Sachem Central School District
March 2015

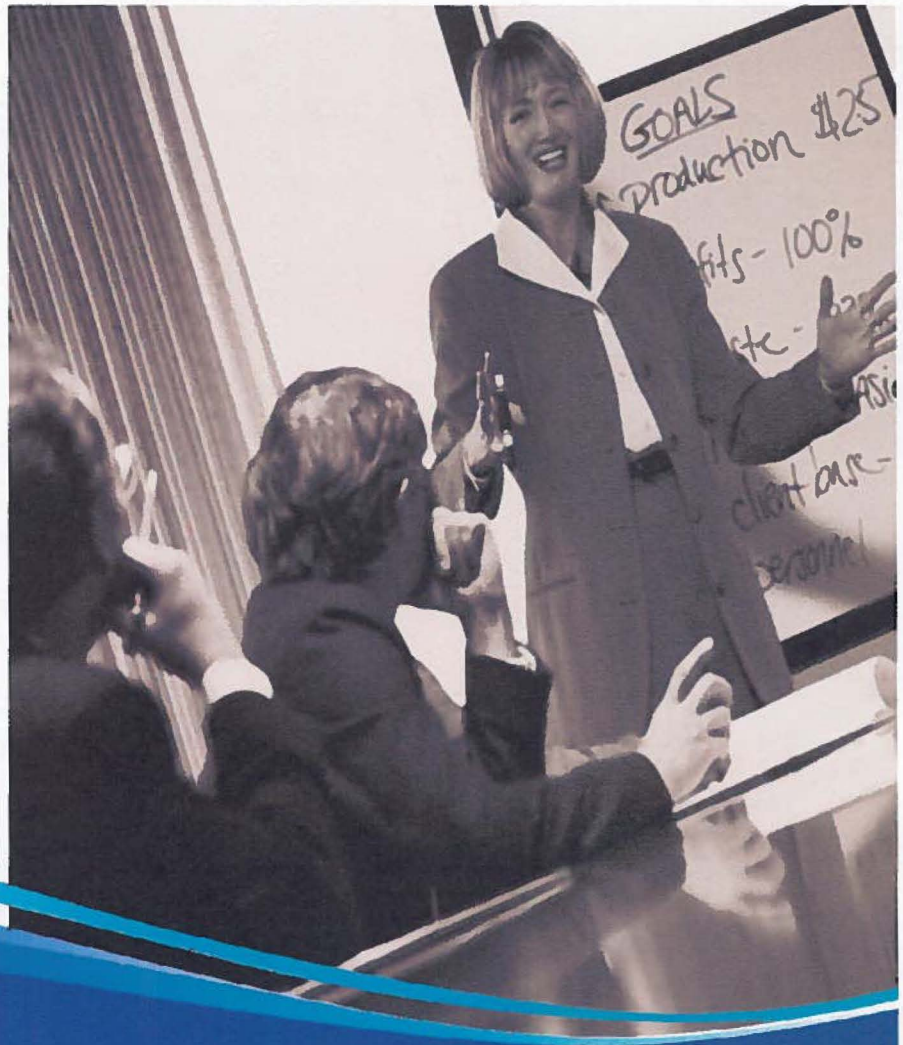
An Energy Conservation Plan

Johnson Controls

Agenda

- Project Overview
- Energy Conservation Measures
- Cost and Savings Summary
- Johnson Controls Qualifications
- Next Steps
- Questions and Answers

Project Overview



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Project Overview

Energy Performance Contracting is:

An agreement that allows school districts to take budgeted utility and operational costs and reallocate them into energy saving capital Improvements without the need for Increased Taxes.

