Overview

The electric utility industry is undergoing major changes which are influencing the way energy and capacity services are provided and power systems are planned.

Hydropower has been used to provide low variable cost energy, flexibility, and grid reliability for many years. However, this traditional role is being challenged by the growing presence of intermittent renewables, low cost natural gas, low load growth, excess capacity, and market uncertainty, which are creating pressures to reduce operating and maintenance costs and restrain capital expenditures that are necessary to address issues of operational risk and aging infrastructure.

These major changes require the best available knowledge to improve planning, operations, and maintenance, and an understanding of the risks associated with potential failure modes and associated consequences.

Tracks

1. Value and Flexibility of Hydropower in Grid Dispatch and Reliability
   - Providing flexibility to the power system
   - Strategic planning for efficient integration with other renewables (wind, solar)
   - Implications and costs of entering new markets (such as EIM)
   - Environmental legislation and regulatory impacts
   - Justifying rehabilitation with low power prices
   - The interplay of new market and operating conditions and dam safety considerations

2. Dam Safety: Learning from International Experience, Best Practices, Incidents, and Failures
   - Dam Safety Incidents/Failures Case Studies
   - Operational impacts of dam safety considerations
   - Preventative maintenance
   - Systems-based approaches to improving reliability
   - Communications and coordination (internal/external) – examples of best practices and breakdowns
   - Knowledge-based leading edge technological resources
   - Lessons learned from other industries
3 Hydro Equipment Reliability

- Impacts on hydro equipment and operations
- Need for condition assessment and monitoring tools
- Techniques for optimally managing load (e.g., start/stops, artificial loads, economic spills, rate design)

CONFERENCE FLOORPLAN

All meals, breaks, and receptions will take place in the Exhibitor Hall, unless otherwise indicated.
## Hydro Track 1: Value and Flexibility

**Value and Flexibility of Hydropower in Grid Dispatch and Reliability - March 19**

*Session Chairs: Ann McManamon, Bonneville Power Administration & Greg Lewis, Duke Energy*

### Grand Ballroom

#### 7:00-8:00 Breakfast

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>8:00-8:15</td>
<td>CEATI Welcome &amp; Introduction</td>
<td>Lizzie Smith, CEATI International</td>
</tr>
<tr>
<td>8:15-9:00</td>
<td>Integrating Variable Resources within the EIM</td>
<td>Kresta Davis-Butts, Idaho Power</td>
</tr>
<tr>
<td>9:00-9:45</td>
<td>Hydropower Operations in the IESO Market</td>
<td>Kurt Kornelsen &amp; Joe Rosati, Ontario Power Generation</td>
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</tbody>
</table>

#### 9:45-10:30 Break, coffee provided by Dynamic Ratings

#### 10:30-11:15 How Changes in the Generation Mix in Iceland have Affected the Price of Flexibility

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<tr>
<td>10:30-11:15</td>
<td>How Changes in the Generation Mix in Iceland have Affected the Price of Flexibility</td>
<td>Ulfar Linnet, Landsvirkjun</td>
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#### 11:15-12:00 Hydropower Value and Opportunities in Future Grid States

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<tbody>
<tr>
<td>11:15-12:00</td>
<td>Hydropower Value and Opportunities in Future Grid States</td>
<td>Michael Ingram, National Renewable Energy Laboratory &amp; Abhishek Somani, Pacific Northwest National Laboratory</td>
</tr>
</tbody>
</table>

#### 12:00-1:30 Lunch

#### 1:30-2:15 Recognizing the Value of Hydro Storage and Flexibility

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<tbody>
<tr>
<td>1:30-2:15</td>
<td>Recognizing the Value of Hydro Storage and Flexibility</td>
<td>Dan Prowse, Manitoba Hydro</td>
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</tbody>
</table>

#### 2:15-3:00 Preparing for Large Scale Grid Transformation: Importance of Synchronous Condenser Operation

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<tbody>
<tr>
<td>2:15-3:00</td>
<td>Preparing for Large Scale Grid Transformation: Importance of Synchronous Condenser Operation</td>
<td>Lingxiao Situ, Hydro Tasmania</td>
</tr>
</tbody>
</table>

#### 3:00-3:45 Break, coffee provided by Dynamic Ratings

#### 3:45-5:00 Panel Discussion: Pumped Storage Potential and New Developments

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<tbody>
<tr>
<td>3:45-5:00</td>
<td>Panel Discussion: Pumped Storage Potential and New Developments</td>
<td>Omar Torres, LADWP; Nathan Sandvig, National Grid; &amp; Mark Jacobson, National Renewable Energy Laboratory</td>
</tr>
</tbody>
</table>

