

**Report of the
107th ARIZONA TOWN HALL
“Keeping Arizona’s Water Glass Full”
Hilton Phoenix/Mesa, Arizona
November 15-18, 2015**

Introduction

“Water is life’s matter and matrix, mother and medium. There is no life without water.”
--Albert Szent-Gyorgyi, Hungarian Biochemist

Arizona has a long-standing history of water management, from Native people practicing sustainable forms of agriculture and building of canals to deliver water to their people, to the state leaders who took steps to protect Arizona’s rights to Colorado River water that culminated in the construction of the Central Arizona Project (CAP). Since water is essential for life, it is vital Arizonans have access to clean running water. Fifteen years of drought, increasing growth pressures, federal regulatory oversight and growing environmental concerns, among other factors, are causing the future of Arizona’s water supply to receive increasing attention. While Arizona’s most populated areas do not currently face a water crisis, some rural areas are seeing more immediate problems, and there is a consensus among experts that, without action, Arizona will face a gap between demand for water and available supplies in the next 25 to 100 years.

Each of the last five decades has seen an Arizona Town Hall on water. The Arizona Town Hall addressed water in 1965, 1977, 1985, 1997 and 2004. This will be the sixth time a Town Hall has been convened to address this important topic. Because water issues in an arid state are never settled, there is consensus that Arizona’s leaders and citizens must continue to develop and refine policies, practices and procedures needed for Arizona’s quality of life, economic prosperity and environment.

With these principles in mind, a cross-section of diverse participants traveled from throughout Arizona and convened in Mesa, Arizona for four days for the 107th Arizona Town Hall to discuss strategies to meet Arizona’s projected water demands over the next 25 to 100 years. The intent of the Town Hall was for participants to discuss how best to improve the reliability and quality of existing water supplies in the face of natural and other challenges, and to identify the means to develop new or additional water supplies.

In discussing water as a key strategic priority for our state and formulating strategies to “keep Arizona’s water glass full,” Town Hall participants considered a wide range of issues. These included the various sources of water and unique challenges associated with each source; projected future imbalances between water demands and supplies in various areas; access to water and usage across various sectors and geographic areas within Arizona; infrastructure needs and economic challenges; legal challenges; persistent drought and climate change; political realities; conservation efforts; and how to prioritize and finance key investments and other action items.

The results of the discussions at the 107th Arizona Town Hall are included in this report. Though not all Town Hall participants agree with each of the conclusions and recommendations

contained herein, this report reflects the overall consensus reached at the 107th Arizona Town Hall.

Setting the Stage

Arizona's Use of Water: Past, Present and Future

Arizona has a long history of recognizing the value and importance of water to its survival. From the ancient use of canals by native communities to the early 20th century investment by the agricultural community and the federal government through reclamation projects, to successful local management and strong leadership across decades, Arizona has largely avoided the water shortage crises that have plagued other states.

Several factors have significantly influenced Arizonans' current use of water. Arizona's municipal, agriculture, mining, forestry and ranching industries have shaped Arizona's water priorities as have tribal water settlements. Instrumental to Arizonans current use of water is the CAP, authorized by Federal legislation in 1968, and developed by the Bureau of Reclamation. The CAP, a system of aqueducts, tunnels, pumping plants and pipelines, is Arizona's single largest resource for renewable water supplies and is designed to bring water from the Colorado River to Central and Southern Arizona.

Along with the creation of the CAP, the passage of the Arizona Groundwater Management Act of 1980 (GMA) has significantly influenced Arizona's current use of water. With the passage of the GMA, for the first time in our state's history, all responsibilities for water planning and regulation were centralized in one state agency, the Arizona Department of Water Resources (ADWR). In addition, the judicial general stream adjudication proceedings are central to determining the extent and priority of water rights on the Gila River and Little Colorado River systems, which in turn impacts water usage.

Explosive population growth in the last half century has driven substantial growth in the metropolitan areas and created a greater demand for municipal water use. Along the way, Arizonans developed the infrastructure needed to transport water from rivers, streams and geologic sources to its communities, both rural and urban. Technological advances and public-private partnerships have played a major role in developing water management and infrastructure projects in Arizona.

Lastly, partnerships between federal, tribal, state and local governments and the integration of tribal water rights have played a major role in the development of Arizona's water management policies and priority uses.

Many of the factors that influenced Arizona's historical use of water are likely to continue to influence the state's future water use. The factors likely to have the greatest influence in shaping Arizona's future use of water are land use and ownership; expected population growth; climate change; droughts; potential shortage declarations on the Colorado River; water pricing; lacking or deteriorating infrastructure; declining groundwater levels in some areas; legal and political challenges; tribal water settlements; and economic and agricultural vitality and sustainability. All of these factors may influence demands on Arizona's water supply.

