TO: HONORABLE CITY COUNCIL

FROM: CITY MANAGER

DATE: AUGUST 4, 2008

DEPARTMENT: ADMINISTRATIVE SERVICES

CMR: 325:08

SUBJECT: CITY OF PALO ALTO'S ENERGY RISK MANAGEMENT REPORT FOR THE THIRD QUARTER, FISCAL YEAR 2007-2008

This is an information report and no Council action is required.

OVERVIEW

Staff has continued to purchase electricity and gas in full compliance with the City’s Energy Risk Management Policies and Procedures. There are no exceptions to report. The City’s credit exposure to wholesale electricity purchases is $9.9 million for electricity, up from $7.8 million from last quarter. The value-minus-cost of purchases of renewable power is $3.6 million. The electricity mark to market value of Western hydro is $12.7 million, while the comparable value of Calaveras hydro is negative $0.7 million. The City’s credit exposure in gas is $5.1 million, up from $0.2 million last quarter. The City’s price risk exposure from the yet-to-be-purchased portion of its electric portfolio, known as Value at Risk or VAR, is well within current guidelines. For the gas portfolio however, this number exceeds the recommended benchmark, a result of the recent increase in gas prices and a decline in reserve levels. Electricity supply reserves are fully adequate for the current risk profile. It is anticipated however, that significant reductions in the electric supply reserve will occur over the next fiscal years as a result of the poor hydro conditions in 2007 and planned draw down of the reserve. Gas reserve levels have also declined due to drawdowns to mitigate the recent rises in market prices. Current reserve levels are not adequate for the existing risks to the portfolio.

BACKGROUND

The purpose of this report is to inform the City Council of the status of the City’s energy portfolio and transactions executed with energy suppliers as of the end of the third quarter of Fiscal Year 2007-08. The City’s Energy Risk Management Policy requires that staff report on a quarterly basis to Council on: 1) the City’s energy portfolio; 2) the City’s credit and market risk profile; 3) portfolio performance; and 4) other key market and risk information.
DISCUSSION

Electricity Purchases. As of March 31, 2008, the electric portfolio consisted of long-term contracts providing deliveries through March 2010. Figure 1 below illustrates the sources of electricity supplies by month for the next 36 months. The City currently has purchased supplies of electricity totaling 353,075 MWh for delivery between April 1, 2008 and March 31, 2010. The average price for all of the fixed-price purchases was $53.42 per MWh, down from $56.12 last quarter. The forward purchases have been transacted with one approved counterparty: Coral Energy. In Figure 1, the Seattle City Light (SCL) volumes represent an “exchange” whereby Palo Alto supplies power to SCL in the winter months and SCL provides power to Palo Alto during the summer months. Note that on May 12, 2008, Council approved an agreement by which Palo Alto’s interest in the SCL exchange was to be terminated as of May 31, 2008.

![Figure 1: Load Resource Balance for Next 36 Months](chart.png)

The MTM value of the City’s forward transactions for wholesale power increased from $7.8 million at the end of last quarter to $9.9 million. Figure 2 presents the forward volumes and MTM positions for each electric supplier by month of delivery.
Figure 2. Electric Forward Volumes and Mark to Market

Figure 2a. Electric Forward Mark to Market

Figure 2b. Forward Electricity Purchase Volumes
The 12 month value of the exchange with Seattle City Light as of March 31, 2008 is negative $326,604. On May 12, 2008, Council approved an agreement by which Palo Alto’s interest in the SCL exchange was terminated as of May 31, 2008.

**Non-Carbon Emitting Electricity.** The City utilizes non-carbon emitting electricity sources for approximately 63% of the total annual load. In all cases, the market price used to mark all non-carbon emitting power is identical to that for wholesale power. The 12-month MTM value of the City’s forward positions for renewable green power is $3.6 million. The 12-month electricity MTM value of Western Hydro is $12.7 million, while the MTM value of Calaveras hydro is negative $0.7 million. This means that the costs of Calaveras are greater than the value of electricity for the next 12 months. Note that the Calaveras MTM value for hydroelectricity does not account for avoided cost and/or revenues from ancillary services, load following, capacity, or the option value of Calaveras in super peak periods.

**Natural Gas.** As of March 31, 2008, the City currently has purchased supplies of gas totaling 4.9 million MMBtu for delivery between April 1, 2008 and January 2011. The average price for all of the fixed-price purchases was $6.48 per MMBtu, down from $7.92 last quarter. The forward purchases have been transacted with four approved counterparties: Coral Energy, Sempra Energy, British Petroleum, and Powerex. The current MTM value of gas forward transactions is $5.13 million. The forward volumes and MTM values by month and by counterparty are presented in Figure 3.

