

Practical Solutions for Multifamily Building Decarbonization

Strategies, Tools and Technologies for
Maximizing Building Performance

WELCOME

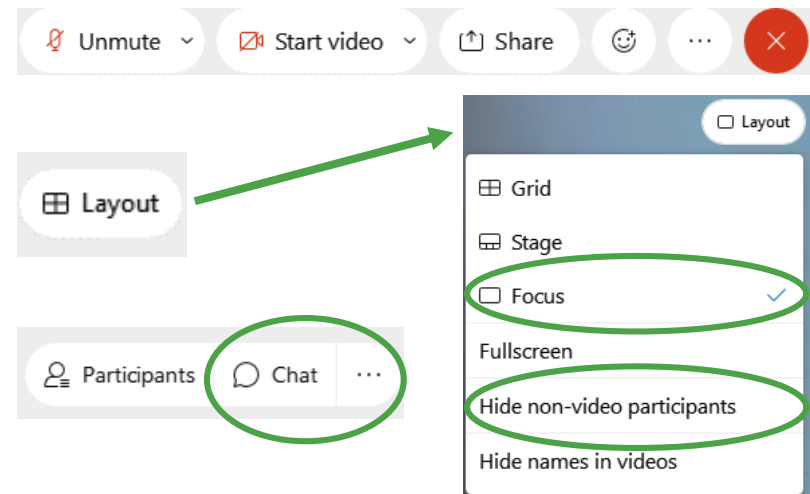
Featuring Guest Presenters from:
NYSERDA | Aeroseal | Allume Energy | Indow



Community
Preservation
Corporation

AUDIENCE BEST PRACTICES

- Please ensure your microphone is **muted**.
- **For best viewing results:** View should be set to Focus or Stage View for shared content with non-video attendees hidden. The Layout options will appear at the top right of your screen.
- **Questions** should be submitted through the Q&A box OR the chat function **to the event Hosts**. The chat icon is located at the bottom right corner of your screen.
- Presentation slides and contact information will be shared with all attendees following the event.



TODAY'S AGENDA

Introduction: Why Clean Tech?

Innovative Decarbonization Technologies

Decarbonization Opportunities in NY State

Open Q&A

Danielle Donnelly, Manager of Sustainability Programs, *Community Preservation Corporation*

Troy Wilbanks, National Sales Manager for AeroBarrier, *Aeroseal*

Sam Pardue, CEO and Founder, *Indow*

Mel Bergsneider, Operations and Partnerships Manager, *Allume*

Simona Li, Senior Project Manager, Multifamily, *NYSERDA*

WELCOME AND INTRODUCTION



**DANIELLE
DONNELLY**

*Manager of Sustainability
Programs*
**Community Preservation
Corporation**

Danielle Donnelly is the Manager of Sustainability Programs and has been with CPC since March 2018.

Before joining CPC's Sustainability Team, Danielle was a Project Manager in charge of monitoring and compliance for CPC's remaining Sandy Build it Back and SPARC storm recovery programs.

She comes to CPC from New York City Human Resources Administration where, as a Community Associate, she conducted outreach to LMI tenants and seniors to help them navigate HPD and Department of Finance resources for repairs, rental assistance, and tax credits. She graduated from the University of Connecticut 2014 with a B.A. in English and Political Science.

CPC's Sustainability Initiative is integrated into the overall CPC business

- CPC's dedicated Sustainability Department was formed to carry out the organization's sustainability and decarbonization goals.
- The platform's mission is to promote energy and water conservation measures as a means of improving the financial and physical quality of multifamily buildings.
- The cost savings associated with energy efficiency and high-performance building practices plays a key role in ensuring the long-term economic stability of multifamily properties.
- CPC has been a carbon neutral company since 2019, aligning with New York City and New York State's carbon reduction goals, as well as international frameworks.

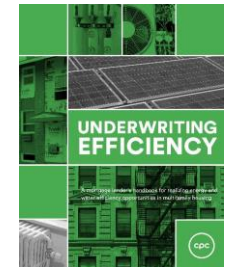
Sustainability Initiative Strategic Objectives

- Develop and propose new financing products that add value to the market and support the adoption of increased environmental and economic sustainability.
- Work with CPC field staff to promote energy efficient and high performance affordable housing.
- Help our customers understand the benefits of decarbonization in the era of climate regulation.
- Provide strategic support to and collaborate with CPC's affordable housing partners in their efforts to bolster green financing programs.
- Aggregate performance data across different levels of energy efficiency to support the development of underwriting standards that support monetizing the projected savings/performance to generate additional NOI.



Enter your property information to explore utility savings and financing options for energy upgrades.

