TOWN OF DRAPER
ENERGY AUDIT

MARCH 2025

T-OMS
TAINTER'S OPTIMIZED MECHANICAL SOLUTIONS

TABLE OF CONTENTS

1.1 DISCLAIMER

The estimated costs shown for each opportunity are based on previous experience with comparable cost reduction plans for other facilities. While the energy conservation and load management measures contained in this report have been reviewed for technical accuracy, we do not guarantee the cost, cost savings or reduction in total energy requirements presented in the recommendations. We shall, in no event, be liable if the potential energy savings are not achieved.

The recommendations are based on an analysis of conditions observed at the time of the Audit, information provided by the owner and costs based upon our experience on similar projects. Estimated savings are computed based on historical savings of 'like' opportunities and rough averages of runtime reductions. Actual savings will depend on many factors including: conservation measures implemented, seasonal weather variations, fuel price increases and specific energy use practices of the facility's occupants and workers. The performance guidelines provided in the report are for design build project development purposes and are not to be construed as a final design document.

1.2 EXECUTIVE SUMMARY

This report presents the findings resulting from the Audit conducted at multiple sites of the Town of Draper. (Town Hall, Town Shop and the Fire Hall). The Audit is designed to review the electric and gas use characteristics of the facilities to identify Energy Conservation Opportunities and Maintenance recommendations.

This audit consisted of:

- Building walk throughs were conducted.
  - Any mechanical equipment in operation was monitored for proper operation.
  - Occupancy at the facility was monitored.
  - Lighting was noted.
- Interview of the maintenance manager
- Note: The As-Built Mechanical Plans were not available for review.
- Installed equipment status indicator data loggers in each building.
- Installed space temperature data logger in Town Hall to see temperature variations.
- Infrared pictures of Town Hall to better understand causes of heat loss.

As a result of these activities, 4 primary Energy Conservation Opportunities (ECO's) were identified, and are presented in the Summary of Recommendations below.

1.3 SUMMARY OF RECOMMENDATIONS

For each of the measures anticipated to deliver savings and where we could, we provide engineering estimates of energy and cost saving potential, implementation cost and simple payback periods. Calculations for the saving have been included in Section 6.

The primary recommendations are as follows:

			Estimated Savings				
ECO	Energy Conservation Opportunity	ECO Cost Budget	kWh	Therms	$ Saved	Capital Cost	Simple Payback (yrs.)
1	Increase the overall efficiency of the Town Hall Building.	$ 65,472	250	1,314	$ 2,152	$ 65,472	30.4
2	LED Lighting Upgrade in all buildings. (Executed already)	$ 20,960	5,830	-	$ 1,020	$ 20,960	20.5
3	Replace the heating unit in the Town Shop.	$ 8,041	510	407	$ 879	$ 8,041	9.1
4	Replace the heating units in the Fire Hall.	$ 15,180	17	226	$ 442	$ 15,180	34.4
	Totals	$ 109,653	6,606	1,947	$ 4,493	$ 109,653	24.4

2.1 BUILDING EXISTING CONDITIONS/OBSERVATIONS/RECOMMENDATIONS

2.1A Town Hall

Existing Conditions:

The Town Hall is a stick built single-level facility with a closed off viewing area. The building is approximately 4,000 square feet. The facility has a meeting/reception hall, stage area, office area, kitchen area and restrooms. There is a non-insulated crawl space below the hall that provides routing of the heating/cooling ductwork for the hall and stage area. There is a non-insulated crawl space below the stage area that houses the air handling equipment that serves the hall area. A closet located in the kitchen area houses the forced air furnace that provides the heating of the office, kitchen and restrooms. There are 16 single pane windows throughout the building.

The building was once a roller-skating rink, hence the viewing area. It was originally heated by a wood stove which had an overabundance of available heat which may explain the lack of insulation.

The primary equipment serving this facility includes:

- There is a 1990s vintage, heating only, Rheem 90 Plus Constant Volume Forced Air Furnace under the stage installed in a horizontal position that served the hall area. This unit is controlled by a standalone snap acting thermostat located on the west wall.
- There is a heating only York Constant Volume Gas Fired Forced Air Furnace (Model G9T06010UPB13A) serving the office, kitchen and restroom areas. This unit is controlled by a standalone snap acting thermostat located on the east wall in the office.
- T-8 Fluorescent lighting throughout the main areas of the facility.

Observations:

During our walk through and review of the data logger showed the hall unit cycles considerably during the colder months of the season. The hall thermostat is set for 64F but the thermometer reading on the thermostats are reading 72F. On a 50F day, the heating unit for the hall cycled 'on' in a pre-purge cycle at 12:27p, the furnace lit 30 seconds later. The unit then went into a post-purge cycle at 12:32. The unit cycled off at 12:34. The unit provided heat for 5 of the 7 minutes in operation. The remainder of the runtime of this unit was spent purging which exhausted heated air to the atmosphere. The unit cycled 187 times over the course of ~47 hours. During this same time, the space temperature never went below 64F.

