

Town of West Hartford – West Hartford Public Schools



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To: All WHPS Principals & Assistant Principals
Cc: All WHPS Plant & Facilities Services Staff
From: Robert Palmer, Director, Plant & Facilities Services
Date: March 7, 2018

Re: WHPS Energy Summary – December 31, 2017

Here is our second WHPS Energy Summary.

We are attempting to distribute it quarterly. It contains energy use and cost information for the district as a whole, as well as for individual schools. We hope that you find the information interesting, as well as useful. Please let us know if it can be improved.

We are so close to bringing annual electricity use under 10 Million kWh - December's total was 10,106,507 kWh!

Plant & Facilities Services continues to implement selected energy conservation capital projects in both our school and town buildings, but in these tight financial times, we ask you to reinforce good energy conservation behavior.

- Treat your school like you do your home – use energy wisely!
- Take home any personally-owned appliances such as toaster ovens, microwave ovens, radios, televisions, coffee pots, air conditioners, air purifiers, mini-fridges, heaters, and fans. A small electrical appliance costs WHPS an average of \$40 per year in electricity. All appliances in schools should be approved by WHPS to ensure that they are necessary, energy-efficient, and meet all electrical, fire, and safety standards.
- Turn off lights, computers, monitors, projectors, printers, and scanners when not in use or at night and on weekends/holidays.
- Unplug devices that are used infrequently to avoid phantom loads. Many devices consume power when they are turned off but still plugged in to an outlet: this is called a phantom load.
- Identify any old incandescent screw-in lightbulbs and ask your custodian for a new LED bulb.
- Start a green team or energy “police” club with your students.
- Make sure that thermostats, vents, and radiators are not covered or blocked.
- Don't leave doors or windows open in the winter.
- Report heating or cooling problems to Plant & Facilities Services rather than purchasing personal space heaters and fans.
- Make realistic suggestions to your custodian or Plant & Facilities Services – you know your building best!

WHPS Energy Summary Highlights

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- WHPS spends almost \$2.5 million a year on electricity and natural gas. Electricity is 75% of that cost.
- Since FY09, WHPS has reduced energy costs by 27% and energy use by 9%, after adjusting for differences in weather between years.
- For the first half of FY18, WHPS energy costs and energy use are down compared to FY17, -3.1% and -0.4%, respectively.

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- Larger high schools and middle schools tend to use more energy and cost more to operate.
- As a whole, WHPS's energy cost per square foot is \$1.33. Schools range from \$1.06/SF (Morley) to \$1.58/SF (Bristow). Schools that use more electricity relative to natural gas – e.g., newer and air-conditioned schools – tend to have a higher cost per square foot.

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- Six (6) schools generate some portion of their electricity from solar panels. (Charter Oak also has a geothermal heating and cooling system.) One of the main considerations for solar is roof age. Aiken's 238 KW solar system was turned on in December!
- Large schools and steam-heated schools – e.g., King Philip, Webster Hill, Whiting Lane, Bugbee – tend to use more natural gas.
- As a whole, WHPS's weather normalized energy use per square foot is 68.7 kBtu/SF. Schools range from 33.0 kBtu/SF (Charter Oak) to 112.4 kBtu/SF (Bugbee). Older, steam-heated, and spread-out, single-story schools tend to be higher energy users per square foot.
- Typically, large decreases in energy use per square foot cannot be accomplished without major capital improvement projects.

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- Green is good, red is bad – indicating a decrease or increase in energy use or cost for individual schools compared to last year (FY17). Keep in mind, some things that affect these school performance metrics are beyond our control – e.g., utility rates, weather.
- Braeburn, Charter Oak, Morley, and Wolcott may want to watch their energy use, as they had more red (increases) during this period, while most other schools were green (decreases). But, even those increases were small, i.e., single-digits.