#### 5:00-7:00 Networking Reception, sponsored by GE Renewable Energy

*Come and engage with over 60 exhibitors and sponsors, as well as other key industry stakeholders, including utilities, service providers, consultants, and manufacturers.*

*Last updated 7 March 2019. Agenda is subject to change without notice.*
# Hydro Track 1: Value and Flexibility

**March 20 - Maintaining Flexibility and Adapting to Changing Conditions**

**Session Chairs:** Ulfar Linnet, Landsvirkjun & Chuck Bach, CEATI

1. **7:00-8:15 Breakfast**

2. **8:15-9:00**
   - **Capturing the Opportunity of Hydropower Ramping while Ensuring Public Safety**
     - Bruno Benedetti & Brian Zakrajsek, Brookfield Renewable

3. **9:00-9:45**
   - **Modeling Day Ahead Hydropower Flexibility in RiverWare**
     - Tim Magee & Edie Zagona, CADSWES - University of Colorado

4. **9:45-10:30 Break, coffee provided by Dynamic Ratings**

5. **10:30-11:15**
   - **Standardizing a Methodology to Evaluate the Impact of Climate Change on Hydropower Production**
     - Bruno Benedetti, Brookfield Renewable & Elyse Fournier, Ouranos

6. **11:15-12:00**
   - **IHA Case Study: Implementing the Hydropower Climate Resilience Guidelines**
     - Robert Lempert, IHA

7. **12:00-1:30 Lunch**

8. **1:30-2:15**
   - **Application of Modern Time Series Methods to Evaluate Streamflow**
     - Mike Vieira, Manitoba Hydro

9. **2:15-3:00**
   - **Tree-Ring Reconstructions for the Colorado River Basin Streamflow: Drought and Implications for Power Generation**
     - Connie Woodhouse, University of Arizona

10. **3:00-3:45 Break, coffee provided by Dynamic Ratings**

11. **3:30**
    - **Prize Draw**
      - *All winners must be present to be eligible.*

12. **3:45-4:30**
    - **Combining Dendrochronology and River Policy to Improve Water Reliability in the Tennessee Valley**
      - Curt Jawdy, TVA

13. **4:30-5:00**
    - **CEATI Wrap Up**
      - CEATI International

14. **5:00 Conference Adjournment**

15. **5:30-7:00 Women in Power Networking Reception**
    - *All conference attendees are welcome to attend the Women in Power Group's reception. Appetizers will be served and refreshments will be available for purchase.*

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_Last updated 7 March 2019. Agenda is subject to change without notice._
# Hydro Track 2: Dam Safety

**Learning from Dam Safety Case Studies and Best Practices - March 19**

*Session Chairs: Annick Bigras, Hydro-Québec & Roger Raeburn, PacifiCorp*

**Sonoran Room**

### 7:00-8:00 Breakfast

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<td><strong>CEATI Welcome &amp; Introduction</strong></td>
<td>Chris Hayes &amp; Bruce Muller, CEATI International</td>
</tr>
<tr>
<td>8:15-9:00</td>
<td><strong>Teton Dam Incident Lessons Learned</strong></td>
<td>Jeanne Major, U.S. Bureau of Reclamation</td>
</tr>
<tr>
<td>9:00-9:45</td>
<td><strong>Taum Sauk Incident Lessons Learned</strong></td>
<td>Matt Frerking, Ameren</td>
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</tbody>
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### 9:45-10:30 Break, coffee provided by Dynamic Ratings

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<tbody>
<tr>
<td>10:30-11:15</td>
<td><strong>Oroville Follow-up: Comprehensive Needs Assessment and Risk Assessment Results</strong></td>
<td>Dave Sarkisian, CADWR</td>
</tr>
<tr>
<td>11:15-12:00</td>
<td><strong>Boone Dam Incident Lessons Learned</strong></td>
<td>Jennifer Dodd &amp; Chris Saucier, TVA</td>
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### 12:00-1:30 Lunch

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<tr>
<td>1:30-2:15</td>
<td><strong>Maintaining Low Water Levels to Ensure Safety</strong></td>
<td>Annick Bigras, Hydro-Quebec</td>
</tr>
<tr>
<td>2:15-3:00</td>
<td><strong>Impact of Forest Fires on Dam Safety Planning</strong></td>
<td>Dave Ritzman, Pacific Gas and Electric</td>
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### 3:00-3:45 Break, coffee provided by Dynamic Ratings

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<tr>
<td>3:45-5:00</td>
<td><strong>Panel Discussion: Evolution of Dam Safety Programs Over Time</strong></td>
<td>PJ Henscheid, Avista; Bill Christman, Chelan County PUD; Reta White, Exelon; &amp; Nate Snorteland, U.S. Army Corps of Engineers</td>
</tr>
</tbody>
</table>

**5:00-7:00 Networking Reception, sponsored by GE Renewable Energy**

*Canyon Ballroom*

Come and engage with over 60 exhibitors and sponsors, as well as other key industry stakeholders, including utilities, service providers, consultants, and manufacturers.

