier 1), including \$5.73 per MMBtu for the gas commodity and \$5.42 per MMBtu for the Environmental Attributes. In the event that the final California Air Resources Board Cap and Trade program does not come into existence, or causes the biogas to carry a GHG emission carbon obligation, the contract price will be reduced to \$10.37 per MMBtu (Tier 2). At Tier 2 price, the biogas is expected to meet RPS requirements.
4. The Seller will provide up to an average amount of 1,272 MMBtu of biogas per day to PWP. Initial deliveries will be approximately 480 MMBtu per day and they will increase as additional supplies become available. If Burbank and Cerritos do not take their project share PWP has the option, but not the obligation, to take the full project volume of up to 2,650 MMBtu per day, under the same contract terms.
5. The seller will be responsible to provide necessary documentation to demonstrate biogas quantity and heat content injected into the natural gas pipeline system, nomination details for transportation to SoCal Citygate and transfer of environmental attributes.
6. The California Energy Commission (CEC) has pre-certified the Magnolia plant as an RPS eligible facility using biogas. Pre-certification of the PWP's local power plants is currently being reviewed by the CEC. Seller will assume compliance obligations in accordance with current rules and regulations. PWP would bear regulatory risk for the term of the contract.

### ***Risks***

This proposed contract exposes PWP to the following major potential risks due to the uncertainty of future market conditions and regulatory requirements:

1. Price: The markets for energy and fuel are volatile and react to a wide range of factors ranging from weather, economic and major geo political events throughout the world. A fixed price contract exposes PWP to potential gains or losses when compared to real time spot markets, but provides predictable costs for the next ten years, thus minimizing market exposure risk;
2. Regulatory: Due to continually evolving environmental legislation, there is a potential risk that future legislation may adversely affect the RPS eligibility or GHG reduction benefit associated with out-of-state biogas resources. Legislation that changes requirements or qualifications often recognize, or "grandfather", existing contracts or resources, thus the City Council's finding and approval of this contract as RPS eligible helps mitigate this risk;
3. Lower Production: The amount biogas output produced by the waste water treatment facility could be consistently lower than expected due to many factors. While PWP would only pay for the actual amount of biogas delivered, lower deliveries could result in a need to procure additional renewable energy at a higher cost to meet RPS goals;
4. Seller's default: There is always a risk of non-performance by the counterparty in any contract. Seller will provide a \$15 million guarantee from the parent corporation covering all transactions between Pasadena and EDF to mitigate default risk; and,

5. Technology: Renewable energy technologies are evolving rapidly, and future resources may have lower costs or greater flexibility and reliability. While the economic value of biogas generated power exceeds any other currently available proven renewable resource, it is possible that future technology may be more efficient. Technological obsolescence risk is unavoidable with any long-term commitment.

#### **COUNCIL POLICY CONSIDERATION:**

The recommended contract 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. This project will help PWP achieve state's legislative goals and regulatory compliance as well as City Council goals in a cost-effective manner.

#### **ENVIRONMENTAL ANALYSIS:**

The project has been determined to be exempt from CEQA per Sections 15301 (Existing Facilities) and 15308 (Actions by Regulatory Agencies for the Protection of the Environment). Section 15301 allows for the operation, repair and maintenance etc. of existing private and public facilities that involve negligible or no expansion of the use. Section 15308 exempts actions taken by regulatory agencies to assure the maintenance, restoration, enhancement or protection of the environment. The proposed project is a contract for a renewable energy source to substitute for a nonrenewable source (natural gas) and will be transmitted through existing facilities, will not result in an increase in emissions or energy output at Pasadena's power plants, and will require no modifications to Pasadena's power plants.

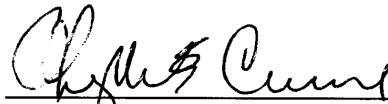
PWP is subject to various RPS and GHG emission requirements under existing law. Biogas to energy resources currently qualify as "eligible renewable resources" for RPS compliance under Section 25741(a)1 of the California Public Resources Code. Under current protocols for the California Air Resources Board Cap and Trade program, the energy produced by biogas generation resources does not carry a GHG emission obligation.

**FISCAL IMPACT:**

This renewable biogas resource purchase agreement is expected to cost approximately \$51.8 million over a ten year period. The current FY2011 and proposed FY2012 operating budgets include sufficient funds to accommodate the expected costs of this contract. All costs associated with this Contract will be recovered in the Power Cost Adjustment component of Pasadena's electric energy rates.

At PWP's full contract share of 1,272 MMBtu per day of biogas supply, the contract cost includes renewable gas premiums of about \$2.5 million annually above the market cost of natural gas. This translates to an average retail electric rate impact of approximately 0.2¢ per kWh.

Respectfully submitted,

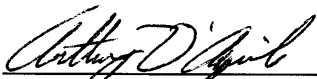


PHYLLIS E. CURRIE

General Manager

Water and Power Department

Prepared by:



ANTHONY D'AQUILA

Wholesale Operations Manager

Approved by:



MICHAEL J. BECK

City Manager