More information: catherine_diviney@whps.org, 860-561-7581



WHPS Energy Summary

December 31, 2017

West Hartford Public Schools

For 12 months ended December 31, 2017

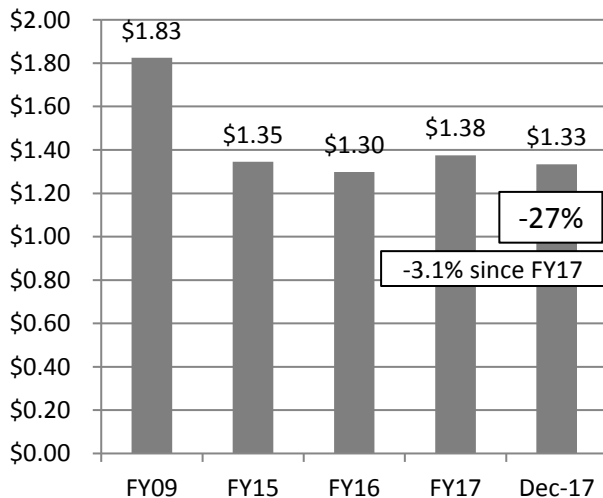
Number of Schools	16	
Square Feet	1,836,945	
Energy Cost (\$)	\$2,448,885	100%
Electricity Cost(\$)	\$1,838,208	75%
Natural Gas Cost (\$)	\$610,677	25%
Energy Cost per Sq Ft (\$/SF)	\$1.33	
Energy Use		
Electricity (kWh)	10,106,507	
Natural Gas (CCF)	811,768	
Weather Normalized Energy Use per Sq Ft (kBtu/SF)	68.7	

Converts electricity and natural gas to thousand British thermal units (kBtu) - 3.412 kBtu/kWh and 102.6 kBtu/CCF - and accounts for differences in weather between years.

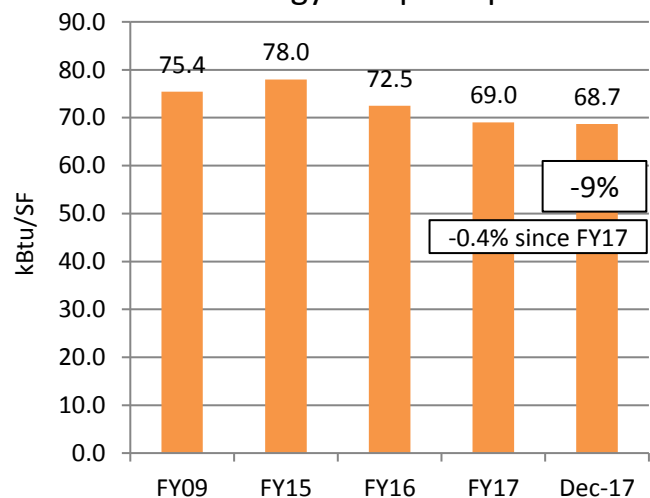
Historical Performance

West Hartford Public Schools has been tracking energy use/cost since FY09.

