

# Salem Central School Energy Performance Contracting



## DETAILED ENERGY AUDIT – SCOPE & FINANCIAL REVIEW

Presented by: JW Danforth Energy Solutions Provider

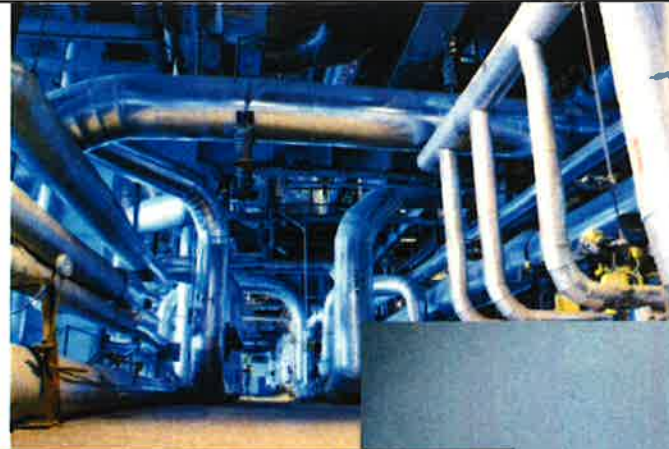
Tyler Andrascik Cell: 518-258-0653 Email: [tandrascik@jwdanforth.com](mailto:tandrascik@jwdanforth.com)

July 18 2018



## Project Highlights

1. Lighting
2. Mechanical
3. Controls
4. Other Energy Savings Measures
5. Financials
6. Questions & Answers



DETAILED ENERGY AUDIT PRESENTATION – SALEM CSD



# LED Lighting Upgrades

Retrofit all Fixtures w/ High Efficiency LED Lighting

**Includes:**

- Interior
- Exterior
- Occupancy Sensors
- Advanced Lighting Controls (3 Gyms)
- Bus Garage

Replacing a Total of 1,785 Fixtures

Installing a Total of 158 Occupancy Sensors

**Benefits:**

- Long Lifetime 50,000hrs
- Less Maintenance
- Brighter More Productive Area
- Increased Security
- Aesthetics

**T8 16W 4FT. BYP** TITANIUM LED SERIES



**HID LED 80W** TITANIUM LED SERIES





## Mechanical Upgrades

### New Hot Water Boiler

- Remove 1 Existing Steam Boiler.
- Install New Hot Water Boiler
- Connect New Boiler to Existing Hot Water Loop
- Existing Steam to Hot Water Heat Exchanger to Remain in Place as Back Up

### New Combustion Air Duct & Air Damper

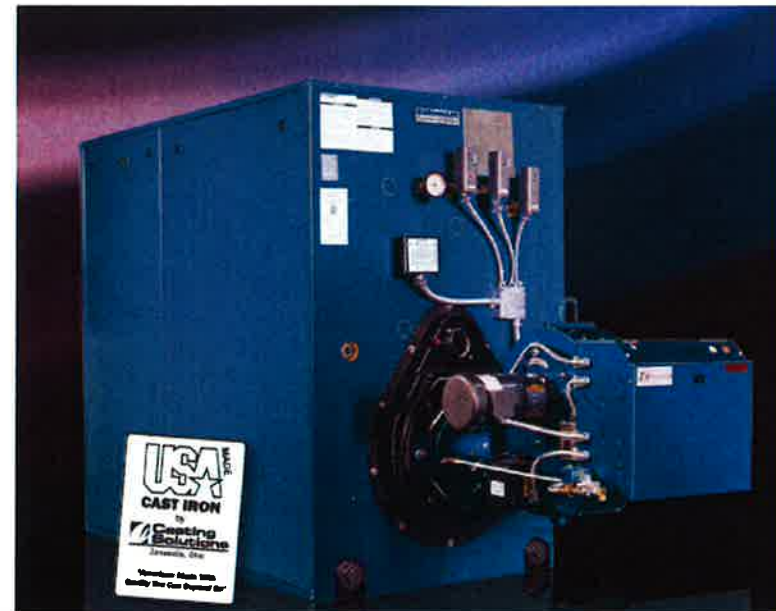
- Currently Open Hole in Ceiling

### Piping & Valve Insulation

- Insulation Reduces Load on Boiler

### Benefits:

- Reduces Cost of Capital Project
- Construction will Not Interfere with Capital Project
- The New Boiler Will Replace the Old Steam Boiler which is near the end of its useful life.