Annual District Energy Savings: **$1,202,673 - 32%**

Project Cost: **$21,677,175**

Facility Improvement Measures (FIM) : **18**

Payback Period: **17.9 years**

Savings Guarantee: **100%**

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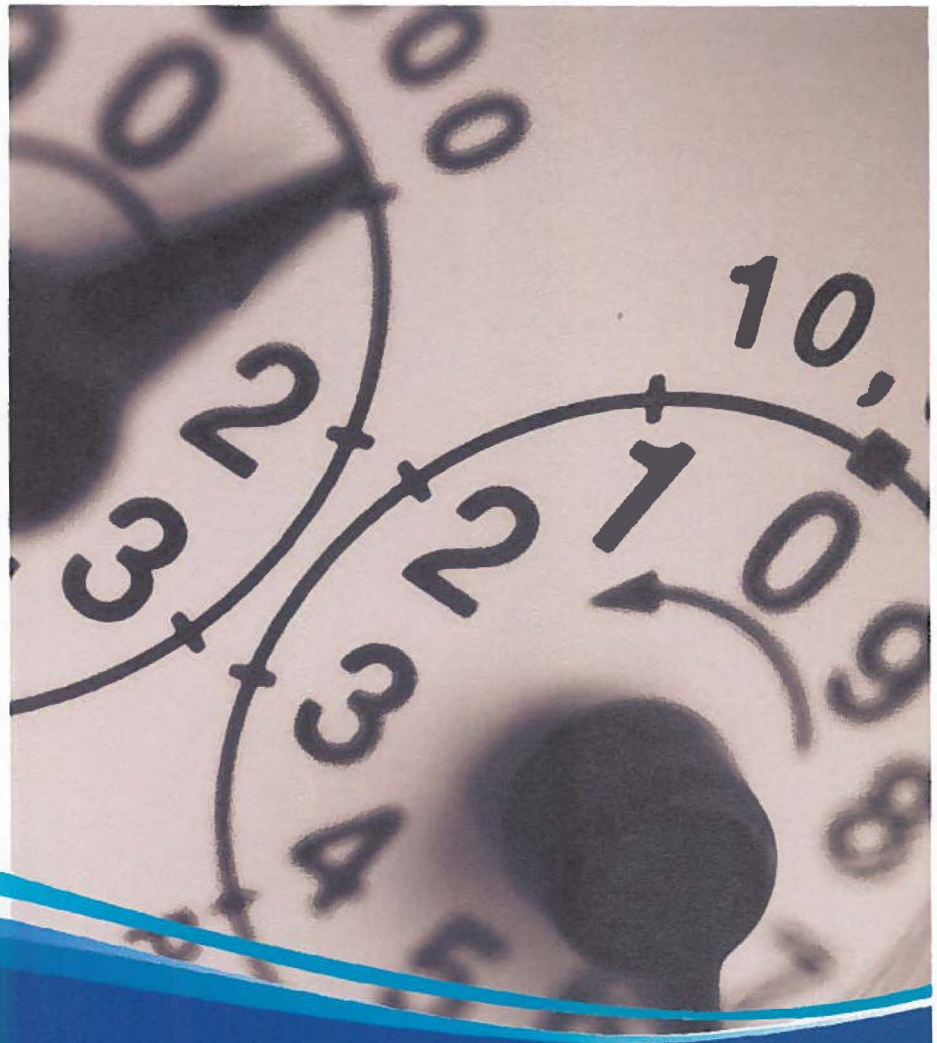
Energy Conservation Measures



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Energy Conservation Measures – Lighting Retrofits & Exterior Lighting

- Total new LED Fixtures – exteriors and some auditoriums: 1,182
- Retrofit 2x2 u-Tube with Reflector: 534
- Relamp fixture with LED Lamp: 155 (High School East)
- Relamp wall wash fixture with Biax Lamp: 172

Existing Lighting

Annual Savings: $133,347

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Energy Conservation Measures – Energy Management System

- State of the Art DDC Control – Internet based system (High School East)
- Temperature Setback, Optimal Start, Exhaust Fan Control
- Demand Controlled Ventilation – Gyms and Auditoriums at High/Middle Schools

District Wide Energy Management System

Annual Savings: $64,545

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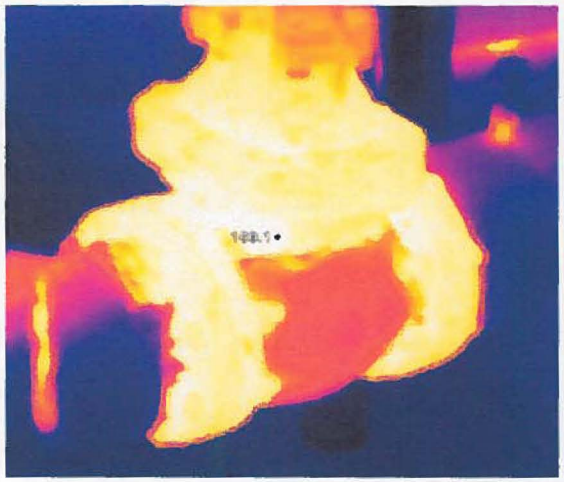
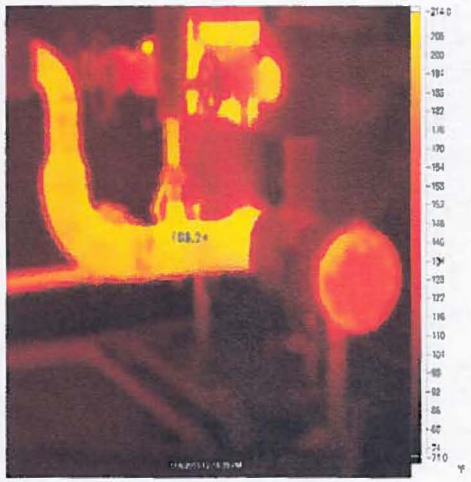
Energy Conservation Measures – Pipe and Valve Insulation

