

UTILITY ANALYTICS FUNDAMENTALS: *Techniques, Applications and Case Studies*

January 23 – 24, 2018
EUCI Conference Center
Denver, CO



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0.9 CEUs for the
course

OVERVIEW

Analytics — the scientific process of transforming data into insight for making better decisions — are used in virtually every division of a utility organization. During the past few years this knowledge requirement in the industry has accelerated and spread throughout the enterprise. It is now a “must-have” skill for almost all utility professionals: from planning, to operations, to trading, to mid-level management, to the C-suite, and everywhere in between. The deployment of various sensors and advanced meters has brought a large amount of data to the industry. Increased computing power has made quantitative analytics plausible, timely and economically feasible. Meanwhile, the advancement of information technologies has enabled utilities to make real-time operational decisions that are fact-based and data-driven. A challenge, though, has been to compile a coherent approach for professionals not having advanced quantitative training within the utility to leverage the multiple applications of analytics so as to achieve better key performance indicators (KPIs).

This course provides an introduction to analytics in the context of the electric power systems and industry. The course is designed for engineers, planners, analysts and managers who are either new to the utility industry or looking to develop a better understanding of how to apply analytics across the entire organization. Through 10 diverse case studies and 4 hands-on exercises, attendees will gain a fundamental understanding of how to apply analytics within the utility industry, the classical and emerging problems, and how to tackle those problems using the quantitative techniques in the enterprise environment.

LEARNING OUTCOMES

Employing case studies and workshop exercises, this instructional course will demonstrate in easy-to-follow methodologies the applications of analytics most frequently used in the utility industry. It will:

- Define the basics of descriptive, predictive and prescriptive analytics and when the appropriate tool(s) should be applied
- Demonstrate how to use numerical and graphical to describe data
- Discuss how to manage data-intensive, analytical projects
- Indicate how to develop, build and coordinate a team to tackle analytical challenges at different hierarchical levels of the organization
- Provide the analytics foundations used to derive the following key utility functions
 - o Electricity demand forecasting
 - o Reliability planning
 - o Demand response program management
 - o Unit commitment
 - o Energy trading
 - o Forecasting emerging technologies
 - Solar rooftop penetration
 - Electric vehicles adoption
 - o Outage management and storm restoration
 - o Aging infrastructure and asset management



“Dr. Hong provided a base knowledge of utilities and then built on the fundamentals making people unfamiliar with utilities, such as myself, comfortable. It provided easy learning of difficult subjects enjoyable and comprehensive.”

Data Analyst, Noah Consulting

AGENDA

TUESDAY, JANUARY 23, 2018

8:00 – 8:30 am	Registration and Continental Breakfast
8:30 – 8:45 am	Introductions and Overview
8:45 – 9:30 am	Evolution of Analytics Practice in the Electric Power Industry <ul style="list-style-type: none"> • History of the industry • Electric power systems • Advancement in analytics and the relationship to IT
9:30 – 10:15 am	Introduction to Analytics <ul style="list-style-type: none"> • Case study 1: analyzing utility stocks • Descriptive analytics • Predictive analytics • Prescriptive analytics • Hands-on exercise
10:15 – 10:30 am	Morning Break
10:30 am – 12:00 pm	Descriptive Analytics <ul style="list-style-type: none"> • Case study 2: describing electricity demand • Numerical methods • Graphical methods • Hands-on exercise
12:00 – 1:00 pm	Group Luncheon
1:00 – 2:30 pm	Predictive Analytics <ul style="list-style-type: none"> • <i>Case study 3</i>: peak demand forecasting • Exponential smoothing • Regression analysis • Hands-on exercise
2:30 – 3:00 pm	Networking Break
3:00 – 4:45 pm	Predictive Analytics (Continuation) <ul style="list-style-type: none"> • <i>Case study 4</i>: power distribution system reliability • Simulation • Case study 5: managing demand response programs • Survival analysis
5:00 pm	Course Adjourns for the Day



“I think the course is good for individuals running data analysis to obtain ideas on the applications of available data analysis tools.”

Assoc Engineer,
ONCOR



“A great initiation for the analysis of utility data.”

