

CITY COUNCIL MEETING

AGENDA ITEM V



**CITY OF FRANKLIN
COUNCIL AGENDA REPORT**

August 5, 2013 City Council Meeting

From: Elizabeth Dragon – City Manager

Subject: Council to consider approving comprehensive audit agreement to perform energy audit services

1. Councilor moves:

“I move that the Franklin City Council approve the proposed Audit Agreement between the City of Franklin and Energy Efficient Investments, Inc.”

2. Mayor calls the vote.

Discussion: Director Milner, Brian Barry and I have been meeting with ENE Systems/EEI since March. We have worked with this company to perform a preliminary investment grade audit to determine if energy upgrades could be funded through energy savings.

A site visit of has been conducted at City hall, Proulx center, Bessie Rowell center, Police station and the DPW garage. Based on their initial findings there are energy projects that have been indentified which could be completed through an energy performance contract. The contract would stipulate guaranteed savings which would pay for the building improvements.

If the preliminary audit is approved by the city then we would move to the next step which is an investment grade audit (a more detailed audit which includes the guaranteed energy savings and financing options for proposed projects). Once the projects are complete ENE will provide quarterly reports to the city confirming that energy savings are equal to audit estimates.

There is no risk involved in approving the audit agreement. There is no cost to the city to perform this audit. However, ENE wants to gauge how committed/interested the city is in completing energy projects using this program before investing a substantial amount of time. Once the investment grade audit is complete we would need to come back before the council to move forward with specific projects and financing methods (including low interest loans as an option).

Alternatives: Deny and take no further action in regards to energy audits and possible improvements of time with this organization.



ENE ENERGY ADVISOR & EEI SERVICES Preliminary Investment Grade Audit

For:

CITY OF FRANKLIN

Prepared by:

ENE Systems, Inc/EEI
Michael Davey, CEM
Tom LoPizzo

Date: July 24, 2013

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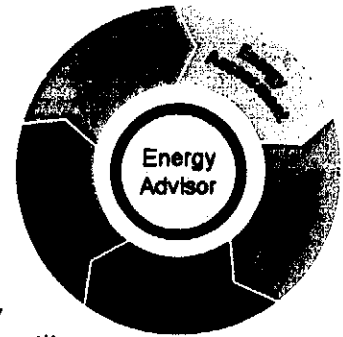
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Executive Summary

On March 18, 2013 & June 4, ENE Systems/EEI performed a Preliminary Investment Grade Audit Agreement for the City Hall Building, Proulx Community Center, Police Station, DPW Garage and The Bessie Rowell Center. For its part ENE Systems has agreed to provide, at no cost to the City, an energy audit that includes improvements of the building's steam heating systems, lighting, and controls. The goal of this effort is that if ENE Systems is able to design and develop an acceptable energy project, the City and ENE Systems will enter into an Energy Services Agreement that will contract ENE to install the measures and guarantee energy savings.



Immediately following the site visit ENE Systems started investigating potential Energy Conservation Measures (ECMs). The Energy Conservation Measures being developed will reduce the energy cost & consumptions of the building and improve the overall comfort for the building occupants.

ENE Systems/EEI confirmed assumptions and gathered additional information in preparation of the Preliminary Investment Grade Audit.

Below you will find the ENE Energy and Operational Conservation Measures Matrix. The matrix is grouped by building. Certain measures are inter-dependant and therefore have been grouped together. The matrix has been constructed to help the City of Franklin select which measures make the most economic sense for the City. There are several additional improvements that can be made that may have longer payback periods.

Potential utility rebates and firm fixed pricing will be identified in the Final Investment Grade Audit as part of an Energy Service Agreement (ESA). ENE Systems will work with the PSNH and Liberty Utilities Account Representatives and Efficiency Program Coordinators to determine the amount of incentive that utilities will provide.

This audit was conducted during the month March and April of 2013 by Michael Davey, CEM and Tom LoPizzo both of ENE Systems.

