# ComEd IE Electrification Workshop

MEEA
MIDWEST ENERGY EFFICIENCY ALLIANCE

Workshop #1

4/22/22

# Introductions & Goals

*Molly Graham*

# Agenda

*Friday, April 22nd, 2022*

| | |
|---|---|
| 1:00 – 1:15 | Intros, Goals & Agenda Review |
| 1:15 – 1:20 | CEJA Electrification Language Review |
| 1:20 – 1:30 | ComEd Goals, Preliminary Plans & Program Guidelines |
| 1:30 – 2:25 | Non-IL Electrification Program Presentations |
| 2:25 – 2:35 | Break |
| 2:35 – 3:25 | Small Group Activity |
| 3:25 – 3:55 | Large Group Discussion |
| 3:55 – 4:00 | Next Steps, Wrap Up & Adjourn |

# Low Income Program Requirements

## *CEJA Review*

- Minimum annual spending levels increased
  - ComEd - $40 million (up from $25mil)
- 80% of spending goes to whole building retrofits
- Dedicated funds for addressing health and safety issues
  - Structural or indoor hazards that must precede EE work
  - 15% of LI budget dedicated
- Statewide Low-Income EE Accountability Committee
  - North and Central/South Subcommittees administered by Illinois Commerce Commission
- Electrification
  - Electric utilities can claim limited savings for gas conversion energy savings
  - Annually, 25% of these savings must come from low-income households

# Electrification

*CEJA Review, Pages 600 - 602*

- Beginning in 2022, an electric utility may offer and promote measures that electrify space heating, water heating, cooling, drying, cooking, industrial processes, and other building and industrial end uses that would otherwise be served by combustion of fossil fuel at the premises, provided that the electrification measures reduce total energy consumption at the premises.
- Electrification program-derived savings can count toward annual savings goals

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# Electrification

*CEJA Review, Pages 600 - 602*

- In no event shall electrification savings counted toward each year's applicable annual total savings requirement, as defined in paragraph (7.5) of subsection (g) of this Section, be greater than:
  - (1) 5% per year for each year from 2022 through 2025;
  - (2) 10% per year for each year from 2026 through 2029; and
  - (3) 15% per year for 2030 and all subsequent years.
- A minimum of 25% of all electrification savings counted toward a utility's applicable annual total savings requirement must be from electrification of end uses in low-income housing.

# Electrification

*CEJA Review, Pages 600 - 602*

- Prior to installing a new electrification measure, the customer must receive an estimate of the impacts on monthly utility bills and annual energy costs

# ComEd Goals, Prelim. Plans & Program Guidelines

*Mark Milby & Jim Fay, ComEd*

# EE Electrification Overview

- **2021 Illinois Energy Law**
  - Beginning in 2022, utilities may offer electrification measures provided they reduce total energy consumption at the premises; reduction in energy consumption may be counted toward achievement of annual goals
  - Eligible end uses include “space heating, water heating, cooling, drying, cooking, industrial processes, and other building and industrial end uses that would otherwise be served by combustion of fossil fuel at the premises”
  - Calculation of savings is outlined
  - Limited to 5%/year in Plan 6
  - 25% of savings must come from electrification in income eligible housing
  - Prior to installing an electrification measure, utility must provide customer with estimate of impact on monthly electric bill and total annual energy expenses
- **ComEd Revised Plan 6 (2022-2025)**
  - Key electrification measures include the family of heat pumps, heat pump water heaters, and C&I forklifts
  - New measures/offerings will be added as they are developed; we have flexibility to pursue any other measure that creates site energy savings and delivers a competitive $/kWh

# EE Electrification Overview

- **ComEd Plan 6 Revised Stipulation Agreement**
  - Target on average $10M spend per year 2022-25 (ramping up over time)
  - Both SF and MF homes included
  - Direct install of electrification measures for IE customers limited to where combined measure installations lower total energy bills
  - Outline of elements to include when calculating customer energy and bill savings
  - To the extent practicable, support complete electrification of all end uses
  - To the extent practicable, integrate space heating electrification with weatherization
  - Endeavor to integrate electrification measures into existing weatherization program delivery
  - Cover costs of service upgrades and other ancillary costs, with the possible exception of multifamily property owners
  - Transition customers to the appropriate ComEd electric rate
  - Coordinate and discuss proposed program approaches with IL stakeholders

