City of Franklin

Integrated Water Resources Plan

February 28, 2012

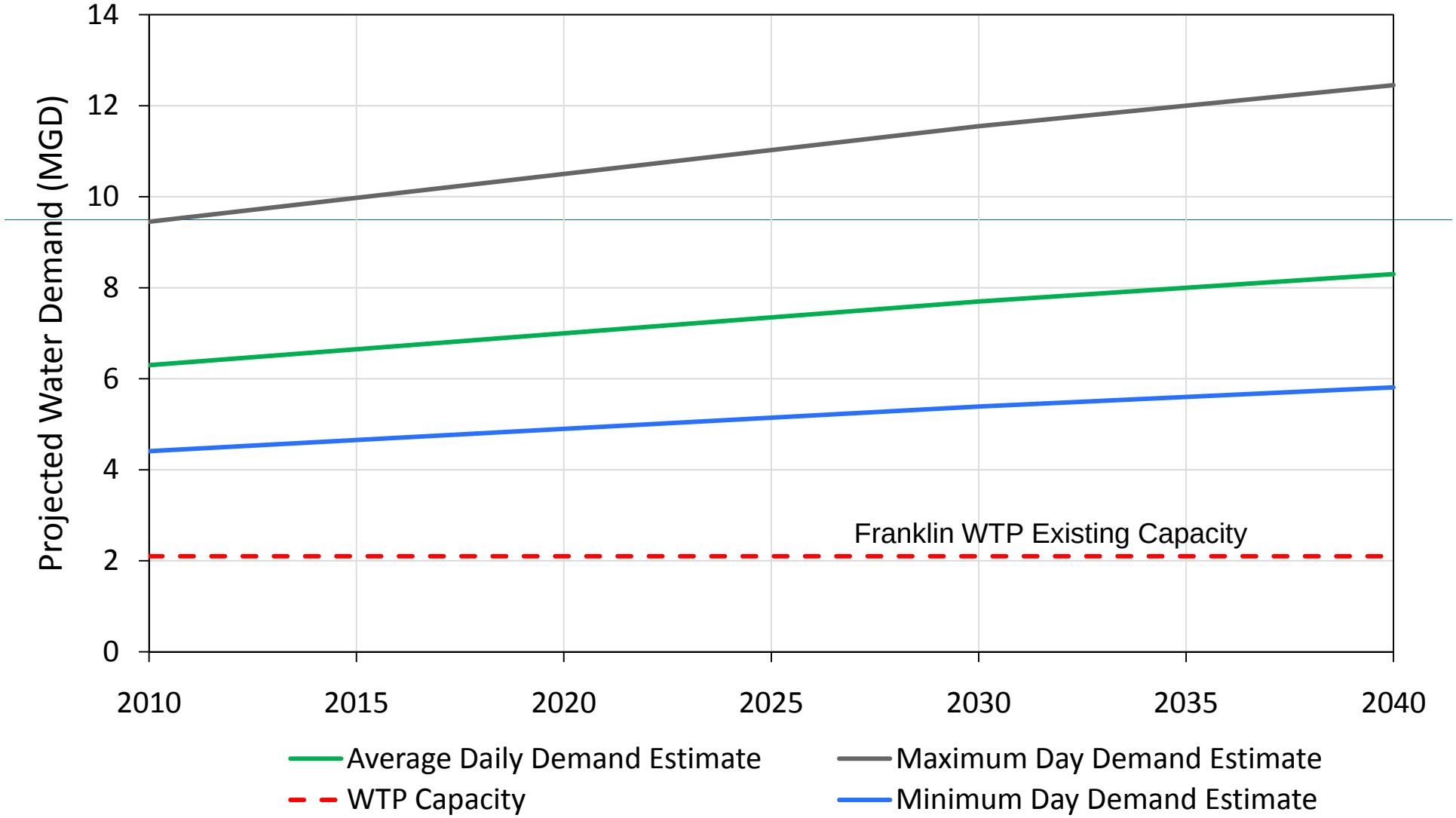
BOMA Update

CDM Smith

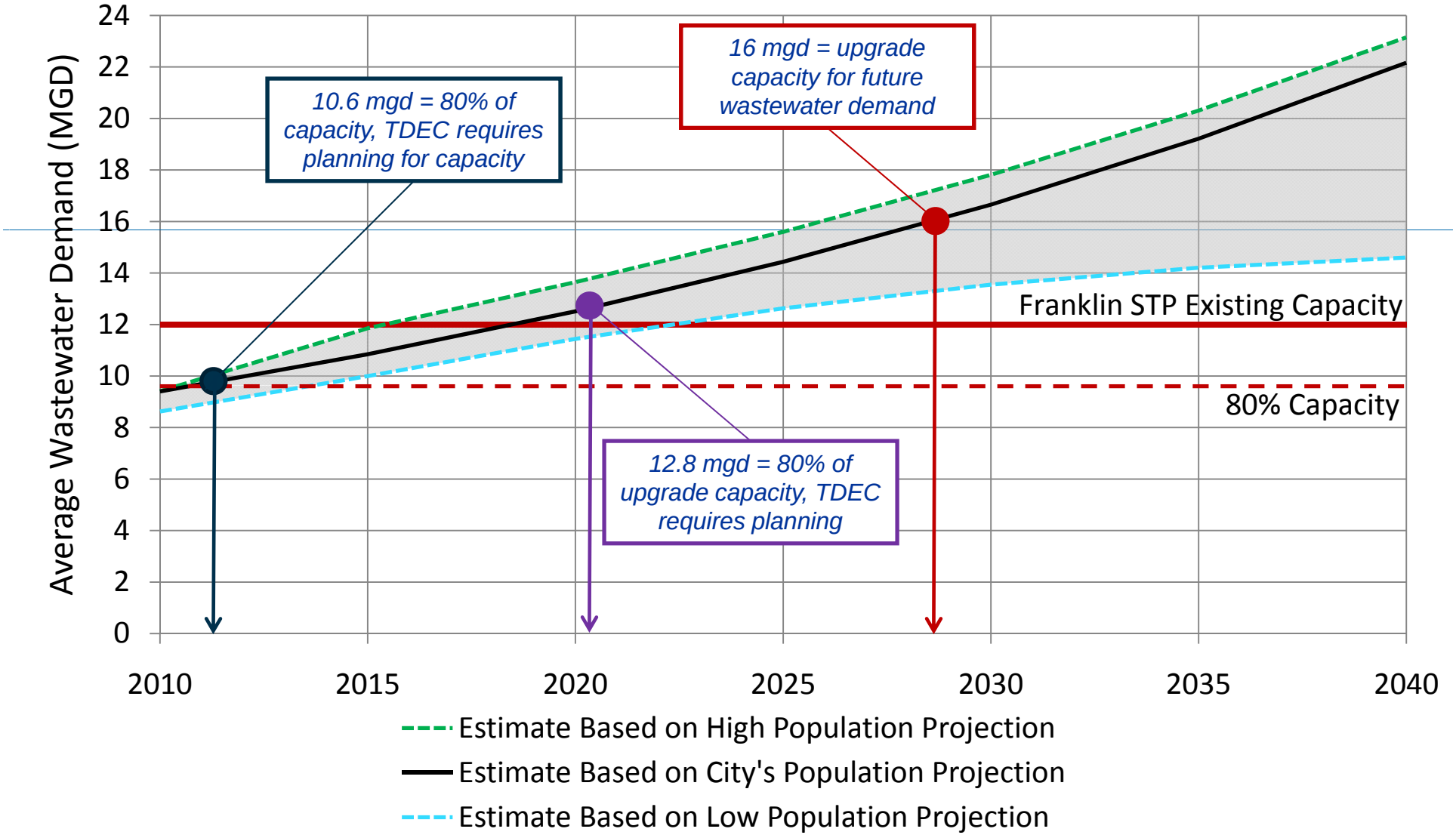
Meeting Agenda

- Review of Objectives
- Objectives Weighting
- Final Alternative Rankings
- Review of Stakeholder Recommended Plan
- Plan Benefits
- Schedule
- Costs and Rate Discussion

