Best Practice Guide
Local Governments

Case Study

La Mesa, City of

Background
Location: San Diego County
Population: 34,000
Size: 9 square miles
Contact: Cameron Berkuti,
Director of Public Works /City Engineer
8130 Allison Ave., La Mesa, CA 91941
Phone: (619) 667-1171
E-mail: cberkuti@ci.la-mesa.ca.us
Website: www.cityoflamesa.com

Summary
In response to Gov. Gray Davis' mandate, the City of La Mesa formed an Energy Conservation Committee to develop energy-saving measures and projects. La Mesa became the first city to change traffic lights to green light-emitting diodes (LEDs). Traffic signals accounted for roughly 30 percent of La Mesa's total electricity consumption, and the city expected an estimated 50 percent cost savings. Other projects developed by the La Mesa Energy Conservation Program included mandating higher temperatures in city facilities, creating a "dark hour" in city buildings from 12 p.m. to 1p.m. and forming a partnership with San Diego Gas & Electric (SDG&E) to provide educational and informational materials to city residents.

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
The city manager administered an energy audit of City Hall and other public facilities and recommended retrofitting lights and HVAC systems in several buildings. Staff augmented the audit report by recommending replacement of old refrigerators with ENERGY STAR®-labeled products. To design the programs, La Mesa formed an Energy Conservation Committee. The committee developed energy-saving measures and projects, which were approved by the city council on June 5, 2001. The targets were: lighting infrastructure; public facilities with heating/cooling systems; and residential energy consumers

Programs: Conservation

- **Lighting**: Removed unnecessary bulbs in all offices.
- **Office Equipment**: Turned off computers during lunch hours and long meeting.
- **Employees**: Implemented casual clothing policy. Employees were very receptive and proactive in the implementation.
- **Dark Hour**: Instituted a cost-free program known as the "dark hour." City buildings, mainly City Hall, shut down all power (lighting, heating, office appliances) between 12 and 1 p.m. The program was communicated to employees via memo and was based on the honor system. No one administered or oversaw the operation.

Programs: Efficiency

- **HVAC**: Found that due to the age of the HVAC systems in City Hall and other public facilities, it was not economical to retrofit. La Mesa planned to replace the entire systems and has budgeted $150,000 for the replacement.
- **Lighting**: Retrofitted lighting in city facilities, at a cost of $20,000.
- **Street lighting**: The Public Works Commission retro- fitted red lights in June 2000 and green lights in June 2001. LED bulbs enabled the city to install battery backups at high priority intersections/traffic lights, so that lights would not be interrupted in event of a power outage. The city expected to receive a grant to install battery backups at all the signalized intersections. LED lighting upgrades cost approximately $100,000.
- **Refrigerators**: Replaced all old refrigerators in city facilities with ENERGY STAR® brands.

Programs: Public Outreach

- **Brochures**: Distributed more than 15,000 Flex Your Power Residential Energy Conservation and Safety brochures at public meetings, Little League, Hall meetings, libraries and senior citizen centers.

Results

The city involved employees from all the departments and made them responsible for implementing energy-saving measures. La Mesa estimated 50 percent cost savings from red and green LEDs and calculated savings from lights

retrofit at 36,000 kWh.

Lessons Learned

La Mesa learned that every watt counts. Though some of the measures the city took were immeasurable or resulted in insignificant savings, the city's action showed the community that they were working together to reduce energy. Actions taken by city personnel were critical to the success of the city's program.

Case Study

Pasadena, City of

Background
Location: Los Angeles County
Population: 133,936 (Census 2000)
Size: 1,650 full-time employees
Contact: John Hoffner, Public Benefit Charge Program Manager
150 S. Los Robles Ave., Suite 200, Pasadena, CA 91101
Phone: (626) 744-4420
E-mail: jhoffner@ci.pasadena.ca.us
Website: www.PWPweb.com

Summary
Pasadena took a creative, all-encompassing approach to energy conservation. Its public awareness and education campaign, "You Have the Power to Conserve," involved numerous public services and incentives, such as landscaping classes and rebates for buying electric vehicles and for installing solar-power roofs. The city's services and incentives are estimated to save customers $2,173,000 in energy costs each year. Pasadena was also ranked number 2 out of 19 commercial customers for load curtailed in the state's Voluntary Load Curtailment Program.