# EE Electrification Working Group

- ComEd has launched a Working Group focused on the development of EE electrification measures and new customer offerings across the EE portfolio.
  - Consists of five Workstreams: Income Eligible, Residential, C&I Program Design, Facility Assessments & Outreach, and Portfolio Support
  - Developing an Action Plan with tasks, milestones, and dates for each Workstream
  - Purpose is to synchronize program design at a fundamental level and coordinate a range of portfolio support needs, including evaluation, TRM modification, stakeholder engagement, data tracking, financial tracking, and research/pilot efforts.
  - A significant amount of related work is already underway, such as:
    - Key research and pilot initiatives
    - Evaluation coordination & Guidehouse engagement
    - TRM measure development
    - Customer bill impacts methodology
    - Stakeholder engagement

# Workshop Participant Guidance

- Electrification technology and equipment is largely new to the Northern Illinois market
  - ComEd can pilot new equipment and new program designs to measure performance in the market and find successful program formulas
  - The discussion should include the need for information or training for electrification market business partners
- We expect opportunities to electrify customers to be limited under current existing joint programs
  - Our workshop discussion should emphasize new channels
- Our goals require us to emphasize income eligible customers
  - Key challenges: High up-front cost measures for limited income customers and the economics of fuel switching to achieve meaningful customer bill impacts
  - We expect to use this workshop to find creative ways to electrify IE customers beyond just increasing incentives

# New York State Clean Heat Program

*Scott Smith, NYSERDA*


# Low to Moderate Income Electrification in New York State

## ComEd Electrification Workshop
## 4-22-22

April 20, 2022

# Climate Leadership and Community Protection Act (CLCPA) – Overview

> Most aggressive greenhouse gas reduction goals of any major economy: 40% by 2030, 85% by 2050

> 70% renewable energy by 2030, 100% zero-carbon electricity by 2040

> Path to carbon neutrality

> Codifies clean energy targets

> Commitments to environmental justice, disadvantaged communities, and just transition

> First statutory Climate Action Council

# CLCPA by the Numbers, Targets Codified into Law

**Carbon neutral economy, mandating at least an 85% reduction in emissions below 1990 levels**

**40% reduction in emissions by 2030**

**100% zero-carbon electricity by 2040**

**70% renewable electricity by 2030**

**9,000 MW of offshore wind by 2035**

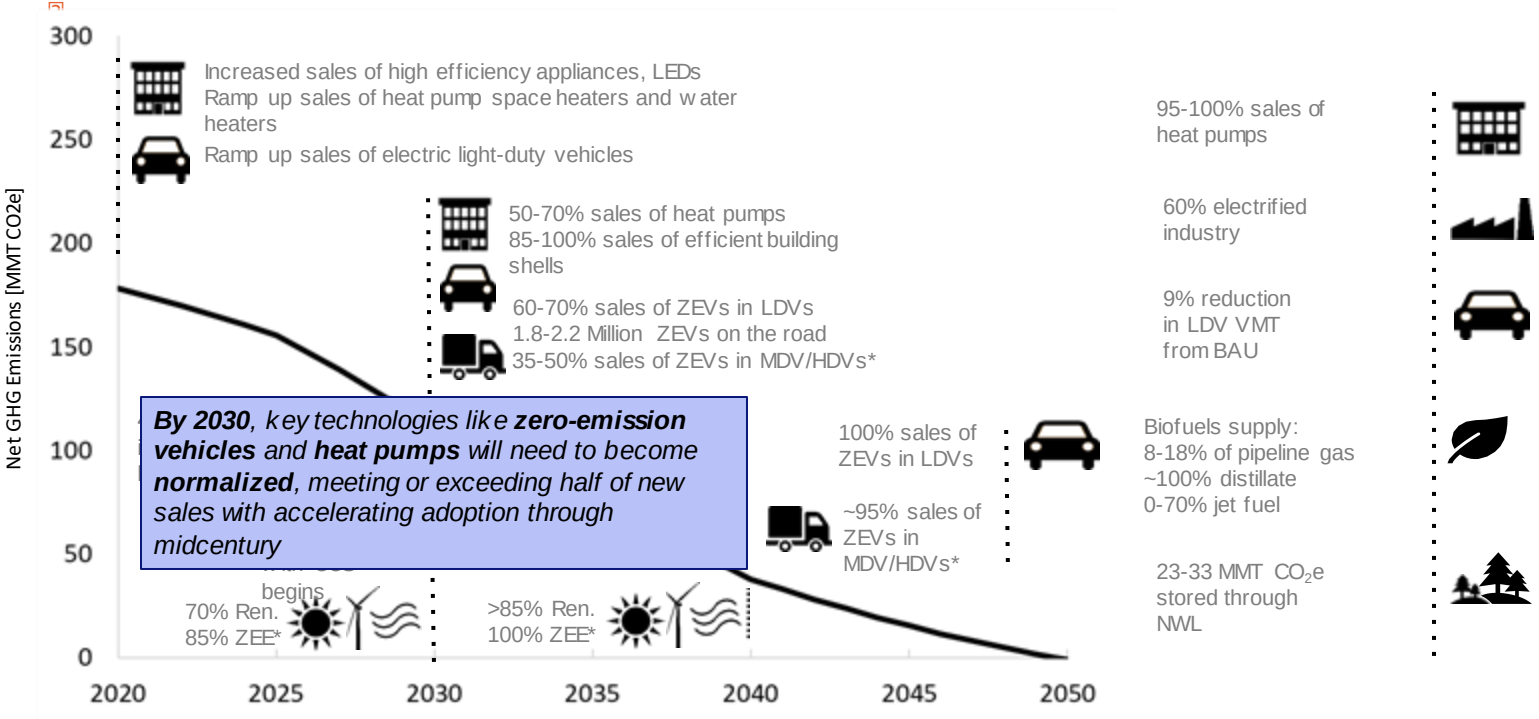
**6,000 MW of distributed solar by 2025**

