

Norman Utilities Authority

2060 Strategic Water Supply Plan



Public Meeting #1

June 25, 2012

AGENDA

Water supply planning overview

Norman's existing water system

What water supply options are being considered?

How will we evaluate and compare the options?

What will we discuss at upcoming public meetings?

Feedback on supply options and evaluation criteria

Norman 2060 Strategic Water Supply Plan

The goal of the Plan is to strengthen our knowledge of short and long-term water supply source(s) and begin implementation of a robust, economical water supply solution acceptable to the citizens of Norman.

The NUA is currently unable to supply sufficient potable water to meet peak demands and is concerned about the effects of regulations and other drivers on our existing sources of supply.

Issues Facing Norman's Water Supply Future

- Current yield of Lake Thunderbird may be reduced
- Quality of Lake Thunderbird water
- Cost of supplemental water from OKC
- Permitted withdrawals from Garber-Wellington aquifer may be reduced by half or more
- Norman's population is increasing
- Based on expected demand, there may be a shortfall of over 20 mgd in 2060

Previous Planning Provides a Solid Foundation & Key Data

- 1992 Master Water Plan
- 2001 NUA Strategic Water Supply Plan
- 2009 Regional Raw Water Supply Study for Central Oklahoma
- 2011 Norman Water Conservation Plan
- 2012 Oklahoma Comprehensive Water Plan
- Studies of Individual Water Supply Projects

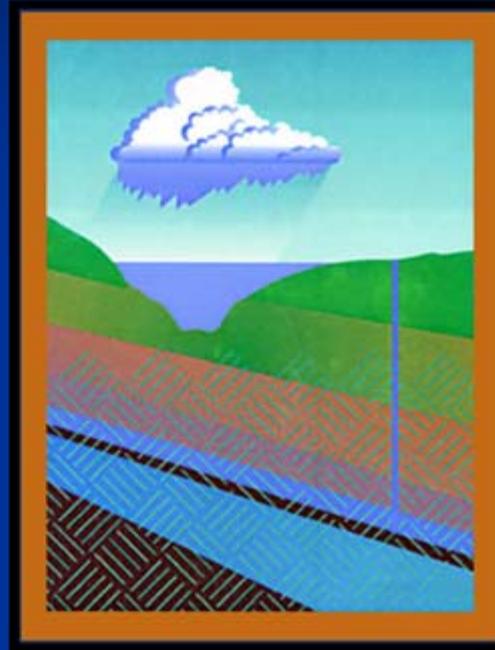
City of Norman, Oklahoma

Norman 2040 Strategic Water Supply Plan



February 2001

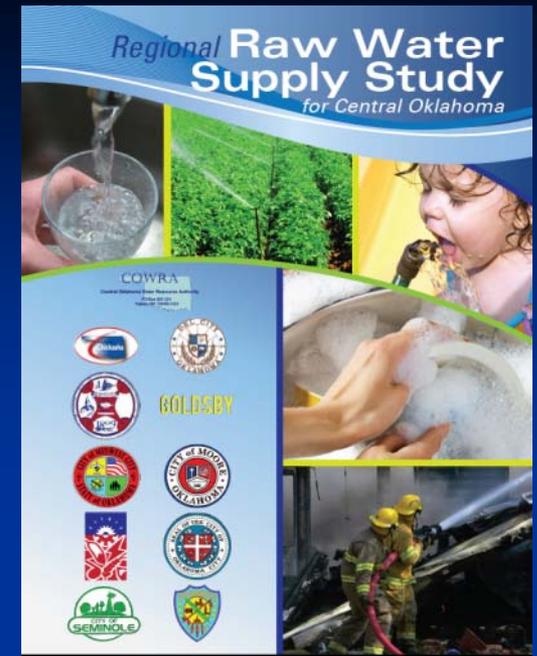
Presented By:
Norman Utilities Authority



- 2001 Recommended Plan
 - Expand Garber-Wellington Wellfield
 - Partner for SE Oklahoma Water Sources

2009 Regional Raw Water Supply Study for Central Oklahoma

- 11 Cities in Central Oklahoma
- Quantity & quality from various SE Oklahoma sources
- Alternate diversion points & project costs
- Distribution of raw or treated water to cities