Referenced in Local Government Guides:

- #3, "Promote Energy Conservation and Efficiency Through a Public Outreach Campaign "
- #4, "Promote Energy Conservation and Efficiency Through Public Services, Incentives and Technical Assistance "
- #5, "Target Low-Income and Senior Populations for Energy Conservation "

Plan
Pasadena Water and Power (PWP) developed a marketing campaign, "You Have the Power to Conserve, " to promote energy conservation. PWP recognized water as a major energy user and developed programs intended to save water, thus saving energy. Pasadena coordinated its efforts with other city departments, including Public Works & Transportation, the Police Department and the Health Department. By cooperatively developing and implementing its energy conservation campaign, PWP has been able to extend its resources to a greater number of residents and businesses. Additionally, the Pasadena city council set a goal to reduce energy consumption in all city facilities by 10 percent.

Programs: Conservation
Alternative and/or renewable energy sources: Twenty-one electrical vehicles (EVs) were leased in April 2001 for the following city departments: meter readers, parking enforcement, printing services, power troubleshooters, transportation engineers and utility customer service representatives. The vehicles included two Toyota RAV4s, ten Nissan hyper-minis, eight Ford Ranger pickups, two Ford Thinks! and one Chrysler

minivan. Public and private chargers for EVs were increased to 36 chargers at 16 locations. The Jet Propulsion Laboratory leases one city-owned parking lot, used by commuting EV drivers. PWP provided approximately $4,868 in rebates to PWP customers in Pasadena for leasing electric vehicles.

Programs: Public Outreach

- Free CFLs: Mailed all PWP customers a coupon with an offer for a free 3-pack of compact fluorescent light (CFL) bulbs. 8,337 CFL packages were distributed
- Bill inserts: Promoted refrigerator recycling, purchasing ENERGY STAR®-approved products, replacing incandescent bulbs with CFLs and using efficient thermostat settings.
- Newsletters: The Conduit, a monthly business newsletter, updated all PWP business customers on energy conservation results and new commercial energy efficiency programs and products. One business was spotlighted each month for its contribution to energy efficiency and conservation. Energy-related questions received on the website and via the AnswerLine from local businesses were answered each month also in the newsletter. Approximately 7,000 newsletters are mailed monthly. PWP also printed educational information in neighborhood association newsletters.
- Point-of-purchase displays: Made available ENERGY STAR® posters, appliance stickers, mobiles and rebate applications to local retailers. The ENERGY STAR® displays were designed to encourage customers to purchase energy-efficient products and promote energy conservation.
- Phone hotline: The AnswerLine was established in February 1998 for all PWP customers. Operators were available to answer questions about utility assistance, conservation programs and rebates and provide energy and water conservation tips.
- Website: PWP engineers and conservation specialists were available to answer technical questions posted by customers on the PWP website.
- Water & Energy Conservation Kit: PWP made available to customers a kit that consisted of:

    - Conservation tips and frequently asked questions with answers.
    - The Energy Cost Calculator to determine the cost of using specific appliances and electronics per day depending on the cost of electricity per kWh.
    - The Lawn Watering Guide intended to determine the amount of time an individual should water their lawn based on size and depth.
    - Brochures for low-income and seniors/disabled persons. Energy can be expensive so these brochures were designed to help select populations lower their utility bill. Applications to the Utility Assistance Program and Lifeline Program were included in the brochures.
    - An H2O information booklet that included resources and ways to conserve water.

- Landscaping classes: Focused on water-efficient garden design, plants and irrigation and were held once a week in October 2001 and again in August 2001. Irrigation timer controls were available for residential customers. Twenty Pasadena residents attended each class.

Programs: Services

Refrigerator Recycling Program: PWP picked up and recycled old refrigerators for 965 customers. Participating customers received a $25 rebate.

