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UF Water Institute Symposium  
February 2010

# A Water Conservation and Planning Tool for Florida

EZ Guide 2.0 (Beta)



# Benefits to Users

- Water conservation programs are goal-based, accountable, measurable, economically efficient, and affordable
- Information can be used as part of the Consumptive Water Use Permits

# What is new?

- Conserve Florida Water Clearinghouse data services
- Water use and parcel data pre-populated for each utility
- Updated Water Audit methodology
- Utility Water Budget
- End-use analysis replace default fixture water savings rates for indoor water use
- Optimal mix of BMPs is found using linear programming

# Conserve Florida Water Clearinghouse Data Services

Centralized resource for water production data, population, land use information:

- Water production numbers from FDEP's Monthly Operation Reports (MOR)
- Water production capacity and number of connections from the Basic Facility Reports (BFR) published by FDEP
- Population data from the U.S. Census
- Parcel level land use data from Florida Department of Revenue (FDOR)

# Conserve Florida Water Clearinghouse Data Services

Home **DOR Parcel Attributes Raw Data Interface** Basic Facility Report Raw Data Interface

## DOR Parcel Attributes Interface

County Name:  City:  Zip Code:

DOR Land Use Code:  Census Block Group:  Sector Type:

[Preview Data](#) [DOR Data Formats](#)

Preview Records: 25; Total Records: 2,499; Estimated File Size (MB): 0.57

### DOR Parcel Attributes

County Number	County Name	Parcel ID	Tax Roll Year	Land Use Code	Land Use Code Description	PA_Code	Special Assessment Code	Just Value	Land Sq Foot	Effective Year Built	Act Year
11	ALACHUA	04325 001 000	2009	001	Single Family Residential	00		178800	108900	1987	15
11	ALACHUA	04422 003 007	2009	001	Single Family Residential	00		415600	217800	1986	15
11	ALACHUA	04422 020 025	2009	007	Miscellaneous residential	00		143400	245243		
11	ALACHUA	04429 000 000	2009	055	Timberland - Site Index	800		173200	217800	1983	15
11	ALACHUA	06029 009 000	2009	000	Vacant Residential	00		7500	25265		
11	ALACHUA	06102 046 001	2009	001	Single Family Residential	00		120200	0	1982	15

Save to File



# Inside the EZ Guide 2.0

- Profile: Basic utility information, water production
- Water Audit: Water losses, unaccounted-for water
- Utility Water Budget:
  - Water use by sector
  - End-use analysis, water use by fixture
- BMP Selection
- BMP Tracking
- Measures
- Reports

