

Norman Utilities Authority

2060 Strategic Water Supply Plan



Public Meeting #4
July 16, 2013

AGENDA

Status and Progress Update

Recommended Portfolios

Implementation Planning for Recommended Portfolios

Path Forward

Project Overview and Update on Progress

Public Meeting 1 (June 2012)

- Basis of Planning
 - Demand, supply options, and evaluation criteria

Public Meeting 2 (October 2012)

- Phase 1 – Individual Water Supply Options

Public Meeting 3 (March 2013)

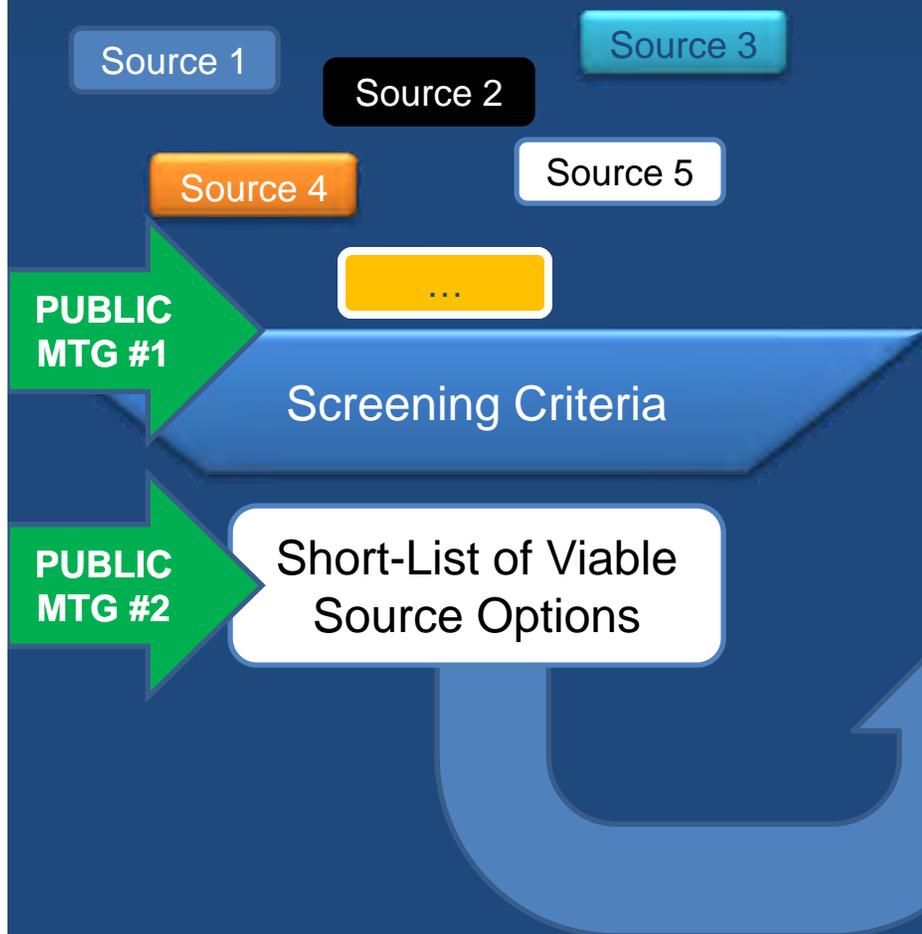
- Phase 2 (part A) – Future Water Supply Portfolios
 - Evaluation of initial supply portfolios

Public Meeting 4 (Tonight)

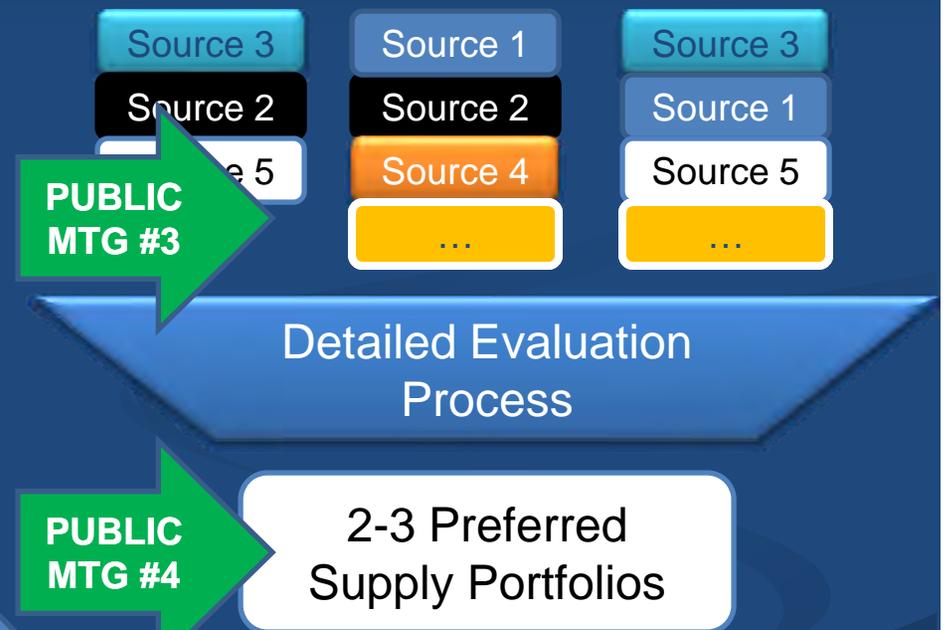
- Phase 2 (part B) – Future Water Supply Portfolios
 - Evaluation of revised portfolios

SWSP Planning Process

Source Options (Phase 1)



Supply Portfolios (Phase 2)



Review of Supply Sources and Evaluation Criteria

Source Options (Phase 1)

Source 1

Source 2

Source 3

Source 4

Source 5

...

Quick
Review ...

Source Options (Phase 2)

Source 3

Source 1

Source 5

...

Screening Criteria

Short-List of Viable
Source Options

Detailed Evaluation
Process

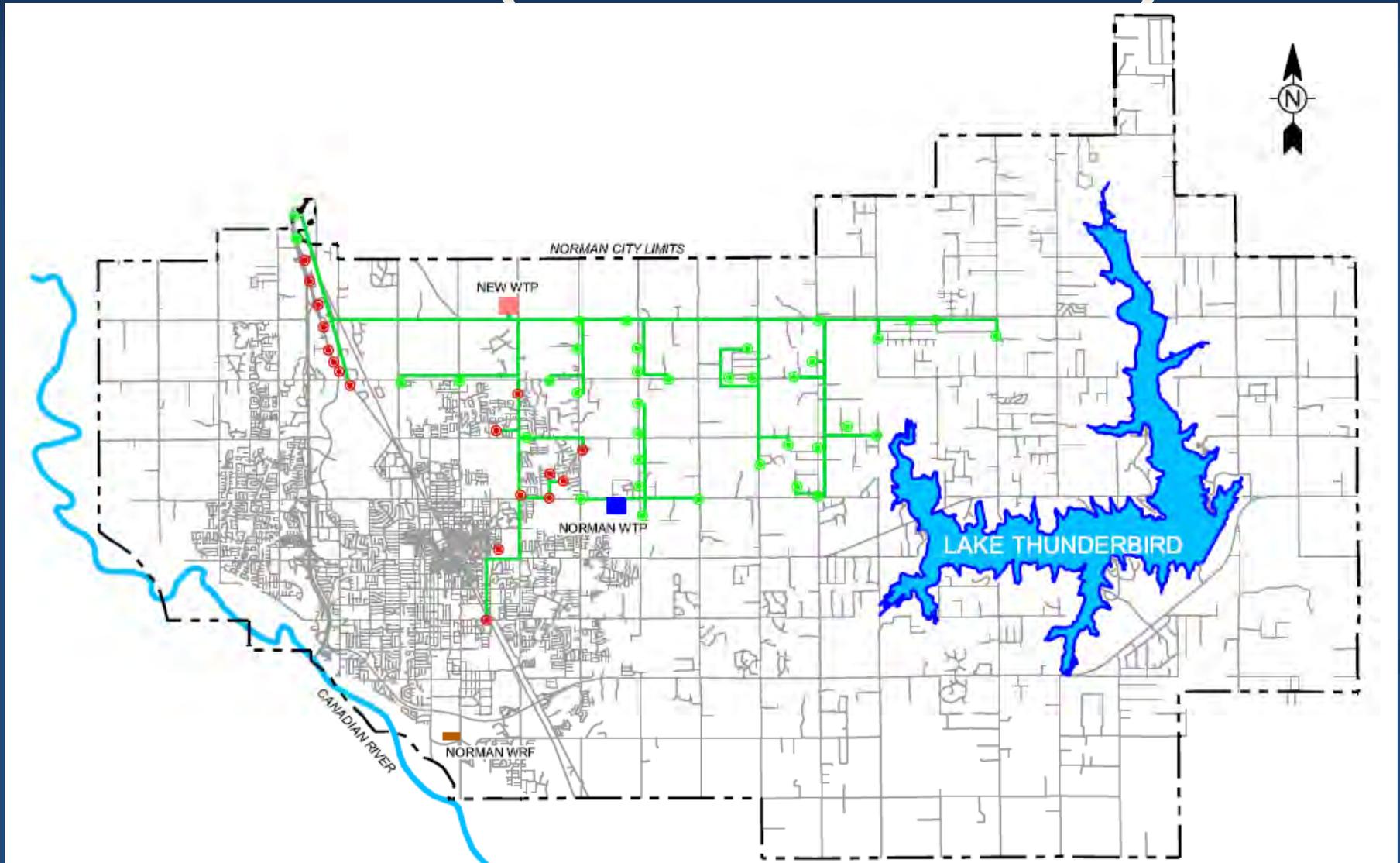
2-3 Preferred
Supply Portfolios



Water Supply Options

Existing Sources	New Local Sources	New Regional Sources
Lake Thunderbird (at firm yield)	Additional conservation	Co-owner with OKC for SE Oklahoma treated water
Garber Wellington Aquifer Wells (with treatment)	Direct non-potable reuse (purple pipe)	Co-owner with OKC for SE Oklahoma raw water
Intermittent purchase of treated water from OKC (wholesale)	Lake Thunderbird Augmentation (indirect potable reuse)	Scissortail Reservoir
Conservation and reuse	Groundwater Recharge (indirect potable reuse)	Parker Reservoir
	Stormwater capture and reuse	Kaw Lake
	Canadian River Diversion	
	Capture Lake Thunderbird spillage	
	Dredging Lake Thunderbird	

Garber Wellington Aquifer Wells (with treatment)



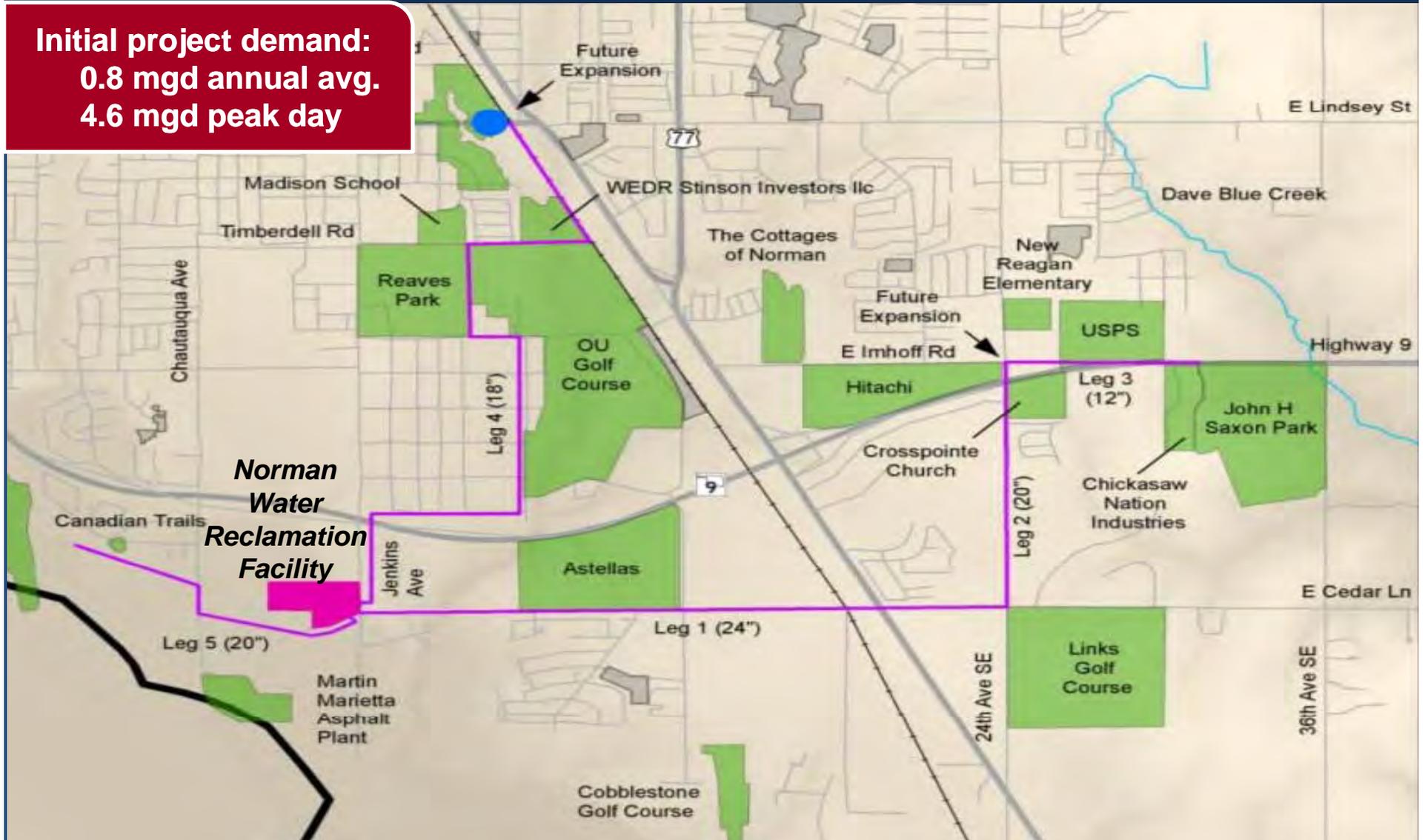
Potential Additional Conservation Savings for Norman (Post 2010)

