A2Ls and the Refrigerant Phaseout for Stakeholders

2/27/2025

Department of Housing Preservation & Development

NEW YORK STATE OF OPPORTUNITY. NYSERDA

Tetem

Steven Winter Associates, Inc.

Independent Contractors to NYSERDA

R410A Phase Out Event: Agenda

Presenters:

- HPD
  - Jennifer Leone – Chief Sustainability Officer
- Steven Winter Associates:
  - Kevin McDonald – Principal Building System Engineer
  - Nicole Ceci – Principal Mechanical Engineer
- Mitsubishi:
  - Mitul Patel – Senior Director of Product Management
  - Sean Daley – Commercial Area Sales Manager NYC
  - Alec Del Vecchio – Commercial Regional Manager NYC
- LG Appliances:
  - Brian Bogden – Senior Director Engineering
- Others on the call:
  - Taitem Engineering: TAP Team
  - HPD BLDS
  - DEC: Suzanne Hagell
  - DOB: Tarek Arafat & Jose Cucalon

Agenda:

- EPA and the AIM Act
- DEC's role, timeline, and variance process
- Integrating new A2Ls into projects
- Manufacturer horizon for A2Ls
- Alternatives to central VRF
- Hydronic Systems
- Next Steps
- Q & A

Attendees:

- We will record this event
- Please introduce yourself in the chat
- If you have questions, please use the Q&A function

NYC Department of Housing Preservation & Development

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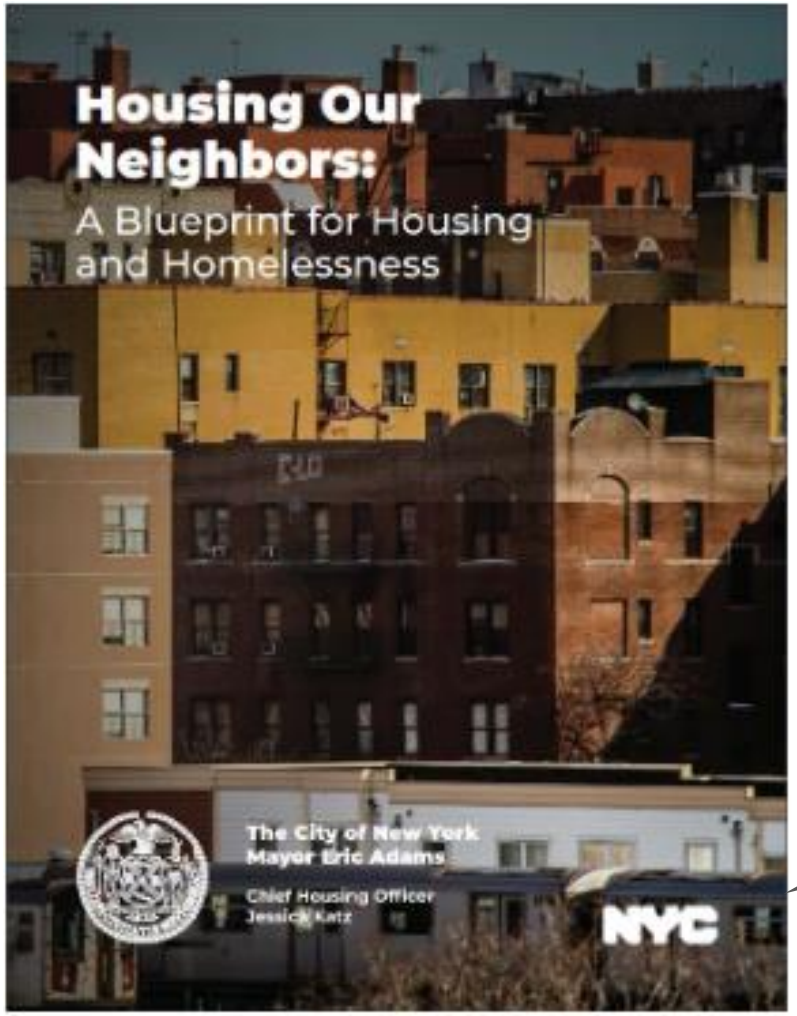
HPD's Commitment to Beneficial Electrification:



Fast-track equitable decarbonization and beneficial electrification to serve low-income households

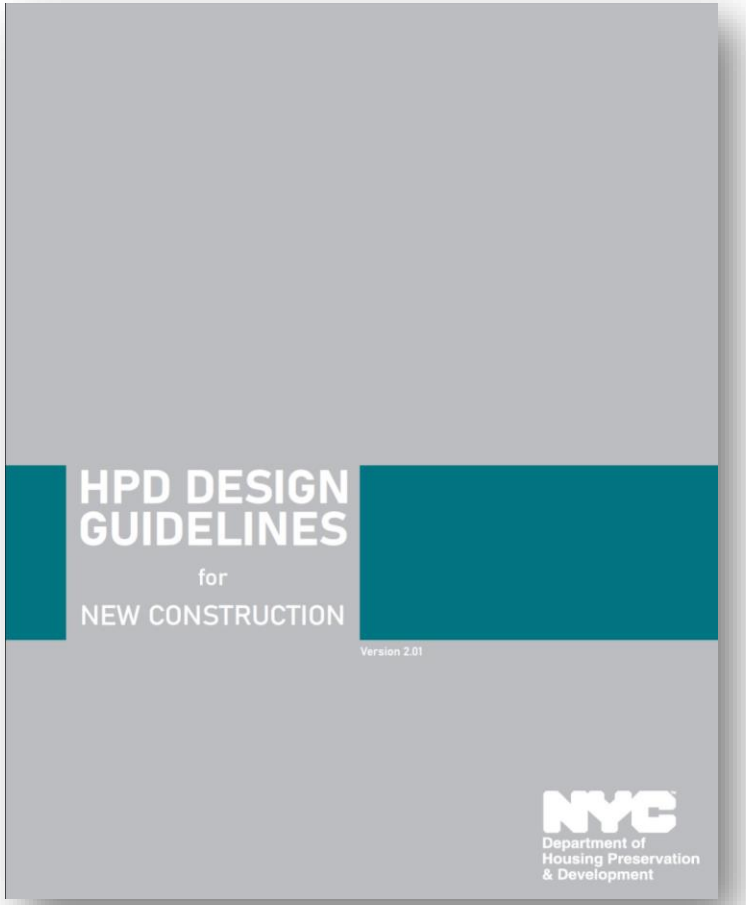
We must ensure that the transition from a fossil-fueled economy is fair and equitable. Reaching New York City's ambitious climate targets while meeting our environmental justice goals will require significant investments in our housing stock, including scaling up beneficial electrification. Beneficial electrification reduces building emissions without creating additional costs for residents, and without stretching the energy grid in ways that may increase pollution and other environmental burdens in communities already disproportionately impacted by climate change.

