

Water Efficiency BMP Manual Workshop

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Managing Water Resources to Support North Carolina's Future

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Welcome

Thanks to the NCCOGs for setting up the workshops and for assisting with logistics of the workshops

Thanks to the municipalities for allowing us to use the facilities
Facilities locations, lunch places, etc.

PDHs for Water Certifications 5-hours (Must stay to end of workshop to receive credit)

Introductions (Name, Water System & Job Title)

Water Efficiency BMP Workshop

Agenda

9:00am – 9:15am	Welcome & Introductions
9:15am – 9:45am	Purpose and Integrating Water Efficiency in LWSP
9:45am – 10:45am	Water Audit, Water Loss Abatement Program & Metering
10:45am – 11:00am	Break
11:00am – 11:30am	Outdoor Water Use Efficiency
11:30am – 12:00pm	Retrofitting Residential Fixtures
12:00pm – 1:00pm	Lunch (On your own)
1:00pm – 1:30pm	Public Information & School Education and Outreach Programs
1:30pm – 2:00pm	Rainwater Harvesting & Reuse
2:00pm – 2:30pm	Water Purchasing Contracts
2:30pm – 2:45pm	Break
2:45pm – 3:45pm	Water Use Pricing (Presentation of Certificates)
3:45pm	Adjourn



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Workshop will cover the following presentations.
Please ask questions as we go through the presentations instead of holding all question to the end of each presentations.

Water Efficiency BMP Workshop



Jurdy Green™

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Jurdy is a spunky, witty and universal creature who is non-gender, -age, -culture or -race specific.

Jurdy has a smart grasp on our frenzied world where there is little time to care for you, others and the environment...

and after observing us now for 50 years, Jurdy can be silent no more!

Water Efficiency & Conservation

- In 2011, NCGA passed HB609 (SL 2011-374)
 - Law mandates improved efficiency of the use of North Carolina's water resources.
 - Water systems are required to include a plan for the reduction of long-term per capita demand for potable water.



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HB609 approved June 27, 2011.

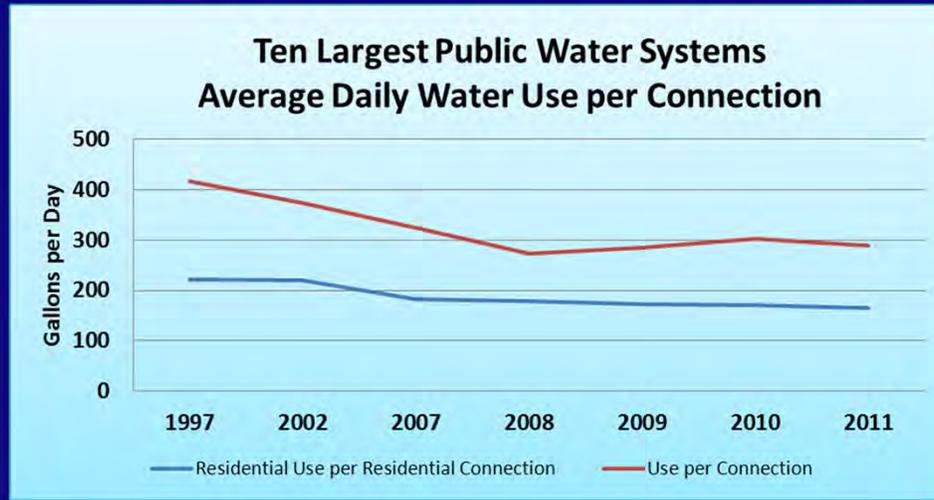
Primary Sponsors: Representative **Chuck McGrady** (Rep)

Henderson; Representative **Paul Stam** (Rep) Wake;

Representative **Mitch Gillespie** (Rep) Burke,

McDowell; & Representative **Becky Carney** (Dem) Mecklenburg

Water System Water Efficiency



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Use per Residential Connection:

1997: 221 gallons per capita per day

2011: 187 gallons per capita per day

Use per Connection:

1997: 417 gallons per capita per day

2011: 298 gallons per capita per day

Reason may be economy, manufacturing downturn, retrofitting and updating water use fixtures, etc.