Lake Sardis
Alt. 1



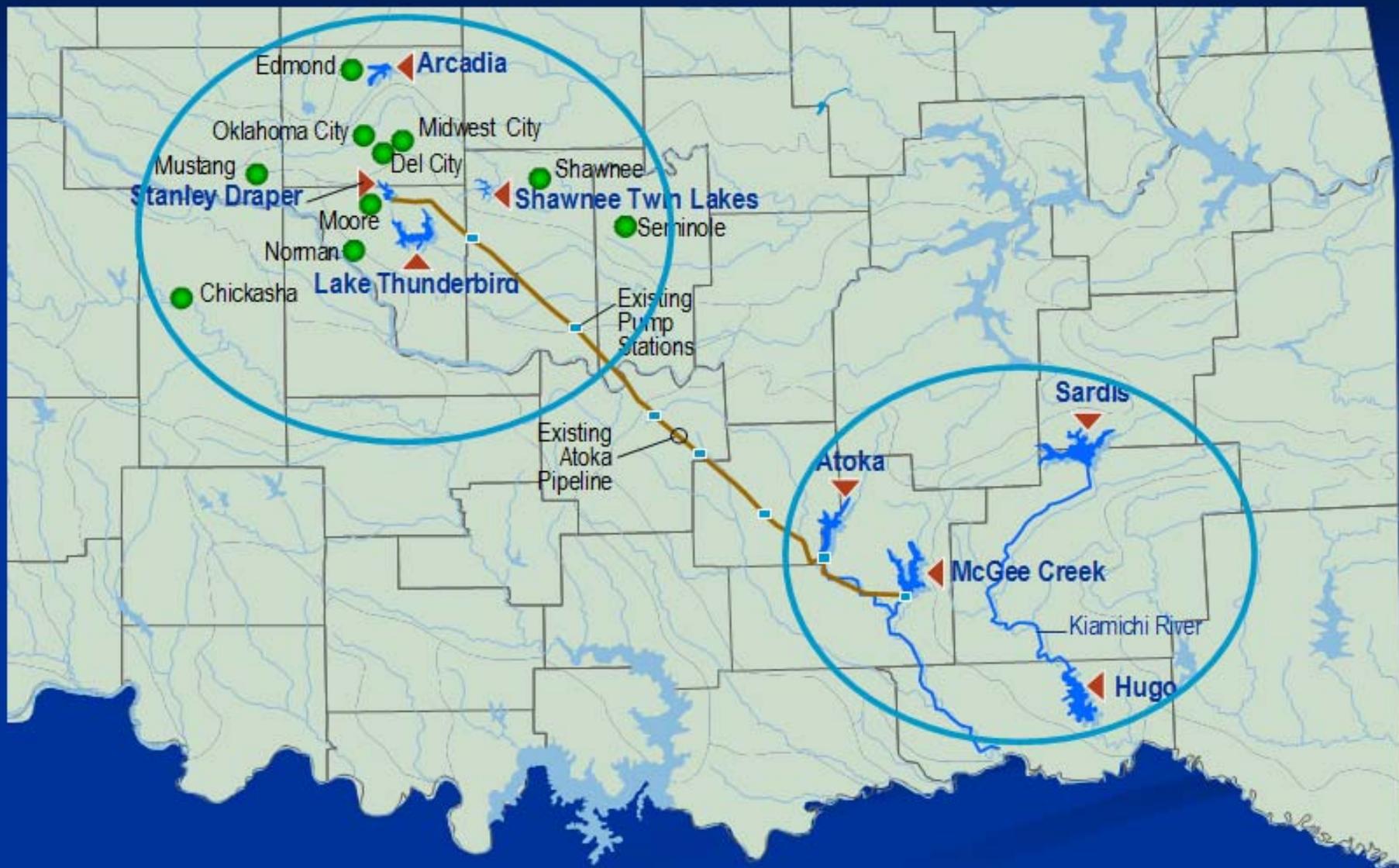
Moyer's
Alt. 2



Highway 3
Alt. 3

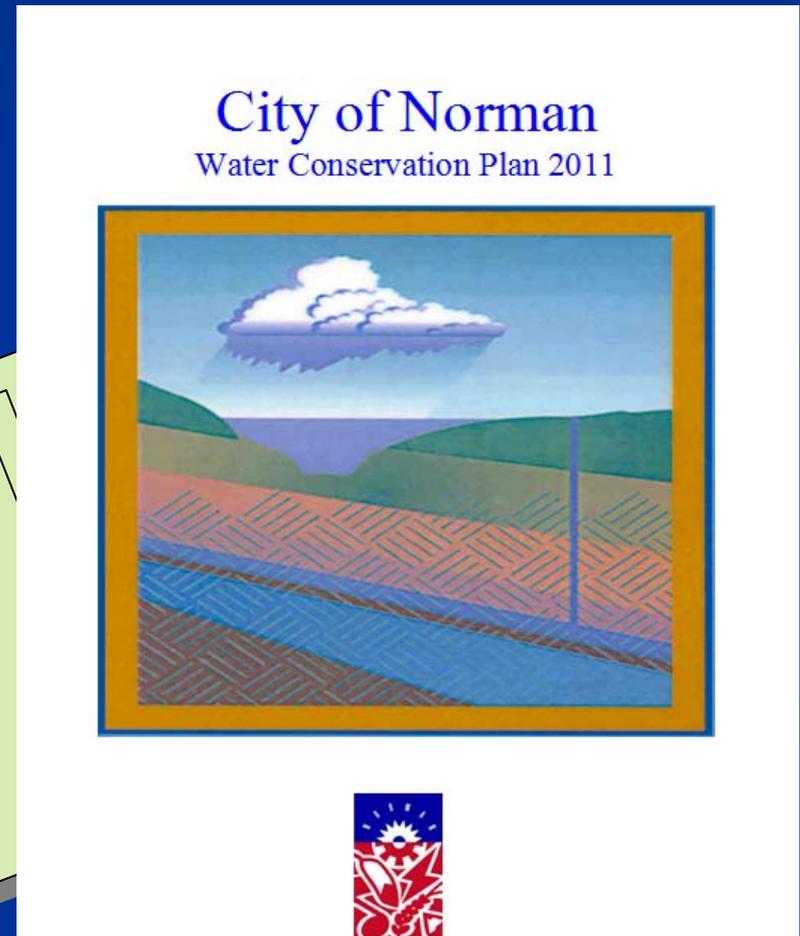
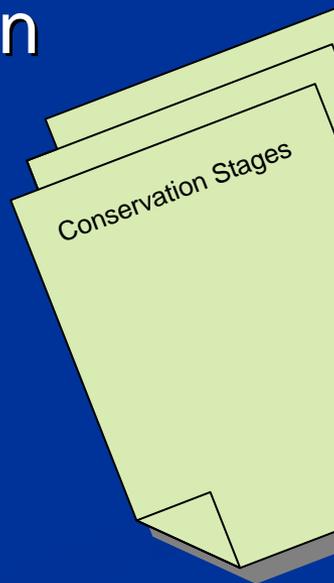


Lake Hugo
Alt. 4



Water Conservation

- Updated Water Conservation Plan
- ECAB Conservation Research
- Public Education



Water Conservation: Existing Plan

- Metering Program 2000
- Plumbing fixtures 1997
- Leak Repair
- Education – newspaper, schools, etc.
- Reuse for golf course
- Water rates
 - inverted block 1999 rate
 - rate increase 2006

Water Conservation: Recent Additions

- Irrigation ordinances
- Odd/Even watering days
- Meter Replacement Program
- Water Reuse at the WWTP
- Griffin Park lake
- Westwood Golf Course
- Updates to City Ordinances
- Web sites and links

The Water Cycle

Continuous movement of water from ocean to air and land then back to the ocean, is as old as the earth itself.

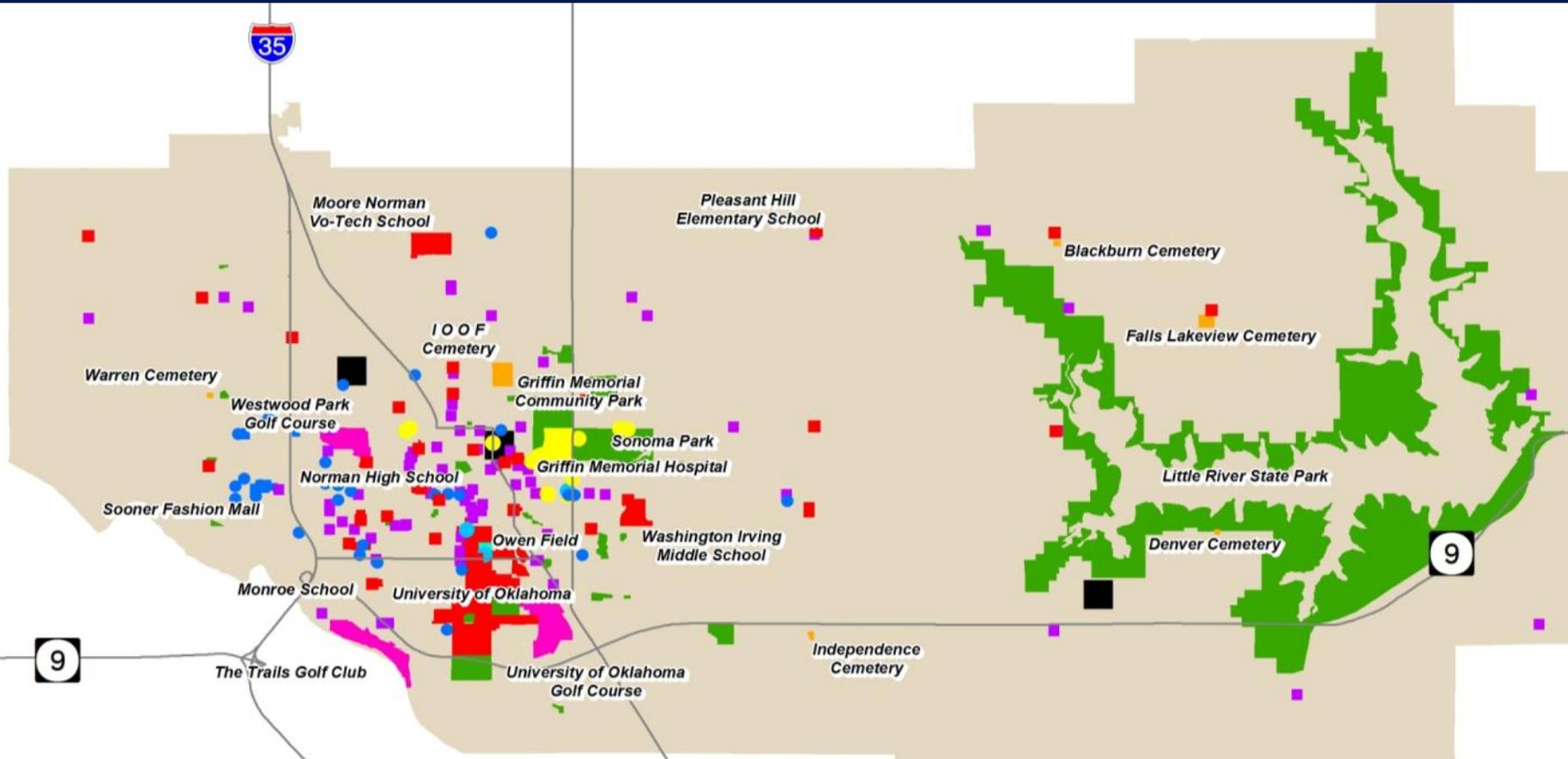
The basic underlying principle is simple: *all water is recycled.*

There is no new water.

11+ MGD discharged to the Canadian River



Potential New Reuse Sites



Legend

— Highways	Government Building
City Limits	Golf Course
Potential Customers	Medical Facility
Airport/Heliport	Park
Cemetery	Shopping Center
Church	Stadium or Arena
Educational Institution	

Changes Since Norman's 2001 Water Supply Plan

- Arsenic Rule
- Chromium VI
- Additional Ground Water Rules
- Aquifer Yield
- Lake Thunderbird Safe Yield
- Reuse Regulations
- Conservation Successes
- Technological Improvements
- Partnering Opportunities / Regional Projects

Water Planners Speak a Different Language...

■ Water Use Types

- Municipal & Industrial (Public Water Supply)
- Potable vs. Non-potable
- Service area vs. domestic wells

All the water uses connected to the municipal system – Residential, Commercial, Industrial, Irrigation, Firefighting...

■ Measurement

- acre-foot
- acre-feet per year (AFY)
- million gallons per day (mgd)
- gallons per capita per day (gpcd)

1 acre-foot = 325,851 gallons

2011 Norman use:

- 15,400 AFY
- 13.9 mgd on average
- 23.9 mgd peak day (Aug. 5, 2011)

Per-capita use includes residential AND industrial AND commercial

SWSP Ad Hoc Committee

- Ensure open and two-way dialogue between the project and the community
- Make sure the project continues on track and on schedule
- Ensure the options and suggestions of the public for potential water supplies are addressed
- Assist in evaluating non-monetary criteria for potential water supply sources
- Understand and be able to communicate the objectives and conclusions of the Strategic Water Supply Plan to the public

AGENDA

Water supply planning overview

Norman's existing water system

What water supply options are being considered?