**Figure 3. Gas Forward Volumes and MTM Exposures**

![3a. Gas Forward Mark To Market](image-url)
Figure 4 presents the Mark to Market history for both gas and electricity.
**Value at Risk**

The “riskiness” of the energy portfolio is measured through the “value at risk” (or VaR). The VaR measures the risk that adverse market conditions could force Utilities to use reserves to cover costs on future purchases over what is reflected in current rates. Specifically, VaR measures how much projected 12-month net revenue could change in one week due to a potential adverse market change. Staff uses the VaR as one of the key measures of market price risk to CPAU.

In compliance with the Risk Management Guidelines, the Utilities staff and the Energy Risk Manager monitor the VaR level relative to the projected end-of-year supply Rate Stabilization Reserve (RSR) levels for both electricity and gas. Currently, the VaR for the electricity portfolio is less than 1% of the RSR. The VaR for gas has increased above the 10% benchmark and is currently at 18% of supply reserve. This recent rise is a result of the increasing levels and volatilities of gas prices, as well as their impact on the lowering of the gas supply reserve levels. Staff continuously monitors gas prices and reserve levels closely. The historic levels of the VaR values for electricity and gas are presented in Figure 5. Note that the 10% benchmark is also shown.

![Figure 5. Value at Risk History](image-url)
Credit Risk
To manage credit risk, staff reports on major credit rating agency’s (S&P and Moody’s) scores, and, in addition, the “expected default frequency” (EDF) using the Moody’s KMV CreditEdge© system. The EDF is an estimated probability that a counterparty will default in the next 12 months.

Electricity. CPAU’s electric supplier counterparty credit exposure and the supplier credit ratings are presented below. CPAU’s only exposure, in excess of $9.9 million, is with Coral Energy, a company rated A- by Standard and Poor’s. Coral is a wholly owned subsidiary of Royal Dutch Shell which is rated AAA, the highest rating given.

Table 1. Electricity Suppliers – Credit Exposure and Credit Ratings as of March 31, 2008

<table>
<thead>
<tr>
<th>Counterparty</th>
<th>Total Credit Exposure</th>
<th>S&amp;P Ranking</th>
<th>Previous Quarter Expected Default Frequency</th>
<th>Current Expected Default Frequency</th>
<th>Expected “Loss” (Exposure x Default)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coral</td>
<td>$ 9,863,609</td>
<td>A-</td>
<td>.05</td>
<td>.03</td>
<td>$ 4,932</td>
</tr>
<tr>
<td>JP Morgan</td>
<td>$ 0</td>
<td>AA-</td>
<td>.05</td>
<td>.04</td>
<td>$0</td>
</tr>
<tr>
<td>Sempra</td>
<td>$ 0</td>
<td>BBB+</td>
<td>.05</td>
<td>.03</td>
<td>$0</td>
</tr>
<tr>
<td>Total</td>
<td>$ 9,863,609</td>
<td></td>
<td></td>
<td></td>
<td>$ 4,932</td>
</tr>
</tbody>
</table>

Renewable Electricity. Palo Alto’s contracts for renewable “green” energy include both wind contracts with Pacificorp Power Marketing (PPM) as well as contracts to convert landfill gas to electricity with Ameresco, Inc. Because Ameresco is not rated by a rating agency, the default rates are calculated by staff using audited financial data and Moody-KMV’s Risk Calc© Software. The credit exposure and EDF ratings for these counterparties are presented below.

Table 2. Renewable Energy Credit Exposure and Credit Ratings as of March 31, 2008

<table>
<thead>
<tr>
<th>Counterparty</th>
<th>Total Credit Exposure</th>
<th>Previous Quarter Expected Default Frequency</th>
<th>Current Expected Default Frequency</th>
<th>Expected “Loss” (Exposure x Default)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ameresco, Inc.</td>
<td>$ 871,818</td>
<td>0.28</td>
<td>0.2</td>
<td>$ 1,744</td>
</tr>
<tr>
<td>Pacificorp Power Marketing</td>
<td>$ 2,685,374</td>
<td>0.01</td>
<td>0.01</td>
<td>$ 269</td>
</tr>
<tr>
<td>Total</td>
<td>$ 3,557,192</td>
<td></td>
<td></td>
<td>$ 2,013</td>
</tr>
</tbody>
</table>
Natural Gas. As Table 3 shows, the City has exposure to five counterparties totaling $5.1 million over the next 36 months. Table 3 below calculates the loss which the City would suffer should one of its gas counterparties default. This loss is calculated as the product of Expected Default Frequency and the MTM value.

