



## St. Paul Public Schools: Goal to Save 10 Percent Energy in 10 Years



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With more than 70 buildings and 7 million square feet of space, St. Paul Public Schools (SPPS) set an aggressive goal of saving 10 percent of its energy use by 2019. The district has long been committed to minimizing environmental impact and saving money through energy efficiency projects and practices.

There was a lot of work to do but many ways to get to the goal. Xcel Energy provided incentives and ideas along the way.

### Starting with Steam boilers

Angela Vreeland is a mechanical engineer and the District's Indoor Air Quality Coordinator. Her job is to monitor the entire district's energy use.

She meets with Xcel Energy account manager Albert Joe from time to time to talk about projects that will help save the district energy and money, and qualify for rebates.

"Al's been great to work with," Vreeland says. "He's been a great resource in keeping on top of what's out there and finding out what qualifies for rebates. It's a great partnership."

Heating was an obvious place to start. Over half of the schools at SPPS are heated by steam boilers. In 2015, the district began a pilot program to replace all steam traps in schools with especially high natural gas use and a high incidence of trap failures. The work quickly proved to be a cost-effective way to save energy and prolong equipment service life.

All 35 projects in a 4-year time span qualified for more than \$32,000 in Xcel Energy rebates. The savings totaled roughly 42,347 dekatherms. But they weren't done yet.

In 2017, Vreeland's team replaced the steam traps in six buildings and expanded the program to include the replacement of faulty thermostats and steam control valves, which also directly affect the efficiency of a steam heating system.



### Financial snapshot

Projects	Rebates for heating project included custom, boiler tune-ups, steam traps, water heaters and more.
Estimated savings	44,551 therms saved
Xcel Energy Rebates	\$150,000

## A Better Boiler

One of the high schools received a boiler plant upgrade to improve efficiency and equipment reliability. That project included a burner replacement, outdoor reset controls, combustion air controls, and exhaust damper controls. The project was funded by an internal revolving energy efficiency fund and also covered some of the lighting projects. SPPS manages the fund which carries over from one fiscal year to the next to provide capital for projects that reduce operational costs and environmental impact.

"We track the savings and replenish the fund for the next round of energy efficiency investments to establish a sustainable funding cycle," Vreeland explains.

That goes for major construction projects, like renovations, additions and new schools, too. For those programs, they build energy efficiency into the project from the ground up, and use energy modeling to determine how much can be saved by a variety of measures.

## Lighting

SPPS also targeted lighting as a good opportunity for energy savings. In 2017, they replaced exterior lighting at 13 schools with LED lighting. The new lamps saved energy, increased safety through improved visibility and also required less maintenance. In 2017, SPPS completed seven interior LED lighting retrofit projects, including in the pool, cafeteria, and gymnasium. SPPS is now systematically replacing T8 fluorescent lamps with LED lamps. Before making their lamp and bulb decisions, they tested a variety of lamp brands, wattages, and color factors to most closely match current T8 lamps to avoid uneven light levels during the upgrade.

## Benchmarking

SPPS uses the B3 Benchmarking website to track energy use.

"Benchmarking allows us to target buildings that would benefit from energy efficiency upgrades," explains Vreeland. "It also allows us to identify anomalies in the data that may be caused by operational issues at a building or billing errors. B3 Benchmarking developed a personalized website for SPPS so that staff, teachers and students could view utility data district-wide."

## Kudos and next steps

Vreeland says teachers and students have voiced their appreciation for the transparency and the efforts undertaken to reduce the District's environmental impact.

SPPS will continue to implement common sense energy efficiency strategies because they now know the many benefits beyond energy savings. These projects improve equipment reliability and safety, reduce maintenance costs, prolong equipment service life and perhaps most importantly, provide a more comfortable learning environment for students and staff.



For more information about Xcel Energy's rebate and energy efficiency programs, please visit [xcelenergy.com/Business](https://www.xcelenergy.com/Business) or call an energy efficiency specialist at **855.839.8862**.