

Central Florida Water Initiative

DRAFT / First Edition



Conservation Implementation Strategy

A strategy to advance and enhance water conservation throughout the CFWI.

Cooperatively developed by the CFWI Conservation Team
Approved by the Steering Committee on April X, 2018

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I. Executive Summary

This implementation strategy has been designed to achieve the water conservation savings identified in the Solutions Strategies document of the Central Florida Water Initiative (CFWI) Regional Water Supply Plan (RWSP). The Solutions Strategy set forth the conservation savings potential for each use sector between 2010 and 2035. The Conservation Team is tracking its progress towards meeting those numbers, which appears in **Table 1** on the following page. An assessment and trend analysis are also presented for each major use type in section *X* of this document. [Summary of assessment, trend analysis and barriers/challenges]

Recommendations to Achieve 37+

- [List all recommendations.]

II. Introduction

A. Background

In Florida, water management districts develop regional water supply plans (RWSPs) to identify sustainable water supply for all water uses while protecting water resources and related natural systems. Through the Central Florida Water Initiative (CFWI), the St. Johns River Water Management District, South Florida Water Management District, and Southwest Florida Water Management District (collectively Districts) are working collaboratively with other agencies and stakeholders, including the Florida Department of Environmental Protection (FDEP), the Florida Department of Agriculture and Consumer Services (FDACS), and representatives from utilities, agriculture, and industry, and the public, to implement effective water resource planning, including water resource and supply development and management strategies to protect, conserve and restore our water resources. The CFWI Planning Area includes all of Orange, Osceola, Seminole, and Polk counties and southern Lake County. This effort used a unified process to address central Florida's current and long-term water supply needs. More information about the CFWI and the RWSP can be found online at <http://cfwiwater.com>. A set of committees and teams, including the Conservation Team, were established to achieve the goals for the CFWI.

Public supply constitutes the largest water use in the region. The CFWI Planning Area is currently home to approximately 2.7 million people and supports a large tourist industry, significant agricultural industry, and a growing industrial and commercial sector. This region's population is expected to increase by 49 percent to more than 4.1 million by 2035. Average total water use is projected to increase from approximately 800 million gallons per day (mgd) in 2015 to about 1,100 mgd in 2035. The Districts and stakeholders are currently updating these numbers as part of the 2020 RWSP Update.

The CFWI RWSP concluded that development of traditional water sources is near, has already reached, or in some areas, has exceeded the sustainable limits, and that alternative and nontraditional water sources will need to be developed to meet the projected demands while protecting water resources and natural systems. Traditional groundwater resources alone cannot meet future water demands, or currently permitted allocations, without resulting in unacceptable impacts to water resources and related natural systems. The evaluations also indicated that expansion of withdrawals associated with projected demands through 2035 will increase the amount and areal extent of water resource stress within the CFWI Planning Area.

The plan addressed future water supply needs of the region by developing alternatives to optimize the use of existing groundwater, and by identifying viable water conservation and other management strategies, viable alternative or nontraditional water supplies, areas that may require recovery or resource protection, and areas where regulatory and water resource protection strategy consistency may be needed. The estimated 850 mgd total water use condition was used as a starting point or Baseline Condition for the plan, which evaluated water conservation options, water supply project options, and conceptual management strategies to meet the estimated 250 mgd future deficit. Water conservation is often less costly than water supply development and should be pursued as a means to address that future deficit.

Water conservation by all water use categories will continue to be a priority to meet the region's future water needs. While ongoing conservation efforts have been implemented in the CFWI Planning Area,

additional conservation is critical. Planning evaluations estimated an additional 37 mgd could be saved with increased conservation efforts. *See* Table 1. Of this, approximately 76 percent could be conserved by public supply utilities, 12 percent by other self-supplied users, and 12 percent by agricultural operations. Additional savings is possible through higher participation rates of best management practices and the implementation of other conservation measures than the ones considered in the initial evaluation.

Table 1. Projected Conservation by Water Use Category

Water Use Category	Projected Solutions Strategies 2035 Conservation (mgd)
Public Supply (PS)	27.91
Agriculture (AG)	4.30
Landscape/Recreational/Aesthetic (LRA)	2.02
Domestic Self-Supply (DSS)	1.19
Commercial/Industrial/Institutional (CII)	1.15
Power Generation (PG)	0.27
Total	36.84

For all use classes other than Agriculture, the conservation savings potential was developed through the review of quantified BMPs. While all conservation savings are included to determine whether the region is on target to meet its 2010-2035 potential, the Conservation Team will track progress made on both the quantified BMPs and other BMPs in order to assist in the development of the 2020 update. A list of all BMPs is included in CFWI Solutions Strategies Volume II. The quantified BMPs are identified in Table 2.

Table 2. Quantified BMPs for Public Supply and Other Self Supply

Public Supply	Other Self-Supply
Advanced ET Irrigation Controllers	CII Facility Water Assessment/Audit
CII Facility Water Assessment/Audit	Irrigation System Audits
Irrigation System Audits	High-Efficiency Toilets
High-Efficiency Toilets	High-Efficiency Faucet Aerators
High-Efficiency Faucet Aerators	High-Efficiency Showerheads
High-Efficiency Showerheads	High-Efficiency Urinals
High-Efficiency Urinals	Pre Rinse Spray Valves
Pre Rinse Spray Valves	Soil Moisture Sensors
Soil Moisture Sensors	
Waterwise Florida Landscaping	

Achieving long-term water use reductions will require a combination of advanced technologies, best management practices, and behavioral changes. Education, outreach, and public engagement are essential for accomplishing a measurable change in water conservation and instilling a lasting conservation ethic in central Florida. Targeted education and public information provide opportunities for building a conservation culture, a stewardship ethic, and permanently reducing individual, agricultural, industrial, and commercial water use. This implementation strategy will explore the strategies necessary to effectively implement conservation in the CFWI to exceed the potential set forth in the Solutions Strategy document.

For agricultural conservation savings, the Conservation Team concluded that historical data from the FARMS Program and other existing cost-share BMP programs, as well as what is known about agriculture within the CFWI Planning Area, should be used to estimate potential water savings. This approach considered several factors in the development of a conservation estimate including participation rate, water savings, BMPs, and project costs. The participation rate in agricultural BMPs is critical to achieving desired outcomes. Data from NRCS EQIP, SWFWMD's FARMS and Mini-FARMS programs, and FDACS' My Florida Farm Weather suggested a participation rate ranging between 10 to 15 percent within the 20-year planning horizon. These participation rates were used in the development of the Solutions Planning Phase conservation estimates.

The potential for conservation varies from farm to farm based on the crop grown, type of irrigation system, soil conditions, drainage characteristics, other site-specific conditions, and existing conservation BMPs in operation. It is estimated that the savings and groundwater offset from agricultural programmatic BMP implementation can range from 1 to 100 percent on a single farm. Based on the best available information, the Conservation Team used an average 20 percent savings estimate that was applied to the 2035 demand (20% of 214.8 mgd or 43 mgd). Applying a participation rate of 10 to 15 percent, the revised potential agricultural conservation ranges from 4.3 mgd to 6.4 mgd.

