

CxENERGY 2017

CONFERENCE & EXPO

Orlando, Florida | April 24-27, 2017

CONFERENCE PROGRAM



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COMMISSIONING | ENERGY MANAGEMENT | BUILDING TECHNOLOGY

Welcome to **CxENERGY 2017** April 24-27, Orlando, FL!



Download the Conference Mobile App!

About the App: get updates from the show coordinator, view session, sponsor and exhibitor information, and the attendee list. Use the app to check into technical sessions and earn CEUs, send messages to fellow attendees, share contact info with exhibitors, and complete course evaluations and surveys.

To Download: iPhone, iPad and Android users—search “cxenergy” on the Apple App Store or Google Play Store; Blackberry, Windows, laptop users can download online at <https://cxenergy2017.gatherdigital.com>.

To Login: enter the email you used to register for CxEnergy and password “cxenergy”.

PRE-CONFERENCE WORKSHOPS & CERTIFICATION OPPORTUNITIES



Commissioning Authority Workshop & Exam

Monday, April 24 – Tuesday, April 25
ST. CLOUD

8:00 am – 5:00 pm, \$950

This highly interactive workshop covers all aspects of commissioning and entails many group breakout activities where attendees will use project case studies to develop and discuss samples of key commissioning deliverables. The CxA exam is a 4-hour, closed-book exam that tests candidates on their knowledge of the commissioning process, as well as a general understanding of building systems and how commissioning fits in with the rest of the construction process.



CxA Gap Session for Recertification

Tuesday, April 25
OSCEOLA AB

2:00 pm – 4:30 pm, FREE

This session and short quiz, focused on existing building and ongoing commissioning, fulfills an important ANSI recertification requirement for CxAs certified prior to April 2016. [The other option is to retake the CxA examination.] The session is offered free of charge to ACG-certified individuals, however for planning purposes you must register in advance.



Energy Management Professional Seminar & Exam

Monday, April 24 – Tuesday, April 25
HARMONY

8:00 am – 5:00 pm, \$750

The New EMP Seminar & Exam were developed to align with the new requirements for ANSI/DOE accreditation. The EMP program is a commissioning-based approach that maximizes energy savings and optimizes building performance. It also provides relevant information about existing building commissioning.



Test & Balance Seminar for CxAs, Engineers, & TAB Professionals

Tuesday, April 25
CELEBRATION

8:30 am – 4:30 pm, \$200

This series of in-depth, practical presentations is geared to helping commissioning providers, engineers, and test and balance professionals understand how key aspects of the test and balance process are carried out, why they are important, and what expected results should be. The TAB experts will emphasize how to apply AABC's recently updated National Standards to challenges encountered in the field.



EMP Validation Exam

Tuesday, April 25
HARMONY

1:00 pm – 5:00 pm, FREE

Candidates for EMP certification who do not have time to attend the full seminar will have an opportunity to sit for the exam only, which will also assist in validating the new exam, a key requirement for ANSI accreditation.



Breakfast and lunch will be provided for all pre-conference workshops and seminars, excluding the CxA Gap Session.

Welcome Reception in the Exhibit Hall

Tuesday, April 25, 5:00 pm – 6:30 pm
OSCEOLA CD

Join us in the Exhibit Hall for the official opening of CxEnergy 2017. Enjoy complimentary cocktails and hors d'oeuvres and network with colleagues while looking over the latest tools and technologies for commissioning, TAB and energy management.

Wednesday, April 26



Plenary Session

8:00 am | **OSCEOLA AB**

Update on ACG & EMA activities and ANSI/DOE recognition for the CxA & EMP programs.

Concurrent Technical Presentations

10:00 am – 12:15 pm

Choose from one of four concurrent one-hour technical sessions led by experts on commissioning, TAB and energy management.

Lunch in the Exhibit Hall

12:15 pm

Concurrent Technical Presentations

2:00 pm – 5:30 pm

Reception in the Exhibit Hall

5:30 pm – 7:00 pm

Thursday, April 27

Concurrent Technical Presentations

8:00 am – 11:30 am

Brown Bag Lunch & EMA Business Meeting

11:30 am - 1:30 pm | **OSCEOLA BALLROOM E**



Continuing Education Credits

Attendees of all certification and concurrent technical sessions will earn continuing education credits toward CxA recertification. Use the CxEnergy app to check into technical sessions and earn CEUs.

