

Water and Energy Nexus

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Water and energy are interdependent – water is used extensively in energy development as cooling water in thermoelectric power generation; in oil and alternative transportation fuels refining, in biofuels production, and in hydraulic fracturing for tight gas and tight oils. At the same time, water and waste water pumping, treatment, and distribution is one of the largest energy use sectors in many developed countries. At a time when fresh water availability is becoming limited in many regions due to changing precipitation patterns, increased ecological and environmental demands for water, and issues over sustainable surface and groundwater withdrawal and use, water consumption demands by the energy sector could expand significantly in the next two decades. The emerging water needs for the energy sector and the emerging energy needs for the water sector could significantly change how these two critical natural resources are developed and utilized.

This presentation will provide an overview of potential water resource issues in North America and globally from energy development and discuss emerging trends in fresh and nontraditional water use, water recycling and reuse, and water demands for different energy generation and production technologies. It will also highlight the general level of interest developed in this area since the water resource challenges were first highlighted in a 2007 Report to Congress on ENERGY DEMANDS ON WATER RESOURCES, developed by Sandia and Los Alamos National Laboratories, the National Energy Technology Laboratory, and the Electric Power Research Institute.