South Florida Water Management District

Lowering Operating Costs for Commercial and Institutional Buildings through Water Use Efficiency Improvements

Last Updated: July, 2013

Why Should a Commercial or Institutional Facility Conserve Water?

- Environmentally responsible thing to do
- Enhance public image
- Offset or delay utility rate increases

- **Reduce operating costs**

So How Much Can Be Saved?

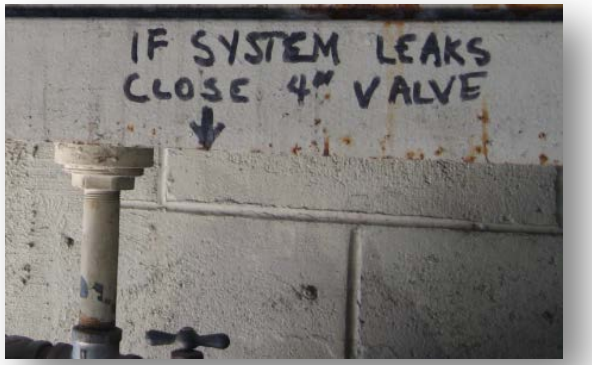
In the commercial and institutional sector:

- **Savings will depend largely on the on-site activity and age of the facility**
- **Potential water savings from conservation ranges from 15 to 50%, most typically 15 to 35%**
- **Investment recovery period for water efficiency measures are usually less than 4 years, normally less than 2.5 years**
- **Not uncommon to find measures which payback in less than one year**

Efficiency Improvement Examples

Prince of Wales Hospital, Sydney Australia

- Identified & repaired a 1 gal/second leak
- **Saved $200,000 (USD) annually**



Duke University - Water recycling system

- Collected & pumped HVAC condensate to replace evaporated water in the cooling tower
- 2 Sump pumps and piping
- **Saved 2 million gallons first year**

Approx. $13,550 at average S. FL rates

A Practical Approach to Water Conservation for Commercial and Industrial Facilities. 2001. Mohan Seneviratne

Utility Rate Structures in South Florida

Many utilities charge for water (potable) and sewer water services on an inclining block rate structure

The number of tiers, $/Kgal, and general structures vary wildly

Gallons	$/Kgal Water	$/Kgal Sewer	Total Cost $/Kgal
0 - 6,000	$3.16	$4.51	$7.66
6,001 - 12,000	$3.96	$4.51	$8.46
12,001 - 27,000	$4.65	$4.51	$9.16
27,001 - 57,000	$5.45	$4.51	$9.96
57,001 - 150,000	$6.28	$4.51	$10.79
> 150,000	$7.06	$4.51	$11.56

Gallons	$/Kgal Water	$/Kgal Sewer	Total Cost $/Kgal
0-5,000	$4.49	$10.96	$15.45
>5,000	$7.89	$13.36	$21.25

Gallons Potable	$/Kgal Water	Gallons Sewer	$/Kgal Sewer	Total Cost $/Kgal
0 - 9,350	$0.50	**0 - 3,740**	$1.85	
9,351 - 16,875	$3.00	**3,741 - 6,750**	$5.90	$9.40 [a]
16,876 - 31,790	$3.90	**>6,751**	$6.22	$10.39 [b]
> 31,791	$5.16	-	-	

a - Cost per Kgal if 50,000 gallons is charged ($9.40).

b - Cost per Kgal if 100,000 gallons is charged ($10.39).

Actual rate structures from three South Florida utilities

Kgal = 1,000 gallons

Utility Rate Structures in South Florida

Fortunately, every gallon a facility conserves lowers operating costs at the highest tier (block) rate charged

Gallons	$/Kgal Water	$/Kgal Sewer	Total Cost $/Kgal
0 - 6,000	$3.16	$4.51	$7.66
6,001 - 12,000	$3.96	$4.51	$8.46
12,001 - 27,000	$4.65	$4.51	$9.16
27,001 - 57,000	$5.45	$4.51	$9.96
57,001 - 150,000	$6.28	$4.51	$10.79
> 150,000	$7.06	$4.51	$11.56

For example: if consumption is lowered from 300,000 gallons per month to 225,000 per month (or 25%), the reduction in operating costs from potable and sewer expenses is:

50 Kgals x $11.56 or $578 (or nearly $7,000 annually)

Kgal = 1,000 gallons

Utility Rate Structures in South Florida

Water and sewer rates are expected to increase

- The availability of easily accessible, relatively clean groundwater is diminishing
- Increased demand on existing infrastructure will lead to costly replacements or capacity upgrades

But that's not all… Water and Sewer Rates Do Not Reflect the Full Water Expense

Costs Affected by Volume of Water Used Include:

- Water heating costs
- Electricity charges
- Depreciation expenses on pre-treatment equipment
- Chemicals treatment costs for cooling towers
- Trade waste testing and charges for BOD, oil and grease, solids
- Sludge removal costs

A facility's TRUE cost of water can be almost double the water/sewer costs

Successful Efficiency Improvement Efforts Rely on a Well-Constructed Plan

Step 1 - Assess the current situation

- **Perform a Water Use Audit**

Step 2 - Create a plan (Include all employees)

Step 3 - Execute the plan

- Start with the low-hanging fruit and progress forward

Step 4 - Monitor and track progress, expenses and savings

The Water Audit is the basis of your plan and therefore, this sets the foundation for your entire effort

What is a Facility Water Audit?