Arizonans need to make tough decisions as to how to manage water resources among competing considerations, such as agricultural use, metropolitan use, rural needs, mining use, power use, environmental concerns, tourism and quality of life issues. In addition, with a decrease in federal funding for infrastructure, Arizonans will have to come up with collaborative partnerships, whether public-private, tribal, or regional, to ensure the necessary infrastructure needed to provide water for current and future uses. This will require Arizona's leaders to pursue innovative ideas and to address energy issues. It will also require a willingness to seek investment from the private sector.

Arizona will also have to revise its legal processes, such as the general stream adjudication process, to more efficiently and effectively define water rights in the 21st century and avoid costly litigation gridlock. Resolution of tribal water right claims and addressing core issues of the relationship between surface and groundwater will be very important as we move forward.

Lastly, Arizona needs to educate our leaders and citizens about water policy, pricing, infrastructure, delivery and other matters so as to impact the manner within which Arizonans consume water.

Managing Water in Arizona: Success Stories and Future Challenges

Arizona has managed its water resources reasonably well overall, especially relative to some other states in the Southwest, but results have varied across various regions of the state. For example, management of groundwater resources has generally been better in the Active Management Areas (AMAs) and Irrigation Non-Expansion Areas (INAs) created under the GMA than in other areas of the state. Infrastructure and other water management resources also vary significantly in quality and availability among Arizona's urban, rural and tribal communities.

To the extent that Arizona's management of water in her first century of statehood was largely a success story, many factors contributed to the narrative. Our elected officials and other dedicated community leaders have shown vision and worked collaboratively to address Arizona's inherent water-related challenges, establishing our state as an early innovator in effective water management. This approach has served Arizona well, both in times of crisis when bold action was required, and in connection with longer-range planning efforts focused on issues such as efficient use of water in all sectors, water banking and other storage programs, and conservation. Specific policies and other factors that have contributed to Arizona's success in water management are too numerous to list exhaustively but include the GMA, CAP, Salt River Project (SRP), irrigation districts, and investments in vital infrastructure. Without entrepreneurship, coordination and mutual respect among stakeholders, these successes would not have been achieved.

As Arizona looks ahead to the next century, we must confront many challenges in the area of water management. Some environmental challenges, such as climate change, drought and degradation of our forests and environment, have occurred and must be addressed. Other challenges relate to infrastructure planning, funding and maintenance, particularly in rural and tribal communities. Legal and political factors also present challenges in various forms, including litigation and other conflicts among users of shared water resources, complex and interrelated laws

and regulations, and a lack of coordinated planning in certain areas of the state (e.g., some areas not covered by AMAs or INAs). And, of course, projected population and industrial growth over the next several decades will substantially increase our demand for water, requiring both augmentation and conservation of water resources within Arizona.

We are also victims of our past successes in the sense that, because Arizona has done a relatively good job of securing a reliable water supply and is not currently facing a water crisis, many of our citizens take water delivery, quantity and quality for granted and are not as educated as they should be about the supply/demand gap and other challenges we will face in the future. Additional education is also required with respect to water management and infrastructure programs, policies and practices that have been successful.

Meeting Arizona's Future Water Needs

Arizona faces a number of challenges in ensuring that the state meets its water needs for the future—and these challenges may vary by region, community and interest group.

A preeminent concern facing all regions and communities is financial in nature, that is, Arizona's ability to obtain the necessary funding for maintaining and updating degrading and failing infrastructure as well as building new, high-tech infrastructure. If a portion of new funding is to come from the population base, rural areas will be greatly impacted because the population base may not be sufficient to raise the necessary funding.

Further, with federal funding on the decline, state funding for water and regulatory agencies, such as ADWR, the Water Supply Development Revolving Fund and ADEQ are critical. Investment from private industry will be necessary. Funding problems are exacerbated by conflicting views and divergent water use interests among Arizona's population and special interest groups, all of whom impact the political process.

Uncertainty about the effect of human, environmental and economic factors on future water demands may deter investment in infrastructure and technology that may be required to meet those demands.

The unresolved reserved rights claims of tribal communities and other federal lands further complicate the general stream adjudication. Another challenge is access to quality water in remote areas, or the infrastructure necessary to deliver water to remote areas, especially in tribal communities. Due to the fact that tribal communities control a significant percentage of current and future water supplies throughout the state, these communities likely will play a significant role in meeting Arizona's future water needs.

There is also much debate as to the best way to ensure Arizona has the water it needs for its future. The inability to decide between competing value judgments and the best use of Arizona's water resources impedes effective and timely improvements to Arizona's water management policies. Some advocate for limited agricultural use, restricted growth in water limited areas or more astute forest land and watershed management. Further, the great debate over the impact of climate change on the environment, and water in particular, raises new issues that will require

further scientific research and skilled and knowledgeable leadership from both the public and private sectors. Water management techniques, such as promoting close proximity between pumping and recharge or replenishment, augmentation, use of reclaimed water and desalinization must be addressed. The manner and costs associated with the transportation of water to areas in need are also challenges.