 Oklahoma Comprehensive Water Plan OCWP	Scenario I (mgd)*	Scenario II (mgd)*
2020	0.70	1.6
2030	0.74	1.9
2040	0.77	2.3
2050	0.79	2.5
2060	0.81	2.6

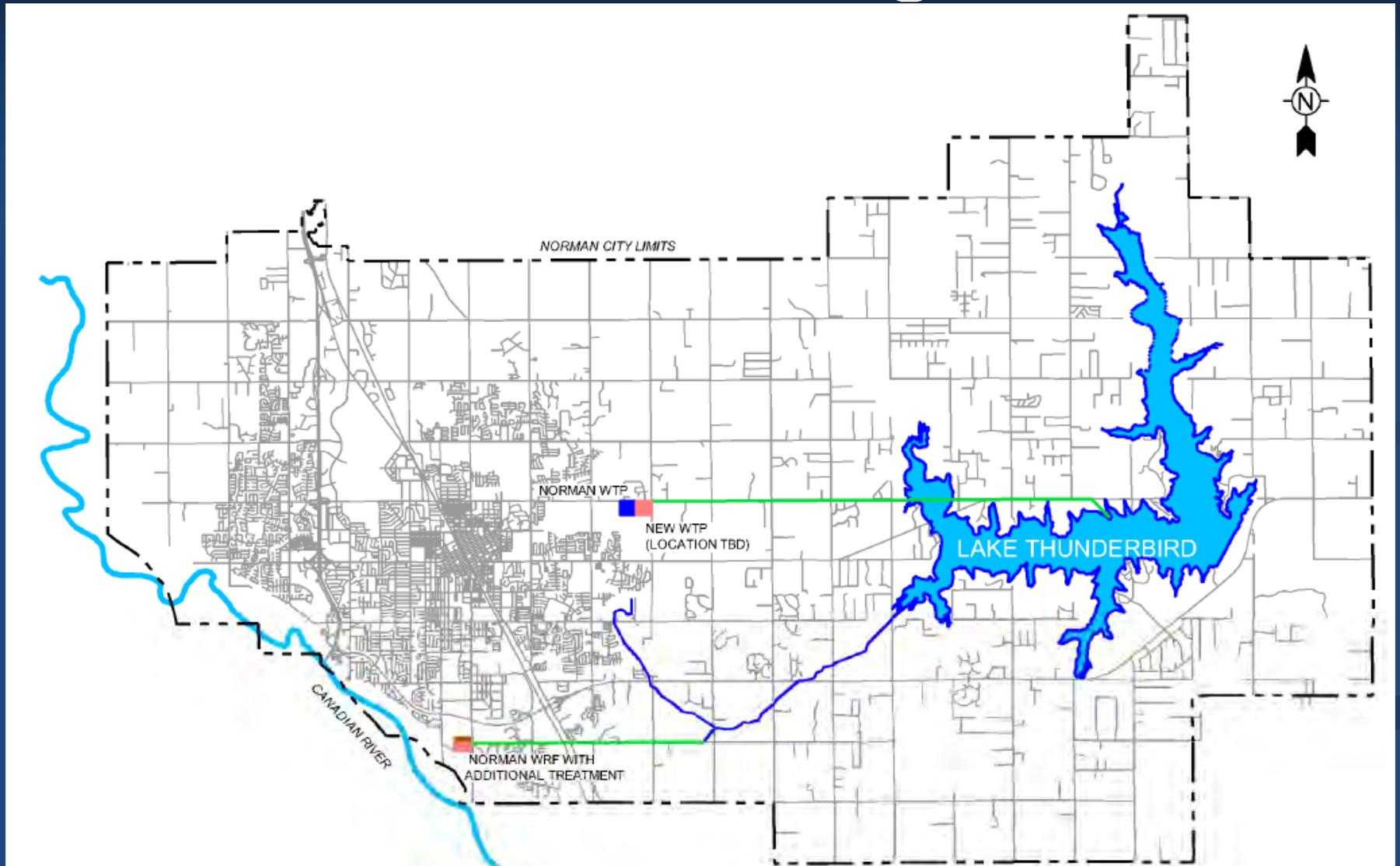
* 60% of OCWP estimates for Cleveland County

Direct Non-Potable Reuse

Initial project demand:
0.8 mgd annual avg.
4.6 mgd peak day



Lake Thunderbird Augmentation

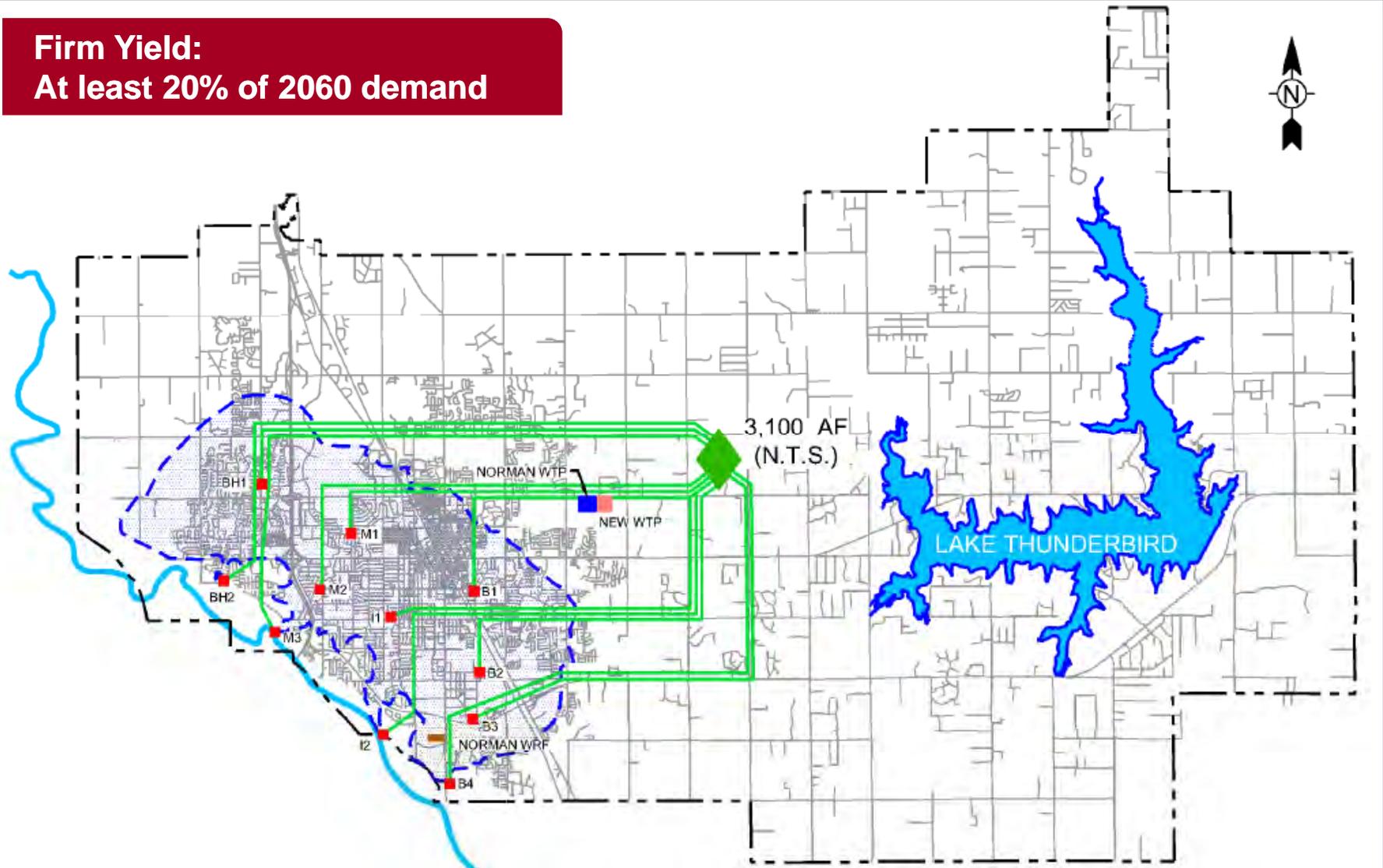


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From COMCD 2012 Lake Thunderbird Water Reuse Feasibility Study