**3,000 MW of energy storage by 2030**

**185 TBtu on-site energy savings by 2025**

# NYS Decarbonization Pathways

**Achievement of emissions reductions to meet state law requires action in all sectors**




*Zero-Emissions Electricity (ZEE) includes wind, solar, large hydro, nuclear, CCS, and bioenergy; MDV includes buses

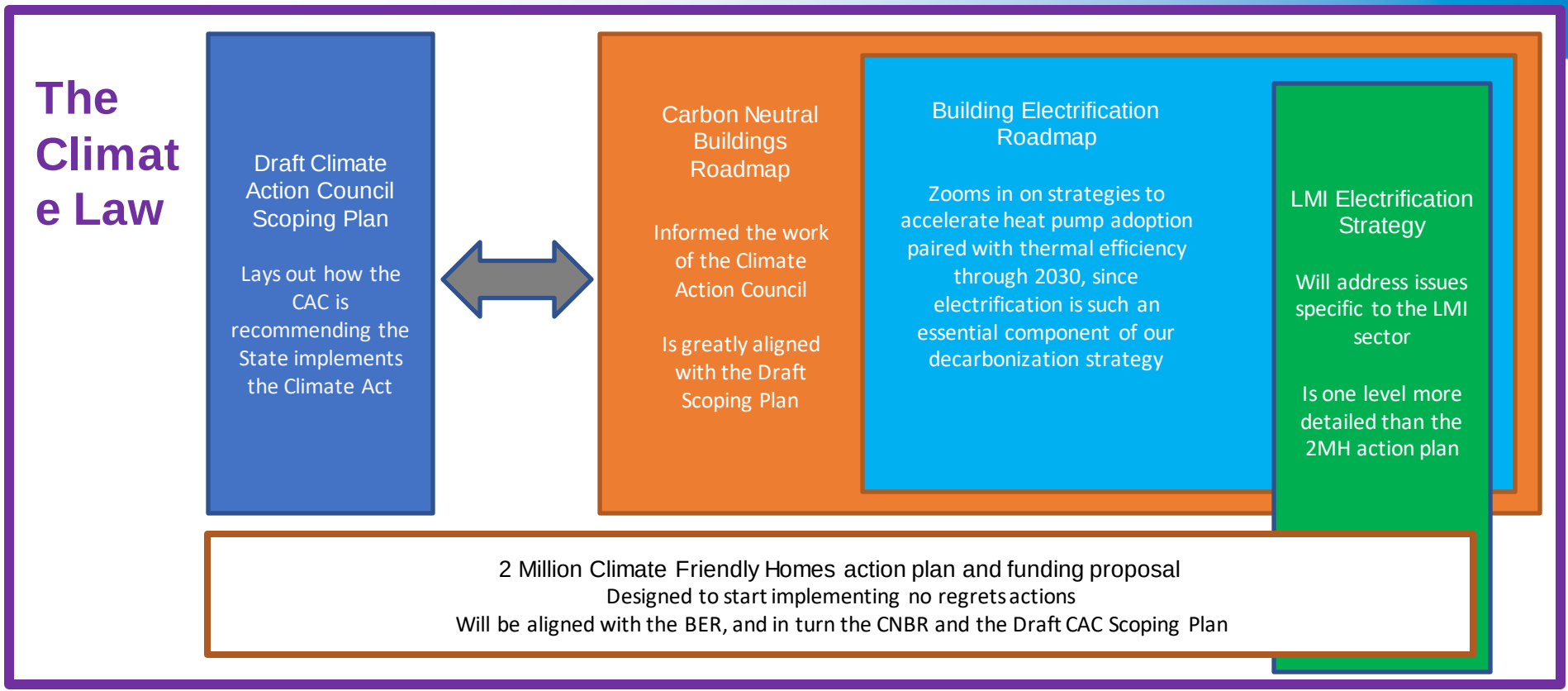
# Energy Efficiency, Electrification, and Clean Electric Power are the Path to Decarbonization

| Energy Efficiency and Conservation | Building Electrification and Low Carbon Fuels | Decarbonizing Electricity Supply |
|---|---|---|
| • Efficient building shell and weatherization measures<br>• Behavioral conservation, operations and maintenance | • **Beneficial electrification of space heating, hot water heating, and appliances** | • Site-based solar PV<br>• Flexible building loads and batteries |