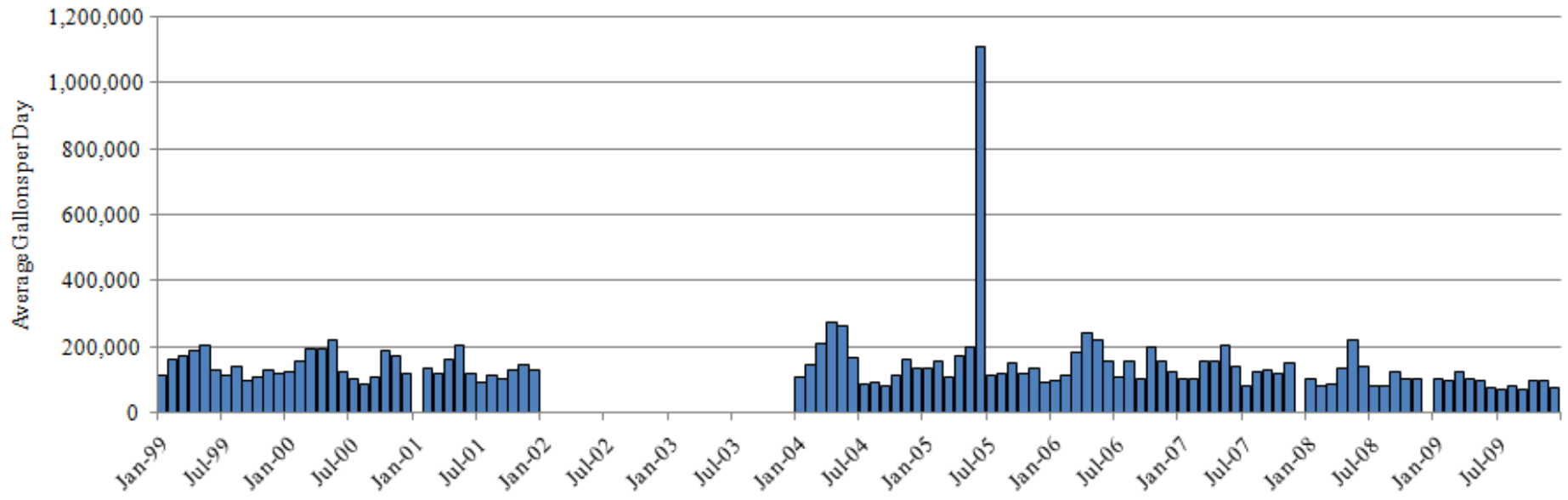
# Utility Profile

- Basic utility information
- Water production data from MOR and BFR
- Data trends and anomalies can be identified
- User can correct data if errors are found



# Utility Profile

Figure 1.2.1 Monthly treated water from the Florida Department of Environmental Protection monthly operation reports



# Utility Profile

**Table 1.1.4 FDEP Basic Facility Report**

FDEP Basic Facility Report	
Analysis Year	2009
Design Capacity (gal./day)	350,375
Number of Plants	1
Number of Service Connections	206
Population Served	721
Population Sold to	50

**Table 1.1.6 Florida Department of Environmental Protection Monthly Operation Report Flow Data**

Year/Month	Million Gallons per Month	Average Gallons per day	Change Value	Quartile Validity	Days
Jan-2009	3.200	103,226	<input type="checkbox"/> Change	OK	31
Feb-2009	2.770	98,929	<input type="checkbox"/> Change	OK	28
Mar-2009	3.850	124,194	<input type="checkbox"/> Change	OK	31
Apr-2009	3.010	100,333	<input type="checkbox"/> Change	OK	30
May-2009	2.930	94,516	<input type="checkbox"/> Change	OK	31
Jun-2009	2.290	76,333	<input type="checkbox"/> Change	OK	30
Jul-2009	2.200	70,968	<input type="checkbox"/> Change	OK	31
Aug-2009	2.549	82,226	<input type="checkbox"/> Change	OK	31
Sep-2009	2.020	67,333	<input type="checkbox"/> Change	OK	30
Oct-2009	2.950	95,161	<input type="checkbox"/> Change	OK	31
Nov-2009	2.850	95,000	<input type="checkbox"/> Change	OK	30
Dec-2009	2.250	72,581	<input type="checkbox"/> Change	OK	31

# Water Audit

- Can be used as part of a CUP application
- The user can select from different methods:
  - M36 Audit (AWWA)
  - AWWA 4.0
  - SWFWMD
  - SJRWMD
- Useful to identify leaks and other system losses, and unaccounted for water

# Water Budget

- Uses FDOR datasets to estimate number of fixtures
- Estimates average water use by sector and by type of water using fixture
- Can produce information on fixture type by land use and age of building.
- Analysis does not require utility billing data