PROGRAM AT A GLANCE

Monday, April 24

- 7:00 am Registration for CxA Workshop
- 7:00 am Registration for EMP Seminar
- 8:00 am – 5:00 pm **CxA Workshop**
[Breakfast & Lunch]
- 8:00 am – 5:00 pm **EMP Seminar**
[Breakfast & Lunch]

Tuesday, April 25

- 8:00 am – 5:00 pm **CxA Workshop & Exam**
[Breakfast & Lunch]
- 8:00 am – 5:00 pm **EMP Seminar & Exam**
[Breakfast & Lunch]
- 8:30 am – 4:30 pm **AABC Test & Balance Seminar**
[Breakfast & Lunch]
- 1:00 pm - 5:00 pm **EMP Validation Exam**
[FREE]
- 2:00 pm – 4:30 pm **CxA Gap Session**
[FREE for ACG Members]
- 5:00 pm – 6:30 pm **Welcome Reception in Exhibit Hall**

Wednesday, April 26

- 7:00 am – 6:00 pm Registration
- 7:00 am – 8:00 am Breakfast
- 8:00 am – 8:45 am **Opening Plenary Session**
- 8:45 am – 9:45 am **Meet & Greet in Exhibit Hall**
- 10:00 am – 12:15 pm **Concurrent Technical Sessions**
- 12:15 pm – 2:00 pm Lunch in the Exhibit Hall
- 2:00 pm – 5:30 pm **Concurrent Technical Sessions**
- 5:30 pm – 7:00 pm **Grand Reception in Exhibit Hall**

Thursday, April 27

- 7:00 am – 8:00 am Breakfast
- 8:00 am – 11:30 am **Concurrent Technical Sessions**
- 11:30 am – 1:30 pm Brown Bag Lunch & EMA Business Meeting

PRESENTED BY



CxENERGY PROGRAM

WEDNESDAY, APRIL 26, 2017

7:00 am - 6:00 pm

Registration

8:00 am - 8:45 am

Opening Plenary Session

7:00 am - 8:00 am

Breakfast

8:45 am - 9:45 am

Meet & Greet in Exhibit Hall

10:00 am - 11:00 am

OSCEOLA A

Energy Performance in the new “LEED Normal”

Mark Gelfo, P.E., LEED Fellow, CxA, EMP

Justin Mulhollan, P.E.

TLC Engineering for Architecture

Christina Sprows, TD Bank

This session reviews how energy modeling and renewable energy analysis guided TD Bank's prototype redesign to improve energy performance and meet new LEED v4 certification goals. Focuses include using energy modeling, and understanding the differences between LEED v2009 and LEED v4.

CELEBRATION

50001 Ready: Self-Reporting & Assessment Tool

Jay Wrobel, Department of Energy

The ISO 50001 energy management standard is a proven framework for industrial facilities, commercial facilities, or entire organizations to manage energy. The growth of ISO 50001 is expected to accelerate as an increasing number of companies integrate ISO 50001 into their corporate sustainability strategies and supplier requirements. This session provides a demo of DOE's new self-paced tool for instituting ISO 50001.

OSCEOLA B

Maintaining Temperature & Humidity in Critical Zones

Mark Ritz, Rheem

The battle to maintain temperature and humidity within critical zones is constant for HVAC engineers. This presentation discusses differences between the standard designs of humidity and temperature control versus the “predictable indoor environment” humidity and temperature control. Learn how technology can provide a neutral air zone in the most sustainable and efficient manner while providing real world, third-party validated data.

ST. CLOUD

Fundamentals of Test & Balance for Engineers, Cx & Energy Providers

Jim Hall, P.E., TBE, CxA

Systems Management & Balancing, Inc.

This practical, information-packed session will explain many of the key test and balance issues—from precise specifications, to duct leakage testing, to pump—and fan-curve considerations—that if properly addressed in cooperation with an independent TAB firm can ensure that any project goes more smoothly.

11:15 am - 12:15 pm

OSCEOLA A

After Hours Cx – Lessons Learned from K-12 Schools

Jim Magee, CxA, EMP, Facility Commissioning Group

Bob Knoedler, P.E., CxA, EMP

Hanson Professional Services Inc.

Reducing energy costs is one of the few ways in which a school system can save money without affecting classroom instruction. Studies have shown that commissioning in the education sector can save 10-15 percent in energy costs. This presentation examines lessons learned from commissioning K-12 schools as well as the challenges presented by the owners, A/E teams and contractors.

