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Section 1. Executive Summary

Various energy conservation measures were evaluated in the development of this Energy Savings Plan (ESP). Johnson Controls has performed field verifications, collected data and taken field measurements to ensure the development of the most cost effective solutions as well as accurate savings calculations. Various solutions were reviewed with the school district's administration to develop a set of Energy Conservation Measures (ECMs) that allow the school district to address the facility's priority items while reducing the total annual energy spend for the District. This study expands upon the original energy audit conducted by CDM Smith. The original audit was used for cost estimates as well as an overall indication of the District needs.

Priority items include:

- Addition of cooling to large group areas in Ocean Township High School, Ocean Township Elementary School, Wanamassa and Wayside Elementary Schools
- Upgrade of lighting systems at all building which include interior, exterior, and LED lighting systems
- Installation of occupancy sensors to control the lighting throughout the buildings
- Conversion of electric domestic hot water heaters to gas-fired units
- Expansion of districts solar photovoltaic system

Energy Savings

Energy saving calculations performed in the development of this ESIP were completing using one of two methodologies. One method involved construction of a whole building energy model with a program called eQUEST. The second method of analysis was to use Microsoft Excel worksheets to determine energy savings; measures with smaller savings or fewer inputs were calculated using excel worksheets such as lighting upgrades, building envelope upgrades and kitchen hood controls.

Benefits

The measures investigated in this Energy Saving Improvement Plan could result in a utility cost savings of 1,736,354 kWh and 96,694 Therms totaling $267,290, based on today's current cost of utilities. Additionally, these energy savings will result in a net reduction of greenhouse gases and will reduce the school district's carbon foot print by 1,364 tons of CO_2.

All these savings are achieved while improving the classroom environment and renewing many items that have been in service beyond useful life expectancy

Section 2. Project Description

This Energy Savings Plan (ESP) addresses the following facilities:

Ocean Township School District	
Ocean Township Administration Building	163 Monmouth Rd, Oakhurst, NJ 07755
Ocean Township High School	550 West Park Avenue, Oakhurst, NJ 07755
Ocean Township Intermediate School	1200 West Park Avenue, Ocean, NJ 07712
Ocean Township Elementary School	555 Dow Avenue, Oakhurst, NJ 07755
Wanamassa Elementary School	901 Bendermere Avenue, Wanamassa, NJ 07712
Wayside Elementary School	733 Bowne Rd, Ocean, NJ 07712

On March 8, 2013 through April 15, 2013 Rudy Bohince and additional engineers visited the project sites and conducted a detailed energy assessment of the properties.

Ocean Township Administration Building

Background Information

The District Administration building was built in 1900 with additions in 1950's. The total building size is roughly 34,000 sq. ft., and contains primarily offices and conference rooms.

Building Occupancy

The administration offices operate as a typical office building and are open from about 7:00 am to 11:00 pm Monday through Friday. There are approximately 79 employees present in the buildings at any given time. This building operates throughout the entire year.

Envelope

The original building has brick walls and sloped roof with asphalt shingles. The addition is CMU walls with a brick façade. The roof of the addition is flat roofing with the two inches of rigid insulation with EPDM surface and steel deck and framing.

The windows in the older portion of the building are all vinyl double pane aluminum windows. The addition has a mix of metal frame single pane windows and double pane vinyl in offices and break rooms.

The buildings envelope is not insulated to current energy code standards although a complete insulation project for the building would not be cost effective.

Lighting

The lighting systems throughout the building contain technology T8 lamps with electronic ballasts and T12 lamps with Magnetic ballast. The exterior fixtures consist primarily of metal halide lamps; overall, there are minimal lighting occupancy sensors installed at the building - the lights are turned off at switches and breakers.

Mechanical Systems

The heating system is comprised of unit ventilators with hot water coils and radiators which are controlled by pneumatic thermostats. The unit ventilators, radiators, and air handlers are supplied with steam by a central boiler room. The boiler room houses two gas fired steam boilers each rated at 2,452 MBH input.

The original building is cooled by packaged AC split systems. These units are rated at 30 MBH cooling. These units are controlled by single set-point thermostat. The addition is cooled by window AC units with a cooling capacity of 24 MBH and a packaged roof top unit with a cooling capacity of 48 MBH.

Domestic hot water is produced by electric water heater in various locations of the building.

Ocean Township High School

Background Information

The High School was built in 1964 and has gone through an addition in 1998. The total square footage of the building is 200,215. The school contains a cafeteria, gymnasium and new gymnasium, locker rooms, classrooms, offices, a library, and an auditorium.

Building Occupancy

Ocean Township High School operates as a typical High School and serves the community for the 9-12 grade levels. There are approximately 1,243 students enrolled in the school, and 188 faculty members. The typical occupancy hours of the classroom and office areas are 7:00 am to 3:00 pm, Monday through Friday. Weekend occupancy varies by season. During the school year the High School is used most weekends (Saturday and Sunday) all day. The custodians are in the building until approximately 11p.m. each night.

Envelope

Built in 1964, the building is a steel structure with cmu walls and brick exterior façade. The building addition walls are cmu structure with brick façade with a layer of rigid insulation. The interior faces of the building walls are painted cmu.

The building roof is flat corrugated steel decking on steel framing. The addition is on steel trusses with insulation on the roof deck. The roof finish is EPDM roofing.

The building windows are mostly double pane with aluminum frames. Windows in the gym have been replaced with translucent panels. Portions of the original building have single pane windows. The single pane windows in the cafeteria are scheduled to be replaced. The building has some sky lights. The skylights are mostly located in circulation areas.

Lighting

Existing interior lighting system consists of 2X2 2lamp, 1X4 1, 2, and 4 lamp, 2X4 2 and 3 lamp T8 linear fluorescent fixtures with electronic ballasts, compact fluorescent, incandescent fixtures, and high intensity discharge (HID) fixtures. Existing exterior lighting consists of HID wall packs.

Mechanical Systems

The classrooms are heated and ventilated by unit ventilators with hot water coils which are controlled by the building management system. The remainder of the buildings is conditioned by air handlers. These Air handling units have hot water coils and few have direct expansion, or dx, cooling coils. The air handlers which serve library, auditorium, and E wing classrooms have cooling coils. The building is served with central boiler room. The boiler room contains three (3) Cleaver Brooks fire tube boilers. Two of the boilers are CBE-700-150-12S rated at 6,300 MBH input and one CBE-700-200-125 rated at 8,400 MBH input. These boilers are over 15 year old. The E-wing of the building has under heating problems; this is due to the distance from the central boiler plant and piping configuration mixing return water in the mains.

The main offices and computer labs are cooled by window air conditioners. The data center has two dedicated split-system air conditioners which provide cooling to the space.

The building automation system controls the space set points and schedules. Smaller Systems are controlled independently by their respective unit controls.

Domestic hot water is produced by eight electric water heaters rated from 3 to 54kW with 80 to 120 gallons of storage. The central boiler plan has a pair of 125 gallons, 540 MBH input storage water heaters. One water heater is a PVI 54N-125A-MX that is in fair condition and one PVI54N-125A-MXG which is new.

Ocean Township Intermediate School

Background Information

Ocean Township Intermediate School was built in 1969 with an addition in 2002. The total building size is 257,400 sq. ft., and contains primarily classrooms with a gym and cafeteria.

Building Occupancy

Ocean Township Intermediate School operates as a typical Intermediate School and serves the community for the 5th through 85th grade age groups. There are approximately 1,239 students enrolled in the school, and 172 faculty members. Typical operating hours of the classroom and office areas are 7:00 am to 3:00 pm, Monday through Friday. During the months of December, January, and February, the Intermediate School is used most weekends (Saturday and Sunday) for Winter Sports. The custodians are in the building until approximately 11 p.m. each night.

Envelope

The Building was constructed in two phases. The original building is cmu walls with brick façade and one inch of rigid insulation. The additional walls have R-10 insulation. The roof is insulated steel deck on steel trusses. The roof has solar array rated at 230 kW. The building has a mix of windows. The original portion of building has single pane and addition has double pane windows.

Lighting

The lighting systems throughout the school contain technology T8 lamps and electronic ballasts with few compact fluorescent fixtures throughout the building. The exterior fixtures consist primarily of metal halide

lamps; overall, there are minimal lighting occupancy sensors installed in the original section of the school - the lights are turned off at switches and breakers. The new 5th Grade wing has occupancy sensors controlling the majority of the spaces including: hallways, classrooms, teachers' lounges, and restrooms.

Mechanical Systems

The classrooms of the original building are conditioned by unit ventilators which has dual temperature loop to heat or cool the space depending on the season. Each of the three classroom wings has a roof mounted mechanical room. Each mechanical room has a chiller, exhaust fan, and air handler. Each chiller is connected to a dedicated air cooled tower. The chillers have scroll compressors and rated for 80 nominal tons each. During the cooling season, control valves in the rooftop mechanical rooms are closed so the roof top chillers are only serving an individual wing of the school.

The original building central plant has two boilers. The first boiler is an American Standard PFA512 from 1973 rated at 4,185 MBH input. The second boiler is Weil McLain 1788 from 2002 rated at 4,113 MBH input. The central plant has two Trane Scroll chillers rated at 85 tons.

The addition to the building is cooled by packaged roof top units and Airedale unit ventilators. The addition is heated by hot water radiation in the space. The radiation is supplied by three Aerco BMK 2.0 boilers rated at 2,000MBH input each and 92% efficient. The units that serve the gym are DX cooling and gas fired heating.

The building is controlled by a central digital control system which controls space set point and schedule.

The domestic hot water is produced by eight water heaters in various locations. Two gas fired units are rated 199 MBH input with 125 gallons and 660 MBH input with 500 gallons respectively. Six electric units range from 50 gallons of storage with 13.5 kW input to 1000 gallons and 90 kW input.

Ocean Township Elementary School

Background Information

Ocean township Elementary School was built in 1957 and has a gymnasium, cafeteria, auditorium, media center, and classroom areas. In total, the building is 76,160 sq. ft. The building is 100% heated but only the office area and library are cooled.

Building Occupancy

Ocean Township Elementary School operates as a typical Elementary School and serves the community for the K-4 age groups. There are approximately 431 students enrolled in the school, and 68 faculty members. Typical operating hours of the classroom and office areas are 7:00 am to 4:00 pm, Monday through Friday, and unoccupied during the weekends. The gym is used in the evenings for basketball until approximately 8:00 pm. The custodians are in the building until approximately 11 p.m. each night.

Envelope

Ocean Township Elementary School, constructed in 1957, is constructed of cmu with brick finish. Windows are aluminum frame with double-pane glass. The building roof is flat on wooden decking. The overall condition of the building is acceptable and typical of a building this age.

Lighting

The lighting systems throughout the school contain technology T8 lamps and electronic ballasts with compact fluorescent fixtures throughout. The exterior fixtures consist primarily of metal halide lamps; overall, there are minimal lighting occupancy sensors installed at the school - the lights are turned off at switches and breakers.

Mechanical Systems

The building is conditioned by unit ventilators and heating and ventilation units .These units are supplied with hot water from the central boiler room. The boiler room consists of two Aerco boilers rated at 2,000MBH each and a Burnham fire tube boiler rated at 7,145MBH. The building is cooled by few Window air conditioners rated cooling capacity of 24 MBH. The main office is cooled by a York unit rated at 36 MBH cooling. Library is cooled by two (2) Lennox roof top units rated at 90 MBH cooling each. The server room is cooled by an EMI ductless spilt system rated at 24 MBH cooling. The domestic hot water is produced by four (4) electric water heaters each rated at 4.5 kW. Overall, the mechanical equipment appears to be operating well and is in good condition.

Wanamassa Elementary School

Background Information

Wanamassa Elementary School was built in 1930 with an addition in 2003. The total square footage of the building is 59,580, which includes the classrooms, offices, gym, and all purpose room.

Building Occupancy

Wanamassa Elementary School operates as a typical elementary school and serves the community for grades kindergarten through fourth grade. There are approximately 335 students enrolled in the school, and 54 faculty members. The typical operating hours of the classroom and office areas are 7:00 am to 4:00 pm, Monday through Friday, and unoccupied during the weekends. The custodians are in the building until approximately 11 p.m. each night.

Envelope

The building is masonry construction with cmu walls, brick exterior, and plaster interior finish. The building has a peaked roof which was added to the original building to suit the neighborhood in which it is located. The windows of the original building were replaced with the vinyl double pane windows. The addition section of the building contains a flat, built-up roof with a rubber membrane.

Lighting

The lighting systems throughout the school contain T8 lamps and electronic ballasts; there are also a handful of compact fluorescent fixtures throughout the facility. The exterior fixtures consist primarily of metal halide lamps. There are some lighting occupancy sensors installed at the school, which turns off the light when the space is not occupied

Mechanical Systems

The main building is heated by unit ventilators and steam radiators. These are supplied by a pair of low pressure steam boilers in the basement. The boilers are Weil Mclain cast iron sectional. The first boiler is

a model 1088 from 2002 and rated at 3103 MBH input each. The second boiler is a model 1288 from 2009 and is rated at 3103 MBH input. The building has electric heat installed in spaces which have been subdivided. The addition is cooled by packaged Trane roof top units ranging from 5 to 12 tons of cooling capacity. The gym is cooled and heated by packaged AAON unit with 390 MBH input of gas fired heating; this unit was designed to have cooling, but it was not installed. Administrative offices are served by window air conditioners.

The building heating and cooling systems are controlled by a central DDC control system which controls space set points and schedules. In some cases the steam radiators need commissioning to ensure the controls operate correctly.

The building domestic hot water is generated by an instantaneous indirect water heater using steam from the heating boiler. When the heating boiler is not needed, the hot water is generated by a 40 gallon storage type electric water heater rated at 4.5 kW input.

Wayside Elementary School

Background Information

Wayside Elementary School was built in 1969. The total building size is 147,375 sq. ft., and contains primarily classrooms with a gym and cafeteria.

Building Occupancy

Wayside Elementary School operates as a typical Elementary School and serves the community for the K-4 age groups as well as pre-school. There are approximately 577 students enrolled in the school, and 83 faculty members. Typical operating hours of the classroom and office areas are 7:00 am to 4:00 pm, Monday through Friday, and unoccupied during the weekends. The custodians are in the building until approximately 11 p.m. each night.

Envelope

Wayside Elementary School is cmu construction with brick exterior. The building does not have any insulation in the original walls. The building roof is corrugated steel decking on steel framing with a rubber membrane. The building windows are aluminum framed double pane windows.

Lighting

The lighting systems throughout the school contain T8 lamps and electronic ballasts; there are also a handful of compact fluorescent fixtures throughout the facility. The exterior fixtures consist primarily of metal halide lamps. There are several lighting occupancy sensors installed at the school, which turns off the light when the space is not occupied.

Mechanical Systems

The building is heat by unit ventilators with hot water coils supplied from the boiler room. The boiler room has three (3) gas-fired, fire tube hot water boilers. The boilers are Hurst 125 WTR installed in 1996, and they are each rated at 3,356 MBH input. The gym and cafeteria are heated and cooled by heating and ventilation units with electric reheat.

The building is cooled by a few window air conditioning units and packaged roof top units. Packaged roof top air conditioning units serve the library, main office, and each center room of the three clusters of classrooms. The unit for the main office is about 15 tons.

The building is controlled by the central DDC control system. The system controls the space set point and schedule.

The domestic hot water is produced by a 100 gallon AO smith gas fired storage water heater rated at 39 MBH input.

Utility Baseline Analysis

Electric

Electrical energy is provided to Ocean Township School District through Jersey Central Power & Light under their General Service Secondary 3 Phase. The electric utility measures consumption in kilowatt-hours (KWH) and maximum demand in kilowatts (KW). One KWH usage is equivalent to 1000 watts running for one hour. One KW of electric demand is equivalent to 1000 watts running at any given time. The basic usage charges are shown as generation service and delivery charges along with several non-utility generation charges. The schools under Ocean Township School District have individual rates per kWh which were used in this report.

Natural Gas

Ocean Township School District acquires its natural gas from New Jersey Natural Gas under the General Service – Large (GSL) classification. The gas utility measures consumption in cubic feet x 100 (CCF) and converts the quantity into Therms of energy. HESS is a third party commodity provider and is also responsible for providing Natural Gas to Ocean Township School District.

The following table shows Ocean-BOE building names, addresses and utility account numbers.

