Water Supply in South-central Kansas

JOSEPH T. PAJOR, DEPUTY DIRECTOR, PUBLIC WORKS & UTILITIES
CITY OF WICHITA, KANSAS
Water Supply Relationships in the REAP Region
City of Wichita Wholesale Customers
The Royal Gorge Bridge
Port of Catoosa in Tulsa, OK

195 feet long, 35 feet wide
Wichita Area Water Supply

“Whiskey is for drinking; water is for fighting over.”

- Mark Twain
Cheney Reservoir
Wichita’s Principal Water Resources
Wichita Water Supply
Water Treatment Process:
“Everyone has a plan 'till they get punched in the mouth.”
- Mike Tyson
## Water Supply Objectives and Strategies

<table>
<thead>
<tr>
<th>Objective</th>
<th>Current</th>
<th>Goal</th>
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</thead>
<tbody>
<tr>
<td>Final Year of 1% Drought Protection</td>
<td>2011</td>
<td>2060</td>
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<tr>
<td><strong>Strategies</strong></td>
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<tr>
<td>Combination of new water supply and long-term conservation is necessary</td>
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<tr>
<td>Add New Water Supply</td>
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<td>10 MGD</td>
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<tr>
<td><strong>Strategies</strong></td>
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<tr>
<td>Secure a cost-effective new water source for the Wichita system</td>
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<tr>
<td>Annual Water Conservation</td>
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<td>0.35%</td>
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<tr>
<td><strong>Strategies</strong></td>
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<td>Rebate programs, landscaping incentives, private well usage, targeted re-use, etc.</td>
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Water Supply Issues

- Based on growth and consumption projections, current supplies will not be adequate through the planning horizon (2060).

- Current supplies would require significant quality of life disruptions in the event of a 1% drought.

- Funding a supply option, coupled with moderate conservation, will provide 1% drought protection, and provide adequate supplies through 2060.
Explanation of Water Supply Options

**Treated Water from El Dorado**
- Drinking water would be sent from El Dorado Lake to a northeast pump station.
- Pre-payment of water would end between 2021 and 2024.

**Raw Water from El Dorado**
- Untreated water would be delivered from El Dorado to the City of Wichita main treatment plant.
- Water would be pre-paid until 2051.
El Dorado Supply Option Diagram

- Water Storage
  - Surface Water Reservoir
  - (El Dorado Lake)

- Water Treatment Plant

- Walnut River & Drainage Basin

- Evaporation
ASR Water Supply Option Diagram

Water Storage
Underground Reservoir
(Equus Beds Aquifer)

Water Treatment Plant

ASR Plant

Little Arkansas River & Drainage Basin
Explanation of Water Supply Options

Aquifer Storage & Recovery (ASR) Improvements

- Drills additional wells and constructs a sidestream storage reservoir.
- Allows the availability of more water to be pumped through the existing treatment plant.
1% Drought Without New Supply

- 3 Years, 2 Months of Stages 1 & 2 Restrictions
- 5 Years, 10 Months of Stages 3 & 4 Restrictions

Stage #1
Stage #2
Stage #3
Stage #4

Volunt. Cons.
Outdoor Watering Banned
Outdoor Watering Banned & 15% Reduction on Indoor Usage
Outdoor Watering Once Per Week

Year 1, Year 2, Year 3, Year 4, Year 5, Year 6, Year 7, Year 8, Year 9, Year 10, Year 11
1% Drought – With New Supply

8 Years, 4 Months of Stages 1 & 2 Restrictions

No Time in Stages 3 & 4 Restrictions

Volunt. Cons.

Outdoor Watering Once Per Week

Outdoor Watering Banned

Outdoor Watering Banned & 15% Reduction on Indoor Usage

Stage #1

Stage #2

Stage #3

Stage #4

Year 1

Year 2

Year 3

Year 4

Year 5

Year 6

Year 7

Year 8

Year 9

Year 10

Year 11

1% Drought
Process Timeline

**DEVELOPMENT OF WATER SUPPLY OPTIONS**

- **Jan. 2013**
  - Demand projections created by PEC with data from the MAPD
  - Water supply and drought scenario models created by SAIC
  - River modeling created by High Country Hydrology, with data from CSU and Burns & McDonnell
  - Data provided by the US Geological Survey on river flows and Equus Beds Hydrology

- **July 2014**
  - Nine water supply options presented to Council on April 8th
Process Timeline

**DEVELOPMENT OF WATER SUPPLY OPTIONS**

**Jan. 2013**
- Nine options presented on April 8th, resulting from input of seven different independent experts

**Water economists at Metering Technology Consultants and Water DM reviewed financial analysis model and role of conservation**

**Water planning narrowed to two options that count on long-term conservation coupled with new supplies from El Dorado Lake or an ASR project**

**July 2014**
- Engineers from Black & Veatch and Burns & McDonnell worked through analysis, while Burns & McDonnell developed 1% ASR design
Wrap Up

“ In Conclusion, ....”

- The two most popular words a speaker can utter together