A systematic survey of all water using fixtures, appliances, equipment and practices at a facility or campus

- Identifies leaks, areas of excessive consumption and other opportunities for efficiency improvements
- Identifying the erosion of (previously) efficient devices
- Forms the basis of efficiency improvement and investment planning (identifies best returns on investment)
- Provides a benchmark for measuring water efficiency program successes

Why not just replace all water using devices with the latest efficiency models at once?

Without conducting a thorough water use audit, you may:

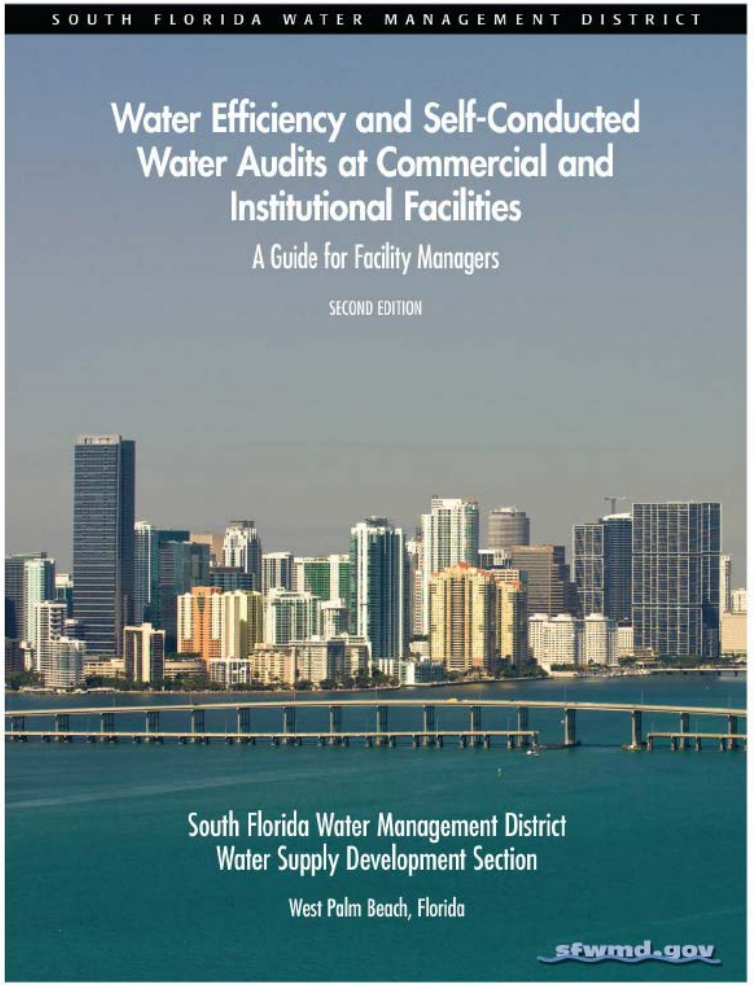
- Direct resource dollars toward areas with slow or low returns
- Inadvertently replace fixtures or appliances that are already operating efficiently
- *Not* identify high-efficiency items that have become less efficient over time or those that have had older replacement parts added during routine maintenance
- Bypass leak detection
- Bypasses wasteful behavior identification

Bottom line: A Water Audit is the smart and cost-efficient way to begin a water use efficiency effort

SFWMD's Water Efficiency Improvement and Self-Conducted Water Audit Guide for Facility Managers

- Written for Facility Managers *anywhere*
- Fully Comprehensive

  (Indoors and outdoor water use)
- Detailed Water Audit Steps
- Savings Calculators
  - to create estimates of costs, savings and investment recovery periods
- **Best of all…**
  this is a FREE publication



Characteristics of the District's Self-Conducted Water Audit Guidebook

1) **Presented in a 'Tiered' approach:**

- **Basic Audits**

Fully comprehensive yet simple
Uncover the 'lowest-hanging fruit' and then some

- **Advanced Audits**

Additional areas to save
Collect quantitative data to create estimates of costs, savings and investment recovery periods

- **Further Improvement Analysis Exercises**

Supports decision-making for planning efficiency improvements
Create a comprehensive and quantified water use profile of the facility, look at trends over time, identify opportunities to collect and reuse on-site water

Characteristics of the District's Self-Conducted Water Audit Guidebook

2) Each procedure is 'Self-Contained'

Each assessment procedure in this Guidebook is divided into four subsections:

Characteristics of the District's Self-Conducted Water Audit Guidebook

Subsection 1:
Background and Description

Information to create a knowledge base on the area the procedure will investigate

(what to look for, where, why, and how)

COOLING TOWER WATER USE – ADVANCED AUDIT

Background and Description

As stated for the Basic Audit, the absence of leaks, corrosion, mineral precipitation, or biological scum indicates only that the basic maintenance regime for the cooling tower is effective. It does not mean the system is running optimally or at a high level of efficiency.

