

Water is a vital element of our economy and energy resources – it's a driving force behind the utility, manufacturing and agriculture industries, among others. Water generates energy to help power our planet, and it helps create many of the products we rely on each day. How we manage and conserve water is one of the biggest challenges and greatest opportunities for today's municipal, industrial and energy leaders. In this issue of the Economics of Water report, experts from MWH Global, now part of Stantec, offer perspectives on key trends and solutions that tap the power of the water-energy nexus while balancing financial, community and environmental needs.

In This Issue

- Unlocking hydropower
- Intelligent water management

How Hydropower Is Bringing Carbon-Free Energy to the Midwest

PAUL BLASZCZYK, MWH GLOBAL VICE PRESIDENT AND PROJECT MANAGER FOR AMERICAN MUNICIPAL POWER

Hydropower sits at the heart of the water-energy nexus. In recent years, harnessing the energy created by flowing water has become an increasingly attractive option for utilities looking to add renewable sources to their energy generation portfolios. It's also an opportunity to enhance existing infrastructure to include electricity generation capabilities. According to the National Hydropower Association (NHA), only 3 percent of the 80,000 dams in the U.S. are being used to generate power from rivers.

American Municipal Power (AMP), a non-profit energy supplier to municipal electric utilities in nine states, hired MWH Global to design run of river hydropower facilities adjacent to four existing dams along the Ohio River, adding more than 300 MW of electricity generation capacity – enough to power 150,000 homes. From feasibility studies and initial geotechnical investigations to regulatory licensing support and final design, MWH experts helped AMP bring these hydropower facilities to life and will celebrate commissioning of all four projects in the next year.

More than 100 existing dam sites – two-thirds of which are located along Midwest rivers in the U.S. – have the opportunity to support hydropower projects like AMP's Ohio River projects, according to NHA. See more about the [AMP projects](#).

Three Keys to Hydropower Success:



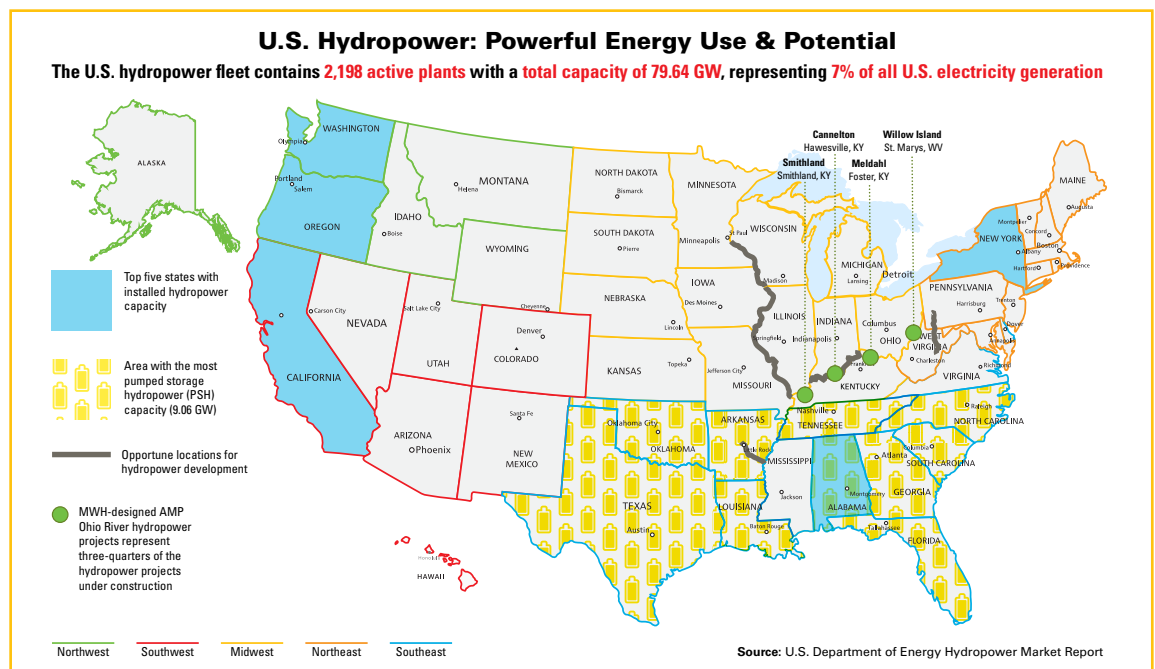
Identify opportune project sites. Like AMP's Ohio River projects, many hydropower facilities result from existing water infrastructure that serve multiple purposes, like flood control, irrigation and recreation. Construction of hydropower facilities is clean, meaning there's little impact on the local environment and minimal disruption to other water uses.