Programs: Incentives

- Appliance rebates: Offered rebates for Ultra Low Flow Toilets, High Efficiency Clothes Washers, Cooling Tower Conductivity Controllers and Automatic Faucet Shut-Off Valves. PWP's website provided detailed information about residential and commercial water use rebate programs, how to qualify and sign up.
- Energy Partnering Program: Provided efficiency measure rebates to help PWP businesses cut power consumption and operating costs. Free technical assistance was provided to determine the payback of projects being considered. PWP's rebate incentive program either matched the business's first year energy-savings or paid up to 25 percent of the total cost of the project (whichever cost was less).
- Additional conservation incentive rebates: Offered energy conservation rebates to residential and commercial customers through PWP. Customers conserving 5 percent received a 5 percent discount on their bill while those who conserved 10 percent or more compared to their previous year's electric bill received a 10 percent discount. Overall, 83,675 rebates were distributed totaling $5,375,930. PWP's website provided detailed information about residential and commercial water use rebate programs, how to qualify and sign up.
- ENERGY STAR® appliance rebates were available through PWP for residential customers to purchase energy-efficient models. Rebates ranged from $50 to $550 depending on the purchase price. If a customer purchased the product from a Pasadena retailer, they were awarded an additional 10 percent rebate.
- Photovoltaic rebates: Eleven residential customers, chosen from a pool of applicants, installed roof-mounted photovoltaic systems, averaging 2 kW each. Each customer received a rebate of $5 per watt.
- Refrigerator rebates: Three programs aimed to encourage customers to use more energy-efficient refrigerators:
- Refrigerator Recycling Program: PWP picked up and recycled old refrigerators for 965 customers. Participating customers received a $25 rebate.
- Refrigerator Replacement: 596 low-income and disabled customers received a free super-efficient refrigerator to replace their inefficient refrigerators.
- ENERGY STAR® Program: Residential customers purchased efficient refrigerators and received individual rebates from $100 to $220 depending on the purchase price. If a customer purchased the product from a Pasadena retailer, they were awarded with an additional 10 percent rebate.

Budget and Finance

Totaling approximately $3 million to $4 million annually, the Public Benefits Fund allocated money for rebate programs, partnering programs and paid for the electric vehicles. Results The response rate to the free CFL package direct mailer was 17 percent; 8,337 CFL packages were distributed. The City of Pasadena ranked second for participation in the Voluntary Load Curtailment Program for the State of California. This state

program, developed to mitigate the threat of rolling blackouts, encouraged commercial businesses to voluntarily agree to reduce energy consumption during power emergencies in exchange for financial incentives. Nineteen commercial customers voluntarily participated in the program providing 7.5 MW of curtailable load. The city reduced energy usage in city facilities by 12 percent, exceeding its goal of 10 percent.

Results

The response rate to the free CFL package direct mailer was 17 percent; 8,337 CFL packages were distributed. The City of Pasadena ranked second for participation in the Voluntary Load Curtailment Program for the State of California. This state program, developed to mitigate the threat of rolling blackouts, encouraged commercial businesses to voluntarily agree to reduce energy consumption during power emergencies in exchange for financial incentives. Nineteen commercial customers voluntarily participated in the program providing 7.5 MW of curtailable load. The city reduced energy usage in city facilities by 12 percent, exceeding its goal of 10 percent.

Case Study

Redondo Beach

Background
Location: Los Angeles County
Population: 63,261
Size: 450 full-time employees
Contact: Sylvia Glazer, Public Works Director
Or Maggie Healy, Assist. to the City Manager
415 Diamond St., Redondo Beach, CA
Phone: (310) 372-1171
E-mail: Sylvia.glazer@redondo.org,
Maggie.healy@redondo.org
Website: www.Redondo.org

Summary
After facing increased energy costs, the City of Redondo Beach with the help of consultant RAND Corporation conducted a comprehensive energy audit and implemented several energy-savings programs. Key programs of the energy campaign, some of which were rewarded with rebates, included the conversion of 1,928 traffic signals to LED, installation of window film to city facilities and installation of a cool roof on City Hall. The City of Redondo Beach also cosponsored numerous energy conservation workshops and discussions. At the summer's end, Redondo Beach had saved 142,841 kWh in energy, or 18.44 percent when compared with the summer before and was well on its way to reaching its goal of becoming a model of energy efficiency.
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"
- #3, "Promote Energy Conservation and Efficiency Through a Public Outreach Campaign"

Plan
The Public Works Department conducted a comprehensive energy audit of city facilities as an initial step in determining which energy conservation methods were best suited for the city. Additionally, a senior energy adviser at the RAND Corporation conducted a free review of the city's energy usage and made recommendations for becoming more energy efficient.

