

State Department Case Study:

San Diego State Office Building

Background

- Type of Facility: Department of General Services state office building
- Location: San Diego
- Size: Approximately 350 employees, 174,100 square feet
- Contact: John Evans, Building Manager
San Diego State Office Building
1350 Front St., San Diego, CA 9210
Phone: (619) 778-264
E-mail: john.evans@dgs.ca.gov
Website: www.buildings.dgs.ca.gov

Summary

In June 2000, the San Diego State Office Building peak kilowatt (KW) load was 1,106 KW. Between June 2000 and 2001, the facility implemented a slew of conservation improvements, which resulted in a 21 percent reduction in peak KW demand and a 33.9 percent reduction in energy used. The building's peak KW load dropped to 873.6 KW. In addition to the conservation improvements already implemented, the building's Peak Load Reduction (PLR) plan in Stage 2 or 3 identified an opportunity for additional curtailments.

Referenced in State Government Guide:

- #1, "Reduce Energy Use in State Facilities Through Conservation Measures"

Plan

The building manager collected all directives from the director of the Department of General Services (DGS) regarding energy usage, temperatures for offices and domestic hot water and lighting levels for office workers. The manager then reviewed the building's compliance with those directives, and found that the building was providing more than what was required.

Building staff proceeded immediately with project implementation, targeting an overall reduction of 25 percent or more depending upon the good will and tolerance of the clients. Areas identified for operational changes were: heating, ventilating and air conditioning (HVAC), lighting and plug-in loads.

The second task was to educate staff about how to meet the savings goal. The building manager involved the entire staff in project implementation and held them accountable for achieving the 25 percent savings. Key members of the staff were the chief engineer, janitor supervisors, the maintenance mechanic, building maintenance workers and stationary engineers.

When switching between no alert, Stage 1, Stage 2 and Stage 3 operations became tedious, the building staff adopted Stage 2 operations as standard, moving only to Stage 3 when required.

Programs: Conservation

✓ **Lighting:**

- Turned off lights when rooms were not in use. All lighting is on a lighting control system.
- Reduced lighting in rooms with more than one light switch.
- Turned overhead lighting off; used task lighting.
- Custodial personnel turned on lighting only while cleaning and then turned lights off; worked in team to reduce lighting.
- Kept safety and security lighting at lowest acceptable level; decorative lamps were removed during Stage 2 and 3. Outside, only parking lot security and entrance/exit lighting were turned on. The lamps and ballasts were removed and stored for reuse.
- Delamped throughout the building. In the corridors, removed ballasts from fixtures not located near suite doors, restrooms, stairwell entrance, fire alarm pull boxes and fire hose cabinets.
- Turned off all lighting at elevator lobbies, except for what was necessary to read the directory and elevator call buttons clearly.
- Made signs for all light switches and power-using equipment that reminded tenants to switch off or unplug lights/equipment during Stage 2 and 3. Installed stickers on light controls to identify which controls were to be turned off during each stage.

✓ **HVAC:**

- Curtailed start and stop times of the HVAC system to what was needed for official building operating hours. The DGS director provided these times in writing.
- Maintained room temperature at 68 degrees F in the winter and 78 degrees F in the summer. Action taken through 455 programmable thermostats.
- Set HVAC to allow building air temperatures to fluctuate +/- 4 degrees.
- Used HVAC economizers to effect optimum duty cycle and to optimize compressor startups.
- Set domestic hot water temperature at 120 degrees F at the hot water heater and at 105 degrees F when water gets to the sink.
- Maintained HVAC reduced operation to minimum levels for safety and health (air quality) during Stage 2 and 3 only.
- Set boiler temp for minimum operation and timer controls to limit run times.
- Installed new controls on chillers.

✓ **Weatherization:** Installed solar coverings in the west and south side of the building.

✓ **Computer/office equipment:**

- Identified at least one essential computer and e-mail server for communications. Shut down all but one PC and monitor during Stage 2 and 3.
- Set all video monitors and computers to power down after five minutes of non-operation.
- Shut down all but one of the nonessential duplicating systems and equipment, copiers, printers, scanners and fax machines.
- Enabled power save mode on printers and copiers. Turned off all but one printer.

✓ **Building plug-in loads:**

- Unplugged space heaters and nonessential devices.
- Unplugged or disconnected two to three drinking fountains per floor.

- Reduced number of coffee pots and cooking devices used in kitchens during Stage 2 and 3 only.
- Limited the use of nonessential appliances, coffee machines, microwaves and coolers for bottled water during Stage 3 only.
- Removed some equipment in the kitchen, such as electrical range and portable refrigerators. Also consolidated refrigerators.

✓ **Employees:** The building manager taught, coached, counseled and trained building occupants on steps to take at work and at home to reduce energy use. Many were eager to do their part. The director of DGS and acting chief of Building Property Management (BPM) helped solicit tenant involvement. The building manager presented energy reports, including savings comparison charts and WebGen profiles, at all tenant and staff meetings.

Budget and Finance

There was no budget. Building managers had to implement no-cost conservation actions only.

Results

In June 2000, the San Diego State Office Building at 1350 Front St. had a total peak KW load of 1,106. In June 2001, total PKW load dropped to 873.6. In June 2001, compared with June 2000, the San Diego State Office Building realized:

- A 21 percent reduction in peak KW demand,
- A 33.9 percent reduction in overall energy use for the month, and
- Cost savings of approximately \$6,800 for the month.

Lessons Learned

San Diego State Office Building learned that building staff needed to continue to closely monitor energy plans and operations, even after the “crisis,” to ensure that energy conservation continued.