A lack of education on water issues among Arizona's citizens and current leaders also presents a significant challenge. Education efforts should focus the value and importance of water to our quality of life, conservation efforts, the value of banking water, and the public perception of water quality, the relationship between water and energy and tribal water rights.

Current partisan politics only add to the challenges and limit solutions. As a constituency, we must learn how to better communicate to our political leaders the importance of water management and the problems we face as well as offer potential solutions. Leadership surrounding these issues will continue to be essential moving forward with a water management system that will sustain Arizona's water resources for the next 100 years.

Innovation and Technology, Land Use and the Economy

Arizona's Water Portfolio

Arizona's existing portfolio of water resources is varied. The two most significant sources of water in our state are groundwater and surface water supplied from the Colorado River, but other rivers, groundwater and reclaimed water also provide substantial quantities of the water used by Arizonans. Within each of these three principal categories of water resources, there are multiple subcategories, such as water obtained from rain and snowfall, recharge and banked water, reclaimed water, greywater and storm water runoff.

On a statewide basis, Arizona's existing water resources are generally adequate to meet our current needs, although both the portfolio and adequacy of water resources vary by region within the state. For example, many rural areas that do not have access to CAP water rely heavily on surface water from local rivers and streams, as well as groundwater. In some parts of Arizona, including the Navajo Nation, running water is not available to many residents. Water quality and affordability are also growing issues for some communities.

Arizona must protect its existing water portfolio, specifically its Colorado River water supply. The structural deficit on this river must be addressed to ensure the maximum use of this vital resource. Arizona will also need to expand its portfolio of water resources to meet future needs, in light of increasing demand driven by population growth and other factors, as well as the fact that a substantial portion of the water we currently use is groundwater that is replenished slowly.

Many steps can and need to be taken to augment Arizona's existing water portfolio. Although reclaimed water is already being used for limited purposes, we should pursue strategies to expand its use, including for commercial and industrial purposes and potentially for direct potable reuse. However, using reclaimed water for human consumption will require changes in the public's

perception. We should continue to enhance our use of technology to make water usage more efficient in all sectors. We should invest in water infrastructure and begin to explore the increased use of brackish water, and existing and new desalinization facilities. We should address the proliferation of invasive non-native species, such as salt cedar that have contributed to depleted river flows and the degradation of riparian areas, as well as implement sustainable forest management programs. We should implement better flood control policies and other measures to more effectively harvest rainwater and storm water runoff. Other short- and long-term options to augment water resources in Arizona may include increasing storage capacity, cloud seeding and importing water from other regions outside the state via cross-country pipelines or rail systems, which could become cost-effective in the future.

While allowing the movement of existing and future water supplies from one user to another is worth exploring, it is a highly sensitive and controversial topic that has the potential to pit regions, communities and industries within Arizona against each other. There may, however, be opportunities to pursue voluntary redistribution of water resources through collaborative infrastructure planning and market-based systems in which willing buyers and sellers can buy, sell or lease their rights within the existing legal framework.

The Impacts of Technology and Innovation

Innovation and technology have a beneficial impact on Arizona's water use, generally allowing for a more efficient use of water. Over the years, Arizona, through ADWR and other agencies, has developed innovative policies, practices and institutions to manage its water supply. Already existing and implemented technologies that positively impact water use are automatic water readers, automated leak detection systems, improvements to nanofiltration, modernization of ditch systems, field leveling, better underground water storage capabilities and conjunctive use of aquifers.

However, there are some existing technologies that are not being used state-wide because they can be cost-prohibitive. For example, technologies exist for the effective recycling of waste water, but some communities cannot afford to construct the necessary facilities. In order to allow for the implementation of existing technologies in areas where such technologies are needed, more funding is needed.

Future innovation may require significant financial commitments from the federal, state and local governments as well as the private sector. Arizona should also explore different water pricing strategies, including financial incentives to those who conserve water efficiently and effectively.

However, Arizona should not "reinvent the wheel" when it comes to innovation and should invest time and resources into evaluating other states' and countries' water conservation models and actions and identify which options could benefit Arizonans.

Arizonans must also invest in stakeholder-driven research and development for increased water use efficiency and innovation in agricultural, mining and manufacturing industries, and Arizona's universities should play a pivotal role in advancing research in the development of water innovation and conservation.

Future innovation will involve looking deeper into the pricing of water, the feasibility of the treatment of brackish water, desalinization, and allowing reclaimed water to be made available as potable water. However, to implement such innovations, Arizona will need to address regulatory requirements that currently prohibit these types of innovations as well as obtain “buy-in” from its citizens and elected officials, through education and awareness. Lastly, Arizona needs to provide an education system that trains future water experts and provide programs of study that foster innovation and best management practices.