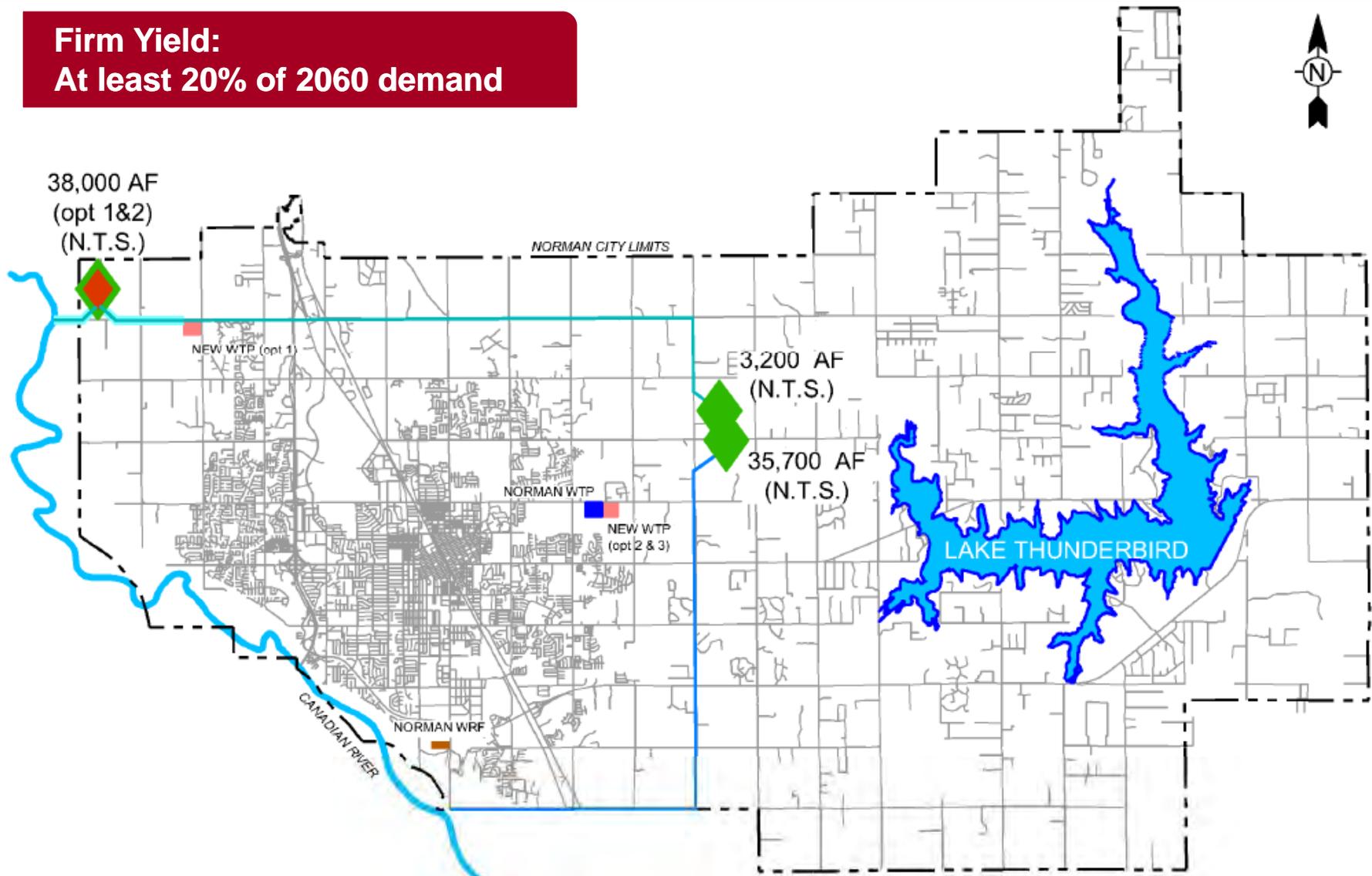
Stormwater Capture

**Firm Yield:
At least 20% of 2060 demand**



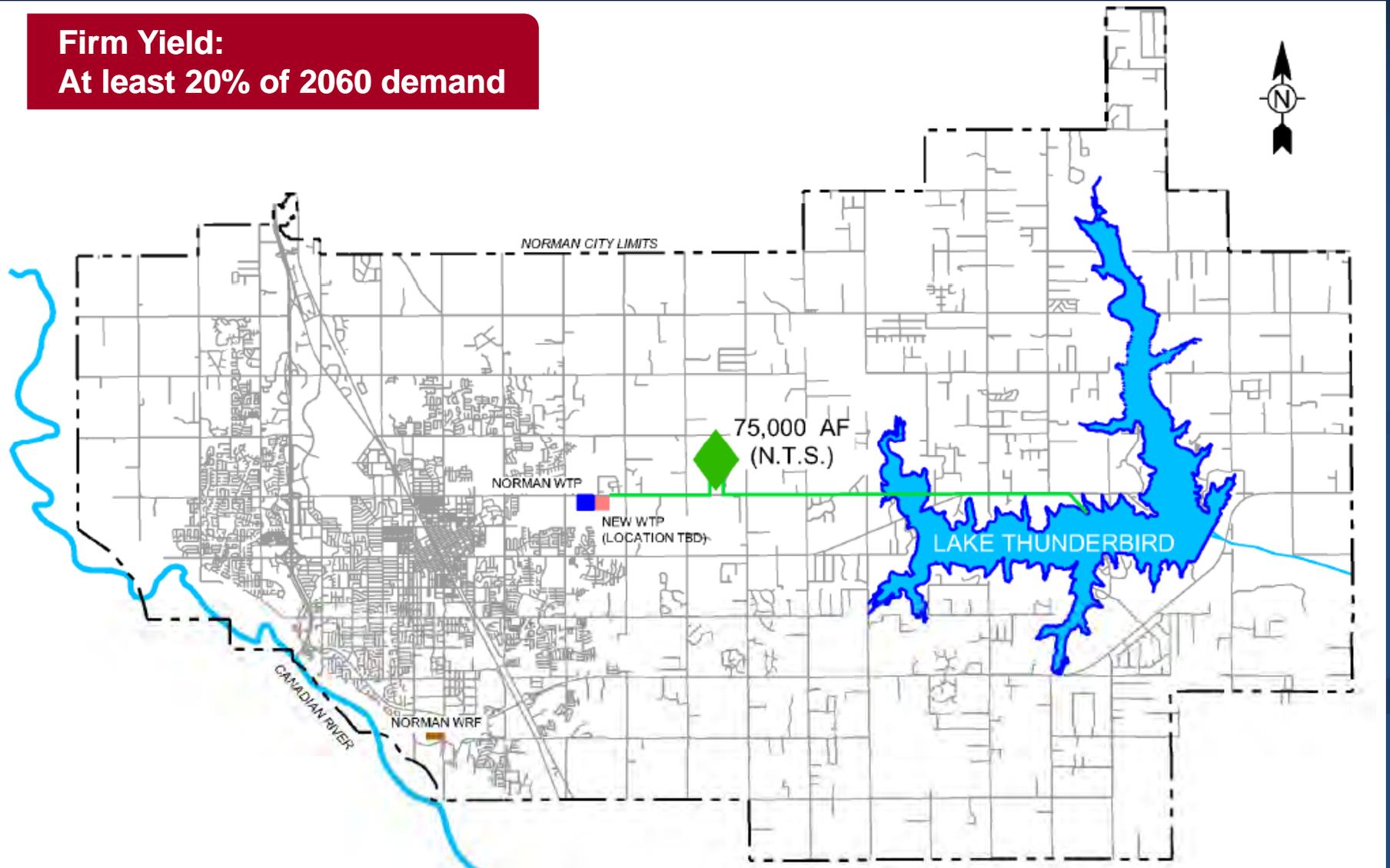
Canadian River Diversion

**Firm Yield:
At least 20% of 2060 demand**



Capture Lake Thunderbird Spillage

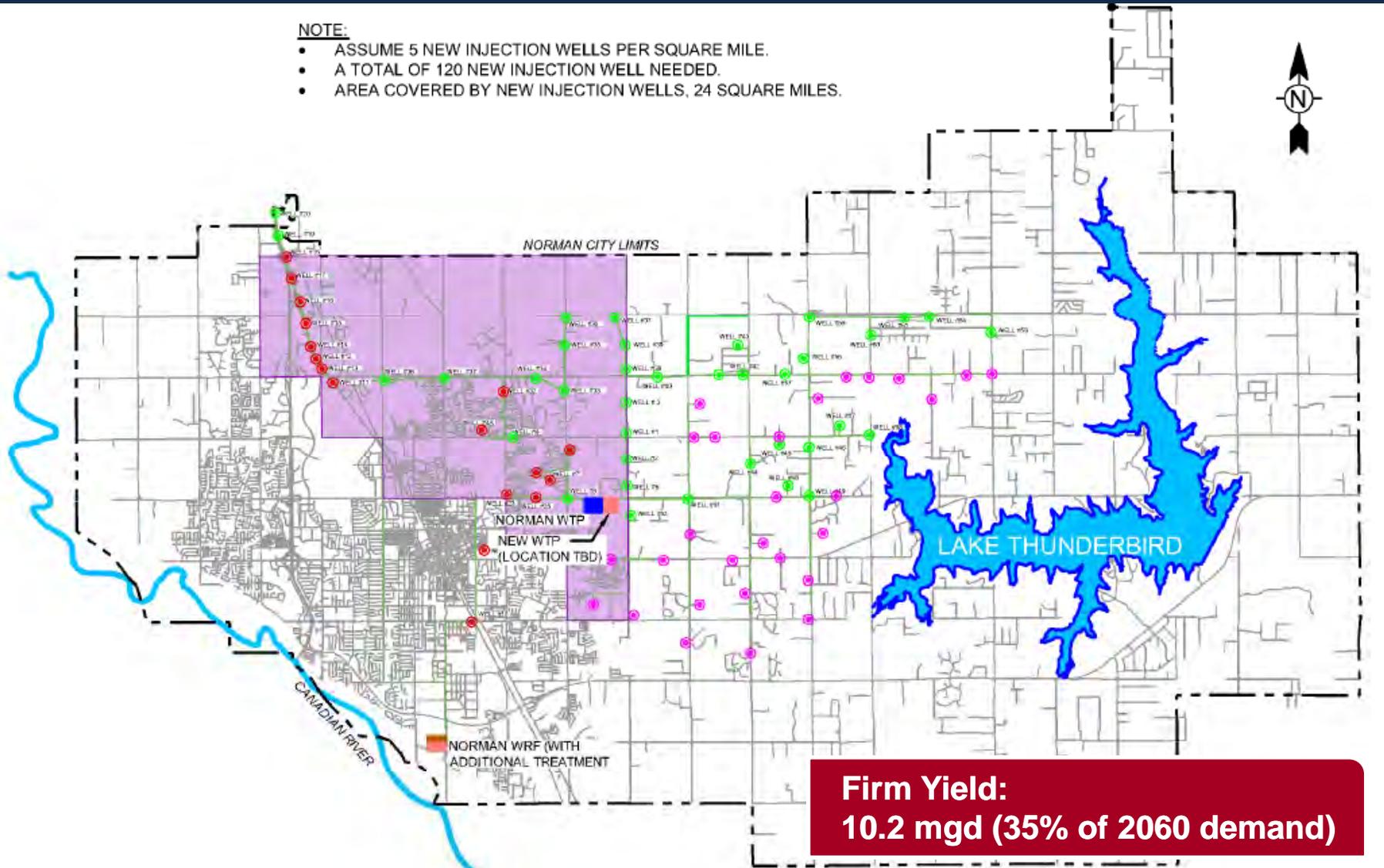
**Firm Yield:
At least 20% of 2060 demand**



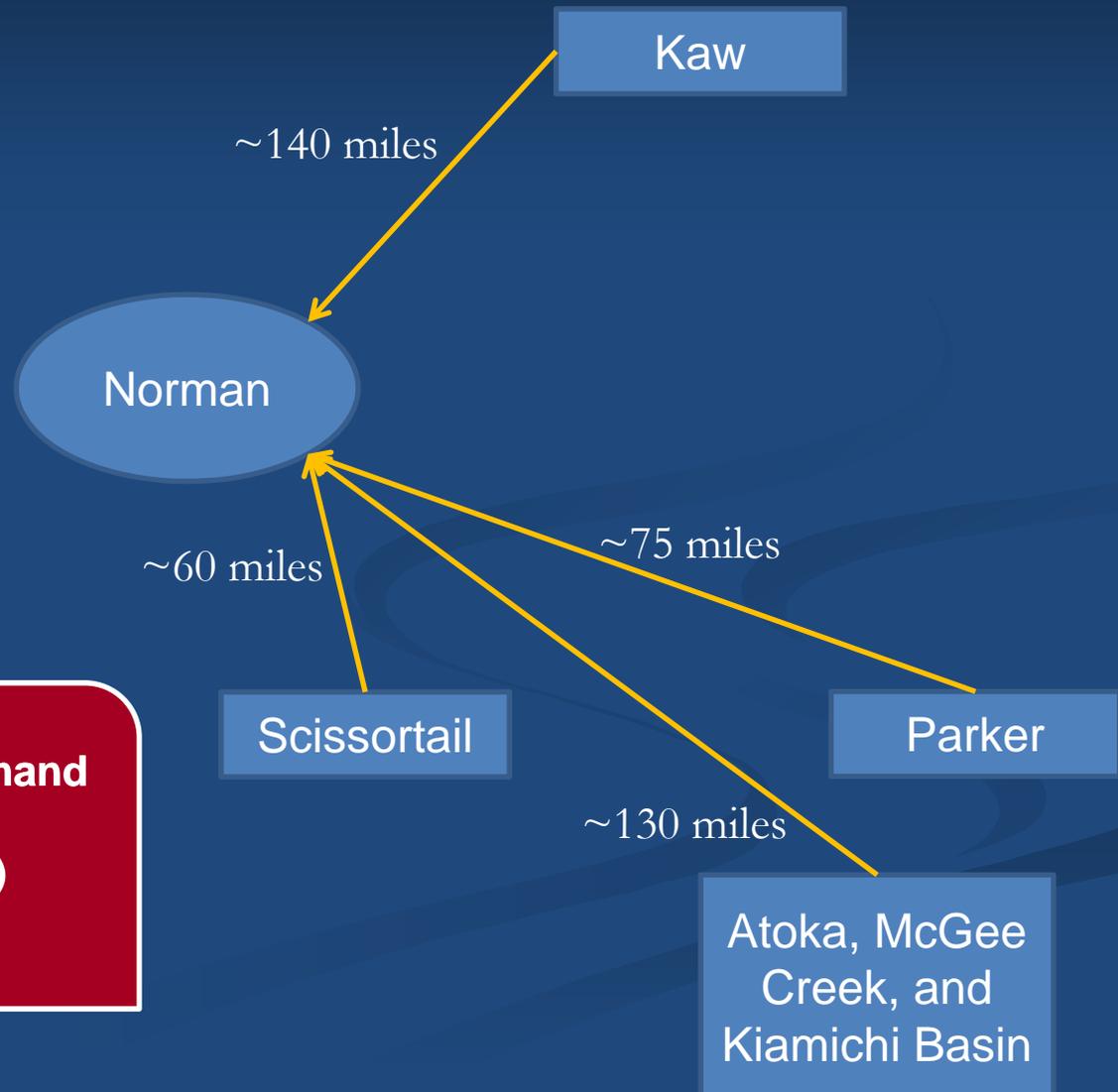
Groundwater Recharge

NOTE:

- ASSUME 5 NEW INJECTION WELLS PER SQUARE MILE.
- A TOTAL OF 120 NEW INJECTION WELLS NEEDED.
- AREA COVERED BY NEW INJECTION WELLS, 24 SQUARE MILES.



New Regional Sources



Firm Yield:

Co-owner with OKC – full 2060 demand

Scissortail – firm yield of 20 mgd
(68% of 2060 demand)

Parker – full 2060 demand

Kaw – full 2060 demand

Review of Supply Sources and Evaluation Criteria (continued)

Source Options (Phase 1)

Source 1

Source 2

Source 3

Source 4

Source 5

...

Screening Criteria

How We Screened Them...

Source Options (Phase 2)

Source 3

Source 1

Source 5

...

Evaluation Process

Short-List of Viable Source Options

2-3 Preferred Supply Portfolios



Relative Comparison of Individual Source Options

SUPPLY AVAILABILITY

RELIABILITY

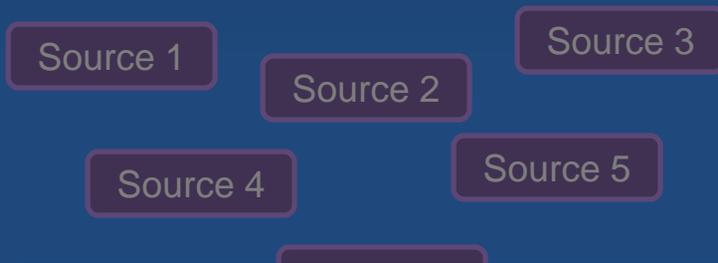
CERTAINTY & TIMELINESS

COST-EFFECTIVENESS

- Quantitative (supply avail. & cost)
- Qualitative (reliability & certainty)
 - Scored from 1 (worst) to 5 (best)

Review of Supply Sources and Evaluation Criteria (continued)

Source Options (Phase 1)



Supply Portfolios (Phase 2)



Screening Criteria

Short-List of Viable Source Options

...Which Source Options are Most Viable?