As part of the Regional Water Supply Planning process, the CFWI Steering Committee created a number of teams to achieve the objectives of the plan, including a Conservation Team. The Conservation Team has 11 members, including a representative from DEP, a representative from DACS, a representative from each of the three water management districts, two water supply utility representatives, a self-supply representative, a representative from agriculture, a representative from the environmental community, and a representative from the business community. Two Water Conservation Subteams focus on water conservation for the primary user group categories of public supply and agriculture. The Subteams are responsible for conducting technical work and bringing draft products and options to the Conservation Team for consideration. Other topics falling outside the scope of the two Subteams, such as savings by domestic water users and other self-supply, are addressed directly by the Conservation Team.

Upon adoption of the CFWI RWSP, the CFWI Steering Committee directed the Conservation Team to identify water conservation savings greater than 37 mgd over the next 20 years. The Conservation Team endeavors to track progress toward meeting that potential, as well as future potential savings identified in the RWSP updates. Scopes of work for the Conservation Team and Subteams are attached as Appendix A and are focused on the development of this implementation strategy and updates for the 2020 RWSP.

B. BMP Overview

[Standby—to be completed once all sectors have draft available]

C. Strategies

This Implementation Strategy includes information on conservation best management practices (BMPs) and four paths to implement water conservation savings, which were approved by the Steering Committee at its July 18, 2017 meeting. These four strategies include:

1. Guidepost [include summary of Guideposts]
2. Designated Projects

As outlined in section X, substantial progress has been made in achieving the CFWI conservation goal of 37+ mgd. The list of completed projects from the District funding summary, the PWS survey results, the Ag project totals, and the OSS project list combine to form a wide-ranging view of conservation that is occurring in the region. Going a step further, this “designated projects” section illustrates options for conservation projects that could be implemented at some point in the future and would help meet the CFWI estimated conservation savings goal of 37+ mgd. This is in addition to projects/ conservation projects previously identified as having been completed or currently underway. The Conservation Team intends to develop a list of conservation project options that could be selected by a permittee for implementation or inclusion in their water conservation plan similar to the list of other water supply development projects that are typically found in a regional water supply plan. Consistent with water supply development project options, the projects identified in this strategy may not necessarily be selected for development by the water supplier/user. The development of these designated projects is underway, with illustration of projects in each individual sector section (see sections X, X, and X). The Conservation Team identified three types of projects that can be included on this iterative list and each type is intended to be included for each use sector:

- A. **Generic Projects:** It is acknowledged that a project is more likely to come to fruition if it has a specifically identified implementing entity. Therefore, the Conservation Team is committed to identifying entity specific projects. However, generic projects, that is, projects that do not have a designated implementing entity, are meant to provide a basic template for a user to potentially adopt at some point in the future.
- B. **Regional Projects:** Regional entities and cooperating partners can provide value in administering project implementation. This is especially true for smaller water users that lack the necessary man power to do implementations on their own. A regional project could also cover larger areas and provide economies of scale.
- C. **Specific-Entity Projects:** Specific-entity projects are project options that identify a specific water user to implement the listed project.

3. Funding Opportunities

Funding opportunities vary based on different eligibility requirements, match requirements, and timing. This strategy intends to streamline the information available to make it more assessible and understandable to all use types. For specific funding opportunities by use type, see sections X, X, or X.

A key part of ensuring water users take advantage of funding opportunities is providing robust education about what funding opportunities are available and helping a water user find a cost-share opportunity that works for them. [Add additional language, perhaps about webpage, that apply to all sectors. Additionally add overview of barriers and challenges common to all sectors.]

4. Regional Education and Outreach

There are six central messages to guide local and regional public education and outreach programs. These messages are key to building public understanding of water supply issues and enabling water users and citizens to take meaningful conservation actions.

- Water conservation is a critical part of ensuring the Central Florida Water Initiative Area is able to meet its future demands while protecting natural systems.
- Water conservation is a cost-effective way to meet the future need for additional water supplies.
- Investing in water efficiency and conservation now will provide water users with long-term savings compared to the shared cost of developing new water supply sources.
- Landscape irrigation systems and practices can be made more efficient.
- Water is a shared and limited resource and it is equally important for all water users to conserve, including utilities, residential customers, commercial, industrial, agricultural, and self-supplied users.
- All users and customers should seek to use water wisely and consciously at all times, not just during drought.

Principals of Conservation Messaging

Two principles serve as the foundation of conservation messaging:

- Water is a limited resource that requires mindful use and management, and
- Water conservation is an efficient and cost-effective method for achieving a sustainable water supply.

Consistent conservation messaging throughout the CFWI Planning Area would result in maximum impact. [Need to reach out to Communications team after discussing at Conservation Team F2F: Creating accurate, effective, and consistent messages is a goal of the Communications and Outreach Team. The Communications and Outreach Team will coordinate with the Conservation Team to ensure messaging includes the most important strategies and programs based on the most recent information. [Do we need details like: Frequent (monthly?) communication between the teams will allow for a review of messaging strategies and updates based on new information.]

D. Regulatory measures

Each district includes as part of each permit conservation requirements. In addition, during the 2016 legislative session, section 373.0465 was amended to require the Department to adopt rules that must include, among other things, an “annual conservation goal” for users within the CFWI. The Department initiated rulemaking in accordance with that law on December 30, 2016 and several workshops have followed. Though still under development, the final rule may increase conservation through goal-setting of BMPs or other metrics.

III. Public Supply

Public supply is now and is projected to continue to be the largest use category in the CFWI Planning Area, accounting for more than 70 percent of the total projected demand increase. Public supply demand is projected to increase by approximately 50 percent from 435 mgd in 2010 to 654 mgd in 2035. The 2015 RWSP identified 26.78 mgd of water conservation potential for public supply. This strategy explores the status of reaching that potential and provides tools utilities can utilize to ensure that potential is met and exceeded.

A. Where Are We Now

As of 20XX, public supply serves an estimated population of 2.X million people (XX% of total population) provided by XX private and public utilities (“utilities”) with a capacity of 0.1 mgd or more. Total conservation savings to date has been calculated at ___ mgd for public supply. This has been derived from three data sources, the methodologies of which and data is provided below.