Both heating units have outlived their useful lives.

The facility Occupancy is from 7:00 a.m. to 3:30 p.m. on Monday and Tuesdays only. There is normally only 1 person occupying the building during this timeframe. The building is also rented out for events, but this is not on a regular schedule.

The burn hours of lighting are low for this building due to very low occupancy. Savings would be much greater if or when occupancy increases.

The floor joists nor the ductwork serving the building are insulated. Combined with single pane windows, this makes for a very inefficient building during the winter months. The snap acting thermostat allows for a very short cycling of the units which is very inefficient but will also shorten the life expectancy of the heating equipment.

Recommendations:

Energy Conservation Opportunity-1 (ECO-1): Increase the overall efficiency of the Town Hall Building.

- Replace the outdated forced air furnaces (2) (Rheem 90+ and York G9T06010UPB13A) that serve both the hall and office space with new more efficient units.
- Replace the thermostats with programmable thermostats that have adjustable occupied and unoccupied setpoints and deadbands and can be viewed remotely via the internet.
- Replace the single pane windows with triple pane windows.

- Insulate the between the floor joists of all areas in the crawl space.
- Lay down a vapor barrier on the dirt floor of the crawl space.

***Energy Conservation Opportunity-2 (ECO-2): LED Lighting Upgrade in all buildings. (Executed already)**

- Replace fluorescent lighting in all buildings with LED lighting.

2.1B Town Shop

Existing Conditions:

The majority of the Town Shop building is a CMU block built single-level facility. The latest addition is a stick built with metal exterior and particleboard interior walls. The building is approximately 3,600 square feet. The facility serves primarily as vehicle maintenance, storage and wash-bay for the Towns salt/sand spreaders, plows, grater, woodchipper and other maintenance vehicles. A forced air furnace located in the main maintenance portion of the shop provides heat to the main shop and adjoining spaces. The new addition is primarily heated by an in-floor heating system. There are 8 double pane windows throughout the building.

The primary equipment serving this facility includes:

- There is a heating only Luxaire Constant Volume Gas Fired Forced Air Furnace (Model GM9S120D20UP11H) serving the maintenance shop areas. This unit is controlled by a standalone snap-acting thermostat located on the east wall above the workbench.
- There is a 97MBH Prestige Solo 110 direct vent boiler serving 7 in-floor heating zones within the addition.
- There are 2 ceiling fans that come on with the lights.
- The through the wall exhaust damper is not connected to anything.
- Old exhaust hood ducting is capped.
- T-8 Fluorescent lighting throughout the main areas of the facility.

Observations:

During our walk through and review of the data logger showed the Luxaire unit cycles normally as expected during the colder months of the season. The unit cycled 162 times but over the course of ~144 hours. Approximately once per hour. This unit has outlived its useful life. The in-floor heating system was 'off'.

The door frame of the man door on the east side of the building is rotted and this door and frame require replacement.

The thermostat within the shed that houses the well pump needs to be replaced.

The overhead garage door located in the addition is insulated but the seals are not sealing. The seals are tight, but it appears as though the door itself is warped or has been slightly displaced by the machinery.

The facility is not normally occupied. Occupancy only occurs for staff meetings and or vehicle maintenance or cleaning. Normal occupancy schedules are not required.

Because the ceiling fans are interlocked to the lights, during the winter months the lights are occasionally left on to circulate the air downward if the heating unit cycles on, thus the burn hours are higher.

Recommendations:

Energy Conservation Opportunity-3 (ECO-3): Replace the heating unit in the Town Shop.

- Replace the outdated Luxaire forced air furnace (Model GM9S120D20UP11H) that serves the maintenance areas with a new more efficient unit.
- Replace the thermostat with programmable thermostats that have adjustable occupied and unoccupied setpoints and deadbands and can be viewed remotely via the internet.
- Interlock the operations of the new heating unit to the ceiling fans.

***Energy Conservation Opportunity-2 (ECO-2): LED Lighting Upgrade in all buildings.**

- Replace fluorescent lighting in all buildings with LED lighting.

2.1C Fire Hall

Existing Conditions:

The Fire Hall is a stick built single-level facility with metal siding and drywall interior. The building is approximately 2,772 square feet. The facility serves as the storage for the fire trucks and hoses and other peripheral firefighting equipment. It also has a small office and restroom.

The primary equipment serving this facility includes:

- There are two (2) Adams gas fired infrared radiant tube heaters serving the fire hall complete. (Model A D SH100) Each unit is controlled by standalone snap-acting thermostats located below each unit.
- T-8 Fluorescent lighting throughout the main areas of the facility.