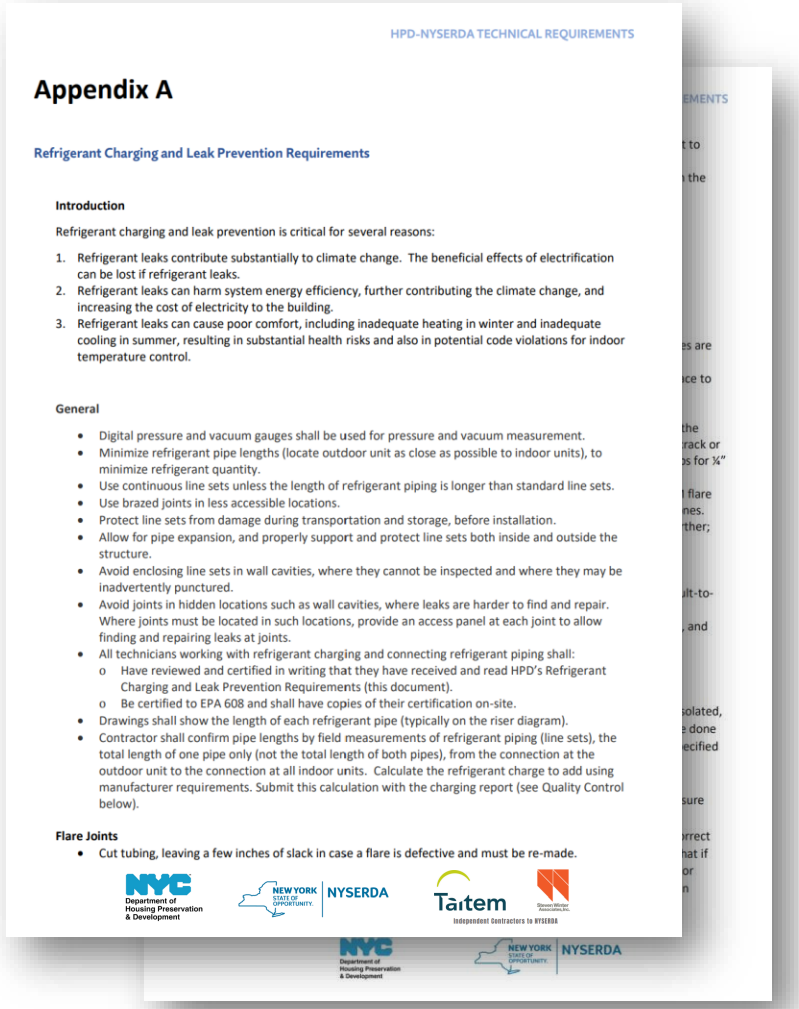
SPOTLIGHT; Incubate and Pilot new ideas to scale beneficial electrification & resiliency through programs like the Retrofit Electrification Pilot and REDi

SPOTLIGHT: Release Sustainable Design Guidelines that create a clear and equitable pathway to decarbonization

Housing-Blueprint.pdf (nyc.gov)

HPD Requirements for Refrigerant Management:





- Refrigerant leaks can greatly affect system efficiency and comfort, as well as posing significant harm to the environment. Projects must meet the Refrigerant Charging and Leak Prevention Requirements.

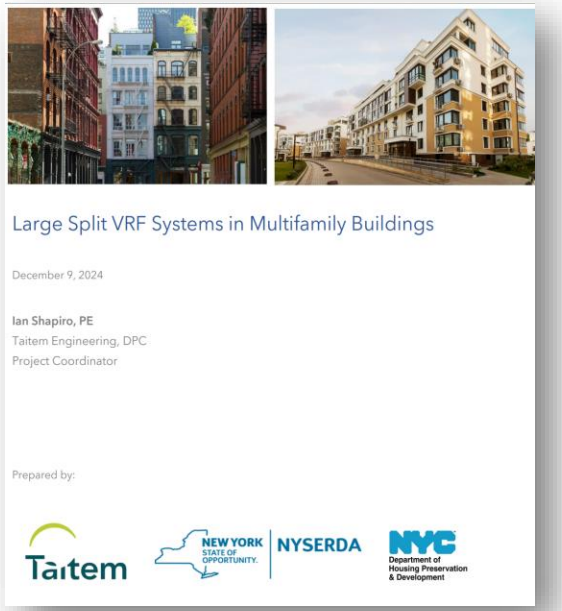
https://www.nyc.gov/site/hpd/services-and-information/redi.page

Guidance on Heat Pump Selection:

Heat Pump Type	Building/ Apartment Cnfiguration	Metering & Billing Strategy	Key Considerations	Installation Cost	Efficiency	Refrigerant Leak Risk
Packaged Terminal Heat Pumps (PTHPs/ Room Heat Pumps)	Ideal for buildings with PTAC or AC sleeves, because each heat pump requires penetration through façade (although new window adaptors are becoming more widely available). Most cost effective for 0-2BR apartments and/ or as a PTAC replacement.	Dual-wired for owner-paid heating and resident-paid cooling	Additional cost if wall penetrations/ window adaptors are requred. Dual wiring also adds some cost.	$$$$	*****	Low
		Wired to apartment meter, resident-paid heating & cooling*	Additional cost if wall penetrations/ window adaptors are requred. Only allowed for coops or where heating is already paid by rent-stabilized tenants	$$$/$$$$	*****	Low
Mini-split system	Where roof or outdoor space is available and building can accomodate limited refrigerant pipe legnths. Typically the most cost effective solution for large apartments	Wired to house meter, with cooling paid by owner	Owner must underwrite cooling into the M&O budget. Residents have less incentive to conserve energy.	$$$$	****	Medium
		Wired to house meter, with cooling sub-metered and billed to resident	Submetering cooling requires additional equipment and a 3rd party for billing, and collecting on cooling can be challenging.	$$$$	****	Medium
		Wired to apartment meter, resident-paid heating & cooling*	Only allowed for coops or where heating is already paid by rent-stabilized tenants	$$$	****	Medium
Central VRF	Buildings where no other solutions are available	Wired to house meter, with cooling paid by owner	Central VRF is more costly to install and maintain, and is less efficient than other systems. Issues in one apartment can cause full system shut-down. Owner must underwrite cooling into the M&O budget.	$$$$$	***	High
		Wired to house meter, with cooling submetered and billed to resident	Same as above, plus submetering cooling requires additional equipment and a 3rd party for billing, and collecting on cooling can be challenging.	$$$$$	***	High

**Resident-paid heating is only allowed with prior HPD permission. Shifting costs from owner to tenants in rent-stabilized or rent-controlled apartments is not allowed. All projects must comply with HPD's Electric Heating Policy.*

Lower-risk solutions



FAQ-Selecting a Heat Pump

The AIM Act and R410A Phaseout

EPA's AIM Act

Description:

The American Innovation and Manufacturing (AIM) Act authorizes EPA to address HFCs by phasing down the production and consumption of Hydrofluorocarbons (HFCs) which are potent greenhouse gases (GHGs) and facilitating the transition over time to next-generation technologies through sector-based restrictions on HFCs.

Type	Refrigerant	GWP	Toxicity and flammability classification
HFO	R1234yf	<1	A2L
HFO	R1234ze	1	A2L
HC (natural)	R290 (propane)	3	A3
HFC	R32	675	A2L
HFC	R410A	2,088	A1
HFC	R454A	238	A2L
HFC	R454B	466	A2L
HFC	R454C	148	A2L
HFC	R513A	631	A1
(natural)	R717 (ammonia)	0	B2L
(natural)	R718 (water)	0	A1
(natural)	R744 (CO_2)	1	A1

Toxicity and flammability classification: A= lower toxicity, B= higher toxicity; 1 = no flame propagation; 2L = lower flammability; 3 = higher flammability (See BS ISO 817[7] for full definitions). Grey shading indicates those refrigerants with GWP<150
Table 2: Refrigerants commonly employed in building services systems

R410A has 3-4X the GWP as next-generation HFCs and >2,000 times the GWP as natural A1s like and H20 and C02.

DEC's Timeline for the HFC Refrigerant Phase Out

On December 24th the New York State Dept of Environmental Conservation (DEC) finalized the HFC Refrigerant phase-out Law. Many manufactures, developers and designers expected a 1-year extension that would give them until the end of 2025 to pull permits, but this is not part of the DEC's timeline.

