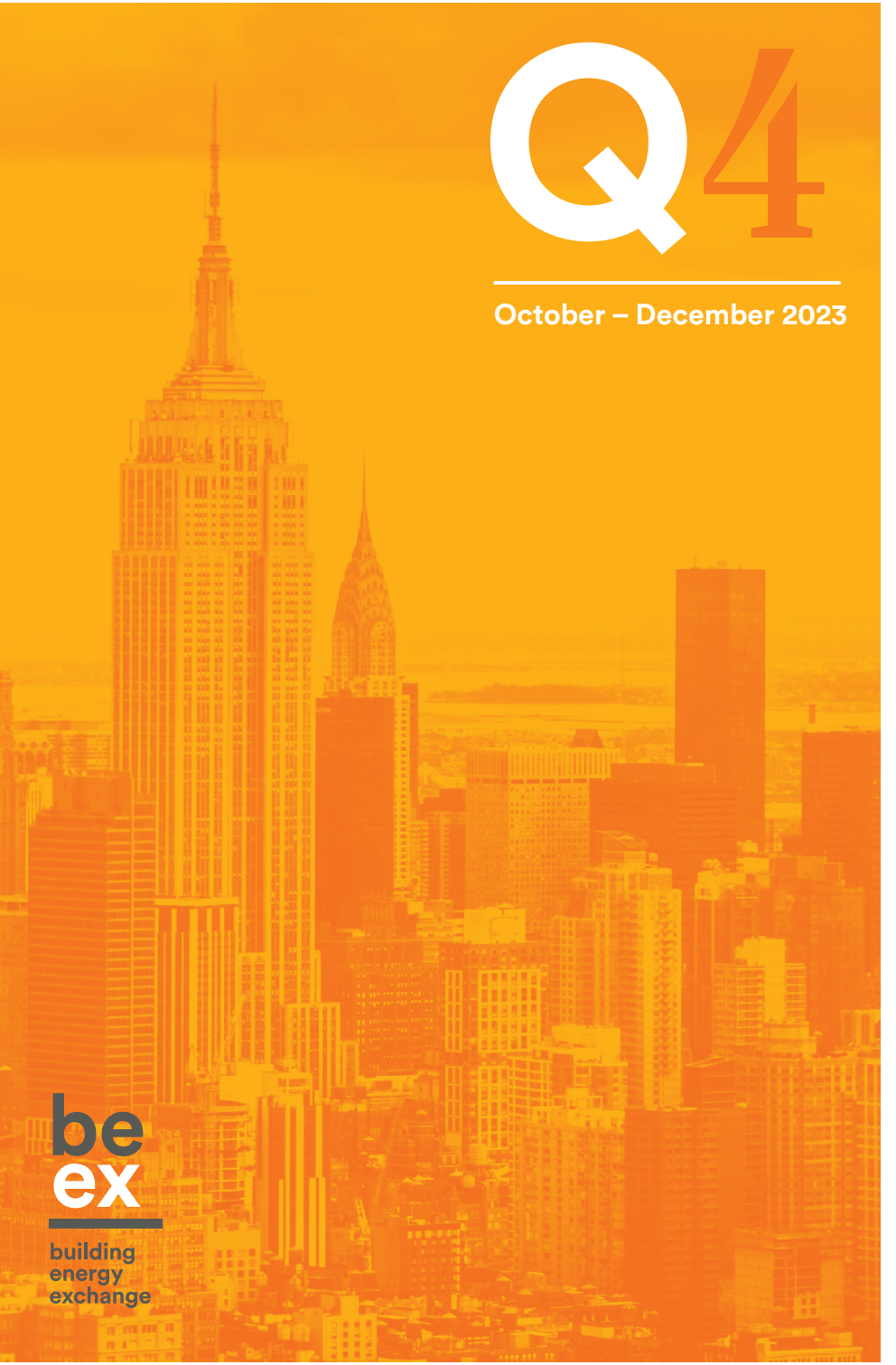


Q4

October – December 2023

be ex

building
energy
exchange

BE-Ex team

Richard Yancey
Executive Director

Katie Schwamb
Director, Educational Resources

Hailey Moll
Senior Associate, Educational Resources

Adrienne La Forte
Associate, Educational Resources

Paul Rivers
Associate, Operations

Kaylee McGowan
Associate, Education & Engagement

Chloe Kellner
Assistant, Education & Engagement

In the last quarter of 2023, we hosted a range of educational offerings and networking opportunities, ending the year with our annual holiday party.

recent programs

November 2, 2023

WISE: Networking Lunch

The Women in Sustainability & Energy group invited emerging and industry-transitioning professions to lunch with seasoned experts from our community. There were lively conversations with table leaders from government, academia, utilities, real estate, environmental justice, engineering, consulting, and architecture.