- Pipe and Valve insulation in all the buildings.
- All Areas in unconditioned spaces (per SED standards).

Existing Un-insulated Heating Distribution System





Annual Savings: $27,420

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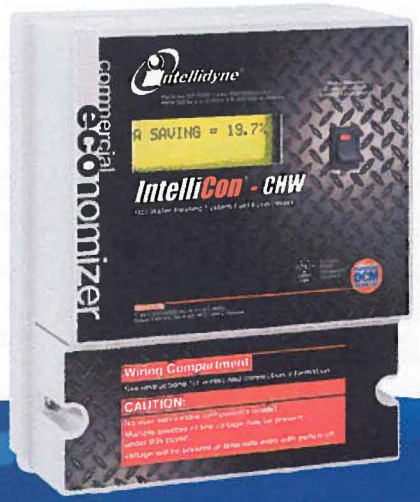
Energy Conservation Measures – Burner Controllers

- Intellidyne Boiler, Domestic Hot Water Heater and Furnace Controllers.
- A microprocessor-based fuel-saving control for commercial hot-water heating systems.

Building	Boiler Controllers	Gas Fired RTU Furnace Controllers	DHW Controllers
Sachem High School North	5	1	0
Sagamore Middle School	4	0	0
Samoset Middle School	4	15	0
Seneca Middle School	4	0	0
Sequoya Middle School	4	1	0
Cayuga Elementary School	4	0	0
Chippewa Elementary School	3	0	0
Gatelot Elementary School	4	0	0
Grundy Elementary School	4	0	0
Hiawatha Elementary School	4	0	0
Lynwood Elementary School	4	0	0
Merrimac Elementary School	4	0	0
Nokomis Elementary School	4	0	0
Tamarac Elementary School	4	0	0
Tecumseh Elementary School	4	0	0
Waverly Elementary School	4	0	0
Wenonah Elementary School	4	0	0
Administration Annex	0	0	1
Transportation Building	0	2	1
Total	68	19	2



Annual Savings: $25,759

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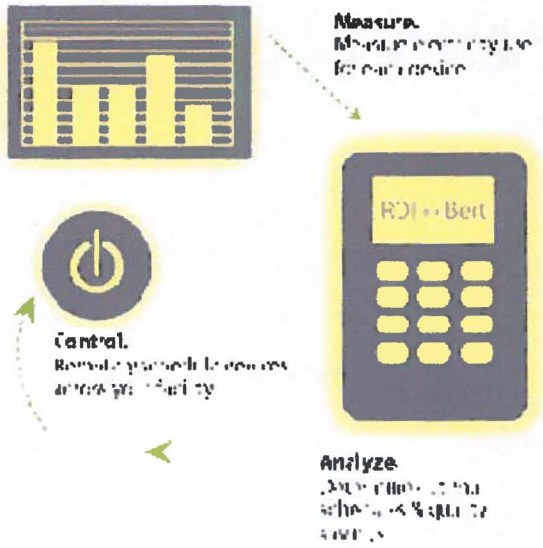
Energy Conservation Measures – Plug Load Controllers

- Over 2,429 Plug Load Controllers
- System uses existing Wi-Fi network communicates to an energy management user interface



Annual Savings: $65,289

Energy Conservation Measures – Photovoltaic Electric Generation

- 2,194 kW Photovoltaic Electric Generation System Districtwide.