Per the law, as of January 8, 2024:

- Any building with a permit that includes R410-A has until 1/1/2027 to be installed, charged and started up
- Buildings without this permit have only until 1/1/2026 to complete.

Many near-term HPD projects thought they had more time, and will be unable to transition to A2Ls because:

- Limited availability of heat pumps with A2L refrigerants, especially for the larger VRF systems.
- Codes/ Rules for the new refrigerants, like fire-rated/ ventilated shafts, are not yet published (although A2L requirements are in ASHRAE 15- 2022 included by reference in 2022 Mechanical Code 1101.6).

DEC's Timeline for the HFC Refrigerant Phase Out

Time isn't the only issue. There are other considerations:

- VRF systems with >50 lbs of refrigerant (>100ft line length and >5 apts/system) will require Annual Refrigerant Management reporting to the state and possibly a Refrigeration System Operating Engineer at substantial cost.
- Availability of R410-A in the future is expected to be limited and could add significant costs and challenges for recharging, repairs and replacement.

Solutions:

1. Variance
2. Transition to new equipment using A2Ls
3. Reconsider system design to reduce refrigerant leak potential

DEC allows for an "Impossibility" Variance

A complete application for an Impossibility Variance must demonstrate that the Applicant cannot comply with the regulatory requirements. To apply for this variance, the Applicant shall submit an Application that demonstrates the following criteria:

1. A compliant substance is not currently or potentially available or a component needed for repair is not currently or potentially available;
2. A variance will not increase the overall risk to human health or the environment; and
3. The Applicant has used best efforts to anticipate and address the impossibility and any potential noncompliance, including minimizing any adverse effects of the greenhouse gas emissions related to noncompliance or making all efforts to repair all identified leaks and to operate and maintain equipment in accordance with manufacturer recommendations, where applicable.

The variance is not guaranteed, but DEC is working with us on this

HPD is seeking a Blanket Variance for Some Projects

A complete application for an Impossibility Variance must demonstrate that the Applicant cannot comply with the regulatory requirements. To apply for this variance, the Applicant shall submit an Application that demonstrates the following criteria:

1. A compliant substance is not currently or potentially available or a component needed for repair is not currently or potentially available;
2. A variance will not increase the overall risk to human health or the environment; and
3. The Applicant has used best efforts to anticipate and address the impossibility and any potential noncompliance, including minimizing any adverse effects of the greenhouse gas emissions related to noncompliance or making all efforts to repair all identified leaks and to operate and maintain equipment in accordance with manufacturer recommendations, where applicable.

HPD will submit for projects closing **before Q4 '25** that **cannot redesign** to A2Ls

Where equipment, space or information is not available to allow the transition (primarily central VRF)

Projects must follow HPD's Technical Guidance on **Refrigerant Management**

Submit for inclusion in the Blanket Variance:

R410-a Tracker for HPD Blanket Variance Request re: DEC Part 494:

This tracker collects information for HPD Electrification Projects that will close before Q3, 2025 that include large VRF systems for which redesigning to new A2L refrigerants is not feasible due to product availability and timing. All fields must be filled out to be included in HPD's Variance request.
Note that the variance, if granted, will be only available to projects that receive permits by a date, TBD by DEC, and will not be extended. Projects that will close after Q2 are strongly advised to redesign.

Based on the latest design, sum up the lbs of R410a used in field charged heatpumps for space heating/cooling. (DHW heatpumps excluded.) This will be aggregated for all projects included in the HPD Variance for NYS DEC to calculate the Greenhouse Gas Emissions (GHG) and their impact on the Climate Acts carbon goals.

HPD Project Information: Enter each project and (for multi-bldg projects), each building as a separate entry										Heat Pump Basis of Design: Each Type must be entered separately										GHG Emission Calculations (automatically populated)			
HPD 5-digit Project ID	HPD Project Name (please use official HPD name)	Project Address (each building must be entered separately)	BBL (do not include spaces or dashes)	HPD Primary Program	Elec. Program: (Pilot/ REDi/ FHI)	Project Type	Number of Dwelling Units	Estimated Projected Closing Date (MM/YYY) - *(Note that only projects that HPD expects to close before Q4, 2025 will be considered)*	Confirm Project will include HPD's Mandatory Technical and Refrigerant Leak Requirements into drawings.	Equipment Tag(s)	Qty of identical systems	Serves	Manufacturer	Model #	Type (select one)	Tons	R410a Lbs per heat pump system (equip + field charge)	Total eqivalent/ effective legnth of refrigerant piping	Total estimated # of refrigerant connections	total Lbs R410a	Annual Leakage Rate (per part 494-1.3 (47)	Annual Leakage lbs	Total GHG Emmissions - 25yrs + EOL reclaim (lbs CO2e)
12345	Example Project	123 Example Street	12345678	Senior Affordable Rental Apartments (SARA)	FHI	New Construction	100	Dec-24		CU-3,4,5,6	4	Dwelling Units	Daikin	RXYQ72xatja	Commercial VRF heatpump >5 tons	6	60	600	12	240	10%	24.0	2,829,024
											1	Community	Daikin	RXYQ72xatja	Commercial VRF heatpump >5 tons	8	80	600	9	80	10%	8.0	943,008
		125 Example Street	12345679	Supportive Housing Loan Program (SHLP)	FHI	Mod Rehab	33	Dec-25		CU-3,4,5,6	2	Dwelling Units	Daikin	RXYQ72xatja	Commercial VRF heatpump >5 tons	6	60	600	12	120	10%	12.0	1,414,512
											1	Ammenity/ BoH	Daikin	RXYQ72xatja	Multi-Split w/ 2 or less IDUs	7	80	600	5	80	2%	1.6	188,608
																				0	0%	0.0	-
																				0	0%	0.0	-

Email completed tracker(s) by Friday, February 28 to sustainability@hpd.nyc.gov.

Details needed by DEC:

Based on the latest design, sum up the lbs of R410a used in field charged heatpumps for space heating/cooling. (DHW heatpumps excluded.) This will be aggregated for all projects included in the HPD Variance for NYS DEC to calculate the Greenhouse Gas Emissions (GHG) and their impact on the Climate Acts carbon goals.

Heat Pump Basis of Design: Each Type must be entered separately										GHG Emission Calculations (automatically populated)			
Equipment Tag(s)	Qty of identical systems	Serves	Manufacturer	Model #	Type (select one)	Tons	R410a Lbs per heat pump system (equip + field charge)	Total eqivalent/ effective legnth of refrigerant piping	Total estimated # of refrigerant connections	total Lbs R410a	Annual Leakage Rate (per part 494-1.3 (47)	Annual Leakage lbs	Total GHG Emmissions - 25yrs + EOL reclaim (lbs CO2e)
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	1	Ammenity/ BoH	Daikin	RXYQ72xatja	Multi-Split w/ 2 or less IDUs	7	80	600	5	80	2%	1.6	188,608
										0	0%	0.0	-
										0	0%	0.0	-

Email completed spreadsheet(s) by Friday, February 28 to sustainability@hpd.nyc.gov.