▶ https://be-exchange.org/wise-networking-lunch-3/

November 15, 2023

Take the Heat! Part 1: Geo & Wastewater

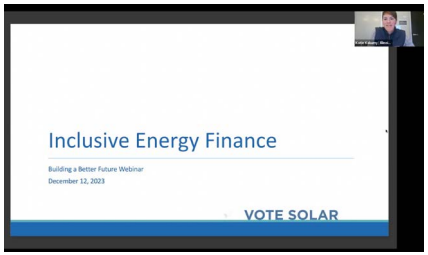
Developed as part of the Empire Building Challenge (EBC), this event was the first in a two-part building decarbonization series focusing on innovative heat recovery technologies. This first event showcased wastewater heat recovery and geothermal heat projects in New York City, and a panel discussion with two EBC partner teams uncovered how to apply these solutions to different building typologies.

▶ https://be-exchange.org/if-you-cant-take-the-heat/

December 12, 2023

Building a Better Future: Maximizing Finance Opportunities to Decarbonize Buildings

The Building Performance Partnership hosted their next event with a panel and live Q&A discussing ways to secure financing for building decarbonization projects, including leveraging the Inflation Reduction Act.



▶ https://be-exchange.org/building-a-better-future-maximizing-finance-opportunities-to-decarbonize-buildings/

insight:

Designing for Our Future: Climate Ready Buildings

by Adrienne La Forte
Associate, Educational Resources
&
Katie Schwamb
Director, Educational Resources

Climate risks, such as extreme weather events and other hazards, are increasing in both frequency and intensity, with projections worsening in the future. As these threats escalate, it's becoming clear that it is no longer practical to design buildings without resiliency as a primary focus. Industry codes, policies, and practices must evolve to incorporate "climate ready building" strategies that prioritize resiliency and performance in order to protect our built environment against future hazards.

A climate ready building is high-performance, low-carbon, and climate resilient. For buildings to be considered "climate ready," their design, construction, and operation must reduce energy use and greenhouse gas emissions while simultaneously mitigating and adapting to the various hazards presented by climate change. To reduce emissions, these buildings utilize robust envelop assemblies and extremely efficient – and often all-electric – equipment and appliances to reduce or eliminate reliance on fossil fuels. In terms of resiliency, climate ready buildings use forward-looking data and institutional knowledge to minimize effects of threats such as increasing precipitation, sea level rise, and extreme heat.

High performance and resilient design strategies often reinforce one another, creating co-benefits. For instance, an air-tight, highly-insulated building envelope – aka its foundation, walls, roof, windows, and doors – can reduce heating and cooling loads within a building which allows for smaller equipment to be specified. This same building envelope can ensure that inhabitants are thoroughly protected from extreme weather conditions and can maintain comfortable living conditions in the event of power outages. In combination, climate ready building design measures create a building that is "future-proof" – prepared to meet the challenges of a

climate-altered world without further exacerbating the climate crisis.

Prioritizing the development of climate ready buildings is imperative to ensure our buildings persevere in the face of an evolving climate landscape. Two industry drivers in particular can help make climate ready building strategies a standard industry practice:

- Forward-looking codes, policies, and standards
- Proactive project teams

First of all, city, state, and federal agencies can help shift industry practices toward climate ready building design by including high performance and resiliency requirements within building mandates or incentives. This might be a significant shift in some cases where policies lack explicit guidance on resiliency or base resiliency requirements on past data and metrics. For example, most codes and standards that regulate building design often reference historic weather data and patterns to determine potential threats to the building. However, with our ever-changing climate conditions, historic data does not accurately represent the anticipated frequency and intensity of future climate-related catastrophes. Requiring and incentivizing high-performance, low carbon, climate resilient building design that leverages forward-looking climate data to anticipate the future climate conditions are key steps to making climate ready buildings an industry standard.