Building Name	Address	Electric Account No.	Gas Account No.
Administration Building	163 Monmouth Rd, Oakhurst, NJ 07755	100012968028	05-3123-3160-25
Ocean Township High School	550 West Park Avenue, Oakhurst, NJ , 07755	100013403629 100013657679	07-3114-1595-23
Ocean Township Elementary School	555 Dow Avenue, Oakhurst, NJ, 07755	100012157705	05-3123-7679-26
Ocean Township Intermediate School	1200 West Park Avenue, Ocean, NJ, 07712	100011471552	07-3125-1008-26
Wanamassa Elementary School	901 Bendermere Avenue, Wanamassa, NJ, 07712	100058803717	03-3105-2020-24
Wayside Elementary School	733 Bowne Rd, Ocean, NJ, 07712	100011531108	06-3106-6326-16
HS Football Field		100013403843	
Bus Garage		100013403694	

Building Name, Address and Utility (Electric & Gas) account numbers.

Ocean township High School

Electric Usage and Demand

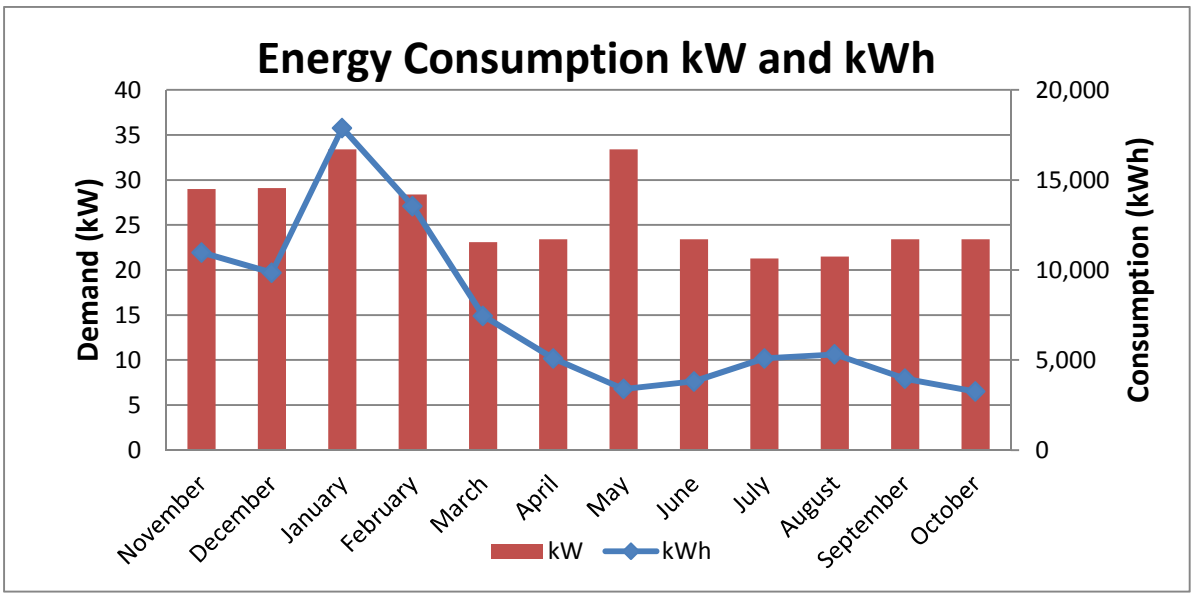
A detailed look at the usage (kWh), demand (kW) and total electric cost per month in a typical year is shown below in table format. Note that the months with (*) represent data that was estimated.

Account # 100013403629

Month	KW	KWH	Total Bill $
November	29	10,973	$ 1,453
December*	29.1	9,853	$ 1,326
January	33.4	17,885	$ 2,270
February	28.4	13,554	$ 1,739
March	23.1	7,458	$ 888
April*	23.4	5,095	$ 696
May	33.4	3,393	$ 514
June	23.4	3,811	$ 632
July*	21.3	5,092	$ 580
August	21.5	5,318	$601
September	23.4	3,966	$ 474
October	23.4	3,256	$ 437
Total	**312.8**	**89,654**	**$ 11,173**

Based off of one year of utility bill information November 2011 to October 2012.

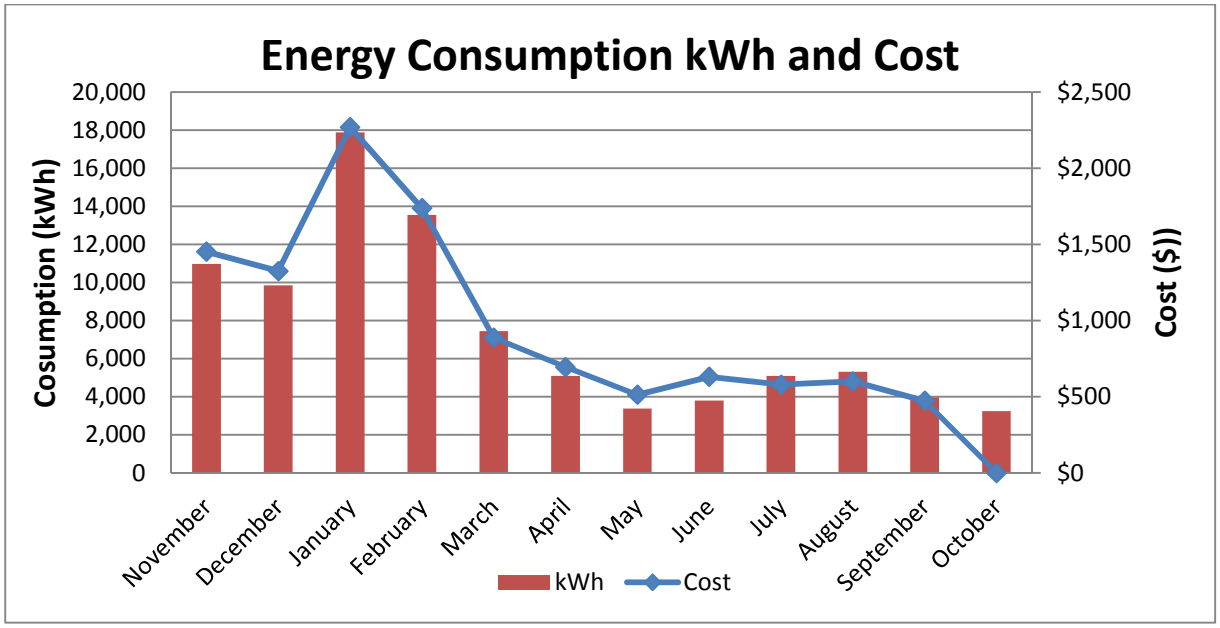
The figure below shows the usage (kW) and (kWh) over the same one year period.



Energy Consumption from November 2011 to October 2012.

Johnson Controls

The figure below shows the usage (kWh) and (Cost) over the same one year period.



Energy Consumption versus cost from November 2011 to October 2012.

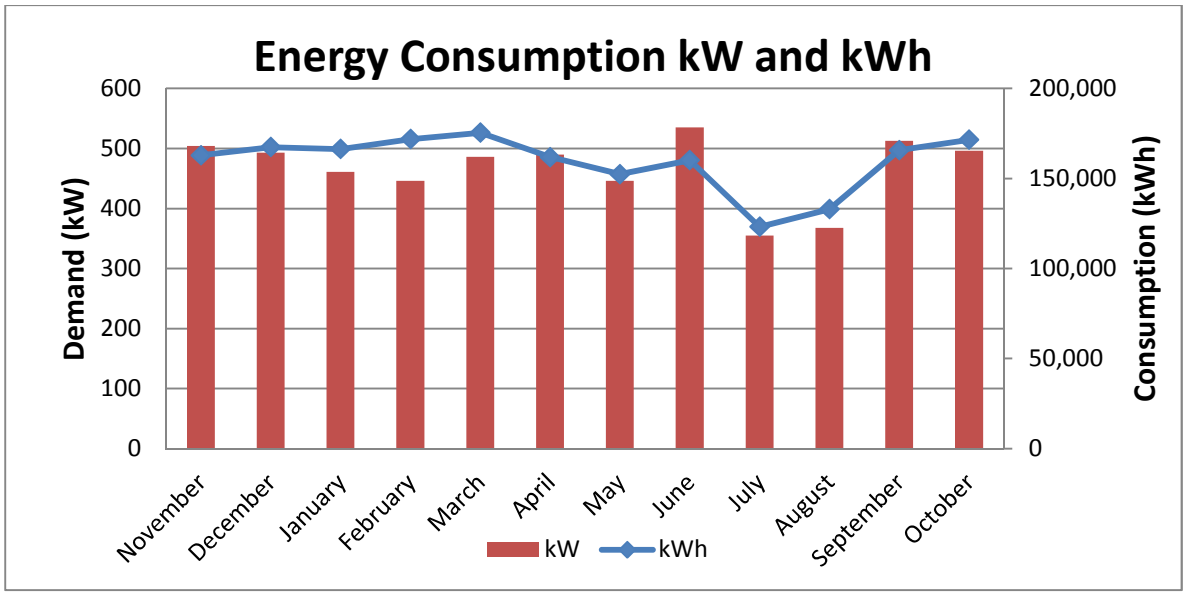
Account # 100013657679

Month	KW	KWH	Total Bill $
November	504	162,883	$ 21,418
December	493	167,388	$ 21,886
January	461	166,306	$ 21,506
February	446	171,847	$ 21,971
March	486	175,395	$ 22,138
April	490	161,801	$ 20,315
May	446	152,374	$ 19,033
June	535	160,135	$ 16,756
July	355	123,135	$ 12,496
August	368	132,974	$13,365
September	513	165,689	$ 17,038
October	496	171,461	$ 17,191
Total	**5,593**	**1,911,388**	**$ 225,112**

Based off of one year of utility bill information November 2011 to October 2012.

Johnson Controls

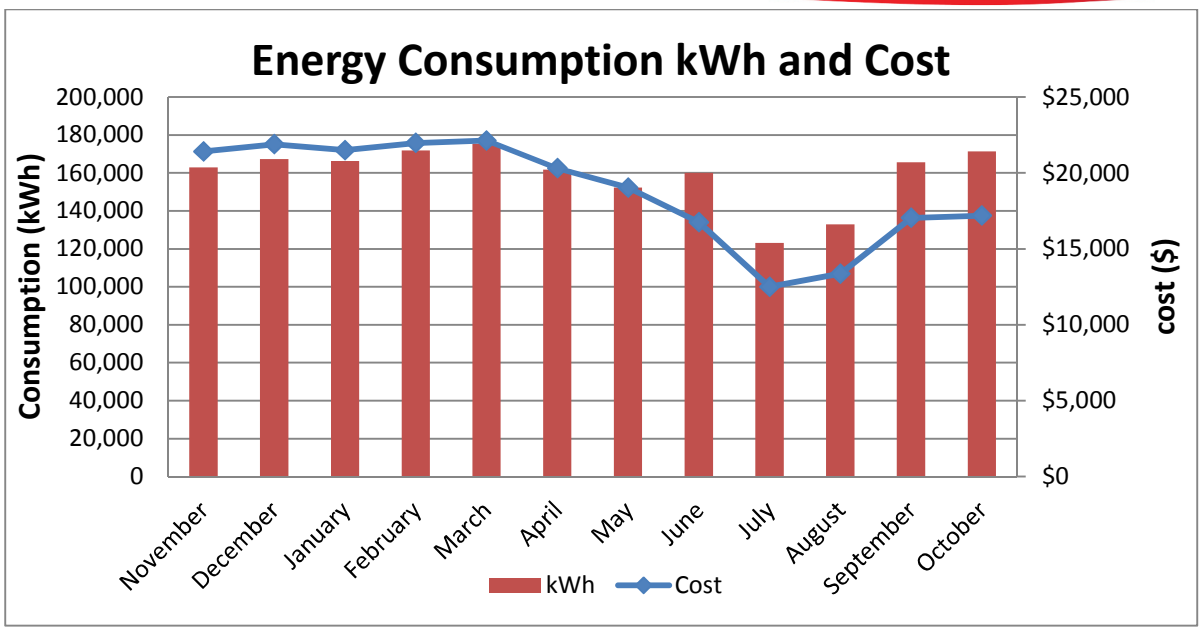
The figure below shows the usage (kW) and (kWh) over the same one year period.



Energy Consumption from November 2011 to October 2012.

The figure below shows the usage (kWh) and (Cost) over the same one year period.

Johnson Controls



Energy Consumption versus cost from November 2011 to October 2012.

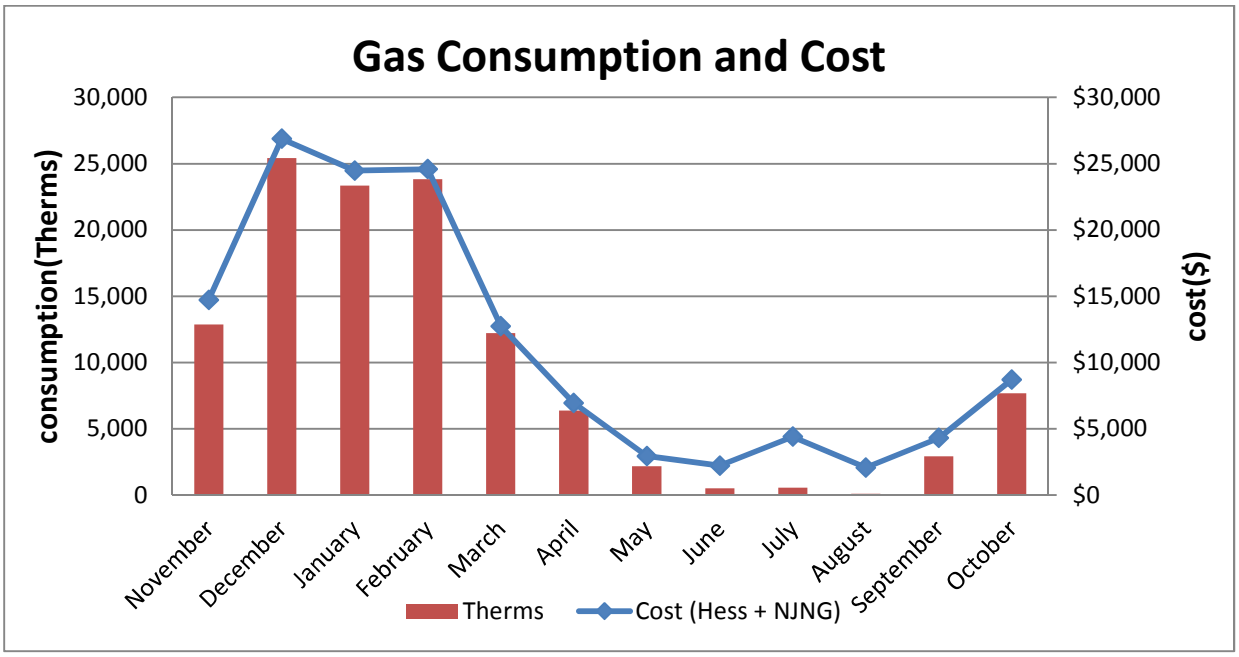
Natural Gas Usage

A detailed look at the consumption (Therms) and the dollar rate per (Therm) monthly in a typical year is shown below in table format

Month	Total Therms	Total Cost	$/Therm
November	12,871	$14,720	$1.14
December	25,426	$26,882	$1.06
January	23,339	$24,477	$1.05
February	23,840	$24,586	$1.03
March	12,223	$12,749	$1.04
April	6,384	$6,955	$1.09
May	2,176	$2,941	$1.35
June	518	$2,217	$4.28
July	562	$4,403	$7.84
August	106	$2,072	$19.52
September	2,926	$4,314	$1.47
October	7,691	$8,714	$1.13
Total	**118,060**	**$ 135,032**	**$ 1.14**

Based off of one year of utility bill information November 2011 to October 2012.

The figure below shows the monthly consumption over the same time period. Notice that the usage peaks in the winter months when heating is necessary.



Natural Gas Consumption versus cost from November 2011 to October 2012.