Observations:

During our walk through and review of the data logger showed that the south infrared unit cycles normally as expected during the colder months of the season. The south unit cycled 21 times but over the course of ~47 hours. Less than once per hour. The north unit cycles on/off but never fires. There are maintenance issues with this unit. These units have outlived their useful lives.

The facility is not normally occupied. Occupancy only occurs for staff meetings and or vehicle maintenance or cleaning. Normal occupancy schedules are not required.

The burn hours of lighting are low for this building due to very low occupancy. Savings would be much greater if or when occupancy increases.

Recommendations:

Energy Conservation Opportunity-4 (ECO-4): Replace the heating units in the Fire Hall.

- Replace the outdated infrared units (2) Adams (Model A D SH100) that serve the Fire Hall with new more efficient units.
- Replace the thermostats with programmable thermostats that have adjustable occupied and unoccupied setpoints and deadbands and can be viewed remotely via the internet.

*Energy Conservation Opportunity-2 (ECO-2): LED Lighting Upgrade

- Replace fluorescent lighting in all buildings with LED lighting.

*Combined with other buildings

3.1 MAINTENANCE ITEMS

Maintenance:

1. Replace the man door and frame at the east side of the Town Shop.

4.1 SAMPLE BID DOCUMENTS

4.1A SAMPLE RFP DOC

DATE: August 4, 2025

You are invited to submit your proposal to provide materials, labor, tools, rentals, supervision and other services required to accomplish the scope of work for the following project:

PROJECT NAME: Town of Draper –Town Building Upgrades

PROPOSALS ADDRESSED TO: (email or physical address)

Name and address of Construction Management firm or assigned Project Manager
Contact: name
Phone: (xxx) xxx-xxxx
E-mail: xxx@xxxxxxxx.com

PROPOSAL TO BE RECEIVED BY: **TIME:** 3 p.m. CDT **on** **DATE:** August 31, 2025

SCHEDULE:

RFP out for Bid	Date xxxx xx, xxxx
Prebid Walkthrough	Date xxxx xx, xxxx
Bids Due	Date xxxx xx, xxxx
Notice to Proceed:	Date xxxx xx, xxxx
Submittal Due Date:	Date xxxx xx, xxxx
Constructions Start Date:	Date xxxx xx, xxxx
Completion Date:	Date xxxx xx, xxxx

OTHER PROJECT HIGHLIGHTS:

- All required permitting and fees shall be included by Contractor.
- This shall be a single prime project with a contract issued directly to the contractor by the Owner.
- The Town of Draper is a Tax exempt entity. If unable to utilize this exemption, all required sales tax shall be included by Contractor.
- Contractor will provide Town of Draper with warrantee information.
- Davis-Bacon and Related Acts including certified payroll via LCP Tracker apply to this project.
- Buy American shall apply to all products.
- All products shall comply with Focus on Energy listed products. Contractor shall submit for Focus on Energy Incentives and name the owner as the recipient.

NOTE: During the proposal process, all communication regarding this proposal should be directed to the undersigned. No communication shall be made with the OWNER personnel unless in case of an emergency. If you decide not to furnish a proposal for this project for any reason, please notify the undersigned by telephone or e-mail. The OWNER will award the contract after coordination with their representative xxxxxxx. Contract award will be based on completeness of bid, ability to meet the construction schedule, and assessment of best value to the OWNER. The Proposal Form in this RFP packet is to be completed and returned to have a fully responsive proposal.

Thank you for your interest in this project.

Construction Manager Firm name, address, email and phone number.

Attachments:
Proposal Form (x pages)
Scope of Work (4 pages)

4.1B SAMPLE PROPOSAL DOC

_____ [Date]

PROPOSAL FORM

PROJECT NAME: Town of Draper – Building Upgrades

From: _____ (Write in bidder's company name)

PROPOSAL TO BE RECEIVED BY: Friday, June 14, 2024, 3:00pm

PROPOSALS ADDRESSED TO: (emailed)

Company name
Contact: xxxxxxxxx
Phone: (xxx) xxx-xxxx
E-mail: xxxxxx@xxxxxxxx

Acknowledgment:

The undersigned represents that it has examined the site(s), read and understands the bidding documents and all conditions affecting the work of the project. The undersigned understands and will perform all work associated with this project within all applicable laws, ordinances, rules and regulations that may affect cost, progress or performance of the work. The undersigned proposes to furnish all labor, material, equipment, supervision and services necessary for a complete system(s) that complies with the RFP documents. The undersigned accordingly submits the following lump sum bid proposal:

PROPOSAL PRICING

Title	Short Description	Proposed Price
Building Upgrades	Provide Upgrades for 3 Town Buildings Per Scope of Work Document	
	Add more lines if breaking up ECO's	

CHANGES IN THE WORK/SCOPE:
The Town of Draper reserves the right to have any additional work done at a fixed negotiated cost or separate cost-plus basis, which will include the SUBCONTRACTOR's/Bidder's profit and overhead.

