NYS Clean Heat Working Group Series

for Participating Contractors & Industry Partners

Session #20

April 18, 2024 9:00 am–10:00 am

NYS Clean Heat
Joint Management Committee

NEW YORK STATE | NYS Clean Heat

Agenda

- **Meeting procedures** (2m)
- **Welcome** (2m)
- **Safety Message** (2m)
- **JMC updates and discussion (**45m**)**
  - 3/1 Program Manual Updates
  - Additional Recent Filings
  - Installation Best Practices Case Studies
  - Upcoming Training Opportunities
- **Stakeholder Presentation(s)**
- **Resources, support, and next steps** (5m)

Meeting procedures

Before beginning, a few reminders:

- **All attendees will be muted**
  - For questions or comments throughout, please use either the Raise Hand or Q&A functions
    - Select the Raise Hand icon in the bottom toolbar, or hover your mouse over your name in the Attendees list in order to see the Raise Hand icon displayed
    - When you have finished asking your question, select the Raise Hand icon again to lower your hand
  - If an attendee opts to use the Raise Hand function to ask a question or make a comment, the meeting moderator will call on that attendee and unmute individually
  - When using the Q&A function, please be sure that your question is directed to “All Panelists”, rather than one specific individual
    - Q&A function is private – the team will share public responses as appropriate
- Slides, notes, and a compilation of Q&As will be posted after the meeting
- If technical issues arise, please contact NYSCleanHeat@ceadvisors.com

Welcome

Joint Management Committee (JMC) Co-Chairs:

> **Ray Cotto**, Central Hudson

> **Will Xia**, NYSERDA

> *Other JMC Members:*

- **Toby Hyde**: Con Edison
- **Jim MacMartin**: National Grid
- **Julie Hawkins**: National Grid
- **Nicole Williams**: NYSEG, RG&E
- **Chris Trenard**: Orange & Rockland

> *Our implementation team today:*

- **Kenn Latal**: ICF
- **Tim Walsh:** ICF

> *Our Working Group support team:*

- **Ben Davis:** Concentric
- **Pieter Zwart:** Concentric
- **Clara-Ann Joyce:** Concentric

Working Group Series

Review of typical meeting format

- **Working meetings between Participating Contractors, industry partners, and other stakeholders with the NYS Clean Heat Program Administrators**
- To foster:
  - Transparency
  - Coordination and communication
  - Prioritization
  - Solution development

Multitasking is a myth when driving!

Distracted driving can cause one to miss up to half of what's in their view.

3 types of distractions:

- Visual: Billboard, accident, scenery, etc.…
- Manual: Eating, GPS, adjusting settings, texting, etc.…
- Cognitive: Fatigue, anxiety, stress, etc.….

How to combat distracted driving:

- Take the time to adjust vehicle settings prior to driving, including GPS- know your route
- Silence phone/devices and store away from hands reach
- Take micro breaks to hydrate, refresh, and refocus

Program Manual Updates from March 1, 2024

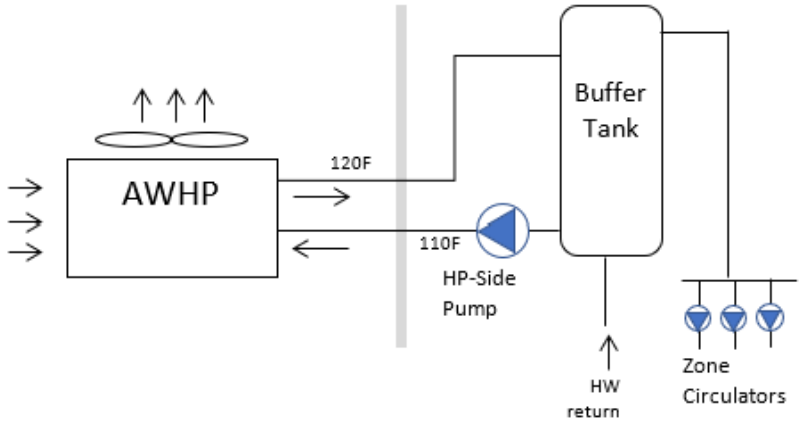
New Definition for Full Load Heating Systems

- The definition of a full load heating system has been updated to: "An installed system that satisfies at least 100% of total building heating load (BHL) at design conditions."
- Up to this change, projects have been required to satisfy at least 90% of BHL to qualify as full load.
- This change is applicable to all full-load categories including custom projects.
- Prescriptive projects submitted after April 1st must use the new definition of full load at 100%.

Date Filed	Version	Topic	Description of Change	Section/ Page
3/1/24	11	Eligibility – Full Load Heating	All space heating incentives are for Full Load Heating Systems, unless otherwise noted	Sections 2, 3.3

Air-to-Water Heat Pump Offering

- The NYS Clean Heat Program now offers incentives for projects involving air-to-water heat pumps (AWHP) for residential space heating as of March 1, 2024.
- The JMC has developed a qualified products list in coordination with Efficiency Vermont.
- Incentive levels and other details are outlined in the Program Manual that was released on March 1.
- If you are interested in installing an AWHP, please reach out to your account manager to provide any upcoming project information.



Partial Load Incentives

- National Grid has discontinued Category 1 partial load incentives.
  - This was the last utility to offer partial load incentives in the Program
- As of January 31, 2024, no utilities offer Category 1 incentives.