Franklin Water Demand Projections



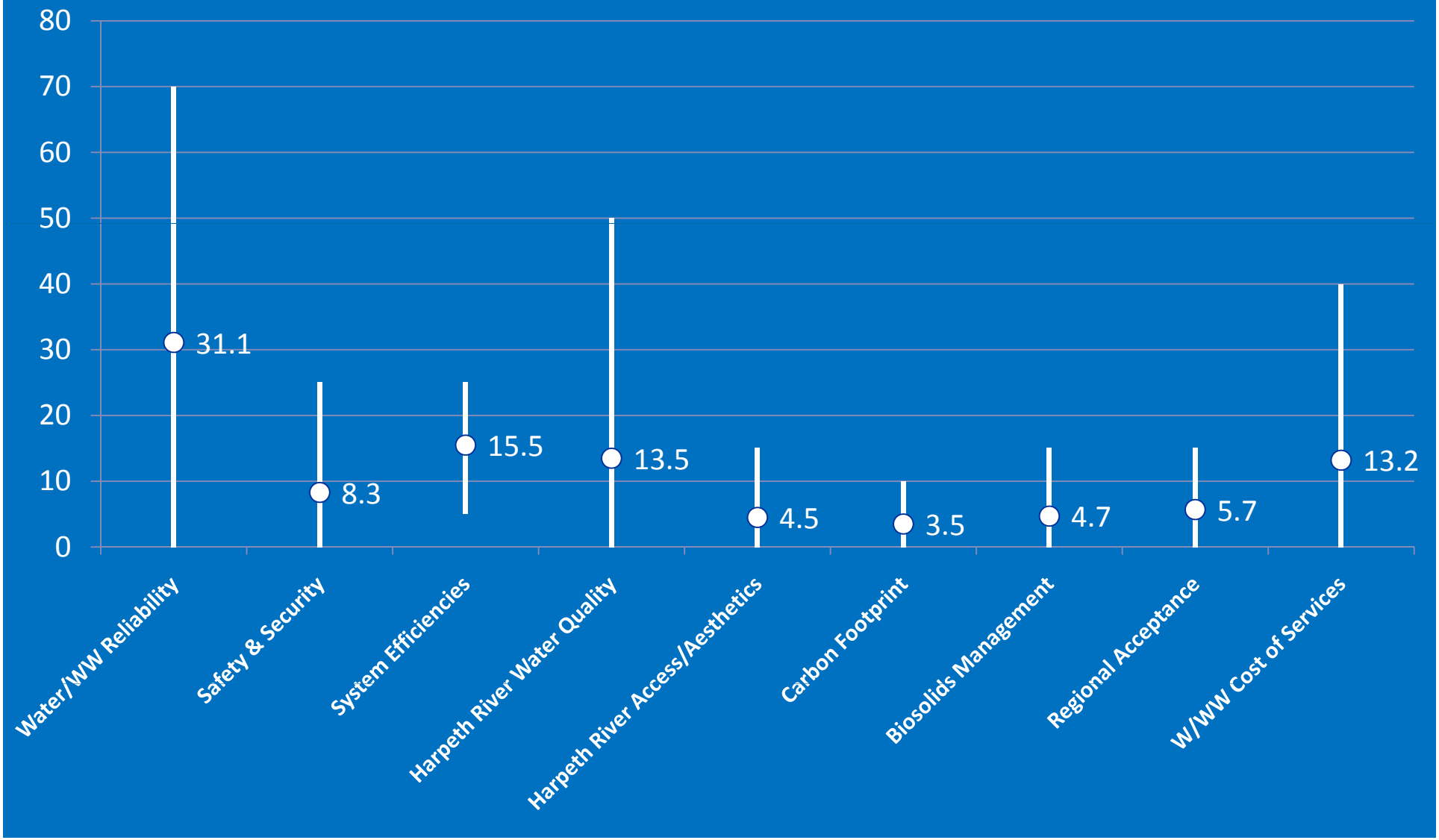
Franklin Wastewater Demand Projection



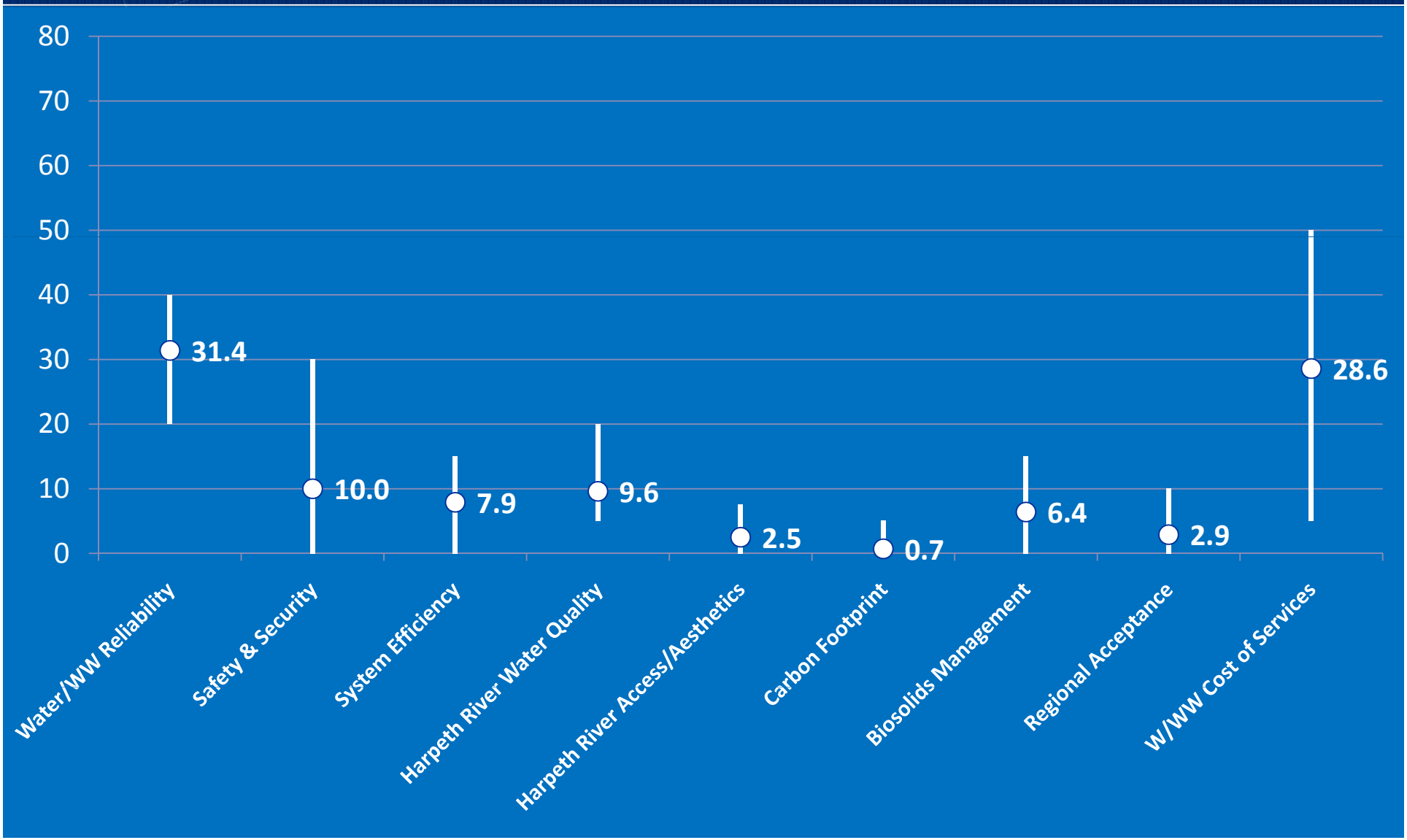
Objectives

1. Meet current and future demands for water and wastewater reliably
2. Provide safety and security of water resources systems
3. Maximize efficiency of water use and value of water resources
4. Improve water quality and ecological health of Harpeth River
5. Provide improved access and aesthetics of Harpeth River
6. Minimize carbon footprint of water resources operations
7. Achieve sustainable biosolids management
8. Achieve regional acceptance
9. Provide excellent level of water/wastewater utility services at reasonable cost

Objective Weighting
Stakeholders



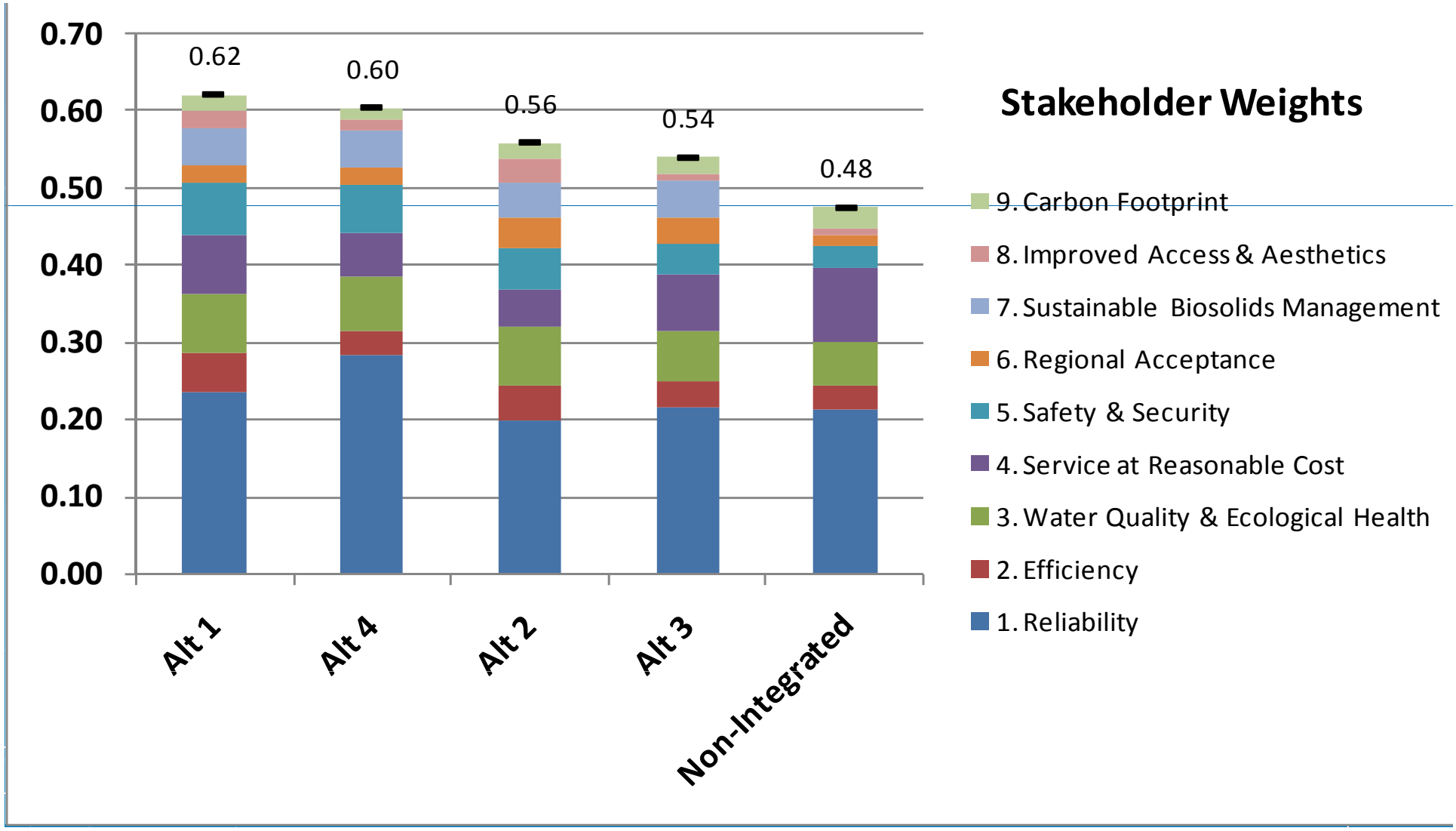
Objective Weighting
Board of Mayor and Alderman