The city manager appointed an Energy Task Force consisting of representatives from every city departments. The duties of the task force included reviewing energy issues, developing and monitoring solutions and promoting employee and public education. After devising a plan of action, the task force projected savings due to energy conservation at $200,000 per year, based on annual energy costs of $1.9 million.

Redondo Beach also developed the Electrical Power Interruption Operation Plan in anticipation of blackouts. The plan outlines the emergency response steps to be taken by the police, fire and public works staff in the case of an electrical power outage. The plan issued the installation of uninterruptible power supplies (UPS), battery backup and generators. A UPS protected the main computer room and the battery backup and two generators protected the city's phone switch.

Programs: Conservation

- **HVAC**: Installed an energy management product at each A/C compressor on the rooftop A/C equipment. The energy management product adjusts the temperature on a real-time basis, rather than a continuous running mode, improving the efficiency of the compressors.
- **Lighting:**
  - Turned off all decorative lighting in parks. Installed light sensors in city facilities. Installed two "Wattman" devices, which control wattage.
- **Weatherization**:
  - Installed window film, which rejects 55 percent of the solar heat entering the building, at the Veterans Park facility and City Hall. The city chose window film that was visibly clear, and would not alter the appearance of the building.
  - Applied a white coating to the roof of City Hall to decrease the amount of heat entering the building.
- **State mandates**: The statewide mandate Executive Order D-1901, issued in January 2001, required all retail businesses to reduce unnecessary outdoor lighting wattage during non-business hours and had law enforcement agencies enforce the order. The Redondo Beach police utilized a partnership approach to help retail businesses conserve energy. After a preliminary trial period of two months, the city enforced the mandate by means of a misdemeanor fine of up to $1,000. Fines were issued only after aggressive attempts had been made to provide information and education to the business.

Programs: Efficiency

- **Lighting:**
  - Replaced electromagnetic ballasts and T12 lamps with electronic ballasts and T8 lamps.
  - Replaced incandescent lighting with CFLs.
- **Street lighting:**
  - Installed 1,928 LED traffic signals at 52 intersections.
  - Installed a High Intensity Discharge (HID) lighting voltage controller on streetlights. This controller reduces voltage after a short warm-up period, thereby reducing power consumption without changing lighting levels.

Programs: Public Outreach

- **Flyers**: Distributed informational flyers with energy conservation tips to city employees.
- **Website**: Posted resource links related to energy conservation on the city's website and flyers and brochures were handed out to the public at city facilities.
- **Energy fairs/conferences**: Hosted or participated in several conferences on energy conservation including:
    - The South Bay Energy Forum – a discussion by experts regarding the energy crisis – was produced with the cooperation of Hermosa Beach.
    - The South Bay Cities Standing Committee on Energy was created with the help of nearby Torrance. The purpose of this forum was for South Bay cities to learn about available energy partnerships and innovative solutions and present these ideas to their respective city councils.
    - Redondo Beach hosted the Energy Conservation Ideas Forum in cooperation with the Innovation Groups. This event consisted of 40 staff members from 15 cities who gathered to share their energy conservation methods.

Budget and Finance

The City of Redondo Beach received a rebate from Southern California Edison (SCE) for installing LED traffic signals at the majority of city intersections. Redondo Beach received a 20/20 rebate from SCE for three months of the summer of 2001. The city will receive a rebate of $4,500 from the State of California for the cool roof at City Hall.

The city applied for the Innovative Peak Load Reduction Program Reserve in the hopes of receiving a grant for the lighting retrofit. The grant was set at $250 per estimated average peak kilowatt saved.

Pilot Programs: The city approached select manufacturing companies and negotiated deals that allowed the city to install energy-efficient products free of cost. The city vowed to examine the savings of the product, if any, after a 60 to 90-day trial period, at which time they would consider whether or not they would continue their relationship with the manufacturer and purchase additional energy-efficient equipment.

