



Electrification in Large C&I Customer Facilities

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EVERSOURCE

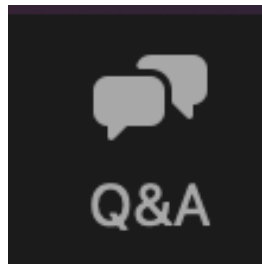


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We look forward to hearing from you

Please put all your questions into the questions section with this icon.





Electrification & Mass Save

Prescriptive and custom incentives

Technical assistance

Early indicators thru example projects

Geothermal

Air-to-water heat pump

Heat Recovery

Electrification & Mass Save



What is Electrification?



Using electrically operated equipment to perform work previously performed by fossil fuel-fired equipment

Examples include:

- Heat pumps (space conditioning, DHW)
- Forklifts
- Lawn equipment
- Induction cooktops
- Industrial process loads

Electrification Support:

- If displacing oil, propane, or electric resistance (HP-to-HP not through this path): [Electric Sponsor](#)
- If displacing natural gas: [Gas Sponsor](#)

Prescriptive Rebates



Eligible equipment (must be on QPL)

Air source (air-to-air) heat pumps

Variable refrigerant flow air source heat pumps

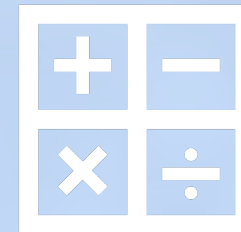
Ground source heat pumps (geothermal)

Eligible Projects

< 150 tons, partial or full displacement

Used for space heating and cooling

Existing buildings only



Prescriptive Rebates



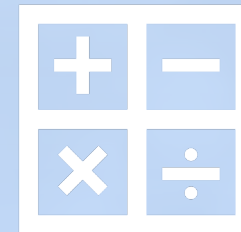
Simple HP application process

- Purchase qualified equipment
- Install per program guidelines
- Complete and submit rebate form
- Same incentive amounts as last year

Commitment letters

- Contact Sponsor and/or rebate processing vendor
- Provide information requested on application form

Other electrification offerings



Custom Incentives

Pre-approval required

Projects >150 tons

Equipment not covered by prescriptive offer

Process heating

Eligibility criteria

Must produce net MMBTU reduction

Must NOT increase GHG emissions

Must meet cost-effectiveness criteria



Custom Incentives



Custom electrification process

- Contact Sponsor
- Define project – calculate savings and costs
- Obtain pre-approval
- Install & receive incentive

Technical Assistance

- Scoping/feasibility studies
- Focused studies



Early indicators through example projects



Geothermal for School



Existing

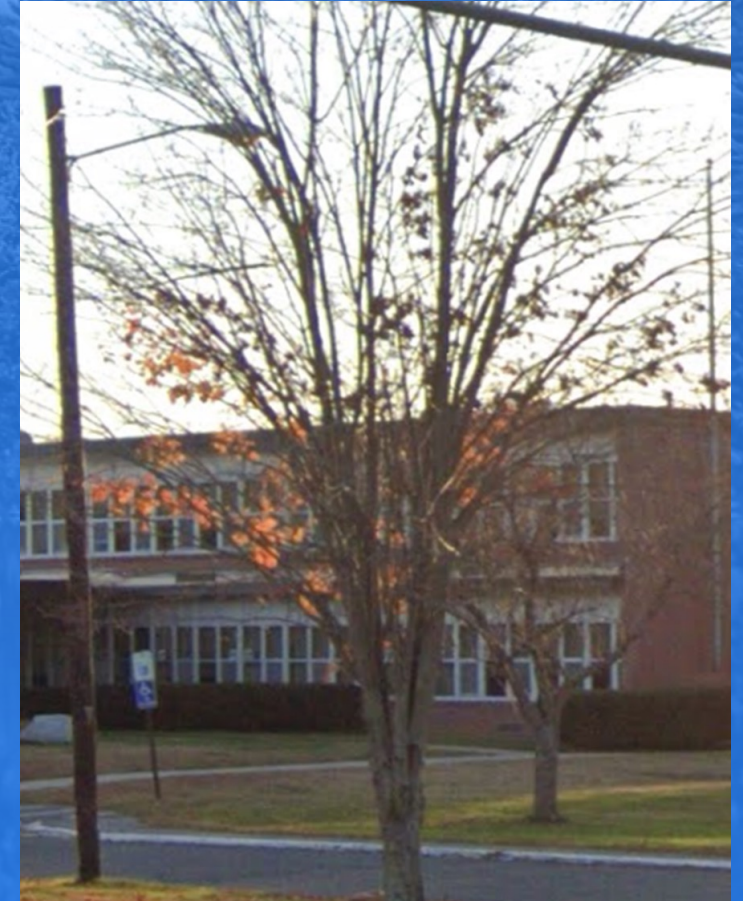
- Built-in 1954, renovated 2009-2012
- 62,000 sq. ft.
- Air conditioned (ASHPs 1st and 2nd floor classrooms)
- End of life Oil boilers (steam), minimal use of ASHPs for heat

Proposed

- Full electrification
- Ground source heat pump
- Ventilation system upgrades

Impacts

- Proposed Cost: \$3,650,000
- Oil Savings: 27,000 gal / yr.
- Heating Cost Savings: \$25,000/yr. (26% decrease)
- Annual GHG Emissions Reduction: 262 metric tons CO₂e



School HVAC Replacement Options Summary



Option	Estimated Gross Install Cost	Estimated Utility Incentives	Estimated Federal Incentives	Estimated net install cost
Replace in-kind (oil boiler)	\$1,150,000.00	\$0.00	\$0.00	\$1,150,000.00
Air-source heat pump	\$2,060,000.00	\$362,000.00	\$0.00	\$1,698,000.00
Ground-source heat pump	\$3,650,000.00	\$962,000.00	\$1,825,000.00	\$863,000.00

