



Urban Innovations: Breaking Down Barriers to Energy Efficiency

A case study in energy optimization for Class B buildings

In 2014, six of Urban Innovations' buildings had ENERGY STAR Certification and one was LEED certified.

Urban Innovations in Chicago has discovered the return on investment from energy efficiency in Class B buildings. They've forged innovative paths to ENERGY STAR® certification in their portfolio, and, in 2014, by working with EDF Climate Corps, they found 990,000 kWh in annual electricity reductions, \$70,000 in annual cost-savings, \$72,000 in immediate rebates and over 846 metric tons in greenhouse gas reductions.

Summary

Like many Class B building owners, Urban Innovations was focused on serving their tenants and attracting new companies to their spaces. Often, energy efficiency and implementing sustainability into operations were seen as barriers to doing good business. But like many building operators, Urban Innovations got to the point where energy usage could not be ignored. By working on their own and with EDF Climate Corps, the team at Urban Innovations took a disparate portfolio of properties and turned them into a model of energy efficient Class B buildings. This is a tale of two of their downtown Chicago buildings.

About Urban Innovations Urban Innovations is a fully integrated real estate investment firm, which controls commercial properties covering 900,000 gross square feet of commercial space and land sites in Chicago's River North neighborhood with more than 180 tenants.

About Environmental Defense Fund (EDF), a leading international nonprofit organization, creates transformational solutions to the most serious environmental problems. EDF links science, economics, law and innovative private-sector partnerships.

About EDF Climate Corps Climate Corps is EDF's innovative summer fellowship program that places specially trained graduate students within organizations as dedicated energy problem solvers.

The City of Chicago has issued an ordinance that non-residential buildings greater than 50,000 square feet must benchmark and report energy use by June 1, 2015.

Since 2008, EDF Climate Corps has been placing top graduate students in buildings giving hands-on help to collect, analyze and act on energy usage data.



The Story

Urban Innovations had 11 Chicago buildings in their portfolio; all of which were at different points in their lifecycle. Some were ready for a complete re-commissioning; others were going through the normal cycles of maintenance. When Alfrieda Green, vice president of property management for Urban Innovations, thought about sustainability, she had some misperceptions: upfront costs, additional operations and maintenance work, and dubious return on investment. She had already done everything she could to run an efficient portfolio from a procurement standpoint; the next biggest area of opportunity was addressing energy usage.

But after Alfrieda attended a Building Owners and Managers Association (BOMA) conference in 2008, followed by some seminars and individual research, she could see the win-win scenario of energy efficiency. In fact, many of the practices adopted by Class A building owners were well within reach for Urban Innovations. It was clear that energy efficiency was a key catalyst to making Urban Innovations' buildings more competitive in the Chicago landscape.

Implementation

For Alfrieda, education broke down the myth that sustainability comes with a premium. She realized that by addressing energy management in her buildings, she could show operational and physical benefits. She began her journey by gathering and analyzing energy usage data. Alfrieda used the ENERGY STAR Portfolio Manager, an online service with no upfront costs, to benchmark performance at Urban Innovations' buildings. The effort spent collecting the data and filling out the tool was more than justified in the valuable information it surfaced.

Immediately Alfrieda could see which properties were over and under-performing. The results were startling. Older properties with no Building Automation Systems (BAS) were outperforming newer buildings running a BAS. Transparency into the energy use data ignited a need to uncover what was driving the varied results.

Alfrieda wasn't the only person with an eye on sustainability at Urban Innovations. Tony Lindsay is Urban Innovations' senior project manager in charge of new projects and construction. To him, sustainability was coming

to the forefront of the overall mindset of commercial real estate. While Alfrieda was the proponent of efficiency for competitiveness, Tony was spearheading the choices that Urban Innovations made for products, equipment and materials.

For Urban Innovations, there were multiple roads to ENERGY STAR certification. For example, there was the building at 222 West Hubbard. Built in 1905, this four-story property was being used for light industrial use. When the major tenant moved out, the Urban Innovations team decided to do a complete redevelopment of the space. They removed almost every system and redesigned the building for office space. In the redevelopment, they created a means of shifting controllability of energy use to the tenants. They did this by designing smaller systems to serve each space, instead of

having one large system. Also, every space was given its own air-handler and rooftop unit.

From a competitive perspective, once word got out about the work Urban Innovations was doing on 222 West Hubbard, the space immediately leased up.

