



NATIONAL RENEWABLE ENERGY LABORATORY

Golden, Colorado



\$1.2MM

Verified Annual Savings

35,652 MMBTU

Verified Annual Energy Savings

660K GAL.

Annual Water Savings

At a glance

CEG Solutions partnered with NREL to electrify two campuses, eliminate gas heating, and modernize systems to cut energy use and emissions while boosting resilience.

Project Highlights

- \$1.2M in verified annual savings
- 35,652 MMBtu annual energy savings
- 10.4M kWh electricity reduction per year
- 660,000 gallons water saved annually (14% reduction at Flatirons)
- Full electrification of natural gas heating at Flatirons Campus
- ~18% overall energy reduction at both Flatirons & STM campuses
- Supported by 2022 DOE AFFECT Grant

OVERVIEW



NREL set aggressive electrification and decarbonization goals for its campuses, particularly Flatirons. The challenge: eliminate fossil fuel heating, modernize outdated systems, and reduce utility costs — all while maintaining critical research operations. CEG was selected to deliver a cost-effective ESPC solution aligned with federal climate Executive Orders 13990, 14008 & 14057.



STRATEGIES



Electrification & Carbon Reduction, Energy & Operational Efficiency, Energy Audits, Incentives, Performance Contracting, Resiliency



Awards

- Department of Energy (DOE) Affect Grant, 2022

Energy Conservation Measures

- Full electrification of natural gas heating at the Flatirons Campus
- SmartLab upgrades & conversion of laboratory ventilation systems from CAV to VAV
- Installation of a pilot microgrid
- Retro-commissioning of dis-repaired solar PV systems
- HVAC controls improvements
- LED retrofits and networked lighting controls
- Domestic water upgrades
- Weatherization improvements and installation of window film

SOLUTIONS

The project combined full electrification of natural gas heating at Flatirons with major efficiency upgrades. Measures included SmartLab ventilation conversions (CAV→VAV), HVAC and controls improvements, LED lighting retrofits, domestic water upgrades, and building envelope weatherization. A pilot microgrid and retro-commissioned solar PV systems further improved resiliency and carbon-free performance.

RESULTS

The project is delivering \$1.2M in annual savings, reducing energy use by 35,652 MMBtu, electricity consumption by 10.4M kWh, and water use by 660,000 gallons (14% at Flatirons). Flatirons and STM campuses each achieve ~18% overall energy reduction. The upgrades advance NREL's leadership in decarbonization and resilience, supported by a 2022 DOE AFFECT Grant.

