UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

16 YEARS, 6 PROJECTS, $140M IN GUARANTEED UTILITY SAVINGS:

THE UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN'S EPC FRAMEWORK

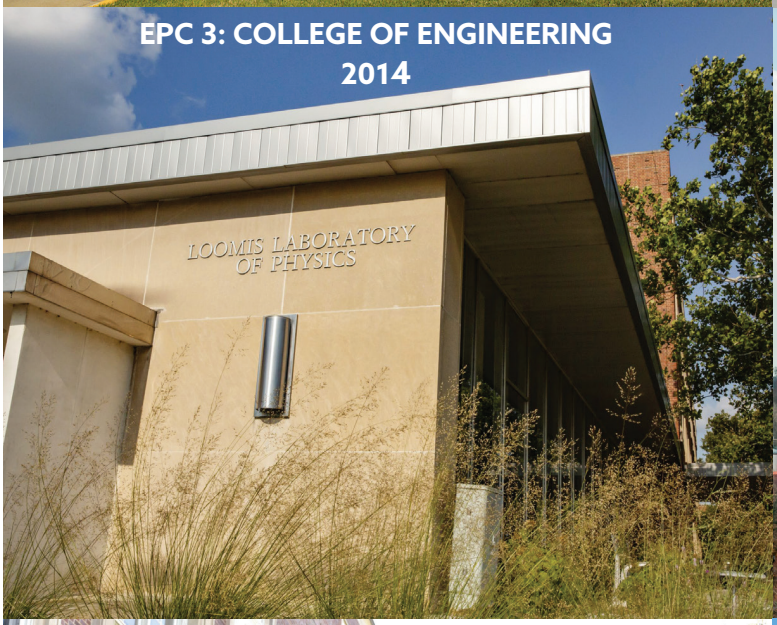
The University of Illinois Urbana-Champaign (U. of I.) has established itself as a leader in campus sustainability and infrastructure modernization using energy performance contracts (EPCs), having completed six projects across campus since 2013. Facing the challenges of aging infrastructure, deferred maintenance, and rising operational costs, the university has embraced EPCs as a key tool to finance critical energy efficiency projects. This approach has allowed the U. of I. to upgrade its facilities, improve energy efficiency, and support its long-term climate leadership commitments—all while lowering financial risk using guaranteed energy savings.

Urbana campus sustainability targets are outlined in the Illinois Climate Action Plan (iCAP), which includes being carbon neutral as soon as possible and building resilience to climate change in the local community. As part of this initiative to reach iCAP energy objectives, EPCs have played a critical role in accelerating energy efficiency improvements across campus, from research facilities to chilled water and power plants. The university's ability to align stakeholders, implement measurement and verification (M&V) protocols, and maintain a structured approach to EPCs has made it a model for other institutions facing similar challenges.

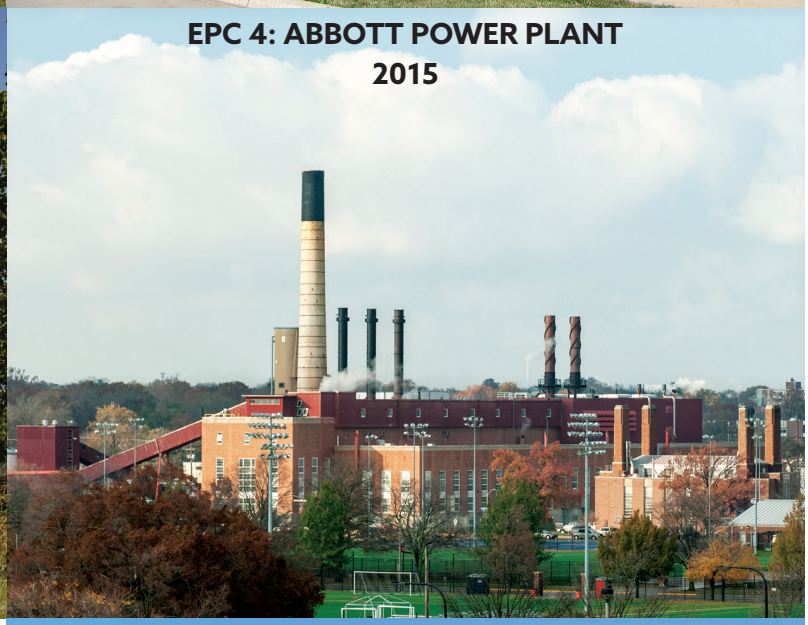
EPC 1: COLLEGE OF VETERINARY MEDICINE
2010