Energy Cost per Sq Ft



Weather Normalized Energy Use per Sq Ft

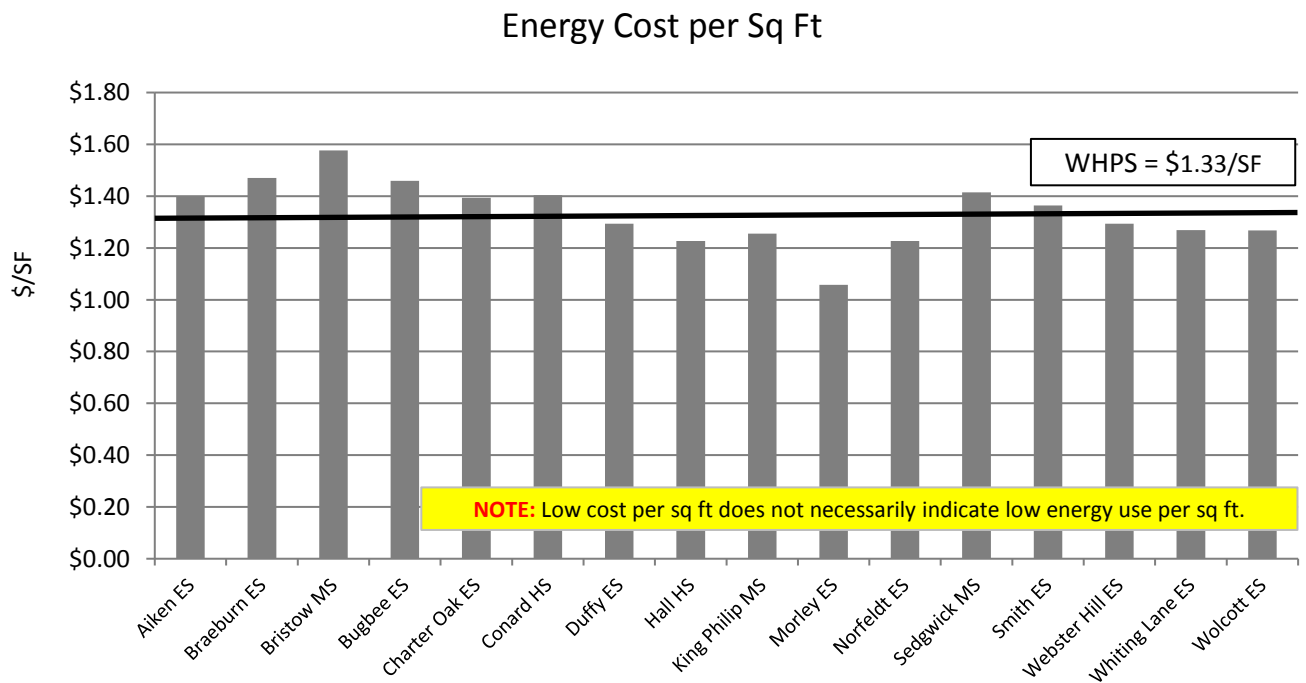
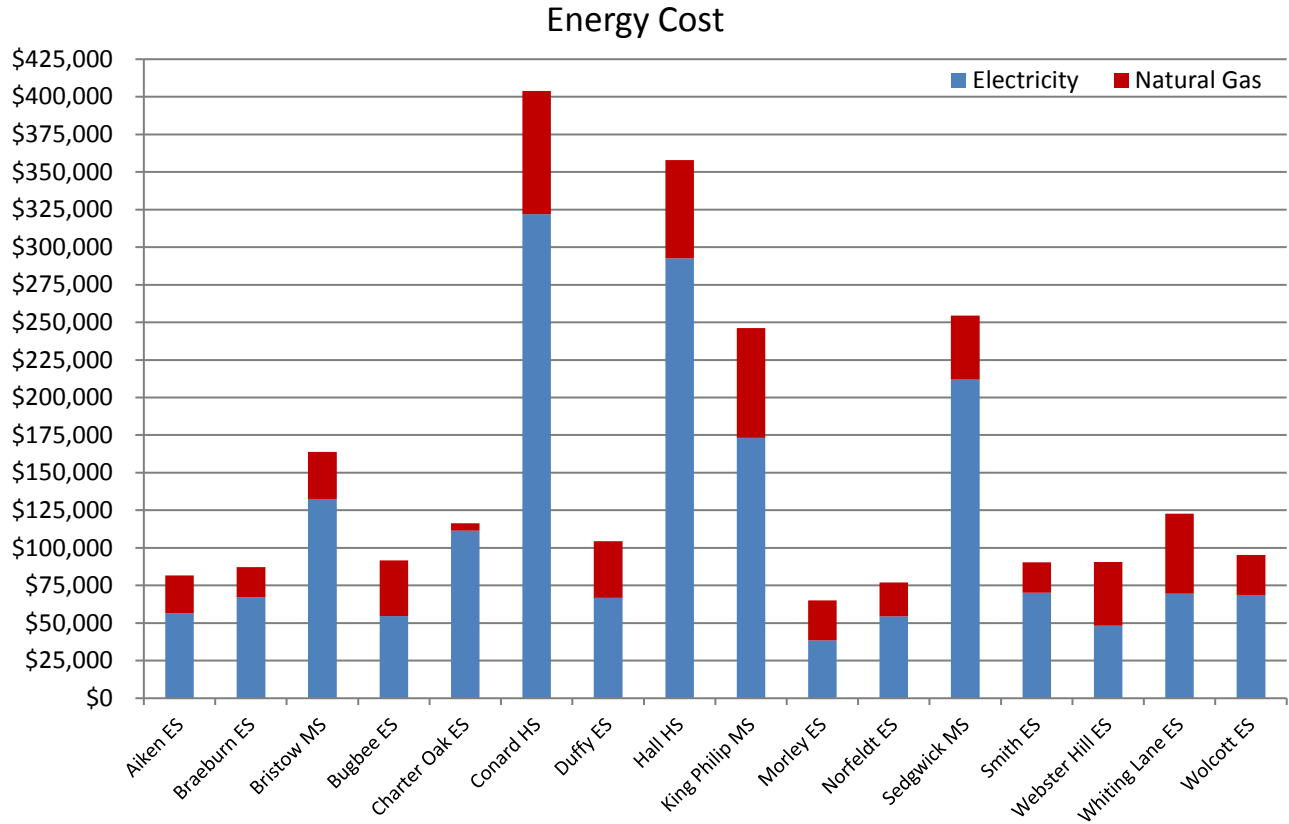