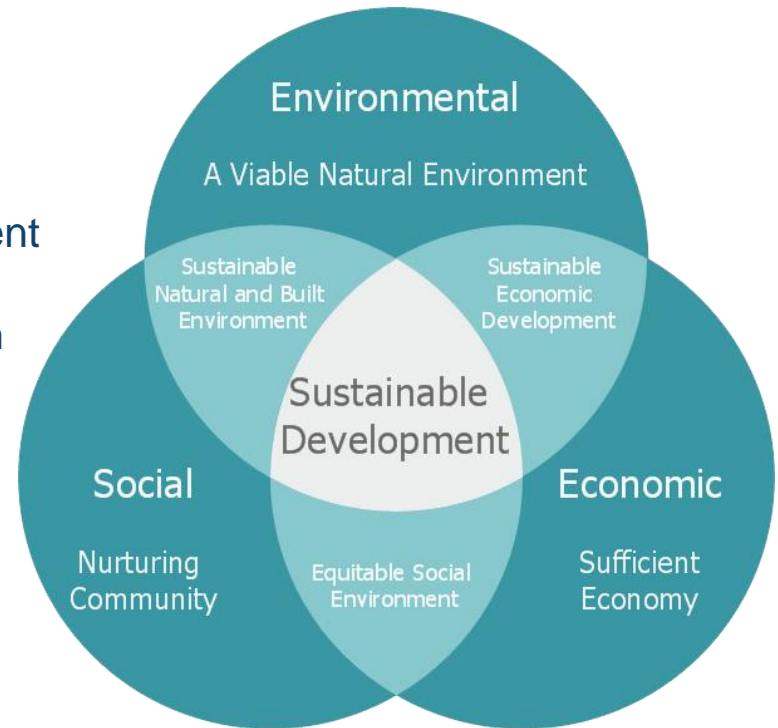
My project is located in zipcode



What do we mean when we say **Sustainability**?

Defined: the ability to continue over a long period of time

- **Energy Efficiency**
 - Reducing energy demand and on-site consumption through systems improvement
- **Decarbonization**
 - Reducing GHG emissions associated with building operations
- **Resiliency and Climate Readiness**
 - Mitigating climate-related risks and improving condition and longevity of the asset
- **Regulatory Risk and New Legislation**
 - **Climate Leadership and Community Protection Act (CLCPA)**
 - **NYC Local Laws (CMA)**
 - **Energy Codes, Stretch Codes**
 - **Gas bans and demand limitations**



LL97

- Covered Buildings: Buildings 25,000+ sqft. or two buildings on the same tax lot totaling 50,000 sqft.
 - This requirement covers approximately 50,000 existing residential and commercial buildings and nearly 60% of the city's building area – 3.15 billion square feet.
- With the addition of Intro 1947, passed in October 2020, **buildings with 35% or fewer rent regulated or income restricted units will be required to comply with GHG emissions caps.**
 - Buildings with affordable units will need to comply with first round of GHG caps in 2026.
 - All other rent regulated or income restricted housing stock exempt from penalties but will be required to complete prescriptive commissioning measures.

Implementation Timeline



- Innovative clean technology supplements “traditional” strategies for decarbonization to create more energy efficient, comfortable, and healthy housing.
 - Clean technology often improves the comfortability of tenants while addressing issues of load reduction, energy efficiency, and utility costs.
 - Smarter systems can also give building owners and developers insight into where their building can be improved and what solutions work the best.
- To truly achieve energy-efficient housing, it is important to address *all* aspects of decarbonization to supplement NYS’ progress to electrification. Reducing energy usage, optimizing energy usage, maintaining reasonable utility costs, and improving tenant comfort should all be prioritized in the transition to clean energy.



SPEAKERS

MODERATOR



**MEL
BERGSNEIDER**

*Partnerships &
Operations Manager*
Allume Energy



SIMONA LI

*Senior Project Manager,
Multifamily Team*
NYSERDA



SAM PARDUE

CEO and Founder
Indow



**TROY
WILBANKS**

*National Sales Manager
for Aerobarrier*
Aeroseal

Troy Wilbanks, Aeroseal

The logo for AEROBARRIER, featuring the brand name in a bold, italicized, white sans-serif font with a registered trademark symbol. The background is a solid blue color with faint, overlapping geometric shapes in white and orange.

Air Sealing Technology from AeroSeal



TIGHTENING THE ENVELOPE - AIR SEALING

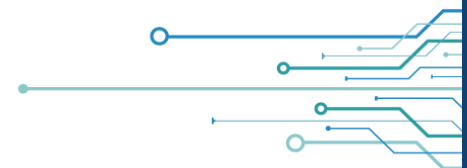
TROY WILBANKS
NATIONAL SALES,
AEROBARRIER

Sustainability Initiatives are driving efficiency requirements

- DOE- More than 76% of all U.S. electricity use and more than 40% of all U.S. energy use and associated greenhouse gas (GHG) emissions are used to **provide comfortable, well-lit, residential and commercial buildings**

How are Builders, Owners & Developers Adapting?

- Improved materials like Indow window inserts and Allume solar technology.
- DOE - 50% of energy is lost through leaking duct work and the building envelope.
- Proper air sealing (X ACH, X CFM) is the corner stone of improving building efficiency.



