

Table 1: Project Summary for Town of Westport & Westport Public Schools -- Recommended Measures

Energy Conservation Measures	Total Price	Electric Savings (kWh)	Natural Gas Savings (CCF)	Oil Savings (gal)	First Year Energy Cost Savings	Estimated Incentive	Net Payback
L... C...							
E... M... X...							
X... X...							
X... X...							
A... C...							
X... L... C...							
H... E... X...							
E... C... B... C...							
H... E... M... F... D...							
C... C... E... X...							
C... D... M... A... H... X...							
X... X... X...							
X... X... H... X...							
Totals	\$7,887,258	3,957,840	137,480	264	\$750,457	\$1,528,363	8.5 Yrs

The Total Price for the individual ECMs above does not include the up-front project costs listed below. These costs will be included in the financing and have been included in all financial analysis of the project and represent the total project cost of \$8,370,000:

- Owner’s representative engineering services (AKF) of \$157,000
- Town legal fees for negotiation of the Energy Services Agreement (ESA), estimated at \$30,000
- NORESKO audit fee (\$91,393) payable upon execution of the ESA
- Capitalized interest cost during construction of \$205,000

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Table 2: Cash Flow Pro Forma

	Annual Energy Cost Savings ¹	Payments for Financed Equipment ²	Measurement & Verification Services	Net Annual Benefits ³	Cumulative Cash Flow
Year 1	(\$1,000,000)	(\$1,000,000)	(\$100,000)	(\$1,100,000)	(\$1,100,000)
Year 2	(\$1,000,000)	(\$1,000,000)	(\$100,000)	(\$1,100,000)	(\$2,200,000)
Year 3	(\$1,000,000)	(\$1,000,000)	(\$100,000)	(\$1,100,000)	(\$3,300,000)
Year 4	(\$1,000,000)	(\$1,000,000)	(\$100,000)	(\$1,100,000)	(\$4,400,000)
Year 5	(\$1,000,000)	(\$1,000,000)	(\$100,000)	(\$1,100,000)	(\$5,500,000)
Year 6	(\$1,000,000)	(\$1,000,000)	(\$100,000)	(\$1,100,000)	(\$6,600,000)
Year 7	(\$1,000,000)	(\$1,000,000)	(\$100,000)	(\$1,100,000)	(\$7,700,000)
Year 8	(\$1,000,000)	(\$1,000,000)	(\$100,000)	(\$1,100,000)	(\$8,800,000)
Year 9	(\$1,000,000)	(\$1,000,000)	(\$100,000)	(\$1,100,000)	(\$9,900,000)
Year 10	(\$1,000,000)	(\$1,000,000)	(\$100,000)	(\$1,100,000)	(\$11,000,000)
Totals	\$8,703,000	\$7,560,000	\$88,000	\$1,055,000	

1. Annual energy cost savings are based on the 2015 energy audit and the recommended project.

2. Payments for financed equipment are based on the 2015 energy audit and the recommended project. The equipment is financed through a 10-year, 5.0% interest rate loan. The loan is repaid through the energy cost savings generated by the project. The loan is repaid through the energy cost savings generated by the project.

3. Net annual benefits are based on the 2015 energy audit and the recommended project. The net annual benefits are calculated as the annual energy cost savings minus the annual payments for financed equipment and measurement and verification services.

After the completion of the 10-year finance term, the recommended project will continue to generate meaningful annual energy costs savings, without any further finance payments. As a result, the Town could potentially realize an increased net annual benefit of more than \$1,000,000 per year.

Selection Criteria for Recommended ECMs

The EPC Committee reviewed 24 specific ECMs in the twelve buildings audited. ECMs were selected for inclusion in this recommendation based on specific economic criteria that produce an economic benefit to the taxpayer. ECMs by building are included in Appendix B. Criteria include:

- Positive Net Present Value (NPV):** The comprehensive recommended project generates a positive NPV after financing costs within 10 years. Most of the measures have a positive NPV of less than 10 years, and the entire recommended project has an NPV of \$911,000 for the projected 10-year contract term.
- Internal Rate of Return (IRR):** Individual ECMs, and the comprehensive recommended project, show an IRR that materially exceeds the cost of financing. The estimated IRR for the recommended comprehensive project is 5.0%. For this analysis, Westport's cost of financing was estimated at 2.5% less a PURA buydown estimated at \$225,000, with the observation that Westport's last bond issue was executed at 2.07%.
- Payback Period:** Individual ECMs should have a simple payback (excluding financing costs) of less than 15 years, based on the first year savings with no escalation. The comprehensive recommended project has a simple payback of 8.5 years.

