2018 UAS FOR ELECTRIC UTILITIES

October 8-9, 2018
Denver Marriott South at Park Meadows
Denver, CO

““This outstanding conference brings together in one room the level of collaborations rarely found in our industry.””

CTO, RBS Drone Technologies

PRE-CONFERENCE WORKSHOP
Automated Detail Inspections: Live Field Demonstration & UAS Data Analysis
MONDAY, OCTOBER 8, 2018

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EUCI is authorized by IACET to offer 1.1 CEUs for the conference and 0.4 CEUs for the workshop

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THE POWER OF CONNECTED
OVERVIEW

This conference gathers industry experts to discuss all the important topics relevant to UAS use for electric utilities. An FAA UAS expert will discuss rules and regulations pertaining to UAS and their implications to the utility industry, as well as the role of UAS in emergency response. Xcel Energy’s UAS Program Manager will provide new updates regarding their program, including Beyond Visual Line of Sight. NASA will discuss its UAS power line inspection work. Attendees will learn about Entergy’s use of UAS for storm response. Arizona Public Service will discuss their UAS program. Ontario Power Generation will describe the evolution of their UAS program and provide a Canadian nuclear perspective. NRECA will discuss current UAS projects administered by electric utility coops. Oak Ridge National Laboratory will provide information regarding advancement in UAS sensor technologies. Com Ed will detail how they transitioned from proof-of-concept to an operational UAS program. National Grid and Southern California Edison will provide the latest details regarding their UAS programs. APPA will provide their public power perspective.

Attendees will have the opportunity to participate in a Q&A panel with UAS experts. They will discuss cutting-edge UAS technologies including updates regarding data collection, storage and processing, and automating the data lifecycle. Don’t miss the chance to meet with industry experts and have all your questions answered!

LEARNING OUTCOMES

- Discuss current FAA rules and regulations pertaining to UAS and their implications for the utility industry
- Describe the latest updates to Xcel Energy’s UAS program
- Review Arizona Public Service’s UAS program and review a storm restoration demo
- Explain NRECA’s lessons learned testing and integrating drones with distribution utilities
- Explain the evolution of Ontario Power Generation’s UAS program
- Describe how to use UAS for emergency response
- Address advancements in UAS sensor technologies
- Describe Com Ed’s process for customer notification regarding UAS utilization
- Participate in a hot topics panel with UAS experts
- Discover the process of automating the data lifecycle
- Discuss NASA’s UAS power line inspection work
- Explain Entergy’s use of UAS for storm response
- Explore Southern California Edison’s UAS program
- Review updates to National Grid’s UAS program
- Describe Com Ed’s transition from proof-of-concept to an operational UAS program
- Explain APPA’s perspective of current UAS programs, policies, and regulations
- Discuss cutting-edge technologies for UAS programs

WHO SHOULD ATTEND

- EPCs (Engineering/Procurement/Construction)
- Surveyors
- Technology Leads
- Geographic Information Officer
- Supervisor of GIS
- Director of Operations
- Operations & maintenance professionals in electric transmission & distribution
- T&D line inspection maintenance personnel
- T&D safety personnel
- Security professionals in the utility industry
- Attorneys who work in the utility industry
- Anyone else interested in learning more about how UAS can be used within T&D
AGENDA

MONDAY, OCTOBER 8, 2018

12:30 – 1:00 pm  Registration

1:00 – 1:45 pm  FAA Presentation: UAS Rules & Regulations
   • Operating a drone under 14 CFR Part 107
   • Updates & changes
   • Impact on the utility industry
   • Waivers
   Al Brunner, Aviation Safety Inspector- UAS, FAA

1:45 – 2:30 pm  Xcel Energy
   • Beyond Visual Line Of Sight (BVLOS)
   • Current updates to Xcel Energy’s UAS program
   • UAS for structure and ROW inspection
   • What Xcel has accomplished when applying for waivers
   Eileen Lockhart, UAS Program Manager, Xcel Energy

2:30 – 3:00 pm  Networking Break

3:00 – 3:45 pm  Arizona Public Service
   • APS program structure
     o Policies
     o Procedures
   • Use cases
     o T&D
     o Fossil
     o Nuclear
   C.J. Berg, Energy Innovation Analyst, Arizona Public Service

“I really enjoyed learning from other utilities and meeting industry counterparts. Our program will definitely benefit from attending this conference.”

UAS Program Lead, San Diego Gas & Electric

“I was able to take away some invaluable information and potential new relationships that I otherwise would not have been privy to if I had not attended this EUCI conference.”

Inspection Technician, Ontario Power Generation

“Absolutely wonderful conference, by the way. All topics were extremely relevant and covered well. The networking opportunity was the best I’ve experienced so far!”