AeroBarrier is the easiest, least intrusive, and most cost-effective way to seal units in a multifamily build.

Benefits to Builders, Owners and Developers

- Guaranteed results in a single process
- Eliminates manual air sealing - DOE Study
- Guaranteed to pass blower door tests

Benefits for individual owners & tenants

- Reduced energy bills
- Reduced transfer of sounds, smells, and pests
- Healthier & more comfortable living space



**In one process, with 3 easy steps
AeroBarrier guarantees any air sealing goal
is met in multifamily new construction,
renovations, and moderate rehabs**

STEP 1:

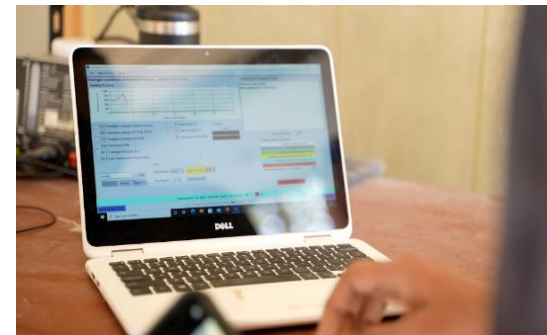
- Prepare the unit
- Pressurize the unit

STEP 2:

- Perform a blower door test and get a baseline air tightness level
- Atomize the sealant into a “fog” within the unit
- Start sealing. Air takes the path of least resistance traveling through leak points, carries the sealant, and seals the leak points.

STEP 3:

- Control & monitor the sealing process
- Achieve the desired air tightness level
- Provide the AeroBarrier seal report for proof of compliance

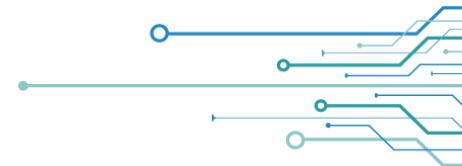


AeroBarrier has achieved broad market adoption in multifamily construction

- Successfully sealing buildings across the USA, Canada, and internationally
- Adopted as a standard air sealing practice by both single family and multifamily builders
- Identified as the crucial component for achieving Net Zero Ready
- Most recognized construction product over the last 5 years



2018 – Most Innovative Product and Overall Best in Show
2020 – Best Green Building Product
2021 – Most Innovative Software Solution

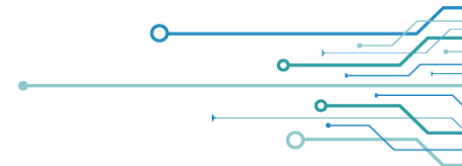


Thank You!

