OCWP Panel #3: OCWP Water Conservation Assessment

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Norman, Oklahoma
October 18, 2011
Presentation Overview

• Potential for Conservation
  • Overview of Conservation
  • Potential Water Savings/Impacts
Water Efficiency & Reuse
The Opportunity

2060 Demand

Growth by Water Use Sector (2010-2060)

- Thermoelectric = 31%
- Irrigation = 25%
- M&I = 28%
- Oil/Gas = 12%
- Crop Irrigation = 897,464 AF
- Self-Supplied Industrial = 54,384 AF
- Self-Supplied Residential = 41,155 AF
- Municipal & Industrial = 772,773 AF
- Oil & Gas = 115,570 AF
- Livestock = 101,040 AF
Water Efficiency & Reuse
The Opportunity

- Assessed Conservation Reduction where Greatest Potential Exists
  - Municipal and Industrial
  - Self-supplied Residential
  - Agriculture Irrigation

- Scenarios Developed Based on Patterns of Current Conservation Trends in the State

- Factors Considered
  - Cost-Effectiveness,
  - Ease of Implementation,
  - Acceptance by OK Residents and Water Providers
Current Conservation in Oklahoma

- Municipal and Industrial
  - *Edmond and Norman are most progressive*
  - 20% of water providers implement conservation pricing
  - Conservation education programs implemented by 34% of water providers
  - *Losses due to leaky pipes varies but can be high*

- Irrigated Agriculture
  - *Majority irrigating with low pressure center pivot*
  - *Nearly 20% irrigate with surface water canal systems*
Presentation Overview

- Potential for Conservation
- Overview of Conservation
- Potential Water Savings/Impacts
What Do We Mean?

- Water use efficiency
  - *Consumer behaviors, decisions, and activities*
  - *Efficient fixtures, equipment, and technology*
  - *Adoption of voluntary programs and policies*
OCWP Municipal & Industrial Conservation Analysis

- Scenario I: Moderately Expanded Conservation
  - Metering: *installing meters to monitor water loss*
  - Tiered Rate Structure: *increasing tiers of cost with increased water use*
  - Community Education and Information: *changing fundamental habits*
### OCWP Municipal/Industrial Conservation Analysis

- Scenario II Substantially Expanded Conservation
  - More aggressive implementation of Scenario I
  - Impact of high efficiency indoor water use regulations beyond that of passive conservation

<table>
<thead>
<tr>
<th>Fixture</th>
<th>Passive Mandates</th>
<th>High Efficiency Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toilet</td>
<td>1.6 gpf</td>
<td>1.0 gpf</td>
</tr>
<tr>
<td>Urinal</td>
<td>1.0 gpf</td>
<td>0.5 gpf</td>
</tr>
<tr>
<td>Faucet</td>
<td>2.5 gpm</td>
<td>1.0 gpm</td>
</tr>
<tr>
<td>Showerhead</td>
<td>2.5 gpm</td>
<td>2.0 gpm</td>
</tr>
</tbody>
</table>
OCWP Irrigation Conservation Analysis

- Scenario I Moderately Expanded Conservation
  - Conversion to higher efficiency irrigation methods in the following categories:
    - Sprinkler (low pressure systems)
    - Surface/Flood (improvements in the infrastructure of the conveyance system)
    - Micro (at or near the surface or root zone)

- Scenario II Substantially Expanded Conservation
  - Includes Scenario I assumptions
  - Impact of shifting to less water-intensive crops (e.g., grain sorghum instead of corn, forage crops like alfalfa and pasture grass instead of grain, etc.)
Presentation Overview

- Potential for Conservation
- Overview of Conservation
- Potential Water Savings/Impacts
2060 M&I, Self-supplied Residential, and Irrigated Agriculture Statewide Demand Projections with Conservation

Water Demand (AFY)

- Baseline
- Scenario I
- Scenario II
2060 M&I, Self-supplied Residential, and Irrigated Agriculture Statewide Demand Projections with Conservation

Water Demand (AFY)

- Baseline
- Scenario I: Savings of 215,000 AF
- Scenario II: Savings of 416,000 AF
OCWP Conservation Analysis
Further Benefits of Conservation

- Reduce/Delay Capital Investments for New Infrastructure by Stretching Supplies
- Reduce Energy Demand
- Money Savings
- Drought Mitigation
  - Reduces demand and stretches supplies
  - Delays or avoids acute drought restrictions
- More Water for Non-Consumptive Uses
  - Protect Oklahoma’s 3rd largest industry – tourism & rec
  - Equally important to fish & wildlife, both sport industry and ecological protections
  - Can reduce impacts of drought on non-consumptive needs
## OCWP Conservation Analysis

What is the Impact?

