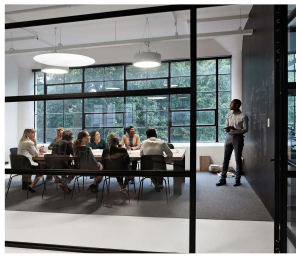
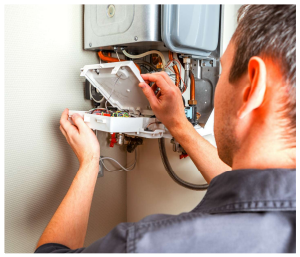

EEI
ENERGY EFFICIENT INVESTMENTS INC.
Energy Performance Contracting
CITY OF PORTSMOUTH, NH

Performance Contracting Timeline

Preliminary Audit	Review findings with City to define priorities	Final Investment Grade Audit	Construction	Measurement &Verification
				

EEI is the New Hampshire ESCO

City of Portsmouth School District (SAU 52)

Manchester, NH City Buildings

Manchester, NH School District

Town Of Pelham

Pelham School District (SAU 28)

City of Nashua School District

City of Franklin

Franklin School District (SAU 18)

Hanover School District (SAU 70)

Shaker Regional School District (SAU 80)

Fall Mountain Regional School District (SAU 60)

Keene, Nelson & Chesterfield School Districts (SAU 29)

