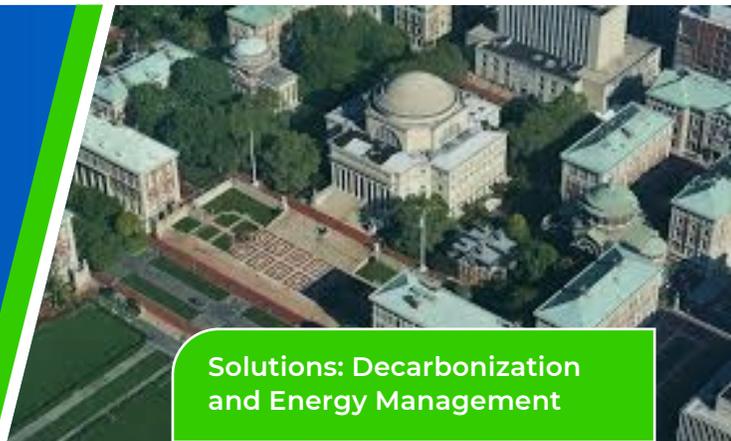




CASE STUDY

Columbia University



Solutions: Decarbonization and Energy Management

CLIENT OVERVIEW

Columbia University is a globally renowned academic institution located in New York City, recognized for its leadership in research, education, and innovation. The University's extensive campus includes a mix of historic buildings and modern research facilities, each with demanding energy needs. Driven by ambitious climate goals and a longstanding commitment to sustainability, Columbia has prioritized operational efficiency and environmental stewardship across its portfolio. Faced with rising energy costs, aging central plant equipment, and a need to comply with local energy regulations, the University partnered with Environ Energy to execute a turnkey retrofit of its central chiller plant—its largest energy-consuming asset—delivering substantial energy savings, regulatory compliance, and long-term carbon reduction.

SNAPSHOT

- \$3.5 million kWh
- 28% reduction in campus-wide energy consumption
- 100% compliance with NYC Local Laws 84, 87, and 88
- \$700,000 Operational Savings
- \$1.2 million Utility Incentives
- Con Edison Green Team Award for Excellence in Energy Management

GOALS

- **Advance Campus Decarbonization:** Align infrastructure upgrades with Columbia's aggressive greenhouse gas reduction targets.
- **Modernize Core Systems:** Future-proof the campus by replacing outdated plant infrastructure with high-efficiency, digitally integrated solutions.
- **Achieve Compliance Efficiently:** Satisfy Local Law requirements (84, 87, 88) without overburdening internal teams or disrupting academic operations.
- **Deliver Immediate Impact:** Prioritize upgrades that would generate near-term cost savings, energy reductions, and measurable performance gains.
- **Optimize Use of External Funding:** Pursue utility incentives and strategic financing to stretch capital dollars and improve project economics.

OPPORTUNITY

- **Aging Infrastructure:** The chiller plant, the University's single largest energy user, was equipped with outdated systems that limited operational efficiency and visibility.
- **High Energy Costs:** Inefficient equipment and controls contributed to excessive electricity consumption and inflated utility expenses.
- **Regulatory Pressure:** The University needed to comply with NYC Local Laws 84, 87, and 88, requiring benchmarking, audits, and system upgrades.
- **Climate Action Goals:** Columbia was committed to reducing greenhouse gas emissions in line with its ambitious decarbonization roadmap.
- **Capital Constraints:** The University sought to maximize return on investment while minimizing upfront project costs through available utility funding.

OUR APPROACH

Environ Energy leveraged its extensive experience to deliver a turnkey solution that modernized Columbia University's central chiller plant, optimizing energy efficiency and system performance:

Advanced Energy Management and Optimization: Environ implemented a state-of-the-art energy management system, including real-time monitoring and advanced analytics, to optimize the chiller plant's operations. By continuously adjusting system performance to align with real-time demand, the University was able to reduce energy consumption during peak hours while improving overall operational efficiency.

