BUILDING A WORLD OF DIFFERENCE

September 27, 2016

BROKEN ARROW MUNICIPAL AUTHORITY

WATER, WASTEWATER AND STORMWATER RATE STUDY – BAMA WORK SESSION

BLACK & VEATCH
Building a world of difference.

PROJECT UNDERSTANDING

- **Perform independent water, wastewater and stormwater rate studies. The studies will accomplish the following objectives:**
  - Establish operating and capital financial plans that fully fund activities
  - Perform a cost of service analysis to determine if cost allocations are fair and equitable among the customer classifications
  - Review the existing rate structure and proposed rates that provide adequate revenues

RATE STUDY PROCESS

COST OF SERVICE FOCUS

To **match**

the costs of providing service to individual

customer classes

and to **design**

rates to equitable recover costs

COST OF SERVICE AND RATE STUDY PROCESS

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"How Should Services be Priced?"

Rate Design

"From Whom Should the Money be Collected?"

Cost Allocation

"How Much Money is Needed?"

Revenue Requirements

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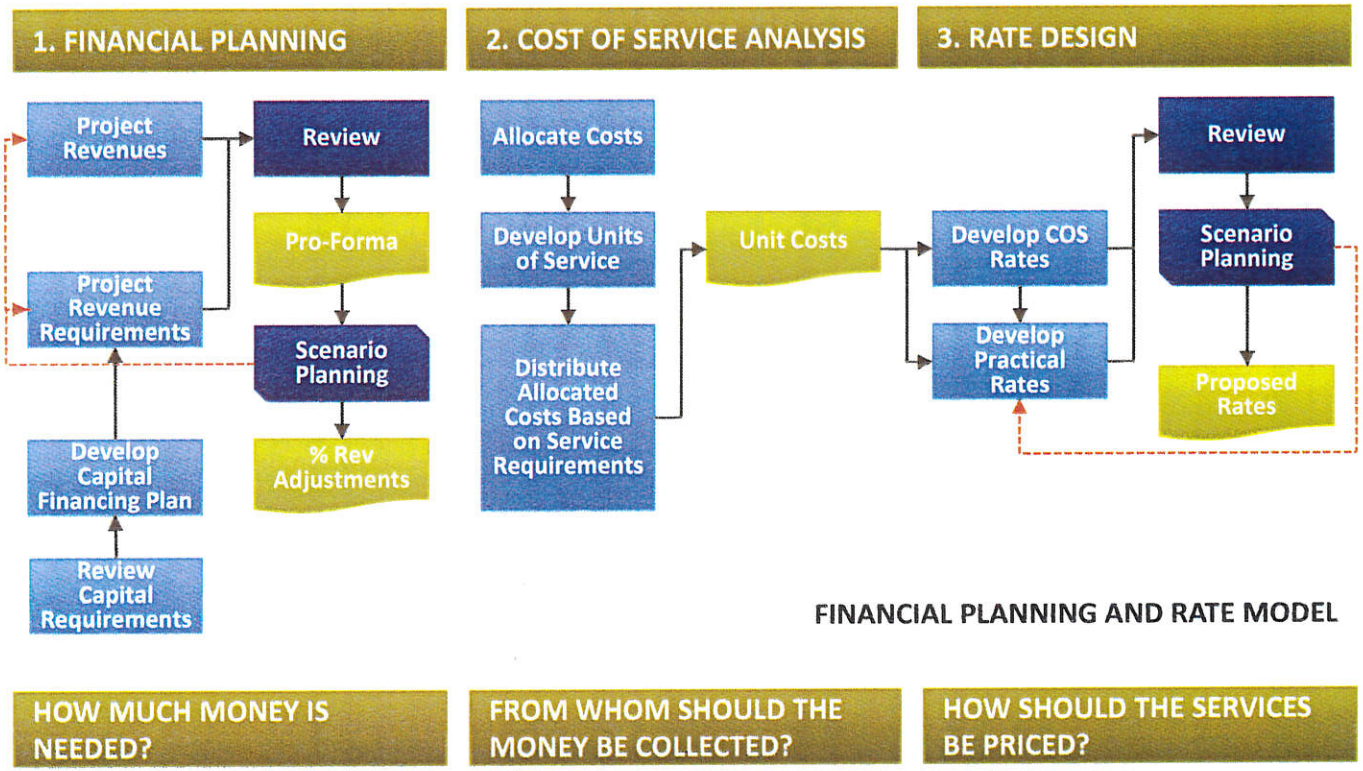
RATE STUDY METHODOLOGY



