



Empire State Building FACT SHEET

SUMMARY

- The Empire State Building sustainability initiative is an innovative collaboration to develop a new approach to bringing large-scale energy efficiency retrofits to existing buildings.
- It is a multi-year effort to demonstrate that a commercially-attractive retrofit and operations program can lead to significant energy savings and greenhouse gas emissions reductions – and can serve as a leading example to other buildings around the world.
- The initial \$20 million project will result in the Empire State Building reducing energy use by up to 38 percent and energy costs by \$4.4 million annually, and reducing carbon dioxide emissions by 105,000 metric tons over the next 15 years, with much of the project funded through energy and operational savings.
- The project team's five key players have collaborated to develop an economically viable combination of innovative approaches to infrastructure projects, design standards, tenant energy management, property management, and leasing and marketing initiatives that will be a leading example for the industry.

PROJECT TEAM

This effort involves a coalition of leading organizations focused on sustainability. Johnson Controls, Inc., Jones Lang LaSalle and Rocky Mountain Institute, have been brought together through the convening power and advisory support of the Clinton Climate Initiative, under the leadership of the Empire State Building Company LLC.

- Johnson Controls, Inc. – Energy Services Company
- Jones Lang LaSalle – Program Manager
- Rocky Mountain Institute – Energy Efficiency Expert
- Clinton Climate Initiative – Catalyst for Climate Change Action
- Empire State Building Company LLC – Owner

PROJECT PROCESS

- During an eight-month design phase, the team rigorously considered more than 60 ideas from multiple sources that would provide the optimal balance of financial and environmental return on investment. Preparation included:
 - Building systems examinations
 - Staff operational reviews
 - Electric and gas utility measurements
 - Project scope and budget analysis
 - Documentation of processes
- Following the initial design phase, a detailed three-month budget and scope review with the owner resulted in the final program approval for implementation.
- The Empire State Building team ultimately identified eight economically viable projects, such as building-wide renovations, electrical and ventilation system upgrades and tenant space overhauls that will provide a significant return on investment, both environmentally and financially.
- The project is underway, with most activity completed in the next two years.
- The full analysis process is available online as open-source materials for public use at esbsustainability.com.



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PROJECT HIGHLIGHTS

A number of strategies are being employed, including:

- **Addressing specific infrastructure needs**, including utility costs, air quality and future planning.
- **Addressing tenant issues**, including energy use and individual space design.
- **Including cutting edge technologies**, including building windows, automated monitoring and controls systems, and high efficiency cooling equipment.
- **Providing reasonable investment**, including an incremental cost of \$13.2 million beyond what must be spent for required infrastructure upgrades.
- **Saving energy costs**, totaling \$4.4 million in annual energy costs, which is equivalent to a 38 percent energy reduction (excluding broadcasting). Payback based on incremental cost is 3.1 years.
- **Providing active team engagement**, including an energy services company (ESCO), the building owner and building tenants to achieve goals.

PROJECT INNOVATIONS

- **Tackling a retrofit using the “right steps in the right order” for whole-systems optimization.** The project reduces energy demand through addressing the building envelope (via the window and radiator projects) and through tenant energy use (via tenant space design and energy management), as opposed to simply just focusing on traditional heating, ventilating, and air conditioning (HVAC) equipment replacements.
- **Creating a diverse team that has challenged each other technically and operationally.** After rigorously debating analysis approaches and project priorities, then vetting conclusions and outcomes, the team used industry standard sustainability ratings and created new tools to develop a better review than any one existing approach alone.
- **Delivering guaranteed energy savings.** Through a performance contract, we have opened the opportunity to secure third party energy efficiency financing.

- **Designing a model pre-built office suite** as a physical example of an integrated sustainability program that bridges base building and tenant space improvements.

PROJECT OUTCOMES

- Dramatically reduce energy use and the resulting greenhouse gas emissions
- Demonstrate savings and results in a transparent and verifiable way
- Improve tenant comfort and reduce tenant energy use through improved design and energy awareness
- Improve the building's marketability
- Provide replicability, resulting in an increase in multi-tenant building retrofits

ENERGY FACTS

- Building Gross Square Footage = 2,575,565 sq. ft.
- Current Building Energy Cost (excluding broadcasting) = \$11.4 million (\$4.42/sq. ft.)
- Current Building Annual Energy Use = 84 kBtu/sq. ft./yr (includes electricity & steam)
- Current Building Peak kW = 9,949 kW (3.86 W/sq. ft.); typically occurs in July or August
- Current Building Peak Cooling = 4,770 tons (540 sq. ft./ton); typically occurs in July or August

SUSTAINABILITY EXHIBIT

- The Empire State Building sustainability exhibit opened on Monday, July 26, 2010 and showcases the work of the award-winning retrofit project that is currently underway.
- Designed by Hornall Anderson, the \$2 million exhibit is an interactive, multi-media experience that aims to educate the millions of people who visit the building every year. The exhibit highlights the positive global impact of both energy efficient building and sustainable living practices, and is located on the second floor Visitor's Center. It is open seven days a week from 8 a.m. to 2 a.m.



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