Troy Wilbanks

Troy.Wilbanks@aeroseal.com

(937) 672-0265



Sam Pardue, Indow



Indow window inserts





Drafts

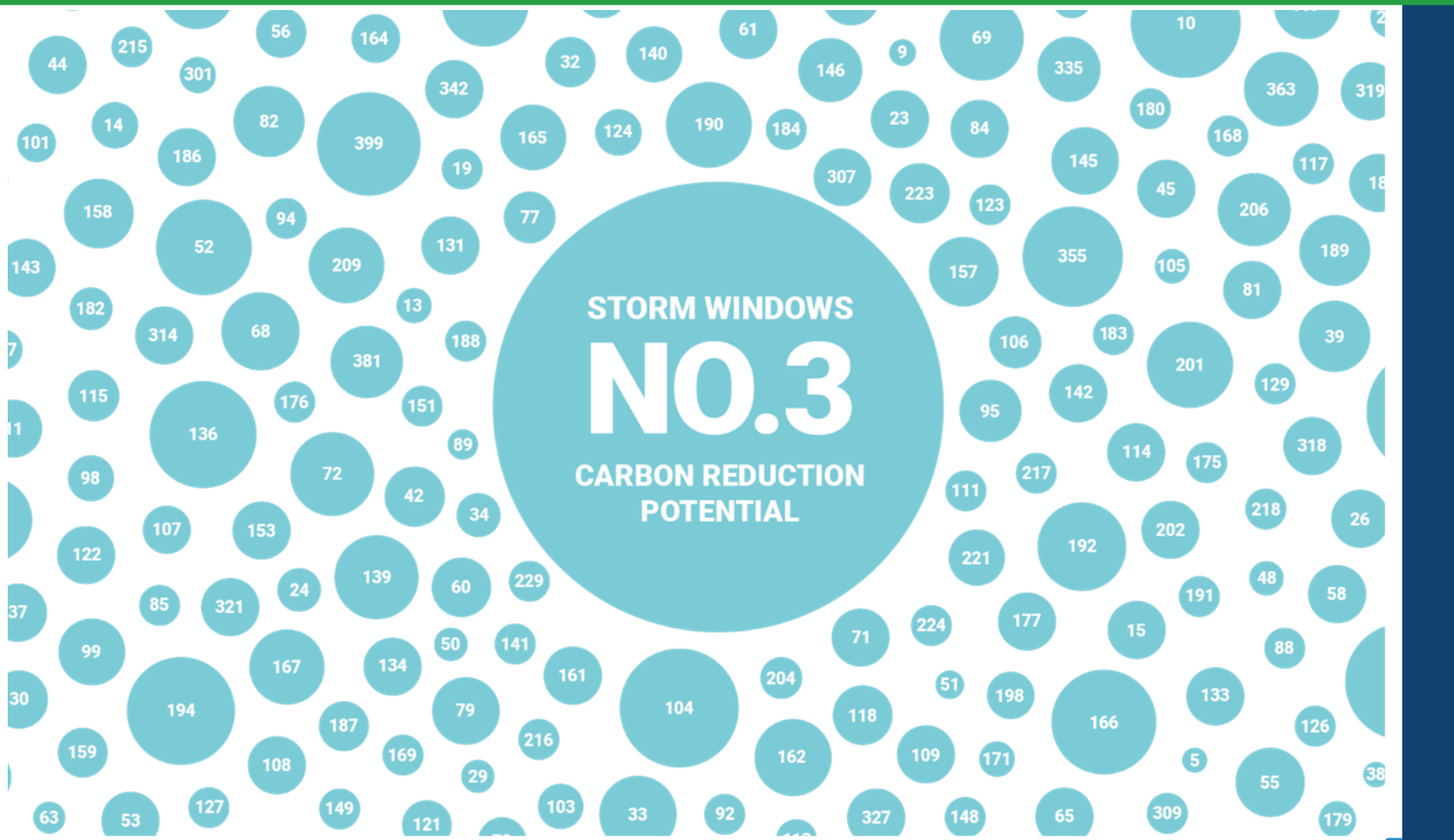


Noise

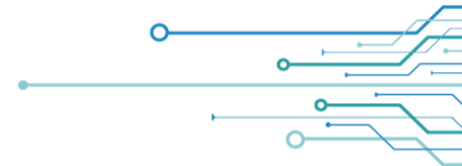


Energy Loss





Our solution presses into window frames.



Comfort, quiet, & energy savings



**Block drafts
100%**



**Reduce
outside
noise 70%**

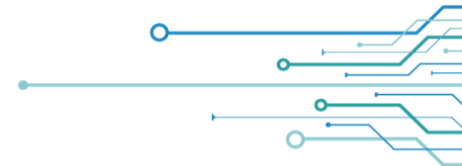


**Energy bills
drop 20%**

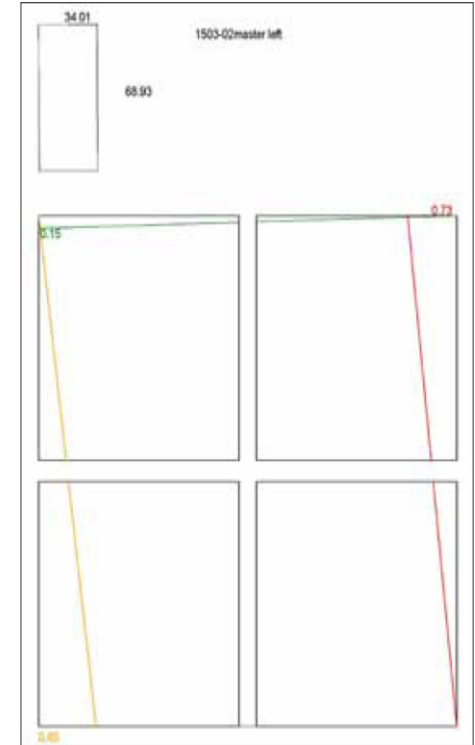
50 Stories of scaffolding?



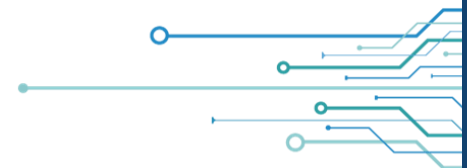
	Replacement Windows	Indow
Cost	\$260,000,000	\$9,000,000+
Installation	Scaffolding Months of Work Tenant Disruption	Minimal disruption Minutes per window Very light weight



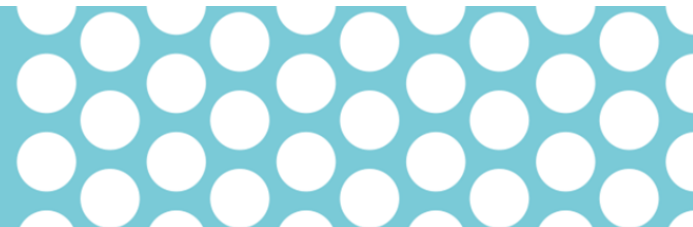
State-of-the-art Laser Measurement Program



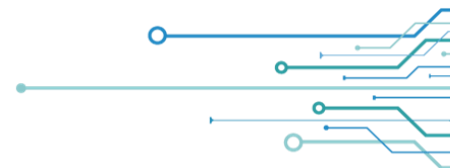
Each insert is cut to an exact fit, even if the window is out of square, which most old windows are with age.



