

Norman Utilities Authority 2060 Strategic Water Supply Plan



**Ad Hoc Committee Meeting
May 23, 2013**

AGENDA

Status and Progress Update

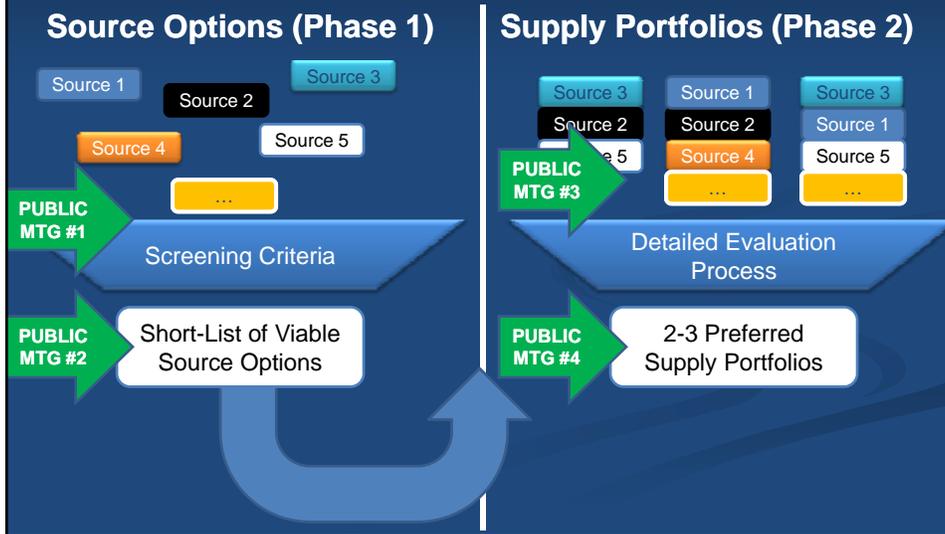
Recommended Portfolios

Implementation Planning for Recommended Portfolios

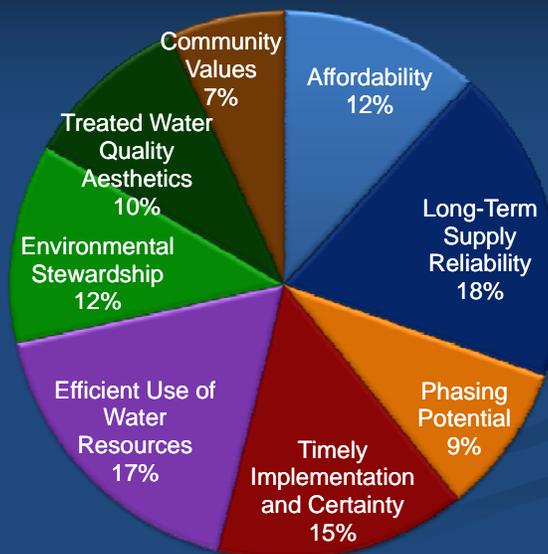
Upcoming Public Meeting 4: Recommended Portfolios