Rigorous, methodical and transparent analysis leads to defensible rates

RATE STUDY PROCESS

REVENUE ASSUMPTIONS

- **Customer growth**
  - 0.5% annual growth for Residential, Multi-Residential and Commercial for water and wastewater
  - 1% annual growth for Residential stormwater ESUs
- **Usage growth**
  - Water unit usage declining, no growth projection
  - Wastewater unit usage stable, no growth projection

OPERATION & MAINTENANCE ASSUMPTIONS

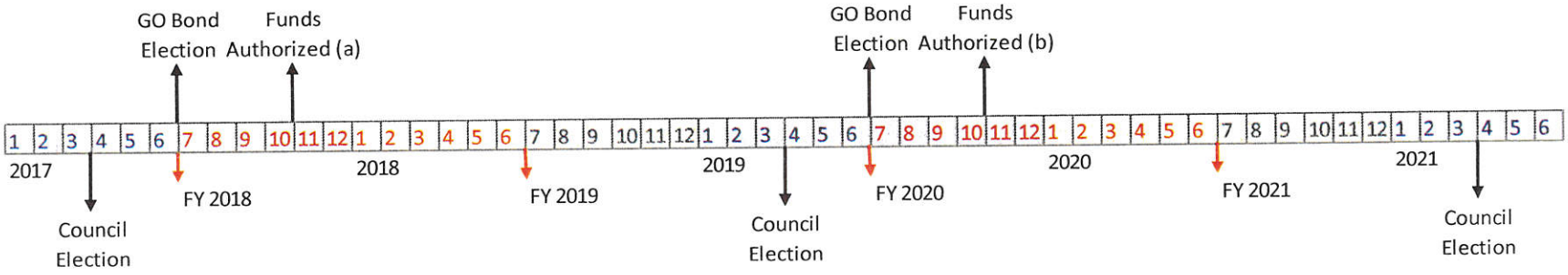
- **Inflation factors**
  - Range from 2% - 5% for salary, benefits, chemicals, power, gas, etc.
  - Annual increase of 7% for cost of purchased water
- **New positions**
  - 34 new positions will be added over 5 years
    - 10 dedicated to Water
    - 8 dedicated to Wastewater
    - 10 dedicated to Stormwater
    - 6 split between utilities

CIP FUNDING SCENARIOS

- Scenario 1 – GO Bond funding available for Wastewater and Stormwater in FY 2018 and FY 2020
- Scenario 2 – GO Bond funding available for Wastewater and Stormwater in FY 2020
- Scenario 3 – GO Bond funding available for Stormwater in FY 2019; no GO Bond funding for Wastewater