Building	kW DC
Cayuga Elementary School	224
Grundy Elementary School	263
Marrimac Elementary School	179
Tecumseh Elementary School	213
Chippewa Elementary School	207
Hiawatha Elementary School	196
Nokomis Elementary School	213
Lynwood Elementary School	190
Tamarac Elementary School	246
Wenonah Elementary School	263
Total	**2,194**

Grundy ES: 263 kW

Annual Savings: $389,905

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Energy Conservation Measures – Cogeneration

- 1050 kW total Cogeneration Units at the District

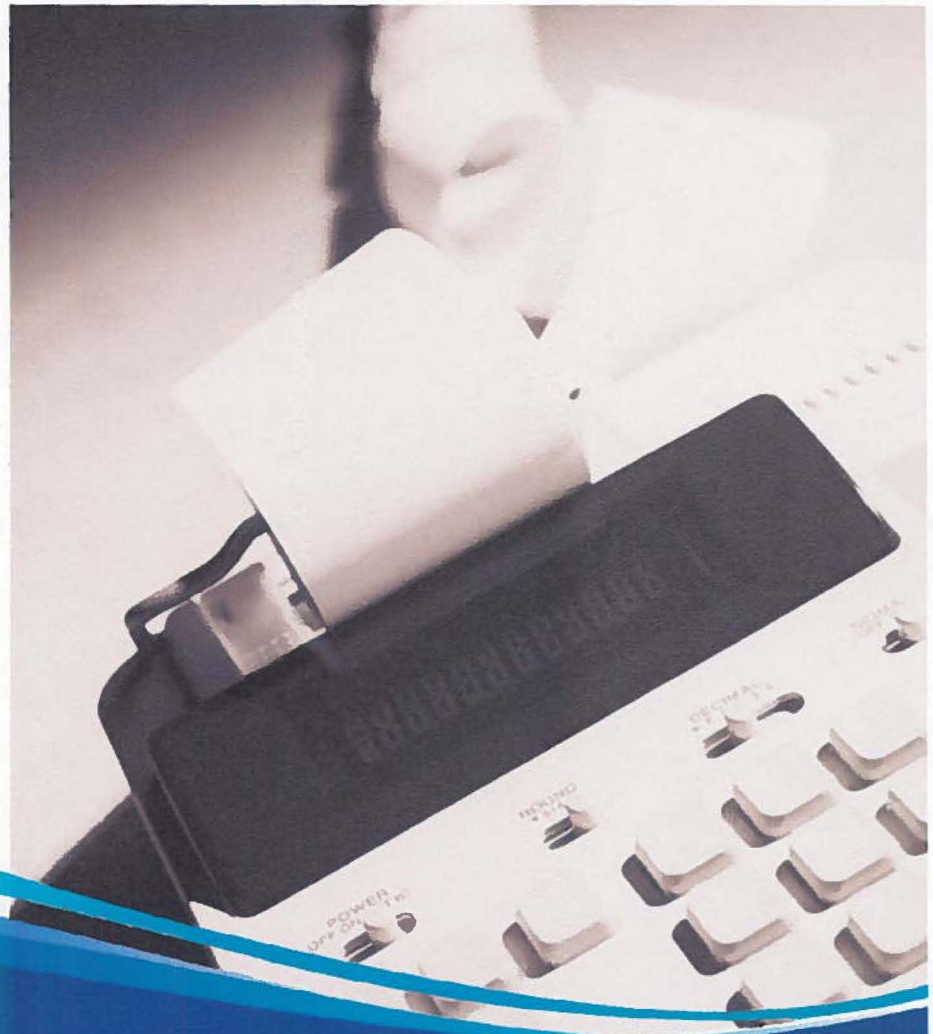
Building	Cogen Size
High School East	375 KW
High School North	300 KW
Sagamore Middle School	75 KW
Samoset Middle School	150 KW
Seneca Middle School	75 KW
Sequoya Middle School	75 KW
Total	**1050 kW**

Annual Savings: $409,060

Energy Conservation Measures - Other Measures

- Weatherization – Savings $ 5,229
- Motor Replacements – Savings $4,536
- Kitchen Hood Exhaust Fan Controls – Savings $11,462
- Water Conservation – Savings $11,876
- Fuel Catalyzer Installation – Savings $1,728
- Air Conditioning Compressor Controllers – Savings $7,841
- Energy Efficient RTU Replacement – Savings $331
- Transformers Replacements – Savings $40,894
- Refrigeration Compressor Controllers – Savings $3,220
- Refrigeration Equipment Upgrades – Savings $230

