

Water Conservation

Introduction

Conservation, by reducing wasteful use, can help ensure a more reliable supply of water for all existing uses and could meet a significant portion of the increased demands of Florida's growing population. While the issues necessitating the need for water conservation/ water use efficiency may differ from utility to utility, many conservation methods and technologies are universally applicable. While the advantages of water use efficiency are apparent, the challenge comes in having comprehensive conservation programming accepted by utilities as a water supply alternative. The least expensive water that a utility can develop is water that has already been developed. When considering the comparative marginal costs of the next increment of water supply, conservation should be included.

Issue Definition

Florida's water demand will continue to increase through 2030. Scarcity of existing, easily developed traditional water sources and the high cost of developing alternative sources are leading water suppliers to more fully consider the value of water conservation as a viable and cost effective alternative water source. Conservation measures should be considered to be economically feasible when the cost of the measure is less than the cost of the next increment of supply.

In addition to providing a cost-effective alternative to new supply development, comprehensive conservation programming can provide other valuable benefits including:

- optimized use of existing facilities;
- deferred capital investment costs for new facilities;
- reduced operations and maintenance costs;
- reduced peak and average day demand;
- improved public perception and support of future supply projects;
- source diversification (which improves system reliability); and
- environmental protection, including reduced energy use and greenhouse gas emissions.

Unfortunately, a common perception is that water conservation involves "doing without". Actually, a significant level of water conservation can be achieved with minimal inconvenience or cost for water users. Efficiently watering landscapes and using efficient plumbing fixtures and appliances in the home can reduce daily water use by 25 percent or more. Some new devices use as much as 50 percent less water than older technologies. Replacing older, water wasting fixtures and equipment for outdoor and indoor uses in all water use sectors (i.e. residential, industrial, commercial and institutional) could save large amounts of water and wastewater costs, but would involve some costs to water users. Incentive programs such as rebates or

credits could help offset these costs.

Water planners need to be able to quantify the degree to which planned water savings are being achieved, the potential for future savings, and which conservation measures are the most efficient and effective for attaining these savings. To achieve a reliable level of certainty associated with water conservation savings, conservation programs must include development of long-term conservation goals and the continual monitoring and evaluation to ensure that these goals are being met.

Legislative actions could facilitate increase water use efficiency in Florida. Developing and implementing legislation to require building code modifications to specify use of best available and efficient technology in new construction is one such action. Another is legislation to require utilities to evaluate and document the cost-effectiveness of water conservation programming in their water supply plans and maintain a specified level of water use efficiency. Requiring thorough water loss investigations and loss prevention programs would reduce water waste in many systems around the state.

Public awareness and involvement are often a driving force in initiating short-term conservation efforts, but high levels of public involvement are hard to maintain in the long-term. For example, during a drought the public and media interests in water conservation are heightened, but to achieve and sustain a meaningful level of water conservation, Florida's effort must overcome the public apathy that returns when the rains come. Continual reinforcement of the conservation message is needed, but other actions such as standards, regulation, and eliminating inefficient fixtures, appliances and equipment are needed to ensure that water continues to be used efficiently even when the public's attention is turned to other issues.

Background

2006 and 2007 were among the driest back-to-back calendar years on record in the State of Florida. By the height of the 2007 dry season, a statewide rainfall deficit of nearly 20 inches over the previous two years had left many surface and groundwater levels at or near historic lows. Dwindling water levels caused unprecedented strains on regional supplies that support more than 18 million residents, and saltwater intrusion jeopardized the groundwater resources of numerous coastal communities.

In an effort to protect and extend the availability of local water supplies, the Water Management Districts (WMD) issued water shortage orders imposing various levels of water use restrictions, ranging from voluntary cutbacks to significant mandatory use restrictions. The most stringent orders included one-day-per-week restrictions on landscape irrigation and strict limits on recreational and other outdoor water uses during recent drought conditions.