Evaluation Process

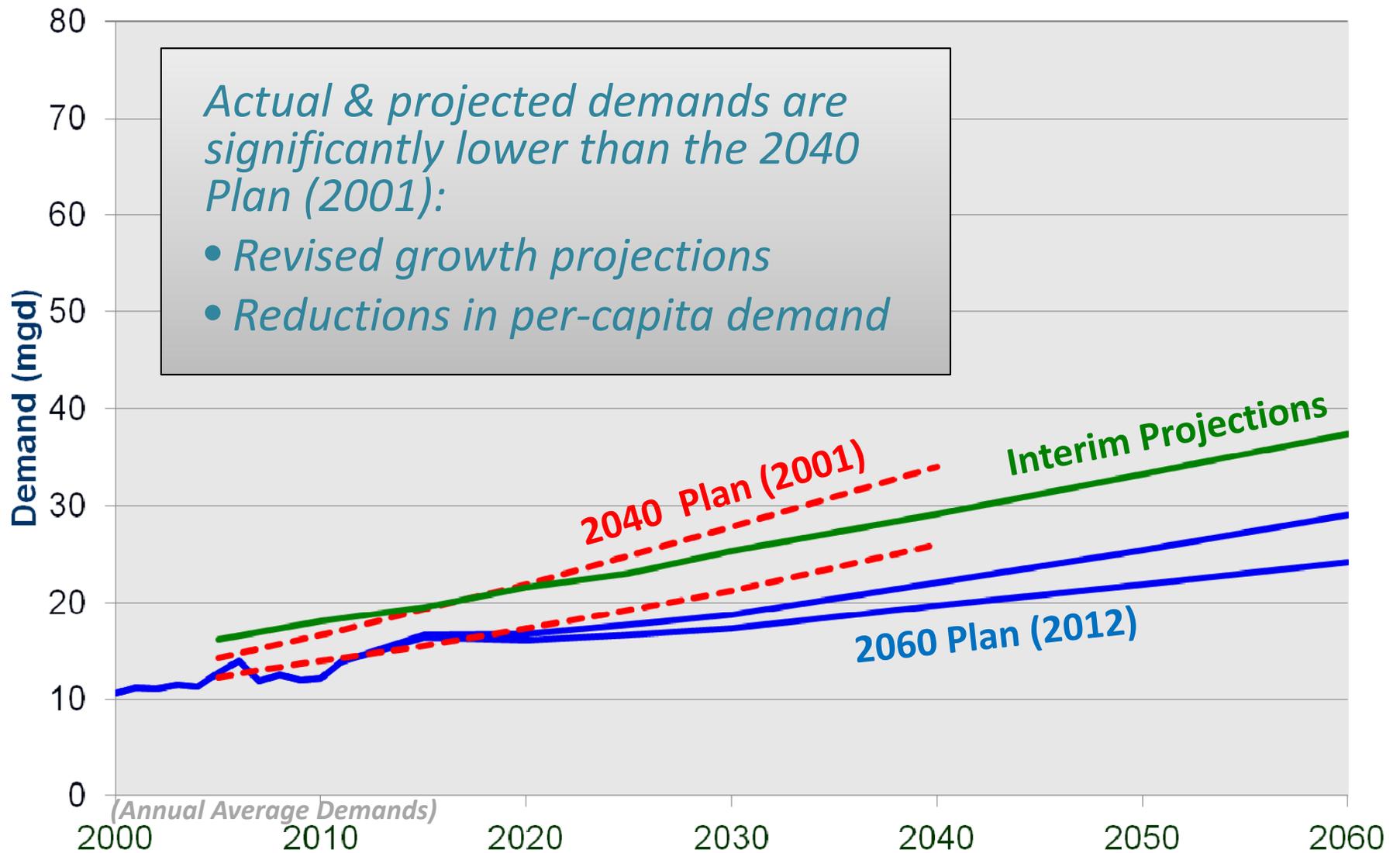
Preferred Portfolios

Water Supply Options Selected for Portfolio Development

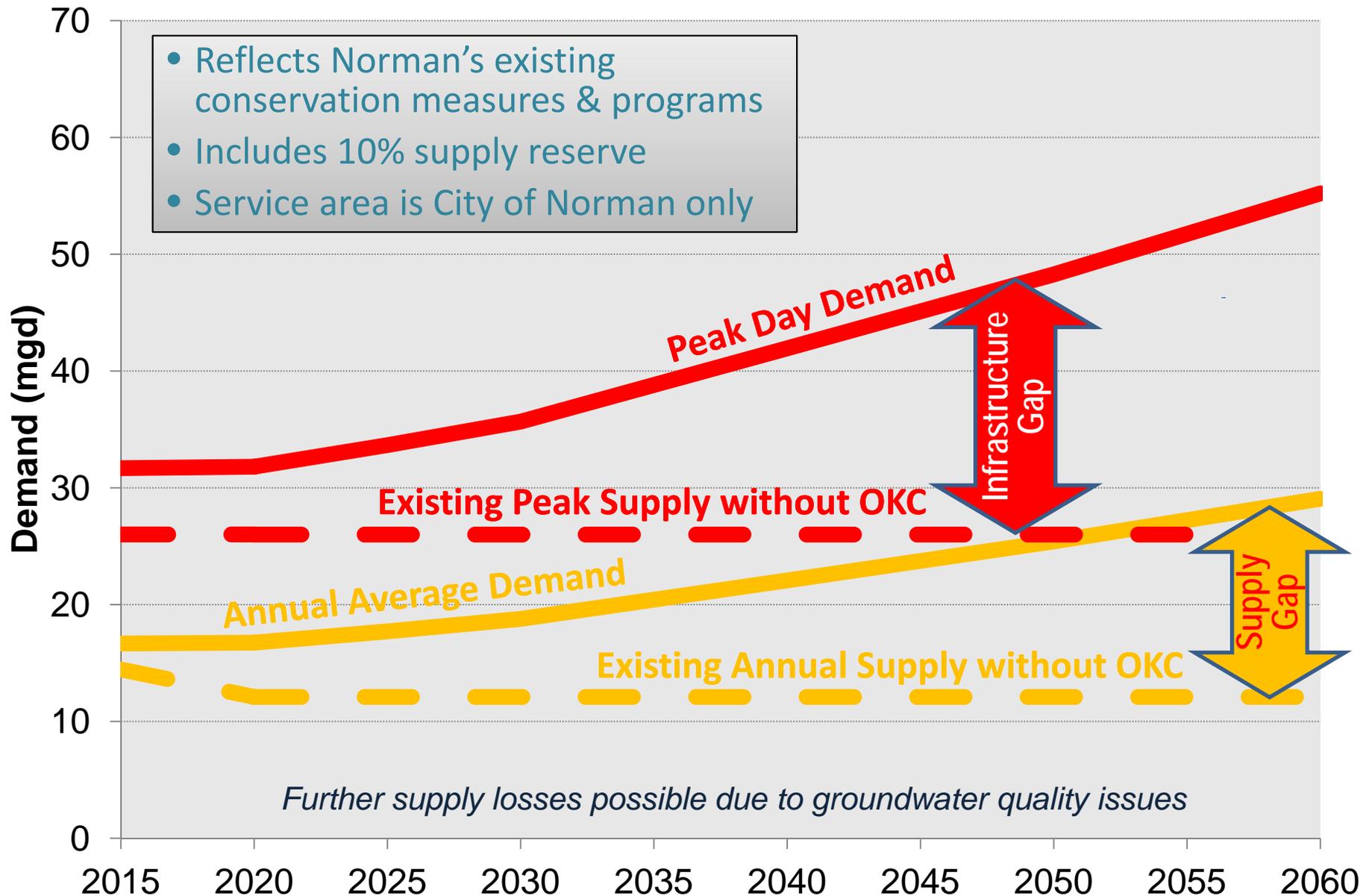
Existing Sources	New Local Sources	New Regional Sources
Lake Thunderbird (at firm yield)	Additional conservation	Co-owner with OKC for SE Oklahoma treated water
Garber Wellington Aquifer Wells (with treatment)	Direct non-potable reuse (purple pipe)	Co-owner with OKC for SE Oklahoma raw water
Intermittent purchase of treated water from OKC (wholesale)	Lake Thunderbird Augmentation (indirect potable reuse)	New out of basin reservoir (either Scissortail or Parker)
Conservation and reuse	Groundwater Recharge (indirect potable reuse)	Kaw Lake

The most viable and cost-effective supply options became the “building blocks” for water supply portfolios

Projected Water Use



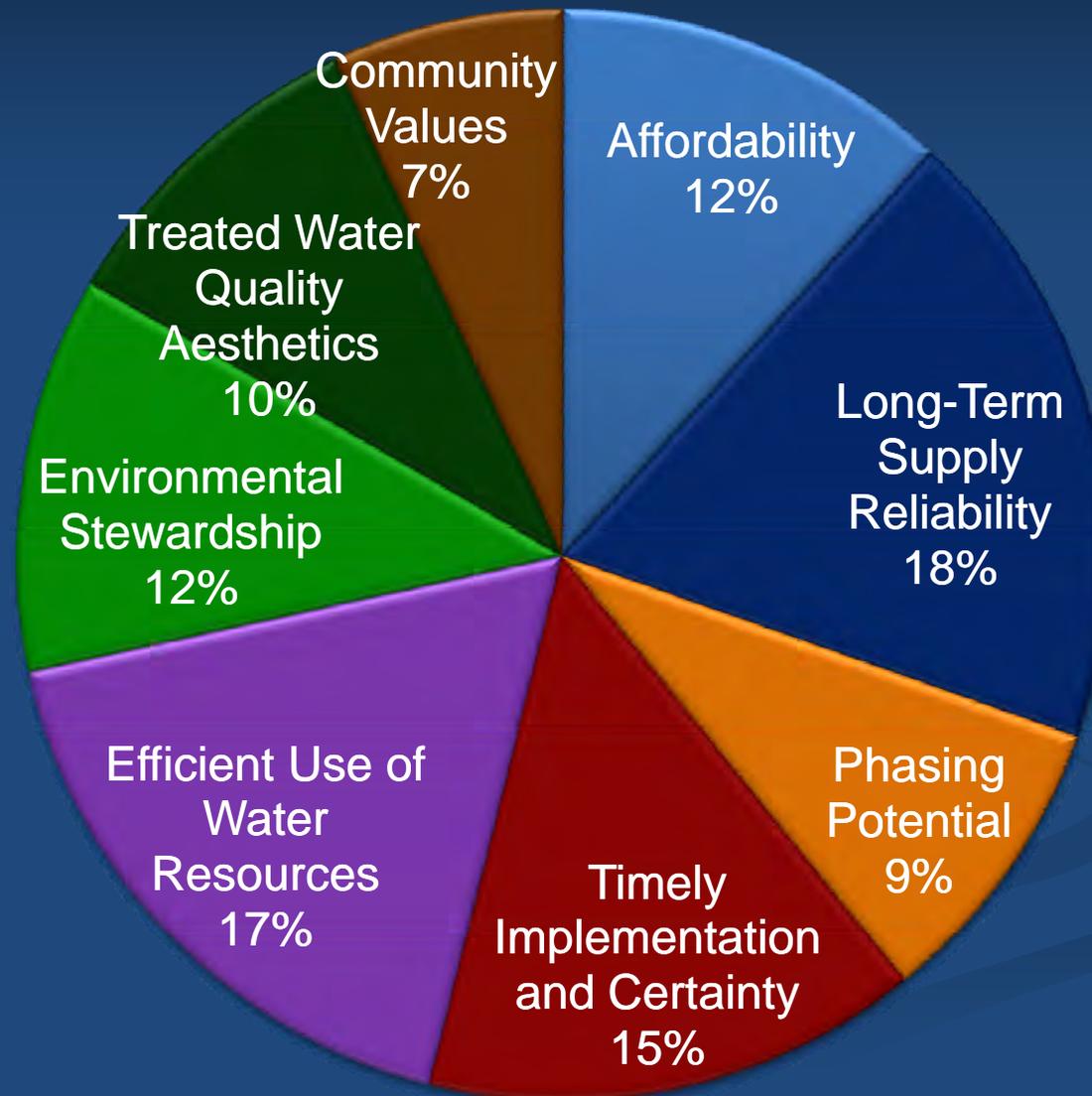
Use Already Exceeds Local Supply



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)	New Out of Basin Reservoir (Parker or Scissortail)	Kaw Lake
P1	6.1	6.0	2.1		1.0	0.8	13.1					
P2	6.1	6.0	2.1		1.0	0.8		13.1				
P3									29.1			
P4										29.1		
P5											29.1	
P6												29.1
P7	6.1				1.0	0.8			21.2			
P8	6.1				1.0		17.0	5.0				
P9	6.1	6.0	2.1	13.1	1.0	0.8						
P10	6.1	6.0	2.1		1.0	0.8					13.1	
P11	6.1	6.0	2.1		1.0	0.8			13.1			
P12	6.1				1.0						22.0	

2060 Annual Average Daily Supply (mgd)

Criteria and Their Relative Importance or “Weight” in Comparing Portfolios



Portfolio Scoring Process

Raw score
(Reliability)



Raw score
(Phasing)



Raw score
(Timely)