Effects of Land Use and Development on Water Use (and Vice Versa)

Land use, development and population growth have widespread impact on water use in Arizona’s various communities, although the impacts may differ from community to community. For example, increased development in arid rural areas can affect the availability of water through wells by decreasing groundwater supplies. High density urban residential developments typically use less water per capita than low density developments, a factor that has mitigated growth in water demand as Arizona’s population has increased and water usage has shifted in some areas from agricultural to municipal or commercial uses. Even demographic trends associated with population growth affect water usage, as millennials have shown a tendency to seek out smaller houses and a desire to use fewer natural resources.

Conversely, water availability and usage also shape our land use, development and other policies. Arizona’s use of land and its history of population growth have always been intertwined with our water policy, and our tradition of linking plans for growth and long-term water policy should be continued and expanded where appropriate. To the extent feasible, we should use economic incentives and other tools to encourage growth in areas where water supplies are relatively abundant and discourage development in hydrologically sensitive areas, such as state trust lands that do not have adequate water supplies attached to them. Developing such lands creates the risk of “leapfrog” or “checkerboard” development throughout the state that places additional strain on, increases the cost of, and decreases the efficiency of our water supplies and usage.

There are several opportunities to improve our land use and development policies and planning with a view towards improving the balance among quality of life, preservation of natural resources, such as rivers and riparian areas, and the health of economies in our urban, rural and tribal communities. Some communities should consider implementing assured or adequate water supply programs or “net-zero” approaches to water use as a condition to approving new development. We should also create appropriate incentives for conservation of water resources, even in areas where water supplies are abundant. We should explore innovative strategies to make our urban communities lower-impact and less sprawling. Local governments and property owners should be incentivized to develop policies that link land use, economic development and water usage in ways that advance local priorities. Finally, we should seek to build upon the successes of existing programs, such as the AMAs and INAs implemented as part of the GMA.

Development within tribal communities, which comprise nearly 28% of Arizona’s land area, presents its own set of challenges. For example, tribal lands are held in trust by the federal government for the benefit of tribal members, but some tribal lands are leased to industrial facilities

and uses that may endanger water quality and may affect availability of water. It is important to take into account the cultural traditions of tribal communities with respect to their history on the land. Mending the trust and cooperation between Native Americans and other communities is essential to good regional land development and water management decisions. Arizonans who are not Native Americans should take into account in their planning for water resources the needs and circumstances that exist on tribal lands, to help preserve Arizona's overall water supplies and to build a more trusting and cooperative relationship with respect to both land use and water use. The relationship between SRP and the Gila River Indian Community, which provides for the banking of tribal water in exchange for certain economic benefits to the Community, may serve as a model for future collaborations between tribal and other communities.

Water as a Key Driver for Economic Growth and a Sustainable Environment

Water is the fuel of Arizona's economy. Secure and reliable water use and supply are essential ingredients to Arizona's economy. Water and the economy are inextricably linked and the availability and assurance of a long-term, predictable, adequate and affordable supply of water impacts the location of population centers, land development and industry investment, all factors critical to sustainable economic development, including agriculture. When a particular industry is limited in its access to water, there are significant third party impacts beyond that industry.

Misperceptions concerning Arizona's current water supplies, i.e., that Arizona may not have adequate water to sustain industrial development, may already discourage economic engines from investing in Arizona. Thus, Arizona must proactively inform the public about the current stability of its water resources, successes in conservation, and existing strategic plans to secure its water supply so as to entice businesses to invest in Arizona. Arizona must also highlight groups like the Water Infrastructure Finance Authority of Arizona (WIFA) and the Statewide Water Advisory Group (SWAG) so as to assure long-term investors that Arizona is a good place to do business.

Further, to attract additional capital and move our economy forward, Arizona needs to have more definitive certainty with regard to its water supply, which may involve streamlining the water rights adjudication process and tribal water rights settlement processes.

Statewide, one of the best investments Arizona could make is to assure that ADWR is funded to accomplish its mission. Additionally, public education about water issues and conservation, uses and practices would be an excellent investment. Arizona must also appreciate and preserve the quality of Arizona's environment, including ensuring continued use of water for recreation.

For Arizona's urban economies, Arizona must incentivize industry and business to use less water, identify and incentivize multi-purpose projects that can benefit multiple users and entities by providing new water supplies. Arizona must also rethink the engineering of water deployment systems, including using non-potable sources of water for all non-drinking water uses.

For rural economics, Arizona must encourage and fund alternative water sources so as to avoid further depleting groundwater through pumping. Arizona must understand and quantify the economic value of agricultural water uses.

For tribal communities, Arizona must work with tribal communities and the federal government to ensure that any lack of water resources is addressed and that tribal water rights are secured and efficiently utilized. The settlement of tribal water rights would have many benefits, including greater certainty for tribal economic development and other stakeholders, and fostering better relationships and opportunities between tribal and non-tribal communities.

