COST ESTIMATION AND CONTROL FOR TRANSMISSION PROJECTS: THE FUNDAMENTALS FOR OVERHEAD, UNDERGROUND AND SUBSTATIONS

February 11-12, 2014
Denver Marriott Tech Center
Denver, CO

EUCI is authorized by IACET to offer 1.1 CEUs for the course.
Throughout North America, the need for new utility projects is projected to grow to improve electricity delivery, increase capacities, improve reliability, and meet new standards associated with incorporating renewable energy generation into the smart grid.

In order to effectively utilize allocated and dedicated funding, it is critical for utilities, developers, sub-contractors, project managers, and suppliers to fully understand efficient utility project cost estimation, as this new infrastructure has substantial costs and risks associated with each project. In fact, new overhead transmission lines can cost $1 million or more per mile. The process of building transmission level projects often takes many years even in the most streamlined process.

In this course, attendees will recognize the critical components to consider in a transmission project estimate. Key components of the course include all factors that impact the final cost of building this infrastructure, including permitting and siting, materials and engineering, construction, and project management.

WHO SHOULD ATTEND

- Transmission and substation project managers, estimators, and contract managers who are new to the job
- Transmission and substation engineers
- Supply chain and cost accounting professionals for utilities and other energy companies
- Generation project developers and engineers who need an understanding of transmission components and costs
- Regulatory agency staff
- Consultants and engineering firms that work within the electricity transmission sector

LEARNING OUTCOMES

1. Discuss utility project planning process and budget considerations
2. Discuss the environmental and siting processes and the impact on schedules and costs
3. Analyze engineering and material cost considerations for transmission lines and substations
4. Compare and contrast contracting methods to include design-bid-build vs. OE/EPC
5. Identify strategies to leverage data for future projects and mitigate risks

“As an environmental consultant, I learned a lot about the construction of a line which will help me provide better environmental strategies to future utility companies.”

– Biologist, WRA, Inc.
AGENDA

Tuesday, February 11, 2014

8:00 – 8:30 a.m. Registration and Continental Breakfast

12:00 – 1:00 p.m. Group Luncheon

8:30 a.m. – 5:00 p.m. Course Timing

**Session I: Utility Cost Estimation Process**
- Developing budget parameters and the project plan
- What can change throughout the life of the project? (Commodity prices, economic factors)
- Measuring performance

**Session II: Methods of Contracting**
Identify common types of contracting methods and understand the risks and advantages/disadvantages associated with each:
- Traditional arrangement/design-bid-build
- EPC arrangement
- Open book EPC variations

**Session III: Costs for Major Utility Projects: Substations, OH Transmission, and Underground Transmission**
Group discussion and exercise of major components, materials and engineering costs
Project begins at the substation
- Site development
- Foundation
- Conduit & grounding plan
- Equipment
- Substation bus
- Conductor/cables

**Substation to Underground Transmission Line Getaway**
- UG transmission plan & profile
- UG transmission duct bank
- UG transmission line splice and pull-through vault
- UG transmission line cable
- UG transmission line substation riser details

**UG Transmission Transition to an Overhead Transmission Line**
- OH transmission plan & profile
- OH transmission staking
- OH transmission foundations
- OH transmission structures
- OH transmission hardware

"If you are new to estimating or the industry, this is for you.”
– VP Power, American Site Builders

“Good course to learn about cost estimation.”
– Transmission Planning Engineer, HECO
AGENDA

Wednesday, February 12, 2014

8:00 – 8:30 a.m.         Continental Breakfast

8:30 a.m. – 12:00 p.m.    Course Timing

Session IV: Permitting, Siting, and Right of Way Considerations and Costs

- Overview
- Potential impacts to project timelines, and costs and strategies to minimize obstacles
- Working with municipalities

Session V: Group Discussion: Project Close Out and Risk Management

The presenter and audience member will share field experiences and lessons learned to inform strategies to manage risk through all project phases and leverage data collected for the next project.
Philip Davis / Senior Project Manager and High Voltage Estimator / Mortenson Construction

Philip Davis is based in Minneapolis, Minnesota and works as a project manager in Mortenson Construction’s High Voltage Transmission Group. Philip currently works in the capacity of leading the group’s efforts in pursuing long haul transmission line EPC projects.

Prior to joining Mortenson Construction in 2012, Philip worked 10 years with Wasatch Electric, An EMCOR Company in Salt Lake City, Utah. His positions included estimator, project coordinator, and project manager in the Power and Utilities Division. He is experienced in estimating projects from 12.47kV up to 500kV in OH & UG Distribution, OH & UG transmission, and electrical substations, switch yards, and static VAR compensators.