	Change Order Mark-up Description	Mark-Up Additive	Mark-Up Deductive
A.	Mark-up on self performed labor.		

B.	Mark-up on direct equipment and materials		

*Markup is considered to be the maximum total markup proposed by the SUBCONTRACTOR/Bidder from the lowest tier SUBCONTRACTOR up through the SUBCONTRACTOR. This shall include all overhead and profit on labor and material as applies to every SUBCONTRACTOR and/or supplier for a particular change in scope.

For purposes of this Contract, direct costs for Change Order work shall include direct labor, direct labor burden, associated labor taxes, material, equipment and Subcontract costs. All other costs are considered overhead or profit (to include but not limited to small tools with an actual purchase price less than $500.00, insurance and Taxes) and shall be included in the percentage of mark-up as set forth in this contract.

Provide within the proposal a detailed list of labor rates (fully burdened) including job title, straight time and overtime rates. Identify salaried personnel on this list. All positions within this proposal at a management level of Superintendent, Project Engineer or CONTRACTOR and above in hierarchy will be on salary and not reimbursed for any hours greater than 40 within a 1 week period.

Job Title	Straight Time	Over Time	Salary Y/N

Attach additional sheets if necessary.

SCHEDULE:
The respondent acknowledges that it has reviewed the schedule information outlined in the RFP package and agrees that it will complete the work of this RFP in the time allowed in the schedule.

ADDENDA:
Receipt of Addenda's _____ is included in respondent's pricing.

ACKNOWLEDGMENT:
The undersigned represents that it has examined the sites, read the RFP and understands the documents and conditions affecting the project. The undersigned understands and will perform all work associated with this project within all applicable laws, ordinances, rules and regulations that may affect cost, progress or performance of the work. The undersigned accordingly submits the following lump sum proposal.

_____ Legal Name of Company

_____ Street Address

_____ By (signature)

_____ City, State Zip

_____ Title

_____ Telephone

4.1C

SCOPE OF WORK

EXECUTIVE SUMMARY

EXISTING CONDITIONS

The Town Hall building does not retain heat very well and the equipment across the 3 buildings is outdated and inefficient.

PROJECT GOALS

This project will increase the building envelope of the Town Hall, replace the heating units in all 3 buildings, and will remove all fluorescent/HID lighting and replace with LED in all 3 buildings.

Implementing these actions will provide for reductions in energy consumption.

SPECIFIC SCOPE ITEMS:

A summary of this Scope of Work includes:

1. Energy Conservation Opportunity-1 (ECO-1): Increase the overall efficiency of the Town Hall Building.
    a. Replace the outdated forced air furnaces (2) that serve both the hall and office space with new more efficient units. (Rheem 90+ and York G9T06010UPB13A)
    b. Replace the thermostats with programmable thermostats that have adjustable occupied and unoccupied setpoints and deadbands and can be viewed remotely via the internet.
    c. Replace the single pane windows with triple pane windows.
    d. Insulate the between the floor joists of all areas in the crawl space.
    e. Lay down a vapor barrier on the dirt floor of the crawl space.
2. *Energy Conservation Opportunity-2 (ECO-2): LED Lighting Upgrade across all 3 buildings. **(Executed already)**
3. Energy Conservation Opportunity-3 (ECO-3): Replace the heating unit in the Town Shop.
    a. Replace the outdated Luxaire forced air furnace that serves the maintenance areas with a new more efficient unit.
    b. Replace the thermostat with programmable thermostats that has adjustable occupied and unoccupied setpoints and deadbands and can be viewed remotely via the internet.
    c. Interlock the operations of the new heating unit to the ceiling fans.
4. Energy Conservation Opportunity-4 (ECO-4): Replace the heating units in the Fire Hall.
    a. Replace the outdated infrared units (2) that serve the Fire Hall with new more efficient units.
    b. Replace the thermostats with programmable thermostats that have adjustable occupied and unoccupied setpoints and deadbands and can be viewed remotely via the internet.

GENERAL

This shall be a lump sum Single Prime bid.

The intent of this Scope of Work and any attached supporting documentation is to provide the Contractor with general conformance guidelines. Given the design build nature of this project, Contractor shall be responsible for performing any/all applicable preliminary site investigation through post-installation start-up and troubleshooting to ensure that the desired results are achieved. In this case, the desired results are:

ECO-1. INCREASE THE OVERALL EFFICIENCY OF THE TOWN HALL BUILDING.