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Operations & Maintenance Savings (O&M)

While O&M cost savings are not currently included in the project financial return estimates, a number of the ECMs in the recommended package will reduce the work required by the Town and BOE facility staff. The longer-lasting LED lighting compared to the existing primarily fluorescent lighting will significantly reduce lamp replacement. NORESKO has estimated that the material savings alone is approximately \$63,000. In addition, the upgrade of the steam traps will reduce the need for facility staff to replace failed traps, and the energy management system upgrades will enhance the ability of the facility staff to monitor and investigate comfort complaints.

Another benefit is that the equipment selected to be installed on the project will be consistent for all facilities reducing the number of replacement parts that need to be stored, and reducing the need for training on multiple types of equipment.

Environmental Impact of Proposed Energy Conservation Measures

NORESCO is a proud member of the U.S. Green Building Council, Clinton Climate Initiative, and a long-time Energy Star® Business Partner. In addition to the direct positive economic benefit this project will have to the Town, this project will provide significant environmental benefits to the Town and the surrounding community, consistent with the Town’s CO₂ reduction policy objectives.

Quantified in the tables below are the greenhouse gas emission reductions that will occur as a result of new higher efficiency equipment replacing the existing old, less efficient systems; as well as new controls that will limit the equipment’s use to when only needed by the building occupants.

Table 4: Energy Savings

Energy Source	Units	Value
Electricity	1,000,000 kWh	1,000,000 kWh
Gas	100,000 GJ	100,000 GJ
Oil	100,000 GJ	100,000 GJ


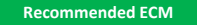

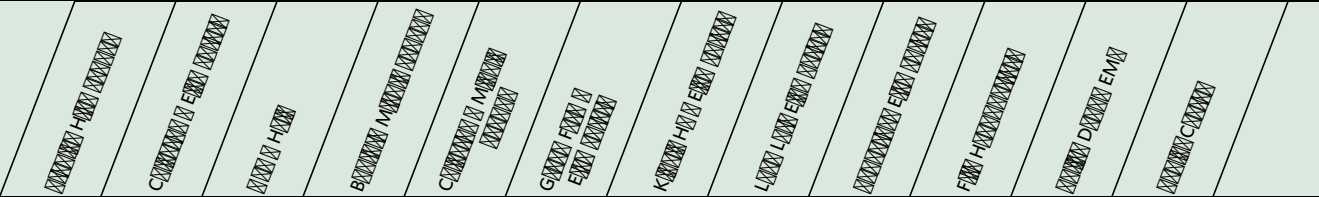
Table 5: Annual Emissions Reductions

Emission Type	Reductions
Carbon Dioxide (CO ₂)	6,128,755 Lbs per year
Sulfur Oxides (SO _x)	1,797 Lbs per year
Nitrogen Oxides (NO _x)	5,926 Lbs per year
Equivalent Acres of Trees Planted	821 acres
Equivalent Cars Removed from the Roads	662 cars