ECM Matrix

Energy Conservation Measure Number	ECM Description	Cost for Installed Measure	Estimated Annual Energy Savings	Measure Lifetime	Potential Rebate	Simple Payback
City Hall						
1a	Steam Boiler Controls	\$ 23,333	\$ 1,800	20.0	\$ 3,250	11.16
1b	Steam Trap/TC Valve Repair Program (36 Traps)	\$ 17,300	\$ 595	20.0	\$ -	29.08
1c	Lighting Retro-fit	\$ 12,000	\$ 594	20.0	\$ 4,200	13.13
1d	Vending Miser	\$ 500	\$ 45	10.0	\$ -	11.11
1e	Demand Control Vent Theater	\$ 8,000	\$ 850	10.0	\$ -	9.41
1f	Insulation Improvements	\$ 15,000	\$ 750	20.0	\$ 5,250	13.00
	City Hall Subtotal	\$ 76,133	\$ 4,634	20.0	\$ 12,700	13.69
Proulx						
1	Lighting Improvements	\$ 23,500	\$ 921	10.0	\$ 8,225	16.59
2	Insulation Improvements	\$ 15,000	\$ 1,500	20.0	\$ 5,250	6.50
3	Boiler Controls and Steam trap repairs	\$ 40,000	\$ 2,500	20.0	\$ 2,000	15.20
	Proulx Subtotal	\$ 78,500	\$ 4,921	20.0	\$ 15,475	12.81
Rowell Center						
1	Vending Miser	\$ 500	\$ 45	15.0		11.11
2	Lighting Improvements	\$ 11,160	\$ 1,200	15	\$ 3,906	6.05
3	Boiler VFD	\$ 8,000	\$ 318	15	\$ 2,800	16.35
4	Boiler Replacement	\$ 39,900	\$ 2,500	15.0	\$ 2,000	15.16
	Rowell Subtotal	\$ 59,560	\$ 4,063	15.0	\$ 5,906	13.21
Police Station						
1	Vending Miser	\$ 500	\$ 45	15.0		11.11
2	LED Righting Retrofit	\$ 14,500	\$ 1,400	15	\$ 5,075	6.73
3	LED Exterior	\$ 11,000	\$ 318	15	\$ 3,850	22.48
	Police Subtotal	\$ 26,000	\$ 1,763	15.0	\$ 8,925	9.69
DPW Garage						
1	Lighting Retro-fit	\$ 6,000	\$ 600	15.0	\$ 2,500	5.83
2	Infrared Heating	\$ 19,950	\$ 1,200	15.0		16.63
3	Condensing Furnace	\$ 19,000	\$ 750	15.0	\$ 1,200	23.73
4	Weatherization	\$ 7,000	\$ 1,000	15.0		7.00
	Rowell Subtotal	\$ 51,950	\$ 3,550	15.0	\$ -	14.63

Combined Project Totals	\$ 292,143	\$ 18,931	15.0	\$ 34,081	13.6
Bond FEE	\$ 3,798				
Measurement & Verification	\$ 2,921				
Project Total	\$ 298,863				

Alternates	
Re-piping of City Hall to Hydronic	\$175,000.00
Installation of Efficient Steam Boiler City Hall	\$68,000.00

The ECM Matrix data presented above is summary information derived from the detailed energy analysis that was performed by ENE Energy Advisors.

The budgetary price included in the audit does not include hazardous waste removal, bond costs, or financing costs.

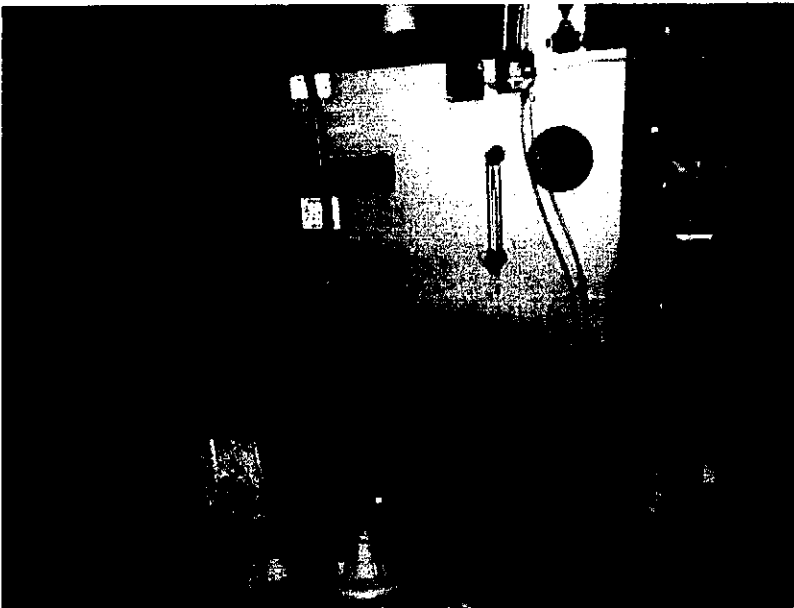
From an energy efficiency standpoint ENE Systems would highly recommend pursuing all ECMs listed above.