SCOPE OF WORK INCLUDES

- Demo of the two (2) existing forced air units.
- Provide and install two (2) new forced air units similar in capacity as the existing but with higher efficiency. (Field verify)
- Provide and install two (2) new LUX type thermostats that have remote communication ability, adjustable occupied/unoccupied setpoint and scheduling and have variable deadband setpoints.
- Demo of the existing 16 single pane windows. (32'x16-1/2").
- Provide and install 16 triple pane windows. Field verify rough openings prior to ordering new.
- Spray foam insulation a minimum of 4" of foam between the floor joist in the crawl space below the entire Town Hall. Approximately 4,000 square feet.
- Provide and install a poly vapor barrier on the floor of the crawl space. Approximately 4,000 square feet.
- Remove and dispose of all materials.

ECO-2. LED LIGHTING UPGRADE ACROSS ALL 3 BUILDINGS. (EXECUTED ALREADY)

SCOPE OF WORK INCLUDES

- Retrofitting 2 tube 8' bulb fixtures with retrofit kits and bulbs.
- Replacing 4' tubes with direct wired 4' LED's.
- Replacing Incandescent and HID lamps with LED.
- Installation materials
- Travel
- Remove and dispose of all ballasts and unused materials.
- Lighting products should comply with Focus on Energy Incentives
- Field verify quantities and types.

EXISTING LIGHTS:

Fire Hall

- 17 – 8' fluorescent tube light fixtures and bulbs. 2 tubes per fixture
- 3 – incandescent bulbs. (Bathroom, storage, entry door)
- 1 – HID yard lamp

Town Shop

- 23 – 4' fluorescent tube light fixtures and bulbs. 6 tubes per fixture
- 2 – HID yard lamps.
- 1 – entryway flood lamp

Town Hall

- 8 – 4' fluorescent tube light fixtures. 4 tubes per fixture.
- 3 – 8' fluorescent tube light fixtures and bulbs. 2 tubes per fixture
- 7 – incandescent bulbs

ECO-3. REPLACE THE HEATING UNIT IN THE TOWN SHOP.

SCOPE OF WORK INCLUDES

- Demo of the one (1) existing forced air unit.
- Provide and install one (1) new forced air unit similar in capacity as the existing but with higher efficiency. (Field Verify)
- Provide and install one (1) new LUX type thermostats that have remote communication ability, adjustable occupied/unoccupied setpoint and scheduling and have variable deadband setpoints.
- Remove and dispose of all materials.

ECO-4. REPLACE THE HEATING UNITS IN THE FIRE HALL.

SCOPE OF WORK INCLUDES

- Demo of the one (1) existing forced air unit.
- Provide and install one (1) new forced air unit similar in capacity as the existing but with higher efficiency.
- Provide and install one (1) new LUX type thermostats that have remote communication ability, adjustable occupied/unoccupied setpoint and scheduling and have variable deadband setpoints.
- Remove and dispose of all materials.

General Inclusions:

- If unable to utilize tax exemption. include taxes in the bid.
- Davis Bacon and Related Acts (includes Certified Payroll via LCP Tracker)
- Buy American
- All work to take place during normal work hours and will include a single office space. Occupancy is to be expected on Monday and Tuesdays within the Town Hall office area. Any noise-generating work in those areas that are occupied must be coordinated with the office staff. All work is anticipated to be accomplished during normal work hours. Any work performed after hours shall be at the contractors' expense.
- All necessary permits, material, hardware, submittals, as-builts, project management, installation, and training.
- Properly dispose of all fixtures and or devices and installation material no longer being used.
- One year labor and material warranty to commence upon completion of the project.

General Exclusions

- Hazardous Waste / Asbestos: Any instances of these substances shall be brought to the owners attention for removal.
- Does not include repairs to any existing electrical violations.
- Remove and turn over to the Owner (or properly dispose of, at the owner's request) all devices and installation material no longer being used.
- Provide 3 hard copies and 1 soft copy of Warranty letter, Record drawings and O&M documents to be provided upon project completion. Submittal documents for material requiring physical maintenance or repair activities will not be accepted as O&M documents.
- Include 4 hours of training to be conducted in (1) 4-hour segment prior to the completion of the project.

