What the Minimum 20 Percent Conservation and Reuse Mandate in the SWIFT Process in Texas Means for Sustainably Designed Water Methods

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In November 2013, the citizens of Texas approved a new water infrastructure financing plan called the State Water Implementation Fund for Texas (SWIFT). SWIFT funds will provide low-cost loans for water projects included in the State Water Plan (SWP). A few conditions catalyzed this historic legislation, including a year of exceptionally severe drought in 2011, and the 2012 SWP, the first such plan released since 2007. This document assumes one scenario for water planning in Texas in which the population nearly doubles and historic dry periods persist, resulting in an 8.3 million acre feet water shortage.¹

A minimum of 20 percent of the fund must finance conservation and reuse water supply methods. These projects must have associated capital costs and be included in the SWP. Conservation strategies often have no capital costs, but if they do, expenses are lower than for other techniques such as desalination.

Recent research revealed that the 20 percent minimum set-aside for conservation in the first round of SWIFT funding in spring 2015 was not met. The projects that were selected represented rudimentary conservation plans, far from the innovative, sustainable methods needed to support the varied terrain and rainfall of a state as vast as Texas.

To understand current trends in water supply project funding, a brief examination of the history of water management in Texas, as well as the SWIFT process, follows.

Water Management in Texas

Water planning in Texas is triggered when it does not rain. The dry period in the 1950s was considered the “drought of record.” As a result, the Texas legislature created the Texas Water Development Board (TWDB).² This state agency developed water plans for the entire state. In 1997, the Texas legislature passed Senate Bill 1 establishing an aggregated regional water planning process different from
past plans that were top-down in nature. The new planning process originates at the regional level, and combines 16 Regional Water Planning Group (RWPG) plans into one document, the SWP. In essence, Texas has 16 separate regional plans rather than one independent state plan. The 16 RWPGs are responsible for preparing regional plans and submitting them to the state every five years. The plans look forward approximately 50 years: as a result, the current document considers water needs, and supplies, up to 2060. Also, since Senate Bill 1, water reuse and conservation are considered viable strategies in Texas.

By 2060, state planners predict severe water shortages of 8.3 million acre feet if Texas does not implement water supply and management strategies. An acre foot is enough water to cover one acre of land at one foot deep, and could supply four average households for one year. The shortages are due to a number of circumstances, and the 2012 plan states that $53 billion will be needed for water projects by 2060.

SWIFT

The 2011 drought provided the impetus for the Texas Legislature to act in 2013, authorizing House Bill 4, which mandated voter approval for Proposition 6, a constitutional amendment establishing plans for an extensive water-infrastructure financing program, called SWIFT. The vote occurred on November 5, 2013, and the proposition was successfully passed 73.35 percent to 26.65 percent. The State’s Rainy Day Fund transferred two billion dollars to begin a low-cost loan program to help communities fund water projects included in the SWP. The investment permits a certain amount of money to be given out every year. The TWDB estimates that as much as $800 million can be dispersed each year. In terms of the minimum 20 percent conservation and reuse set-aside, that translates to $160 million each year that could potentially fund these types of projects.

The TWDB already supports water projects in Texas with loans, so how is SWIFT different? SWIFT will provide a large influx of money to fund projects, but these projects must meet three criteria: they must be included in the SWP; they must be a recommended strategy; and must have an associated capital cost. Capital costs occur during construction, and include the purchase of land, buildings, and equipment used in the production of a good, or the rendering of a service. Also, the entities applying for this funding must be political subdivisions of the state including municipalities, non-profit water supply corporations, counties, river authorities, special law districts, water improvement districts, irrigation districts, special water control and improvement districts, and groundwater conservation districts.

In spring 2015, the TWDB determined if projects submitted during the abridged application process, beginning in November 2014, were eligible for funding. Then the Board sent invitations to entities for final financial applications. The list of projects was revealed May 6, 2015. The first money will be distributed in fall 2015. SWIFT funds could be accessible two times a year depending on available monies.

Conservation and Reuse Approved for First SWIFT Funding Distribution

Before the February 3, 2015 deadline for the SWIFT abridged applications, research revealed reuse strategies could outpace conservation by six to one. Therefore, if reuse spending in future cycles of SWIFT funding mirrors projects...
proposed in the 2012 SWP, it will outpace conservation. However, after the initial applications were received in February, conservation project proposals exceeded the minimum 20 percent set-aside and outnumbered reuse projects. After the May 6 final release of information, the number of conservation projects totaled only approximately five percent of the money allocated for the first distribution. Reuse projects were not represented at all.

