

June 26, 2019

Post-Workshop Summary Brief:

Lower Mekong Initiative Integrating River Planning for Energy and Environment Technical Workshop

June 9-14, 2019 | Tennessee, USA (Oak Ridge, Knoxville, Chattanooga, Nashville)

Goals: In 2018, Lower Mekong Initiative (LMI) members endorsed the Joint Statement to Strengthen Water Data Management and Information Sharing in the Lower Mekong region. This workshop helped LMI members fulfill these intentions by building capacity to collect, analyze, and manage data to reduce water and energy inefficiencies and promote sustainable development. The goal of the workshop was for each of the countries to coordinate their decisions to reach favorable outcomes for multiple stakeholders. Participants were exposed to tools, methods, and guidelines that are used in the United States and are adaptable to each country's integrated river system in areas such as: 1) monitoring and data collection, visualization, and implementation in real-time river system scheduling, modeling, and optimization; 2) tools, such as hydrodynamic and water quality models, real-time scheduling, and optimization software needed for short- and long-term scheduling and planning for multipurpose river system functions and future development. Each delegate completed a survey of appropriate tool(s) they learned about at the workshop to improve water resource system management and potential method of implementation to be vetted with their country's leadership.

Background: This project falls under the Lower Mekong Initiative's Water, Energy, Food and the Environment Nexus Pillar. Ensuring energy development projects in water systems take into account social, water, irrigation, and environmental impacts will help LMI members increase their energy security. LMI website: (<https://www.lowermekong.org/>).

Presentations:

- Opening remarks:
 - Jennifer Shinen, U.S. Department of State
 - Beth Urbanas, U.S. DOE-International Affairs Office
- "ORNL's History, Mission, & Capabilities" (Stan Wullschleger, Oak Ridge National Laboratory)
- Overview of the USDOE Water Power Technology Office (WPTO) Program, (Timothy Welch, U.S. DOE-Water Power Technologies Office)
- "Foundations for Strategic Lower Mekong Hydropower and Water Resources Management: Project Overview" (Boualem Hadjerioua, Oak Ridge National Laboratory)
- "Secure Water Act Section 9505 Assessment – Effects of Climate Change on US Federal Hydropower" (Shih-Chieh Kao, Oak Ridge National Laboratory)
- "River System Operations and Planning with RiverWare" (Edie Zagona, Center for Advanced Decision Support for Water and Environmental Systems)
- "The Tennessee Valley Authority: Improving the Quality of Life" (Pat Ezzell, Tennessee Valley Authority)
- TVA River Operations Scheduling- demonstrations, (Tom Barnett, James Everett and Melissa Lindquist, Tennessee Valley Authority)

- “Water Temperature Control at TVA Dams for Environmental Protection & Compliance” (Coleen Montgomery, Tennessee Valley Authority)
- “River & Reservoir Compliance Monitoring Program” (Dennis Baxter, Tennessee Valley Authority)
- “Reservoir Release Improvements” (Jeff Ogden, Tennessee Valley Authority)
- “Water Quality Modeling Tools to Evaluate and Forecast Water Quality in Rivers and Reservoirs” (Paul Wolff, WolffWare, Ltd.)
- “Improving Hydropower Generation Efficiency with the Hydropower Performance Calculator (HPC)” (Paul Wolff, WolffWare, Ltd.)
- “TVA Hydro Plant Monitoring & Optimization System” (Keith Jones, Tennessee Valley Authority)
- “TVA Power Operations” (Allen Clare, Tennessee Valley Authority)
- “Power Operations Asset Management” (Michelle Ray, Tennessee Valley Authority)
- “Nashville District Water Management” (Randy Kerr, U.S. Army Corps of Engineers)
- Corps Water Management System (CWMS) and Real Time Simulation (RTS) demonstrations (Randy Kerr & Brantley Thames, U.S. Army Corps of Engineers)
- “Near Realtime Data Collection, Storing, Distribution USGS Lower Mississippi–Gulf Water Science Center” (Shannon Williams, U.S. Geological Survey)
- “Tennessee Watershed Management Approach Overview” (Sherry Wang, Tennessee Department of Environment and Conservation- TDEC)

Visits/Tours:

- Tour of the Oak Ridge National Laboratory (ORNL) Summit Supercomputer (most powerful computer in the world), Oak Ridge National Laboratory
- Tour of the ORNL Aquatic Ecology Laboratory, Oak Ridge National Laboratory
- Tour of the ORNL Manufacturing Demonstration Facility (MDF), Oak Ridge National Laboratory
- Tour of the Tennessee Valley Authority (TVA) River Forecast Center (RFC), Knoxville, TN
- Tour and briefing of the TVA System Operation Center (SOC) and Tour of the TVA Hydropower Dispatch Control Cell (HDCC), Chattanooga, TN
- Tour of the TVA Chickamauga Dam Powerhouse and U.S. Army Corps of Engineers (USACE) Chickamauga Lock Replacement Project, Chattanooga, TN
- Tour of the USACE Old Hickory Lock & Dam, Nashville, TN

Summary:

The “Integrating River Planning for Energy and Environment Technical Workshop” provided a week-long opportunity for delegates from LMI-member countries to gather information about how integrated river planning is being achieved in the United States, including insight into approaches and tools which could be leveraged by LMI countries to enhance current capabilities.

The Workshop also reiterated the importance of collaboration and information sharing for managing and optimizing a complex, transboundary, and multipurpose water resource system, such as the Lower Mekong River.

Among the models, tools, and analysis presented to the delegation are capabilities for:

- hydrologic monitoring and data collection;
- hydrologic and hydraulics modeling;
- river forecasting;
- system operations;
- hydropower scheduling;
- fish monitoring;
- river health monitoring;
- water standards, monitoring, and mitigation;
- hydropower turbine dispatch and optimization;
- water/hydropower system management and optimization;
- asset planning and management; and
- water quality standards.

At the end of the workshop, members of the delegation summarized their priorities for improving water resource system management. A summary of the Workshop discussions, information gathered, and initial recommendations will be compiled in a Workshop Summary Report, which is expected to be shared in July 2019. The next phase of this LMI project will focus on developing integration strategies.

Workshop Locations:

During the Workshop, the LMI international delegation visited Oak Ridge National Laboratory facilities in Oak Ridge, TN, USA; Tennessee Valley Authority offices in Knoxville and Chattanooga, met with US Corps of Engineers in Nashville, TN, USA; Visited Chickamauga Lock & Dam near Chattanooga, TN, USA; and Old Hickory Lock & Dam near Nashville, TN.

Workshop Participants:

A full list of the Workshop participants will be provided in the Workshop Summary Report. The Workshop included 15 representatives (who are decision-makers or assignees at the director or deputy director level) from the LMI-member countries and one representative from the Mekong River Commission (MRC). In addition to the international delegation, one representative from the U.S. Department of State, two representatives from the U.S. Department of Energy's Office of International Affairs, and many other participants from other U.S. agencies, organizations, industry, and academia participated to the workshop.

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