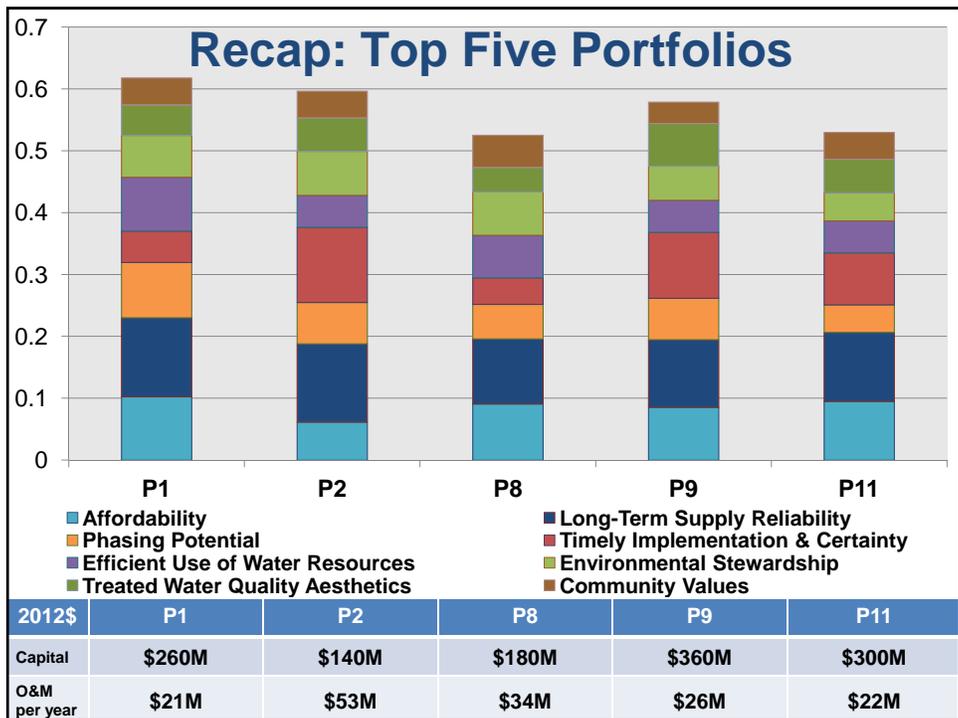
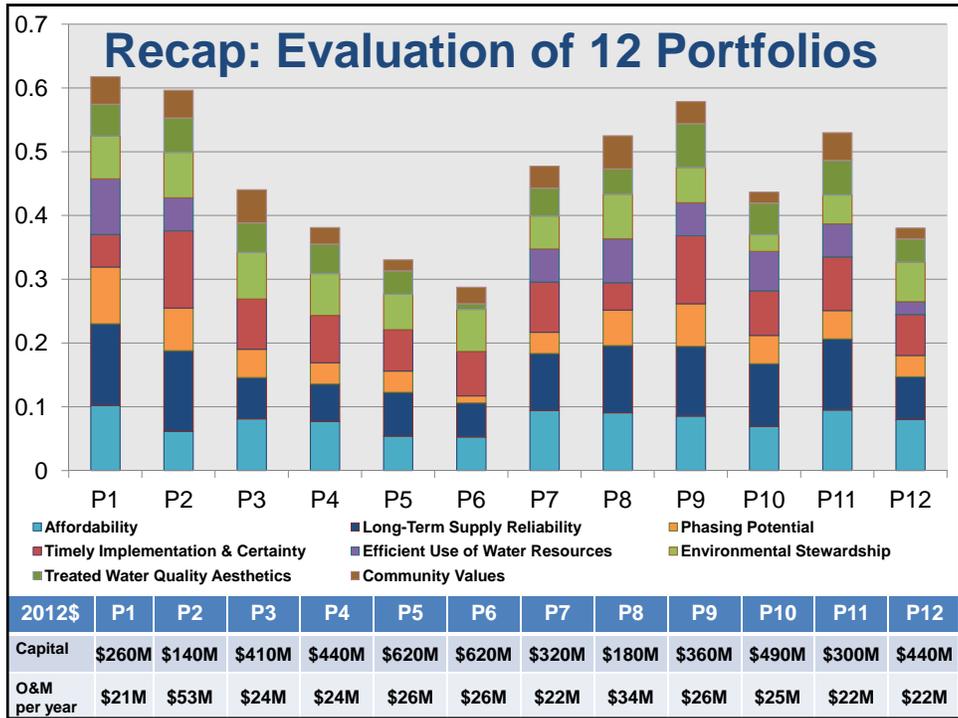
Action Items and Next Steps

SWSP Planning Process



Criteria and Their Relative Importance or "Weight" in Comparing Portfolios





AGENDA

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Upcoming Public Meeting 4: Recommended Portfolios

Action Items and Next Steps

Annual Average Day Source Use in 2060 (mgd)

Portfolio ID	Lake Thunderbird	Active Garber-Wellington Wells (with treatment)	Inactive Garber-Wellington Wells (with treatment)	New Garber-Wellington Wells (with treatment)	Additional Conservation	Direct Non-potable Reuse	Lake Thunderbird Augmentation (IPR)	Treated Water from Oklahoma City (wholesale)	Treated Water from Oklahoma City (co-owner)	Raw Water from Oklahoma City (co-owner)
P1	6.1	6.0	2.1	0	1.0	0.8	13.1			
P2	6.1	6.0	2.1		1.0	0.8		13.1		
P8	6.1				1.0		17.0	5.0		
P9	6.1	6.0	2.1	13.1	1.0	0.8				
P11	6.1	6.0	2.1		1.0	0.8			13.1	

Annual Average Day Source Use in 2060 (mgd)										
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P1	6.1	6.0	2.1	0	1.0	0.8	13.1			
P2	6.1	6.0	2.1		1.0	0.8		13.1		
P8	P8 Eliminated: Lowest Weighted Score among the Top 5									
P9	P9 Eliminated: Concerns with Heavy Reliance on Groundwater									
P11	P11 Modified to form New P13 (Raw Water from SE Oklahoma)									
NEW P13	6.1	6.0	2.1		1.0	0.8				13.1

Recommended Portfolios

- All three have diverse supplies including:
 - Lake Thunderbird at reduced (firm) lake yield
 - Active & inactive existing wells with treatment
 - Additional conservation
 - Additional non-potable water reuse
- Meeting future growth in demand varies
 - P1: Lake Thunderbird Augmentation (indirect potable reuse)
 - P2: OKC Treated Water (wholesale customer)
 - P13: Raw Water from SE Okla. (co-owner)