This procedure directs you through an audit of the cooling tower's efficiency by examining the tower's concentration ratio and quantifying the volumes of makeup, blood-off, and evaporation. In addition, potential savings from increasing cycles of concentration will be calculated, as well as the potential volume of condensate water created by the system's air handling unit. From a water conservation perspective, a cooling tower's operating efficiency is measured in terms of cycles of concentration (COCs) or concentration ratio. This is a measure of the accumulated dissolved solids in the cooling tower's water relative to that of the makeup water. This is expressed mathematically as follows (Vickers 2001):

CR = CB ÷ CM

Where: CR = concentration ratio,
CB = TDS concentration of blow-down water, and
CM = TDS concentration of makeup water

A clean and well-maintained cooling tower

Evaporated water leaves behind dissolved mineral content. The rate at which water must be bled from the system is therefore affected by the amount of total dissolved solids (TDS) in the makeup water when it entered the system and its ability to accept additional minerals as water is lost through evaporation. Water pretreatment and treatment regimes, such as softening, ~~adsorption~~, filtration, and chemical adjustments to pH levels, can allow cooling tower water to maintain higher levels of TDS concentrations before bleeding. Some newer technologies and chemical additives even claim to achieve zero or near zero bleed.

Concentration ratios can also be calculated in systems not equipped to monitor the concentration of dissolved solids in cooling tower water if submeters are in place to measure makeup and blow-down water volumes over a specific period as follows (Vickers 2001):

CR = M ÷ B

Where: CR = concentration ratio,
M = volume of makeup water, and
B = volume of blow-down water

Running a cooling tower at a minimum of five cycles of concentration can save tens to hundreds of thousands of gallons of water per year, depending on cooling tonnage and hours of use. However, speak to your vendor about optimizing efficiency with respect to the hardness of your make up water. Table 17 shows the percent of water that can be saved by increasing the number of cycles.

A by-product of cooling towers is the volume of high-quality condensate water formed in the air handling unit of the cooling system. This water is typically drained to the sewer, but can be used to supplement cooling tower makeup. Condensate water is low in TDS so it requires little to no pretreatment for dissolved solids, but may require treatment to control biological

144 Water Efficiency Improvement Self-Audit Guide

sfwmd.gov

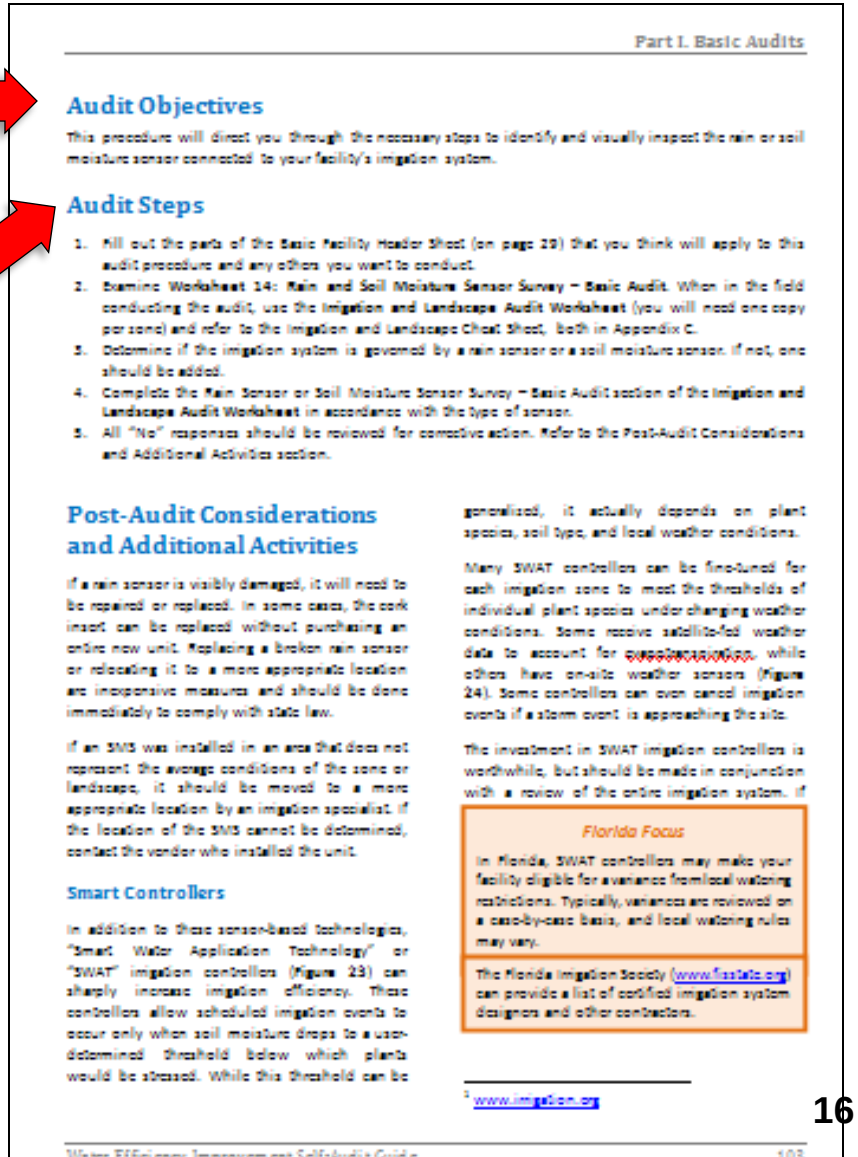
Characteristics of the District's Self-Conducted Water Audit Guidebook

Subsection 2:
<u>Audit Objective(s)</u>

Objective(s) clearly defined

Subsection 3:
<u>Audit Outline</u>

Step-by-step guidance in the physical implementation of each procedure provided



Part I. Basic Audits

Audit Objectives

This procedure will direct you through the necessary steps to identify and visually inspect the rain or soil moisture sensor connected to your facility's irrigation system.