Conservation and Financing

The Role of Conservation

Although it is not a panacea for Arizona's water issues, conservation has played—and will continue to play—an important role in helping Arizona meet its water needs. Efficient use of water is imperative in an arid climate, and Arizona has done a good job in the past of implementing conservation measures. Agriculture has made great strides in conserving water resources, thanks to technological advances and improved farming and irrigation methods. We should expand our efforts to conserve water in the future so that, when combined with our augmentation efforts discussed elsewhere in this report, we will be able to close the projected future gap between water demand and supply.

There are a number of specific things the state and Arizonans can do to conserve water. Water pricing strategies, including tiered and seasonal rate structures, can be and are used to promote conservation while maintaining the financial integrity of utilities. Building codes that encourage low-impact development, installation of low-use appliances and xeriscape landscaping are effective conservation tools. We can explore opportunities to make better use of greywater in homes and other settings, reduce evaporation, and pursue technological innovations that prevent unnecessary overuse of water. Utilities can continue to empower their customers to conserve water by providing additional information about water usage, cost and conservation techniques in billing statements and through other media. There are also opportunities for agriculture to further conserve water through better flood irrigation techniques, drip irrigation, the installation of concrete ditches and other strategies. Many renewable energy technologies consume less water than traditional generation facilities and these should be encouraged.

In determining what steps should be taken to conserve water, Arizona needs to adopt a flexible approach that fosters collaboration and public-private partnerships, and allows individual communities to focus on localized solutions that meet their unique needs and circumstances. We should design and implement conservation programs that give users choices rather than mandate (or prohibit) specific practices. Moreover, Arizona should focus on incentives, such as tax credits, water rebates and similar programs, rather than penalties.

Finally, improved education is critical to effective water conservation. Arizona must create and enhance a culture of conservation by focusing on consumer awareness and conscientious use of water. In addition to increasing public awareness generally, we also need to provide education on water conservation opportunities and strategies for elected officials, civic leaders, utilities, planning departments, students at all levels of formal education, and citizens at-large. Arizonans should understand their water resources, including the sources of water in Arizona, how water is delivered,

why it is important to conserve water, and how they can contribute to the future security of Arizona's water supply.

Funding Arizona's Current and Future Water Needs

Arizona's available funding sources to address current and future water needs are limited in that, with few exceptions, current funding for water needs—including infrastructure, operations, delivery and maintenance—are borne by the end users of water through the pricing of water, user fees and taxation. Existing additional funding sources consist of borrowed money, private equity, revenues from utility operations and cooperatives, Water Infrastructure Finance Authority (WIFA) loans and grants, and federal infrastructure funds. However, statewide funding programs are inadequate to address the future funding of Arizona's water needs and it is clear that a diversification of funding will be necessary to sustain Arizona's future water needs.

Some would argue that end users should continue to pay both for their water usage and for the infrastructure necessary to deliver water, making water a "fee for service" commodity. However, this model is more problematic in our rural and tribal communities. Others maintain that the price of water needs to be increased. However, merely increasing the price of water is not enough to ensure long term availability.

While Arizona has funding mechanisms in place, like WIFA, the Arizona Water Protection Fund, Natural Resource Conservation Districts, the Water Resource Development Fund (WRDF) and the Water Supply Development Revolving Fund, these mechanisms are underfunded and underutilized.

In order to increase, diversify and stabilize funding to meet Arizona's future water needs, Arizonans must first ensure funding of existing funding mechanisms, and this would likely include additional assessments and increased user fees. If we do not believe Arizona's legislature would enact laws providing an increase to water funding, then we must consider a legislative referendum or voter initiative to provide for additional assessments or user fees for water priorities. Other suggested methods of obtaining state-initiated funding include the creation of special taxing districts, the implementation of a user fee on domestic water use, a fee to support water conservation, and a tourism fee designated for water conservation and infrastructure. At the same time, we must assure that our leaders are accountable and ensure that Arizona's water needs are at least partially met through general fund allocations and the funding of ADWR.

Arizonans must also make their voices be heard in Washington, D.C., and make our case to our Congressional delegation that federal funding is necessary to meet water infrastructure needs, especially for rural and tribal communities. We should ensure that Arizona does not leave federal grants or matching funds on the table by looking to federal agencies, like the U.S. Department of Agriculture and the Bureau of Reclamation, for grant and financial opportunities. ADWR should support the greater access to and use of those funds through an investment in a staff position to assist water users in the identification of and application for these funding opportunities.

Public-private partnerships are key to a diversification in funding as well as private dollars from investors, foundations, and green market funds. However, in doing this, we must ensure that

our regulatory scheme is not a deterrent to private investment and public-private partnership, while at the same time ensuring that regulated utilities and state agencies are able to take advantage of these financial mechanisms and recover initial investments.