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Feedback on supply options and evaluation criteria

Water Enterprise Fund

- Over 5 billion gallons produced each year
- 24/7 365 days a year



- Over 550 miles of pipelines
- 170,000 water quality tests per year

Norman's Existing Water Sources



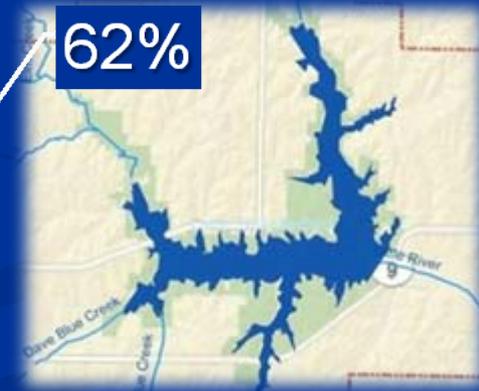
36%

Ground-water Wells
(Garber-Wellington aquifer)

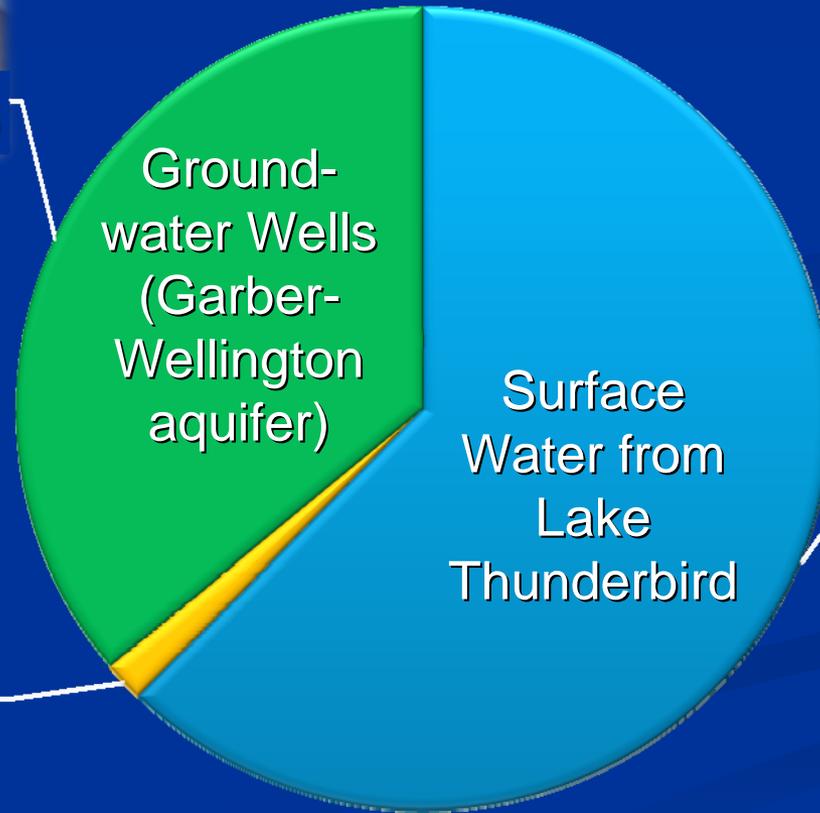


OKC
2%

Surface Water from Lake Thunderbird



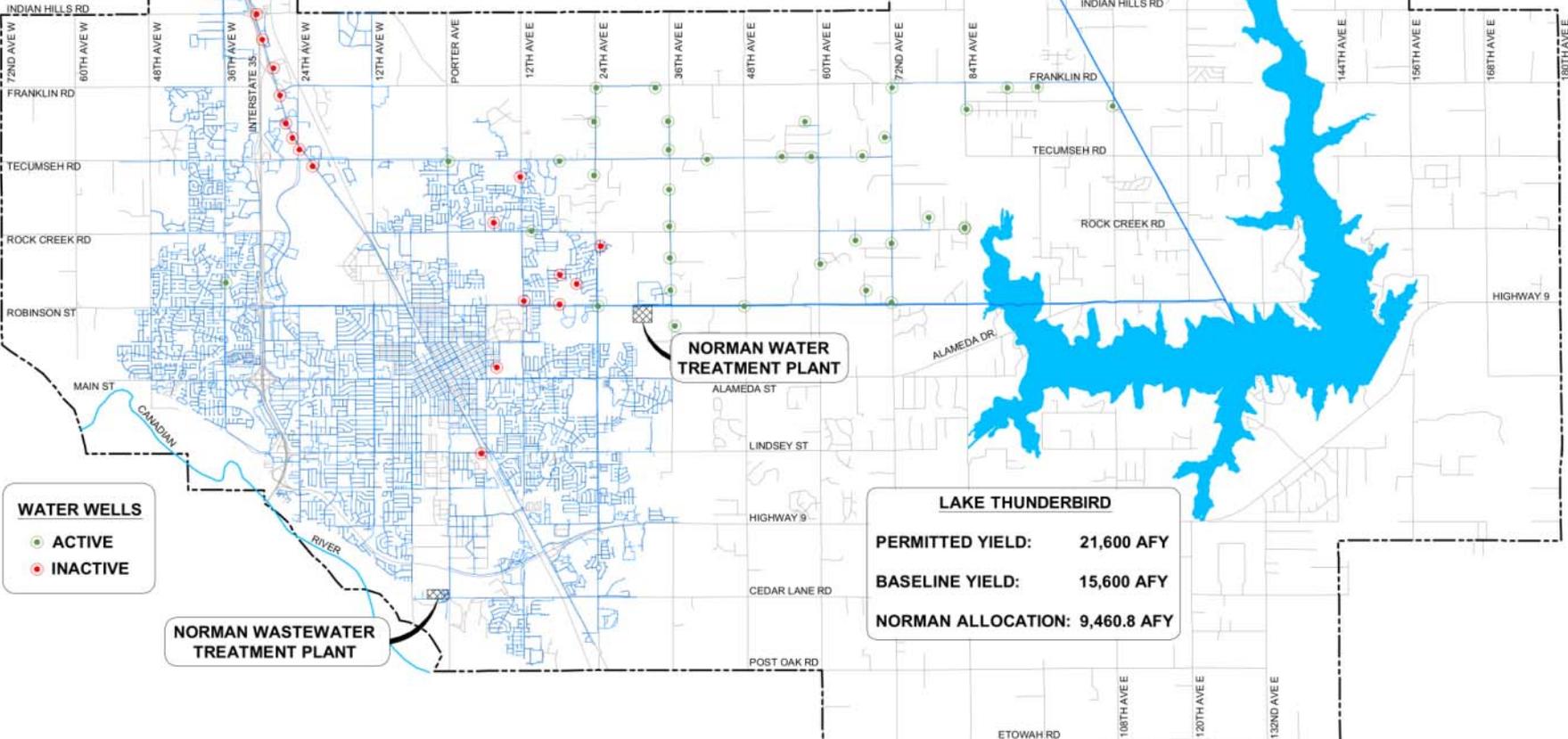
62%



LOCAL SOURCES

TREATED WATER FROM OKLAHOMA CITY

WELL SYSTEM CAPACITY: 8.72 MGD
WELL AVERAGE YIELD: 4.4 MGD



WATER WELLS

- ACTIVE
- INACTIVE

NORMAN WASTEWATER TREATMENT PLANT

NORMAN WATER TREATMENT PLANT

LAKE THUNDERBIRD

PERMITTED YIELD: 21,600 AFY
 BASELINE YIELD: 15,600 AFY
 NORMAN ALLOCATION: 9,460.8 AFY

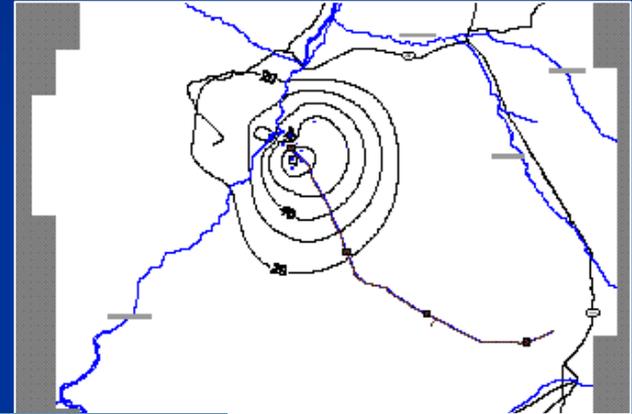
No Single Supply is "Perfect"



Surface

Water:

*Renewable
but may not
be fully
reliable in
extended
drought*

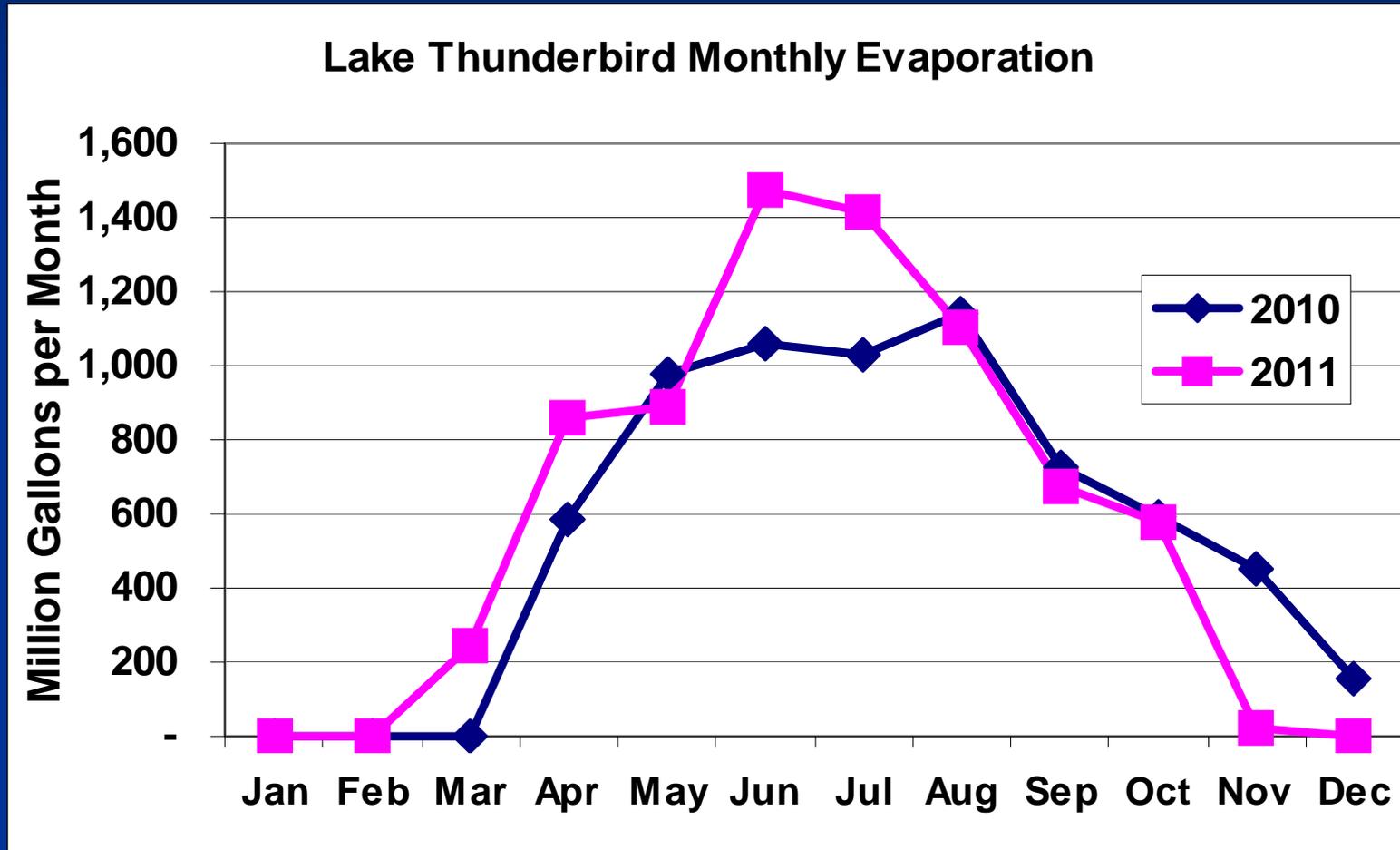


Groundwater:

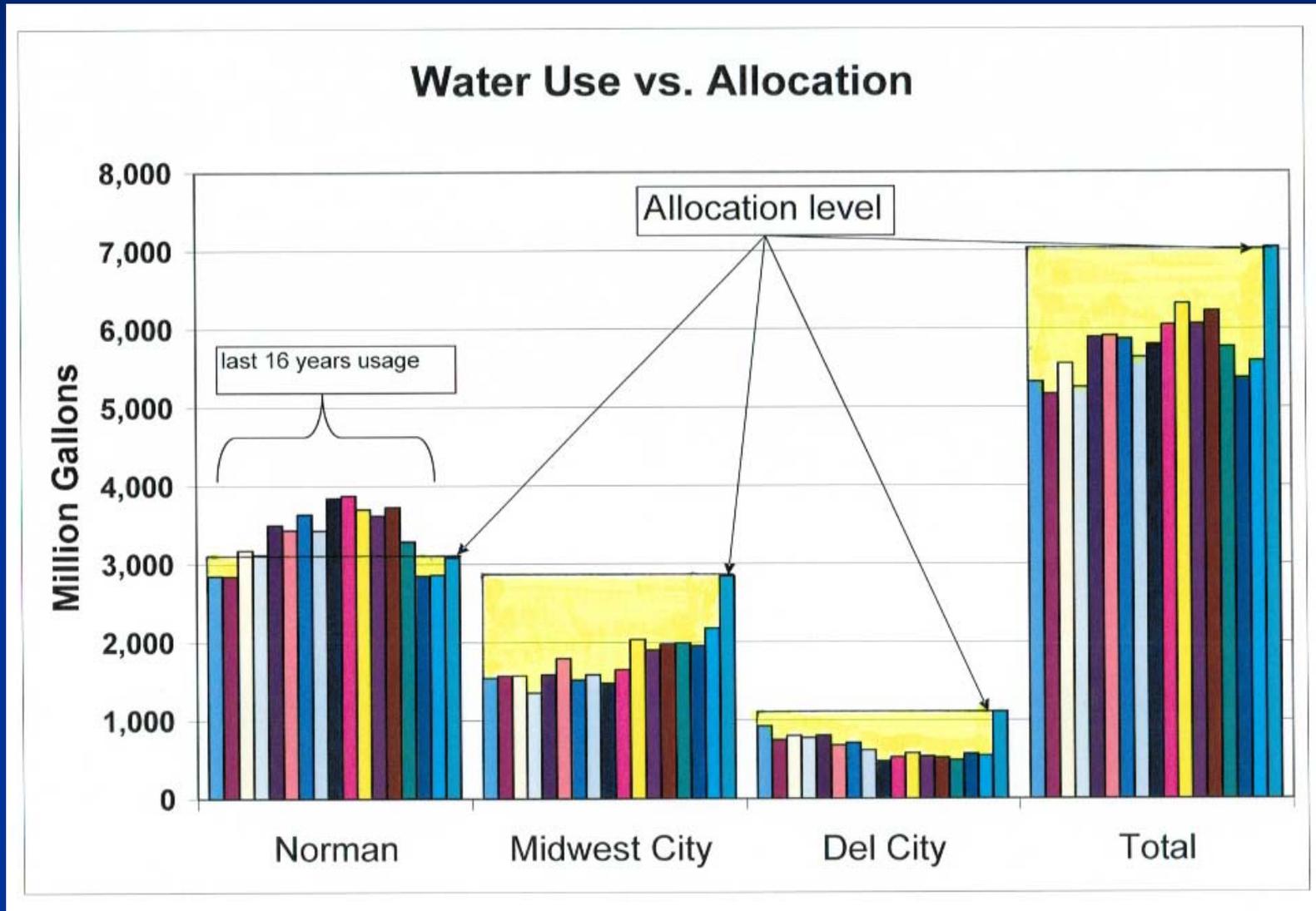
*Reliable but
may not be
sustainable if
over-utilized;
local water
quality issues*