The projects approved mirrored three proposed in the 2012 SWP, and are for the following strategies:

1. Conservation Water Distribution System Improvements (fixing leaky pipes)
2. Conservation-Advanced Water Metering Infrastructure Project (meter replacement or installation)
3. Agricultural Irrigation Conveyance Improvement (enclosing conveyance pipes to guard against evaporation)

These projects represent basic conservation strategies. While these measures are important, Texas must move beyond rudimentary schemes. Given the results of the first round of funding, it appears the next few years of SWIFT monies will provide support for basic infrastructure rather than truly innovative technologies that would help diversify supply options.

Factors Influencing Infrastructure Decisions in Texas

Before the drought of the 1950s, Texas was a state that relied heavily on notable practical approaches, such as water recovery, to supply water. Currently, however, there are barriers to many of the same types of strategies. Yet, given Texas history of conservative, pragmatic water use, this is actually ironic. Why are Texas planners so focused on rudimentary strategies in the first SWIFT cycle? After all, project-based planning is only about 60 years old. Large infrastructure projects for supplying water in Texas, such as reservoirs, are a recent development.

One factor in how projects are chosen is that the same engineering firms are chosen by RWPGs to help write plans. This fact may restrict diversity if firms have a limited portfolio of projects. For example, The Texas Tribune recently reported that one Texas firm, Freese & Nichols, was paid over half the $13.7 million in money allocated by the TWDB to help prepare several regional plans, evidence of their significant involvement.

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Diversity in the state’s water supply is an astute way to combat some of the negative impacts of this phenomenon on the state’s natural resources. Additionally, Texas is the third fastest-growing state in the nation following Nevada and South Dakota and development naturally follows. Land-use planning is a factor related to scarce water supplies. Despite this fact, the SWP as well as the regional plans give little or no reference to land-use planning. Preemptive planning based on water availability models rarely occurs, even in a state where supply is dwindling, and the reason for this in Texas is that most development is taking place in unincorporated areas with no regulation. In Texas, counties do not have development codes as do urban areas. In a state with most of its growth occurring in these regions, securing water sources ahead of improvements is optimal but unlikely. If land-use were more of a factor in water management planning, green infrastructure methods could become popular ways to increase or maintain supply.

Types of Water Supply Strategies and Associated Costs

In order to determine if water supply strategies in the SWP were varied, the study examined projects labeled conservation, reuse, innovative, and auxiliary water technologies.

“Conservation” means: (A) the development of water resources; and (B) those practices, techniques, and technologies that will reduce the consumption of water, reduce the loss or waste of water, improve the efficiency in the use of water, or increase the recycling and reuse of water so that a water supply is made available for future or alternative uses. Conservation approaches included in the SWP consist of: irrigation scheduling; leak detection; washer and toilet replacement programs; meter replacement programs; water system audits; and education.

Reuse is also called “recycled water,” “reused water,” or “reclaimed water.” Texas Administrative Code Title 30 § 210.3 defines reuse as, “domestic or municipal wastewater which has been treated to a quality suitable for a beneficial use.” Reuse represents nearly 10 percent of all new supplies from recommended water management strategies by the year 2060.

Much more money is allocated to reuse than conservation in the SWP, yet conservation projects pose the greatest potential to be sustainably
Innovative water technologies, according to the TWDB, include high-tech applications such as sea or brackish water desalination and aquifer storage and recovery, a technique to store water underground which decreases evaporation rates. Innovative water, as defined by the TWDB, also includes both types of reuse and rainwater harvesting (RWH). However, reuse will count toward the minimum 20 percent set-aside in SWIFT. RWH has finally been defined as a conservation strategy by the TWDB and as such, will also be counted toward the set-aside. In the current SWP, there are 64 instances of proposed aquifer storage and recovery and brackish or seawater desalination projects, totaling just over three billion dollars and promising to deliver 391,000 acre feet of water by the year 2060. These strategies do not count toward the minimum 20 percent conservation and reuse set-aside, nor are they sustainable. They are expensive, project-based technologies, highly engineered, and both—especially desalination—present environmental risks that may outweigh benefits.

Figure 3 is a comparison of costs for reuse, conservation, and innovative water methods.

