TO:        HONORABLE CITY COUNCIL

FROM:      CITY MANAGER
           DEPARTMENT: ADMINISTRATIVE SERVICES

DATE:      FEBRUARY 6, 2006  CMR: 127:06

SUBJECT:   CITY OF PALO ALTO'S ENERGY RISK MANAGEMENT REPORT FOR
           THE SECOND QUARTER, FISCAL YEAR 2005-2006

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

OVERVIEW

Staff has continued to purchase electricity and gas in full accordance with the City’s Energy Risk Management Policies and Procedures. There have been no exceptions to report. Recent decreases in prices for both electricity and gas have reduced the exposure of the City’s positions. The current Mark to Market (MTM) value of the City’s fixed price purchases is $26.3 million for electricity, down from $41.5 million at the end of last quarter; and $16.9 million for gas, down from $24.0 million at the end of last quarter. The current Mark to Market value of the City’s wind power contracts for the next 12 months has decreased from $1.9 million to $0.08 million. The value of the hydro contracts with Western and NCPA have decreased in value from $53 million to $50.1 million. These decreases in value are due to the decrease in prices for commodities in the forward markets subsequent to the sharp increases observed immediately after Hurricane Katrina. The electricity Value at Risk (VaR) measure declined and remains below maximum limits. For the first time the VaR of the gas portfolio has exceeded the recommended 10% of the Supply Reserve. Corresponding to the changes in portfolio market value, the total credit exposure of the City has decreased overall from $66.5 million to $43.2 million ($26.3 million for electricity and $16.9 million for gas).

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 second quarter of Fiscal Year 2005-06. 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

Open Transactions as of December 31, 2005

Open transactions are commitments that the City has made to purchase either electricity or gas, but for which supplies have not yet been delivered. The analysis presented here is restricted to forward fixed price purchases with corporate counterparties, and, except where specifically stated, does not include purchases from Western Area Power Administration (Western) or the Calaveras Project operated by NCPA. Additionally, the electricity analysis separates standard bulk power purchases from long-term wind contracts which the City has recently implemented.

Electricity. As of December 31, 2005 the electric portfolio consisted of 69 open transactions (transactions for which commitments have been made but electricity remains to be delivered) through December 2009. Figure 1 illustrates the sources of electricity supplies by month for the next 36 months. The City currently has purchased supplies of electricity totaling 0.95 million MWh for delivery between October 1, 2005 and December 31, 2009. The average price for all of the fixed-price purchases was $48.22 per MWh, slightly up from $47.48 last quarter. The forward purchases have been transacted with four approved counterparties: Coral Energy, Duke Energy, Sempra Energy and British Petroleum. Note that in Figure 1, the Seattle City Light (SCL) volumes represent a “swap” whereby Palo Alto supplies power to Seattle City Light in the winter months and Seattle provides power to Palo Alto during the summer months. The distribution of purchases by month and by counterparty is presented in Figure 2.

Figure 1. Load Supply Balance for Electricity
The Mark to Market (MTM) value represents the difference in price between the current market value of the contracted supply and the original contracted price. A positive MTM value indicates an increase in the value of the purchase, which would be realized only if the transaction was liquidated. While a positive MTM value represents an increase in value to the City, it also represents the City’s credit exposure with the supplier. In other words, should a counterparty default on delivery of supply, the City would need to purchase replacement energy on the open market when prices could be higher. A negative MTM represents the supplier’s credit exposure with the City.

The MTM value is based on the current forward prices, that is, the prices at the end of the quarter for deliveries in the future. Prices during the quarter decreased slightly following the sharp increases immediately after Hurricane Katrina drove up energy prices in all sectors. During the quarter, prices for deliveries in Calendar Year (CY) 2006 declined by 10%, while those of 2007, 2008, and 2009 decreased marginally (less than 5%). Because of this price decline, the total MTM value of the City’s forward transactions dropped during the quarter from $41.6 million to $26.3 million. Figure 4 presents the MTM positions for each supplier by month.