Policy Priorities:

- **Rapidly scaling demand for low carbon/high performance**
- **Cost reduction**
- **Technology innovation for electrical heating equipment**
- **Managing an orderly natural gas transition**
- **Improving buildings' load flexibility grid interactivity**

# How the Big Policy Blocks Work Together



# Two Million Homes Action Plan - Overview

## Governor Hochul's 2022 State of the State (SOTS)

Directs **NYSERDA, HCR, DPS and DOS** to deliver:

**an executable plan in 2022** to implement the Two Million Climate-Friendly Homes Initiative
**a funding proposal and strategies to leverage private capital**

Specifically, the Action Plan must outline path and funding to achieve:

a minimum of **1 million electric homes/apartments** and up to **1 million electrification-ready homes/apartments** by 2030
at least 800,000 of the 2 million homes must be low-to-moderate income households

Scale of home converting to full electrification for heating will need to

**Increase 10X from 20k homes/year to 200k+ homes/year by 2030**

# Solutions are available, with variation by building type

**Technologies are commercially available**

- Cold climate air-source heat pumps (ASHP), ground-source heat pumps (GSHP), or carbon-free community thermal loops for space heating/cooling
- Heat pump water heaters with storage tanks and demand-flexible controls
- Electric induction cooktops and heat pump dryers
- In widespread use in other regions globally (e.g. Asia, Europe, parts of Canada)

**Harder-to-electrify cases include**

- Super tall buildings
- Buildings heating with steam/district steam
- 100% of hot water needs in large multifamily

**Disadvantaged communities and equity**

- Retrofit- and electrification-readiness costs can be high (and uncertain) in buildings with deferred maintenance, outdated electrical service


**Key areas for R&D and demonstrations**

- Bring the best global/emerging solutions to NYS
- Cold climate performance in range of HP sizes
- Harder-to-electrify cases, community thermal loops
- Resiliency of all-electric buildings
- Transition to lower-GWP refrigerants

# NYS Clean Heat – Case-18-M-0084

**$454M** in Statewide Heat Pump Incentive Program
- Consumer incentives
- Led by: NYS Utilities
- NYS Clean Heat Statewide Heat Pump Program Implementation Plan
- NYS Clean Heat Statewide Heat Pump Program Manual

**$230M** in Market Development Plan
- Initiatives to develop the NYS heat pump market
- Support the goals of the Statewide Heat Pump Incentive program
- Led by: NYSERDA
- Plan details: Appendix 1 in the Implementation Plan

**NY Clean Heat Market Development Plan -** $230M Building Electrification Investment

| Initiatives funded through the Heat Pumps "Phase 2" Investment Plan | | | |
|---|---|---|---|
| **Critical Market Need** | **Total Funding** | **Initiative** | **Budget** |
| TRAIN AND DEVELOP THE NEEDED CLEAN HEATING AND BUILDING ELECTRIFICATION WORKFORCE | $38.2 | WORKFORCE DEVELOPMENT | $38.2 |
| BUILD CONSUMER DEMAND AND MARKET CONFIDENCE AND REDUCE CUSTOMER ACQUISITION COSTS | $60.9 | **MARKETING** | **$19.2** |
| | | **COMMUNITY CAMPAIGNS** | **$10.0** [1a] |
| | | **CRITICAL TOOLS** | **$4.0** |
| | | TECHNICAL ASSISTANCE | $27.7 |
| DRIVE PERFORMANCE IMPROVEMENTS, REDUCE COST, AND DELIVER NEW ECONOMIC SOLUTIONS THROUGH TECHNOLOGY INNOVATION AND DEMONSTRATIONS | $60.0 | **CLEAN THERMAL DISTRICT SYSTEMS** | **$15.0** |
| | | HVAC TECHNOLOGY CHALLENGES | $15.0 |
| | | EMPIRE BUILDING CHALLENGE | $15.0 |
| | | MULTIFAMILY BUILDING DEMONSTRATIONS | $5.0 |
| | | **COST REDUCTION STRATEGIES** | **$10.0** |
| MAKE ELECTRIFICATION SOLUTIONS AVAILABLE FOR LMI CONSUMERS | $31.0 | **LMI** | **$31.0** [1b] |
| MAKE PRODUCTS AVAILABLE WHEN AND WHERE CONSUMERS NEED THEM BY BUILDING THE CLEAN HEAT SUPPLY CHAIN | $12.0 | **SUPPLY CHAIN** | **$12.0** |
| MINIMIZE WINTER ELECTRICAL PEAK BY INVESTING IN DEMAND REDUCING "HEAT-PUMP READY" SOLUTIONS | $26.5 | COMFORT HOME | $26.5 |
| DEVELOP A LONG-TERM BUILDING ELECTRIFICATION ROADMAP TO GUIDE THE TRANSFORMATION OF HOW NEW YORKER'S HEAT AND COOL THEIR BUILDINGS | $1.0 | **BUILDING ELECTRIFICATION ROADMAP** | **$1.0** |
| Sub-Total (representing the Heat Pump Phase 2 sub-initiatives in this Investment Plan | | | **$98.2** |
| TOTAL (representing totality of NYSERDA's Investments in the NYS Clean Heat Market Development Plan | | | **$229.6** |