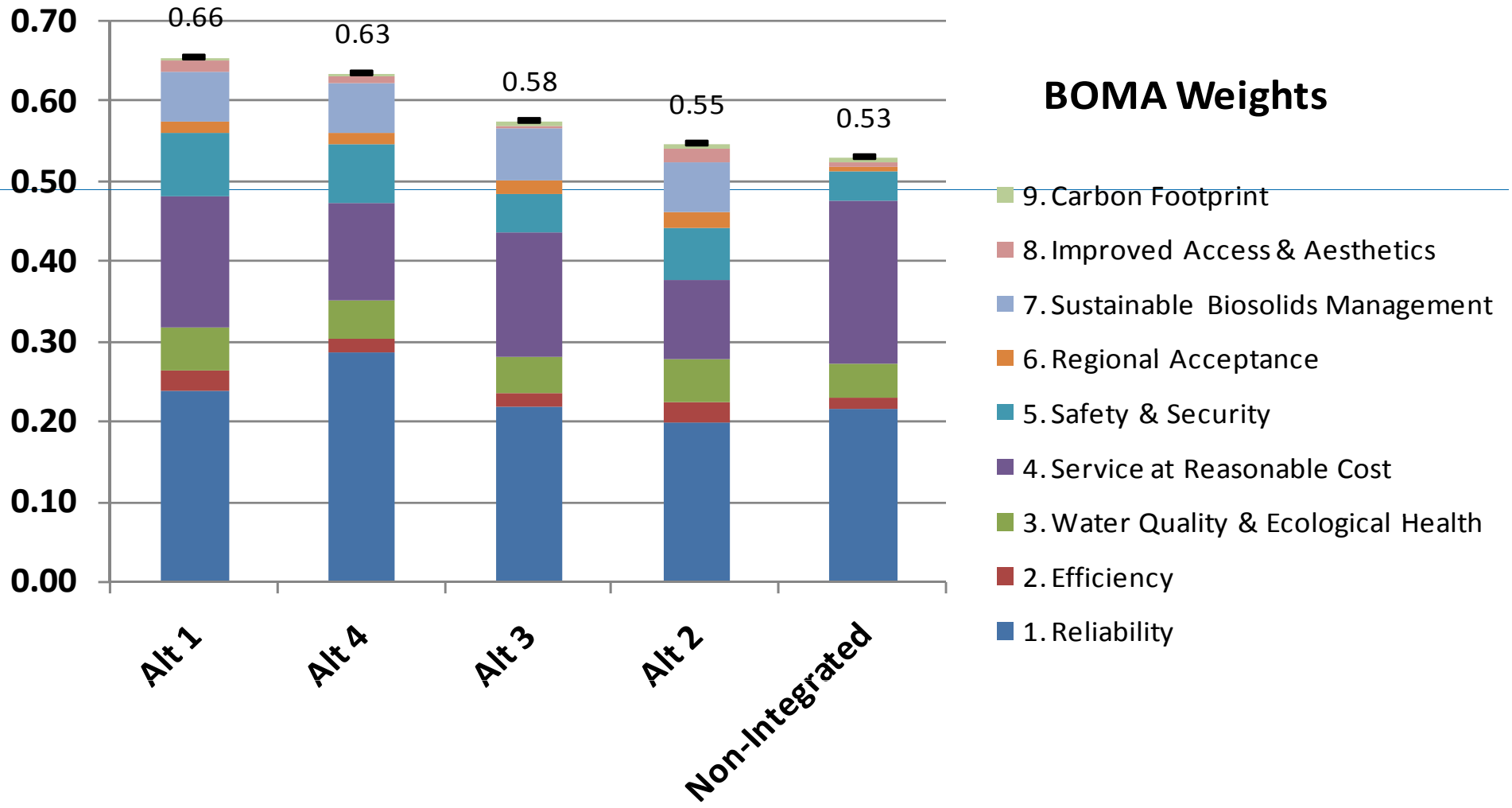
Definition of Alternatives

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Non-Integrated
Low-Head Dam Removal	Yes	Yes	Yes	No	No
Water Treatment Plant	4 mgd & HVUD Purchase	Decommission WTP & HVUD Purchase	2.1 mgd & HVUD Purchase	Line to Cumberland & 12.5 mgd WTP	2.1 mgd & HVUD Purchase
Water Distribution System	WQ/Quantity Improvements, advanced metering	WQ/Quantity Improvements, advanced metering	Advanced metering	WQ/Quantity Improvements	Model
Conservation	5% savings	2% savings	None	2% savings	None
Stormwater BMPs	Yes	Yes	No	No	No
Ecological Restoration	Low Head Dam Removal & Specific Restoration Projects	Low Head Dam Removal & Watershed Projects	Low Head Dam Removal	None	None
Existing WWTP	16 mgd	24 mgd	24 mgd	16 mgd	24 mgd
New Southern WWTP	8 mgd	None	None	8 mgd	None
Berry's Chapel/ Cartwright Flows	To be considered	To be considered	No	No	No
Collection System	Septic Users, I/I Reduction	Septic Users, I/I Reduction, Pump to Existing WWTP	I/I Reduction, Pump to Existing WWTP	Septic Users	Pump to Existing WWTP
Reclaimed Water	Upgrade Pumping to 12 mgd & add Probable Customers	Upgrade Pumping to 12 mgd & add Probable Customers	None	Upgrade Pumping to 12 mgd & add Probable Customers	None

Rankings with Stakeholder Weights



Rankings with BOMA Weights



Ranking Results
Sensitivity Analysis of Alternatives Results

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Non-Integrated
Stakeholder Weights	1	3	4	2	5
BOMA Weights	1	4	3	2	5
Equal Weights	1	2	4	3	5
Reliability 30%	1	3	4	2	5
Water Quality 30%	1	2	4	3	5
Safety & Security 30%	1	2	4	3	5
Cost 30% (Capital/Lifecycle , $M)	1	3	2	4	5
	(213/785)	(246/870)	(189/752)	(286/793)	(127/585)

Preferred Alternative 1

- 100% reliable in meeting future water and wastewater demands
- Greatest control and operational flexibility
- Addresses City's waste load allocations
- 30 miles of Harpeth River and tributary restoration and City-wide stormwater BMPs
- Sustainable biosolids management program
- In terms of lifecycle cost, Alternative 1 is approximately 4% greater than the lowest cost alternative (Alternative 3) and over $85 million (11%) less than the most expensive (Alternative 4)
- Provides flexibility in project implementation and financing

Water Plan Schedule

Project	Project Start	Project Finish
WTP to 4 mgd, UV & AOP	11/1/2012	4/1/2015
Distribution WQ Improvements	1/1/2013	1/1/2014
Distribution Model	12/30/2012	
AMI Implementation	12/30/2012	5/30/2014
Distribution Improvements*	1/1/2028	1/1/2030
SCADA	12/30/2013	