In some parts of the state, nurseries, growers, and agricultural users were asked to reduce their consumption by more than 45 percent, leading to reduced outputs and lost jobs. According to the Florida Department of Agriculture and Consumer Services, the total economic impact of the drought may exceed \$2 billion or more by 2010.

Meanwhile, the plight of Lake Okeechobee, the largest freshwater lake in the Southeastern United States, came to embody Florida's water shortage in the national press, garnering attention from such media outlets as *CNN*, *Fox News*, *USA Today* and *The Wall Street Journal* with vivid imagery of dried-out lakebeds, muck fires, struggling fishing and tourism businesses,

and pump stations rendered useless by extraordinarily low water levels. In fact, the lake reached a historic new low of 8.82 feet NGVD on July 2, 2007, the lowest water level recorded there since the south shore of the Herbert Hoover Dike was completed in 1936. This milestone brought more media coverage, and a December 2007 *Associated Press* poll of more than 200 media representatives across the country designated Florida's ongoing drought as the year's second-leading national story. The top story was the nation's mortgage crisis.

Florida's Current Conservation Initiatives

Water conservation efforts in the State of Florida date back more than 30 years. Traditionally, conservation has been promoted through public education, water conservation grant/funding programs sponsored by some of Florida's water management districts, the implementation of best management practices, and regulatory requirements.

The success of Florida's cooperative funding programs, for instance, hints at the potential for water conservation as an integral part of water supply planning. Since 1991, about \$20.5 million in conservation grant funding from the Southwest Florida WMD and South Florida WMD alone has resulted in an estimated water savings of more than 16 million gallons per day – enough to fill 1,100 residential swimming pools each day or meet the daily water demands of 100,000 Florida residents. At less than \$3.00 per gallon saved, including cooperators' costs, conservation is easier to implement, more energy efficient, and significantly less expensive than other alternatives for augmenting local water supplies, such as reuse or desalination, which may cost more than \$10.00 per new gallon produced.

In addition, the State's water management districts require planning and implementation of water conservation measures by public water suppliers, commercial and industrial users, landscape and golf users, and agricultural users. Examples of existing requirements for public water suppliers include:

- Adoption of local government ordinances that affect irrigation hours, new landscaping, and plumbing fixtures.
- Evaluation of the feasibility of water reuse.
- Leak detection.
- Conservation-based rate structures.
- Public education.
- Industrial and commercial water use audits.

Currently, the districts' rules do not require accurate quantification of water savings, long-term conservation goals, protocols for monitoring and evaluating success, and enforcement of local ordinances.

The Conserve Florida Initiative

In an effort to put greater emphasis on water conservation, in early 2000, the Florida Department of Environmental Protection (FDEP), led a statewide water conservation

initiative. That consensus-based effort resulted in the 2002 publication of the “*Florida Water Conservation Initiative*,” that includes 51 recommendations to improve efficiency in all categories of water use.

In February 2004, various stakeholders signed the “Joint Statement of Commitment for the Development and Implementation of a Statewide Comprehensive Water conservation Program for Public Water Supply”. Signatories to this important agreement included the FDEP, WMDs, the Public Service Commission, the Florida Section American Water Works Association (FSAWWA) Utility Council, the Florida Water Environment Association Utility Council and the Florida Rural Water Association.

The collaborative effort of the signatories was the basis for the 2004 enactment of Section 373.227, F.S., which states that Florida’s water conservation goal is “to prevent and reduce wasteful, uneconomical, impractical, or unreasonable use of water resources”. To achieve these conservation objectives, the legislation emphasized “goal-based, accountable, tailored, and measurable water conservation programs for public water supply”. The legislation directed the FDEP, in cooperation with the WMDs and the other stakeholders, to develop a statewide water conservation program for public water supply utilities.