Table 2: Incentives by Utility

Category	Description	Incentive	Central Hudson	National Grid	NYSEG/ RG&E	Orange & Rockland
2	*ccASHP: Full Load Heating*[15]	$/10,000 Btu/h of maximum heating capacity at NEEP 5°F	$500	$800	$800	$700
2a	*ccASHP: Full Load Heating with integrated controls* (inclusive of base incentive):	$/10,000 Btu/h of maximum heating capacity at NEEP 5°F	$700	$1,000	$1,000	$1,000
2b	*ccASHP: Full Load Heating with decommissioning* (inclusive of base incentive):	$/10,000 Btu/h of maximum heating capacity at NEEP 5°F	$1,000	$1,200	$1,200	$1,400
2e	*Air-to-Water Heat Pump, for space conditioning*	$/10,000 Btu/h of heating capacity at the condition of 5°F ambient and 110°F leaving water temperature, or A5W110, as documented by the AWHP QPL.	$500	$800	$800	$700
3	*GSHP: Full Load Heating*	$/10,000 Btu/h of full load heating capacity as certified by AHRI	$2,000	$1,500	$1,500	$2,000

Con Edison

Table 2: Residential ASHP Incentives

		Non-DAC		DAC	
Category Number	Description	Single Family Home	Apartment	Single Family Home	Apartment
2a	ccASHP: Full load heating with integrated controls	$2,500	$1,000	$4,500	$2,000
2b	ccASHP: Full load heating with decommissioning	$8,000	$4,000	$10,000	$5,000
2e	AWHP: Full load heating with decommissioning				

Table 3: Residential GSHP Incentives

		Non-DAC	DAC
Category Number	Description	Whole Building	Whole Building
3	GSHP: Full Load Heating	$25,000	$35,000

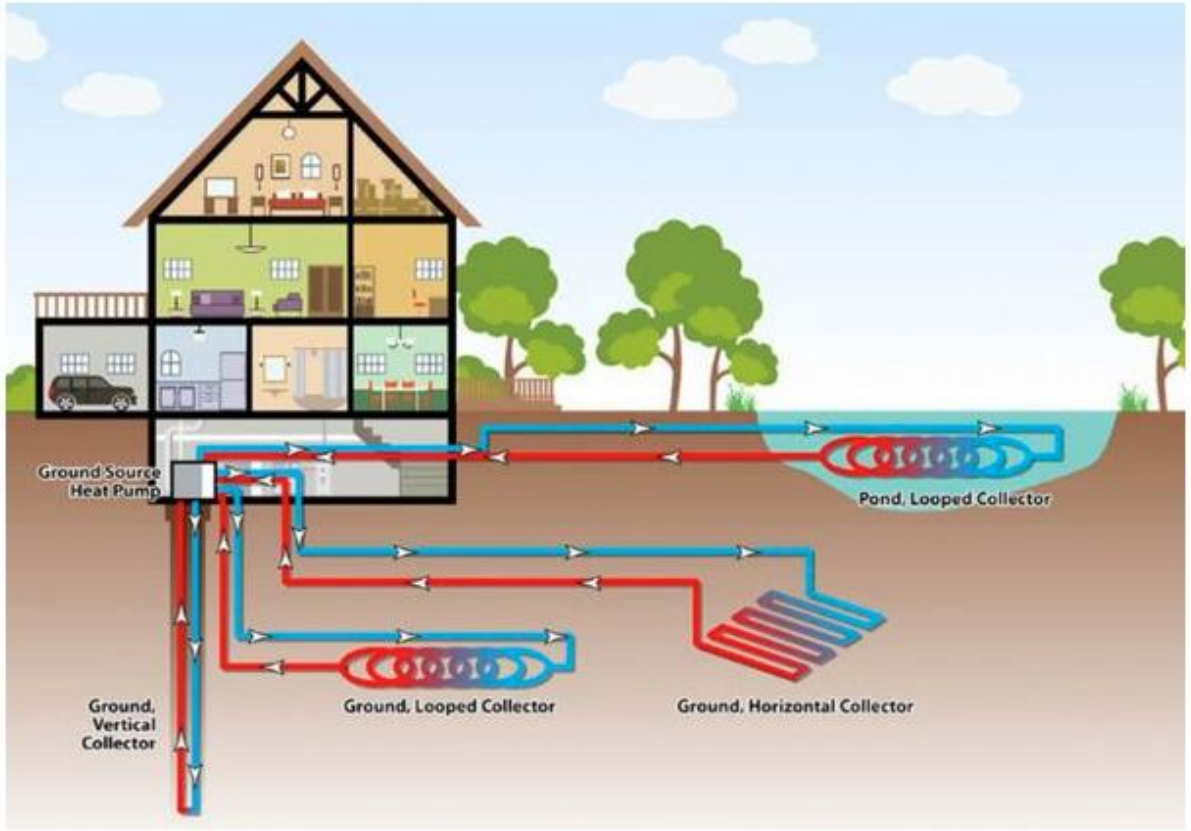
Category Name Adjustments

- Updated category names:
  - Category 5: *Residential Rate HPWH*
  - Category 7: *GSHP Desuperheater in Category 3 GSHP Systems*
  - Category 8: *Water-to-Water Heat Pump ("WWHP") Used to Meet Domestic Hot Water ("DHW") Load in Category 3 GSHP Systems*

