MAFMA Semi Annual Meeting

October 26, 2023

DIVISION OF CAPITAL ASSET MANAGEMENT & MAINTENANCE

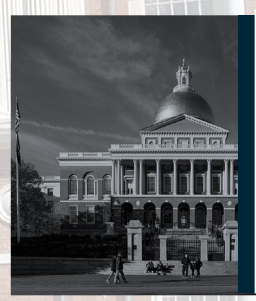
AGENDA: MAFMA meeting 2023

- Introductions
- DCAMM Commissioner Adam Baacke
- MAFMA Member of the Year Award
- Communication best practices construction projects, Fontaine Bros Construction
- Heat pumps and new technology, Trane
- Tool Barn FLIR Camera
- Decarbonization efforts, DOER and DCAMM
- Alternate funding case study , Bristol Community College

MAFMA Member of The Year

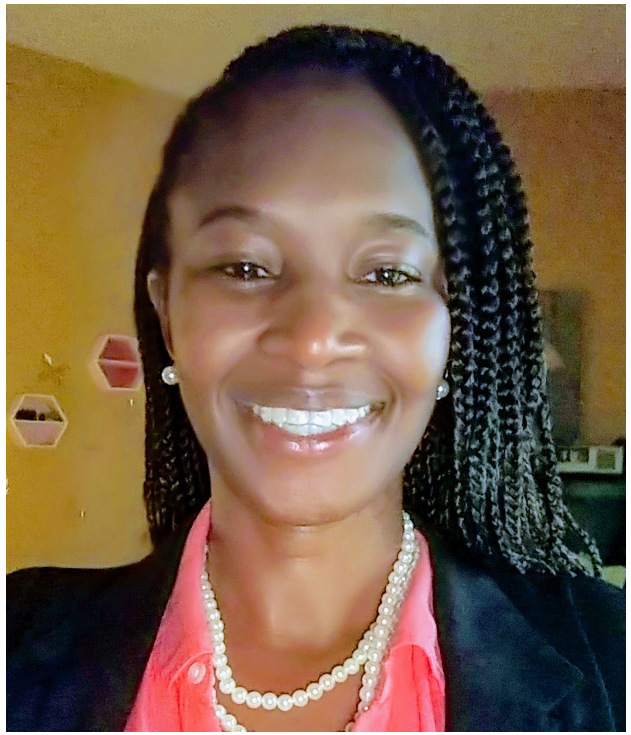
2023 Award

October 26, 2023



Massachusetts Facilities Management Association

Emma Julien



- - Ms. Julien, an indispensable asset at Lemuel Shattuck Hospital (LSH), adeptly manages over $15.2M in programmatic and operational service contracts with unwavering dedication.
- - With her profound understanding of Chapter 149 IFBs and facilities deferred maintenance projects, she has been instrumental in the smooth functioning of Pappas Rehabilitation Hospital for Children’s (PRHC), actively contributing to weekly facility project meetings.
- - Ms. Julien's commitment extends beyond her primary responsibilities as she consistently provides invaluable support to sister-hospitals, vendors, and staff, exemplifying exceptional commitment and expertise in addressing their facility-related procurement and contract needs.

Jim Latini

- Jim Latini, as DCAMM's Chief Engineer since 2018, has leveraged his extensive experience to build a team of subject matter experts, effectively revolutionizing the approach to managing and supporting DCAMM facilities.
- His pivotal role in the development of comprehensive plans for ventilation and filtration systems, has played a crucial part in maintaining the safety and functionality of DCAMM facilities, ensuring they remained safe and operational during challenging times.
- Jim’s proactive approach and hands-on problem-solving capabilities have solidified his reputation as the go-to person for all building system issues. His dedication to swiftly addressing repair needs through expedited projects underscores his commitment to DCAMM.

Jo Ann Bentley

- - Jo Ann Bentley, an accomplished licensed architect, exemplifies exceptional leadership as the head of the Facilities Department, overseeing 1,000,000 square feet across five Bristol County locations, with a remarkable track record of managing over $100M in capital projects.
- - Jo Ann's customer-centric approach and professional demeanor are evident in her unwavering dedication to campus-wide strategies during challenging times, highlighting her invaluable contributions beyond her regular responsibilities.
- - With a keen eye for operational efficiency, Jo Ann has developed comprehensive Maintenance and Operational Procedures, ensuring seamless equipment functioning and minimizing system downtime, spearheading over 50 projects and key environmental upgrades.

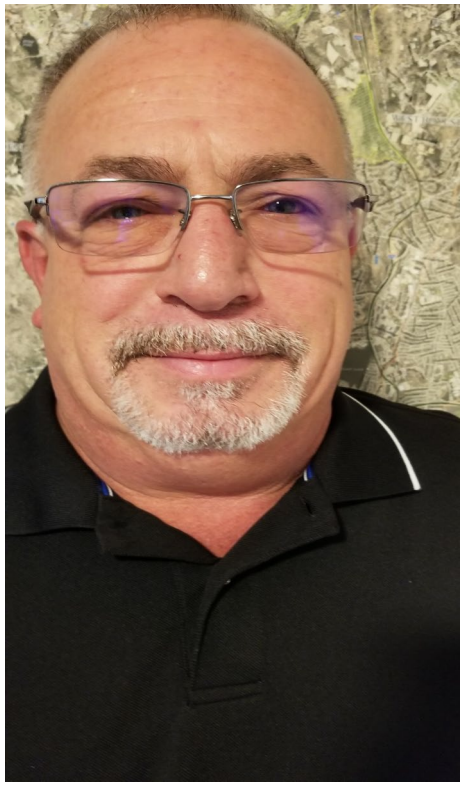
John Fydenkevez

- - John Fydenkevez, a dedicated employee with 26 years of service at the Veterans Home in Holyoke, has been an integral part of the institution's DCAMM projects and Maintenance Department operations for the past 9 years.
- - Demonstrating an unwavering commitment to the well-being of the veterans, John prioritizes safety in all operations, ensuring the highest standards are upheld at all times.
- - In times of crisis, his dedication shines through as he goes above and beyond, providing round-the-clock support and ensuring the comfort and safety of all residents, staff, and visitors at the home.

Karen Jason

- - Karen Jason, a pivotal strategic leader at Bridgewater State University for over two decades, has played a significant role in transforming the campus into a premier educational and working environment.
- - Instrumental in establishing the "Division of Operations," she has effectively integrated critical services, fostering a cohesive and efficient administrative structure focused on capital planning, facilities management, and core university services, leading to a remarkable enhancement of the campus environment.
- - Currently spearheading the ambitious $40 million renovation of Burnell Hall, she is instrumental in creating a state-of-the-art and environmentally friendly space for the University at large.

Michael Fratoni



- - Michael, the dedicated Director of Facilities at Milford Public Safety Headquarters, serves as the key liaison for multiple Public Safety Agencies, showcasing his exceptional ability to manage and coordinate various complex facility-related tasks and projects.
- - With a keen focus on daily routine maintenance, office buildouts, energy conservation measures, and deferred maintenance projects, Michael's exemplary leadership and management skills have been instrumental in ensuring the seamless functioning of the agency.
- - Michael's unwavering commitment to addressing concerns, coupled with his extensive knowledge of facility operations, underscores his exceptional contributions and dedication as a Facilities Manager.

Tom Mazzeo

- Thomas's exceptional rise within the Sheriff's Office, from Correctional Officer to Assistant Deputy Superintendent of Facilities, underscores his unparalleled leadership and management skills, evidenced by his successful management of a diverse team of maintenance officers and tradesmen.
- He has overseen numerous large-scale projects, including the construction of a 160,000 square foot facility and various design and construction initiatives.
- Thomas's dedication extends beyond facility management. His proactive approach to ADA accessibility upgrades and successful implementation of extensive life safety and hygiene measures during the challenging years of highlights his unwavering commitment to the safety and well-being of both staff and inmates.

And The Award Goes To . . .

Congratulations

FONTAINE BROS., INC.

PRESENTATION

Celebrating 90 years in business

OCTOBER, 2023

FONTAINE HISTORY

FONTAINE BROS., INC.

FB SINCE 33

+ FAMILY OWNED.
+ FOURTH GENERATION.
+ EXECUTIVE INVOLVEMENT.
+ PROUD BUILDING HISTORY.

1933: A FOUNDATION IS BUILT

IN THE MIDDLE OF THE GREAT DEPRESSION (HARDLY THE BEST TIME TO START A BUSINESS), TWO BROTHERS DECIDE TO PURSUE THEIR MUTUAL DREAM OF HAVING THEIR OWN CONSTRUCTION COMPANY. EUDORE AND GEORGE FONTAINE ISSUE 35 SHARES OF COMMON STOCK & FONTAINE BROS., INC., IS BORN.

SCHOOLS ARE OUR FOCUS

FONTAINE BROS., INC.

SINCE 2015, FONTAINE HAS BEEN AWARDED

13 CM SCHOOL PROJECTS TOTALING $900 MILLION

AND

14 GC SCHOOL PROJECTS TOTALING $600 MILLION

OCCUPIED SCHOOL CAMPUSES

FONTAINE BROS., INC.

Mountain View School

Middleborough High School

West Springfield High School

Northbridge Elementary School

Nelson Place Elementary School

Worcester South High School

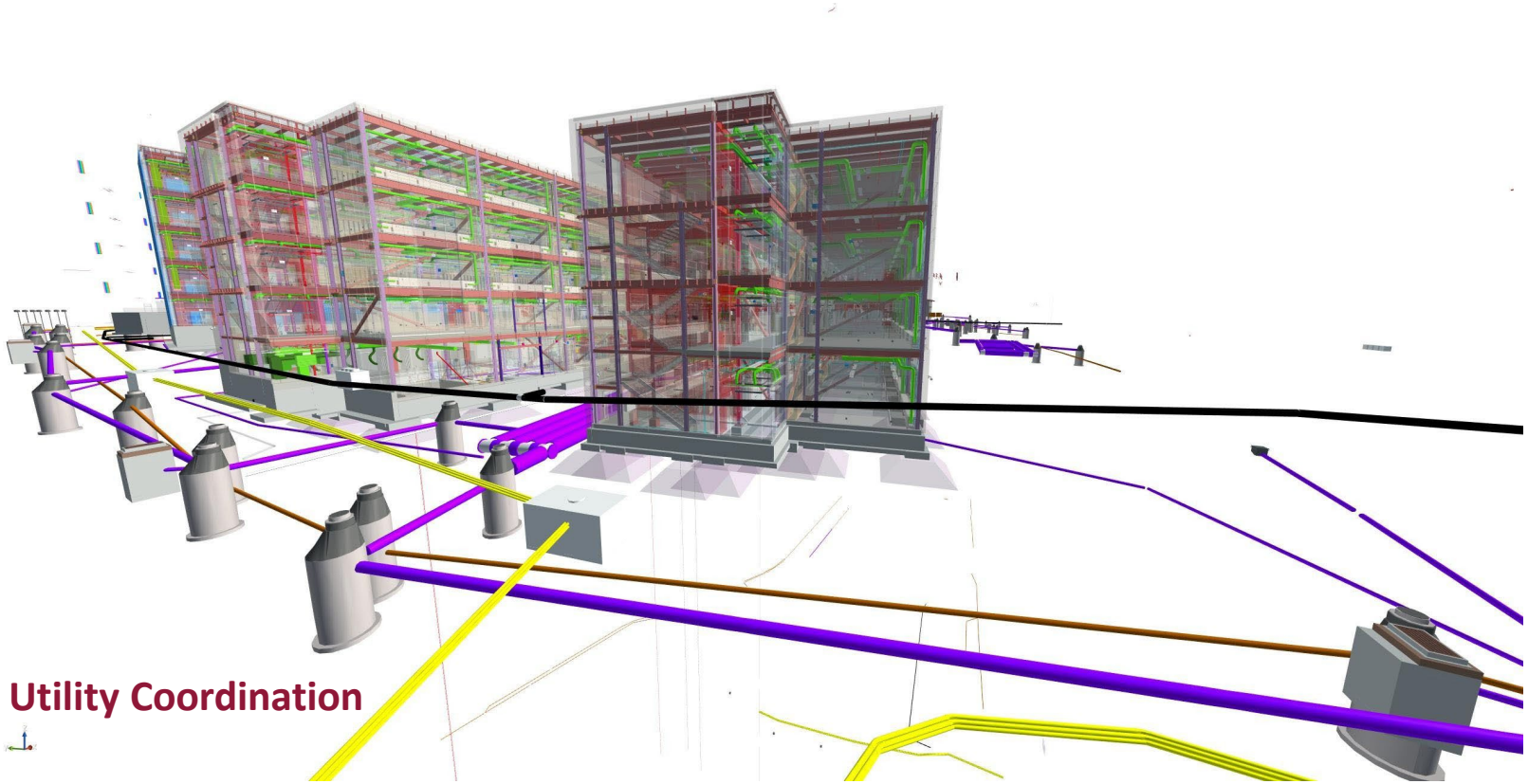
M|WBE & WORKFORCE DEVELOPMENT

Pictured To Left: Lt Gov Karyn Polito and Fontaine Carpenter, Jesus Lopez.

Above: Elizabeth Wambui, Director of Diversity, Inclusion & Impact, featured on the cover of *Worcester Business Journal*

CM PRE-COORDINATION PROCESS

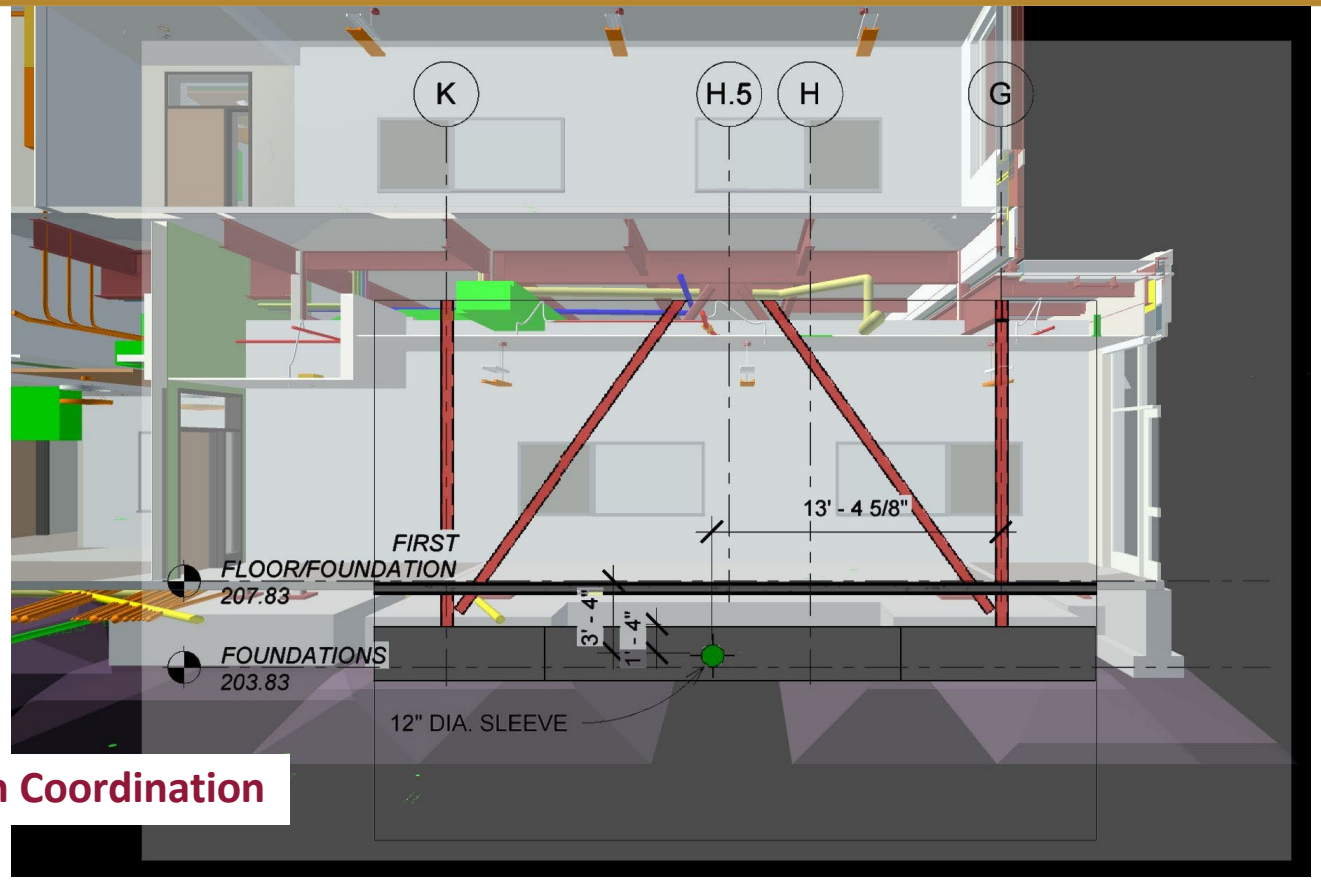
FONTAINE BROS., INC.