EPC 2: OAK STREET CHILLER PLANT
2011

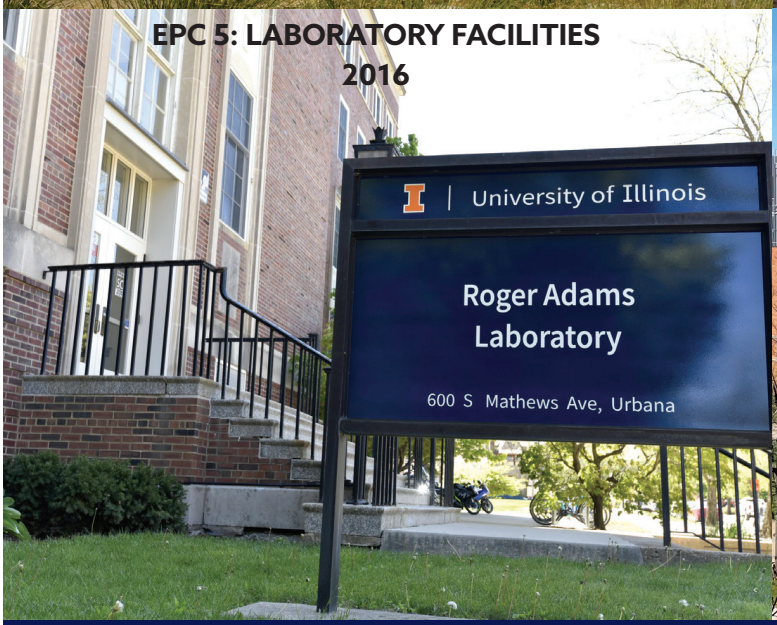
EPC 3: COLLEGE OF ENGINEERING
2014



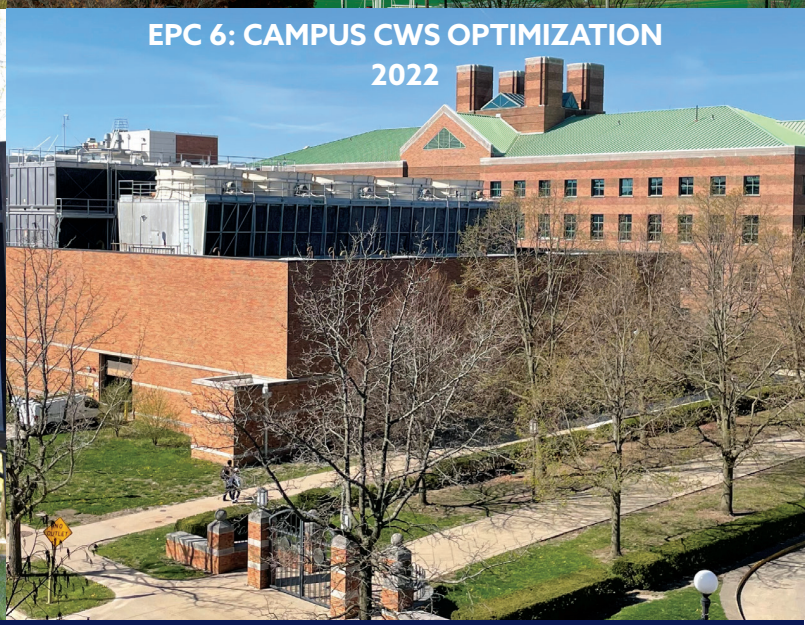
EPC 4: ABBOTT POWER PLANT
2015



EPC 5: LABORATORY FACILITIES
2016



EPC 6: CAMPUS CWS OPTIMIZATION
2022



Photos courtesy of Facilities & Services (F&S),
University of Illinois Urbana-Champaign

To better understand how the U. of I. has successfully integrated EPCs into its campus infrastructure planning, Energy Services Media (ESM) spoke with Sylvia McIvor, Associate Director of Energy Performance Contracting at Facilities & Services (F&S). McIvor brings a diverse background in utilities, energy service companies (ESCOs), and now in higher education. With experience both on the provider and client side of EPC projects, she offers valuable insights into the university's procurement process.