Ocean Township Intermediate School

Electric Usage and Demand

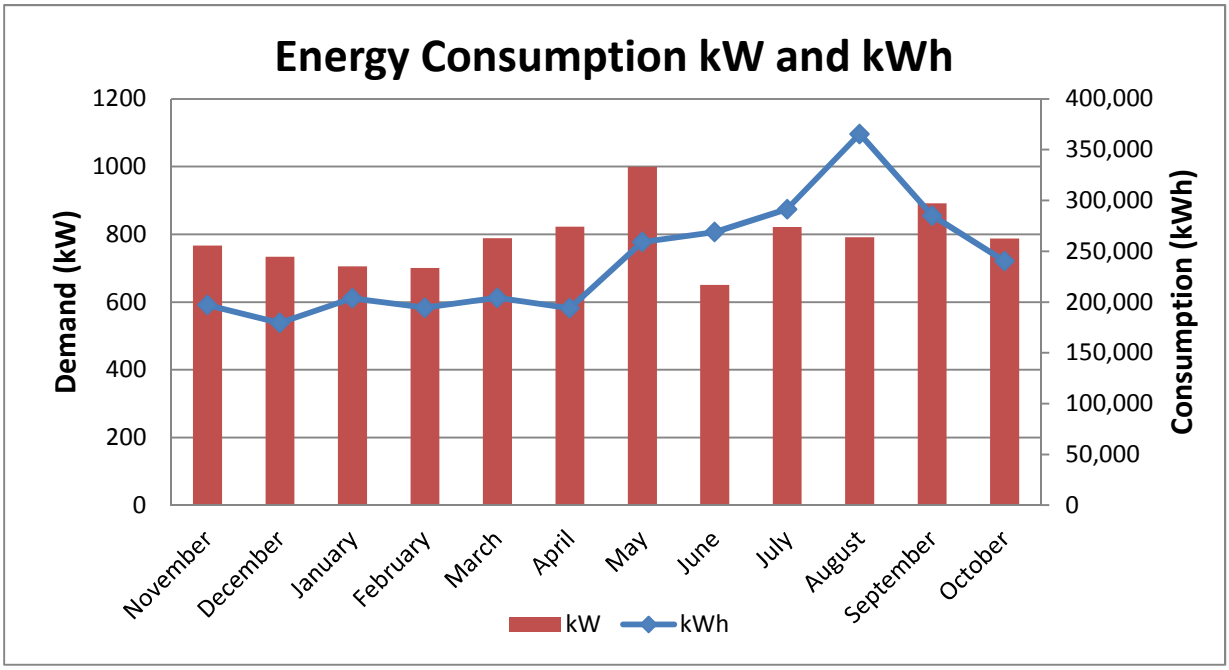
A detailed look at the usage (kWh), demand (kW) and total electric cost per month in a typical year is shown below in table format. Note that the months with (*) represent data that was estimated.

Month	KW	KWH	Total Bill $
November	767	197,028	$ 27,756
December	734	179,448	$ 25,513
January	705	203,794	$ 27,992
February	701	194,363	$ 26,846
March	789	204,128	$ 27,491
April	823	193,957	$ 26,606
May	999	259,204	$ 29,031
June	651	269,000	$ 28,843
July	822	291,523	$ 30,581
August	791	365,473	$ 36,651
September	892	285,202	$ 30,081
October*	788	240,283	$ 26,431

Month	KW	KWH	Total Bill $
Total	9,463	2,883,403	$ 343,822

Based off of one year of utility bill information November 2011 to October 2012

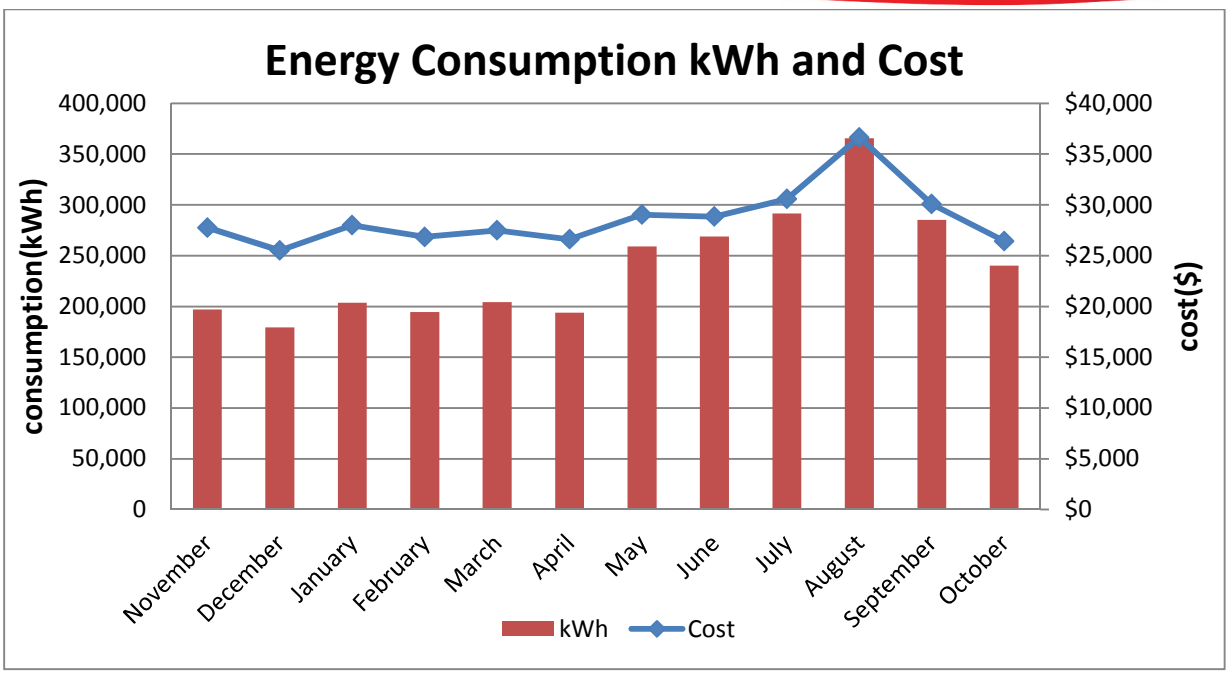
The figure below shows the usage (kW) and (kWh) over the same one year period.



Energy Consumption from November 2011 to October 2012.

The figure below shows the usage (kWh) and (Cost) over the same one year period.

Johnson Controls



Energy Consumption versus cost from November 2011 to October 2012

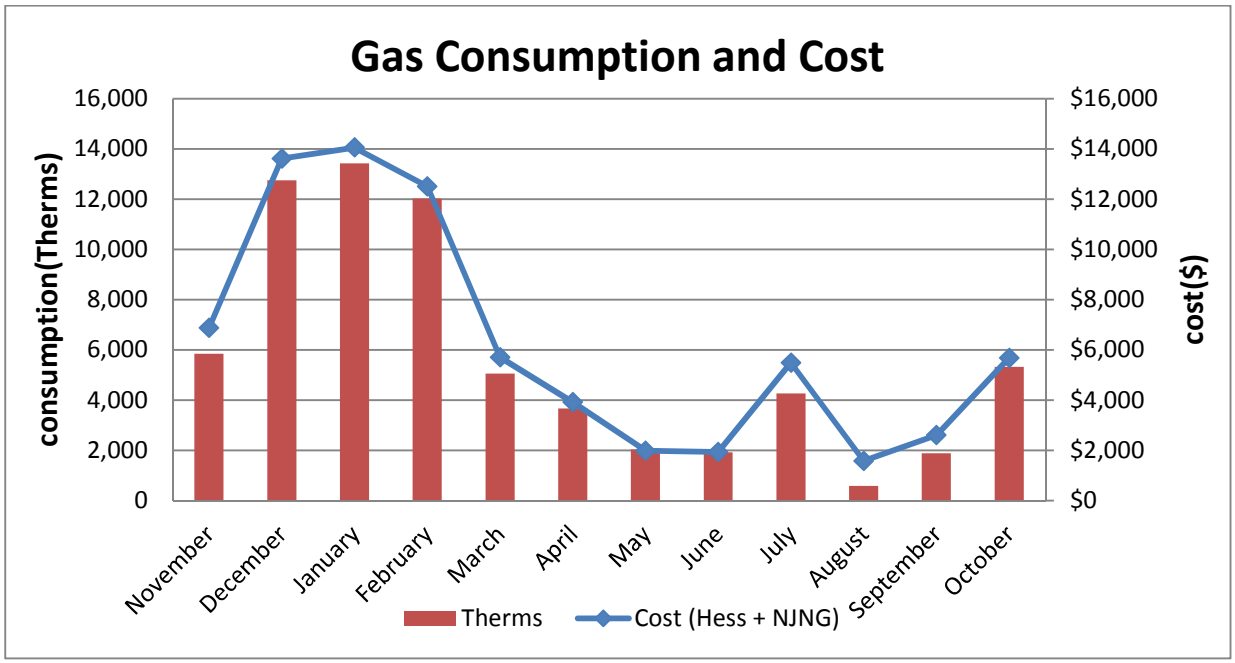
Natural Gas Usage

A detailed look at the consumption (Therms) and the dollar rate per (Therm) monthly in a typical year is shown below in table format

Month	Total THERMS	Total Cost	$/Therm
November	5,839	$ 6,873	$ 1.17
December	12,753	$ 13,608	$ 1.06
January	13,417	$ 14,048	$ 1.05
February	12,018	$ 12,501	$ 1.04
March	5,053	$ 5,704	$ 1.04
April	3,667	$ 3,919	$ 1.13
May	2,037	$ 1,986	$ 1.07
June	1,919	$ 1,934	$ 0.98
July	4,267	$ 5,485	$ 1.00
August	585	$ 1,577	$ 1.28
September	1,886	$ 2,600	$ 2.70
October	5,320	$ 5,675	$ 1.38
Total	**68,760**	**$ 75,911**	**$ 1.10**

Based off of one year of utility bill information November 2011 to October 2012

The figure below shows the monthly consumption over the same time period. Notice that the usage peaks in the winter months when heating is necessary.



Natural Gas Consumption versus cost from November 2011 to October 2012

Ocean Township Elementary School

Electric Usage and Demand

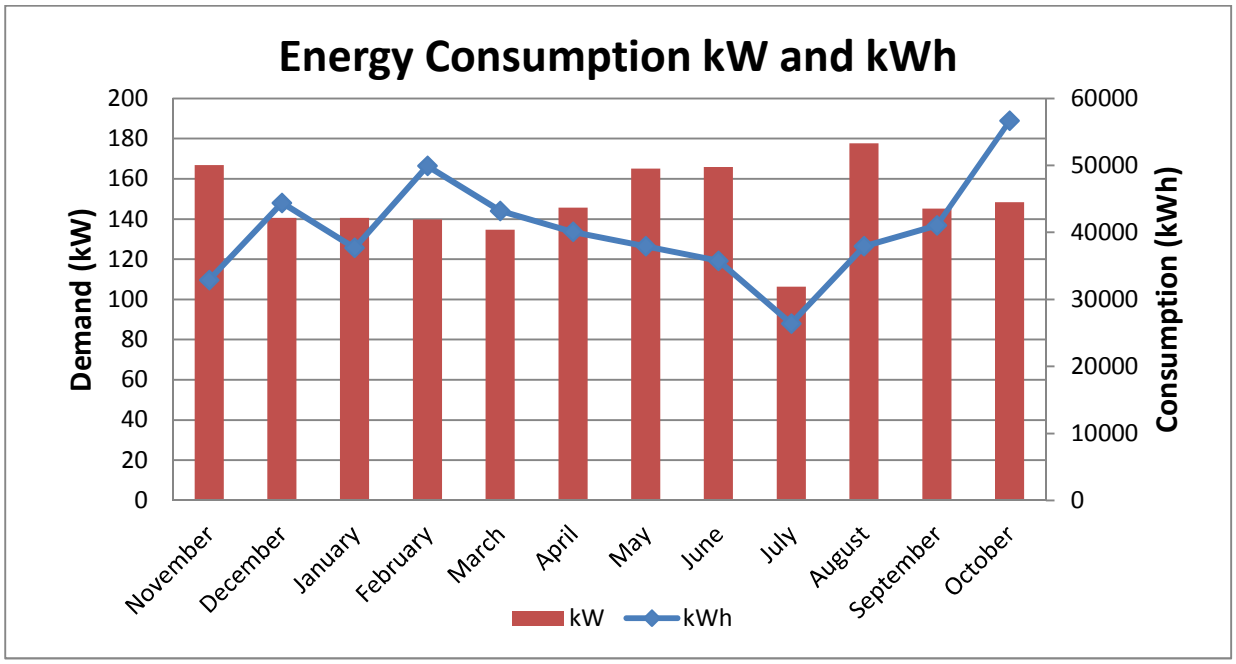
A detailed look at the usage (kWh), demand (kW) and total electric cost per month in a typical year is shown below in table format. Note that the months with (*) represent data that was estimated.

Month	KW	KWH	Total Bill $
November	166.8	32880	$4,875
December*	140.6	44400	$6,038
January	140.6	37680	$5,236
February	139.7	49920	$6,633
March*	134.6	43,200	$5,601
April	145.7	40080	$5,333
May*	165.1	37920	$4,392
June*	165.8	35760	$4,192
July*	106.4	26400	$2,856
August	177.6	37920	$4,469
September*	145.2	41040	$4,431

Month	KW	KWH	Total Bill $
October*	148.3	56640	$5,768
Total	**1,776**	**483,840**	**$ 59,826**

Based off of one year of utility bill information November 2011 to October 2012

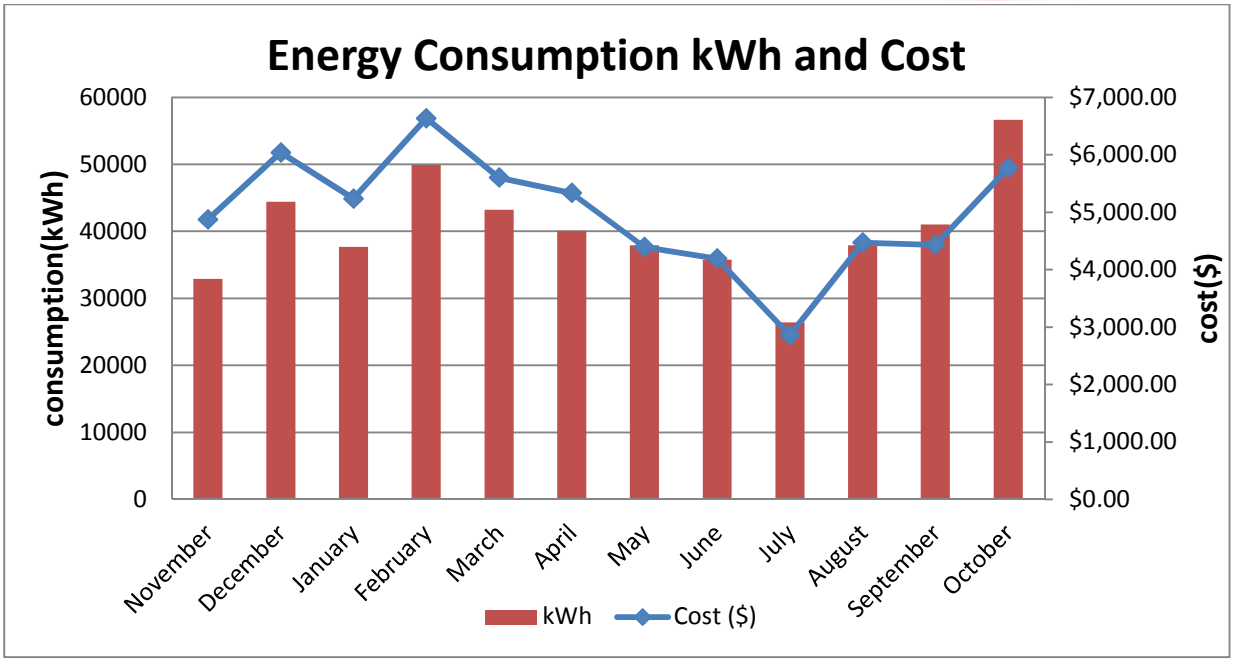
The figure below shows the usage (kWh) and cost ($) over the same one year period.



Energy Consumption from November 2011 to October 2012

The figure below shows the usage (kWh) and (Cost) over the same one year period.

Johnson Controls



Energy Consumption versus Cost from November 2011 to October 2012.

