



EUCI Presents a Conference on:

WATER MANAGEMENT IN POWER GENERATION

EFFICIENCIES, REGULATIONS, AND SCARCITY

September 14 – 15, 2009 • The Westin Bonaventure Hotel and Suites • Los Angeles, California

POST-CONFERENCE TOUR OF CASTAIC PUMPED HYDRO POWER PLANT

SEPTEMBER 15, 2009

TIMING: 12:00 – 5:00 P.M.

HOST UTILITY:

Los Angeles  Department of Water & Power

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OVERVIEW

As the demands for water and power both continue to steadily increase, power generators must manage both demands by integrating sound resource management and new technology into their operations in real time, as well as in their long-term resource plans. Though power plants in the United States depend heavily on a fresh water supply, water resource allocation is rarely considered when discussing power generation—but this is likely to change and change quickly. It is estimated that nearly 48% of all freshwater withdrawals are made for thermoelectric power generation, primarily as cooling water. With Congress potentially addressing the link between water and power with new legislation calling for research as a first step, power professionals need to focus on water management in power generation now more than ever before.

This summit will look at various components of water management including reviewing both policy and technology available to reduce water consumption. It will provide alternatives to using freshwater as cooling water in areas where water is scarce. These alternatives will include discussions on water recycling, various cooling tower technologies, and even adapting transmission line planning to accommodate for water scarcity. It will analyze the difficult tightrope utilities walk when balancing water conservation and energy efficiency. Finally, it will discuss how to proceed into the future where both demands for water and demands for power are sure to increase.

LEARNING OUTCOMES

- Analyze the inextricable nexus between water and power
- Examine water resource allocation and describe the importance of future planning for power generations
- Describe possible solutions to the water scarcity problem including long distance transmission of energy and water recycling
- Assess the numerous factors considered when balancing water consumption and energy efficiency as it applies to power generation
- Evaluate various available cooling tower technologies
- Demonstrate the shared management of cooling water source in an arid environment in two power plant facilities
- Discuss the importance of water quality regulations and available technology in power generation and describe how they are applied



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

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Requirements for Successful Completion of Program

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

Instructional Methods

Power Point Presentations, Case Study, Question and Answer Panel Discussions

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PROGRAM AGENDA

MONDAY SEPTEMBER 14, 2009

- 7:30 – 8:00 a.m.** **Registration and Continental Breakfast**
- 8:00 – 8:30 a.m.** **Keynote Address: Long Range Water Challenges for Power Systems: Conserving and Recycling the Closest Water Source**
- *David Nahai, CEO and General Manager, Los Angeles Department of Water and Power*
- 8:30 a.m. – 5:00 p.m.** **The Inextricable Link Between Water and Power**
- *Conference Chair: Lonnie J. Eldridge, Deputy City Attorney-Renewable Energy, Los Angeles Department of Water and Power*
- 8:30 – 9:15 a.m.** **The Global Nexus of Energy and Water: Trends and Challenges**
- Energy and water are interrelated (we use energy for water and water for energy)
 - This relationship is under strain today (through drought, heat wave, grid failure, etc.)
 - Trends imply this strain is likely to get worse (because of population growth, economic growth, climate change, and policy choices we make)
- *Dr. Michael E. Webber, Associate Director, Center for International Energy and Environmental Policy and Assistant Professor, Mechanical Engineering, University of Texas at Austin*
- 9:15 – 10:00 a.m.** **Why Water Resources Need to be Considered in all Power Generation Plans**
- Short-term water supply issues can impact costs and operation
 - Long-term resource allocation is imperative to accurate planning
 - Accurate planning is the only way to ensure compliance with the multiple regulatory agencies
- *Commissioner David W. King, New Mexico Public Regulation Commission*
- 10:00 – 10:30 a.m.** **Networking Break**
- 10:30 a.m. – 12:00 p.m.** **Panel: How to Proceed in a Future Where Both Water and Power are Scarce?**
- With the dual roles of the Los Angeles Department of Water and Power potentially at odds with one another, this panel will discuss how the Department is able to manage both their power and water resources in real time. It will further address how they plan to adapt to increasing demands for both power and water into the future.
- *Jonathan Parfrey, Member, Los Angeles Board of Water and Power Commissioners*
 - *James McDaniel, Senior Assistant General Manager-Water System, Los Angeles Department of Water and Power*
 - *James Caldwell Jr., Assistant General Manager Environmental Affairs, Los Angeles Department of Water and Power*
 - *Joe Brajevich, Assistant General Counsel, Los Angeles Department of Water and Power*
- 12:00 – 1:00 p.m.** **Group Luncheon**