Water Efficiency *versus* Conservation

➤ Defined:

- Water Efficiency – the accomplishment of a function, task, process, or result with the minimal amount of water feasible.
- Water Conservation – refers to reducing the usage of water.
- Water efficiency differs from water conservation in that it focuses on reducing waste.
- The key for efficiency is reducing waste, not restricting use.



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Although used interchangeably, water efficiency and conservation can have different contextual meanings.

Simply put, water efficiency should be thought of as the practice of optimizing the use of available water supply, and water conservation as behavioral practices that result in consumption reduction.

Help extend water supply, get more use of current supply and may make more revenue with existing water sources.

Water Efficiency & Conservation

- HB609 (SL 2011-374) required:
 - Development of BMP for community water efficiency and conservation.

WATER = MONEY
DON'T WASTE IT



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DENR was required to develop BMPs for community water systems (LWSPs)

Water Efficiency & Conservation

- HB609 (SL 2011-374):
 - NCDENR was charged with providing statewide outreach and technical assistance.



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Statewide outreach and technical assistance through workshops throughout the State with 8 locations:
Washington, Pembroke, Enfield, Jacksonville, Thomasville, Wilkesboro, Rutherfordton, & Asheville.

Water Efficiency & Conservation

➤ Best management practices addresses:

- Integrate water efficiency/conservation into LWSP
- Water audits & water loss abatement programs
- Metering and submetering of existing connections
- Retrofitting residential fixtures
- Outdoor water use efficiency
- Rainwater harvesting & reuse
- Public information & *school education*
- *Water purchasing contracts*
- Water use pricing



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The required best management practices include:

In addition to developing these, the N.C. Division of Water Resources also included best management practices (BMPs) for: School Education and Outreach & Water Purchasing Contracts

This BMP also serves to help water systems become eligible for state water infrastructure funds from the Drinking Water State Revolving Fund, the Drinking Water Reserve, or any other grant or loan of funds allocated by the General Assembly that require incorporating consumer education as mandated by Section 3.2. G.S. 143-355.4(b).

Water Efficiency BMP Manual

➤ Purpose

- To assist water system managers in determining which BMPs would be most effective in reducing their long-term per capita demand for potable water.
- Per capita demand is calculated by using a water system's annual residential demand and year-round population.
- Water systems are not required to implement any specific best management practice.



Water Efficiency BMP Manual

➤ Purpose (cont'd)

- Water systems are not required to implement any specific best management practice.
- Several BMPs are fundamental to an effective water efficiency plan.
- Outlines several BMPs that have been successfully used in other water systems throughout NC.



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The most important is conducting regular water audits to identify revenue and nonrevenue water and water losses.

As part of conducting these water audits, metering of all connections is essential to account for all water used.

Adopting leak detection and water loss abatement programs allows systems to act on the water audit information to reduce water loss and lost revenue.

Conducting an initial water audit allows a water system to determine baseline efficiencies and set realistic goals for improvement.

Subsequent water audits enable a water system to measure milestone achievements and performance of BMPs implemented.

Case Studies

Water Efficiency BMP Manual

➤ Purpose (cont'd)

Each BMP will contain the following components:

- Applicability
- Description
- Implementation
- Schedule
- Scope
- Documentation
- Determination of Water Savings
- Cost-Effectiveness
- References
- Case Study Example



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Each BMP will contain the following components:

Water Efficiency BMP Manual

➤ Purpose (cont'd)

- This manual should be seen as an evolving document that will be routinely updated and modified.



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As efficiency and conservation practices are implemented, new insights, technological advances and information will become available.

In addition, future technologies may improve water savings and reduce costs.

NCDWR encourages utility managers, efficiency/conservation specialists, planners, policy makers, and others to provide comments and feedback regarding this document, so it can be continually improved to better serve the water systems of NC.