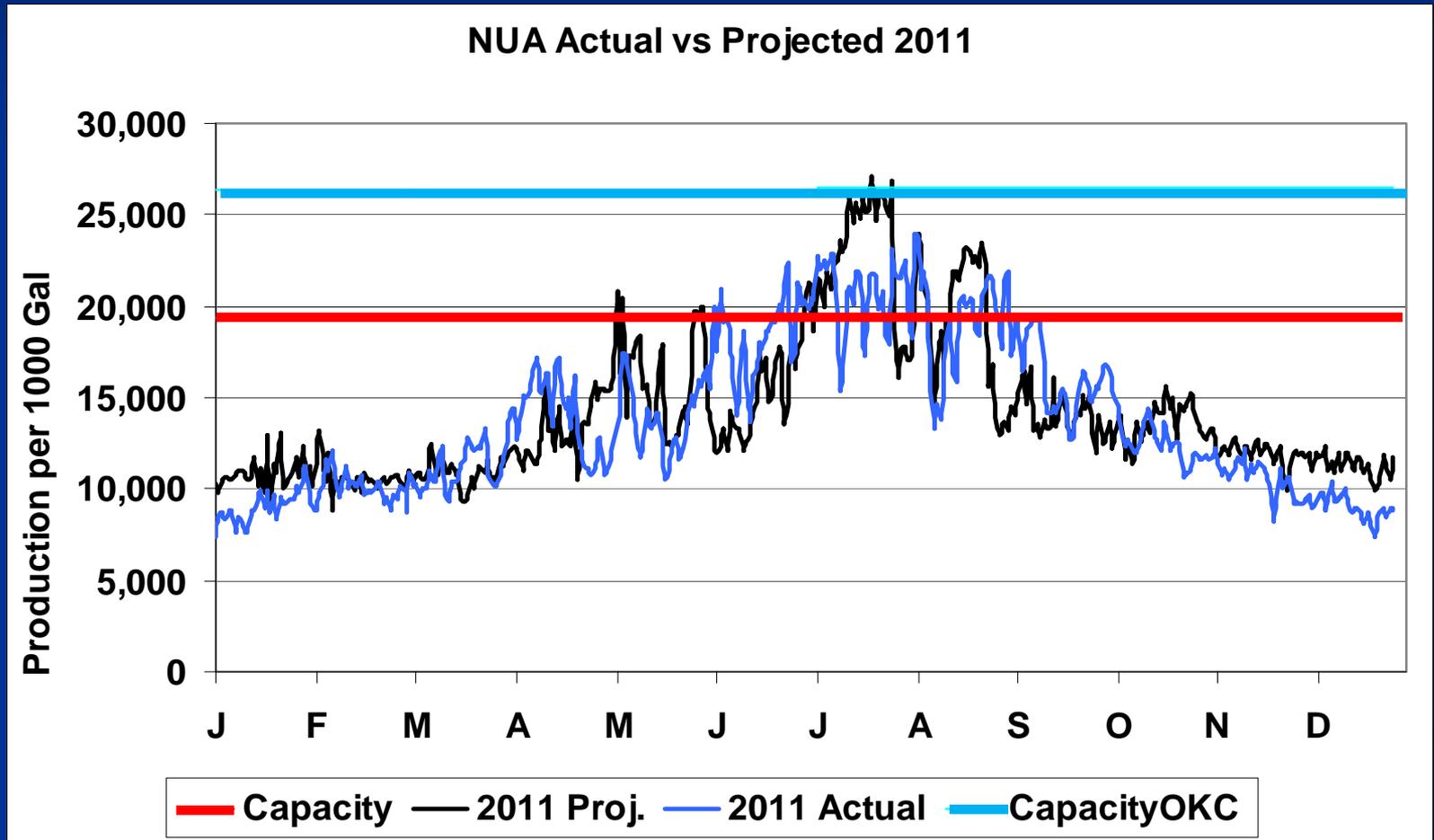
Lake Thunderbird Evaporation



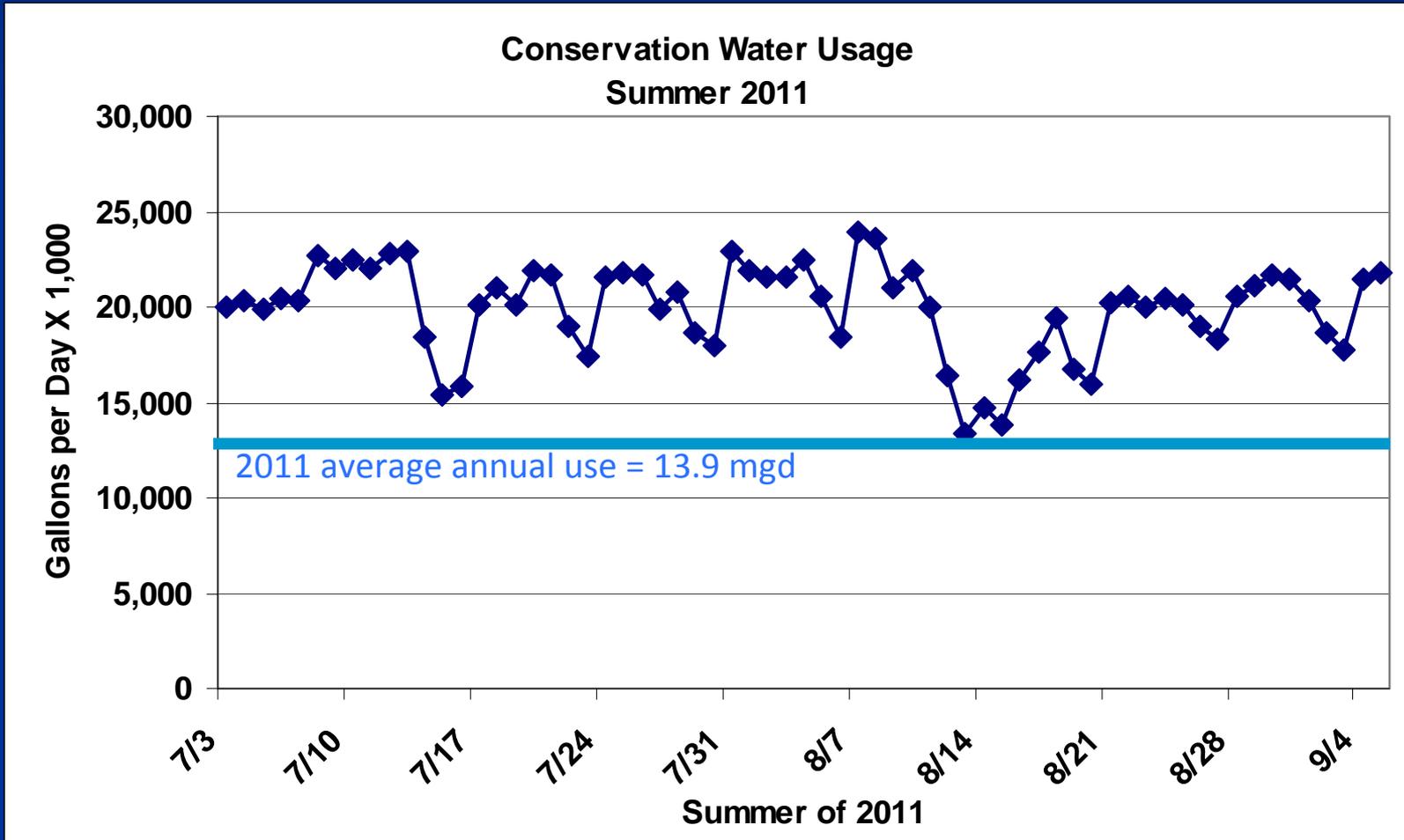
Lake Thunderbird Water Use



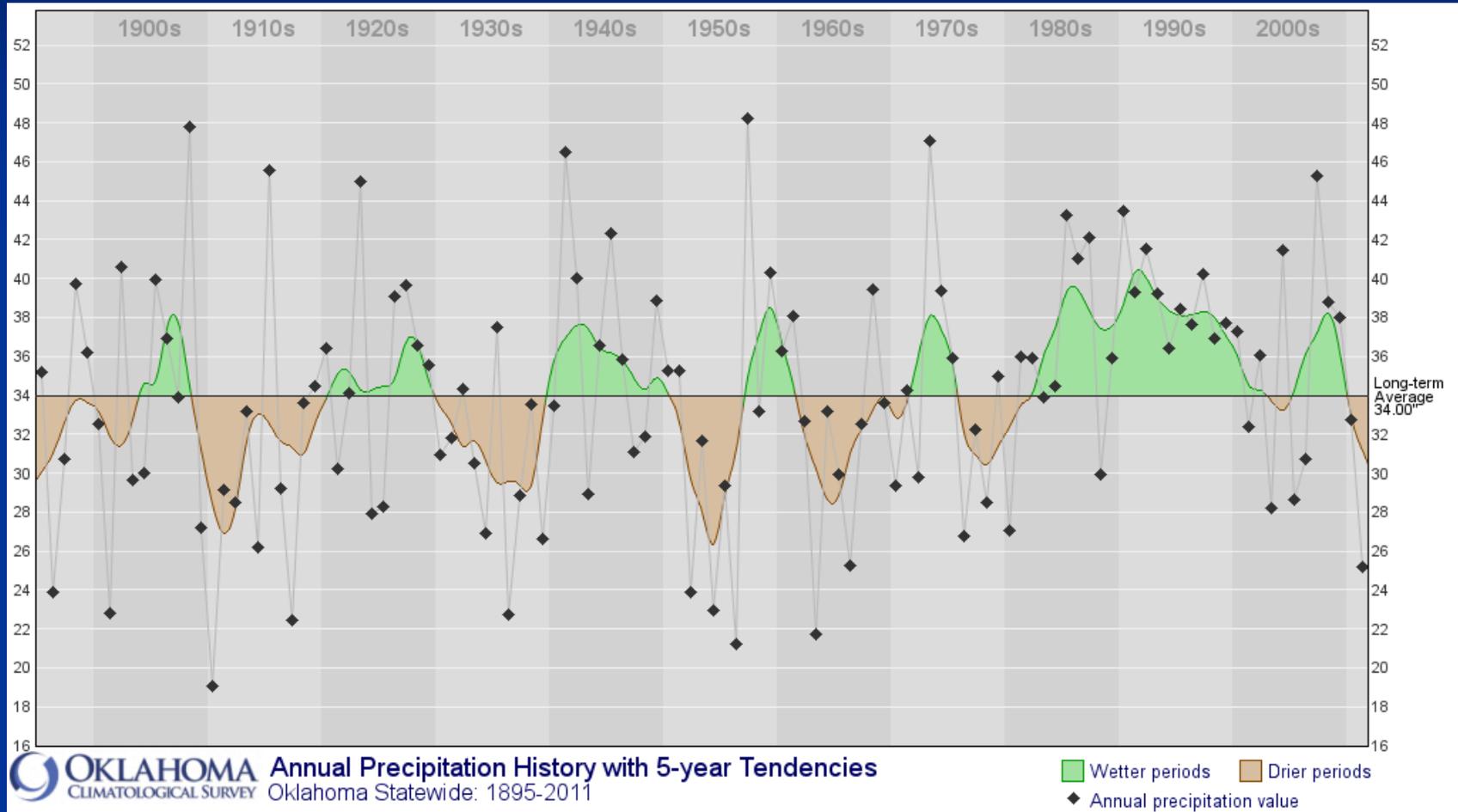
2011 Water Usage



Water Conservation Summer 2011



Oklahoma Precipitation