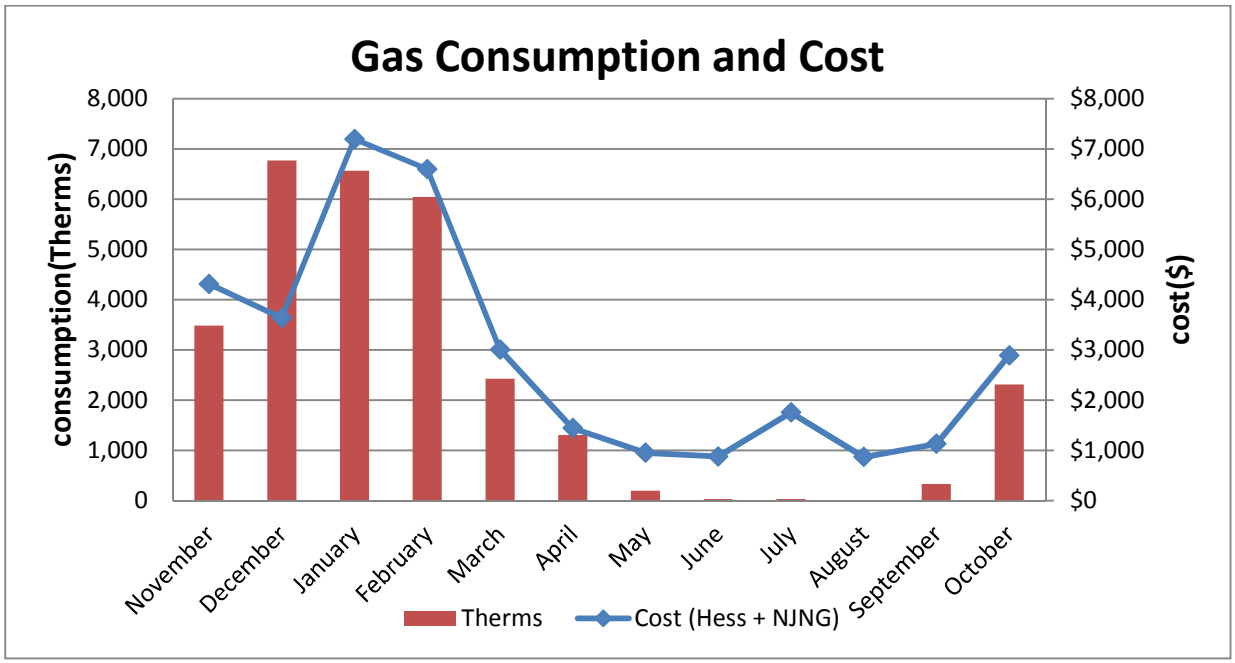
Natural Gas Usage

A detailed look at the consumption (Therms) and the dollar rate per (Therm) monthly in a typical year is shown below in table format

Month	Total THERMS	Total Cost	$/Therm
November	3,480	$4,309	$1.24
December	6,767	$3,634	$0.54
January	6,567	$7,195	$1.10
February	6,045	$6,596	$1.09
March	2,427	$3,003	$1.24
April	1,308	$1,441	$1.10
May	196	$ 951	$4.86
June	29	$ 878	$30.38
July	29	$1,753	$60.45
August	3	$868	$259.13
September	328	$1,127	$3.43
October	2,314	$2,890	$1.25
Total	**29,492**	**$34,645**	**$1.17**

Based off of one year of utility bill information November 2011 to October 2012

The figure below shows the monthly consumption over the same time period. Notice that the usage peaks in the winter months when heating is necessary.



Natural Gas Consumption versus cost from November 2011 to October 2012.

Wanamassa Elementary School

Electric Usage and Demand

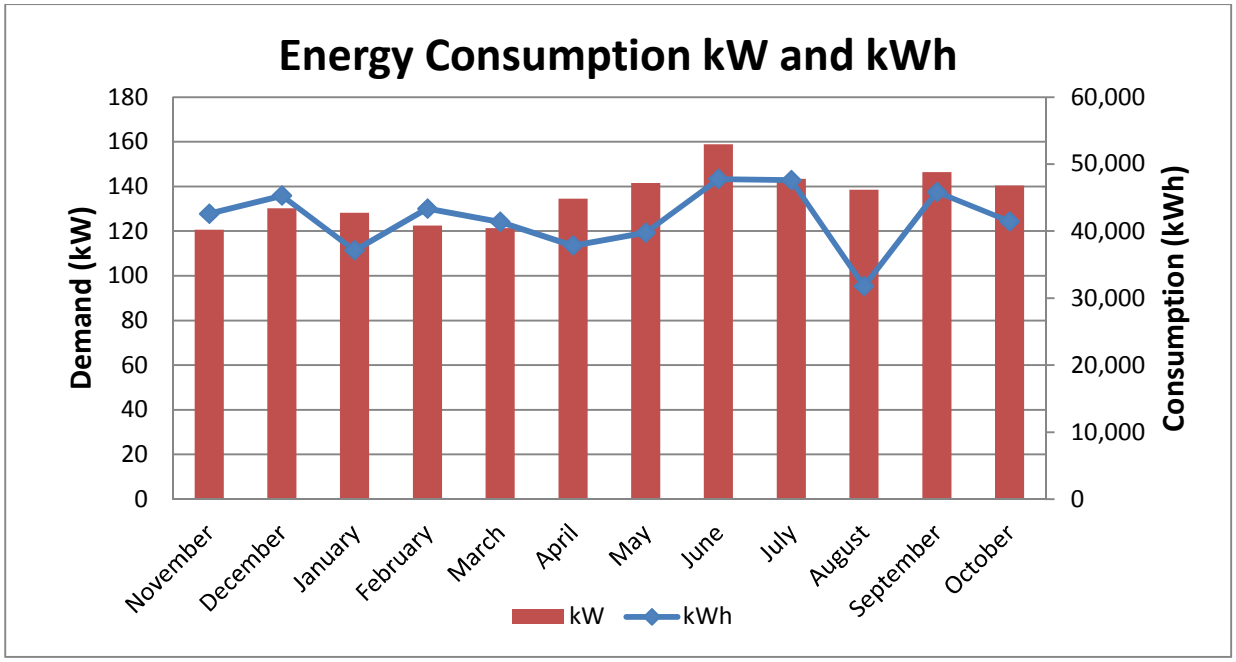
A detailed look at the usage (kWh), demand (kW) and total electric cost per month in a typical year is shown below in table format. Note that the months with (*) represent data that was estimated.

Month	KW	KWH	Total Bill $
November	120.6	42,580	$5,691
December*	130.2	45,280	$6,073
January	128.2	37,120	$5,097
February	122.5	43,360	$5,769
March	121.4	41,360	$5,355
April	134.6	37,840	$5,016
May	141.6	39,760	$5,272
June	158.9	47,760	$5,169
July*	143.4	47,600	$5,046
August	138.6	31,760	$3,630
September	146.4	45,840	$4,917
October	140.4	41,440	$4,428

Month	KW	KWH	Total Bill $
Total	1,627	501,700	$ 61,460

Based off of one year of utility bill information November 2011 to October 2012

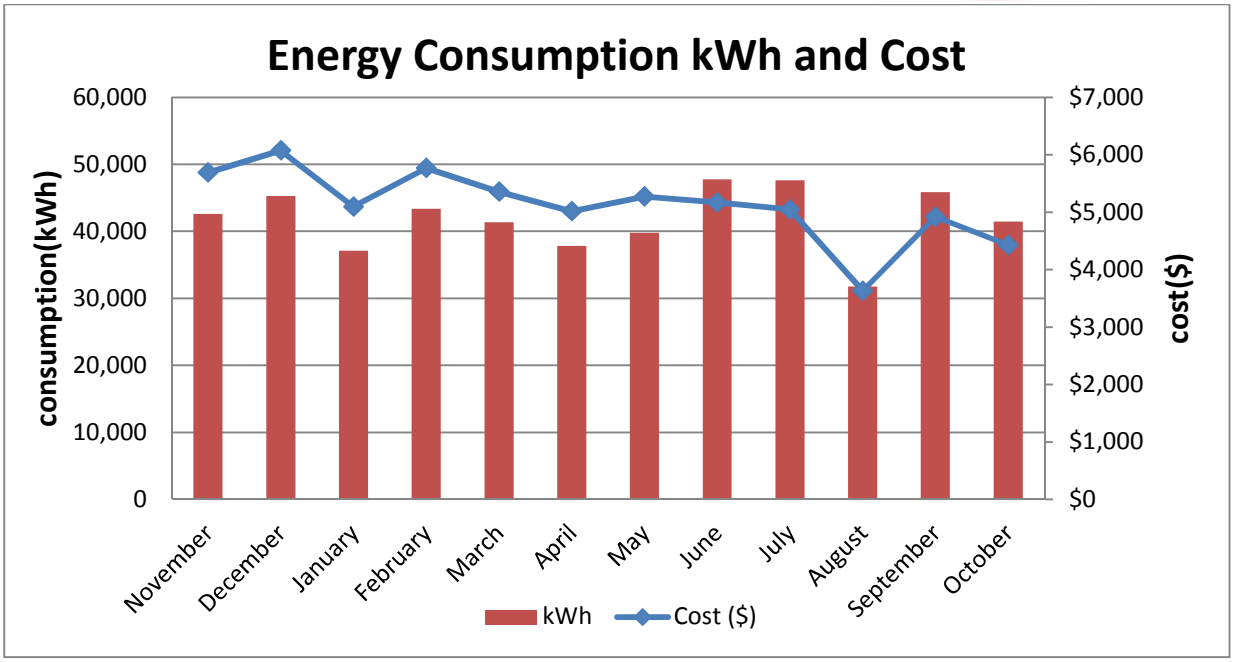
The figure below shows the usage (kW) and (kWh) over the same one year period.



Energy Consumption from November 2011 to October 2012

The figure below shows the usage (kWh) and (Cost) over the same one year period.

Johnson Controls



Energy Consumption versus Cost from November 2011 to October 2012.

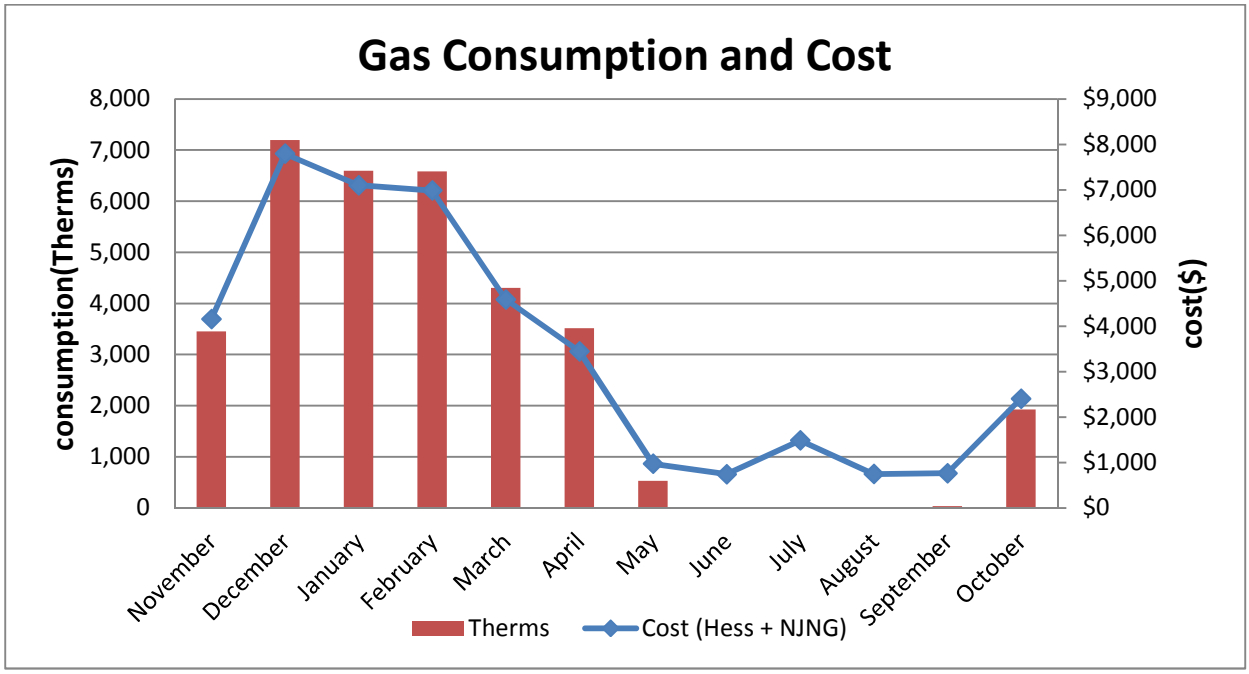
Natural Gas Usage

A detailed look at the consumption (Therms) and the dollar rate per (Therm) monthly in a typical year is shown below in table format

Month	Total THERMS	Total Cost	$/Therm
November	3,452	$4,155	$1.20
December	7,197	$7,793	$1.08
January	6,596	$7,102	$1.08
February	6,583	$6,986	$1.06
March	4,301	$4,587	$1.07
April	3,515	$3,446	$0.98
May	527	$969	$1.84
June	8	$741	$98.25
July	15	$1,486	$98.25
August	8	$744	$98.12
September	33	$764	$23.38
October	1,928	$2,404	$1.25
Total	**34,163**	**$41,177**	**$ 1.21**

Based off of one year of utility bill information November 2011 to October 2012

The figure below shows the monthly consumption over the same time period. Notice that the usage peaks in the winter months when heating is necessary.



Natural Gas Consumption versus cost from November 2011 to October 2012

Wayside Elementary School

Electric Usage and Demand

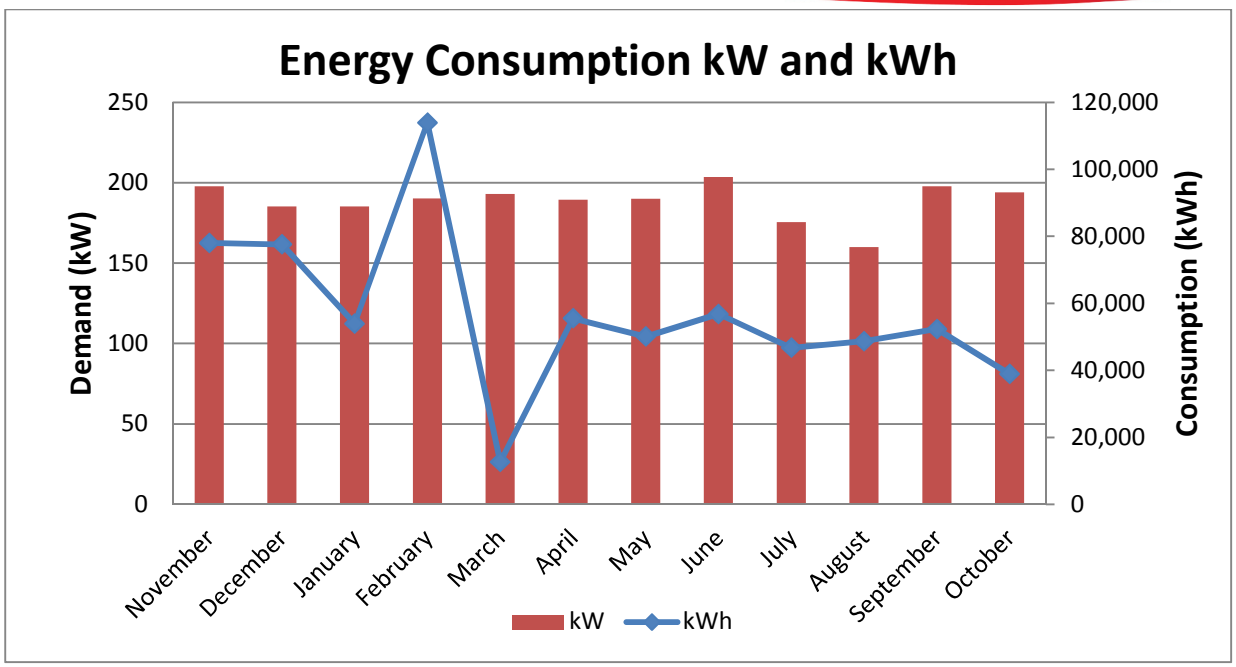
A detailed look at the usage (kWh), demand (kW) and total electric cost per month in a typical year is shown below in table format. Note that the months with (*) represent data that was estimated.