Water Efficiency BMP Manual

➤ Purpose (cont'd)

- Several BMPs will fulfill several requirements under Section 9 of the Drought Bill.
 - Water Use Pricing
 - Water Audits & Water Loss Abatement Programs
 - Integrate Water Efficiency/Conservation into LWSP
 - Metering and Submetering of Existing Connections
 - School Education and Outreach Programs



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By completing the following BMPs, a water system can fulfill several requirements under Section 9 of the Drought Bill. Fulfilling these requirements also will help the water system be eligible for loans under the N.C. Division of Water Resources State Revolving Fund (DWRSRF).

- (1) Has established a water rate structure that is adequate to pay the cost of maintaining, repairing, and operating the system, including reserves for payment of principal and interest on indebtedness incurred for maintenance or improvement of the water system during periods of normal use and periods of reduced water use due to implementation of water conservation measures. The funding agency shall apply guidelines developed by the State Water Infrastructure Commission in determining the adequacy of the water rate structure to support operation and maintenance of the system.
- (2) Has implemented a leak detection and repair program.
- (3) Has an approved water supply plan pursuant to G.S. 143-355.
- (4) Meters all water use except for water use that is impractical to meter, including, but not limited to, use of water for firefighting and to flush waterlines.
- (5) Does not use a rate structure that gives residential water customers a lower per-unit water rate as water use increases.
- (6) Has evaluated the extent to which the future water needs of the water system can be met by reclaimed water.
- (7) Has implemented a consumer education program that emphasizes the importance of water conservation.“

Integrating Water Efficiency into the LWSP

➤ Local Water Supply Plans

- Must include a plan for the reduction of long-term per capita demand for potable water.
- Online LWSP system has been modified to help water systems better track their long-term per capita water demand.



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LWSP is an assessment of a water system's current and future water needs and its ability to meet those needs.

in Section 5 of the LWSP will track long-term per capita water demand based on year-round population and water demand projections entered by the user.

The chart will also be equipped to show a history of per capita water demand.

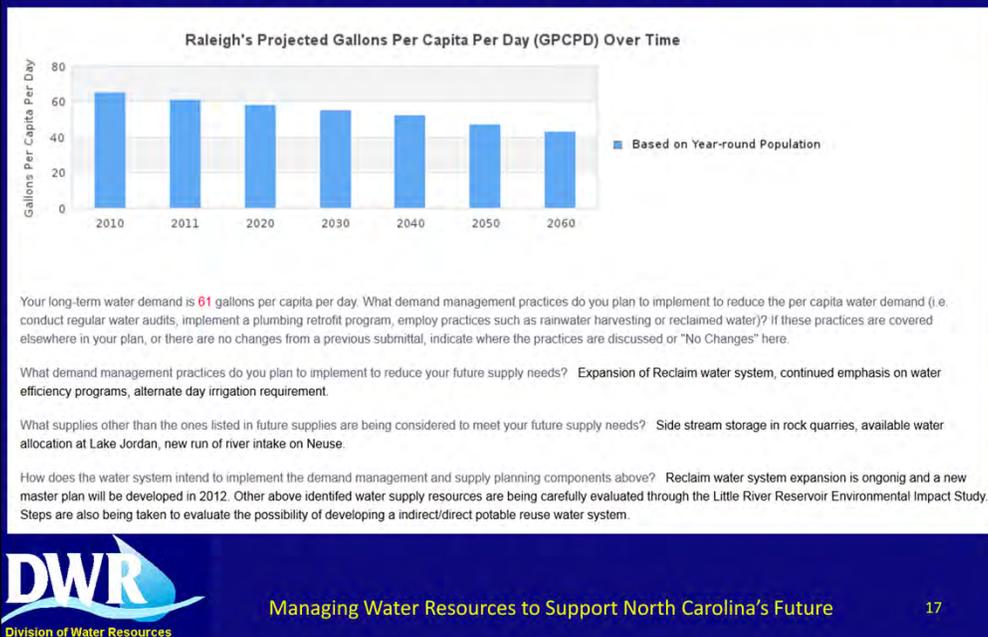
Integrating Water Efficiency into the LWSP