Cost and Savings Summary



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Cost and Savings Summary

Positive cash flow: $14,139,113

Yr	NYSED Building Aid	A1 NYSED Building Aid less non-aidable measures	A2 Annual Energy Cost With Out Savings	A3 Annual Energy Cost with Improvements	A=A2-A3 Annual Energy Savings	B Annual O&M savings	C PSEG Rebate Program	D=A1+A+B+C Total Annual Savings	E Annual Lease Payment	F Annual Service M&V Costs	D+G Annual Cash Flow	Cumulative Cash Flow
1	$1,142,203	$1,016,561	$3,713,385	$2,510,712	$1,202,673	$6,767	$30,000	**$2,256,001**	($1,800,874)	$0	$455,127	*$455,127*
2	$1,142,203	$1,016,561	$3,787,653	$2,560,927	$1,226,726	$6,767	$0	**$2,250,054**	($1,800,874)	$0	$449,180	*$904,306*
3	$1,142,203	$1,016,561	$3,863,406	$2,612,145	$1,251,261	$6,767	$0	**$2,274,589**	($1,800,874)	$0	$473,714	*$1,378,021*
4	$1,142,203	$1,016,561	$3,940,674	$2,664,388	$1,276,286	$6,767	$0	**$2,299,614**	($1,800,874)	$0	$498,740	*$1,876,761*
5	$1,142,203	$1,016,561	$4,019,488	$2,717,676	$1,301,812	$6,767	$0	**$2,325,139**	($1,800,874)	$0	$524,265	*$2,401,026*
6	$1,142,203	$1,016,561	$4,099,877	$2,772,029	$1,327,848	$6,767	$0	**$2,351,176**	($1,800,874)	$0	$550,302	*$2,951,328*
7	$1,142,203	$1,016,561	$4,181,875	$2,827,470	$1,354,405	$6,767	$0	**$2,377,733**	($1,800,874)	$0	$576,859	*$3,528,186*
8	$1,142,203	$1,016,561	$4,265,512	$2,884,019	$1,381,493	$6,767	$0	**$2,404,821**	($1,800,874)	$0	$603,947	*$4,132,133*
9	$1,142,203	$1,016,561	$4,350,823	$2,941,700	$1,409,123	$6,767	$0	**$2,432,451**	($1,800,874)	$0	$631,577	*$4,763,710*
10	$1,142,203	$1,016,561	$4,437,839	$3,000,534	$1,437,306	$6,767	$0	**$2,460,633**	($1,800,874)	$0	$659,759	*$5,423,469*
11	$1,142,203	$1,016,561	$4,526,596	$3,060,544	$1,466,052	$6,767	$0	**$2,489,379**	($1,800,874)	$0	$688,505	*$6,111,974*
12	$1,142,203	$1,016,561	$4,617,128	$3,121,755	$1,495,373	$6,767	$0	**$2,518,700**	($1,800,874)	$0	$717,826	*$6,829,800*
13	$1,142,203	$1,016,561	$4,709,470	$3,184,190	$1,525,280	$6,767	$0	**$2,548,608**	($1,800,874)	$0	$747,734	*$7,577,534*
14	$1,142,203	$1,016,561	$4,803,660	$3,247,874	$1,555,786	$6,767	$0	**$2,579,113**	($1,800,874)	$0	$778,239	*$8,355,773*
15	$1,142,203	$1,016,561	$4,899,733	$3,312,832	$1,586,901	$6,767	$0	**$2,610,229**	($1,800,874)	$0	$809,355	*$9,165,128*
16	$0	$0	$4,997,728	$3,379,088	$1,618,640	$6,767	$0	**$1,625,407**	$0	$0	$1,625,407	*$10,790,535*
17	$0	$0	$5,097,682	$3,446,670	$1,651,012	$6,767	$0	**$1,657,779**	$0	$0	$1,657,779	*$12,448,314*
18	$0	$0	$5,199,636	$3,515,603	$1,684,033	$6,767	$0	**$1,690,800**	$0	$0	$1,690,800	*$14,139,113*
Total	***$17,133,043***	***$15,248,408***	***$79,512,165***	***$53,760,155***	***$25,752,010***	***$121,806***	***$30,000***	***$41,152,224***	*($27,013,111)*	***$0***	*$14,139,113*	*$14,139,113*

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Estimated Project Timeline

BOE to Authorize EPC:	January 2015
JCI to provide design criteria to ECG:	April 2015
ECG to prepare submission to SED:	June–July 2015
SED Approval & Financing:	April 2016
Construction commences:	May 2016
Construction substantial completion:	November 2017
Final Completion:	**December 2017**