“It takes a community to protect and preserve water resources. AWRA’s community is more important than ever.”

Earl Spangenberg, Past President and member since 1972

Founded in 1964 by leading thinkers and practitioners in the field of water resources, AWRA represents a community of multidisciplined professionals engaged in two of the most important challenges of our time:

1) Ensuring the availability of a safe, sufficient, and ecologically viable water supply, and

2) Protecting the future of that supply through sound management, practice, policy, research and education

To address these challenges, AWRA provides an opportunity for learning and leadership that is unsurpassed in spanning the depth and breadth of water resources issues.

AWRA members - working and learning together across a broad spectrum of interests - have the opportunity to:

- Identify and explore key issues of concern with other committed professionals
- Discuss research findings and best practices
- Support undergraduate and graduate studies and research
- Engage in policy dialogues at the highest level
- Develop networks and partnerships to support innovation
- Advance learning through online resources
- Educate one another on needs, trends, and best practices through published articles and presentations
- Design and attend topical focused conferences and training
- Take a stand on protecting and preserving water resources across our communities and globally

Our commitment to a highly professional and friendly association of multidisciplined managers, practitioners, teachers, students, policy makers, and community leaders enable us to be unlike any other association anywhere.

We invite you to support and participate in AWRA as an extension of your commitment to the protection and preservation of water resources.

Join AWRA and help us make a difference … together.

For information on membership benefits and to apply electronically, please visit www.awra.org, or call AWRA at (540) 687-8390. An application form can be found on the inside of the back cover.
This issue of Water Resources IMPACT discusses the interdependency of energy and water production and options in both areas to conserve both water and energy. Essentially, the Water-Energy Nexus is a recognition of limits, and the interdependency of energy and water production heightens the awareness of those limits and the need for far more efficient use of both resources.

3 <strong>Introduction: Water, Energy, and New Developments on the Way Ahead ... Laurel E. Phoenix</strong>
Many power plants in the United States were built when neither fossil fuels nor water seemed limited. Also, water and wastewater plants were built when energy was relatively cheap. Water and power regulators and planners need to consider the water-energy nexus in all future water and energy provision systems.

**FEATURE ARTICLES**

4 <strong>The Need for Integrated Energy and Water Modeling to Support Sustainable Resource Planning ... Vince Tidwell, Mike Nightower, and Geoff Klise</strong>
Case studies dealing with water demand for thermolectric power generations are presented for two very different physiographic locations, the Great Lakes watershed and the Western United States emphasizing the differing requirements for these disparate locations. Methods for reducing fresh water use in the energy sector are discussed including use of non-fresh water for power plant cooling, and the use of dry cooling techniques.

9 <strong>Water Dependency of Energy Production and Power Generation Systems ... Tamim Younos</strong>
Both energy production and power generation systems in the United States depend on adequate water supplies. The author discusses water needs for principal energy sources including coal, natural gas, oil, biofuels, and synthetic fuels. He further discusses water use efficiency of power generating systems including hydroelectric, fossil fuel thermolectric, nuclear, geothermal, solar, and hydrogen. Electricity demand is expected to increase 50 percent in the next 25 years in the United States.

13 <strong>Energy Demands of the Urban Water Life-Cycle ... Laurel E. Phoenix</strong>
Drinking water treatment facilities and wastewater treatment facilities in urban areas require significant amounts of energy. The author summarizes a General Accounting Office report that discusses how new technology and varied approaches can be used to reduce energy requirements for these facilities.

15 <strong>Producing Algae-Based Biofuels From Wastewater ... Paul Lauer and Emil J. Sullivan</strong>
Biofuels are an alternative to fossil-based fuels but there is a legitimate concern about the amount of water needed to grow crop-based feedstocks for biofuels. Formation water of varying salinity is produced as a by-product of oil and gas production. The authors discuss investigations that are underway to use formation water as a means of cultivating algae to be used as biofuel.
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Cover Photo: From iStock.com. Lake Powell with distinctive bathtub ring showing its low water level.

AWRA ... Community, Conversation, Connections