![Figure 2. Forward Electric Purchases by Counterparty](image)

Hydro Power. Based on forecasts provided by Western and the Calaveras Project and forward market projections, staff has calculated values for CPAU’s hydro contracts. It should be noted that for both the Western and Calaveras, values are based on the expected volumes of delivery for the next 12 months. These values will change as actual volumes will differ from those predicted at this moment in time. At present, the 12-month value for Western through December 31, 2006 is $33.3 million, down from $38.3 million last quarter. For Calaveras, the 12-month value is $16.8 million, slightly up from the previous quarter results of $15.3 million.
Seasonal Exchange Contracts. The sole seasonal exchange transaction in which Palo Alto is engaged involves Seattle City Light. Under this contract, which was signed in 1992, Palo Alto receives 9 MW from November through March, and sends 10 MW from June through October. The 12-month MTM value of this contract is minus $613,414. A negative MTM value means that the counterparty has a credit exposure to Palo Alto.

![Figure 3. Electricity Forward Prices for Delivery at NP15](image)

Note: NP15 refers to North Path 15 which serves as the key delivery and market point for Northern California. As such it represents an aggregated price for the region.

Wind Power. As noted in the previous report, the City recently signed a 23.5-year contract with Pacificorp Power Marketing (PPM) for supplies of wind energy. Wind power has different characteristics from a normal power purchase because it is not volumetrically firm. The amount Palo Alto receives directly relates to how strongly the wind blows. Based on historic meteorological conditions, Palo Alto expects to receive approximately 58,000 Megawatt hours per year.

Using the expected monthly volume averages for on-peak and off-peak, the MTM value of the contract is $20,000 over the next 12 months. This MTM value, however, does not include the value of the Renewable Energy Credits associated with the production of the power. These credits have a variable value of between $1 and $12, but currently their market price is roughly $1.50 for 1 MWh blocks. The additional value of the credits puts the total MTM value of the contract at an estimated at $0.08 million for the next 12 months, down from $1.98 million last quarter.
Natural Gas. As of December 31, 2005 the gas portfolio consisted of 177 open transactions (transactions for which commitments have been made but gas remains to be delivered) through December 2008. The City currently has purchased supplies of gas totaling 5.07 million MMBtu for delivery between October 1, 2005 and December 31, 2009. The average price for all of the fixed-price purchases was $6.26 per MMBtu, slightly up from $6.21 last quarter. The forward purchases have been transacted with five approved counterparties: Coral Energy, Duke Energy, Sempra Energy, ConocoPhillips and British Petroleum.

Forward prices for gas decreased by 10% over the quarter for delivery in Calendar Year 2006 (CY 06), and increased 5% for delivery in Calendar Year 2007 (Figure 6). The current MTM value of these transactions is $16.9 million, a decrease of 44% from last quarter. The MTM value by month and by counterparty is presented in Figure 7.

Figure 6. Forward Calendar Year Gas Prices

![Figure 6. Forward Calendar Year Gas Prices](image)

Figure 8 below presents the pool purchases made for each month over the next three years compared to estimated pool load. It illustrates the gas laddering purchasing strategy in relation to the total estimated load, showing the amount of volumes purchased (hedged volumes), the volume to be used by market rate customers, and the amount of pool to be purchased on the short-term market (pool exposed to market). Under the laddering strategy, CPAU purchases up to 100% of forecasted load for the upcoming 18 months, up to 75% of load for 19 to 27 months out, and up to 50% of load for 28 to 36 months out. As a result, the amount of pool exposure to the market is low in the near term, but increases further out in the future.
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 CPAU 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 market change. Staff use the VaR as one of the key measures of 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 0.08% of the RSR, a reduction from 0.13% in last quarter. During the quarter, the VaR for gas climbed to 17.6%, up from 8.0% at the end of last quarter. The historic levels of the VaR values for electricity and gas are presented in Figure 9. Please note that in Figure 9, gaps in the graph indicate missing data.

The VaR increase in the gas portfolio is a direct result of much higher forward prices associated with Hurricane Katrina. The 10% VaR limit set by the Risk Manager in conjunction with the Risk Oversight Committee represents a benchmark to monitor the potential risk to which the City is exposed as a result of possible variability in the cost of supplies not yet purchased. In some instances, exceeding the 10% benchmark would indicate the need for the City to purchase additional forward supplies. The risk represented by the VaR number is solely the result of the increases in energy prices as opposed to large unhedged positions. At this time, when prices are beginning to decline from near historic highs and when over 90% of our expected gas load has been purchased, staff does not recommend additional purchases in order to reduce VaR levels. Rather, staff will continue to monitor VaR levels and make recommendations to limit risk.
exposure when appropriate. The VaR levels could be immediately reduced through additional forward purchases, but at a high cost.