CELEBRATION

Converting CAV to VAV in Florida: What Does This Really Mean?

Steven Harrell, CxA, SSRcx

Tom Davis, BayCare Health Systems

This presentation defines the steps necessary to truly convert all non-sensitive zones in a hospital facility from constant air volume control to variable air volume control and the procedures necessary to comply with AHCA requirements and receive Agency approval in the state of Florida. A case study will be presented highlighting St. Joseph's Hospital North where this conversion has occurred and been approved by AHCA. Energy benefits and complete results to date will be discussed in detail.

OSCEOLA B

Tracking Standards Developments and Best Practices in HVAC Air Distribution Systems

Neal Walsh, Aeroseal LLC

Mike Lorion, Airmax Service Corporation

This presentation reviews key updates to the ASHRAE 189.1 Standard impacting air duct performance, ASHRAE SPC 215's work to determine leakage airflow and fractional leakage of operating HVAC air distribution systems, a case study on resolving air duct leakage in Florida multi-family condo complexes, and reviews best practices related to ductwork testing, installation and repair.

ST. CLOUD

Using Online Commissioning Tools to Save Time & Money and Add Value

Joshua Gepner, P.E., Environmental Systems Design, Inc.

Project management, documentation management, and data-transfer activities within the construction industry are continuously becoming more reliant on advanced digital technology. This is especially true in the commissioning sector. This presentation provides information on the selection of an online commissioning tool that matches the intended use, budget and complexity, and rolling it out to internal and external stakeholders.

12:15 pm - 1:45 pm

Lunch in Exhibit Hall

2:00 pm - 3:00 pm

OSCEOLA A

Optimizing Chilled Water Systems for Energy Efficiency and Occupant Comfort

Mark Benevides, Siemens

A chilled water (CHW) system is often the most energy-intensive, occupant-satisfaction related component in a facility. This presentation provides information on implementing a holistic approach to CHW system management and the fundamental thermodynamic principles that will lead to reduced energy consumption, improved occupant comfort and extended equipment life.

CELEBRATION

Speed to Market: How to Commission a Modular Data Center in Today's Marketplace

*Derek De Jesús, CxA
Burr Computer Environments, Inc.*

DOE estimates data centers consume two percent of all electricity produced in the U.S. A significant trend in the marketplace is the use of modular data centers, a portable method of deploying capacity that can be placed anywhere data capacity is needed. This presentation covers the evolution of the data center marketplace and the challenges of purchase/design/build as it relates to modular data center commissioning.

OSCEOLA B

Existing Building Commissioning in Health Care Facilities

*Saverio Grosso
ENERActive Solutions, an Edison Energy Company*

Drawing on technical examples, lessons learned, and best practices from a recent award-winning healthcare facility project, this presentation comprehensively explores the key components necessary to execute successful existing building commissioning (EBCx) projects in mission critical buildings.

ST. CLOUD

Acceptance and Testing for a Quality Turnover to Sustainable Operations & Maintenance

*Paul Raschilla, EMP, AKF Group
Jules Willinger, CxA, AKF Group*

This presentation demonstrates how to use commissioning to supplement the planning, design and construction process to achieve a better systems outcome. Attendees will learn the key closeout steps necessary for better operations and maintenance; how to line up the project contract responsibilities for a quality turnover to operations; and the basic tasks required for a quality acceptance and turnover process.

3:15 pm - 4:15 pm

OSCEOLA A

Building Enclosure Commissioning: Growing Trends in Higher Energy Performance & Operational Excellence

John Runkle, P.E., Intertek

Ensuring the integrity of building enclosures has become increasingly complex. Over time specialty Cx disciplines, such as building envelope commissioning (BECx), have gained momentum as effective processes in achieving high performance. Using case studies, this presentation explores real-life examples of how BECx provides comprehensive quality assurance that can save time and money while simultaneously increasing a project's worth.

CELEBRATION

GSA Project Nets \$48 Million Savings: A Case Study

Kevin Brown, P.E., EMP, ABM

The GSA needed to replace aging building systems and regulate energy use in its Southern California portfolio. By utilizing an energy performance contract that leveraged future savings for financing, this comprehensive energy retrofit is expected to cut these buildings' energy consumption by 38%, yielding a near \$50 million savings to taxpayers.