1. Status Assessment Data Sources

To identify the estimated amount of conservation completed since 2010 and to project the amount of conservation to be completed by 2035 implementing planned conservation activities for utilities, two sources of data were utilized. Some information presented in this status assessment was obtained from district cost-share programs. However, to get a more complete understanding of utility conservation savings, in 2016 the CFWI PWS Conservation Subteam developed and distributed a survey to determine which conservation programs CFWI utilities have been historically engaged in and which programs will continue into the future.

a. CFWI-wide

Three BMPs were developing used [insert methodology]. These BMPs were outlined in the CFWI Strategies Plan Volume II, restated below:

- **The Florida Water Star Rebates or Requirement:** The Florida Water Star certification program, developed by the St. Johns River Water Management District, applies both indoor and outdoor water efficiency standards and design principles to single and multi-family homes, commercial buildings, and master-planned communities. This program is functionally linked to the Florida Green Building Coalition. Local governments, utilities, and water management districts can collaborate to promote and/or incentivize participation in the recognition program and/or have their own facilities meet the program standards.
- **The Extension Agent/Florida Friendly Program:** The Florida-Friendly Landscaping Program™ is implemented by the University of Florida/Institute of Food & Agricultural Science (UF/IFAS) and the FDEP. This program promotes low maintenance plants and environmentally sustainable landscaping and irrigation practices through its nine principles. The nine principles of Florida-friendly landscaping are described in Chapter 373.185, F.S. These principles guide property owners on how to design and maintain a beautiful landscape using minimal water,

pesticide, and fertilizer inputs while preserving local water resources and local wildlife. Watering efficiently and planting the right plant in the right place are two of the nine program principles that conserve water. The program has also developed a model ordinance and covenant that can be adopted for local governments and homeowner associations, respectively. Local governments' utilities and water management districts can collaborate with the FFL Program™ or act independently to promote the nine principles. <http://ffl.ifas.ufl.edu/index.html>.

- Florida Green Building Coalition (FGBC) Homes:** The FGBC's certification program applies holistic efficiency standards to single and multi-family homes and commercial buildings. Water Conservation is one of the areas of sustainable operations criteria. Facilities are evaluated using a points-based system governing sustainability practices and hardware employed and installed at the facility. This program is functionally linked to the Florida Water Star program. Local governments, utilities, and water management districts can collaborate to promote and/or incentivize participation in this recognition program and/or have their own facilities meet the program standards.

CFWI-Wide BMP	2010-2014	2015-2019			2010-2014 Savings (gpd)	2015-2019 Savings (gpd)
Florida Water Star Rebates or Requirement ¹	435	4756	128	99,840	55,680	608,768
Extension Agent/Florida Friendly Program ²	Unk	Unk	Unk	Unk	Unk	77,808
FGBC Homes ³	711	1,805	26	Unk	18,167	46,930

¹ Six utilities who responded to the survey have some type of Florida Water Star rebate or requirement. Home counts and savings provided by Deirdre Irwin. 2010-2014 414 homes in Osceola County, 20 in Orange County, and 1 in Seminole County. 214 apartments in Orange County were not counted as savings are uncertain.

² Savings estimate of 7.1 Mgal/yr (19,452 gpd) for Orange, Polk, and Seminole Counties for 2016. Apply to years 2016 - 2019 per Dr. Michael Dukes.

³ Per Deirdre Irwin, there were 711 FGBC certified homes from 2010 - 2014 and 1083 from 2015 - 2017 in Orange, Osceola, Polk, Seminole, and Southern Lake Counties in the CFWI. Indoor savings is estimated at 26 gallons per day per home. Assume 361 new FGBC homes for each year for 2018 and 2019.

b. Cost-share

The water savings estimates for projects utilizing District cost-share funding were included to the 2010 – 2014 savings estimate. See PWS Cost-Share Table XX. If there was an overlap with the funded cost-share program BMPs and the PWS Conservation Survey BMPS (explained below), the survey information was used except for Polk County, Lakeland and PRWC irrigation projects. Those exceptions included multiple BMPs with a combined estimated savings that was higher than the savings estimates being applied to the survey BMPs.

[Insert final table]

c. PWS Conservation Survey

The survey was conducted between May 20 and November 22, 2016, using an online questionnaire. Hard copies of the survey were provided if requested. Eight-two utilities, each with a capacity of 0.1 mgd or

more, within the boundaries of CFWI area were invited to participate in the survey. Twenty-five utilities responded to the survey, though responses varied in degrees of completeness ranging from no useable data to substantial usable data. The survey results provided beneficial information that is being used to support the strategic planning process of CFWI Conservation Team. A summary of the survey is provided for each of the five parts below and a results of the survey are referenced in Appendix X.

Summary of PWS Conservation Survey	
Part 1	<p>A general profile and demographics about the participating utility.</p> <p><i>Responses to Part 1 of the Survey provided information about the total customer accounts represented by the participating utilities. In total, more than 750,000 accounts and the majority of those utilities had a conservation awareness program of some kind.</i></p>
Part 2	<p>A compendium of the utility’s water conservation efforts including educational programs, regulatory measures, financial incentives or efficiency equipment.</p> <p><i>More than 20 different type programs were identified and are being implemented by various utilities.</i></p>
Part 3	<p>Characterization of the water efficiency details and analytics about the utilities’ program activities.</p> <p><i>Part 3 of the survey focused on the 10 BMPs that were quantified in the CFWI Regional Water Supply Plan 2015. In addition, 5 other BMPs were included in the survey since the subteam was aware of utilities that currently had rebates for these BMPs as well. The number of BMPs implemented and the expected future number of BMPs was requested from the utilities. The survey asked for the program start and end year, the number of devices distributed since program inception, and the number of devices projected to be distributed annually.</i></p> <p><i>The 12 utilities responding to Part 3 of the survey represent 67 percent of the CFWI PWS demand. The utilities who participated in the survey but did not complete Part 3 either do not have BMP rebate or give-away programs, or do have BMP rebate programs, but have not tracked them. The remaining 70 utilities who did not respond to Part 3 of the survey represent 33 percent of the CFWI PWS demand.</i></p>
Part 4	<p>Questions about the utilities’ awareness of grant funding opportunities.</p> <p><i>Need summary Include cross reference to Funding section and recommendations.</i></p>
Part 5	<p>Utility programs that use alternative water supplies.</p> <p><i>Need summary</i></p>

[Insert final table]

2. Conservation Savings 2010 – 2014 Results and Methodology

Between 2010 and 2014, X mgd in conservation savings has been identified. A complete breakdown is provided in Appendix X.

That number is based on conservation savings beginning in a base year of 2010. The number of BMPs implemented from 2010 – 2014 was determined by analyzing the BMP data using the two data sources listed above. BMPs implemented prior to 2010 were not counted. If a utility BMP program spanned a timeframe longer than 2010 – 2014, the number of BMPs implemented since program inception was assumed to follow a linear trend from the start of the program through 2015. The number of devices per year was then multiplied by five to represent an estimated number of devices for the five-year period (2010 – 2014).

A total of 15 BMPs were analyzed to come up with a conservation savings for this time period for those utilities that participated in the survey. BMP savings methods utilized the following data:

- The unit savings include each of the ten 2015 Quantified BMPs included in Appendix A of the Solutions Strategies.¹ The water savings per BMP were applied to the estimated number of devices for 2010 – 2014 to obtain a savings estimate for the time period.
- Savings for two additional BMPs were developed by the subteam for water efficient clothes washers and water efficient dishwashers.
- Savings are additionally under development for rain sensors.

Because only 12 utilities (represent 67 percent of the CFWI PWS demand) responded to Part 3 of the survey, the amount which the non-responding might have saved was estimated by extrapolation. Since there is limited data, it is appropriate to use a range of estimated conservation savings for the CFWI. The estimated savings for only the 12 utilities responding to Part 3 of the survey represent the low end of the savings range, assuming all the remaining utilities do not practice BMP rebates or give-aways, and the estimated savings for all CFWI utilities, assuming they have similar BMP savings as the 12 utilities, represent the high end of the range. The savings for the high end of the range was based on extrapolating the conservation savings associated with 67 percent of the CFWI demand to 100 percent of the CFWI demand.