Audit Steps

1. Fill out the parts of the Basic Facility Header Sheet (on page 29) that you think will apply to this audit procedure and any others you want to conduct.
2. Examine **Worksheet 14: Rain and Soil Moisture Sensor Survey – Basic Audit**. When in the field conducting the audit, use the **Irrigation and Landscape Audit Worksheet** (you will need one copy per zone) and refer to the Irrigation and Landscape Cheat Sheet, both in Appendix C.
3. Determine if the irrigation system is governed by a rain sensor or a soil moisture sensor. If not, one should be added.
4. Complete the **Rain Sensor or Soil Moisture Sensor Survey – Basic Audit** section of the **Irrigation and Landscape Audit Worksheet** in accordance with the type of sensor.
5. All "No" responses should be reviewed for corrective action. Refer to the Post-Audit Considerations and Additional Activities section.

Post-Audit Considerations and Additional Activities

If a rain sensor is visibly damaged, it will need to be repaired or replaced. In some cases, the cork insert can be replaced without purchasing an entire new unit. Replacing a broken rain sensor or relocating it to a more appropriate location are inexpensive measures and should be done immediately to comply with state law.

If an SMS was installed in an area that does not represent the average conditions of the zone or landscape, it should be moved to a more appropriate location by an irrigation specialist. If the location of the SMS cannot be determined, contact the vendor who installed the unit.

Smart Controllers

In addition to these sensor-based technologies, "Smart Water Application Technology" or "SWAT" irrigation controllers (Figure 23) can sharply increase irrigation efficiency. These controllers allow scheduled irrigation events to occur only when soil moisture drops to a user-determined threshold below which plants would be stressed. While this threshold can be generalized, it actually depends on plant species, soil type, and local weather conditions.

Many SWAT controllers can be fine-tuned for each irrigation zone to meet the thresholds of individual plant species under changing weather conditions. Some receive satellite-fed weather data to account for evapotranspiration, while others have on-site weather sensors (Figure 24). Some controllers can even cancel irrigation events if a storm event is approaching the site.

The investment in SWAT irrigation controllers is worthwhile, but should be made in conjunction with a review of the entire irrigation system. If

Florida Focus

In Florida, SWAT controllers may make your facility eligible for a variance from local watering restrictions. Typically, variances are reviewed on a case-by-case basis, and local watering rules may vary.

The Florida Irrigation Society (www.fisstate.org) can provide a list of certified irrigation system designers and other contractors.

[1] www.irrigation.org

Characteristics of the District's Self-Conducted Water Audit Guidebook

Subsection 4:
Post- Assessment

Considerations and Additional Activities
Information to help evaluate survey results and provide suggested future actions

Links to web and other resources also provided

Part I. Basic Audits

Post-Audit Considerations and Additional Activities

For all water-using appliances and machinery, consider replacing non-ENERGY STAR-qualified appliances with more efficient models when the current appliances reach the end of their useful life. The Energy Star program's website[1] provides information on qualified appliances.

For all water-using appliances and machinery, consider replacing non-ENERGY STAR-qualified appliances with more efficient models when the current appliances reach the end of their useful life. The Energy Star program's website[2] provides information on qualified appliances.

It is not recommended to retrofit low-flow aerators on commercial kitchen sinks except those used exclusively for handwashing. Handwashing station faucets should be fitted with 0.5 gallon per minute (gpm) aerators.

Pre-Rinse Spray Valves

Metered faucets are those that remain open for a set amount time. Metered faucets should use no more than 0.25 gallons per use. Therefore, metered faucets are not, by default, held to a specific flow rate so long as the timing and flow When a 0.5 aerator is used, the flow cycle can be as long as 30 seconds and not exceed this limit. Conversely, an aerator flowing at

[1] For information on the most efficient residential and commercial kitchen equipment, visit www.energystar.gov. For commercial food service best management practices, see www.energystar.gov/index.cfm?c=bulletins.fisher_nickel_feb_2008 or search for "Best Practices — How to Achieve the Most Efficient Use of Water in Commercial Food Service Facilities" in the ENERGY STAR website search bar.

[2] For information on the most efficient residential and commercial kitchen equipment, visit www.energystar.gov. For commercial food service best management practices, see www.energystar.gov/index.cfm?c=bulletins.fisher_nickel_feb_2008 or search for "Best

Pre-rinse spray valve

Pre-rinse spray valves are hand-operated devices used to remove food and grease from dinnerware before it is placed in a dishwasher. Conventional pre-rinse spray valves use between 3.5 and 5 gpm. With normal use, they can consume more water than the dishwashers. Low-flow models use 1.6 gpm or less.

Commercial Dishwashers

Commercial dishwashers use heated water (180° F or higher) or chemicals to remove and clean food debris from dinnerware. Machines using heated water are referred to as "high-temp" machines. Those that use chemicals are known as "low-temp" machines.