WHPS Energy Summary

December 31, 2017

Energy Cost by School

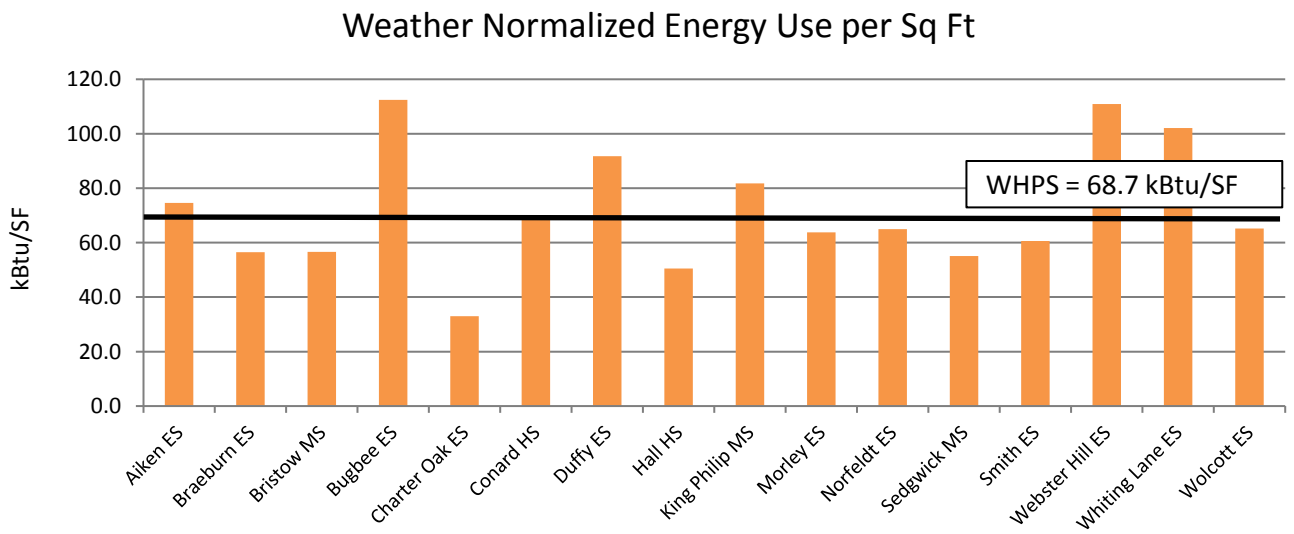