** Depending on the Phasing of the Capacity Improvements*

Wastewater Plan Schedule

Project	Project Start	Project Finish
Upgrade Existing WWTP to 16 mgd	7/1/2012	1/1/2015
Phase I Biosolids	7/1/2012	1/1/2015
Sewer Model	1/1/2013	
Sewer Rehabilitation (RDII > 12%)	6/30/2012	6/30/2020
New South WWTP (4 mgd)*	7/1/2024	7/1/2026
Build-out South WWTP (8 mgd)*	7/1/2032	1/1/2034
SCADA	12/30/2013	
Biosolids Phase II*	7/1/2024	7/1/2026
Biosolids Phase III*	7/1/2032	1/1/2034
Add Probable Customers (reclaimed)	1/1/2015	12/30/2040
Upgrade Reclaimed Pump Station	1/1/2014	1/1/2015

** Depending on the Phasing of the Capacity Improvements*

Priority Projects

Importance (Regulatory, Growth, Objectives)	Time/Implementation		
	15+ Years	5 – 15 Years	0 – 5 Years
Low	Low Priority	Medium Priority	High Priority
Medium	Low Priority	High Priority	Immediate Action
High	Medium Priority	High Priority	Immediate Action

Project Priority

General
SCADA System

Wastewater Treatment
WWTP Phase 1 - capacity to 16 mgd
~~WWTP Phase 2 & 3 - capacity to 24 mgd~~
Add Berry's Chapel & Cartwright Creek WWTPs

Water Treatment
WTP upgrade to meet LT2 regulations
Expand WTP to 4 mgd

Reclaimed Water
Upgrade reclaimed pump station to 12 mgd
Add potential City owned reclaimed customers
Add other potential reclaimed customers

Collection System
Calibrated wastewater collection model
Rehabilitation for I/I reduction
Add septic users within UGB

Distribution System
Distribution WQ improvement projects
Annual leak detection program
Distribution quantity/supply improvements
Calibrated water distribution model

Stormwater
Stormwater BMPs
City owned facility stormwater reuse

Conservation
Irrigation controls ordinance
Toilet/faucet replacement program
Additional water conservation programs

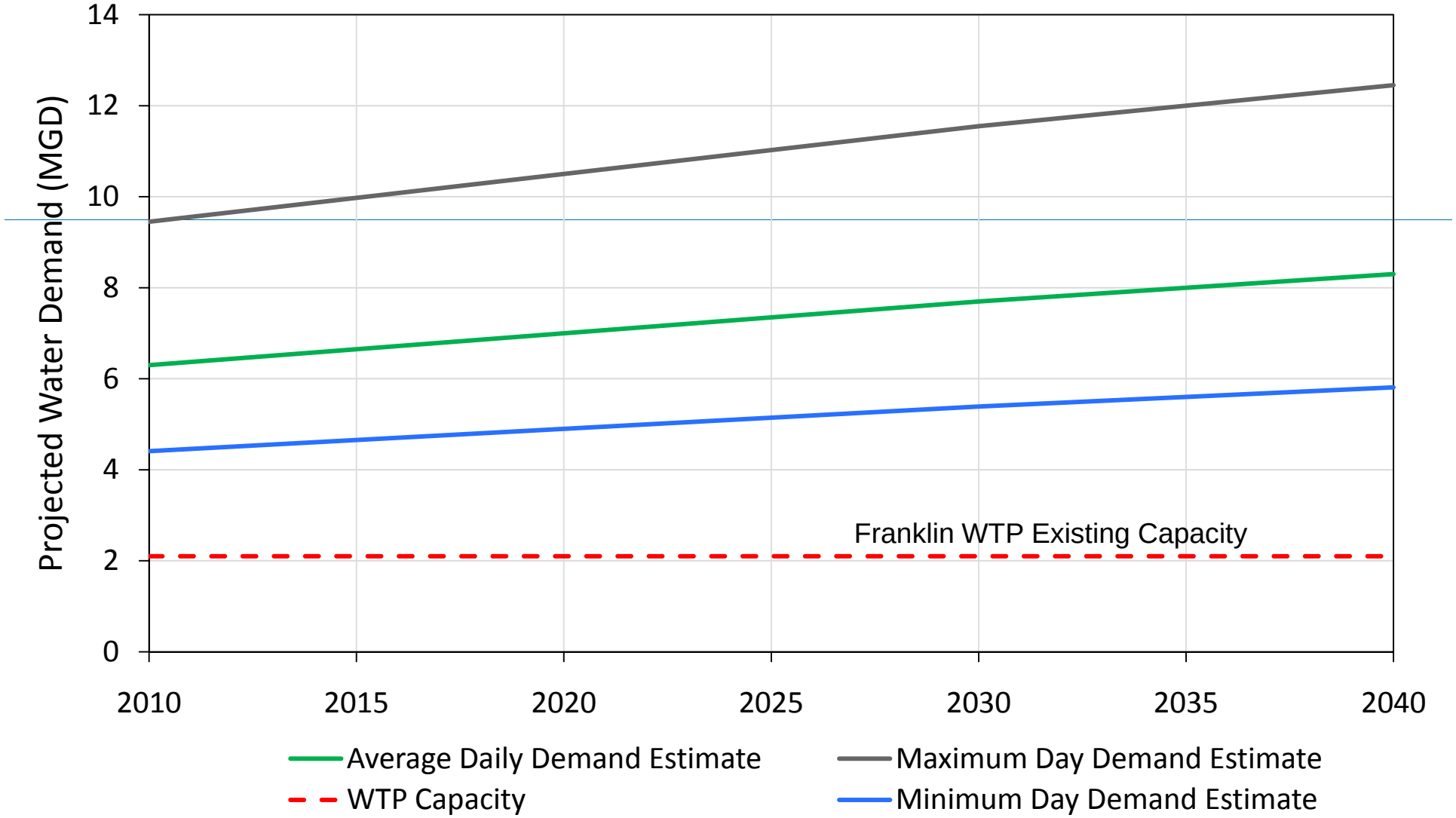
Ecological Restoration
Low head dam removal
Streambank restoration projects

Biosolids
Class B biosolids (thicken, digest, dewater)
Class A biosolids (solar dryer)

Capital Costs and Rate Implications

- Water Rates
  - Capital Investment - $19.2 Million (23.5% growth related)
  - Assumptions
    - Funding All Improvements With Debt
    - 4% Interest Amortized Over 30 Years
    - 1% Growth Rate
    - Present Day Dollar Values
- Wastewater Rates
  - Capital Investment - $206.2 Million (62.2% growth related)
  - Assumptions
    - Funding All Improvements With Debt
    - 4% Interest Amortized Over 30 Years
    - 2.5% Growth
    - Present Day Dollar Values