OSCEOLA B

Energy Modeling as a Tool for Retrocommissioning

John Bixler, P.E., NV5 - Sebesta

Energy modeling and retrocommissioning can effectively share information to aid in building investigations. The session provides an overview of the mechanics of energy modeling, specific energy model inputs that can be enhanced by RCx information, examples of how to include RCx findings in energy models, discussion of the insights gleaned from an energy model that should be used in RCx, and strategies to capitalize on synergies between the services.

ST. CLOUD

MBCx: The Next Wave of Energy Savings in Utility Incentive Programs

*Ruairi Barnwell, DLR Group
Rick Tonielli, ComEd
Ben Talbot, P.E., DLR Group*

Monitoring Based Commissioning (MBCx) is the fastest growing form of commissioning and utility companies are increasingly aligning incentive programs to fit the trend. DLR Group is an approved MBCx service provider in the ComEd Energy Efficiency Program. The speakers provide a background and evolution of the program, outlining a series of case study examples that illustrate the opportunities, challenges and best practices associated with implementing MBCx.

4:30 pm - 5:30 pm

OSCEOLA A

OSCEOLA B

Your Control Systems Have Been Hacked, Now What?

*Michael Chipley, PhD, The PMC Group LLC
Eric Nickel, Chinook Systems*

It is imperative that those involved with the design, deployment, and operation of control systems learn to detect, contain, eradicate and recover from a cyber-attack specifically targeting control systems. This presentation is an overview of the Advanced Control System Tactics, Techniques and Procedures (TTPs) developed by the U.S. Cyber Command.

CELEBRATION

Discover how much Water You're Using and Use that Information to Optimize Your Facility

Brent Baird, Instruments Direct

The question all balancers need to answer is "how much water are we using." Without this critical data, there is no basis to adjust or balance a hydronic system. This session explores the different water applications in a typical facility and breaks down the technologies on how to monitor the flow and energy from both a flow survey discovery process and a long-term dedicated metering solution.

Development of an Energy Roadmap for Orlando International Airport

*Nate Boyd, P.E., Hanson Professional Services Inc.
Jeff Daniels, Orlando International Airport*

A large airport authority sought to develop an "energy roadmap." Gathering the requisite information, establishing benchmarks and targets, and performing assessments and audits were critical steps; along with collaborating to forecast demands, costs, and budgets. Since these were phased efforts, it was vital to establish the sequence and priorities. This presentation examines the development of the roadmap and how it will be used and periodically re-evaluated.

ST. CLOUD

Energy Efficiency Incentives in an Era of Political Uncertainty

Nelson Marin, Walker Reid Strategies, Inc.

As a new Administration and Congress arrives in Washington, D.C., so does great uncertainty in the future of federal incentives and financing for energy efficiency. This session provides an update and key information regarding how you can still leverage current incentives as well as expired programs. It also explores the outlook for the rest of the year in light of these political changes.

5:30 pm - 7:00 pm Reception in Exhibit Hall

THURSDAY, APRIL 27, 2017

7:00 am - 8:00 am Breakfast

8:00 am - 9:00 am

OSCEOLA A

OSCEOLA B

Case Studies: Saving Energy without Large Capital Projects

Eric Weber, P.E., Energent Solutions

When people think of energy efficiency, they often think of large capital projects. Often, small and rural hospitals do not have the budget for state of the art equipment or systems. How did two such hospitals go from ENERGY STAR scores in the teens to the verge of certification? Find out how these facilities used people rather than equipment to achieve massive energy savings through creativity, systems and processes.

CELEBRATION

Measurement and Verification of Heat for Thermal Energy Credits

*Thomas D. Prevish, Ph.D., P.E.
NorthWest Engineering Service, Inc.*

The prevalence of Combined Heat and Power (CHP) distributed generation systems has fostered interest in verifying the electricity and heat utilized by customers receiving tax incentives offered by state and federal energy efficiency and renewable energy programs. This presentation discusses typical system configurations, accuracy considerations, and regulatory guidelines for counting thermal energy credits, including the role of third-party verification and Cx.

DLC Networked Controls Specification Enables Utility Incentives

Howard Wolfman, P.E., Lumispec Consulting

Industry standards for lighting control technology are lagging as tremendous innovation is occurring at the manufacturer level to reduce the cost and complexity of installing and commissioning the systems. Attendees will learn how to use the non-profit DesignLights Consortium (DLC) and its networked lighting controls qualified controls list as a tool in implementing and commissioning lighting control systems.