Site Utility Coordination

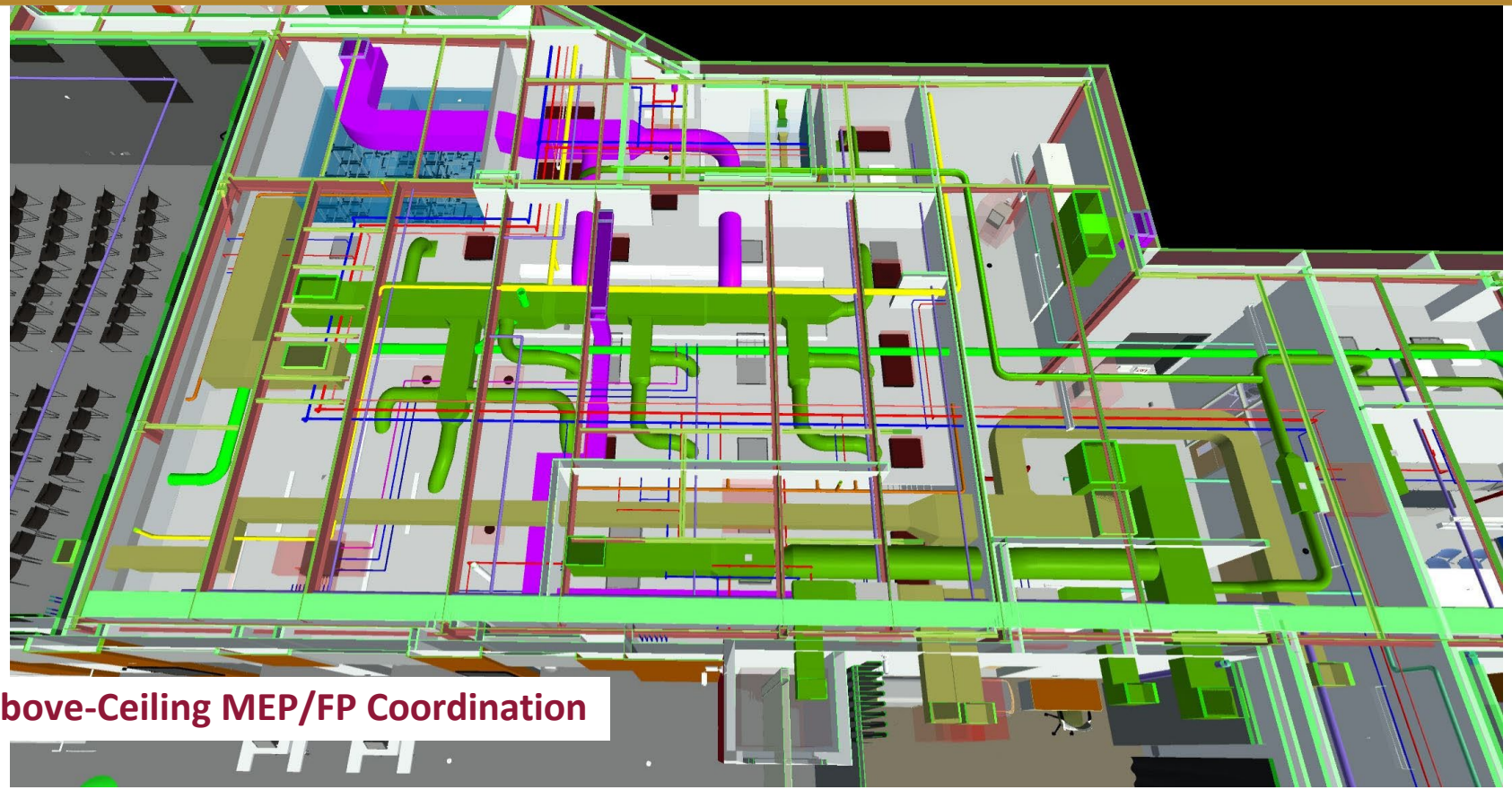
CM PRE-COORDINATION PROCESS

FONTAINE BROS., INC.



Foundation Coordination

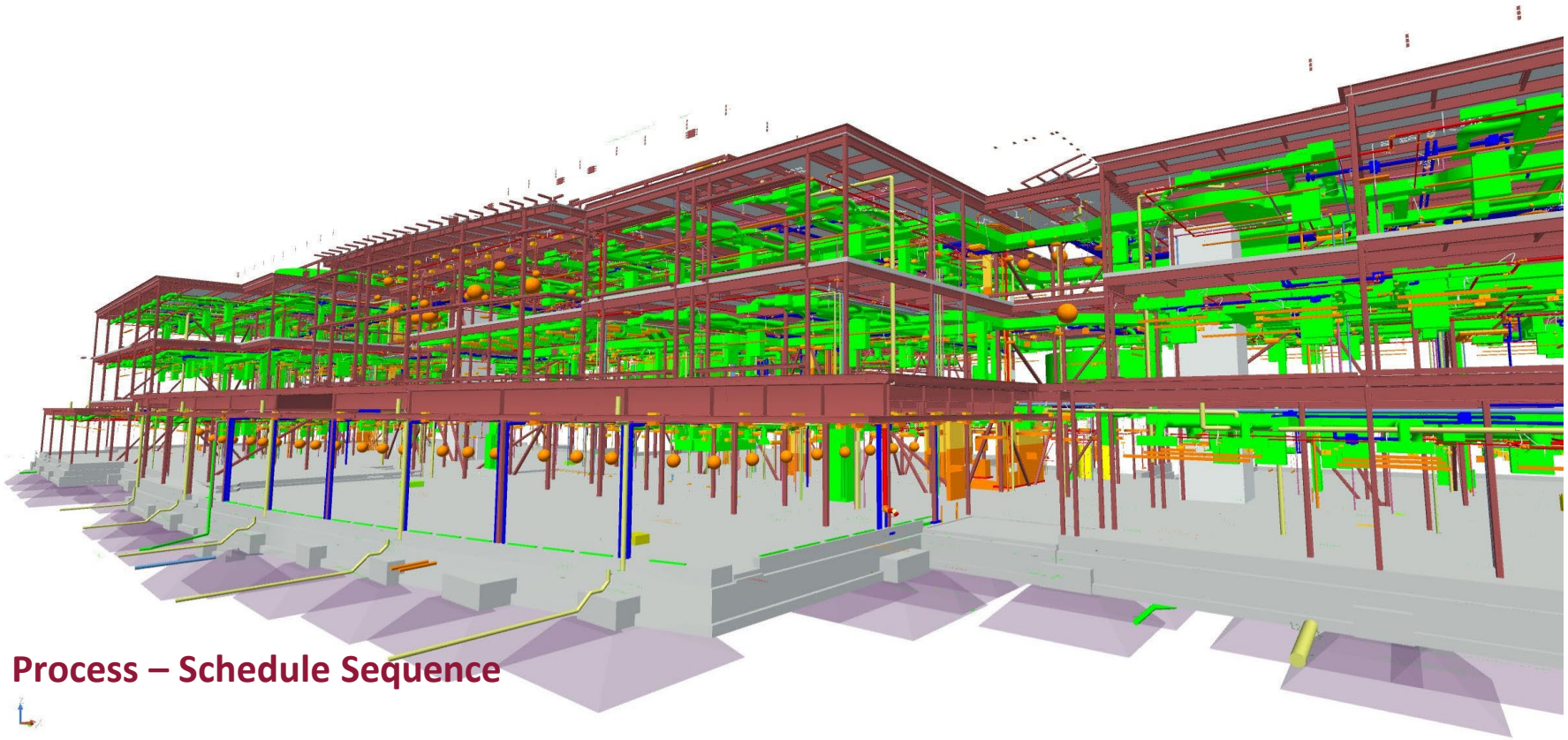
CM PRE-COORDINATION PROCESS



Above-Ceiling MEP/FP Coordination

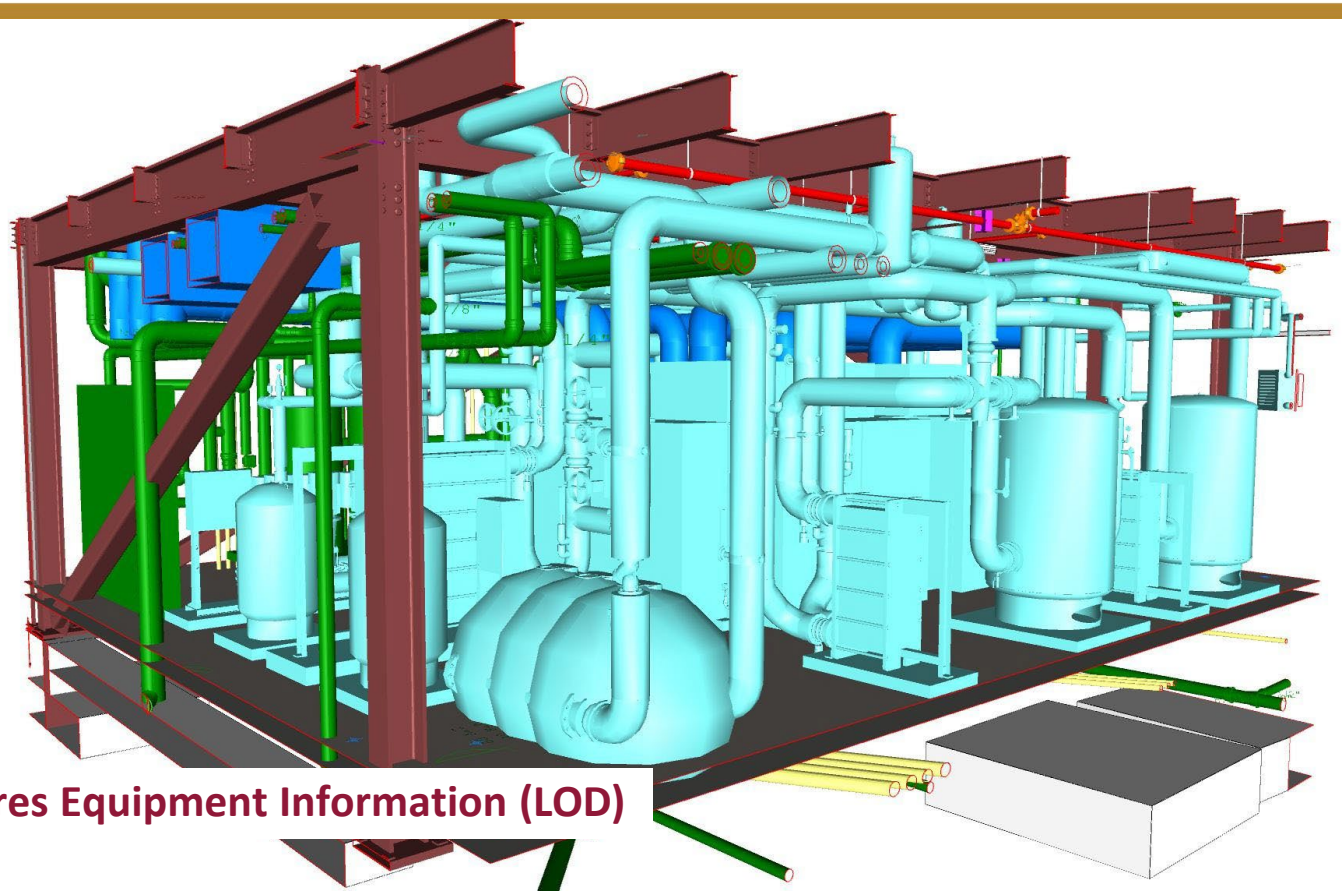
MEP/FP COORDINATION

FONTAINE BROS., INC.



Process – Schedule Sequence

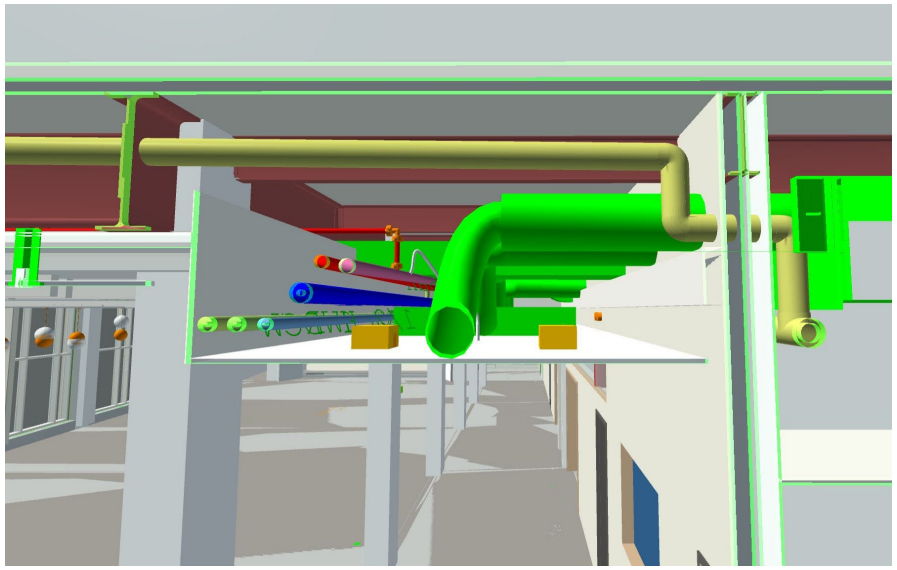
MEP/FP COORDINATION

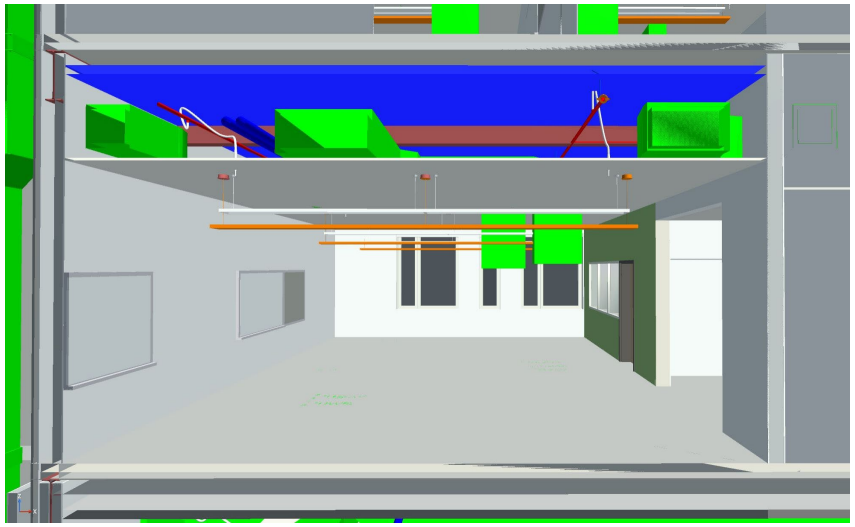


Manufactures Equipment Information (LOD)

MEP/FP COORDINATION

FONTAINE BROS., INC.