Sylvia McIvor, Associate Director of Energy Performance Contracting, Facilities & Services (F&S), at the University of Illinois Urbana-Champaign. Photo courtesy of Sylvia McIvor

In our conversation, McIvor explains the university's approach to EPCs, the challenges of implementing these projects in a public setting, and how the institution plans to sustain this model for the future.

ESM: *Why has the university continued to choose EPC as a procurement model for campus infrastructure upgrades?*

McIvor: The university has continued to choose EPC as a strategic procurement model because it enables critical infrastructure upgrades, utilizing utility savings to pay for the projects over time. EPCs leverage guaranteed energy savings—measured and verified through a structured process—to fund improvements, ensuring fiscal responsibility while advancing campus sustainability goals.

This approach not only accelerates project implementation but also addresses deferred maintenance by replacing outdated equipment with new, high-efficiency systems. By partnering with firms that specialize in energy conservation, called energy service companies (ESCOs), we can make meaningful progress toward our iCAP goals while enhancing overall building performance and operational efficiency.

ESM: *Can you provide some context on the university's financial challenges?*

McIvor: Like many public universities in the state, the university faces significant financial challenges due to a long-term decline in state funding and rising operational costs. Since 2009, Illinois public universities have experienced a 17.2% reduction in state general funds for operations.

This decline in state appropriations for higher education—amounting to a $530 million reduction—has forced eleven of the twelve Illinois public universities to raise tuition and fees over the past 16 years.[1] As a result, the U. of I. has had to be strategic in its financial planning, balancing affordability for students while ensuring the necessary reinvestment in campus infrastructure. Meanwhile, the university's backlog of deferred maintenance continues to grow.

To address these financial challenges, the university has prioritized self-funded solutions, like EPCs, which allow for critical infrastructure upgrades without relying on state appropriations for specific projects. By leveraging guaranteed energy savings, the university can modernize facilities, improve sustainability, and reduce deferred maintenance, all while conserving fiscal resources.

ESM: *Does the university carry any risk when using the EPC model?*

McIvor: While EPC provides guaranteed energy savings, the process carries similar exposure risks as with any major construction project. These include potential disruptions to research activities, unforeseen site conditions, and the complexities of M&V. While the ESCO contractually guarantees savings, the goal of these projects is to reduce energy consumption and advance sustainability efforts—not simply to be reimbursed if savings fall short. To mitigate these risks, the university takes a structured and proactive approach, including utility-level metering in all buildings, rigorous ESCO vetting, ongoing performance monitoring, and careful project execution planning to minimize possible inconveniences to students, faculty, and staff. With six projects executed on campus, we have "lessons learned" for varied types of facilities, which help us further mitigate risks with every new project. By prioritizing energy conservation and operational efficiency, the university ensures that EPCs remain a valuable tool in achieving long-term sustainability and infrastructure renewal goals.

ESM: *How has the university gained stakeholder alignment on the value of EPCs?*

McIvor: Gaining stakeholder alignment is key to implementing successful EPCs. It helps to have a champion at a high enough level that can promote the value of EPCs to executive management and leadership teams to gain buy-in.

Taking advantage of state resources can help create trust internally; for example, the university worked with an EPC subject matter expert in the early years through the Illinois Department of Commerce and Economic Opportunity (DCEO). Having an outside voice who can speak to the history of EPC and how it is used nationally by other higher education institutions and the federal government gives the procurement process credibility and legitimacy.