Stackable



A tight seal, easy access to the window & self-contained storage. A perfect window solution for imperfect windows.

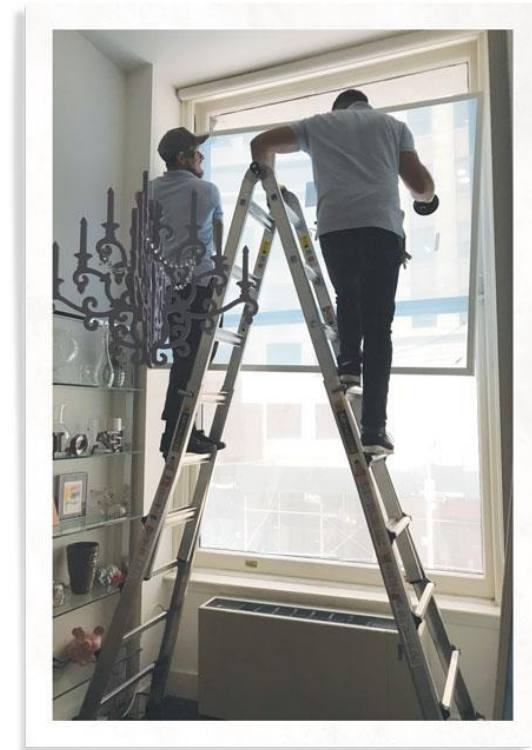


25 Broad Street NYC 256 Panels Acoustic Grade

- Mullion system by Indow subdivided large windows with minimal sight impact
- Building has strict Landmark Preservation regulations
- Minimal tenant disruptions with quick installations

“Some of the tenants have said they feel a drastic improvement on the drafts and the noise has died down significantly.”

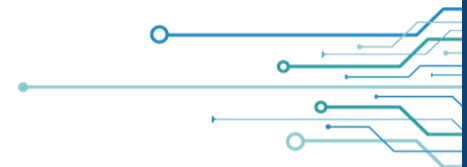
– Joseph Casillo, Senior Project Manager, 25 Broad Street, New York, NY



RUPCO / Affordable Housing Concepts

- 37 Panels
- Standard Grade

Rural Ulster Preservation Company (RUPCO) worked in partnership with Affordable Housing Concepts to restore this building in Newberg to be turned into multi-family housing.



Building owner / managers

- Easy project estimation - we just need w x h measurements of the inside of your window frames
- Consider bundling with complimentary measures:
 - Aero seal - air sealing
 - Runwise - boiler room controls
 - Radiator Labs- radiator controls
- Easy, non-disruptive installations

Tenants

- Dramatic improvements to comfort, quiet, and air quality
- Lower electric bills, more financial stability

To start, contact Orlin Reynolds, Indow Commercial Specialist
orlin@indowwindows.com / (503) 505-7048

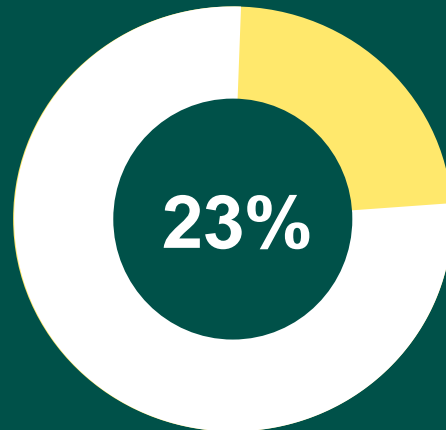
Mel Bergsneider, Allume Energy

Meet Allume Energy

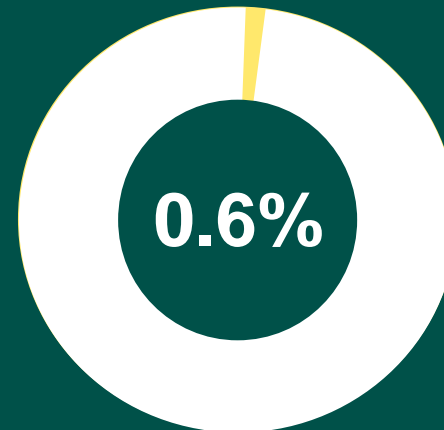
April 2022



Rooftop solar is booming, but not everyone can join in



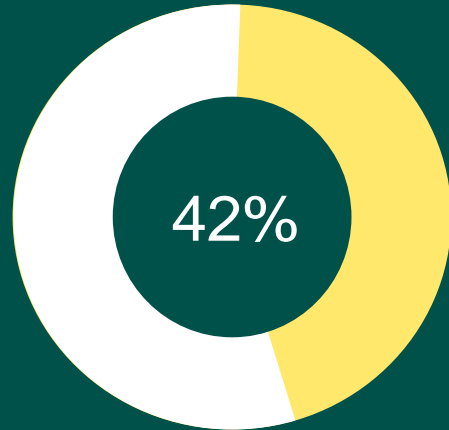
In Australia, homes have a higher solar penetration than any other country.