1. Facility Backgrounds

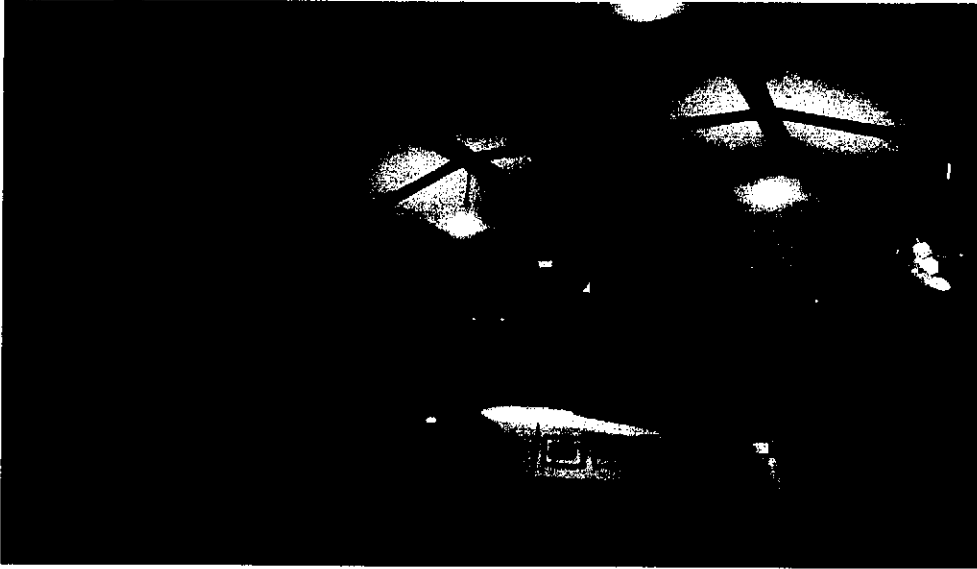
Town Hall & Opera House

The town hall and attached theater building are both steam heated and (central cooling is not provided). In most locations occupants noted lack of heating control and expressed thermal comfort concerns. The pipes in the boiler room are not properly insulated. This results in excess heat in the room and lost energy in the system. Occupants in rooms above the boiler room noted significant heat gain from the boiler room below. The control and quality of the heating system was the number one concern to building occupants.

Boiler Room Photo below shows un-insulated pipes. We have included options to improve current boiler operation, convert to hydronic, or replace boiler system with more efficient steam systems.



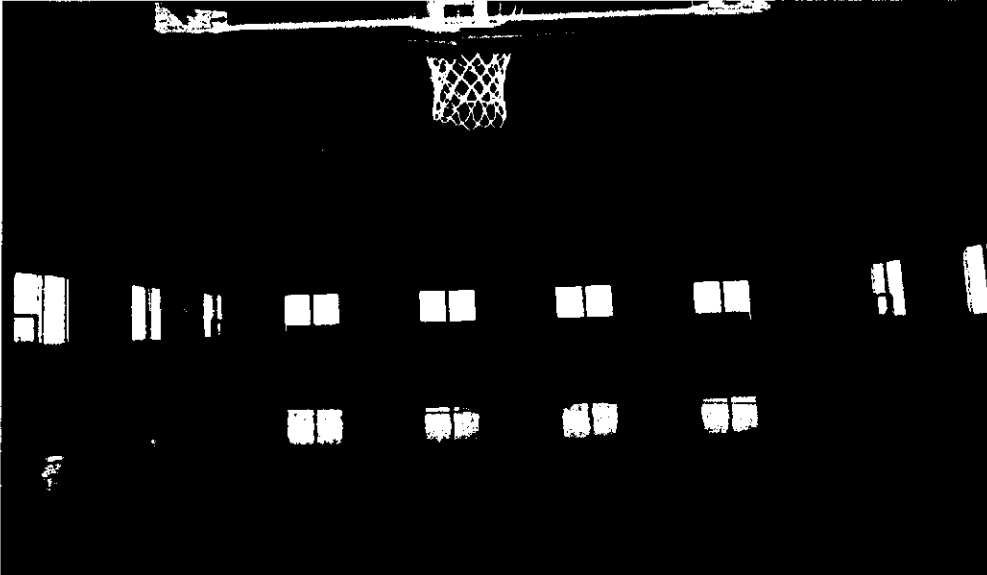
Opera house energy improvement opportunities include lighting updates and demand control ventilation.