Table 3. Credit Exposure and Default Ratings of Natural Gas Suppliers (March 31, 2008)

<table>
<thead>
<tr>
<th>Counterparty</th>
<th>Total Credit Exposure</th>
<th>S&amp;P Ranking</th>
<th>Previous Expected Default Frequency</th>
<th>Current Expected Default Frequency</th>
<th>Expected Loss (Exposure x Default)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP</td>
<td>$ 226,746</td>
<td>AA+</td>
<td>.02</td>
<td>.01</td>
<td>$ 23</td>
</tr>
<tr>
<td>ConocoPhillips</td>
<td>$ 0</td>
<td>A-</td>
<td>.03</td>
<td>.03</td>
<td>$ 0</td>
</tr>
<tr>
<td>Coral</td>
<td>$ 2,496,932</td>
<td>A-</td>
<td>.03</td>
<td>.03</td>
<td>$ 749</td>
</tr>
<tr>
<td>Powerex</td>
<td>$ 543,708</td>
<td>AAA</td>
<td>.01</td>
<td>.01</td>
<td>$ 54</td>
</tr>
<tr>
<td>Sempra</td>
<td>$ 1,863,276</td>
<td>BBB+</td>
<td>.05</td>
<td>.03</td>
<td>$ 559</td>
</tr>
<tr>
<td>Total</td>
<td>$ 5,130,663</td>
<td></td>
<td></td>
<td></td>
<td>$1,385</td>
</tr>
</tbody>
</table>

Reserve Adequacy

A key premise of the City’s risk management practices is ensuring the adequacy of supply reserves with respect to the risks undertaken as a result of purchases of gas and electricity commodities. Table 4 below summarizes the current and projected supply reserve levels for gas and electricity as of June 30, 2008. The current maximum reserve balances for electric and gas are 103% and 75% of purchase costs, respectively. The minimum reserve guideline levels are 50% of the maximum levels for both gas and electricity.
Table 4. Supply Reserve Levels for Electricity and Gas ($ Millions)

(Preliminary figures)

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Beginning Reserve Balance as of 6/30/07</th>
<th>Budgeted Reserve Guideline Range for FY 07/08</th>
<th>Unaudited Actual Reserve Balance as of 3/31/08 FY (07-08)*</th>
<th>Projected Reserve Balance for FY07/08 as of 3/31/2008</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electricity</td>
<td>$ 60.6</td>
<td>$ 28.5</td>
<td>$ 56.9</td>
<td>$ 47.1</td>
</tr>
<tr>
<td>Gas</td>
<td>$ 6.7</td>
<td>$ 10.0</td>
<td>$ 20.0</td>
<td>$ -6.6</td>
</tr>
</tbody>
</table>

* Accounting activity figures to date reflect what has been booked into the City’s accounting system (SAP). These figures are preliminary until outside auditors have completed their review and the Comprehensive Annual Financial Report is produced. There could be significant changes to the RSR balances based on year end adjustments that have not as yet been booked.

The current reserves for electricity are well above the minimum and well above credit, regulatory and other risks for the next 12 months. Total risks associated with the electric supply reserve for the next 12 months include: $3.4 million for credit reserves; $13 million for hydro risk; $0.2 million for market risk of the yet-to-be-purchased positions through the end of 07/08, and $12 million for possible regulatory, operational and other risks. These risks total $30 million.

The current electric reserve balance of $47.1 million does not take into account the increase in future costs of power due to the on-going drought conditions. Financial projections indicate that the purchase of wholesale power to offset the below-normal generation of hydro electricity will likely lead to a decline in the supply reserve in the upcoming years. These projections indicate the supply reserve could decline to $42 million by the end of Fiscal Year 07/08 depending on precipitation for the rest of the hydro year. The current electricity reserve will be reduced significantly as a result of the on-going drought, and may reduce further depending on next winter’s precipitation patterns. Current projections on future reserve levels, assuming average hydro supply indicate levels dropping to approximately $20 million at the end of FY 08/09. Therefore, with average annual risks of approximately $34 million, the portfolio risk for the electric supply will require careful monitoring over the next few years to ensure that reserves are adequate for the City’s risk exposure.

With regard to gas, the current projected reserve levels of negative $ 6.6 million are below the minimum level of $10.0 million as set by current policy. While the current projected balance for the gas supply reserve is negative, this is partially a product of accounting timing, where supply costs are expensed for the entire fiscal year, while future revenues from the sale of that gas is not recognized until fiscal year end. It is expected that reserve balances will decline to $3.9 million by the end of the fiscal year. Reserve levels are barely adequate at present for the current risks they are intended to mitigate given current market dynamics. Total risks associated with the gas supply reserve include $1.0 million for credit reserves, and $5.5 million for unhedged
commodities in the next 12 months. Therefore, risks to the gas supply reserve total $6.5 million. Thus, the projected $3.9 million in reserves is not adequate for long term risk mitigation. Staff has addressed the level of gas reserves in the 2008-09 budget and rate setting process, but it is important to note that changing market dynamics, international events, and other factors outside the City’s control, can have a significant and adverse impact on the adequacy of reserves for both gas and electricity over a short timeframe.

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