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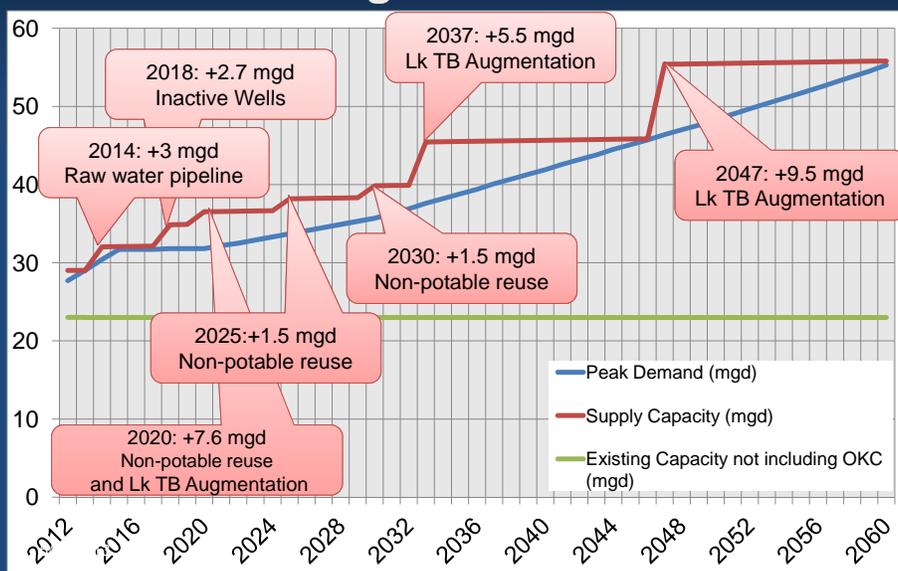
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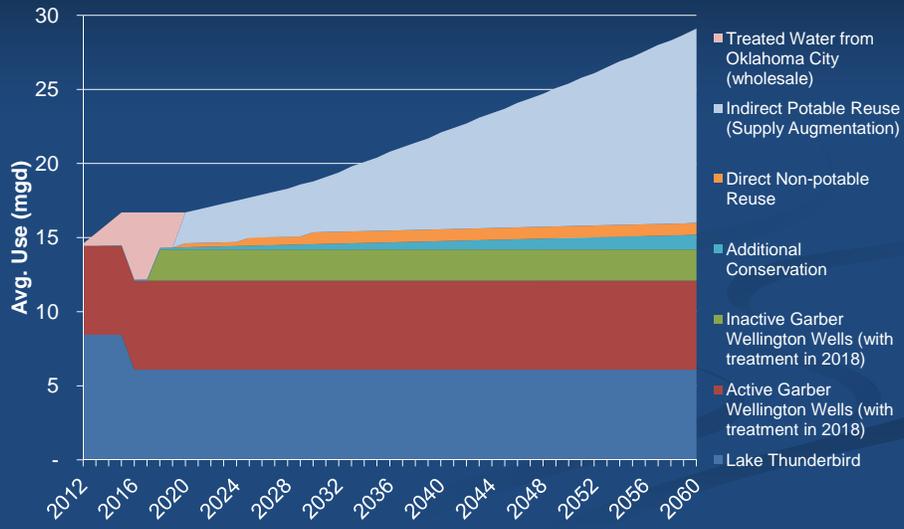
Phased Capacity Increases to Meet Growing Demand: Portfolio 1

PROVISIONAL VALUES
SUBJECT TO CHANGE



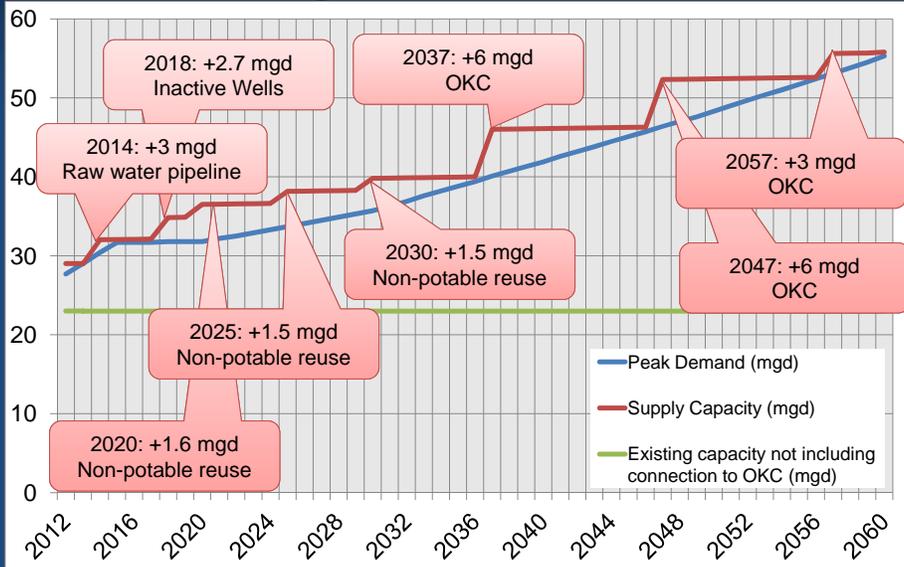
Phased Capacity Increases to Meet Growing Demand: Portfolio 1

