This spreadsheet for use by Saginaw Public School District only

Instructions for this spreadsheet:

1) Mark which Energy Conservation Measures (ECM) to include in the project scope
   -Use any character (e.g. 'x') to indicate inclusion in the 'ECM Selector' tab, Column B 'Include in Project'
   -Clear the cell or use a space (' ') to exclude a measure
   -ECMs not marked for inclusion will be greyed-out and not included in totals

2) NOTE: Some ECMs cannot be combined with other ECMs (e.g., Merrill Park Geothermal and Merrill Park UV Upgrades + Cooling).

3) In the 'Cash Flow Analysis' tab, the cash flow can be manipulated with the following parameters:
   -To include any rebates or grant money in the financed amount, change paremeter to 'Yes'. Rebates are not included in financing by default
   -A down payment can be entered as a percentage of the total investment, less rebates (if applicable)
   -Financing Rate can be changed to a percentage value between 0% and 100%
   -Financing Term length may be entered as any whole number
   -The estimated annual increase in the Utility Rate may be entered as a percentage between 0% and 100%
   -The estimated annual increase in the cost of Operations and Maintenance (O&M) may be entered as a percentage between 0% and 100%
   -The length of the cash flow analysis may be set to 15, 20, or 25 years. Note that if the Finance Term length is longer than the Length of Cash Fl

Data presented in this sheet is confidential. DO NOT SHARE.

low Analysis, not all project cost will be included.

Put 1 Here	Energy Conservation & Facility Improvement Measures Financial Analysis	
1	**1A**	**LED Lighting Upgrades - Thompson**
1	**1B**	**LED Lighting Upgrades - Zilwaukee**
1	**1C**	**LED Lighting Upgrades - Arthur Eddy**
1	**1D**	**LED Lighting Upgrades - Herig**
1	**1E**	**LED Lighting Upgrades - Kempton**
1	**1F**	**LED Lighting Upgrades - Loomis**
1	**1G**	**LED Lighting Upgrades - Merrill Park**
1	**1H**	**LED Lighting Upgrades - Chester Miller**
1	**1I**	**LED Lighting Upgrades - Jesse Rouse**
1	**1J**	**LED Lighting Upgrades - Stone**
1	**1K**	**LED Lighting Upgrades - Doerr/ECC**
1	**1L**	**LED Lighting Upgrades - Success Academy**
1	**1M**	**LED Lighting Upgrades - Maint/Trans**
1	**1N**	**LED Lighting Upgrades - Prof Dev**
1	**1O**	**LED Lighting Upgrades - Service Center 2**
1	**1P**	**LED Lighting Upgrades - BoE**
	2A	***Water Efficiency - Thompson***
	2B	***Water Efficiency - Zilwaukee***
	2C	***Water Efficiency - Arthur Eddy***
	2D	***Water Efficiency - Herig***
	2E	***Water Efficiency - Kempton***
	2F	***Water Efficiency - Loomis***
	2G	***Water Efficiency - Merill Park***
	2H	***Water Efficiency - Chester Miller***
	2I	***Water Efficiency - Jesse Rouse***
	2J	***Water Efficiency - Stone***
	2K	***Water Efficiency - Doerr/ECC***
	2L	***Water Efficiency - Success Academy***
	2M	***Water Efficiency - Maint/Trans/Annex***
	2N	***Water Efficiency - Prof Dev***
	3A	***RCx - Thompson***
	3B	***RCx - Zilwaukee***
	3C	***RCx - Arthur Eddy***
	3D	***RCx - Herig***
	3E	***RCx - Kempton***
	3F	***RCx - Loomis***
	3G	***RCx - Jesse Rouse***
	3H	***RCx - Stone***
	3I	***RCx - Success Academy***
	3J	***RCx - Saginaw Arts & Sciences Academy****
	3K	***RCx - Middle School****