Category	Description	Incentive	Central Hudson	National Grid	NYSEG/ RG&E	Orange & Rockland
5	*Residential Rated HPWH: Retail*	$/Equipment unit	$1,000	$700	$700	$1,000
	Residential Rated HPWH: Midstream	$/Equipment unit	$1,100	$800	$800	$1,100
6	*Custom Hot Water Heating Applications*	$/MMBtu of annual energy savings	$70	$70	$70	$70
7	*GSHP Desuperheater*	$/Equipment unit	$150	$100	$100	$150
8	*WWHP used for DHW*	$/Equipment unit	$1,000	$900	$900	$1,000

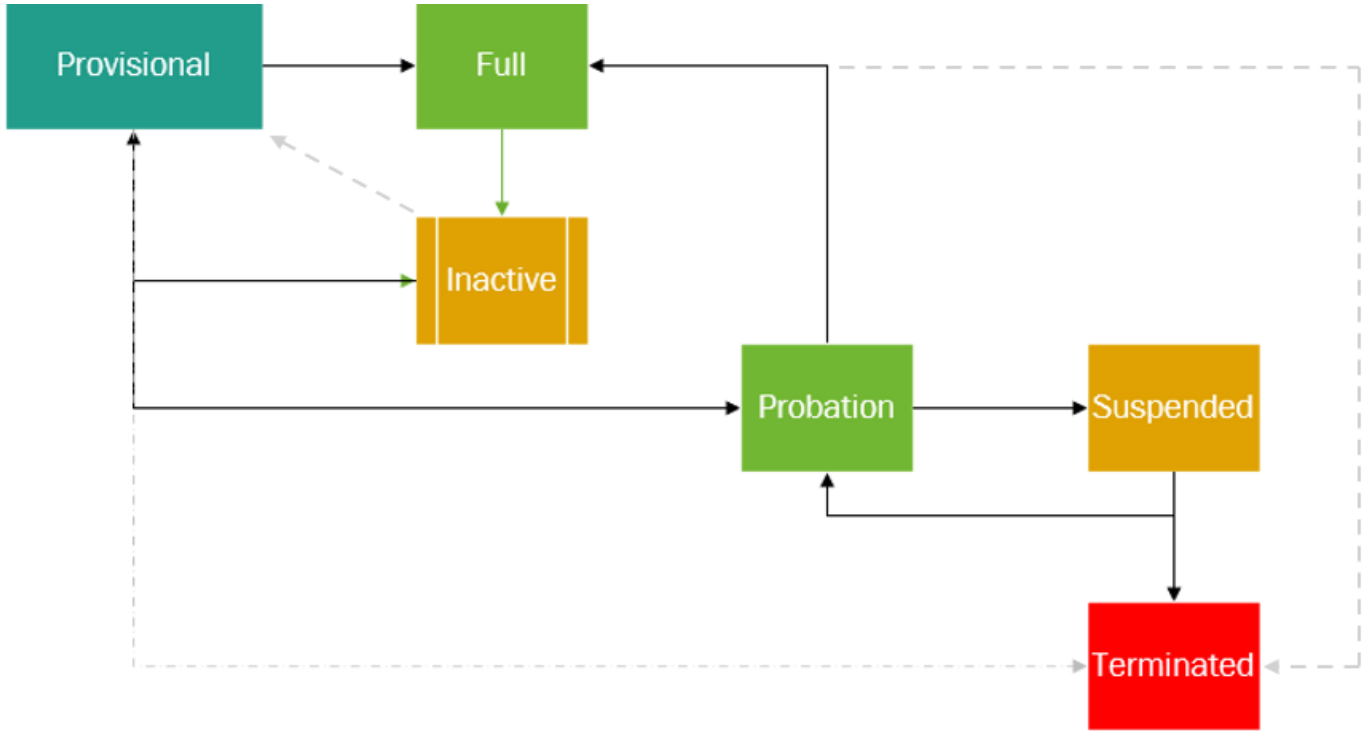
Category 3 GSHP Sizing

> Category 3 GSHP projects must be sized to meet at least 100% of the load of the project scope at design conditions and serve at least 80% of the building's total square footage



Inactive Status Minimum Thresholds

- In order to be considered “active” in the NYS Clean Heat Program, contractors must submit at least one application to the program every 6 months
  - This threshold has been changed from 24 months



Con Edison Clean Heat Updates

- Project applications must be submitted by May 31, 2024 to be eligible for the 2024 Limited-Time Promotions
- Introduced non-resi GSHP incentives for Thermal Conductivity Testing (TCT)
- Expanded MF offerings
  - Increases the eligibility for our prescriptive $/dwelling rate up to buildings with 100 units
  - Allows buildings of any size to submit for partial load custom categories
  - Introduced a new offering for MF prescriptive water projects (Category 6a)

New and Updated Tools and Resources

- New and updated technical documents are now available on the program resources webpage:
  - *Design Temperature Lookup Tool*
    - *This tool provides the design temperature reference by zip code.*
  - *Guidance for Acceptable Load Calculations*
    - *This document provides guidance on how to perform heating and cooling load calculations for applications to NYS Clean Heat.*
  - *Statewide Custom Calculator v3.0* and *User Guide*
    - *This tool assists PCs with calculating custom energy savings for projects that involve the installation of NEEP cold climate single package, cold climate mini-split air source heat pumps, large unitary air-to-air heat pumps, air source variable refrigerant flow (VRF) heat pumps, and large closed ground loop heat pumps with centralized pumping.*
  - *Statewide HRC Calculator v1.1* and *User Guide*
    - *This calculator is to be used for water-source electrically operated Heat Recovery Chiller(s) that operate to meet year-round hot water (HW) and chilled water (CHW) loads.*
  - *Clean Heat Category 6 DHW Calculator v3.0*
    - *This tool assists PCs with calculating energy savings for Category 6 DHW projects.*

