

# Powering Sustainability on Campus

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The power behind **your mission**



# Powering Sustainability on Campus

## Creating safe and sustainable learning environments

Increasingly, campus leaders are looking for sustainable solutions and developing strategies to reduce carbon emissions as a part of their campus Master Plans. In fact, nearly 700 colleges and universities already have pledged to become carbon neutral by 2050, or sooner, according to Second Nature ([www.secondnature.org](http://www.secondnature.org)).

Johnson Controls is helping higher education institutions reach these ambitious targets through effective decarbonization strategies. Our solutions not only address climate change and a zero carbon future, but also modernize their campus buildings and energy infrastructure.

## Net Zero Buildings as a Service

At Johnson Controls, we're the power behind the mission of higher education institutions to achieve Net Zero. And there is a very strong parallel between our goals and those of colleges and universities across the country. Sustainability is our business, and achieving carbon neutrality is a goal directly aligned to our own corporate mission.

Our company has been reporting our emissions and taking action to reduce our footprint for more than 20 years. We were among the first industrial companies to join the UN Global Compact and, through an aggressive series of enterprise-wide initiatives, we have cut our energy intensity by more than 50% and our greenhouse gas intensity by more than 70%. In January of 2021, we announced ambitious new sustainability commitments that outline our priority to make positive changes in reducing our company's environmental footprint. Building on our history of sustainability leadership, we committed to achieving net zero carbon emissions before 2040 and announced science-based targets for 2030.

While improving our own environmental footprint is essential, Johnson Controls makes an even greater impact through products and services that help our higher education customers improve energy, water and resource efficiency. We provide a range of innovative, sustainable, clean technologies that help customers reduce carbon emissions and energy use, increase resiliency, use fewer resources and reuse and recycle materials while protecting people and the environment.

## Healthy People | Healthy Places | Healthy Planet

Johnson Controls has served 2,887 higher education campuses in North America, powering their missions for exceptional student experiences through healthy, connected and sustainable infrastructure.

Among our current active portfolio of more than 50 energy saving performance contracts with colleges and universities, we guarantee these institutions more than \$1 billion in savings over their contract terms.



## Powering decarbonization for our customers

In our 135 years of managing and optimizing facilities, Johnson Controls has continuously pioneered new offerings that allow customers to make critically needed infrastructure and operational improvements now, while delivering long-term solutions to ensure continued success for years to come.

Our Net Zero as a Service program bundles assets, technology and services into one contract that delivers immediate as well as ongoing operational and financial benefits without the burden of product ownership, numerous contracts or increased debt.

Our process leads customers through a series of steps to achieve decarbonization, providing increasingly sustainable products and services and the highest environmental impact.

## Decarbonization Solutions

### Goal Setting & Advisory Services



- Cultural and organization-wide alignment
- GHG inventory (Scope 1,2,3) baseline
- Decarbonization roadmap and strategy
- Financial assessment and solutions
- Peer and market benchmarking
- Master planning

### Safe, Secure, Healthy Environments



- Building code compliance for occupant safety
- Indoor air quality and ventilation
- Fire safety, building and cyber security strategies and technologies
- Industry-leading certification of health and safety (i.e. BOMA/ WELL)

### Digitally Enabled Environments



- Energy management information systems
- Streamlined data acquisition
- Data-driven building decision-making using predictive, automated, responsive capabilities
- Leveraging digital models for master planning and scenario assessment
- Transparent, traceable decarbonization dashboards

### Efficient Infrastructure



- Savings and outcome-based energy efficiency program
- Deferred maintenance resolution
- Infrastructure resiliency
- Electrification solutions
- Portfolio energy management
- Waste Management
- Water Conservation

## Johnson Controls' Sustainability Commitments



**Double** customers' annual avoided emissions by 2030 through Johnson Controls OpenBlue digitally enhanced products and services



Achieve **net zero** carbon emissions before 2040



Link executive **compensation** to sustainability and diversity goals to drive leadership accountability



Use **100%** renewable energy by 2040



Direct **75%** of R&D investment on new products supporting sustainable solutions



Elevate sustainability as a key performance metric for suppliers and provide training to help them cut their emissions



### Sustainable operations

- Continuous decarbonization operations management plan
- Training or staffing future-ready infrastructure experts
- Sustainable lifecycle management and technology obsolescence planning
- Condition-based, predictive maintenance



### Distributed energy resources

- Distributed Energy Strategy
- On-Site Renewable Energy Generation
- On-site Storage
- Grid Interactive Services
- Advanced Asset Optimization
- Demand Response Services
- EV Charging



