

## **Water-Energy Planning and Trade-Off Analysis**

Emphasis on sustainable water and energy management has led to the recognition that regional water planning and energy portfolio planning can no longer be conducted in isolation. The term ‘water and energy nexus’ has emerged to describe the dynamics and trade-offs inherent in long-term management strategies. This research supports the development of a tool for evaluating opportunities and trade-offs in long-term water and energy planning under conditions of future uncertainty. Areas of current focus include:

- mandates for sustainable alternative sources of water and energy;
- increased emphasis on demand management concurrent with population trend and revenue uncertainties;
- exploration of cost-effective water reuse options;
- uncertainty with respect to climate change and the future availability and quality of water supply for both water and energy utilities.

This can be elegantly addressed in an integration of two existing tools that have been widely used around the world. The result is scenario based simulation tools that allow quantitative and whole-system analysis of energy and water management alternatives and capital investment projects.

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