	3L	*RCx - United High School***
	3M	*RCx - Handley***
	4	*Replace 18 RTUs + 1 MAU & 2001 DHW - Arthur Eddy*
	5	*HVAC Upgrade - Herig*
	6A	*Boiler Plant Upgrades - Merrill Park*
	6B	*Boiler Plant Upgrades - Doerr/ECC*
	7	*Geothermal + DHW + BAS - Merrill Park*
	8A	*UV Upgrades + Cooling + BAS + DHW - Merrill Park*
	8B	*UV Upgrades + Cooling + BAS + DHW - Chester Miller*
	8C	*UV Upgrades + Cooling - Kempton*
	8D	*UV Upgrades + Cooling - Stone*
	8E	*UV Upgrades + AHUs + Cooling + BAS - Doerr/ECC*
	9A	*Cooling Add - Jesse Rouse*
	9B	*Cooling Add - Zilwaukee*
	10A	*Solar: United HS*
	10B	*Solar: Saginaw Career Complex (SCC)*
	10C	*Solar: Handley ES*
	10D	*Integrated Solar: Arthur Eddy ES*
	10E	*Integrated Solar: Maintenance Building*
	11A	*Roof Replacement - Arthur Eddy*
	11B	*Roof Replacement - Maintenance*
	12	*Gym HVAC + Lighting Upgrades - Prof Dev*
	13	*Repair Allowance*
		TOTAL:

Year
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2
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Total

v Public School District - Project Menu

Measure Investment			Annual Savings	
MIN	GMAX	Utility Rebate	Utility	O&M
$ 289,826	$ 329,043	$ 39,683	$ 30,953	$ 12,381
$ 139,310	$ 158,160	$ 16,426	$ 11,170	$ 4,468
$ 228,625	$ 259,560	$ 22,095	$ 15,024	$ 6,010
$ 143,438	$ 162,847	$ 18,686	$ 16,398	$ 6,559
$ 113,436	$ 128,785	$ 13,256	$ 14,552	$ 5,821
$ 150,444	$ 170,800	$ 11,538	$ 7,414	$ 2,966
$ 202,820	$ 230,264	$ 7,268	$ 6,313	**$ 2,525**
$ 62,655	$ 71,133	$ 8,244	$ 7,190	**$ 2,876**
$ 82,579	$ 93,753	$ 10,726	$ 9,369	**$ 3,747**
$ 125,154	$ 142,089	$ 12,836	$ 11,155	**$ 4,462**
$ 66,495	$ 75,493	$ 5,288	$ 6,329	**$ 2,532**
$ 123,118	$ 139,778	$ 9,279	$ 10,331	**$ 4,132**
$ 38,683	$ 43,918	$ 5,367	$ 4,741	$ 1,896
$ 37,678	$ 42,777	$ 1,774	$ 1,589	$ 556
$ 32,220	$ 36,579	$ 13,058	$ 11,183	$ 3,914
$ 45,408	$ 51,552	$ 8,209	$ 7,133	$ 2,497
$ 49,143	*$ 53,690*	*$ -*	*$ 2,519*	*$ 301*
$ 26,836	*$ 29,319*	*$ -*	*$ 1,303*	*$ 162*
$ 32,398	*$ 35,396*	*$ -*	*$ 1,493*	*$ 198*
$ 25,131	*$ 27,456*	*$ -*	*$ 1,669*	*$ 150*
$ 12,452	*$ 13,604*	*$ -*	*$ 1,343*	*$ 67*
$ 20,415	*$ 22,304*	*$ -*	*$ 1,738*	*$ 116*
$ 22,309	*$ 24,373*	*$ -*	*$ 1,614*	*$ 135*
$ 13,393	*$ 14,632*	*$ -*	*$ 1,609*	*$ 72*
$ 14,033	*$ 15,331*	*$ -*	*$ 1,098*	*$ 77*
$ 15,969	*$ 17,447*	*$ -*	*$ 1,769*	*$ 90*
$ 17,673	*$ 19,308*	*$ -*	*$ 724*	*$ 102*
$ 19,720	*$ 21,544*	*$ -*	*$ 940*	*$ 114*
$ 8,935	*$ 9,761*	*$ -*	*$ 114*	*$ 43*
$ 9,371	*$ 10,238*	*$ -*	*$ 342*	*$ 46*
$ 73,037	*$ 88,648*	*$ 700*	*$ 12,026*	*$ -*
$ 23,154	*$ 28,103*	*$ -*	*$ 4,490*	*$ -*
$ 42,376	*$ 51,434*	*$ -*	*$ 7,674*	*$ -*
$ 26,035	*$ 31,599*	*$ -*	*$ 3,282*	*$ -*
$ 23,541	*$ 28,573*	*$ -*	*$ 2,122*	*$ -*
$ 33,929	*$ 41,181*	*$ 350*	*$ 4,374*	*$ -*
$ 25,072	*$ 30,431*	*$ -*	*$ 2,171*	*$ -*
$ 26,536	*$ 32,208*	*$ -*	*$ 2,396*	*$ -*
$ 27,438	*$ 33,303*	*$ -*	*$ 4,715*	*$ -*
$ 124,159	*$ 150,696*	*$ -*	*$ 16,563*	*$ -*
$ 62,405	*$ 75,744*	*$ -*	*$ 8,101*	*$ -*