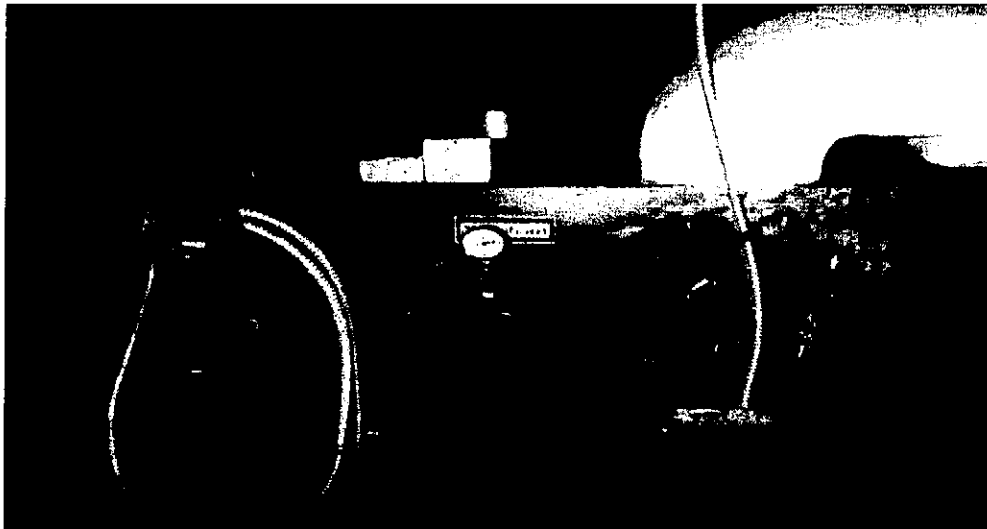
Proulx Recreation Center

The Proulx Recreation Center includes a gym facility, storage garage and office space which are currently not in usage. It was noted that the offices are expected to be utilized in the next few months.

Basketball Court Lighting Below: Significant opportunity for savings with conversion to florescent system. The existing system consists of 500W MH lamps which can be reduced to a 196W fluorescent fixture.



The boiler at the Proulx boiler system would also benefit from a Heat Timer control system and heat trap repair program.



Bessie Rowell

The Bessie Rowell building is currently being utilized as a day-care facility and includes space for a future senior center. Portions of the building were recently renovated for the kindergarten/day care usage. Portions of the building had very limited ventilation control. It was noted that the building requires future air conditioning. We believe that if an air conditioning system is installed it cannot be installed based solely on energy savings. It is possible to combine the energy savings from this project and potentially reduce the cost of the air conditioning system.

Some of the recommended improvements in this building include condensing boilers, VFD controls, and lighting improvements.

Photo below shows existing boiler pumps which lack VFD control.

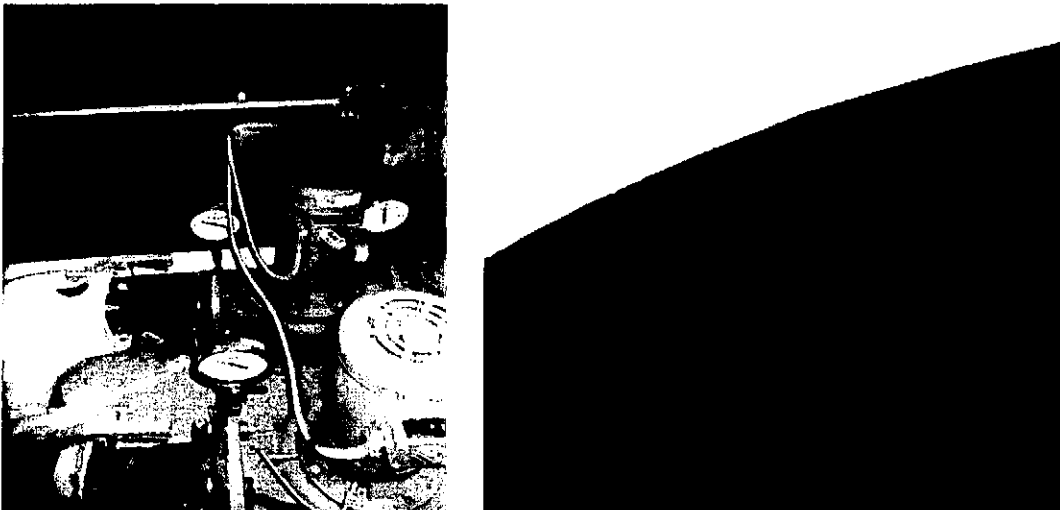


Photo above shows exterior lights which can be upgraded to LED.

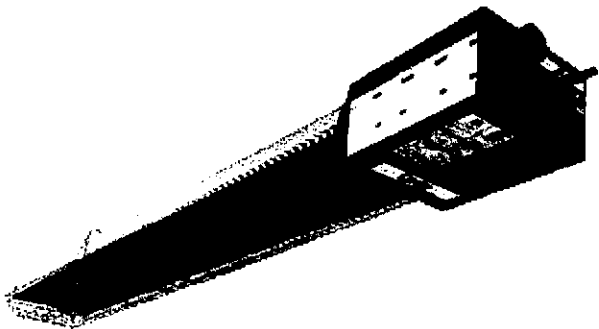
Police Station



The Franklin Police Station is one of the newest City owned buildings and the heating and cooling systems are in good shape. This building represents the best potential improvement for LED lighting. The building is operated and occupied 24/7 which means that LED fixtures would have the best bang for the buck at the Police Station. EEI recommends replacing exterior lamps with LED fixtures and replacing interior 2x4 lamps with LED retrofit kits.