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MONDAY SEPTEMBER 14, 2009 (CONTINUED)

1:00 – 1:45 p.m.

Using Existing Regulations to Secure a Reliable Water Supply

- Overview of state water project
 - FERC relicensing at Oroville
 - State water project water supply reliability
 - Department of Water Resources efforts – CA water plan and integrated regional water management
- *Raphael A. Torres, Deputy Director, State Water Project, California Department of Water Resources*

1:45 – 2:30 p.m.

Transmission Grid Evolution to Support Power-Water Substitution

- Long distance transmission of electric power can substitute for fresh water withdrawals in Southern California
 - The transmission grid will require upgrades to carry the increased load from areas where power is generated to where it is required
 - Depending on the cases of wind, solar, or nuclear mandates, different transmission corridors will be required
 - These cases will be modeled and presented showing the implications for the grid, where transmission corridors are needed and implications for water usage if those investments are not made
- *Dr. Steven Fernandez, Research Scientist, Oak Ridge National Laboratory*

2:30 – 3:00 p.m.

Networking Break

3:00 – 3:45 p.m.

Water Operations, Power, and Recycling Nexus

- Water supply sources for Los Angeles
 - Power needs for each source
 - Operational needs/restrictions
 - Recycled water as a new Source in-lieu of imported water
- *Jim Yannotta, Assistant Director of Water Resources, Los Angeles Department of Water and Power*

3:45 – 5:00 p.m.

Panel: How do we Balance Energy Efficiency and Water Conservation?

The inextricable link between water and power creates a difficult balancing act for those professionals tasked with increasing energy efficiency while also decreasing water use and consumption. This panel will discuss the key cost/benefit considerations utilities must consider when planning and managing their power generation.

- *Moderator: Ronald J. "Ron" Borrego, PE, Principal Engineer with AMEC Geomatrix*
- *Dr. Michael E. Webber, Associate Director, Center for International Energy and Environmental Policy and Assistant Professor, Mechanical Engineering, University of Texas at Austin*
- *Bob Lotts, Water Resource Manager, Arizona Public Service*
- *Kevin Geraghty, Vice President, Power Generation, NV Energy*

5:00 – 6:00 p.m.

Networking Reception

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PROGRAM AGENDA

TUESDAY, SEPTEMBER 15, 2009

- 7:30 – 8:00 a.m.** **Continental Breakfast**
- 8:00 a.m. – 12:00 p.m.** **Methods to Conserve Water During Power Generation**
- 8:00 – 8:45 a.m.** **Technology to Minimize Water Consumption in Power Generation Cooling**
- Dry cooling
 - Hybrid cooling
 - Parallel condensing
- *Joseph Padilla, Regional Manager, SPX Cooling Technologies, Inc.*
- 8:45 – 9:30 a.m.** **Using Shallow Shell Resins to Reduce Demineralizer Operating Costs**
- Acid and caustic are the major operating cost components for demineralizing water used to produce steam for power generation
 - Operating budgets for coflow operated demineralizer plants have easily been exceeded by recent price increases for acid and caustic
 - Retrofit of such plants with unique shallow shell ion exchange resins can significantly reduce the cost for acid, caustic and water
 - One power plant now saves over \$750,000 annually from such a retrofit.
- *Francis Boodoo, Technical Sales Manager, The Purolite Company*
- 9:30 – 10:15 a.m.** **Water in the Desert: A Case Study of Utilizing Effluent as a Cooling Water Source for the Palo Verde Nuclear Generating Station and the Redhawk Generating Station**
- Determining water supply options for a nuclear plant in a desert environment
 - Design of conveyance system, treatment plant and storage requirements to support plant operations
 - Water utilization, i.e. treatment plant effluent quality, cycles of concentration, final disposal
 - Water balance with a finite supply of water
 - Next step – utilizing the excess capacity from the Palo Verde water treatment plant to supply cooling water to a new combined cycle facility
 - Design of storage and treatment systems at the Redhawk facility
- *Bob Lotts, Manager of Water Resources, Arizona Public Service*
- 10:15 – 10:30 a.m.** **Networking Break**
- 10:30 – 11:15 a.m.** **Water Quality Issues: What are the Options?**
- More restrictive permit limitations and water quality standards
 - Water quality of incoming water restricts use
 - What are the treatment options or are there other alternatives?
- *Christine Johnston, Senior Environmental Analyst, Xcel Energy*
- 11:15 a.m. – 12:00 p.m.** **Balancing Water and Power**
- Los Angeles water and power usage
 - Water and power equivalencies
 - Legal and regulatory frameworks
- *Lonnice J. Eldridge, Deputy City Attorney—Renewable Energy, Los Angeles Department of Water and Power*

