

CONNECTING ISRAELI WATER MANAGEMENT AND TECHNOLOGICAL INNOVATIONS TO ARIZONA

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We in

Arizona have become all too familiar with projections of a future gap between water demand and supply, due in part to our growing economy and potential reduction of supplies.

The importance of Arizona's ability to ensure a reliable water supply can't be overstated. It affects the entire trajectory of our future economic development prospects and our overall quality of life.

But we're not alone. Half-way around the world, Israel is confronting similar challenges head on, proving that desert economies cannot only survive, but thrive.

Wise management forestalls crisis

The good news in the short run is that, due to proactive water management, Arizona has managed to avoid a Colorado River shortage declaration for 2017, meaning there will be no curtailments in the delivery of Colorado River water through the Central Arizona Project (CAP) in the coming year.

Things get murkier beyond 2017, however. Future cutbacks are likely. But Arizona is ready. We have a rich history of surface water and groundwater management investments and innovations. And now it's time for us to build upon our strong foundation and look to our friends with common experience for new methods, approaches and technologies.

A legacy to build on

Thankfully, we're not starting from scratch. Arizona has a legacy of water management success to position our state for prosperity in the 21st century.

Thanks to the foresight and leadership of great water stewards like Rep. Morris K. Udall, Sen. Jon Kyl, Governor Bruce Babbitt, and other key leaders, Arizona sits in relative comfort compared to its neighbors when it comes to water. Arizona is not experiencing a crisis of water resources.

Arizonans know the importance of the Central Arizona Project canal and Arizona's 1980 Groundwater Management Act (GMA). The GMA created the Department of Water Resources, which centralized responsibility for water planning and regulation in a single state agency and actively managed and regulated the pumping of groundwater in designated Active Management Areas. The later addition of a regulated program for underground water storage and recovery and formation of the Arizona Water Banking Authority has resulted in underground storage of nine million acre feet of water and significantly reduced overdraft of Arizona's precious groundwater resources.



Arizona's municipal, industrial and agricultural sectors are leaders in improving water use and efficiency. Growers in Yuma, the nation's leading producer of winter vegetables, have adapted to new, innovative production and irrigation technologies that have enabled growers there to improve crop productivity while lowering the amount of water used for irrigation.

Overall, from 1957 to 2013, Arizona reduced its water consumption by 100,000 acre feet. Arizonans use less water now than we did in 1957, yet since then our state's population has increased six times over and the size of our economy has grown by a factor of 19. That's an accomplishment to be proud of. Arizona cities have been and remain leaders in conservation.

Looking to Israel for inspiration and innovation

Arizona is not the only arid desert landscape that has adopted a forward-looking approach to water. Israel has its own record of success that's worth understanding. After all, Israel and Arizona share similar climates, variation in terrain and weather conditions, growing economies and populations, vibrant agricultural sectors, and, most importantly, natural conditions of water scarcity.

Israel is a recognized water management and technology leader. The nation's 1959 Water Law paved the way for it to be the world leader in desalination and for innovation in efficiency and recycling; over 80 percent of Israel's wastewater is now treated and re-used.

Israel has also embraced leading-edge water conservation efforts and partnerships with the private sector to build large treatment facilities, as well as the deployment of innovative technology to reduce water loss.

Desalination

Israel is known globally for its deployment of seawater desalination for meeting the country's drinking water needs.

In response to drought and its impacts on water availability for



municipal and agricultural users, Israel built a series of state-of-the-art, large-scale desalination facilities, which vary in size and configuration. Israel also relies on brackish water desalination, with a plant

continued on page 14

in southern Israel relying on evaporation ponds for brine disposal.

In fact, Israel's IDE Technologies was recently named second in Fortune's Change the World List for its pioneering work in the desalination industry. The list recognizes companies that have had a positive social impact through activities that are part of their core business strategy, rated by level of innovation, measurable social impact and business results, and Fortune was impressed by IDE's global scale and wide-ranging innovations in desalination.

Similar technology has been built and tested in Yuma. The wide scale deployment of desalination across the state, though, will be affected by cost considerations for the capital investments required for infrastructure and ongoing energy costs. Arizona can look to Israel for guidance on different financing opportunities, such as public-private partnerships, that leverage private capital for investments in large-scale publicly owned facilities.



Reuse

Another water use practice that distinguishes Israel—and Arizona—is water reuse. As a nation, Israel leads the world in water reuse, with over 80 percent of the country's water reused, mostly by the agricultural sector.

In Israel, parks and playing fields offer green spaces, but household landscaping tends to be limited to small gardens. And Israel utilizes storage and recovery as a key element of water reuse for agriculture.

Water reuse in Arizona has historically been for turf irrigation, Palo Verde Nuclear Generating Plant cooling, some limited agricultural use, and wetlands and riparian areas.

Our reuse rates, especially in the Phoenix metropolitan area, are relatively high compared to other areas of the U.S. Unlike Israel, where the future of reuse is likely to remain in the agricultural sector, Arizona's reuse may expand to indirect and direct potable reuse.

While direct and agricultural reuse have raised concerns in the past, modern technologies allow for greater reuse than ever before. Arizona and Israel share research on and development of advanced treatment technologies to purify treated wastewater so it can be safely used.

Water takes center stage

It's encouraging that water management—including from a

binational perspective—is starting to receive proper consideration in policymaking circles here in Arizona and elsewhere in the U.S. thanks to some high-profile events, with just a few examples provided here.

An expert panel at May's AZ Water Association Annual Conference examined the extent to which Israel's policies and practices can serve as a model for Arizona, and what Israel can learn from Arizona.

Last October, Arizona Gov. Doug Ducey addressed Israel's biennial WATEC Conference, a prestigious international water conference that attracts high level leaders and government officials from all over the world. Among the speakers at the Tel Aviv conference were the deputy president of the Republic of Kenya and former Israeli Prime Minister and President of Israel Shimon Peres. Gov. Ducey served as keynote speaker at the opening plenary session at the invitation of the Israeli Minister of the Economy. Article coauthor Sharon B. Megdal was invited to speak at the session on management of water systems in arid environments.

And in December 2016, the U.S. Chamber of Commerce and Industry is hosting a major summit focused on U.S.-Israel water policy and technology. The forum is supported by Israel's Ministry of Economy and Industry and Israel NewTech, a national program aimed at promoting Israel's water and sustainable energy sectors. The summit will bring together business leaders, government officials and water experts from across the U.S. and Israel to discuss best practices in corporate water stewardship and public policies to address the ongoing water shortages.

Common challenges, common solutions

Arizona and Israel have much in common when it comes to water management. We both face drought conditions. We both share a desire for potable water of the highest quality. We both face new demands due to growing economies. Conservation in both places is a way of life. And Israel and Arizona both share borders with other nations and regional water users.

Arizona and Israel have each developed successful water strategies and have each rightly been recognized as world leaders in water stewardship. But we can't rest on our laurels. Tomorrow's water challenges will be even tougher than those we have already faced. By taking advantage of opportunities for collaboration—sharing research, technology and innovation—Arizona and Israel will chart a successful course of future water planning and management, ensuring our desert economies continue to thrive for generations to come.

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