TO: HONORABLE CITY COUNCIL
FROM: CITY MANAGER
DEPARTMENT: UTILITIES
DATE: MARCH 18, 2002
CMR: 176:02
SUBJECT: UPDATE ON ALTERNATIVE ELECTRIC SUPPLY PORTFOLIO PLAN.

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

BACKGROUND

Utilities staff is evaluating several alternatives to develop a long-term electric portfolio plan. In February 2001 the Utilities Advisory Commission (UAC) approved a set of guidelines to fill anticipated energy deficits. The primary objectives in developing the Electric Supply Portfolio Plan were presented and approved by the UAC September 25, 2001, and approved by City Council on November 13, 2001 (CMR 425:01). These reports and presentations identified renewable energy and energy efficiency as potentially valuable contributors to the overall resource portfolio, and recommended that further analysis was warranted to develop an alternative energy investment strategy. On January 9, 2002 staff presented to the UAC a detailed analysis of alternative energy resource options for the Electric Supply Portfolio Plan.

DISCUSSION

Renewable energy and energy efficiency activities in Palo Alto are currently incorporated in the Public Benefits program [CMR 421:01, December 3, 2001] and green power (Future Green) electric rate program [CMR 121:00, January 31,2000]. Public Benefits are funded through a state-mandated minimum level of 2.85% of electric retail sales revenues, to be spent on one or more of the following four areas: (1) energy efficiency, (2) renewable energy, (3) low-income programs, or (4) research, development and demonstration. The Public Benefits program had an adopted budget of $1.9 million in FY 2000-01. This report focuses on the use of electric supply funds outside of the Public Benefits and Future Green programs for renewable energy and energy efficiency investments to contribute to the overall energy resource portfolio for Palo Alto. In this report, the term “alternative energy resources” refers
to both *renewable energy supply* from sources such as wind or solar energy, and *demand side management* (DSM) including energy efficiency and load management.
The City uses the California Energy Commission (CEC) definition of renewable energy supply. Under the definition established in California’s electric industry restructuring law (AB 1890), eligible renewables may include solar, wind, geothermal, solid fuel biomass, whole waste tire combustion, municipal solid waste, landfill gas, and hydropower with a generating capacity of 30 MW or less. Palo Alto’s green power program (Future Green) further distinguishes between “existing” renewable resources as projects built before 2000 and "new" or “future” sources of renewables that are projects designed or developed after January 1, 2000.

In 2001, eligible renewable energy sources constituted approximately 6% of the electricity supply for Palo Alto. Of this 6%, 1% comes from small hydroelectric projects as part of the energy supply from Western, and 5% is due to market purchases that are assigned the same power content as the California Power Mix (the California statewide average composition of electricity generation by energy source as reported by the CEC). The current average California Power Mix renewables share is 12%. Based on the California Power Mix component of CPAU electricity resources, Palo Alto also has only half the share of fossil fuels and nuclear power compared to the state average mix. Large hydroelectric generation (over 30 MW) is Palo Alto’s largest power source, and is not considered a renewable resource by the CEC.

![Energy Supply Component (%)](image)

**Figure 1.** 2001 Palo Alto and California Electric Supply Resource Mix.
The key economic, technological, and environmental attributes of the major energy resources considered by staff include cost, variability, air emissions, and other environmental issues. The dominant characteristics of each major generation technology are summarized in Attachment A. The most competitive renewable energy technologies are currently wind, geothermal, and landfill gas.

There is no uniform metric for determining how “sustainable” any given resource mix is. Staff has concluded that no available single metric is sufficient to adequately reflect City Council preferences with respect to cost versus environmental performance, and that such a tradeoff is a Council-level policy decision. Staff proposes to explore and quantify this “environmental premium” as part of the action plan.

Alternative Strategies
Staff is currently evaluating several alternative renewable resource strategies. The framework for this evaluation is based upon four key strategic questions presented to the UAC for discussion on January 9, 2002.

1. Should CPAU purchase energy or continue buying attributes? Staff recommends purchasing energy with a long-term view. Renewable energy content for the Future Green rate program is presently accomplished by purchasing “green tickets”, which are a market mechanism by which the renewable attributes of energy generated from qualifying resources may be traded separately from the actual energy. Staff believes that with some adjustments to the current design, CPAU can have a more successful program offering, and that green power program success can be enhanced by renewable resource procurement.

2. What quantity of resources should the City buy as specific purchases? One example of a portfolio target would be to increase renewable content in direct purchases from the current 1% to 5% [60 GWh/yr] by 2006, growing to 10% [125 GWh/yr] by 2011 (with periodic review). Specific recommended targets may be higher or lower than this example. Staff will return with specific recommended guidelines as part of the overall electric portfolio plan, and specific near-term and long-term purchase recommendations.

3. How much should supply funds be spent to cost-effectively deploy efficiency measures to be used to help supply meet demand? An example program would be to invest up to $1 million per year of non-Public Benefits funds for special programs. These special programs would be held to a more stringent cost-effectiveness test based on combining rate impact with environmental benefit as determined by City “environmental premium” criteria. These funds could also be applied to leverage City facility projects where appropriate.
4. Should the Renewables Strategy and Action Plan be incorporated into the overall energy resource plan? Staff recommends that guidelines for renewable energy procurement should be an integral part of the resource plan because of the many interdependencies with overall resource portfolio planning. Development of a renewable plan independent of the overall supply portfolio would miss opportunities for synergy. These guidelines should remain flexible to enable response to changing market conditions, customer preferences, regulatory climate, and new opportunities, with specific recommendations reviewed periodically.

