TO: HONORABLE CITY COUNCIL
FROM: CITY MANAGER                      DEPARTMENT: UTILITIES
DATE: MARCH 1, 2004                      CMR:168:04
SUBJECT: RENEWABLE ENERGY SUPPLY IMPLEMENTATION PLAN

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

BACKGROUND

On October 21, 2002 the City Council approved the Long-Term Electric Acquisition Plan (LEAP) Guidelines [CMR:398:03], which included Guideline #6: Renewable Portfolio Investments, which serves as Palo Alto’s “Renewable Portfolio Standard”. On August 4, 2003, Council approved the LEAP Implementation Plan [CMR:354:03], Task #1 of which is to acquire renewable energy resources to meet LEAP Guideline 6. The attached January 14, 2004 UAC report summarizes progress to date and the specific approach to executing the renewable energy supply implementation task in the LEAP Implementation Plan. Staff expects to bring contracts to Council for approval to meet these goals during the spring and summer of 2004.

BOARD/COMMISSION REVIEW AND RECOMMENDATIONS

The Renewable Energy Supply Implementation Plan was presented and discussed at the January 14, 2004 UAC meeting. Key commission questions and comments are summarized below with staff responses.

1. Are we at an advantage if we just jump in and sign a contract now? Are we going to be fighting over this resource in a few years?
Staff is recommending a two-tiered approach to filling the City’s renewable energy needs: (1) power purchase agreements for the near term (2005-2008), and (2) exploring new resource development opportunities for the longer term (2008-2015). There is an advantage to securing a portion of the renewable target now because (a) the offer is at a fair price and (b) there are not very many good renewable resource sites in the Bay Area. If too much time passes before the City acts, these resources will no longer be available, and competition for the most cost-effective resources will continue to grow. However, technology may continue to advance, improving the cost of delivered renewable energy, which would favor waiting. The two-tiered approach strikes a balance, and enables staff to explore some of the longer-term alternatives more closely.

2. *How does the seasonality of these resources fit in with the hydro world?*

The combination of the base load landfill and the seasonal wind resource fits the energy deficit quite well, because it generates more in middle and late summer when hydro generation is declining and when the market price is generally higher. It is not a perfect fit, but is generally a good match. Furthermore, wind has energy but does not have capacity behind it because of its intermittent nature, which provides a good complement to the Western resource and Calaveras, which has huge capacity but little energy behind the dam. This provides some synergies when the wind and hydro are operated together.

3. *Has NCPA looked into building its own wind farm?*

Yes. Several respondents proposed project development alternatives for nearly all technology categories. The projects could be developed jointly with NCPA, or developed for NCPA. The most promising of these alternatives are being considered as part of implementing Tier II in the procurement process.

4. *Are we buying energy on the basis of a base load profile or are we buying it on a “run-of-river” basis? What does the wind energy output look like if the wind doesn’t blow that day?*

The landfill gas is basically a flat base load. The product that best fits the City’s needs from the wind generators is a day-ahead firm (“as-scheduled”) product, which means that one day ahead the schedulers will know what is to be delivered at each hour, guaranteed by the supplier. Day-ahead wind forecasting has become fairly sophisticated, but there are deviations in both directions (too much or too
little generated). Deviations from the forecast in a given hour can be corrected up
by the supplier with either market resources (buy a little or sell a little surplus) or
other wind resources at other projects operated by the same supplier. The total
wind energy generated for the City in a month or quarter must match the total
amount delivered. Monthly variability is far lower than the daily or hourly
variability, and the particular site has a very steady and generally predictable wind
pattern.

5. Where are the landfill gas generators located?

The projects proposed by the selected respondent are located in Suisun,
Richmond, Livermore, and Santa Cruz. Staff is also working with the City of
Mountain View to determine the feasibility of utilizing the landfill gas from
Shoreline, which could provide approximately 3-4 MW.

6. What is the total capacity that would be available for landfill gas?

The total capacity available would be several hundred megawatts. There were 75
MW of northern California landfill projects bid into the NCPA RFP.

7. Can we do anything with our own landfill or our own biomass here in Palo Alto?

Electric generation using landfill gas from the Palo Alto landfill is not economic,
has been operating well below its rated capacity for some time (less than ¾ MW
with a nameplate capacity of 2 MW), and the field has difficulty in maintaining a
methane content sufficient to meet the needs of the generation equipment, which is
aging. A third party owns the landfill generator, and the third party currently sells
the output when it is running to PG&E through a “Standard Offer 4” power
purchase agreement. The City receives revenues in the form of lease and royalty
payments as well as wheeling charges to transmit the electricity to the statewide
grid.

Biomass electric generation requires that a fairly large amount of fuel be
transported to the site, needs to be relatively large (20-50 MW) to be economic,
requires significant fuel processing and storage area, and requires significant
attention to particulate and other airborne emissions. Most biomass generators are
located close to a source of high volumes of wood or animal waste, such as in
counties with timber or cattle industries, or municipal solid waste. Waste materials
suitable for electricity conversion processed by the City are sufficient to support
only about 3 MW of electricity generation, too small to be practical. The City’s composting operation processes approximately 17,000 tons of yard waste annually, sufficient to support only about 1 MW, and approximately 26,000 tons per year of refuse, sufficient to support only about 2 MW. The remainder of the 100,000 tons per year of waste material is recycled. Other renewable energy generation alternatives available are more attractive at this time.

POLICY IMPLICATIONS


Renewable energy supplies are required to meet the targets established by Council in LEAP Guideline #6 (Renewable Portfolio Investments) and also support LEAP Guideline #2 (Hydro Risk Management) and #3 (Market Risk Management) by diversifying Palo Alto’s resources, and #5 (Local Generation) through exploring local renewable generation alternatives.

- **LEAP Guideline #6: Renewable Portfolio Investments**: The City shall continue to offer a renewable resource-based retail rate for all customers who want to voluntarily select an increased content of renewable energy. In addition to the voluntary program, the City shall invest in new renewable resources to meet the City’s sustainability goals while ensuring that the retail rate impact does not exceed 0.5 ¢/kWh on average. Pursue a target level of new renewable purchases of 10% of the expected portfolio load by 2008 and move to a 20% target by 2015, contingent on economic viability. The contracts for investment in renewable resources are not to exceed 30 years in term.

Implementing LEAP Renewable Portfolio Investments also supports City’s Sustainability Policy Statement, adopted April 2, 2001 [CMR 175:01], the Green Government Pledge, adopted July 19, 1999 [CMR 284:99] and elements of the Comprehensive Plan, specifically:

- **GOAL N-9**: A clean, efficient, competitively-priced energy supply that makes use of cost-effective renewable resources, and Policies
- **POLICY N-44**: Maintain Palo Alto’s long-term supply of electricity and natural gas while addressing environmental and economic concerns.
- **POLICY N-48**: Encourage the appropriate use of alternative energy technologies.
ATTACHMENTS
A: January 14, 2004 UAC Report
B: January 14, 2004 Presentation
B: Minutes from UAC Meeting January 14, 2004

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