The *Joint Statement of Commitment* has since evolved into a statewide effort known as *Conserve Florida* with three main program elements:

- Standardized public water supply conservation definitions and standardized performance measures for assessing and benchmarking the effectiveness of water conservation programs and practices.
- A Florida-specific, Web based, water conservation “Guide” to assist public water suppliers in the design and implementation of goal-based, utility-specific water conservation plans. The Guide is designed to assist utilities in evaluating potential water savings based on a detailed utility profile. The Guide recommends feasible cost-effective conservation measures and best management practices and expresses results as potential gallons saved, percent reduction in demand, or gallons per capita per day.
- A statewide water conservation clearinghouse that includes an integrated statewide database for the collection, evaluation, and dissemination of quantitative and qualitative information about water conservation programs and practices and their effectiveness

This water utility-initiated program, the Conserve Florida Clearinghouse, is now operated by the Department of Engineering Sciences at the University of Florida under contract with the FDEP. The Clearinghouse maintains the conservation “Guide”. It also collects, analyzes, catalogs, and provides research information and related online resources. In addition, the Clearinghouse provides technical assistance to public water supply utilities and water managers to aid them in developing effective and efficient water conservation programs (<http://conservefloridawater.org/>). To date, the Clearinghouse has been funded on an ad hoc basis by the water management districts, the FDEP, and the FSAWWA Utility Council.

Climate Change Heightens Conservation Awareness

A number of factors, including recurring drought, high gasoline prices, increased media

coverage of environmental issues, and strong scientific consensus on the potentially disastrous effects of climate change, have led to increased public awareness of environmental issues. Individuals, organizations, businesses, and government are actively seeking ways to reduce their “carbon footprint” and other impacts on the environment. One notable dynamic with strong implications for Florida’s public water suppliers is the relationship between energy and water. A substantial amount of energy is embedded in water production and transport, and some alternatives, such as desalination of seawater, require more energy than others. Using water efficiently is one way to reduce energy use and the attendant creation of greenhouse gasses.

Some media have linked the most recent drought event in the United States to the larger issue of global climate change. If competition for water supplies increases due to source limitations and the effects of climate change, Florida’s water industry must be prepared to respond to potentially rapid changes in source reliability, as Australia and California have experienced in recent years. In response to its long-term water supply crisis, California has recently begun an effort to achieve a 20 percent reduction in urban per capita water use statewide by 2020. The United States Green Building Council is considering requiring this 20 percent reduction in the new green building standards (LEED 2009).

The national and international “green” movement, gaining momentum due to the rapidly increasing cost of gasoline and other petroleum-reliant products, is causing end users and businesses alike to reconsider their ability to reduce their carbon footprint and impact on the environment. Today, being “green” has taken on new meaning and encompasses a wide range of sustainable activities, one of which is, notably, conserving water.

Conservation in Current Water Supply Planning Efforts

The regional water supply planning efforts of Florida’s three largest WMDs have identified areas within their jurisdictions where traditional sources of supply are inadequate to meet projected 20-year demand. In the fall of 2006, the Southwest Florida WMD, St. Johns River WMD, and Southwest Florida WMD developed an action plan for one such area, known as the Central Florida Coordination Area, which falls within the jurisdictional boundaries of all three WMD. The WMDs have each concluded, through detailed water supply planning and individual permit actions, that the area’s traditional groundwater supplies cannot support the projected growth in public water supply demand over the next 20 years without harm to the water resources (rivers, streams, lakes, wetlands and aquifer quality).

To assure a coordinated and consistent approach to water supply planning and avoid the adverse effects of competition for limited water supplies, the districts are adopting rules that limit groundwater withdrawals to no more than that needed to meet year 2013 demands, and that limit permit durations to 2013 unless a commitment is made to use alternative water supplies to meet demands beyond 2013. A similar rule, dubbed the regional water availability rule, was adopted in February 2007 by the South Florida WMD for the lower east coast of Florida, limiting all freshwater withdrawals in the region to April 2006 allocations and requiring that any additional water demands be met through alternative water supplies and conservation.