# Near Term LMI-e Summary

- Investments in Beneficial Electrification in the LMI market segment that seek to improve energy affordability and health outcomes, while maintaining consumer protection and increasing access to heat pump solutions for LMI communities, households, and building owners
- $30 million over 2020-2025 includes market interventions to provide clean heating and cooling solutions to the LMI market segment
  - Research and analysis
  - Pilots and demonstrations
  - Short-term Incentives
  - Consumer education

# Context and Barriers

- Fossil fuel combustion in residential sector accounts for 15% of statewide GHG emissions, **48%** of all housing units are LMI
  - LMI represents 43% of small homes and 60% of multifamily units
  - 28% of LMI renters have heat included or only pay for their electric
  - 30% of LMI households heat with a delivered fuel (12% electric, 56% natural gas)
- Barriers to adoption of heat pump solutions
  - First cost, including project economics
  - Awareness of the technology and benefits
  - Insight into best case application by building type/use
  - Split incentive

# Institutional challenges

- Shifting of electric load (tenants and homeowners) and impact on energy and shelter burden – consider PSC 6% energy burden, LIHEAP, utility allowances
- Interplay with rent regulations/major capital improvements
- Need to ensure consumer protections are in place
- Building performance issues associated with older housing stock
- Available energy efficiency and housing budgets are already stretched thin without heat pumps as a consideration
- NYCHA is a big opportunity and most don't pay SBC; opportunity to collaborate with NYPA

# Intervention Overview

| No. | Investments | Est. Budget | Timing |
|---|---|---|---|
| 1 | Research and analysis addressing policy and program design to increase adoption, ensure energy affordability and leverage non-energy benefits | $1 million | 2020-2021 |
| 2 | RFPs to develop and pilot scalable solutions for heat pump adoption while advancing energy affordability | $18 million | 2022-2023 |
| 3 | LMI Heat Pump Demonstration Study for single family and multifamily buildings | $10 million | 2020-2023 |
| 4 | Education for LMI customers who adopt heat pumps on how to maximize the benefits | $1 million | 2020-2025 |
| | **Total:** | **$30 million** | |

# Low and Moderate Income (LMI) Electrification Study

Executive Summary & Appendices

November 24, 2021

# Introduction

To meet New York's climate targets, **electrification** of heating, domestic hot water, and other appliances **will be required** of all NYS's buildings.

The transition to an all-electric building stock presents many challenges for building owners, residents, regulators, and policymakers, especially in the low- and moderate-income (LMI) housing sector. **LMI households comprise 46% of NY's residential housing units**.

This study provides **data and insights to help NYSERDA advance electrification** in LMI housing.

It provides **quantitative analysis derived from the most robust database** of residential buildings to date in NYS, purpose-built for this study, and **qualitative insights based on interviews with experts in the field**.

The study team synthesized these results to recommend priority building segments best suited for near-term electrification, as well as **promising strategies for market interventions** that NYS can pursue to achieve electrification goals while preserving affordability.