$ 90,103	$ 109,361	$ -	$ 11,904	$ -
$ 29,623	$ 35,955	$ -	$ 3,600	$ -
$ 929,230	$ 1,015,206	$ 10,775	$ 7,456	$ 7,500
$ 849,174	$ 927,743	$ 2,400	$ 545	$ 4,500
$ 498,427	$ 544,544	$ 4,000	$ 2,749	$ 5,000
$ 573,315	$ 626,361	$ 6,275	$ 2,918	$ 4,000
$ 2,875,896	$ 3,141,983	$ 1,182,850	$ (2,219)	$ 13,850
$ 1,308,521	$ 1,429,590	$ 8,367	$ (14,510)	$ 9,850
$ 788,242	$ 861,173	$ 6,932	$ (14,697)	$ 8,250
$ 1,374,366	$ 1,501,527	$ 4,000	$ (14,382)	$ 6,000
$ 1,202,082	$ 1,313,303	$ 3,000	$ (21,663)	$ 5,200
$ 1,020,612	$ 1,115,042	$ 5,600	$ (11,049)	$ 8,600
$ 510,198	$ 557,403	$ 3,400	$ (30,762)	$ -
$ 2,116,497	$ 2,312,323	$ 3,000	$ (12,700)	$ -
$ 1,518,815	$ 1,684,029	$ 673,612	$ 57,501	$ -
$ 1,319,650	$ 1,441,748	$ 576,699	$ 49,758	$ -
$ 515,068	$ 562,724	$ 225,090	$ 14,736	$ -
$ 1,263,849	$ 1,380,784	$ 1,013,353	$ 45,007	$ -
$ 476,421	$ 520,502	$ 358,992	$ 15,980	$ -
$ 1,564,240	$ 1,728,896	$ -	$ -	$ -
$ 447,661	$ 494,783	$ -	$ -	$ -
$ 218,867	$ 229,039	$ -	$ (4,893)	$ -
$ 250,000	$ 350,000	$ -	$ -	$ -
$ 1,881,890	**$ 2,136,530**	**$ 203,733**	**$ 170,844**	**$ 67,342**