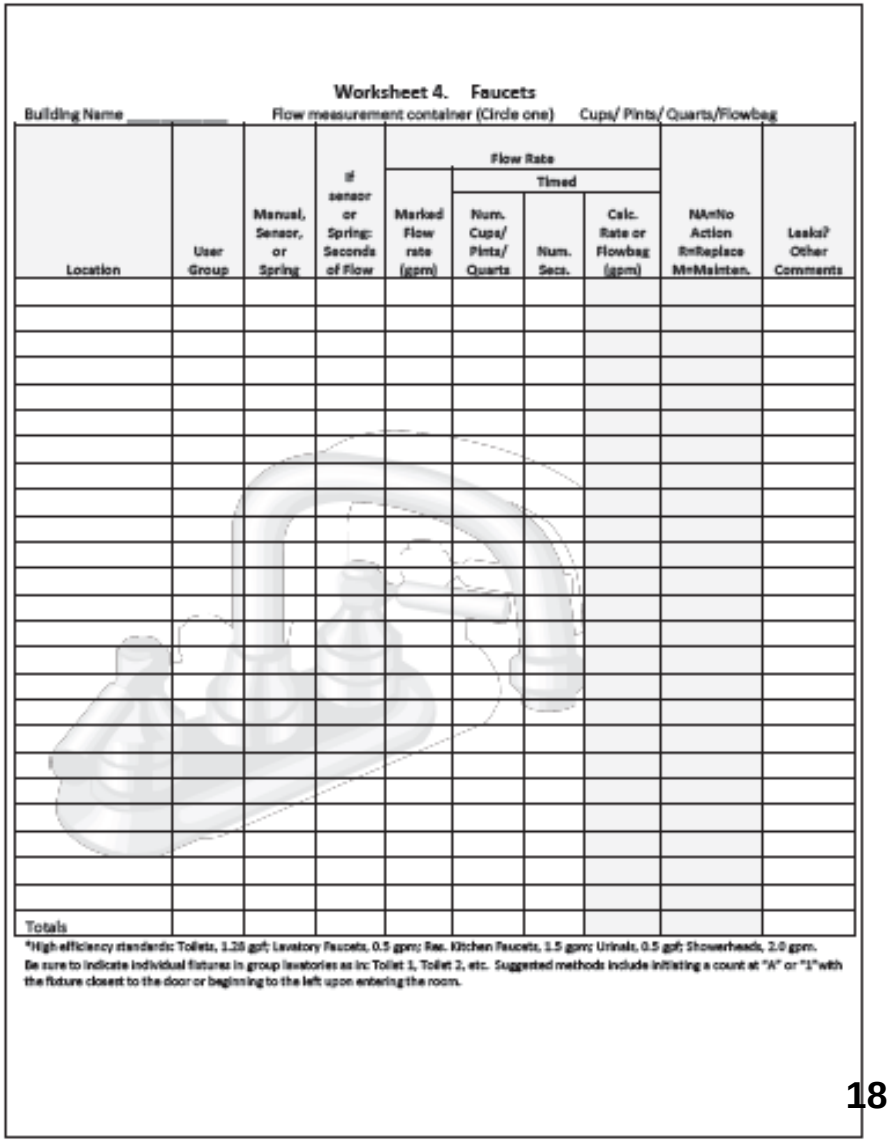
Commercial dishwasher

Replacing an older pre-rinse spray valve with a low-flow model is one of the most cost-effective water and energy saving measures for commercial kitchens. Making this change can save up to $600 a year and 120 gallons of water

Characteristics of the District's Self-Conducted Water Audit Guidebook

Comprehensive Worksheets

Easy to follow worksheets are provided to ensure adherence to investigative protocol



Worksheet 4. Faucets

Building Name _____ Flow measurement container (Circle one) Cups/ Pints/ Quarts/Flowbag

Location	User Group	Manual, Sensor, or Spring	If sensor or Spring: Seconds of Flow	Flow Rate				NAnNo Action RnReplace MnMaInten.	Leaks? Other Comments
				Marked Flow rate (gpm)	Timed: Num. Cups/ Pints/ Quarts	Timed: Num. Secs.	Timed: Calc. Rate or Flowbag (gpm)		
Totals									

*High efficiency standards: Toilets, 1.28 gpf; Lavatory Faucets, 0.5 gpm; Res. Kitchen Faucets, 1.5 gpm; Urinals, 0.5 gpf; Showerheads, 2.0 gpm.
Be sure to indicate individual fixtures in group lavatories as in: Toilet 1, Toilet 2, etc. Suggested methods include initiating a count at "A" or "1" with the fixture closest to the door or beginning to the left upon entering the room.

Additional Weblink Resource Lists and Best Management Practices

Appendix B. Best Management Practices for Commercial and Institutional Buildings

Action or Measure	Present/ Active Currently	Action Currently Under Way, but Incomplete	Implement in Near Future	Not Applicable	Comments
Indoor Domestic Water Use					
All tank toilets have been checked for leaks					
All toilets and urinals flush rates have been verified via flush-cycle timer test					
All fixture leaks repaired					
All facility-wide leaks repaired					
All plumbing fixtures are high efficiency 1.28 gallons per flush (WaterSense whenever possible)					
Toilets					
Urinals					
Faucet aerators					
Showerheads					
All tankless toilets have piston flush valves					
All older tank toilets have been outfitted with water displacement devices such as bags or small filled plastic bottles					
Carpet cleaning uses dry methods (powder or steam)					
Ensure all pipes are insulated					
Meters and Submeters					
Meters have been checked for accuracy					
Use the lowest-quality water supply available					
Someone on-site can read meters					
Routine meter reading regime established (irrigation)					

Additional Resources and Websites

Air-Conditioning, Heating, and Refrigeration Institute. 2010. www.ahridirectory.org.