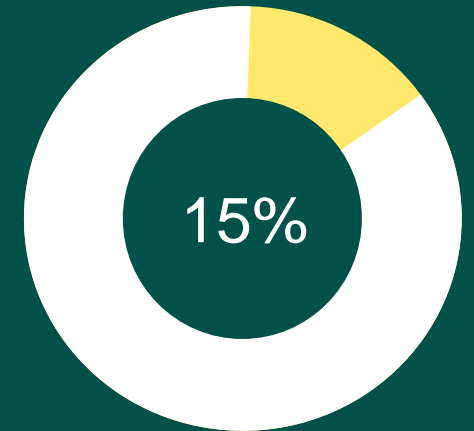
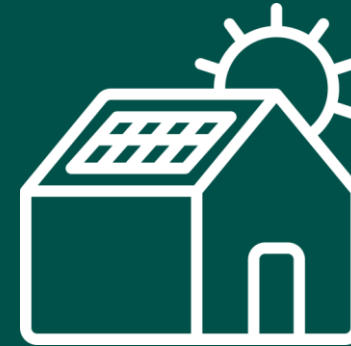
But apartment residents have been missing out.



US: Energy Equity in Affordable Housing



Low- and Moderate- Income (LMI)¹ households in the US²



LMI households with solar adoption³

1. Earning 80% or less of the area median income

2. Low-income Energy Affordability Data Tool: <https://www.energy.gov/eere/slsc/maps/lead-tool>

3. Barbose et al. 2020. National Renewable Energy Laboratory (NREL).



We didn't think this was fair,
so we built the **SolShare**.

The world's only hardware to connect
apartments to a shared rooftop solar system.

This award-winning technology is already
supplying solar energy to over 1,000
apartments in Australia.

Now with installed projects in the US and UK.



How does it work?

Splits solar

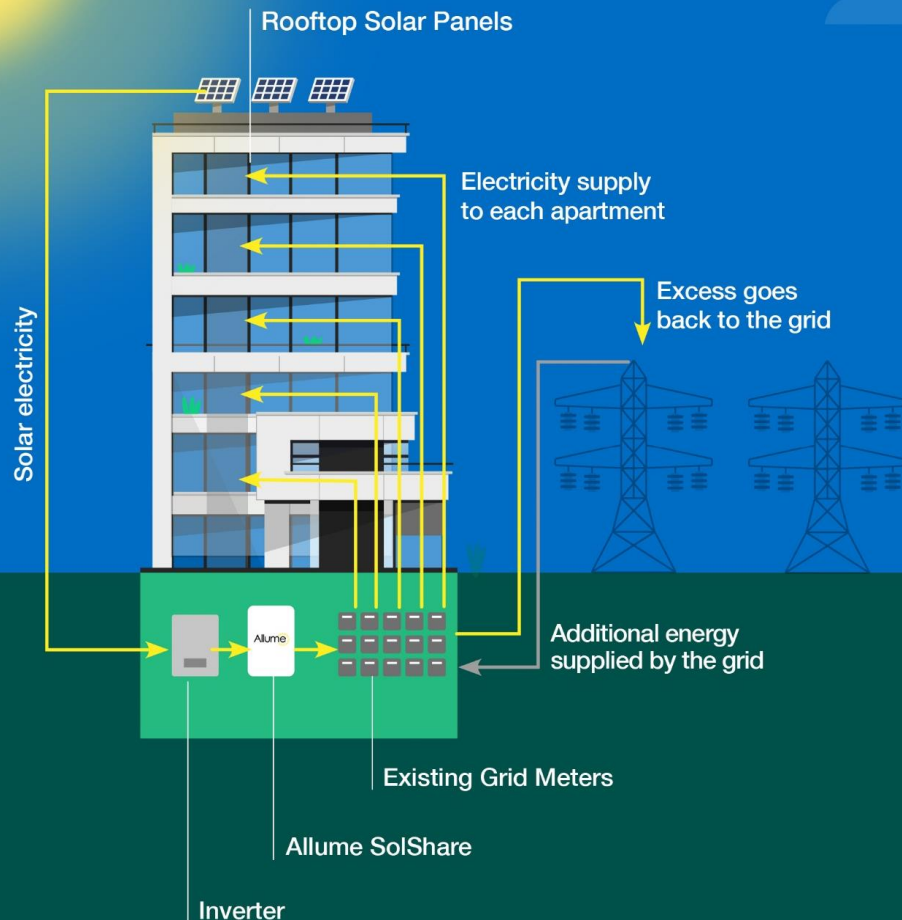
Distributes solar from a single rooftop system to multiple apartments within a building.

Connected centrally

SolShare's outputs wire at the central meter panel, making for a non-invasive and cost effective installation process.