NORMAN 2025

Land Use & Transportation Plan

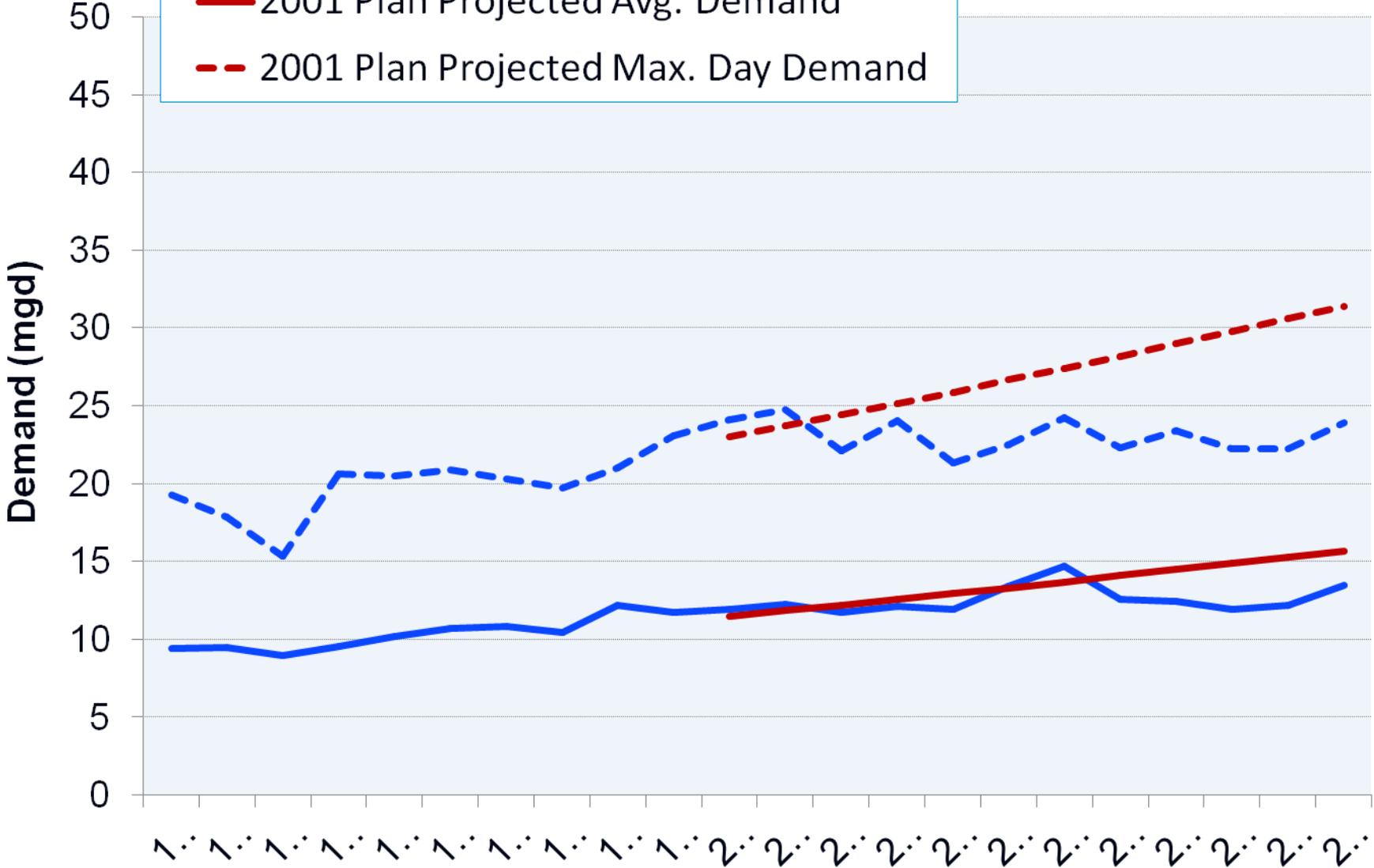
Department of Planning
and Community Development

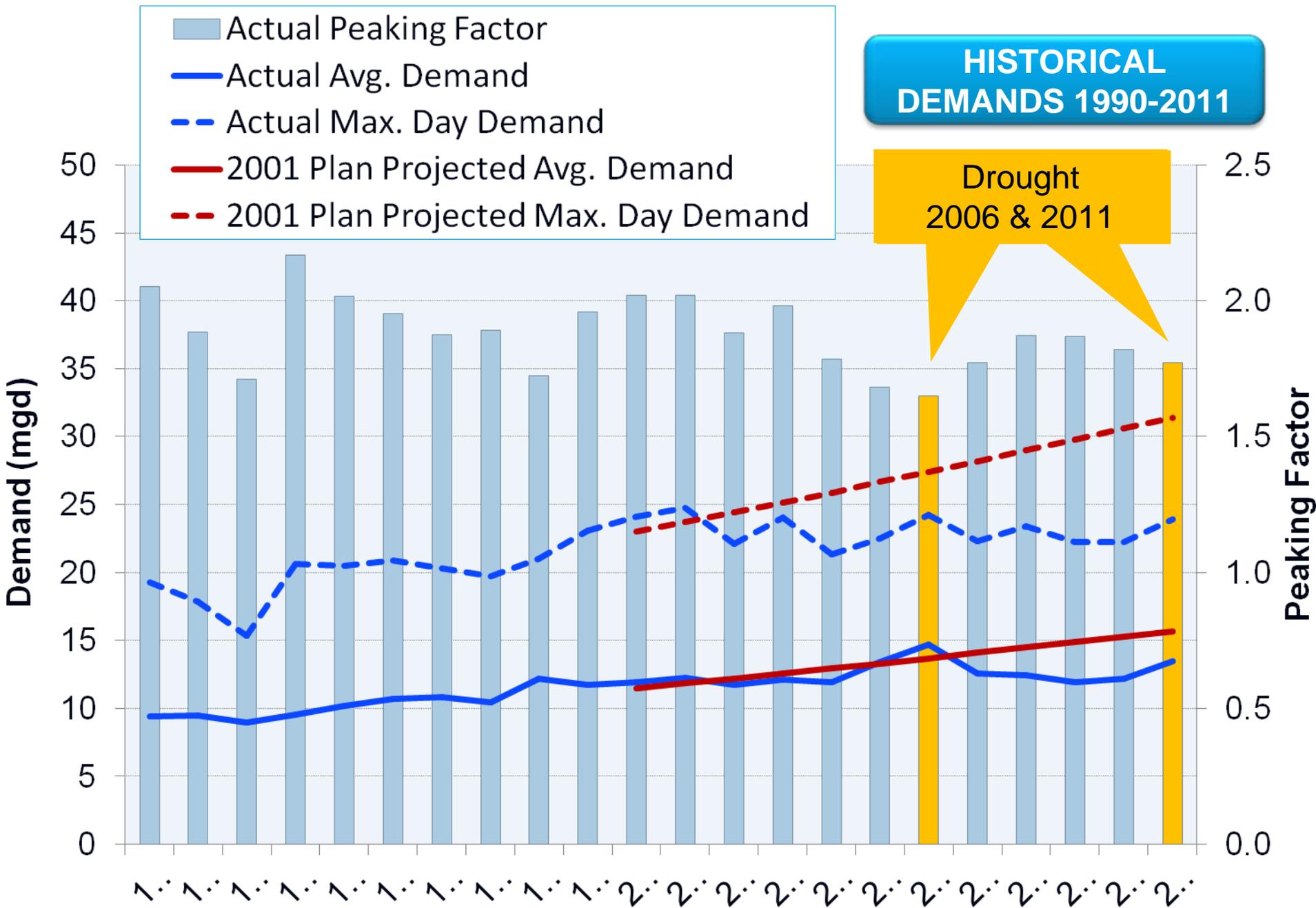


*Strategic Water Supply
Plan meets demands
based on City of Norman
adopted land use plans*