Switching to A2Ls (R454b & R32)

Design considerations

Source: Apple Intelligence

Switching to A2Ls: (R454b & R32)

- A2L Heat pumps (2-5 tons)
  - Many options on the market
  - Performance within 5-10% of R410a
  - PTHPs are simple

- NYC requirements from:
  - 2022 Mech Code Chapter 11
  - ASHRAE 15-2022 9.12 Refrigerant Pipe Installation

Qty of Models - Manufacturers	R-32	R-454B	Total
Major NYC			
Bosch		6	6
Bryant		12	12
Carrier		12	12
ComfortStar		7	7
Cooper&Hunter		10	10
Fujitsu	7		7
GREE	5		5
Hisense		8	8
Hitachi	3		3
Lennox	8		8
LG	15		15
Luxaire		5	5
Midea		36	36
Mitsubishi Electric		10	10
Panasonic	1		1
Samsung	8		8
Tempstar		12	12
Other Manufacturers	30	233	263
Total	77	286	363

Source: EPA Cold Climate Rated Mini/Multi-split heat pumps 2-5 tons

Switching to A2Ls: Protecting Piping

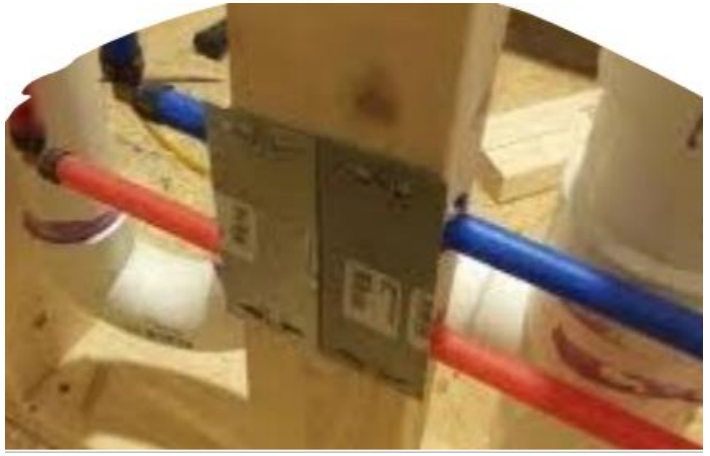
9.12.2 Installation Requirements for Flammable Refrigerants

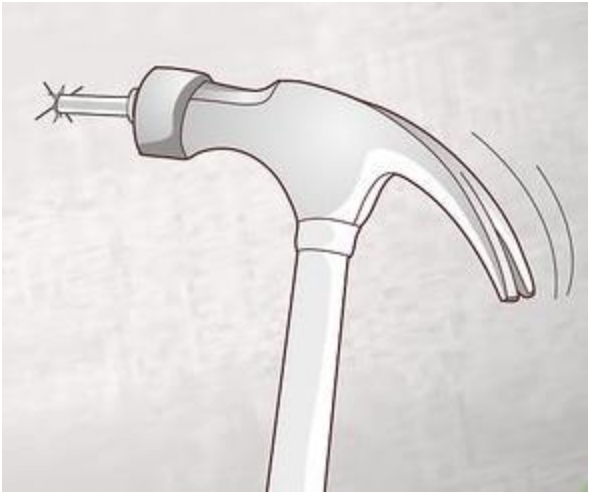
Refrigerant piping for *refrigerating systems* using Group A2L, A2, A3, B2L, B2, or B3 *refrigerant* *shall* comply with the requirements of Section 9.12.2.1 through 9.12.2.2.

9.12.2.1 Pipe Protection

In addition to the requirements in Section 9.12.1.2, aluminum tube, copper tube, or steel tube for Group A2, A3, B2L, B2, and B3 *refrigerants* located in concealed locations where tubing is installed in studs, joists, rafters, or similar member spaces and located less than 1.50 in. (38 mm) from the nearest edge of the member, *shall* be continuously protected by shield plates. Protective steel shield plates having a minimum thickness of 0.0575 in. (1.461 mm) *shall* cover the area of the tube and *shall* extend a minimum of 2.0 in. (51 mm) beyond the outside edge of the tube.

Informative Note: Considering ASTM dimensional tolerances, number 16 gage galvanized steel meets the minimum thickness requirement, and number 15 gage plain steel meets the minimum thickness requirement.





https://up.codes/viewer/new_york_city/ashrae-15-2022/chapter/9/design-and-construction-of-equipment-and-systems#9.12.2

Switching to A2Ls: Ventilated Shafts

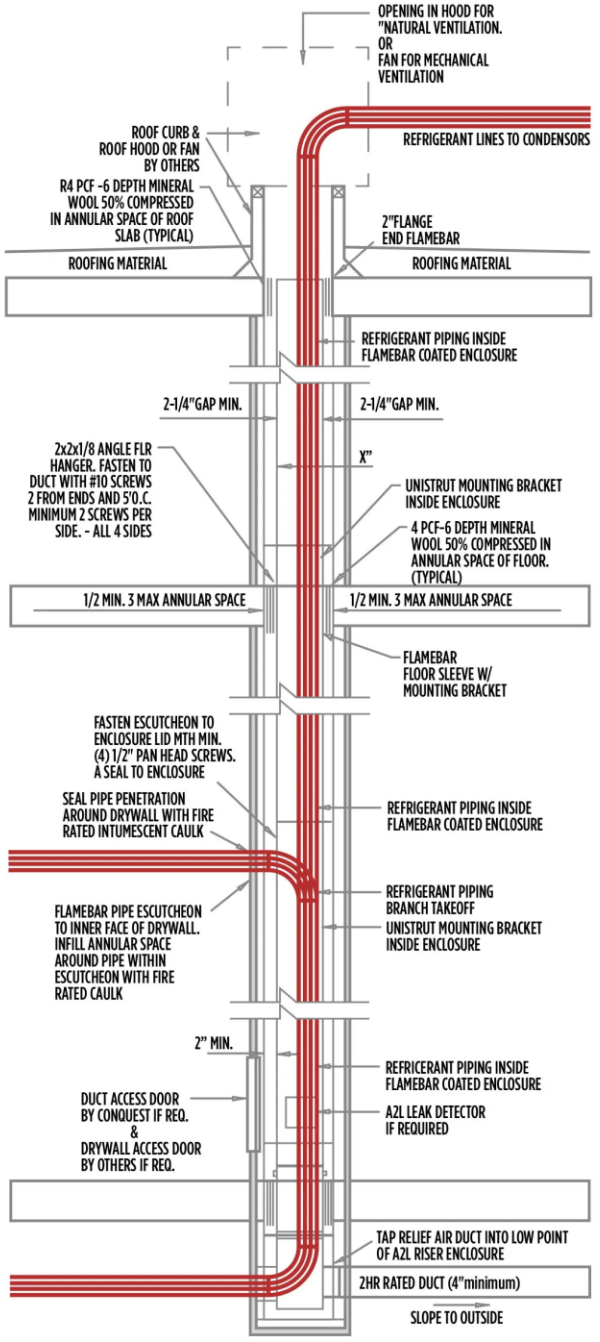
- Bottom of shaft exhausts outside (*9.7.8.2*)
  - 15ft above ground
  - 20 ft from window/openings

- Top of shaft has make-up air opening (*9.12.2.2*)

- Natural Ventilation:
  - 4” pitched exhaust pipe (refrigerant sinks, *cpvc)
  - *thermal comfort concerns
  - *less typical

- Mechanical Ventilation
  - 100-600 cfm
  - Refrigerant sensor at bottom of shaft
  - *Backdraft damper to prevent stack effect
  - *4-6” vent to roof
  - *Typical for NYC Multifamily

*interpretations/recommendations must be evaluated by Engineer of Record
ASHRAE15 sections in ()



Detail Source: ConquestFlamebar.com

Or… Exterior Refrigerant Risers

Architects.
Can you make line-hide beautiful?