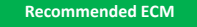

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Installation Price														
1	Lighting Improvements & Controls	\$1,234,034	\$273,255	\$157,006	\$510,383	\$456,114	\$265,068	\$181,952	\$397,662	\$391,127	\$57,802	\$105,784	\$48,535	\$4,078,722
2	New Energy Efficient Condensing Boilers	\$1,351,128		\$435,552				\$396,641	\$528,854			\$596,962		\$3,309,137
3	Packaged AC Units		\$81,512											\$81,512
4	Energy Management System Upgrades	\$552,633	\$316,000		\$109,176	\$400,066	\$195,557	\$96,579	\$260,096	\$117,574		\$100,778	\$57,387	\$2,205,846
5	Weatherization & Insulation	\$55,586	\$29,009	\$13,174	\$7,332	\$7,732	\$7,346	\$10,255	\$21,107	\$22,086	\$5,253			\$178,880
6	Pipe Insulation	\$35,964	\$22,250	\$39,738				\$5,635	\$13,780			\$6,019		\$123,386
7	Automated Swimming Pool Covers	\$103,218												\$103,218
8	Plug Load Controls	\$42,630	\$13,027	\$7,186	\$30,415	\$13,284	\$14,134	\$10,419	\$12,757	\$12,222			\$576	\$156,650
9	Walk-In Cooler Controls	\$28,834			\$16,162	\$19,069	\$18,114		\$17,554	\$18,114			\$8,892	\$126,739
10	Kitchen Hood Controls	\$209,131			\$49,401	\$49,401				\$57,635				\$365,568
11	High Efficiency Transformers	\$307,009			\$237,742				\$40,756					\$585,507
12	Energy Conservation Through Behavior Change	\$4,691	\$4,691		\$4,691	\$4,691	\$4,691	\$4,691	\$4,691	\$4,691				\$37,530
13	High Efficiency Motors and Variable Frequency Drives	\$87,604		\$4,318	\$72,712	\$75,559	\$37,420	\$10,951	\$39,578					\$328,142
14	Air Handling Unit Refurbishment	\$67,557												\$67,557
15	Chiller Variable Speed Control, Water Side Economizer, and Tower Refurbishment	\$153,308												\$153,308
16	Convert Dining Multizone Air Handler to Variable Air Volume	\$52,544												\$52,544
17	New Pool Air Handling Unit	\$463,958												\$463,958
18	Water Heater Replacement										\$19,760			\$19,760
19	HVAC Replacement											\$948,499		\$948,499
20	Geothermal Heat Pump Conversion												\$280,000	\$280,000
21	Steam to Hot Water Heating Conversion							\$918,694	\$758,066					\$1,676,760
22	Cooling Tower Replacement					\$185,583	\$250,463							\$436,046
23	Staples HS Boiler Replacement B HW Boiler	\$359,804												\$359,804
24	Steam Trap Replacement		\$72,455					\$47,425	\$47,425					\$167,305