Alliance for Water Efficiency. 2010. www.allianceforwaterefficiency.org.

Bluejay, M. 2010. How to Save Money on Water Heater Use. www.michaelbluejay.com/electricity/waterheaters.html.

Consortium for Energy Efficiency. 2010. www.cee1.org.

ENERGY STAR program. 2010. www.energystar.gov.

Florida-friendly Landscaping Principles. fyn.ifas.ufl.edu; fyn.ifas.ufl.edu/pdf/epp-ind-bmp-en-12-2008.pdf.

Florida-friendly Landscaping. 2010. www.floridayards.org; www.floridayards.org/landscape/FYN-Handbook.pdf.

Food Service Technology Center. 2010. www.fishnick.com.

Green Restaurant Guide. San Francisco Department of Public Health. 2009. www.sfdph.org.

Miami-Dade Water and Sewer Department. 2008. Water Audit Final Report.

Ministry of the Environment, Canada. 1993, revised 1997. Guidebook for Conducting Water Audits and Developing Water Efficiency Programs at Federal Facilities. Cat. No. En 40-445/1993E. ISBN 0-662-20334-8.

Natural Resources Defense Council. 2009. Making Every Drop Work: Increasing Water Efficiency in California's Commercial, Industrial, and Institutional Sector.

New Hampshire Department of Environmental Service. 2001. Environmental Fact Sheet: Performing a Business or Industry Water Use and Conservation Audit.

Piper, J. 2008. How Does a Water Audit Work? Facilities.Net. www.facilitiesnet.com/green/article/How-Does-a-Water-Audit-Work--9363.

South Florida Water Management District WaterWise Plant Guide. 2010. http://publicserver2.sjrwmd.com/waterwise/search.jsp

Southwest Florida Water Management District. 2010. Office Building Checklist. http://www.swfwmd.state.fl.us/conservation/waterwork/checklist-office.html. Southwest Florida Water Management District. 2010. School Water Audit (Draft document).

St. Johns River Water Management District WaterWise Landscapes. 2010. www.sjrwmd.com/waterwiselandscapes/index.html (or go to www.floridaswater.com and enter "WaterWise landscapes" into the search bar).

St. Johns River Water Management District. Florida Water Star Program. 2010. www.sjrwmd.com/floridawaterstar/index.html.

WaterSense. Environmental Protection Agency. 2010. www.epa.gov/WaterSense/.

Appendix A. How to Read Your Water Meter

Water meters in the U.S. typically measure volume in gallons or cubic feet. One cubic foot equals 7.48 gallons and 100 cubic feet equals 748 gallons. Water charges are typically based on 100 cubic feet or on 1,000 gallon units. There are two basic types of water meters -- the straight-reading meter, which resembles an odometer in a car, and the round-reading meter, which has several separate dials. The "straight-reading" meter is by far the most common.

How to Read a Straight-Reading Meter

In the meter shown in **Figure A-1**, the reading is taken from the figures shown under the words CUBIC FEET. The meter reads 81710.03, which is the total number of cubic feet of water recorded since the meter was installed. If the utility bills in units of 100 cubic feet, it would read this meter as simply 817.

Figure A-1. Simple dial meter in cubic feet.

The meter shown in **Figure A-2** is new, hence the reading for this meter is 0.00. The small blue triangle (just to the right of the "35") is the low-flow indicator. This triangle will spin if any water is flowing through the meter. This indicator can be useful in leak detection.

Figure A-2. Simple dial meter with triangle spin flow indicator.

Characteristics of the District's Self-Conducted Water Audit Guidebook

Microsoft Excel Spreadsheet Calculators for Advanced Audits

Summary Output Table										
Fixture	Fixtures Exceeding Efficiency Flow	Units Require Maintenance	Units Should be Replaced	Total Replacement Costs	Total Mainenance Costs	Total Cost Estimate (Repairs + Maint.)	Annual Potential Savings (gallons)	Annual Potential Water Savings ($$)	Annual Potential Energy Savings ($$)	Investment Recovery Period (in months)
Toilets	40	44	0	$0	$1,056	$1,056	357,687	$3,140	N/A	4.0
Urinals	8	6	0	$0	$150	$150	28,688	$252	N/A	7.1
Lavatory Faucets	42	0	42	$168	$0	$168	104,711	$919	$0	2.2
Non-Lav. Faucets	28	0	37	$148	$0	$148	20,187	$177	$0	10.0
Showerheads	0	0	0	$0	$0	$0	0	$0	$0	0.0
					Totals	$1,522	511,272	$4,489	$0	4.1