Switching to A2Ls: Labeling

9.12.1.8 Pipe Identification

Refrigerant piping located in areas other than the room or space where the refrigerating equipment is located *shall* be identified in accordance with ANSI/ASME A13.1 [9]. The pipe identification *shall* be located at intervals not exceeding 20 ft (6.1 m) on the *refrigerant piping* or pipe insulation. The minimum height of lettering of the identification label *shall* be 0.50 in. (12.7 mm). The identification *shall* indicate the *refrigerant designation* and safety group classification of *refrigerant* used in the *piping* system.

a. For Group A2L and B2L *refrigerants*, the identification *shall* also include the following statement: "WARNING—Risk of Fire. Flammable Refrigerant."

When will new equipment be available?

Mitsubishi Electric Low GWP Product Launch Timeline

Low GWP refrigerant required | <65 kBtu/h

- 1-phase, <65 kBtu/h
  - Single zone
  - Multizone

Mitsubishi Electric begins shipping Low GWP <65kBtu/h Products

- Submittals/Specification Data Available (Jan-April)
- Product Selection Software Tool Available [DSB] (Jan-April)

Mitsubishi Electric begins providing information for Low GWP >65 kBtu/h Products

- Product Overview and Application Training
- Submittals/Specification Data Available

Mitsubishi Electric expands information available for Low GWP >65 kBtu/h Products

- Installer Training
- Product Selection Software Tool Available [DSB]

Low GWP refrigerant required | >65 kBtu/h

- 3-phase, >65 kBtu/h
  - VRF

End of extension period for New Installations of pre-2025 1-phase, <65 kBtu/h R410A

Mitsubishi Electric begins shipping Low GWP >65kBtu/h Products

ASHRAE-15 Changes

- Sets max refrigerant charge for a room volume
  - R-410a uses RCL (26 lbs / 1,000 cu.ft.)
  - R-32 uses LFL (19.1 lbs / 1,000 cu.ft.)
- New terms and calculations introduced for A2L refrigerants
- EDVC – Effective Dispersal Volume Charge
  - How much refrigerant is allowed to leak into a space
- m_{rel} – Releasable Refrigerant Charge
  - How much refrigerant will enter a space if a leak occurs
- How to comply with A2L refrigerant
  - $m_{rel} \leq$ EDVC

A2L VRF Design Considerations

- Codes Not Complete or Final
  - ASHRAE-15 revisions / addendum
  - City & states adoption of A2L rules
- Lower Refrigeration Concentration Limits
  - EDVC and m_{rel}
  - Leak mitigation controls allowed
  - Smaller systems w/ lower charge
- Refrigerant Piping
  - Fire rated and vented shafts
  - Exterior pipe routing
  - BC controllers
- Leak Mitigation Controls
  - Refrigerant leak detectors @ FCU
  - Safety shut off valves
  - Factory provided components and control logic for leak mitigation

A2L Conversion Checklist

- Review A2L refrigerant charge for ASHRAE-15 compliance
  - Calculate EDVC for zones served by VRF
  - Increase room volume or reduce releasable charge to get $m_{rel} \leq$ EDVC
    - Connect adjacent spaces or use ducted units to increase room volume
    - Add safety shut off valve or move them closer to FCU to reduce m_{rel}
- Review refrigerant pipe routing within the building
  - If refrigerant piping penetrates 2 or more floor/ceiling assemblies it must be in a fire rated vented shaft enclosure
  - Relocate units and piping to minimize floor penetrations and shafts required
  - Running refrigerant piping external to the building can help avoid shafts

A2L – The Case For VRF

Our Goal is Electrification - VRF Remains the Premier Electrified HVAC Technology

- Highest Efficiency Electrified HVAC Solution
  - Improved ROI for building ownership
  - Lowers AC cost to the end user
- Designed for occupant comfort
  - Zoned comfort solution
  - Year-round comfort regardless of OA
- Increases Installation Flexibility
  - Capable of handling full building HVAC load for new construction
  - Allows for creative retrofit designs for buildings with or without centralized HVAC infrastructure
- VRF remains the solution for electrification
  - Must innovate to work with evolving legislation

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LG Electronics offers a variety of Heat Pump products ranging from VRF to Water Heating products employing inverter technology that drives efficiency, capacity, and wide operating ranges.

About LG Inverter Technology

Inverter Heat Pumps are measurably quieter and generally more efficient than conventional systems that continuously cycle on and off. Designed together with our compressors, LG inverter technology drives greater efficiency, more heat at colder temperatures, and aids in moisture removal in cooling mode.

For Support…

…Contact

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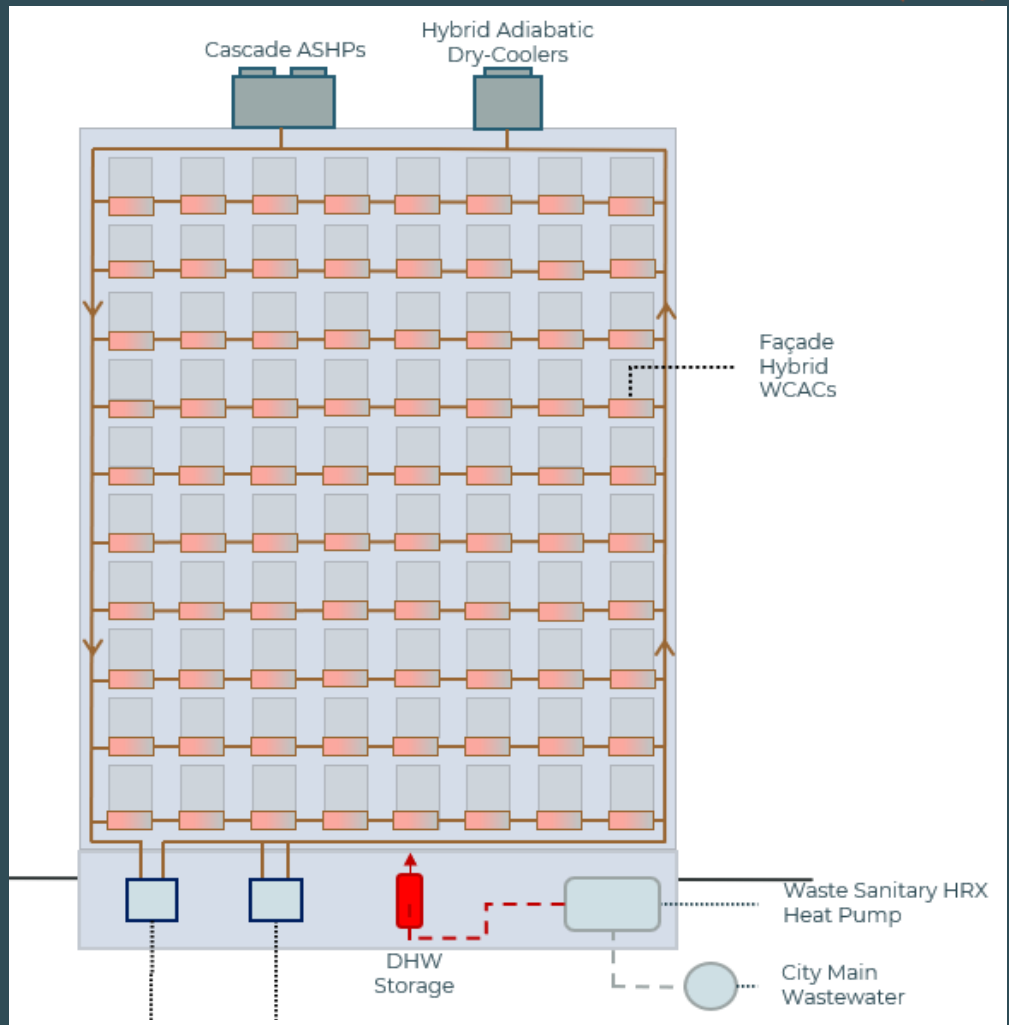
John Moore
516.458.1823
Email: johnm@klimany.com
Web: www.klimany.com

