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# 2025 Chief Engineers & Facility Managers Conference: What's So Cool About Chilled Water

At the 2025 Chief Engineers & Facility Managers Conference, Mike Larson, director of utility operations at Abbott Power Plant, described part of why the Urbana campus is so remarkable in utility and energy production and distribution: chilled water.

## 2025 Chief Engineers & Facility Managers Conference: Keynote Recap

The University of Illinois Urbana-Champaign is a world-leader in teaching, collaboration, research and workforce development – and a conference has helped position Illinois as a leader within the state and region for those who perform similar work to F&S. The Illinois Chief Engineers & Facility Mangers Conference was a two-day gathering held in March, meant to spur discussion and find solutions to common issues at … Continue reading

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Cold water, taken down to 42 degrees Fahrenheit at five chillers in Champaign and Urbana, is pumped throughout the campus in 26 miles of underground pipes to enter 138 buildings and absorb surrounding warmer temperatures, which in turn, keep things cool. It's much more efficient and effective for a large campus like Illinois, which might otherwise require a plethora of small window a/c units or other measures that require much more electricity or steam.

In 2004, a $50M conversion to an alternative chilled-water configuration using regional chilled-water plants serving a large central-piping loop connecting campus buildings was started. The loop has reduced cooling energy consumption by an estimated 20 percent.

The Campus Chilled Water System (CCWS) provides:

- Enhanced energy conservation – the chiller loop operates with fewer chillers, colder chilled water temperatures, and reduced pumping requirements
- Increased efficiency (one chiller can feed multiple buildings)
- Increased reliability
- Reduced maintenance costs

# Upgrades

This system was further optimized through a series of software and hardware upgrades.

F&S did so through through its Energy Performance Contracting (EPC): **https://fs.illinois.edu/Projects/epc-06-campus-chilled-water-system-optimization/**.

- Awarded to Veregy Central, LLC
- $2,499,000 contract value
- $264,971 guaranteed annual energy cost savings
- 10-year payback with guaranteed energy cost savings only

*Installed OptimumLOOP control software at Oak Street and North Campus Chiller Plants to enhance system performance. Its proprietary algorithms continuously analyze and adjust operations in real time, optimizing control of chilled water plant equipment for maximum efficiency. The cloud-based OptiCx platform provides operators with valuable insights, including key performance indicators (KPIs) and data analytics, enabling quick detection, diagnosis, and resolution of system faults.*

EPC projects use the amount of money it estimates saved in the future to help fund it – oftentimes, the savings do even better than projections.

The university uses EPC to manage complex facilities with high energy use, such as laboratories, making them energy efficient and addressing deferred maintenance issues along the way.

The EPC provides customers with a comprehensive set of energy efficiency, renewable energy, and distributed generation measures and is accompanied with guarantees that the energy and operational savings produced by the project will be sufficient to cover the full cost of the project.

Said Sylvia McIvor about EPC and the importance of the CCWS: "It is not necessarily 'rare' to have a district chilled water system on a larger university or hospital campus. However, our whole 'energy enterprise' – which includes the chilled water system – is unique due to the integration of co-generation, renewable energy, smart grid technology, and sustainability initiatives. Our district cooling system is on the scale of a municipal system in size."

# What We Have

Having a large CCWS enterprise made that a prime candidate for an EPC project, especially with varying ages, efficiencies, and capabilities of the mechanical and software systems.

"If we didn't have the CCWS, you'd have to do all these improvement projects individually at each building," said Larson. "There's a lot of advantages to having centralized steam and chilled water. That effects every building."

The CCWS EPC project had a large impact footprint, and is exactly the place where savings could be found.

"Huge projects result in huge savings," Larson told the attendees.

What Larson has found is that the five chiller plants push out enough cold water, but the pressure might weaken as it traverses miles of plumbing.

"We want to run our pumps as low as possible to save power, while still serving the campus community. We may need need to add tertiary pumps–down the line, closer to a high-use building like Beckman–to push the flow faster."

CampusChilledWaterPlanningMap.pdf

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