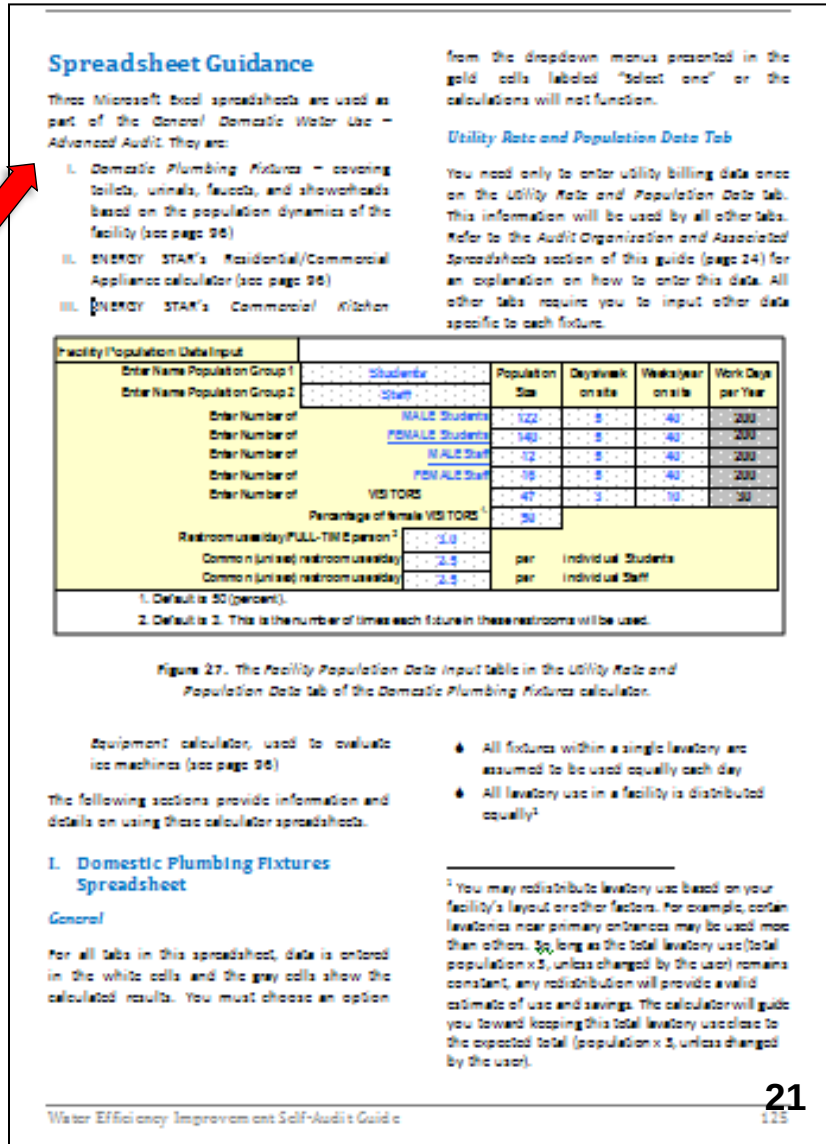
Detailed Output Table									
TOTALS >>>>	**2,887**	**1,222**	**635,151**	**268,755**		**$5,577**	**$2,360**	**$3,217**	**3.9**
Toilet Location	Current Gallons used per day (see note above)	Gallons used per day with Efficient Fixture	Annual Total Gals. Used Per Year	Annual Gals. Used with High-Eff. Fixture	Current Cost per Flush	Current Annual Cost	Annual Cost with High-Eff. Fixture ($$)	Annual Savings with High-Eff. Fixture ($$)	Estim. Investment Recovery Period (in months)
106B	**99**	**38**	**21,700**	**8,333**	**$0.037**	**$191**	**$73**	**$117**	**2.5**
106C	**33**	**18**	**7,159**	**3,927**	**$0.026**	**$63**	**$34**	**$28**	**10.1**
101A	**0**	**0**	**0**	**0**	**$0.011**	**$0**	**$0**	**$0**	**0.0**
905a	**90**	**27**	**19,858**	**5,866**	**$0.048**	**$174**	**$51**	**$123**	**2.3**
905b	**56**	**27**	**12,220**	**5,866**	**$0.029**	**$107**	**$51**	**$56**	**5.2**

Characteristics of the District's Self-Conducted Water Audit Guidebook

Spreadsheet Guidance

Companion spreadsheets developed in Microsoft Excel format help create estimates of costs, savings and investment recovery periods

Spreadsheet Guidance provide step-by-step guidance on how to use each companion spreadsheet, including exactly what field data are needed for each and how to properly enter all information.



Spreadsheet Guidance

Three Microsoft Excel spreadsheets are used as part of the *General Domestic Water Use – Advanced Audit*. They are:

I. *Domestic Plumbing Fixtures* – covering toilets, urinals, faucets, and showerheads based on the population dynamics of the facility (see page 96)

II. ENERGY STAR's Residential/Commercial Appliance calculator (see page 96)

III. ENERGY STAR's *Commercial Kitchen Equipment* calculator, used to evaluate ice machines (see page 96)

The following sections provide information and details on using these calculator spreadsheets.

from the dropdown menus presented in the gold cells labeled "Select one" or the calculations will not function.

Utility Rate and Population Data Tab

You need only to enter utility billing data once on the *Utility Rate and Population Data* tab. This information will be used by all other tabs. Refer to the *Audit Organization and Associated Spreadsheets* section of this guide (page 24) for an explanation on how to enter this data. All other tabs require you to input other data specific to each fixture.