In addition to progressive policies, forward-thinking project teams can be a significant force driving resilient and high-performance design. At the beginning stages of a project, stakeholders – such as the building design team – must evaluate current and future climate threats, establish performance goals, and incorporate design strategies based on the project's unique context. In other words, project teams must assess the anticipated climate risks applicable to their site, then proactively integrate design measures that protect against these risks. A critical strategy is utilizing the integrative design process to ensure that the risk-assessment and goal-setting efforts occur early in the design phase and include feedback as well as buy-in from the comprehensive project team. This helps ensure that the climate ready design strategies are integral to the design and won't be value engineered out as the project moves through the design phase and into construction.

How do we ensure that the industry takes the crucial steps towards developing climate ready buildings that meet our needs? At the government level, we must implement policies, laws, and codes that drive forward-looking resilient design. At the industry level, stakeholders – including but not limited to architects, engineers, contractors, and developers – must proactively assess climate threats impacting their project sites, establish building performance goals, and comprehensively integrate key design strategies based on each project's unique set of conditions. Practitioners must be provided with tools and trainings to support this climate ready way of designing, constructing, and operating buildings. After all, resiliency in the built environment not only means adapting to and protecting against climate hazards, but also being sustainable enough to avoid contributing to the problem. ■

Climate ready building design measures create a building that is "future proof" - prepared to meet the challenges of a climate-altered world.

▶ https://be-exchange.org/insight/designing-for-our-future/

programs

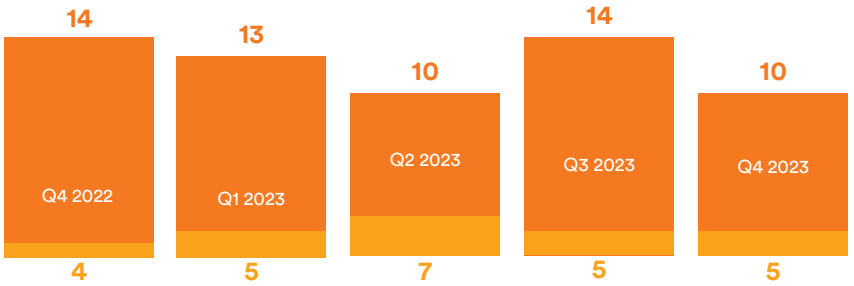
BE-Ex delivered impactful programming and networking events to end a successful year. The Building Performance Partnership continued its series, Building a Better Future, with a virtual event of over 100 participants. BE-Ex was pleased to host events for our partners, including Con Edison, the Mayor's Office of Climate and Environmental Justice, and NESEA.

BE-Ex developed events

Q4 2022 – Q4 2023 events saw a range of lively in-person panel events, trainings, and networking opportunities.

events in 2023 **69**

attendees in 2023 **2,656**



BE-Ex hosted events

diversity goals

1.
No all male panels
Q4: 0 all male panels

2.
50% female speakers across BE-Ex panel events
Q4: 58% non-male speakers

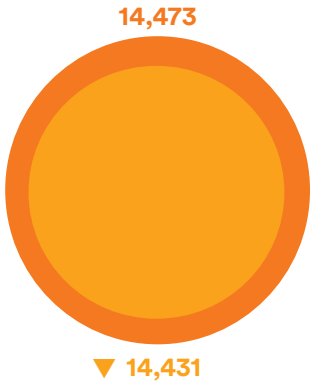
45
average number of days on calendar, BE-Ex events

59
average attendance, BE-Ex events

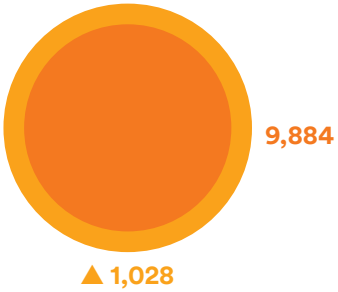
audience

We've seen growth and increased engagement in our audience this year. Our social media audience has grown 15% in the last 12 months and our website has seen an increased usage of 27%.