The pilot program was a win-win situation: If the company was confident in their product and the City of Redondo Beach was satisfied with the results of the trial period then the manufacturer was ensured more business from the city and good referrals. The city was allowed to determine the cost/ savings ratio of the product before purchasing a large quantity. The Wattman device, window film and battery backup for traffic signals were used in pilot programs; the Wattman device is now being purchased for other city facilities.

Results

The Public Works Department designed a results-tracking system using Excel and worked with SCE on designing and formatting the information for disk. There was no additional cost to the city for this service.

Case Study

Sacramento, City of

Background
Location: Sacramento County
Population: 460,000
Contact: Brian Reilly, Senior Engineer
927 10thStreet, Room 300, Sacramento, CA 95814
Phone: (916) 808-8427, Fax: (916) 264-7903
E-mail: breilly@cityofsacramento.org
Website: www.cityofsacramento.org

Summary
Since 1990, the City of Sacramento has reduced its electrical load by more than 1.5 MW. Between 1992 and 2000 the city completed 23 energy retrofit projects, such as installing energy-efficient lighting, heating, ventilating and cooling equipment and LED lamps in traffic signals. Sacramento's extensive program has resulted in a cumulative 38 percent reduction in electrical energy usage; more than $440,000 in annual energy savings; $535,000 in SMUD rebates; and more than 6,400,000 kWh in energy savings (or approximately 6.1 percent reduction annually). In response to the 2001 energy crisis, the city council developed a plan to reduce energy use by another 7 percent and pledged to curtail 1.8 MW at SMUD's request. With the completion of projects scheduled for 2001 and 2002, total reductions are expected to exceed 2 MW, which is enough electricity to power 2,000 homes. Sacramento beat its goal with a 9 percent energy reduction citywide, and conservation accounting for 72 percent of the savings and efficiency projects for 38 percent.
Referenced in Local Government Guides:

- #1, "Reduce Energy Use in Local Government Facilities Through Conservation Measures"
- #3, "Promote Energy Conservation and Efficiency Through a Public Outreach Campaign"
- #4, "Promote Energy Conservation and Efficiency Through Public Services, Incentives and Technical Assistance"
- #5, "Target Low-Income and Senior Populations for Energy Conservation"

Plan
On Jan. 30, 2001, the Sacramento Municipal Utility District's (SMUD) board of director and assistant general manager presented to city council an overview of the State's present energy crisis. Under the direction of the city manager, public works staff from the City of Sacramento, County of Sacramento and SMUD teamed up to develop a common Energy Conservation Work Program that provided short-term energy conservation guidelines and long-term energy efficiency measures for reducing citywide electricity use by 7 percent.

The objectives of the program were to reduce energy consumption (kWh) and maximize energy savings through approved incentive programs administered by the CEC and SMUD and through employee/public education. The work plan included a variety of load-reduction projects, selected based on energy-savings

payback and available energy incentives. The work plan assumed a $500,000 appropriation from the Utility User Tax. The staff presented an overview of the plan to city council.

Programs: Conservation

- Lighting: Installed occupancy sensors in offices, conference rooms and storage areas.
- Employees: Set a casual dress policy for the summer, which made the heat more bearable and enabled air conditioners to be turned down.
- Irrigation: Changed parks and landscape irrigation schedule to between 10 p.m. and 10 a.m. when electrical demand is at its lowest.
- Water heaters: Adjusted temperatures of domestic water heaters down to 120 degrees F to prevent excessive mixing of hot and cold water.

Programs: Efficiency

- HVAC:
  - Substituted air-cooling unit with an energy-efficient chiller in Public Safety building.
  - Replaced HVAC system in two parking lots –raised SEER number to 12 or higher, from 7 or 8.

- Lighting:

  - • Retrofit T12 with T8 lamps in Public Safety building.
  - • Retrofit traffic signals with LEDs.
  - • Implemented an experimental inductive street light project.

- Equipment

  - Replaced motors in water and sewage pumps, which increased efficiency, and lowered bill and demand savings.
  - Replaced park irrigation pumps with variable speed drive pumps.

Programs: Employee Outreach

- Energy information: Sent out packets to employees.
- Newsletter: Distributed employee newsletter “Watts Up?”
- Phone service: City manager sent phone message to all employees stating conservation measures.

Programs: Public Outreach

- Fairs: Set up booth at SMUD energy fair representing what city had to offer.
- Signage: Posted conservation signs on doors of city facilities.

