

# Self Funded Project Scope & Estimated Cost/Savings

## Annual Cash Flow Analysis

Year	Annual Energy Savings	Annual Operational Savings	Total Annual Savings	Annual Project Costs	Annual Cash Flow	Cumulative Cash Flow
Installation	\$0	\$0	\$0	\$0	\$0	\$0
1	\$101,431	\$1,800	\$103,231	91,211	\$12,020	\$12,020
2	\$104,778	\$1,854	\$106,632	91,211	\$15,421	\$27,442
3	\$108,236	\$1,910	\$110,146	91,211	\$18,935	\$46,376
4	\$111,808	\$1,967	\$113,775	91,211	\$22,564	\$68,940
5	\$115,497	\$2,026	\$117,523	91,211	\$26,312	\$95,252
6	\$119,309		\$119,309	91,211	\$28,098	\$123,350
7	\$123,246		\$123,246	91,211	\$32,035	\$155,385
8	\$127,313		\$127,313	91,211	\$36,102	\$191,488
9	\$131,514		\$131,514	91,211	\$40,304	\$231,791
10	\$135,854		\$135,854	91,211	\$44,644	\$276,435
11	\$140,338		\$140,338	91,211	\$49,127	\$325,561
12	\$144,969		\$144,969	91,211	\$53,758	\$379,319
13	\$149,753		\$149,753	91,211	\$58,542	\$437,861
14	\$154,695		\$154,695	91,211	\$63,484	\$501,345
15	\$159,799		\$159,799	91,211	\$68,589	\$569,933
16	\$165,073		\$165,073	\$91,211	\$73,862	\$643,795
Totals	\$2,093,612	\$9,556	\$2,103,169	\$1,459,373	\$643,795	\$643,795



# Self Funded Project Scope & Estimated Cost/Savings

B	Building	Facility Improvement Measures "FIM" Description	Simple Payback	Selling Price	Total Annual Operational Savings	Total Annual Energy Savings	Total Annual Savings
	Campus High School						
X		Lighting					
X		Replace MH with T5 Fluorescent-Gym 1(25-400W)(13-42W CFL Pendant)	6.98	\$3,295		\$472	\$472
X		Replace MH with T5 Fluorescent-Gym 2(36-400W)	4.34	\$4,493	\$200	\$836	\$1,036
X		Replace MH with T5 Fluorescent-Poo(8-400W)	5.29	\$1,048		\$198	\$198
X		Replace MH with T5 Fluorescent-Cafeteria(20-400W)	7.21	\$2,696		\$374	\$374
X		Replace MH with T5 Fluorescent-Labs(100-400W)	7.24	\$12,879		\$1,778	\$1,778
X		Water Conservation	7.99	\$64,654	\$100	\$7,987	\$8,087
X		Kitchen Equipment	3.25	\$864		\$266	\$266
X		Vending Misers	7.84	\$2,299		\$293	\$293
X		Ice Machine Measures	5.74	\$995		\$173	\$173
		Liquid pool Cover					
X		Pool Solar Heater & Blanket	10.87	\$93,600		\$8,607	\$8,607
X		Weatherization(Door Weatherstripping)	9.19	\$33,912		\$3,691	\$3,691
	Haysville Middle Sch						
X		HVAC Renovation					
X		RTU Replacement	21.14	\$247,680		\$11,716	\$11,716
		Lighting					
X		Premium T8 Lighting					
X		Specular Reflectors	11.92	\$62,346		\$5,231	\$5,231
X		Replace MH with T5 Fluorescent-Main Gym(19-400W)	3.61	\$2,396	\$200	\$464	\$664
X		Replace MH with T5 Fluorescent-Aux Gym(20-400W)	4.31	\$2,696	\$200	\$426	\$626
X		LED Exit Lights					
X		Occupancy Sensors					
X		Water Conservation	15.79	\$59,781	\$100	\$3,687	\$3,787
X		Kitchen Equipment	5.29	\$1,329		\$251	\$251
X		Vending Misers	5.54	\$991		\$179	\$179
X		Ice Machine Measures	5.82	\$995		\$171	\$171
X		Weatherization(Door Weatherstripping)	9.82	\$8,640		\$880	\$880
	Haysville West Mid Sch						
X		Lighting					
X		Replace MH with T5 Fluorescent(49&22-250W seldom used)					
X		Replace 2UL T8 with Straight T8 Fluorescent(100-Corr.)	12.51	\$11,880		\$950	\$950
X		Water Conservation	10.10	\$34,074	\$100	\$3,273	\$3,373
X		Kitchen Equipment	2.88	\$739		\$257	\$257
X		Vending Misers	7.12	\$753		\$106	\$106



