

# **Institutional Dimensions of Modeling: Lessons from Implementation of the Texas Water Availability Modeling System**

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## **ABSTRACT**

The presentation will highlight the following two institutional dimensions of computer modeling of reservoir/river system management.

1. Modeling complex institutional aspects of water resources development and management may be a key consideration in developing and applying a modeling system.
2. Effective implementation of a modeling system may require a partnership effort of an entire water management community that includes political officials, water users, government agencies, private consulting firms, and university researchers.

Lessons learned from implementation of the Texas Water Availability Modeling (WAM) System over the past nine years demonstrate the importance of these institutional dimensions of modeling. The WAM System consists of the generalized Water Rights Analysis Package (WRAP) river/reservoir system simulation model and input datasets for the 23 river basins of Texas. Activities of an array of water management entities operating 3,365 major reservoirs and other facilities in accordance with various water allocation systems and other institutional arrangements are modeled in support of planning and regulatory efforts.

The WRAP modeling system is generalized for application to river/reservoir systems located anywhere in the world. The public domain WRAP software and detailed user documentation are available at the website: <http://ceprofs.tamu.edu/rwurbs/wrap.htm>. WRAP continues to be expanded to address a broadening range of river basin management applications.

The WAM System is significantly contributing to improved water management in Texas. The Texas experience in implementing a WRAP-based WAM System illustrates the following fundamental concepts. Model implementation may require an institutional partnership effort. A modeling system may be shared by a water management community. Regulatory and planning functions are integrally related. A modeling system is constructed rather than just a model. Model development is a process of continual expanding and improving.