SAU 48 in Plymouth

Common Man Restaurant Group

Concord NH YMCA

the Grappone Conference Center in Concord

Bedford Village Inn

Amherst, NH

Belmont, NH

Brookline, NH

Plaistow, NH Timberlane School District

Somersworth, NH SAU 56

Belmont, NH

Cheshire County, NH

Henniker, NH

Jaffrey, NH

Keene, NH

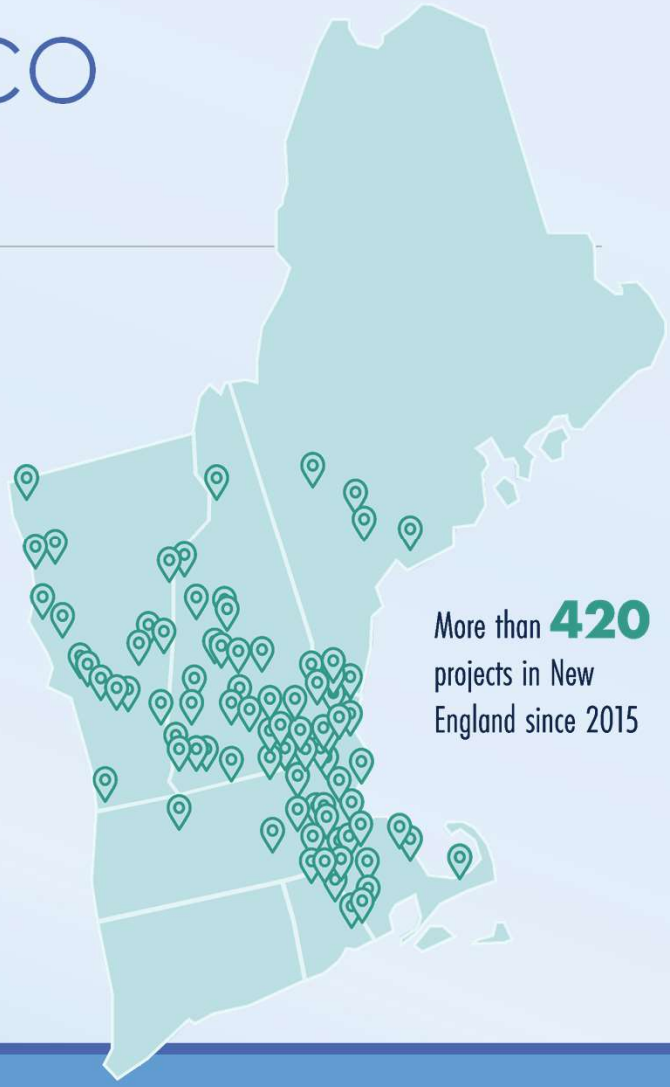
Keene, NH School District

Nashua, NH

Rochester, NH

Rollinsford, NH

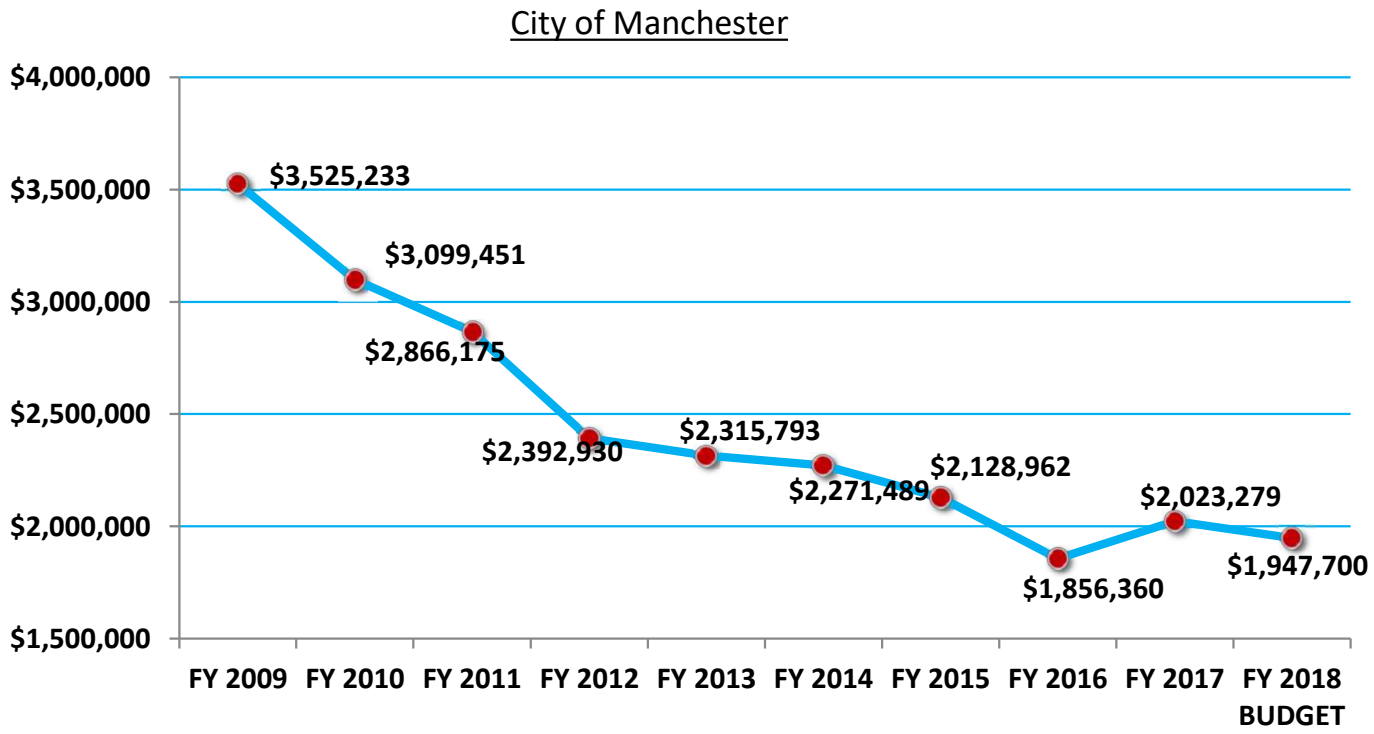
Westmoreland, NH



More than **420** projects in New England since 2015

Long-term energy partnerships

Success in the City of Manchester



$9 million energy upgrade and complete renovation of the Little Harbor Elementary

$10 million renovation project and energy upgrade for the district's Dondero Elementary School

Removal of asbestos ceiling tile and flooring

Installation of a NFPA compliant sprinkler and fire alarm system

Installation of a new boiler, HVAC controls, and energy recovery ventilators

Installation of new ceiling tiles and grid, including decorative ceiling in cafeteria