### Gaps/Depletions Mitigation Statewide (2060)

<table>
<thead>
<tr>
<th>Source</th>
<th>Baseline Shortage Amount AFY</th>
<th>Total (in AFY) &amp; Percent Reduction from Baseline Shortage Amount</th>
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<tbody>
<tr>
<td></td>
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<td>Moderate Conservation</td>
</tr>
<tr>
<td>SW</td>
<td>75,240</td>
<td>18,810</td>
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<tr>
<td>AGW</td>
<td>38,980</td>
<td>12,474</td>
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<td>BGW</td>
<td>92,710</td>
<td>13,906</td>
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## Reduction in the Number of Basins with Gaps and/or Storage Depletions from Conservation

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Surface Water</th>
<th>Alluvial Groundwater</th>
<th>Bedrock Groundwater</th>
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<tbody>
<tr>
<td>Baseline</td>
<td>55</td>
<td>63</td>
<td>34</td>
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<tr>
<td>Scenario I</td>
<td>42</td>
<td>51</td>
<td>26</td>
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<tr>
<td>Scenario II</td>
<td>33</td>
<td>41</td>
<td>23</td>
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</table>
Conservation-Associated Cost Savings in Municipal and Industrial Sector

- Evaluated reduction in direct operational costs for water and wastewater treatment and delivery due to conservation.
- Accounted for electricity, labor, chemical costs, water analysis, regulatory compliance.

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<thead>
<tr>
<th></th>
<th>Surface Water</th>
<th>Groundwater</th>
<th>Wastewater</th>
<th>Total</th>
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<tbody>
<tr>
<td>Scenario I</td>
<td>$26.0</td>
<td>$2.9</td>
<td>$18.5</td>
<td>$47.5</td>
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<tr>
<td>Scenario II</td>
<td>$39.0</td>
<td>$4.3</td>
<td>$23.9</td>
<td>$67.2</td>
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The 2012 Oklahoma Comprehensive Water Plan (OCWP) update, a 5-year effort conducted by the Oklahoma Water Resources Board, is nearing completion. During the final year of development, and prior to formal submittal to the Governor and State Legislature in February 2012, the OWRB and its planning partners will continue to solicit important input from stakeholders, citizens and others with a vested interest in the future of Oklahoma’s water resources.

UPCOMING OCWP SCHEDULE
- September 13, 2011: Final Water Board review and public comment on draft OCWP
- October 17, 2011: Formal Water Board consideration and adoption of OCWP
- October 18-19, 2011: OCWP unveiled at Annual Governor’s Water Conference
- February 2012: Formal submittal of OCWP to Governor and State Legislature

Joint Legislative Water Committee Briefing Documents

Technical & Engineering Studies
Supporting the Water Plan are technical and engineering assessments performed primarily by CDM, the lead engineering firm contracted by the U.S. Army Corps of Engineers through a cooperative agreement with the OWBR, as well as research studies accomplished by various state and federal agencies and universities. These studies have provided planners with information required to lay the groundwork for effective and innovative water policy for Oklahoma. (more)

OCWP Executive Report
The final 2012 OCWP Update Executive Report will serve as a concise compilation of technical and policy information produced over the five-year planning period. In addition to background information on water planning and management in Oklahoma, the Executive Report will include a statewide assessment of water supplies, future projections of demand, and potential options to alleviate anticipated deficits of particular concern. The report’s Water Policy Recommendations section will present, for formal legislative consideration, dozens of suggested measures to address Oklahoma’s key water problems and issues.