Regulatory Compliance and Data Reporting: Environ ensured Columbia University's compliance with NYC Local Laws 84, 87, and 88 by managing the entire energy benchmarking, audit, and reporting process. Our approach streamlined regulatory reporting, helping the University meet critical energy performance standards while advancing its sustainability objectives.

Financial Optimization and Incentive Strategy: Environ collaborated with Columbia University to strategically secure utility incentives, minimizing upfront costs and enhancing the project's financial efficiency. Our approach ensured the retrofit could be completed within budget, aligning with the University's financial goals while positioning them for long-term savings and sustainability.

RESULTS AND IMPACT

Energy and Cost Savings: The retrofit of Columbia's central chiller plant resulted in a significant 3.5 million kWh reduction in annual electricity use, generating \$700,000 in operational savings in the first year.

Regulatory Compliance and Sustainability Leadership: The project ensured full compliance with NYC Local Laws 84, 87, and 88, positioning Columbia as a leader in energy efficiency and sustainability within the higher education sector.

Financial Optimization: By securing \$1.2 million in utility incentives, Environ helped Columbia reduce upfront costs, enhancing the financial efficiency of the project and ensuring alignment with long-term budget goals.

Industry Recognition: The project was honored with the "Con Edison Green Team" award, underscoring the successful implementation of a cutting-edge energy solution.

Ongoing Partnership: Environ continues to support Columbia's sustainability initiatives, driving long-term energy efficiency and carbon reduction strategies.

STRATEGIC INITIATIVES FOR CONTINUED SUSTAINABILITY AND IMPACT

Looking forward, Environ continues to work closely with Columbia University to explore and implement additional energy-saving measures across its campus. These initiatives include advanced load management, further optimization of energy systems, and continued alignment with the University's long-term decarbonization goals. Environ's ongoing partnership ensures that Columbia remains at the forefront of sustainability, meeting evolving regulatory requirements and advancing its climate commitments.

This project exemplifies how strategic energy investments can drive operational efficiency, regulatory compliance, and sustainability goals, positioning Columbia for continued success in its energy management journey.

Environ redefined efficiency at Columbia University by orchestrating a large-scale central plant modernization and controls overhaul—driving deep energy reductions, cutting costs, and positioning the campus for long-term climate leadership.

Sector(s)	Institutional – University
Areas of Expertise	Energy and/or Decarbonization Analysis; Professional Services
Customer Goals & Identification Process	Environ was engaged to lead an energy team tasked with developing and implementing cost effective efficiency measures throughout Columbia University's portfolio buildings, including academic buildings, labs, and research centers.
Integration of Customer Goals Recommendations, Next Steps & Outcomes	<p>Environ worked with contractors to schedule construction work in a way which would not impact on the operation of the buildings.</p> <ul style="list-style-type: none"> • Several efficiency projects were evaluated. Projects which were implemented include residential electrification, oil to natural gas boiler conversions, and a state-of-the-art overhaul of the central chiller plant. • Environ supported green building design throughout the development of Columbia's Manhattanville campus. • Completed planning and budgeting for all applicable new Local Law compliance. This includes submitting benchmarking reports to the New York City DOB for Local Law 84, as well as overseeing development of specifications and overseeing competitive bidding to building energy auditors and lighting retrofit partners for compliance with Local Law 87 and Local Law 88.
Qualified Personnel	<ul style="list-style-type: none"> • Jennifer Kearney – Business Development; Sustainability Services; Procurement Michael Reinhold – Energy Modeling; Professional Services Christopher Recine – Business Development; Professional Services Christina McNellis – Sustainability Services Deborah Alabi – Energy Modeling; Incentive Application Development
Firm's Scope of Work	<ul style="list-style-type: none"> • Energy Procurement • Energy Analysis & Energy Modeling • GHG Emissions Accounting • Compliance
Customer Reference	<p>Name: Stephanie Carlisle Title: Assistant Vice President of Engineering and Energy Organization: Columbia University Facilities and Operations Phone Number: (212) 854-8048 Email: ss6732@columbia.edu</p>
Heat Pump Design Lessons (if applicable)	N/A