Rethinking Hydronics

Electrified Hydronic Systems

The Electrified Hydronic Approach

- Hydronic risers/distribution
- Mild temperature terminal units
  - Loop at 100F in winter / 85F in summer
  - <105F obviates pipe insulation req
  - ~ <110F compatible with large selection of AWHPs
- AWHPs + adiabatic coolers outdoors to maintain loop temperature
- Add'l heat source/sink modifications:
  - Wastewater heat recovery
  - Ground-source
- DHW from WWHP on the hydronic loop
  - Recovers cooling heat in summer



[Optional] Indoor units for a cascade HPWH

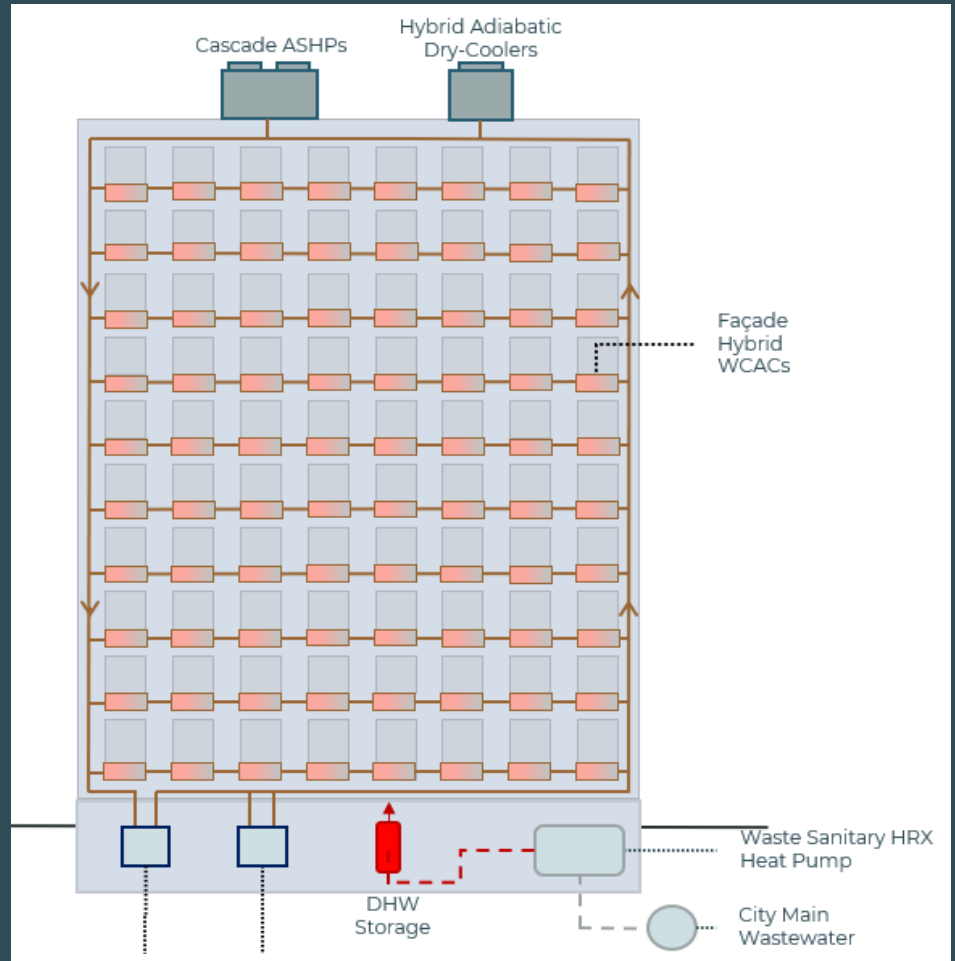
Common electrification obstacles

- Need to avoid charging residents for heating/DHW
- Wall penetrations (ccPTHPs)
- Limited space availability for new equipment installs*
- New systems = new maintenance and staff training
- Refrigerant issues
  - Leaks**
  - Regulatory phase outs
- Cost is high, even after incentives, rebates, and tax credits
- Increased energy costs (gas is cheap, electricity $$)

Why electrify with hydronics?

	Site energy usage (kBtu/SF)				
	Heat	DHW	Cool	Other (cooking, plug loads, lighting)	Total Site EUI
Gas hydronic PTACs (average)	47.0	16.9	2.8	13.4	80.1
Electrified Hydronics	14.8	7.2	~4-7.7	13.4	39.6-43.3
VRF *	12.4	6.6	3.4	13.4	35.8

- Non-energy benefits such as
  - Water is “open source” and flexible (as opposed to VRF)
  - All refrigerant is in sealed circuits
  - Space cooling for comfort and safety

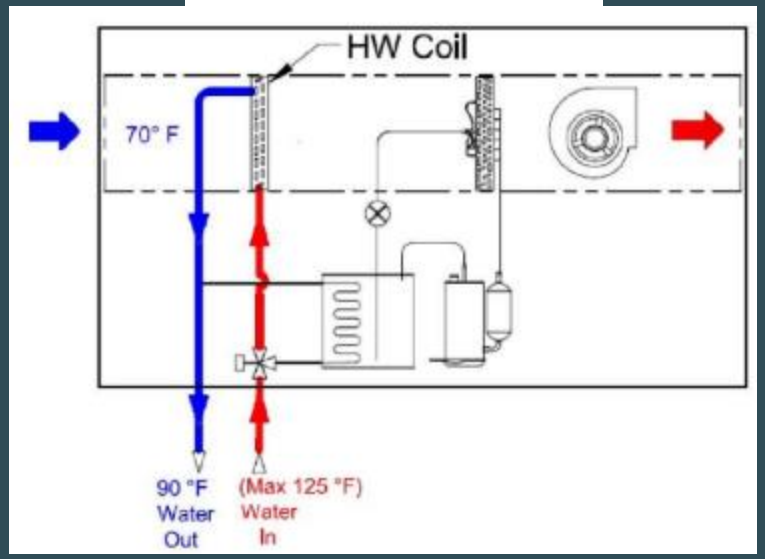


[Optional] Indoor units for a cascade HPWH

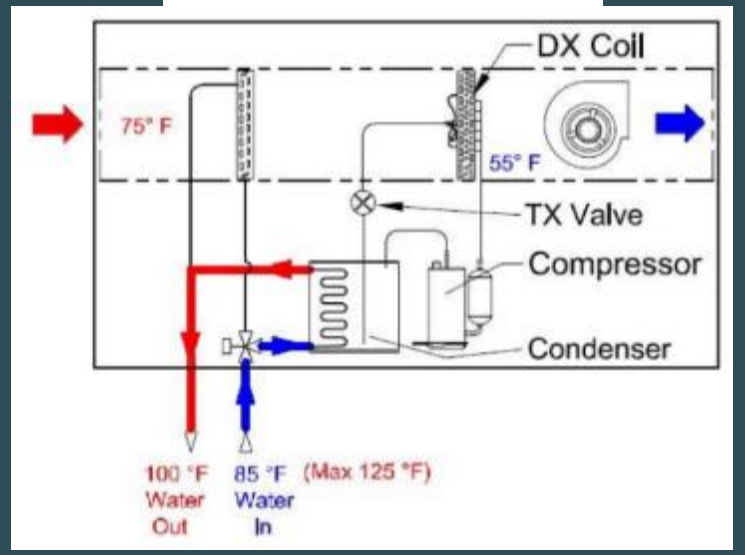
Terminal Unit Selection

- Hybrid Water Cooled A/Cs (HWCACs)
  - Heating cost to remain on owner
  - Cooling mostly on resident, some to owner
  - Heating and cooling available at all year
  - Integrated user controls