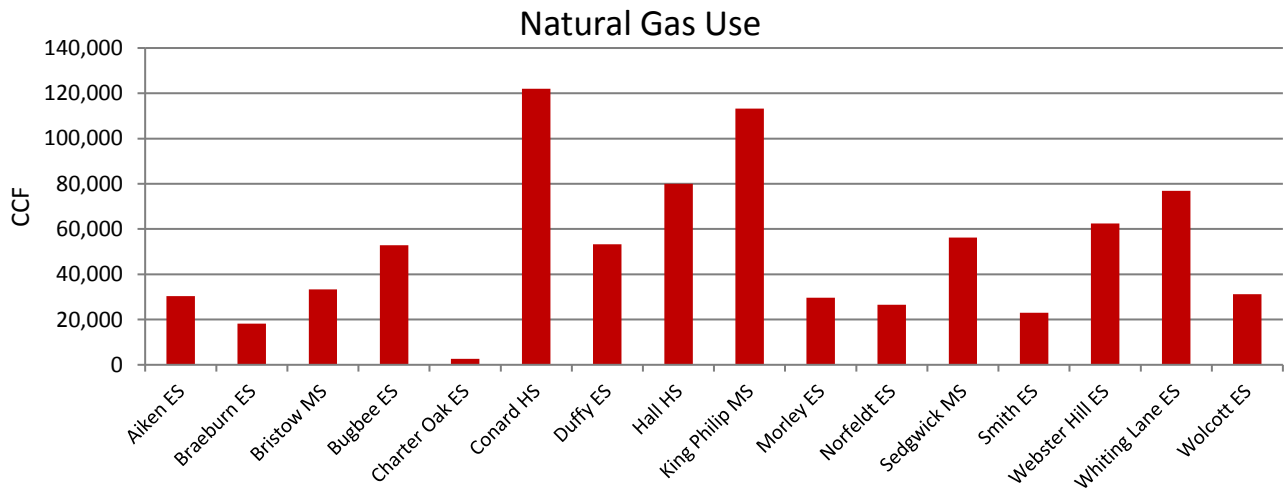
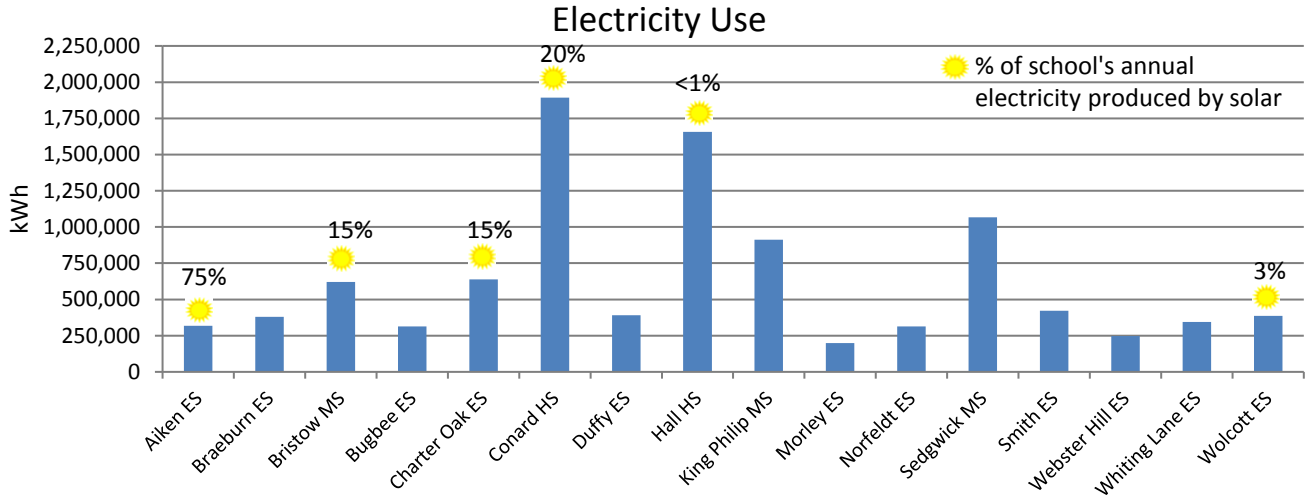