Dynamically shares

The SolShare maximizes savings for the tenants while sending their solar allocation at a time that will save them the most money.



How does it help?

Behind-the-meter

No need for regulatory carve outs or changing the utility's billing system

Financially effective

The SolShare unlocks economies of scale by dynamically sharing one solar PV system among multiple units

Flexible

Fully programmable distribution algorithms allow for the solar allocation to be configured in any way that suits the customer.



Solar savings for those who genuinely need it

“

We are hearing from our residents that they don't need to worry about electricity bills to keep warm in winter, as they have accumulated savings from spring to autumn.

Ravi Koneru, Housing Choices Australia Assets Coordinator



Mel Bergsneider – Partnerships and Ops Manager

mel@allumeenergy.com



Simona Li, NYSERDA

NYSERDA Multifamily Low Carbon Retrofit Resources and Programs

April 27, 2022



NYSERDA

Multifamily Low Carbon Retrofit Resources and Programs

**Multifamily
Low Carbon
Playbooks**

**Low Carbon
Capital
Planning
Support**

**Low Carbon
Pathways for
Multifamily
Buildings**

Planning

Implementation

Multifamily Low Carbon Playbooks

playbook

Low Carbon Multifamily Retrofits

Pre-War Low Rise



This playbook summarizes retrofit strategies that maximize occupant comfort and energy savings through a transition from fuel to electricity-based heating, cooling and hot water systems. Aligned with typical capital improvement cycles, the recommendations will prepare buildings for increasingly stringent efficiency and carbon emissions targets through careful phasing of work across all major building components, including upgrades to exterior walls, windows, and ventilation systems.



NYSERDA



Playbooks

Overview

Free PDF guides that map out low carbon retrofits based on actual buildings

- > Cover solutions that can achieve LL97 2030 compliance
- > Identify pathways for implementation over time
- > Highlight benefits of low carbon solutions beyond energy savings

Playbooks and more detailed walkthrough available on Building Energy Exchange (BEEEx) website

- > **Link to playbook PDFs:** <https://be-exchange.org/lowcarbonmultifamily-main/>
- > **Link to walkthrough video:** <https://be-exchange.org/multifamily-retrofits-playbooks-launch/>

Multifamily Low Carbon Capital Planning Support

*Technical Assistance
Program*



Benefits for Participants

- > **Get up to 75% off the total cost of your energy study**
- > **Identify potential benefits of low carbon retrofits, including:**
 - Ways to reduce your utility & operating costs
 - How these may improve quality of life for residents
 - Put you on the path toward compliance with low carbon building regulations and avoid fines (e.g., LL97)
- > **Have confidence in NYSERDA-vetted analysis and calculations**

Eligibility

- > **Must meet existing FlexTech program eligibility requirements**
- > **Studies must focus on electrification or electrification-readiness building improvement measures**
 - Transition at least one heating/cooling or DHW system to a high-performance electric technology
 - OR significantly reduce heating/cooling load that can enable future electrification (e.g. envelope improvements, ventilation improvements, building electrical infrastructure, etc.)
- > **All participants required to work with a FlexTech Consultant or MFBSN Provider**

Cost-Share Levels

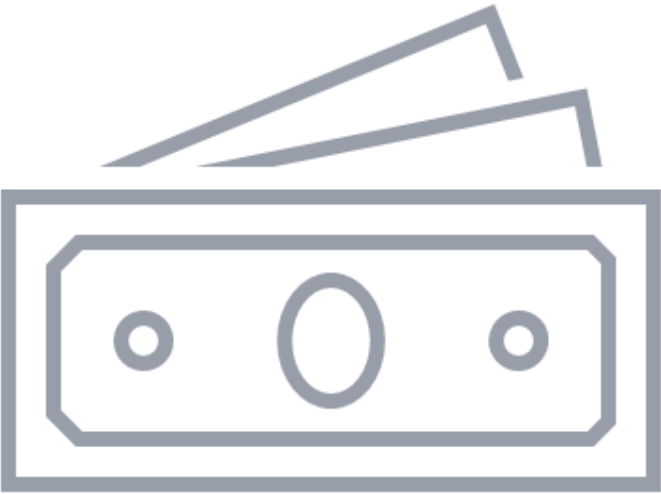
Type	Energy Analysis	Cost-share	Cost-share Cap per project
Portfolio-level Study	ASHRAE Level 1+ or above	Up to 75% of total study cost	2% of total portfolio annual energy expenditure for the buildings in study, up to \$100k
Building-specific Study	ASHRAE Level 2 or above	Up to 75% of total study cost	10% of annual building energy expenditure of buildings in study, up to \$500k

- > Customers can do a portfolio-wide planning study AND building-specific study
- > Some pre-implementation assistance activities (e.g. RFP development, bid review) would be eligible to be included in building-specific study cost-shared scope

Low Carbon Pathways for Multifamily Buildings (LCP)

Implementation Program

Benefits for Participants



Access incentives of up to \$7,400 per dwelling unit for low carbon retrofits



Remove uncertainty/risk around funding and implementation requirements



Achieve substantial savings on energy costs & Improve resident comfort

Eligibility

Open to existing multifamily buildings – market-rate and affordable

Participants required to work with a Multifamily Building Solutions Provider or FlexTech Consultant

Participant Eligibility: *Targeting for replication*

- > **Owners or property managers who are active members in real estate associations**
 - e.g. CNYC, UHAB, REBNY, RSA, etc.
- > **Or portfolio owners/managers with 10+ buildings**

What Is Incentivized?