Programs: Services

- **"Beat the Heat" Program:** Department of Parks and Recreation implemented "Beat the Heat," a summer program designed to help the young and old during the energy crisis. The program was based on the notion that one of the best ways to get people to save electricity was to get them out of the house. Services included:

    - Swimming pools: The Department of Parks & Recreated decided to capitalize on the popularity of swimming pools. The Recreation Division staff analyzed where the pools were geographically, what they offered and which facility could do what. The swimming pools were opened from Memorial day to Labor day. Six large pools extended closing from 5 p.m. to 7 pm. Four play pools were open during peak heat period of the day, extending closing from 3 pm to 5 pm. Seven pools that were normally used to teach swimming lessons only allowed adults to use the pools between 5-7 p.m. City council provided $50,000. The costs of the program included staffing and chemical.
    - Community centers: Advertised that seven centers had extended hours until 10 p.m.

Budget/Finance

City council allocated $500,000 of the anticipated increase in Utility User's Tax to support the 2001 Energy Conservation Work Plan. The outreach efforts cots $5,000. SMUD and CEC provided $105,942 in rebates for the 2001 efficiency projects.

Results

Sacramento aimed to reduce energy use by 7 percent in 2001, and exceeded its goal. The city saved 9 percent despite the fact that it had built over 500,000 square feet of new space that year.

- 38 percent of the energy savings was the result of efficiency projects and 72 percent can be attributed to conservation and to the city's voluntary load curtailment.
- The Department of Parks & Recreation received $50,000 from the city council to implement the Beat the Heat program. The program was a success: More than 17,000 people visited the swimming pools during the extended summer hours.
- The city's electrical cost went up 6 percent because of a utility rate increase.
- The 2001 energy conservation measures cost $593,249. Annual energy savings was.2,761,018 kWh and 319.60 peak demand kW. Annual billing/financial savings $180,212. Sacramento received $105,942 in rebates, all from SMUD except LED rebate from CEC.

Winner: Flex Your Power Energy Conservation Award (2002)

Lessons Learned

Successful programs required voluntary staff participation and public and employee education.

Case Study

San Francisco, City of

Background
Location: San Francisco
Population: 776,773 (Census 2000)
Size: 27,000 employees
Contact: Bill Idzerda, Energy Efficiency Specialist, Hetch Hetchy Water & Power 1155 Market St., 4th Floor, San Francisco, CA 94103
Phone: (415) 554-3186
E-mail: widzerda@puc.sf.ca.us
Website: www.ci.sf.ca.us/puc

Summary
San Francisco has extensive energy conservation and efficiency programs for city-owned facilities and for residents and businesses. In response to the 2001 energy crisis, Mayor Willie Brown in April created the Mayor's Energy Conservation Account (MECA), which provided $15 million for conservation-oriented capital projects throughout city-owned facilities. The funding has helped the San Francisco Public Utilities Commission (SFPUC) implement 13 efficiency projects that were estimated to conserve 60 million kWh annually and as much as $5 million a year in avoided 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
The San Francisco Public Utilities Commission (SFPUC) assumed that city departments would work with SFPUC on efficiency measures if there was funding and operational support. SFPUC hired an external consultant to conduct a general audit of selected facilities in the city and County of San Francisco. The consultant collected information about certain energy-using systems in city facilities, including interior and exterior lighting, HVAC, boilers and motors. For the most promising projects, the consultant conducted a more detailed audit. Required data inputs included equipment- use characteristics, energy use and equipment life. The consultant evaluated anticipated costs of projects, the potential energy and cost savings and payback period. The consultant then recommended specific retrofits for buildings with the greatest savings potential. The general audit was completed in one month and the detailed audit, with project designs, was completed in six to seven months. The consultant's goals were to find projects with a quick payback period, typically less than seven years. Simple payback periods of electricity projects (saving $0.7 / kWh) range from one to seven years. SFPUC found that a largescale efficiency projects, such as a lighting or heating, ventilating and air-conditioning (HVAC) retrofit, typically required a year for auditing, planning and designing. An additional six to 18 months was required for installation and construction. Request for proposals were sent to outside contractors and a contract was awarded to the most qualified bidder. The contract process took four months. Overall planning, design and agreement process took at least one year. SFPUC formed an energy-efficiency division whose responsibilities included: prioritizing projects based on audit results; recommending projects to city department