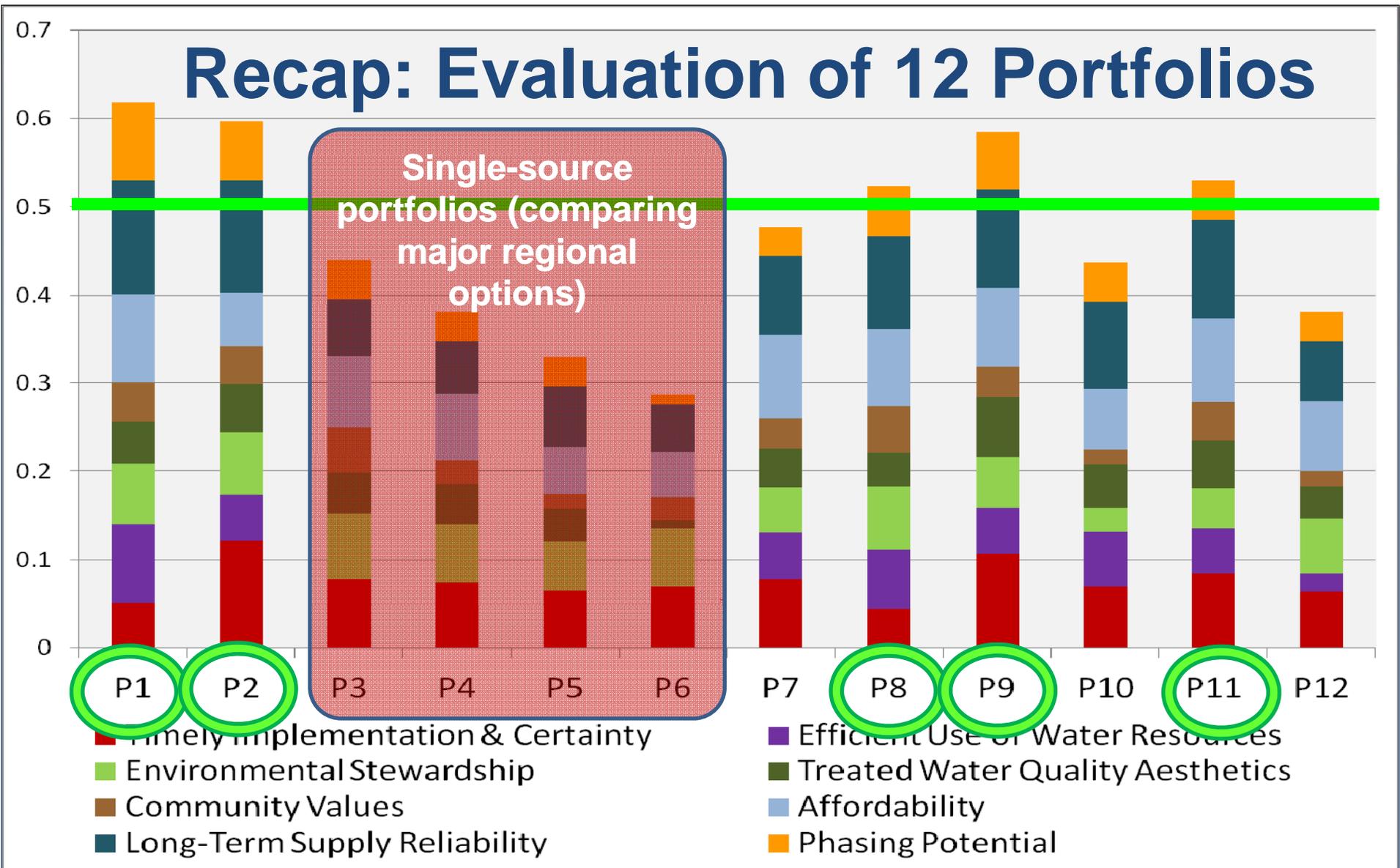
... repeat for remaining criteria
... repeat for remaining portfolios

Portfolio Score



Portfolio 1

Recap: Evaluation of 12 Portfolios



2012\$	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12
Capital	\$250M	\$140M	\$410M	\$440M	\$620M	\$620M	\$320M	\$180M	\$330M	\$490M	\$300M	\$430M
O&M per year	\$21M	\$53M	\$24M	\$24M	\$26M	\$26M	\$22M	\$34M	\$24M	\$25M	\$22M	\$22M

Top 5 Portfolios for Meeting our Objectives

	Lake Thunderbird Allocation	Existing Groundwater Wells	New Groundwater Wells	Conservation & Non-potable Reuse	Lake Thunderbird Augmentation	Regional Supplies via Oklahoma City
P1 Max Local	6	8		2	13	
P2 Low Capital	6	8		2		13 ^W _T
P8 Max Thunderbird						
P8 Eliminated: Impractical to Completely Eliminate Groundwater						
P9 Max Groundwater	6	8	13	2		
P11 Regional OKC	6	8		2		13 ^O _T

Values are 2060 Annual Avg. Use (mgd)

OKC Notes: W=Wholesale purchases, O=Owner; T=Treated, R=Raw

Portfolios that use significant regional supplies

	Lake Thunderbird Allocation	Existing Groundwater Wells	New Groundwater Wells	Conservation & Non-potable Reuse	Lake Thunderbird Augmentation	Regional Supplies via Oklahoma City
P2 Low Capital						WT
P11 Regional OKC						OT
NEW P13 Regional OKC	6	8		2		OR 13

P2 Eliminated: High annual costs, lacks benefits of co-ownership

P11 Modified to form New P13 (Regional Raw Water, co-owner w/OKC)

Values are 2060 Annual Avg. Use (mgd)

OKC Notes: W=Wholesale purchases, O=Owner; T=Treated, R=Raw

Portfolios that focus on use of local sources

	Lake Thunderbird Allocation	Existing Groundwater Wells	New Groundwater Wells	Conservation & Non-potable Reuse	Lake Thunderbird Augmentation	Regional Supplies via Oklahoma City
P1 Max Local	6	8		2	13	
P9 Max Groundwater						
P9 Eliminated: Concerns with Excess Reliance on Groundwater						
NEW P14 Wells + TBird Aug.	6	8	2	2	11	

Values are 2060 Annual Avg. Use (mgd)

OKC Notes: W=Wholesale purchases, O=Owner; T=Treated, R=Raw

AGENDA

Status and Progress Update

Recommended Portfolios

Implementation Planning for Recommended Portfolios

Path Forward

Recommended Portfolios that Best Meet our Objectives

	Lake Thunderbird Allocation	Existing Groundwater Wells	New Groundwater Wells	Conservation & Non-potable Reuse	Lake Thunderbird Augmentation	Regional Supplies via Oklahoma City	Capital and O&M Costs (2012\$)
P1 Max Local	6	8		2	13		\$250M \$21M/yr
P13 Regional OKC	6	8		2		13 ^O / _R	\$340M \$23M/yr
P14 Wells + TBird Aug.	6	8	2	2	11		\$270M \$22M/yr

Values are 2060 Annual Avg. Use (mgd)

OKC Notes: W=Wholesale purchases, O=Owner; T=Treated, R=Raw

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
 - P13: Regional Raw Water (co-owner with OKC)
 - P14: New Wells & Lake Thunderbird Augment'n

Key Attributes of Recommended Portfolios

P1: Thunderbird Augmentation

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

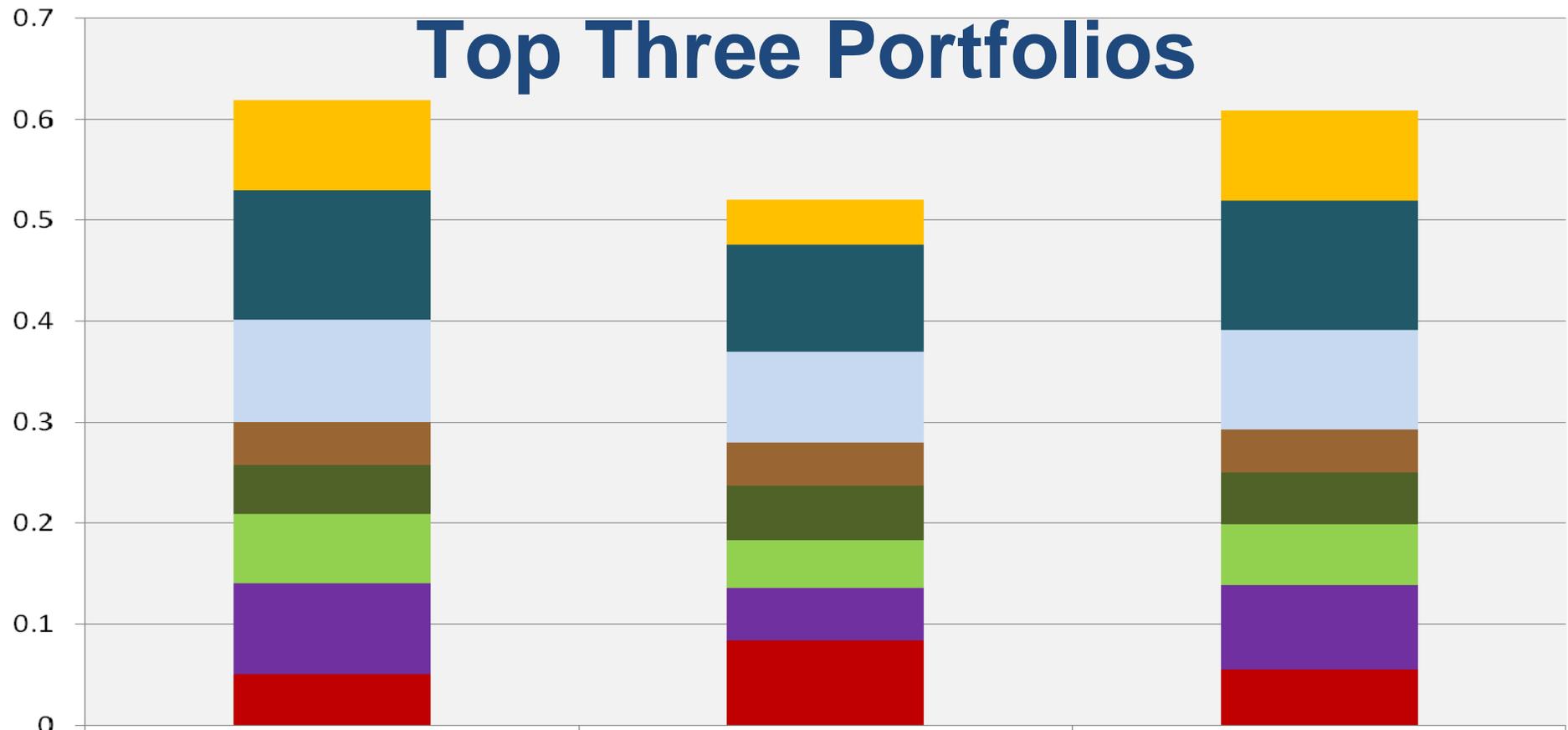
P13: Regional Raw Water (co-owner with OKC)

- Local control over treatment
- Contingent on OKC projects

P14: New Wells and Thunderbird Augmentation

- Local control over sources
- Discharge permitting uncertainties
- Efficient use of water resources
- Greater phasing potential than P1

Top Three Portfolios



- Timely Implementation & Certainty
- Environmental Stewardship
- Community Values
- Long-Term Supply Reliability

- Efficient Use of Water Resources
- Treated Water Quality Aesthetics
- Affordability
- Phasing Potential

2012\$	P1: Thunderbird Augmentation	P13: Regional Raw Water (co-owner with OKC)	P14: New Wells + Thunderbird Augmentation
Capital	\$250M	\$340M	\$270M
O&M	\$21M/yr	\$23M/yr	\$22M/yr