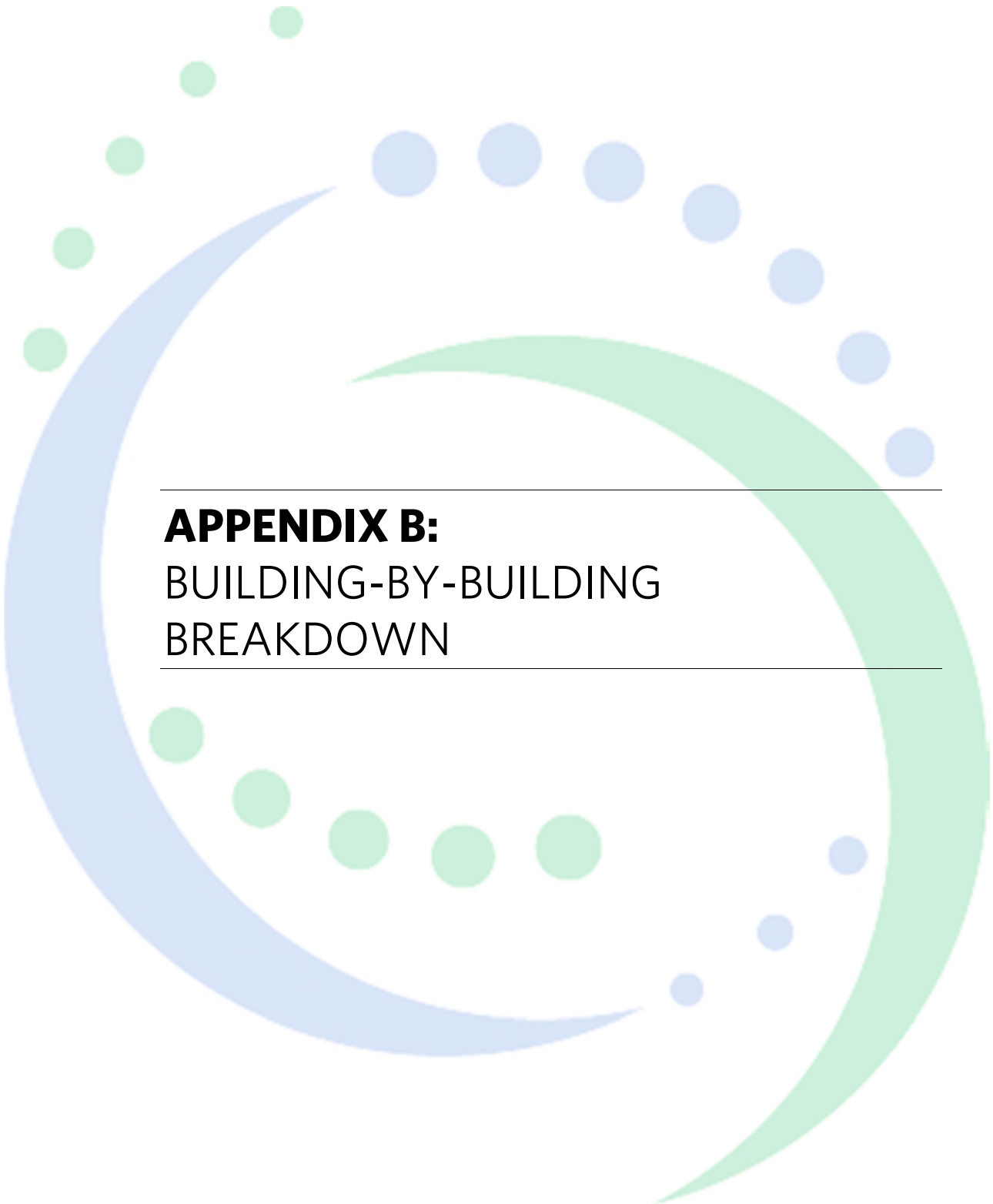
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Projected First Year Savings														
1	Lighting Improvements & Controls	\$92,998	\$21,274	\$7,301	\$39,335	\$33,305	\$24,195	\$15,352	\$33,758	\$35,491	\$5,922	\$7,546	\$5,244	\$321,721
2	New Energy Efficient Condensing Boilers	\$50,894		\$10,930				\$5,200	\$13,100			\$18,100		\$98,224
3	Packaged AC Units		\$1,154											\$1,154
4	Energy Management System Upgrades	\$115,234	\$17,906		\$11,969	\$13,484	\$11,918	\$14,263	\$15,513	\$16,694		\$6,493	\$7,798	\$231,272
5	Weatherization & Insulation	\$3,735	\$2,530	\$672	\$426	\$547	\$475	\$1,564	\$1,501	\$2,145	\$329			\$13,924
6	Pipe Insulation	\$2,123	\$1,699	\$943				\$304	\$1,488			\$116		\$6,673
7	Automated Swimming Pool Covers	\$22,234												\$22,234
8	Plug Load Controls	\$9,393	\$3,259	\$2,887	\$3,462	\$1,383	\$953	\$1,362	\$1,293	\$986			\$145	\$25,123
9	Walk-In Cooler Controls	\$1,835			\$762	\$1,504	\$905		\$821	\$828			\$410	\$7,065
10	Kitchen Hood Controls	\$10,724			\$2,342	\$1,584				\$3,710				\$18,360
11	High Efficiency Transformers	\$28,174			\$20,168				\$3,042					\$51,384
12	Energy Conservation Through Behavior Change	-	-		-	-	-	-	-	-	-			-
13	High Efficiency Motors and Variable Frequency Drives	\$16,698		\$825	\$6,151	\$9,353	\$1,719	\$635	\$6,091					\$41,472
14	Air Handling Unit Refurbishment	\$4,503												\$4,503
15	Chiller Variable Speed Control, Water Side Economizer, and Tower Refurbishment	\$14,784												\$14,784
16	Convert Dining Multizone Air Handler to Variable Air Volume	\$5,115												\$5,115
17	New Pool Air Handling Unit	\$11,068												\$11,068
18	Water Heater Replacement									\$2,400				\$2,400
19	HVAC Replacement											\$3,895		\$3,895
20	Geothermal Heat Pump Conversion												\$19,600	\$19,600
21	Steam to Hot Water Heating Conversion							\$11,300	\$28,800					\$40,100
22	Cooling Tower Replacement					\$3,700	\$4,900							\$8,600
23	Staples HS Boiler Replacement B HW Boiler	\$14,054												\$14,054
24	Steam Trap Replacement		\$7,301					\$8,158	\$13,749					\$29,208