Figure 8. Market Exposure

Credit Risk
Staff has enhanced the City’s credit oversight policies and procedures. As part of this process, staff will regularly report on major credit rating agency’s (S&P and Moody’s) scores, and, in addition, the “estimated 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. For example, a 0.2 EDF indicates a chance of 2 in 1000 that the firm will be in default in the time period. Thus a higher EDF represents a higher credit risk for the City. While the current risk management practices do not set a specific EDF upper limit, any counterparty with a value over 0.50 warrants careful and regular monitoring of its financial condition and outlook.

Electricity. CPAU’s electric supplier counterparty credit exposure and the supplier credit ratings are presented below. CPAU’s largest exposure, in excess of $21.3 million, is with Coral, a company rated A- by Standard and Poors. 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 December 31, 2005.

<table>
<thead>
<tr>
<th>Counterparty</th>
<th>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”12</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP</td>
<td>$1,362,812</td>
<td>AA+</td>
<td>.02</td>
<td>.02</td>
<td>$273</td>
</tr>
<tr>
<td>Coral</td>
<td>$21,328,835</td>
<td>A-</td>
<td>.05</td>
<td>.02</td>
<td>$4,265</td>
</tr>
<tr>
<td>Duke</td>
<td>$478,960</td>
<td>BBB</td>
<td>.11</td>
<td>.08</td>
<td>$390</td>
</tr>
<tr>
<td>Sempra</td>
<td>$3,102,133</td>
<td>BBB+</td>
<td>.09</td>
<td>.11</td>
<td>$3,412</td>
</tr>
<tr>
<td>Total</td>
<td>$26,281,740</td>
<td></td>
<td></td>
<td></td>
<td>$8,340</td>
</tr>
</tbody>
</table>

1 Coral was previously owned by Shell (70%) and Intergen (30%). Recently Coral became wholly owned by Shell PLC.
2 Expected loss represents the product of the default rate in the next 12 months and credit exposure. As such it provides an estimate of the 12-month average risk being carried by CPAU as a result of its forward contracts. Default frequencies are independently calculated, and cross-default probabilities (that chance the one firm’s default will increase the chances of another firm defaulting) are not included.
3 This estimate is based on the credit ratings, and not the KMV model results.

The City’s current large exposure to Coral is a reflection of a 5 year contract for electricity supplies at a cost of $37 per MWh. The current appreciation in prices due to weather factors renders this contract very valuable, and therefore a credit risk. However, this risk has moderated significantly with the recent reduction in forward prices as well as on-going deliveries; the previous quarter’s credit exposure with Coral was $32.7 million as compared to $21.3 million this quarter.

Renewable Electricity. Palo Alto’s contracts for renewable “green” energy include both wind contracts with Pacificorp Power Marketing (PPM), discussed above, as well as contracts to convert landfill gas to electricity with Ameresco, Inc. Neither PPM (owned by Scottish Power)
nor Ameresco are publicly traded and therefore KMV Credit Edge does not include them in its default reporting. The Risk Manager has used financial information provided confidentially by each of the two counterparties to estimate an Expected Default Frequency, which is statistically comparable to the EDF’s reported for the other counterparties. The Credit Exposure and EDF ratings for these counterparties are presented below.

Table 2. Green Energy Credit Exposure and Credit Ratings as of December 31, 2005.

<table>
<thead>
<tr>
<th>Counterparty</th>
<th>Credit Exposure</th>
<th>Previous Quarter Calculated Expected Default Frequency</th>
<th>Current Calculated Expected Default Frequency</th>
<th>Expected “Loss”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ameresco, Inc.</td>
<td>$0</td>
<td>N/A</td>
<td>0.85</td>
<td>$0</td>
</tr>
<tr>
<td>Pacificorp Power Marketing</td>
<td>$78,114</td>
<td>0.58</td>
<td>0.58</td>
<td>$453</td>
</tr>
</tbody>
</table>