WHPS Energy Summary

December 31, 2017

Energy Use by School





WHPS Energy Summary

December 31, 2017

Energy Use per Sq Ft is weather normalized to account for differences in weather between years

Current Performance by School

Aiken ES				King Philip MS			
Sq Ft 58,411				Sq Ft 196,257			
For 12 months ended	FY17	Dec-17	Change	For 12 months ended	FY17	Dec-17	Change
Cost	\$87,282	\$81,717	-6.4%	Cost	\$252,478	\$246,293	-2.4%
Cost per Sq Ft	\$1.49	\$1.40	-6.4%	Cost per Sq Ft	\$1.29	\$1.25	-2.4%
Electricity (kWh)	340,480	317,240	-6.8%	Electricity (kWh)	934,080	913,440	-2.2%
Natural Gas (CCF)	29,645	30,323	2.3%	Natural Gas (CCF)	117,214	113,245	-3.4%
Energy Use per Sq Ft (kBtu/SF)	75.9	74.6	-1.7%	Energy Use per Sq Ft (kBtu/SF)	82.5	81.8	-0.8%
Braeburn ES				Morley ES			
Sq Ft 59,312				Sq Ft 61,593			
For 12 months ended	FY17	Dec-17	Change	For 12 months ended	FY17	Dec-17	Change
Cost	\$85,460	\$87,172	2.0%	Cost	\$63,232	\$65,111	3.0%
Cost per Sq Ft	\$1.44	\$1.47	2.0%	Cost per Sq Ft	\$1.03	\$1.06	3.0%
Electricity (kWh)	372,800	379,520	1.8%	Electricity (kWh)	202,560	198,240	-2.1%
Natural Gas (CCF)	18,167	18,176	0.0%	Natural Gas (CCF)	27,679	29,660	7.2%
Energy Use per Sq Ft (kBtu/SF)	55.7	56.5	1.4%	Energy Use per Sq Ft (kBtu/SF)	60.4	63.8	5.6%
Bristow MS				Norfeldt ES			
Sq Ft 103,900				Sq Ft 62,846			
For 12 months ended	FY17	Dec-17	Change	For 12 months ended	FY17	Dec-17	Change
Cost	\$169,565	\$163,779	-3.4%	Cost	\$76,091	\$77,077	1.3%
Cost per Sq Ft	\$1.63	\$1.58	-3.4%	Cost per Sq Ft	\$1.21	\$1.23	1.3%
Electricity (kWh)	674,958	620,472	-8.1%	Electricity (kWh)	315,269	312,851	-0.8%
Natural Gas (CCF)	33,830	33,374	-1.3%	Natural Gas (CCF)	27,610	26,550	-3.8%
Energy Use per Sq Ft (kBtu/SF)	57.9	56.6	-2.2%	Energy Use per Sq Ft (kBtu/SF)	65.6	65.0	-0.9%
Bugbee ES				Sedgwick MS			
Sq Ft 62,857				Sq Ft 179,850			
For 12 months ended	FY17	Dec-17	Change	For 12 months ended	FY17	Dec-17	Change
Cost	\$90,937	\$91,730	0.9%	Cost	\$263,440	\$254,489	-3.4%
Cost per Sq Ft	\$1.45	\$1.46	0.9%	Cost per Sq Ft	\$1.46	\$1.42	-3.4%
Electricity (kWh)	321,680	314,720	-2.2%	Electricity (kWh)	1,059,600	1,067,100	0.7%
Natural Gas (CCF)	54,549	52,872	-3.1%	Natural Gas (CCF)	57,555	56,203	-2.3%