New Website Layout

- As of March 1, 2024, the NYS Clean Heat website has a new layout
  - References in the March 1 Program Manual will reflect the updated website location
- Primary website link remains https://cleanheat.ny.gov/contractors

Additional Recent Filings

- A new Clean Heat Implementation Plan was filed in conjunction with the Program Manual on March 1, 2024
  - Additional note added regarding projects scheduled to be completed after the currently authorized funding period ending in 2025
  - Residential AWHP added as an eligible technology
  - Reference noting that customers or projects participating in a Utility Thermal Energy Network project are not eligible for Clean Heat incentives
- The Clean Heat Program's 2023 Annual Report was filed on April 1, 2024
- Both can be found in the NYS DMM system in Case No. 18-M-0084

Installation Best Practices Case Studies

The Issue is *Not* the Heat Pump – It's the Application

February 13, 2024

Matt Christie, Director; Residential Decarbonization - TRC

The Naysayers

Whole-home heat pump heating is viable in upstate NY

Yet - a vocal minority can scuttle progress

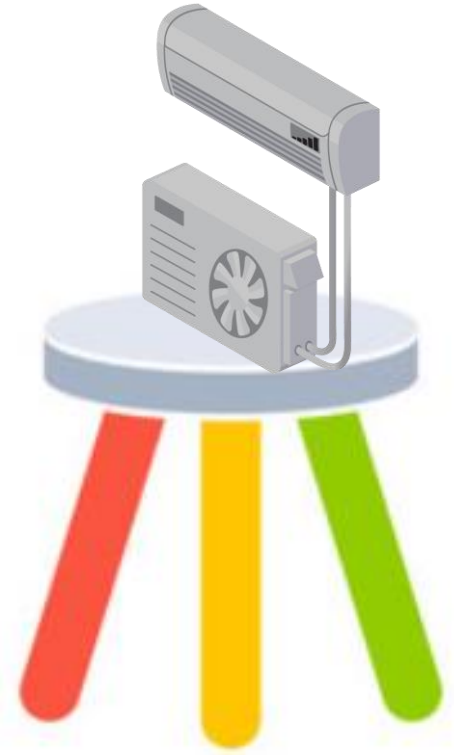
Out of:

- 17,639 *NYS Clean Heat* ASHPs upstate
- ~ 13,500 whole-home heating
- ~ 20 customer complaints in 3 years

The Naysayers say:

- Heat pumps can't handle *real* cold
- They blow cold air
- They don't keep my house comfortable
- The electric bills are way too high
- You *need* a backup furnace or boiler

Where Does the Blame Go?



- **Sizing, Design, and Product Application**
- **The Heat Pump's Functional Capacity**
- **Installation Quality**

The Over-Oversized Catastrophe

The House

- 3,826 square foot split level ranch
- Lower Hudson Valley
  - design temp = 14°F
- Whole-home heat pump
- Manual J design load = 109,251 Btuh
  - = 28.5 Btuh/sq.ft.
- Installed 3 systems with a combined 140,000 Btuh nominal capacity. Paper-work showed it was 116% of design.

The Complaints

- 32,288 kWh use from November to May
- $5,000 surprise electric bill when they switched from “estimated” to “actual” meter reading
- In the summer – unable to cool below 84°F on a 95°F day

Deep Dive

- ~~Refrigerant charge?~~
- ~~Air-flow blockage?~~
- Oversized system?

Manual J Review - 109,251 Btuh calculated load:

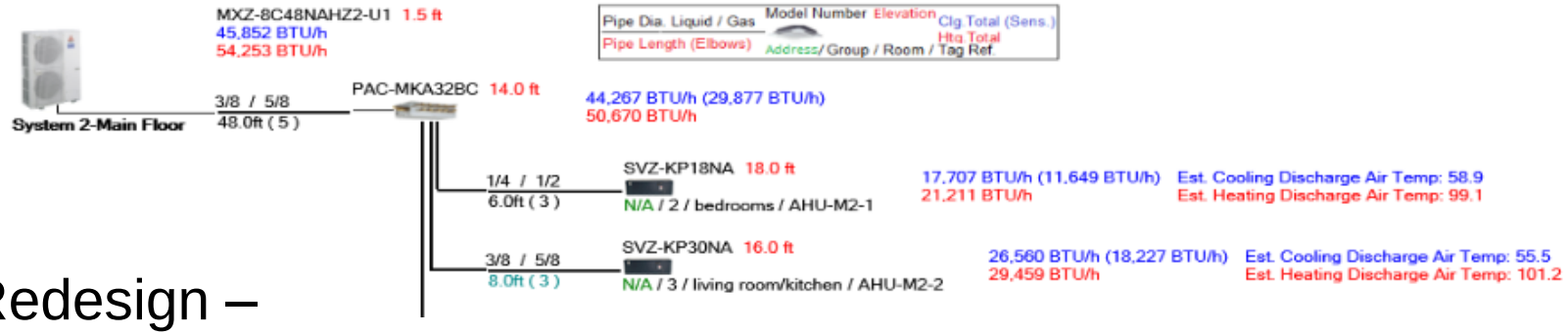
- Used -4°F as the design temperature (rather than 14°F)
- Modeled 25,215 Btuh of duct losses, when only 1/3 of house is served by ducts.
- Modeled floors and ceilings *between* conditioned space (adiabatic surfaces) as external-surfaces with heat loss
- Modeled single-pane windows throughout

Actual Design Load – 62,186 @ 14°F

- System Capacity @ 14 = 140,000.
- System is 225% oversized leading to purge-cycling

Was that All? – Not Quite

- System 1 – Paired an unused basement with the main living area
- System 3 – Paired an occupied above garage apartment with a “future use maybe” head in the uninsulated garage.