AGENDA

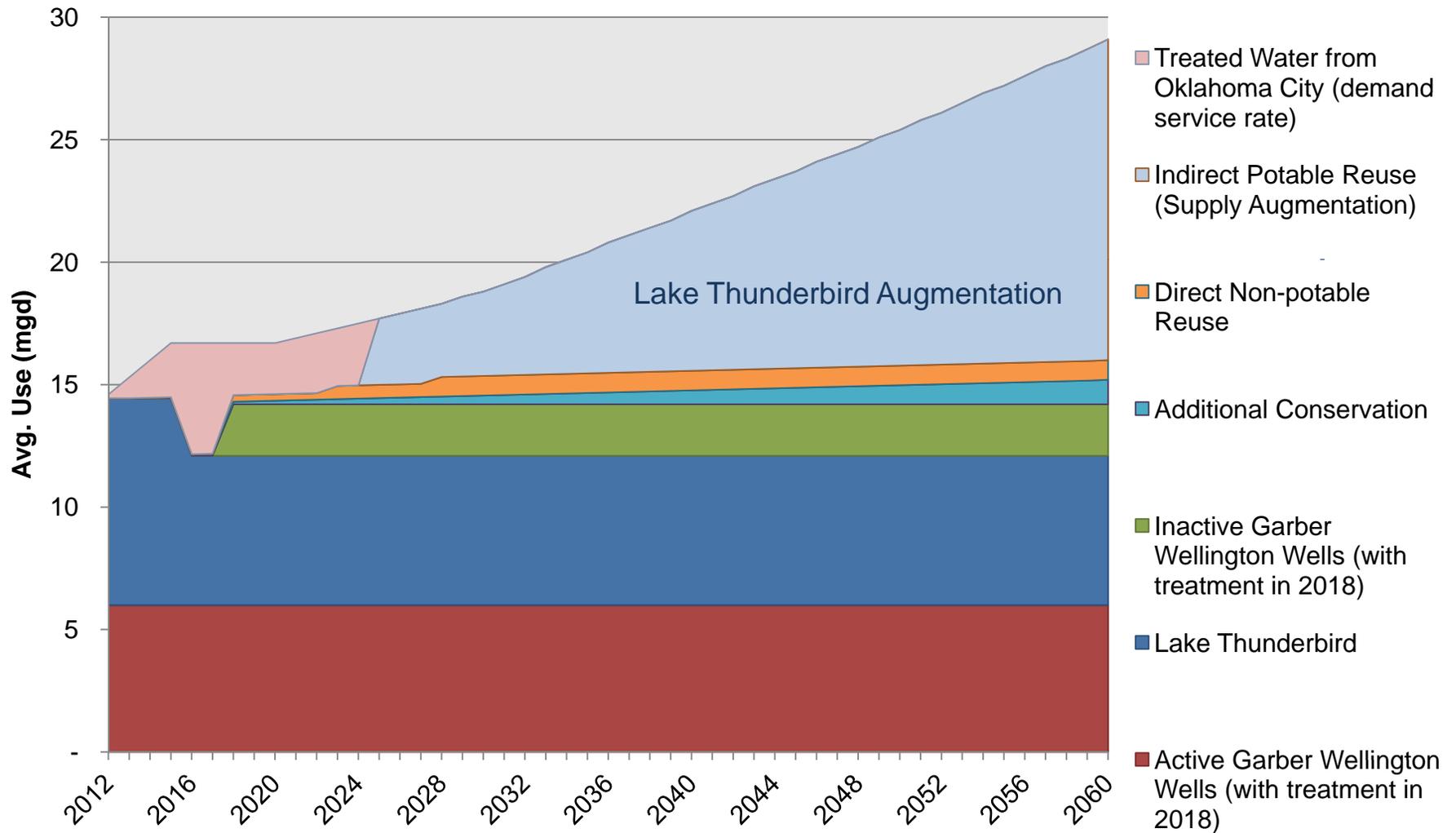
Status and Progress Update

Recommended Portfolios

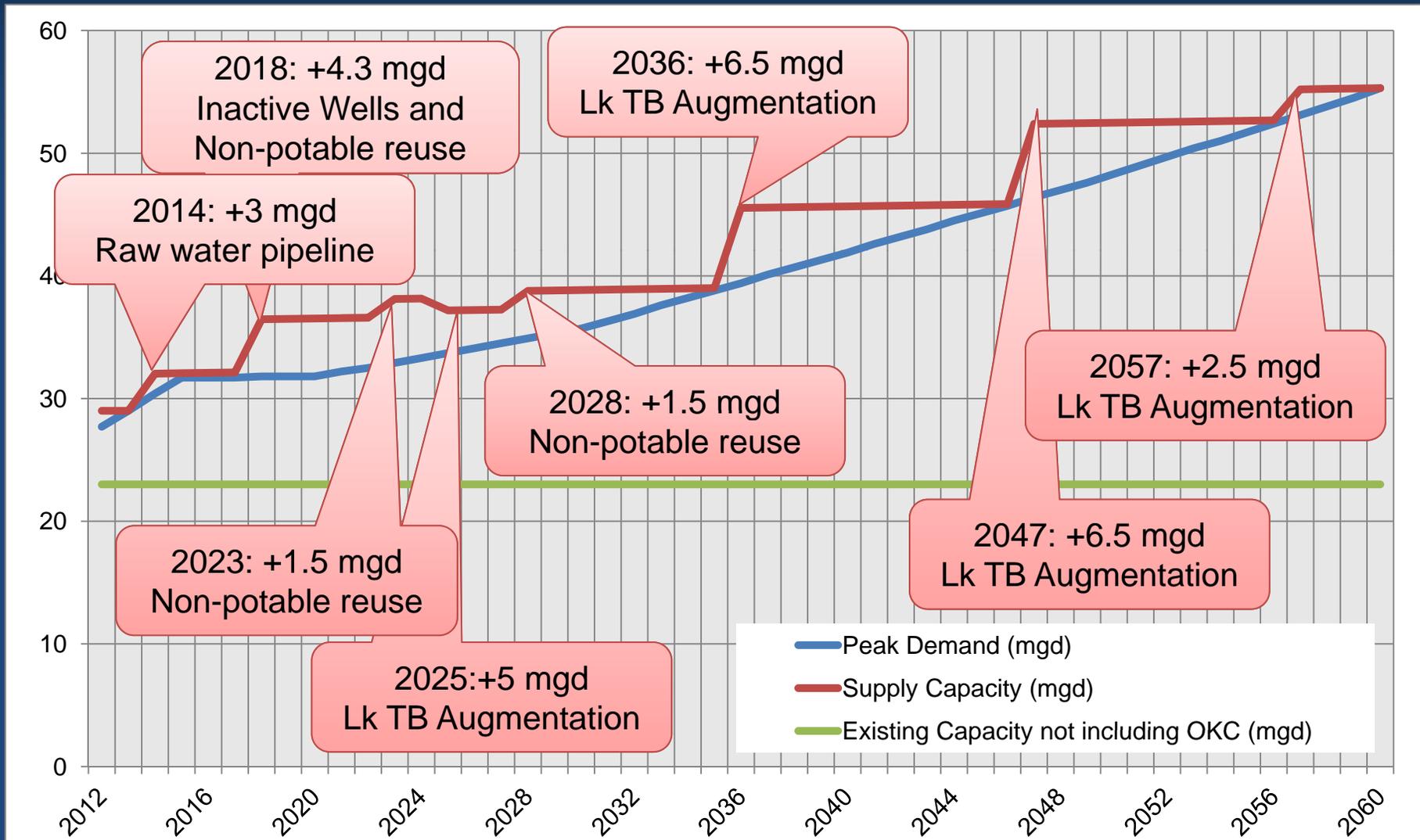
Implementation Planning for Recommended Portfolios

Path Forward

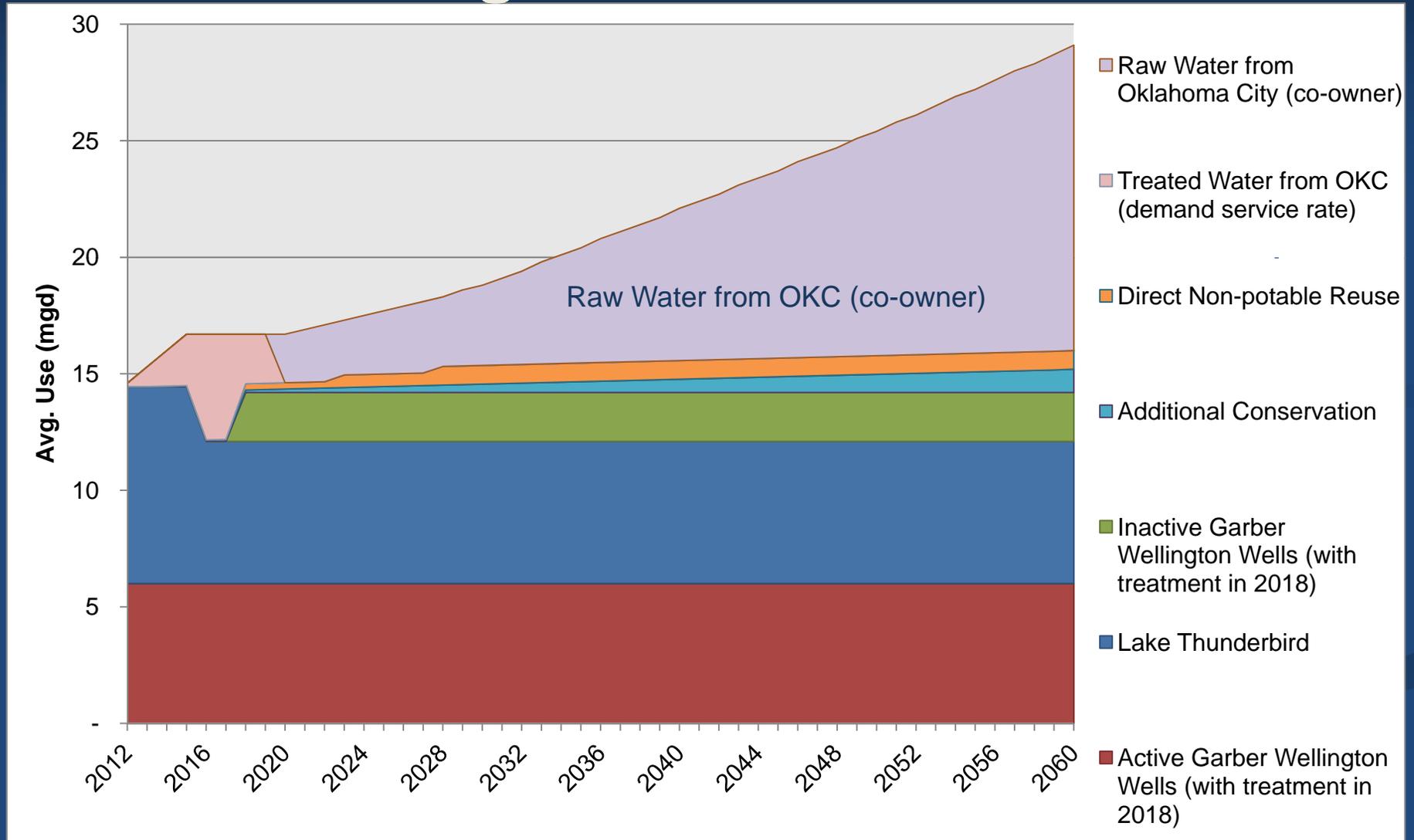
Phased Capacity Increases to Meet Growing Demand: Portfolio 1



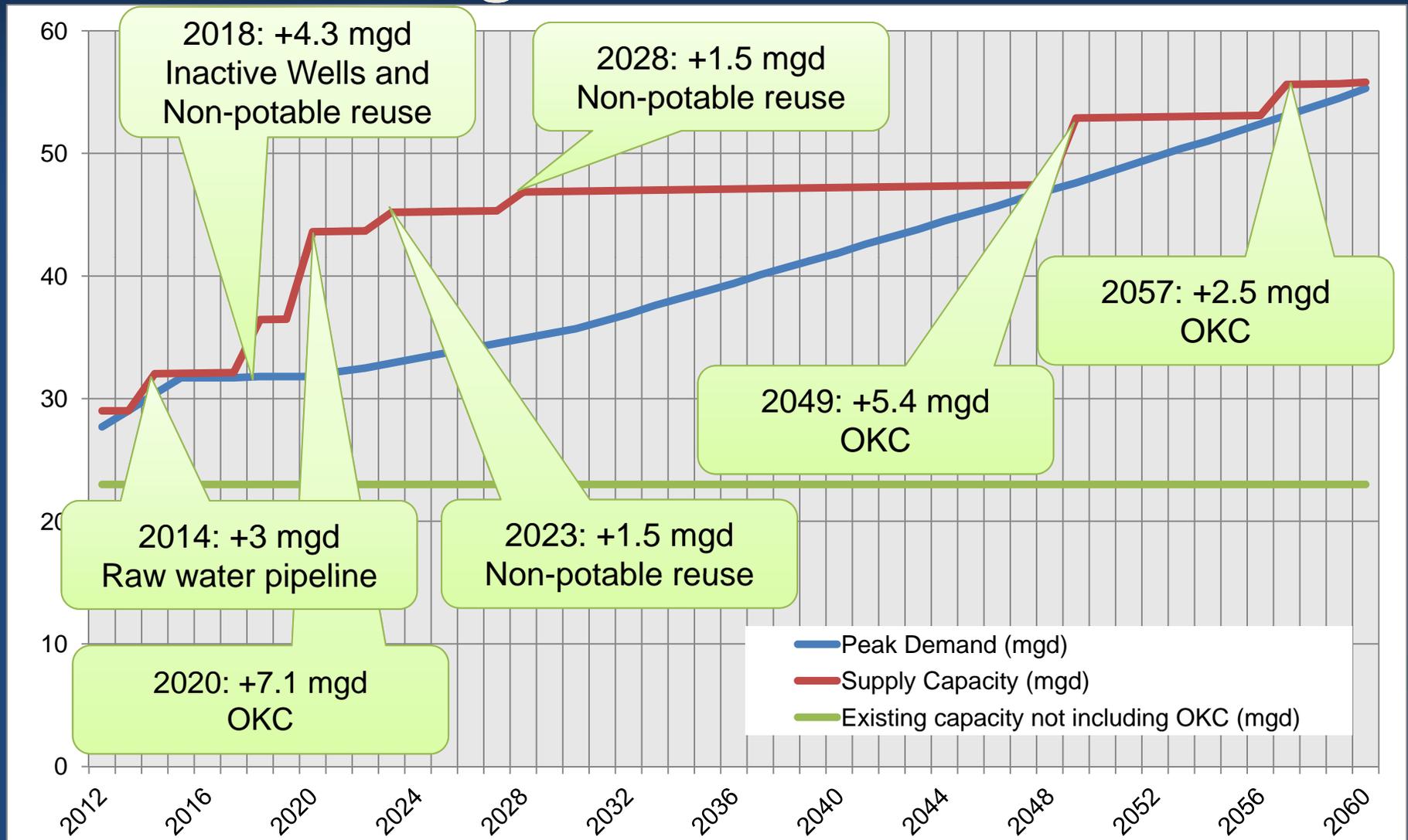
Phased Capacity Increases to Meet Growing Demand: Portfolio 1