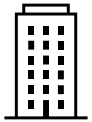
# Definitions

**Low Income –** At or below 60% of state median income (SMI)

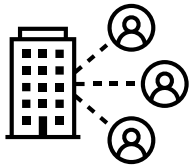
**Moderate Income –** Between 60% and 80% area median income (AMI) or SMI, whichever is higher

**Single-Family –** One-to-four-unit residential building

**Multifamily –** Five or more residential unit building



**LMI Multifamily Building –** Buildings are classified through the following logic



- Low Income Multifamily – 25% or more of the units are classified as Low Income
- Moderate Income Multifamily – 25% or more of the units are classified as Moderate Income
- Buildings with more than one income classification above 25% were categorized in the lower income bin
  - Example: a building with more than 25% Low Income households and more than 25% Moderate Income households was classified as a Low-Income building

# Interview and Research Results

- Qualitative research identified four sets of **barriers to electrification**
- While identified barriers may be applicable to different income levels and building types, the research interviews illustrated that **these barriers resonated deeply with LMI housing stakeholders**

### TECHNICAL BARRIERS

- Existing Electric Service
- Housing Stock Quality / Deferred Maintenance
- Existing HVAC / Distribution Systems
- Physical Space for Equipment

### KNOWLEDGE BARRIERS

- Implementation Blueprint
- Technology Awareness / Familiarity
- Identifying Eligible Customers
- Language
- Confidence and Trust
- Public Opinion / Attitudes

### POLICY / INSTITUTIONAL BARRIERS

- Energy Bill Responsibilities / Utility Allowances
- Utility Make-Ready Coordination Cooperation
- Submetering
- Rent Increase Limitations
- Capital / Financing Access

### ECONOMIC BARRIERS

- Value Proposition
- Project Costs: Equipment / System Design
- Operational Costs
- Split Incentives
- Tenant Disruption / Unit Accessibility

# New York State Residential Building and Unit Count Database Summary

| | | Buildings | | | Units | | |
|---|---|---|---|---|---|---|---|
| | | Total NYS | Total NYC | Total Non-NYC | Total NYS | Total NYC | Total Non-NYC |
| Single Family (1-4) | All Income-Levels | 4,911,077 | 946,068 | 3,965,009 | 4,632,509 | 1,294,767 | 3,337,742 |
| | LMI* (incl. subsidized) | 1,624,196 | 385,704 | 1,238,492 | 1,718,427 | 605,558 | 1,112,869 |
| | Subsidized | 2,268 | 901 | 1,367 | 6,555 | 2,923 | 3,632 |
| Multifamily | All Income-Levels | 336,523 | 86,471 | 250,052 | 2,388,573 | 1,911,575 | 476,998 |
| | LMI* (incl. subsidized) | 121,277 | 54,852 | 66,425 | 1,492,846 | 1,282,570 | 210,276 |
| | Subsidized | 16,200 | 14,215 | 1,985 | 618,269 | 579,676 | 38,593 |
| Condo/Coop | All Income-Levels | 135,023 | 34,970 | 100,053 | 128,638 | 61,497 | 67,141 |
| | LMI* (incl. subsidized) | 42,526 | 14,182 | 28,344 | 74,148 | 29,987 | 44,161 |
| | Subsidized | 1,969 | 1,945 | 24 | 28,017 | 27,400 | 617 |
| **Total** | All Income-Levels | 5,382,623 | 1,067,509 | 4,315,114 | 7,149,720 | 3,267,839 | 3,881,881 |
| | LMI* (incl. subsidized) | 1,787,999 | 454,738 | 1,333,261 | 3,285,421 | 1,918,115 | 1,367,306 |
| | Subsidized | 20,437 | 17,061 | 3,376 | 652,841 | 609,999 | 42,842 |

Subsidy counts here only include addresses successfully linked to Database.
Single Family includes Mobile Homes
* LMI count only includes those in Database where income level is known as Low/Moderate (excl. Above/Unknown)

# Key Findings (1/2)

## Synthesis of Research and Analysis

- Northeast EE programs **do not offer a single *comprehensive electrification solution*** example, for either LMI or market rate customers
- **High Efficiency Heating Electricity Rates** are the only program example directly addressing the challenge of housing affordability and electrification impacts on customers' energy bills
- **Energy-Only Retrofits** solely to meet electrification goals are highly unlikely to be driven by energy cost savings under current market conditions. Heat pump + envelope project life cycle costs are favorable for only a small portion of NYS's LMI building stock
- Near-term pilot initiatives are needed to build market capacity, expand trade ally competencies, and test installation methods at manageable scale
- Newly-built Database of residential buildings in New York State provides a **strong foundation for quantitative analysis and identification of electrification opportunities** based on market segments and enabling characteristics

# Key Findings (2/2)

## Synthesis of Research and Analysis

A mix of program and non-program solutions are required to bring NYS's LMI electrification goals to scale

- Maintaining **income-eligible household energy affordability is the most pressing near-term challenge** for electrification efforts due to market installation and fuel costs; long-term affordability solution will likely require policy and regulatory changes supported by programs and data insights
- Program designs should assume **significant subsidy**; LMI residents will have trouble paying for project costs (particularly low-income), and project paybacks are long or non-existent
- Align NYSERDA programs and funding to **leverage existing income-qualified housing infrastructure replacement budgets** to electrify mechanical systems when buildings' existing systems reach the end of their useful life
- Concurrent **advocacy will be needed to shift broader market parameters**, including electric utility costs, heating and cooling allowances, and housing stock improvement policies