# Water Budget



Figure 3.2.1 Calibrated Water Budget by Sector

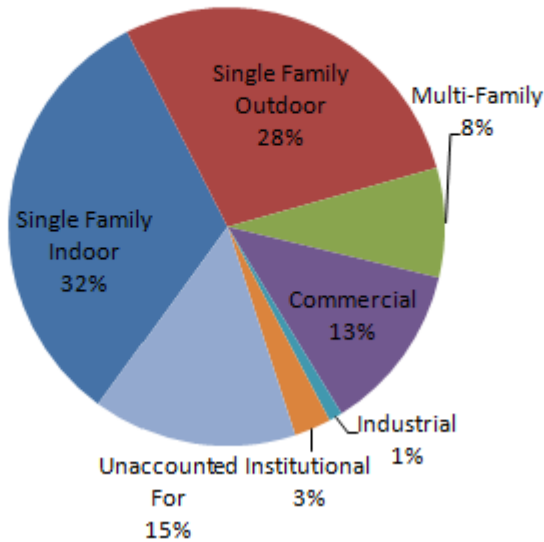


Table 3.2.1 Percentage and gpcd Summary by Sector

Sector	% of Total Water Use	Breakdown of Gross gpcd	Breakdown of Gal/Htd. Sq. Ft.
Single Family	60.6%	95	5.01
Single Family Indoor	32.5%	51	2.68
Single Family Outdoor	28.1%	44	2.33
Multi-Family	8.1%	13	5.61
Commercial	12.5%	20	4.72
Industrial	1.0%	2	0.78
Institutional	2.7%	4	3.38
Unaccounted For	15.0%	24	0.82
<b>TOTAL</b>	<b>100.0%</b>	<b>157</b>	<b>5.47</b>

# End-Use Analysis

- Analyzes historical water use by fixture
- Provides an inventory of fixtures in the utility service area, based on FDOR data

**Table 3.3.2. Count of Single Family Residences with Indicated Number of Bathrooms.**

Effective Year Built Group	Total	residences with Indicated Number of Baths					
		1	1.5	2	2.5	3	>3
Pre 1983	1	0	0	0	0	0	1
1983-1994	190	0	0	0	0	0	190
1995-2008	12	0	0	0	0	0	12
total	203	0	0	0	0	0	203

**Table 3.3.3 residences with Indicated Number of Fixtures as a Function of the Number of Bathrooms**

Fixture	residences with Indicated Number of Baths					
	1	1.5	2	2.5	3	>3
Toilets	1	2	2	3	3	4
Clothes Washers	1	1	1	1	1	1
Showerheads	1	1	2	2	3	3
Faucets	2	3	3	4	4	5

# Best Management Practices (BMP)

- Based on Water Budget
- Estimates average water savings sector and by type of water using fixture
- Provides information on type fixture by sector and age of building that is used to target specific areas for retrofit projects

# Finding Optimal BMP Mix

Table 4.2.6 Net Benefits of Toilet Retrofit Programs

BMP Option (ID) and Label	Current Fixture Group	Toilets / house	Existing Fixtures	Existing Gal./toilet/day	Retrofitted Gal./toilet/day	Water Savings Gal./toilet/day	Total Water Savings, Gal./day	Total Program Cost, \$/day	Total Program Cost, \$/K gal.	Savings of Water Production Costs- Total Program Cost, \$/K gal.	Net Benefits of Retrofit Program \$/day
(1.01) SFR Toilets	Pre 1983	1	0	101.85	15.95	85.90	0	\$0.00	\$0.00	\$0.00	\$0.00
(1.02) SFR Toilets	Pre 1983	2	0	50.93	7.98	42.95	0	\$0.00	\$0.00	\$0.00	\$0.00
(1.03) SFR Toilets	Pre 1983	3	0	33.95	5.32	28.63	0	\$0.00	\$0.00	\$0.00	\$0.00
(1.04) SFR Toilets	Pre 1983	4	0	25.46	3.99	21.47	0	\$0.00	\$0.00	\$0.00	\$0.00
(1.05) SFR Toilets	1983-1994	1	0	72.02	15.95	56.07	0	\$0.00	\$0.00	\$0.00	\$0.00
(1.06) SFR Toilets	1983-1994	2	2	36.01	7.98	28.03	56	\$0.04	\$0.73	\$4.27	\$0.24
(1.07) SFR Toilets	1983-1994	3	423	24.01	5.32	18.69	7,905	\$8.69	\$1.10	\$3.90	\$30.83
(1.08) SFR Toilets	1983-1994	4	198	18.00	3.99	14.02	2,775	\$4.07	\$1.47	\$3.53	\$9.81
(1.09) SFR Toilets	1995-2008	1	0	33.74	15.95	17.78	0	\$0.00	\$0.00	\$0.00	\$0.00
(1.10) SFR Toilets	1995-2008	2	0	16.87	7.98	8.89	0	\$0.00	\$0.00	\$0.00	\$0.00
(1.11) SFR Toilets	1995-2008	3	0	11.25	5.32	5.93	0	\$0.00	\$0.00	\$0.00	\$0.00
(1.12) SFR Toilets	1995-2008	4	0	8.43	3.99	4.45	0	\$0.00	\$0.00	\$0.00	\$0.00
		Total	623				10,737				\$40.88