## Controls / DDC Upgrades

### **New Front End Control (DDC)**

### **Add Wireless Controls to Remaining Hot Water Unit Vents**

- (15) Unit Vents at the H.S. North Wing
- (13) Unit Vents to the H.S. South Wing

### **Add 5 Exhaust Fans to DDC System**

- Boys Locker Room, Girls Locker Room, Weight Rooms, Misc Toilets

### **Add HW Pumps VFDs to DDC System**

- (2) 3HP Pumps (99 Wing)
- (2) 5HP Pumps (68 Wing)



# Other Energy Savings Conservation Measures

## Walk-In Freezer/Cooler Controls

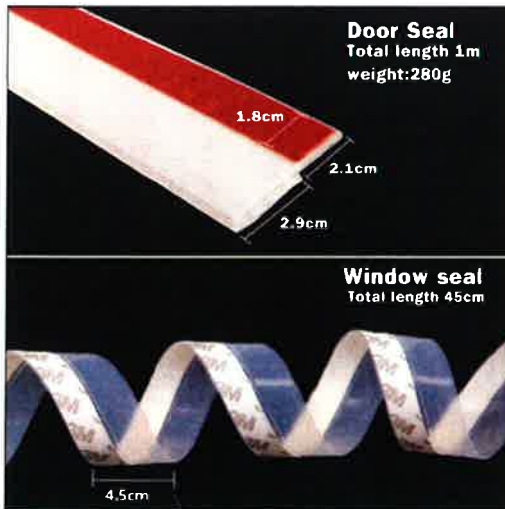
-In Kitchen Areas

## Programmable Thermostat

-Bus Garage

## Air Sealing & Weather Stripping

-School & Bus Garage



# Project Paybacks & Costs

PROJECT PAYBACKS / COST BREAKOUT

## SALEM CSD FACILITY IMPROVEMENT MEASURES

FIM #	Facility	Facility Improvement Measure	Implementation Price	Energy Savings	Associated Savings	Estimated Utility Incentives	Simple Payback	Net Payback
1	School Buildings	Interior Lighting Upgrades	\$308,817	\$11,599	\$2,380	\$15,550	22.1	21.0
2	Bus Garage	Interior Lighting Upgrades	\$4,552	\$333	\$51	\$236	11.9	11.2
3	School Buildings	Exterior Lighting Upgrades	\$28,669	\$1,330	\$374	\$2,779	16.8	15.2
4	Bus Garage	Exterior Lighting Upgrades	\$5,340	\$321	\$81	\$630	13.3	11.7
5	School Buildings	Lighting Occupancy Controls	\$91,027	\$2,107	\$0	\$3,750	43.2	41.4
6	School Buildings	Provide Combustion Air Duct & Damper	\$24,723	\$3,281	\$0	\$0	7.5	7.5
7	School Buildings	Piping & Valve Insulation	\$49,963	\$3,601	\$0	\$0	13.9	13.9
8	School Buildings	Air Sealing & Weather-stripping	\$32,559	\$2,270	\$0	\$0	14.3	14.3
9	Bus Garage	Air Sealing & Weather-stripping	\$8,722	\$637	\$0	\$0	13.7	13.7
10	School Buildings	Walk-In Freezer/Cooler Controls	\$14,878	\$660	\$0	\$0	22.6	22.6
11	Bus Garage	Install Programmable Thermostat	\$470	\$2,678	\$0	\$0	0.2	0.2
12	School Buildings	Control System Upgrades	\$200,863	\$12,799	\$0	\$0	15.7	15.7
13	School Buildings	Install Oil Fired Non-Condensing HW Boiler	\$262,403	\$14,555	\$0	\$0	18.0	18.0
		<b>TOTAL</b>	<b>\$1,032,986</b>	<b>\$56,171</b>	<b>\$2,886</b>	<b>\$22,945</b>	<b>18.0</b>	<b>-</b>