Fire House

Existing

- Built in 2018
- 3,390 sq. ft.
- Radiant slab heating
- Failed propane-fired condensing boiler

Proposed

- AWHP equipment
- Full Electrification
- Tying into existing radiant floor
- 4 Tons

Impacts

- Propane Savings: 670 gal/yr
- Heating Cost Savings: \$1352/year (57% decrease)
- Annual GHG Emissions Reduction: 4 metric tons CO₂e



Hybrid AWHP: Library



Existing

- Built in 1873, renovated 1997
- 60,000 square feet
- Fully air conditioned: Air-cooled chiller w/ ice storage
- Gas fired boilers, standard efficiency

Proposed

- AWHP equipment
- Partial Electrification (hybrid approach)
- Ventilation: Controls upgrades proposed

Impacts

- Proposed Cost: \$1,658,000
- Gas Savings: 19,700 therms/yr
- Heating Cost Impact: +\$8000/yr (37% increase)
- 42% GHG Emissions reduction



VRF & DOAS: School



Existing

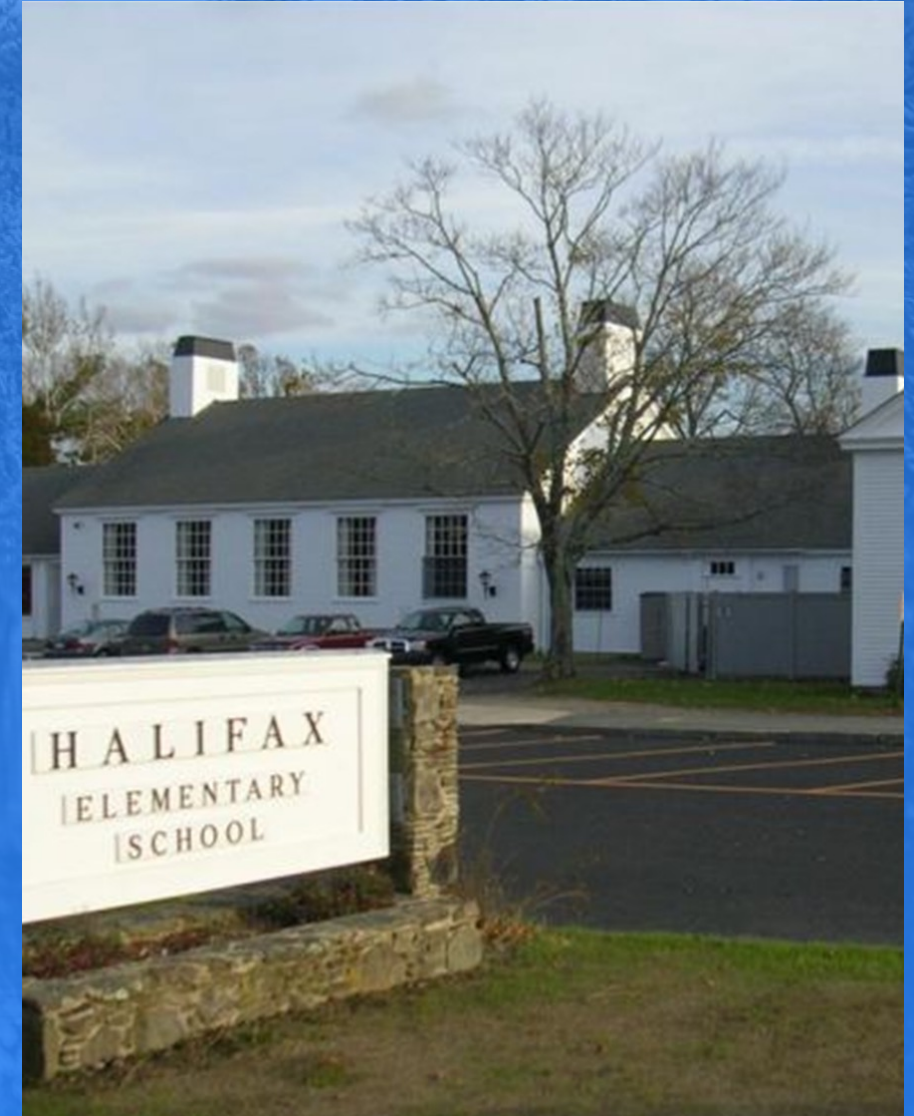
- Built in 1958, renovated 1992
- 79,000 sq ft
- Minimal cooling, no cooling to classrooms
- Gas-fired condensing boilers

Proposed

- VRF equipment to heat and cool spaces, hybrid approach
- Partial electrification of select wings (90% displacement for affected areas, 56% site total)
- Use of existing condensing boilers for backup
- Ventilation system upgrades including ERVs (no ERVs existing)

Impacts

- Proposed Cost: \$1,850,000
- Gas Savings: 22,000 therms/yr
- Heating Cost Savings: \$24,000/yr (44% decrease)



Heat Recovery and Electrification



- Evaluating potential for heat recovery an essential first step when considering electrification
- Yields operational cost savings and emissions reduction, is more efficient to move heat from a waste stream than generate heat.
- Potential opportunities include:
 - Exhaust air heat recovered to makeup air
 - Industrial processes
 - Data centers
 - Wastewater streams

Ventilation First: Schools



Full Electrification – 1 School

- 2,678 tons CO₂e (lifetime)
- \$2.45M installed cost
- Two measures:
 - Energy recovery on ventilation air (\$0.85M)
 - Space conditioning (\$1.6M)

Partial Electrification – 3 Schools

- 3,666 tons CO₂e
- \$2.55M installed cost
- Energy recovery on ventilation air



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