Manchester School District

Opening

In January of 2011, the City of Manchester (including the School District) launched a partnership with ARAMARK Enginering Solutions to implement an award winning, comprehensive energy management program. In this first edition program newsletter, we will explore the features of this program, the expected activities, and some of the energy conservation measures currently underway.

Everyone is aware of the impact of rising energy prices in our lives and the strain on school district budgets these days. A school district's energy spending typically represents the largest percentage of its non-fixed budget. In practicing sound fiscal responsibility, the City administration issued a request for proposals to explore the opportunities and potential energy savings that were available in the marketplace to help the School District reduce their energy spending.

After reviewing the alternatives, the District chose a comprehensive energy program with the intent of achieving the greatest amount of benefit for the long term. The program is structured to provide this implementation and support service for 18 months with the intent that the District will have improved new tools and processes in place to continue maintaining an efficient profile far into the future on its own.

Program Activities

So what is, or will be, happening around the District in the next couple of months? A full-time energy manager from ARAMARK has been working with the District. This individual reports directly to the City of Manchester's Facilities Manager.

The first step was to verify that the current energy use data is completely accurate and to become more familiar with the buildings and the systems controlling them. Meetings with various groups throughout the City and the School District have already occurred. These meetings were conducted to ensure that all participants understand the components of the energy management program and communicate how individuals can participate in the program. The energy program was introduced throughout the School District at the Principals' meeting held before the 2011 school year ended.

The next step is to schedule additional meetings to explain the actual energy projects that will occur at each school and to discuss the overall Energy Awareness Program.

School District Energy Message

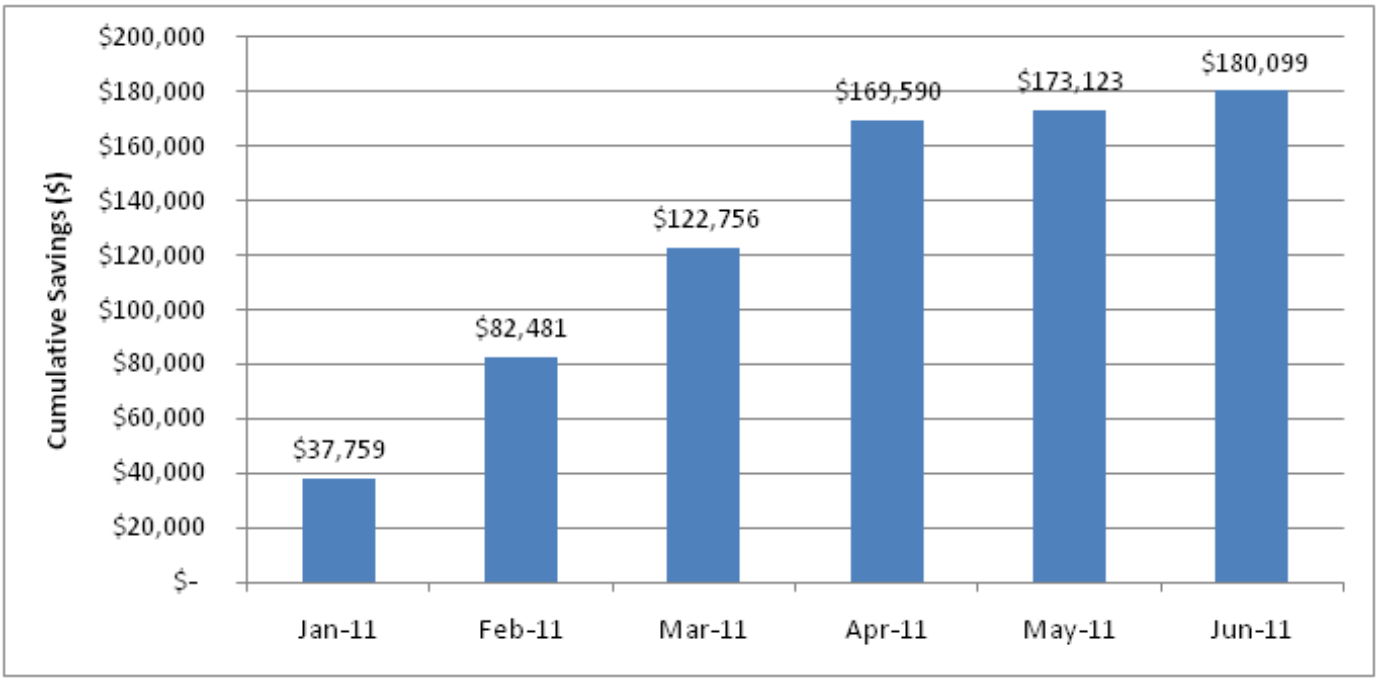
Would you like to get more involved? Join us! The Manchester School District will create an energy team from members of the academic community and operations staff. Our goal is to have representatives from different areas that are interested in developing ways to reduce energy use in the schools and become ambassadors by taking the program to the classrooms and to their colleagues. If you're interested, just contact the facilities department. Help make your School District a model of efficiency.