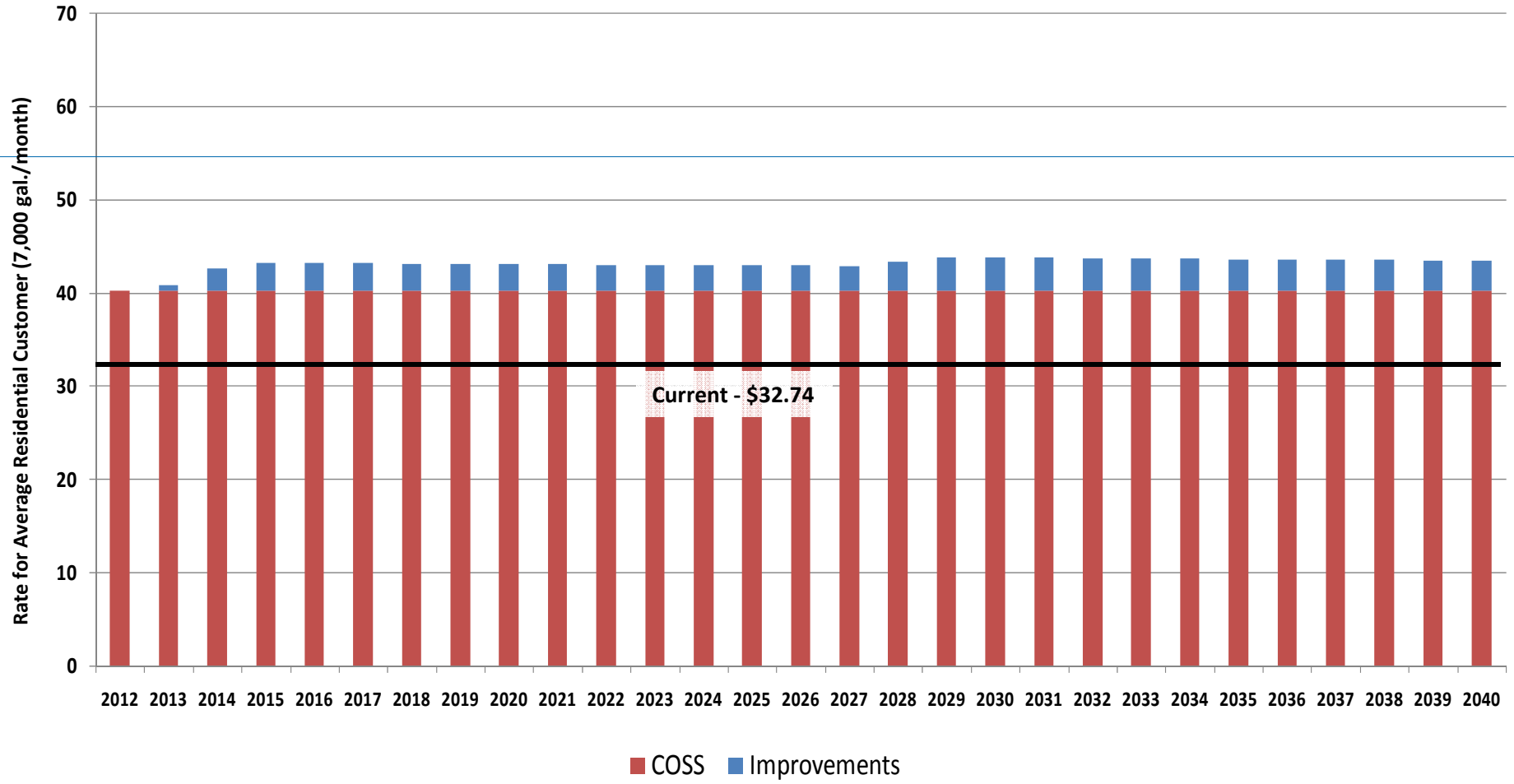
Franklin Water Demand Projections



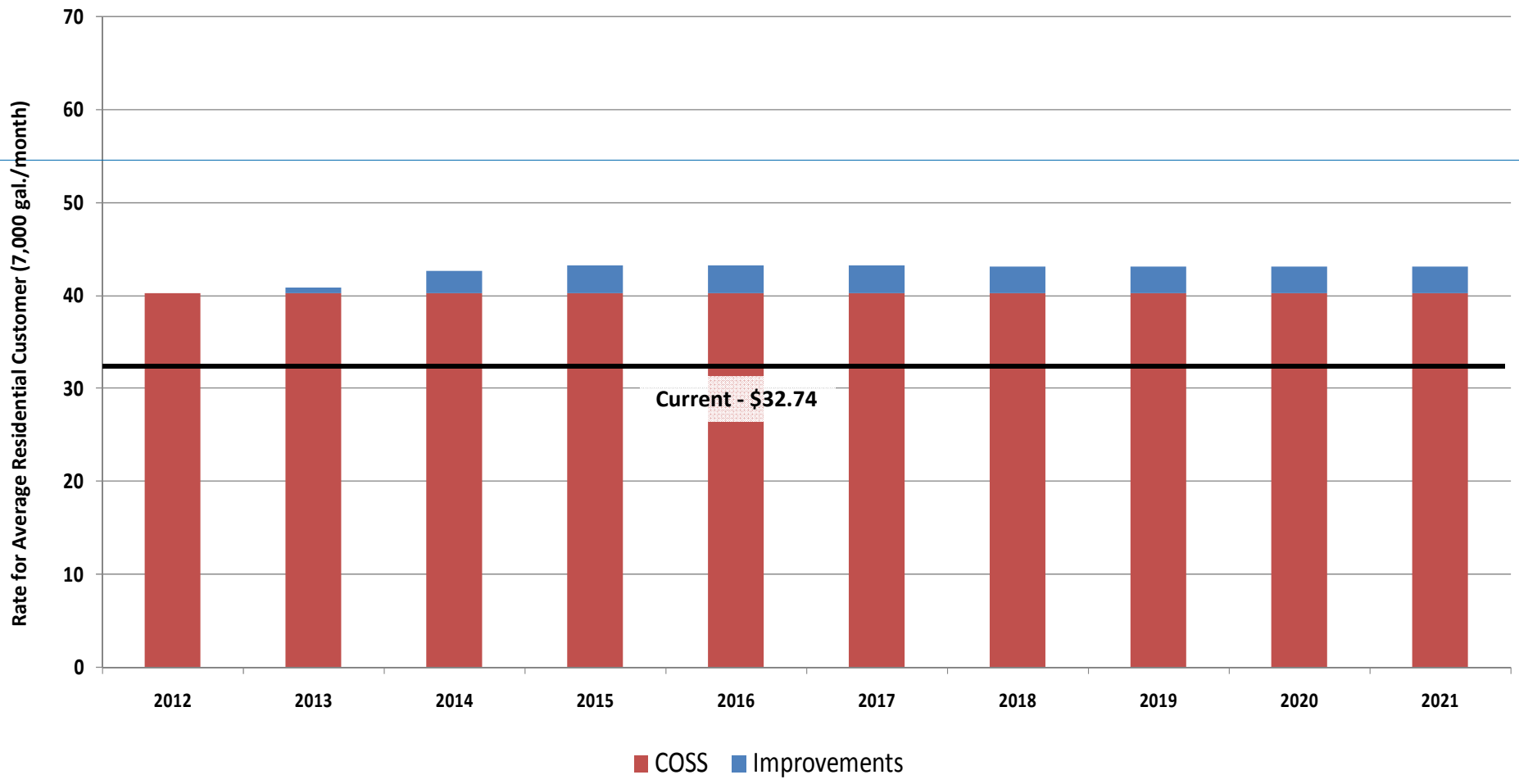
Water Option

Project	Capital Cost	% Growth	Growth	Rehabilitation
Distribution Model	$200,000	0%	$0	$200,000
Meter Replacements	$3,500,000	0%	$0	$3,500,000
Distribution WQ Improvements	$1,500,000	0%	$0	$1,500,000
WTP to 4 mgd, UV& AOP	$9,134,000	50%	$4,567,000	$4,567,000
SCADA	$830,000	0%	$0	$830,000
Distribution Improvements	$4,000,000	0%	$0	$4,000,000
Capital Investment	**$19,164,000**		**$4,567,000**	**$14,597,000**

Impact on Average Residential Inside Rates (30 Year Window)



Impact on Average Residential Inside Rates (10 Year Window)



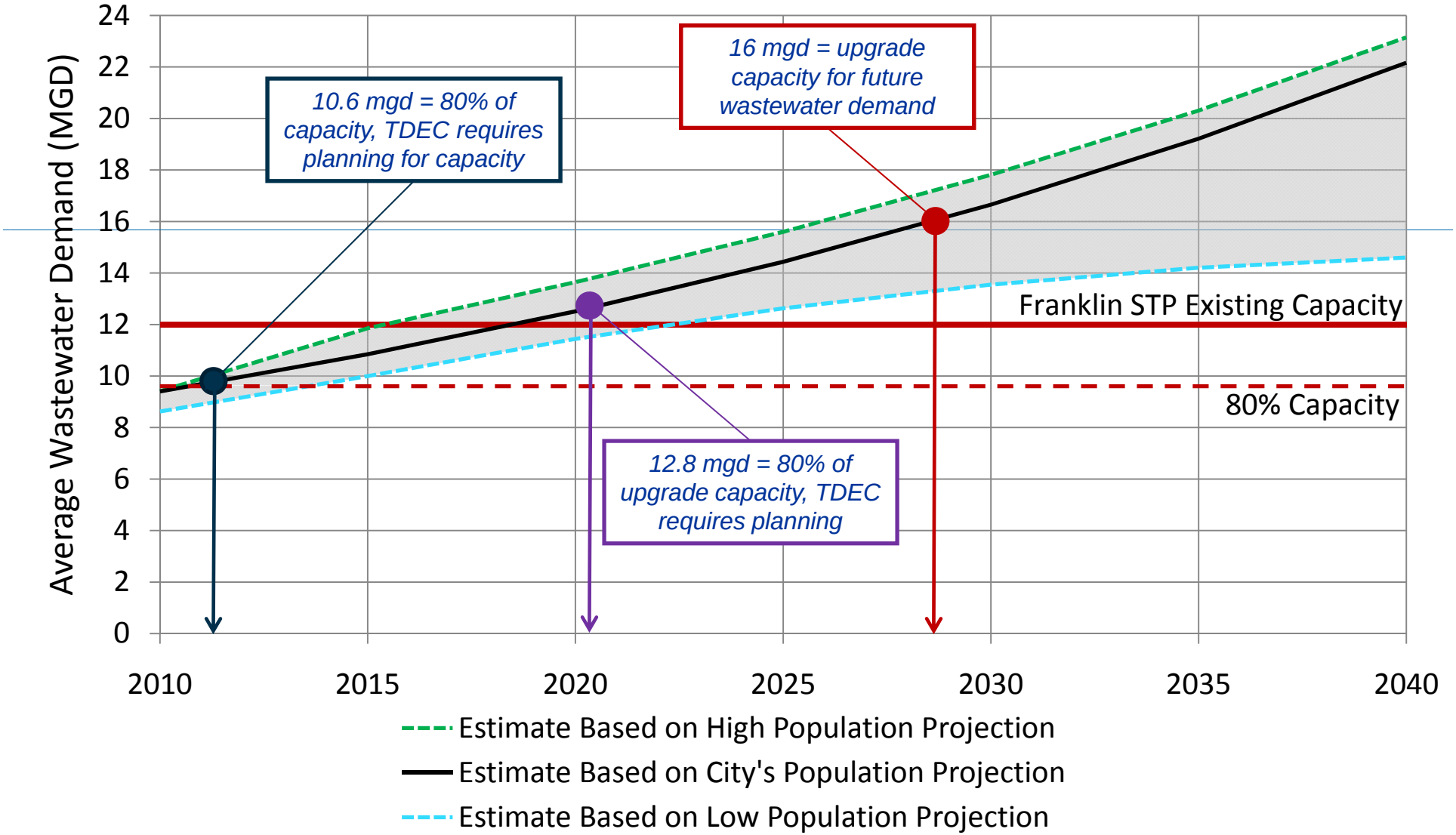
Costs of Water Production

Costs per 1000 gallons:

Wholesale Purchase (2012)	$ 2.18
Franklin (Average Production Cost)	$ 1.50
Franklin (Projected Cost for 4 MGD)	$ 1.33

Potential Annual Operations Cost Savings for 4 MGD Plant Expansion
$ 350k - $ 450k

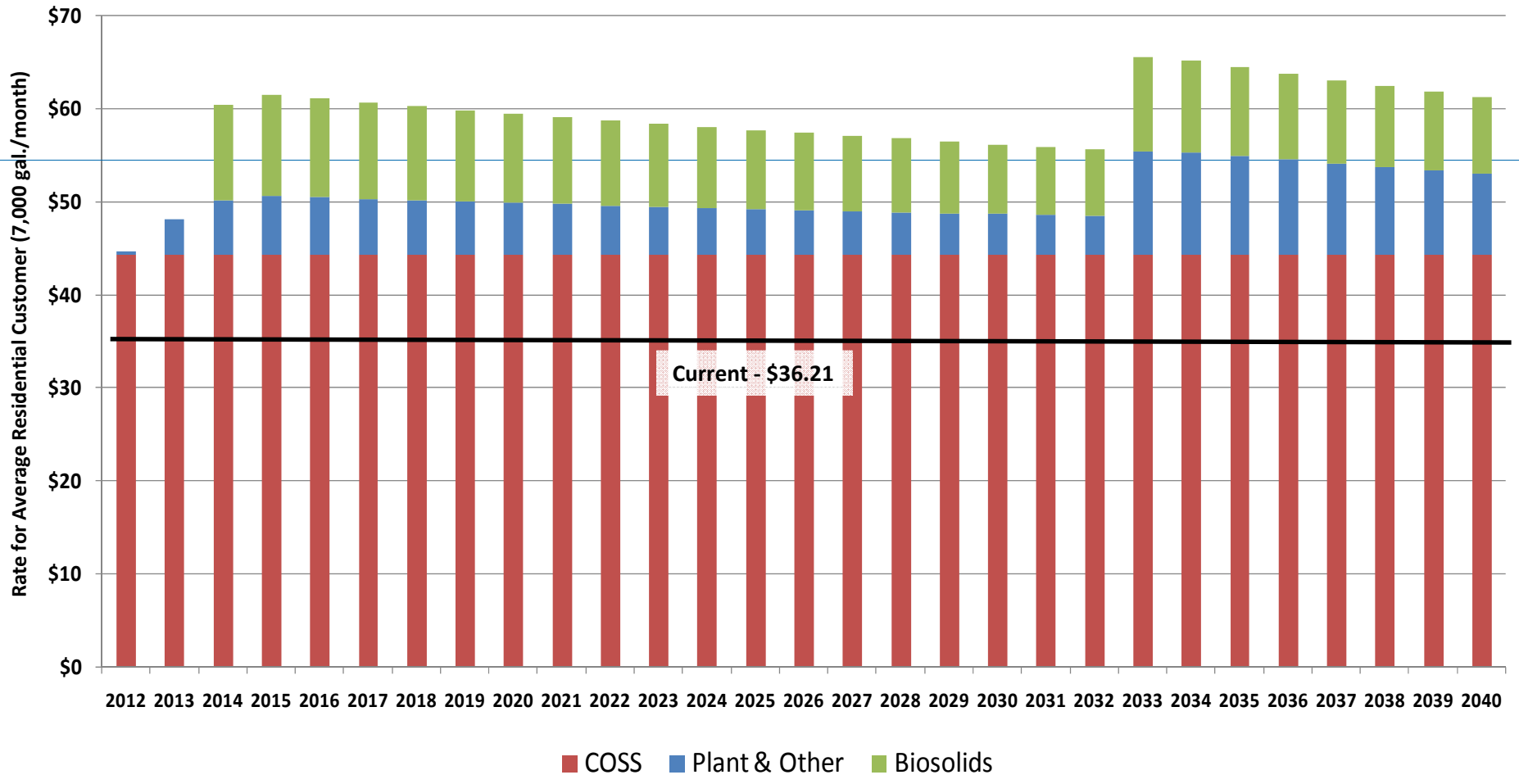
Franklin Wastewater Demand Projection



Wastewater Option A

Project	Capital Cost	% Growth	Growth	Rehabilitation	Start	Complete
Sewer Model	$400,000	0%	$0	$400,000	1/1/2013	
Sewer Rehab (RDII > 12%)	$16,430,000	0%	$0	$16,430,000	5/30/2012	5/30/2014
Phase I Biosolids	$42,500,000	25%	$10,625,000	$31,875,000	7/1/2013	1/1/2015
Biosolids Dryer	$23,500,000	25%	$5,875,000	$17,625,000	7/1/2013	1/1/2015
Exisitng WWTP Hydraulic Improvements	$8,100,000	0%	$0	$8,100,000	7/1/2013	1/1/2015
Existing WWTP to 16 MGD	$10,500,000	100%	$10,500,000	$0	7/1/2013	1/1/2015
SCADA	$4,800,000	25%	$1,200,000	$3,600,000	12/30/2013	
Phase II Biosolids	$14,000,000	100%	$14,000,000	$0	7/1/2024	7/1/2026
South WWTP (Phase I - 4 MGD)	$60,000,000	100%	$60,000,000	$0	7/1/2024	7/1/2026
Phase III Bioslids	$8,000,000	100%	$8,000,000	$0	7/1/2032	1/1/2034
South WWTP (Phase II - 8 MGD)	$18,000,000	100%	$18,000,000	$0	7/1/2032	1/1/2034
Capital Investment	**$206,230,000**		**$128,200,000**	**$78,030,000**		

Impact on Average Residential Inside Rates (30 Year Window)