1 Andriesen, P. (2024, March 11). Nearly all Illinois public universities report higher costs, less money to operate. Illinois Policy Institute. *https://www.illinoispolicy.org/nearly-all-illinois-public-universities-report-higher-costs-less-money-to-operate/*

As we work on new projects, the proven success we have seen allows us to position EPCs as a strategic procurement option.

Overall, the university has done an excellent job at engaging faculty, administrators, facilities teams, and campus departments by demonstrating the financial, operational, and sustainability benefits of this model.

ESM: *What is the most successful aspect of the framework the university built to execute EPC projects?*

McIvor: The most successful aspect of the university's EPC framework is its structured, scalable, and collaborative approach, which ensures both efficiency and long-term impact. The university has developed a robust model that integrates key stakeholders, leverages existing campus infrastructure, and maximizes energy benefits. The most successful pieces of our framework are;

- **Centralized facilities and services oversight**: A dedicated team that manages all EPC projects, ensuring consistency, adherence to university project delivery processes and standards, risk mitigation, and alignment with campus priorities.
- **True M&V:** The university's existing utility infrastructure and building metering capabilities allow for precise tracking of energy consumption and guaranteed savings.
- **Strategic facility groupings:** We have found that energy savings generated in one building can help fund deferred maintenance in another, optimizing financial and operational efficiency. We also maintain a database of buildings, sorted by their utility use, and target those facilities for EPC projects.
- **Cross-disciplinary collaboration:** EPC projects are informed by input from crafts and trades teams, retrocommissioning experts, EMS controls/recommissioning teams, and campus departments, ensuring that known facility issues and unfunded energy-saving opportunities are addressed.
- **Procurement & compliance oversight:** The University Office of Capital Programs, Real Estate and Utility Services ensures all EPC projects adhere to state regulations, procurement standards, and legislative requirements.

"As we work on new projects, the proven success we have seen allows us to position EPCs as a strategic procurement option."

ESM: *Over the past 16 years, EPCs have been used, how has the F&S team evolved to manage the projects and ESCO partners?*

McIvor: F&S' Utilities & Energy Services (UES) division at the university has evolved to better manage EPC projects and partnerships with ESCOs. What began as a single-person initiative with management support has grown into a dedicated EPC team of three professionals with diverse expertise, bringing a combined 40+ years of EPC experience and 50+ years of university experience across various disciplines. Over the past 16 years, our team's focus has been to;

- **Expand internal expertise:** The team now includes specialists with backgrounds in controls installation, inspection, recommissioning, project management, utilities, and business/account management, allowing for a well-rounded approach to EPC execution.
- **Data-driven project management:** Enhanced tracking tools and real-time monitoring ensure projects are delivering on their energy savings guarantees.
- **Stronger ESCO partnerships:** The team has shifted toward a long-term, collaborative approach with ESCOs, focusing on continuous project optimization and accountability.
- **Alignment with campus-wide energy strategies:** EPCs are now more integrated with the iCAP and long-term sustainability goals, maximizing their impact.

ESM: *What type of challenges have presented themselves while using EPCs, and how did the F&S team overcome them?*

McIvor: While EPC has been a successful strategy for the university, several challenges have emerged over the years.

We have seen stakeholder skepticism about the guaranteed savings. There was initial hesitation about EPCs due to concerns over whether projected savings would materialize. F&S addressed this by implementing robust M&V protocols, ensuring transparency and accountability in tracking energy savings.

The university has experienced funding constraints. As state funding for infrastructure projects remained uncertain, the university used internal financing within UES to sustain EPC investments. Additionally, the university has leveraged utility incentives and cost-sharing models, including the Office of the Provost's matching funds program, which allows departments to contribute toward EPC projects while receiving financial support.

We've had project complexity in older buildings. Many campus facilities have unique infrastructure challenges, making EPC implementation more complex. The F&S team mitigates this risk by conducting detailed pre-project audits and engineering assessments to develop tailored and fully designed solutions.

We have been challenged to identify new savings opportunities. The university is a highly energy-conscious campus with active retrocommissioning and EMS controls/recommissioning teams that continuously optimize building efficiency. While this is beneficial and provides savings, it also makes it more challenging to identify large-scale savings for EPC projects. To overcome this, these UES departments work closely with one another to pinpoint facilities and systems that have not yet been optimized, ensuring a pipeline of viable EPC opportunities.