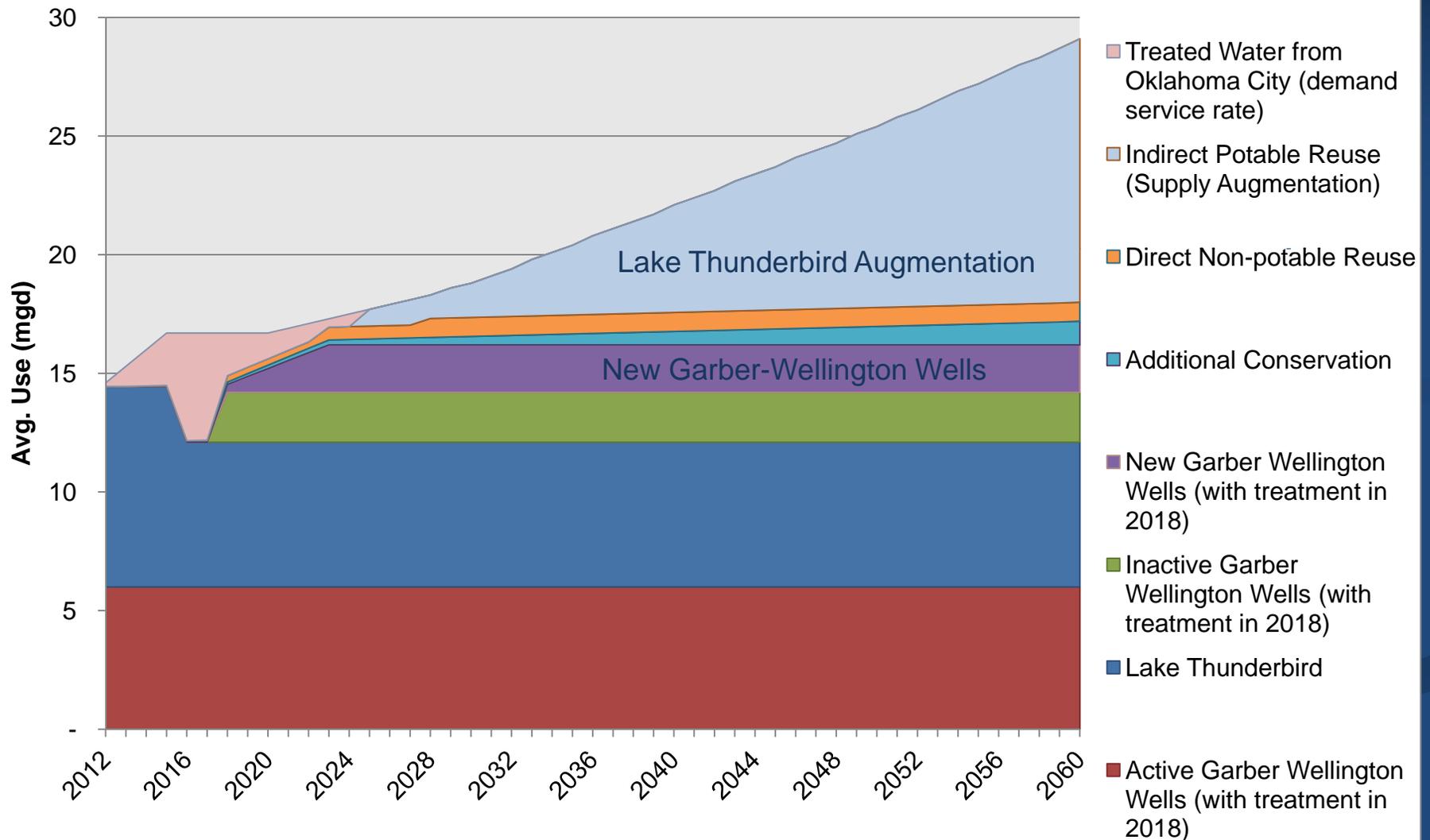
Phased Capacity Increases to Meet Growing Demand: Portfolio 13



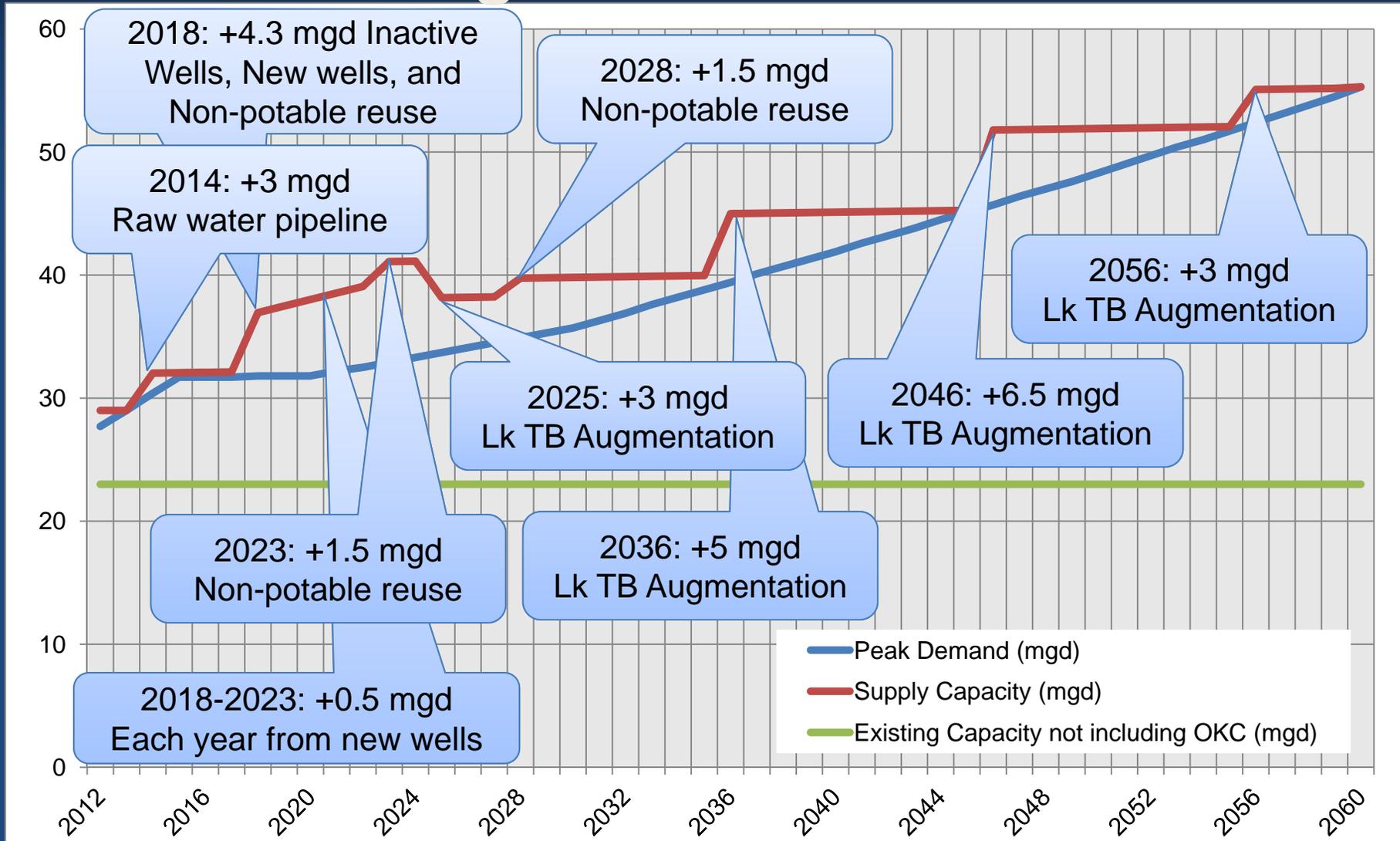
Phased Capacity Increases to Meet Growing Demand: Portfolio 13



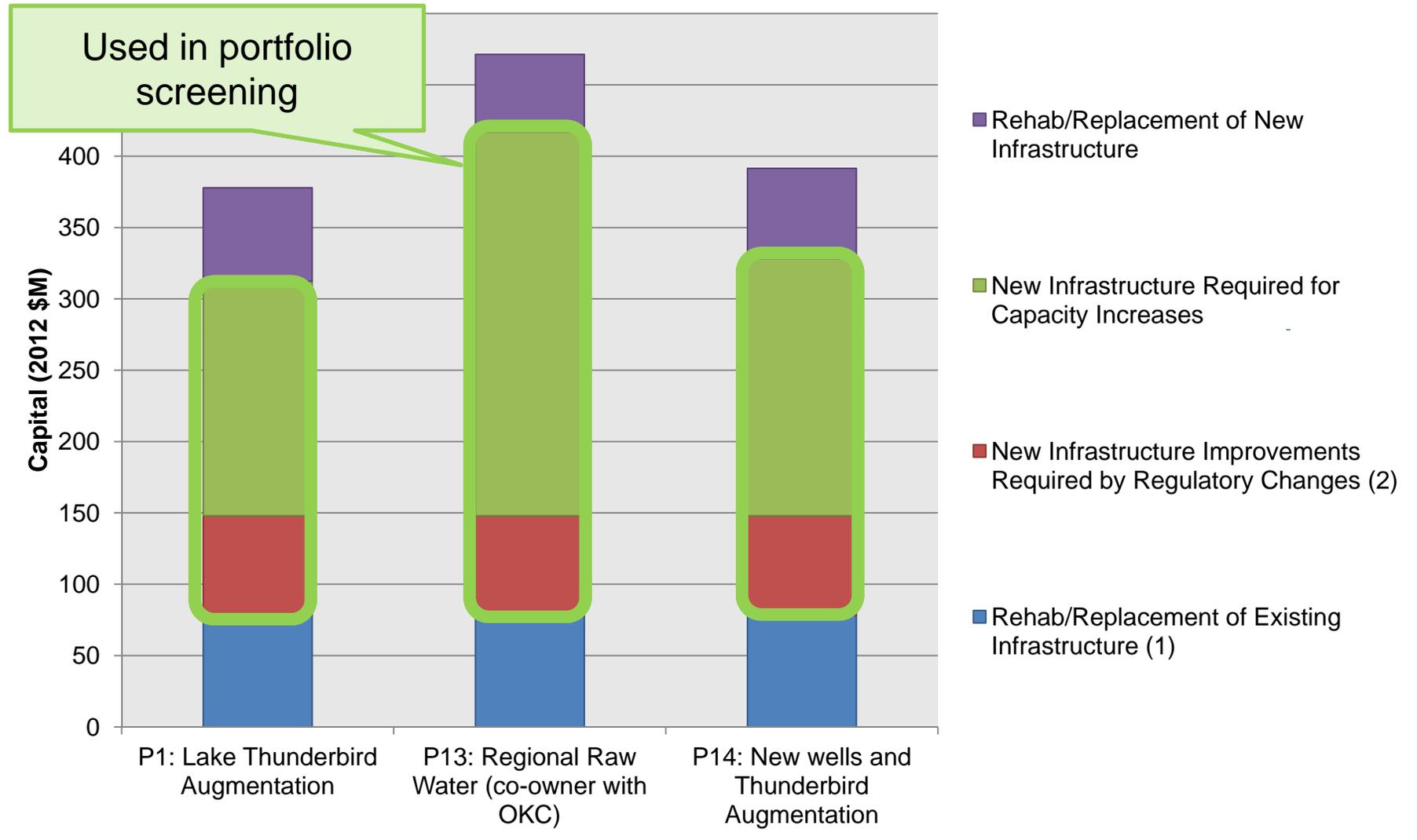
Phased Capacity Increases to Meet Growing Demand: Portfolio 14



Phased Capacity Increases to Meet Growing Demand: Portfolio 14



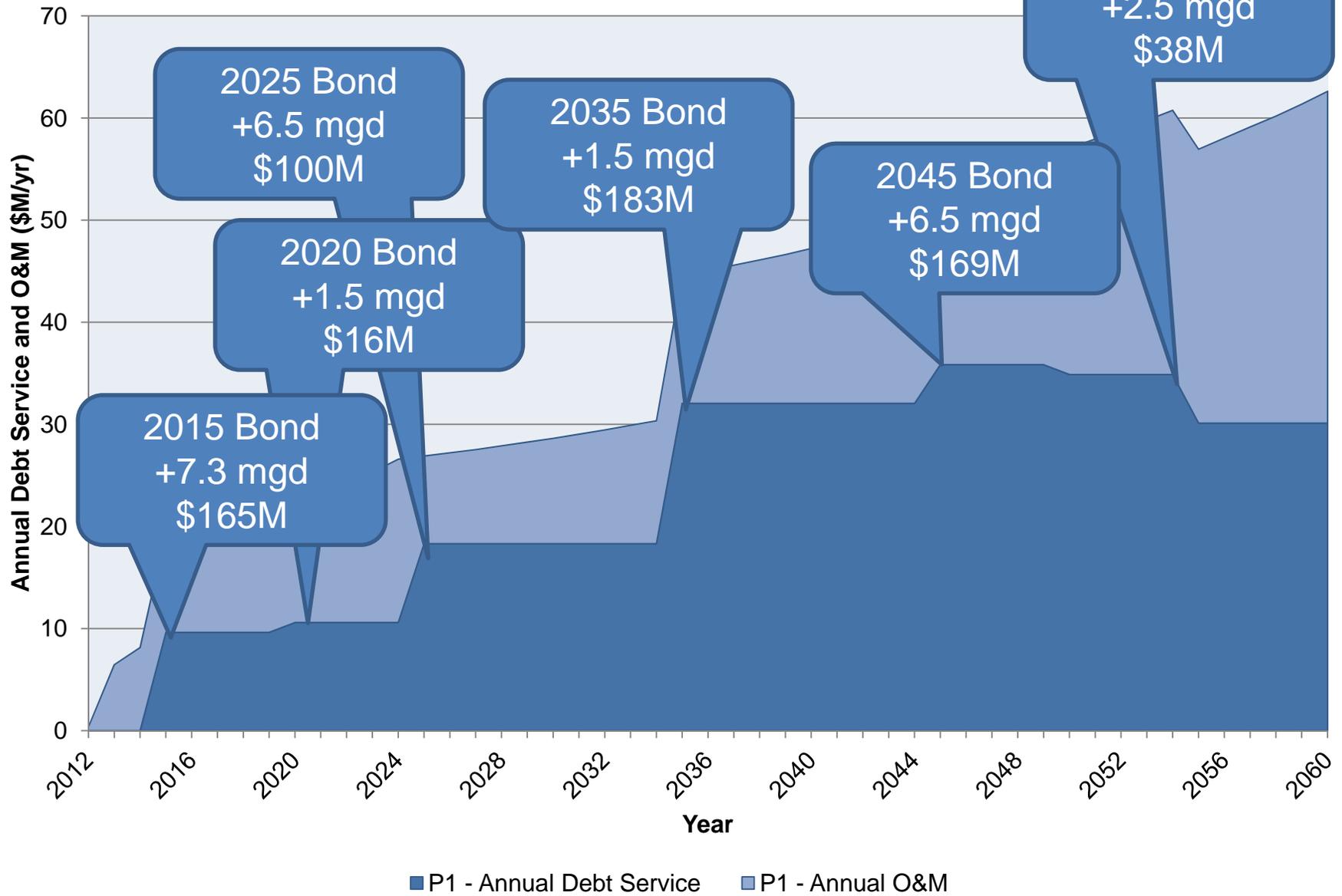
Comparison of Capital Costs (2012 \$M)



