LEAN Electrification Update: Current Status, Challenges and Opportunities

EEAC, July 2023

HP: Achievement, Pipeline, Projections

- 2022 Reported Heat Pumps*: 1,329
- 2023 Completed Heat Pumps: 468
- 2023 In Process Heat Pumps**: 1,961
- 2023 In-Process/Complete Heat Pumps: 2,429
- 2022-2023 Goal In Process/Complete: 105%
- 2022-2024 Goal In Process/Complete: 65%

In the first 6 months of 2023, we have enough in process or complete projects to achieve term to date goals by end of 2023!

*Combined Single Family and Multifamily Programs
**In-Process Includes projects in stages: Assessment, Agreement, Approved, Installation
2022/2023 Unit Goal 3585

HP: Network Activities to Achieve

Achieving Strategic Clarity

- Targeting deliverable fuels/electrics
- Leveraging city & town assessor data
- Small Multifamily outreach

Strengthening Lead Vendor Role

- Increase in pipeline reporting
- LV Approval of all HP projects

Deploying adaptive plan

- Partial & full displacement
- Multifamily and single family
- Gas to electric options

Stakeholder Engagement

- Recent Agency HP Roundtable
- Continuous Training
- Educating Vendors
- Educating Customers

CFP Status: Verifying all referrals through Statewide Client Services Center, delivering EE for qualified referrals
HPC Status: Onboarding Kick-Off 6/30/2023, Contracting/training in process, tgt September expansion

HP: End to End Customer Education

Assessment

- Any fuel type; is this the right fit?
- Gas: operational cost discussion
- Full vs partial displacement
- Enough heat

Design/Installation

- Head placement
- Ensure proper sizing
- Condenser location
- Installer confirmation
- Owner sign off on proposal

Post Installation

- PA funded maintenance
- Customer Education on Operation
- CAA available for any issues
- Manufacturer reps available for maintenance training

GETTING THE MOST OUT OF YOUR HEAT PUMP

Set the heat pump thermostat or hand held remote for comfort

Don't worry too much about the specific temperature on the controllers.
- You may find it comfortable to set it a bit higher in colder weather; that's OK!
- It's also OK to overheat one room a bit, to help heat more of the house

Settings used on the controllers are the Key to Good Heat Pump Performance
(This applies to handheld remotes and or wall mounted thermostats)

Use these settings listed below to maximize savings and improve your comfort:

Set it and Forget it
- Avoid frequently adjusting the thermostat; try to keep indoor settings steady.
- It's fine to adjust temperatures up and down a few degrees as needed for comfort
- It's ok to adjust the temperature down a couple of degrees at night
- Turning down your heat pumps at night or when you're not home can make the system use more electricity and cost you more. Small changes within 2 to 3 degrees is fine.
- Avoid turning the heat pump unit(s) "on" and "off" to control the temperature in the house during heating season

Use the "heat" or "cool" setting on the thermostat or controller, rather than "auto"
- Set the indoor **fan speed** to "auto", so the fan runs only when needed.
- Don't shut your heat pump off in very cold weather! Your heat pump should be used as your primary system
- Cold-climate heat pumps still operate very efficiently when outside temperature drops below zero.
- Turn the fan up to a higher speed in cold weather to deliver more heat and improve efficiency.
- Be sure to keep debris and snow away from the outdoor unit(s).
- Before shutting your heat pump off after long periods of air conditioning, Turn the interior heads to "fan" mode and run it for an hour before turning off the Heat Pump. This will help dry out the interior of the unit and inhibit mold and dust collecting on the coils and filters.

Routinely Clean the filters on the inside units
- It is very important for the performance of the heat pump that the indoor air filters for **ductless mini-split** systems are cleaned every 4 weeks.
- For **ducted systems** the disposable filters should be replaced at a minimum twice annually before heat and cooling seasons. (Replace them more frequently if necessary (pets and multiple occupants)

Clogged filters and dirty coils can damage heat pumps and prevent them from heating or cooling the house which could make the system more expensive to operate.

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Review the back side for more contact information.