In addition, the CFWI PWS subteam obtained data and developed savings estimates for the Florida Water Star Program (new residential homes), the Florida Green Building Coalition Program (new residential homes), and the Extension Agency’s Florida Friendly Program in the CFWI and added these savings to the other BMP savings.

3. Expected Conservation savings 2015 – 2019 Results and Methodology

Between 2015 and 2019, **X** mgd in conservation savings has been identified as having been implemented or planned for implementation. A complete breakdown is provided in Appendix **X**.

To derive that number, the survey responses for the “number of devices expected to be distributed annually” were tallied for each BMP in order to determine the number of implementations expected for the years 2015 – 2019. The water savings per BMP were applied to the tallies to obtain the savings estimate for 2015 – 2019. A range of estimated savings for 2015 – 2019 was developed using the same methodology as described above for the 2010 – 2014 timeframe.

¹ See page X of the 2015 Final CFWI RWSP, Solutions Strategies, Volume IIA, Appendix A.

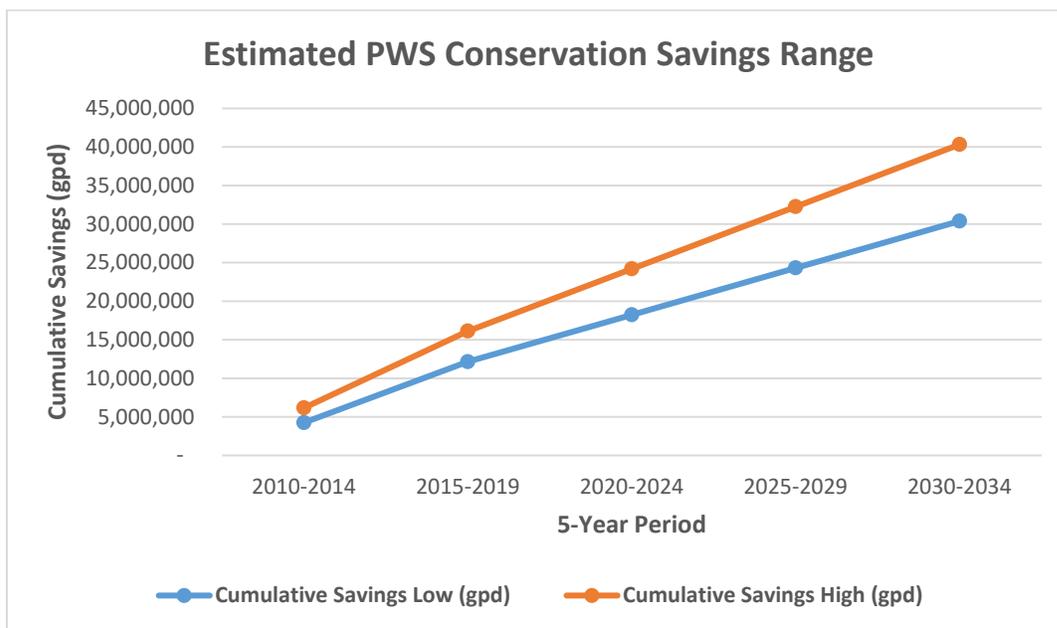
Annual savings estimates for Florida Friendly Landscaping Programs throughout Orange, Seminole, and Polk Counties in the CFWI were also provided by Dr. Michael Dukes for the year 2016.² It was assumed that years 2017 through 2019 would have the same annual savings. See Table X.

While known cost share projects were included in the 2015 – 2019 savings estimate, due to the project solicitation process, many future projects have not been identified at this time. Specifically, SJRWMD cost share projects have not been identified for 2018 or 2019 and SFWMD and the SWFWMD cost share projects have not been identified for 2019.

B. Trend Analysis

A trend analysis was performed graphically by [insert methodology] including low and high savings estimates for the 2010 – 2014 and the 2015 – 2019 timeframes and estimated conservation savings through 2034. See Figure X.

Figure X.



As illustrated by the trend lines and assuming conservation continues at these current levels, it is estimated that the PWS potential of 27.9 mgd could be met in 20XX based on the high estimate, and 20XX based on the low estimate.

C. Barriers and challenges

The results of the survey included barriers the utilities experience with program implementation and challenges of taking advantage of the resources available from the water management districts. Future iterations of this implementation strategy may undertake a review of cost-share applications in each district, evaluate which users are utilizing cost-share programs for conservation and identify how

² Needs reference.

additional applicants can be encouraged to apply for cost-share funding to implement larger conservation efforts.

Utilities identified the financial component associated with program development as the number one barrier to conservation implementation. Information about financial opportunities is discussed in section X of this strategy.

Another critical challenge is customer awareness about the value of water. A major recommendation discussed by the public supply sub-team was the need to have a substantial customer awareness campaign. More information about outreach and communication is provided in section X of this strategy.

D. Public Supply BMPs

1. The value of quantifying BMPs

The Conservation Team has dedicated a significant amount of time and effort to quantifying BMPs, both those included in the 2015 RWSP and other BMPs not previously quantified. Quantifying BMP water savings can help evaluate and identify effective conservation practices and, by increasing chances of success, decrease the costs of meeting future demands. A new resource in quantifying BMPs is an effort known as H2OSAV. Some utilities have invested in utility-specific BMP research utilizing the H2OSAV program.

H2OSAV is an archive of multi-year, utility territory datasets that merge water meter, conservation program and property appraiser data coupled to analytical tools for evaluating water consumption patterns and the effectiveness of individual water conservation programs. H2OSAV targets utilities in the CFWI regional planning area in an effort to address these evaluation issues. The beta version of H2OSAV is being developed by the Program for Resource Efficient Communities (PREC) at the University of Florida in partnership with Tohopekaliga Water Authority (TWA); City of Apopka (Apopka); Orlando Utilities Commission (OUC); and Orange County Public Utilities (OCPU). In combination these utilities cover 37% of the CFWI region and in 2015 accounted for 45% of its water demand.

2. Passive Conservation

Passive savings refer to water savings that occur as a result of users implementing conservation BMPs in the absence of incentives. These are typically the result of education or due to codes or ordinances which mandate the installation of high-efficiency items in new construction and renovations as well as use of other equipment not covered by such mandates. Cumulative passive savings can lower per capita water use. Passive savings will occur *in addition to* the potential 27.9 mgd of water savings through conservation BMPs.

Quantifying passive conservation may provide benefits in estimating total conservation savings, which may help in meeting future demands. The Conservation Team will evaluate the use of the Alliance for Water Efficiency's Water Conservation Tracking Tool to identify passive conservation savings for the 2020 update.

3. Quantified BMPs Based on EZ Guide in the 2015 RWSP.

In the 2015 RWSP, conservation savings were based on certain parameters that ensured the calculation of reasonable estimates of water conservation potential. One of these was a cost effectiveness cap of \$3 per 1,000 gallons, as defined by the EZ Guide. The below table reflects the BMPs that met this threshold as included in the Solutions Strategy document. However, it is important to note that the order of the BMPs has been changed and classifications (outdoor residential and commercial irrigation, indoor plumbing, and commercial use) have been added.

