



FACT SHEET: GREEN BUILDINGS - OPERATIONS & MAINTENANCE



SUSTAINABILITY OPPORTUNITY

A typical building incurs 80% of its lifetime cost through operations and maintenance. Stanford University operates and maintains over 1000 buildings of various sizes, 15 million square feet of building space, and about 1,500 landscaped acres. Comprehensive energy efficiency programs, verification of mechanical systems, targeted behavioral programs, and careful attention to indoor air quality ensure Stanford's existing buildings operate efficiently and safely.

TOP INITIATIVES & RESULTS

Energy Demand Management

- Through the Whole Building Energy Retrofits Program, Stanford will spend \$30 million on major capital improvements to the 26 biggest energy users on campus. The retrofits completed thus far have delivered a discounted payback of 3.3 years and Pacific Gas and Electric rebates of \$440,000. An additional \$1.85 million in PG&E rebates are anticipated for projects in construction. Several completed projects have achieved better savings than expected. The Stauffer 1 & 2 projects resulted in more than a 40% drop in energy consumption.
- Since 1993, Stanford's Energy Retrofit Program has provided more than \$10 million for projects to improve energy efficiency, reduce building costs, reduce utility demand, and decrease maintenance costs. Since 2002, these energy retrofits have resulted in an estimated savings of 176 million kilowatt-hours of electricity—about 8 months of Stanford's current electricity use.
- The Energy Conservation Incentive Program rewards schools and departments with "cash for kilowatt hours." If the organization uses less than its budget (based on past usage), it keeps the money saved. Since 2004, the program has inspired participants to use three percent less electricity than budgeted—more than \$800,000.

Building HVAC Recommissioning

Stanford is recommissioning the Heating, Ventilation, and Air Conditioning (HVAC) systems of its largest buildings to ensure they function as designed. Technicians and engineering consultants who conduct the reviews also provide recommendations to further improve energy performance through retrofit projects.

Acknowledging the complex schedules of an academic environment, Stanford actively manages operational hours for building systems. Each week Stanford adjusts the HVAC operating schedule in up to 60 buildings to align with the specific hours of use.

Occupant Behavior

In 2009 Stanford launched the Building Level Sustainability Program, a platform for Stanford's Schools and Departments to educate occupants and implement sustainability practices at a building level. The program harnesses individual, action-based resource conservation to achieve consumption reductions that complement the effects of infrastructure improvements. Office building pilot projects sustained up to a 20% reduction in electricity use, corresponding to a payback period of less than one year for modest investments in Smart Strips and timers. Waste reduction and water conservation efforts achieved comparable savings. The program features a customizable Toolkit to tailor targeted actions to a specific building population. Future program development will address behavioral changes appropriate for laboratory and dorm environments.



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Green Cleaning

Stanford's custodial services provider, UGL UNICCO, promotes indoor environmental quality through its GreenClean program. The holistic GreenClean approach balances health, safety, and environmental risks of products and services, specific facility functions and occupant activities, and cleaning, maintenance, and sanitation needs. From ergonomically designed HEPA-filter vacuums and microfiber rags to the zero emissions vehicles used by custodial crews, UGL UNICCO ensures low-impact cleaning practices.

Chemical and Pollutant Source Control

Stanford strives to provide the best air quality to building occupants and the campus at large. Accordingly, smoking is prohibited in all indoor spaces, covered walkways, university vehicles, and at university sponsored outdoor events, including athletic competitions. The School of Medicine and all of its associated grounds are entirely smoke-free. The university is installing entryway systems with special outdoor and indoor mats at each doorway to trap dirt and other particulates that occupants track into buildings. The award-winning Department of Environmental Health and Safety has a surplus chemical program to reduce waste, a mercury thermometer replacement program, and an extensive universal waste program to properly dispose and/or recycle e-waste. Custodial and lighting contractors are required to recycle the glass and safely dispose of mercury from fluorescent lamps across campus.

Integrated Pest Management

Stanford uses non-chemical pest control whenever possible, both inside buildings and in the surrounding landscape. The emphasis is on excluding pests from the buildings, not controlling them once they are thriving inside. Power washing, natural predators, and other alternative techniques are used to control plant pests as well, with pesticides and herbicides used only as a last resort. techniques are used to control plant pests as well, with pesticides and herbicides used only as a last resort.

AWARDS

- Honorable Mention, ASHRAE Technology Award, for the Stauffer Building I laboratory VAV conversion project in the existing institutional building category (2010)
- Award of Honor—Complete Environmental Health & Safety Award, Campus Safety Health and Environmental Management Association (2009)
- Honorable Mention, Flex Your Power Awards (2005)
- Environmental Achievement Award for Lab Mercury Reduction Efforts, US Environmental Protection Agency (2002)
- Clean Bay Business Award, Palo Alto Regional Water Quality Control Plant, annual recipient since 2001 (Stanford Fleet Garage)

RETROFIT PROJECT REBATES

- Cantor Art Center Retrofit, \$122,000 rebate from PG&E (2011)
- Alumni Center Window Film Installation, \$11,000 rebate from PG&E (2011)
- Parking Structures 2 and 6 Lighting Retrofit, \$13,000 rebate from PG&E (2010)
- Y2E2 Photovoltaic Installation, \$38,000 rebate from PG&E (2009)
- Avery Aquatic Center Pump Retrofit, \$110,000 rebate from PG&E (2009)
- Business Continuity Data Center, \$48,000 rebate from PG&E (2009)
- School of Medicine Server Virtualization, \$8,988 rebate from PG&E (2009)
- Stauffer Building II Laboratory VAV Conversion, \$110,000 rebate from PG&E (2008)
- Desktop Power Management, \$55,000 rebate from PG&E (2008)
- Stauffer Building I Laboratory VAV Conversion, \$180,000 rebate from PG&E (2007)
- Reservoir 2 Photovoltaic Installation, \$135,000 rebate from PG&E (2004)

MORE INFORMATION

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