Operational Strategy & Business Intelligence – Strategic Initiatives, ComEd
AGENDA

MONDAY, OCTOBER 8, 2018 (CONTINUED)

3:45 – 4:15 pm  Integrating Drone Technology into Utility Operations: Lessons Learned Testing and Integrating Drones with Distribution Utilities
NRECA has been working with utilities with a drone test platform to research best practices to allow utilities to take advantage of the technology. As we fly more missions at operational utilities, we have learned some tough lessons about software integration, selecting the right drone and sensor platform, and insuring a utility is meeting all the FAA regulations and requirements.
• NRECA is working with its member utilities, and the drone industry, to separate the hype, myth, and promise of drone technology to what is practical, sustainable, and implementable at a utility.
• This presentation will give a good overview on how to select the right platform, how to integrate the technology in the utilities daily workflow for inventory, inspections, and assessments, and give some insights on how best to work with the FAA.
   Stan McHann, Senior Research Engineer, NRECA

4:15 – 5:30 pm  PANEL: Hot Topics & Practical Considerations: UAS Integration into the Utility Industry
Tison Reno, Engineer- Distribution Asset Management, Entergy
Stan McHann, Senior Research Engineer, NRECA
Tim Trebilcock, Associate Engineer, Ontario Power Generation
Chris McMurtry, Solutions Architect, Sharper Shape, Inc.
Tom Barracca, Business Development Manager, ULC Robotics

5:30 – 6:30 pm  Networking Reception

TUESDAY, OCTOBER 9, 2018

7:30 – 8:00 am  Continental Breakfast

8:00 – 8:45 am  UAV Inspections for Utilities Case Study & Analytics
Honeywell Smart Energy and Honeywell Unmanned Aerial Vehicle (UAV) Services combine the power of data analytics capabilities and aerospace expertise which serve, and are tailored to, utilities and renewable energy customers.
• These software capabilities, coupled with UAV inspection services, deliver increased safety and efficiency for data-collection to markets using application specific drones. Honeywell’s Smart Energy and UAV Services teams will share a joint case study on the application of UAVs and data analytics to serve a current utility cooperative customer.
   Shailendra Singh, Honeywell Aerospace UAV Solutions, Director of Business Development, Honeywell
   John Hurd, Field Engineering Lead, Honeywell

8:45 – 9:30 am  FAA: UAS for Emergency Response
• Types of UAS Operations
• Small UAS Rule (Part 107)
• Civil COAs
• Special Governmental Interest (formerly e-COAs)
• Future Initiatives
• FESSA 2209
   Scott Gardner, Acting Manager, Emerging Technologies, AJV-115, UAS Tactical Operations Section, FAA
TUESDAY, OCTOBER 9, 2018 (CONTINUED)

9:30 – 10:15 am  Southern California Edison UAS Program
   • Best practices (operations and program development)
   • Program implementation
   • Governing documents (e.g., internal operations manuals, governance documents, etc.)
   • What to do with deliverables?
   • Customer interests
   • Thermal and radiometric sensors and how they can be used for substation, transmission line, and building inspections
   • Current and future applications
   Craig Stenberg, Flight Operations Manager, Southern California Edison

10:15 – 10:45 am  Networking Break

10:45 – 11:30 am  Integrating UAS into Operations
   • Program implementation
   • Operational practices
   • Challenges in integration
   Jacquelyn Bean, Lead Analyst, National Grid

11:30 am – 12:15 pm  NASA’s UAV Power Line Inspection Work
   • UAV based powerline inspection
   • Autonomous corona detection
   • Autonomous path planning
   • Flight corridor compliance
   • UAS traffic management
   Nicholas Rymer, Research Engineer, NASA Langley Research Center

12:15 – 1:00 pm  Group Luncheon

1:00 – 1:45 pm  Entergy Case Study Session
   • Mitigating helicopter flights during storm response
   • University research and partnerships
   • Starting a program from scratch and getting organizational buy in
   • Integrating internal & contractor drone operations
   Tison Reno, Engineer- Distribution Asset Management, Entergy

“This outstanding conference brings together in one room the level of collaborations rarely found in our industry.”

CTO, RBS Drone Technologies

“Attending the UAS for Electric Utilities conference is highly recommended as it is a great way to hear about how utilities are using UAS.”

Project Advisor, San Diego Gas & Electric
AUTOMATING THE UAS DATA CYCLE

1:45 – 2:30 pm

Collecting, managing, and analyzing UAS utility inspection data is highly rewarding but also quite demanding and labor intensive.

Most people who are currently using UAS for utility inspections are painfully aware of this fact and are eagerly anticipating the day when the process is automated throughout the data collection and analysis cycle.