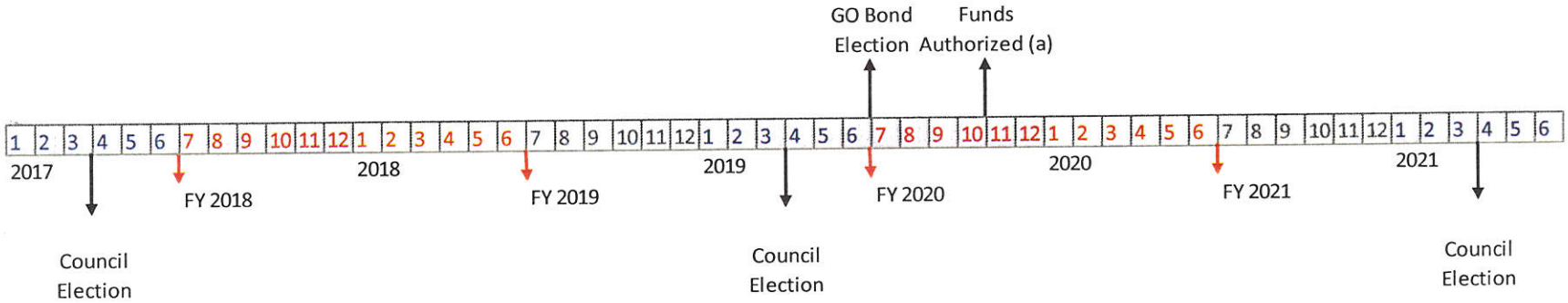
GO BOND FUNDING TIMING

Scenario 1: GO Bonds Funds avaible for Wastewater and Stormwater in FY 2018



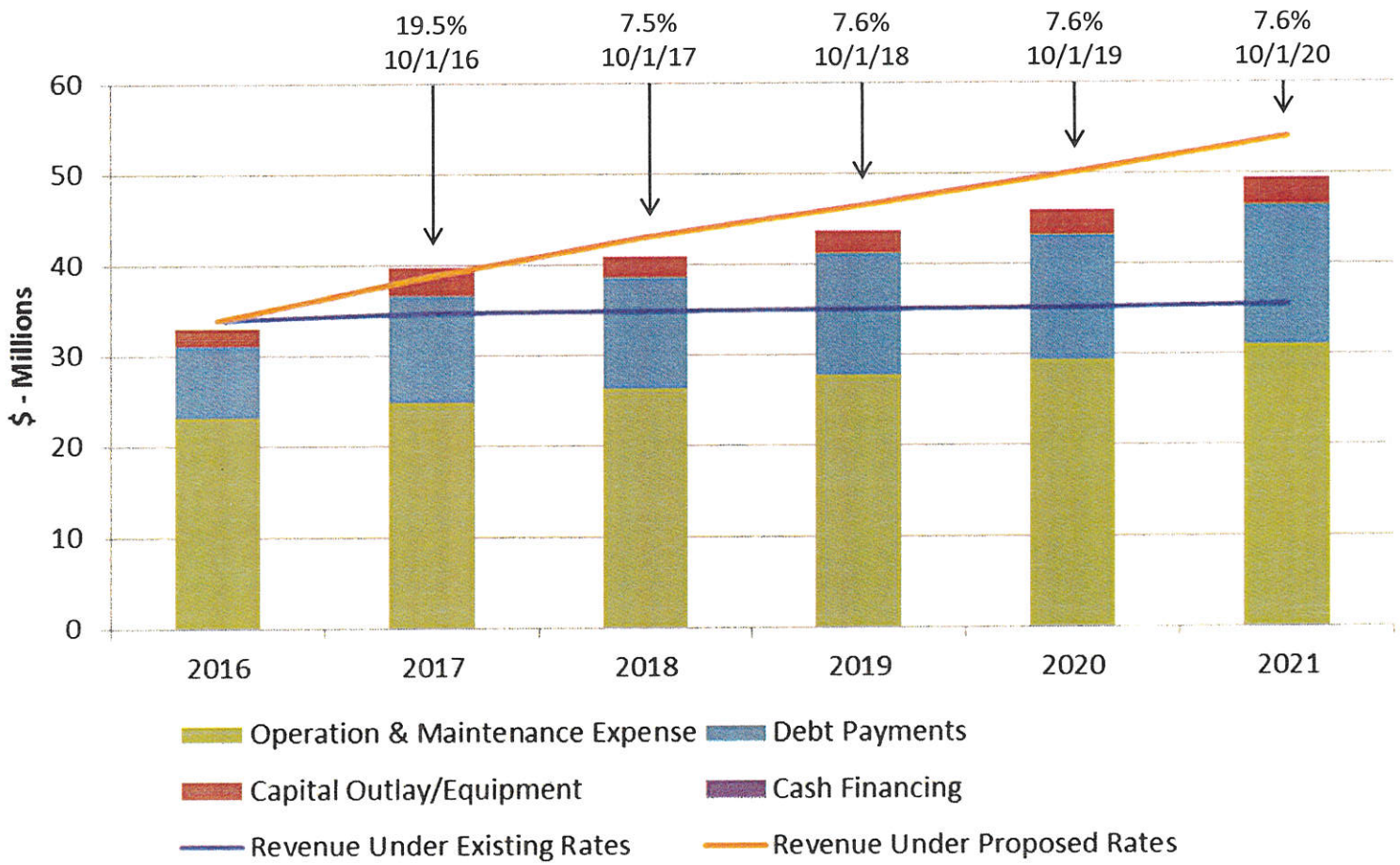
(a) Funds available for FY 2018 and FY 2019 CIP
(b) Funds available for FY 2020 and FY 2021 CIP