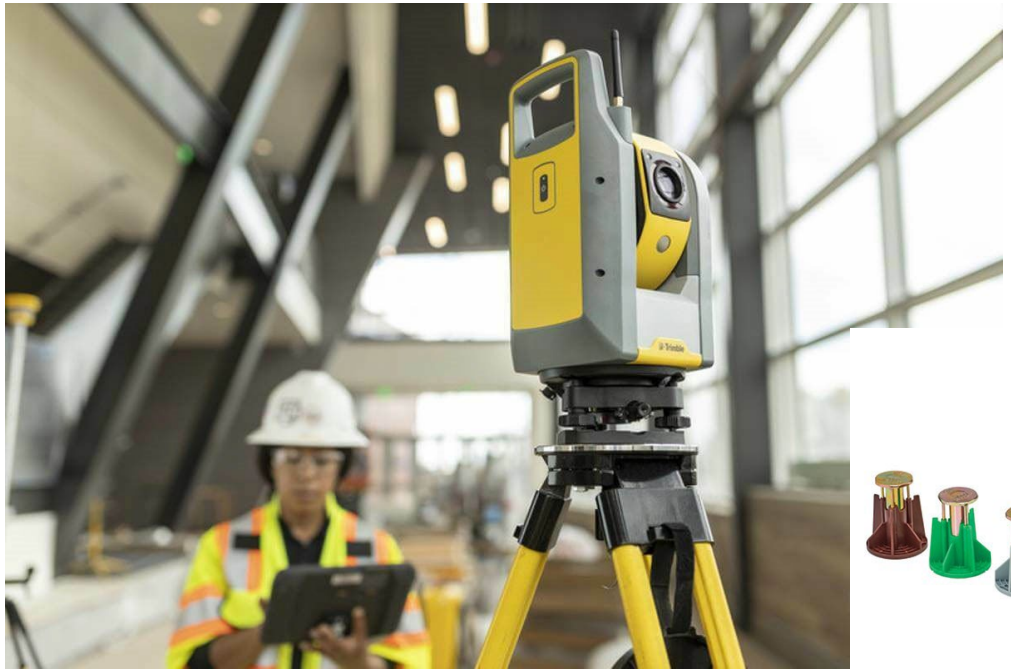


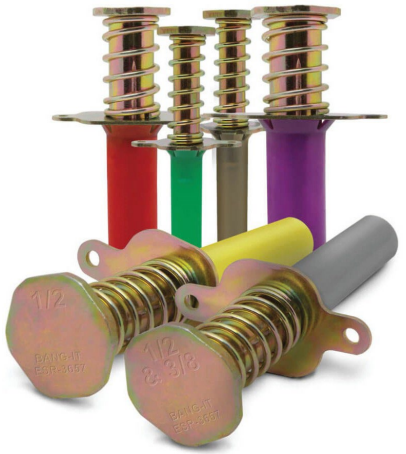


Coordination with Ceiling Details

MEP/FP COORDINATION

FONTAINE BROS., INC.

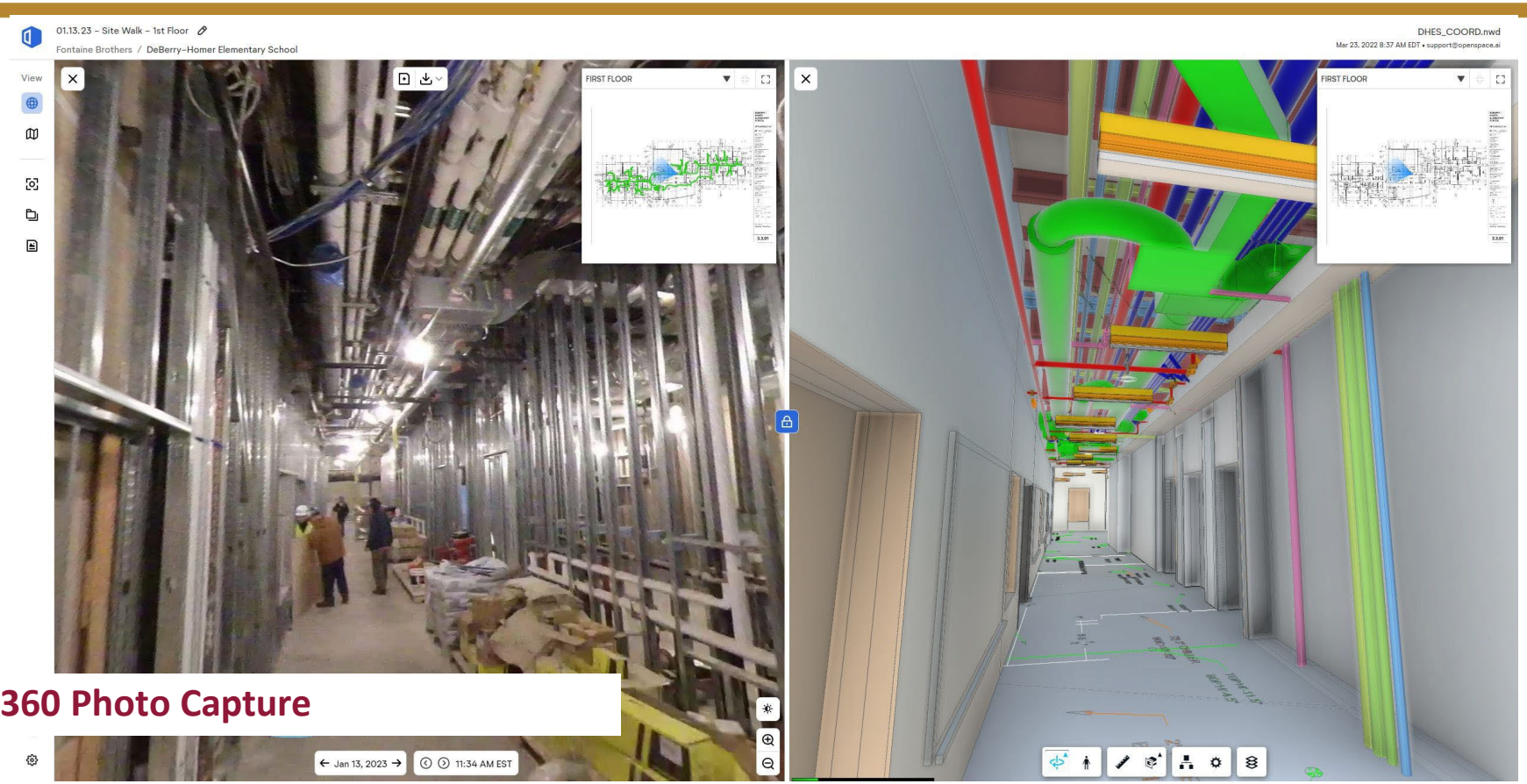




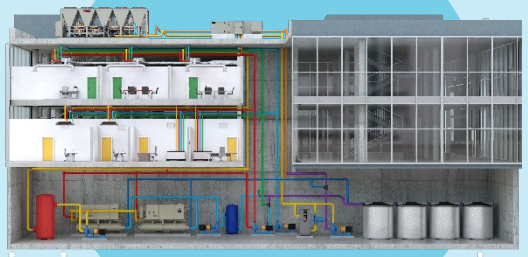
MEP/FP Total Station Layout

OPENSPACE

FONTAINE BROS., INC.



360 Photo Capture



Decarbonization and the Electrification of Heat

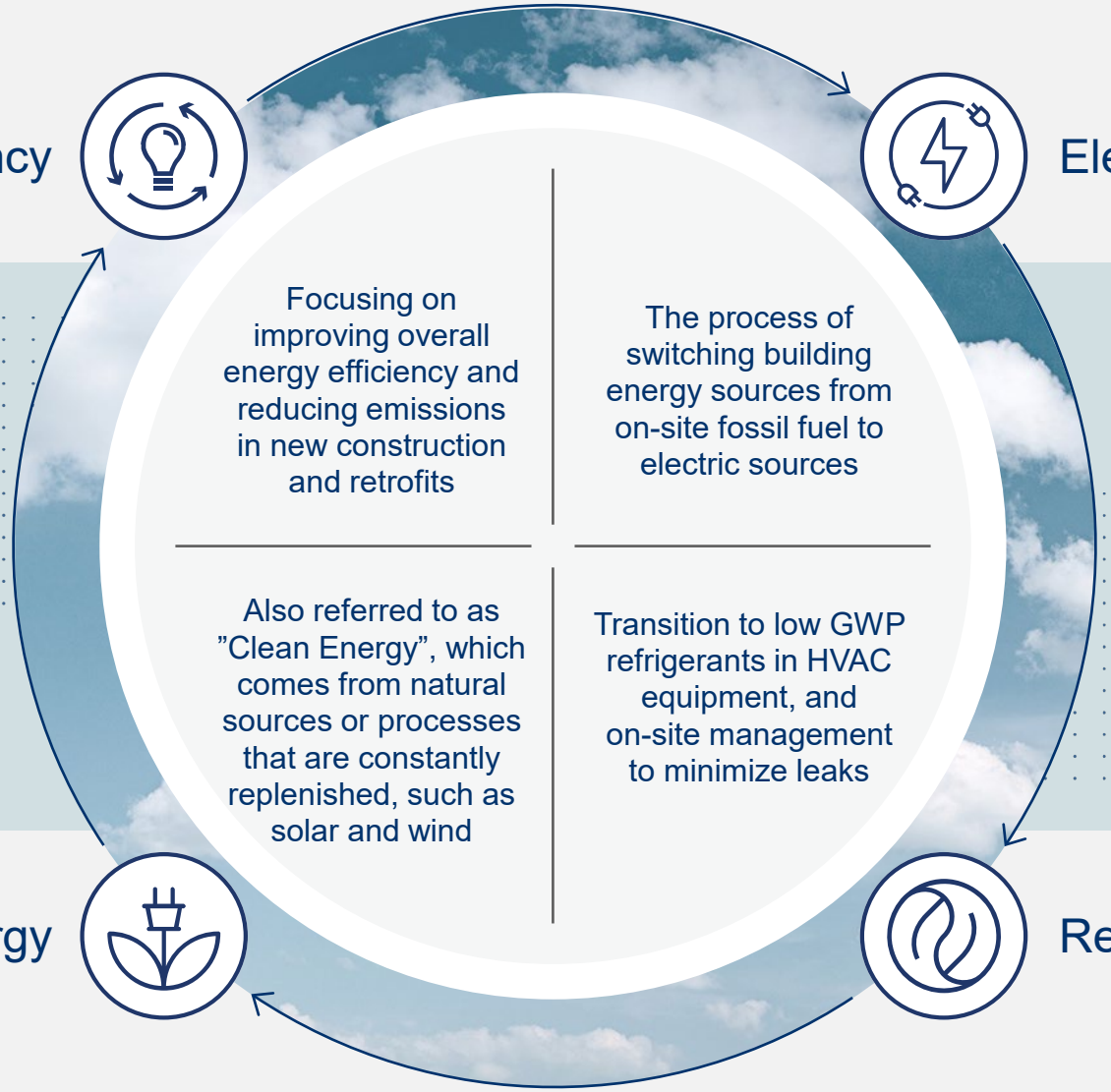
The Future of Heating Buildings

Nolan Lantieri and Kory Leblanc
Date: 10/26/2023

Decarbonization

The process of reducing or eliminating carbon emissions

Pillars of Decarbonization



Reducing Indirect Emissions

Indirect GHG emissions (AKA Scope 2) are generally associated with emissions one step removed a customer’s direct operations

Reducing Direct Emissions

Direct GHG emissions (AKA Scope 1) are those that occur from sources directly controlled by the customer

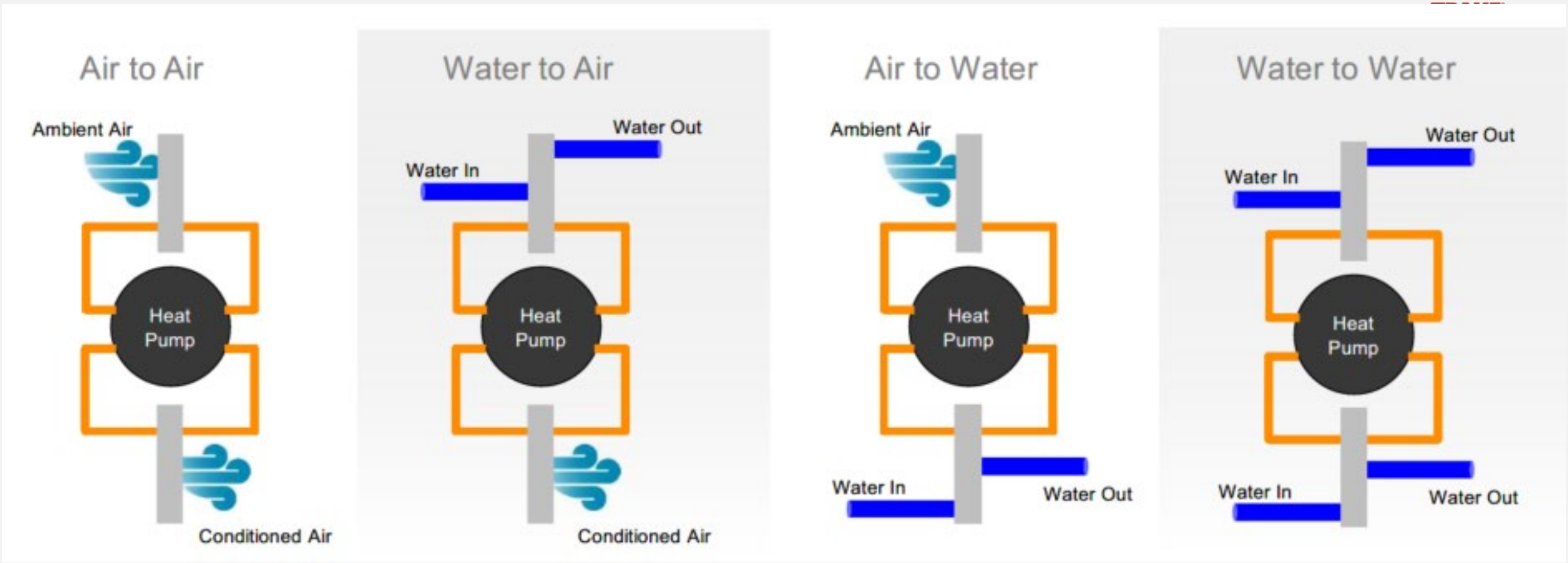
Electrified Heating

- **Electrified heating can take many forms** from heating lamps to electric resistance boilers to heat pumps.
- Electric resistance heating is 100% efficient and is **used in buildings today** from baseboard heaters to reheat in VAV boxes.
- One of the most **efficient means to heat spaces** is by using compressors in heat pumps

What is a Heat Pump?

- Any unit used to produce heat
  - Moves heat energy from one fluid to another
- Typically reversing heat pumps
  - Able to heat or cool

What is a Heat Pump?