There is a lot of buzz around artificial intelligence and autonomous drone flights making the utilization of drones for infrastructure inspection quick and painless. But which strategies are most promising for automatically creating flight plans and executing missions?

What about the FAA – how soon will airspace regulations allow for drone autonomy? Is Artificial Intelligence and computer vision already a viable alternative to human inspectors?

This session examines what the state of UAS automation looks like today and attempts to forecast where technological advances might soon be making a real impact on how drone inspection data is acquired and analyzed.

Chris McMurtry, Solutions Architect, Sharper Shape, Inc.

TRANSITIONING FROM PROOF-OF-CONCEPT TO OPERATIONAL UAS PROGRAM

3:00 – 3:45 pm

The business case for UAS

Organizing proof-of-concept

Steps to transitioning to an operational UAS program

Brian Cramer, UAS Program Manager, ComEd

SAY “YES” TO DRONES: DRONES FROM A PUBLIC POWER PERSPECTIVE

3:45 pm – 4:15 pm

A Washington perspective on the current state of play for drone laws

Examples of current public power drone programs, including a business case study

Explanation of regulatory “gaps” and industry barriers preventing widespread utility use

Suggestions for using drones to prepare for emergencies, based on public power responses to recent hurricanes

Andrew Wills, Government Relations Director and Counsel, APPA

“Excellent opportunity to find out what other utilities are doing, the state of emerging technology, and issues to consider.”

Manager, IT Business Relationship Management, Tucson Electric Power

“EUCI provided a well-rounded, informative conference of great interest to utilities. Their staff are professional facilitators who run great meetings.”

Principal Power System Engineer, Utility System Efficiencies, Inc.

“Excellent conference for utilities exploring a UAS program.”

Manager of IT, SECO Energy
Evolution of an UAV Inspection Program – a Canadian Nuclear Perspective

This presentation brings to life the evolution of an Unmanned Aerial Vehicle (UAV) inspection program.

• A series of case studies have been performed, from the initial proof of concept, testing several UAVs with varied payload configurations, and to showcase successful field trials
• The first UAV case study, driven by Canadian N285 requirements, dramatically reduced the inspection time from several days to a series of 4 – 12 minute inspections, resulting in substantial savings to the company and reduced risk to staff performing the work
• Intensive follow-up into the UAV market, research and coordination with operators, manufacturers and regulators, led to the purchase of several UAVs (Skyranger, Albris, Elios and DJI) for different applications
• Additional case studies on Ice-boom inspections, dam safety spill ways, and power plant exterior inspections give a unique field perspective on the challenges, and decisions made when adopting this technology for industrial inspections
• The demonstrated success of these case studies has lead to additional investment and growth in this area, to further utilize this evolving technology as a leading inspection program.

Ontario Power Generation’s UAV program has become the UAV Center of Excellence for OPG, including innovative UAV configuration to address public safety, as well as UAV indoor solutions for inspection and radiation detection

Tim Trebilcock, Associate Engineer, Ontario Power Generation
PRE-CONFERENCE WORKSHOP

Automated Detail Inspections:
Live Field Demonstration with IREA & UAS Data Analysis

MONDAY, OCTOBER 8, 2018

8:00 – 8:30 am  Registration & Continental Breakfast
8:30 am – 12:00 pm  Workshop Timing

OVERVIEW

Sharper Shape’s pre-conference workshop will provide attendees with a hands-on experience using automated utility inspection applications. Live UAS flight demonstrations will be conducted with Automatic Detailed Inspection (ADI) software, that uses LiDAR point cloud data to create precise autonomous drone inspection flight paths. The newly released Automatic Visual Inspection (AVI) application will also be featured during the workshop. AVI provides much of ADI’s autonomous flight planning capability but does not require LiDAR to create flight plans. Instead, Automatic Visual Inspection uses publicly available Digital Elevation Models to automatically plan efficient autonomous UAS inspections and emergency operations. AVI delivers much of the speed and quality of ADI, while eliminating the requirement of first acquiring LiDAR data of the inspection zone.

In the field, the workshop will demonstrate how these software tools can be used to automatically derive inspection and emergency response flight plans. ADI and AVI flight plans will be created with Sharper Shape’s Pilot iPad application, and then uploaded to a drone for live autonomous inspections of transmission structures. After the completion of flight operations, the captured data will be uploaded to the CORE software suite for immediate processing using CORE’s built in AI/computer vision tools and optimized human inspection environment. By the end of the workshop, the newly collected data will have been inspected and reports generated, giving participants a solid understanding of the autonomous operations process and how utilities can adopt these tools for a range of important work.

