

MN CUSTOM EFFICIENCY



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Energy-saving ventilators keep air fresh at local school. Kids stay healthy – and awake!

During most of the year, almost 56 million people across the United States spend their days in a grade-school building.

Until recently, though, many schools haven't been healthy places to breathe. Indoor air quality was found "unsatisfactory" in nearly 20 percent of our nation's public elementary and secondary schools, according to the U.S. Environmental Protection Agency.

A tightly sealed school can become "sick" or filled with stale air. Ventilation equipment can draw in fresh outdoor air, but it also exhausts heated or cooled air – and can blow your district's energy budget!

Schools that want to establish good indoor air quality and save energy can take advantage of new ventilation technology. Rebates from Xcel Energy can help you install this technology sooner.

Custom Efficiency, brought to you from *ConservationWise* by Xcel EnergySM offers rebates for almost any equipment or process improvement that leads to energy savings. The more energy your project saves, the more you can earn in rebate dollars.

Ahead of the Curve

While the issue of indoor air quality in schools has become widely known over the last decade, IAQ has been watched closely in the Richfield Public Schools for more than 30 years, said Rus George, supervisor of buildings and grounds and transportation.

Recently, the district decided to install energy-recovery ventilators (ERVs) in 59 exterior classrooms at Richfield Middle School, a 225,000-square-foot facility that serves about 900 students. The project also included replacing two air-handling units and a rooftop unit that served interior classroom space.

FINANCIAL SUMMARY

Project cost:	\$63,263
Xcel rebate:	\$11,378
Annual demand savings:	57 kW
Annual energy savings:	54,767 kWh
Payback:	1.6 years
Total annual savings:	\$31,615 (gas and electricity)

What's your school's I(A)Q?

Improved indoor air quality can help you reduce:

- Absenteeism
- Complaints of fatigue, headaches
- Environmental triggers for allergies and asthma (1 of every 13 school-age kids in the U.S. has asthma)
- Respiratory illnesses

Besides the health benefits, better IAQ can improve:

- Student productivity and concentration
- Reaction time on computerized tests

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ERVs: The Energy-Saving Solution

An ERV allows you to ventilate your building without losing all the energy used to heat or cool the air.

It's very simple: outgoing and incoming air move simultaneously through the ERV but never mix. A conductive material, such as water, separates the two streams of air.

The conductive material captures the heat (or cold) from the outgoing air before it's vented outside. In winter, the recovered heat is used to help bring the incoming air up to a set temperature. Fresh air then flows into the classroom.

An ERV also controls humidity between the two air streams to keep classrooms comfortable year-round (and prevent mold problems). Humidity from incoming summer air can be shipped out on the outgoing air stream. In winter, the conductive material can retain the humidity in the exhaust and return it to the classroom in the clean, incoming air.

To keep a classroom healthy, the ERV must move the air at a minimum rate of 450 cubic feet per minute. That provides 15 cfm per student, based on 30 students in a classroom. Drop below that rate and carbon dioxide levels rise, which causes a condition that George refers to as "sleepy school syndrome." This can trigger anything from fatigue and loss of focus to headaches and missed days of school.

George said, "We did this project to get more fresh air into the buildings - to make the environment better and more healthy for the kids."

Report Card

The project at Richfield Middle School passed every test. Running at 65 percent efficiency, the ERVs decreased the school's demand by 57 kW, while maintaining comfortable 70-degree temperatures. Annual energy use dropped by nearly 55,000 kWh.

After the project is paid off - in about a year and half, thanks to almost \$32,000 in annual energy savings and \$11,000 in Xcel rebates - the school will continue to save.

ERVs are designed for year-round effectiveness. Richfield Middle School is occupied nearly as much in the summer as during the school year. George is looking forward to tracking how much energy savings they see during the hottest months of the year. The ERVs also monitor humidity and maintain proper levels whatever the season. "There's no moisture buildup or 'dead' smells," George said.

And how are the kids? "The teachers say they are more alert," George said. "They stay awake."

Future Projects

Richfield Public Schools plans to install ERVs in six other buildings in the district. When students head back this fall, the district will be putting the final touches on a new swimming pool at Richfield Middle School. The project includes replacing a 32-year-old pool, as well as installing new AHUs and a new dehumidification system.

George also hopes to improve lighting efficiency throughout the district. Throughout all of these projects, he has worked with his Xcel Energy account manager to find out how Richfield Public Schools can take advantage of other energy-savings rebates.

Take a deep breath... and call today!

If you are thinking about equipment updates or other improvements, keep your Xcel Energy account manager in the loop. There may be special incentives for your project, and you may discover energy-saving solutions you hadn't considered.

All Custom Efficiency projects require preapproval before equipment purchase or installation. Contact your account manager or our Business Solutions Center at 1-800-481-4700, e-mail bsc@xcelenergy.com. Or visit xcelenergy.com/rebates to learn more about Custom Efficiency and our other conservation programs.



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