

3W4

Innovative Funding for Institutional Growth

APPA

2019 Annual Meeting



APPA Johnson Controls

Welcome to the intersection of dreamers and doers...

Where we create the answers and the infrastructure to transform the communities we live in and serve.

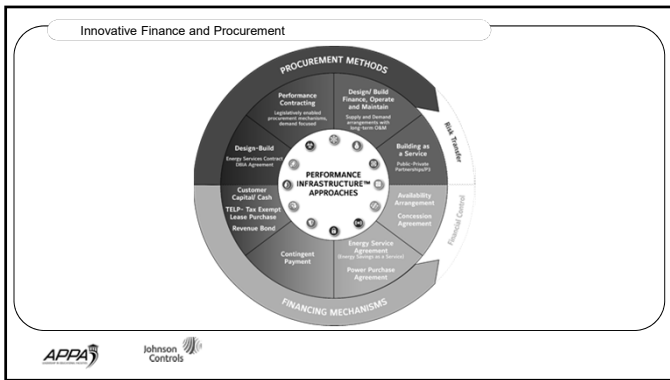
We are the Johnson Controls Performance Infrastructure™ team.

We're the fearless innovators, the team players and the trusted partners who work tirelessly -- relentlessly -- to eliminate all barriers to build the best possible environments and empower the people within.

From one light, to one room, to one building, to one city, to one world: we make it possible and we make it work today.



Johnson Controls



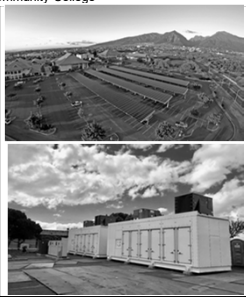
University of Hawaii Community College

The Challenge

- First campus in US to achieve 100% renewable energy
- "Net-zero"

The Innovative Solution Performance Contract and Power Purchase agreement.

- Energy efficiency measures
- Solar shade canopies
- Distributed energy storage



\$79M in energy savings

- UH Maui College**
 - Energy conservation measures
 - 2.8MW Solar PV
 - 13.2MWh battery distributed energy storage
- UH Community Colleges O'ahu**
 - 7.7MW Solar PV
 - 28.6MWh battery distributed energy storage

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University of Hawaii Community College System

Advancing toward 100 percent renewable energy

By 2025, the University of Hawaii's UH Maui College will be 100% powered by clean energy. UH O'ahu will be 100% powered by clean energy. UH Mānoa will be 100% powered by clean energy.

100% 98% 97% 74% 70%

Here's how UH is partnering with Johnson Controls to increase energy efficiency and save money:

- Energy Performance Contract
- Smart Controls
- LED Lighting
- BIM Assessments
- Smart Controls
- LED Lighting

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University of North Dakota


The Challenge

- Century-old coal plant at the center of campus needing immediate replacement

The Innovative Solution Public-Private Partnership

Design-Build-Finance-Operate-Maintain

- Natural gas-fired steam plant, moved to edge of campus
- Central quad developed
- Intelligent lighting infrastructure
- Building controls upgrades
- HVAC & mechanical equipment



200 building campus, 6.5M sq. ft.

- 40-year public-private partnership**
- Consortium members include:**
 - Affiliated Engineers
 - AES
 - JLG Architects
 - Odney Public Affairs
 - Obermiller Nelson Engineering (ONE)
 - PCL Construction

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Slide 1

EW4 feel free to swap photos with something from your VM

Erica Weber, 1/25/2018


Samford University, Alabama

The Challenge

- Aging facilities
- Failing equipment & HVAC systems
- Record-setting enrollment
- Sustain financial strength
- Engage students in conserving natural resources

The Innovative Solution
Contingent Payment

- HVAC equipment
- Intelligent lighting infrastructure
- Controls upgrades
- Central plant optimization
- Building envelope



- \$51M in energy and operational savings
- 33% reduction in utility costs
- Reducing carbon footprint by 15,000 tons of CO2
- Decrease water consumption by 20 million gallons

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Texas A&M Commerce University

The Challenge

- Rising utility costs
- Aging facilities

The Innovative Solution
Performance Contract

- HVAC & mechanical equipment upgrades
- Installation of facility management & controls systems
- Cooling Tower Sewer Credits
- Lighting retrofits
- Solar Window Film
- Utility Sub Meter
- Student Housing HVAC Controls



- Improvements on 23 buildings on campus
- Cost of project was \$8.8M
- \$12.7M in savings over 15 year term
- 8 Facility Improvement Measures


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Northwest Florida State College

The Challenge

The Innovation

The Solution



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Slide 9

EWV1 Jon - are teh challenge items correct?

Erica Weber Whitmore, 3/22/2019