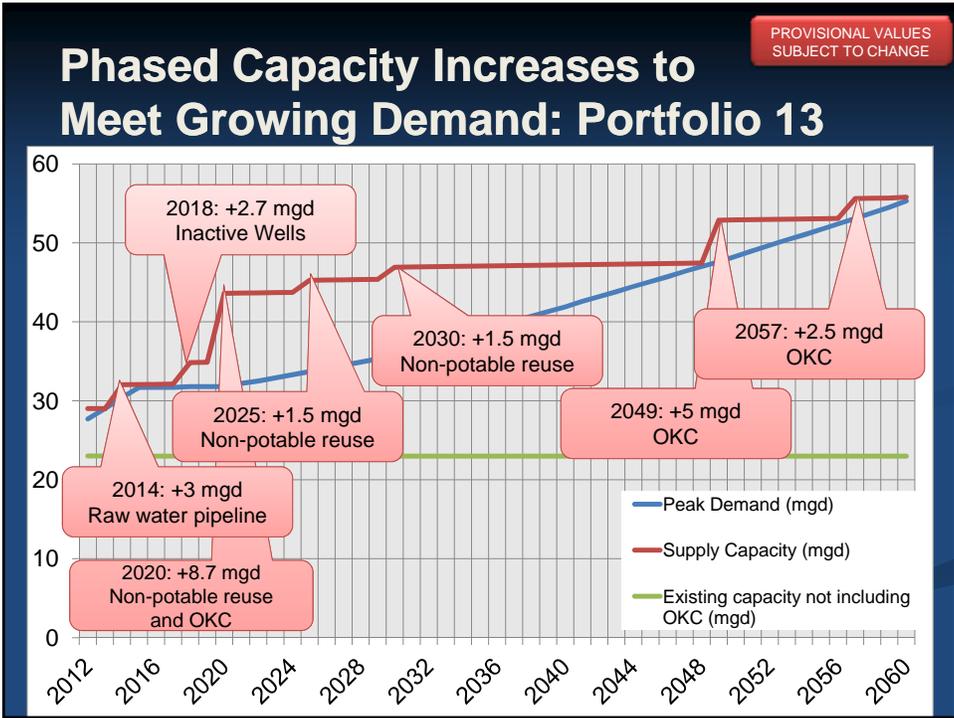
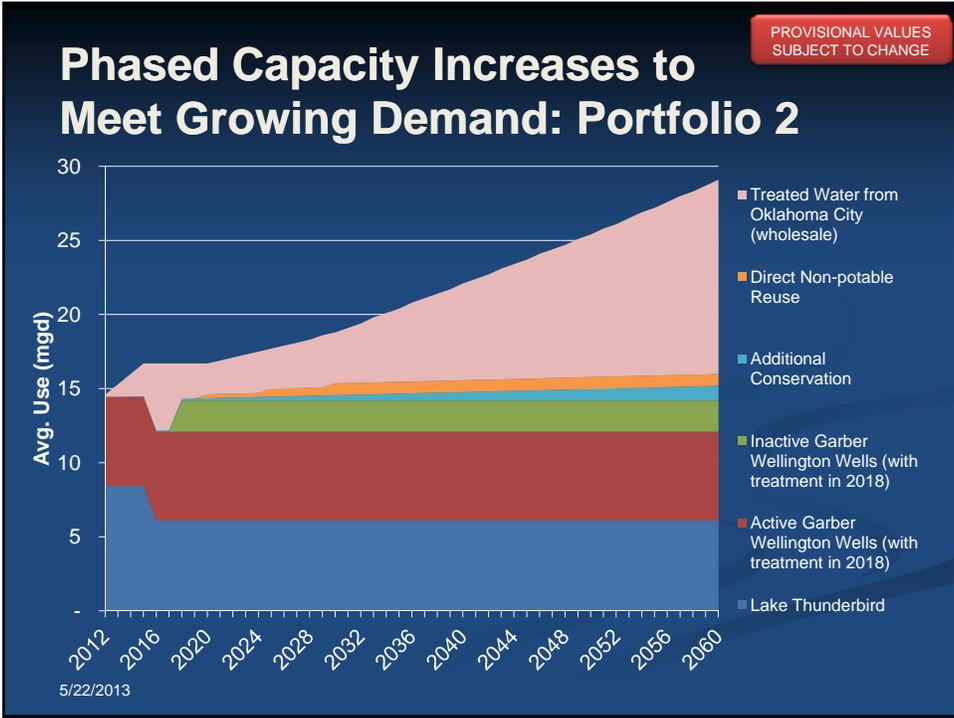
PROVISIONAL VALUES
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Phased Capacity Increases to Meet Growing Demand: Portfolio 2