Facility Population Data Input					
Enter Name Population Group 1	Students	Population Size	Days/week on site	Weeks/year on site	Work Days per Year
Enter Name Population Group 2	Staff				
Enter Number of	MALE Students	122	5	40	200
Enter Number of	FEMALE Students	140	5	40	200
Enter Number of	MALE Staff	12	5	40	200
Enter Number of	FEMALE Staff	16	5	40	200
Enter Number of	VISITORS	47	3	10	30
	Percentage of female VISITORS [1]	50			
Restroom use/day/FULL-TIME person [2]		3.0			
Common (unisex) restroom use/day		2.5	per	Individual Students	
Common (unisex) restroom use/day		2.5	per	Individual Staff	

1. Default is 50 (percent).
2. Default is 3. This is the number of times each fixture in these restrooms will be used.

Figure 27. The Facility Population Data Input table in the Utility Rate and Population Data tab of the Domestic Plumbing Fixtures calculator.

I. Domestic Plumbing Fixtures Spreadsheet

General

For all tabs in this spreadsheet, data is entered in the white cells and the gray cells show the calculated results. You must choose an option

- All fixtures within a single lavatory are assumed to be used equally each day
- All lavatory use in a facility is distributed equally[1]

[1] You may redistribute lavatory use based on your facility's layout or other factors. For example, certain lavatories near primary entrances may be used more than others. So long as the total lavatory use (total population x 3, unless changed by the user) remains constant, any redistribution will provide a valid estimate of use and savings. The calculator will guide you toward keeping this total lavatory use close to the expected total (population x 3, unless changed by the user).

How difficult/time consuming is this for me (or my staff) to do?

Don’t be intimidated!!

The guide book was written for new-comers to water use efficiency in a cook-book style

All procedures will prove to be fairly easy once you get started

While supplies last, the District can send you flow bags free of charge (these are a big time saver)

How difficult/time consuming is this for me (or my staff) to do? (Con't)

Don't be intimidated!!

Most facilities can be done in 8 – 16 hours (indoors & outdoors)

All field work should be done in teams of two

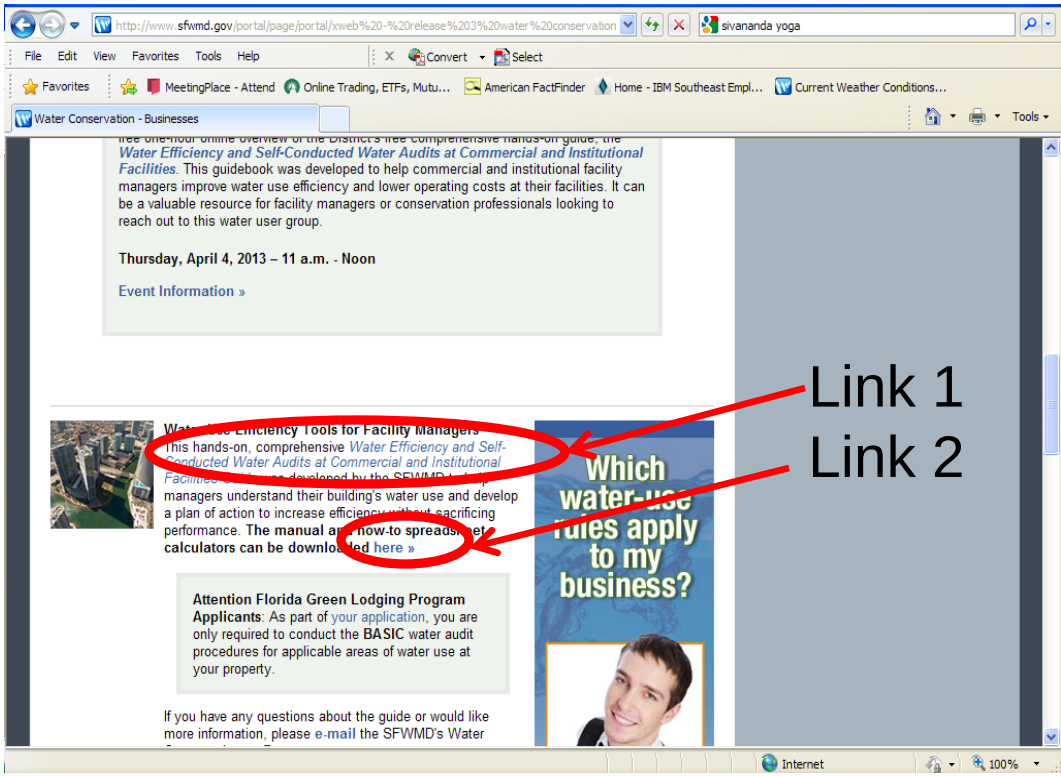
This will speed the process more than double over 1 person alone.

For some procedures (irrigation & landscaping), two-way radios are handy; approximately 2.5 hours for 12 zones

The Water Management District is available to help answer questions as to how to conduct any audit procedure

Ok, so how do I find it?

1. **www.savewaterfl.com**
2. Click on the "**Businesses**" link in the left hand side panel
3. Scroll DOWN to "**Water Use Efficiency Tools for Facility Managers**" (look for the skyline photo)
4. There are two links:
5. The first allows you to look at the guidebook via an **online viewer**. The second bring you to a **library** where you can **download** it and the associated spreadsheet calculators.



Questions?

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