Heating Mode



Cooling Mode



Retrofit Considerations

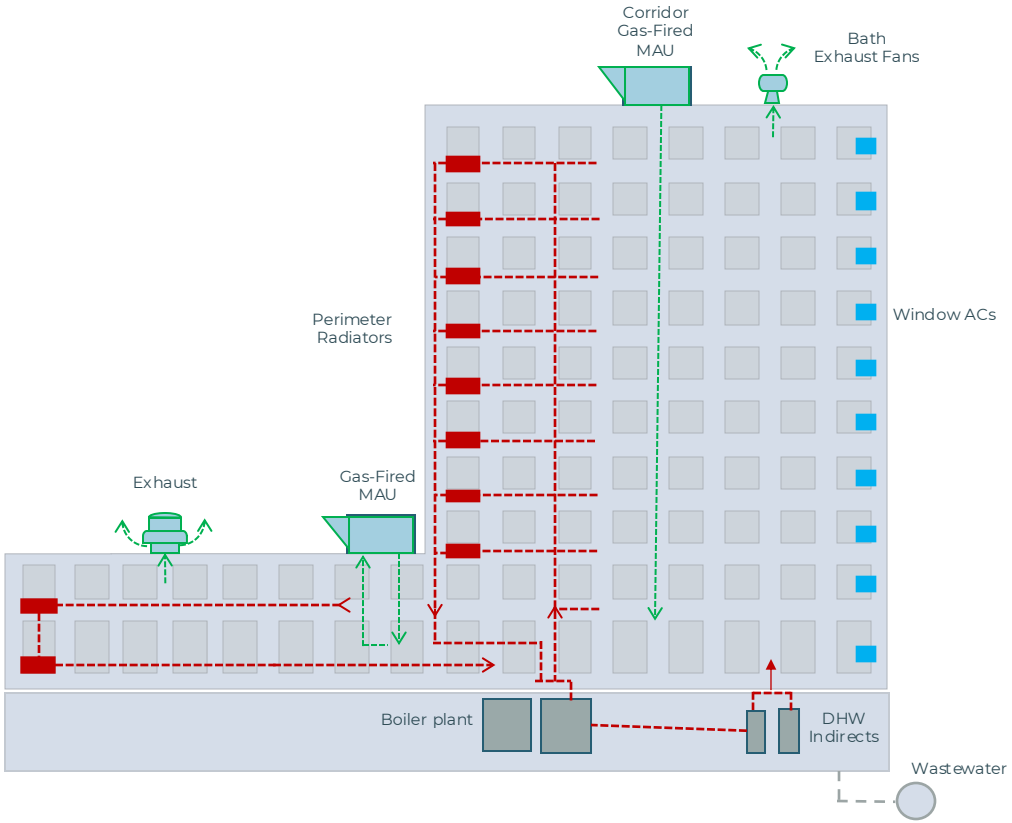
- Reuse of existing hydronic piping (and some steam piping)
- Construction inconvenience and disruption to occupants
  - Less than VRF or PTHPs?
  - Terminal unit utilizes existing AC circuit
- Eliminate (or phase out) fossil fuels, navigate electric services
  - Displacement strategies can be tailored to avoid service upgrades and are compatible with future full electrification

Converting a typical hydronic building

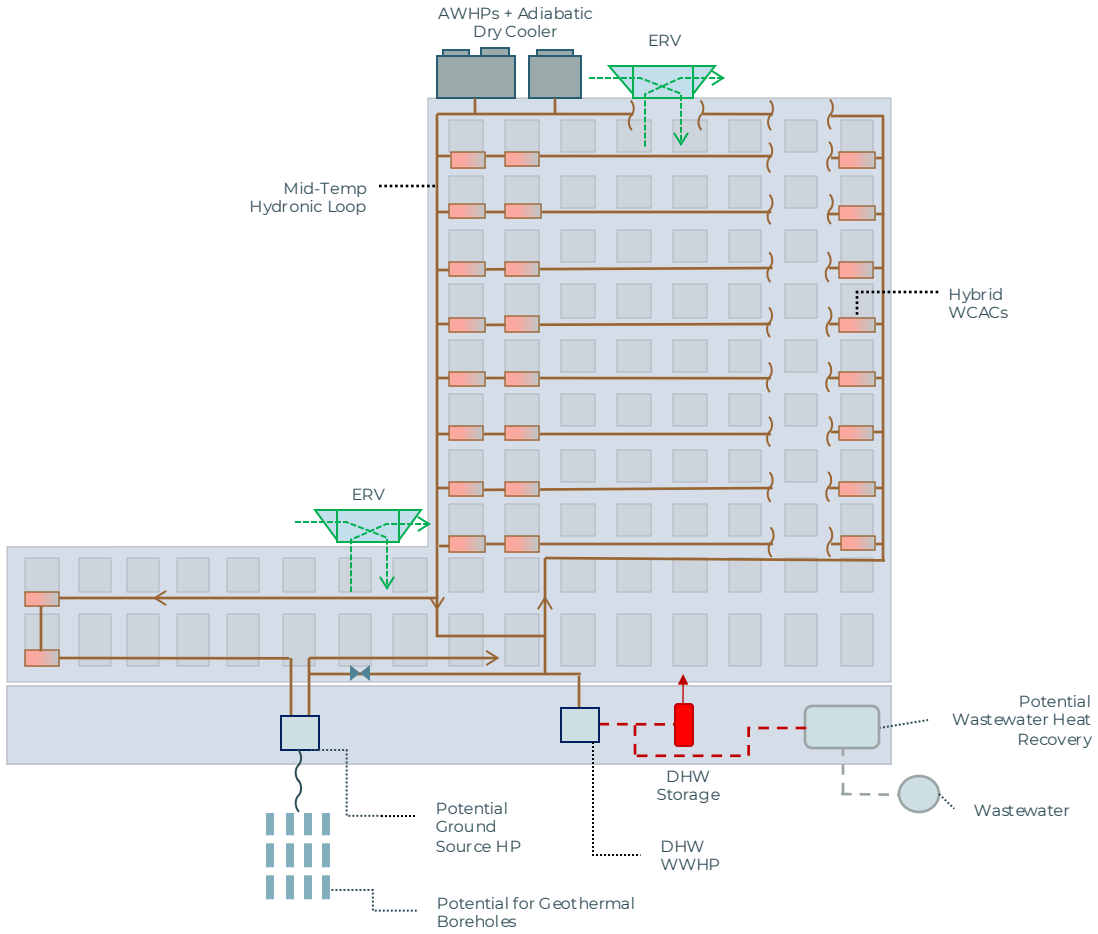
Existing
Perimeter fin tube radiators fed by HW, central MAU

Proposed
Use AWHPs/adiabatic coolers on roof. Leverage existing distribution and install new terminal units. Convert to efficient electrically-driven heating and cooling.