SECTION 5: DETAILED - ESTIMATED COST BREAKDOWN

	ECM-1 Town Hall Upgrades			*ECM-2 LED Lighting			ECM-3 Town Shop Heating			ECM-4 Fire Hall Heating		
Project Managers	Hours	Rate	Total	Hours	Rate	Total	Hours	Rate	Total	Hours	Rate	Total
Project Manager	0	$ 120	$ -	0	$ 120	$ -	0	$ 120	$ -	0	$ 120	$ -
Construction Staff												
Superintendant	0	$ 90	$ -	0	$ 90	$ -	0	$ 90	$ -	0	$ 90	$ -
Admin	24	$ 60	$ 1,440	8	$ 60	$ 480	8	$ 60	$ 480	8	$ 60	$ 480
Subtotal	24		$ 1,440	8		$ 480	8		$ 480	8		$ 480
	Contractor Cost	Mark Up %	Total	Contractor Cost	Mark Up %	Total	Contractor Cost	Mark Up %	Total	Contractor Cost	Mark Up %	Total
Material & Equipment	24800	10%	$ 2,480		10%	$ -	2800	10%	$ 280	6200	10%	$ 620
Subtotal	24800		$ 27,280	0		$ -	2800		$ 3,080	6200		$ 6,820
Subcontractors												
Construction Manager			$ 4,000			$ 3,600			$ 1,500			$ 1,500
Mechanical			$ 8,800						$ 2,250			$ 5,000
Electrical						$ 16,880						
Insulation			$ 18,000									
Subtotal	0		$ 30,800	0		$ 20,480	0		$ 3,750	0		$ 6,500
Total of General			$ 59,520.00			$ 20,960.00			$ 7,310.00			$ 13,800.00
Insurance, Bonds, Contingency												
Insurance	0%			0%			0%			0%		
Performance Bond	0%			0%			0%			0%		
Contingency	10%		$ 5,952	0%		$ -	10%		$ 731	10%		$ 1,380
Total of Insurance and Bonds			$ 5,952.00			$ -			$ 731.00			$ 1,380.00
ECO Subtotal			$ 65,472.00			$ 20,960.00			$ 8,041.00			$ 15,180.00

6.1 Calculations

Section 6 ECO-1.1 Replace Town Hall Furnaces-Therm Savings

Issue:
- The heating unit is cycling and is inefficient.

Proposed Modification:
- Replace the unit with a more energy efficient unit
- Insulation therm savings under other calc

Savings Calculation:
- The furnaces runs 16 hours per day, 7 days a week, for approximately 7 months (30 days/mo) out of the year. ((30 x 7) x16)
- established the baseline. (tuned to current therm usage)

Furnace 1	45 btu/sf x 3500 sf 1 cfm/sf	157500 btu/hr 3500 cfm	Furnace 2	45 btu/sf x 500 sf 1 cfm/sf	22500 btu/hr 500 cfm
Total therm savings		233	Total $ saved		$451

F1 Gas Usage Baseline:
- The furnace runs 16 hours per day, 7 days a week, for approximately 7 months (30 days/mo) out of the year. ((30 x 7) x16)

Heating Therms = 1.08 * CFM * delta T * (hours of operation) / (100,000 * boiler eff.)

= 1.08 *3500 * (80 - 65) * ((30*7)x10) / (100,000 * .78)
= 1,527 Therms

F1 Gas Savings:
- The gas savings comes from reducing the hours of operation by adding insulation and replacing the furnace.

Heating Therms = 1.08 * CFM * delta T * (hours of operation) / (100,000 * boiler eff.)

= 1.08 *3500 * (80 - 65) * ((30*7)x10) / (100,000 * .90)
= 1,323 Therms

Therm Savings
= 204

Cost Savings:
= $395

F2 Gas Usage Baseline:
- The furnace runs 16 hours per day, 7 days a week, for approximately 7 months (30 days/mo) out of the year. ((30 x 7) x16)

Heating Therms = 1.08 * CFM * delta T * (hours of operation) / (100,000 * boiler eff.)

= 1.08 *500 * (80 - 65) * ((30*7)x10) / (100,000 * .78)
= 218 Therms

F1 Gas Savings:
- The gas savings comes from reducing the hours of operation by adding insulation and replacing the furnace.

Heating Therms = 1.08 * CFM * delta T * (hours of operation) / (100,000 * boiler eff.)

= 1.08 *3500 * (80 - 65) * ((30*7)x10) / (100,000 * .90)
= 189 Therms

Therm Savings
= 29

Cost Savings:
= $56

Section 6 ECO-1.2 - Replace Town Hall Furnaces-kWH Savings

Issue:

- The furnace runs 16 hours per day, 7 days/wk, for approx 7 months (30 days/mo) out of the year.

Proposed Modification:

After the insulation and new furnace install. The runtime shall reduce significantly.