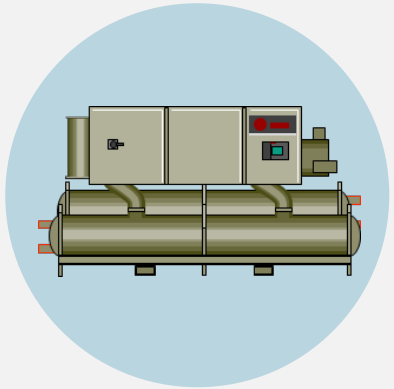
Ex. RTUs, VRF

Ex. WSHP

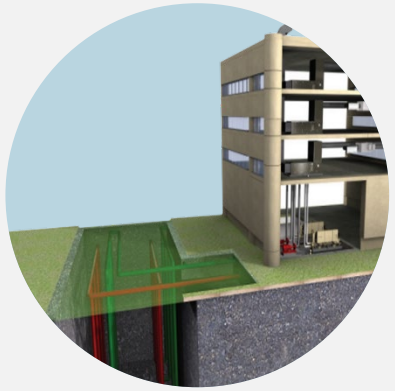
Ex. Air-Source Heat Pump Chiller

Ex. Water-Source Chiller

Electrified Systems – Heat Sources



Cooling Load
(Heat Recovery)

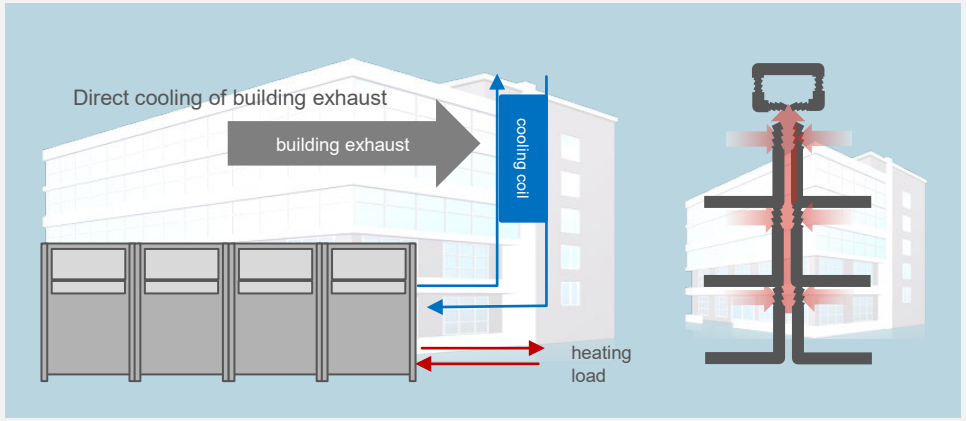


Geothermal loop

Lake, river, pond

Storm and sewer

Ambient Air



Exhaust air coil

Thermal energy storage battery
"Storage Source Heat Pump"

Application Considerations

Geographies & Climate Zones

Building types

New construction or retrofits

Buildings with:

- Natural gas bans
- Carbon taxes
- Sustainability Net Zero / ESG goals
- Utilities that have renewables on-site or on the grid

VRF Systems

Highlight:

- Min ambient -22F

+ LEV Kits

VRF Systems

Highlight:
- Min ambient -22F

+ LEV Kits

DX Heat Pumps

Mixed Air

Highlight:
- Dual Fuel

DOAS

Highlight:
- Dual Fuel
- Air-Source
- Water Source

VRF Systems

Highlight:
- Min ambient -22F

+ LEV Kits

DX Heat Pumps

Mixed Air

Highlight:
- Dual Fuel

DOAS

Highlight:
- Dual Fuel
- Air-Source
- Water Source

Packaged Hydronic Heat Pumps

Centrifugal

Highlight:
- 140F Hot Water

Screw

Highlight:
- 140F Hot Water
- “The Tank”

VRF Systems

Highlight:
- Min ambient -22F

+ LEV Kits

DX Heat Pumps

Mixed Air

Highlight:
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- Dual Fuel
- Air-Source
- Water Source

Packaged Hydronic Heat Pumps

Centrifugal

Highlight:
- 140F Hot Water

Screw

Highlight:
- 165F Hot Water
- “The Tank”

Modular Hydronic Heat Pumps

Heat Pump

Highlight:
- Air to Water
- Water to Water

Heat Recovery

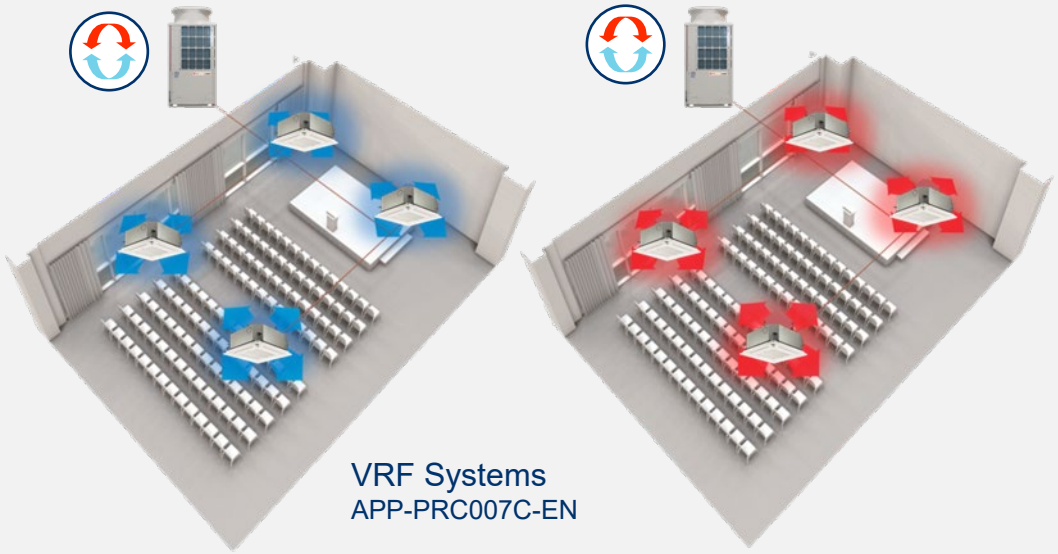
Highlight:
- Heat Recovery

Multipipe

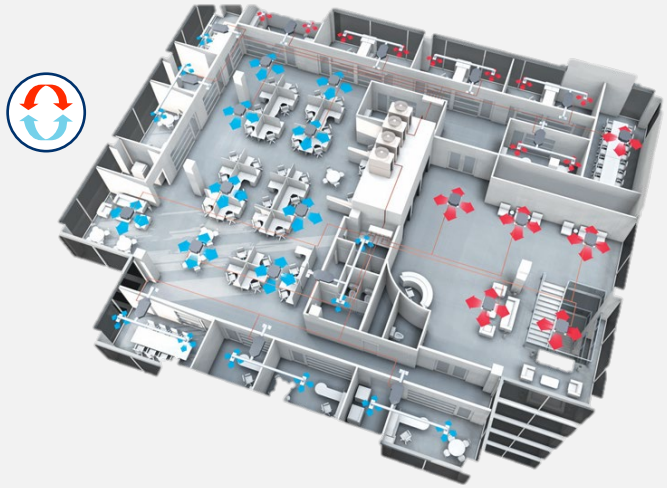
Highlight:
- 6 Pipe

System Configurations

Heat Pump and Heat Recovery Systems



VRF Systems
APP-PRC007C-EN



Zoned Rooftop Systems
APP-PRC009A-EN

Water Source Heat Pump Loop
SYS-APM010C-EN

Legend

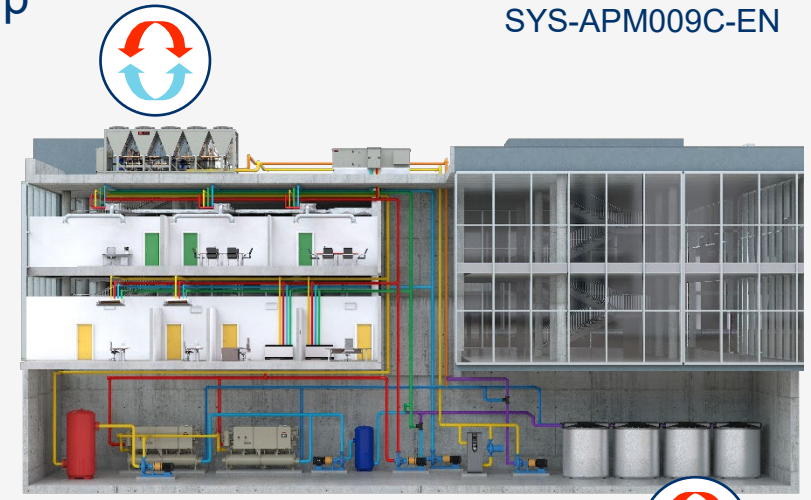
heat source & sink

System Configurations

Applied Hydronic Heat Pump Systems

Air to Water Heat Pump
SYS-APG003*-EN

Central Geothermal Heat Pump
SYS-APM009C-EN



Storage Source Heat Pump
APP-APG022A-EN

Legend

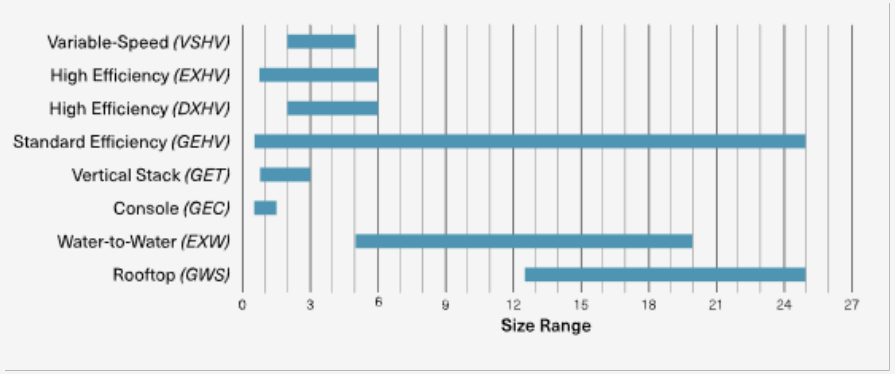
heat source & sink

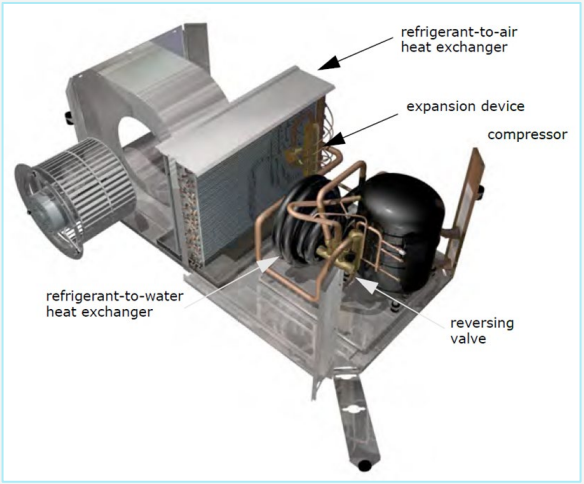
Water Source Heat Pumps

A Water Source Heat Pump is a type of heat pump that operates by rejecting heat to a water loop during cooling mode or by absorbing heat from the same water loop during heating mode

- **Large system portfolio:** Wide portfolio of different WSHP designs to ensure a system to fit your building's needs
- **Superior efficiency:** Units available with Two Stage Compressors, Variable Speed compressors, and variable speed fans. Models with variable speed compressors provide up to 40 EER.

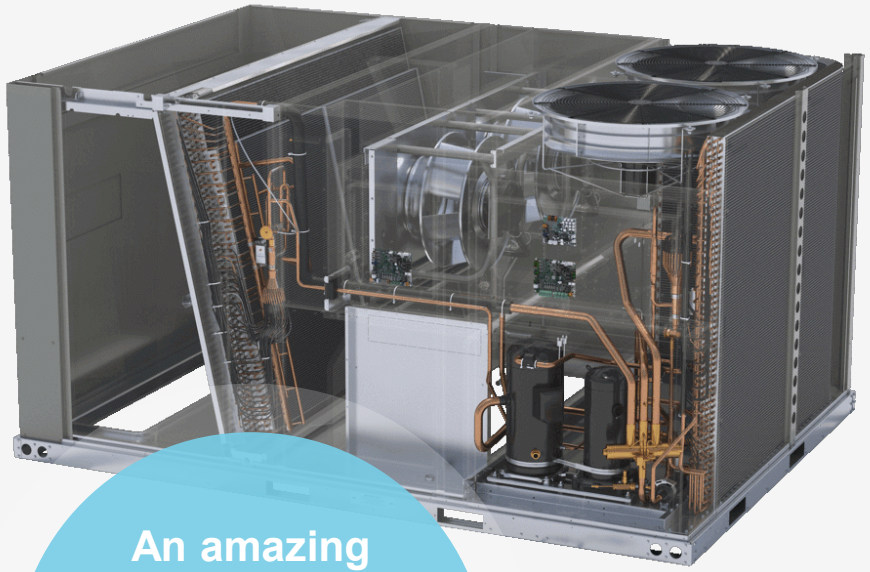
Extensive Portfolio for Varying Applications





Packaged Rooftop ASHP

(3-25 Tons)



An amazing combination of high energy efficiency and quiet performance

FEATURES

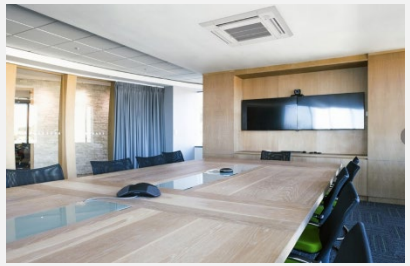
- **Meets a wide range of needs for varying climate, application and sustainability goals:** Standard and high efficiency all-electric heat pump and hybrid dual fuel heating options
- **Variable speed motors:** Two-speed air flow is now standard with options for single zone or multiple zone VAV.
- **Designed for simplified service and maintenance:** Color-coded wiring and keyed connectors, no fan belts to replace, single-side access with standard hinged access to control panel.
- **Optional modulating hot gas reheat:** Provides consistent dehumidification, controllable by relative humidity or space dew point.

VRF Systems

Terminals - Ductless

High Wall

Ceiling Recessed



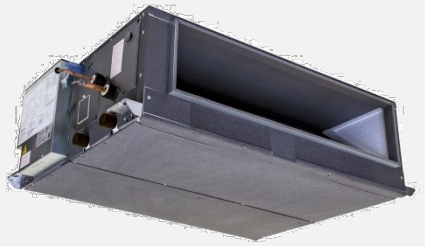
Recessed One-Way

Ceiling Suspended

Floor Mounted

Terminals - Ducted

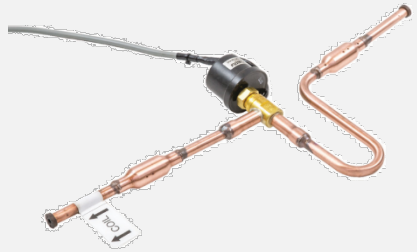
Low/Medium/High Ducted



Multi Position Air Handler

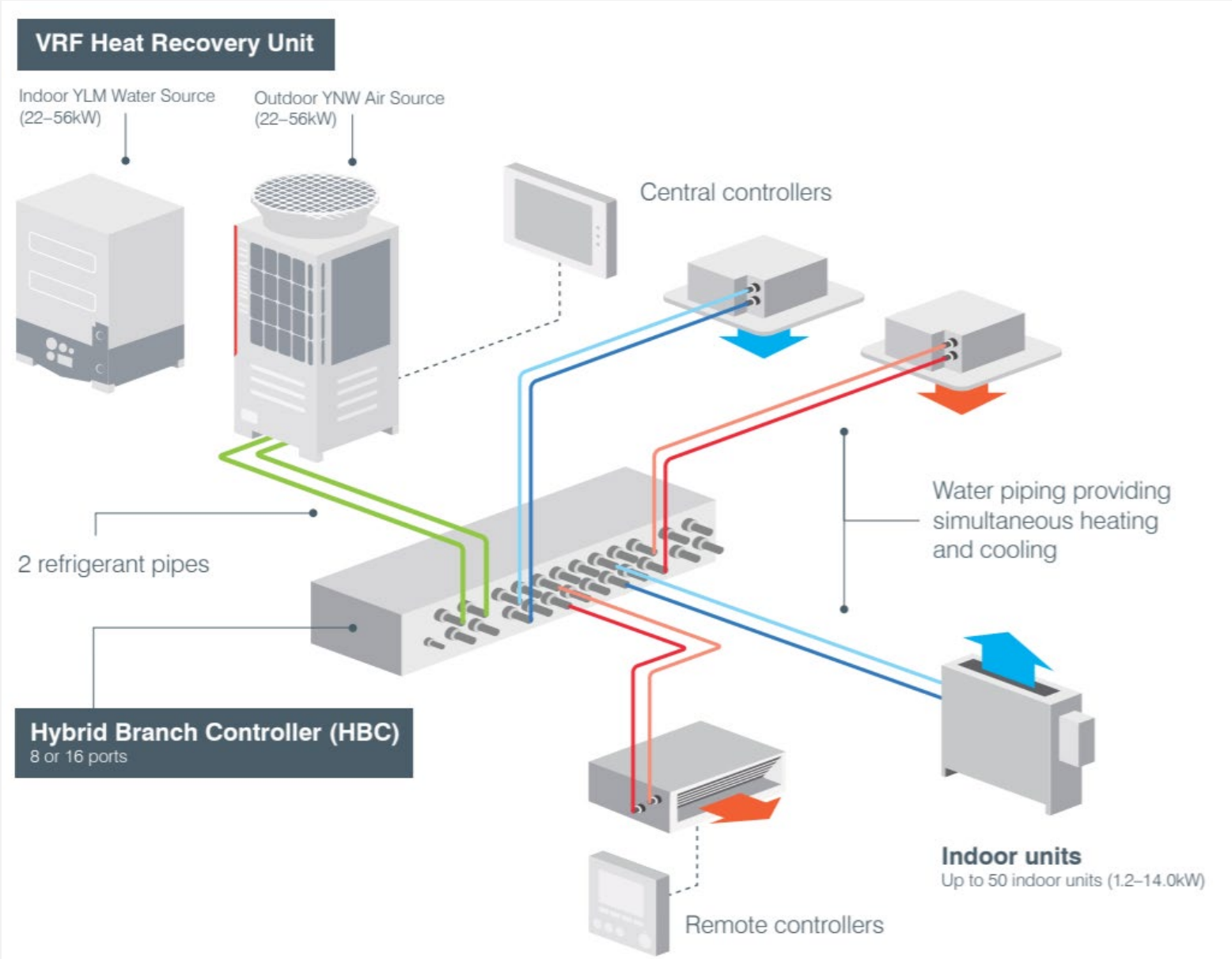
Terminals – LEV Kit

LEV Kit



Hybrid VRF

- Combines benefits of VRF and a Hydronic System
- Heat Recovery Capability
- Water is delivered to indoor units and removes refrigerant from occupied spaces