The three agencies also are working collaboratively to replace short-term watering restrictions with clear and consistent year-round conservation rules, including more efficient landscape irrigation measures, to increase overall water use efficiency and promote water supply sustainability and predictability in the region.

In addition, through the inclusion of conservation in their regular water supply plan updates, all of the State’s WMDs have taken steps to demonstrate the potential for water use efficiency and demand management to meet projected long-term water supply needs. Based on user data and potential best management practices, the Southwest Florida WMD, for instance, was able to determine that between 2005 and 2030 as much as 102.9 million gallons per day could be saved through the implementation of eight common, cost-effective measures – just throughout the ten-county area it evaluated. Table 1 lists the measures and related 20-year savings and costs the Southwest Florida WMD identified for public supply.

Table 1. Potential Public Supply Savings in the Southwest Florida WMD, 2005-2025.¹

Measure	Potential Savings (MGD ²)	20-Year Program Cost (\$M) ³	Cost per MGD saved
ULV Toilet Rebate	22.4	\$ 65.04	\$2.90
Plumbing Retrofit (kits)	23.4	\$ 59.40	\$2.54
Rain Sensor Rebates	17.4	\$ 44.00	\$2.53
ICI Spray Valve Replacement	0.7	\$ 0.39	\$0.56
ICI Surveys	3.2	\$ 8.00	\$2.50
Landscape/Irrigation Rebates	26.9	\$ 77.85	\$2.89
Large Landscape Surveys	0.9	\$ 2.48	\$2.76
Water Budgets	8	\$ 24.00	\$3.00
Totals	102.9	\$ 281.16	\$2.73

¹ Source: Regional Water Supply Plan (SWFWMD, 2006).

² Million Gallons per Day (MGD).

³ Applicable portions of estimated research and development costs included.

Florida’s state and local government agencies are revisiting and expanding their water conservation standards and revitalizing their public education programs with the aim of fostering an enduring culture of water conservation. If the State is to successfully continue to accommodate new growth and continue to meet water demands in a cost-effective manner, water conservation must be accepted and implemented as a quantifiable component of all future water supply planning efforts.

Issue Criticality for Water Supply

Water conservation should be ranked very high among the 2030 topics because of its direct effect on water supplies, energy use, greenhouse gas emissions, and public health. Development of alternative supplies is costly and requires significant use of energy. Implementation of comprehensive and effective conservation measures reduces both water and energy use. Conservation is a cost-effective, low energy source of “new” water that needs greater legislative and policy level attention. The application of water conservation could help accomplish several objectives consistent with those of the other FL 2030 topic areas.

- Sustainability - Ensuring a sufficient water supply without compromising the ability to meet future generations' needs.
- Deferment - Increasing the efficient use of potable water supplies increases the availability

of the existing water supply for new customers by deferring increases in demand.

- Economic Benefit - Identifying cost-effective solutions to manage demands in order to help defer/avoid costs of new supply and reduce electric generation costs and impacts.
- Reliability - Increasing efficient use of potable water supplies to help reduce the risk of overwhelming supply deficits during a water shortage or drought.
- Environmental Protection - Reducing energy requirements and greenhouse gas emissions, protecting air, water resources and the sustainability of environmentally sensitive lands and water resources.

Florida 2030 Vision

By the year 2030, all Florida water users will have eliminated the "...wasteful, uneconomical, impractical or unreasonable use of water resources," (Section 373.227, F.S.). All classes of water users in Florida will have spent a decade at the highest feasible level of water use efficiency. All water users, except for domestic uses and minor agricultural activities, will measure and report their water use regularly to the water management districts. Per capita use in urban areas will be significantly less than today. The carbon footprint of water use will be reduced dramatically by lowering levels of energy in water withdrawals, treatment, distribution, and collection, treatment and disposal of wastewater. Water conservation will be the priority water supply option considered for new demands, and ranked for priority implementation based upon its multiple benefits and cost effectiveness.