[For Discussion: Do we want to link the savings numbers from the PWS to this chart? See below just one as an example, the numbers of which may be wrong.]

Public Supply 2015 Quantified BMPs						
Conservation BMP	Modeled Participation Rate	Modeled Service Life (years)	Total Number of Implementations	Cost (\$/kgal)	Total Cost (\$ million)	Estimated Savings (mgd)
Outdoor Residential or Commercial Irrigation						
Advanced ET Irrigation Controllers	23%	10	2,845	\$0.86	\$1.14	0.26
Irrigation System Audits	12.50%	5	99,605 (est. 17,397 completed)	\$2.65	\$6.00	1.21 (est. 0.211 saved)
Soil Moisture Sensors	23%	5	28,617	\$1.07	\$2.90	1.51
Waterwise Florida Landscaping	0.10%	20	3,956	\$1.77	\$7.91	0.87
Indoor Plumbing						
High-Efficiency Toilets	23%	40 Res 25 CII	373,215	\$0.74	\$74.70	7.45
High-Efficiency Faucet Aerators	23%	15	1,057,602	\$0.40	\$16.30	7.35
High-Efficiency Showerheads	23%	40 Res 8 CII	527,728	\$0.09	\$11.30	8.66
Commercial Use						
CII Facility Water Assessment/Audit	12.50%	5	169	\$2.41	\$0.50	0.10
High-Efficiency Urinals	23%	25	3,808	\$0.52	\$1.40	0.30
Pre Rinse Spray Valves	23%	5	307	\$0.04	\$0.02	0.20
Public Supply Total					\$122.17	27.91

4. New Quantified BMPs

[FOR DISCUSSION:] For the below BMPs, the Conservation Team intends to complete the below chart to add to those quantified BMPs previously included in the 2015 RWSP.

Public Supply New Quantified BMPs						
Conservation BMP	Modeled Participation Rate	Modeled Service Life (years)	Total Number of Implementations	Cost (\$/kgal)	Total Cost (\$ million)	Estimated Savings (mgd)
Outdoor Residential or Commercial Irrigation						
Rain Sensors			6,984			.140
Enforcement/Citation program**			Unknown			1.420
Customer Portal/AMI						
FCGB Homes			1794			.065
Florida WaterStar Rebates or Requirement			1756			.225
Florida Friendly/IFAS Extension Agent			Unknown			.078
Indoor Plumbing						
High-Efficiency Clothes washers			2,025	?		.022
High-Efficiency Dishwashers			108	?		.0009
Auto-line flushing						

*Includes both indoor and outdoor.

**Enforcement could be both utility or local government enforcement.

5. Additional Narrative BMP Targeting

In addition to quantified results above, survey respondents indicated they were implementing or planned to implement the following additional BMPs for which numbers are not currently available.

Public Supply Narrative BMPs		
Conservation BMP	Total Number of Implementations	Strategies to Increase Efficacy
Inclining Block Rates		An effective rate structure that produces behavioral changes in residential use. It is recommended that utilities use Water Rate model to determine if their pricing is optimized.
AWWA System Water Audits/Water Loss Reduction		
Rain Barrels and Cisterns*	1,432 Rain Barrels 2 Cisterns	
Educational Programs		Education and outreach is key to ensuring water conservation takes place inside and outside the home. More information on strategies to implement education can be found in section X of this strategy.

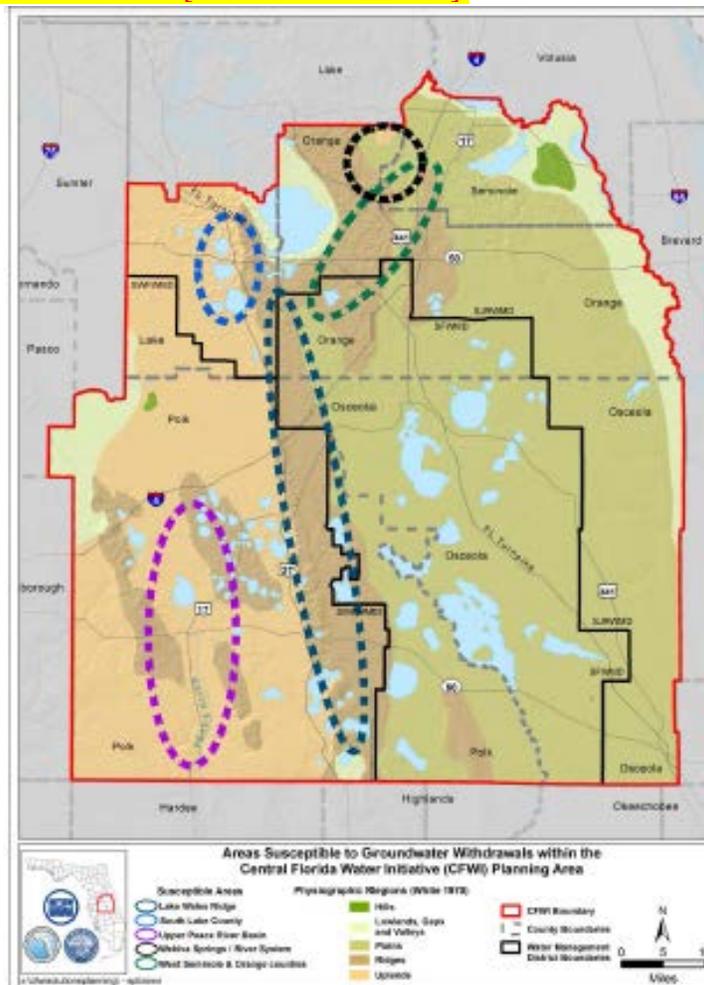
Cooling Tower Project (ICI)		
EPA Water Score		<i>More explanation to come</i>
Battle of the Buildings		<i>More explanation to come</i>

Rain barrels and cisterns collect stormwater, which constitutes an alternative supply source. While the use of alternative water supplies may reduce the use of traditional water supply sources, it may not increase the water use efficiency (typically for irrigation). They are included as BMPs here because they may be used by a utility to offset or reduce potable water use.