Installation of LED lighting system

New finishes and casework throughout the building

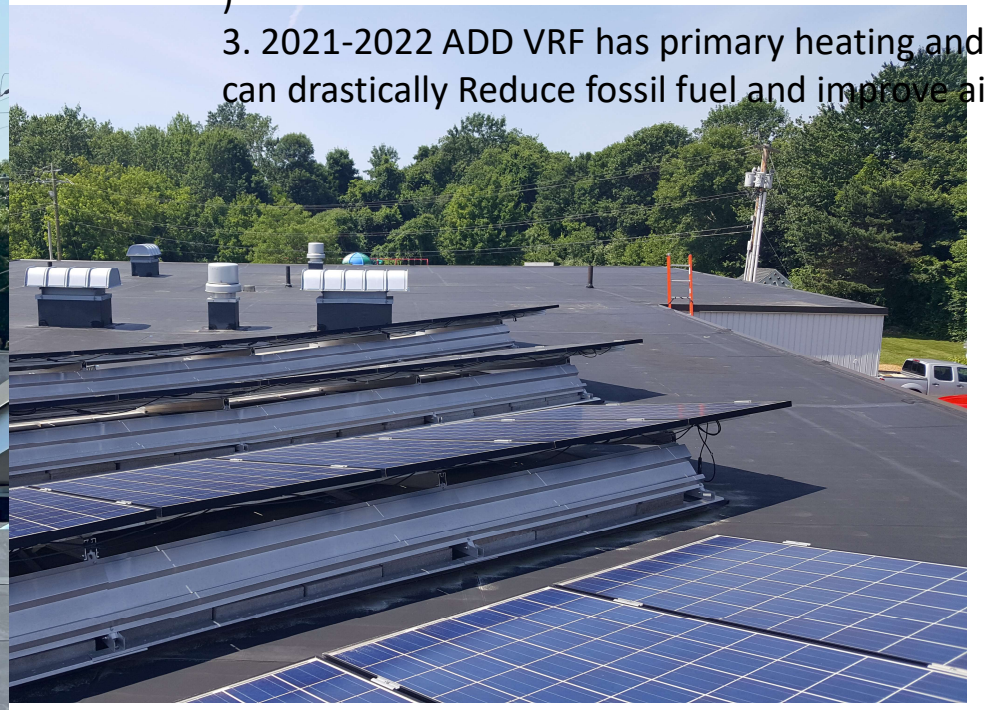
New Franklin Elementary

Phased Approach

1.2012 Lighting, Controls, Boilers small Solar. No tax impact energy savings paid for improvements

2. 2018 Add Ventilation to school (Classrooms had no Ventilation prior)

3. 2021-2022 ADD VRF has primary heating and cooling so building can drastically Reduce fossil fuel and improve air Quality



City Hall Initial Observations

2 pipe change over heating and cooling system means staff has to make decision for the entire building to go into heating or cooling mode

Large Portions of the building are under ventilated

Building has 2014 Gas boiler Plant

Repairs have been made on a “fix whats broken” method in recent years

Pipes are in very poor condition

The building could benefit big picture building/capital/code plan

City Hall Energy Savings Opportunities

Transformers can be upgraded from 97% to over 99% efficiency

2% of all power going through transformers is lost as waste heat

Natural Gas Boiler System

2013-2014 boiler system with Natural Gas

Chambers Building Ventilation Unit

The Chambers ventilation unit lacks energy recovery ventilation, The unit is DX cooling, so it is not connected to chiller (maybe a good idea for season when chiller is off and we are on heating mode), and appears undersized for current ASHRAE ventilation rates

Older Abandon in place HVAC Equipment

City Hall HVAC was designed in a different Era and for different uses and have never had a comprehensive plan to meet current use

