CORNELL SUSTAINABLE ENERGY SYSTEMS

Cornell has a number of innovative energy systems and has been actively reducing energy use since the 1970's. Those systems combined result in a 30% less energy use with associated environmental impact reductions. The combined efforts of many years work resulted in the:

- **International District Energy Association System of the Year Award in 2010**
- **Environmental Protection Agency "Energy Star" Award in 2011**

Major energy initiatives

Conservation $2-10 million investment per year in projects, over $1.5 million/yr savings since 2001. The Energy Conservation Initiative goal is to reduce the year 2000 campus energy use 20-30% by 2015. Projects include new energy system controls, demand controlled ventilation, variable flow systems, lighting, and education. Conservation focused preventive maintenance ensures peak performance.

The hydroelectric plant Re-powered in 1981 to generate up to 1000 kW. Annual production meets 2% of campus needs, 5 million kW-hr/yr. A 2008 controls project increased annual output by 20%.

Cogeneration and boiler efficiency The Central Energy Plant steam generation pressure was increased to 400 psi in 1986 to produce power from nearly all campus steam on its way to heat buildings. All power is generated at 80% efficiency, over twice conventional power plants. The cogeneration facility generates 12% of campus electric needs, about 35 million kW-hr/yr.

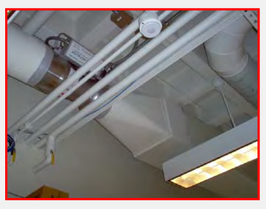
Lake Source Cooling Cornell's deep lake water cooling project utilizes renewable deep cold lake water to cool a separate closed water loop that removes heat from campus buildings. The system saves **86%** on energy use for central cooling, 25 million kW-hr/yr.

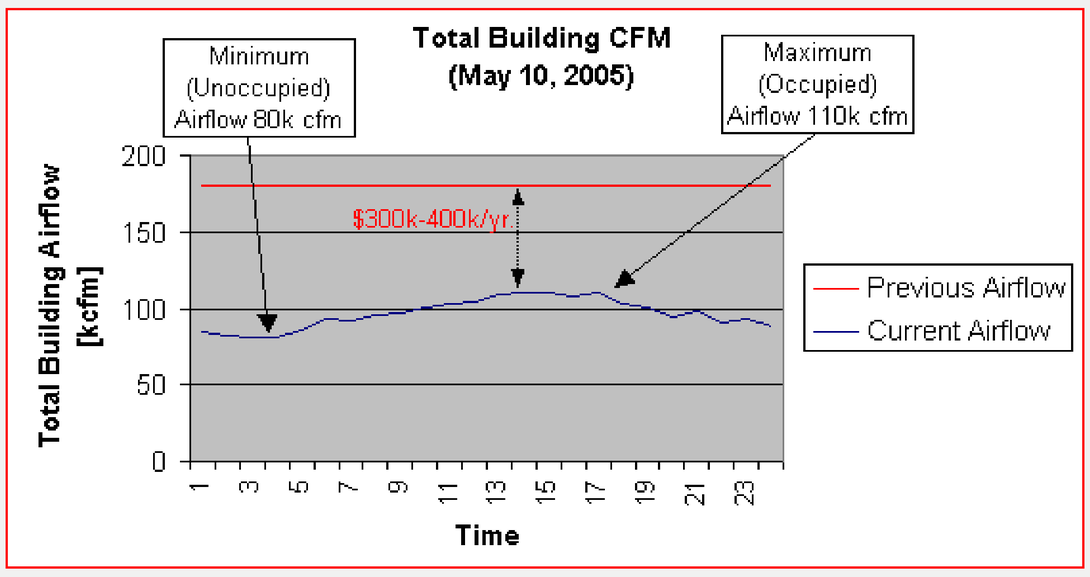
Leading edge building features Cornell is an early adopter and innovator in building conservation features. Aggressive variable volume air controls, sophisticated control algorithms, demand controlled ventilation, low energy use research environmental chambers, and heat recovery are all part of our newest buildings.

Green buildings All major construction projects must achieve LEED silver certification and 30% less than energy code (Cooke House, Life Sciences, Human Ecology, CCHPP Office, Plantations Welcome Center, Animal Health Diagnostic Center). The Climate Action Plan goal of 50% less than energy code is pushing us toward lower and lower energy use. Our fully metered buildings and sophisticated controls and archived controls data allow us to tune and track performance.

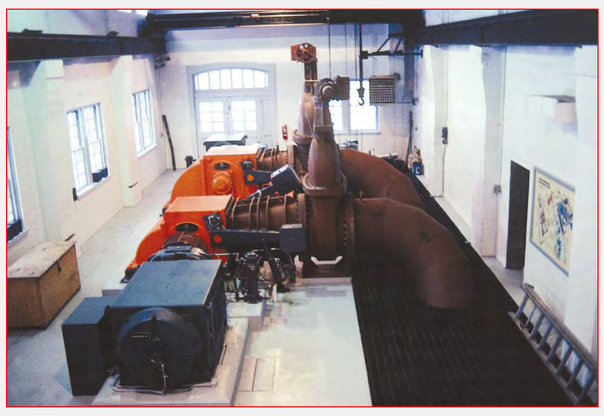
The Combined Heat and Power Project began operation in 2009. This project added highly efficient and cost effective electric and steam generation equipment that reduces combined direct and indirect carbon dioxide emissions by over 25%.

Biotechnology Conservation Project
30% Save = $350k/yr

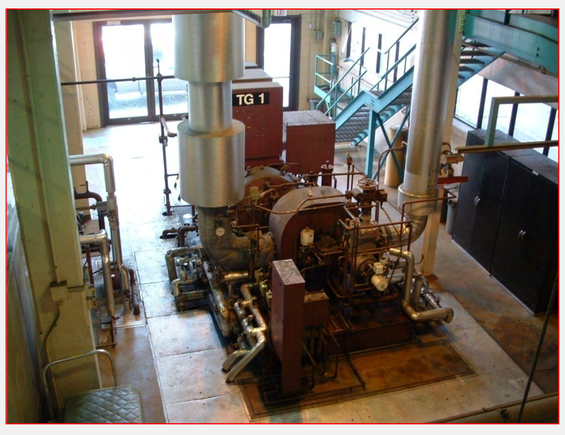




Hydro Plant

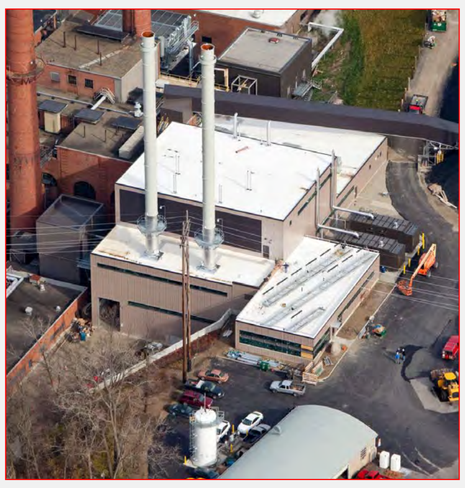


CHP Cogeneration



Lake Source Cooling

Combined Heat and Power



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More Information
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