6. Geographic Target Areas

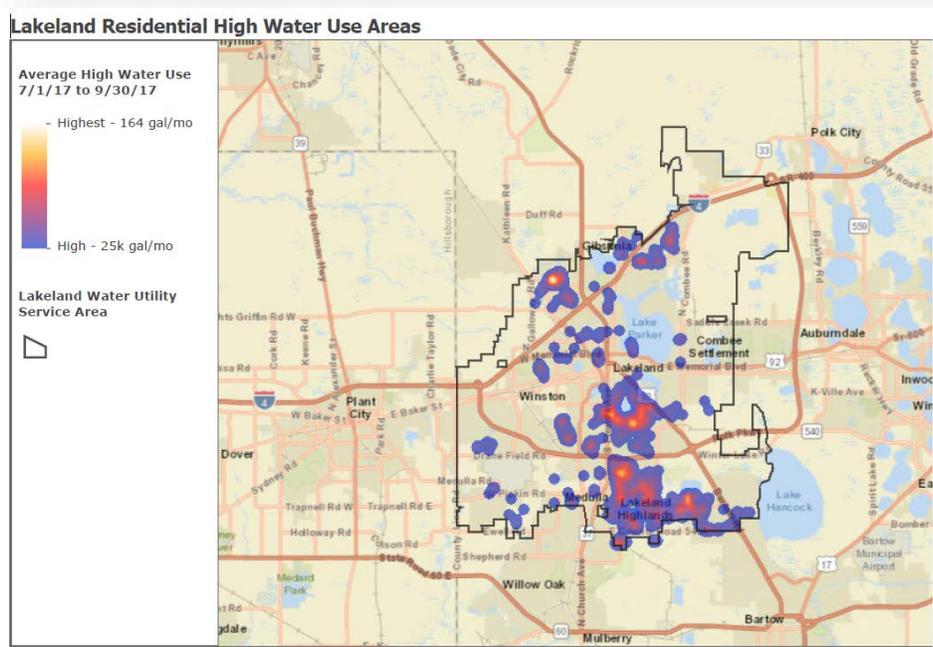
The conservation team is currently developing methods for targeting these BMPs at specific communities or service areas. Factors that should be considered when implementing these BMPs are outlined below by classification. Utilities may identify these areas using their service area information. However, the Conservation Team will investigate identifying these areas CFWI-wide as well in future iterations of this strategy.

- **Resource Targets.** Entities with wells located within the CFWI’s “Areas Susceptible to Groundwater Withdrawals”... [FOR DISCUSSION].



- **Outdoor Residential or Commercial Irrigation.** Outdoor residential and commercial irrigation represent a significant amount of potable water use in the CFWI. Factors that can help a utility decide where to focus their BMP efforts, from rebates to education and beyond include:
 - Water customers in the upper rate tiers
 - Water customers with separate irrigation meter and high use on irrigation meter
 - Water customers not following the District year- round irrigation restrictions
 - Customers using potable rather than reclaimed water when reclaimed water is available
 - Size of residential lot
 - Irrigable square footage

For illustration, the City of Lakeland has identified an outdoor irrigation target area using average high water use during the July – September time periods. From the below map, the City of Lakeland can identify where it may be get the most return on investment when targeting outdoor irrigation.



- **Indoor Plumbing.** Retrofitting older homes and businesses can result in significant cumulative savings. Factors that can help a utility decide where to focus these BMP efforts, from rebates to education and beyond include:
 - Water customers in the upper rate tiers
 - Water customer having separate domestic and irrigation meters and high use on domestic meter
 - Age of home or business
 - Size of home or business
 - Type of business

For example, see self-supply section X of this strategy.

- Commercial or Institutional Use. Commercial or institutional users connected to the utility's water system present a different type of customer, whose needs and incentives are different than a residential user. Factors that can help a utility decide where to focus commercial BMP efforts, from rebates to education and beyond include:
 - Type or class of business
 - Age of structure
 - Businesses not using reclaimed water when it is available
 - Businesses not recycling water when the type of business allows (example- car washing)
 - Businesses not taking advantage of chilled water for AC cooling when available by utility
 - Irrigable square footage

E. Regional Education and Outreach

Fostering an informed and engaged public requires public suppliers, water management districts, and other conservation partners to implement a robust education and outreach program. The success of public supplier's conservation program rests on its education of its customer and the resulting behavioral changes that reduce individual water use. Therefore, education programs are key to informing the community about the latest water efficiency and water conservation options. Public outreach is also a vital step in implementing any incentive-based or regulatory water conservation initiatives developed by public suppliers, water management districts, or other parties.

Implementing a successful public education and outreach program will support the community in making informed choices and in developing behavioral changes that conserve water resources. This section outlines key conservation messages and strategies that can be used to implement a comprehensive conservation education and outreach program in the CFWI region locally and regionally.

A. Local Implementation Strategies

Local governments and water providers play a key role in engaging citizens in conservation since they often serve as the primary point of contact between the resource and the end user. There are a number of ways for local governments or water providers to reach target audiences and raise public awareness about conservation and the value of our water resources.

A successful public education and outreach program must:

- Be targeted at the specific demographics of the service area;
- Raise public awareness of local and regional water issues and foster support for solutions;
- Educate the community about water-conserving behaviors and applicable conservation ordinances;
- Promote and encourage the adoption of water efficient technologies through the use of rebates and other incentives and offering technical support; and
- Incorporate proven technologies, research, and information as it becomes available.

- Create a staff position or designate a point person to coordinate all water conservation activities in your jurisdiction or service area.
- Provide water conservation guidance on your website, including information about available efficiency rebates, training opportunities and community events.
- Include articles about water conservation in electronic newsletters.
- Print conservation tips on the water bill or provide educational bill stuffers focused on conservation.
- Design water bills to be easy to understand. Prominently display price per unit, historical usage and how the customer's use compares to regional averages. It may be additionally beneficial to explain any applicable inclining block rate structure.
- Consider implementing smart metering software that can provide water customers with more detailed information about their usage and how their usage compares to similar households in their neighborhood. Advanced systems may additionally alert customers to unusually high water use in their home, preventing waste associated with leaks and similar issues.
- Utilize social media to promote water conservation tips, educational opportunities, and events.
- Host and support technical training to target audiences such as plumbers, landscapers, and irrigation professionals.
- Construct Florida Friendly landscape and/or smart irrigation demonstration sites in parks or other public facilities, complete with educational signage.
- Offer speakers for HOA meetings, civic clubs, and other community organizations.
- Place conservation focused displays, interactive kiosks, or brochures at libraries and other public buildings.
- Organize and promote special events such as conservation fairs and educational workshops.
- Give classroom presentations at local schools or develop conservation-focused educational materials and training programs for teachers.
- Offer efficiency evaluations, staff trainings, and educational materials to local schools and businesses.
- Public suppliers may find value in sharing guidebooks, standard operating procedures, checklists, and other materials with other public suppliers to optimize the effectiveness of these programs. See, for example, South Florida Water Management District's Water Efficiency Self-Assessment Guide for Commercial and Institutional Building Facility Managers.
- Coordinate photography, video, essay, or art contests themed around water conservation.
- Adopt a water conservation policy for government facilities and educate staff about the importance of water conservation.

Local governments and utilities in the region can carry regional conservation messages directly into their communities using the methods listed above. Without local implementation of public education and outreach activities, the full potential of regional conservation efforts will not be realized.

B. Regional Implementation Strategies

Some aspects of a conservation public education and outreach program are best addressed on a regional level. By providing tools and resources to local governments and utilities, a regional public education program would allow for reduced duplication of effort, shared costs and consistency of messaging. Supplementing local public education efforts with a regional program will enable key educational messages to extend further and have a greater impact.

