

Local Government Case Study:
City of Fremont

Background

- Location: Alameda County
- Population: 207,169 for 2001 (data from CA State Dept. of Finance)
- Size: 950 full-time employees (estimate), 92 square miles
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Summary

The Fremont Energy Advisory Committee, created in April 2001, considered and evaluated the need for new energy policies in the City of Fremont. The Energy Advisory Committee established two goals to help focus its considerations:

1. In the short term, minimize likelihood of rolling blackouts to the maximum extent possible and mitigate the impact of rolling blackouts, including safety hazards. Increase ability to manage the crisis.
2. In the long term, seek reasonably priced, reliable power, balanced with environmental concerns, to support a strong, healthy climate for residents and businesses.

The committee developed and implemented conservation and efficiency projects aimed to meet these goals. As a result, the city saved, on average, 10 percent in energy costs.

Referenced in Local Government Guides:

- #1, "Reduce Energy Use in Local Government Facilities Through Conservation Measures"
- #2, "Reduce Energy Use in Local Government Facilities Through Efficiency Improvements"

Plan

In March 2001, the city council authorized the city manager to appoint an Energy Advisory Committee (EAC). The committee consisted of several Fremont facility managers and city staff. Between April and August, the Committee heard presentations and participated in discussions regarding power supply options, conservation and energy management, rotating blackout mitigation, environmental issues, distributed and renewable generation and industry status. Pacific Gas and Electric (PG&E) was a frequent and valuable contributor, along with state agencies such as the Bay Area Air Quality Management District (BAAQMD), the California Public Utilities Commission (CPUC), the California Energy Commission, the California Independent System Operator and several energy organizations.

Outreach: In the EAC Staff Report, the committee recommended that the city begin an energy conservation outreach effort to help avert rolling blackouts and to assist businesses and residents to safely manage blackouts. The committee considered the following key factors in arriving at the conservation and outreach recommendation:

- Approximately 77 percent of the electrical demand in Fremont came from commercial and industrial customers.
- Residential consumers contribute about 23 percent of the demand in Fremont. Air conditioning is one of the most manageable loads for residential consumers.
- Changes in behavior and investment in more energy-efficient appliances, equipment, lighting and manufacturing processes will conserve valuable resources while at the same time produce long-term economic efficiency and competitive viability.
- Recently passed state legislation would provide additional short-term economic incentives (\$850 million statewide) to further this effort.
- The city has the means to distribute educational and motivation materials to constituents, builders and the business community.
- PG&E offered to assist the city in the preparation of materials. Educational brochures can also help

residents and businesses to better prepare for rotating blackouts if they occur and to enhance their capability to react to the energy crisis.

- PG&E reported a potential shortage of 2,000 to 6,000 MW resulting in an estimated 10 to 300 hours of interruption throughout the summer, starting as early as May. Interruptions have been two hours each to date but could be extended to three hours because of the difficulty of manually switching some circuits.

The city appointed a special assistant to launch an energy conservation and outreach campaign. The special assistant researched safety issues, modern energy-efficient appliances and common energy usage habits. PG&E helped with the information gathering.

Renewable energy: The Energy Advisory Committee also recommended that the city promote renewable energy sources and long-term energy efficiency to transition from short-term efforts to a long-term, sustainable energy environment. Key factors considered in arriving at the renewable energy source recommendation:

- The Committee heard presentations and held discussions on renewable energy and formed the recommendation that, among the alternatives of wind, solar, small hydroelectric, biomass and geothermal, only solar and biomass have potential applications in Fremont.
- Solar photovoltaic demonstration projects were being constructed by a few other cities to help advance the commercial development and public understanding of this technology.
- The California Energy Commission had a rebate program (\$4.50 per watt) that paid for nearly half the cost of solar photovoltaic installations of up to 1 MW.
- The CPUC had approved net metering rates for installations up to 1 MW under which surplus generation can feed back into the grid (giving the effect of a meter running backward), which makes the value of solar generation equal to the full retail cost of electricity.
- Although the cost of solar photovoltaic generation in small installations was still approximately double the retail cost of electricity, the rebates and rate subsidies almost made up for those high costs.
- Recommended plan: The city will assess the benefits of a city photovoltaic project and a landfill gas generation project, and develop detailed recommendations on long-term energy efficiency

policy options, such as providing incentives for developers to exceed the Title 24 energy standards.

