Empire State Building

New York City, NY

Energy-efficiency innovators and a forward-thinking building owner infused New York City's skyline centerpiece with energy efficiency and generated $4.4 million in annual energy cost savings.

The Empire State Building is undergoing a building-wide energy-efficiency retrofit launched by building owner Empire State Building Company that proves the business case for intelligent reinvestment and repurposing of existing commercial properties. The replicable program has been assisted by NYSERDA funding and expertise, creating an energy-efficiency model for the building that quantifies costs, savings and benefits. When complete in 2013, the retrofit project will reduce energy use at the 2.8-million-square-foot property by more than 38 percent.

The metamorphosis of the 80-year-old landmark into a beacon for sustainability began with a team of experts, including the Clinton Climate Initiative, Johnson Controls, Inc., Jones Lang La Salle, and Rocky Mountain Institute, that created process innovations and applications of proven technologies, which together generate savings for the 1,250-foot-tall building that will be monitored and verified. NYSERDA was a member of the team, bringing expertise and over $1 million of funding to the table.

> ***"NYSERDA is right at the intersection of costs and benefits, playing a key leadership and enabling role in making existing buildings the most energy-efficient buildings in New York."***
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> *-Anthony E. Malkin*
> *Empire State Building Company*

The strategy produces a three-year return on investment in new technology, including:

- Direct digital controls (DDC)
- Tenant lighting, daylights, and plugs
- Variable air volume (VAV) air-handling units (AHUs)
- Retrofit chiller plant
- Retrofit of windows reusing 96 percent of original frames and glass
- Tenant energy management program
- Radiative barrier
- Tenant demand control ventilation (DCV)

"These changes will cut our carbon footprint by an amount equivalent to taking 20,000 cars off the road," said Anthony E. Malkin, owner of Empire State Building Company. Retrofits typically reduce energy consumption by 10–20 percent, but the team's approach nearly doubled the savings, reducing 105,000 metric tons of carbon dioxide over the next 15 years, lowering cooling load requirements by 1,600 tons and dropping peak electrical demand by 3.5 MW.

The retrofit will significantly reduce the Empire State Building's carbon footprint and energy costs—and boost indoor environmental quality through tenant demand-controlled ventilation, more efficient windows and coordinated ambient and task lighting.

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