DPW Garage

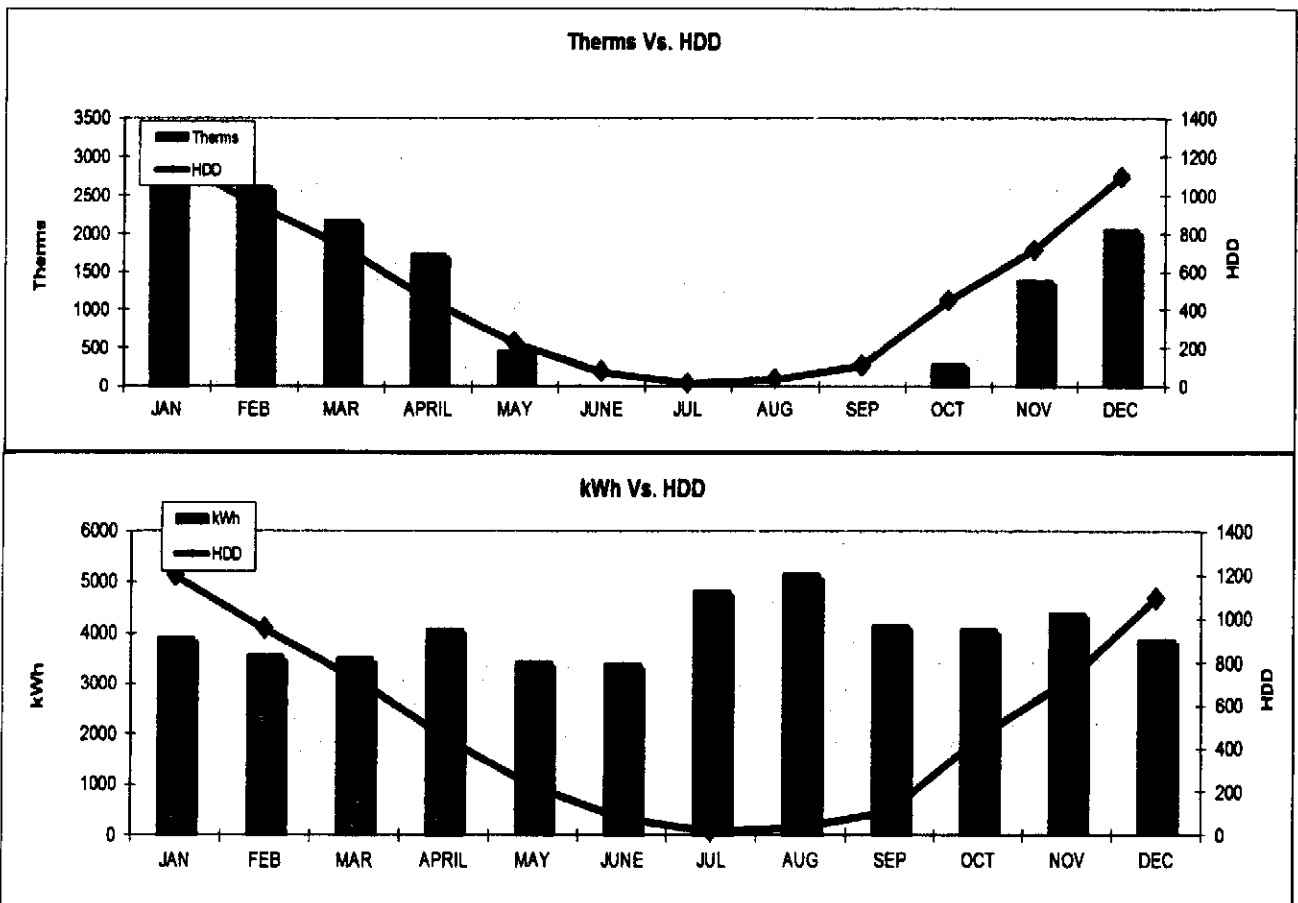
The DPW Garage is heated with gas fired unit heaters. EEI recommends replacing that eight gas fired unit heaters with infrared heaters. Infrared heaters can significantly reduce space heating and the existing furnace can be replaced with a new condensing furnace.



2. Utility Data Analysis

The utility rates used to determine baseline and post retrofit energy costs were based on the historical data supplied by the City of Franklin for the Town Hall Facility.

Heating degree day (HDD) is a measurement designed to reflect the demand for energy needed to heat a building. It is derived from measurements of outside air temperature. The heating requirements for a given structure at a specific location are considered to be directly proportional to the number of HDD at that location. A similar measurement, cooling degree day (CDD), reflects the amount of energy used to cool a home or business.



3. Energy Analysis

Based on our initial analysis of these three buildings ENE believes there is sufficient opportunity to develop an energy performance contract in which the savings will help pay for the improvements to the building.

The State of New Hampshire allows Cities and Towns to enter into energy performance contracting arrangements with performance contracting firms in that have an overall simple payback of less than 20 years.