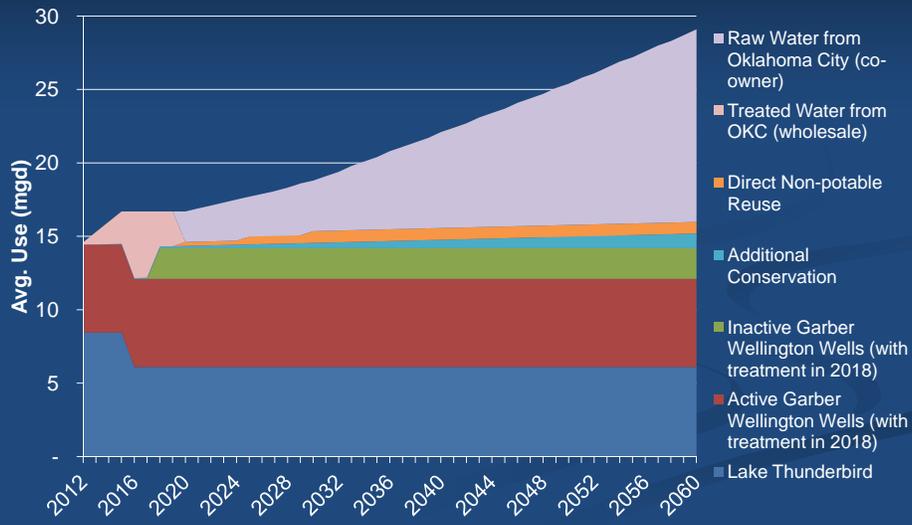
PROVISIONAL VALUES
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Phased Capacity Increases to Meet Growing Demand: Portfolio 13

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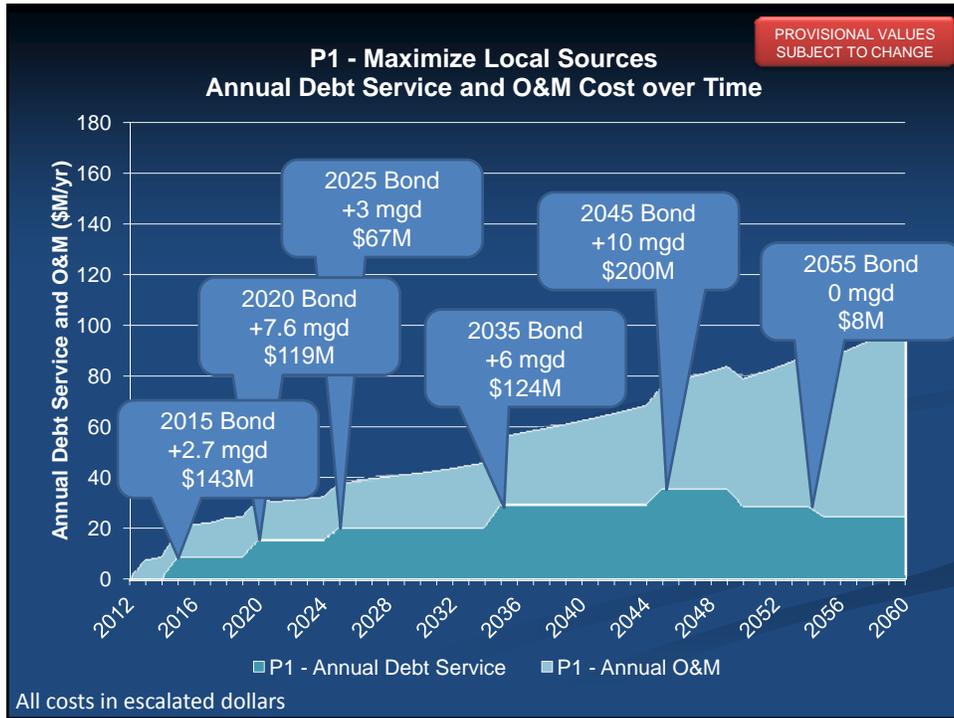
Comparison of Capital Costs

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	P1: Lake Thunderbird Augmentation (IPR)	P2: OKC Treated Water (wholesale customer)	P13: Raw water from SE Oklahoma (co-owner)
Rehabilitation/Replacement of Existing Infrastructure (2012 \$M) ¹	72.0	82.6	72.0
New Infrastructure Required for Capacity Increases (2012 \$M)	176.0	81.1	273.9
New Infrastructure Improvements Required by Regulatory Changes (2012 \$M) ²	69.8	69.8	69.8
Rehabilitation/Replacement of New Infrastructure (2012 \$M)	74.3	49.5	57.1
Total (2012 \$M)	392.1	283.0	472.8
Total (escalated \$M)	661.3	492.8	759.7

Notes:
 1. Existing infrastructure includes Vernon Campbell WTP , raw water piping, and treated water connection to OKC.
 2. Infrastructure required because of anticipated regulatory changes includes treatment for active Garber-Wellington Aquifer wells.