With these considerations, the committee developed broad recommendations to the city manager that addressed: Conservation and Outreach; Optional Binding Mandatory Curtailment Program; Power Plant Siting; Distributed Generation; Renewable Energy, Energy Efficiency, and other initiatives.

Programs: Conservation

- ✓ **HVAC:** Set air conditioning at 78 F.
- ✓ **Lighting:** Never all on at same time - zigzagged lighting pattern.
- ✓ **Equipment:** Asked employees to turn off equipment.
- ✓ **Digital controls:** Installed direct digital controls (DDC) for energy management system to reduce peak usage of energy. One of the functions of the DDC is to schedule energy usage.

Programs: Efficiency

- ✓ **HVAC retrofit:** Installed 37 new HVAC units. The older units used electric heat; the new units use gas heat.
- ✓ **Lighting:** Changed T12s to T8s.
- ✓ **Alternative and/or renewable energy sources:** The city decided that the best way to promote the use of renewable energy was to have a showcase project that not only saved the city energy but also served as a model for the public.
 - The Police Department installed a thermal energy storage (TES) unit. Savings totaled 61 percent less energy use between January and June 2001.
 - The Engineering Department identified funding opportunities for a photovoltaic system and began a preliminary feasibility analyses for installing a photovoltaic roof on the new fire station. Alameda County Waste Management Authority (ACWMA) helped the city with the grant application process by analyzing the feasibility of photovoltaic roof project, the cost, cost benefit and payoff. The city began bidding for a contractor.
- ✓ **Construction:** Hired outside contractor to retrofit entire administration center building with energy-efficient equipment.

Programs: Public Outreach

- ✓ **Newsletters:**

- Printed and distributed an energy newsletter to every home and most businesses in Fremont.
- Printed energy consumption data by sector (city, residential and commercial) in a city newsletter to show the public how Fremont was faring during the summer of 2001.

✓ **Brochures:** Distributed energy brochures in Spanish, Chinese and English through the city's social services' network. City staff contacted community-based organizations to discuss the benefit of mono-lingual flyers to communities they respectively serve and to enlist their help in distributing the fliers.

✓ **Media:** Broadcast conservation and rolling blackout safety on the municipal channel.

✓ **City events:** Hosted energy information booths at the July 4th Parade and the Festival of the Arts.

✓ **Free CFLs:** Distributed free CFLs to low-income households in Fremont in coordination with the California Conservation Corps (CCC). CCC and Fremont volunteers visited eligible households for nearly a week. Each household received four CFLs.

✓ **City employees:** Provided employees with monthly reports on how much energy each city building had saved during the summer of 2001 energy crisis.

Programs: Incentives

✓ **Recognition contest:** Designed a contest for residents who reduced their energy bill by 20 percent or more in 2001 when compared with 2000. A total of 1,000 entry forms (available through the energy newsletter) were submitted for June, July and August. Staff asked PG&E to verify the customer's usage/savings, and each month selected five to 10 winners in a random drawing. The mayor announced winners at city council meetings each

month. Winners received City of Fremont merchandise, such as T-shirts and Festival of the Arts glasses and mugs.

Budget and Finance

Funds came from various sources. For the fire station, funds came from the capital budget. The city manager's office paid for the community outreach program.

Total cost for the energy-efficient projects was \$530,000. Total cost of HVAC retrofit was approximately \$353,000 (including removing and disposing of old equipment and buying and installing new equipment). Total cost of lighting retrofit was approximately \$130,000. Total cost of digital controls was approximately \$47,000.

Fremont received a grant of \$32,000 from CEC's Innovative Peak Load Program for the digital controls, gas heat pumps and T12 to T8 conversions.

Results

Total projected peak electricity savings was 150 kWh as a result of HVAC and lighting retrofits. Total projected peak electricity savings from HVAC including DDCs was 130 kWh.

Staff contacted their PG&E account representative for data on the City of Fremont accounts (approximately 400 to 500 meters) monthly. The city chose to track its 25 largest facilities. Savings for 2001 were as follows:

- January to June 2000: 10 percent savings on average
- June, compared to June 2000: 11 percent savings
- June residential: 13 percent savings
- June commercial: 11 percent savings
- June - Police building: 61 percent savings (as a result of thermal energy storage unit.)