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Simple Payback		H	C	H	B	C	G	K	L	E	F	D	C	
1	Lighting Improvements & Controls	11.0	10.9	19.5	10.9	11.6	8.9	10.0	9.8	8.9	7.8	12.0	7.5	10.6
2	New Energy Efficient Condensing Boilers	25.1		38.5				75.0	39.4			32.8		32.6
3	Packaged AC Units		68.7											68.7
4	Energy Management System Upgrades	3.1	15.3		6.8	27.3	14.2	4.4	14.1	4.7		14.8	5.1	7.6
5	Weatherization & Insulation	12.1	9.1	19.2	14.8	11.5	13.1	4.3	11.4	7.9	13.7			10.4
6	Pipe Insulation	14.1	10.7	42.1				15.9	7.1			51.9		16.4
7	Automated Swimming Pool Covers	3.0												3.0
8	Plug Load Controls	2.9	2.6	1.6	6.8	7.6	12.8	5.8	8.0	10.4			2.6	4.6
9	Walk-In Cooler Controls	13.5			19.2	10.6	18.0		19.5	19.9			20.0	15.9
10	Kitchen Hood Controls	17.0			18.9	28.8				13.3				17.5
11	High Efficiency Transformers	8.7			9.8				11.5					9.3
12	Energy Conservation Through Behavior Change	---	---		---	---	---	---	---	---				---
13	High Efficiency Motors and Variable Frequency Drives	3.4		3.3	9.8	6.0	19.7	15.4	4.6					6.0
14	Air Handling Unit Refurbishment	12.9												12.9
15	Chiller Variable Speed Control, Water Side Economizer, and Tower Refurbishment	8.1												8.1
16	Convert Dining Multizone Air Handler to Variable Air Volume	7.9												7.9
17	New Pool Air Handling Unit	40.9												40.9
18	Water Heater Replacement									6.3				6.3
19	HVAC Replacement											243.5		243.5
20	Geothermal Heat Pump Conversion												13.3	13.3
21	Steam to Hot Water Heating Conversion							80.0	25.4					40.8
22	Cooling Tower Replacement					49.1	50.1							49.7
23	Staples HS Boiler Replacement B HW Boiler	24.0												24.0
24	Steam Trap Replacement		9.9					5.8	3.4					4.0

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APPENDIX B:
BUILDING-BY-BUILDING
BREAKDOWN

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STAPLES HIGH SCHOOL

Project Overview

The project involves the implementation of a new energy management system (EMS) at Staples High School. The system will be used to monitor and control the school's energy usage, including heating, ventilation, and air conditioning (HVAC) systems. The project is expected to result in significant energy savings and a reduction in the school's carbon footprint. The system will be installed in the school's main building, which is a large, modern structure with a curved facade. The project is being funded by the school district and is expected to be completed by the end of the year.



The project is being funded by the school district and is expected to be completed by the end of the year. The system will be installed in the school's main building, which is a large, modern structure with a curved facade.