Energy Savings	O&M Savings	Total Savings	Inventives	Financed Project Cost
$170,844	$67,342	$238,186	($203,733)	($96,906)
$175,969	$69,363	$245,332		$106,827
$181,248	$71,443	$252,692		$106,827
$186,686	$73,587	$260,273		$106,827
$192,286	$75,794	$268,081		$106,827
$198,055	$78,068	$276,123		$106,827
$203,997	$80,410	$284,407		$106,827
$210,116	$82,823	$292,939		$106,827
$216,420	$85,307	$301,727		$106,827
$222,913	$87,866	$310,779		$106,827
$229,600	$90,502	$320,102		$106,827
$236,488	$93,218	$329,705		$106,827
$243,583	$96,014	$339,597		$106,827
$250,890	$98,894	$349,784		$106,827
$258,417	$101,861	$360,278		$106,827
$266,169	$104,917	$371,086		$106,827
$274,154	$108,065	$382,219		$106,827
$282,379	$111,307	$393,686		$106,827
$290,850	$114,646	$405,496		$106,827
$299,576	$118,085	$417,661		$106,827
$4,590,640	**$1,809,513**	**$6,400,153**	**($203,733)**	**$1,932,797**

Total	Simple Payback (years)
$ 43,334	5.8 - 6.7
$ 15,637	7.9 - 9.1
$ 21,034	9.8 - 11.3
$ 22,957	5.4 - 6.3
$ 20,373	4.9 - 5.7
$ 10,380	13.4 - 15.3
$ 8,838	22.1 - 25.2
$ 10,066	5.4 - 6.2
$ 13,116	5.5 - 6.3
$ 15,617	7.2 - 8.3
$ 8,861	6.9 - 7.9
$ 14,463	7.9 - 9.0
$ 6,637	5.0 - 5.8
$ 2,145	16.7 - 19.1
$ 15,097	1.3 - 1.6
$ 9,630	3.9 - 4.5
$ 2,820	*17.4 - 19.0*
$ 1,465	*18.3 - 20.0*
$ 1,691	*19.2 - 20.9*
$ 1,819	*13.8 - 15.1*
$ 1,410	*8.8 - 9.7*
$ 1,854	*11.0 - 12.0*
$ 1,749	*12.8 - 13.9*
$ 1,681	*8.0 - 8.7*
$ 1,175	*11.9 - 13.0*
$ 1,859	*8.6 - 9.4*
$ 826	*21.4 - 23.4*
$ 1,054	*18.7 - 20.4*
$ 157	*57.1 - 62.3*
$ 388	*24.2 - 26.4*
$ 12,026	*6.0 - 7.3*
$ 4,490	*5.2 - 6.3*
$ 7,674	*5.5 - 6.7*
$ 3,282	*7.9 - 9.6*
$ 2,122	*11.1 - 13.5*
$ 4,374	*7.7 - 9.3*
$ 2,171	*11.5 - 14.0*
$ 2,396	*11.1 - 13.4*
$ 4,715	*5.8 - 7.1*
$ 16,563	*7.5 - 9.1*
$ 8,101	*7.7 - 9.3*

$ 11,904	7.6 - 9.2
$ 3,600	8.2 - 10.0
$ 14,956	61.4 - 67.2
$ 5,045	167.8 - 183.4
$ 7,749	63.8 - 69.8
$ 6,918	82.0 - 89.6
$ 11,631	145.6 - 168.4
$ (4,660)	n/a
$ (6,447)	n/a
$ (8,382)	n/a
$ (16,463)	n/a
$ (2,449)	n/a
$ (30,762)	n/a
$ (12,700)	n/a
$ 57,501	14.7 - 17.6
$ 49,758	14.9 - 17.4
$ 14,736	19.7 - 22.9
$ 45,007	5.6 - 8.2
$ 15,980	7.3 - 10.1
$ -	n/a
$ -	n/a
$ (4,893)	n/a
$ -	n/a
$ 238,186	**7.0 - 8.1**

Annual Cash Flow	Cumulative Cash Flow
$335,093	$335,093
$138,505	$473,598
$145,865	$619,463
$153,446	$772,909
$161,254	$934,163
$169,297	$1,103,460
$177,580	$1,281,040
$186,112	$1,467,153
$194,901	$1,662,053
$203,952	$1,866,006
$213,276	$2,079,282
$222,879	$2,302,161
$232,770	$2,534,931
$242,958	$2,777,889
$253,452	$3,031,340
$264,260	$3,295,600
$275,392	$3,570,993
$286,859	$3,857,852
$298,670	$4,156,521
$310,834	$4,467,356
$4,467,356	**$4,467,356**