# Summary of Selected BMPs

Table 4.4.1 Summary of Optimal BMP Programs

Current Gross gpcd	Target Gross gpcd	Needed Gross gpcd Savings	Max Possible Gross gpcd Savings	Gross gpcd Reduction Achieved From Optimal BMP Program	Gross gpcd Savings Still Required	Gross gpcd After Implementation of BMPs	Total Net Benefits of Retrofit Program (\$/day)	Total Fixtures to Replace	Total BMP Program Cost (\$/day)
188.86	130.00	58.86	31.25	2,136.73	-2,077.87	-1,947.87	1,759	110,542	\$2,582.46

**BMP Chart**

Optimize for GPCD Goal

Optimize for Net Benefits


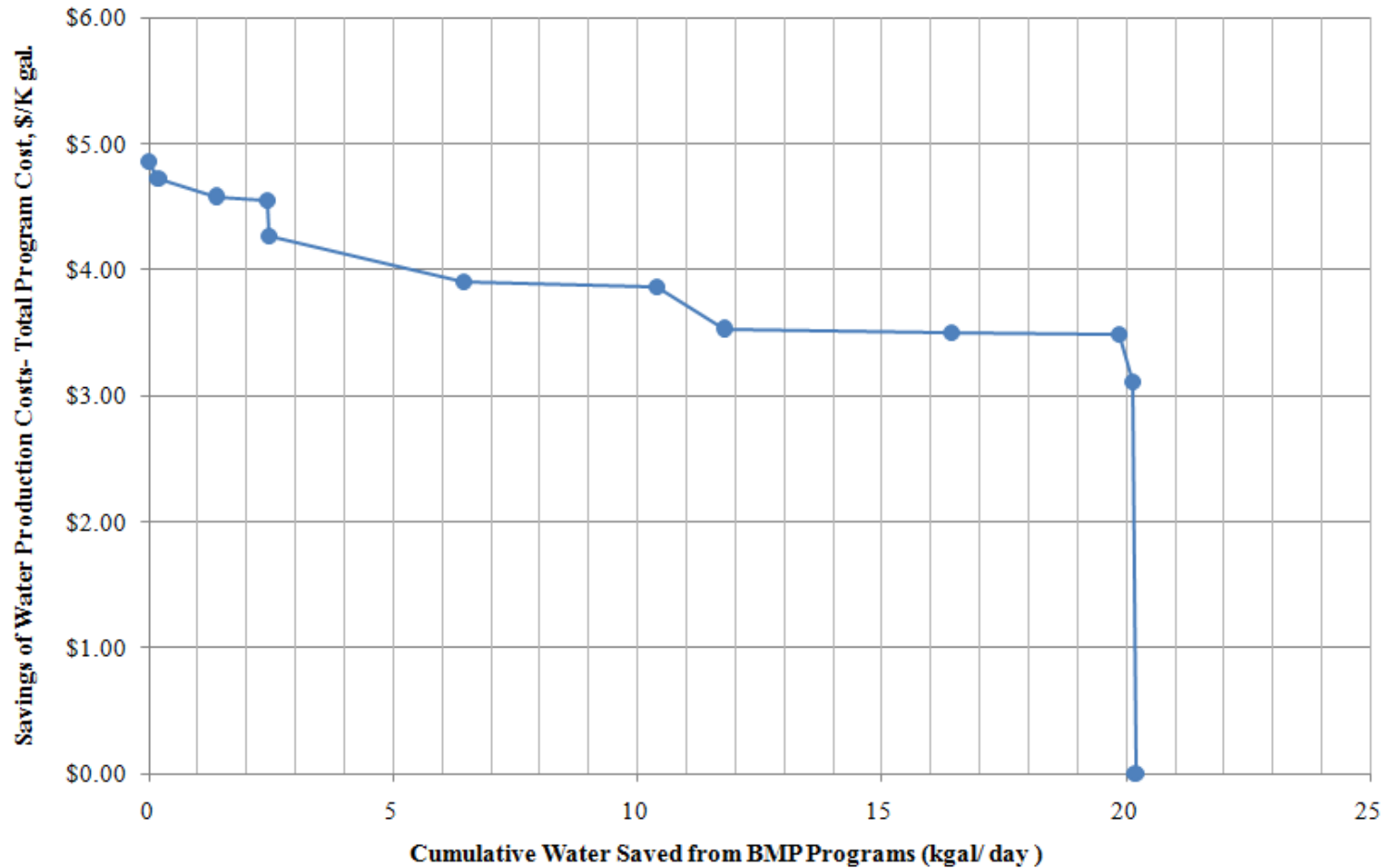
 Denotes BMP to Implement

Table 4.4.2 Optimized BMP Implementaion Plan

BMP Option (ID) and Label	Current Fixture Efficiency Group	Fixtures/ house	Fixtures	Existing Gal./fixture/ day	Retrofitted Gal./fixture/ day	Water Savings Gal./fixture/ day	Total Water Savings, Gal./day	Total Program Cost, \$/day	Total Program Cost, \$/K gal.
(1.01) SFR Toilets	Pre 1983	1	214	101.85	15.95	85.90	18,383	\$4.39	\$0.24
(1.02) SFR Toilets	Pre 1983	2	16,274	50.93	7.98	42.95	698,967	\$334.17	\$0.48
(1.03) SFR Toilets	Pre 1983	3	2,028	33.95	5.32	28.63	58,068	\$41.64	\$0.72
(1.04) SFR Toilets	Pre 1983	4	251	25.46	3.99	21.47	5,390	\$5.15	\$0.96
(1.05) SFR Toilets	1983-1994	1	38	72.02	15.95	56.07	2,130	\$0.78	\$0.37
(1.06) SFR Toilets	1983-1994	2	4,976	36.01	7.98	28.03	139,492	\$102.18	\$0.73
(1.07) SFR Toilets	1983-1994	3	1,092	24.01	5.32	18.69	20,408	\$22.42	\$1.10
(1.08) SFR Toilets	1983-1994	4	124	18.00	3.99	14.02	1,738	\$2.55	\$1.46
