

Empire Building Challenge

Low Carbon Retrofit Project Summary



EMPIRE STATE
REALTY TRUST



Empire Building Challenge
PARTNER
Reimagining Low-carbon Buildings

Empire State Building

350 Fifth Avenue,
New York City

- 2,850,000 square feet
- 102 stories
- Built in 1931
- Mix of tech, media, and other tenants
- 2020 Building Energy Grade: B
- 2019 EUI = 80.6
- Façade: steel frame with limestone clad
- Heating: district steam to two-pipe steam radiators
- Cooling: electric and district steam chillers

\$5 MILLION
NYSERDA investment

\$40+ MILLION PLAN
leveraged to bring
Empire State Building
to carbon neutrality
by 2030

10 MILLION SQ.FT.
ESRT portfolio will be
seeded for retrofit
project planning



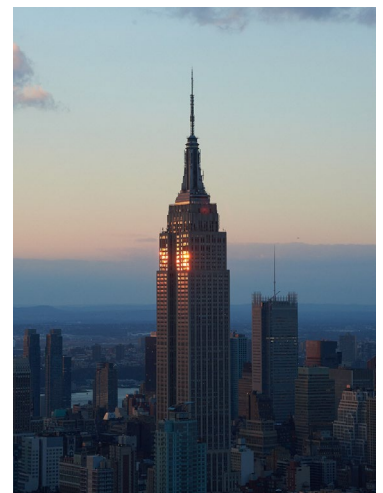
New York City icon reaches for carbon neutrality

Empire State Realty Trust (ESRT) owns and manages more than 10 million square feet in the metro New York region, including the iconic Empire State Building. After a widely replicated deep-energy retrofit initiated in 2009, ESRT has further collaborated with NYSERDA to develop “ESB 2.0,” the twenty-first century update to bring the Empire State Building to carbon neutrality and demonstrate how New York City high-rise office buildings can meet ambitious New York State and New York City climate targets.

The Empire Building Challenge funded work, which includes pilots on several floors in partnership with tenants, will electrify certain space conditioning loads and recover waste heat that is currently exhausted. NYSERDA’s investment will support pilots for several key projects with the intention to replicate successful solutions throughout the Empire State Building as well as the rest of the ESRT portfolio.

“The Empire State Building is as innovative today as it was the day it was built and serves as the international beacon of the possibilities within the built environment to prove the business case to reduce carbon emissions. This important partnership between New York State and commercial real estate leaders creates local jobs, drives technological innovation, improves our communities, and stands as an example for climate-friendly retrofits.”

– Tony Malkin, Chairman, President, and
CEO, Empire State Realty Trust



NEW YORK
STATE OF
OPPORTUNITY.

NYSERDA

PROJECT TEAM:

- Empire State Realty Trust
- Buro Happold Engineers
- EQuest Energy Group
- Stephen Doig
- Reos Partners
- Johnson Controls
- Skanska
- Luthin Associates/5

LOW CARBON RETROFIT MEASURES INCLUDE:

- District steam optimization through load reduction and heat recovery
- Partial district steam phaseout with new hot water riser
- Retail loop condenser heat recovery with water-source heat pumps
- Energy recovery ventilators
- Air and water source heat pumps for partial electrification and heat recovery

The team analyzed more than 200 energy conservation measures. ESRT will now prioritize optimization of existing systems and maximization of energy recovery to minimize steam consumption and reduce or eliminate simultaneous heating and cooling.

A phased approach that strategically deploys energy conservation measures over the next 15 years can deliver an additional 14.5% reduction in annual building CO₂ emissions, with a simple payback of 6.8 years.

The Empire Building Challenge

The Empire Building Challenge is a \$50 million investment by New York State to demonstrate different pathways for achieving carbon neutrality in tall buildings.

Through the establishment of a private-public partnership with leading real estate owners and their engineering experts, exciting approaches to cold-climate decarbonization are being tested in the New York market. With the potential to replicate these solutions across the 130 million square feet of real estate controlled by the first cohort of Empire Building Challenge partners and beyond, the impact of each project will accelerate New York's progress toward the Climate Leadership and Community Protection Act's (Climate Act) goal of reducing greenhouse gas emissions 85% by 2050.

Join the challenge

Visit nyserdera.ny.gov/EBC or email ebc@nyserdera.ny.gov for additional details on the Empire Building Challenge and to learn how to partner with NYSERDA, reduce carbon emissions, and get involved in the clean energy economy.

¹ Recovery through Retrofits, www.urbangreencouncil.org/content/news/recovery-through-retrofits