Total kwh savings 250 Total $ saved $44

F1 Savings Calculation:

Supply fan

kWh = HP * 0.746 * load factor * hours of operation / efficiency

= .5 * .746 * .45 *2100 / .83

= 425 kWh

Supply fan reduction

kWh = HP * 0.746 * load factor * hours of operation / efficiency

= .5 * .746 * .45 *1500 / .83

= 258 kWh

Total kWh savings

= 167 kWh

Cost savings

= $29

F2 Savings Calculation:

Supply fan

kWh = HP * 0.746 * load factor * hours of operation / efficiency

= .25 * .746 * .45 *2100 / .83

= 212 kWh

Supply fan reduction

kWh = HP * 0.746 * load factor * hours of operation / efficiency

= .25 * .746 * .45 *1500 / .83

= 129 kWh

Total kWh savings

= 83 kWh

Cost savings

= $15

Section 6 ECO 1.3 Replace Town Hall Windows With High Efficiency Units

EXISTING

Area of windows to be replaced	219
Existing U value of windows	1.27
Heating Balance Point (F):	65
Annual Heating Degree Days Base 55F	8,417
Efficiency of heating system:	70%
Is the facility cooled?	No
Hrs/wk Facility is Cooled	
Cooling Balance Point:	
Cooling Degree Days:	
EER of Cooling System:	10.2
Average Existing th/yr Use	**803**
Average therm Rate	$1.940
kWh/yr	0
Average kWh Rate	$0.175
Annual Energy Cost	$1,558

PROPOSED

Proposed U value of windows	0.30
Average Proposed th/yr Use	**190**
kWh/yr	0
Annual Energy Cost	$369

SAVINGS

th/yr	613
kWh/yr	0
Annual Cost Savings	**$1,189**

Section 6 ECO1.4 Add Insulation to crawl space

EXISTING

Area to be Insulated	4,000
Existing R-value of insulation:	10
Total air film R-value	2.0
Heating Balance Point (F):	50
Heating Degree Days:	8,417
Efficiency of heating system:	80%
Is the facility cooled?	No
Hrs/wk Facility is Cooled	
Cooling Balance Point (F):	
Cooling Degree Days:	
EER of Cooling System:	10.2
Average Existing th/yr Use	**842**
Average therm Rate	$1.940
kWh/yr	0
Average kWh Rate	$0.175
Annual Energy Cost	$1,633

PROPOSED

R-value of additional insulation	15
Average th/yr Use	**374**
kWh/yr	0
Annual Energy Cost	$726

SAVINGS

th/yr	468
kWh/yr	0
Annual Cost Savings	**$907**

Section 6 ECO-2 Town of Draper LED Upgrades

Project Na: Town of Draper — Date: 1/19/2024

Existing

Area	qty	type	#lamps	Length	wattage	Ext Watts	# New Lamps	# New lamps Total	Watts	Ext Watts	Watts Saved	Inc
Fire Hall	17	T8	2	8	107	1819	2	34	15	510	1309	59.5
	0	T8	2	4	61	0	2	0	15	0	0	0
	0	T8	4	4	120	0	2	0	15	0	0	0
	0	T8	6	4	224	0	6	0	15	0	0	0
	3	Inc	1	0	100	300	1	3	15	45	255	5.25
	1	Ext HID	1	0	100	100	1	1	15	15	85	1.75
					Extg Total	2219		38		570	1649	$67

Operational Hours

hrs/day	2	
days/wk	5	
wks/yr	52	
hours	520	hours
Total Hours	520	
Diversity	1	
	520	
	$ 150	
	$ saved	

Utility rate from bills

kWh's	Cost	cost/kwh
5845	1023	0.175
520	857	0.175
	kwh saved	kwh rate

Project Na: Town of Draper — Date: 1/19/2024

Existing

Area	qty	type	#lamps	Length	wattage	Ext Watts	# New Lamps	# New lamps Total	Watts	Ext Watts	Watts Saved	Inc
Town Hall	3	T8	2	8	107	321	2	6	15	90	231	10.5
	0	T8	2	4	61	0	2	0	15	0	0	0
	8	T8	4	4	120	960	2	16	15	240	720	28
	0	T8	6	4	224	0	6	0	15	0	0	0
	7	Inc	1	0	100	700	1	7	15	105	595	12.25
	1	Ext HID	1	0	100	100	1	1	15	15	85	1.75
					Extg Total	2081		30		450	1631	$53

Operational Hours

hrs/day	2	
days/wk	5	
wks/yr	52	
hours	520	hours
Total Hours	520	
Diversity	1	
	520	
	$ 148	
	$ saved	

kWh's	Cost	cost/kwh
520	848	0.175
	kwh saved	kwh rate

Project Na: Town of Draper — Date: 1/19/2024

Existing

Area	qty	type	#lamps	Length	wattage	Ext Watts	# New Lamps	# New lamps Total	Watts	Ext Watts	Watts Saved	Inc
Town Shop	0	T8	2	8	107	0	2	0	15	0	0	0
	0	T8	2	4	61	0	2	0	15	0	0	0
	0	T8	4	4	120	0	2	0	15	0	0	0
	23	T8	6	4	224	5152	6	138	15	2070	3082	241.5
	3	Inc	1	0	100	300	1	3	15	45	255	5.25
	2	Ext HID	1	0	100	200	1	2	15	30	170	3.5
					Extg Total	5652		143		2145	3507	$250

Operational Hours

hrs/day	24	2	
days/wk	7	5	
wks/yr	7	52	
hours	1176	hours	
Total Hours	1176		
Diversity	1		
	1176		
	$ 722		
	$ saved		

kWh's	Cost	cost/kwh
1176	4124	0.175
	kwh saved	kwh rate

TOTALS	
	5830
$ 1,020	kwh saved
$ saved	

Section 6 ECO-3.1 Replace Town Shop Furnaces-Therm Savings

Issue:
- The heating operates longer than necessary due to lights being on.