### Renewable energy supply services

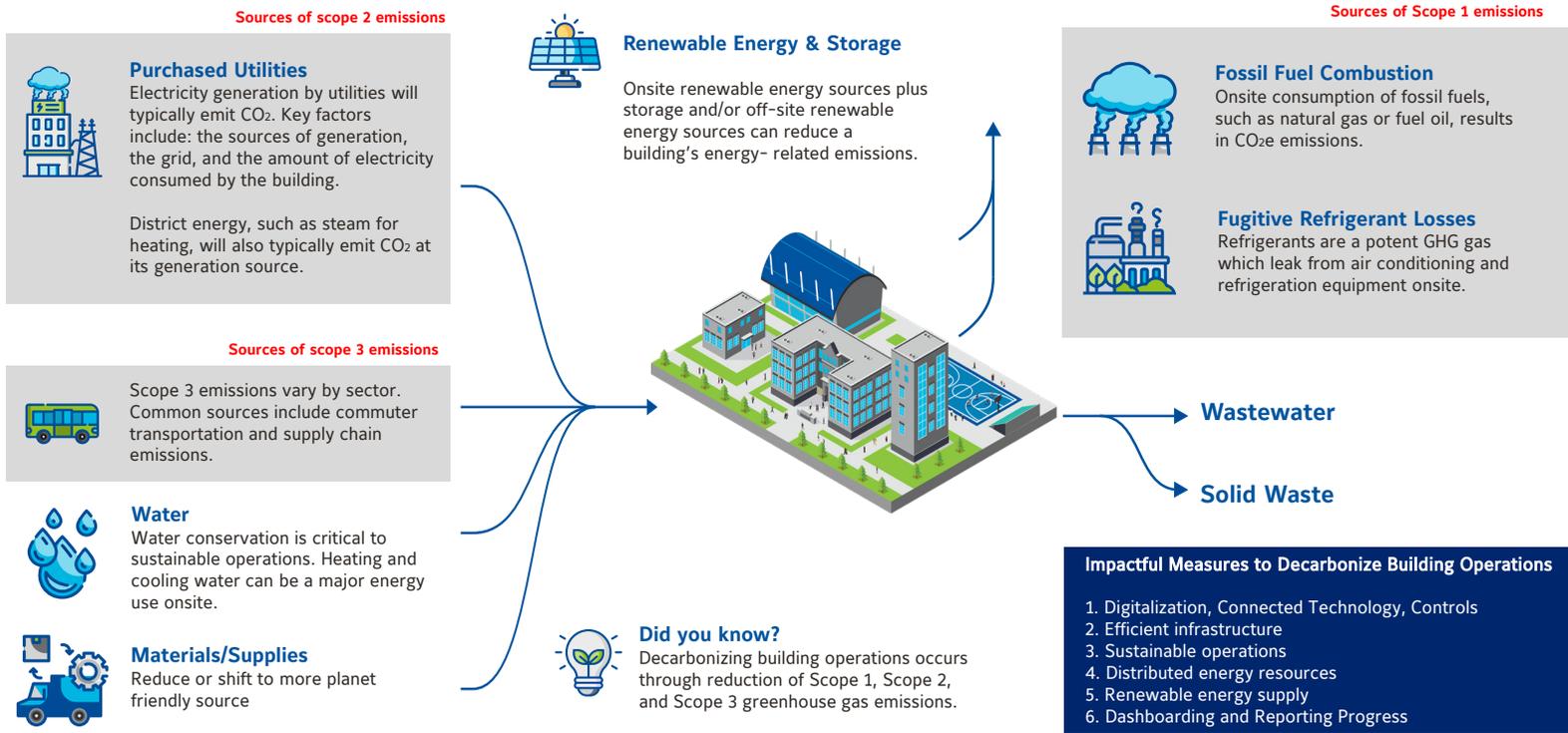
- Renewable Energy Advisory
- Renewable Energy Procurement (PPAs, VP-PAs, RECs, RNG)
- Carbon Offsets
- Energy Supply (Budget) & Billing Management
- Renewable Finance, Development & Trading



### Certify and recognize impact

- Transparent, traceable decarbonization dashboards, accounting and reporting
- Brand public relations and communications
- Industry-leading certifications facilitation

## Elements of a Net Zero [Decarbonized] Campus



- **Scope 1: Direct GHG emissions.** Direct GHG emissions are released from sources that are owned or controlled by a company.
- **Scope 2: Electricity indirect GHG emissions.** Scope 2 emissions are indirect GHGs released from the energy purchased by an organization. Scope 2 emissions physically occur at the facility where electricity is generated.
- **Scope 3: Other indirect GHG emissions.** Scope 3 emissions include all other indirect GHG emissions. These emissions are a consequence of the activities of the company, but occur from sources not owned or controlled by the company. Some examples of scope 3 activities are extraction and production of purchased materials; transportation of purchased fuels; and use of sold products and services.