# LMI Heat Pump Demo Study Learning

NEW YORK STATE OF OPPORTUNITY. | NYSERDA

# LMI Heat Pump Demo Study – Scope Summary

- ~430 single family homes participating in EmPower or Assisted Home Performance
- ~30 multifamily buildings in the Multifamily Performance Program
- Development of short-term statewide standard offer incentive structures and program guidelines
- Eligibility parameters will be developed to address:
  - Fuels displaced to help ensure maximum benefit to the household/building
  - Minimum standards for building shell performance consistent with Comfort Home
  - Minimize cost-shifting of heat to tenants
- Collection of data and market insights on heat pump installations, including DHW
- Coordination with utilities on study learning objectives and transition plan to apply learnings to the next phase
- Inform development of pilot and demonstration projects

# Learnings to date from LMI Heat Pump Demo Study

- There is an appetite from LMI customers, building owners and contractors to electrify LMI homes and multifamily buildings
- Full subsidy of heat pumps and related items such as insulation and panel boxes has produced a much greater Low Income portion of the projects (±60%) than originally expected (vs. Moderate Income projects)

# Learnings to date from LMI Heat Pump Demo Study

- The vast majority (over 85%) of LMI single family homes need some kind of make-ready work before installing a heat pump, including approximately 17% that require electrical panel upgrades
- The single family contractor base is limited and uneven across the state. Most contractors are not set up with business models that can accommodate energy efficiency plus heat pump work.

# Learnings to date from LMI Heat Pump Demo Study

> The average costs across several hundred single family projects are:
  - $20,000 for a whole home air source heat pump system
  - $8,000 for envelope improvements
  - $2,000 for panel upgrades, when needed

# Learnings to date from LMI Heat Pump Demo Study

> Too few downstate single family projects, likely due to:
  - Lack of community campaign focus and support
  - Contractor capacity in EmPower and AHP
  - Incentives
> Too few single family HPHW, possibly due to:
  - Overall NYS Clean Heat focus on heating
  - Program design
> Costs vary significantly by single family contractor with no clear trend by number of projects

# Learnings to date from LMI Heat Pump Demo Study

> Most (63%) multifamily projects located downstate

> ~Half (45%) multifamily projects need an electrical service upgrade

> Most (57%) multifamily housing units are currently heated by electric resistance heat

> Two upstate multifamily projects plan to install GSHP whereas downstate projects all plan to install ASHP or HPWH

> There has been a significant amount of churn/attrition in the study. Most recently, a large high-rise dropped out because there was no NEEP listed ccPTHP that met their project's sizing needs

> As projects have dropped out, others have expressed interest. There has been a wait list in the study for some time.

# CA Low Income MF Weatherization Program

*Nick Dirr, Association for Energy Affordability*

ASSOCIATION FOR ENERGY AFFORDABILITY INC.

# Electrification Programs for Multifamily Buildings

## California Overview and Lessons Learned

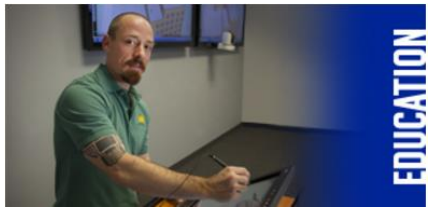
**Nick Dirr**, AEA
Senior Director, Programs
April 22, 2022

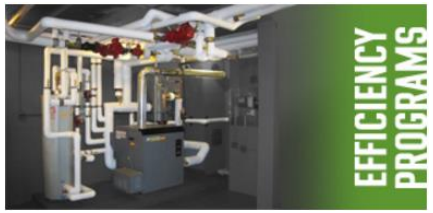
# ASSOCIATION FOR ENERGY AFFORDABILITY INC.

*Energy Efficiency is our Specialty, Affordable Housing is our Priority*

The Association for Energy Affordability, Inc. is dedicated to achieving energy efficiency and decarbonization in new and existing buildings in order to foster and maintain affordable and healthy housing and communities, especially those of low-income. With locations in CA and NY, AEA representatives engage in a broad range of educational, technical and construction management activities and services to promote this mission and develop the industry that advances and sustains it.