Month	KW	KWH	Total Bill $
November	197.8	78,000	$10,040
December*	185.3	77,600	$10,162
January*	185.3	53,920	$7,406
February*	190.2	113,920	$14,306
March	193.1	12,640	$2,862
April	189.4	55,520	$7,306
May	190.1	50,080	$7,592
June	203.5	56,800	$6,245
July	175.5	46,720	$5,193
August	160	48,680	$5,099
September*	197.8	52,320	$5,824
October*	194	38,880	$3,351
Total	**2,262**	**685,080**	**$ 85,392**

Based off of one year of utility bill information November 2011 to October 2012

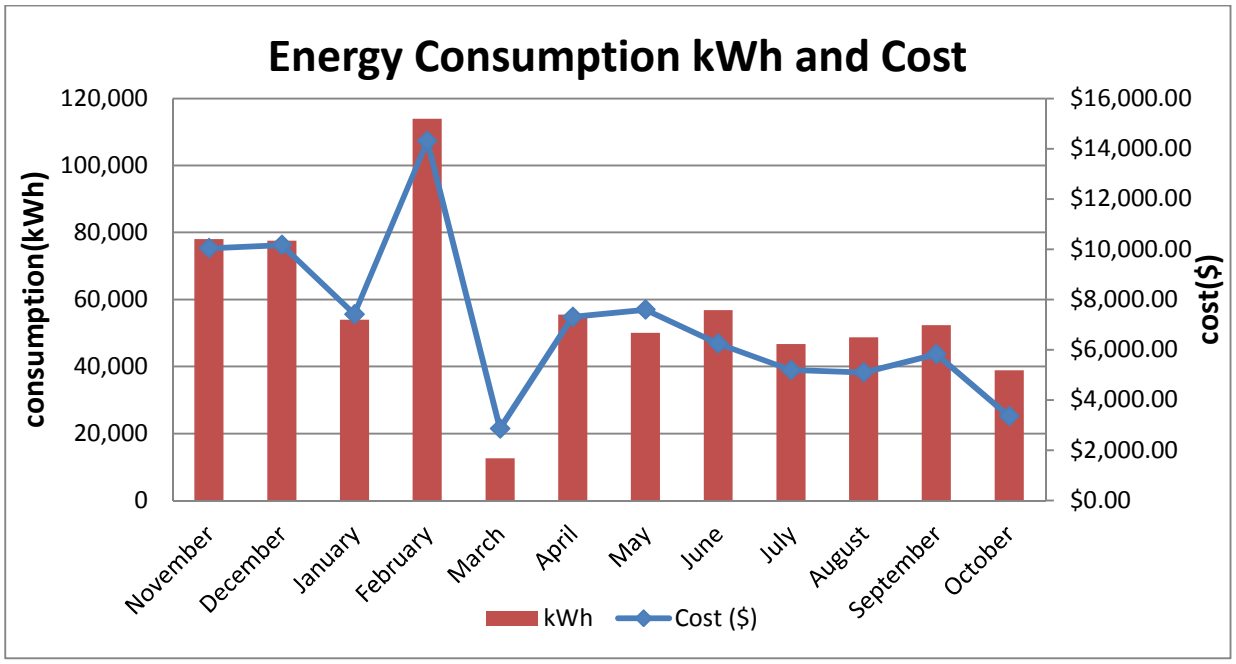
The figure below shows the usage (kW) and (kWh) over the same one year period.

Johnson Controls



Energy Consumption from November 2011 to October 2012

The figure below shows the usage (kWh) and (Cost) over the same one year period.



Energy Consumption versus Cost from November 2011 to October 2012

Johnson Controls

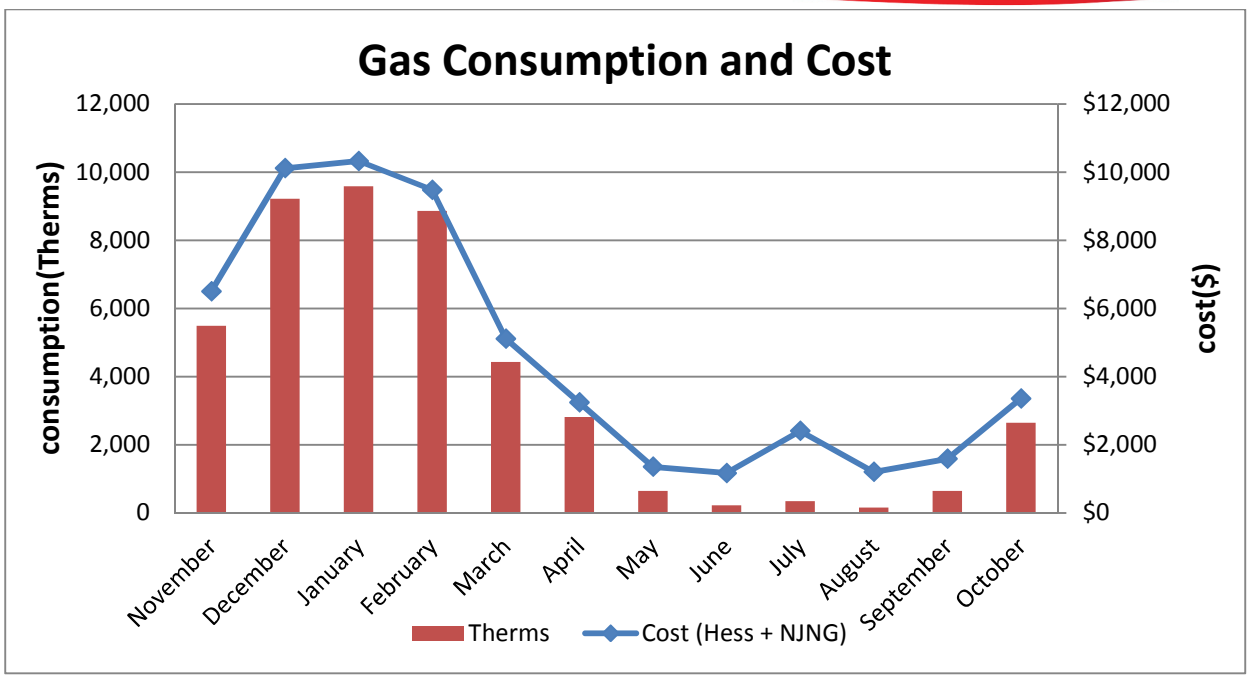
Natural Gas Usage

A detailed look at the consumption (Therms) and the dollar rate per (Therm) monthly in a typical year is shown below in table format

Month	Total THERMS	Total Cost	$/Therm
November	5,485	$6,500	$1.19
December	9,213	$10,113	$1.10
January	9,579	$10,321	$1.08
February	8,856	$9,479	$1.07
March	4,427	$5,112	$1.15
April	2,808	$3,236	$1.15
May	641	$1,352	$2.11
June	222	$1,167	$5.26
July	339	$ 2,402	$7.08
August	159	$1,202	$7.55
September	641	$1,583	$2.47
October	2,646	$ 3,353	$1.27
Total	**45,016**	**$ 55,819**	**$ 1.24**

Based off of one year of utility bill information November 2011 to October 2012

The figure below shows the monthly consumption over the same time period. Notice that the usage peaks in the winter months when heating is necessary.



Natural Gas Consumption versus cost from November 2011 to October 2012.

Administration Building

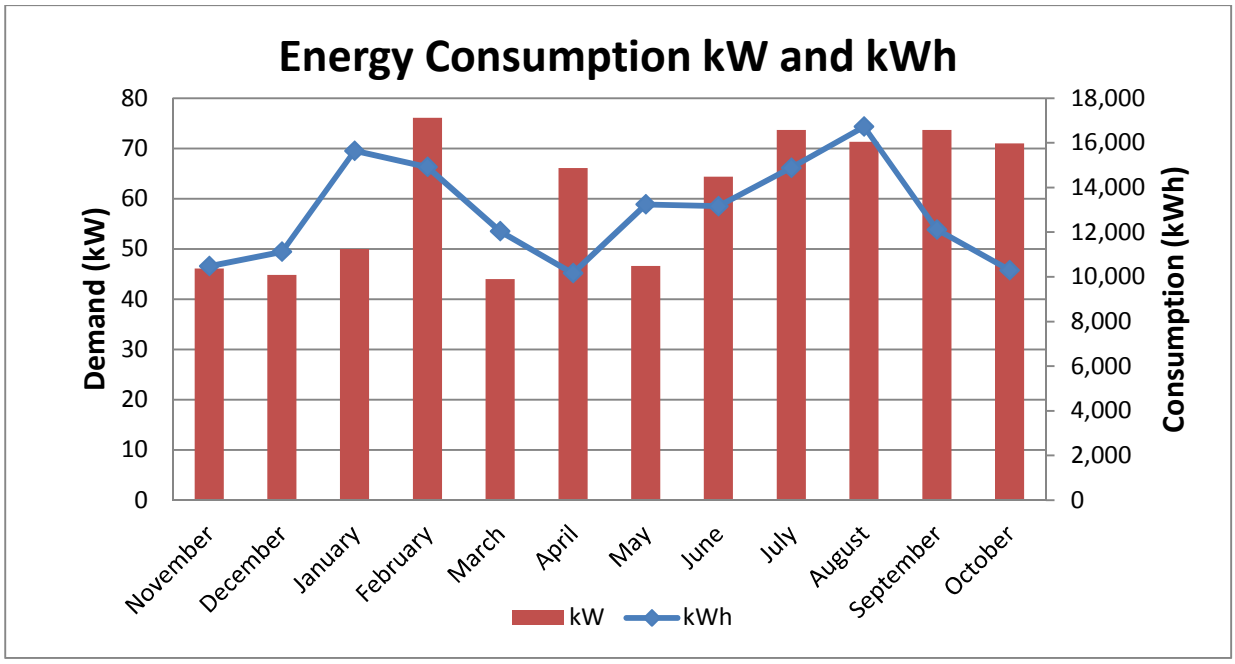
Electric Usage and Demand

A detailed look at the usage (kWh), demand (kW) and total electric cost per month in a typical year is shown below in table format

Month	KW	KWH	Total Bill $
November	46.1	10,480	$1,508
December	44.8	11,120	$1,573
January	50	15,640	$2,120
February	76.1	14,920	$2,204
March	44.0	12,040	$1,607
April	66.1	10,160	$1,386
May	46.6	13,240	$1,773
June	64.4	13,160	$1,568
July	73.7	14,880	$1,777
August	71.3	16,720	$1,817
September	73.7	12,120	$1,523
October	71	10,300	$1,331
Total	**728**	**154,780**	**$ 20,186**

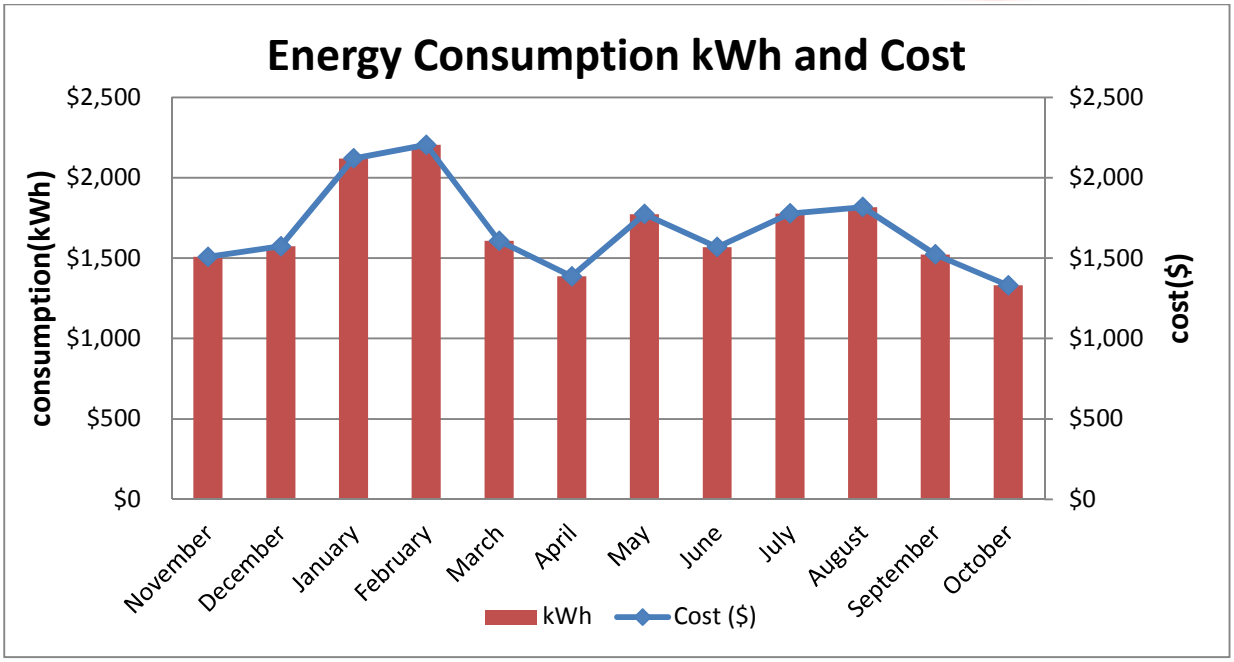
Based off of one year of utility bill information November 2011 to October 2012

The figure below shows the usage (kW) and (kWh) over the same one year period.



Energy Consumption versus cost from November 2011 to October 2012

The figure below shows the usage (kWh) and (Cost) over the same one year period.



Energy Consumption versus Cost from November 2011 to October 2012.

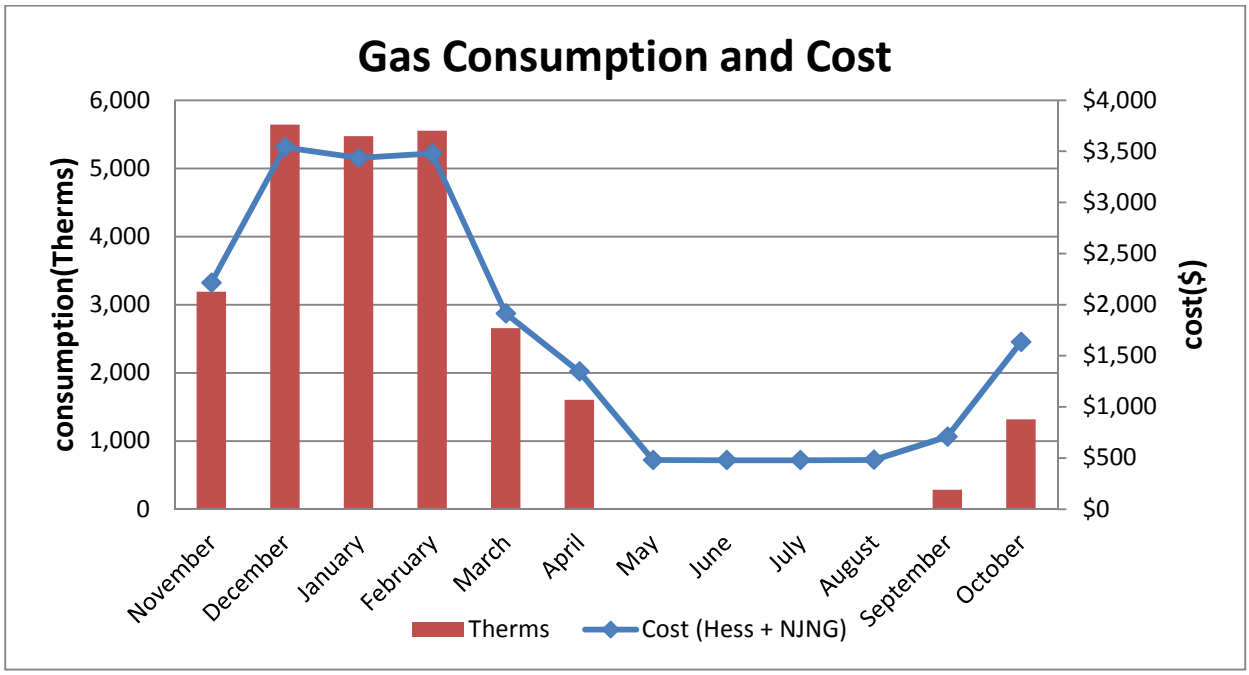
Natural Gas Usage

A detailed look at the consumption (Therms) and the dollar rate per (Therm) monthly in a typical year is shown below in table format

Month	Total THERMS	Total Cost	$/Therm
November	3,191	$2,214	$0.69
December	5,642	$3,539	$0.63
January	5,470	$3,434	$0.63
February	5,553	$3,479	$0.63
March	2,654	$1,913	$0.72
April	1,605	$1,346	$0.84
May	1	$480	$432.25
June	0	$479	-
July	0	$479	-
August	2	$481	$215.78
September	286	$709	$2.48
October	1,317	$1,633	$1.24
Total	**25,721**	**$ 20,186**	**$ 0.78**

Based off of one year of utility bill information November 2011 to October 2012

The figure below shows the monthly consumption over the same time period. Notice that the usage peaks in the winter months when heating is necessary.