Air-Source Heating Units

Two-pipe Units

- Two-pipe unit examples
- Partial heat recovery

Two-pipe Unit

Heat Exchanger

Heating Unit Types

Modular: Air-source

Proper Service Plans offer protection to ensure reliability, sustainability, and operational efficiencies

Research shows that regular maintenance can:

- Reduce downtime by 35–45 percent*
- Reduce unexpected breakdowns by 70–75 percent*

Follows similar scope of service to ‘traditional’ equipment

- Coil Cleaning
- Filter maintenance
- Electrical, compressor, fans, etc. check
- Check for leaks
- Use of service maintenance tools

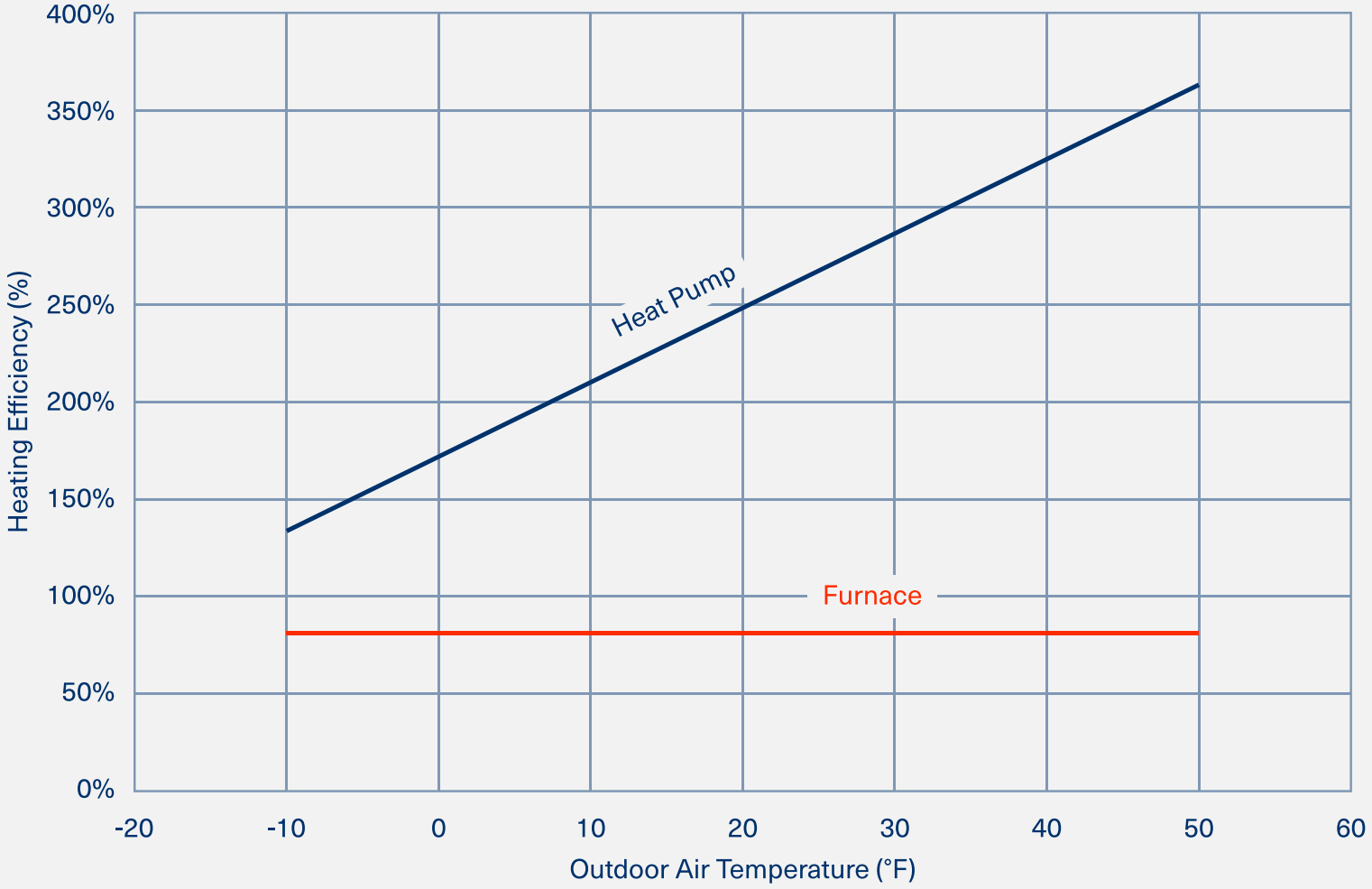
Things to consider

- Water Source- Strainer Maintenance
- Reversing Valve
- Different technologies

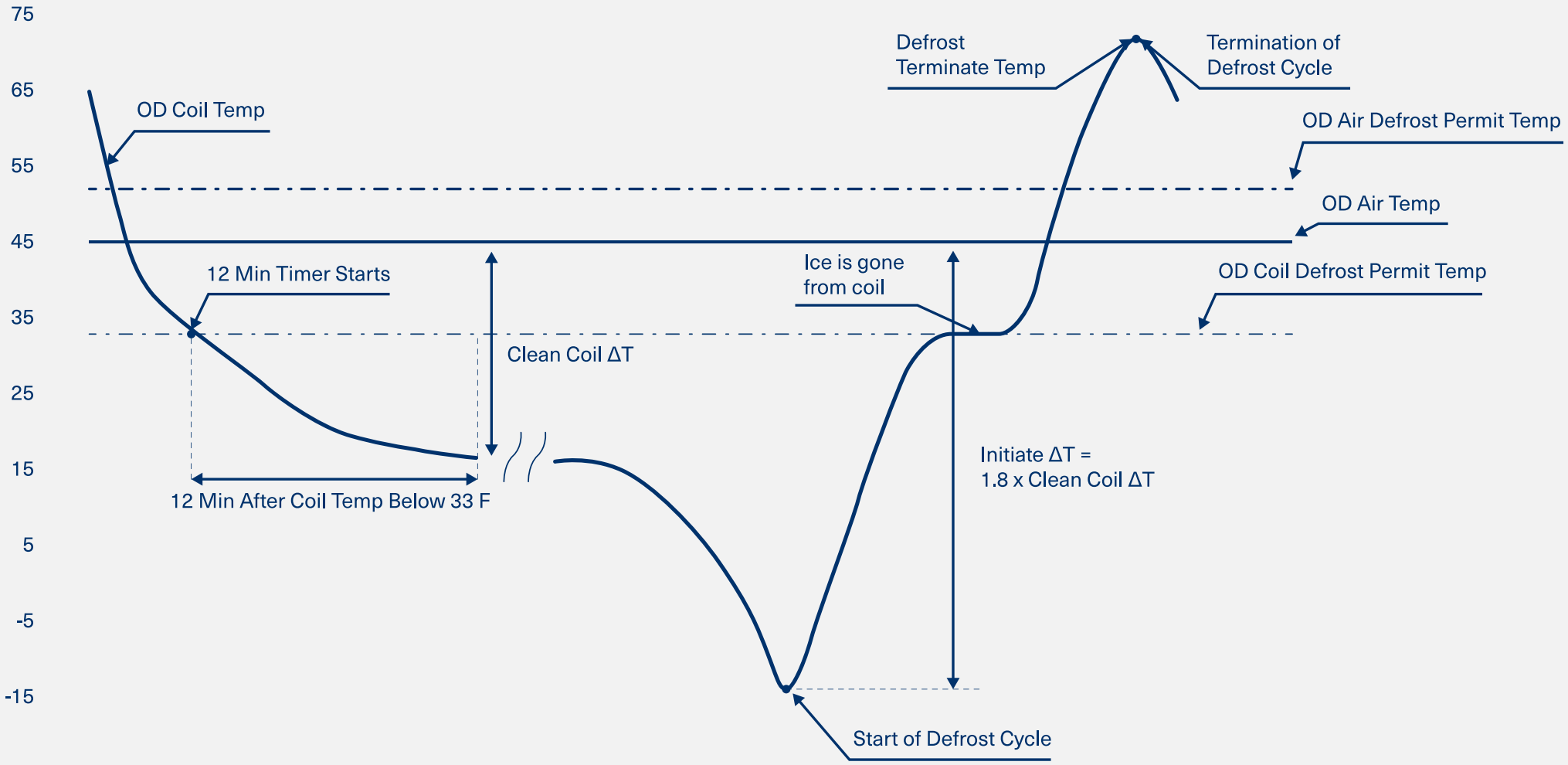
*Source: [Federal Energy Management Program]

Efficiency Comparisons

Heat Pump vs Gas Furnace

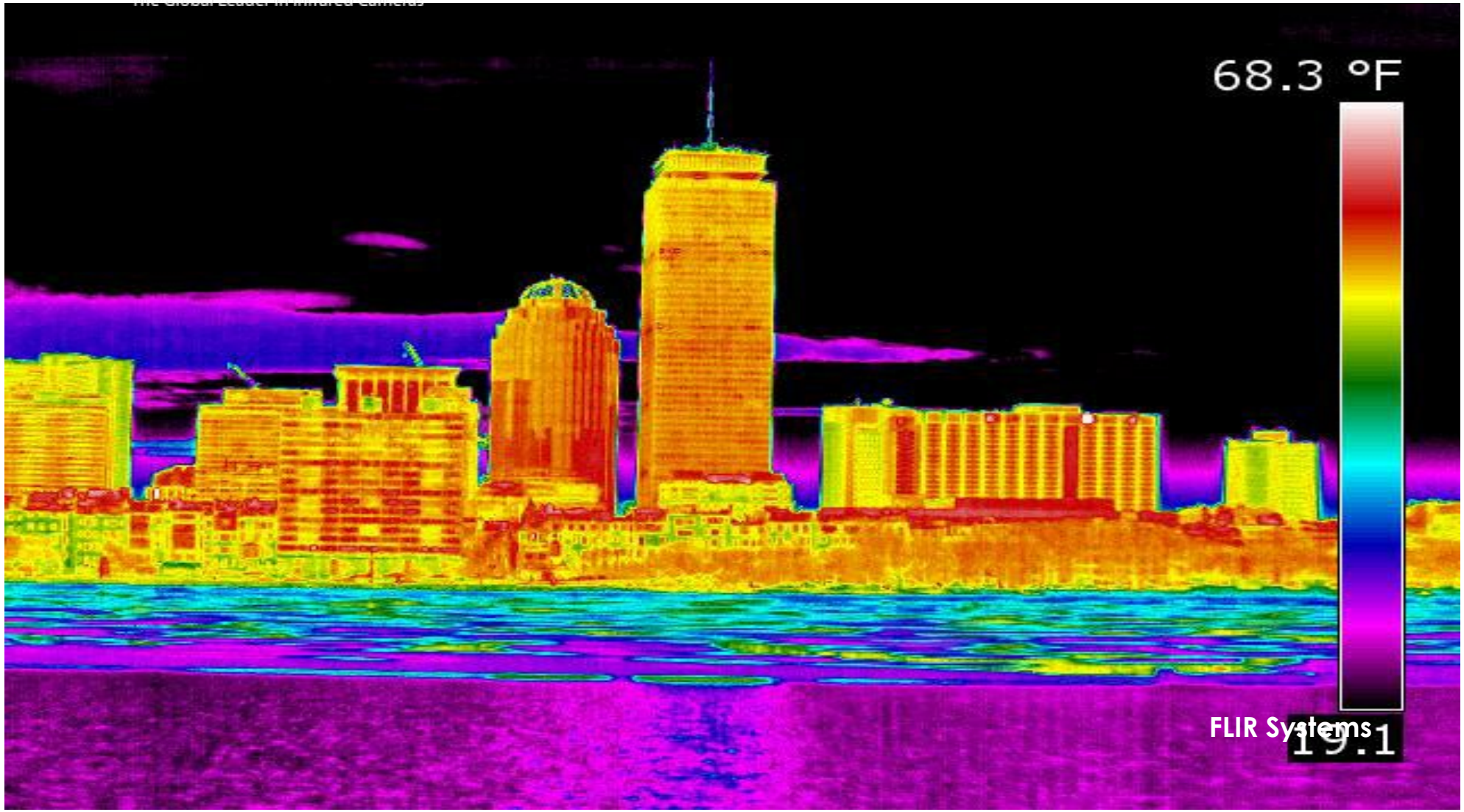


Defrost Cycles



Key Takeaways

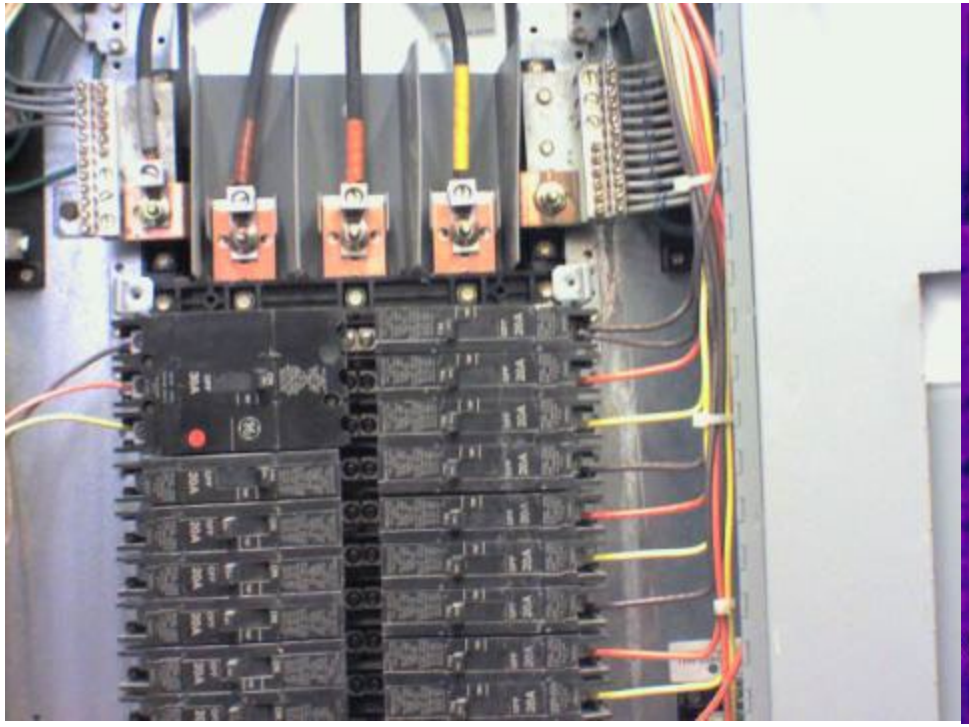
1. Electrification of heating can substantially **decarbonize** buildings
2. Heat pumps can be significantly more **efficient** than electric resistance heating
3. Heat pumps require an appropriate source of heat
4. Recover heat where possible - the **cheapest BTU** is the one already in the building
5. Electrified heating solutions are **available for nearly every application**


68.3 °F
FLIR Systems
19.1

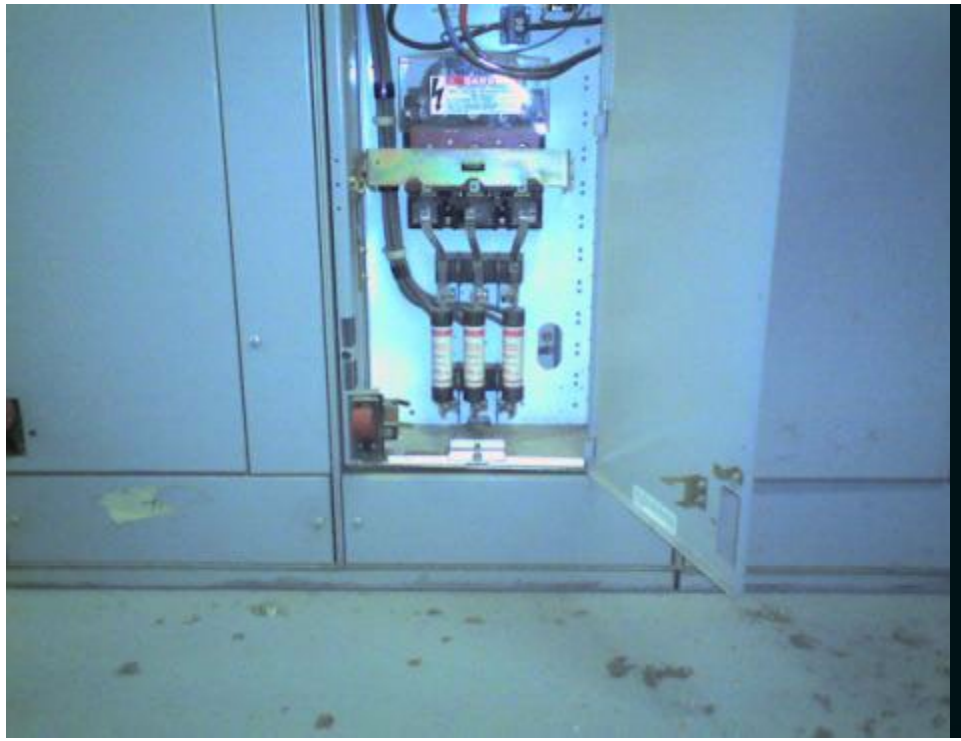
An infrared image

What does this image tell us more?

