Options for Water Supply
Sustainability and Resilience

2015 Water Supply Summit
October 28, 2015
Guiding Principles and Mission

CFPUA Guiding Principles

- Stewardship
- Sustainability
- Service

CFPUA Mission Statement

To provide high-quality service in an environmentally responsible manner while maintaining the lowest practical cost.

Stewardship – Sustainability - Service
Challenge: Secure Cost Effective Water Supplies for a Growing Population

Regional Challenge:
- New Hanover County
- Brunswick County
- Pender County

All projected to grow.

All depend on the same river and aquifers for water supply.

Source: NHC Comprehensive Plan 2014 Existing Conditions Report
NHC Growth Projections

NHC Comprehensive Plan 2014:

NHC Population Growth Projections:
• from 203,000 in 2010
• to 337,000 in 2040
• 66% in 30 years.

True? Who has a crystal ball?

Planning for water supply sustainability and resilience is essential for our community.
## CFPUA Supply vs Demand

<table>
<thead>
<tr>
<th>Year</th>
<th>2014</th>
<th>2020</th>
<th>2030</th>
<th>2040</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Supply (Surface Water &amp; Ground Water)</strong></td>
<td><strong>61.494 MGD</strong></td>
<td><strong>62.152</strong></td>
<td><strong>62.152</strong></td>
<td><strong>62.152</strong></td>
</tr>
<tr>
<td><strong>Average Day Demand</strong></td>
<td><strong>19.483 MGD</strong></td>
<td><strong>21.509</strong></td>
<td><strong>24.583</strong></td>
<td><strong>28.102</strong></td>
</tr>
<tr>
<td><strong>Peak Day Demand (1.5 x Average)</strong></td>
<td><strong>29.224 MGD</strong></td>
<td><strong>32.264</strong></td>
<td><strong>36.875</strong></td>
<td><strong>42.153</strong></td>
</tr>
</tbody>
</table>

**MGD = Million Gallons per Day**

Assumes 44% demand growth and no loss of supply.
Water Resource Federation Stats

Utilities are Combining Diversification and Conservation to Meet Supply Gaps

- Conservation: 15%
- Reuse Wastewater for Non-potable: 15%
- Indirect Potable Reuse: 11%
- Stormwater/Rainwater Capture & Reuse: 10%
- Aquifer Storage & Recovery: 8%
- Water Sharing: 7%
- Direct Potable Reuse: 7%
- Groundwater: 5%
- Gray Water: 5%
- Seawater Desalination: 4%
- Surface Water: 4%
- Brackish Water Desalination: 4%
- Imported: 3%
- On-site Reuse: 2%


Nearly 40% of utility survey respondents are planning some form of reuse.
CFPUA Water Supply Resources Planning

- Surface Water Withdrawals
- Groundwater Withdrawals
- Aquifer Storage and Recovery
- Direct Potable Reuse
- Conservation
Surface Water: Resource and Challenges

Resource:
Lower Cape Fear River
• 53.3 MGD Raw Water

Threats:
• Upstream Withdrawals
• Lower Natural Flows

Regulatory Challenges:
• No Allocation Permitting
• No Permit, No Security

Groundwater: Resource and Challenges

Resources:
- Castle Hayne Aquifer
- Peedee Aquifer

Threats:
- Aquifer Depletion
- Salt Water Intrusion

Regulatory Challenges:
- Managing Withdrawals
- Modeling Change

Source: USGS Hydrogeology, Hydraulic Characteristics, and water-Quality Conditions in the Surficial, Castle Hayne, and Peedee Aquifers of NHC, NC
ASR: Resource and Challenges

Resource:
- Stores Surface Water in Aquifer
- Treats Disinfection Byproducts
- Shaves Peak Demands

Threats:
- Other Wells in Close Vicinity
- Time to Permit and Operate

Regulatory Challenges:
- No ASR Protection Zone
- Growing Familiarity in NC

Source: USGS Hydrogeology, Hydraulic Characteristics, and water-Quality Conditions in the Surficial, Castle Hayne, and Peedee Aquifers of NHC, NC
Direct Reuse: Resource and Impediments

Resource:
Northside WWTP Effluent
• 16 MGD Advanced WWTP
• 2 Miles from Water Plant

Threats
• Investment Before Acceptance
• Public Perception

Regulatory Challenges:
• Unproven Regulatory Path
• New in North Carolina
Options for Water Supply
Sustainability and Resilience

Surface Water Withdrawals
  • Impacted by Upstream Withdrawals and Precipitation

Groundwater Withdrawals
  • Impacted by Aquifer Levels and Salinity

Aquifer Storage and Recovery
  • Impacted by Incursion by Other Wells

Direct Potable Reuse
  • Impacted by Public Perception and Regulatory Path
Options for Water Supply Sustainability and Resilience

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