Managing multiple ESCO partners has been complex. With multiple projects running simultaneously, maintaining consistency across vendors is critical. F&S has implemented standardized reporting, oversight protocols, and regular performance reviews to streamline project management and ensure accountability.

The EPC team has addressed each challenge through strategic process improvements and stakeholder collaboration.

ESM: *What typical funding structures are used – bonds, tax-exempt lease agreements, etc. to finance EPC projects?*

McIvor: The university can employ a combination of financing mechanisms, in addition to the internal financing, to ensure financial sustainability while maximizing project feasibility, including:

Tax-Exempt Lease Purchase Agreements: TELPs allow the university to finance projects with repayments made using guaranteed energy savings, ensuring a cost-neutral approach. This financing mechanism has been used on one project on this campus and one at the University of Illinois Chicago

Bond Financing: When EPC projects align with larger capital initiatives, bonds may be utilized to fund infrastructure upgrades. *NOTE: To date, this has not been a source of EPC project financing on the Urbana campus.*

Utility Incentives & Other Grants: The university actively pursues utility rebates and external grant opportunities to offset project costs and improve the financial viability of EPC investments.

ESM: *Where do you see the future of this EPC work going? What's next for the university?*

McIvor: The future of EPC at the university is focused on streamlining and accelerating project implementation to keep ESCOs engaged and encourage competition, executing projects in utility production facilities as well as campus buildings, executing more "small" projects (under $5M), expanding into new facility types, and leveraging emerging technologies to drive deeper energy efficiency and sustainability improvements. It's a balance of finding the "low-hanging fruit" to help pay for higher-cost deferred maintenance projects in a group of energy-intensive campus buildings and secure the funding commitments to execute these projects. We have several initiatives, which include:

- **Scaling the small project program:** The university aims to expand its sub-$5M EPC initiative, allowing for more frequent, faster-executing projects while creating opportunities to engage a broader range of ESCO partners.
- **Energy management and smart buildings:** The integration of analytics and automation will further optimize energy performance, improving operational efficiency across campus facilities.
- **Targeting research-intensive facilities:** Energy-intensive labs and research buildings present significant opportunities for EPC-driven savings and modernization.

ESM: *What advice can you provide to other higher education facility leaders who need infrastructure upgrades or are interested in exploring an EPC?*

McIvor: For higher education institutions exploring EPC as a strategy for infrastructure upgrades, success hinges on careful planning, strategic stakeholder engagement, and strong project execution. From the outset, it's critical to secure partnership with a high-level organizational champion who can help drive the initiative forward, garnering executive buy-in and aligning key decision-makers with the long-term benefits of the program. I also recommend:

- **Engaging stakeholders early:** Building consensus across faculty, administration, facilities teams, and financial officers ensures campus-wide support and long-term buy-in.
- **Implementing a rigorous M&V process:** A strong M&V framework is critical to tracking savings, holding ESCOs accountable, and demonstrating project success.
- **Aligning EPCs with sustainability goals:** Connecting EPC projects to carbon reduction, resilience, and campus sustainability plans (such as the university's iCAP goals) can enhance funding opportunities and institutional support.
- **Standardizing contracting and procurement:** Developing repeatable, structured contracting models simplifies the process, reduces administrative burden, and allows for faster project deployment.
- **Leveraging multiple funding sources:** Institutions should explore tax-exempt financing, utility incentives, and internal funding pools to maximize financial feasibility.
- **Prioritizing high-impact buildings first:** Universities with aging infrastructure and limited retrocommissioning and recommissioning programs can achieve significant savings and infrastructure improvement through EPCs.

As the university continues its work toward decarbonization and infrastructure modernization, EPCs remain a core strategy for advancing its sustainability goals. Since 2009, the Urbana campus has executed over $109M of EPC projects, yielding $140M in guaranteed utility savings. To date, eighteen buildings have been upgraded through the EPC delivery method, addressing over $67M in deferred maintenance. By utilizing performance-based contracting, the university has demonstrated a replicable model that balances fiscal responsibility with environmental impact.