newsletter subscribers



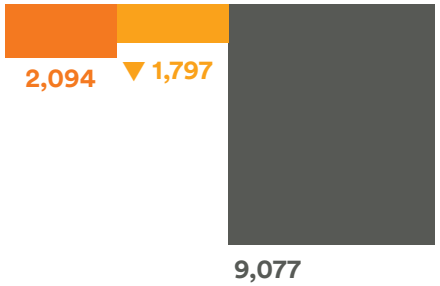
social media followers



Q3 2023 Q4 2023 2023 total

total radio be-ex listeners in 2023 **904**

resource downloads

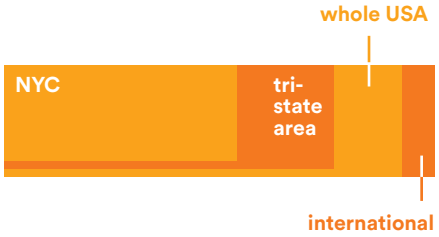


website traffic

website sessions in Q4 2023 **32,135**

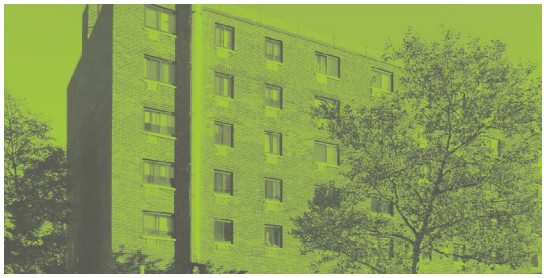
total website sessions in 2023 **106,482**

program audience geographic distribution



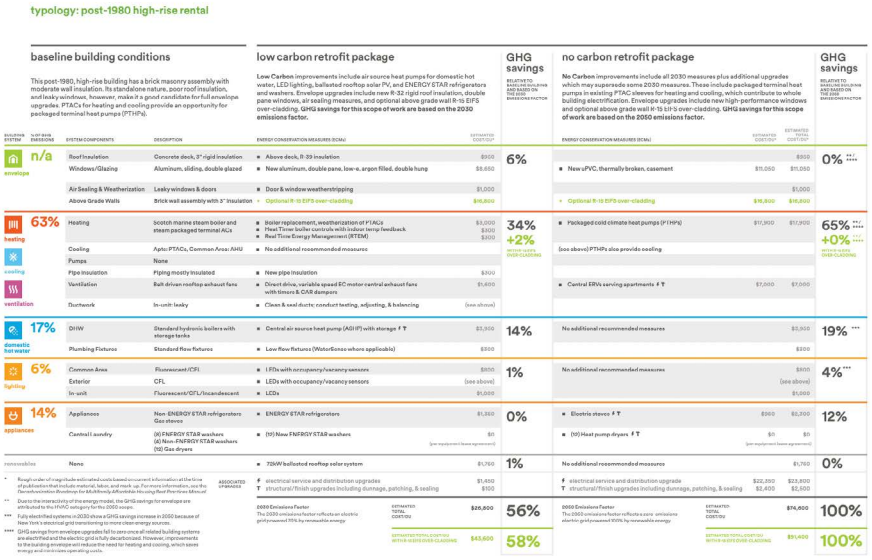
Decarbonization Pathways for Affordable Housing

October 31, 2023



Building Energy Exchange hosted a presentation and panel on affordable housing retrofit measures. Experts from HPD, Bright Power, Magnusson Architecture & Planning, PC, and Samaritan Daytop Village shared examples of building upgrades and capital planning strategies to help affordable housing project teams meet New York's new climate regulations.

The event highlighted the release of BE-Ex's newest report, Decarbonization Roadmaps for Affordable Housing. The accompanying tear sheets, organized by building typology, map out pathways to Local Law 97 compliance for affordable housing developers. The tear sheets provide a low carbon package and a no carbon package, detailing system upgrades to reduce or eliminate a building's carbon emissions.