➤ In LWSP, Section 5: Tracking Chart reads:

- *Your long-term water demand is ## gallons per capita per day. What demand management practices do you plan to implement to reduce the per capita water demand (i.e. conduct regular water audits, implement a plumbing retrofit program, employ practices such as rainwater harvesting or reclaimed water)?*



Integrating Water Efficiency into the LWSP



Projecting long term per capita demand is different than the approach we took in the past; we asked water systems to take their current per capita demand and multiply it by your projected residential population.

This will change due to implementation of the bmps.

Integrating Water Efficiency into the LWSP

5. Planning

Projections						
	2011	2020	2030	2040	2050	2060
Year-Round Population	489,000	683,300	844,500	995,700	1,225,700	1,508,800
Seasonal Population	0	0	0	0	0	0
Residential	30.010	39.560	46.630	52.230	58.120	65.080
Commercial	12.500	15.360	18.100	20.280	22.560	25.260
Industrial	1.500	1.750	2.060	2.310	2.570	2.880
Institutional	2.160	4.570	5.390	6.040	6.720	7.520
System Process	0.100	3.070	3.630	4.060	4.460	5.060
Unaccounted-for	1.639	5.590	6.590	7.380	8.220	9.200

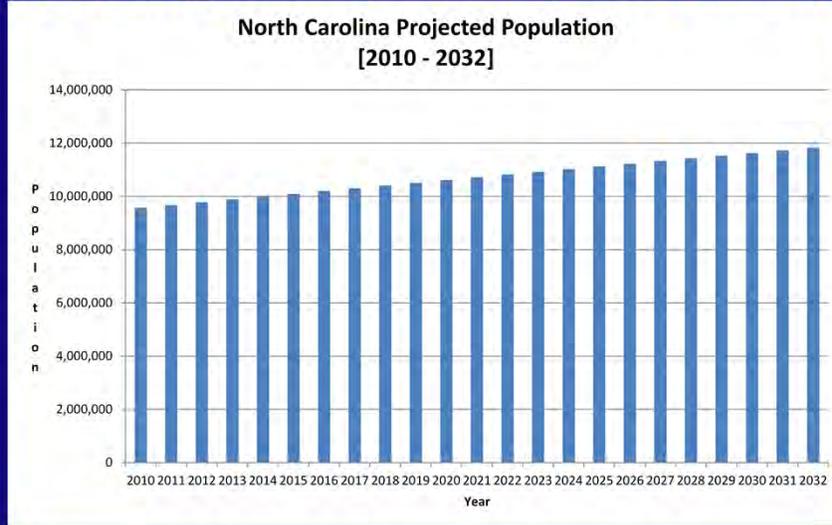
Demand v/s Percent of Supply						
	2011	2020	2030	2040	2050	2060
Surface Water Supply	78.200	78.200	78.200	78.200	78.200	78.200
Ground Water Supply	0.000	0.000	0.000	0.000	0.000	0.000
Purchases	0.000	0.000	0.000	0.000	0.000	0.000
Future Supplies	0.000	0.000	13.100	13.100	13.100	13.100
Total Available Supply (MGD)	78.200	78.200	91.300	91.300	91.300	91.300
Service Area Demand	47.909	69.900	82.400	92.300	102.650	115.000
Sales	0.001	0.750	0.750	0.750	0.750	0.750
Future Sales	0.000	0.000	0.000	0.000	0.000	0.000
Total Demand (MGD)	47.910	70.650	83.150	93.050	103.400	115.750



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Raleigh's residential population is projected to more than double in water use by year 2060; going from 30MGD to over 65MGD.

Integrating Water Efficiency into the LWSP



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North Carolina's population is projected to grow from 9.5 million in 2011 to almost 12 million by 2032.

Contact Information

QUESTIONS?

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