Financed Amount	Avg. Net Annual Payment*
$2,136,530	**-$106,355**
$2,136,530	**-$177,572**
$2,136,530	**-$213,181**

**Avg. Net Annual Payment is the Annual Payment m*

Annual Payment w/o savings	Interest Rate	Loan Term
$213,653	**0.00%**	**10**
$142,435	**0.00%**	**15**
$106,827	**0.00%**	**20**

inus the average of the 20-year total savings.

Inputs:		
	Yes	Finance Rebate Amount?
	$0	Down Payment
	0.00%	Rate of Financing (%)
	20	Term of Financing (Years)
	3%	Annual Utility Rate Increase (%)
	3%	Annual Operation Rate Increase (%)
	20	Length of Cash Flow Analysis

Outputs

Saginaw Public School District

Year	Energy Savings	O&M Savings	Total Savings	Inventives	Financed Project	Annual Cash
1	$170,844	$67,342	$238,186	($203,733)	-$96,906	$335,093
2	$175,969	$69,363	$245,332		$106,827	$138,505
3	$181,248	$71,443	$252,692		$106,827	$145,865
4	$186,686	$73,587	$260,273		$106,827	$153,446
5	$192,286	$75,794	$268,081		$106,827	$161,254
6	$198,055	$78,068	$276,123		$106,827	$169,297
7	$203,997	$80,410	$284,407		$106,827	$177,580
8	$210,116	$82,823	$292,939		$106,827	$186,112
9	$216,420	$85,307	$301,727		$106,827	$194,901
10	$222,913	$87,866	$310,779		$106,827	$203,952
11	$229,600	$90,502	$320,102		$106,827	$213,276
12	$236,488	$93,218	$329,705		$106,827	$222,879
13	$243,583	$96,014	$339,597		$106,827	$232,770
14	$250,890	$98,894	$349,784		$106,827	$242,958
15	$258,417	$101,861	$360,278		$106,827	$253,452
16	$266,169	$104,917	$371,086		$106,827	$264,260
17	$274,154	$108,065	$382,219		$106,827	$275,392
18	$282,379	$111,307	$393,686		$106,827	$286,859
19	$290,850	$114,646	$405,496		$106,827	$298,670
20	$299,576	$118,085	$417,661		$106,827	$310,834
Total	**$4,590,640**	**$1,809,513**	**$6,400,153**	**($203,733)**	**$1,932,797**	**$4,467,356**

Financed Amount	Net Annual Payment	Interest Rate	Loan Term	
$2,136,530	**$213,653**	**0.00%**	**10**	**3.10%**
$2,136,530	**$142,435**	**0.00%**	**15**	**3.76%**
$2,136,530	**$106,827**	**0.00%**	**20**	**4.30%**

20 Year Cash Flow
Cumulative Cash
$335,093
$473,598
$619,463
$772,909
$934,163
$1,103,460
$1,281,040
$1,467,153
$1,662,053
$1,866,006
$2,079,282
$2,302,161
$2,534,931
$2,777,889
$3,031,340
$3,295,600
$3,570,993
$3,857,852
$4,156,521
$4,467,356
$4,467,356

Project Amount

Total Project Cost:	$2,136,530
Utility Rebates & Grants	$203,733
Down Payment:	$0
Financed Project Amount:	**$2,136,530**

Finance Assumptions

Rate of Financing:	0.00%
Term of Financing:	20

Savings Adjustements

Annual Utility Rate Increase:	3%
Annual Operation Rate Increase:	3%

Analysis Results

20 Year Cumaltive Cash Flow	$	4,467,356
20 Year Cumaltive Savings	$	6,400,153