Notes:

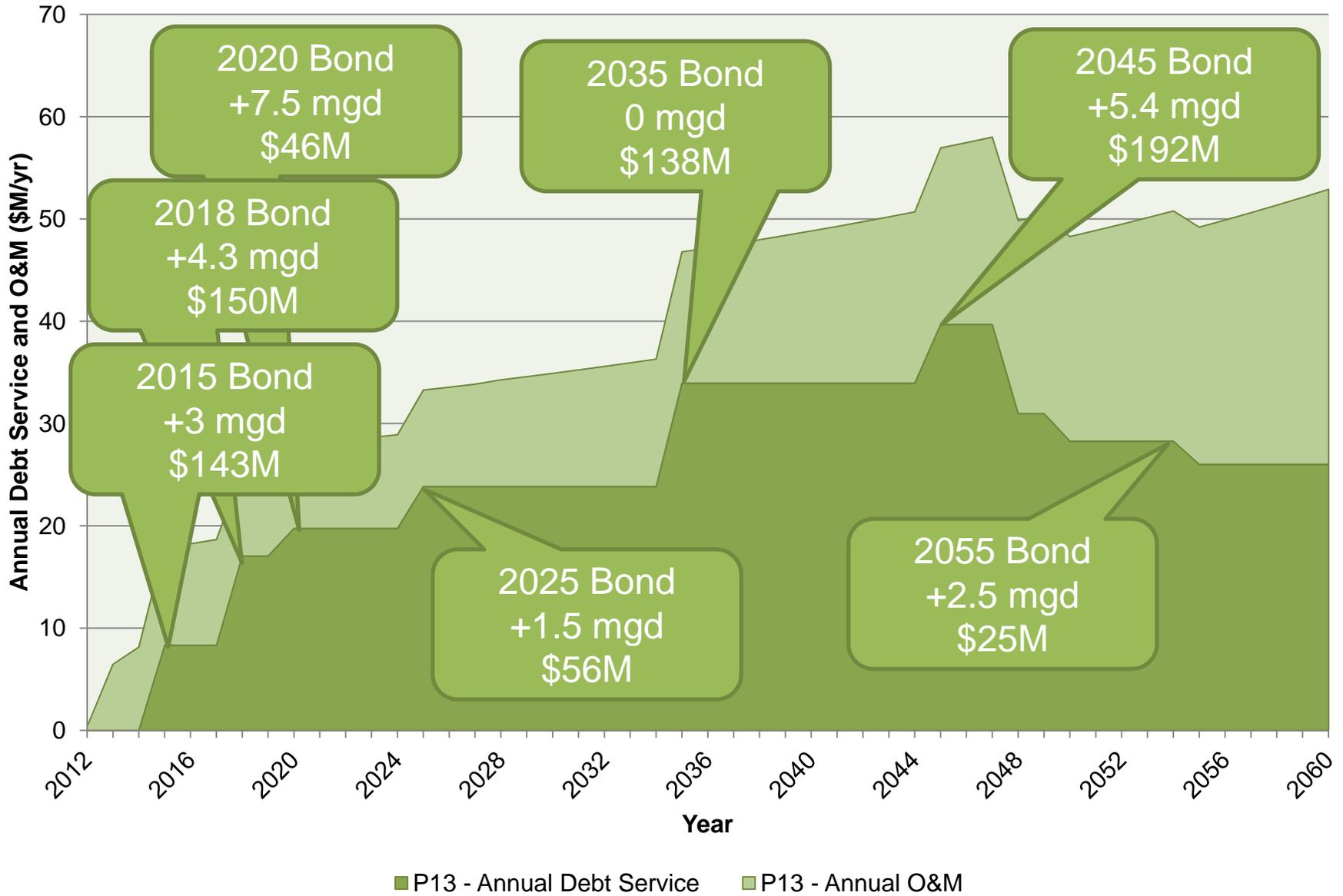
- Existing infrastructure includes Vernon Campbell WTP, raw water piping, and treated water connection to OKC.
- Infrastructure required because of anticipated regulatory changes includes treatment for active Garber-Wellington Aquifer wells.

**P1 - Maximize Local Sources
Annual Debt Service and O&M Cost over Time**



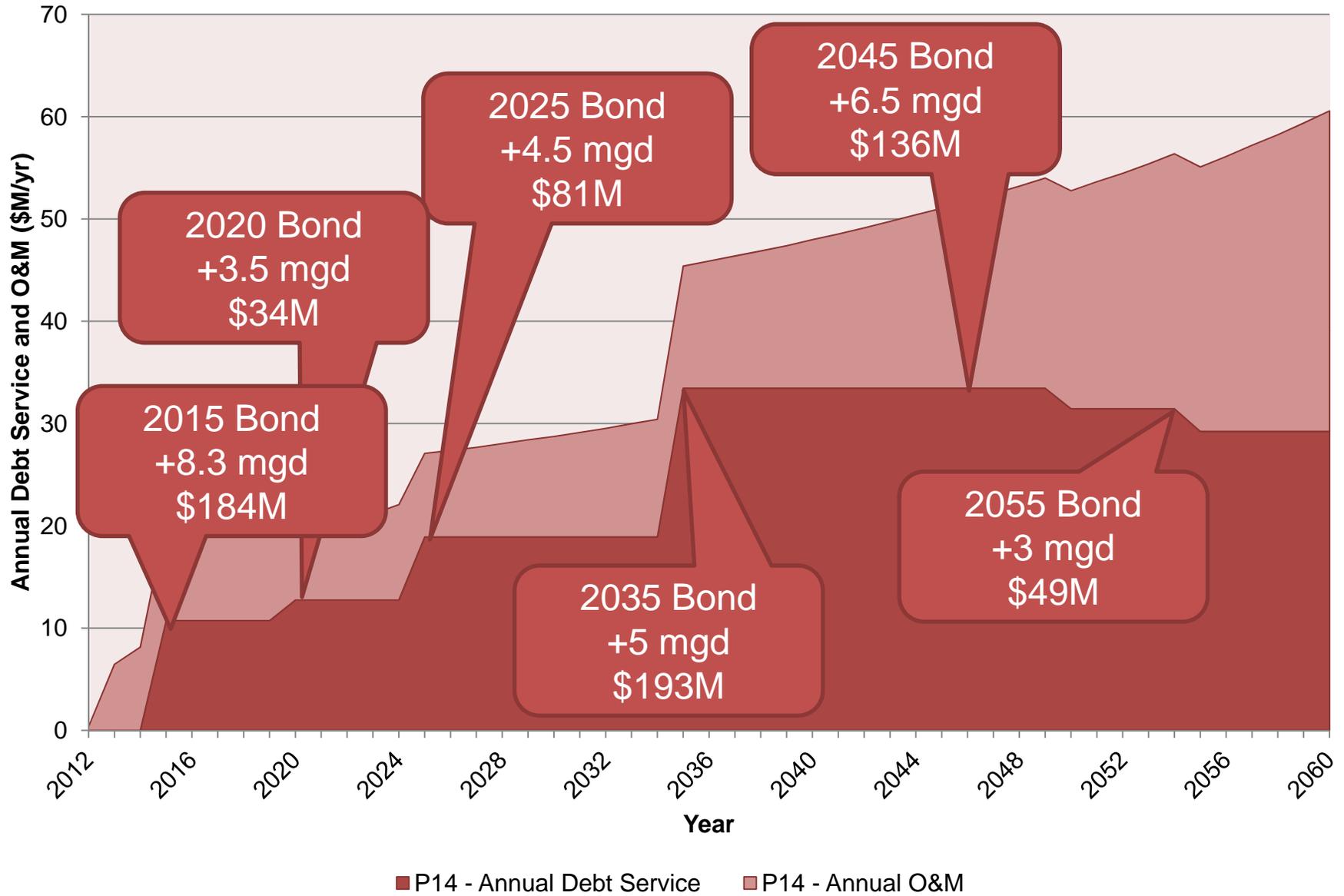
All costs in escalated dollars

P13 – Regional Raw Water via OKC (co-owner) Annual Debt Service and O&M Cost over Time



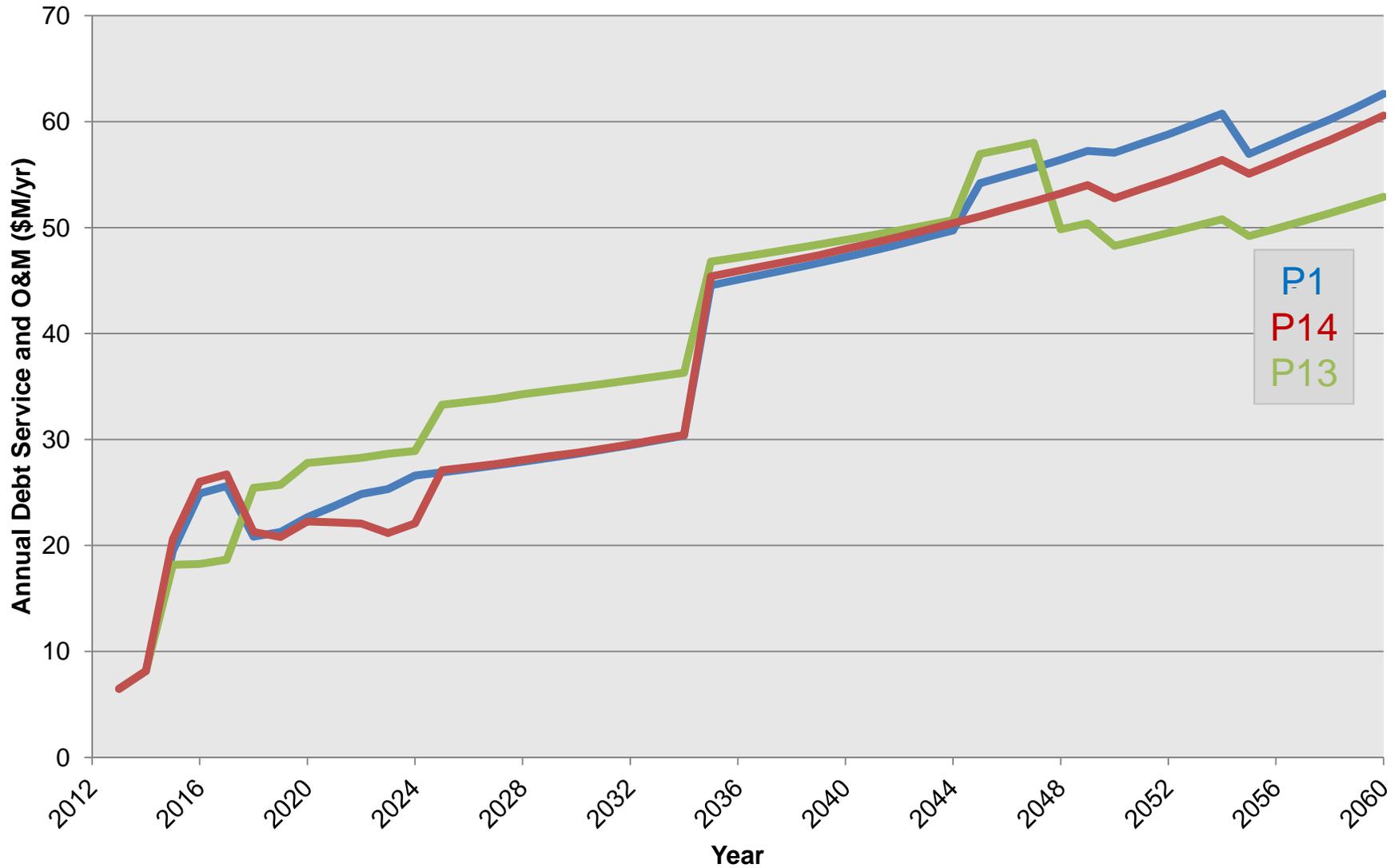
All costs in escalated dollars

P14 - New Wells and IPR Annual Debt Service and O&M Cost over Time



All costs in escalated dollars

Comparison of Annual Costs



Key Attributes of Recommended Portfolios

P1: Thunderbird Augmentation

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

P13: Regional Raw Water (co-owner with OKC)

- Local control over treatment
- Contingent on OKC projects

P14: New Wells and Thunderbird Augmentation

- Local control over sources
- Discharge permitting uncertainties
- Efficient use of water resources
- Greater phasing potential than P1

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