- Energy efficiency/Electrification program design and implementation
- Energy/Electrification research & demonstration projects
- Energy audits and green building design for new construction and existing buildings




# AEA MF Electrification Program Types

- Low-Income MF Whole Building
- General MF Whole Building
- Low-Income MF Individual Measures
- General MF Individual Measures
- Direct Install
- Midstream
- New Construction

# Space Heating Electrification Measures

- **A/C Already Existing?** Could be same form factor
  - Split DX Heat Pump
  - Packaged DX Heat Pump
  - Packaged Terminal Heat Pump

- **No Existing A/C?** Less benefit from traditional types, can consider new equipment types
  - Mini-Split Heat Pump
  - High Performance Unitary Heat Pumps


# Water Heating Electrification Measures

**Heat Pump Water Heaters**

- In-unit Residential
- Central Multifamily
- Dedicated Laundry
- Pool

# Other Measure Opportunities

- Electric Cooking
- Electric Laundry Drying
- Electrical Capacity
- Complimentary Programs
  - Solar PV
  - Electric Vehicle Charging
  - Battery Storage
  - Load Shifting

# Smart: Electrification + Energy Efficiency

- **Reduce loads** to make equipment smaller, easier, and cheaper
- **High performance envelope and ventilation** systems
  - Smaller heat pumps for space heating
- **Efficient plumbing** fixtures and distribution systems
  - Smaller & simpler heat pump water heaters
- **Smaller renewable energy systems** to offset overall energy use

# Key Program Features

Many of the programmatic best practices from standard Energy Efficiency Programs also apply to Electrification

- Streamlined and Simple (as possible)
- Single Point of Contact/ “One-Stop-Shop”
- Flexible and Adaptable
- Strong Customer Support and Technical Assistance

*It is critical to do these well given other challenges of electrification programs*

# Program Rebate Structures

- Higher incentives for in-unit measures
- Balance higher incentives for greatest GHG/Energy savings with costs/complexity to do the work
- Higher incentives for affordable MF – lack of ownership reserves
- Layering incentives anywhere and everywhere possible!

# Driving Program Participation

**Persuasion and Education!** Technical assistance for the property owner and contractors

- Pair electrification measures with existing or new Solar PV
- Cleaner air, safety
- Bill savings
- Equity
- 2-for-1 when replacing A/C
- Removal of gas meters (one utility to manage)
- Buildings are always going to have electricity
- Early adopters
- Take advantage of higher rebates
- Future regulation(s)

*Image: Dave Sweet*

# Electrification Project Challenges

- Electrical Upgrades - space for new dedicated breakers / capacity)
- Building modifications
- Upfront cost
- Consumer knowledge
- Contractor knowledge
- System sizing
- Range of options (many pros and cons)
- Programmatic quantification/reporting metrics

# How to scale electrification?

- “Scale” is relative. 5x is easy with more resources, but 100x?
- Midstream and upstream can help
- Downstream support still needed (project-based support and targeted downstream incentives)
- Direct install might work for some measures, but not for all
- Some upgrade opportunities could scale easily, while others will need specialized support

# Questions?

**Nick Dirr**

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Association for Energy Affordability

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# Break

*2:25 – 2:35*

# Small Group Activity

## *Overview*

- Ideation phase of determining how to design these programs
- Need to identify the areas of the existing SF and MF income eligible programs that need to be adjusted for electrification
  - New tool / resource, process change, knowledge gap, workforce shortage, lack of information
- Walk through existing IE program process flow, identify existing activities we know how to do, and new activities that need to be created and implemented
- Just initial brainstorming today, future workshops will focus on *how* to do the new activity

# Small Group Activity

## *Overview*

- Two small groups, choose your path: Single Family and Multifamily
- Elect a group spokesperson
- Open group Miro Board for real time idea sharing
- Existing program flows captured in matrix
  - Columns: High level step in the process
  - Rows: Participating party
- Teal sticky: existing activity we know how to do
- Orange sticky: new activity we need to design
  - Next workshop will focus on talking about all the orange stickies

# Small Group Activity

## *Overview*

- Spend the first 10 minutes individually brainstorming and contributing to the board – add at least 1 sticky to each column!
- Remainder of the time will be spent walking through each column and talking through activities and identifying gaps
- No limit to the number of stickies
- Don't edit someone else's sticky
- Quick tips at the top of the board
- We'll come back as a group and share out key takeaways, themes, interesting points of discussion, potential unexpected barriers

# Small Group Activity

## *Overview*

- Single Family Board: https://miro.com/app/board/uXjVO80rKmQ=/?share_link_id=160786960152

- Multifamily Board: https://miro.com/app/board/uXjVO7yd6QQ=/?share_link_id=470126003886

# Large Group Discussion

## *Overview*

- Small group report out
- Reactions / Questions / Potential Issues for each group
- Suggestions for next two workshops

# Closing

- Key takeaways
- Next workshop date TBD soon
- Additional considerations?
  - New TRM measures?
  - Policy manual updates?
- Closing words from ComEd

# Thank You!

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