Source: Greenhouse Gas Protocol | (ghgprotocol.org)

# Success Stories



## Colorado State University, Pueblo

- Renewable energy supplies 100% of campus electrical demand
- More independent, more resilient campus with no new debt
- 22.3 acre solar array with battery storage supplies 12M kWh of electricity
- First university in the state to reach “net zero electric” efficiency
- University exceeds three of the four greening government goals from Governor Polis, including greenhouse gas emission reduction, energy management and renewable energy goals

### Net Zero

- On-site solar generation

“Our solar project as well as other campus-wide energy savings programs that Johnson Controls made possible will allow us to minimize energy costs for the next two decades allowing us to pass on these savings to our students. We are working hard to keep higher education affordable and within reach for the people of Pueblo and Southern Colorado.”

Timothy Mottet  
President, CSU Pueblo



- Highly-efficient natural gas steam plant replaced UND's 100 year-old coal-fired plant
- \$90M facility built at no cost to taxpayers in the state
- Reducing emissions by 40,000 metric tons of CO<sub>2</sub>e each year, equal to the carbon stored in 74 square miles of forest
- Along with energy savings retrofits across campus, program will save UND more than \$1M per year in steam savings and lower repair costs
- Recipient of 2020 Sustainability Innovation Award from APPA

#### Energy Savings

- New construction
- Demand-side project

"On this day, we can proudly proclaim that UND is contributing to the national effort to lower greenhouse gas emissions."

Andrew Armacost  
UND President

"My message to the rest of the North Dakota University System is simply, 'Look and learn.' The dedication today is not simply about replacing a 100-year-old steam plant. It is a reflection of innovative problem solving, robust collaboration and visionary leadership, the result of which will benefit generations of North Dakotans."

North Dakota Governor Burgum

# University of Hawai'i System



The image above shows the solar canopy installed by Johnson Controls at Leeward Community College. Installations like these are very popular on the campus not only because they provide clean energy, but also due to the shade they provide for cars. The installations also include electric vehicle charging infrastructure.

- On-site solar and energy storage capacity includes 2.8MW of solar PV and 13.2 MWh of battery distributed energy storage at UH Maui College and 7.7 MW of solar PV and 28.6 MWh of battery distributed energy storage at the UH Community College campuses on O'ahu
- Two campuses already generate and store 100% renewable energy on site
- UH saved \$80 million through an energy retrofit and renewable energy solutions
- The projects reduced energy use by an average of over 80% across four campuses
- University of Hawai'i (all 10 campuses) will achieve net zero by 2035; JCI selected for 4 campuses in current procurement \$104.4M
- Smart controls were included in the project to maximize comfort, control and reliability
- Achieved a \$20 million reduction in deferred maintenance across two phases of work through efficiency projects and savings

## Net Zero

- Demand-side projects
- On-site solar generation



### Solar and battery storage allow five UH campuses to self-generate energy

Johnson Controls was named to the Fortune magazine "Change the World" list in 2018 for helping the University of Hawai'i Maui College move toward generating 100% renewable energy on their campus.



"Universities across the country should be looking at this project as a blueprint for how to save a ton of money and minimize their greenhouse gas emissions. It sets the standard."  
-Environment + Energy Leader

Johnson Controls and University of Hawai'i Recipients of the 2019 Judges' Choice Award  
[www.environmentalleader.com](http://www.environmentalleader.com)



# Northwest Florida State College

- Worked across five campuses to improve efficiency, reliability, and occupant comfort
- Completed the project on time despite severe weather conditions in the area
- Replaced all lighting with LEDs, including visible improvements to sports arena lighting
- Improved water conservation with installation of low flow fixtures
- New central energy plants on its two biggest campuses
- Replaced eight miles of 50-year-old underground hot/cold water piping
- Added flow control and redundancies to its existing infrastructure
- Replaced air handlers that were more than 50 years old
- Project will save college more than \$29 million in energy and operational savings

## Energy Savings

- New central plant construction

“We tried to do similar things in the past on our own and completely failed. With the help of our contract with Cenergistic and Johnson Controls we have managed to save more than we ever imagined possible. Just do it, sooner rather than later. If I have any regret at all about this, I can only say that I wish we had done it sooner.”