ST. CLOUD

Preserving the World's Art and Artifacts through Existing Building Commissioning

*Ryan Lean, P.E., Jaros, Baum & Bolles
Molly Dee, Jaros, Baum & Bolles*

Installing a cutting-edge HVAC system goes a long way in successfully controlling temperature and relative humidity in any space, but complications may still arise. The Brooklyn Museum, one of the oldest and largest in the US, experienced the challenges associated with gallery climate control following a phased renovation project. To diagnose the cause of unstable temperature and relative humidity in gallery spaces, an EBCx process was successfully implemented on their gallery HVAC systems.

9:15 am - 10:15 am

OSCEOLA A

ASHRAE 90.1-2016, Energy Standard for Buildings – Review of Changes

*Richard Lord, CCS Sr. Fellow/ASHRAE Fellow
United Technologies – Climate Controls and Security
(Carrier)*

The presentation will focus on the updates to the ASHRAE 90.1-2016 Energy Standard for Buildings including envelope, mechanical, lighting and performance modeling changes relative to ASHRAE 90.1-2013. It will also include some overall background on the standard and its overall impact on Building Energy Efficiency and Design.

CELEBRATION

Commissioning Lighting Control Systems

*Jesse Felter, SSRCx
Tom Divine, P.E., SSR*

Requirements for lighting controls become more complex as energy-conservation codes evolve. With each level of increased complexity, the benefits of formally commissioning lighting control systems increase. There are many steps to examine when commissioning lighting controls, following energy code requirements. This presentation examines the applicable codes, designing the project scope and best practices associated with commissioning lighting control systems.

OSCEOLA B

Performance Testing for the Enclosure

*Elizabeth Cassin, RA, Wiss, Janney, Elstner Associates, Inc.
Fiona Aldous, Wiss, Janney, Elstner Associates, Inc.*

Field performance testing is an integral part of the Building Enclosure Commissioning process. Testing helps validate that the enclosure meets the performance requirements for the project, and is generally performed to verify air tightness, water tightness, adhesion, energy efficiency, among others. This session discusses typical industry-established test methods in detail to demonstrate the level of effort required for the testing as well as why the tests are performed.

ST. CLOUD

The Energy/Water Nexus: Seeking Opportunities for Savings

Melissa Darr, Arcadis

This presentation examines the strong interconnection between water and energy use at the municipal and building level. Strategies to identify inefficiencies and to increase opportunities for savings will be discussed. Attendees will gain an understanding of water demands of various energy production technologies and the energy demands of various water treatment methods and the true cost of water at a site.

10:30 am - 11:30 am

OSCEOLA A

An Owner's Approach to Maximize Benefits of the Cx Process

*Bradley Pollitt, AIA, UF Health Shands Hospital
Mark Dykes, UF Health Shands Hospital
Sanjyot Bhusari, P.E., Affiliated Engineers*

The overall objective was simple—create efficient, high-performing buildings and save money on the resulting utility reductions. Getting there was tougher. The UF Health facilities Vista Rehab and Cancer Hospital (South Tower) both received recognition from the American Hospital Association for their efforts. This session outlines their journey, its challenges, lessons learned and successes.

CELEBRATION

Commissioning of cGMP and Laboratory Systems

Michael Conway, CxA, exp U.S. Services Inc.

This presentation focuses on commissioning unique systems associated with pharmaceutical, biotech and manufacturing facilities. Its emphasis is the importance of the commissioning process for FDA regulated systems and environments – from installation verification and start-up, to operational verification and turnover packages – noting all steps must be completed and documented to follow the conditions required of these critical applications.

OSCEOLA B

Controls Verification + Test & Balance = A Smoother Commissioning Process

*Justin Garner, P.E., TBE, CxA
Engineered Air Balance Co., Inc.*

When properly specified, Total System Balance of HVAC systems includes verification of controls. Focusing on terminal units and AHUs as examples, this session presented by AABC will explore how complete verification of control configurations and sequences by the test and balance agency can save significant commissioning time.

ST. CLOUD

Effective Building Automation Controls Integration

Jeremy Bartlett, CxA, RMF Engineering

This presentation focuses on design and construction phase design review with an emphasis on ensuring controls integration between traditional building automation systems and packaged control technologies in new construction and renovation projects. Laboratory facilities present unique challenges for traditional building automation systems and packaged laboratory controls. We cover the steps necessary to ensure functional, safe and efficient controls integrations across building systems.

