

Energy Star Shines in Boston's Back Bay



Even though this building was one of the first in the country to receive an Energy Star Label, its operating team won't stop there. In fact, the building still uses approximately the same amount of energy it did almost eight years ago — in spite of a nearly 40% increase in occupancy.

Two Twenty Two Berkeley

Developing programs to address environmental concerns is nothing new for Hines, the international real estate development firm. Long known for its commitment to creating energy-efficient office buildings, the firm has been conducting regular surveys since the 1980s to assess and compare each of its property's ability to meet clearly defined standards for energy utilization.

In 1998 we added another component to our ongoing Energy Standards programs by joining the U.S. Environmental Protection Agency's (EPA's) Energy Star program.

One of our properties — One State Street in Hartford, CT — was the first commercial building in the country to earn the Energy Star Building designation. Hines has since become an Energy Star partner in the Commercial Real Estate sector and has embarked on a program of benchmarking throughout the company.

We currently have 24 properties that have earned the Energy Star Building Label, including Two Twenty Two Berkeley (located at Boston's Back Bay) and its sister project 500 Boylston. Our goal is to have all 103 of our properties benchmarked by the end of this year.

BY JAMES R. GREEN

This commitment has made Hines one of the program's most active participants. At recent count, there was 44 million square feet of commercial space in the U.S. with the Energy Star Building designation — Hines owns and manages approximately 17 million sq.ft. of that space.

A Baseline For Improved Efficiency

When the features of the Energy Star program and benchmarking tool (see sidebar) are combined with quality construction and a knowledgeable operating staff, as is the case at Two Twenty Two Berkeley, the results may be even better than expected.

Two Twenty Two Berkeley received its Energy Star Building Label on June 9, 1999, becoming one of the first 20 in the U.S. and the first in Boston to receive the designation. Rather than stopping there, however, the building's engineering staff is using the program as the basis for developing an energy management program designed to achieve the best possible performance from the building.

More Energy Saving Strategies

The local utility recently got involved to help the Hines operating team improve its benchmark score. Together we evaluated a number of energy-efficient changes to the building and the utility provided incentives to implement the improvements. This included installing variable frequency drives on 40 air handling units and approximately 1,800 wall-mounted light control motion sensors throughout the building, resulting in annual energy savings of around 2 kBtu/ft².

In the past, our policy was that house-keeping supervisors were required to make sure all the lights were out before leaving the floor in the evening. Through our energy audit we found that when workers stayed late, most, if not the entire floor, would stay lighted. Any savings realized by this policy were all off-peak. Since we installed the sensors, from 15-20% of the controlled lights will be off at any given time, which lessens the energy needed to produce light and also reduces the cooling load.

Because of these and other actions, the team has been able to “hold the line” on gross energy use and meet a growing tenant need for services. The building uses approximately

the same total amount of energy today as it did almost eight years ago, in spite of a nearly 40% increase in building population.

A Good Foundation

Two Twenty Two Berkeley’s energy efficiency scores are also a product of good design and quality construction. Thermally efficient glazing, a state-of-the-art direct digital control (DDC) energy management control system (EMCS), and a central cooling plant with efficient centrifugal refrigeration equipment were part of the initial design. In the off-peak “shoulder” months of late September to May, two 1,000-ton plate/frame heat exchangers are able to satisfy the cooling load requirements without spinning any of the four centrifugal chillers. These chillers supply 3,285 tons of mechanical cooling while the exchangers essentially provide the building with “free cooling.”

A curtainwall insulation system also helped drive energy consumption down. During installation, we worked closely with the installers to help them understand the importance of the role they played. We explained how the extra effort they put into the job upfront would have a substantial impact on the building’s performance later on.

The Benefits of Powerful Benchmarking Tools

When we were first introduced to the Energy Star Program and its benchmarking tool, we quickly recognized it as an excellent metric to help accomplish many of the goals set forth in our Energy Standards.

