

**High-Performance Building / Deep Energy Retrofit Training – Training Outline**

Proposed Timeline – 4 hours

Location – Building Energy Exchange

**Objective 1 – Define a high-performance building / deep energy retrofit**

*(Time: ~30 minutes)*

- a) City sustainability goals
  - 80 X 50
  - 1.5C Plan and Mayor's Executive Order 26
  - Intro – 1253-2018 (GHG Buildings Mandate)
  - Progress toward goals for municipal buildings
- b) The need for deep energy retrofits
  - Why solar PV, new buildings, and minor upgrades aren't enough
  - Defining low-energy buildings: EUI goals by typology (reference Local Law 31 / CBECS average EUIs)
  - Defining deep energy retrofits: Tie to DCAS Deep Energy Retrofit Guidelines, at least 50% source reduction
  - How DCAS screens for DERs (Benchmarking/EUI reporting, planned capital work, etc.)
- b) Overall characteristics
  - Internal load reduction through lighting and equipment performance
  - External load reduction through envelope performance
  - High efficiency HVAC with balanced, right sized ventilation
  - High-performance operation and load management

**Objective 2 – Demonstrate the benefits of a high-performance building / deep energy retrofit**

*(Time: ~30 minutes)*

- a) Energy savings
- b) Occupant comfort
- c) Good long-term investment – reduced damaged from moisture, air movement, etc.
- d) Healthy, filtered indoor air
- e) Reduced outdoor noise
- f) Reduced pest migration
- g) Reduced O&M with smaller, less complicated HVAC

**15 Minute Break**

Objective 3 – Principles of high-performance buildings

*(Time: ~75 minutes)*

- a) Principles of internal load reduction
- b) Principles of external load reduction
  - a. High performance glazing
  - b. Air sealing
  - c. Optimized insulation
  - d. Reduced thermal bridging
- c) Principles of high-performance building systems
  - a. Balanced, right-sized DOAS with HRV/ERV
  - b. High efficiency heating, cooling, humidity control
- d) Principles of high-performance building operation & maintenance

15 Minute Break

Objective 4 – Applying learned principles to city buildings

*(Time: ~75 minutes)*

- a) Definition of key city building typologies
  - a. Will be determined by agencies in attendance
- b) Targeted improvements / ECMs for key agencies and / or typologies
  - a. Touch on staged implementation of ECMs, tie to Enerphit certification process
- c) Reference existing studies and Passive House high rises
  - a. 57<sup>th</sup> Street Garage DER Level III audit
  - b. DOE school DER Level III audits
  - c. FDNY window replacements
  - d. DDC / DCAS / SWA LL31/32 studies
  - e. NYC Retrofit Accelerator
- d) Implementation process and mechanisms for NYC municipal buildings
  - a. Climate Action Planning Tool
  - b. Deep Energy Retrofits
  - c. ACE and ExCEL programs
  - d. Incremental funding

# deep energy retrofit training

June 18, 2019

**be**  
**ex**

---

building  
energy  
exchange

Energy

---

**NYC**

**DCAS**

Citywide Administrative  
Services

---

# deep energy retrofits

**AIA Course Number:** BEEEx105/2019

This course is available for 4.0 LUs

---

# course registration

BE-Ex is a Registered Provider with The American Institute of Architects Continuing Education Systems. Credit earned on completion of this program will be reported to **AIA CES** for AIA members. Certificates of Completion for non-AIA members are available on request.

This program is registered with **AIA CES** for continuing professional education. As such, it does not include content that may be deemed or construed to be an approval or endorsement by the AIA of any material of construction or any method or manner of handling, using, distributing, or dealing in any material or product. Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.



This four-hour training will teach attendees about building science and implementation practices that support the delivery of capital projects designed to cut energy use by 50% or more, otherwise known as Deep Energy Retrofit (DER) projects, and why DERs are needed to achieve NYC's climate action goals.

# learning objectives

## Learning Objectives:

At the end of this training, participants will be able to:

— Define key characteristics of high performance buildings and DERs.

— Explain the benefits of high performance buildings and DERs.

— Communicate NYC's sustainability goals and explain why deep energy retrofits are a critical part of the City's climate action plan.

— Apply the principles of high-performance buildings and DERs to capital projects for NYC municipal buildings.