The success of the U. of I.'s EPC initiatives demonstrates the importance of clear procurement structures, internal stakeholder alignment, and robust M&V practices. With a dedicated team overseeing these projects and a commitment to long-term energy conservation, the university is poised to continue leading the way in higher education sustainability and campus infrastructure upgrades.

The University of Illinois Urbana-Champaign EPC Projects

To date, eighteen buildings have been upgraded through the EPC delivery method, **addressing over $67M in deferred maintenance.**

EPC 1: COLLEGE OF VETERINARY MEDICINE

Awarded | **March 2010**

Construction Phase Start | **December 2010**

Construction Phase Completed | **2013**

Contract Term | **18 years**

Contract Value | **$21.2M**

Total Projected Savings | **$24.4M**

Energy Service Company | **Energy Systems Group**

Rebate Amount | **$1.8M**

ECMS

Lighting retrofits, occupancy sensors, daylight harvesting, water conservation: DX compressors/sterilizers, steam trap replacement, coil cleaning, duct cleaning, AHU upgrades/replacements, motor upgrades, doors/weather-stripping, chilled water variable flow reset, cooling tower modifications, fume hood conversions, demand control ventilation, loading dock stat relocation, VAV retrofit, roofing, ward displacement ventilation control, insulation, SAC South Wing improvements.

EPC 2: OAK STREET CHILLER PLANT

Awarded | **August 2011**

Construction Phase Start | **January 2012**

Construction Phase Completed | **2013**

Contract Term | **10 years**

Contract Value | **$11.1M**

Total Projected Savings | **$12M**

Energy Service Company | **Siemens Industry, Inc.**

Rebate Amount | **$952K**

ECMS

Two high-efficiency electric drive chillers, cooling tower mods, and associated support equipment.

EPC 3: COLLEGE OF ENGINEERING

Awarded | **August 2014**

Construction Phase Start | **December 2015**

Construction Phase Completed | **2020**

Contract Term | **20 years** Contract Value | **$40.5M**

Total Projected Savings | **$41.9M** Rebate Amount | **$196K**

Energy Service Company | **Energy Systems Group**

ECMS

New clean room and wet laboratory, occupancy sensors, steam trap replacement, centralized water cooling for laboratory equipment, direct digital control systems, air-handling unit replacements and retrofits, pipe insulation, air-duct cleaning, heat recovery system modifications, exhaust fans, variable air volume boxes, and high-efficiency fume hoods.

EPC 4: ABBOTT POWER PLANT

Awarded | **November 2015**

Construction Phase Start | **August 2016**

Construction Phase Completed | **2018**

Contract Term | **10 years** Contract Value | **$2.1M**

Total Projected Savings | **$2.1M**

Energy Service Company | **NORESCO**

ECMS

Water-cooled chiller and chilled water coils.

EPC 5: LABORATORY FACILITIES

Awarded | **October 2016**

Construction Phase Start | **January 2019**

Construction Phase Completed | **2024**

Contract Term | **20 years** Contract Value | **$32.5M**

Total Projected Savings | **$58.2M** Rebate Amount | **$615K**

Energy Service Company | **Schneider Electric USA**

ECMS

Direct digital controls system, variable air volume conversion, air handling unit replacements and upgrades, window replacement, seal building envelope, laboratory exhaust upgrades, new heat recovery chiller, and LED lighting retrofit

EPC 6: CAMPUS CWS OPTIMIZATION

Awarded | **September 2022**

Construction Phase Start | **November 2023**

Construction Phase Completed | **2024**

Contract Term | **10 years** Contract Value | **$2.49M**

Total Projected Savings | **$3.2M** Rebate Amount | **$750-$862K**

Energy Service Company | **Veregy Central, LLC**

ECMS

OptimumLOOP control software at Oak Street and North Campus Chiller Plants to enhance system performance, using proprietary algorithms to continuously analyze and adjust operations in real-time, optimizing control of chilled water plant equipment for maximum efficiency.