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B	Building	Facility Improvement Measures "Fill" Description	Simple Payback	Selling Price	Total Annual Operational Savings	Total Annual Energy Savings	Total Annual Savings
X	Admin Office	Cooling for Server Room		\$3,573			
X		Expand BAS	12.66	\$15,458		\$1,221	\$1,221
X		Water Conservation(See Below)					
X		Weatherization(Door Weatherstripping)	9.60	\$2,160		\$225	\$225
X	Service Center	Overhead Radiant Heating	11.63	\$181,440		\$15,597	\$15,597
X		Parking Lot Lights on BAS		\$1,440			
X	Grand Lane						
X		RTU Replacement	25.36	\$40,320		\$1,590	\$1,590
X		Expand BAS	8.69	\$20,081		\$2,312	\$2,312
X		Parking Lot Lights on BAS		\$1,440			
X		Lighting					
X		Premium T8 Lighting					
X		Specular Reflectors	11.60	\$13,432	\$100	\$1,058	\$1,158
X		LED Exit Lights					
X		Occupancy Sensors					
X		Daylighting					
X		Water Conservation	12.16	\$8,623	\$100	\$609	\$709
X		Vending Misers	5.71	\$766		\$134	\$134
X		Weatherization(Door Weatherstripping)	6.04	\$6,480		\$1,072	\$1,072
X	Learning Center						
X		Expand BAS	20.24	\$15,322		\$757	\$757
X		Water Conservation(See Above)					
X		Weatherization(Door Weatherstripping)	6.05	\$1,512		\$250	\$250
X	Freeman Elementary						
X		Lighting					
X		Water Conservation	12.64	\$27,884	\$100	\$2,106	\$2,206
X		Kitchen Equipment	7.18	\$664		\$93	\$93
X		Weatherization(Door Weatherstripping)	9.62	\$3,888		\$404	\$404
X	Nelson Elementary						
X		Lighting					
X		Replace MH with T5 Fluorescent(17-400W)(13-42W CFL Pentam)	4.79	\$2,097		\$438	\$438
X		Water Conservation	8.16	\$29,921	\$100	\$3,567	\$3,667
X		Kitchen Equipment	2.65	\$664		\$251	\$251
X		Weatherization(Door Weatherstripping)	9.45	\$9,720		\$1,029	\$1,029