typology: post-1980 high-rise rental

baseline building conditions			low carbon retrofit package		GHG savings	no carbon retrofit package		GHG savings
This post-1980, high-rise building has a brick masonry assembly with moderate wall insulation. Its standalone nature, poor roof insulation, and leaky windows, however, make it a good candidate for full envelope upgrades. PTACs for heating and cooling provide an opportunity for packaged terminal heat pumps (PTHPs).			Low Carbon improvements include air source heat pumps for domestic hot water, LED lighting, ballasted rooftop solar PV, and ENERGY STAR refrigerators and washers. Envelope upgrades include new R-32 rigid roof insulation, double pane windows, air sealing measures, and optional above grade wall R-15 EIFS over-cladding. GHG savings for this scope of work are based on the 2030 emissions factor.			No Carbon improvements include all 2030 measures plus additional upgrades which may supersede some 2030 measure. These include packaged terminal heat pumps in existing PTAC sleeves for heating and cooling, which contribute to whole building electrification. Envelope upgrades include new high-performance windows and optional above grade wall R-15 EIFS over-cladding. GHG savings for this scope of work are based on the 2050 emissions factor.		
ENERGY SYSTEM	% OF BASE EMISSIONS	SYSTEM COMPONENTS	DESCRIPTION	ENERGY CONSERVATION MEASURES (ECMs)	ESTIMATED COST/SF		ENERGY CONSERVATION MEASURES (ECMs)	ESTIMATED COST/SF	
envelope	n/a	Roof Insulation	Concrete deck, 3" rigid insulation	Above deck, R-39 insulation	$900	6%		$900	0% *, **, ****
		Windows/Glazing	Aluminum, sliding, double-glazed	New aluminum, double pane, low-e, argon filled, double hung	$5,650		New uPVC, thermally broken, casement	$11,050	$11,050
		Air Sealing & Weatherization	Leaky windows & doors	Door & window weatherstripping	$1,000			$1,000	
		Above Grade Walls	Brick wall assembly with 3" insulation	Optional R-15 EIFS over-cladding	$16,800		Optional R-15 EIFS over-cladding	$16,800	$16,800
heating	63%	Heating	Scotch marine steam boiler and steam packaged terminal ACs	Boiler replacement, weatherization of PTACs Heat Timer boiler controls with indoor temp feedback Real Time Energy Management (RTEM)	$3,000 $300 $200	34% +2% WITH R-15 EIFS OVER-CLADDING	Packaged cold climate heat pumps (P-THPs)	$11,900	$11,900	65% **, ***, **** +0% ***, **** WITH R-15 EIFS OVER-CLADDING
cooling		Cooling	Apts: PTACs, Common Area: AHU	No additional roommended measures			(see above) PTHPs also provide cooling		
		Pumps	None						
		Pipe Insulation	Piping mostly insulated	New pipe insulation	$300				
ventilation		Ventilation	Belt driven rooftop exhaust fans	Direct drive, variable speed EC motor central exhaust fans with timers & CAB dampers	$1,400		Central ERVs serving apartments # T	$7,000	$7,000
		Ductwork	In-unit: leaky	Clean & seal ducts: conduct testing, adjusting, & balancing	(see above)				
domestic hot water	17%	DHW	Standard hydronic boilers with storage tanks	Central air source heat pump (ASHP) with storage # T	$3,900	14%	No additional recommended measures	$3,900	19% ***
		Plumbing Fixtures	Standard flow fixtures	Low flow fixtures (WaterSense where applicable)	$300			$300	
lighting	6%	Common Area	Fluorescent/CFL	LFDs with occupancy/vacancy sensors	$850	1%	No additional recommended measures	$850	4%***
		Exterior	CFL	LEDs with occupancy/vacancy sensors	(see above)			(see above)	
		In-unit	Fluorescent/CFL/Incandescent	LEDs	$1,000			$1,000	
appliances	14%	Appliances	Non- ENERGY STAR refrigerators Gas stoves	ENERGY STAR refrigerators	$1,300	0%	Electric stoves # T	$900	$2,700	12%
		Central Laundry	(6) ENERGY STAR washers (6) Non-ENERGY STAR washers (10) Gas dryers	(10) New ENERGY STAR washers	$0 (per equipment lease agreement)		(10) Heat pump dryers # T	$0 (per equipment lease agreement)	$0	
renewables		None		70kW ballasted rooftop solar system	$1,760	1%	No additional recommended measures	$1,760	0%
				electrical service and distribution upgrades structural/finish upgrades including dunnage, patching, & sealing	$1,400 $100		electrical service and distribution upgrade structural/finish upgrades including dunnage, patching, & sealing	$22,050 $2,400	$23,800 $2,600
				2050 Emissions Factor	ESTIMATED TOTAL COST/SQ	56%	2050 Emissions Factor	ESTIMATED TOTAL COST/SQ	100%
					$20,800			$74,600	
					ESTIMATED TOTAL COST/SQ WITH R-15 EIFS OVER-CLADDING	58%		ESTIMATED TOTAL COST/SQ WITH R-15 EIFS OVER-CLADDING	100%
					$43,600			$89,400	

* Rough order of magnitude estimated costs based on current information at the time of publication that include material, labor, and mark-up. For more information, see the Retrofit Installation Roadmap for Multifamily Affordable Housing Roof Portfolio Manual

** Due to the interactivity of the energy model, the GHG savings for envelope are attributed to the HVAC category for this 2050 scope.

