



Fall 2016 Hydropower Conference

Optimizing Hydropower Operations - Mathematical Modelling Tools

November 3-4, 2016 • Seattle, WA

Conference Overview

As the number of environmental or social constraints on hydro operations increase, so too does the need for sophisticated optimization and simulation models to assist the decision maker. Efficient models for the various horizons, ranging from a few hours up to many years ahead, provide countless benefits to all stakeholders who rely on effective river water management. Hydroelectric facilities benefit by maximizing energy production and revenues, minimizing spillage and efficiency losses and providing adequate reservoir flood storage capacity. Increasingly, hydropower system operators must balance high pools for recreation and drought protection, storage reserve for flood protection, flow requirements for in-stream ecological needs, and high availability for dependable capacity.

Deterministic and stochastic models are used to analyze reservoir system operations, plant operations, environmental compliance, outage planning, market sales and other hydropower management activities. Improving the quality and reliability of optimization and simulation tools is a priority for water managers and stakeholders affected by hydropower operations.

With more powerful computing systems and better inflow forecasting tools, optimization models enable hydropower system managers to embrace sophisticated analyses grounded on years of scientific research, in the ever changing world of river and hydropower management.

Objective

The objective of this workshop is to improve hydropower optimization and simulation modelling knowledge through collaborative information sharing.

Join us in Seattle this November 3-4 to further enhance hydropower modelling tools to meet current and future needs.

Topics for Discussion

- Have you been successful at representing the physical characteristics and operation of your system within reasonable computing times?
- How do you deal with the various uncertainties?
- Are your modelling tools able to consider non-hydro facilities such as intermittent generation sources (e.g., wind and solar)?
- What are the unresolved issues that you face in the optimal management of your system?
- Do you have a new system that could improve hydropower production and revenues?
- Have you implemented a new optimization or simulation system in an attempt to improve your company's bottom line and/or ability to meet operating targets?

Themes

Long and Medium Term Planning Models:

- Optimization
- Simulation of Heuristics
- Deterministic or Stochastic

Short Term Scheduling and Optimal Unit Loading Models:

- Optimization
- Simulation or Heuristics
- Deterministic or Stochastic

Post-analysis:

- Verification and Hindcasting
- Accuracy of Forecasting and Effectiveness of Past Operations

For more information, visit
www.ceati.com/event/HOP2016

Who Will Attend?

Hydroelectric Operations
and/or Water Managers

Hydrologists

Engineers

Water Resource Planning
Managers

Software Developers in the
area of Water Management

CEATI
INTERNATIONAL

NOVEMBER 3rd

FALL 2016 HYDROPOWER PROGRAM

7.30 - 8.15 **REGISTRATION & BREAKFAST**

OPENING

8.15 - 8.30 **Event Welcome**
CEATI International

SESSION 1: Global Planning and Scheduling

Session 1 Chairs: *Ulfar Linnet, Landsvirkjun*
Nathalie Voisin, PNNL

8.30 - 9.00 On-Boarding Hydro-Optimization at Tacoma Power
Mike Hill, Tacoma Power
& Clint Kalich, Avista

9.00 - 9.30 Models for Hydro Scheduling and Planning in Hydro-thermal Power Systems
Geir Warland, SINTEF

9.30 - 10.00 Real-time, Short, Medium and Long Term Operations Planning of the BC Hydro System: Modeling Framework and Decision Support Tools
Ziad Shawwash, University of British Columbia,
& Douglas Robinson, BC Hydro

10.00 - 10.30 **NETWORKING COFFEE BREAK**

10.30 - 11.00 Selection of a Hydro Scheduling Model at Landsvirkjun
Gunnar Geir Pétursson, Landsvirkjun

SESSION 2: Plant Optimization

Session 2 Chair: *Andy Sheppard, Southern Company*

11.00 - 11.30 Puget Sound Energy Facility Control System
John Chandler, Puget Sound Energy

11.30 - 12.00 Kemano Optimal Loading Model
Alec Mercier, Rio Tinto Alcan

12.00 - 1.30 **NETWORKING LUNCH**

13.30 - 14.00 Panel Discussion
Session 1 & 2 Presenters

SESSION 3: Short Term Scheduling and Optimization

Session 3 Chairs: *Chuck Bach, CEATI International*
Kevin Gawne, Manitoba Hydro

14.00 - 14.30 Optimization of the Hydro Power Generation System at TransAlta
Massimiliano Parisi, Kisters