Recommended ECMs

Savings: \$310,488
Net Payback: 6.5 years
Price: \$2,629,222

L	H
E	E
I	H
C	C
E	A
I	A
L	C

All Identified ECMs

Savings: \$403,566
Net Payback: 10.8 years
Price: \$5,109,633

All Recommended ECMs as shown above.
 ECMs below that are not recommended at this time:

I	A
K	H
A	E

BEDFORD MIDDLE SCHOOL

Project Overview

The ECMs identified below are recommended for implementation. The ECMs are listed in the table below. The ECMs are listed in the table below. The ECMs are listed in the table below. The ECMs are listed in the table below. The ECMs are listed in the table below.



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Recommended ECMs

Savings: \$81,511
Net Payback: 9.8 years
Price: \$972,451

L	H
E	E
I	H
L	

All Identified ECMs

Savings: \$84,615
Net Payback: 10.2 years
Price: \$1,038,014

All Recommended ECMs as shown above.
ECMs below that are not recommended at this time:

K	J
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COLEYTOWN ELEMENTARY SCHOOL

Project Overview

The project involves the installation of a new HVAC system at Coleytown Elementary School. The system will be designed to meet the school's energy efficiency goals and provide a comfortable learning environment. The project includes the removal of the existing system, installation of the new equipment, and ductwork modifications. The estimated cost of the project is \$730,687.



The project is a part of the school's capital improvement program. It is expected to result in significant energy savings and a longer lifespan for the HVAC system. The project is currently in the planning phase and is expected to start in the next few months.

Recommended ECMs

Savings: \$53,969
Net Payback: 11.7 years
Price: \$730,687

L... C... E... M... I... I...	L... C... E... C... B... C... I... I...
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All Identified ECMs

Savings: \$55,123
Net Payback: 12.9 years
Price: \$812,199

All Recommended ECMs as shown above.
ECMs below that are not recommended at this time:

A... C...

GREENS FARMS ELEMENTARY SCHOOL

Project Overview

The project consists of the following components:

- Energy Efficiency Improvements
- Water Conservation Measures
- Lighting Upgrades
- Control Systems
- Other Energy Conservation Measures



The project is a multi-phase effort to improve the school's energy performance. It includes the installation of energy-efficient lighting, water-saving fixtures, and advanced control systems to optimize energy usage.

Recommended ECMs

Savings: \$39,260

Net Payback: 11.2 years

Price: \$524,216

Lighting Upgrades	Control Systems
Energy Efficient Motors	Energy Efficient Compressors
Water Conservation Measures	High-Efficiency Motors

All Identified ECMs

Savings: \$45,065

Net Payback: 15.7 years

Price: \$792,793

All Recommended ECMs as shown above.

ECMs below that are not recommended at this time:

Energy Efficient Windows	Energy Efficient Refrigerators
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POLICE DEPARTMENT



Project Overview

ECM D
C

J
C
B · A F
E

Recommended ECMs

Savings: \$7,546
Net Payback: 12.0 years
Price: \$105,784

L C

All Identified ECMs

Savings: \$36,150
Net Payback: 48.0 years
Price: \$1,758,042

All Recommended ECMs as shown above.

ECMs below that are not recommended at this time:

E C B	E M
I	H AC

TOWN HALL

Project Overview

The ECM is a comprehensive energy efficiency program that includes a full range of energy audits, lighting retrofits, HVAC system upgrades, and control system optimization. The program is designed to reduce energy consumption and improve the overall efficiency of the building.



The program is a multi-phase project that includes a full range of energy audits, lighting retrofits, HVAC system upgrades, and control system optimization. The program is designed to reduce energy consumption and improve the overall efficiency of the building.

Recommended ECMs

Savings: \$4,384
Net Payback: 4.6 years
Price: \$24,678

Lighting retrofits, HVAC system upgrades, and control system optimization.	HVAC system upgrades, lighting retrofits, and control system optimization.
Lighting retrofits, HVAC system upgrades, and control system optimization.	HVAC system upgrades, lighting retrofits, and control system optimization.

All Identified ECMs

Savings: \$23,558
Net Payback: 26.4 years
Price: \$656,974

All Recommended ECMs as shown above.
ECMs below that are not recommended at this time:

HVAC system upgrades, lighting retrofits, and control system optimization.	HVAC system upgrades, lighting retrofits, and control system optimization.
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