Arizona must also look at creating regional or statewide programs to issue revenue bonds, in addition to those offered by WIFA, designated to develop long-term water supply and the requisite infrastructure. Offering tax credits and financial incentives to those who engage in innovative conservation is another option, as well as examining acre-foot withdrawal fees in AMAs and no longer providing for well fee exemptions. Further, we should broaden the scope of incentives and maintain existing incentives for farmers and other agricultural water users.

However, to have meaningful dialogue on funding mechanisms, Arizona will need to educate its leaders and citizens on the critical importance of water priorities and this may be done by utilizing high-profile opportunities like other states' current water crises.

Strategies for Pricing Water to Incentivize Desired Outcomes

The cost and price of water play important roles in managing Arizona's water, for example, by promoting conservation and funding infrastructure development—but the relationships among cost, price and incentivizing desired outcomes are complex. For example, the price that Arizonans pay for water has a significant role in shaping their perception of its value, but that price may not reflect the true cost of the water being consumed. This disconnect arises for several reasons, including the lack of premiums associated with scarcity, environmental impacts, infrastructure needs and other externalities.

Current methods for pricing water and financing infrastructure include tiered rate structures, in which users are charged higher rates as the volume of water they consume increases, and rate increases that are generally recovered by utilities after the infrastructure is built. These methods have shortcomings, however, and in some cases they create competing incentives. For example, while tiered rate structures incentivize conservation, they can adversely affect the revenue stability and bottom line of utilities. But rates must also adequately fund the maintenance and augmentation of Arizona's infrastructure for water harvesting, storage and delivery. The Arizona Corporation Commission (ACC) has significant influence over water pricing for private water companies in Arizona. Specifically with respect to infrastructure financing, the ACC's policies and regulations, including its rate case adjudication process, are cumbersome and do not sufficiently promote investment.

Going forward, water should be priced in a way that more accurately reflects its true overall cost, but steps need to be taken to ensure that Arizona remains competitive and water is affordable for vulnerable populations. Water pricing also needs to be relatively stable, both for consumers and providers—and to facilitate responsible levels of investment in infrastructure. These outcomes can be achieved through modifications to existing pricing methods, although there are statutory and other limitations that will need to be addressed. One approach would be to eliminate the uniform low cost of water assigned to the bottom tier in existing tiered rate structures, such that costs at the higher tiers would become less variable and stabilize revenues for utilities. Pricing could also be broken out by each individual component of the true cost of water, such that a fixed price would be

assigned to infrastructure costs and variable pricing would track water usage.

While price and cost are important tools to incentivize desired outcomes, they are not the only mechanisms available or necessary to produce those outcomes. Additional strategies that could incentivize desired outcomes include increasing user fees to fund water infrastructure projects on a statewide basis, and creating new management strategies to address groundwater concerns. Given the unique challenges and issues faced by urban, rural and tribal communities across the state, as well as by water users in different economic sectors, Arizona must focus on localized solutions.

What Can Arizonans Do (Without Additional or New Funding)?

There are several actions that Arizonans can take to meet our current and future water needs that do not require substantial additional or new funding. However, these actions require a commitment at the individual, local, regional, state and national levels.

First, Arizona must educate its citizens on personal accountability for water use and conservation. Commitment and collaboration from the private sector, our universities, K-12 education system and state and local officials are necessary to engage in this educational endeavor. Utilization of technology and social media, i.e., Facebook, Twitter, Instagram, can provide instant access to information regarding water issues, use, up-and-coming technologies, conservation and augmentation. We also must educate our citizens and leaders on the nexus between energy and water use. Arizona's leaders, educators and innovators must elevate water issue awareness through the media by providing the media with information and success stories regarding the efficient and effective use of water.

Second, we must utilize existing technology to better communicate with our citizens about personal water usage. Through social media and apps, information about an individual's relative use of water compared to others within their community can be disseminated almost instantaneously. Access to such information may accomplish greater accountability for water use and conservation efforts necessary to meet our future water needs.

Third, steps must be taken within the state legislative and executive branches of government to ensure that Arizona's laws and regulations encourage smart water use and conservation. For example, regulations can be implemented related to landscape design and maintenance, new development infrastructure design, well impact and spacing requirements, direct potable re-use and flexibility in collaborative approaches across AMAs and INAs. Arizona Department of Environmental Quality water standards need to be revisited so as to allow for the greater use of innovative technologies and repurposed water.

Fourth, steps must also be taken at the federal level to give greater autonomy to the states to manage their water resources.

Fifth, local governments should revisit rules and ordinances, including local building codes, to promote efficient water use. Localities should also consider implementing water wasting ordinances as well as voluntary "turn off the tap" days.

Sixth, utility rate structures should be revised to further incentivize smart water use and conservation.

Seventh, water markets and corresponding legal structures should be developed to take advantage of the gains we see from water conservation.