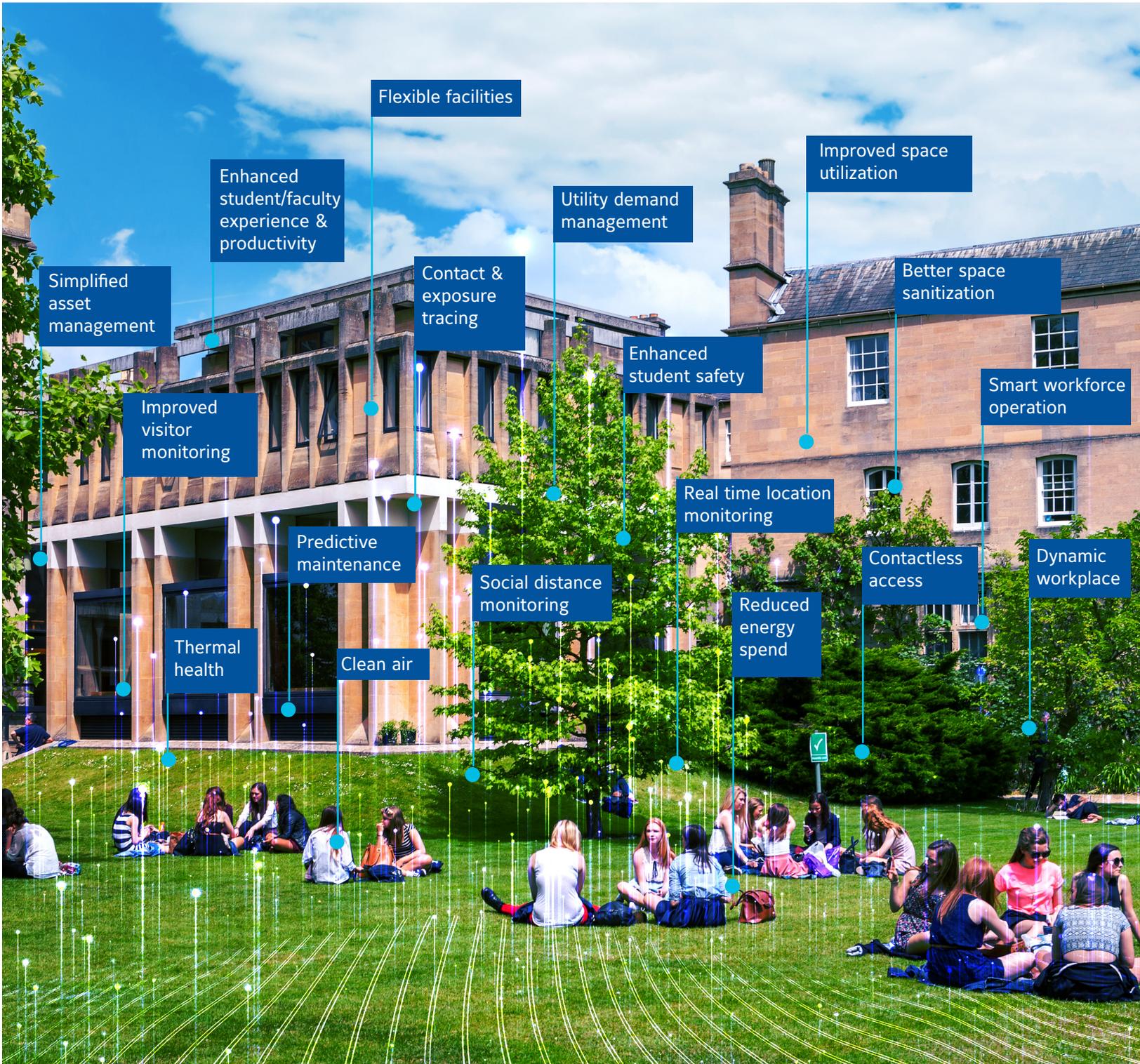
Randy White

Vice President of Business Operations and Finance and Chief Financial Officer

# Why Digitally Enabled Solutions are Important to Achieving Carbon Neutrality



# Some of our Campus Solutions



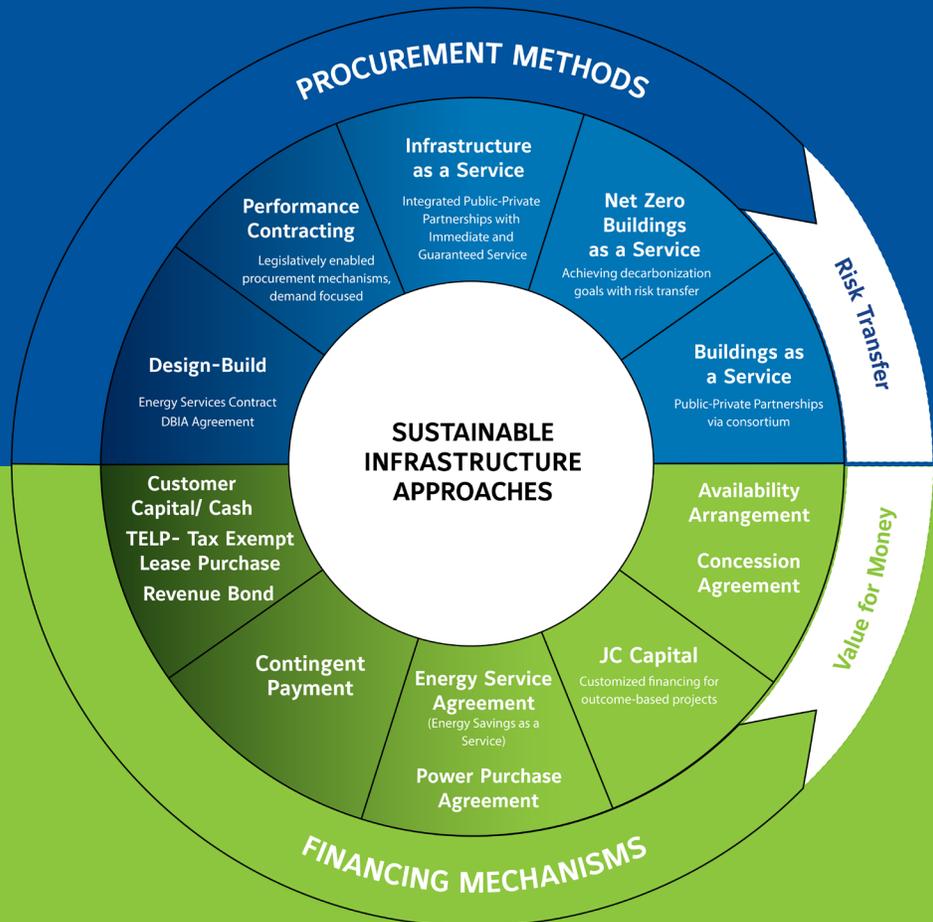
# Outcome-based solutions that power customers' missions

## 1. Problems Addressed

- Institutional outcomes, achieve mission/ vision, student experience
- Infrastructure modernization/replacement
- Risk transfer
- Energy resiliency, disaster preparedness
- Reduce operational costs and carbon footprint
- Address deferred maintenance
- Privilege of focus on your institution's mission and strategic plan
- Attract/retain customers, shareholders, tenants

## 2. Contracting Vehicles

- ESC | Energy Savings Contracts
- ESPC Federal | Energy Savings Performance Contract
- State Legislation - Driven PC | Energy Performance Contract
- PPAs | Power Purchase Agreements
- Concession Models
- Contingent Payment Program/ IaaS | Infrastructure as a Service
- DBFOM | Public Private Partnership



## A few delighted customers



**University of North Dakota**  
\$195M DBFOM JCI Prime  
New steam plant & campus upgrade



**LAX Consolidated Rent-a-Car Facility**  
\$200M DBFOM with Consortium  
Improved traveler experience



**Cornell College**  
\$5.9M Contingent Payment Campus improvement, removing the campus steam plant  
Reduced energy usage by 20 percent



**Corvias | Fort Bragg Military Housing**  
\$110M Tech & energy efficiency  
Improved environment & predictability



**University of Hawaii**  
\$120M solar, energy storage, eliminating fossil fuel energy use 100%

## About Johnson Controls

Today's students expect to learn and live in safe, healthy, comfortable and sustainable environments. On campuses across the country, administrators face a seemingly overwhelming challenge: How to optimize campus environments, lower energy consumption, decrease operational costs, and reduce environmental impact, while at the same time attracting and retaining students and faculty.

Johnson Controls, a leading provider of higher education solutions, helps institutions achieve these diverse goals by creating comfortable, quality learning environments that operate more intelligently and efficiently. As the global leader in technology that powers smart, healthy and sustainable buildings, our solutions are found on more than 2,880 higher education campuses across North America. Our mission is to reimagine the performance of buildings to serve people, places and the planet.

And we've been doing it since 1883.

For additional information, please visit [www.johnsoncontrols.com/industries/higher-education](http://www.johnsoncontrols.com/industries/higher-education)