# Project Cash Flow / Financials

## SALEM CSD PERFORMANCE CONTRACT PROFORMA 15 YEAR CASHFLOW 18 YEAR LIFE CYCLE PROJECTION

Year	Energy Costs		Assets			Liabilities					Net Annual Benefit	Cumulative Cash Flow	
	Base Year Energy Costs	Energy Savings	Associated Savings (1)	Estimated Rebates & Incentives (2, 3)	Estimated NYSED Building Aid (4)	Total Assets	Payment (5)	Performance Assurance	Service Contract	On-Going Services (6, 7)			Total Liabilities
1	\$166,612	\$56,171	\$2,886	\$15,101	\$65,299	\$139,457	(\$90,164)	\$0	\$0	\$0	(\$90,164)	\$49,294	\$49,294
2	\$169,944	\$57,294	\$2,944	\$9,178	\$65,299	\$134,715	(\$90,164)	\$0	\$0	\$0	(\$90,164)	\$44,552	\$93,845
3	\$173,343	\$58,440	\$3,003	\$0	\$65,299	\$126,742	(\$90,164)	\$0	\$0	\$0	(\$90,164)	\$36,578	\$130,424
4	\$176,810	\$59,609	\$3,063	\$0	\$65,299	\$127,971	(\$90,164)	\$0	\$0	\$0	(\$90,164)	\$37,807	\$168,231
5	\$180,346	\$60,801	\$3,124	\$0	\$65,299	\$129,224	(\$90,164)	\$0	\$0	\$0	(\$90,164)	\$39,061	\$207,291
6	\$183,953	\$62,017	\$3,186	\$0	\$65,299	\$130,503	(\$90,164)	\$0	\$0	\$0	(\$90,164)	\$40,339	\$247,631
7	\$187,632	\$63,257	\$3,250	\$0	\$65,299	\$131,807	(\$90,164)	\$0	\$0	\$0	(\$90,164)	\$41,643	\$289,274
8	\$191,384	\$64,522	\$3,315	\$0	\$65,299	\$133,137	(\$90,164)	\$0	\$0	\$0	(\$90,164)	\$42,973	\$332,247
9	\$195,212	\$65,813	\$0	\$0	\$65,299	\$131,112	(\$90,164)	\$0	\$0	\$0	(\$90,164)	\$40,949	\$373,196
10	\$199,116	\$67,129	\$0	\$0	\$65,299	\$132,428	(\$90,164)	\$0	\$0	\$0	(\$90,164)	\$42,265	\$415,461
11	\$203,099	\$68,472	\$0	\$0	\$65,299	\$133,771	(\$90,164)	\$0	\$0	\$0	(\$90,164)	\$43,608	\$459,068
12	\$207,161	\$69,841	\$0	\$0	\$65,299	\$135,141	(\$90,164)	\$0	\$0	\$0	(\$90,164)	\$44,977	\$504,045
13	\$211,304	\$71,238	\$0	\$0	\$65,299	\$136,537	(\$90,164)	\$0	\$0	\$0	(\$90,164)	\$46,374	\$550,419
14	\$215,530	\$72,663	\$0	\$0	\$65,299	\$137,962	(\$90,164)	\$0	\$0	\$0	(\$90,164)	\$47,799	\$598,217
15	\$219,840	\$74,116	\$0	\$0	\$65,299	\$139,415	(\$90,164)	\$0	\$0	\$0	(\$90,164)	\$49,252	\$647,469
16	\$224,237	\$75,598	\$0	\$0	\$0	\$75,598	\$0	\$0	\$0	\$0	\$0	\$75,598	\$723,067
17	\$228,722	\$77,110	\$0	\$0	\$0	\$77,110	\$0	\$0	\$0	\$0	\$0	\$77,110	\$800,178
18	\$233,296	\$78,652	\$0	\$0	\$0	\$78,652	\$0	\$0	\$0	\$0	\$0	\$78,652	\$878,830
Total	\$1,202,744	\$24,770	\$24,279	\$979,490	\$2,231,284	(\$1,352,454)	\$0	\$0	\$0	(\$1,352,454)	\$878,830	\$878,830	

### ASSUMPTIONS

Total Implementation Cost:	(\$1,032,986)	Total Estimated Utility Incentives:	\$22,945	Cumulative Savings:	\$878,830
Other Costs(Construction Interest):	(\$34,077)	Construction Period Escrow Interest (10):	\$1,334	Net Present Value:	\$637,838
Net Financed Investment:	(\$1,067,063)	State Aid/Medicaid Reimbursement Rate:	80.1%	Percent of Utility Savings:	33.7%
Interest Rate (8):	3.25%	Effective Aid Rate (11):	72.4%	Guarantee Period(lyrs):	3
Financial Term in Years:	15	Service Inflation Rate:	2%		
Annual Payment:	(\$90,164)	Energy Inflation Rate:	2%		
Simple Payback (years) (9):	18.0	Operational Savings Inflation Rate:	2%		





## Questions & Answers



Thank You!