Natural Gas Consumption versus cost from November 2011 to October 2012

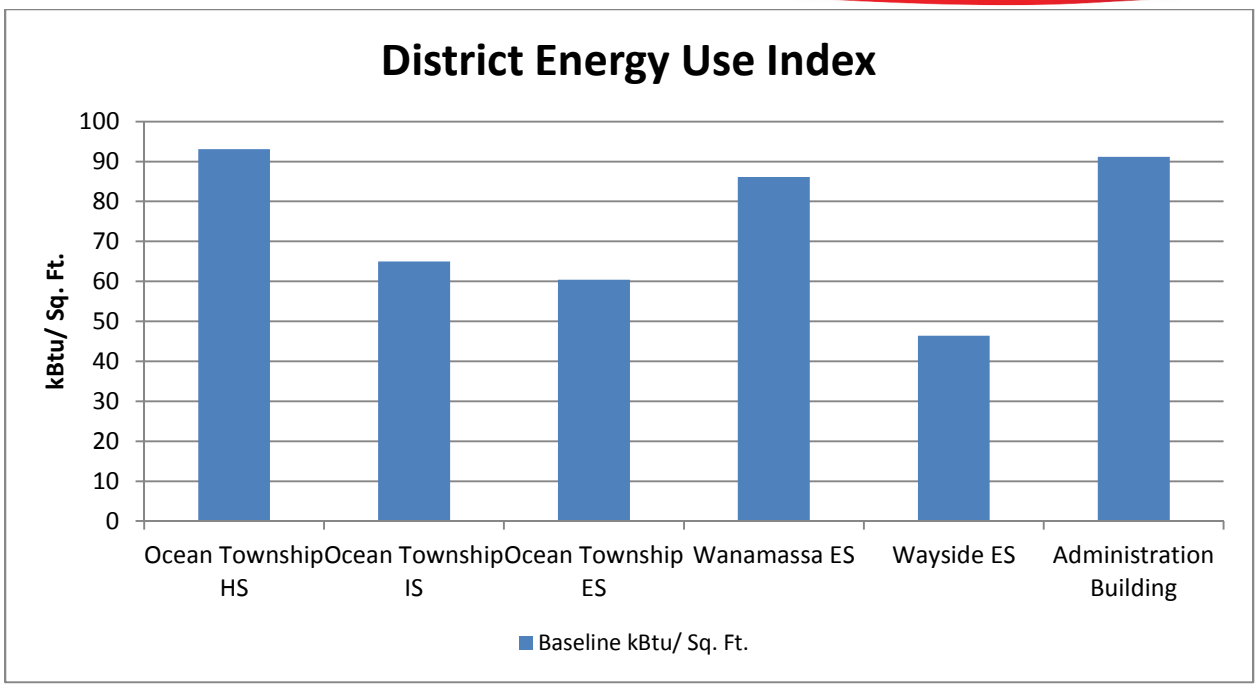
Johnson Controls

Energy Usage Summary

Name of School	Area, Sq Ft	Electrical		Gas		Total Energy Cost ($)	Total Energy (MMBTU)		
		Consumption (kWh)	Total Cost ($)	Consumption (MMBTU)	Total Cost ($)			kBtu/ Sq. Ft.	$ / Sq. Ft.
Ocean Township HS	200,215	2,001,042	$236,285	11,806	$135,032	$371,317	18,636	93	$1.85
Ocean Township IS	257,400	2,883,403	$343,822	6,876	$75,911	$419,733	16,717	65	$1.63
Ocean Township ES	76,160	483,840	$59,826	2,949	$34,645	$94,471	4,601	60	$1.24
Wanamassa ES	59,580	501,700	$61,460	3,416	$41,177	$102,637	5,129	86	$1.72
Wayside ES	147,375	685,080	$85,392	4,502	$55,819	$141,211	6,840	46	$0.96
Administration Building	34,000	154,780	$20,186	2,572	$20,186	$40,372	3,100	91	$1.19
Total 2011 - 2012	**774,730**	**6,709,845**	**$806,971**	**32,121**	**$362,770**	**$1,169,741**	**55,022**	**71**	**$1.51**

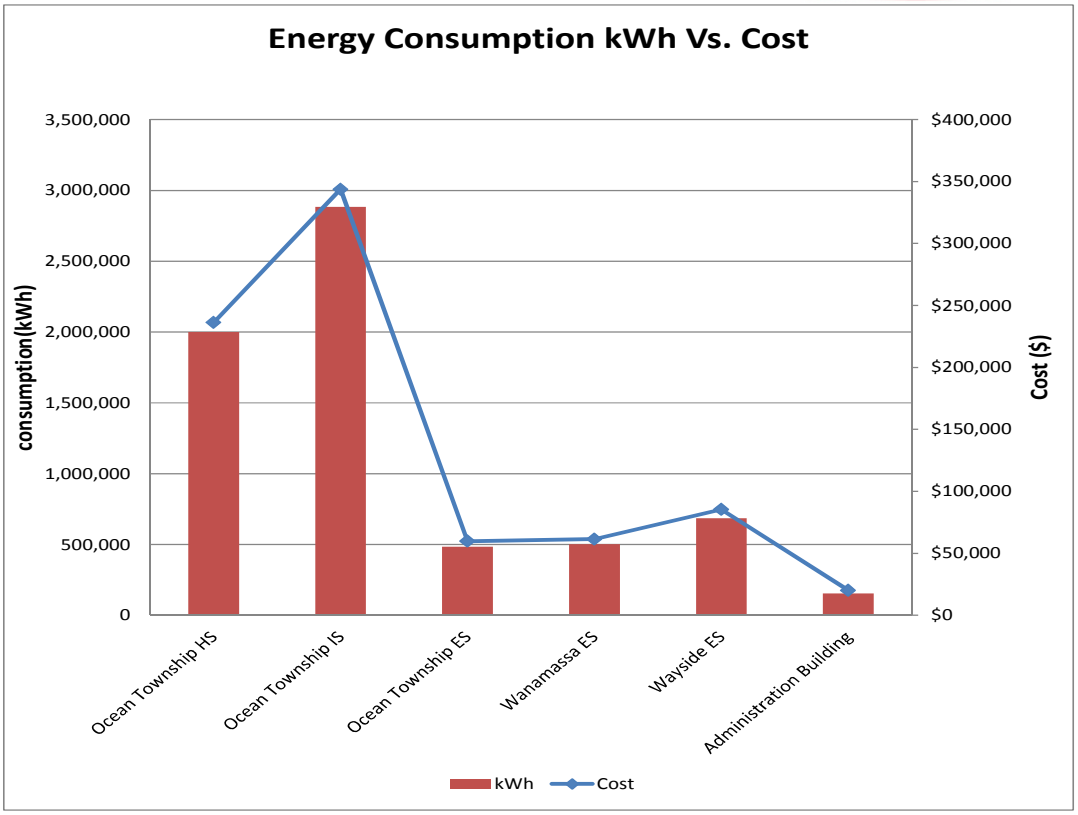
Ocean Township Board of Education Energy Summary Analysis.

Johnson Controls



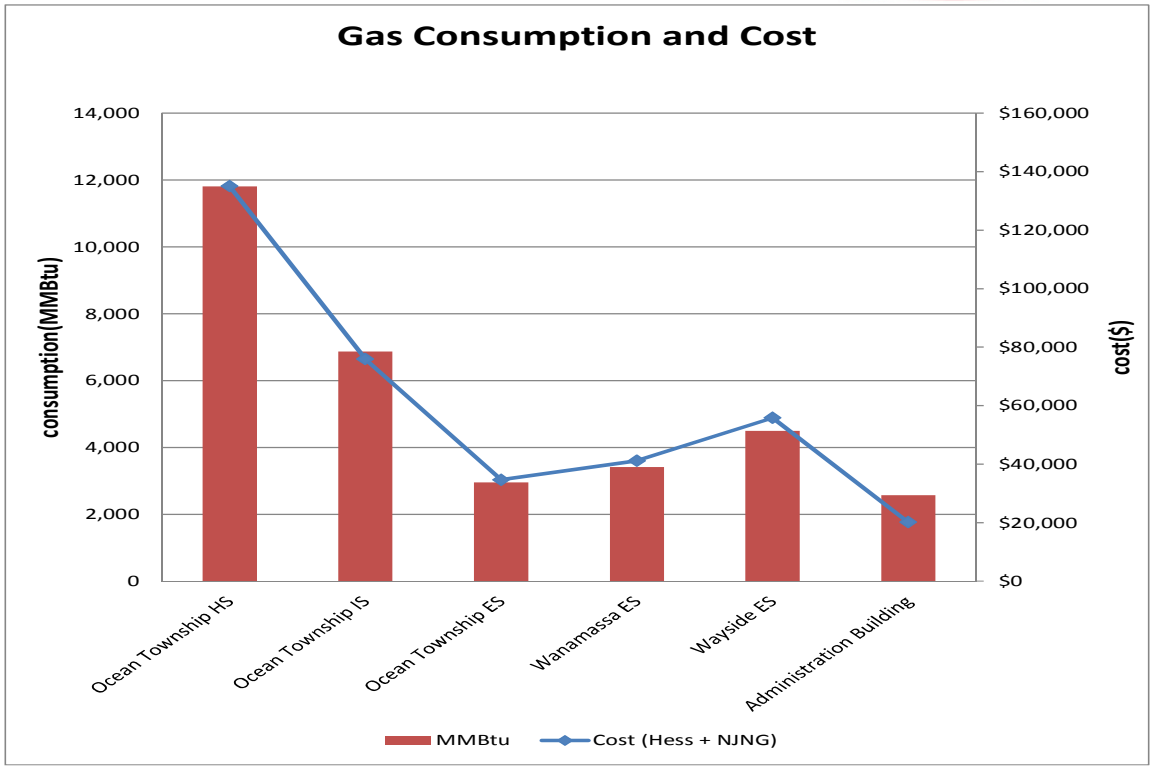
Ocean Township Board of Education Energy Summary Analysis.

Johnson Controls

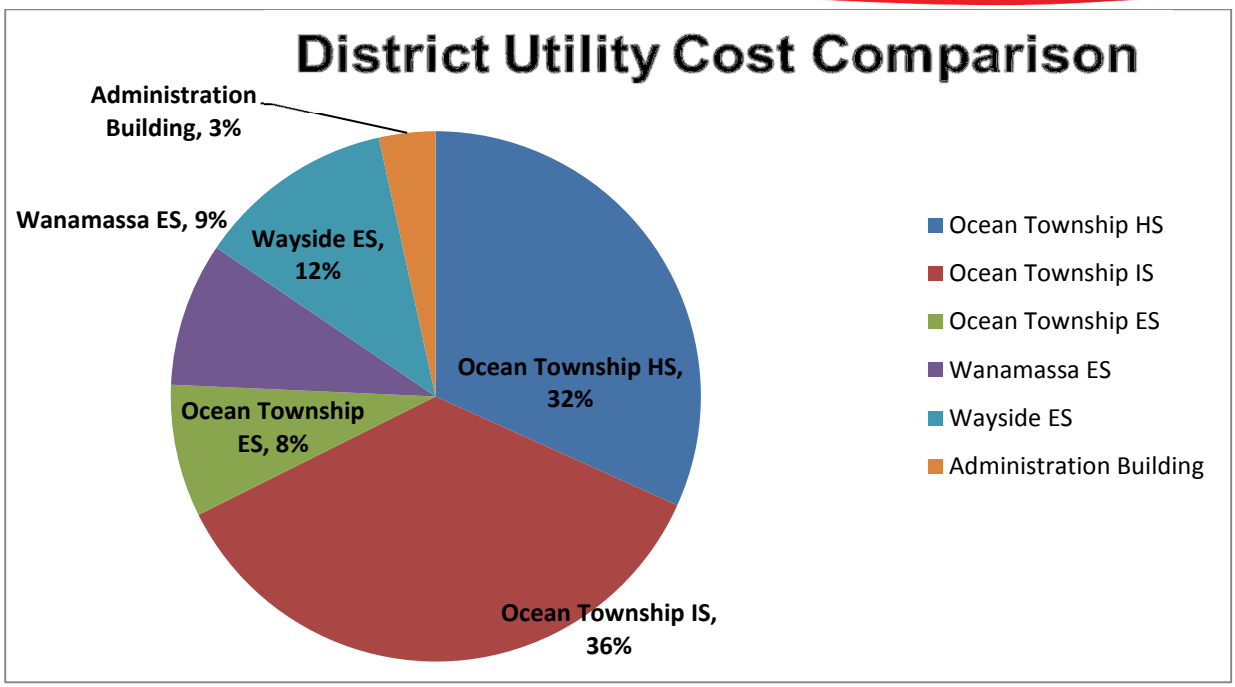


Ocean Township Board of Education Electric Consumption versus Cost.

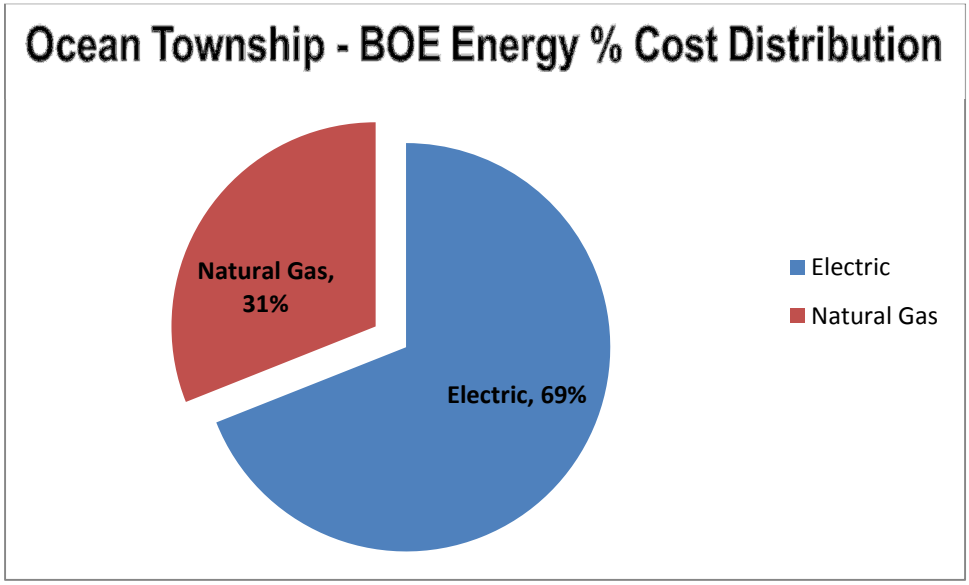
Johnson Controls



Ocean Township Board of Education Natural Gas Consumption versus Cost.



The pie chart below shows the distribtuion of these two energy sources relative to the entire District energy consumption. At 69% of the total consumption, electricity comprises a larger share of the energy usage.



Ocean Township Board of Education Percentile Energy Cost Distribution.

Marginal Rates

The utility rates identified below were used for purposes of calculating the dollar effect of the energy savings at Ocean Township Board of Education.

Name of School	$/kW	$/kWh	$/Therm
Ocean Township HS	$7.01	$0.086	$1.14
Ocean Township IS	$6.72	$0.100	$1.10
Ocean Township ES	$6.08	$0.101	$1.17
Wanamassa ES	$5.80	$0.103	$1.21
Wayside ES	$6.29	$0.110	$1.24
Administration Building	$5.23	$0.110	$0.78

Johnson Controls

Utility Escalation Rates

For purposes of calculating the extended value of the energy savings of this project the following utility escalation rates have been used.