Finally, we need to continue our exploration of water augmentation methods including watershed restoration, weather modification, desalinization, permitting of injection wells, xeriscaping, detention/retention basin requirements, leak detection programs and the use of storm water and rain water.

Setting Priorities and Taking Action

There are a number of actions that can and should be taken to beneficially impact Arizona's water needs, and ensure the security and sufficiency of our water supply well into the future. Some actions need to be taken immediately, while others will require longer-term planning and execution. Continuing Arizona's history of collaboration in addressing water-related challenges will be critical to success. Governments at all levels, tribal nations, elected officials, community leaders, private businesses, educational institutions, non-profit organizations and individual Arizonans will all play vital roles in implementing—and, in some cases, funding—these important actions.

Priority Action Items; Responsibility and Funding

Arizona's water use history is filled with stories of individuals and communities, who due to the foresight, resolve, proactivity and collaboration, have allowed this state to flourish economically without the pressure of having a depleted water system. Arizona's most populated, metropolitan areas do not currently face an imminent water crisis, but some rural areas are seeing more immediate challenges. And, as discussed earlier in the Report, Arizona will need to identify, and develop additional water supplies to meet projected water demand in the future. In order for this to be accomplished, Arizonans must work together to increase communication and collaboration.

Below are the top six priorities for Arizona to pursue:

- Move Forward with Arizona's Strategic Vision for Water Supply Sustainability
- Create and Fund Mechanisms to Finance Water Supply and New Infrastructure
- Appropriately Fund and Staff ADWR
- Education
- Conservation and Augmentation
- Legal Reform

Priority: Move Forward with Arizona's Strategic Vision

Arizona's Strategic Vision must be supported and implemented at the tribal, state, county and local levels. Governor Ducey's new water initiative is a crucial start and must be supported. Arizona must consider potential solutions and strategies that would have the most beneficial impact

on Arizona's water supply and demand. Specific actions should include efforts to promote local water planning, funding of the Water Resources Development Fund (WRDF) and addressing the structural deficit of the Colorado River in collaboration with other basin states. The Strategic Vision identifies both short-term and long-term action items, and ties these actions to local economic development plans, but must be continually updated to meet Arizona's changing needs.

Who is responsible for this action: Governor of Arizona, Arizona Legislature, ADWR, and all other stakeholders, including tribal governments.

Priority: Create and Fund Mechanisms to Finance Water Supply and New Infrastructure

Proper financing to carry-out Arizona's long-term water strategy will also need to be established. Whether the entity charged with financing the implementation of the long-term water plan is under the purview of an existing state agency, such as the Water Supply Development Revolving Fund, or a new agency that understands how the long-term action plan will be implemented must still be determined, though the preference would be to use existing state agencies. The WRDF is a key mechanism for financing water development projects and infrastructure. Primarily a self-sustaining revolving loan fund, the WRDF should be sufficiently capitalized to meet its statutorily defined mission.

Who is responsible for this action: Governor of Arizona, the Arizona Legislature and citizens of Arizona.

Priority: Appropriately Fund and Staff ADWR

Stable and adequate funding of ADWR will allow it to carry out its statutory responsibilities, which will include implementation of a long-term strategic water plan. It will further allow ADWR to retain and hire highly skilled, knowledgeable professionals to carry out its obligations and serve as leaders on statewide water issues. Funding will need to be appropriated by the Arizona Legislature sufficient to support ADWR's mission, such as protecting Arizona's Colorado River entitlement.

Who is responsible for this action: Governor of Arizona, Arizona Legislature, and Arizona's citizens.

Priority: Education and Public Awareness

It is imperative that we educate the general public and our political leaders on water issues. Those entities that are especially knowledgeable about water issues should take the lead in educational efforts. Water education should be a required component within our public schools at the K-12 levels.

ADWR, in collaboration with the water education community, should also develop a focused communication plan and retain staff to lead statewide discussions among the community and water stakeholders through public forums and online communities. The communications plan must include water literacy information and an outreach program, including a curriculum that recognizes

and includes the diverse sets of water values observed throughout the state.

Public education or service campaigns, led by local water providers, should also be implemented, and take into account cultural and regional demographics, focusing on regional communities, schools, elected officials and our youth. These campaigns should promote and incentivize conservation and inform the public about water use by residential communities and different economic sectors.

Lastly, Arizona needs to promote its water as a valuable commodity to not only justify its current value, but to also stimulate novel and creative funding mechanisms that will be needed in the future, i.e., public-private partnerships, private sector investments in infrastructure, economic development and land development.

Who is responsible for this action: Arizona's university system, Board of Regents, Arizona's community college districts, K-12 school districts, water providers, ADWR and the Arizona Cooperative Extension.