Energy Program Performance Summary

Second Quarter Performance (2011)	Contract Year to Date (since (01/2011)	Total Performance to Date (since 01/2011)
Consumption reduction[1]: • Energy reduction: **4.4%**	Consumption reduction[1]: • Energy reduction: **8.9%**	Consumption reduction[1]: • Energy reduction: **8.9%**
Financial savings: **$57,343** • Electricity: $31,995 • Natural Gas: $25,348	Financial savings: **$180,099** • Electricity: $85,792 • Natural Gas: $94,307	Financial savings: **$180,099** • Electricity: $85,792 • Natural Gas: $94,307
GHG avoided emissions: • 247,682 lbs of CO2	GHG avoided emissions: • 1,340,730 lbs of CO2	GHG avoided emissions: • 1,340,730 lbs of CO2

[1] Comparisons are made to the Base Year. Base Year periods vary slightly for some meters but all fall between July 2009 and June 2010.

Cumulative Savings



Current Profile
- Energy Intensity: 61 kBtu/SqFt

Baseline Profile (July 2009 – June 2010)
- Energy Intensity: 60 kBtu/SqFt

School Gyms Go Green and Produce Energy Savings

During the month of July the gyms at Manchester Memorial High School, Southside Middle School, and Henry J. McLaughlin Middle School were upgraded with new energy efficient T-5 high output high bay fixtures. The existing metal halide fixtures provided a poor quality of light and were not an energy efficient technology. The new light fixtures improved the color rendering, light levels, and consume significantly less energy. Each gym lighting project will provide a simple payback using utility incentive programs of under four years. The light improved the overall quality of the space that will enhance gym classes, sporting events, and school assemblies.

Each light fixture has a motion sensor, when the gym is unoccupied, the light will automatically turn “off” after an adjustable time delay.

School Boilers Accept 21st Century Burner Technology

A boiler at each of three schools; Manchester Central High School, Hillside Middle School, and Southside Middle School were retrofitted with new computer burner controllers. The purpose of this retrofit was to reduce the consumption of natural gas by adjusting the firing rate of the boiler based on load and temperature of the combustion air. Since the air density changes during the school heating season, the controller will adjust the amount of air and fuel used during the burner’s operation to match the highest level of efficiency.

The old burner controls had to be manually set, without auto-adjusting to meet changes in air temperature and load. The linkage to operate the burners was a mechanical linkage that has to be adjusted causing wear and drift out of adjustment during the heating season. This is the first phase of this retrofit, and if the energy savings projected meet the planned expectations, additional boilers may be retrofitted with this advanced technology.

Energy Tips and News

Remember, everyone makes an impact on energy consumption. Things you can do to help reduce energy consumption:

1) Turn out lights when you leave the room (don't forget about faculty rooms, copy rooms, etc.) even if it's only for a minute or so. (No, it does not use more energy to turn the lights back on.) Take advantage of natural day lighting when possible by turning off room lights that are not contributing to overall light levels, and don't forget to keep some of the hall lights off during the day if there is enough natural light. Gymnasiums and other spaces with the type of lights that don't come back on immediately are to be turned off if the space is unoccupied for more than half hour, i.e., a class period with no scheduled class.

2) Keep doors and windows closed when the cooling or heating systems are active. If your school doesn't have air conditioning, then opening windows and doors may be your source of cooling but the rest of the buildings are designed to operate with doors and windows closed to maintain conditions. The equipment in the rooms simply is not designed to heat or cool the hallways or the neighbor's back yard. Remember if your room can't maintain District temperatures, there may be a problem with the equipment and it should be looked at by the maintenance mechanic.

3) Keep doors to the outside closed at all times. Propping open exterior doors is a huge, unnecessary waste of energy in addition to the obvious safety concerns.

Energy and Environmental Facts

We measure the energy used by electrical items in terms of watts. Light bulbs, microwaves, and TVs all have wattage ratings that indicate how much power they will use when operating to do the work we use them for. When we get our home electric bills, we pay for the total work done in kilowatt-hours which is a measure of how much power we used cumulatively for the month. One kilowatt is simply 1,000 watts and a killowatt-hour is the equivalent of using 1,000 watts for one hour. For example: if we have 10, 100-watt incandescent light-bulbs in our home and we turn all 10 light bulbs on for three hours, then the total energy used is 10 (bulbs) x 100 (watts per bulb) x 3 (hours) = 3,000 watt-hours or 3 kilowatt hours (kWh). If we pay 10 cents per kWh, the cost is $0.30. How much would you pay in your home?

A BTU (British Thermal Unit) is a standard measurement used to indicate the usage of fossil fuels. A BTU is the amount of energy required to raise 1 pound of water by 1° F (there are almost 8 pounds of water in a gallon). Boiler heating capacities are measured in BTU per hour. Different fuels, such as natural gas, propane, and No. 2 heating oil have different heat values, the amount of heat given off by burning that volume of fuel. One gallon of No. 2 heating oil has a heat value of 139,000 BTUs. One gallon of propane has a heat value of 91,600 BTUs. Natural gas, which is measured in cubic foot. (For the more technical folks, the value of natural gas BTU/CF varies because this gas is actually a mixture that can actually consist of different percentages of the various gases that make up that mixture, each having a different heating value.) So, 1MMBTU = 1,000,000 BTUs = 1 Decatherm and is equivalent to 1,000 cubic feet of gas.

Even kilowatts can be converted to a BTU equivalent; 1 kilowatt-hour = 3,412 BTUs. We use this number along with fossil fuels to show total energy usage per square foot of building space when we make certain comparisons.