11:30 am - 1:30 pm

Brown Bag Lunch & EMA Business Meeting



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average time savings*

* Actual results may vary per project

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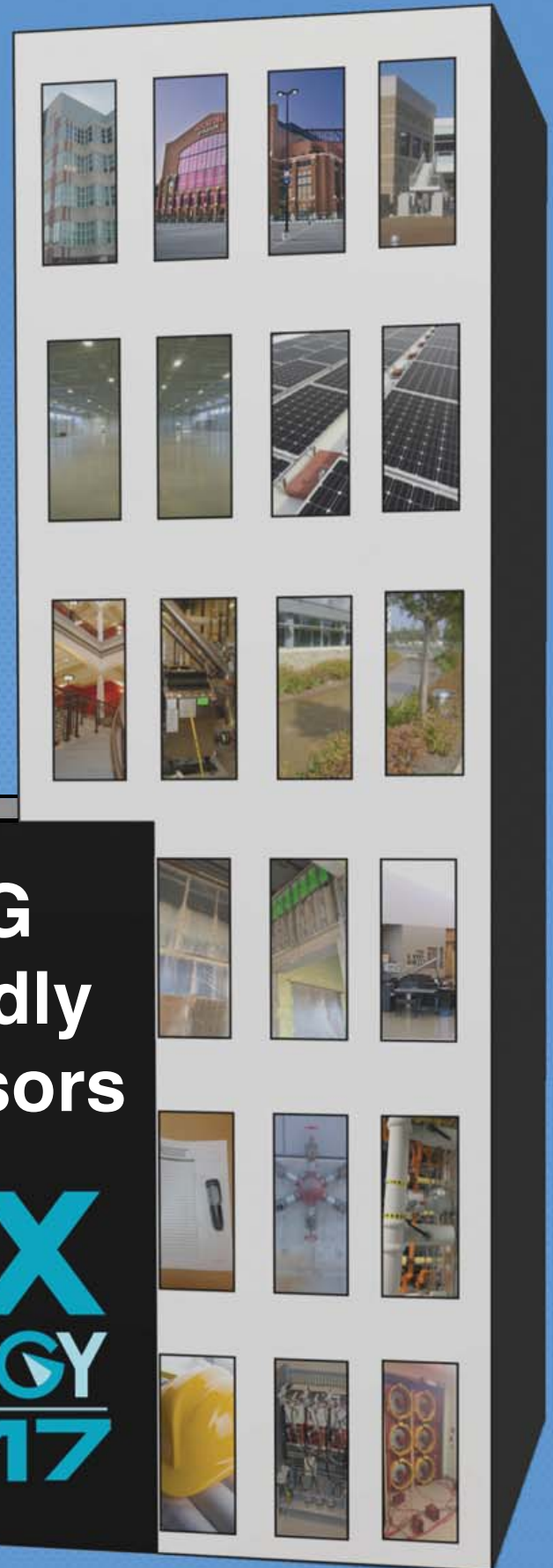
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April 26, 2017
Speaker Mark Ritz, Rheem



¹Based on comparison of a 50-gallon Rheem® Prestige® Series Hybrid Electric Water Heater with 3.50 EF and a 50-gallon standard residential electric water heater with a 0.95 EF. ²Product of the year, AHR Expo 2013. ³Based on recovery at a 100° rise. ⁴According to test data, Spiderfire is rated to last 12 years and according to the DOE, a commercial gas water heater are expected to last 7 years. The Spiderfire's longer life will help avoid estimated replacement costs of \$4,500. ⁵Condensing models only. ⁶Savings based on included components and compatibility; Installation conditions vary; Consult the Rheem Use and Care Manual, the Rheem Gas Piping Facts brochure (TK-GPF-12), the National Fuel Gas Code (NFPA 54, ANSI Z223.1), and any other local gas codes when installing a Rheem Tankless Water Heater.

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350

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PROJECTS

38

MILLION
TOTAL SQ. FT.

Energy Savings (over 3 year period)

20¢ - 30¢

per sq. ft.

or

\$20 - \$30

MILLION

TOP 4
MARKETS
make up

67%

of total TLC
commissioning
projects

OFFICE BLDG/
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That's equivalent to...

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1.3 million

urban trees

Removing



10,000

passenger vehicles
from U.S. roads

Saving about

50,000

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