heads; working with departments and engineering consultants to initiate projects; researching future secure energy sources; and overseeing the distribution of the Mayor's Energy Conservation Account (MECA) of $15 million. The division was also responsible for educating city departments about conservation, and was working with the Department of Environment to create a City Energy Plan. The Plan will provide a coherent framework for assessing San Francisco's opportunities to overcome its electric infrastructure vulnerabilities and assure reliable, affordable and sustainable sources of electricity for current and future generations. The division presented the draft plan at citywide, public meetings. The expected savings for the entire conservation plan was 60,000,000 kWh/year and 2,500,000 therms/year.

Programs: Conservation

- **Companywide standards:** The Energy Efficiency Section of Hetch Water and Power prepared a handout ofenergy-efficient standards for city facilities – lighting, heating and cooling systems and office equipment – during normal operational conditions. The goal was to reduce energy use by 20 percent or more.
- **Conservation Monitors:** 60 city departments appointed Conservation Monitors, whose job was to educate employees about conservation practices in the office.
- **Lighting:** Conservation Monitors used a light meter to identify areas where light levels at night exceeded city guidelines by 20 percent or more. (Light meters were borrowed from Hetch Hetchy). In over-lit areas, auditors either removed some lamps in each fixture or shut off lights (where there were bi-level switches). In areas with task lights, general overhead lighting was not allowed to exceed 30 foot-candles.
- **Benchmarking:** Participated in a benchmarking study with 23 water and wastewater utilities nationwide to share strategic insights on the deployment of different processes and practices affecting operations.

Programs: Efficiency

- **HVAC:** Retrofitted boiler and HVAC in 19 clinics at Department of Public Health.
- **Lighting:**
    - Retrofitted13 buildings at San Francisco General Hospital Medical Center with 38,000 energy-effi- cient fluorescent lamps, 40 LED exit signs and 600 reflectors. The goal was to save 2,800,000 kWh/year.
    - Retrofitted 19 clinics at the Department of Public Health.
    - Retrofitted eight Department of Parking and Traf- fic (DPT) parking garages.
    - Installed 600 fluorescent fixtures at Department of Public Works (DPW) Bureau of Building Repair on Cezar Chavez. SFPUC provided the DPW with funding, technical expertise and facility audits. In exchange, DPW provided personnel to install the recommended energy-efficient lighting.
- **Street lighting:** The DPT replaced incandescent traffic lights at 1,100 intersections with LED lamps. The goal was to save 10 million kWh/year, an 82 percent energy reduction.

- **Water systems:** City Distribution Division, Lake Merced Pumping Station, installed several energy-efficient pumps to save 1.4 million kWh/year.
- **Water supply and treatment:** Installed variable frequency drive motors at Harry Tracy treatment plant to save 600,000 kWh annually.

Budget and Finance

The city and county departments received funds from the $15 million MECA (July 2001), from maintenance and capital-improvement budgets and from the California Energy Commission's (CEC) grants and 3-percent lowinterest loans. The loans would be repaid with the cost savings from energy-efficient equipment and measures.

General Hospital lighting retrofits design and construction budget was $1.2 million. The CEC provided a $1.1 million loan at 3 percent interest and a $155,000 grant. Department of Public Health retrofits construction cost was $1.1 million and the CEC provided a $110,000 grant. DPT lighting construction cost was $600,000. DPW cost of audit, design and construction was $250,000.

LED retrofit project cost was $4 million. The CEC provided a $3 million-$4 million loan at 3-percent interest.

Water system audit, design and construction cost was $225,000. VFD construction cost was $75,000.

Results

Conservation measures were no- or low-cost, and helped 71 percent of city and county departments use less electricity in 2001 when compared with 1999. City Hall facility managers consistently saved 19 percent every month compared with the same month of the previous year, based on analyses of metered data.

The lighting, boilers and HVAC retrofits will save 2.2 million kWh and 50,000 therms/year. DPT energy-efficient lighting retrofits will save 800,000 kWh/year. DPW annual electricity savings was 700,000 kWh. LED greatest savings came from reduced maintenance/labor costs because the LED lights only need changing every 10 years, rather than every one to two years.