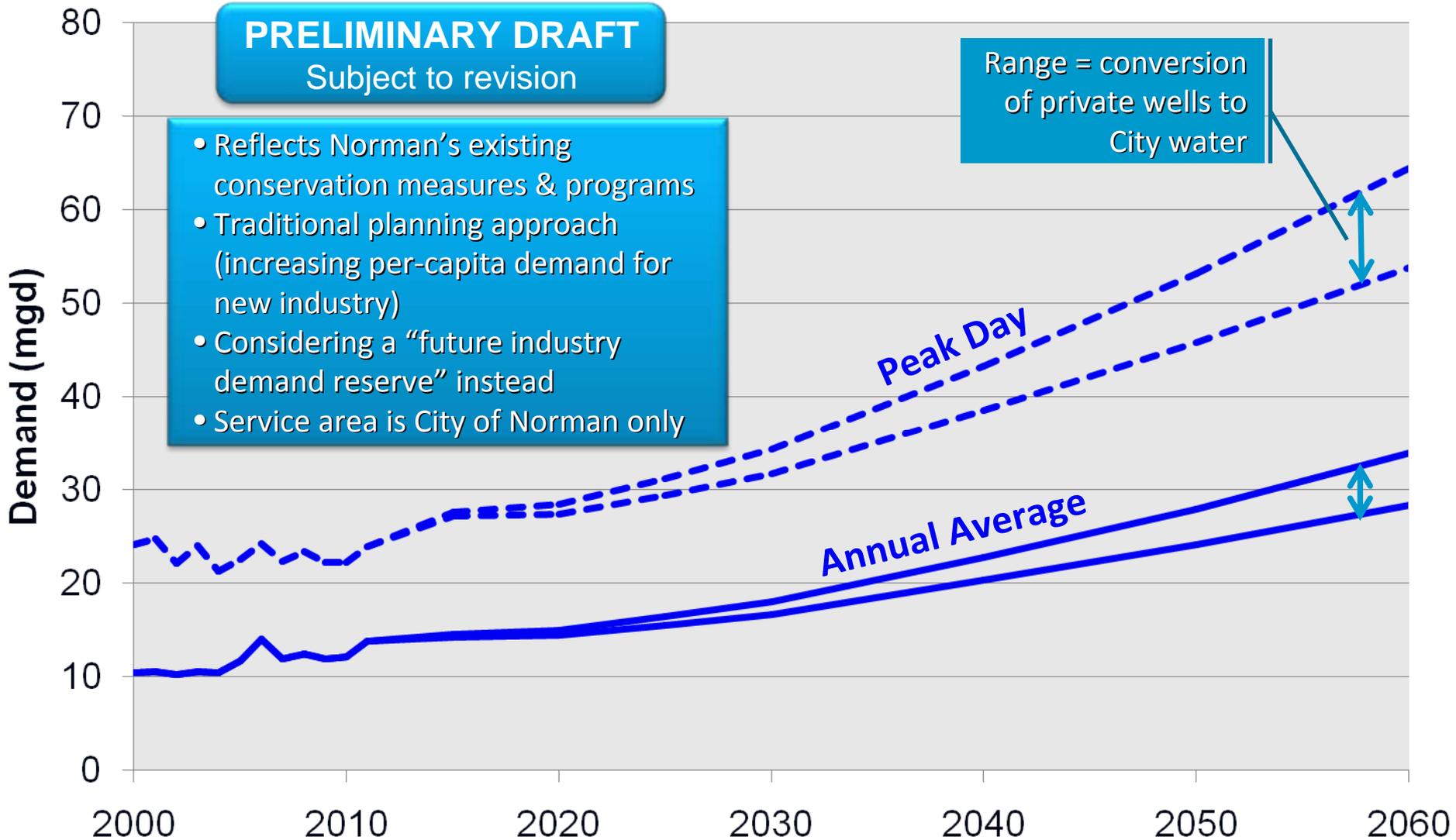
**HISTORICAL
DEMANDS 1990-2011**

- Actual Avg. Demand
- - Actual Max. Day Demand
- 2001 Plan Projected Avg. Demand
- - 2001 Plan Projected Max. Day Demand





Projected Water Use



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Source Options to be Evaluated

- Three general types of sources
 1. Existing sources under new regulations and yield
 2. Maximize and enhance local supplies
 3. Leverage outside water sources

Not evaluating these sources or eliminating any right now – that's the next step

Sources to be Evaluated

- Existing sources under new regulations & yield
 - Local Garber-Wellington groundwater wells
 - Lake Thunderbird & WTP
 - OKC treated water interconnect

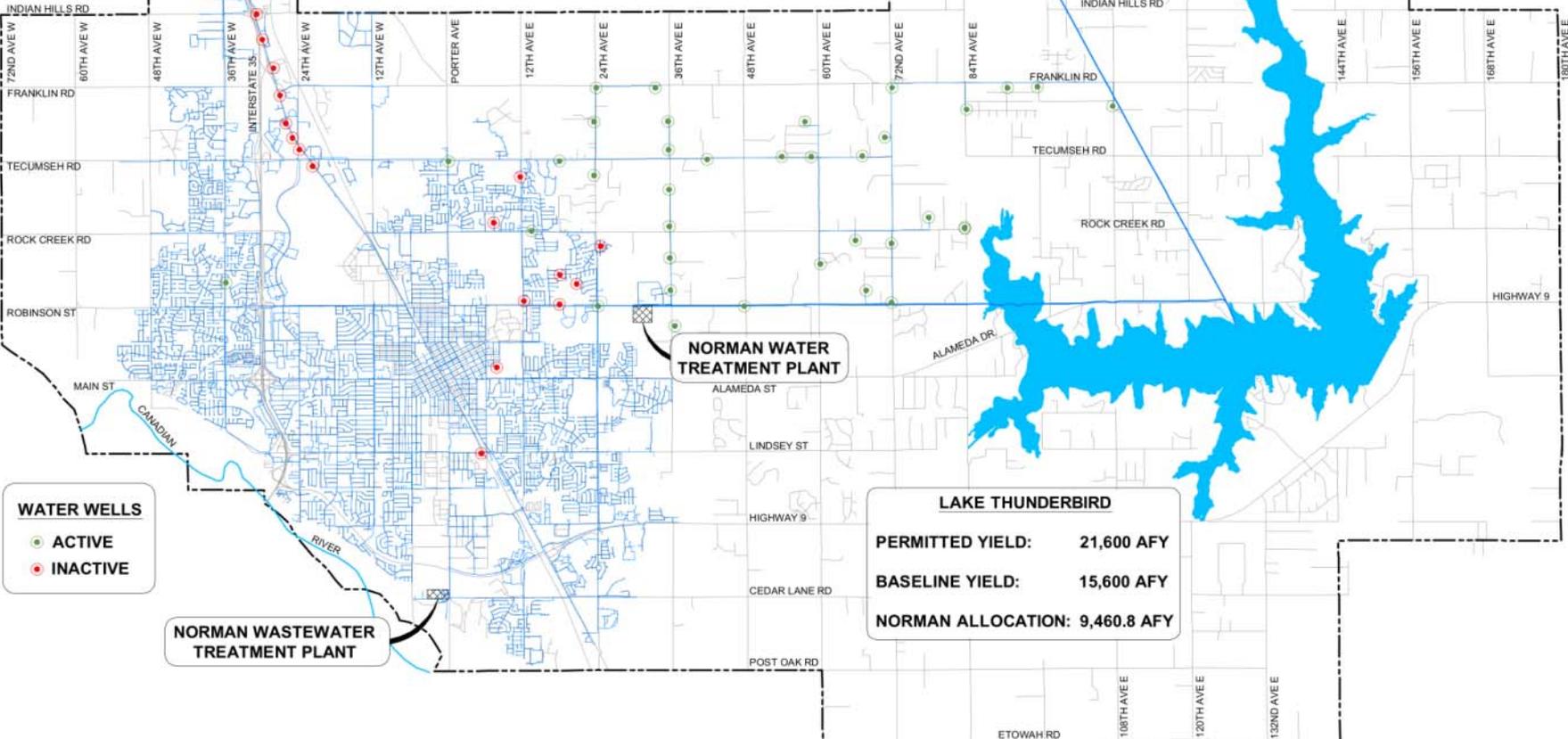
Source Options to be Evaluated

- Maximize and enhance local supplies
 - Lake Thunderbird spillage
 - Lake Thunderbird augmentation
 - Groundwater recharge
 - New Eastside or Westside Reservoir
 - New Diversions from the Canadian River
 - Treated Effluent Reuse
(direct non-potable vs. indirect potable)
 - Additional Conservation Measures
 - Stormwater Capture and Reuse

LOCAL SOURCES

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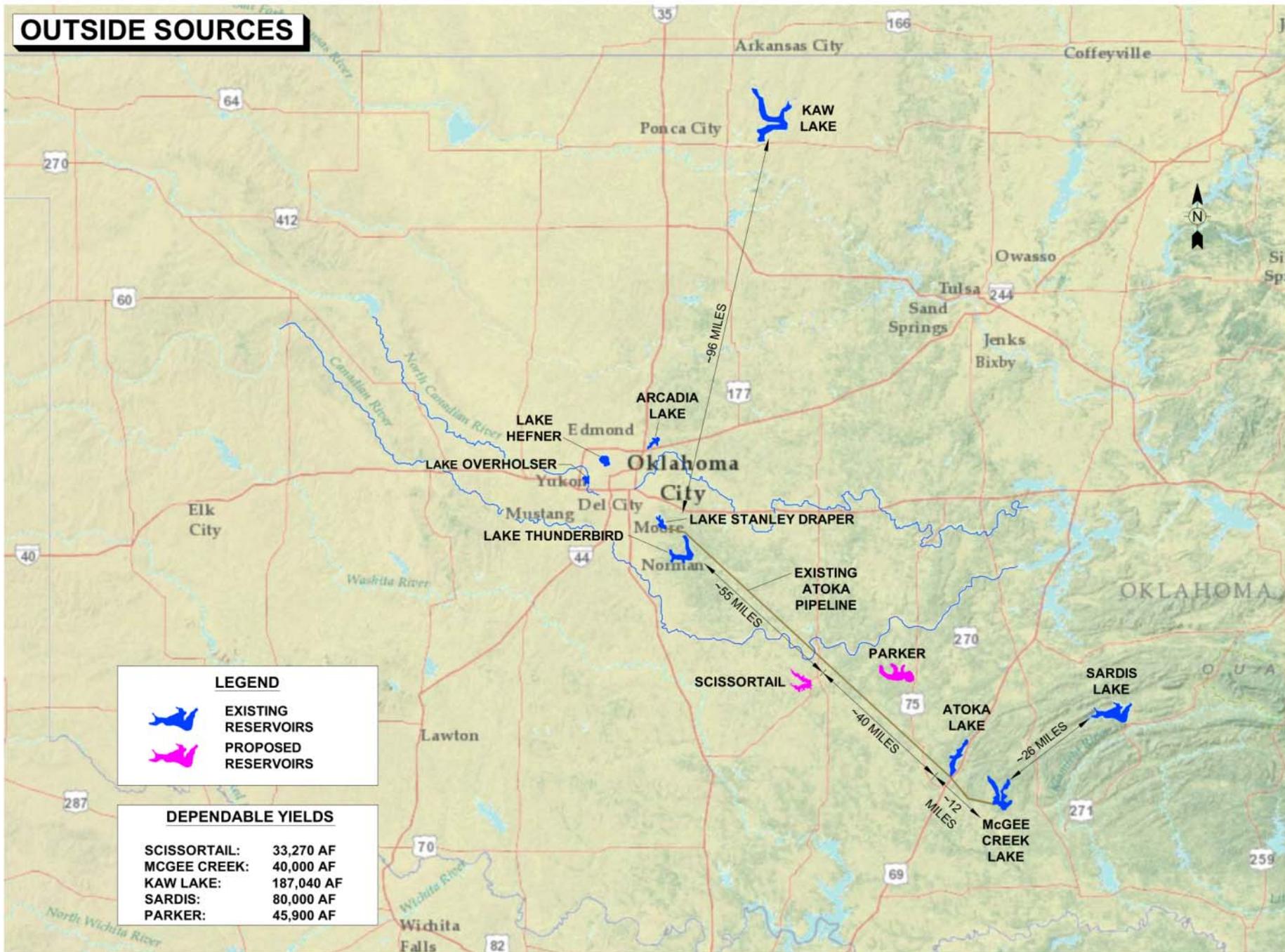
LAKE THUNDERBIRD