The development of regional coordination effort could provide significant benefits. To start such an effort, it may be beneficial to hold public meetings, reach out to all public suppliers, share information through list-serves and similar, and collectively develop website portals and information campaigns. Entities may decide they would like to form a partnership or other more formal relationship. Printed materials and promotional items could be designed and produced by multiple stakeholders as a unified effort, providing economy of scale and cohesive branding throughout the CFWI planning area. Local public education programs can leverage these elements in their communities to provide consistent and professionally developed messages while saving staff time. Mass media buys, such as television, radio and billboard advertisements, would have a reach that extends throughout the CFWI area and are therefore best undertaken as a shared effort between the stakeholders.

- Coordination would ensure that water conservation related public education activities in the region are consistent.
- Mass media buys could include a combination of television, radio, internet and print advertising. The campaigns would focus on relevant and timely messages agreed upon as highest priority for the participating stakeholders. They could be run on an annual basis or at strategic times of the year.
- Large-scale outreach events could be coordinated to promote water conservation and potentially garner coverage by local media. Events could include essay, video or photo contests, road races, and large festivals.
- Public education materials could be made available to all public suppliers in a digital format that would enable local governments and utilities to add their own logo and contact information. Materials could include fact sheets, brochures, children's activities, and posters.
- A CFWI website could serve as a public hub for the most up-to-date and useful conservation information. The site would have its own dedicated URL, with a writing style and appearance that corresponds to the regional campaign branding. Local governments and water providers could link to this site rather than designing and developing their own educational content.

C. Barriers and Challenges Associated with Education and Outreach

There are several potential hurdles to overcome when seeking to implement an effective water conservation public education program. Budgetary constraints are likely one of the greatest barriers to success. However, even when program funding exists, training of staff dedicated to implementing water conservation is critical to ensuring the program is successful. In addition, certain target audiences may prove challenging to reach.

Establishing a regional program for conservation education would solve many of the above constraints. Public outreach programs that are not practical for one agency to implement may be more achievable if all benefiting agencies collaborate. Through regional efforts, organizations could pool staff expertise, save time by avoiding duplication of effort, share program development costs, share successful approaches, and achieve an economy of scale when purchasing promotional and efficiency items. Such efforts would also improve communication and create more consistent messaging in the CFWI region. A regional approach could therefore overcome barriers associated with limited staff hours or expertise, and those associated with budget constraints.

Barriers to public participation in conservation programs are another hurdle that must be faced. Certainly, a lack of knowledge about conservation methods and the need to conserve would be the first challenge to address. However, while a conventional public awareness campaign could improve understanding of conservation issues, it may not be effective in bringing about the desired behavioral changes. To achieve the greatest impact, it will be important to know what prevents CFWI residents from acting to reduce their water use. Perhaps lack of technical know-how or physical ability is preventing citizens from taking steps to become more efficient. Breaking long-established water use habits may also be difficult even when the individual is receptive to the idea of the change. If the new behavior is too difficult, too costly, too hard to remember, or goes against social norms, even an informed water user will be unable to transcend the gap between knowledge and action.

A great deal of research has been conducted to determine the best ways to encourage the public to alter behaviors to benefit the environment. Though no perfect strategy has been identified, any successful plan will include a combination of effective communication, skillful marketing and the proper incentives. One approach that is often applied to environmental and sustainability projects is using community-based social marketing (CBSM) to increase program participation rates. CBSM merges knowledge from psychology with expertise from social marketing. It focuses on understanding what impedes and motivates a target audience to act, as well as the importance of leveraging social norms, reminders and commitment strategies to achieve lasting behavior change. It also asserts that initiatives are most effective when they occur at the community level, involve face-to-face interaction and are simple and convenient to implement.

CBSM is composed of four basic steps: uncovering barriers to behaviors and then, based upon this information, selecting which behavior to promote; designing a program to overcome the barriers to the selected behavior; piloting the program; and then evaluating it once it is broadly implemented (McKenzie-Mohr & Smith, 1999). Several research methods can be utilized to uncover these barriers to action, including focus groups, observational studies and survey research. For example, in 2009 the Southwest Florida Water Management District developed a water conservation campaign to reduce landscape irrigation. They conducted focus groups and collected survey data to better understand resident's watering behaviors and barriers to reducing their watering frequency. Based on the collected data, five commercials

were made and tested with focus groups. The final campaign employed a cohesive look, consistent messaging and distinct logos to improve public recall.

D. Estimating Water Savings Associated with Education and Outreach

Building awareness of the need for water conservation is a necessary first step for any program that depends on public participation. However, quantifying the amount of water savings attributable to education and outreach efforts may prove difficult. Utilities and local governments must strive to go beyond just reporting the number of workshop participants, brochures distributed or presentations conducted to determine if those efforts truly produce water savings.

Typically the impact of a regional public awareness campaign can be assessed by conducting a pre- and post-treatment survey to see if there are changes in knowledge, behavior and attitudes in the targeted area. Much of the survey data that can be gathered from citizens about their water use behaviors depends on self-reporting, not direct observation. Unfortunately, individuals may tend to exaggerate the number and frequency of their conservation actions because they want to be perceived as socially and environmentally conscious. However, knowing how to conserve, or believing that conservation is important, does not always translate into more efficient behaviors.

Fortunately, for water conservation, billing data could also be evaluated to quantify actual household water savings. If the outreach initiative can first be limited to a small pilot area, it would be possible to create a treatment group and a control group. This would allow the program evaluators to control for weather conditions and other factors that could potentially influence water use. A similar method has been employed by the H2OSAV program referenced in section X of this strategy.

For the “*Skip a Week*” campaign, SWFWMD provided information to 1,330 homeowners’ associations and partnered with other area utilities to distribute inserts in more than 435,000 utility bills.

By comparing pre- and post-campaign surveys, the District found:

- Public awareness of the campaign increased by 450%

QUANTIFYING SAVINGS USING PILOT AREAS

If the public information initiative is targeting a specific action, like toilet rebates or showerhead distribution, participation levels before and after the campaign could be measured. If an increase occurs, the calculated water savings for that number of efficiency upgrades could then theoretically be attributed to the increased awareness generated by the outreach effort. Again, the program would ideally be piloted in a smaller area first to allow for ease of comparison to a control group.

The impact of many other educational initiatives—from direct mailers to conservation workshops—could all be quantified by looking at pre- and post-treatment billing data for a small target population and comparing it to a control. The percentage of households that reduced their water use following the treatment could then be extrapolated to the rest of the population to determine the expected water savings once the program is fully implemented. Lastly, water savings for certain public information programs, such as reducing irrigation or outdoor water waste, could also be quantified through direct observational surveys conducted by staff.

- Prior to the campaign, residents believed they should water their lawns during the winter an average of 3.1 times per month. After the campaign, that number dropped to 1.8 times per month.
- 19% more respondents reported skipping watering every other week
- During this 4-month campaign, an estimated 1.2 billion gallons of water was saved

Although it may be difficult to quantify water savings for education and outreach initiatives, what is certain is that limited conservation knowledge constrains a water user’s ability to conserve. Public awareness may therefore be best thought of as a means to an end. If citizens are not aware that a water supply problem exists, and don’t know what actions they can take or what resources exist to help them, then the savings expectations for other public-focused conservation BMPs will not be fully realized.