Proposed Modification:
- Replace the unit with a more energy efficient unit
- Interlock to ceiling fan so no longer on when lights are on.

Savings Calculation:
- The furnaces runs 24 hours per day, 7 days a week, for approximately 7 months (30 days/mo) out of the year. ((30 x 7) x16)
- established the baseline. (tuned to current therm usage)

Furnace 1	45 btu/sf x 2100 sf	94500 btu/hr
	1 cfm/sf	2100 cfm

Total therm savings	407	Total $ saved	$790

F1 Gas Usage Baseline:
- The furnace runs 16 hours per day, 7 days a week, for approximately 7 months (30 days/mo) out of the year. ((30 x 7) x16)

Heating Therms = 1.08 * CFM * delta T * (hours of operation) / (100,000 * boiler eff.)

= 1.08 *2100 * (80 - 65) * ((30*7)x16) / (100,000 * .78)
= 1,465 Therms

F1 Gas Savings:
- The gas savings comes from reducing the hours of operation by replacing the furnace and interlocking to the ceiling fans.

Heating Therms = 1.08 * CFM * delta T * (hours of operation) / (100,000 * boiler eff.)

= 1.08 *2100 * (80 - 65) * ((30*7)x8) / (100,000 * .90)
= 1,058 Therms

Therm Savings
= 407

Cost Savings:
= $790

Section 6 ECO-3.2 - Replace Town Shop Furnace-kWH Savings

Issue:

- The furnace runs 16 hours per day, 7 days/wk, for approx 7 months (30 days/mo) out of the year.

Proposed Modification:

After interlocking to the ceiling fan and the new furnace install, the runtime shall reduce significantly.

Total kwh savings	510	Total $ saved	$89

F1 Savings Calculation:

Supply fan

kWh = HP * 0.746 * load factor * hours of operation / efficiency

= .5 * .746 * .45 *3360 / .83

= 679 kWh

Supply fan reduction

kWh = HP * 0.746 * load factor * hours of operation / efficiency

= .5 * .746 * .45 *((30*7)*4) / .83

= 170 kWh

Total kWh savings

= 510 kWh

Cost savings

= $89

Section 6 ECO-4.1 Replace Fire Hall IR Units-Therm Savings

Issue:
- The heating units cycle and are inefficient.

Proposed Modification:
- Replace the unit with a more energy efficient unit

700 therms/year

Savings Calculation:
- The IR's operate approx 4 hours/day, 7 days a week, for approximately 7 months (30 days/mo) out of the year. ((30 x 7) x4)
- established the baseline. (tuned to current therm usage)

IR1	45 btu/sf x 1386 sf	62370 btu/hr	IR2	45 btu/sf x 1386sf	62370 btu/hr
Total therm savings		226	Total $ saved		$439

Both IR's Gas Usage Baseline:
- TheIR's operate 4 hours per day, 7 days a week, for approximately 7 months (30 days/mo) out of the year. ((30 x 7) x4)

Heating Therms = 60000 BTU * (hours of operation) / (100,000 * IR eff.)

= (2*30000)* ((30*7)x4) / (100,000 * .78)
= 646 Therms

IR Gas Savings:
- The gas savings comes from increasing the efficiencies by replacing the IR's.

Heating Therms = 1.08 * CFM * delta T * (hours of operation) / (100,000 * boiler eff.)

= (2*30000)* ((30*7)x3) / (100,000 * .90)
= 420 Therms

Therm Savings
= 226

Cost Savings:
= $439

Section 6 ECO-4.2 Replace Fire Hall IR Units-kWH Savings

Issue:

- The IR'sruns 4 hours per day, 7 days/wk, for approx 7 months (30 days/mo) out of the year.

Proposed Modification:

After the new IR install, the combustion fan runtime shall decrease.

Total kwh savings	17	Total $ saved	$3

IR Combustion Fan Savings Calculation:

Supply fan

kWh = HP * 0.746 * load factor * hours of operation / efficiency

= .2 * .746 * .45 *((30*7)*4) / .83

= 68 kWh

Supply fan reduction

kWh = HP * 0.746 * load factor * hours of operation / efficiency

= .2 * .746 * .45 *((30*7)*3) / .83

= 51 kWh

Total kWh savings

= 17 kWh

Cost savings

= $3