Priority: Conservation and Augmentation

Conservation of existing water supplies and augmentation of new water supplies are both needed to close the projected supply/demand gap that Arizona faces in the future. We need strong education and public awareness programs to lay the groundwork for success in our conservation efforts by creating a "culture of conservation." In that regard, educating consumers about their water usage habits and strategies for conservation through billing statements or social media can be effective. Tiered water rates, designed to promote conservation and revenue stability, and other financial tools should also be used to incentivize conservation, and we need to develop more effective methods for financing investment in conservation technologies. Modernized building codes and other policy initiatives, including in land use and development, are also needed. Arizona should also encourage counties, cities and towns to address water issues as part of their local strategic planning efforts.

Arizona must also take a number of actions to augment existing water resources. In the short-term, we should focus on increasing reclaimed water and grey water reuse, investing in additional water storage capacity and increasing our capabilities to capture and utilize storm water runoff. Longer-term, we should explore opportunities to expand reclaimed water reuse including for human consumption, expand use of brackish and poor quality water, investigate cost-effective strategies for the desalinization of ocean water, and make strategic investments in water production, delivery infrastructure, and exchange opportunities with other states.

Related to both conservation and augmentation, Arizona needs to focus on maintaining and improving the quality of its watersheds and other natural resources that impact water supplies and quality for people and the environment. For example, Arizona should implement sustainable forest management programs, including support for the current Four Forest Restoration Initiative underway by the U.S. Forest Services (USFS) in all of the forested watersheds, incentivize private industry to thin forests, and remove non-native vegetation and invasive species from watersheds. Congress and state government must take a long view by stopping the diversion of forest restoration

funding to fire suppression uses, and also fund other watershed improvement projects statewide.

Who is responsible for this action: Federal and state governments, municipalities and local governments, regulatory agencies (including the USFS at the federal level and the Arizona State Forester at the state level), utilities, private businesses, non-profit organizations, state universities and individuals all bear responsibility for various aspects of these actions—and are potential sources of necessary funding.

Priority: Legal Reform

The general stream adjudication process, as litigated in the Superior Court of Arizona, needs to be streamlined and simplified so as to ensure more expedient and equitable resolution of water rights, provided that federal claims are adjudicated first and that small users are adequately protected in the process and the outcome. This may involve reassessing the adjudication procedures and hiring additional staff. Adjudications are critical to long-term economic development and water use planning.

Similarly, quantifying tribal water rights claims is critical but can be lengthy and expensive if done through litigation. Settlement of tribal claims benefits all parties by providing the water certainty necessary to plan long-term economic development. While settlement may be less expensive than litigation, it is a very lengthy process. Thus, the settlement process should be expedited whenever possible while preserving due process and community engagement.

In addition, some of the standards implemented by environmental regulatory agencies could be revised as they can be too cumbersome and restrictive and may stifle water use innovation. Recommended regulatory changes include addressing augmentation of surface water supplies, water quality standards relative to the use of reclaimed water, limitations on deep well-injection of brine water, expanded uses of lower quality groundwater, acceptable pollutant and toxin levels and the development of regulations specific to the permissible uses of potable and non-potable water, keeping in mind the implications to the environment. Arizona should allow new groundwater management frameworks to be established in groundwater basins outside of AMAs.

Who is responsible for this action: Congress, Federal regulatory agencies, Arizona Legislature, Arizona regulatory agencies, General Stream Adjudication Special Master, Superior Court of Arizona, tribal governments, attorneys and lobbyists.

The Role of Individuals

Although collective action will be essential given the importance and magnitude of water-related challenges facing Arizona, individual Arizonans can and should:

- educate themselves about our state's water resources and challenges, including by seeking out formal and informal educational opportunities through Arizona's institutions of higher education, K-12 school system and other entities;
- educate others—including elected officials—on water issues, with a view towards raising public awareness and creating a climate in which Arizona's water-related

- strategic initiatives gain widespread understanding and support;
- advocate for federal and state funding of programs and policies that will help ensure Arizona's water security, including by lobbying elected officials;
 - support funding for ADWR and investment in sensible water infrastructure projects;
 - build trust and collaborative relationships among the different communities within Arizona, including tribal governments, and with the states of Nevada and California and the Republic of Mexico;
 - promote Arizona's historic and recent successes in water management and conservation efforts, including through social media;
 - involve young people in conservation efforts from an early age; and
 - Use water responsibly in daily life.

Conclusion

The participants of the 107th Arizona Town Hall on "Keeping Arizona's Water Glass Full," after three days of serious and intense deliberations, urge implementation of the previously delineated priorities, including moving forward with Arizona's Strategic Vision; creating a mechanism to finance water supply and new infrastructure; appropriately funding and staffing ADWR; adequately capitalizing WRDF; focusing on education; promoting conservation and augmentation; and legal reform. We encourage Arizona's citizens and elected officials to take appropriate and timely actions to ensure Arizona's water security and prosperity into the future.