*** Fully electrified systems in 2030 show a GHG savings increase in 2050 because of New York's electrical grid transitioning to more clean energy sources.

**** GHG savings from envelope upgrades fail to zero once all related building systems are electrified and the electric grid is fully decarbonized. However, improvements to the building envelope will reduce the need for heating and cooling, which saves energy and minimizes operating costs.

ASSOCIATED UPGRADES

▶ https://be-exchange.org/decarbonization-pathways-for-affordable-housing/

WISE & BE-Ex Annual Holiday Celebration

On December 12th, 2023, Building Energy Exchange hosted the annual WISE & BE-Ex Holiday Party. The evening brought together old and new community members and allowed industry professionals to connect over small bites and festivities.

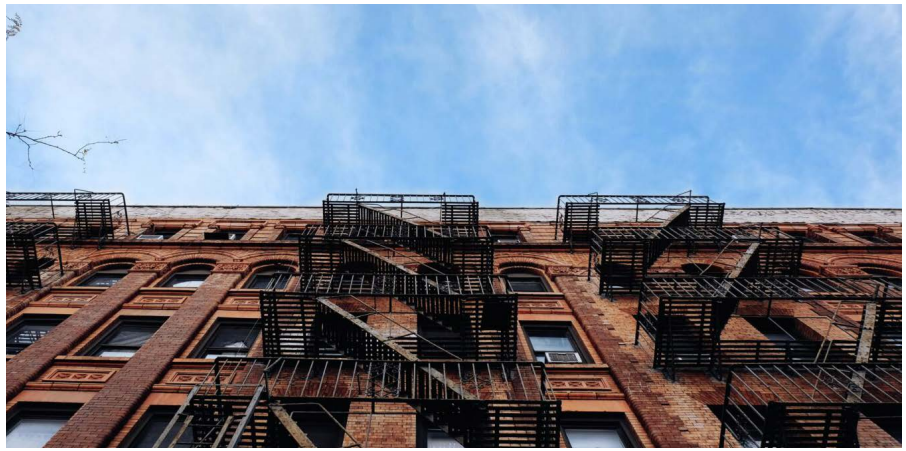
Executive Director, Richard Yancey, gave remarks highlighting BE-Ex's plethora of resources, projects, and events in 2023, as well as the growth of BE-Ex's team and community. Katie Schwamb, Director of Educational Resources, gave a sneak-peak at what's to come in 2024, including another year of WISE programming and updated trainings.

We were excited to end another year advancing building decarbonization with some of the many people and partners that make our work possible.

January 25, 2024

CMA Series: Keeping Pace with PACE - Financial Resources

As the 2024 compliance period for the Climate Mobilization Act has arrived, BE-Ex, NRDC, and NYCEEC are hosting an event discussing the financial opportunities for building decarbonization projects. Panelists will provide information on PACE incentives, the Inflation Reduction Act funding, utility incentives, and more.



▶ https://be-exchange.org/cma-keeping-pace-with-pace/

January 31, 2024

Celebrate BE-Ex! A Decade of Excellence

Join us as we celebrate more than a decade filled with impactful resources, programs, and initiatives, all supported by an ever-growing community dedicated to shaping the future of our built environment for a more healthful, comfortable, and climate-friendly future.

▶ https://be-exchange.org/celebrate-be-ex-a-decade-of-excellence/

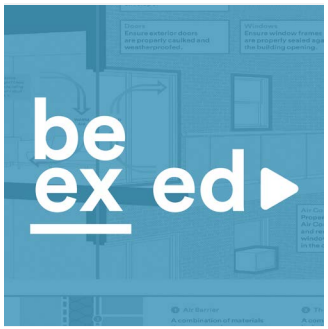
February 8, 2024

Take the Heat! Part 2: Building Core & Perimeter

This is the second in a two part series discussing breakthrough heating and cooling recovery systems across the building sector. This presentation and panel will focus on showcasing ventilation and cooling recovery strategies. The event is hosted as part of NYSERDA's Empire Building Challenge (EBC), and will highlight four EBC partner teams as panelists.