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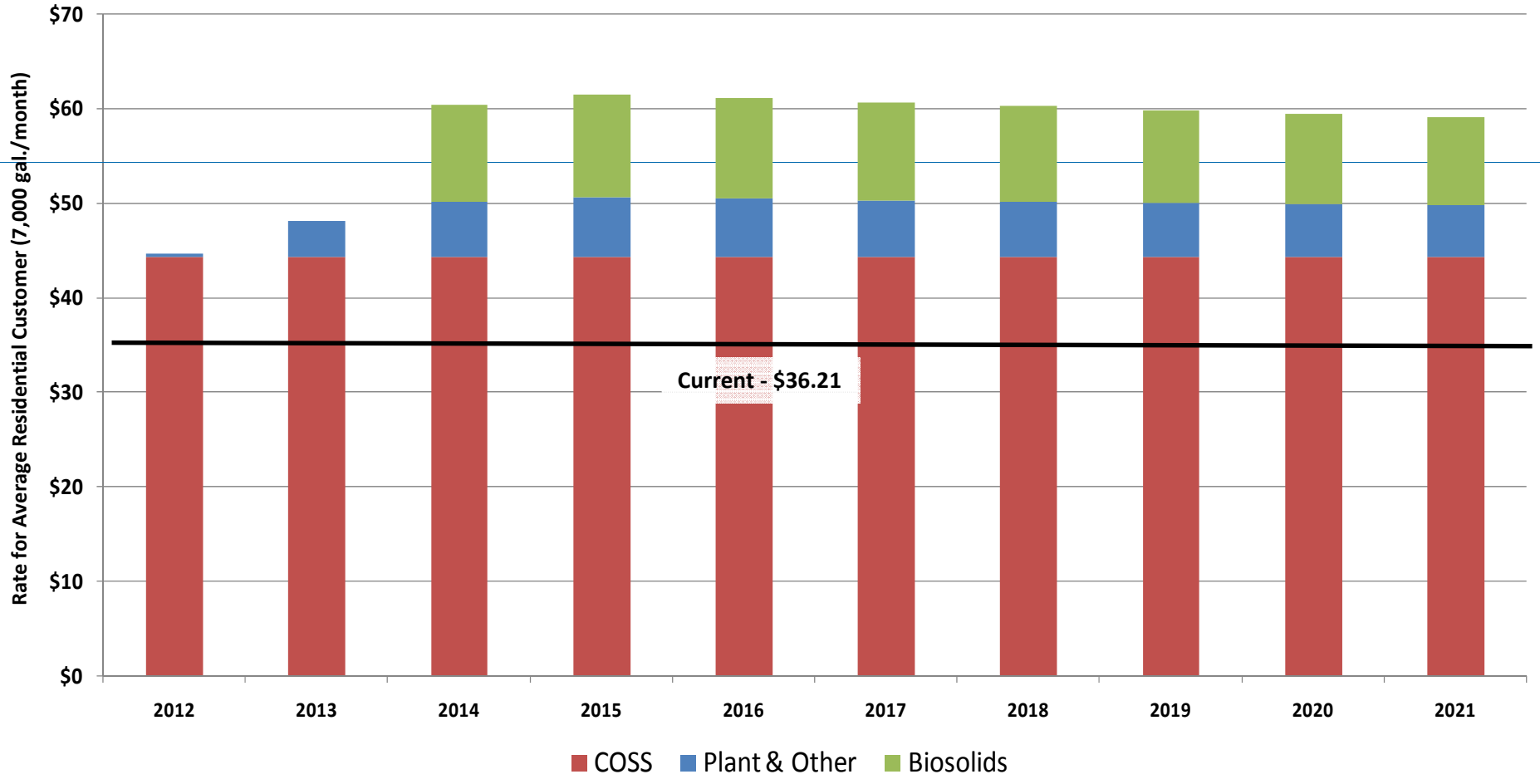
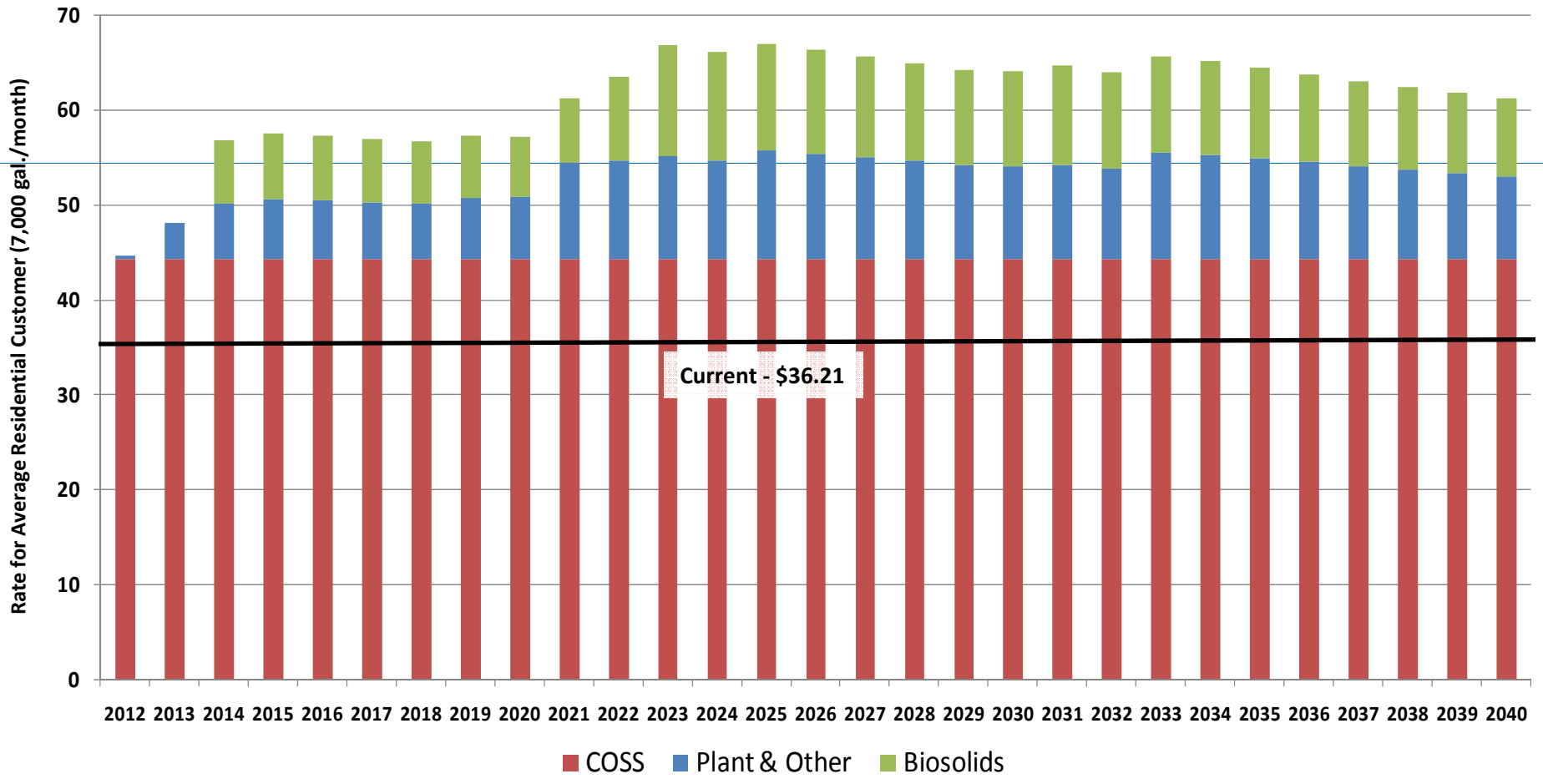


Wastewater Option B

Project	Capital Cost	% Growth	Growth	Rehabilitation	Start	Complete
Sewer Model	$400,000	0%	$0	$400,000	1/1/2013	
Sewer Rehab (RDII > 12%)	$16,430,000	0%	$0	$16,430,000	5/30/2012	5/30/2014
Exisitng WWTP Hydraulic Improvements	$8,100,000	0%	$0	$8,100,000	7/1/2013	1/1/2015
South WWTP (Phase I - 4 MGD)	$60,000,000	100%	$60,000,000	$0	7/1/2013	7/1/2015
Phase I Biosolids	$42,500,000	25%	$10,625,000	$31,875,000	7/1/2013	7/1/2015
SCADA	$4,800,000	25%	$1,200,000	$3,600,000	12/30/2013	
Phase II Biosolids	$14,000,000	100%	$14,000,000	$0	1/1/2023	7/1/2024
Biosolids Dryer	$23,500,000	25%	$5,875,000	$17,625,000	1/1/2023	7/1/2024
Existing WWTP to 16 MGD	$10,500,000	100%	$10,500,000	$0	7/1/2024	7/1/2026
Phase III Bioslids	$8,000,000	100%	$8,000,000	$0	7/1/2032	1/1/2034
South WWTP (Phase II - 8 MGD)	$18,000,000	100%	$18,000,000	$0	7/1/2032	1/1/2034
Capital Investment	**$206,230,000**		**$128,200,000**	**$78,030,000**		

Impact on Average Residential Inside Rates (30 Year Window)