The UAC recommended following four additional strategic questions for consideration by Council:

1. Should the CPAU renewable program be voluntary or compulsory? CPAU currently has a voluntary program in the Future Green rate program. The degree to which renewable energy should be included specifically in purchases outside of the Future Green and Public Benefits programs is a policy decision.

2. To what degree should Public Benefits program funds be directed toward increasing renewable energy content? Public Benefits funds are currently completely allocated to energy efficiency and renewable energy rebate programs that flow back to Palo Alto customers. Public Benefits funds can be applied toward renewable energy investments, but would reduce the available program funding for local participants.

3. Are the extra expenditures required to increase renewable content worth it to Palo Alto? This question is the main issue in finding a balance between cost, rates and environmental impact. Palo Alto enjoys substantially lower electric rates than nearby utility customers. How much of this “headroom” is the City willing to forego in pursuit of sustainability? For example, at the 5% level (60 GWh/year) and an assumed 2 ¢/kWh premium above the available market price for electricity, annual commodity purchase expenditures would increase by up to $1.2 million per year. This implies an average rate increase of approximately 1.5% (0.1 ¢/kWh) over the “do nothing” alternative. Staff plans to solicit public input and report findings to the UAC and Council in this regard in the next few months.

4. Should Utility-derived expenditures exercising Palo Alto’s commitment to sustainability be directed to programs other than renewable energy? This question addresses issues beyond the scope of control and expertise of Utilities staff but not beyond the scope of direction by Council. One way to frame this question more directly with respect to this report is, “Would you support raising say, $1,000,000 through utility rates to invest in alternative energy resources in order to improve the environment, or would you support raising those same funds to be spent in other ways to improve the environment if they achieved similar benefits more cost-effectively?”
POLICY IMPLICATIONS AND UTILITIES STRATEGIC PLAN

The proposed Action Plan described under “Next Steps” conforms with the intent of the Council’s adopted Sustainability Policy statement, adopted April 2, 2001 [CMR 175:01].

It is the intent of the City of Palo Alto to be a sustainable community - one which meets its current needs without compromising the ability of future generations to meet their own needs. In adopting this policy, Palo Alto accepts its responsibility to:

- Ensure the continued economic, social and environmental vitality of the City of Palo Alto;
- Protect the quality of the air, water, land and other natural resources;
- Promote and support the conservation of native vegetation, fish, wildlife habitat and other ecosystems;
- Minimize human impacts on local and worldwide ecosystems.

The proposed Action Plan is consistent with the Palo Alto Comprehensive Plan. Vision statement, goals, and policies described in the Comprehensive Plan relevant to energy efficiency and renewable energy supplies are summarized in Table 1 below.

Table 1. Comprehensive Plan Policies Relevant to Energy Efficiency and Renewable Energy.

<table>
<thead>
<tr>
<th>Natural Environment Vision Statement</th>
<th>Palo Alto will meet today’s needs without compromising the needs of future generations.</th>
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<tbody>
<tr>
<td>POLICY N-44</td>
<td>Maintain Palo Alto’s long-term supply of electricity and natural gas while addressing environmental and economic concerns.</td>
</tr>
<tr>
<td>POLICY N-47</td>
<td>Optimize energy conservation and efficiency in new and existing residences, businesses, and industries in Palo Alto.</td>
</tr>
<tr>
<td>POLICY N-48</td>
<td>Encourage the appropriate use of alternative energy technologies.</td>
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Of the four Primary Objectives in Developing Electric Supply Portfolio Plan adopted by the Utilities Department and approved by City Council, the fourth specifically states,

“Balance environmental, local reliability, rates and cost impacts when considering renewable resource and energy efficiency investments.”

This objective is a critical first step toward defining “cost-effective” for renewable resources in Palo Alto, stipulating that reliability and environmental implications should be included, not just cost. This balance is important because most renewable resource alternatives continue to be more expensive compared to conventional generation technologies.
The proposed Action Plan supports Strategies 2, 4, and 7 of the Utilities Strategic Plan.

- Key Strategy 2: Preserve a supply cost advantage compared to the market price.
- Key Strategy 4: Deliver products and services for competitive markets.
- Key Strategy 7: Implement programs that improve the quality of the environment.

**RESOURCE IMPACT**
There is no resource impact at this time.

**ENVIRONMENTAL REVIEW**
This report does not constitute a project under the California Environmental Quality Act.

**NEXT STEPS**
Staff expects to incorporate the final Alternative Energy Portfolio Strategy into the overall Electric Supply Portfolio Plan within the next three to six months after extensive public, UAC, and Council input and discussion. Subsequent purchase recommendations will be brought to the UAC, Finance Committee and Council for consideration over the next one to three years.

Staff plans to execute the following Action Plan in order to address the relevant strategic questions listed above.

- Establish criteria for balancing the environmental, local reliability, rates and cost impact when considering renewable resource and energy efficiency investments.
  - Solicit public input through public forums and surveys.
  - Solicit UAC and Council input through reporting and discussion.
  - Quantify diversification value for various renewable supply resources.
  - Coordinate investment evaluation with local resource assessment, local and distributed generation activities, Future Green rate program, and the Public Benefits program.
- Continue to actively monitor technical and economic progress in emerging technologies.
  - Monitor and report on successful activities at other utilities, especially public power.
  - Identify and evaluate potential renewable energy alternatives. Leverage unique capabilities of municipal ownership.
  - Identify potential leveraging assistance such as grants.
  - Evaluate potential for local resources to contribute to the renewables portfolio.
- Evaluate the financial impacts on the City of Palo Alto from different participation levels as a Future Green customer.
ATTACHMENTS
A: Generation Technology Key Attributes Summary Table

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