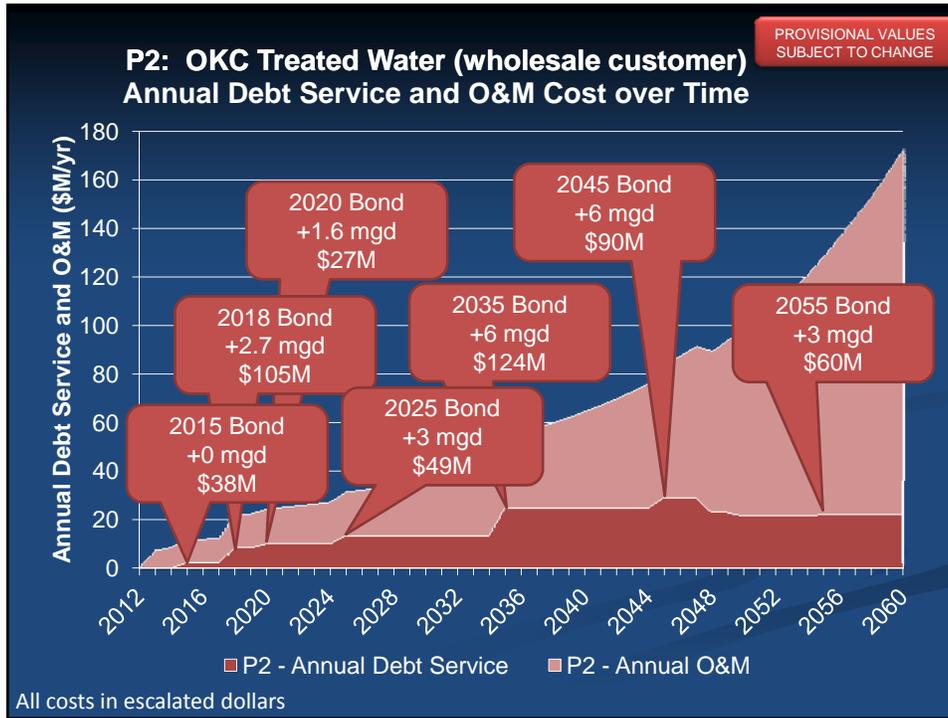
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Bond Issuance – Portfolio 1

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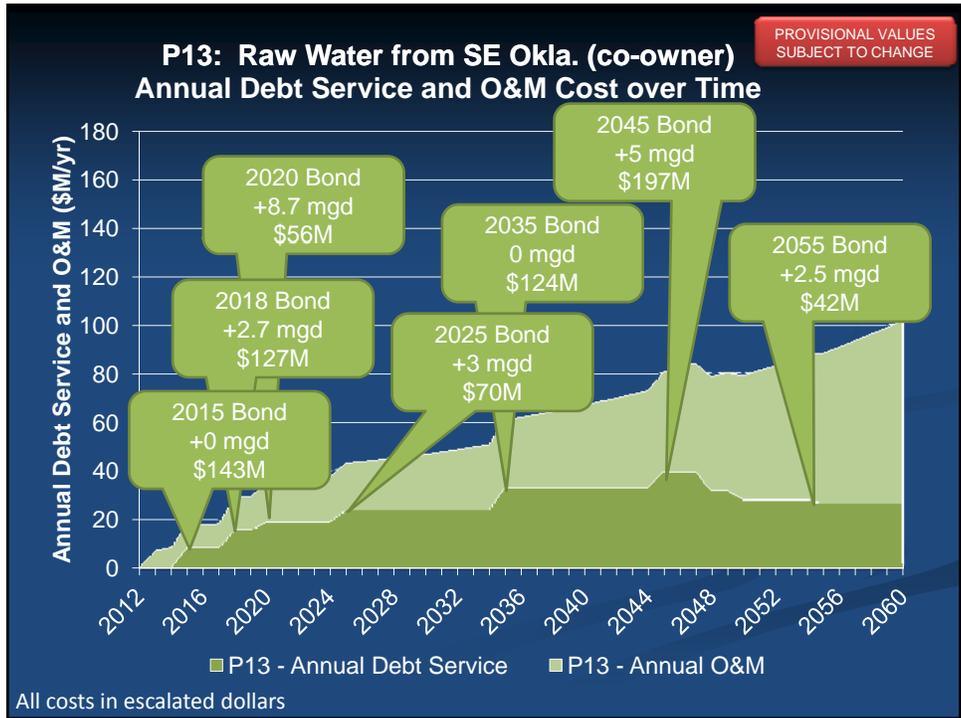
Bond Issue Year	Amount (\$M escalated)	Capital Projects
2015	143	Lake Thunderbird - Existing WTP disinfection and clarifier rehab Garber-Wellington Wells – Treatment (active and inactive wells) OKC Wholesale – 2 nd connection
2020	119	Lk TB Augmentation – intake rehab Non-potable Reuse – Treatment and 1/3 transmission network Lk TB Augmentation – 4 mgd WRF and 6 mgd WTP and transmission system
2025	67	Non-potable Reuse – Remainder of transmission network, storage tank rehab Lk TB Augmentation – Treatment expansion to 8.5 mgd WRF and 18 mgd WTP
2035	124	Lake Thunderbird – Existing WTP rehab Non-potable Reuse – Storage tank rehab Garber-Wellington Wells – Treatment rehab
2045	200	Non-potable Reuse – Treatment rehab Lk TB Augmentation - Treatment expansion and rehab to 13.5 mgd WRF and 25 mgd WTP Non-potable Reuse – Storage tank rehab
2055	8	Non-potable Reuse – Storage tank rehab