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POST-CONFERENCE TOUR OF CASTAIC PUMPED HYDRO POWER PLANT

TIMING: 12:00 – 5:00 P.M.

OVERVIEW

Pumped storage hydro power plants can be utilized as a key load balancing power generation source during peak load periods. Los Angeles Department of Water and Power is offering this opportunity to take a guided tour of the facility where you will see firsthand how the plant is operated.

In order to attend the tour, register for the tour in addition to the conference on the EUCI registration form.

AGENDA

12:00-1:30 p.m.	Boxed Lunch on the Bus
1:30-3:00 p.m.	Tour of the Castaic Pumped Hydro Facility
3:00-5:00 p.m.	Bus to Return to Hotel

PROCEEDINGS

A copy of the conference proceedings will be distributed to attendees at the event. If you are unable to attend or would like to purchase additional copies, flash drives are available 2 weeks after the conference is complete. The cost per Flash Drive is US\$295 [add US\$50 for international shipments]. Flash Drives include visual presentations only. Upon receipt of order and payment the Flash Drive will be shipped to you. NOTE : All presentation flash drive sales are final and are non-refundable.

CONFERENCE LOCATION

A room block has been reserved at the The Westin Bonaventure Hotel and Suites, 404 South Figueroa Street, Los Angeles, CA 90071, for the nights of September 13-14, 2009. Room rates are \$139 plus applicable tax Call 213-624-1000 for reservations and mention the EUCI conference to get the group rate. Make your reservations prior to August 26, 2009. There are a limited number of rooms available at the conference rate. Please make your reservations early.

REGISTRATION INFORMATION

REMEMBER, EVERY 4TH REGISTRANT IS FREE

For instant registration, call (303) 770.8800 or fax the Registration Form to (303) 741.0849.

Register 3, Send 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.

All cancellations received on or before August 14, 2009 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 conference or publication. This credit will be good for six months. In case of conference cancellation, Electric Utility Consultants' liability is limited to refund of the conference 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.

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PLEASE REGISTER THE FOLLOWING

- Water for Power: Water Management for Power Professionals in a Time of Scarcity - A Resources Summit, September 14-15, 2009, \$1395
Early Bird on or Before September 4, 2009, \$1195
Tour of Castaic Pumped Hydro Power Plant, add \$50
I'm sorry I cannot attend, but please send me the conference proceedings at \$295. (Please add \$50 for international shipping)

ENERGIZE WEEKLY

When you sign up for "Energize Weekly" you will receive a new conference presentation each week via email on a relevant industry topic. The presentations are selected from a massive library of over 1000 current presentations that EUCI has gathered during its 22 years organizing conferences.

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How did you hear about this event? (Direct email, Colleague, Speaker(s), etc.)

Name Title
Name Preferred for Badge E-Mail
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PAYMENT METHOD

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Check here if you have any dietary or accessibility needs. We will contact you for more details.