Options and Path Forward to Achieve FL 2030 Vision

Achieving the 2030 Vision for Water Conservation will require actions by regulatory agencies, water utilities, developers, industries, state and local government and consumers. While any of these entities can contribute individually, achieving needed water use reductions requires a comprehensive approach involving all stakeholders and a combination of strategies.

- Sustainable development standards could be adopted and enforced, resulting in more water efficient homes, businesses and institutions throughout Florida. Local landscape irrigation ordinances consistent with the guidance in the December 2006 publication *Landscape Irrigation and Florida-Friendly Design Standards* could be adopted by all Florida municipalities to mandate efficient landscape irrigation. This could significantly reduce water used for irrigation, which currently accounts for about 50% of publicly supplied water. WMD permitting rules could require permittees to quantify how much of their future demand will be met through conservation. Regulations could also require the use of specific technologies and consider water budgets or "caps on consumption" and mandatory volumetric reductions in water usage.
- Conservation programs could be defined and evaluated for funding through Capital Improvement Projects at the local level. At the state level, conservation could be eligible for State Revolving Loan funds (SRF) and Water Protection and Sustainability Program monies. Adoption of water conservation plans could be prerequisite for obtaining SRF funds.

- Financial incentives can be an effective means of increasing conservation. They can include such things as rebates, bulk purchase/product giveaways, and tax credits to encourage installation of water saving devices. Financial incentives could be part of a comprehensive conservation program.
- An important national program, U.S. Environmental Protection Agency (EPA) WaterSense was launched in 2006 to establish water efficiency standards and independent testing for water saving devices. WaterSense has developed certification standards for toilet and faucets. Other standards are under development. Florida could adopt the WaterSense standards (through the regulation and financial incentive options), and promote WaterSense products (through the education option).
- Water usage rates that increase as water use increases are referred to as conservation rates. Charging customers who, within a user class, use large amounts of water are charged a higher rate, which sends a price signal to reduce non-essential uses. Properly designed conservation rates do not adversely affect utility revenues. Rates could be designed in a way to account for changes in water use (including conserved water), provide incentives to conserve water, and could include a “safety net” for low-income consumers. Drought rates and seasonal rates are other rate setting strategies that can reduce water use.
- Collaboration between stakeholders is a strategy that has been used to good effect in Florida. The Conserve Florida statewide conservation program for public water supply is one example of how utilities, regulators and other affected parties can develop effective approaches to conservation, working in collaboration with the FSAWWA Water Use Efficiency Division and the national Alliance for Water Efficiency. The Georgia Water Wise Council and the California Urban Water Conservation Council are other examples of successful collaboration outside of Florida.
- Education alone cannot achieve the savings needed, but it is a necessary element of a comprehensive conservation program. It can underscore why water costs what it does, outline what conservation strategies are available and what role the individual can play in achieving desired water use reductions.

Advantages and Disadvantages

An obstacle that must be overcome is a perception of uncertainty by some with respect to the reliability of certain water conservation program savings. There is a growing body of research that conclusively demonstrates quantifiable savings from implementation of common practices such as conservation rate structures and equipment and fixture upgrades. Sufficient reliable information for utilities to reasonably project the amount of water they can save over time through various defined conservation programs is available. A reasonable estimate of such savings and a plan to achieve them should be a component of every utility’s water supply plan. In some cases, regulatory incentives and cost-sharing could help utilities complete the analyses necessary to develop reliable savings estimates and assist in implementation.

Another obstacle to consideration of conservation savings as a viable source of supply is that the cost of implementing conservation programs are rarely evaluated equally against the cost of developing new water supply infrastructure. Where such analyses have occurred, conservation

programming is nearly always the most cost-effective alternative.