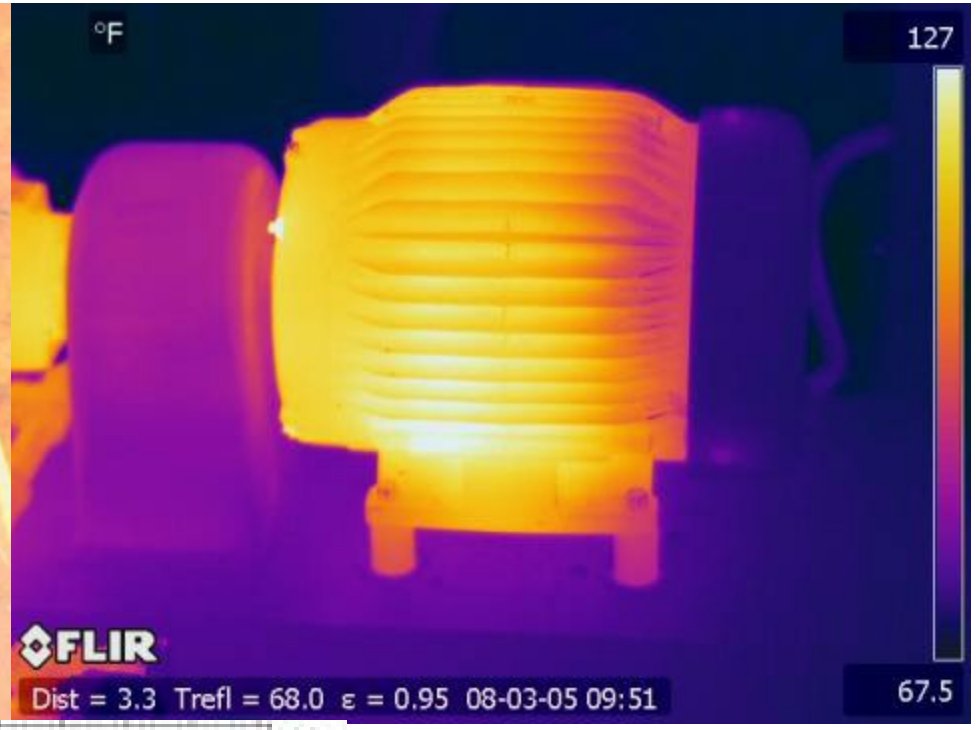
Electrical PM

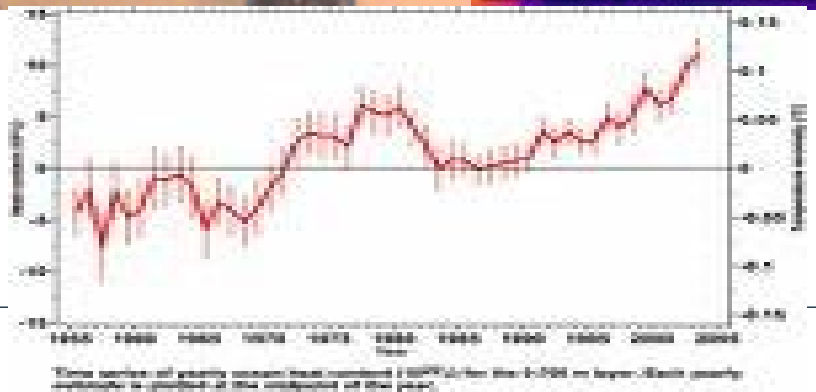


Fuses



Motors

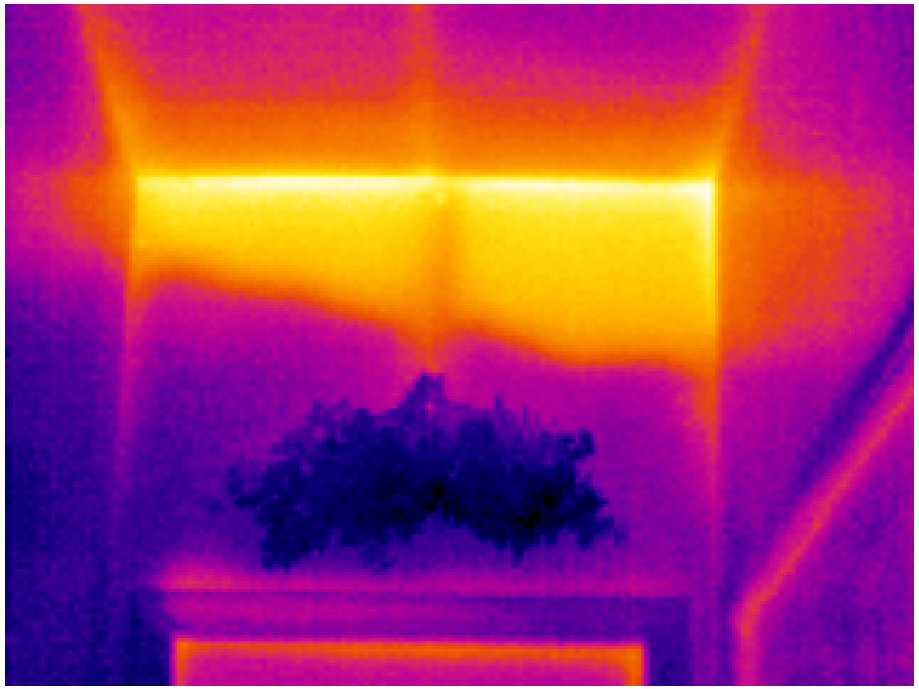




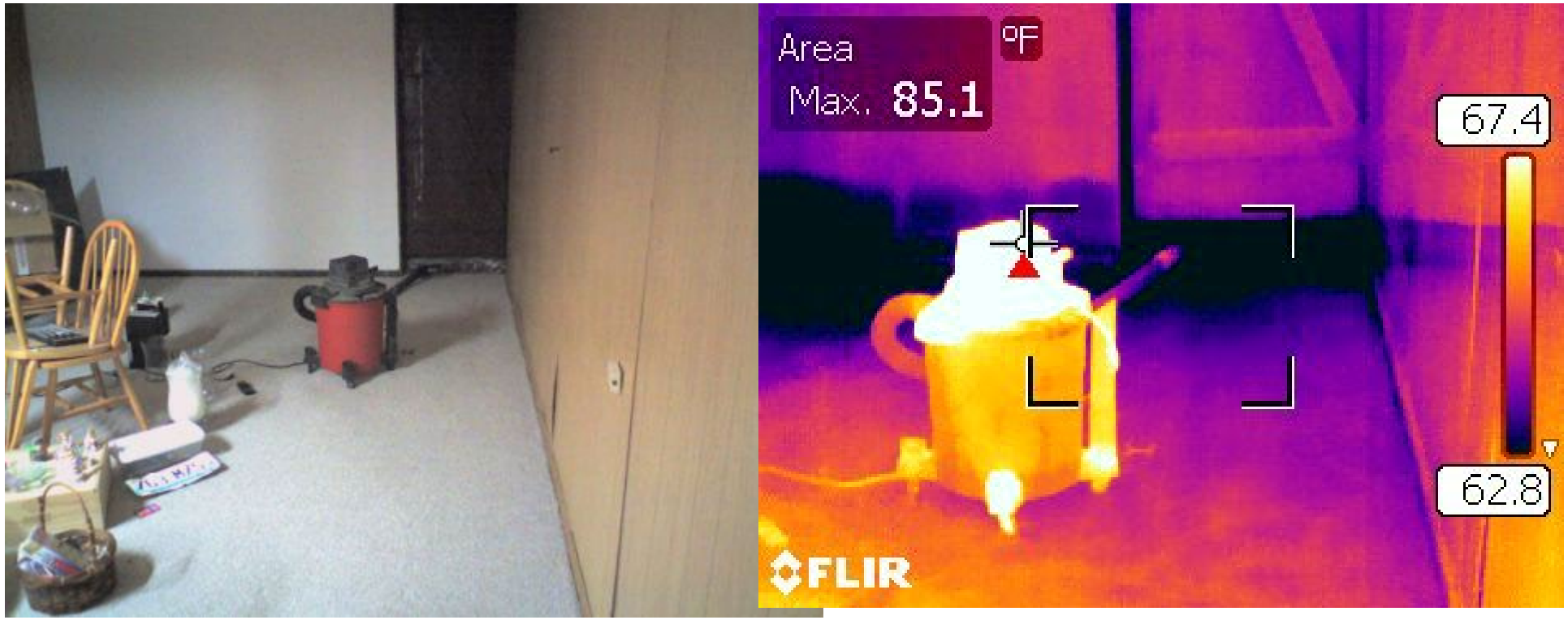
Gear box

Steam Traps

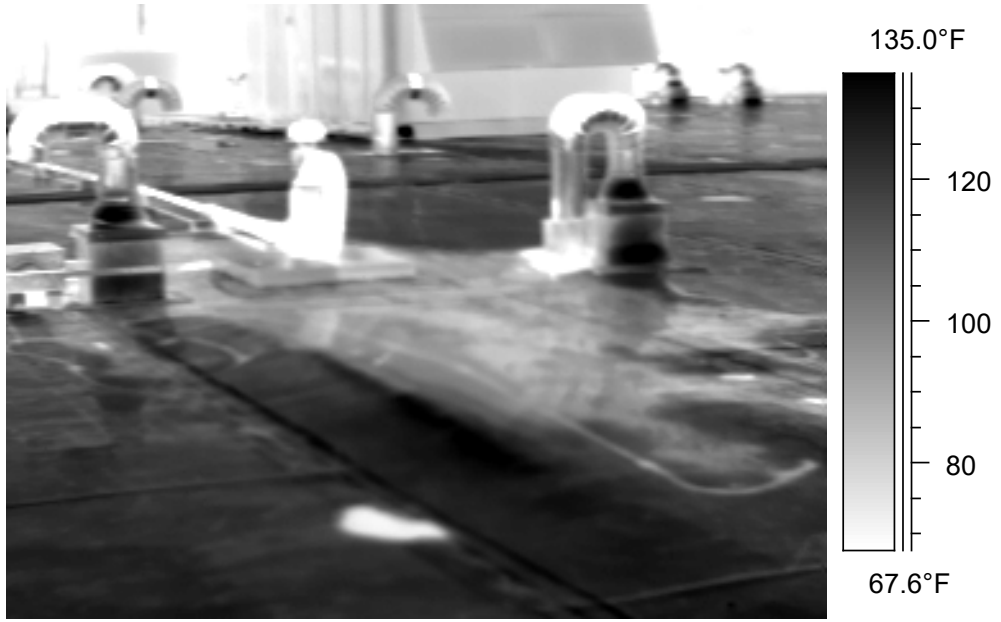
Insulation Settled



Water Damage



Roof Leaks



MAFMA Tool Barn

- **For further information:**
  - **Contact - Michele Davis**
    michele.davis@mass.gov / 617.939.1063

  - **Contact - DCAMM Central Region Headquarters**
    220 Old Common Road, Lancaster, MA
    Main Number: 978.365.7352

Creating A Clean, Affordable, Equitable and Resilient Energy Future For the Commonwealth

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENERGY RESOURCES
Elizabeth Mahony, Commissioner

Leading by Example
Policy to Planning to Implementation

2023 MAFMA Meeting

DOER
Massachusetts Department of Energy Resources

The Policy: Executive Order 594

DOER
Massachusetts Department of Energy Resources

EO594 Goals and Targets

- Focus on elimination of onsite fossil fuels for buildings, fleets, and equipment
- Key strategies include electrification of heating, cooling, and fleets
- Targets ramp-up after 2025

Objective	2025	2030	2040	2050
Reduce emissions from onsite fossil fuel use	-20%	-35%	-60%	-95%
Reduce fuel oil use	-90%	-95%	TBD	TBD
Reduce Energy Use Intensity (EUI)	-20	-25%	TBD	TBD
Zero emission vehicles (ZEVs) in state fleet	5% of fleet	20% of fleet	75% of fleet	100% of fleet
Total EV charging stations at state facilities	350	500	TBD	TBD

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Massachusetts Department of Energy Resources

EO594 Key Requirements

- New Building Standards
  - Fossil fuel-free space heating, cooling, and water heating
  - Efficiency requirements (e.g. high performance envelope)
- Existing building projects
  - Eliminate onsite fossil fuels
  - Prioritize envelope improvements, renewables, energy storage, and resilient design
  - Track energy use and improve operational efficiency
  - Incorporate decarbonization into any equipment replacement or capital and master planning
- Fleet electrification →

GVWR	Effective date of ZEV acquisition requirement
≤ 8,500 pounds	July 1, 2022 (start of fiscal year 2023)
≤ 14,000 pounds	July 1, 2024 (start of fiscal year 2025)
>14,000 pounds	July 1, 2029 (start of fiscal year 2030)

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Efforts Ramping Up

Federal

- Inflation Reduction Act
- Bipartisan Infrastructure Law
- Federal-State Buy Clean Partnership

Massachusetts

- First cabinet-level climate chief
- Mass Save investments in decarbonization
- Utility-scale offshore wind

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Planning for Change

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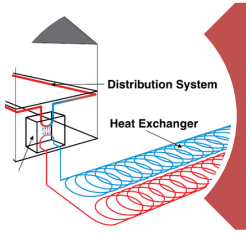
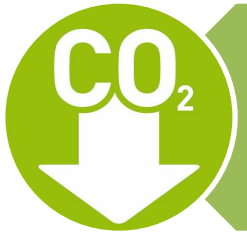
What will things look like in 2050?



All buildings constructed in last 30 years are entirely heated and cooled with efficient electric or renewable thermal technology

All existing buildings have transitioned away from fossil fuels

Entire fleet of state vehicles converted to ZEVs



All capital budgets identify and ensure that no emissions are created by new projects and any remaining emissions are offset

How do we get there from here?