There is one additional category of water found in the regional plans, the use of which will enhance supplies and should be considered in future. It is described in this study as auxiliary water and includes: use of RWH; graywater; stormwater capture using green infrastructure technologies (and to augment aquifer storage and recovery facilities); air conditioning condensate recovery; and brush control. People assume these methods add little to the water supply, yet consider that graywater is as much as one-third of household water use. Additionally, a report for the 80th Texas Legislature in 2006 on RWH potential concluded as much as 38 billion gallons of water annually could be provided if 10 percent of roof area in the state of Texas were utilized for rainwater catchment. This represents 1.4 percent of the projected need in 2060 during drought. During wet conditions, capture potential increases. These two examples illustrate the potential for auxiliary water to serve as one tool in finding additional sources in Texas.

Auxiliary water methods are sustainable strategies, and could be considered conservation. Yet, in the 2012 SWP, there is only one instance of capital costs for an auxiliary water strategy—brush control in Region F. This indicates either a lack of knowledge of the techniques, a lack of expertise in the field, or unwillingness on the part of the RWPGs to engage these technologies.

Recommendations on Ways to Increase Diversity of Projects

In a state as vast as Texas, with various rainfall amounts and distinctive regions, the following are recommendations for increasing sustainable water supply practices.

First, find synergies between private financing and traditional approaches upon which the state might capitalize. Examples of this include changing the way we manage water by keeping water on-site through private collection (RWH, graywater use, and air condensate recovery), using green infrastructure techniques to control stormwater runoff, using ecosystem services or ecological land management, and conserving land with easements to keep water supplies healthy. If the TWDB defined water conservation as a public purpose in its prioritization and rulemaking process, it would enable customer-side municipal water conservation to be financed with public monies. This action requires
a shift in philosophy about financing conservation strategies. If entities pay people for water savings through programs such as lawn replacements, the savings become permanent. Formal agreements with the private business or person making the upgrades or installing the system are required, but are feasible. As in the past in Texas, conservation can be achieved by thousands of small local and individual strategies as well as large infrastructure projects.

To move beyond basic measures, the state must develop a method of costs analysis for conservation. RWPGs need help quantifying expenses to reach state goals. The TWDB provides support by maintaining demographic data, for example, but could provide more. If groups had precise numbers from which to base projections and better compare strategies, they could make better decisions.

The TWDB should create a conservation ombudsperson position with the agency to promote diverse strategies. Currently the TWDB has a rural ombudsman who helps promote the 10 percent rural set-aside (the other set-aside mandated in the legislation) to state entities. Conservation projects need their own advocate.

Education should enlighten citizens about novel Texas cultural history related to early water use as well as new technologies. Education should begin early and continue into the secondary years where courses on aquatic science already occur, extending to post-secondary levels. The state should support research and development of advanced water capture technology, green infrastructure methods, and ecological land-management techniques. State leaders should support the production of applied curriculum in water systems management for the community college and technical school systems. The subjects should include technical education on building and maintaining recovery systems for graywater, rainwater, and air condensate as well as instruction on green infrastructure techniques, ecosystem services, ecological land management and how these methods enhance and support water supply. High school aquatic science programs could benefit by producing a workforce of technical tradespeople engaged in new technologies. It will create jobs and provide instruction for how to maintain these systems. Texas community colleges and technical schools could become national leaders in the field of auxiliary water technology if they instituted programs such as these.

Another recommendation is to amend or expand the TWDB Conservation Advisory Council’s advice to include water conservation best management practices (BMP) reaching further in scope. The council’s BMP guide is referenced often in the regional plans; therefore, it appears to be the document planning groups use most to learn about recommended strategies. For example, the TWDB should implement and advertise the RWH/Condensate Recovery BMP guide, which exists in a report on the TWDB website. It argues effectively for large-scale water recovery systems.

Conclusion

Texans are fiercely independent, pragmatic, innovative people by nature. The cultural history of the state underscores these facts. The SWIFT fund is a result of creative thinking by planners, legislators, and citizens to alleviate problems before they become serious. That same vision is necessary to inspire synergies between participants using auxiliary water technologies financed through new funding mechanisms resulted from changing economic philosophies. The citizens of the state, and its ecological health, will benefit if they can muster the political will to resourcefully meet the minimum 20 percent conservation and reuse set-aside in future rounds of SWIFT funding.
References:


3. Ibid.


16. Ibid.