BEFORE



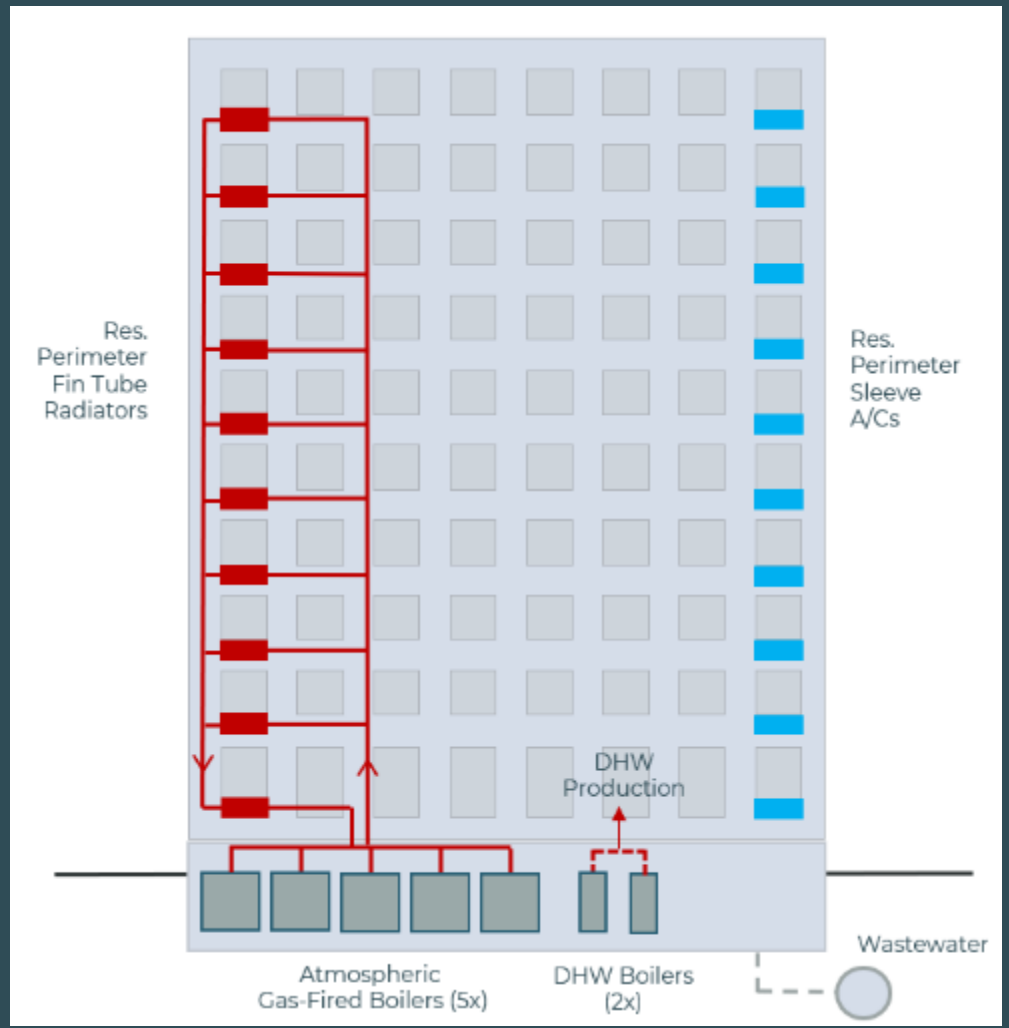
AFTER



Sample Building Retrofit Case

- 100-unit apartment building in design
  - Existing atmospheric natural gas boilers w/baseboard radiators
  - HWS/R temps are 180(F)/160(F)
  - Existing non-condensing DHW heaters
  - Sleeve ACs
- Incentives: Clean Heat, NYSERDA LCP, NYSERDA Heat Recovery PON 5547, ITC, 179D
- First cost ~$4.5M - $6M before incentives

	Summary Estimated Retrofit Installation Costs ($/SF)				
	High End Cost Estimate	Low End Cost Estimate	Average Installed Cost	Estimated Incentives*	Net Cost
Electrified Hydronics – baseboard baseline	$78	$44	$61	$7	$54
Electrified Hydronics – WSHP baseline	$46	$33	$39	$7	$32
VRF (not A2L)	$67	$49	$58	$8	$50



Discussion and Questions:

Please put your questions in the Q&A and we'll discuss after HPD closes out the presentation

Solutions Matrix:

Scenario	Requirement	Comments
Project **has permit** for a R410-a design	System must be installed, charged & started up by 1/1/2027	n/a
Project does not have permit, is closing **before Q4 2025**, and it would be **"impossible"** to convert to A2Ls	System should **seek variance**. If approved, system must be installed, charged, & started up by 1/1/2027	HPD is seeking a "Blanket Variance" for near-term projects where it is **impossible** to convert to A2Ls.
Project does not have permit, is closing **before Q4 2025**, and **can** reasonably convert to A2Ls	Project should **redesign** to a system that uses A2Ls	Many systems already have **solutions available** for A2Ls, like PTHPs and residential split-systems
Project does not have permit, and is closing **after Q3 2025**	Project should **redesign** to a system that uses A2Ls or should consider an alternative refrigerant like H20	These projects have **time to redesign** to the new standards and cannot seek a variance.

We strongly advise teams to think about refrigerant leaks, future availability of R410-A and future phase-outs when making this decision.

Next Steps/ Action Items:

If you have an HPD project w/ central VRF using R410-A that is expected to close before Q4 2025 and

1. **cannot redesign to new A2L refrigerants** and
2. **believe your project should be eligible for an Impossibility Variance**, you should

Work w/ your HVAC consultant to fill out the tracker. Note that we cannot submit with incomplete or missing information and email completed spreadsheet(s) by Friday, February 28 to sustainability@hpd.nyc.gov.

If your project does not meet this timeline, you will need to redesign project using the new A2Ls – either by waiting for new equipment to be available or by shifting to a solution that does not include central VRF.

Additional Information & Links

DEC & Refrigerants:

Part 494 FAQ

Part 494 Fact Sheet

Part 494/495 Requirements for Suppliers and Owners or Operators - NYSDEC

https://dec.ny.gov/sites/default/files/2024-12/part494expresstermsofficial.pdf

https://www.aaon.com/resources/how-does-the-epa-technology-transition-rule-impact-the-hvac-industry-and-what-are-the-key-considerations-for-hvac-professionals

https://www.ashrae.org/technical-resources/standards-and-guidelines/read-only-versions-of-ashrae-standards

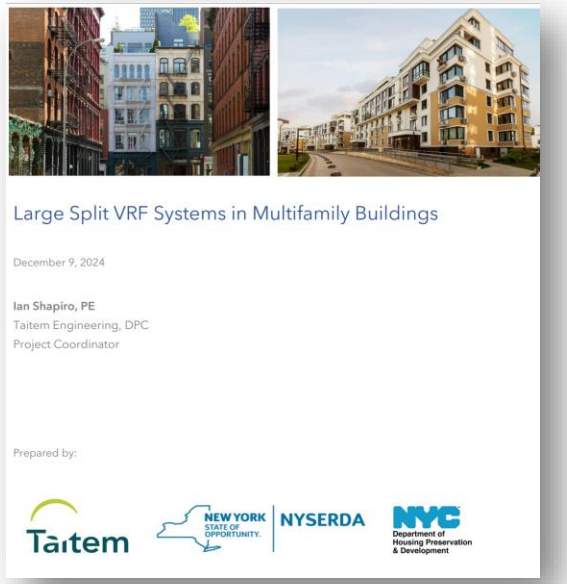
https://up.codes/viewer/new_york_city/ashrae-15-2022/chapter/9/design-and-construction-of-equipment-and-systems#9.12

https://up.codes/viewer/new_york_city/nyc-mechanical-code-2022/chapter/11/refrigeration#1101.6

HPD Electrification Resources:

HPD Technical & Refrigerant Management Requirements- Split System Heat Pump for Space Heating

VRF Convening Public Summary: VRF issues for Multifamily (conclusion: VRF as last resort, not “premier”)



Send questions to: sustainability@hpd.nyc.gov.

Q&A