(1.09) SFR Toilets	1995-2008	1	58	33.74	15.95	17.78	1,031	\$1.19	\$1.15
(1.10) SFR Toilets	1995-2008	2	0	16.87	7.98	8.89	0	\$0.00	\$0.00
(1.11) SFR Toilets	1995-2008	3	0	11.25	5.32	5.93	0	\$0.00	\$0.00
(1.12) SFR Toilets	1995-2008	4	0	8.43	3.99	4.45	0	\$0.00	\$0.00
(2.01) SFR Clothes Washers	Pre 1983	1	0	55.92	14.08	41.84	0	\$0.00	\$0.00

# Marginal Net Savings Function



# Conclusions

- New Water Budget feature provides a parcel level evaluation of current and historical water use patterns
- Water Budget provides detailed information on fixtures available for retrofit
- EZ Guide 2.0 can feed into CUP and/or planning processes:
  - Utility Boundary
  - Water Audit
  - Conservation Plan
  - BMP selection and tracking

# Acknowledgment

The guidance and support of the Conserve Florida Water Clearinghouse Advisory Committee is appreciated. The financial support provided by the South Florida, Southwest Florida, and St. Johns River Water Management Districts, the Florida Department of Environmental Protection and the Florida Section of the American Water Works Association has been essential.

# Conserve Florida Water Clearinghouse

- Clearinghouse website:

**[www.conservefloridawater.org](http://www.conservefloridawater.org)**

- EZ Guide Download and User Manual

**[http://conservefloridawater.org/ez\\_guide](http://conservefloridawater.org/ez_guide)**

- EZ Guide Questions/Comments:

**[support@conservefloridawater.org](mailto:support@conservefloridawater.org)**