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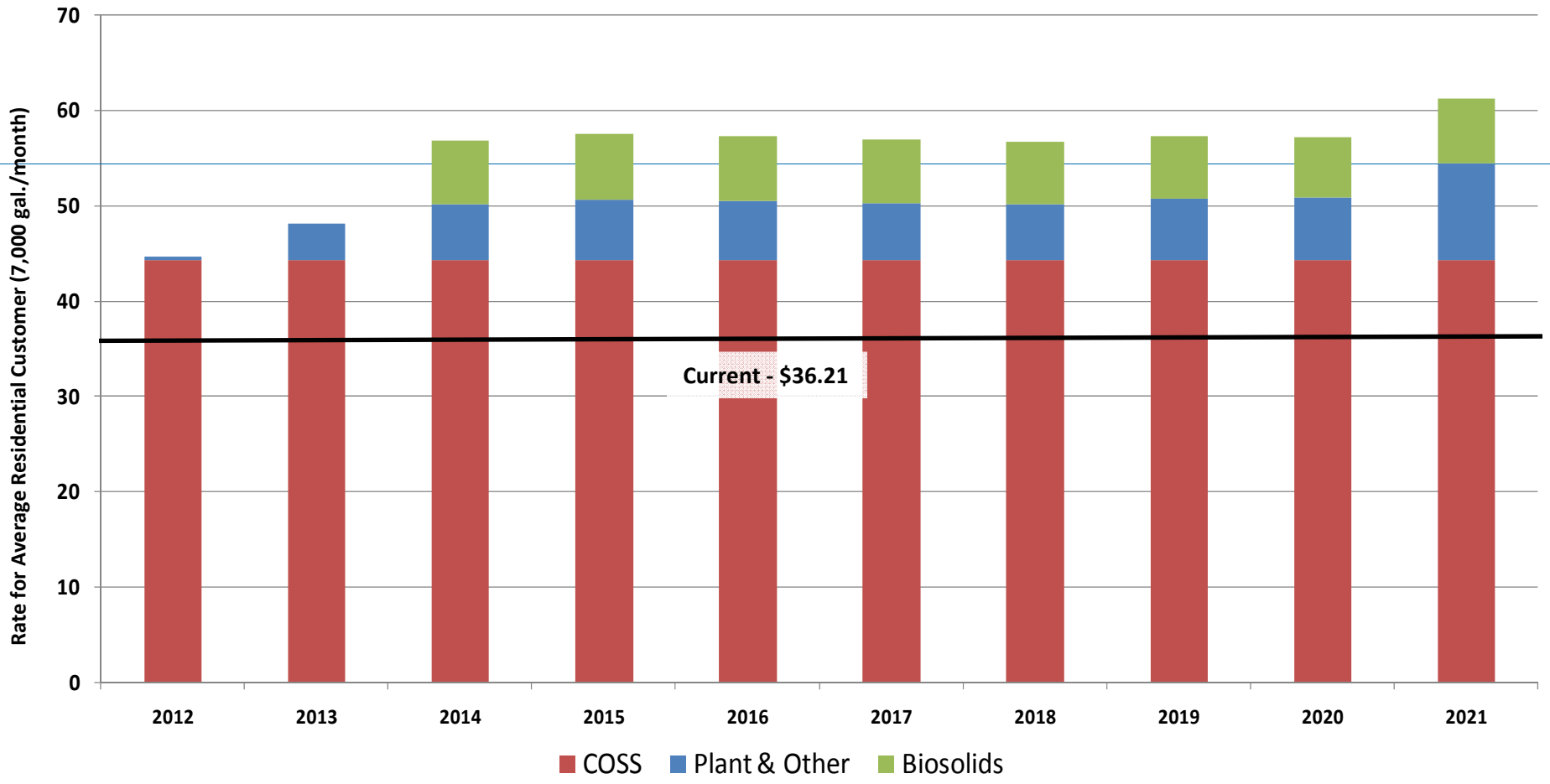
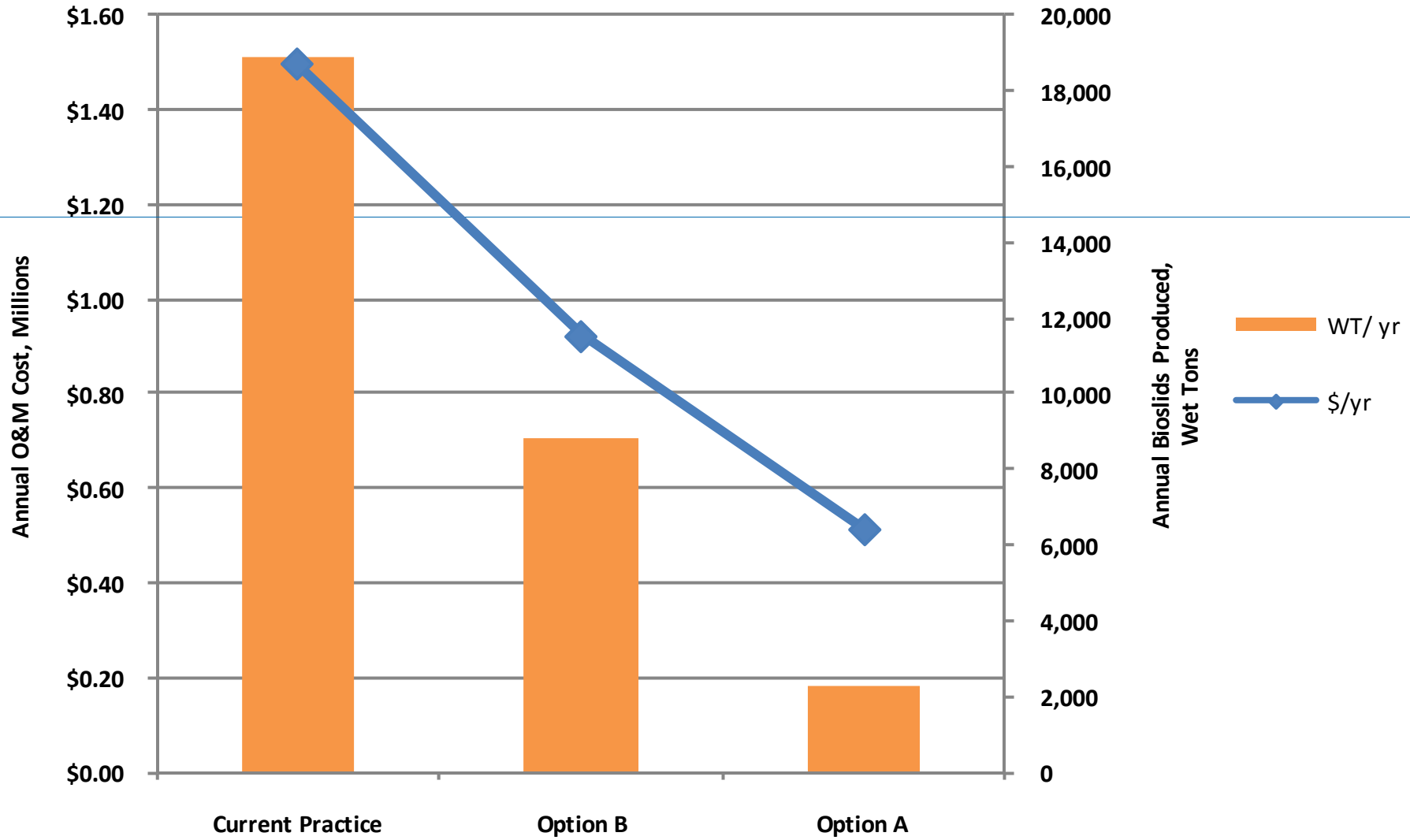
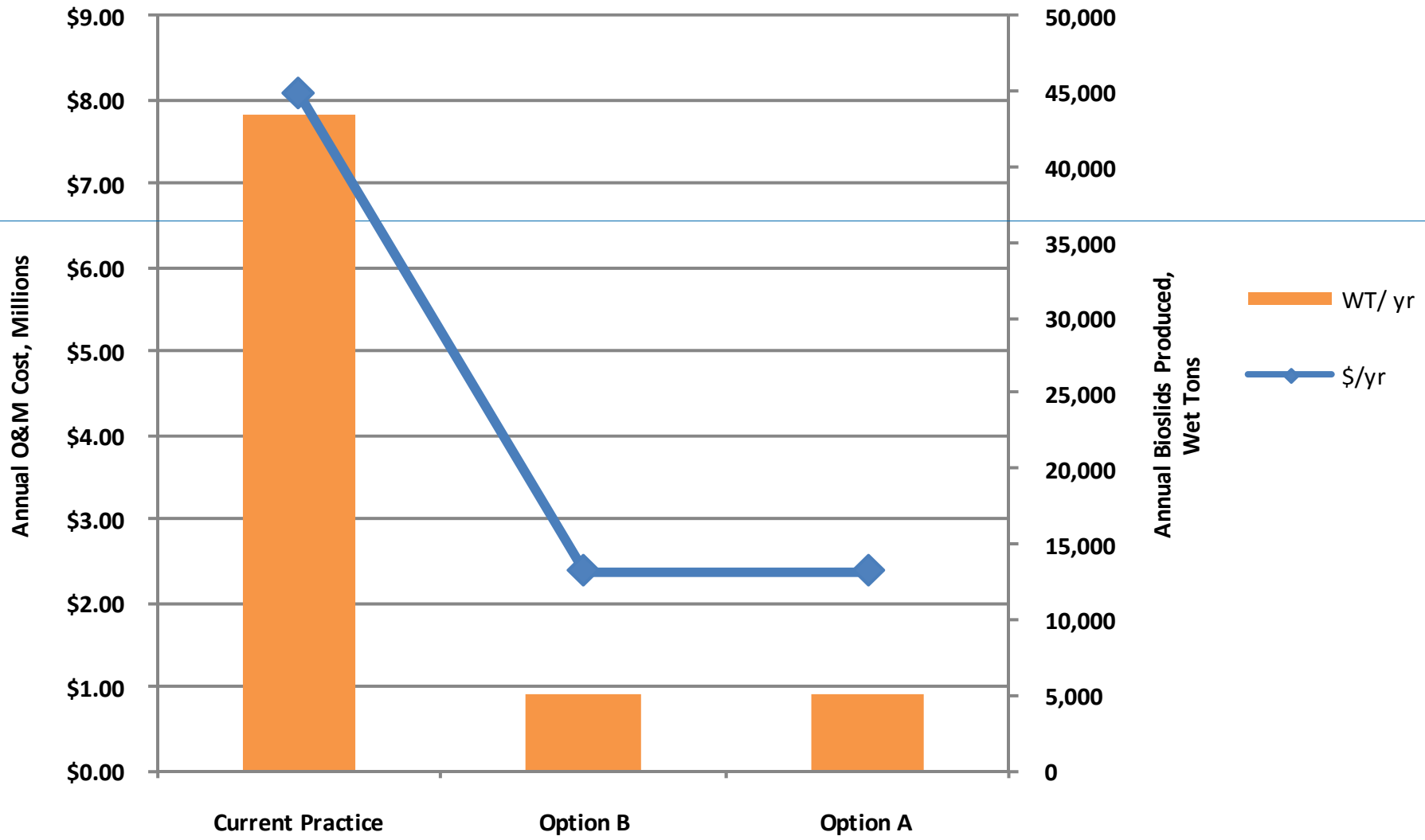


Biosolids O&M Costs – 2012



Biosolids O&M Costs - 2040



Summary

- Recommend Implementation of Alternative 1
  - Highest Ranked by:
    - BOMA
    - Stakeholders & Steering Committees
    - All Sensitivity Analysis
- Cost and Financing of the Plan
  - Multiple Options for Wastewater Implementation
  - City 's Preference of Being "Proactive Rather than Reactive"
  - Allows for Addressing of Continued Growth and Regulatory Compliance
- Permitting Process
  - Start Now & Stay Ahead of the Game
    - Additional Data Collection & Analysis/ Application Process
    - Public education process
  - Water Quality and Effect on Harpeth River is Key to the Successful Implementation of this IWRP and its Projects

Feedback and Discussion