- > **Four packages corresponding to major building systems**
 - Envelope
 - Ventilation
 - Heating/cooling electrification
 - DHW full or partial electrification
- > **Participants can choose ANY package to implement**
 - Packages designed to be modular – can implement one at a time
 - Designed to account for interactive effects, but also generally assume that an owner may only complete one package
- > **Incentives can be stacked if more than one package is implemented**
- > **Packages include recommended measures with bonus incentives**
 - Measures that will time well with other construction and/or will substantially increase packages savings

Measure Packages and Incentives Overview

	Envelope Package		Ventilation Package		Heating & Cooling Package		Domestic Hot Water Package
Required Measures	<p>Meet specified U-value target in program guidelines Owner to select which envelope upgrades to make to reach this goal.</p> <p>Provide code-compliant ventilation for each bathroom & kitchen OR demonstrate existing ventilation meets requirements</p>		<p>Provide balanced ventilation with heat/energy recovery to each apartment.</p>		<p>Installation of heat pump technology for in-unit heating and cooling, including:</p> <ul style="list-style-type: none"> Variable Refrigerant Flow (VRF) Low-temperature hydronic with Air-to-Water Heat Pump (AWHP) Packaged Terminal Heat Pump(PTHP) Mini/Multi-split Air-Source HeatPump (ASHP) Water-to-Water and Ground Source Heat Pump Single Package Vertical Heat Pump (SPVHP) 		<p>Buildings with existing central DHW systems: Use displacement approach to provide at least 30% of annual DHW consumption usage via heat pumps.</p> <p>Buildings with existing unitized DHW systems: Provide 100% DHW load via heat pumps.</p>
Required Measure Incentives	<p>Up to \$5,000/dwelling unit</p> <p><i>(\$3,750/dwelling unit (base incentive) + \$1,250/dwelling unit (bonus) if 1st package installed and none of the other packages have already been installed.</i></p>		<p>\$750/dwelling unit</p>		<p>\$750/dwelling unit*</p>		<p>\$700/dwelling unit* for buildings with existing central DHW systems</p> <p>\$750/dwelling unit* for buildings with existing unitized DHW systems</p>
Recommended Measure & Bonus Incentives	Air sealing	\$50/dwelling unit	Air sealing	\$50/ dwelling unit	Air sealing	\$50/dwelling unit	N/A
	Steam Heating System Upgrades	\$250/dwelling unit			Convert existing gas stoves to induction stoves	\$100/dwelling unit	

* Can be layered with NY Clean Heat incentives

Low Carbon Pathways Coordination with Other Programs

Planning

- Low Carbon Capital Planning
- FlexTech



Implementation

- AMEEP
- NY-Sun
- NYS Clean Heat*
- Utility programs – for other measures
- Financing opportunities
 - Green Bank RFP 18
 - PACE
 - And other loans



O&M/M&V

- RTEM

**NYS Clean Heat category 4a incentives cannot be layered at this time.*

> **Additional notes:**

- With the exception of the NYS Clean Heat* program, a project shall not receive incentives for the same measures as those incentivized by LCP.

Non-energy Benefits and LCP Resident Survey

- > **Brief survey administered pre- & post-construction to residents** to determine improvements to the resident experience and quality of life
- > **Goals of resident survey:** Assess non-energy benefits resulting from low carbon retrofits

Non-Energy Benefit	LCP Measure Packages
Thermal Comfort	Heating and Cooling
Acoustic Comfort	Envelope, Heating and Cooling
Indoor Air Quality	Ventilation, Envelope
Sleep Quality	Heating and Cooling, Envelope
Improved Health/Costs	Ventilation, Heating and Cooling
Thermal Controllability	Heating and cooling
Pest Management	Envelope
Productivity	Heating and Cooling, Envelope
Lighting Quality	Envelope
Water Quality	DHW
Aesthetics	Heating and Cooling, Envelope
Mental Health	Heating and Cooling, Envelope

Questions?

Please email MultifamilyInfo@nyserda.ny.gov if interested in any of these programs or resources or reach out to me at:

Simona Li, Simonne.Li@nyserda.ny.gov

Thank you!

QUESTIONS?

THANK YOU FOR TUNING IN

Contact Today's Speakers

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Mel Bergsneider, Allume Energy

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Sam Pardue, Indow

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Troy Wilbanks, Aeroseal

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Learn More

www.communityp.com/sustainability