[DO WE NEED TO ADD INFORMATION ON: Outreach to permittees]

F. Funding Opportunities

1. District cost-share programs

District	SJRWMD	SWFWMD	SFWMD
Program inception	2009	1991	2003
Total funding for conservation projects since program inception	\$3,243,335	\$20,950,000	\$6,125,514
Number of conservation projects since program inception	26	170	207
Project Types	<ul style="list-style-type: none"> • Indoor plumbing retrofits • Landscape and irrigation retrofits • Smart irrigation installations • Automated meter reading technology • Irrigation restriction enforcement 	<ul style="list-style-type: none"> • Indoor plumbing retrofits • Landscape and irrigation modification • Smart irrigation controller installations • Industrial/Commercial/Institutional efficiency improvements • Potable water line looping to reduce flushing • Advanced Metering Analytics • Florida Water Star rebates 	<ul style="list-style-type: none"> • Indoor plumbing retrofits • Landscape and irrigation retrofits • Advanced irrigation controller installations • Rain sensors • Automatic line flushing devices • Pre-rinse spray valves • Rain harvesting and cistern installation • Water conservation software technology
Cost share amounts	Most successful projects receive 33% cost-share but water conservation receives 50% with REDI communities receiving 100%.	Projects selected for funding receive 50% cost-share with REDI communities receiving 75%.	Projects are eligible to receive up to 50% cost-share and REDI communities are eligible to receive up to 75%.

2017-18 funding	For the most recent year of approved funding (2017/18), the entire program had a budget of \$23.6 million.	For the most recent year of approved funding (FY2018), the entire program had a budget of \$59.8 million, of which approximately \$0.5 million was for conservation projects.	For 2016 2018, the CFP had a budget of \$9,082,900 with approximately \$1 million going towards water conservation projects
Application Due Date	April (Districtwide); October (REDI)	October	Varies
Governing Board selection	June (Districtwide); December (REDI)	February	Varies
Funds made available		October	
More information	http://www.sjrwmd.com/funding/	http://www.swfwmd.state.fl.us/business/coopfunding/	https://www.sfwmd.gov/doing-business-with-us/coop-funding

2. Other Funding Opportunities

Public Supply utilities may find that they can work together with local governments, local wastewater facilities, or other partners to implement nutrient reduction strategies that also conserve water. Finding project partners allows for more opportunities and greater environmental and public benefits while leveraging match funding. A few of these water quality funding opportunities that may have a water conservation link are listed below.

Funding Source	Description	Website	Conservation Link
319 Education Grant	These grant funds can be used to implement educational programs that will help reduce nonpoint sources of pollution.	https://floridadep.gov/wra/319-tmdl-fund/content/federal-clean-water-act-grants	May allow for coordination between water conservation and nonpoint source runoff associated with landscape irrigation.
319 Grant	These grant funds can be used to implement projects and programs that will help reduce nonpoint sources of pollution.		
State Revolving Fund – Drinking Water	The Drinking Water SRF Program provides low-interest loans to local governments and private utilities to plan, design, and build or upgrade drinking water systems.	https://floridadep.gov/wra/srf/content/dwsrf-program	May allow for coordination between leak detection and audit program and infrastructure upgrades

3. Funding Education

Providing information about funding opportunities is an important step in increasing opportunities for water conservation. [To add: information about how we can educate individual utilities on funding opportunities, including potential for one-stop-shop website].

G. Guideposts

[Stand by]

H. Designated Projects

1. Generic Projects

Title	Toilet Rebate Project
Entity	Generic
Location	Any
Description	\$100 HE toilet rebate for single family homes
Implementation Schedule	October 2020 – October 2021
Number of Implementations	500
Total Project Cost	\$100,000
Water Saved (gpd)	10,000

2. Regional Projects

Title	Outdoor Best Management Practices
Entity	Polk Regional Water Cooperative (PRWC)
Location	Polk County
Description	300 irrigation evals, 600 rain sensors, 200 smart irrigation controllers, 20 FFL rebates
Implementation Schedule	October 2018 – October 2020
Number of Implementations	1120
Total Project Cost	\$192,500
Water Saved (gpd)	42,000

3. Entity Specific Projects

a. See Josh's email re: options.

IV. Agriculture

V. Other Self-Supply

Other Self Supply (OSS) is the X largest water use category in the CFWI Planning Area and is expected to increase by approximately X% from X mgd in 2010 to X mgd in 2035. The 2015 CFWI RWSP identified 4.63 mgd of water conservation potential for this water use sector. This strategy lays out a methodology to investigate more optimal BMPs to achieve conservation that are based on a specific OSS use type and the specific water demand outlined in individual water use permits.

The OSS category combines Domestic Self-Supply (DSS), Landscape/Recreational/Aesthetic (LRA), Commercial/Industrial/ Institutional (CII), and Power Generation (PG) water uses. The OSS category derives water from private wells or other sources to meet permitted demands. These wells or other sources may be used instead of, or in addition to, potable water provided by a large Public Supply utility.

Estimates of water conservation potential for DSS, CII, LRA, and PG categories in the 2015 CFWI RWSP were based on various segments of the Conserve Florida Water Clearinghouse EZ Guide outputs for Public Supply. The EZ Guide methodology for water conservation potential for OSS users assumed savings within this sector was directly proportional to similar customers served by or other uses supplied

by public supply systems. CII estimates focused on domestic indoor uses associated with CII facilities; LRA estimates were derived from publicly supplied outdoor water use BMPs (soil moisture sensors and irrigation audits); and PG conservation potential was also based on the CII water conservation potential. The water conservation potential for DSS was assumed to be directly proportional to that of the residential use of public supply for indoor and outdoor BMPs. The public supply per capita conservation potential of 5.57 gallons per day was applied to the projected DSS population to determine the DSS water conservation estimate. The OSS conservation potential from the 2015 CFWI RWSP is shown in Table X.

Table X. 2015 CFWI RWSP OSS Estimated Conservation Potential based on EZ Guide Outputs

Water Use Category	2035 Demand	Percent Conservation	Projected 2035 Conservation
DSS	24.42 mgd		1.19 mgd
CII	95.85 mgd	1.2%	1.15 mgd
LRA	72.18 mgd	2.8%	2.02 mgd
PG	22.41 mgd	1.2%	0.27 mgd
Total	214.86 mgd		4.63 mgd

The table below reflects the BMPs that the EZ Guide used to determine the conservation potential for the OSS sector. These BMPs focused on the domestic indoor (i.e., plumbing retro-fits) and some outdoor BMPs as shown in Table X.

Table X. 2015 CFWI RWSP OSS Estimated Savings by BMP

Use Type	BMP	Savings
CII	CII Audit	0.005 mgd
CII	Pre-Rinse Spray Valve	0.01 mgd
Outdoor	Irrigation System Audit	0.95 mgd
Outdoor	Smart Meter System	1.19 mgd
Indoor	HE Toilet	0.78 mgd
Indoor	HE Faucet	0.77 mgd
Indoor	HE Showerhead	0.9 mgd
Indoor	HE Urinal	0.02 mgd
Total		4.63 mgd

[Methodology, strategies to come]