# Comprehensive Energy Monitoring to Support Quality Control & Greater Efficiency on Campus

Energy management is a critical point of focus for colleges and universities across the U.S. While cost savings is one of the catalysts, there's also the fact that 75% of prospective students say a school's commitment to environmental sustainability would affect their decision to attend.

Alongside recycling programs, bike rentals and community gardens (to name a few examples), effective energy management within campus buildings is an important step in the right direction. After all, building energy use is often the largest source of campus greenhouse gas emissions.

At one prestigious college, what began with the use of CORIS to monitor and control lights in a student gym has evolved into dynamic campus energy management programs.
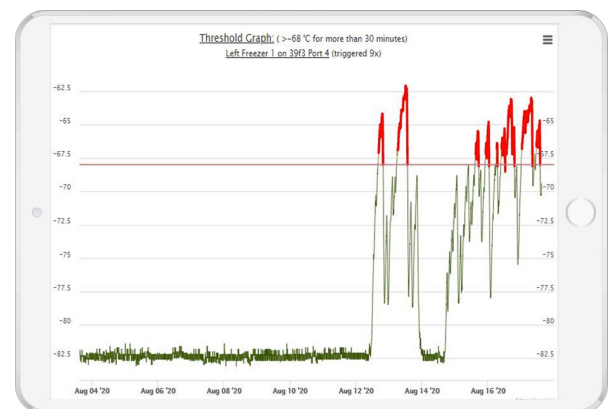
The Roots of the CORIS Relationship

When CORIS (then J&F Labs) and the college partnered together for their first major project in 2011, the initiative was to optimize the control of lighting systems in a student gym — a space where lights were generally left on 16 to 17 hours every day. With wireless energy control in the hands of users and an upgraded system, the college reduced energy consumption in the gym by 82%. With these savings, it comes as no surprise that these controls are still in place today.

Two years later, in 2013, CORIS embarked on their next major project with the college. This time, they installed remote control thermostats in college-owned fraternities and sororities to reduce energy consumption, as well as monitor temperatures when buildings were not occupied during semester breaks (so as to prevent frozen pipes). These thermostats are still in place, too.

The third major project in the partnership started in 2016, when CORIS installed controls on several hundred window air-conditioning units around campus to make sure they were shut off at night and on the weekends. While this project was put on hold in 2020 due to the pandemic and very few people were in the offices with the window air-conditioning units, there are plans to reactivate this project in the summer of 2022 when the units will once again be actively used.

While the window-air conditioning unit project pre-dated her time at the college, it was this project that first introduced the college's energy management system engineer to CORIS. In her role, the energy management system engineer maintains the utility metering infrastructure on campus — with steam, chilled and hot water as well as electricity distributed to around 120 buildings. The other part of her role is working as an energy analyst, using data collected from the meters to gain insights into campus energy consumption in order to drive greater efficiency.

Seeing the benefits of CORIS on previous initiatives — and the full infrastructure it provided to monitor and report data — she saw opportunities to extend the use of CORIS to meet other needs and applications across campus. While some steps were taken to validate CORIS as the optimal solution among competitors, she ultimately found CORIS to be the best fit: **"The more research I did, the less apt I was to change course."**

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New Use Cases of the CORIS Monitoring System

With an interest in testing CORIS' LoRa temperature/relative-humidity (T-RH) sensors, the college embarked on a pilot program with CORIS. What would it take to deploy LoRa wireless sensors across campus? What would that network look like to get comprehensive coverage? While the pilot program provided the energy management system engineer and her team with these insights, it also was helped by CORIS' commitment to service. **"They were always on hand to help with the deployment of the equipment or troubleshoot any issues with communication," she said. "That's been indicative of the relationship throughout. If something comes up, they are right there via email or phone call."**

Since the pilot program, CORIS T-RH sensors have been added in areas across campus — specifically those more remote locations. The college does have a rather robust building automation system in place that provides insights into temperatures in spaces across campus; however, there are older buildings and those nooks and crannies where this automation is not in place. As the energy management system engineer notes, the college sometimes needs to monitor these remote areas to support information for capital renewal projects, energy efficiency projects, or to make sure they aren't freezing pipes because systems are taken offline during construction.

Before CORIS, a facility manager would use a HOBO data logger to pick up temperature and humidity data in remote locations, and then connect the logger to a computer and download the data. With the integrated CORIS system, the facility manager receives an alert as soon as the temperature drops below the threshold. **"Having that real-time data and alarming available enabled us to be more responsive to those locations we hadn't previously had insight into before," she noted.**

What's also been beneficial about CORIS has been the ability to easily redeploy the system for other applications on campus. When the college was considering a potential future project for a remote facility storing library materials, they wanted to first understand if the cooling systems in place were maintaining the proper temperature and humidity levels. To this end, they were able to take a CORIS gateway from one location and give it to a technician to plug the gateway into the library and deploy the sensors. **"The setup is pretty seamless," she emphasized.**

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>
> - The college's energy management system engineer

Looking Ahead to New Applications

The conversation with CORIS around new monitoring opportunities across campus is ongoing. While there have been talks around low-temperature freezer monitoring with the college's sustainability group, the energy management system engineer notes that CORIS often comes to them with technologies that they think would be applicable to the college's needs.

For instance, part of the trial with the CORIS T-RH sensors included a pulse count meter device that spoke to the LoRa wireless network. In many of the college's buildings, often behind several concrete walls, there are steam condensate meters — and as the switch opens and closes the device, it registers a pulse that tells you how much water is running through the meters. When the college mentioned they were using an outdated system no longer supported by the manufacturer to communicate with a series of gateways, CORIS set up a pulse count device that communicated with the LoRa network and sent up one of their engineers to perform testing.

"We've appreciated how responsive they've been in helping us solve some of those challenges and addressing some of the use cases we're finding on campus," she said.

Alongside the energy management system engineer's use of CORIS, additional projects continue to take place across campus. In the winter of 2020, CORIS devices were deployed to control the ventilation fans in classrooms and other gathering places to maximize air flow and to mitigate the spread of COVID-19 virus particles within the air. With these fan controls in place, personnel could keep air circulating rapidly when the rooms were in use, and then turn off the fans remotely at night and when rooms were not scheduled to be in use. While ensuring safety for faculty and students, the college was able to support its efforts for enhanced energy management and fewer costs.

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