Redesign –

- One 48K system serving the main living areas
- A 24K system, mostly unused, serving basement and garage
- A 18K system serving the above-garage apartment

Happy customer, functional heating and cooling, reasonable bills

The “Don’t Pair Those” Blunder

- New construction multifamily all-electric building
- Thoughtfully sized, well-placed heads with open floor-plans for easy distribution
- Mostly small 1, 2 bedroom apts.
- Customer comfort complaints – erratic temperature swings

The “Don’t Pair Those” Blunder

What we found on the roof:

- Big 48-60K outdoor units
- Multi-port octopuses
- Multiple replacement units, ready to be installed

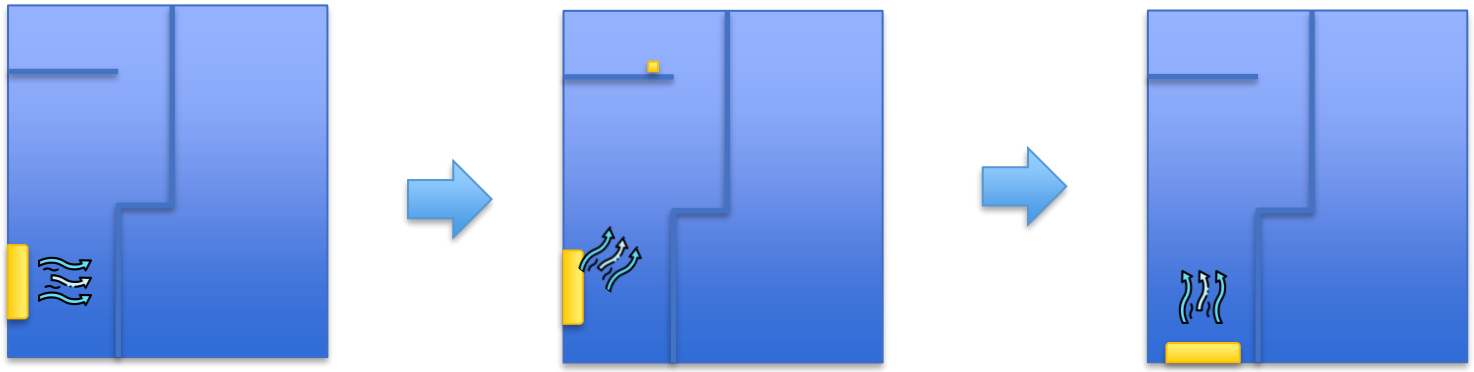
The Issue:

- Installers had paired multiple apartment units to the *same* outdoor compressor.
- Systems were unable to turn-down low enough when the *other* apartment wasn’t calling for heat.
- Short-cycling and poor temperature maintenance.

The “Can’t Get There From Here”

The complaint – my kitchen, and the pantry behind it, never get warm enough. I’m running my backup constantly.

The discovery – ductless head place across a narrow room

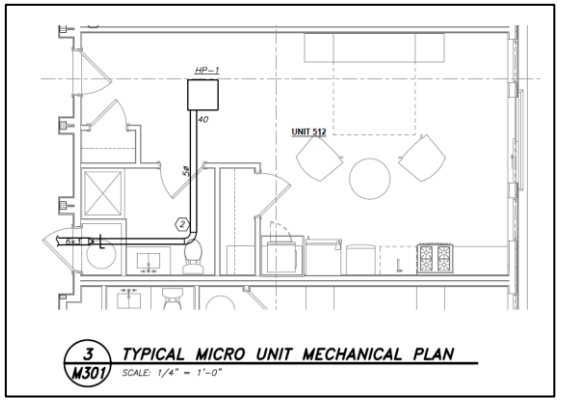


Adjust fans, place remote sensor

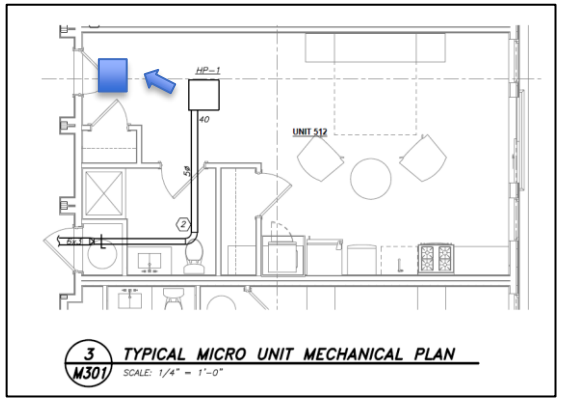
Better: Move the head

The “Shouldn’t have Moved That”

The complaint – I need to crank the thermostat to get the room warm



The discovery – the ceiling cassette’s planned location was moved during construction

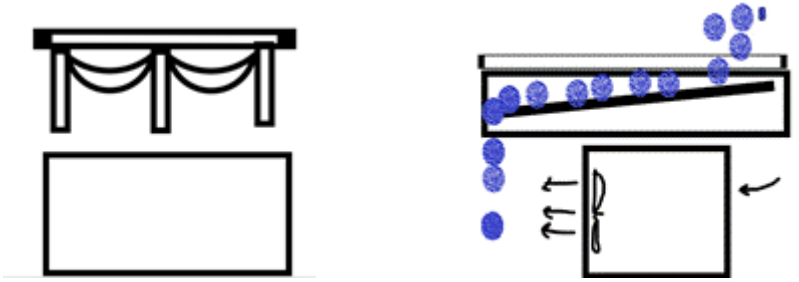


The Ice Block #1

The complaint – Insufficient heat, high bill

The discovery – Compressor ice-block!

