



John A. Logan College Pool Cover Case Study

November 2021

John A. Logan College has a history of implementing energy efficiency improvements to reduce energy costs and to demonstrate their commitment to sustainability. Major improvements include installing high efficiency pool heaters and high efficiency chillers, converting pneumatic controls to direct digital controls (DDC), retrofitting interior and exterior lighting, a 10-acre solar electric project, and more.

In 2017 SEDAC conducted research to find out how much energy could be saved by installing two pool covers at the Community Health Education Building, which houses a lap and a therapy pool. Although this building represents approximately 5% of the overall square footage at JALC, energy bill analysis revealed that this facility consumes nearly 50% of the College’s energy usage some months. This high usage is driven by dehumidification and heating of pool water.

Due to the constant evaporation of water from uncovered pool surfaces, the dehumidification equipment (two 50-ton units) operates 24/7, consuming large amounts of electricity. Evaporation not only contributes to increased water usage but removes large quantities of heat as the pool water evaporates. Fresh water then must be heated to replace the evaporated water and additional chemicals need to be used to treat the fresh water. Pool covers eliminate evaporation, thus reducing energy use for dehumidification and pool heating.

Pool Cover Savings Analysis

Pool covers can reduce evaporation from the pool surfaces during unoccupied periods (approximately 4,500 hours/year).

In December of 2019 JALC applied for an \$185,000 IGEN grant to fund a pool cover project. The proposal was funded and two automated pool covers were installed in June 2020. The covers reduce heat loss and eliminate evaporation. They are wall mounted above head-height and deployed and retracted by pushing a button.

The following table compares usage pre and post pool cover installation.

Pool Covers	Natural Gas		Electricity		Water		Chemicals
	therms	Cost	kWh	Cost	Gallons	Cost	Cost
Pre-Pool Cover	42,400	\$28,000	1,174,000	\$116,000	911,000	\$4,400	\$7,000
Post-Pool Cover	40,800	\$25,500	926,000	\$92,000	739,000	\$3,600	\$6,500
Savings	1,600	\$2,500	248,000	\$24,000	172,000	\$800	\$500



Savings

Total savings are approximately \$27,800 and CO₂ emissions reductions are approximately 150 metric tons of CO₂ per year. The cost savings have exceeded expectations. Pool hours have remained the same pre and post pandemic, yet usage is probably about 60% of where it was pre-pandemic. This most likely contributes to increased savings.

While the installed cost of \$185,000 may seem high, the significant annual savings return the investment with a simple payback of approximately 7 years.

Another savings that is not accounted for in our analysis is the reduced wear on expensive dehumidification equipment. With an uncovered pool, the equipment needs to operate 24/7 whereas with the pool covered during unoccupied periods, the need for dehumidification is substantially reduced thus extending the life of these systems.

Dr. Bradley Griffith, Director of Logan Fitness Center had the following to say about the pool covers:

As an auxiliary service at John A. Logan College, it is very important that our facility be self-sufficient financially. Our energy expenditures have been one of the biggest challenges to that, but **the implementation of pool covers is a game changer**. The extra savings generated from these pool covers give us added flexibility to update other equipment and bring on more staff. The automatic pool covers that we installed are extremely user-friendly and can be deployed or retracted in less than 3 minutes. In addition to the cost savings, we don't have to worry about additional staff time or potential injuries that can be a concern with manual covers.

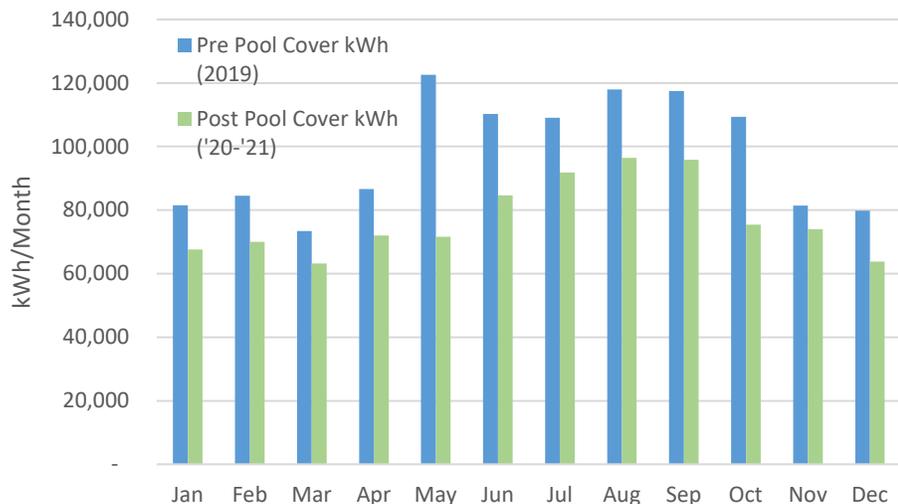
The following graph compares electrical usage pre and post pool cover installation. The only change between these two periods is the installation of the pool covers. These savings may well increase as JALC optimizes dehumidification settings with greater understanding of how interior humidity levels are impacted by the pool covers.

Learn more

SEDAC has a Fact Sheet on energy saving ideas for pools that can be viewed at:

<https://smartenergy.illinois.edu/pools-2/>

Pre vs. Post Electrical Consumption (kWh)



Who we are

The Smart Energy Design Assistance Center assists buildings and communities in achieving energy efficiency, saving money, improving indoor air quality, and becoming more sustainable. SEDAC is an applied research program at the University of Illinois at Urbana-Champaign. SEDAC services to save energy and money include:

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