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B	Building	Facility Improvement Measures "FIM" Description	Simple Payback	Selling Price	Total Annual Operational Savings	Total Annual Energy Savings	Total Annual Savings
X	Oatville Elementary	RTU Replacement Lighting	22.81	\$46,080		\$2,020	\$2,020
X		Water Conservation	15.79	\$29,852	\$100	\$1,791	\$1,891
X		Kitchen Equipment	2.65	\$664		\$251	\$251
X		Weatherization(Door Weatherstripping)	7.65	\$5,400		\$706	\$706
	Prairie Elementary	Lighting					
X		Replace MH with T5 Fluorescent Library(12-250W)	10.43	\$1,659		\$159	\$159
X		Water Conservation	11.61	\$25,831	\$100	\$2,125	\$2,225
X		Kitchen Equipment	9.66	\$864		\$89	\$89
X		Weatherization(Door Weatherstripping)	9.58	\$5,616		\$586	\$586
	Rex Elementary	Expand BAS	17.05	\$16,337		\$958	\$958
X		Lighting					
X		Replace MH with T5 Fluorescent(17-400W)	4.79	\$2,097		\$438	\$438
X		Water Conservation	13.63	\$27,160	\$100	\$1,993	\$1,993
X		Kitchen Equipment	3.44	\$864		\$251	\$251
X		Weatherization(Door Weatherstripping)	9.40	\$8,640		\$919	\$919
	Ruth Clark Elementary	Lighting					
X		Replace MH with T5 Fluorescent Gym(20-400W)	4.68	\$2,696	\$150	\$426	\$576
X		Replace MH with T5 FluorescentCORR(7-400W)	4.34	\$899		\$207	\$207
X		Water Conservation	24.53	\$26,460	\$50	\$1,029	\$1,079
X		Kitchen Equipment	2.42	\$200		\$83	\$83
X		Weatherization(Door Weatherstripping)	7.98	\$7,344		\$920	\$920
	Tri-City Day School	Expand BAS	36.18	\$24,998		\$691	\$691
X		Water Conservation	10.89	\$4,641		\$426	\$426
X		Weatherization(Door Weatherstripping)	3.57	\$1,728		\$484	\$484
X		Bond Origination Fee		\$72,970			
X		PDA Fees		\$104,456			
		14.14	14.14	\$1,459,373	\$1,800	\$101,431	\$103,231



**OPTION A:**

**Renovate Existing Central System:** Replace existing boiler and chiller with high efficiency modular units. Replace the two large multizone air handling units to be heating and cooling variable air volume units. Leave existing specific area AHUs as is. Replace cooling tower. Use all variable speed motors for pumps and fans. Replace piping in central plant area. Modify existing zone dampers used for local temperature control. Install augmented units similar to Option B units in areas that are receiving not enough air from central units. Verify existing duct problems via camera survey. Clean existing duct work to be reused. Outside air will be introduced to units via constant speed fan controlled by CO2 sensors in occupied spaces. Minimal required Asbestos abatement if existing duct work can be used. Individual Classroom temperature control is not possible.

Total Installed Cost: \$1,333,000  
Annual Energy Costs: \$33,800  
Annual Maintenance Costs: \$3,000  
Life of equipment: 25 year average  
Total Life Cycle Cost over 15 years: \$1,921,800

**OPTION B:**

**Split system residential high efficiency heat pump** system utilizing multiple stage (ECM motors) compressor and fans. Heat pump units will be mounted horizontally in barrel of roof cavity above lay-in ceiling and ducted to central four way diffuser near center of space; return air will be ducted to filtered return air grille at unit location. Condensing units will be either mounted on platforms on roof or on ground. Install new outside air duct to all units, either attaching to the return air duct of units or directly ducting into the spaces. Locally, exhaust all areas including code required areas and with an increased exhaust in all storage and toilets. Significant Asbestos abatement will be required. Individual classroom temperature control is possible.

Total Installed Cost: \$1,169,000  
Annual Energy Costs: \$30,900  
Annual Maintenance Costs: \$1,000  
Life of equipment: 12 year average  
Total Life Cycle Cost over 15 years: \$2,540,200 (Assume all units replaced in year 12)

**OPTION C:**

**Ground source heat pump** extended range system utilizing multiple stage (ECM motors) compressor and fans. System also includes dedicated heat pump unit inside air unit with heat recovery desiccant wheel. This system is essentially the same as Option B with exception of using vertical geothermal wells to supplement or reject heat. The water piping to be HDPE pipe installed in corner of hallways and "furred-in" with gypsum board. Install new outside air duct to all units, either attaching to the return air duct of units or directly ducting into the spaces. Locally, exhaust all areas including code required areas and with an increased exhaust in all storage and toilets. Significant Asbestos abatement will be required. Individual classroom temperature control is possible.

Total Installed Cost: \$1,803,000  
Annual Energy Costs: \$20,500  
Annual Maintenance Costs: \$3,000  
Life of equipment: 19 year average  
Total Life Cycle Cost over 15 years: \$2,179,000