The solution – Install baffles between deck joists



The Ice Block #2

The complaint – Left for Florida, turned down the heat to 50°F. Received a $2,000 electric bill.

The discovery – Compressor ice-block!

The solution – don’t place units under gutters if avoidable.

If you must – make sure your gutter is solidly secure.

The “I didn’t think about that”

No complaint – just a standard field inspection.

The discovery: “We didn’t like how they looked under those stairs”

The Stacks on Stacks Dripper

- Gut-rehab converted warehouse
- Ran out of roof space for compressors, so wall mounted a few
- Pre-incentive quality control inspection, no complaints (yet)

Same-day repair: diversion hoses

The Duct, Duct, Fail

The House

- 2,200 Condo in the Hudson Valley
- Re-used existing ducts from the prior natural gas furnace.
- Complaint: Thermostat set to 66°F. Too hot in one room (73°F), too cold in the other (59°F).

The Issue:

- The contract said “furnish and install new insulated ductwork”
- The contractor only installed a new duct *trunk,* and re-connected the existing room-runs
- The front room (hot) had a 6” duct running short and straight to the room
- The back room (cold) had a 6” duct meandering with turns, and a partly crushed section going over a joist.
- (Aside: a third run had disconnected, and been re-attached 3 times already)

All the Refrigerant Wasted

- Of the ~20 customer complaints – at least 8 can be connected to refrigerant charge/leakage issues.
- Use quality tools – eccentric flare tool and digital torque wrench
- Follow best-practices
- Follow manufacturer's torque recommendations
- Practice your skills with scrap copper

https://cleanheatconnect.ny.gov/installer-reference-materials/#flare-fitting

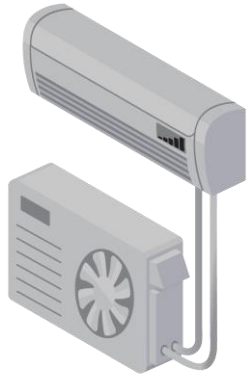
The Bad, the Worse, and the Ugly

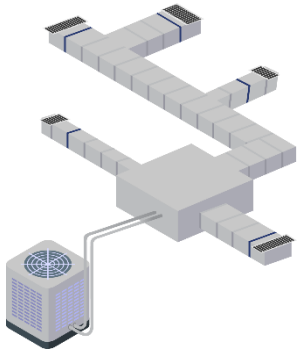
The Bad, the Worse, and the Ugly

Takeaways

A well functioning heat pump is:

- Sized right
- Paired right
- Lets the air move freely through the units
- Lets the air move into the room
- Charged right (and lines vacuum tested and sealed)
- Really, really good at heating and cooling any home in New York





Where can I get help?

Work through/with a Clean Heat Connect partnered distributor and manufacturer.
https://cleanheatconnect.ny.gov/

Clean Heat Connect Resources

- Sizing and Design training calendar
- NEEP Sizing visualization tool link
- Heat Pump Home-Runs (common design suggestions for different house-types)
- Flare fitting skills videos and guides
- Heat Pump Planner (consumer facing sales-support tool)
- ASHP Commissioning Checklist
- Snow-deflector product options
- NYS Clean Heat quality control checklist explainer

Questions?