The power of the benchmarking tools rests within the vast database developed by the U.S. Department of Energy’s (DOE’s) Energy Information Agency Commercial Buildings Energy Consumption Survey (CBECS), which compares 4,000 buildings nationwide.

This is by far the most comprehensive set of criteria available to compare the energy profiles of our buildings. It offers an unsurpassed way to measure and compare similar properties. And it’s easy to use.

Using the current version of the tool, I can track multiple properties and help others within the organization benchmark their own properties. When specific data is needed, such as building population or the number of PCs in use, we can apply the software’s rule of thumb allowances. We opted to do more research and come up with firm numbers — some of which turned out to be considerably greater than we would have estimated — with a surprising impact on the overall benchmark score.

The benefits of the benchmarking tool and its companion application, QuikScope, go far beyond measuring and comparing properties. The tools can also be used to evaluate proposed changes to building systems, operating processes, and procedures. And they are especially helpful when it becomes necessary to approach tenants and decision makers with the costs to install energy upgrades to the building.

The tools allow us to demonstrate clearly how short-term investments in energy initiatives will yield long-term savings in operating expenses. Using them, we’re able to quantify the savings and the effectiveness of any changes we make.

Greg Brown, our vice president of operations, stresses that tenants are becoming increasingly aware of the value of energy efficiency to their bottom line. “The Energy Star Building Label makes a clear statement about the property’s ability to deliver value. It’s starting to show up on more and more requests for proposals. As more owners become aware of it, the Energy Star designation will become a competitive advantage.”



The Hines Boston Operations Team — Two Twenty Two Berkeley. Top row, from l to r: Jim Green, Robert Everett, Kevin Flaherty, Michael Hutchinson, Andy Maguire. Bottom row, from l to r: Manny Botelho, Chuck Lambert, Paul Liburdi, John Dillon.



A shot taken in the central plant serving the building.

Later, this effort paid off. A member of the insulating crew was able to observe imperfections revealed by the temperature difference after infrared scans were taken on the curtainwall. The few gaps and voids were pinpointed and repaired quickly.

A Focused Operations Team

In the end, the building operators are most responsible for maintaining the property at the highest level of energy performance. They control systems that can impact energy consumption by as much as 20%. Operators continuously monitor and analyze the building's comprehensive EMCS, noting variances in energy consumption and taking prompt corrective action when building electric demands approach preset alarm limits. Such manual interventions allow them to see first-hand the effect their actions have on energy performance and help to ensure that the building's energy goals remain a priority.

The Hines Operations team is also responsible for developing operating standards and making sure they are followed. With Energy Star and the benchmarking tool, the team now has a better understanding of how energy is utilized. It's allowed our staff to manage more efficiently and maximize use of the physical asset. Because of the improved efficiencies in base building and tenant systems, we've been able to maintain energy capacities as tenant needs grew without upgrading or increasing the size of existing infrastructures.


The Future

EPA's Stuart Brodsky, program manager for the commercial real estate sector of Energy Star, predicts that the Energy Star Label will be as ubiquitous as the fuel efficiency rating on automobiles.

"The brokerage community will use the statement of energy that is generated by the benchmarking tool to help tenants forecast occupancy costs," says Brodsky. "Building buyers and sellers will make investment decisions based on energy efficiency ratings. Brokerage companies and listing services will use the Energy Star Label as a marketing tool, differentiating high performance properties.

"When a significant real estate industry player like Hines makes such a strong commitment to Energy Star, it shows how valuable the program is. The fact that Hines is among the industry leaders that are benchmarking their buildings indicates the strong link between energy performance and asset value."

Meanwhile, the search for ways to improve the energy picture in commercial real estate continues. Progress in lighting, controls, and the recent advances in energy-efficient plasma displays for PCs hold much promise. The potential impact of such changes could rival any that have been seen in the last 10 years. But that's the future.

For now, we continue to look for ways to use energy more efficiently every day. Having Energy Star as part of a well-defined energy standard is a great place to start. 

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