PERMITTED YIELD: 21,600 AFY
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Source Options to be Evaluated

- Leverage Outside Water Sources
 - Bulk purchase from OKC
 - Bulk raw water from SE Oklahoma
 - Scissortail Reservoir
 - Parker Reservoir
 - Kaw Reservoir

OUTSIDE SOURCES



LEGEND



EXISTING RESERVOIRS



PROPOSED RESERVOIRS

DEPENDABLE YIELDS

SCISSORTAIL:	33,270 AF
MCGEE CREEK:	40,000 AF
KAW LAKE:	187,040 AF
SARDIS:	80,000 AF
PARKER:	45,900 AF

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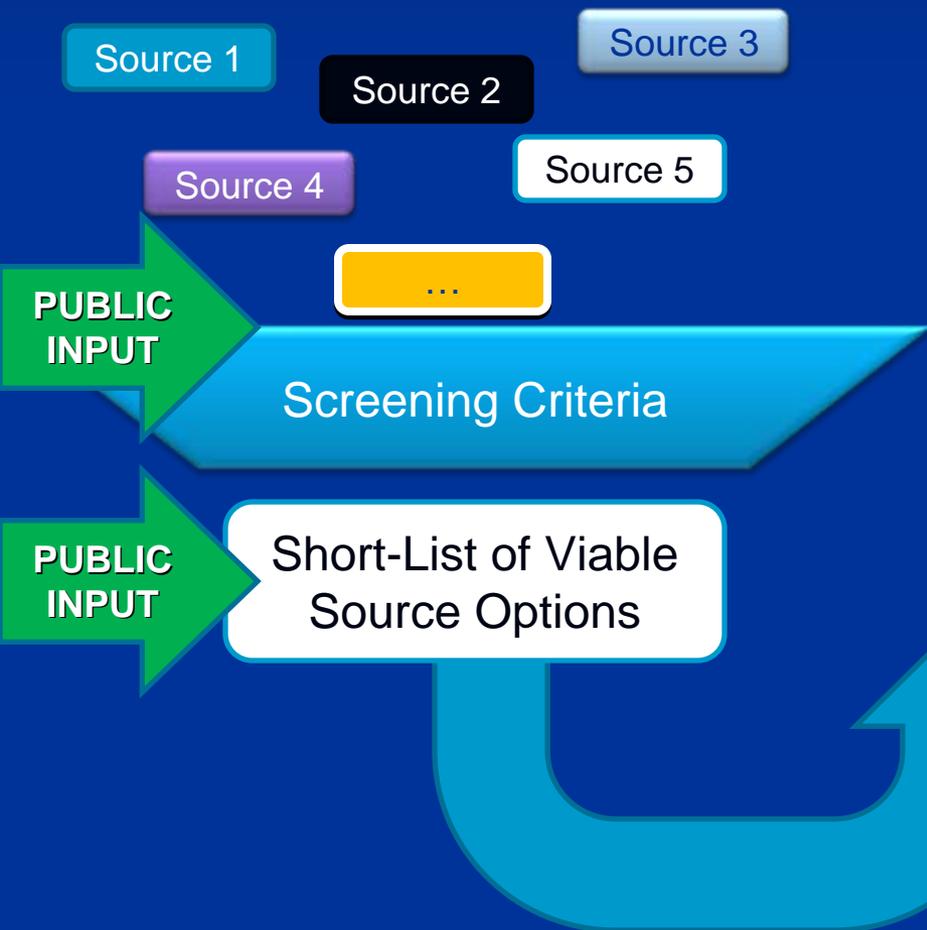
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What will we discuss at upcoming public meetings?

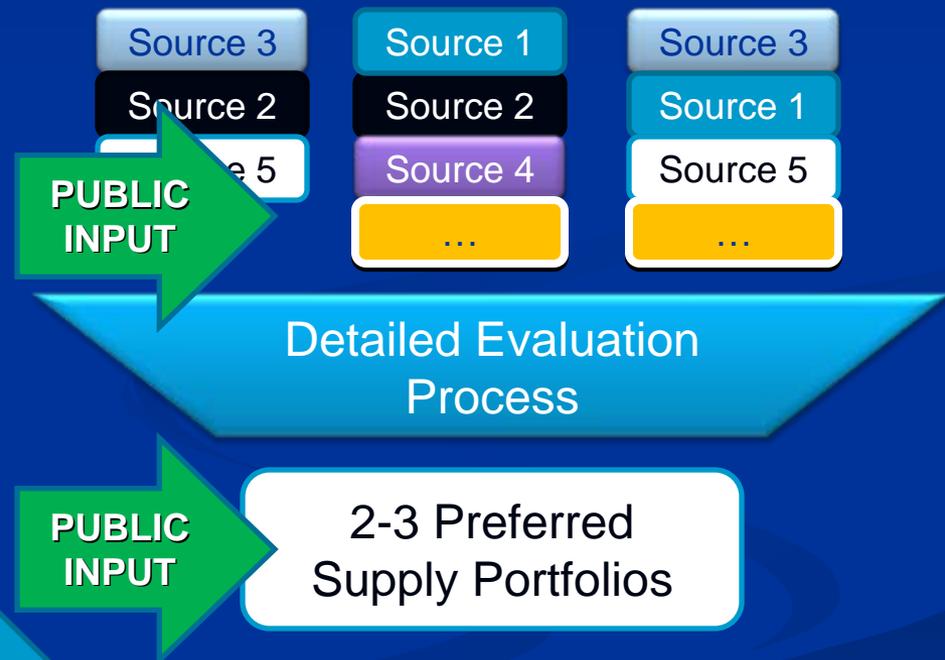
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Water Supply Planning Terminology & Process

Source Options (Phase 1)



Supply Portfolios (Phase 2)



EVALUATION CRITERIA

Objective	Questions We'll Answer
Affordability	<i>“What will it cost to reliably provide treated water?”</i>
Long-Term Supply Reliability	<i>“Will we be able to reliably meet our demand?”</i>
Phasing Potential	<i>“Can we defer capital and increase the supply over time?”</i>
Timely Implementation and Certainty	<i>“Are we certain we can bring the supply online by the time it is needed?”</i>
Efficient Use of Water Resources	<i>“Are we making the best use of the available resources?”</i>
Environmental Stewardship	<i>“Are we preserving our environmental resources?”</i>
Treated Water Quality Aesthetics	<i>“Will our customers be satisfied with the quality of the water we deliver?”</i>

Objective	Sub-objectives & measures
Affordability	<ul style="list-style-type: none"> • Minimize capital cost • Minimize life-cycle cost
Long-Term Supply Reliability	<ul style="list-style-type: none"> • Reduce drought vulnerability • Minimize supply shortages • Infrastructure reliability
Phasing Potential	<ul style="list-style-type: none"> • Defer capital costs • Provide for future needs
Timely Implementation and Certainty	<ul style="list-style-type: none"> • Reduce institutional complexity and increase local control • Timely implementation
Efficient Use of Water Resources	<ul style="list-style-type: none"> • Maximize water use efficiency • Increase conservation
Environmental Stewardship	<ul style="list-style-type: none"> • Minimize energy consumption • Minimize temporary construction impacts and environmental mitigation needs • Minimize permanent ecosystem impacts • Increase use of renewable resources
Treated Water Quality Aesthetics	<ul style="list-style-type: none"> • Achieve secondary MCLs • Minimize taste and odor potential

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SWSP Public Input

- Ad Hoc Committee Meetings
- Public meeting 1 – June 2012
 - SWSP background and goals
 - Input on list of supply sources
 - Input on relative importance of evaluation criteria for supply portfolios
- Public meeting 2:
Results of screening of options
- Public meeting 3:
Supply portfolios to be evaluated
- Public meeting 4:
Results of portfolio screening

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