

# Your Energy Savings<sup>SM</sup> Business Program

## Case Study: Gwinn High School



Gwinn High School, located in Michigan's Upper Peninsula, recently embarked on a project to reduce operating costs. With assistance from DTE Energy's Your Energy Savings Program, the school was able to upgrade existing equipment to provide both cost savings and a more comfortable environment for learning.

Built in 1963, Gwinn High School currently enrolls approximately 400 students throughout its 365 square mile school district in Marquette County. Enrollment has been on the decline since the closing of the nearby K.I. Sawyer Air Force Base in 1995. As a result of the decline, the school needed to increase operational efficiency and cut costs in recent years. Additionally, students in outlying areas of the school sometimes experienced inconsistent room temperatures, with those students farther from the boiler often experiencing lower temperatures than those located in more central locations. This was a challenge given the frigid winter conditions for which the area is known.

With the growing need to reduce operational costs, DTE Energy's Your Energy Savings Program provided more than \$12,000 in energy efficiency incentives to help the school purchase and install energy efficient equipment. These measures included new high-efficiency condensing boilers, demand control ventilation and energy recovery ventilators. The projected energy savings amounts to nearly 4,700 MCF and \$48,800 on an annual basis.

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### High Efficiency Condensing Boilers

The boilers at Gwinn High School were the first area of focus. The existing boilers, original to the building, were more than 46 years old. They were replaced with high efficiency condensing boilers, which are designed to capture a portion of the latent heat normally lost up the chimney by condensing water vapor in the flue gas. The water vapor is created as the hydrogen component of the fuel is burned.

With a minimum thermal efficiency of 90% or greater, these boilers minimize standby losses and modulate the firing rate of the boiler to match the amount required to heat the building.

The natural gas savings obtained by replacing the antiquated boilers will go a long way toward reducing operating expenses in coming years. The new high-efficiency boilers are projected to save the school 589 MCF and over \$6,000 annually.

In addition, a dedicated high efficiency sealed combustion system was installed to handle domestic hot water loads as well. This measure will result in a projected savings of nearly 220 MCFs and nearly \$2,300 annually.



## Energy Recovery Ventilators

Energy Recovery Ventilators (ERVs) work to make mechanical ventilation more cost effective by recovering energy from exhaust airflows. They employ heat exchangers to heat or cool incoming fresh air, thus recovering 60-80% of the conditioned temperatures that would normally be lost.

ERVs also transfer moisture between the two air streams. These are recommended in areas where the cooling load is heavy or in places with very cold winters, such as Michigan's Upper Peninsula. The addition of this important feature will save Gwinn High School over 950 MCF and \$10,000 annually.



## Demand Control Ventilation

To address the issue of inconsistent temperatures throughout the building, a Demand Control Ventilation (DCV) system was installed within the school. Using a combination of CO2 sensors and variable speed drives, the CO2 sensors detect the level of CO2 present in the room. As occupancy increases, so does the level of CO2. This information is then tied to the air handler speed.

When the CO2 levels are low, only a small amount of outside air is allowed to enter the building. Conversely, as the CO2 levels increase, the air handler speed increases, allowing additional outside air to enter the building. Variable speed drives work to adjust the speed of the fans on the air handling units for optimal flow. This system affects over 31,000 square feet of the building, including the woodshop, automotive shop, cafeteria and gymnasium.

The DCV system provided the greatest level of savings for the school, and also had the biggest impact on student comfort. At Gwinn High School, the system is projected to save more than 2,900 MCF and \$30,000 annually.

The energy savings achieved are summarized below:

Measure	Annual Energy Savings (MCF)	Annual Cost Savings (\$)
Space Heating Boiler	589	\$6,120
Domestic Hot Water Boiler	219	\$2,275
Energy Recovery Ventilator	966	\$10,036
Demand Control Ventilation	2921	\$30,349

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## Your Incentives to Save

DTE Energy's Your Energy Savings Program offers cash incentives to help business customers reduce their energy use. These incentives reduce the up-front cost of installing more efficient equipment and make it easier for you to invest in energy efficiency. Since a portion of energy costs are a controllable operating expense, every dollar saved can make an impact on your bottom line.

## Making it Easier to Save

The program offers incentives for an array of energy-saving technologies – electric and gas. Customers can pick from a prescriptive menu of projects with preset incentives or propose a custom project with verifiable energy savings.

To participate in the program, simply follow these steps:

- Check your eligibility with program requirements
- Submit a preapproval application to reserve your funding
- Install the eligible measures according to the application specifications
- Complete, sign and submit final application with all documentation within 60 days of project completion

## Contact Us

We can help you understand the incentive requirements and available resources. You can contact us via letter, fax, e-mail or phone. You can also download incentive applications from the program website at:

[YourEnergySavings.com](http://YourEnergySavings.com)

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