If requirements for quantifiable water conservation programming are not incorporated into water supply development and permitting processes, the potential consequences include:

- Greater quantities of water will be withdrawn from fresh ground or surface water sources than would otherwise be required.
- Potential for reductions in the use of potable water for irrigation or other non-potable water uses will be diminished.
- Fewer avoided/eliminated costs and higher costs to the public.
- Larger fixed and variable costs for water supply development.
- Increased energy requirements and greenhouse gas emissions.

The Conserve Florida conservation program has advantages and disadvantages in terms of its contribution to improved water use efficiency. The collaborative nature of the organization and its representative member agencies and organizations is a strong advantage. Another is support from the legislature (except for the critical funding component). Conserve Florida provides a platform for consistency in data collection, evaluation, and analysis and it provides for a centralized data warehouse for Florida-specific utility conservation information. The primary disadvantage is a lack of a dedicated long-term funding source. Funding proposals have been debated by member stakeholders, but no practical funding mechanism has been agreed upon. Additionally, there is no long-term management or governance structure to carry the Conserve Florida program forward. And finally, the current composition of Conserve Florida participation does not include all of the stakeholders necessary for ultimate success.

Issues for Consideration

Public participation, including the many stakeholder groups that comprise a “public,” will be central to long-term effectiveness and the ability to achieve our goals. There are several parties that will be responsible for outreach, education, and stakeholder involvement throughout this process. These include the water management districts, utilities, other regulatory entities and elected officials.

Generally, the communication process will address the background of the issues (“why” this is important), what steps are being taken (specific measures or policies being implemented), who is taking the lead and how the public and/or specific stakeholders can get involved or what they can do to take action (who and how) and when actions can be expected and/or needed and lastly, what happens if we do not take these actions (the “no action” outcome, creates the “action imperative”).

There is tremendous need to create broad-based understanding of the core issues immediately, so the time is now. Climate change, energy use and rising costs for fuel and water together have the ability to immediately capture public attention and motivate them to action.

The media is a key player throughout this process. A two-tiered media strategy is proposed:

One tier should focus on the global issues and their relevance to Florida and serve to establish the foundation of knowledge about the issues and why these actions are being taken. Once the policies are moving forward, the media can play a key role in communicating status. The second tier focuses on the local media, where opinions are shaped and action takes place. Specifically, the local media can play a key role in “telling the utility story” and promoting conservation programs, educating consumers and providing programmatic information.

The public education process involves three distinct steps; awareness, education and action. The droughts of this decade have brought a sense of awareness to the people of Florida. During the next period of time, all segments of our population need to become fully informed as to the role of conservation in our state's future. Only then, can government and our water supply utilities count on the people of the state to take responsible action- in achieving efficient resource use of both energy and water.

Other issues to consider:

- Provide a stable funding base for the Conserve Florida program directed by section 373.227, F.S., including the statewide water conservation Clearinghouse for public water supply. Each region, and public water supplier, must design and implement science-based and cost-effective water conservation practices which meet the needs of the community's service area. The Conserve Florida program, including the Clearinghouse, should be placed on a stable, long-term basis by being assigned a permanent budget allocation. This stability is necessary to build up the long-range activities of the Clearinghouse and provide adequate services to public water providers.
- The Florida Building Code includes water efficiency requirements through adoption of plumbing and irrigation standards. Updating the building code would occur through the Florida Building Commission. Recommendations would include increasing the efficiency requirement of various products beyond the National Energy Policy Act requirements, using as a new standard the EPA Water Sense product label and Alliance for Water Efficiency plumbing codes and standards documentation. This should be done through a series of Executive Orders by the Governor's office requiring increased efficiency in new construction.
- Local plumbing and building code requirements built into state code would require a local adoption mechanism to embed into local codes for enforcement purposes. This interaction needs to be built into the state building codes so local adoption and modification of codes is automatic and enforced. For example, the Florida Statute requiring the installation of automatic rain sensors was not codified in local jurisdictions and precluded uniform application of the law statewide.
- The use of cisterns and graywater systems having specific water quality requirements or standards that should be included in the Florida Building Code would have to be approved by the Florida Department of Health (FDOH). National research results identified by the Alliance for Water Efficiency, in association with Conserve Florida would be used to propose product requirements for FDOH standards and inclusion in the Florida Building Code.
- Water use permitting requirements are the responsibility of the water management districts in coordination with the FDEP. Changes in existing rules, required by new legislation or

