PROGRAM OVERVIEW

With many of us spending more time inside buildings than outside, Caltech recognizes the importance of ensuring building occupants are provided with safe, clean, and productive work environments. Meeting these needs is essential in supporting the Institute's research and education mission.

Using an integrated approach to design and construction, the Facilities Department has incorporated principles from the USGBC's LEED standards, the Living Building Challenge, and LABS 21 into the Institute's Design Guidelines. Full life cycle costs are evaluated at the onset of projects, which offers the Institute better overall building management capabilities and ensures that buildings are optimized for resource and operational efficiency.

The benefits of incorporating sustainable design principles into building practices range from financial savings, to environmental impact abatement to improving health and quality of life. Overall, green buildings improve system resilience. Some of the key benefits the Institute has identified include:

- Reducing environmental impact
- Reducing operating costs
- Reducing or neutralizing first costs
- Enhancing asset value and increasing profits
- Optimizing life cycle economic performance
- Improving productivity
- Reducing absenteeism and turnover
- Reducing liability
- Increasing building real estate value
- Enhancing occupant comfort

GOALS & STRATEGIES

Goals for Viability

Ensure existing and future facilities meet and maintain a high level of energy, water and resource efficiency

Strategies

- LEED certification
- Building guidelines for new construction and tenant improvements
- Transition to operations program
- Aggressive retro-commissioning and controls optimization program
- Furniture reuse program

LEED PROJECT HIGHLIGHTS

Cahill Center for Astronomy and Astrophysics

44 points, LEED-NC Gold certification, 2008 (LEED-NC v2.2)

- 50% water savings in landscape irrigation
- 40% indoor domestic water use reduction
- 39% energy use reduction
- 90% diversion of construction waste
- 27kW roof-mounted photovoltaic array

Walter and Leonore Annenberg Center for Information Science and Technology (IST)

43 points, LEED-NC Gold certification, 2009 (LEED-NC v2.2)

- 56% water savings in landscape irrigation
- 40% indoor domestic water use reduction
- 27% energy use reduction
- 93% diversion of construction waste
- 75% of occupied spaces with day lighting
- 64kW roof-mounted photovoltaic array

Linde + Robinson Laboratory for Global Environmental Science (L + R)

53 points, LEED-NC Platinum certification, 2010 (LEED-NC v2.2)

- Lowest energy intensive physical science research lab in the US
- First lab with radiant and compressor free cooling for half the year
- First LEED Platinum research lab in a historic rehabilitated building
- First lab to achieve 50% lab equipment energy use reduction
- 100% of rainwater captured on-site satisfies irrigation needs
- 64% indoor domestic water use reduction
- 70% energy use reduction
- 96% diversion of construction waste

Access the live building dashboard here.

Warren and Katherine Schlinger Laboratory for Chemistry and Chemical Engineering (Schlinger)

42 points, LEED-NC Gold certification, 2010 (LEED-NC v2.2)

- 65% water savings in landscape irrigation
- 42% indoor domestic water use reduction
- 20% energy use reduction
- 88% diversion of construction waste
- 75% of occupied spaces with day lighting

LEED PROJECT HIGHLIGHTS

Earle M. Jorgensen Laboratory

87 points, LEED-NC Platinum certification, 2013(LEED-NC v2009)

- 50% water savings in landscape irrigation
- 30% indoor domestic water use reduction
- 37% reduction in energy use
- 82% diversion of construction waste
- Passive Energy Conservation Features: green roof, day lighting, natural ventilation

Broad Center for Biological Sciences (Broad)

63 points, LEED-EBOM Gold certification, 2013 (LEED-EBOM v2009)

- 54% chilled water savings
- 85% steam use reduction
- 50% indoor domestic water use reduction
- 30% more energy efficient than a typical biology laboratory
- 39% GHG reduction

Caltech Child Care Center

69 points, LEED-NC Gold certification, 2014 (LEED-NC v2009)

- 43% indoor domestic water use improvement
- 55% water savings in landscape irrigation
- 35% energy use improvement
- 83% of occupied spaces with day lighting
- 99% diversion of construction waste

Keck Center

84 points, LEED-NC Platinum certification, 2014 (LEED-NCv2009)

- 96% reuse of existing building
- 35% indoor domestic water use improvement
- 46% energy use improvement
- 24% energy cost offset with campus solar photovoltaics
- 95% diversion construction waste
- 92% of occupied spaces with day lighting

LEED PROJECT HIGHLIGHTS

Gates Thomas Laboratory Renovation
LEED-NC Gold certification, expected 2015 (LEED-NC v4)

Retro-Commissioning & Controls Optimization

Data show building systems experience efficiency losses at an approximate rate of 3 percent per year. Caltech's comprehensive retro-commissioning program is focused on minimizing efficiency losses and optimizing building performance. To date, approximately 65 percent of planned retro-commissioning or controls optimization of existing buildings is either complete or underway. Additional buildings have undergone energy audits, from which energy conservation measures have been identified and placed in the queue for funding and implementation.