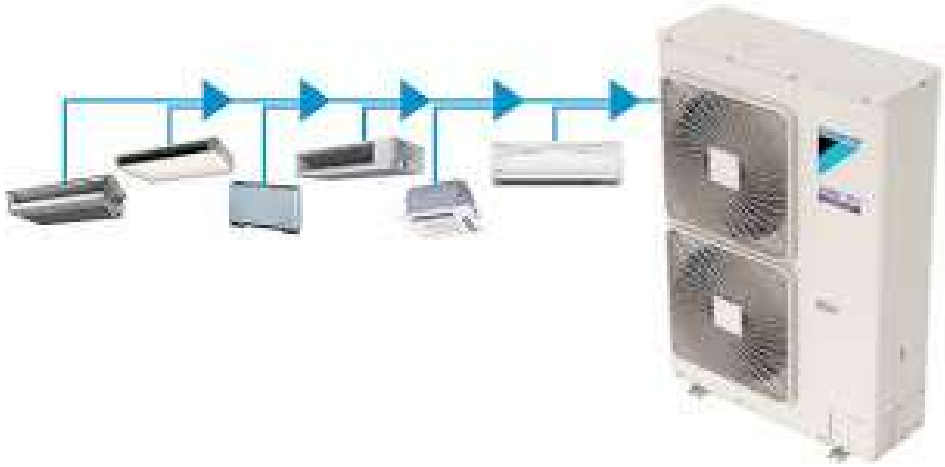
Outdoor air intakes blocked in conference room. This is common in a 2 pipe change over system to keep occupants comfortable

City Hall- What are best long term options?

1. VRF with Energy Recovery
2. 2-pipe system with added ventilation
3. 4- Pipe System with added ventilation
4. Geothermal System (2 or 4 pipe)

Available Options our Design Team Is considering

Option 1 -VRF with Energy Recovery -Similar to New Franklin



City Hall VRF Solution

Pros

- Highly Efficient and building will be low or no fossil fuel
- Relatively Easily to retrofit and phase construction
- Much better heating and cooling than current building

Cons

- Current VRF technology only lasts 15 years.
- Would not utilize Chiller that was replaced 2 years ago
- Significant amount refrigeration pipes running in building and the EPA keeps changing allowable refrigerants

Keeping the current 2 pipe system but adding ventilation to all areas

Pros

- Lowest cost to get ventilation

Cons

- 2 pipe systems will always have complaints in shoulder months
- Will be Fossil Fuel primary heating

Option to Add a 4 Pipe

Re-pipe building to have 4 pipes going to hall HVAC units and allow building controls to modulate between heating and cooling by set point. Also add ventilation to all areas

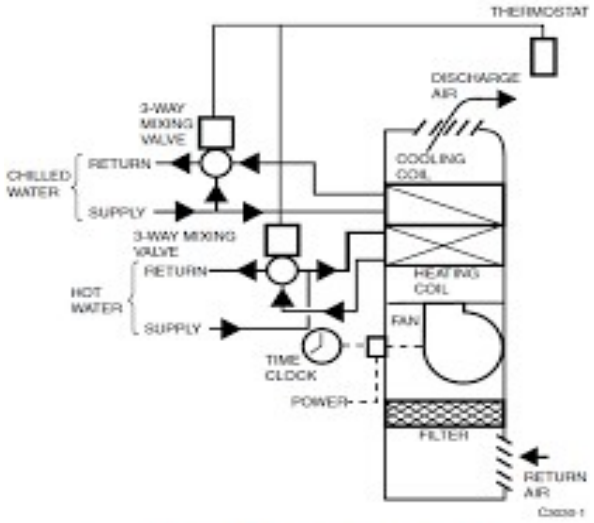


Fig. 34. Four-Pipe Heating/Cooling Fan Coil Unit with a Split Coil.

Inflation Reduction Act

Inflation Reduction Act- Federal Solar and Biomass Tax Credit

Eligible Projects can qualify for up to 40% of the project install cost

Maximize credit with Domestic Requirements, Qualified Community

Tax credit returned to the customer tax free

Will need to submit an application of interest

2 or 4 Pipe Geothermal

Pro

- Inflation Reduction act will pay 40% of entire project if building is converted to Ground Source geothermal
- 50 year solution with zero fossil Fuel
- EEI is converting City of Burlington to Geothermal

heating and cooling

Cons

- Higher cost up front

Our Process

- EEI is doing assessments on City Hall, Library, DPW, Fire Stations, and Community Campus
- Similarly we are working on long term planning at Portsmouth Middle and High School
- Our goal is a collaborative approach where we bring ideas forward and work with City Government to pick the best long term Solutions for City Buildings
- Phase 1 Audits will be completed by December 2024

NH USDA/ NH BFA

EEI has been working with the NH Business Finance Authority to help bring USDA Rural Development Funds to NH. We anticipate they will roll out a $50 Million dollar program in June that will make communities like Portsmouth Eligible for very low interest financing for energy efficiency upgrades