Financial Analyst, Orlando Utility Commission

AGENDA

WEDNESDAY, JANUARY 24, 2018

8:00 – 8:30 am	Continental Breakfast
8:30 – 10:00 am	Prescriptive Analytics <ul style="list-style-type: none">• <i>Case study 6</i>: unit commitment• Linear programming• Dynamic programming• Hands-on exercise• <i>Case study 7</i>: energy trading• Electricity market and locational marginal pricing• Risk analysis
10:00 – 10:15 am	Morning Break
10:15 – 11:00 am	Comprehensive Case Studies <ul style="list-style-type: none">• <i>Case study 8</i>: Forecasting solar rooftop penetration• <i>Case study 9</i>: Outage analytics• <i>Case study 10</i>: Aging infrastructure and asset management
11:00 – 11:45 am	Utility Analytics in the Enterprise Environment <ul style="list-style-type: none">• Analytics solutions and services• Managing analytics projects• Cross-functional analytics team• Career path and career development
11:45 am	Program Concludes

INSTRUCTOR



Tao Hong

**Director of BigDEAL (Big Data Energy Analytics Laboratory),
University of North Carolina at Charlotte**

Dr. Tao Hong is the Director of BigDEAL (Big Data Energy Analytics Laboratory) at University of North Carolina at Charlotte and Chief Data Scientist of Hong Analytics. He has been providing training and consulting services to more than 100 organizations in the energy industry worldwide. He is the Founding Chair of IEEE Working Group on Energy Forecasting, General Chair of Global Energy Forecasting Competition, lead author of the online book *Electric Load Forecasting: Fundamentals and Best Practices*, and author of the blog *Energy Forecasting*. Dr. Hong received his B.Eng. in Automation from Tsinghua University in Beijing and his PhD with co-majors in Operations Research and Electrical Engineering from North Carolina State University.



“Dr. Hong is able to bring his knowledge to engage students in real and interesting issues.”

Engineer, ComEd

REQUIREMENTS FOR SUCCESSFUL COMPLETION OF PROGRAM

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

INSTRUCTIONAL METHODS

PowerPoint presentations, case studies, and workshop exercises will be used in this program.

EVENT LOCATION

EUCI Conference Center

4601 DTC Blvd., B-100
Denver, CO 80237

NEARBY HOTELS

Hyatt Regency Denver Tech Center

7800 E. Tufts Ave
Denver, CO 80237
Phone: 303-779-1234
0.3 miles away

Hilton Garden Inn Denver Tech Center

7675 E. Union Ave
Denver, CO 80237
Phone: 303-770-4200
0.6 miles away

Denver Marriott Tech Center

4900 S. Syracuse St
Denver, CO 80237
Phone: 303-779-1100
0.7 miles away

Hyatt Place Denver Tech Center

8300 E. Crescent Parkway
Greenwood Village, CO 80111
Phone: 303-804-0700
0.9 miles away

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.

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REGISTER 3, SEND THE 4TH FREE

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

REGISTRATION
to register [CLICK HERE](#) or

Call: 201 871 0474
fax: 253 663 7224
email: register@pmaconference.com
web: <http://pmaconference.com/>
Mail: POB 2303 Falls Church Va 22042

Please make checks payable to: "PMA"

EVENT LOCATION

EUCI Conference Center
 4601 DTC Blvd., B-100
 Denver, CO 80237

SEE NEARBY HOTELS ON PAGE 5

PLEASE REGISTER

**UTILITY ANALYTICS FUNDAMENTALS:
 TECHNIQUES, APPLICATIONS AND CASE STUDIES**

January 23 – 24, 2018: US \$1495,
 Early bird on or before January 5, 2018: US \$1295

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

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Company

What name do you prefer on your name badge?

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Phone Email

List any dietary or accessibility needs here

CREDIT CARD INFORMATION

Name on Card Billing Address

Account Number Billing City Billing State

Exp. Date Security Code (last 3 digits on the back of
 Visa and MC or 4 digits on front of AmEx) Billing Zip Code/Postal Code

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 December 22, 2017 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 (201) 871-0474.