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SUBJECT TO CHANGE**

Bond Issuance – Portfolio 2

Bond Issue Year	Amount (\$M escalated)	Capital Projects
2015	38	Lake Thunderbird - Existing WTP disinfection OKC Wholesale – 2 nd connection
2018	105	Lake Thunderbird - Existing WTP clarifier rehab Garber-Wellington Wells – Treatment (active and inactive wells)
2020	27	Lake Thunderbird – intake rehab Non-potable Reuse – Treatment and 1/3 transmission network
2025	49	Non-potable Reuse – Remainder of transmission network, storage tank rehab OKC Wholesale – Rehab connection
2035	124	Lake Thunderbird – Existing WTP rehab Garber-Wellington Wells – Treatment rehab Non-potable Reuse – Storage tank rehab
2045	90	Non-potable Reuse – Treatment rehab OKC Wholesale – 3 rd connection
2055	60	Non-potable Reuse – Storage tank rehab OKC Wholesale – 4 th connection



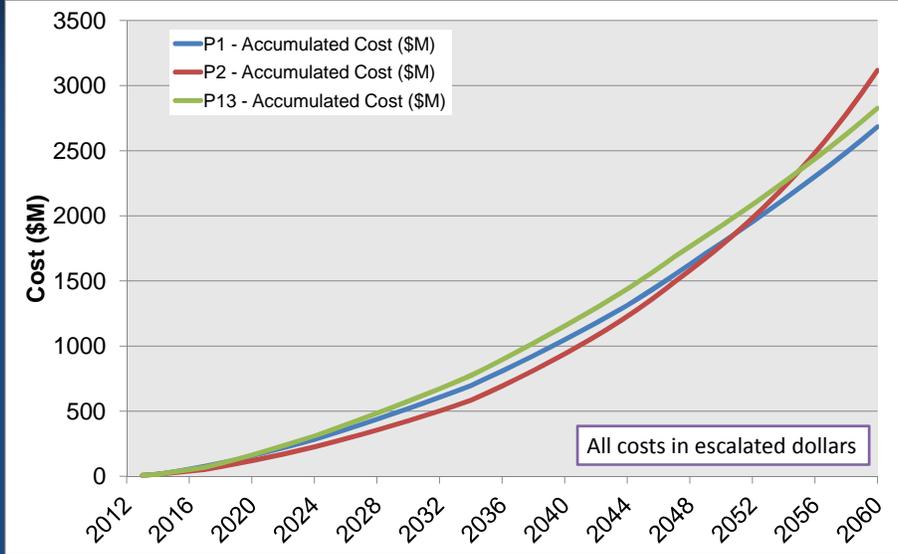
Bond Issuance – Portfolio 13

PROVISIONAL VALUES
 SUBJECT TO CHANGE

Bond Issue Year	Amount (\$M escalated)	Capital Projects
2015	143	Lake Thunderbird - Existing WTP disinfection improvements OKC Wholesale – 2 nd connection OKC Co-owner – Debt for Atoka transmission system
2018	127	Lake Thunderbird - Existing WTP clarifier rehab Garber-Wellington Wells – Treatment (active and inactive wells) OKC Co-owner – Connection from Atoka pipe to Norman
2020	56	Lake Thunderbird – intake rehab Non-potable Reuse – Treatment and 1/3 transmission network OKC Co-owner – Treatment (13.1 mgd)
2025	70	Non-potable Reuse – Remainder of transmission network, storage tank rehab OKC Co-owner – Debt for Moyers to Atoka transmission system
2035	124	Lake Thunderbird – Existing WTP rehab Garber-Wellington Wells – Treatment rehab Non-potable Reuse – Storage tank rehab
2045	197	Non-potable Reuse – Treatment rehab OKC Co-owner – Terminal storage reservoir, Treatment rehab and expansion to 18.5 mgd
2055	42	Non-potable Reuse – Storage tank rehab OKC Co-owner – Treatment expansion to 23.5 mgd