Natural Gas. As the Table 3 shows, the City has exposure to five counterparties totaling $16.9 million over the next 36 months, a decrease of over 42% since the last quarter. As with electricity, this large jump in the market exposure is the result of the rapid rise in the forward energy prices. The highest exposure with a single supplier is $8.0 million with Sempra, a BBB+ company, with the second highest exposure being with AA+ rated BP at $4.1 million. The remainder of the exposure is distributed between two other counterparties. The Table 3 below calculates the loss which the City would suffer should one of it’s gas counterparties default. This loss is calculated as the product of Estimated Default Frequency and the MTM value.
### Table 3. Credit Exposure and Default Ratings of Natural Gas Suppliers
Gas Supplier Credit Exposure and Credit Rating as of December 31, 2005.

<table>
<thead>
<tr>
<th>Counterparty</th>
<th>Credit Exposure</th>
<th>S&amp;P Ranking</th>
<th>Previous Expected Default Frequency</th>
<th>Current Expected Default Frequency</th>
<th>Expected Loss²</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP</td>
<td>$4,103,618</td>
<td>AA+</td>
<td>.02</td>
<td>.02</td>
<td>$821</td>
</tr>
<tr>
<td>ConocoPhillips</td>
<td>$378,533</td>
<td>A-</td>
<td>.02</td>
<td>.02</td>
<td>$76</td>
</tr>
<tr>
<td>Coral¹</td>
<td>$3,095,700</td>
<td>A-</td>
<td>.05³</td>
<td>.05³</td>
<td>$1,548</td>
</tr>
<tr>
<td>Duke</td>
<td>$1,403,574</td>
<td>BBB</td>
<td>.11</td>
<td>.08</td>
<td>$1,123</td>
</tr>
<tr>
<td>Sempra</td>
<td>$7,987,351</td>
<td>BBB+</td>
<td>.09</td>
<td>.11</td>
<td>$8,786</td>
</tr>
<tr>
<td>Total</td>
<td>$16,968,776</td>
<td></td>
<td></td>
<td></td>
<td>$12,354</td>
</tr>
</tbody>
</table>

1. Recently Coral became wholly owned by Shell PLC.
2. Expected loss represents the product of the default rate in the next 12 months and credit exposure. It provides an estimate of the 12-month average risk being carried by CPAU as a result of its forward contracts. Default frequencies are independently calculated, and cross-default probabilities (that change the one firm’s default will increase the chances of another firm defaulting) are not included.
3. This estimate is based on financial analysis of confidential data, and not the KMV model results.

**Credit Quality of Suppliers.** Overall, the City’s suppliers have continued to improve their credit quality. Figure 10 shows how the expected default frequency of CPAU’s current suppliers has declined (i.e., improved credit) over the past three years. As mentioned previously, Pacificorp Power Marketers is privately held and therefore an EDF is not issued by Moody’s KMV. The firm’s sole owner, Scottish Power, is used as a surrogate EDF. Similarly, Coral is the wholly owned subsidiary of Shell. The Coral EDF is calculated manually on a quarterly basis based on confidential financial information provided by the company. The estimate is also adjusted after consultation with credit analysts at Standard and Poors and Moody’s Investor Services.

The staff-calculated EDF point estimates for Pacificorp Power Marketers, Coral and Ameresco are included on the Figure 10.

Council should be aware of changes in the guarantor for the Pacificorp Power Marketer’s wind power purchase. While the guarantor is currently Pacificorp Holdings Inc. (PHI), purchases of portions of PHI by Mid-American are necessitating changes in the guarantor. The new guarantor will be Scottish Power Financial (SPFUS) an A- rated company. Staff is currently in the process
of negotiating a new guarantee with SPFUS but this was not consummated by the end of the quarter.

**Figure 10. Expected Default Frequencies for CPAU Counterparties over last 6 months**

Note: The Pacificorp, Coral and Ameresco EDF values shown above are point estimates calculated by staff from confidential financial information. As such, tracking is done on a quarterly basis and is not continuous.
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                                                    Energy Risk Manager

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                                                    Director, Administrative Services

CITY MANAGER APPROVAL:                              EMILY HARRISON  
                                                    Assistant City Manager

ATTACHMENTS
A) Consolidated Mark to Market Report of All Open Gas Transactions as of December 31, 2005
B) Consolidated Mark to Market Report of All Open Electric Transactions as of December 31, 2005