Align with long-term, strategic planning efforts to reduce or eliminate carbon emissions. The path to successful hydropower projects begins with careful consideration and planning with future generations in mind. Hydropower offers reliable, long-term advantages over other energy sources. For example, hydropower is locally produced, making it an attractive addition to energy portfolios typically driven by fluctuating fuel costs.



Consider hydropower's unique storage capabilities. Pumped storage is a form of hydropower that stores and generates electricity by moving water between two reservoirs. This offers one of the few affordable, utility-scale ways to store and deploy electricity from a renewable energy source, unlike solar or wind.



Discovering the True Cost of Water

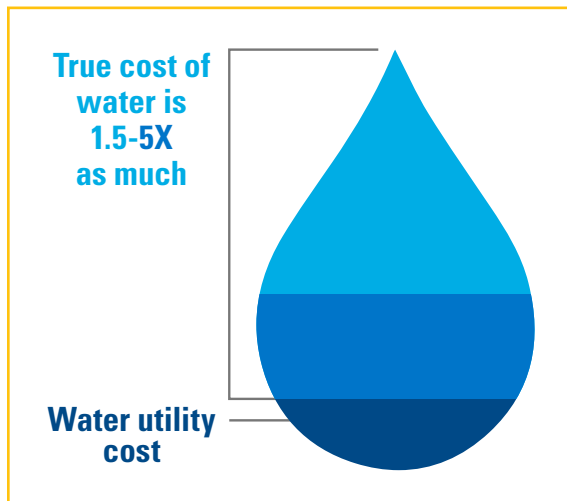
ROMAN LIS, PE, CEM; GLOBAL PRACTICE LEADER FOR INTELLIGENT WATER MANAGEMENT

Manufacturing, agriculture and utility sectors all depend on water, but many fail to quantify the “true cost of water.” The reality is that water costs much more than what companies see on their water bills. Water has to be treated, pumped, stored, heated or cooled, and discharged or disposed of, all of which create additional costs. Add in the cost of compliance with new regulatory requirements for water quality and wastewater discharge limits, and the cost of water in all market sectors continues to rise.

MWH Global, now part of Stantec, is helping clients with an intelligent water management approach that optimizes water usage from supply to discharge or disposal. Today, most if not all global manufacturing companies have some type of water sustainability program and have set goals to reduce water consumption. What they need to think about is: are they doing enough to identify cost-effective projects that significantly reduce water usage?

Small- to mid-size manufacturing facilities use between 10 and 200 million gallons of water per year. Larger facilities, such as petroleum refineries, can use in excess of 500 million to 1 billion gallons per year. At a typical cost ranging from \$3 to \$8 per 1,000 gallons, water costs can vary from \$30,000 to \$8 million per year plus sewer discharge costs.

When evaluating water conservation measures (WCMs), it is important to remember that the true cost of water is generally 1.5 to 5 times the water utility cost. Including these costs in your financial analysis can have a dramatic effect on the return on investment. Moving forward, the need for intelligent water management programs will be critical to corporate sustainability goals as well as important cost-saving measures.



Water is a major cost and competitive factor in global markets due to the growing consumption of potable water and additional environmental regulations. MWH Global helps clients evaluate and implement WCMs (including leveraging any publicly-available financial incentives) that provide true cost savings and more efficient water management programs compared to standard approaches, particularly in the manufacturing sector.

To learn more about the MWH Global intelligent water management solutions, contact [Roman Lis](#).

This communication is distributed with the understanding that the author, publisher and distributor of this communication are not rendering professional advice or opinions on specific facts or matters and, accordingly, assume no liability whatsoever in connection with its use.

Four Insights

- **Getting Payback** – Quantifying the “true cost of water” will greatly reduce the payback period for any associated capital investments; typical payback periods for these programs range between six months and three years
- **True Savings** – Compared to standard WCM savings of 20 percent, a true cost of water approach can yield 30 to 50 percent savings by emphasizing water reuse
- **Feeling Incentivized** – Year over year, the trend in incentives for reducing water consumption are on the rise and on average, reduce the payback period by 30 percent
- **Meter, Meter, Meter** – For large water users, it’s worth installing an inexpensive flow meter system to better track water usage; flow metering often leads directly to water savings

Connect with MWH:



Connect with Stantec:



For more information visit:

[MWH Global](#)
[Stantec](#)

For media inquiries:

Geoff Renstrom
(303) 951-2564
grenstrom@linhartpr.com