The phases of an energy performance contract are listed below:



- 1. ECM Study:** Currently we are engaged in the first phase which includes developing potential Energy Conservation Measures and determining accurate pricing and savings for each building. If the preliminary audit is approved by the City, ENE would then begin an Investment Grade Audit which includes the Guaranteed Energy Savings and Financing Options for the City. The typical financing mechanisms for these projects are Municipal Bond, Lease Finance or Vendor Lease Finance. ENE will work with the City to ensure that Energy Savings are equal to the annual finance payment so it is cost neutral for the City. ENE will guarantee the energy savings in the final investment grade audit.
- 2. Project Development:** The project development phase includes the design of the ECM's from the investment grade Audit. This phase also includes reviewing schedule requirements in City Buildings, obtaining necessary permits, and selecting material suppliers/subcontractors.
- 3. Construction:** This phase includes construction of all ECMS that were selected from the investment grade audit. ENE will act as project manager for all selected improvements.
- 4. Measurement and Verification:** ENE will provide quarterly reports to the City confirming that energy savings are equal to audit estimates.

4. Energy Conservation Measures

Town Hall

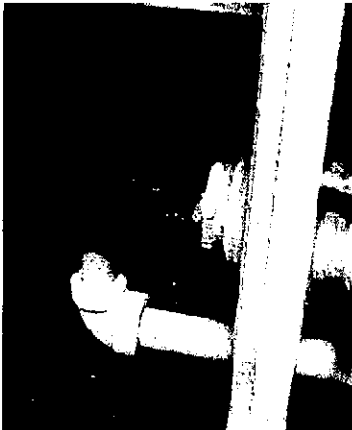
ECM 1a. Steam Heating Controls

Installation of web based energy management controls on system.

The HVAC system in the town hall consists of a steam boiler which is controlled via a pressure system. ENE proposes installing electronic controls that will cycle the boiler based upon an average of thermostat set points using wireless thermostats.

ECM 1b – Steam Trap Maintenance program.

Steam traps keep the steam in the radiator until it gives up its energy and turns to condensate. A thermostatic bellows opens and closes to allow cooler condensate to pass and closes up when hot steam tries to pass.



The motion of the accordion bellows as it opens and closes to allow the condensate to pass subject the steam traps internal workings to wear and tear. Eventually they wear themselves out and the internal workings are replaced much like a washer on a faucet. The useful life is 5-7 years.

Given the layers of undisturbed paint and the age of the steam system, many of the internal workings in the steam traps could date back to the original installation.

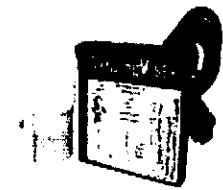
It is easier to replace the workings of these thermostatic traps than it is to diagnose, inspect and test their operation and condition. Whether considered preventative maintenance or part of an energy conservation measure, the internal working of the steam traps, 'the cage', needs to be replaced on all the steam traps.

ECM 2a – Lighting Improvements

The lighting systems consists of standard efficiency 32watt T8 Lamps, incandescent lighting and various flour cent fixtures. ENE recommends re-lamping the existing 32watt T8 lamps with 25watt lamps, installing energy star ballasts and re-lamping select areas with LED lamps.

ECM 1d Vending Misers

ENE recommending equipping the vending machines with vending misers that will power down the systems based upon the occupancy sensor. This will reduce energy consumption without any impact on operation.



ECM 1e Demand Control ventilation

Ventilation in the Opera house is sized for a fully occupied building. We recommend installing demand control ventilation units that will modulate outside air based upon actual building occupancy.



ECM 1F Insulation Improvements

ENE recommends installing pipe insulation on all exposed uncovered heat piping in the boiler room and adjacent spaces.

Proulx Center Energy Conservation Measures

ECM#1 Lighting improvements

The Gym lights represent the best possible return on investment for the Proulx center. The existing lights are more than 500 watts and the wattage can cut in half using fluorescent fixtures. Motion sensors can also be added to further reduce electrical consumption.

ECM#2 Insulation Improvements

Above the Gym ceiling there is only 6" of insulation. ENE recommends blowing in Cellulose Insulation to an R-50 level. EEI also recommending air sealing existing gaps and penetration with a two-part foam insulation.



ECM#3 Boiler System Improvements

We propose a steam heat trap and boiler controls system at the Proulx Center similar to the system at City Hall.

Rowell Center Energy Conservation Measures

ECM 1 Vending Misers

ENE recommending equipping the vending machines with vending misers that will power down the systems based upon the occupancy sensor.



ECM 2 Lighting Improvements

ENE proposes replacing exterior lights with LED lamps and re-lamping T8 lamps with T8 25 Watt lamps and equivalent low wattage ballasts. The exterior fixtures shall also be equipped with photocells for greater usage control.