Name of School	Energy					
	Electric Consumption		Annual Electric Demand		Natural Gas	
	Escalation Rate	Start Year of Escalation	Escalation Rate	Start Year of Escalation	Escalation Rate	Start Year of Escalation
Ocean Township HS	2.2%	Year 1	2.2%	Year 1	2.4%	Year 1
Ocean Township IS	2.2%	Year 1	2.2%	Year 1	2.4%	Year 1
Ocean Township ES	2.2%	Year 1	2.2%	Year 1	2.4%	Year 1
Wanamassa ES	2.2%	Year 1	2.2%	Year 1	2.4%	Year 1
Wayside ES	2.2%	Year 1	2.2%	Year 1	2.4%	Year 1
Administration Building	2.2%	Year 1	2.2%	Year 1	2.4%	Year 1

Section 3. Financial Impact

Energy Savings and Cost Summary

The table below provides a summary of the costs and savings associated with the measures recommended in the Energy Savings Plan. The savings have been calculated based on the savings methodology detailed throughout this report and included in the appendix of this report. Costs for each measure have been estimated based on project implementation experience and industry standards.

ECM #	ECM Description	Total Estimated Price	Annual Utility Savings without Escalation	Simple Payback	Installation Plan	Recommended For Installation
1	Hot Water Boiler Replacement - Ocean Township Intermediate School	$179,827	$6,055	29.7	JCI Implement	
2	Variable Flow Heating Hot Water Pumping (Motor Replacement) - Ocean Township High School	$20,655	$1,488	13.9	JCI Implement	
3	Variable Flow Heating Hot Water Pumping (Motor Replacement) - Ocean Township Intermediate School	$12,245	$828	14.8	JCI Implement	
4	Variable Flow Heating Hot Water Pumping (Motor Replacement) - Wayside Elementary School	$18,269	$1,137	16.1	JCI Implement	
5	Steam Trap Replacements - Administration Building	$26,261	$790	33.2	JCI Implement	
6	Steam Trap Replacements - Wanamassa Elementary School	$25,985	$1,744	14.9	JCI Implement	
7	Addition of Cooling to Cafeteria - Ocean Township High School	$340,015	($2,400)	N/A	JCI Implement	X
8	Addition of Cooling to Gym - Ocean Township High School	$341,575	($3,157)	N/A	JCI Implement	ALT
9	Addition of Cooling to Cafeteria - Ocean Township Elementary School	$344,792	($3,210)	N/A	JCI Implement	X
10	Addition of Cooling to Gym - Ocean Township Elementary School	$288,004	($2,762)	N/A	JCI Implement	X
11	Addition of Cooling to Gym - Wanamassa Elementary	$136,507	($3,281)	N/A	JCI Implement	X

ECM #	ECM Description	Total Estimated Price	Annual Utility Savings without Escalation	Simple Payback	Installation Plan	Recommended For Installation
	School					
12	Addition of Cooling to Gym & Cafeteria - Wayside Elementary School	$311,182	($4,499)	N/A	JCI Implement	X
13	Addition of Cooling to Schools - Entire School RTUS - Wayside Elementary School	$599,910	($4,870)	N/A	JCI Implement	
14	Addition of Cooling to School – Variable Refrigerant System Option 1 - OTES	$480,939	($7,012)	N/A	Public Bidding for Subcontractors	
15	Addition of Cooling to School – Variable Refrigerant System Option 2 - OTES	$49,071	$2,552	19.2	Public Bidding for Subcontractors	
16	Addition of Cooling to School – Variable Refrigerant System Option 3 - OTES	$279,471	$0	N/A	Public Bidding for Subcontractors	
17	Addition of Cooling to School – Variable Refrigerant System Option 4 - OTES	$1,487,294	($40,892)	N/A	Public Bidding for Subcontractors	
18	Water Source Heat Pump Installation - Ocean Township Elementary School	$2,354,873	$31,514	74.7	Public Bidding for Subcontractors	
19	Install Humidity Control in Cafetorium - Ocean Township Intermediate School	$11,903	($2,866)	N/A	JCI Implement	X
20	Dehumidification System Installation - Ocean Township Intermediate School	$3,219,867	($672)	N/A	JCI Implement	
21	Pipe Insulation / Blankets - Administration Building	$45,565	$3,528	12.9	JCI Implement	ALT
22	Pipe Insulation / Blankets - Ocean Township High School	$84,671	$7,818	10.8	JCI Implement	X
23	Pipe Insulation / Blankets - Ocean Township Elementary School	$60,147	$4,816	12.5	JCI Implement	
24	Pipe Insulation / Blankets - Ocean Township Intermediate School	$40,517	$3,615	11.2	JCI Implement	
25	Pipe Insulation / Blankets - Wanamassa Elementary School	$79,741	$9,118	8.7	JCI Implement	X

Johnson Controls

ECM #	ECM Description	Total Estimated Price	Annual Utility Savings without Escalation	Simple Payback	Installation Plan	Recommended For Installation
26	Pipe Insulation / Blankets - Wayside Elementary School	$53,893	$3,843	14.0	JCI Implement	X
27	HVAC Filter Upgrades - Ocean Township High School	$187,006	$4,322	43.3	JCI Implement	
28	HVAC Filter Upgrades - Ocean Township Elementary School	$49,081	$1,924	25.5	JCI Implement	
29	HVAC Filter Upgrades - Ocean Township Intermediate School	$267,335	$7,635	35.0	JCI Implement	
30	HVAC Filter Upgrades - Wanamassa Elementary School	$43,405	$2,058	21.1	JCI Implement	
31	HVAC Filter Upgrades - Wayside Elementary School	$63,940	$2,843	22.5	JCI Implement	
32	Building Automation Controls Upgrades - Central Plant - Administration Building	$43,900	$6,252	7.0	JCI Implement	X
33	Steam Radiator Control Valves - Administration Building	$30,780	$2,322	13.3	JCI Implement	
34	Steam Radiator Control Valves - Wanamassa Elementary School	$27,482	$2,791	9.8	JCI Implement	
35	Demand Control Ventilation - Administration Building	$3,474	$170	20.4	JCI Implement	
36	Demand Control Ventilation - Ocean Township High School	$26,710	$13,282	2.0	JCI Implement	X
37	Demand Control Ventilation - Ocean Township Elementary School	$6,256	$3,015	2.1	JCI Implement	X
38	Demand Control Ventilation - Ocean Township Intermediate School	$20,775	$10,144	2.0	JCI Implement	X
39	Demand Control Ventilation - Wanamassa Elementary School	$3,208	$1,028	3.1	JCI Implement	X
40	Demand Control Ventilation - Wayside Elementary School	$8,903	$1,023	8.7	JCI Implement	X
41	Boiler Controllers - Administration Building	$17,268	$875	19.7	JCI Implement	X
42	Boiler Controllers - Ocean Township High School	$24,126	$3,529	6.8	JCI Implement	X
43	Boiler Controllers - Ocean Township Intermediate School	$16,084	$4,263	3.8	JCI Implement	X
44	Boiler Controllers - Wanamassa	$17,268	$2,043	8.5	JCI Implement	X

ECM #	ECM Description	Total Estimated Price	Annual Utility Savings without Escalation	Simple Payback	Installation Plan	Recommended For Installation
	Elementary School					
45	Boiler Controllers - Wayside Elementary School	$24,126	$1,337	18.0	JCI Implement	X
46	HVAC System Commissioning - Administration Building	$6,417	$0	N/A	JCI Implement	X
47	HVAC System Commissioning - Ocean Township High School	$15,721	$23,905	0.7	JCI Implement	X
48	HVAC System Commissioning - Ocean Township Elementary School	$8,663	$6,835	1.3	JCI Implement	X
49	HVAC System Commissioning - Ocean Township Intermediate School	$15,721	$5,177	3.0	JCI Implement	X
50	HVAC System Commissioning - Wanamassa Elementary School	$8,663	$3,090	2.8	JCI Implement	X
51	HVAC System Commissioning - Wayside Elementary School	$8,663	$9,275	0.9	JCI Implement	X
52	Solar PV - Ocean Township High School	$369,853	$17,648	21.0	JCI Implement	X
53	Solar PV - Ocean Township Intermediate School	$67,280	$26,056	2.6	JCI Implement	X
54	Exterior Building Lighting - Administration Building	$5,057	$654	7.7	Public Bidding for Subcontractors	X
55	Exterior Building Lighting - Ocean Township High School	$60,625	$4,235	14.3	Public Bidding for Subcontractors	X
56	Exterior Building Lighting - Ocean Township Elementary School	$44,891	$2,795	16.1	Public Bidding for Subcontractors	X
57	Exterior Building Lighting - Ocean Township Intermediate School	$101,981	$7,774	13.1	Public Bidding for Subcontractors	X
58	Exterior Building Lighting - Wanamassa Elementary School	$30,235	$2,765	10.9	Public Bidding for Subcontractors	X
59	Exterior Building Lighting - Wayside Elementary School	$18,307	$1,966	9.3	Public Bidding for Subcontractors	X

ECM #	ECM Description	Total Estimated Price	Annual Utility Savings without Escalation	Simple Payback	Installation Plan	Recommended For Installation
60	Interior Lighting Retrofits - Administration Building	$34,651	$3,034	11.4	Public Bidding for Subcontractors	X
61	Interior Lighting Retrofits - Ocean Township High School	$49,331	$7,798	6.3	Public Bidding for Subcontractors	
62	Interior Lighting Retrofits - Ocean Township Elementary School	$14,031	$1,553	9.0	Public Bidding for Subcontractors	
63	Interior Lighting Retrofits - Ocean Township Intermediate School	$59,713	$4,910	12.2	Public Bidding for Subcontractors	
64	Interior Lighting Retrofits - Wanamassa Elementary School	$21,289	$2,065	10.3	Public Bidding for Subcontractors	
65	Interior Lighting Retrofits - Wayside Elementary School	$41,362	$2,096	19.7	Public Bidding for Subcontractors	
66	Interior LED Lighting - Ocean Township Intermediate School	$2,100	$711	3.0	Ocean Township School Staff	X
67	Daylight Harvesting - Ocean Township High School	$1,917	$156	12.3	Public Bidding for Subcontractors	
68	Daylight Harvesting - Ocean Township Elementary School	$1,917	$208	9.2	Public Bidding for Subcontractors	

ECM #	ECM Description	Total Estimated Price	Annual Utility Savings without Escalation	Simple Payback	Installation Plan	Recommended For Installation
69	Daylight Harvesting - Ocean Township Intermediate School	$3,833	$55	69.7	Public Bidding for Subcontractors	
70	Daylight Harvesting - Wayside Elementary School	$1,917	$65	29.5	Public Bidding for Subcontractors	
71	Lighting Occupancy Controls - Administration Building	$1,351	$80	16.8	Public Bidding for Subcontractors	X
72	Lighting Occupancy Controls - Ocean Township High School	$64,158	$6,032	10.6	Public Bidding for Subcontractors	X
73	Lighting Occupancy Controls - Ocean Township Elementary School	$16,012	$3,165	5.1	Public Bidding for Subcontractors	X
74	Lighting Occupancy Controls - Ocean Township Intermediate School	$49,972	$3,948	12.7	Public Bidding for Subcontractors	X
75	Lighting Occupancy Controls - Wanamassa Elementary School	$7,647	$132	57.9	Public Bidding for Subcontractors	X
76	Lighting Occupancy Controls - Wayside Elementary School	$25,931	$2,593	10.0	Public Bidding for Subcontractors	X
77	Controls for Plug-in Equipment - Administration Building	$1,510	$532	2.8	Ocean Township School Staff	
78	Controls for Plug-in Equipment - Ocean Township High School	$10,050	$1,464	6.9	Ocean Township School Staff	X
79	Controls for Plug-in Equipment - Ocean Township Elementary School	$5,550	$950	5.8	Ocean Township School Staff	X

ECM #	ECM Description	Total Estimated Price	Annual Utility Savings without Escalation	Simple Payback	Installation Plan	Recommended For Installation
80	Controls for Plug-in Equipment - Ocean Township Intermediate School	$12,300	$2,084	5.9	Ocean Township School Staff	X
81	Controls for Plug-in Equipment - Wayside Elementary School	$5,700	$1,062	5.4	Ocean Township School Staff	X
82	Kitchen Equipment Replacement (Energy Star) - Ocean Township High School	$4,548	$320	14.2	Public Bidding for Subcontractors	
83	Kitchen Equipment Replacement (Energy Star) - Ocean Township Intermediate School	$78,521	$2,376	33.0	Public Bidding for Subcontractors	
84	Ice Machine Meltwater Heat-exchanger - Administration Building	$6,496	$940	6.9	JCI Implement	
85	Ice Machine Meltwater Heat-exchanger - Ocean Township High School	$12,992	$1,469	8.8	JCI Implement	
86	Ice Machine Meltwater Heat-exchanger - Ocean Township Intermediate School	$7,244	$940	7.7	JCI Implement	
87	Kitchen Hood Controls - Ocean Township High School	$27,739	$3,524	7.9	JCI Implement	X
88	Kitchen Hood Controls - Ocean Township Elementary School	$18,124	$1,514	12.0	JCI Implement	
89	Kitchen Hood Controls - Ocean Township Intermediate School	$32,059	$5,862	5.5	JCI Implement	X
90	Walk-in Box Upgrade - Ocean Township Intermediate School	$1,781	$301	5.9	JCI Implement	
91	Transformer Replacement - Ocean Township High School	$96,867	$6,723	14.4	Public Bidding for Subcontractors	

ECM #	ECM Description	Total Estimated Price	Annual Utility Savings without Escalation	Simple Payback	Installation Plan	Recommended For Installation
92	Transformer Replacement - Ocean Township Elementary School	$4,109	$281	14.6	Public Bidding for Subcontractors	
93	Transformer Replacement - Ocean Township Intermediate School	$120,933	$8,182	14.8	Public Bidding for Subcontractors	
94	Transformer Replacement - Wayside Elementary School	$66,142	$3,994	16.6	Public Bidding for Subcontractors	
95	Vending Miser - Ocean Township High School	$700	$232	3.0	Ocean Township School Staff	X
96	Vending Miser - Ocean Township Intermediate School	$2,100	$270	7.8	Ocean Township School Staff	X
97	Vending Miser - Wayside Elementary School	$350	$259	1.4	Ocean Township School Staff	X
98	High Efficiency Electric Hand Dryer Installation - Administration Building	$600	$531	1.1	Ocean Township School Staff	X
99	High Efficiency Electric Hand Dryer Installation - Ocean Township High School	$1,200	$407	3.0	Ocean Township School Staff	X
100	High Efficiency Electric Hand Dryer Installation - Ocean Township Intermediate School	$1,200	$387	3.1	Ocean Township School Staff	X
101	High Efficiency Electric Hand Dryer Installation - Wayside Elementary School	$600	$462	1.3	Ocean Township School Staff	X
102	Replace Teacher Room Refrigerators with Energy Star Models - Administration	$1,200	$369	3.2	Ocean Township School Staff	X

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ECM #	ECM Description	Total Estimated Price	Annual Utility Savings without Escalation	Simple Payback	Installation Plan	Recommended For Installation
	Building					
103	Replace Teacher Room Refrigerators with Energy Star Models - Ocean Township High School	$3,600	$866	4.2	Ocean Township School Staff	X
104	Replace Teacher Room Refrigerators with Energy Star Models - Ocean Township Elementary School	$3,600	$1,017	3.5	Ocean Township School Staff	X
105	Replace Teacher Room Refrigerators with Energy Star Models - Ocean Township Intermediate School	$8,400	$2,686	3.1	Ocean Township School Staff	X
106	Replace Teacher Room Refrigerators with Energy Star Models - Wanamassa Elementary School	$3,600	$1,037	3.5	Ocean Township School Staff	X
107	Replace Teacher Room Refrigerators with Energy Star Models - Wayside Elementary School	$3,600	$1,108	3.2	Ocean Township School Staff	X
108	Window Replacement - Administration Building	$142,880	$3,162	45.2	Public Bidding for Subcontractors	
109	Window Replacement - Ocean Township Elementary School	$16,720	$353	47.4	Public Bidding for Subcontractors	
110	Window Replacement - Wayside Elementary School	$72,960	$1,464	49.8	Public Bidding for Subcontractors	
111	Infiltration Reduction - Administration Building	$113,323	$6,467	17.5	Public Bidding for Subcontractors	
112	Infiltration Reduction - Ocean Township High School	$73,836	$8,348	8.8	Public Bidding for Subcontractors	
113	Infiltration Reduction - Ocean Township Elementary School	$46,247	$5,692	8.1	Public Bidding for Subcontractors	