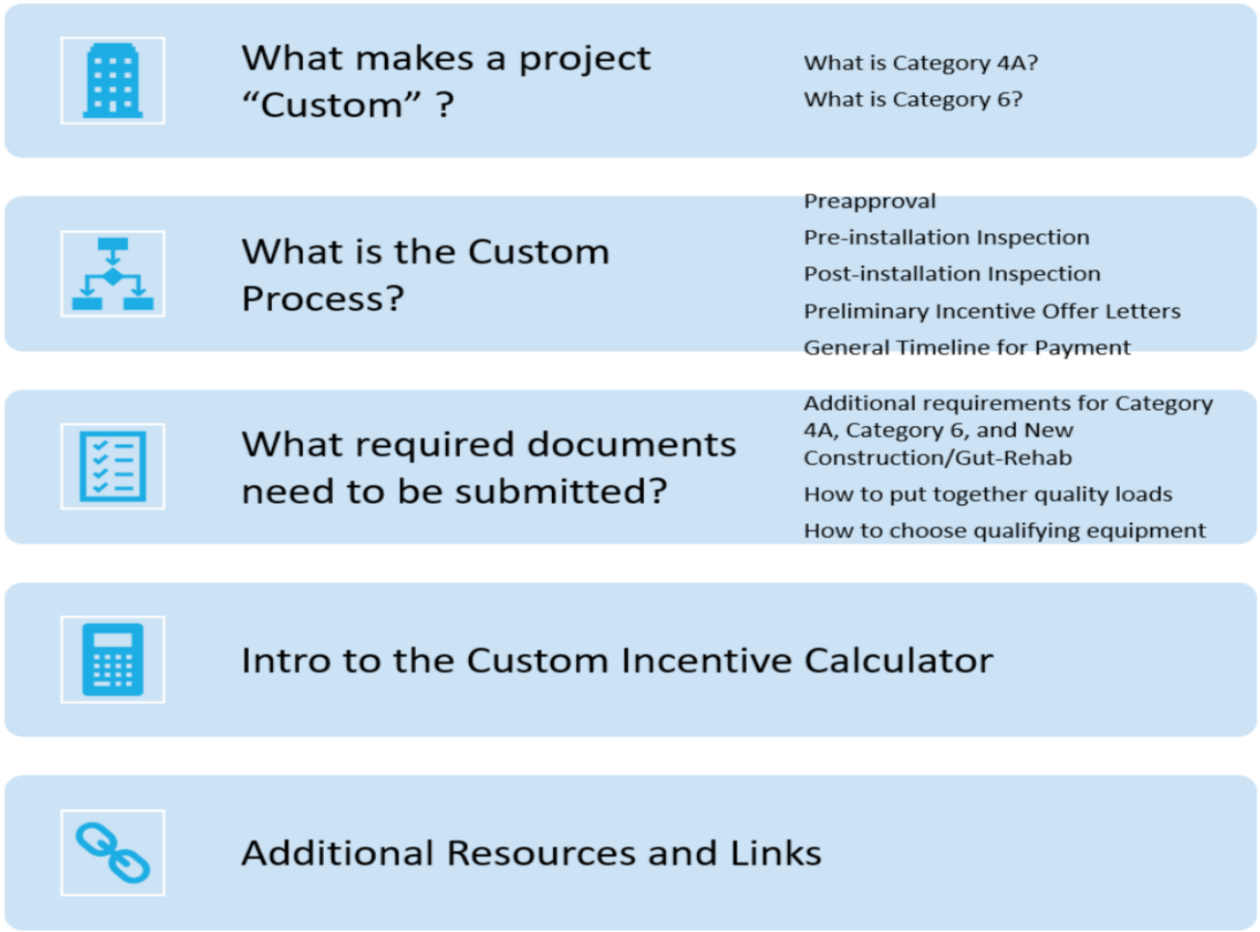
Matt Christie
TRC
mchristie@TRCcompanies.com

Upcoming Training Opportunities

School of Clean Heat – AWHP OIT Webinar

- Fri, Apr 26, 2024 9:00 AM - 10:00 AM EDT
- Registration at https://register.gotowebinar.com/register/5505046251644728414
- Key Points to be Covered:
  - Required certifications for enrollment
  - Qualified Product List
  - How to calculate the incentive (NYSEG, RG&E, Central Hudson, National Grid, ORU)
  - Submitting in the Online Intake Tool (OIT) (NYSEG, RG&E, Central Hudson, National Grid, ORU)
  - Additional Required documentation
- Separate AWHP OIT Training to be announced for Con Edison territory

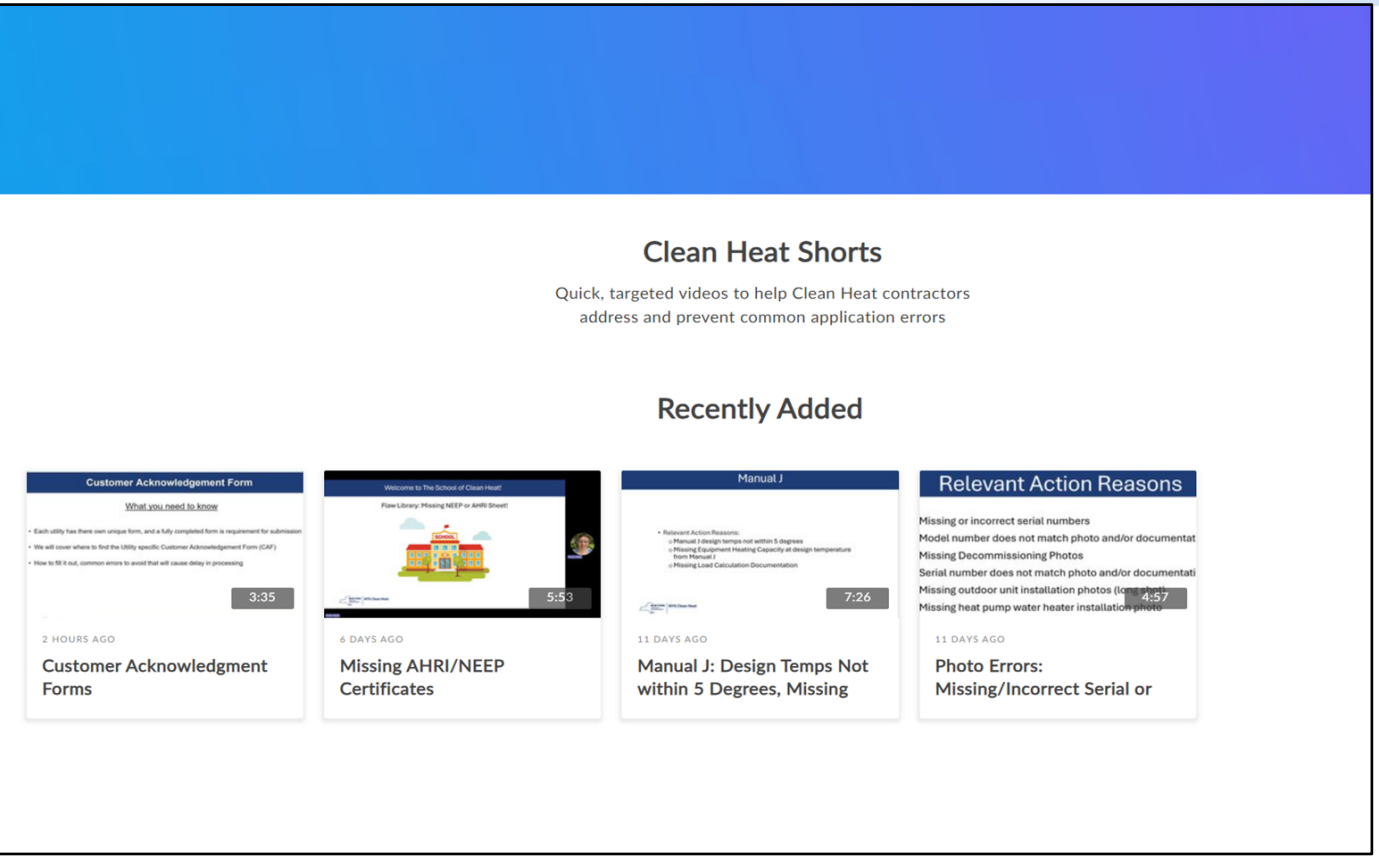
School of Clean Heat – Custom Application & Process Webinar