Scenario 2: GO Bonds Funds avaible for Wastewater and Stormwater in FY 2020



(a) Funds available for FY 2020 and FY 2021 CIP

COMBINED REVENUE AND REVENUE REQUIREMENTS – SCENARIO 1



GO Bond funding available for Wastewater and Stormwater in FY 2018 and FY 2020

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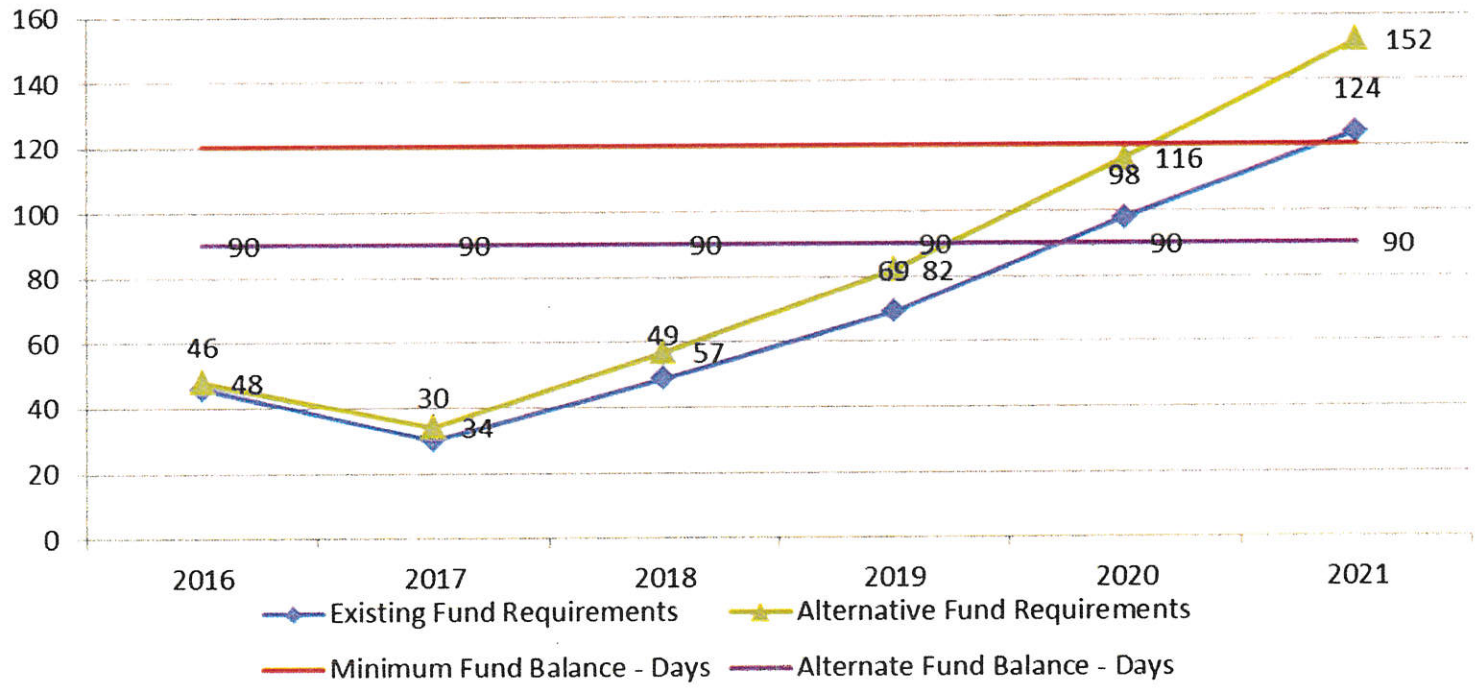
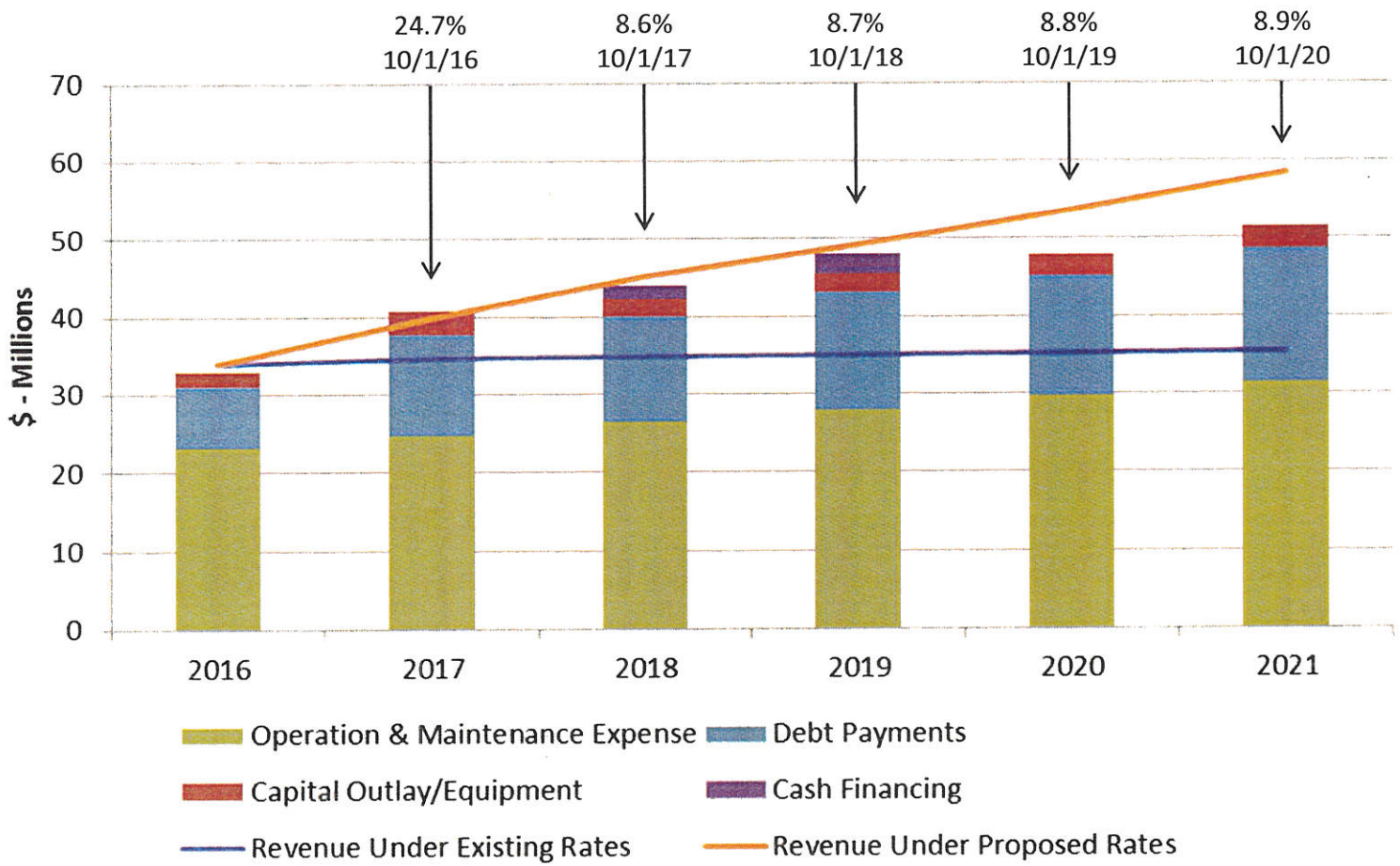
EMERGENCY RESERVE FUND

