

SEDAC CASE STUDY



Pekin High School RCx and Energy Assessment

March 2019



VALUE OF PERIODIC ENERGY ASSESSMENTS

One primary benefit of scheduling regular energy assessments is that they can help facilities review past progress and make plans for future energy savings. Pekin High School completed an RCx study in 2013 and an energy assessment 5 years later in 2018. Tim plans to schedule another energy assessment study in another 5 years to further assess progress and identify strategies for future improvements.

SEDAC Quick Tip

Schedule a new energy assessment every 5 years to review progress and set new goals.

COMFORT + SAVINGS

Tim Bonnette, Pekin Community High School's Buildings and Grounds Director, is a proactive energy champion for his school district. He is motivated to make his facility more energy efficiency for two main reasons:

- 1. Comfort.** Tim believes that students and teachers deserve the best learning environment possible, which includes quality lighting and comfortable temperatures.
- 2. Monetary savings.** The school district has a tight budget, so anything that can lower costs is greatly appreciated. Money saved on utility bills can be directed to more important priorities.

Pekin High School has been working with SEDAC to save energy and money and improve building comfort since 2013 when they completed a retro-commissioning study. Energy-saving measures implemented by the district were expected to save \$44,000 annually on energy bills. Five years later, Tim reached out to SEDAC again for an energy assessment. The report, completed in December of 2018, recommended additional energy efficiency measures that have the potential to save the district \$36,000 annually.

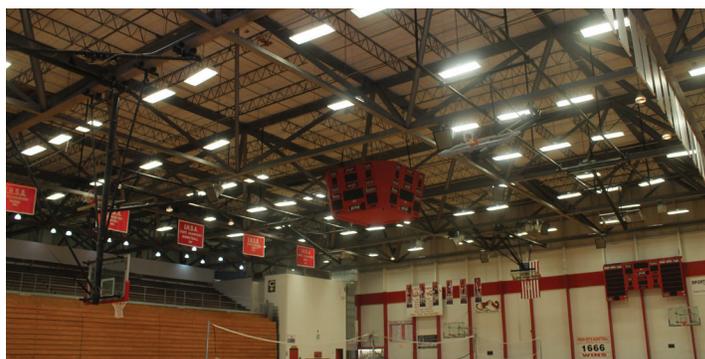
Table 1. Summary of Energy Savings

Estimated Annual Savings	2013 RCx Study (Implemented measures)	2018 Energy Assessment (Recommended Measures)
kWh	378,000	265,000
Therms	27,000	33,000
Cost Savings	\$44,000	\$36,000

To review past progress, the 2018 SEDAC energy assessment report compared 2013 and 2018 energy usage data. With this information, Tim was able to see how past efforts to improve energy efficiency have impacted current energy use. Have strategies the school district has implemented led to actual energy savings?

Although several of the operational and tune-up measures recommended in the 2013 RCx project were implemented, current energy use did not reflect anticipated savings, especially for natural gas. Confounding factors can complicate comparisons, such as differences in student population, number of heating and cooling days, or extreme weather.

In addition, systems (especially older mechanical systems) can fall out of calibration within a few years. These systems require vigilance in maintenance and tune-ups. SEDAC's 2018 energy assessment report recommended replacing some of the vintage systems with new and higher-efficiency equipment, which should result in significant energy savings.



RCx VS. ENERGY ASSESSMENTS

Both the Pekin High School RCx study and the energy assessment reports reviewed building systems and equipment, analyzed energy usage, and offered energy savings recommendations.

The main difference between the two studies is the focus. Energy assessments typically address the whole building and may include low-cost measures as well as capital-intensive, longer-life measures, such as replacing noncondensing boilers with condensing boilers or installing variable frequency drives. In contrast, RCx measures often require less capital investment to achieve significant savings because they focus on operational and maintenance improvements. RCx reports typically include a combination of no and low-cost recommendations.

Table 2. RCx and Energy Assessment Measures

Program	Energy Cost Reduction Measures
RCx (2013) Implemented	<ul style="list-style-type: none">• Air handling unit scheduling• VFD programming economizer optimization• Holiday schedule programming• Temperature sensor repairs• Parking lot lighting upgrade• Pool pump VFD
Energy Assessment (2018) Recommended	<ul style="list-style-type: none">• Exterior and interior lighting upgrades• Steam trap survey and repair• Water heater replacement• Kitchen demand control ventilation

SEDAC reports calculate the simple payback for each recommended measure—the amount of time it takes for the measure to pay for itself through energy savings. Reports also identify available incentives. For the 2013 RCx measures implemented by Pekin High School, the average simple payback was only **1.4 years**. In contrast, the 2018 energy assessment report recommended measures have an average simple payback of **4.1 years**, including incentives.

Pekin High School can use this information to decide how to prioritize recommendations. Tim has already started to implement some of the low-cost measures, and he is making plans to gradually implement other recommendations over the next five years.

SEDAC Quick Tip

All facilities can benefit from regular energy assessments. RCx studies are helpful for facilities that have a need for operational and maintenance improvements. Contact SEDAC to discuss which service is right for you.



ENERGY SAVING TIPS FROM TIM BONNETTE

1. Install metering devices to better understand your energy use and what efficiencies are gained when you work on projects.
2. Pay attention to what incentives are available from utilities and prioritize recommended measures based on these incentives. SEDAC can help identify incentives.
3. When prioritizing energy efficiency measures, balance measures that have quick paybacks with longer-term projects that may generate greater savings down the road.
4. When selling energy efficiency projects to administration, don't just focus on cost savings. Demonstrate how the improvements will impact the comfort or aesthetics of the facility.

SAVE ENERGY & MONEY WITH SEDAC

SEDAC provides technical assistance to help new and existing buildings become more energy efficient. Find out how SEDAC can help your facility save energy and money at apply.sedac.org. SEDAC offers:

- Quick advice and implementation assistance
- Energy assessments
- Retro-commissioning
- Benchmarking
- Long-term energy planning
- Help navigating energy efficiency programs and incentives
- Design assistance for new construction and renovation
- Energy Code training and support

The Smart Energy Design Assistance Center (SEDAC) helps buildings and communities save energy and money and become more sustainable. SEDAC is an applied research program at the University of Illinois at Urbana-Champaign, working in collaboration with the 360 Energy Group.

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