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The road to decarbonization is long…

It’s going to take time…

Decarbonization will require comprehensive policies and roadmaps, investments, and time, with input and support from across all levels of state government

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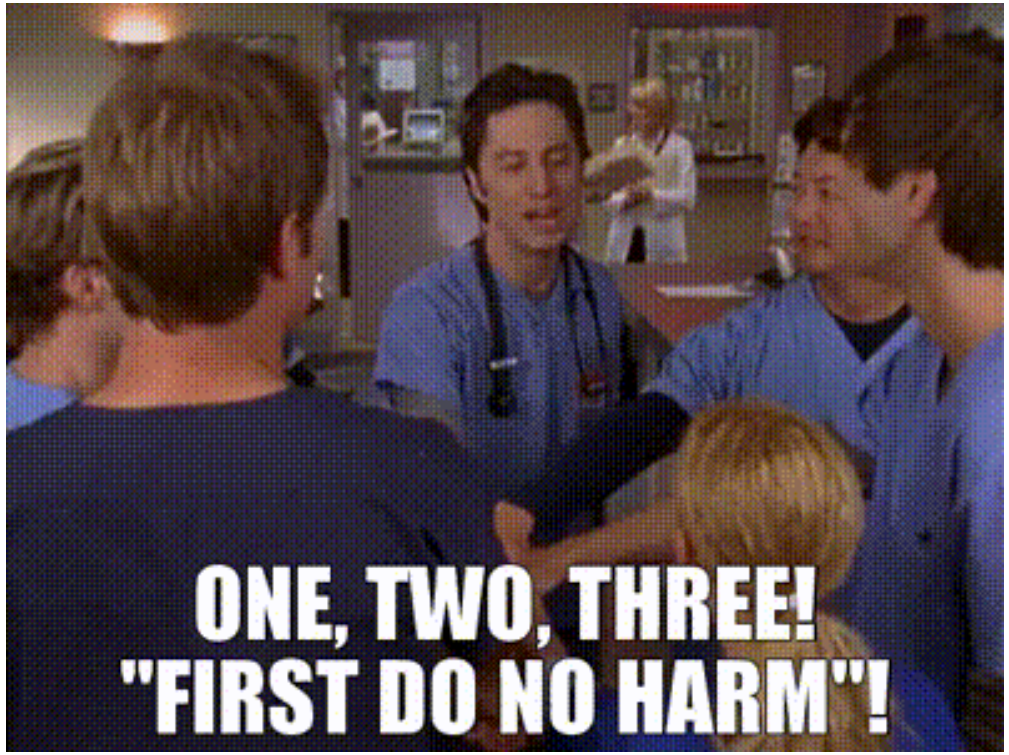
What can we do NOW?

In short, do no harm!

When replacing or buying new equipment, don't install equipment that will increase use of fossil fuels or lock us into using oil or gas for another 10, 20, 30 years



Take Stock of Heating Equipment

- Take stock of equipment, current conditions, and projected end-of-life
- **Make a plan** to replace the equipment with appropriate fossil-fuel free options (e.g., heat pumps) well before the equipment fails

Current Building Equpment data collection attributes:
Equipment Name
Description
Location Path (building)
Specification Class
Specification Name
Manufacturer
Model Number
Serial Number
Building System class /
Condition
Date Installed*
Replacement Value*
Life Expectancy*

Heating system Fuel/Energy Type
Heat Distribution System
Asbestos insulation
Efficiency rating (where available)
Capacity rating
Ancillary/additional heating systems
Cooling equipment
Square footage of conditioned space
Boiler room
Building envelope

vs.

Ducted System

Electrify Light Duty Vehicles

- Electric light-duty options are available today!
- Start with sedans, SUVs, and neighborhood utility vehicles/golf carts

Statewide Contract VEH102

CHEVROLET BOLT

CHEVROLET BOLT EUV

HYUNDAI KONA

F-150 LIGHTNING

HYUNDAI IONIQ

FORD MUSTANG MACH-E

HYUNDAI IONIQ 5

Statewide Contract FAC116

CUSHMAN HAULER

YAMAHA UMAX

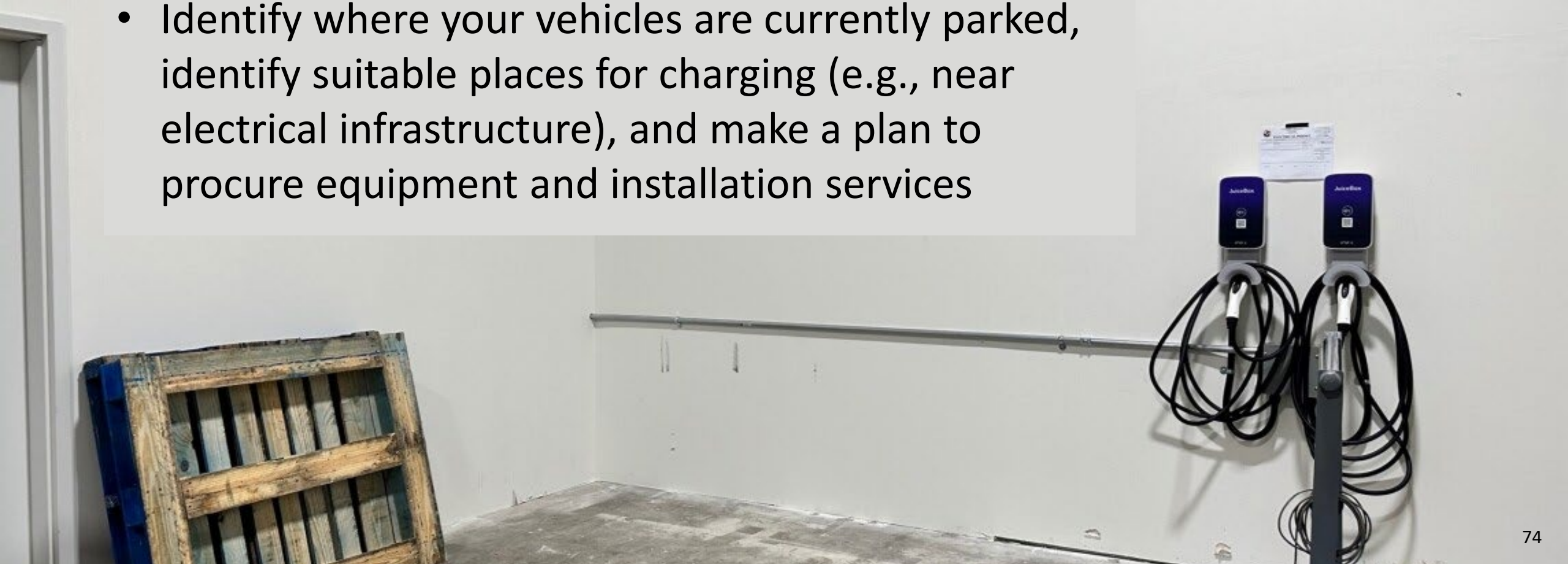
CUSHMAN SHUTTLE

GREENWORKS UTV

POLARIS GEM

Prepare for Fleet Electrification

- Whether it's this year, or within the next couple of years, EVs are coming to your fleet. Be ready with EV charging stations!
- Identify where your vehicles are currently parked, identify suitable places for charging (e.g., near electrical infrastructure), and make a plan to procure equipment and installation services



Low-Hanging Fruit: Landscaping Equipment

While not a huge consumer of fossil fuels, switching to battery-powered landscaping equipment is an easy win

Battery handheld equipment is often cost-comparable to gas-equipment, and have many benefits – quieter, no fumes, less vibration

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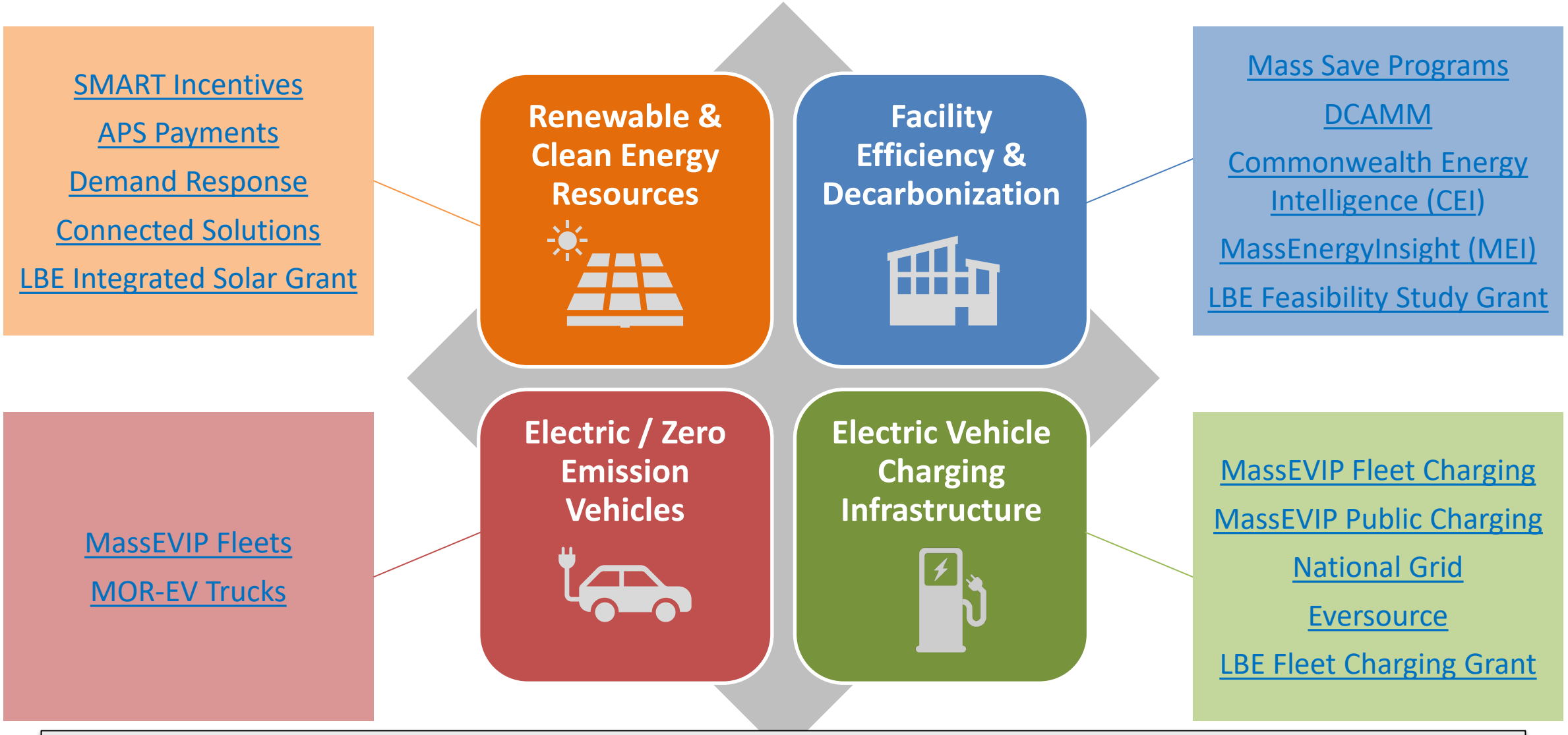
Funding Programs for Decarbonization



Federal Tax Credits for renewables, EVs, EV charging, and others now available to non-taxable entities

LBE Contacts

Eric Friedman, Director

Eric.Friedman@mass.gov

Catie Snyder, Deputy Director

Catie.Snyder@mass.gov

Ryan Kingston, Sustainability Project Coordinator

Ryan.Kingston@mass.gov

Sophia Vitello, Data Analyst

Sophia.Vitello@mass.gov

Morgan Bowler, LBE Intern

Morgan.Bowler@mass.gov

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Massachusetts Department of Energy Resources

THANK YOU!

Existing Buildings and the Path to Zero

Krista Lillis, Deputy Director Energy and Sustainability

10.26.23

DIVISION OF CAPITAL ASSET MANAGEMENT & MAINTENANCE

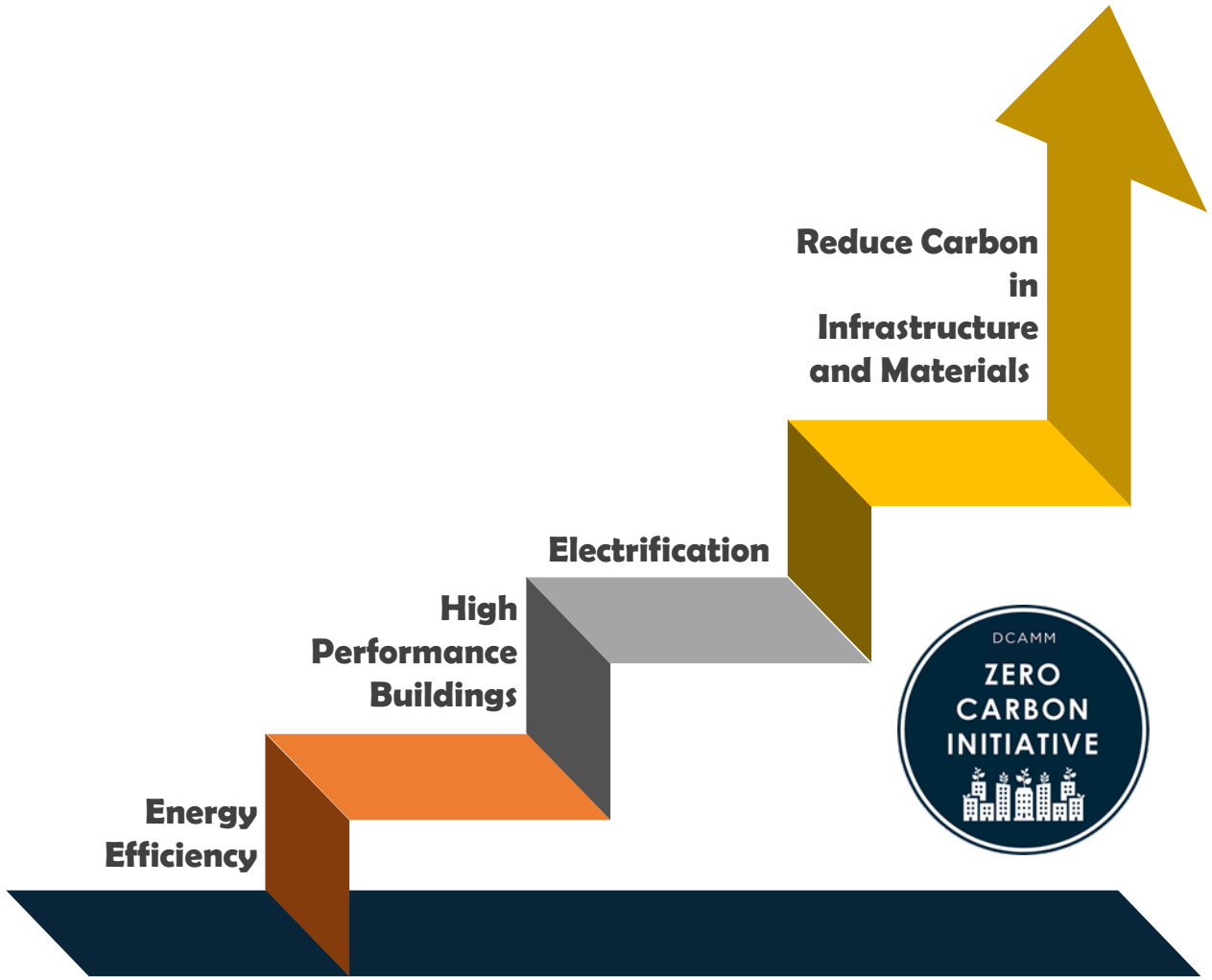
DCAMM- Energy and Sustainability Group

Energy and Sustainability Program Goals:

- Reduce greenhouse gas emissions
- Increase efficiency
- Save energy and water (and money)
- Construct better, more resilient buildings

Program Focus:

- Eliminate fossil fuels
- Include resilience in every project
- Renew and electrify infrastructure
- Rethink central plants
- Continue to utilize data driven approach
- Support knowledge at the facility level
- Assist facilities with ongoing operational efficiency



Energy and Sustainability Group: Low hanging fruit, long term strategy

Capital Energy Projects	Large: Comprehensive Small: Utility Vendor
Energy Intelligence and Optimization	Real-time data collection (CEI) Commissioning and monitoring
Electric Grid Programs	Demand Response Renewable/alternative energy credits
Advise and collaborate	Resilience LEED and high-performance buildings Partner with agencies

M.G.L. c. 25A: DCAMM Energy Projects

Pursuant to M.G.L.c. 25A, DCAMM awards contracts to the offeror that demonstrably possesses the skill, ability and integrity necessary to perform faithfully energy management services.

Data-driven project delivery

Look at the Data

CEI- Commonwealth Energy Intelligence. Interval metering and bill data allow us to identify potential needs and opportunities.

Understand the Building!

