Implementing an Outdoor Water Efficiency Program

Managing Water Resources to Support North Carolina’s Future
Irrigation Water Efficiency—Three Phases

Assess current conditions
- Surveys and metering

Implement customer educational initiative
- Landscape Audit

Establish minimum standards and incentivize upgrades
- Ordinances and financial benefits

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Water-Use Surveys

Necessary to understand the existing conditions

Surveys sent to

• All customers
• Customers with largest summer peak water usage.

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Surveys should be as simple and quick as possible

- Estimate total irrigated area (i.e. 1000 ft²)
- Percentage of permanent and temporary irrigated area
- Percentage of turf under irrigation
- Estimate of irrigated water applied per week
- Irrigation by schedule, sensors, feel, or combination
Separate irrigation metering is the law for new connections serviced by large community water systems.

Work with billing department for metering and estimating data

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Implementing Educational Initiative

Provide educational information to all irrigation customers

• Offer landscape audits to all customers
• Encourage landscape audits to customers with largest summer peak water usage.
• Install model landscaping activities at town facilities.

Communication:

• During Water Audit
• Bill inserts, Local weather announcers, Gardening show hosts, Newspaper columnists, Gardening clubs, Cooperative Extension, Green industry businesses.

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Minimal Auditing Program Requirements

Review past water bills.

Landscaped areas specific data,
- measurements,
- plant types,
- irrigation system (zones and controllers).

Review maintenance irrigation schedules, and sensor effectiveness.

Effectiveness of irrigation heads.

Education on simple landscape practices to increase water use efficiency.

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Categories for Proper Landscape Water Management

- Planning and Design
- Vegetation selection
- Efficient irrigation system
- Soil analysis and amendments

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Survey and use existing contours
Create planting/hydro “zones”
Minimize earthwork
Reduce surface water flow velocity and runoff
Limit turf areas to appropriate conditions

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Vegetation Selection

“All plants must be placed in an environment that meets their basic requirements” - USDA

- All scales
- Nationally (Plant Hardiness Zone Map)
- Single landscape area.

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Turfgrass Selection

Cool-season species thrive at 60 to 75 degrees

- Excessive heat will damage roots

Warm-season species thrive at 80 to 95 degrees

- Excessive dryness will damage roots
During drought conditions, turf should be watered and irrigated **only** to keep the turf alive.

- ½-inch water every two to four weeks
- Turfgrass will go dormant and turn a dull brown.
- Water immediately if the turfgrass turns bluish-gray.

**Warnings During Drought!**

- Avoid herbicides and fertilizers
- Avoid vehicle or foot traffic
- Increase mowing heights.
Irrigation Systems

**Permanent Irrigation Systems**
- Pipe and nozzle layout!
  - Avoid spray overlap by spacing nozzles appropriately
  - Avoid spraying impermeable surfaces
  - Avoid larger rooting trees
- Water efficient nozzles
- Maintain nozzles
- Irrigation sensors (rain or soil)

**Temporary Irrigation**
- Hand watering (bucket or hose)
- Drip irrigation
- Water Syringing
- Temporary sprinklers.

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Measuring Irrigation Efficiency

Measurement of irrigation rate

1. Distribute a few empty “catch” cans across the irrigated area.

2. Start time when irrigation begins.

3. End time once the catch can is full.

Provides:

- Irrigation time
- Distribution evenness
Native NC soils are generally acidic and low in nutrients

- Restrict plant uptake of water
- Proper fertilization and liming will result in increased water uptake efficiency
- Minimal recommended application rates
Mulching Offers:

• Soil moisture retention,
• Reduces surface water runoff and soil erosion
• Impedes the growth of weeds

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<th>Inches of Material</th>
<th>Organic Material Needed to Cover 100 Square Feet</th>
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<tr>
<td>1</td>
<td>9 cubic feet</td>
</tr>
<tr>
<td>1/2</td>
<td>4 cubic feet</td>
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Other Amendments

• Herbicides reduce competition
• Insecticides reduce insect and nematode issues avoiding some disease issues.
Minimum Standards and Incentive Programs

Develop minimum standards ordinances
- Metering of permanent irrigation systems
- Avoid irrigating impermeable surfaces
- Installation of moisture sensors
- Reductions during times of droughts

Develop incentive programs with rebates, cost-sharing, or loans
- Replace inefficient nozzles
- Turf buy-back
- Encourage certain species
- Provide mulch to customers
- Installation of permanent irrigation systems

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Achieve and Acknowledge Results

Set a reduction goal in water demand for landscape uses.

Document results in a system-wide report within 10 years.
**10-Year report needs to include:**

- Number and water use of dedicated irrigation meter accounts
- Estimated number and water use for unmetered landscape water use
- Number of surveys completed and response rate.
- Number of audits completed
- Details of educational programs
- Data on all incentive programs (type, acceptance, and cost)
- Estimates of water savings based on actual metered data (total and programmatic)
- The cost of administering irrigation efficiency program.

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Conclusion

To effectively manage outdoor water use requires an understanding of the needs/wants of the customers in concert with an educational component to require and encourage responsible landscape water use management.

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