ECM #	ECM Description	Total Estimated Price	Annual Utility Savings without Escalation	Simple Payback	Installation Plan	Recommended For Installation
114	Infiltration Reduction - Ocean Township Intermediate School	$55,742	$5,464	10.2	Public Bidding for Subcontractors	
115	Infiltration Reduction - Wanamassa Elementary School	$26,966	$2,934	9.2	Public Bidding for Subcontractors	
116	Infiltration Reduction - Wayside Elementary School	$50,577	$4,769	10.6	Public Bidding for Subcontractors	
117	Window Film - Ocean Township High School	$19,734	$687	28.7	Public Bidding for Subcontractors	
118	Domestic Hot Water Fuel Conversion - Ocean Township Elementary School	$22,199	$1,121	19.8	JCI Implement	
119	Demand Response - Ocean Township High School	$0	$6,806	0.0	JCI Implement	X
120	Demand Response - Ocean Township Intermediate School	$0	$2,269	0.0	JCI Implement	X
121	GridConnect w/ Demand Response - Ocean Township High School	$4,405	$0	N/A	JCI Implement	
122	GridConnect w/ Demand Response - Ocean Township Intermediate School	$4,405	$0	N/A	JCI Implement	
123	Grants - Local, State & Federal - Administration Building	$1,283	$3,365	0.4	JCI Implement	X
124	Grants - Local, State & Federal - Ocean Township High School	$1,056	$7,575	0.1	JCI Implement	
125	Grants - Local, State & Federal - Ocean Township Elementary School	$1,283	$6,010	0.2	JCI Implement	X
126	Grants - Local, State & Federal - Ocean Township Intermediate School	$1,283	$7,105	0.2	JCI Implement	X
127	Grants - Local, State & Federal - Wanamassa Elementary School	$1,208	$1,178	1.0	JCI Implement	
128	Grants - Local, State & Federal - Wayside Elementary School	$1,283	$385	3.3	JCI Implement	X
129	Pay for Performance Program -	$5,280	$16,646	0.3	JCI Implement	

ECM #	ECM Description	Total Estimated Price	Annual Utility Savings without Escalation	Simple Payback	Installation Plan	Recommended For Installation
	NJ - Administration Building					
130	Pay for Performance Program - NJ - Ocean Township High School	$6,417	$78,769	0.1	JCI Implement	X
131	Pay for Performance Program - NJ - Ocean Township Elementary School	$5,280	$19,687	0.3	JCI Implement	
132	Pay for Performance Program - NJ - Ocean Township Intermediate School	$6,041	$21,298	0.3	JCI Implement	
133	Pay for Performance Program - NJ - Wanamassa Elementary School	$6,417	$19,730	0.3	JCI Implement	X
134	Pay for Performance Program - NJ - Wayside Elementary School	$6,041	$29,056	0.2	JCI Implement	
135	PC Computer Management System - Administration Building	$553	$388	1.4	JCI Implement	X
136	PC Computer Management System - Ocean Township High School	$1,047	$1,323	0.8	JCI Implement	X
137	PC Computer Management System - Ocean Township Elementary School	$497	$484	1.0	JCI Implement	X
138	PC Computer Management System - Ocean Township Intermediate School	$1,592	$1,855	0.9	JCI Implement	X
139	PC Computer Management System - Wanamassa Elementary School	$483	$410	1.2	JCI Implement	X
140	PC Computer Management System - Wayside Elementary School	$868	$687	1.3	JCI Implement	X
141	Replace CRT Monitors - Ocean Township High School	$1,900	$1,185	1.6	Ocean Township School Staff	X
142	Replace CRT Monitors - Ocean Township Intermediate School	$4,370	$317	13.8	Ocean Township School Staff	X
143	Green Ribbon Schools - Wayside Elementary School	$7,383	$0	N/A	JCI Implement	

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ECM #	ECM Description	Total Estimated Price	Annual Utility Savings without Escalation	Simple Payback	Installation Plan	Recommended For Installation
144	Energy Star Rating - Wayside Elementary School	$14,767	$0	N/A	JCI Implement	
145	Panoptix - Administration Building	$77,203	$3,216	24.0	JCI Implement	
146	Natural Gas Buses - Administration Building	$2,280,000	$103,391	22.1	Public Bidding for Subcontractors	
147	Academy of Energy Education - District Wide	$7,552	$0	N/A	JCI Implement	

TOTAL INVESTIGATED	**$16,500,733**	**$650,605**	**25.4**
TOTAL RECOMMENDED FOR INSTALLATION	**$2,976,655**	**$329,695**	**9.0**
TOTAL ALTERNATE PROJECT	**$3,363,795**	**$330,066**	**10.2**

Operational Savings Estimates

The lighting retrofits recommended for this project will reduce the amount of lamps that need to be replaced each year due to the longer lasting lamps and new technology fixtures. The LED lighting recommended for the exterior fixtures will last much longer than the current high intensity discharge (HID) lighting and will generate material cost savings.

A brief description of the operational savings estimated for this project is included below. Once final design is complete, Johnson Controls will work with the District to quantify the exact sources of savings by going through past invoices and expenses.

ECM Item	Annual Savings	Year To Start Savings	Years To Run
Lighting Retrofits	$5,767	Year 1	5 Years
High Efficiency Hand Dryers	$4,725	Year 1	15 Years

Potential Revenue Generation Estimates

Rebates

As part of the ESP for Ocean Township School District several avenues for rebates and incentives have been investigated which include:

NJ Smart Start Equipment Incentives

Pay for Performance

The estimated incentive amount for each program is listed below. Upon final selection of project scope and award of subcontractor bids, the incentive applications will be filed.

New Jersey Smart Start Equipment Incentives

Building	ECM Description	Estimated SmartStart Incentive
Administration Building	Exterior Building Lighting	$300
Ocean Township High School	Exterior Building Lighting	$2,665
Ocean Township Elementary School	Exterior Building Lighting	$570
Ocean Township Intermediate School	Exterior Building Lighting	$1,505
Wanamassa Elementary School	Exterior Building Lighting	$2,335
Wayside Elementary School	Exterior Building Lighting	$3,700
Administration Building	Interior Lighting Retrofits	$3,065
Ocean Township High School	Interior Lighting Retrofits	$5,730
Ocean Township Elementary School	Interior Lighting Retrofits	$2,100
Ocean Township Intermediate School	Interior Lighting Retrofits	$7,455
Wanamassa Elementary School	Interior Lighting Retrofits	$2,345
Wayside Elementary School	Interior Lighting Retrofits	$2,345
Ocean Township High School	Kitchen Hood Controls	$900
Ocean Township Elementary School	Kitchen Hood Controls	$900
Ocean Township Intermediate School	Kitchen Hood Controls	$900
Ocean Township Elementary School	Domestic Hot Water Fuel Conversion	$350
Total		$36,865

Pay for Performance

Building	Incentive #1	Incentive #2	Incentive #3	Total
Admin Building	$2,500	$16,646	$16,646	$35,792
Ocean Township High School	$10,011	$75,481	$75,481	$160,973
Ocean Township Intermediate	$12,870	$86,082	$86,082	$185,034

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Building	Incentive #1	Incentive #2	Incentive #3	Total
School				
Ocean Township Elementary School	$3,808	$21,298	$21,298	$46,404
Wanamassa Elementary School	$2,979	$26,164	$26,164	$55,307
Wayside Elementary School	$7,369	$29,056	$29,056	$65,481
TOTAL	**$39,537**	**$254,727**	**$254,727**	**$548,991**

Demand Response

The Peak Load Contribution Numbers (PLC #) for each school was obtained from the local utility in order to evaluate the potential for demand response participation. The table on the following page details the PLC for each building as well as the total district contribution to the peak load.

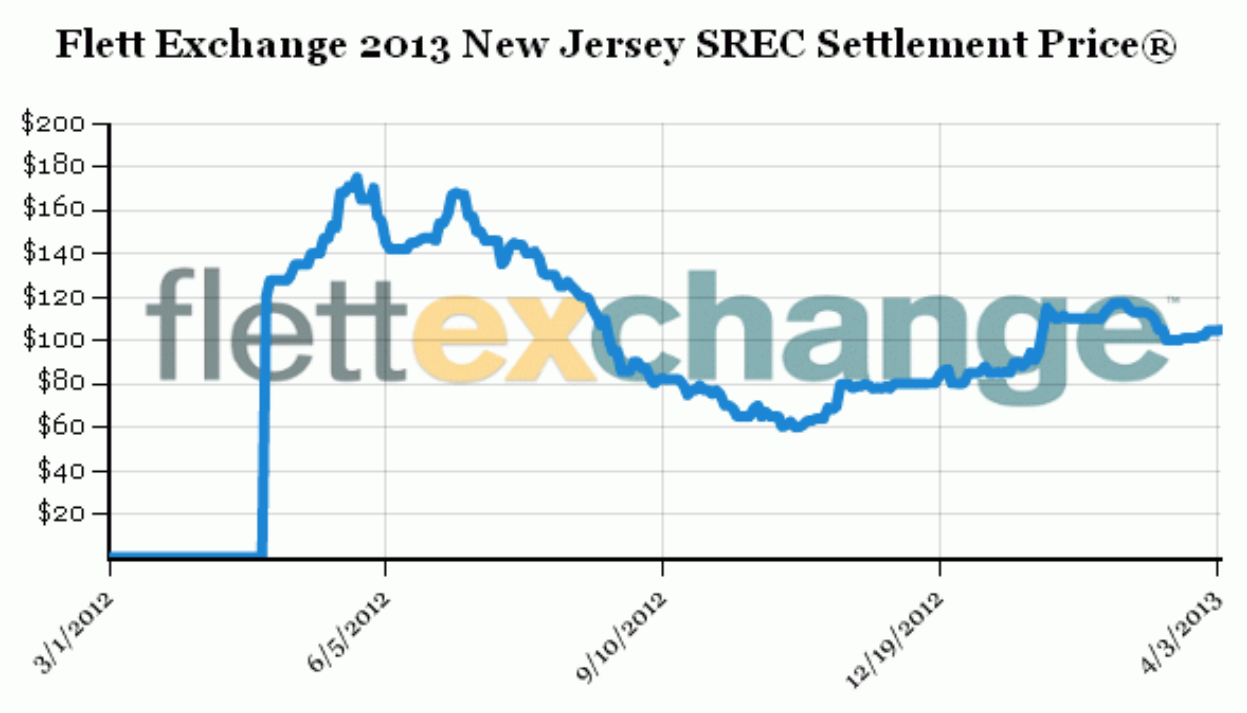
Schools	Account Number	2013 (PLC Estimates)
Ocean Township High School	100013657679	324.58
Ocean Township Intermediate School	100011471552	805.33

The table below displays annual earnings to Ocean Township Public School by participating in the Emergency Response Program based on a 280 kW (aggregated) load drop for 2013/2014, 324 kW (aggregated) load drop for 2014/2015, and 100 kW (aggregated) load drop for 2015/2016 and beyond.

PJM Payment Year (Year)	Price Certainty (Known / Forecast)	Annual Customer Capacity Benefit ($ / year)
2013/2014	KNOWN	**$13,396**
2014/2015	KNOWN	**$9,075**
2015/2016	KNOWN	**$5,456**
2016/2017	FORECAST	**$4,286**
2017/2018	FORECAST	**$4,286**
2018/2019	FORECAST	**$4,286**
2019/2020	FORECAST	**$4,286**
2020/2021	FORECAST	**$4,286**
2021/2022	FORECAST	**$4,286**
2022/2023	FORECAST	**$4,286**
Totals		**$57,929**

SRECs

No SREC incentives have been included with this Energy Savings Project although any solar power generated by the installed systems will also generate SRECs. The District will obtain any revenue generated through the sale of the SRECs. The graph below indicates the trend in SREC pricing for Energy Year 2013.



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Business Case for Recommended Project

Ocean Township BOE

Financial Analysis

DRAFT

Financing Summary

	Construction Sell Price	$2,836,658
Fees	NJ Department of Labor & Workforce Development Fee	14,183
	Customer Installed ECMs	140,000
	Financing & Legal Fees	50,000
	Adjusted Financed Amount	$3,040,841
	Loan Structure	Lease
	Contract Term - Years	15
	Construction Term - Months	6
	Loan Payment Frequency	Annual
	Interest Rate	2.65%
	Total Financed Amount	$3,040,841

Scenario Manager	
Select Scenario	BASE

Business Case Summary

		Measured Utility Savings	Non-measured Savings: Solar PV Savings	Non-measured Savings: Operational Savings	Non-measured Savings: Rebate	Non-measured Savings: Demand Response Benefits	Total Savings	Loan Payment	Measurement Verification (Perf. Mgmt.)	Service (Perf. Mgmt.)	Balance
Construction \	Year 0	$ 15,142	$ 1,768	$ -	$ 12,990	$ 13,396	$ 43,297	$ -	$ -	$ -	$ 43,297
Performance Years	Year 1	$ 164,488	$ 43,704	$ 3,459	$ 108,969	$ 9,075	$ 329,695	$ 306,150	$ 19,571	$ 3,141	$ 833
	Year 2	$ 168,313	$ 44,666	$ 3,563	$ 98,499	$ 5,456	$ 320,497	$ 307,569	$ 8,903	$ 3,172	$ 852
	Year 3	$ 172,228	$ 45,648	$ 3,669	$ -	$ 4,286	$ 225,831	$ 215,221	$ 6,535	$ 3,204	$ 872
	Year 4	$ 176,233	$ 46,653	$ 3,779	$ -	$ 4,286	$ 230,951	$ 226,823	$ -	$ 3,236	$ 892
	Year 5	$ 180,332	$ 47,679	$ 3,893	$ -	$ 4,286	$ 236,189	$ 232,009	$ -	$ 3,269	$ 912
	Year 6	$ 184,526	$ 48,728	$ 4,010	$ -	$ 4,286	$ 241,549	$ 236,854	$ -	$ 3,301	$ 1,394
	Year 7	$ 188,818	$ 49,800	$ 4,130	$ -	$ 4,286	$ 247,033	$ 236,854	$ -	$ 3,334	$ 6,846
	Year 8	$ 193,209	$ 50,896	$ 4,254	$ -	$ 4,286	$ 252,645	$ 236,854	$ -	$ 3,368	$ 12,424
	Year 9	$ 197,704	$ 52,015	$ 4,381	$ -	$ 4,286	$ 258,386	$ 236,854	$ -	$ 3,401	$ 18,132
	Year 10	$ 202,303	$ 53,160	$ 4,513	$ -	$ -	$ 259,975	$ 236,854	$ -	$ 3,435	$ 19,686
	Year 11	$ 207,009	$ 54,329	$ 2,907	$ -	$ -	$ 264,245	$ 236,854	$ -	$ 3,470	$ 23,921
	Year 12	$ 211,824	$ 55,524	$ 2,994	$ -	$ -	$ 270,343	$ 236,854	$ -	$ 3,504	$ 29,985
	Year 13	$ 216,752	$ 56,746	$ 3,084	$ -	$ -	$ 276,582	$ 236,854	$ -	$ 3,539	$ 36,189
	Year 14	$ 221,795	$ 57,994	$ 3,176	$ -	$ -	$ 282,966	$ 236,854	$ -	$ 3,575	$ 42,538
	Year 15	$ 226,956	$ 59,270	$ 3,272	$ -	$ -	$ 289,497	$ 236,854	$ -	$ 3,610	$ 49,033
Total	Σ	$ 2,927,631	$ 768,580	$ 55,084	$ 220,458	$ 57,929	$ 4,029,682	$ 3,656,308	$ 35,009	$ 50,560	$ 287,805

Note:
Cash flows presented in this report are to be used for modeling purposes only. Final interest rates and actual cash flows will be determined at the time of project closing when final terms and conditions are executed.

Greenhouse Gas Reductions

Ocean Township School District

Johnson Controls
INGENUITY WELCOME

The Project's reduced emissions would be equivalent to:

CO2 sequestered by	524,629	**tree seedlings grown for 10 year in urban scenario.**	
CO2 sequestered by	4,363	**acres of pine or fir forest.**	
CO2 emissions from	3,912	**passenger vehicles.**	
CO2 emissions from	47,583	**barrels of oil consumed.**	
CO2 emissions from the energy of one year.	1,741	**homes for**	
CO2 emissions from burning	107	**coal railcars.**	

Source:
All carbon equivalencies extracted directly from the EPA website.
"Greenhouse Gas Equivalencies Calculator." Clean Energy. U.S. Environmental Protection Agency. <www.epa.gov/cleanenergy/energy-resources/calculator.html> (July 2, 2009).

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