

ARGONNE'S GLOBAL WATER POWER TECHNOLOGIES RESEARCH

Working with partners on several continents



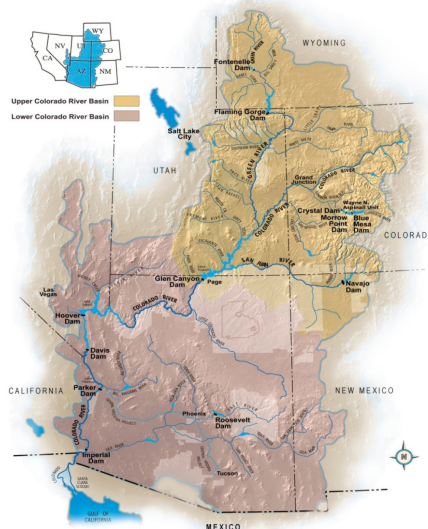
Argonne has been performing hydropower analyses for 35 years

- Supporting U.S. Department of Energy's Water Power Technologies Office.
- Supporting Bureau of Reclamation and Western Area Power Administration for over 30 years.
- Conducting hydropower evaluations in over 20 countries in Europe, Asia, Africa, and Latin America.

ARGONNE IN THE UNITED STATES

- **GTMMax in the United States:**
Argonne used **GTMMax** to help determine optimal hydropower levels at Arizona's Glen Canyon Dam amid environmental operating constraints.
- **CHEERS in the United States:**
Argonne demonstrated **CHEERS'** capabilities by performing an analysis of generation levels and real-time market transactions for Colorado River Storage Project—Aspinall Cascade.
- **EMCAS in the United States:**
Argonne used **EMCAS** to model the Western Electricity Coordinating Council (WECC) to study electricity and water issues, and for electricity price forecasting.

Colorado River Basin



ARGONNE'S GLOBAL SUPPORT TO PARTNERS

Argonne National Laboratory develops modeling tools that support decision-making related to hydropower operations, development, or upgrade projects.

Argonne helps to optimize the utilization and management of water and hydropower resources through modeling and simulation of complex water resource and hydropower operations.

Argonne transfers Argonne-developed models to users worldwide to provide them with access to GTMax, CHEERS, EMCAS, and other state-of-the-art modeling tools, thus enabling the users to customize model applications and analyses to address their specific needs.

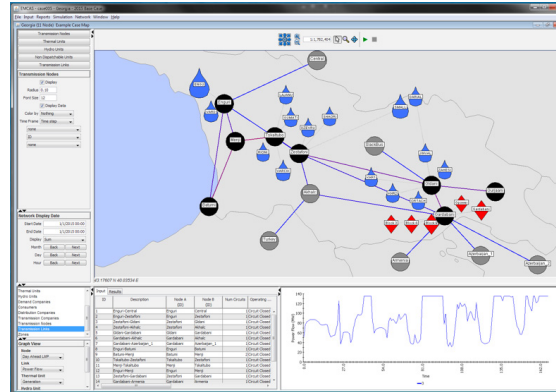
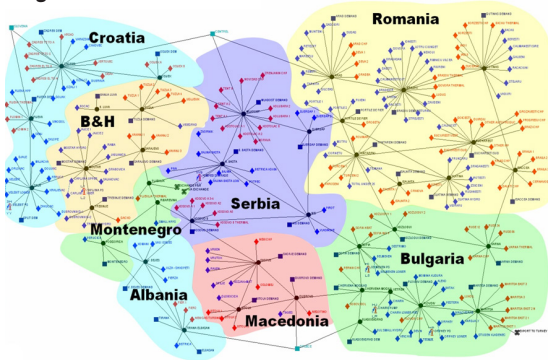


ARGONNE IN EUROPE

Role of Hydro in Southeast Europe: In a United States Agency for International Development (USAID) study, Argonne collaborated with regional utility experts using **GTMx** to analyze the role and value of hydro in eight Balkan countries.

Country of Georgia: Argonne used **EMCAS** and **GTMx** to optimize hydropower operations, analyze 10-year grid development plans, and evaluate new electricity market rules.

Regional Power Market

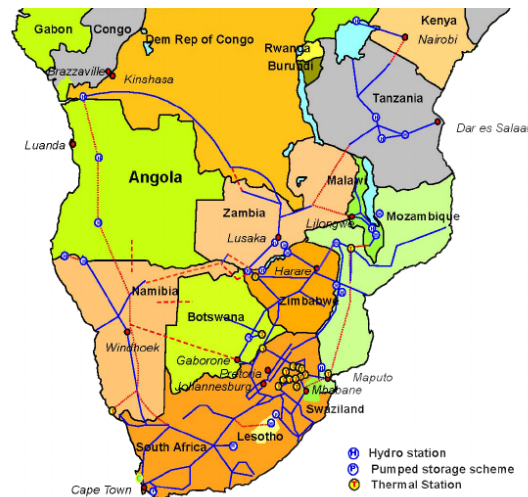
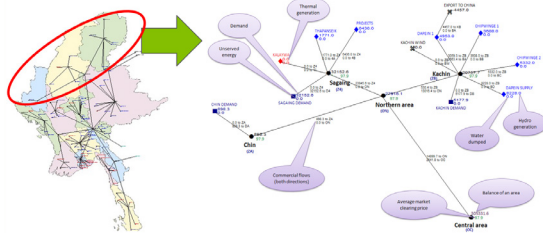


ARGONNE IN ASIA AND AFRICA

Myanmar GTMax training and modeling: Argonne provided **GTMx** training and collaborated to evaluate optimal power dispatch while considering hydro cascades, transmission constraints, and cross-border power exchanges.

Southern-African Power Pool (SAPP): In a World Bank study, Argonne analyzed the Zambezi River Basin, showing the need to rehabilitate existing facilities, construct new hydro and thermal projects, and strengthen transmission grids.

GTMx Model: Myanmar Topology



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