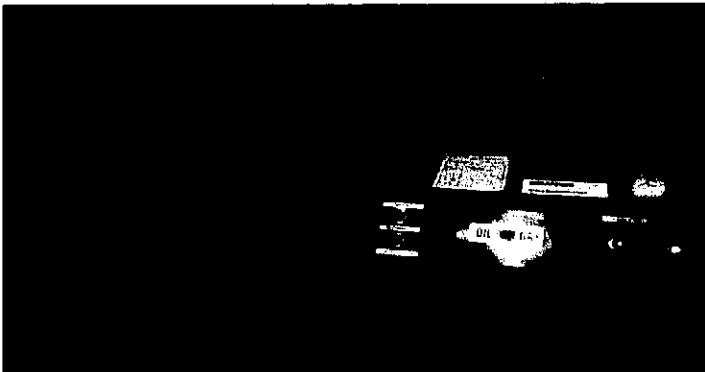


ECM#3 Boiler VFD

The current boiler pumps lack variable speed control. ENE recommends installing VFD pumps to cycle based on heating demand. Installation of VFD pumps are eligible for rebates from PSNH.

ECM#4 Boiler replacements

ENE recommends replacing the existing lead boiler with a condensing natural gas boiler. Condensing natural gas boilers are up to 96% AFUE. We recommend leaving one of the existing standard efficiency boilers. The existing boilers are estimated at 80% efficient. At City Hall our team has recommended high efficiency steam boiler replacements as an option to replace the existing system.



Police Station

ECM 1 Vending Misers

ENE recommending equipping the vending machines with vending misers that will power down the systems based upon the occupancy sensor.

ECM 2&3 LED Retrofits

Police Station Building Exterior and Interior represent an excellent opportunity for LED conversion due to long run time hours on fixtures. Many interior lights run 24/7.

DPW Garage

ECM# 1 Lighting Retrofits

Installation of high efficient T8s at DPW garage Building

ECM# 2 Infrared Heating

High Efficiency Infrared heating will have a strong payback for garage bay heating.

ECM#3 Condensing Furnace

Installation of Condensing Natural Gas Furnace with 94% efficiency to replace end of life existing furnace.

ECM#4 Weatherization

The building has potential improvements for weatherization at building overhead doors.

COMPREHENSIVE ENERGY AUDIT AGREEMENT

Between the City of Franklin, NH and Energy Efficient Investments, Inc.

THIS COMPREHENSIVE AUDIT AGREEMENT (this "**Audit Agreement**") is entered into as of July 25, 2013, by and between the City of Franklin with a principal business address at 316 Central Street, Franklin, NH 03235 ("**Client**") and EEI, Inc. the (ESCO), having its principal place of business at 26A Columbia Circle, Merrimack, NH 03054. The Client and ESCO may be referred to herein individually as a "**Party**" and collectively as the "**Parties**".

WHEREAS, ESCO desires to perform certain energy services including a detailed energy audit for Client at the facilities identified in Exhibit A attached hereto (the "**Facilities**");

WHEREAS, the Client intends to enter into one or more energy services agreements (each an "**ESA**") with ESCO for implementation of the Scope of Work (referred to below) identified by ESCO as a result of its work under this Audit Agreement. It is the intent of the Parties that each such ESA shall be eligible for the full project term allowed under New Hampshire General Law ; and

WHEREAS, Client intends to phase the energy services and issue one or more notices to complete energy audits of groupings of buildings listed in Exhibit A.

NOW THEREFORE, in consideration of the mutual promises and agreements contained herein, the Parties hereto hereby agree as follows:

1. Upon ESCO' receipt from Client of a Notice to Proceed (as defined below) for the Facilities or portions thereof, ESCO shall complete the following work under this Audit Agreement (the "**Audit Work**"):
 - (a) conduct an energy audit for review and approval of Client;
 - (b) analyze the existing energy consuming systems;
 - (c) preliminarily design an energy conservation project (The ESCO shall perform a detailed assessments of the Buildings listed in Exhibit A with the goal of developing an energy saving project with recommended improvements to the building envelope, electrical systems, lighting, and HVAC systems).
 - (d) prepare and deliver to Client a proposal (the "**Project Proposal**"), which shall include:
 - (i) the proposed scope of work (the "**Scope of Work**");
 - (ii) the implementation price for the Scope of Work (the "**Implementation Price**");
 - (iii) estimated cost savings for the Project Proposal; and
 - (iv) a project cash flow statement which identifies the Implementation Price being financed out of energy and operational cost savings within a repayment term as defined by the Client.

Concurrent with the completion of the Audit Work and Client's notification that it has approved the Scope of Work set forth in the Project Proposal, ESCO will prepare and submit to Client an ESA detailing the terms and conditions related to the implementation of the Project Proposal.