*Last updated 7 March 2019. Agenda is subject to change without notice.*
# Hydro Track 2: Dam Safety

**March 20 - Learning from Dam Safety Case Studies and Best Practices**

**Session Chairs:** Kim Pate, Seattle City Light & Hugh Armitage, Southern Company

**Sonoran Room**

### 7:00-8:15 Breakfast

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<td><strong>ICOLD International Experiences with Dam Safety</strong></td>
<td>Mike Rogers, ICOLD</td>
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<tr>
<td>9:00-9:45</td>
<td><strong>Integrated Systems Analysis of USACE Hydropower Facilities on Missouri River</strong></td>
<td>Bob Patev, U.S. Army Corps of Engineers</td>
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<tr>
<td><strong>9:45-10:30 Break, coffee provided by Dynamic Ratings</strong></td>
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### 10:30-11:15 FERC Pilot Semi-Quantitative Risk Analysis of Rhinedollar Dam

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<td><strong>FERC Pilot Semi-Quantitative Risk Analysis of Rhinedollar Dam</strong></td>
<td>Matt Muto, SCE &amp; Dean Durkee, Gannett Fleming</td>
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</table>

### 11:15-12:00 Hardy Hydroelectric Project: Spill Tube Liner and Aspiration System Repair

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<tr>
<td>11:15-12:00</td>
<td><strong>Hardy Hydroelectric Project: Spill Tube Liner and Aspiration System Repair</strong></td>
<td>DeVon Washington &amp; Adam Monroe, Consumers Energy &amp; Cordelle Thomasma, Barr Engineering</td>
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</tbody>
</table>

### 12:00-1:30 Lunch

### 1:30-2:15 New Zealand: Seismic Dam Safety

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<td><strong>New Zealand: Seismic Dam Safety</strong></td>
<td>Peter Amos, Damwatch</td>
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### 2:15-3:00 Precipitation-Frequency and Storm-Related Information for Scoping Level Hydrologic Risk Analyses

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<td>2:15-3:00</td>
<td><strong>Precipitation-Frequency and Storm-Related Information for Scoping Level Hydrologic Risk Analyses</strong></td>
<td>Mel Schaefer, MGS; Tye Parzybok, MetStat; &amp; Roger Raeburn, PacifiCorp</td>
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<tr>
<td><strong>3:00-3:45 Break, coffee provided by Dynamic Ratings</strong></td>
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### 3:30 Prize Draw

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<tbody>
<tr>
<td>3:30</td>
<td><strong>Prize Draw</strong></td>
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### 3:45-4:30 Red Willow Dam: Response to Sinkholes/Cracking on Embankment

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<td><strong>Red Willow Dam: Response to Sinkholes/Cracking on Embankment</strong></td>
<td>Jack Gagliardi, U.S. Bureau of Reclamation</td>
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</table>

### 4:30-5:00 CEATI Wrap Up

<table>
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<tr>
<td>4:30-5:00</td>
<td><strong>CEATI Wrap Up</strong></td>
<td>CEATI International</td>
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### 5:00 Conference Adjournment

### 5:30-7:00 Women in Power Networking Reception

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All conference attendees are welcome to attend the Women in Power Group's reception. Appetizers will be served and refreshments will be available for purchase.

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Last updated 7 March 2019. Agenda is subject to change without notice.
# Hydro Track 3: Equipment Reliability

*Hydro Equipment Reliability - March 20*

**Session Chairs:** Chuck DeVane, Southern Company & Craig Bourassa, Avista

## 7:00-8:15 Breakfast

### 8:15-9:00
**How Hydro Turbines can Benefit from Instrumentation and Condition Monitoring System to Improve Flexibility**
- David Auger-Habel, GE Renewable

### 9:00-9:45
**Control Systems Integration for Unmanned Operation of Remote Small Hydro**
- Fon Hiew, New Brunswick Power
- Christoph Moeglich, Reivax