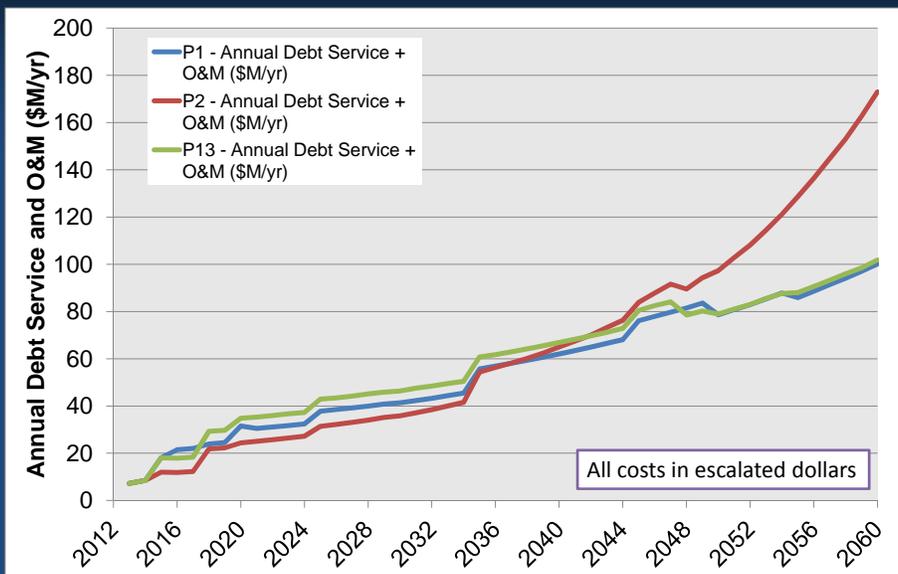
Comparison of Cumulative Costs

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Comparison of Annual Costs

PROVISIONAL VALUES
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Key Supply Timing Assumptions

- 2014: First full year of operation for expanded (to 17 mgd) raw water supply capacity to existing WTP
- 2016: Norman's allocation of Lake Thunderbird yield will be reduced to 6.1 mgd
- 2018: Cr6 regulations become effective, requiring GW treatment
- By 2020: Lake Thunderbird Augmentation with effluent can be permitted and constructed
- Existing inactive wells (arsenic) will be brought back online and treated in same year that Cr6 regulations become effective
- Additional conservation measures/ programs will be increasingly implemented by Norman and adopted by public at a steady rate
- Additional direct non-potable reuse implemented in 3 equal phases (2020, 2025, 2030), serving only south Norman nonpotable sites
- Lake Thunderbird Augmentation (P1) and OKC supplies (P2/P13) expanded over time as needed to meet increased peak demand

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Key Phasing and Costing Assumptions

- Costs developed in 2012 dollars and escalated at 3%/year (except OKC wholesale rates escalated at 6%)
- Capital Projects
 - New projects come online just before capacity is needed
 - Treatment, intake, and pumping infrastructure rehabilitated every 25 years
 - Storage tanks rehabilitated every 10 years
- Operation & Maintenance and Annual Costs
 - One well per year is rehabilitated/replaced
 - 1.3% of pipeline is rehabilitated each year (75 year life)
 - Treatment O&M includes both fixed costs and costs that vary based on amount of water treated
- O&M and Annual Costs (cont.)
 - P1 uses Demand Service rates for OKC wholesale
 - P2 uses Demand Service rates through 2015, then switches to Take or Pay rates for OKC wholesale
 - P13 uses Demand Service rates through 2015, then switches to Take or Pay rates until 2019
- Debt Service on Capital
 - Bonds issued for 100% of capital and can cover multiple projects
 - Bond interest rate of 4% (present to 2024) or 6% (from 2025 on)
 - 30-year term
 - 1% cost of issuance

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Key Attributes of Recommended Portfolios

P1: Thunderbird Augmentation

- Discharge permitting uncertainties
- Efficient use of water resources
- Greater phasing potential than P2 or P13

P2: OKC Treated Wholesale

- Low capital
- Low near-term costs
- Fewer capital projects and simpler operations for Norman
- High long-term costs
- Contingent on OKC projects

P13: SE Okla. Raw Water

- Local control over treatment
- Higher near-term costs than P2 but lower long-term costs
- Contingent on OKC projects

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