Philip completed university studies at Weber State University in Ogden, Utah in construction management, Spanish, and business administration. He has also recently obtained the Project Management Professional certification from Project Management Institute.

Aaron English / NEPA Specialist / Tetra Tech

Aaron English is a NEPA specialist with extensive experience providing NEPA management and environmental documentation. His experience includes management for the siting of energy projects on federal lands, the Oregon Energy Facility Siting process, natural resources and cultural resources assessment, development or mitigation strategies, and agency coordination. He has acted as a third party consultant to federal agencies as well as supported utilities and renewable energy developers in obtaining permits for their projects. His recent project work includes serving as the project manager for the Boardman to Hemingway 500kV Transmission Line Project, a 500 kV transmission line through eastern Oregon and southwestern Idaho and also as a senior reviewer for the Idaho Power and Rocky Mountain Power, Gateway West 230 kV and 500 kV Transmission Line Project.

Connie Farmer / NEPA/CEQA Specialist / Tetra Tech

Connie Farmer is a NEPA/CEQA professional with broad experience including environmental project management, renewable energy/emerging technologies development, NEPA/CEQA management, California Energy Commission Application for Certification licensing process, natural resources and cultural resources assessment, environmental policy and law, and environmental compliance auditing. She has worked on NEPA projects for various federal agencies, including the US Bureau of Land Management, National Park Service, US Forest Service, US Fish and Wildlife Service, US Department of Energy and US Department of Defense. Her CEQA experience also includes work for local agencies and California Department of Fish and Wildlife. Her project experience includes project management on several utility scale renewable and conventional generation projects in the southwest including California, as well as serving as NEPA coordinator on the Boardman to Hemingway 500 kV Transmission Line Project.

Jay Turner, EIT, PMP / Six Sigma Green Belt for Process Improvement, LEED AP O+M Senior Cost Estimator / Southern California Edison

Jay Turner has twelve years of cost estimating, project management, failure analysis, and process improvement experience in the utility and consulting industries. He currently estimates substation and high voltage transmission construction costs for Southern California Edison. Jay is an Engineer-in-Training, and has been certified as a Project Management Professional, Six Sigma Green Belt for Process Improvement, and LEED Green Associate. He earned a Bachelor of Science in Engineering and Applied Science from the California Institute of Technology.
INSTRUCTIONAL METHODS

Power Point Presentations interactive group exercise, and group discussion will be used during this course.

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.

CREDITS

EUCI has been approved as an Authorized Provider by the International Association for Continuing Education and Training (IACET), 1760 Old Meadow Road, Suite 500, McLean, VA 22102. In obtaining this approval, EUCI has demonstrated that it complies with the ANSI/IACET Standards, which are widely recognized as standards of good practice internationally.

As a result of its Authorized Provider membership status, EUCI is authorized to offer IACET CEUs for its programs that qualify under the ANSI/IACET Standards.

EUCI is authorized by IACET to offer 1.1 CEUs for the course.

EVENT LOCATION

A room block has been reserved at the Denver Marriott Tech Center, 4900 South Syracuse Street, Denver, CO 80237, for the nights of February 10-11, 2014. Room rates are $159, plus applicable tax. Call 1-303-779-1100 for reservations and mention the EUCI course to get the group rate. The cutoff date to receive the group rate is January 20, 2014, but as there are a limited number of rooms available at this rate, the room block may close sooner. Please make your reservations early.

PROCEEDINGS

The proceedings of the course will be published, and one copy will be distributed to each registrant at the course.
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## PLEASE REGISTER THE FOLLOWING

- **COST ESTIMATION AND CONTROL FOR TRANSMISSION PROJECTS: THE FUNDAMENTALS FOR OVERHEAD, UNDERGROUND AND SUBSTATIONS**
  - FEBRUARY 11-12, 2014: US $1395
  - EARLY BIRD ON OR BEFORE JANUARY 31, 2014: US $1195

### FIVE EASY WAYS TO REGISTER

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<tr>
<td>One: Call</td>
<td>(201) 871-0474</td>
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<td>Two: Fax</td>
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### How did you hear about this event? (direct e-mail, colleague, speaker(s), etc.)

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

All cancellations received on or before January 10, 2014, will be subject to a US $195 processing fee. Written cancellations received after this date will create a credit of the tuition (less processing fee) good toward any other EUCI event or publication. This credit will be good for six months. In case of event 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. EUCI reserves the right to alter this program without prior notice.