### 9:45-10:30 Break, coffee provided by Dynamic Ratings

### 10:30-11:15
**The Versatility of a Distributed Condition Monitoring System as a Way to Reduce Installation Costs**
- Gregory Zurbriggen, Meggitt (Vibro-Meter)

### 11:15-12:00
**Evaluation of Damaged Generator Rotor Laminations Using Fitness-for-Service Methods**
- Eric Scheibler, Quest Integrity
- Jason Shipp, TVA

### 12:00-1:30 Lunch

### 1:30-2:15
**Using an Air Gap Monitoring System During Initial Commissioning Stages of a Hydro Generator**
- André Tetreault, VibroSystM

### 2:15-3:00
**Collection of Experiences using Resistance Temperature Detectors (RTD) as PD Sensors to Detect and Locate Electrical Defects Deep Inside Hydro and Turbo Stator Windings**
- Raja Kuppuswamy, Dynamic Ratings & Randy Bowersox, Northern California Power Agency

### 3:00-3:45 Break, coffee provided by Dynamic Ratings

### 3:30
**Prize Draw**
*All winners must be present to be eligible.*

### 3:45-4:15
**Success of Overcoming High Load Instability of Mica New Generating Units**
- Sabrina Lin, BC Hydro & Sylvain Marier, Andritz

### 4:15-4:45
**Surface Partial Discharge in Stator Windings: Causes, Symptoms and Remedies**
- Mladen Sasic, Iris Power (Qualitrol)

### 4:45-5:15
**Hydro Generator Spider Rim Support Ledge Fracture**
- Jason Sinkhorn, ElectroMechanical Engineering Associates

## 5:15 Conference Adjournment

### 5:30-7:00 Women in Power Networking Reception
*All conference attendees are welcome to attend the Women in Power Group’s reception. Appetizers will be served and refreshments will be available for purchase.*

Last updated 7 March 2019. Agenda is subject to change without notice.
Registration Form

You can also register online at www.ceati.com/SPRING2019

Your Information

Name ____________________________
Title ____________________________
Organization ______________________
Street Address ______________________
City, Province, State ______________________
Country ____________________________
Postal/Zip Code ______________________
E-mail ____________________________
Phone ____________________________
Fax ____________________________

Payment Information

☐ Visa ☐ Mastercard
Card No. ____________________________
Expiry Date /
Signature ____________________________
Cardholder ____________________________

Registration Fees & Discounts

Register by December 17th, 2018 and save up to $100

☐ $1195 USD Standard Registration
☐ $995 USD Utility Registration
☐ $755 USD CEATI Participant Registration
☐ $755 USD Speakers

*HPLIG, HOPIG, & DSIG participating organizations may be eligible for a complimentary registration; contact your Program Coordinator for more information.

Exhibit at the Hydropower Conference!

☐ $4400 USD Silver Sponsor Booth (2 passes)
☐ $3900 USD Sponsorship Booth
☐ $3400 USD Standard Booth (2 passes)
☐ $1500 USD Conference Sponsor
☐ $755 USD Additional Exhibitor Passes

Please indicate your top 3 booth choices below:

___________________________________________

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 60 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. Exhibit registration and additional conference passes include proceedings package, access to the presentation room, breakfast, breaks, lunches, and reception where indicated on the schedule.

For Exhibitors: All cancellations received 60 days prior to the event will be subject to a processing fee of 25% of the total amount. There will be no refunds granted after this date. Delegate substitution is permitted at no extra cost. Exhibitor registration and additional conference passes include proceedings package, access to the presentation room, breakfast, breaks, lunches, and reception where indicated on the schedule.

Important Information

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

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Prices are in USD. Charges will appear as ‘CEATI International Inc’ and are subject to applicable taxes and fees. All cancellations received at least 60 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 registering for the event will be added to CEATI’s mailing list. If you do not wish to be included in this electronic outreach, please click on the ‘unsubscribe’ button in the email to remove yourself. In the spirit of industry networking, your email may be shared with other conference participants. If you do not wish to have your email shared, please contact us at events@ceati.com. By attending, you acknowledge that there may be photographs or videos taken of you during this event, and you consent to the use of these photographs or videos in future CEATI communications.

The Westin La Paloma
3800 East Sunrise Drive
Tucson, AZ 85718
+1.800.937.8461

Tel: 1.514.866.5377  events@ceati.com  www.ceati.com

All conference guests are eligible for a preferred rate of $209 USD a night subject to availability. To receive this rate, please mention the group name CEATI International for the 2019 Spring Industry Conference. Preferred rate only available until January 22, 2019.