14.30 - 15.00 Hydro Power Modelling on the Columbia River System
Anna Stermer, BPA

15.00 - 15.30 **NETWORKING COFFEE BREAK**

15.30 - 16.00 St. Lawrence Short-term Hydro Scheduling Model
*Francois Welt, Hatch, NYPA**

16.00 - 16.30 Modeling Hydropower in Production Cost Modeling of Electricity Markets: State-of-the-Art and Opportunities for Improvement
Nader Samaan, PNNL

16.30 - 17.00 Panel Discussion
Session 3 Presenters

17.00 **DAY 1 - Conference Adjourned**

18.00 - 19.30 **NETWORKING RECEPTION**

Agenda subject to change without notice.

NOVEMBER 4th

FALL 2016 HYDROPOWER PROGRAM

8.00 - 8.30

NETWORKING BREAKFAST

SESSION 4: Long and Medium Term Operations Planning and Optimization

Session 4 Chairs: *Marcel Paul Raymond, CEATI International*
Kresta Davis-Butts, Idaho Power

8.30 - 9.00

StockCible - An Aggregated Model for Long-term Planning at Hydro-Québec
Grégory Emiel, Hydro-Québec

9.00 - 9.30

Optimization of Hydropower Reservoir Operation with Ensemble Streamflow Prediction
Alec Mercier, Rio Tinto Alcan

9.30 - 10.00

Midterm Operations Simulation with Monte Carlo
Jacob Snell, Manitoba Hydro

10.00 - 10.30

NETWORKING COFFEE BREAK

10.30 - 11.00

The Challenges of System-Wide Operations Modeling at the Tennessee Valley Authority
Greg Mueller, TVA
& *Shaun Carney, Riverside Technology*

11.00 - 11.30

RiverWare Optimization
Tim Magee, CADSWES

11.30 - 12.00

Panel Discussion
Session 4 Presenters

12.00

DAY 2 - Conference Adjourned

NETWORKING LUNCH

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Registration Form

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You may also register online at www.ceati.com/register/HOP2016

Your Information

Name	<input type="text"/>
Title	<input type="text"/>
Organization	<input type="text"/>
Street Address	<input type="text"/>
City, Province/State	<input type="text"/>
Country	<input type="text"/>
Postal/Zip Code	<input type="text"/>
E-mail	<input type="text"/>
Phone	<input type="text"/>
Fax	<input type="text"/>

Payment Options

<input type="checkbox"/> Visa		<input type="checkbox"/> Mastercard	
Card No.	<input type="text"/>		
Expiry Date	<input type="text"/> / <input type="text"/>		
Signature	<input type="text"/>		
Cardholder	<input type="text"/>		

Registration Fees & Discounts

- ☐ \$795 USD Standard Registration
- ☐ \$575 USD CEATI Participant Registration
- ☐ \$575 USD Speaker Registration
- ☐ Free HOPIG Members*

* HOPIG participating organizations receive 2 complimentary registrations. Only available to current members in good standing.

Important Information

Registration fees include proceedings package, breakfast, breaks, lunches and reception where indicated on the schedule.

- ☐ Please check if you wish to be contacted about allergies or other dietary requirements.

Prices are in USD. Charges will appear as 'CEATI International Inc' and are subject to applicable taxes and fees.

All cancellations received at least 30 days prior to event will be subject to a \$200 processing fee. There will be no refunds granted after this date. Delegate substitution is permitted at no extra cost.

Please note that all names completing this form will be added to CEATI's mailing list. If you do not wish to be included in this electronic outreach, please click the "unsubscribe" button in the email to remove yourself.

Completed registration forms can also be sent by email to events@ceati.com or by fax to (514) 904-5038

Conference Location

Hilton Downtown Seattle
1301 6th Avenue
Seattle, WA 98101
+1.206.624.0500



All conference guests are eligible for a discounted rate of \$174 (USD) subject to availability. Simply mention "CEATI International" when reserving. Reservations must be made prior to September 16, 2016.