For the building at 325 West Huron, the path to energy efficiency came from strategic choices made during regular maintenance and equipment turnover. Here was an ENERGY STAR certified building with a steam boiler that was over 100-years old! The giant steam boiler, which usually would be a red flag, wasn't even on the radar for replacement. Through regular maintenance, Jason Szczur, Urban Innovations' chief engineer, made the boiler an energy efficiency asset rather than a barrier. By putting in new igniters, tubes, heating elements, and insulation, he improved the overall energy efficiency of the building.



Urban Innovations has stayed on top of maintenance and repairs at 325 West Huron throughout the years, the team has improved the efficiency of the cooling tower on the roof, and regularly replaces the heat pumps in each of the tenant spaces. Also, new modulating control valves were put on all the tenant steam radiators – an \$80 valve that impacts the overall bottom line by modulating to the room temperature and optimizing energy use.

Results

Of Urban Innovations' eleven properties in Chicago, six are ENERGY STAR certified and four are within close reach. The Urban Innovations portfolio also scores 27% better than the ENERGY STAR national median source energy use intensity (EUI), meaning that their sites require nearly 30% less total energy to operate than the national average for buildings of similar size, age, and construction.

Source Energy Use Intensity (EUI) is a unit of measurement that describes a building's energy use relative to its size. "Source energy" is the total amount of raw fuel that is required to operate the building. In addition to what the building consumes on-site, source energy includes losses that take place during generation, transmission, and distribution of the energy, thereby enabling a complete assessment of energy consumption resulting from building operations. For this reason, Source EUI is the best way to quantify the energy performance of commercial buildings. Use it to understand the complete energy impact of your property, and to compare the energy performance of properties across your portfolio.

Since they began benchmarking energy use in 2008, Urban Innovations total energy use has expectedly increased due to a successful upsurge in tenant occupancy across the portfolio. With the efficiencies currently in place, Urban Innovations is



well positioned to continue their business growth while decreasing their energy costs.

In 2014, Urban Innovations partnered with Environmental Defense Fund's Climate Corps program. Urban Innovations needed expert help to improve their processes and embed energy efficiency into their standard operations.

EDF recruited and trained a graduate student to work at Urban Innovations to analyze energy data and find cost savings. Urban Innovations' EDF Climate Corps fellow, Michael Perry, worked closely with Tony and Jason to identify the most energy efficient opportunities for new equipment as well as replacement parts and equipment, making the business case for long-term energy savings.

Michael also developed an Excel-based tool that identified applicable rebate information and calculated cost-savings from upgrading to more energy efficient systems and equipment. Through the use of this tool, Urban Innovations identified annual reductions of over 990,000 kilowatt hours in electricity usage, over \$70,000 in annual cost-savings, over \$72,000 in immediate rebates, and over 846 metric tons in greenhouse gas reductions. As a hands-on resource, Michael helped Urban Innovations navigate through demand response markets and drive organizational sustainability efforts.

Moving Forward

In the future, Urban Innovations will continue partnering with EDF Climate Corps to use the capital planning tool on an annual basis to prompt them to look at the larger equipment units and choose the most efficient, cost-effective replacements, making better front-end decisions for long-term performance.

Urban Innovations also looks to continue working with tenants and vendors to educate them on energy efficiency. By focusing on better communications of the benefits of energy efficiency, they will create scalable best practices across their portfolio.

But overall, for Urban Innovations, the next big opportunity is to continue building their expertise in energy management. Now that they have broken down their misconceptions of energy efficiency in Class B buildings, there are even more benefits to be found. Buildings will always need renovations, and equipment will always need maintenance. Urban Innovations has taken their data and turned it into bottom line and environmental wins; they have learned from their success and will continue making their portfolio more competitive through energy innovations.

Energy Efficiency Resources

EDF Climate Corps – Trained, hands-on help from the Environmental Defense Fund. www.EDFClimateCorps.org

City of Chicago – Resources to meet the city's benchmarking ordinance. www.CityofChicago.org/EnergyBenchmarking

Retrofit Chicago – Information on Mayor Emanuel's commercial buildings initiative. <http://retrofitchicagocbi.org/>

Better Buildings Initiative – Information from the Department of Energy (DOE). <http://energy.gov/better-buildings>

Energy Star Portfolio Manager – EPA's no cost online tool to benchmark energy use. <http://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/use-portfolio-manager/new-energy-star-portfolio-manager>