Single Family Electrification Opportunities

- Gas to electric is now an option for customers who understand cost implications
- Network training has accelerated heat pump installations
- Solutions for all types of installations: full and partial displacements
- Increasing building shell upgrades including windows (cost effective where existing single pane, close to double pane being cost effective)
- Shifting budget from replacing fossil fuel (oil/propane) heating systems to **increasing** weatherization/heat pump installations from budgeted goal

Single Family Electrification Challenges

- Customer adoption of, resistance to heat pumps
- Customer behavior, regular appliance maintenance
- Landlords driving uninterested income eligible renter to convert to heat pump
- Installer network needs expansion, including subcontractors (electricians)
- Need to increase number of companies that perform HP maintenance
- Considerations on refrigerant and environmental implications
- Air to water not ready for 1-4 residential
- Gas to electric, high energy cost burden

Multi-Family Electrification: Two Pathways

Deep Energy Retrofit (DER)

- Defined as retrofit to an income eligible multifamily building projecting a 40% reduction in site Energy Use Intensity (EUI) compared to existing building conditions

- Incentive: $350 per million BTU (MMBTU) projected savings

Electrification Only

100% Incentive (standard path)

- Gas to electric can be cost effective under normal program CE criteria

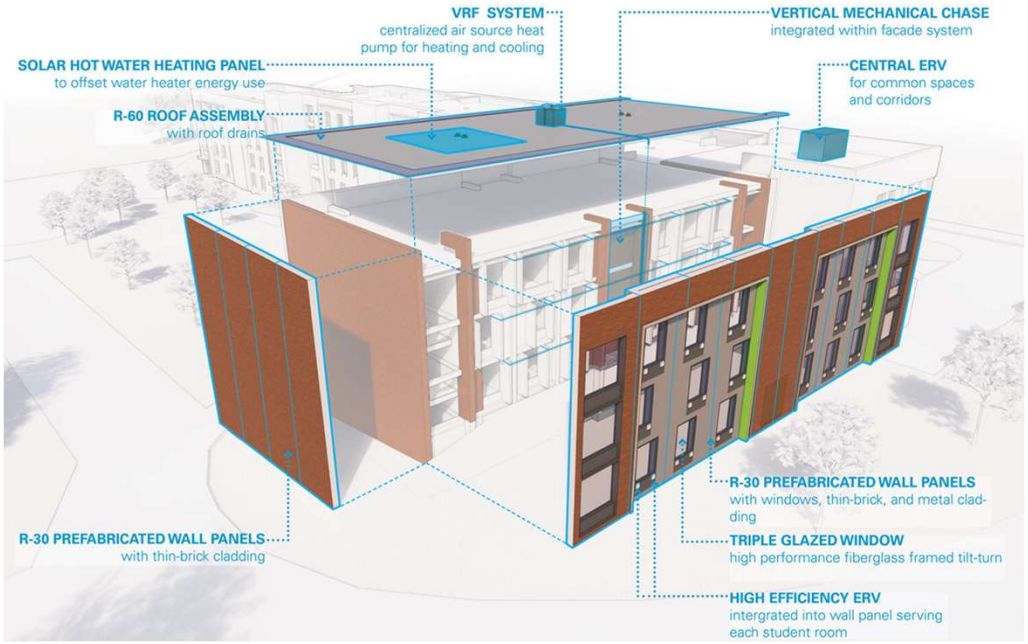
-Oils and deliverables generally cost effective

Per Ton Incentive

If project is not cost effective electrifying from gas, per ton incentive applied to project

DER Multi-Family Projects

- Estimated incentives currently range from $450,000 to $5.5 million
- Payouts expected to start in the 2024 Program Year
- Customer interest increased, impacting regular program engagement



https://www.ashleymcgraw.com/suny-oneonta-ford-hall-der

Multi-Family Electrification Heat Pump opportunities

- Air to water
- Building envelope - strategic and deep
  - Foam
  - Windows
  - DER, bringing together other financial resources
- Connected hvac controls and high efficiency baseboard
  - Save therms now and KWH in future for air to water heat pumps
  - Reduces existing gas usage by lowering the set point temp and ensuring condensing

Multi-Family Electrification/Heat Pump Challenges

- Specific to existing fuel type
  - Electric baseboard to heat pump: Increased costs related to maintenance staff time (Almost 200 HP declined by PHAs)
  - Deliverable fuel to heat pump: Mostly design/understanding technology
  - Gas to heat pump: Service upgrade cost; cover under program now, but is getting expensive
- Energy cost burden and metering configurations
- Limits in electric grid service capacity
- User Behavior: Residents, Staff
- Maintenance
  - Staffing within housing sites
  - Vendor network
- VRF still very expensive
- Timeline for DER/Electrification not fully covered by MassSave makes timeline of installation uncertain and will cross multiple three year plans
- Mixed Income buildings / Mixed Incentive structure
- Condos / Mixed Ownership

Electrification: Looking forward

- Continue to successfully grow engagement with HPCs, CFP and other entities engaging with customers to increase customer engagement
- ABCD implementing gas to electric stove pilot to learn about that installation process
- Continue to successfully increase engagement with local municipalities to get more data to identify deliverable fuel residences to outreach to all building types
- Owner education on what program can provide and provisions to ensure positive benefit to IE resident
- Partnership with local, state, federal entities & policy to develop, deliver coordinated electrification initiatives