executive order, would provide consistency in application of implementation requirements and the goals associated with use of water conserving best management practices. Care must be taken to plan for consistency on the basis of design and not necessarily on the consistency of the letter of the rule. Water resource systems, as well as land use, development patterns, climate, topography, soils and plants are diverse in this large geographic state. "One size does not fit all".

- Local governments should move, with the assistance of water management districts, to immediately implement the new Landscape Irrigation and Florida Friendly Design Standards.
- Adopt a policy that, in all state and water management district funding programs, improvements in water use efficiency are equally as eligible as capital facility expansion projects for financial assistance. Funding decisions would consider the cost-effectiveness of conservation projects compared to that of capital facility expansion projects. Currently, funding practices in Florida are heavily biased toward building new facilities rather than promoting conservation. The Water Protection and Sustainability Program and the SRF are two examples of programs that fund new facility construction, but not water conservation.
- The use of Low Impact Development techniques reducing water demand would be adopted through the Florida Department of Community Affairs down through regional planning councils and local planning agencies. The University of Florida and others have developed low impact development procedures and methods.
- Require electric utilities to partner with water supply agencies in co-funding average and peak demand reductions in both electricity and water use. This would require either legislative action, a series of executive orders, or reinterpretation of existing greenhouse gas emission orders.
- Direct the FDEP to allow the Safe Drinking Water Act's SRF be used for long-term water conservation loans to water utilities throughout the state.
- Define "efficient use" of landscape irrigation in the reasonable-beneficial use requirement of water use permitting

Continued growth of demand for public water supply, particularly in higher socioeconomic ranges, threatens the sustainability of Florida water resources. A large component of landscape irrigation is unnecessary or very inefficient. There is substantive evidence that most communities allow landscaping to be installed requiring supplemental irrigation to survive without installing or maintaining adequate irrigation controls to prevent overwatering. A common estimate is that about half of the water delivered by public water suppliers in Florida goes to landscaping. More than half of this use could be avoided by using drought tolerant Florida Friendly landscaping and efficient irrigation systems and controls (where irrigation systems are desired).

The Water Resources Act of 1972 (Chapter 373, F.S.) provides: "Reasonable-beneficial use" means the use of water in such quantity as is necessary for economic and efficient utilization for a purpose and in a manner which is both reasonable and consistent with the public interest (Section 373.019(16), F.S.). This term is central to Florida water law and is included within the

Water Resources Implementation Rule (Ch. 62-40, F.A.C.). It is also used in the specific requirements in each of the water management district rules for permitting water use. In this setting, the most relevant part of this definition is the requirement for "economic and efficient utilization" of water. The operational meaning of this phrase is developed to a degree in Chapter 62-40, F.A.C., and more so in the individual rules of the five water management districts.

Florida water law has a mechanism to prevent waste of water by allowing only water use that is "efficient" but current interpretations of this requirement are not very specific or limiting in regard to landscape irrigation. It should no longer be regarded as a "reasonable-beneficial" use of water for any community to allow application of more water than is horticulturally necessary for desirable landscapes.

The FDEP and the WMDs should elaborate on the definition of reasonable-beneficial use of water to exclude landscape irrigation water use that does not include drought tolerant Florida Friendly landscaping, implementation of all reasonable efficient irrigation technologies, and reliable assurances that efficient irrigation systems will perform to their design year after year.