LEARNING OUTCOMES

- Analyze existing LiDAR data
- Create inspection flight plans
- Review VLOS flight plans
- Participate in a live demonstration of transmission structure inspection
- Review inspection assets
- Create reports using data obtained from field demonstration
- Address how to inspect large amounts of data from multiple sensors
WORKSHOP AGENDA

MONDAY, OCTOBER 8, 2018

- Overview
  - Analysis of LiDAR data
  - Analysis of Digital Elevation Models
  - Creation of autonomous inspection flight plans
- Field Trip: IREA Live Field Demonstration of Transmission Structure Inspection
  - Autonomous detailed inspection of the transmission structures
- Post-Flight Inspection
  - Uploading and managing field data
  - Review of inspection assets
  - Creation of inspection reports
- Questions
- Conclusion

WORKSHOP INSTRUCTOR

Chris McMurtry
Solutions Architect, Sharper Shape

In his role as the Solutions Architect for Sharper Shape, Inc., Chris McMurtry is focused on designing unmanned aerial solutions based around the company’s class leading “full-stack” hardware and software tools. Chris first became involved with drone technology for film and television production work, but he soon became convinced that unmanned aerial technology could do far more than just produce compelling entertainment content. This led to the creation of one of the first UAS services companies that specialized in using drone technology for utility inspections. Since 2013 Chris has been focused on finding the fit for UAS applications in the energy sector, with the goal of helping utilities transform their inspection and maintenance programs.
INSTRUCTIONAL METHODS

Case studies, PowerPoint presentations and classroom exercises will be used in this event.

REQUIREMENTS FOR SUCCESSFUL COMPLETION

Participants must sign in/out each day and be in attendance for the entirety of the conference to be eligible for continuing education credit.

IACET CREDITS

EUCI has been accredited as an Authorized Provider by the International Association for Continuing Education and Training (IACET). In obtaining this accreditation, EUCI has demonstrated that it complies with the ANSI/IACET Standard which is recognized internationally as a standard of good practice. As a result of their Authorized Provider status, EUCI is authorized to offer IACET CEUs for its programs that qualify under the ANSI/IACET Standard.

EUCI is authorized by IACET to offer 1.1 CEUs for the conference and 0.4 CEUs.

EVENT LOCATION

A room block has been reserved at the Denver Marriott South at Park Meadows, 10345 Park Meadows Drive, Littleton, CO 80124, for the nights of October 7-8, 2018. Room rates are US $189 plus applicable tax. Call 1-303-925-0004 or click here for reservations and mention the EUCI event to get the group rate. The cutoff date to receive the group rate is September 7, 2018 but as there are a limited number of rooms available at this rate, the room block may close sooner. Please make your reservations early.

REGISTER 3, SEND THE 4TH FREE

Any organization wishing to send multiple attendees to this conference may send 1 FREE for every 3 delegates registered. Please note that all registrations must be made at the same time to qualify.

SPONSORSHIP OPPORTUNITIES

Do you want to drive new business through this event’s powerful audience? Becoming a sponsor or exhibitor is an excellent opportunity to raise your profile before a manageably sized group of executives who make the key purchasing decisions for their businesses. There is a wide range of sponsorship opportunities available that can be customized to fit your budget and marketing objectives, including: Platinum, Gold, or VIP sponsor, Reception host, Tabletop exhibit, Lanyard sponsor, Luncheon host and Breakfast host.

Please contact Erin Burba at eburba@euci.com or 720-988-1260 for more information.
Please Select

- **2018 UAS for Electric Utilities Conference and Workshop**: October 8-9, 2018: US $1795
  Early Bird on or before September 21, 2018: US $1595

- **2018 UAS for Electric Utilities Conference Only**
  October 8-9, 2018: US $1395
  Early Bird on or before September 21, 2018: US $1195

- **Pre-Conference Workshop Only**
  Monday, October 8, 2018: US $595
  Early Bird on or before September 21, 2018: US $495

- I'm sorry I cannot attend, but please email me a link to the conference proceedings for US $395

How did you hear about this event? (direct e-mail, colleague, speaker(s), etc.)

Print Name: ____________________________ Job Title: ____________________________

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OR Enclosed is a check for $ __________________ to cover __________________ registrations.

Substitutions & Cancellations

Your registration may be transferred to a member of your organization up to 24 hours in advance of the event. Cancellations must be received on or before September 7, 2018 in order to be refunded and will be subject to a US $195.00 processing fee per registrant. No refunds will be made after this date. Cancellations received after this date will create a credit of the tuition (less processing fee) good toward any other EUCI event. This credit will be good for six months from the cancellation date. In the event of non-attendance, all registration fees will be forfeited. In case of course cancellation, EUCI’s liability is limited to refund of the event registration fee only. For more information regarding administrative policies, such as complaints and refunds, please contact our offices at 303-770-8800.

EUCI reserves the right to alter this program without prior notice.