- Wed, May 15, 2024 – 9:00 – 10:00 AM
- This live training will reference the custom portion of the NYS Clean Heat program for National Grid, Avangrid, Central Hudson and Orange & Rockland.
- The webinar will be recorded for future access on our Upstate School of Clean Heat Training Channel.

Register for the Custom Overview Training today!

School of Clean Heat Shorts Channel



- Learn how to correct common application errors in minutes
- Cover only the specific training topics you need
- Access at anytime to fit your busy schedule
- Additional Clean Heat Shorts coming soon!

[Visit School of Clean Heat Shorts]

PNNL HVAC Contractor Survey

- Pacific Northwest National Lab (PNNL) is conducting a research study about HVAC contractor perceptions of heat pump technology.
- Focused on gathering insights on experience and perceptions of heat pumps
- Help identify needs and barriers to further heat pump adoption
- Anonymous responses
- Approximately 10-15 minutes to complete

Survey Link

Stakeholder Updates

> Topics encouraged to be coordinated via JMC through nyscleanheat@ceadvisors.com.

Reminder: Meeting Cadence

- The JMC has PC&IP meetings scheduled in early June, September, January and March.
  - Aligns with future program announcements and updates moving forward
  - Continuous feedback is still encouraged through program representatives and NYS Clean Heat email inboxes
- Utilities will continue engagement and outreach with individuals and small groups to align on potential program adjustments and get additional feedback from the industry

Resources, Support, and Next Steps

- Next PC&IP meeting on **June 13th, 2024** (9:00 AM-10 AM)
  - Please submit potential topics for the next Working Group by **June 6th** via email to NYSCleanHeat@ceadvisors.com or directly to your utility partner.
- **Email blasts** – twice per quarter
  1. Early week following Working Group: next steps, including slides, meeting notes and Q&A
  2. Week prior to meeting: Agenda items and report-out on prior items
- NYSCleanHeat@ceadvisors.com – for *program*-related inquiries
- NYSCleanHeat@icf.com and (844) 212-7823 for *project*-related inquiries
- NYS Clean Heat Website - (https://cleanheat.ny.gov/contractor-resources/)

NYS Clean Heat Project Status Inquiry Process

Project inquiries

1. Contractor reaches out to their dedicated account manager (AM) for issue resolution first
2. If the AM does not respond within three days, contact NYSCleanHeat@icf.com or the Utility Program Manager as listed below. These Program Managers work for their respective utilities, which have contracted with ICF to handle applications.

Utility Program Manager contacts

- **Central Hudson:** Ray Cotto, Assoc. Energy Efficiency Program Manager

  Phone: (845) 486-5750, Email: RCotto@cenhud.com

- **Con Edison:** Toby Hyde, Section Manager, Phone: (917) 565-6911, Email: hydet@coned.com, Dan Krupa, Manager, Phone: (212) 460-2831, Email: krupad@coned.com

- **National Grid:** Jim MacMartin, Program Manager, Phone: (315) 427-0723, Email: James.MacMartin@nationalgrid.com

- **NYSEG/RG&E:** Nicole Williams, Program Manager, Conservation and Load Management

  Phone: (585) 484-6592, Email: nicole.williams@nyseg.com

- **Orange & Rockland:** Chris Trenard, Program Administrator, Phone: (845) 577-2317, Email: trenardc@oru.com

Additional Resources

- **Co-chair contacts**
  - **Ray Cotto**, Central Hudson: Phone: (845) 486-5750, Email: RCotto@cenhud.com
  - **Will Xia**, NYSERDA: Phone: (332) 323-8368 (m) , Email: William.Xia@nyserda.ny.gov
- All program documents are located on the NYS Clean Heat Resources page (https://cleanheat.ny.gov/contractor-resources/)
- All regulatory proceeding documents are located on the NYS DMM (http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?Mattercaseno=18-M-0084)
- Additional program resources are available on the Clean Heat Connect website (https://cleanheatconnect.ny.gov/)

Thank you!


People. Power. Possibilities.
Central Hudson
A FORTIS COMPANY


conEdison


nationalgrid


Orange & Rockland


NYSEG · RG&E
Part of the Avangrid family


NEW YORK STATE
NYSERDA