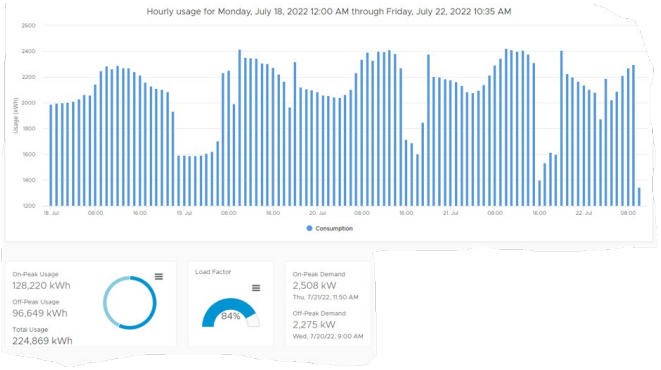
Get your eyes on it, talk to facility operators, see how it works currently, and how it needs to work.

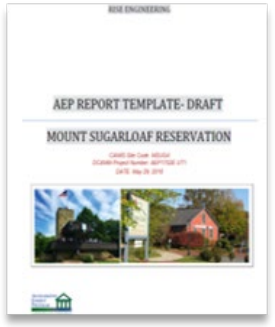
Document Existing Conditions

Utility Vendors, Facility Advisors, & Others audit the facilities, providing immediate projects and long term

Start!

Make short term recommendations that lead to long term operational changes
.





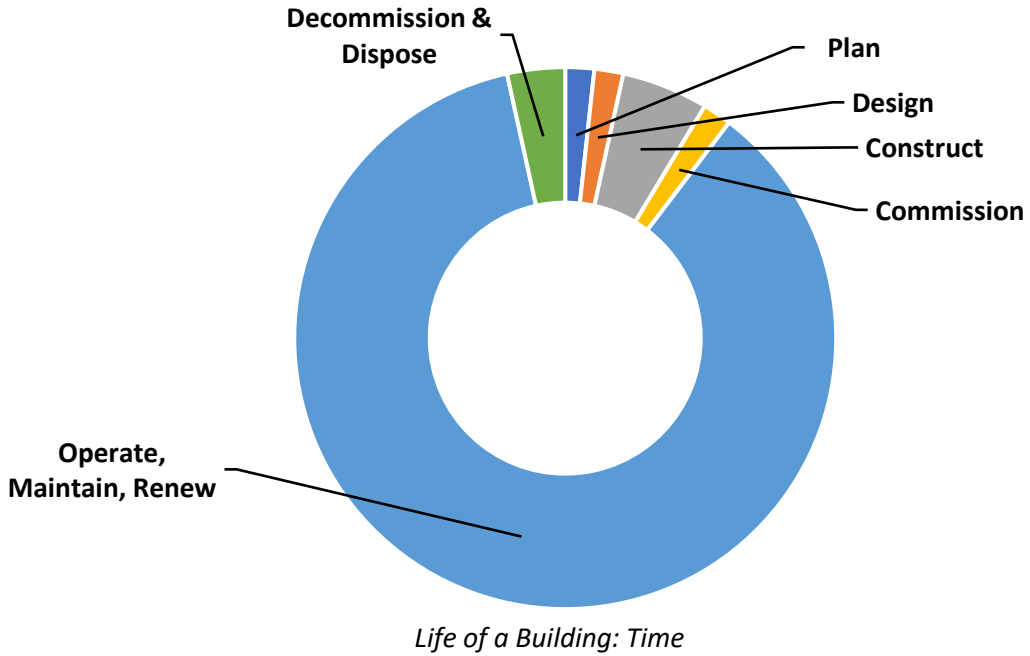
Challenges of Retrofits…

What's behind that wall?

How do we use it?

We can look at that in the future…

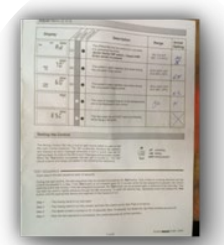
Let's just do the right thing!



Life of a Building: Time

1. Identify and quantify efficiency opportunities.
2. Specify highest efficiency equipment.
3. Eliminate oil, if possible look to reduce/eliminate other fuel uses. Make a plan for future removal/switching.
4. Train facility staff, identify existing maintenance contracts that will be affected, or new maintenance contracts that will be required.
5. Look at resilience! If the project location is susceptible to threats- flooding, high heat, etc. can we do something to address it?

Historic ECM Focus: Continuous Improvement



Electrification:

Electric equipment, Heat Pumps,

Solar repairs, EV Chargers, etc.

Building controls:

Aligning existing equipment, new programming, sensors, front end- increased control!

Envelope improvements:

Insulation, Storm windows, Weather stripping

Lighting and controls:

LEDs, daylighting, occupancy

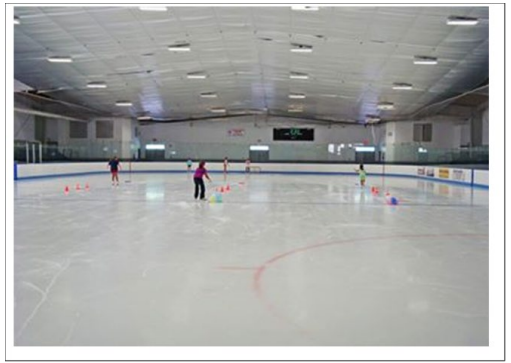
Case Study: Technology driven efficiency

Ice Rinks:

- Past Projects- ceiling
- Originally part of state-wide program
- Focus on quick efficiency measures
- Lights
- Preheat and reheat
- Zamboni fillers

<u>Existing Building Lesson</u>:

- Dehumidification



Case Study: Not always 1 for 1

Trial Courts:

- Replace existing standard natural gas fired DHW tank with a hybrid heat pump electric hot water tank.
- Couldn't get up to temp
- New electric tanks did not have the same recovery ability as the Nat Gas fired tanks.
- Booster was installed keep the re-circ line at a stable temperature to meet code.

<u>Existing building lesson:</u>

- Could have been some cross-flow with leaky check valves…

Rheem

The new degree of comfort.®

Water | Commercial Electric **Hybrid Water Heaters**

Hybrid Electric Commercial water heaters are available in 50, 65 and 80-gallon capacities and are the most efficient water heaters available

Efficiency
- High 3.55 - 3.70 UEF reduces operating cost
- ENERGY STAR® rated

Performance
- Delivers more hot water than most standard electric water heaters – 67 gallons first-hour delivery for 50-gallon model, 75 gallons FHD for 65-gallon model and 89 gallons FHD for 80-gallon model
- Ambient operating range: 37-145° F is widest in class, offering more days of HP operation annually; designed to meet Northern Climate Spec (Tier 3)
- Maximum temperature setting is 150°F

Easy Installation
- Easy access side connections
- Quick access to electrical junction box
- Easily replaces a standard electric water heater

Integration
- LCD Screen with built-in water sensor alert with audible alarm

EcoNet®
- EcoNet® WiFi-connected* technology and free mobile app gives users control over water systems, allowing for customizable temperature, vacation settings, energy savings and system monitoring at home or away. Visit Rheem.com/hybridsolutions
- Water sensor detects water outside of the unit and sends an alert via the free

Operation Modes
- Energy Saver
- Heat Pump
- High Demand
- Electric
- Vacation: 2-28 days (or placed on hold indefinitely)

Plus...
- Premium grade anode rod with resistor extends the life of the tank
- 3/4" NPT water inlet and outlet; 3/4" condensate drain connections
- Incoloy stainless steel resistor elements
- Dry-fire protection
- Easy access, top mounted washable air filter
- 2" Non-CFC foam insulation
- Enhanced flow brass drain valve
- Temperature and pressure relief valve installed
- Low lead compliant

Warranty
- 3-Year limited tank and parts warranty

See Commercial Warranty Certificate for complete information

*WiFi broadband internet connection required.

Efficiency | These models have been tested according to DOE test procedures, and exceed the minimum energy factor requirements of current ASHRAE Standards (Part of the federally mandated Energy Policy Act (EPact). Also exceeds energy efficiency codes of all states including California Energy Commission (CEC).

Rheem Hybrid
50, 65 and 80-Gallon Capacities
208-240 Volt / 1 PH / 30 Amps
Electric

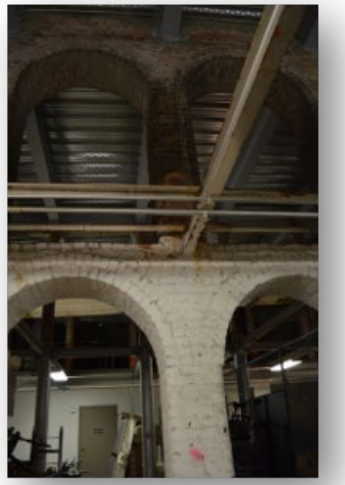
Case Study: The Importance of Incremental Efficiency Upgrades

State House:

- DCAMM performed an initial feasibility, to achieve energy savings and improve occupant comfort
- Original project covered lighting
- Energy and water savings project

<u>Next Steps:</u>

- Weatherstripping
- Always continuing to improve!



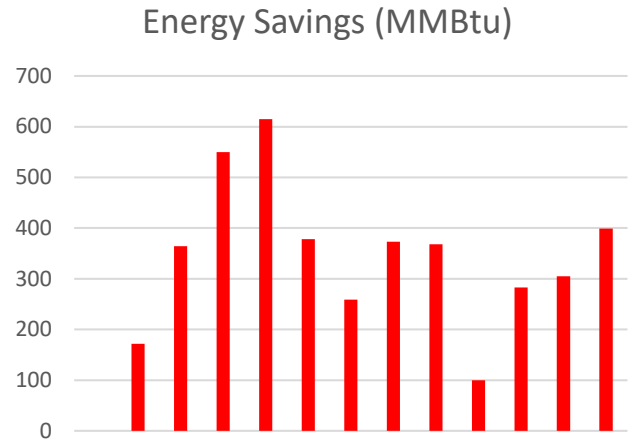
Case Study: The Importance of Incremental Efficiency Upgrades

DDS:

- Started with small projects audits identified needs
- Lights, insulation, noted need for thermal control

<u>Next Steps:</u>

- New Comprehensive Project
  - Improve occupant comfort
  - Meet Commonwealth decarbonization goals
  - Update building systems
- Up to 12 homes



Questions?

Krista Lillis

Deputy Director, Energy and Sustainability

Division of Capital Asset Management and Maintenance

Krista.Lillis@mass.gov

BRISTOL

COMMUNITY COLLEGE

Alternate Project Funding

Jo Ann Bentley, RA

AVP Admin & Facilities

- Mid-March 2020 – Bristol Community College closed the campus for what we thought would be a two-week period of time. Fast forward to today, along with the rest of our peers, we are still in recovery mode.

- The Facilities Department never left campus. We were on the front lines, making the campus safe for the return of Students, Faculty, and Staff.

- Due to the CARES Act and American Rescue Plan Act, the college received financial assistance. The college used the funds to assist students, and the Facilities Department was allowed to submit requests for products we could buy and projects we would undertake that would be for the benefit of the students.

- From the purchase of masks and gloves, to the installation of new HVAC equipment, to the removal and replacement of windows and frames in two buildings, Facilities spent $7.4 million.

4'x8'x1/8" Lexan sheets	We can cut Lexan in-house
Acrylic Mask & Glove Stations	Additional stations to house PPE for remainder of classrooms
Antimicrobial Light Sensors / Light Switches	Antimicrobial treated devices and stainless steel wall plates with antimicrobial additives to help keep their surfaces cleaner.
Automatic Temperature Controls	Upgrade Building HVAC controls to meet COVID -19 standards: Building E Supervisory Controller Integration Building J Supervisory Controller Integration, Building C Supervisory Controller Integration, Add supervisory controller to BCC network. Install APC Power supply on new controller. Map into BMS Server.
Building HVAC Insulation Encapsulation	The insulation in the univents in building b and k is breaking down due to age. Fiberlock will be applied to all insulation in the univents to extend the insulations useful life and maintain indoor air quality.
Band Saw	We can cut Lexan sheets
Bookstore Lockers	Will allow for students to receive their books without face-to-face interaction with bookstore employees.
Bottle filling stations	Replace water fountains with touchless bottle filling stations.
Elevator Cab Air Purifier	Air purifiers for elevators
Campus wide bathroom floor restoration and sealant	This work would provide a sealed non pouros surface which would effectively eliminate the ability for bacteria/viruses to grow
Building VRF system	Installation of mini vrf systems in all rooms in order to remove older window units and provide ASHRAE HVAC standards per COVID air circulation and fresh air intakes.
Duct work cleaning	Building Duct Work Cleaning
Restroom Solid Surface Vanities, Epoxy Flooring	Remove and replace counters, sinks, toilet partition stalls
Electrostatic Disinfecting Guns	Additional units to cover additional Buildings and campuses
Exhaust Fans	Building exhaust fans to increase air circulation per COVID-19 guidelines pushing indoor air outside.
Fire doors hold-open devices	Will allow hallway doors to remain open to promote air flow by use of a magnetic hold-open device. Device will be tied into fire alarm system and will automatically disconnect to close doors when fire alarm is activated. B Building
Hands Free Automatic Soap Dispenser	Touchless hand soap dispensing

HealthMate PreFilter	Filters for HealthMate Air Purifier
HEPA filters	HVAC filter changes for all campuses (2x)
High Capacity disk scrubber for restroom floors.	Machine will scrub tile floors and grout.
IWAVE-C	Internal AHU installed air filtration unit for full building HVAC. 1 Unit per 12 tons. Full Install including electrical.
Mini splits and condensers	Increased data center (server room) air flow. Increased data equipment with remote work / learning creating more heat out-put. Risk of servers shutting down because of too much heat.
MityLite tables w/table racks for transportation	These 20 tables will be used for the Vaccination Clinic that FRFD and FR Health and Human Services will be conducting on campus. The current tables we own are used for Mobile Food Market, therefore we don't have enough tables to support both events. Both events continue to go on because the population of FR is in great need of both services during this COVID19.
Mobile Work Station	Portable work stations to limit the amount of time in the trade shops and able to social distance
Nano septic wraps and push pads	For all campuses
NB Cooling Tower	Cooling Tower Installtion for NB Campus to provide adequate full building AC and air circulation
Outdoor Seating - 13 picnic tables w/ umbrellas & 6 benches	Provide outdoor seating throughout campus.
Paint Shield EW	Microbicidal paint - prevents spread of bacteria on painted surfaces. Kills 99.9% of bacteria w/in 2 hours of exposure
Propane heaters for outdoor use	The mobile food market will continue to be held outdoors throughout the winter months. We will strategically locate outdoor propane heaters so volunteers can stay warm during the 4 hours of outdoor service.
Propane tanks and propane	20lb propane tank and propane. To be locally sourced.
Restroom Clean System Machine	Steam cleaner for restroom walls, cove base, partitions.
Room air purifiers	Attleboro
Tufftec Cubbie Lockers - 25	New Cubbies in HDPE material in child care will allow proper sanitation of space.
UV Angel Air	Designed directly into a traditional ceiling light fixture, UV Angel Clean AirTM is an unobtrusive environmental treatment system that uses ultraviolet light to automatically and continually treat the air.

Masks, Gloves, and Holders

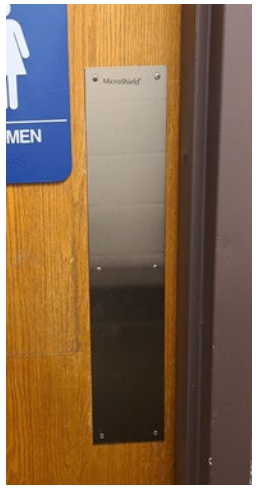
Sanitizer Dispensers

Automatic Dispensers

Seat Covers

Toe-kick Door Openers

Wipe Dispensers



Microshield Pushpads and Nanoseptic Wraps

Bottle filling Stations

Automatic Flushometers

Antimicrobial counters, sinks, automatic soap dispensers, floors epoxy coated with antimicrobial additive

Plexiglass partitions – made with coat hangers

Air Purifiers

100 - Seating and Epoxy Flooring

Cafeteria Furniture

700 Seat Auditorium and epoxy flooring

Outdoor Seating, benches, tables and chairs

New Windows – Engineering Building

New Windows – Learning Resource Center

Thanks for Coming
See you in the Spring!!