Energy Use per Sq Ft (kBtu/SF)	113.5	112.4	-1.0%	Energy Use per Sq Ft (kBtu/SF)	55.5	55.1	-0.7%
Charter Oak ES				Smith ES			
Sq Ft 83,458				Sq Ft 66,329			
For 12 months ended	FY17	Dec-17	Change	For 12 months ended	FY17	Dec-17	Change
Cost	\$113,029	\$116,323	2.9%	Cost	\$92,352	\$90,444	-2.1%
Cost per Sq Ft	\$1.35	\$1.39	2.9%	Cost per Sq Ft	\$1.39	\$1.36	-2.1%
Electricity (kWh)	659,273	638,994	-3.1%	Electricity (kWh)	412,416	422,400	2.4%
Natural Gas (CCF)	2,530	2,580	2.0%	Natural Gas (CCF)	23,653	23,063	-2.5%
Energy Use per Sq Ft (kBtu/SF)	32.7	33.0	0.9%	Energy Use per Sq Ft (kBtu/SF)	60.7	60.6	-0.2%
Conard HS				Webster Hill ES			
Sq Ft 287,874				Sq Ft 70,092			
For 12 months ended	FY17	Dec-17	Change	For 12 months ended	FY17	Dec-17	Change
Cost	\$438,901	\$403,894	-8.0%	Cost	\$101,668	\$90,646	-10.8%
Cost per Sq Ft	\$1.52	\$1.40	-8.0%	Cost per Sq Ft	\$1.45	\$1.29	-10.8%
Electricity (kWh)	2,009,890	1,893,113	-5.8%	Electricity (kWh)	241,600	248,320	2.8%
Natural Gas (CCF)	125,016	121,932	-2.5%	Natural Gas (CCF)	63,144	62,466	-1.1%
Energy Use per Sq Ft (kBtu/SF)	70.7	70.0	-1.0%	Energy Use per Sq Ft (kBtu/SF)	110.5	110.9	0.4%
Duffy ES				Whiting Lane ES			
Sq Ft 80,683				Sq Ft 96,817			
For 12 months ended	FY17	Dec-17	Change	For 12 months ended	FY17	Dec-17	Change
Cost	\$106,782	\$104,365	-2.3%	Cost	\$124,839	\$122,821	-1.6%
Cost per Sq Ft	\$1.32	\$1.29	-2.3%	Cost per Sq Ft	\$1.29	\$1.27	-1.6%
Electricity (kWh)	398,720	390,240	-2.1%	Electricity (kWh)	371,840	345,120	-7.2%
Natural Gas (CCF)	56,868	53,336	-6.2%	Natural Gas (CCF)	79,674	76,914	-3.5%
Energy Use per Sq Ft (kBtu/SF)	94.5	91.7	-3.0%	Energy Use per Sq Ft (kBtu/SF)	103.3	102.1	-1.2%
Hall HS				Wolcott ES			
Sq Ft 291,593				Sq Ft 75,073			
For 12 months ended	FY17	Dec-17	Change	For 12 months ended	FY17	Dec-17	Change
Cost	\$366,657	\$357,823	-2.4%	Cost	\$93,241	\$95,202	2.1%
Cost per Sq Ft	\$1.26	\$1.23	-2.4%	Cost per Sq Ft	\$1.24	\$1.27	2.1%
Electricity (kWh)	1,694,817	1,657,216	-2.2%	Electricity (kWh)	378,560	387,520	2.4%
Natural Gas (CCF)	80,691	79,936	-0.9%	Natural Gas (CCF)	31,016	31,138	0.4%
Energy Use per Sq Ft (kBtu/SF)	50.4	50.5	0.2%	Energy Use per Sq Ft (kBtu/SF)	62.7	65.2	4.0%