Office area standards and conservation monitors resulted in 71 percent of departments using less electricity in 2001 when compared with 1999. City Hall facility managers consistently saved 19 percent every month when compared with the same month of the previous year.

Best Practice Guide
Local Governments

Case Study

Atascadero, City of

Background
Location: San Luis Obispo County
Population: 26,000
Size: 100 full-time employees, 96,289 square feet (buildings in question)
Contact: Geoff English,
Deputy Community Services Director
6500 Palma Ave., Atascadero, CA 93422
Phone: (805) 461-5000
E-mail: english@atascadero.org
Website: www.atascadero.org

Summary
In response to the Governor's call to reduce energy use by 15 percent in government buildings, the City of Atascadero launched Phase I of a two-part energy conservation program that included no- and low-cost efforts in its six facilities. The city spent roughly $1,600 on improvements, which resulted in energy savings of 18,474 kWh per month or a 30 percent reduction when compared with usage in 2000. Atascadero also began investigating potential projects for Phase II, including solar and wind power and new roofing. Referenced in Local Government Guides: **n** #1, "Reduce Energy Use in Local Government Facilities Through Conservation Measures"

Plan
City staff compared monthly kilowatt readings for each facility over the previous three years to establish a baseline amount for all city-owned and city-operated buildings. City staff then prepared a cost/benefit report, which was revised by an external consultant, on various potential energy-saving solutions. Atascadero city council delegated staff from the building maintenance division to plan and implement conservation measures. Atascadero consulted with PG& E and used them as a resources for the audits and some changes, including rates. The plan was as follows: The targets of the city's plans were five buildings (two fire stations, one police station, one community center and one city administration building) and city personnel behavior. The square footage of the five buildings was:

- Atascadero Lake Pavilion: 14,798 sq. ft.
- City Hall: 44,893 sq. ft.
- Police Station: 11,814 sq. ft.

- Printery building/recreation: 19,354 sq. ft.
- Fire Station #1: 5,430 sq. ft.

Long-term objectives were: Research solar, wind and new roofing project; and consider replacing and upgrading wastewater treatment equipment, which was the city's biggest energy user (representing approximately 47 percent of the annual kilowatt usage.)

Programs: Conservation

- **HVAC**:
    - Set all thermostats to 78 degrees F in the summer.
    - Opened windows and vents on the upper three floors of City Hall (four-story building) at night to cool the building. On some cooler days, used prevailing winds to cross ventilate certain buildings.
    - Purchased and installed sun-block exterior window screens on city administration building, for both west and south sides.
    - Installed block-out interior window shades in south and west sides of city administration building.

- **Office equipment**:
    - Turned off PCs, printers and monitors when not in use.

- **Other equipment**:
    - Shut down city's nonessential features, such as a fountain in the downtown park.
    - Reserved use of elevator in a five-story building for disabled users and delivery purposes only.

- **Employees**:
    - Trained custodians to turn off lighting and equipment when not in use.
    - Distributed Flex Your Power flyers and window clings to employees.
    - Sent general e-mails about energy conservation to employees.

- **Work schedules**:

  Changed workweek in July and August to four days, 10 hours each day. There were a few problems and/or minimal complaints due to the hours change. The city returned to normal hours when school resumed due to child care issues.

- **Weatherization**
    - Caulked all windows and window seals.
    - Replaced weather stripping.

Programs: Efficiency

- **Lighting**
    - Replaced all incandescent bulbs with energy-efficient bulbs. All T12 fluorescent lighting has been replaced with T8s. All standard incandescent light bulbs have been replaced with low-watt compact fluorescent bulbs.
    - Replaced traffic signals with LEDs.

Budget and Finance

The low-cost efforts (lighting, caulking, shading and weather stripping) cost $1,600. Building Maintenance Fund financed the improvements.

Results

In July 2000, city used 61,971 kW compared with 43,497 kW in July 2001, a 30 percent reduction. Electric bills were higher in 2001 as a result of PG&E rate hikes, but the city used fewer kW overall. Between July and December 2001, Atascadero reduced energy use by approximately 17 percent in its six buildings compared with July-December 2000.