▶ https://be-exchange.org/take-the-heat-part-2/

completed



primer
Climate Mobilization Act Primer 2.0 on BE-Ex Ed

Compliance with Local Law 97 — the ambitious, first-of-its-kind legislation placing a limit on emissions from New York City buildings — begins this year. The refreshed Climate Mobilization Act Primer now available on-demand on BE-Ex Ed demystifies compliance requirements for market-rate commercial and multifamily buildings and connects project teams to solutions and resources.

training
Climate Ready Buildings Training (HCR) on BE-Ex Ed

The second version of the Climate Ready Buildings Training is aimed at affordable housing project teams who want to learn more about NYS Homes & Community Renewal's (HCR's) processes. The Climate Ready Buildings Training: HCR version, as well as a combined HPD & HCR course, were officially launched on BE-Ex Ed this quarter, allowing students across New York State to learn more about designing and financing high-performance, resilient housing.

Climate Ready Buildings Training: HCR & HPD

The Climate Ready Buildings training educates affordable housing project teams – including building owners, architects, and contractors – on how to design and construct high-performance buildings that are resilient against the increasing pressure ...

FREE course
Credits: 3 AIA LU | HSW

Climate Ready Buildings Training: Homes and Community Renewal (HCR)

Participants will gain a deeper understanding of how the climate crisis and subsequent NY policies impact the building industry, insight into design and construction strategies, such as Integrative Design Process (IDP), and HCR-specific funding op...

FREE course
Credits: 2.5 AIA LU | HSW

Climate Ready Buildings Training: Housing Preservation & Development (HPD)

Participants will gain a deeper understanding of how the climate crisis and subsequent NY policies impact the building industry, insight into design and construction strategies, such as Integrative Design Process (IDP), and HPD-specific funding op...

FREE course
Credits: 2.5 AIA LU | HSW

upcoming

guidebook
Future Housing Initiative: Underwriting Standards for Low-Carbon Housing

The Future Housing Initiative is aimed at low-carbon, multifamily housing using existing data and analysis of building performance. The Underwriting Standards project will develop a database of energy performance data from low-carbon multifamily properties and will guide the creation of utility cost benchmarks that can be used for underwriting low-carbon multifamily building. A related guidebook will educate lenders on how to use these low-carbon utility cost benchmarks to underwrite their own projects.

training
Climate Mobilization Act: Affordable Housing Training

This educational initiative aims to demystify NYC's Climate Mobilization Act and its impact on the affordable housing sector. Through a new training program that launches on January 30th, affordable housing building owners will understand how to comply with local laws, connect with relevant financing resources, and develop decarbonization master plans for their properties.

programs

Climate Ready Buildings Training
October 4th

Passive House Fundamentals
October 10th, October 17th

Building a Better Future: Unlocking Community Rebates and Incentives
October 12th

Decarbonization Pathways for Affordable Housing
October 31st

WISE Networking Lunch
November 2nd

Take the Heat! Part 1: Geo and Wastewater
November 15th

Passive House Primer
December 11th

Building a Better Future: Maximizing Finance Opportunities to Decarbonize Buildings
December 12th

WISE & BE-Ex Holiday Party
December 12th

project status

Q4 2023

- ■ Climate Ready Buildings Training 2.0 - NYS HCR Course
- ■ Updated Climate Mobilization Act Primer

Ongoing

- □ **Decarbonizing New York City Offices: Resources and Training**
- □ **Building Performance Partnership: Hubs Support**
- □ **Cold Climate Heat Pump Tech Primer**
- □ **Future Housing Initiative: An Equity & Carbon Database for Multifamily Housing - Health Metrics**
- □ **Future Housing Initiative: Underwriting Standards for Low-Carbon Housing**
- □ **Empire Building Challenge Knowledge Platform**
- □ **Climate Mobilization Act Series: Affordable Housing Education**
- □ **Climate Ready Buildings Training 2.0 - Ongoing Training**

■ COMPLETED □ ANTICIPATED