2. Prior to commencement of any Audit Work and from time to time thereafter, Client shall issue to ESCO a notice outlining specific buildings and associated areas (in square feet) from the list of Facilities for which ESCO is to complete Audit Work (each a "Notice to Proceed"). Upon receipt of such Notice to Proceed, ESCO shall

commence and diligently pursue completion of the Audit Work on the identified buildings for an Audit Fee (as defined below) of zero cents (\$0.00) per square foot of building area for the first. Anything to the contrary herein notwithstanding, upon receipt of an executed copy of this Audit Agreement, ESCO shall be authorized to access all Facilities to perform Audit Work.

3. Client hereby agrees that if it does not proceed with the implementation of the Scope of Work with ESCO for any respective phase within sixty (60) days of submission of a Project Proposal, Client shall compensate ESCO for its Audit Work by paying an audit fee to ESCO in the amount of zero cents (\$0.00) per square foot of building area for the first building, and a predetermined cost per square foot for audits thereafter (as specified in the Notice to Proceed for such phase) (the "*Audit Fee*") in no case will the Audit Fee exceed \$0 per building. The Audit Fee shall be fully-earned, due and payable by Client to ESCO no later than forty-five (45) days after the date that ESCO submits a Project Proposal for such phase to Client. If Client and ESCO enter into an ESA which includes the Scope of Work for such phase, Client will not be billed the Audit Fee due under this Audit Agreement as the Implementation Price shall be all inclusive.

4. ESCO's receipt of an executed copy of this Audit Agreement shall be evidence of Client's agreement to the terms and conditions of this Audit Agreement.

5. This Audit Agreement and exhibits hereto, if any, shall (a) constitute the entire agreement between the Parties relating to the subject matter hereof, (b) supersede all previous agreements, discussions, communications and correspondences with respect to the subject matter hereof and (c) only be amended, supplemented or modified by a written instrument executed by both Parties. If any provision of this Audit Agreement is held by a court of competent jurisdiction to be unenforceable, no other provision shall be affected thereby, and the remainder of this Audit Agreement shall be interpreted as if it did not contain such unenforceable provision.

6. Client hereby agrees to provide timely and complete access to all necessary property and energy consumption and cost records for the three (3) years preceding the commencement of ESCO's services. Client will make available the assistance of its personnel as may be necessary for ESCO's performance of the Audit Work hereunder.

7. ESCO and Client shall mutually hold each other harmless in the event of a claim that is the sole result of the actions of other party. Each party is responsible to address claims arising from its own actions, inactions or omissions.

8. ESCO and Client represent and warrant to each other that (a) the execution, delivery and performance of this Audit Agreement have been duly authorized and approved by all necessary organizational action on the part of such Party, (b) the signatories hereto have been duly authorized by all necessary organizational action of such Party to sign and deliver this Audit Agreement and (c) upon execution this Audit Agreement will constitute a legal, valid and binding obligation of such Party.

Standard Contract Provisions

9. **Amendment.** No term or provision of this Agreement shall be altered, amended or changed in any way except in writing, with such amendment being executed by the parties hereto.

10. **Entire Agreement.** It is agreed that all understandings and representations heretofore between the parties are merged into this Agreement, which alone fully and completely expresses their agreement and that the same is entered into after full investigation, neither party relying upon any statement or representation not embodied in this Agreement.

11. **Agreement Binding.** This Agreement shall be binding upon and be to the benefit of the heirs, executors, administrators, successors, and assigns of the respective parties.

12. **Assignment.** No party shall assign any obligation under this Agreement without the written consent of the other party.
13. **Governing Law.** This contract shall be governed by, and interpreted in accordance with, the laws of the State of New Hampshire. It is specifically agreed that the courts of the State of New Hampshire shall have jurisdiction over any dispute arising herefrom.
14. **Counterparts.** This Agreement may be executed in any number of counterparts, each of which shall be deemed an original for all purposes but all of which shall constitute one in the same agreement.

IN WITNESS WHEREOF, we have hereunto set our hands and executed this Agreement on the day and year first above written.

[signature page follows]

IN WITNESS WHEREOF, the duly authorized officers or representatives of the Parties have set their hand under seal on the date first written above with the intent to be legally bound.

City of Franklin, NH

EEL, Inc.

Authorized Signature 1

Authorized Signature

Name

Paul Murphy
Name

Title

Director, Energy Advisors
Title

Authorized Signature 2

Name

Title

COUNSEL

Authorized Signature 3

Name

Title

[Signature Page to the Comprehensive Audit Agreement]

EXHIBIT A

FACILITIES LIST

Facility Name	Address	Date of Construction	Applicable Square Footage
City Hall	316 Central Street		
Proulx Center	124 Memorial Street		
Rowell Center	12 Rowell Drive		
Police Station	5 Hancock Terrace		
DPW Garage	257 Fisher Street		