



Program Summary

Keep the Outside Out

Program Brief

On June 14, 2022, NYSERDA and BE-Ex hosted the third event of their [High Rise / Low Carbon Series](#), focusing on recent innovations in delivering high-performance envelope retrofits, and the strategies used by Empire Building Challenge Partners to maintain high-quality indoor environments while radically lowering heating and cooling demand.

The Empire Building Challenge (EBC) is a \$50 million NYSERDA program that accelerates the decarbonization of tall buildings through public-private partnerships to bring scalable carbon-neutral retrofit approaches to the New York market.

The High Rise / Low Carbon Series highlights NYSERDA's EBC and the commitments of the Challenge Partners. The series is designed to inspire action among New York's building industry stakeholders and invite the world's top solution providers to join New York on its journey towards a low-carbon future.

Program Highlights

Whitney Young Manor • EBC real estate partner Omni New York opted for major envelope upgrades as part of their retrofit of this occupied 105-unit, two-building affordable housing complex in Yonkers, New York. Exterior insulation and finish system (EIFS), alongside new UPVC casement window replacements and roof upgrades, lay the groundwork for an overhaul of the existing 1970s electrical resistance heating systems and window ACs. Building wall R-value is modeled to increase from 8 to 23.5, with the roof increasing from 23-33.5, dramatically increasing insulative capacity and improving HVAC system efficiency. With this downsized demand, a centralized air-source heat pump system will provide heating, cooling, and domestic hot water, while an energy recovery ventilation system ensures improved indoor air quality.

The Heritage • L+M Development Partners targets comprehensive envelope improvements at this three-building mixed-income, mixed-use development bordering Central Park. Typical of 1970s construction, these poor performing buildings have leaky envelopes, little-to-no remaining insulation, baseboard electric resistance heating, and window and wall ACs. EIFS will be applied to two towers, while the midrise will use a combination of prefabricated wall panels, EIFS, and upgraded high-performance windows, significantly increasing the façade's R-value. With envelope upgrades nearing Passive House-level performance, packaged terminal heat pumps will effectively meet downsized heating and cooling demand while significantly reducing electricity use. Like Whitney Young Manor, The Heritage will receive an energy recovery ventilation system to compliment the tight envelope, improving resident comfort and health.

Program Takeaways

Panel

Abdulla Darrat
President
Renewal Construction Services LLC

Laura Humphrey
Director of Sustainability
L+M Development Partners

Aurimas Sabulis
CEO
Dextall

Erin Fisher
Director of Engineering Services
CANY

John Ivanoff
Associate Principal
Buro Happold

Moderator

Todd Kimmel
Regional Specifications Manager
ROCKWOOL North America

Opening Remarks

James Geppner
Senior Project Manager, RetrofitNY
NYSERDA

Envelope upgrades are a keystone element of a successful retrofit, enabling improvements to other core building systems.

Increased façade performance allows for downsized, efficient heating and cooling equipment (e.g., the elimination of perimeter heating units) and highly controlled ventilation systems.

Envelope retrofits are a once-in-a-generation investment opportunity for developers.

An extensive envelope upgrade can increase durability and prevent frequent FISP (Façade Inspection Safety Program) maintenance work. Façade and window improvements can have a significant impact on occupant comfort, aesthetics, and marketability. Increased performance reduces energy costs and insulates owners from future energy price increases. Energy recovery ventilation, enabled by envelope upgrades, ensures healthful and comfortable spaces for occupants.

A well-rounded and collaborative team is critical—

from structural engineers and architects to contractors and solutions providers— to ensure construction efficiency and tenant satisfaction, improved energy performance, and improved aesthetics.

Construction efficiency is essential to successful envelope retrofits, particularly for occupied buildings.

Early collaboration with contractors leads to a thoughtful and tight construction schedule that meets project requirements (e.g., limiting interior access or prioritizing time of day). Prefabricated panelized systems significantly reduce on-site construction times and reduce tenant disruption.

Tenant buy-in is of the utmost importance for envelope retrofits of occupied buildings—particularly residential.

Consider dedicating staff to act as tenant liaisons, communicating construction schedules and managing expectations. Design projects to meet the specific occupant demands (e.g., using solutions that minimize interior access).

Envelope retrofit solutions providers, manufacturers, and distributors will be essential players in New York's retrofit market over the next decade.

Demand for innovative and scalable solutions will continue to rise in response to policy demands. The wide range of building typologies in New York necessitates a diverse set of solutions and technologies.

Additional Topics for Future Consideration:

- Energiesprong program and impact on NY market
- Empire Building Challenge partner cost and performance data
- Incentive programs for envelope upgrades
- Phased envelope retrofit approaches
- Retrofit upgrades of historic buildings