

Spring 2020 WORKSHOP
Hydroelectric Productivity Committee
Memphis, Tennessee
April 26 – 29, 2020

	Topic Title	Short (one sentence) Description
1	Capital reinvestment Rates update	A PG&E representative will provide an update on the capital program for existing equipment replacement at its hydropower facilities
2	Cost Trends per category / investigate the drivers	ORNL will report on their investigation into the drivers of the cost trends for the cost categories.
3	Maintenance planning process; new roles for planners	The traditional approach to maintenance is changing as more and better data is available on powerhouse equipment. Three members will provide insights into these changes at their company.
4	Environmental Costs / LW reporting (What's in it?)	The HPC annual data submission requests utilities report on plant level environmental expenses that were incurred in support of the environmental related commitments. The definitions and examples of expenses will be provided, and questions addressed.
5	Capital Projects Prioritization 2	This session is the second opportunity for additional utility representatives to share the subject process utilized by their organizations.
6	Testing & research at Institute de recherche d'Hydro-Québec (IREQ)	Hydro Quebec will share some the hydropower research and development activities which are presently underway.
7	Use of spill data	Since the release of the HPC data guide in 2005 utilities have provided the annual amount water spilled at each hydropower facility in their fleet. At the 2019 Data Review meeting no utilities indicated any value for this data element. ORNL was asked to investigate if this data element has any potential value and will share the results of their investigation.
8	Define measure(s) of "cycling intensity" which accounts for frequency & rates of ramping. Step 1 - formulate request for data	ORNL will provide a status report on the initial findings of their research on this topic.

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9	Moving towards condition-based maintenance, online monitoring, Artificial Intelligence (AI) etc.	As hydropower facilities are equipped with new equipment condition monitoring systems, data will become available that will enable maintenance planners to schedule maintenance on a condition basis rather than time intervals. Three committee members will share how the new approach is being implemented and the benefits realized.
10	Cost of annual / routine unit outages	The expense and labor to support routine unit outages requires a major commitment of staff and financial resources. A representative from Chelan County Public Utility District (CCPUD) will provide the resources required to execute their plan and ways the organization has minimized the impacts while gaining the benefits from the work.
11	Maintenance schedules – comparison (unit size)	Two committee members will share their company’s approach to scheduling generating units outages and the typical work scope.
12	Business Case for HRI (the benefits of technology)	The Hydropower Research Institute (HRI) is a nonprofit organization initially established by Chelan County Public Utility District (CCPUD) in 2018 whose initial focus is to collect and assemble operational data from contributing hydropower facilities. Presently, the HRI database represent approximately 30% of the United States hydropower fleet in 110 hydropower facilities and 489 units. A CCPUD representative will provide the anticipated benefits associated with this effort.
13	Digital Worker	The introduction of electronic hardware and information technology around 1970 launched the Third Industrial Revolution. The mixture of physical and digital

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		domains has brought society to the Fourth Industrial Revolution and this one is often referred to as Industry 4.0. The transition has already occurred in other industries and has begun in hydropower. This session will provide the impact of this transition on the hydropower utility employee.
14	Leadership - field visits	At the Fall Workshop, the question was raised about the frequency of visits by performed by organizational leaders. The committee agreed to conduct a survey among committee members with the results provided in the spring.