- **Resolution No. 555 – Emergency Reserve**
  - 6 months of expenses for Water, Sewer, and Sanitation
  - 4 months of expenses for Stormwater
  - Expenses includes operating expenses, capital outlay and debt service

COMBINED UTILITY FUND BALANCE – SCENARIO 1

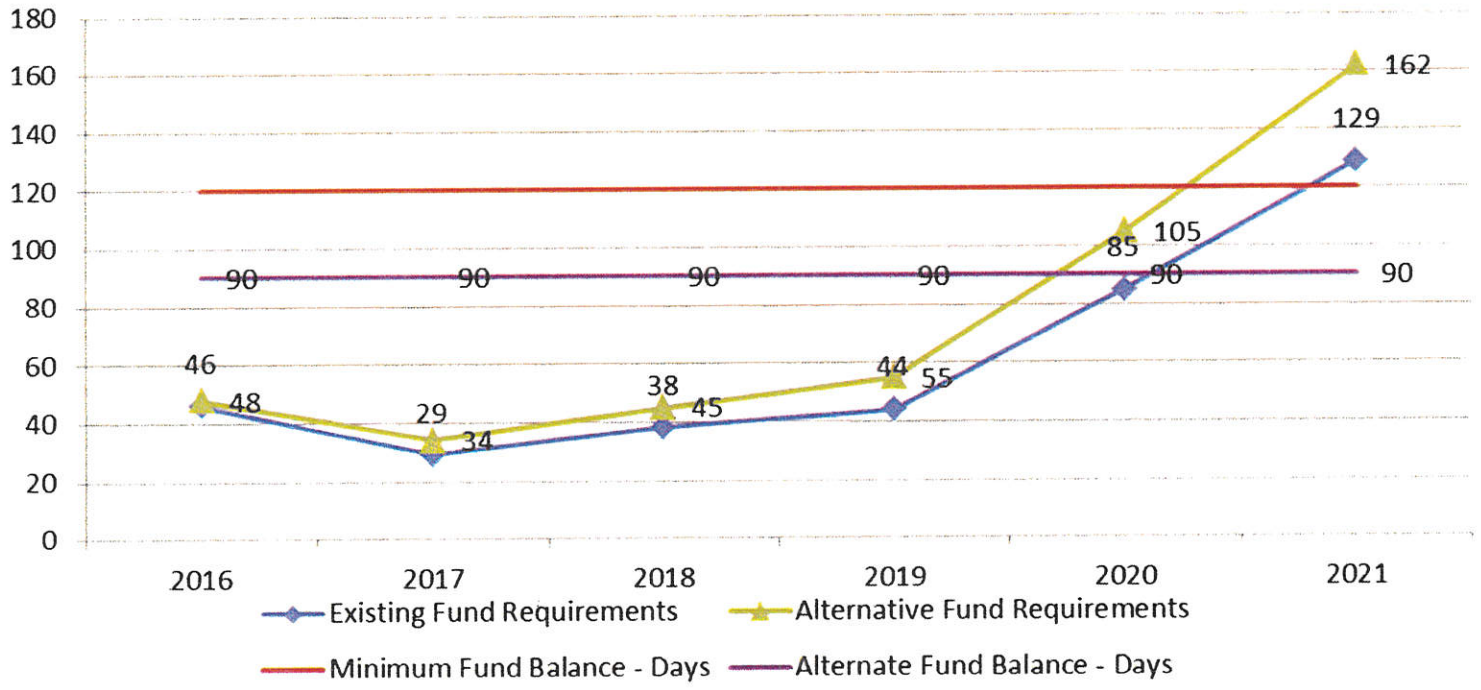


COMBINED REVENUE AND REVENUE REQUIREMENTS – SCENARIO 2

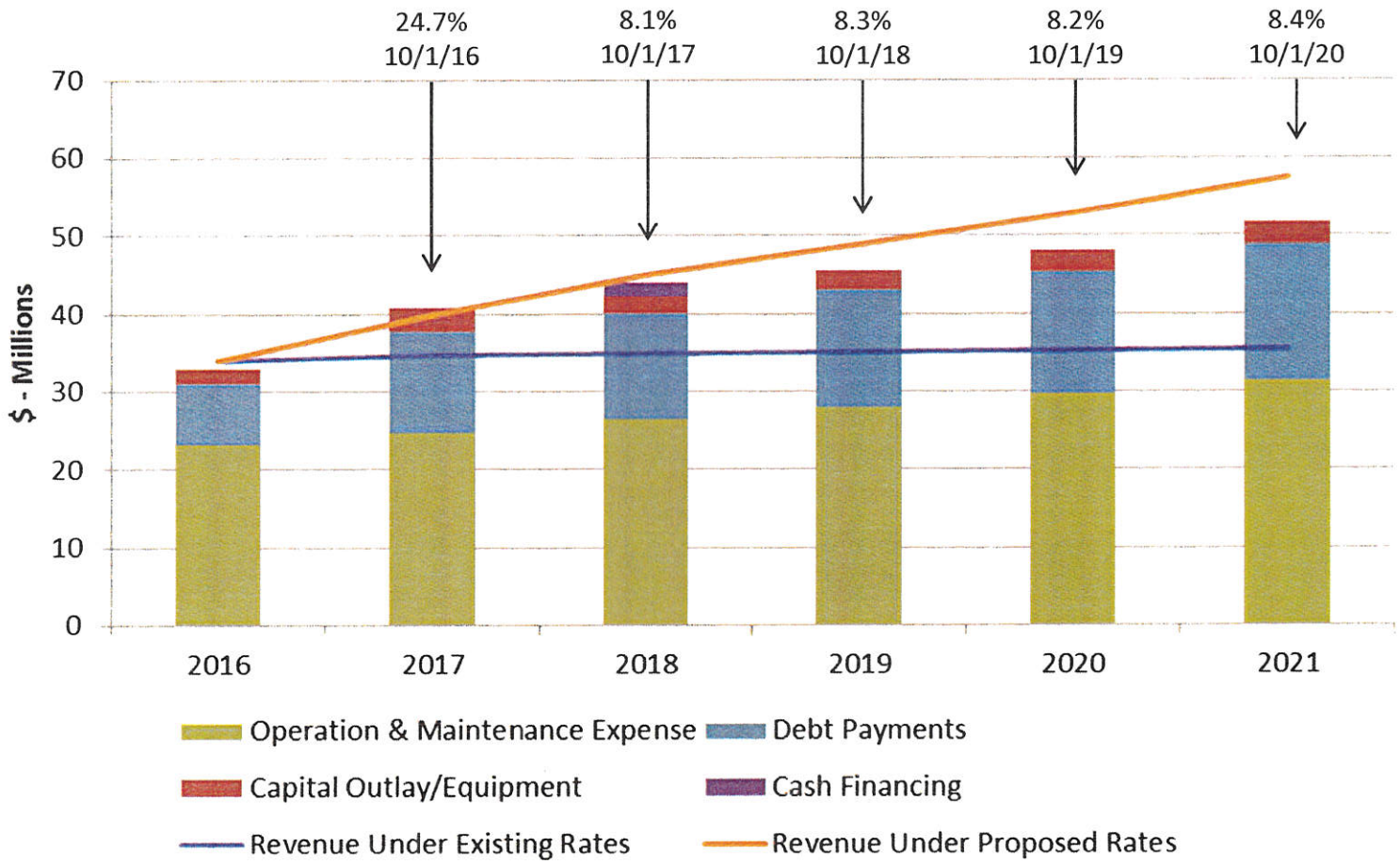


GO Bond funding available for Wastewater and Stormwater in FY 2020

COMBINED UTILITY FUND BALANCE – SCENARIO 2

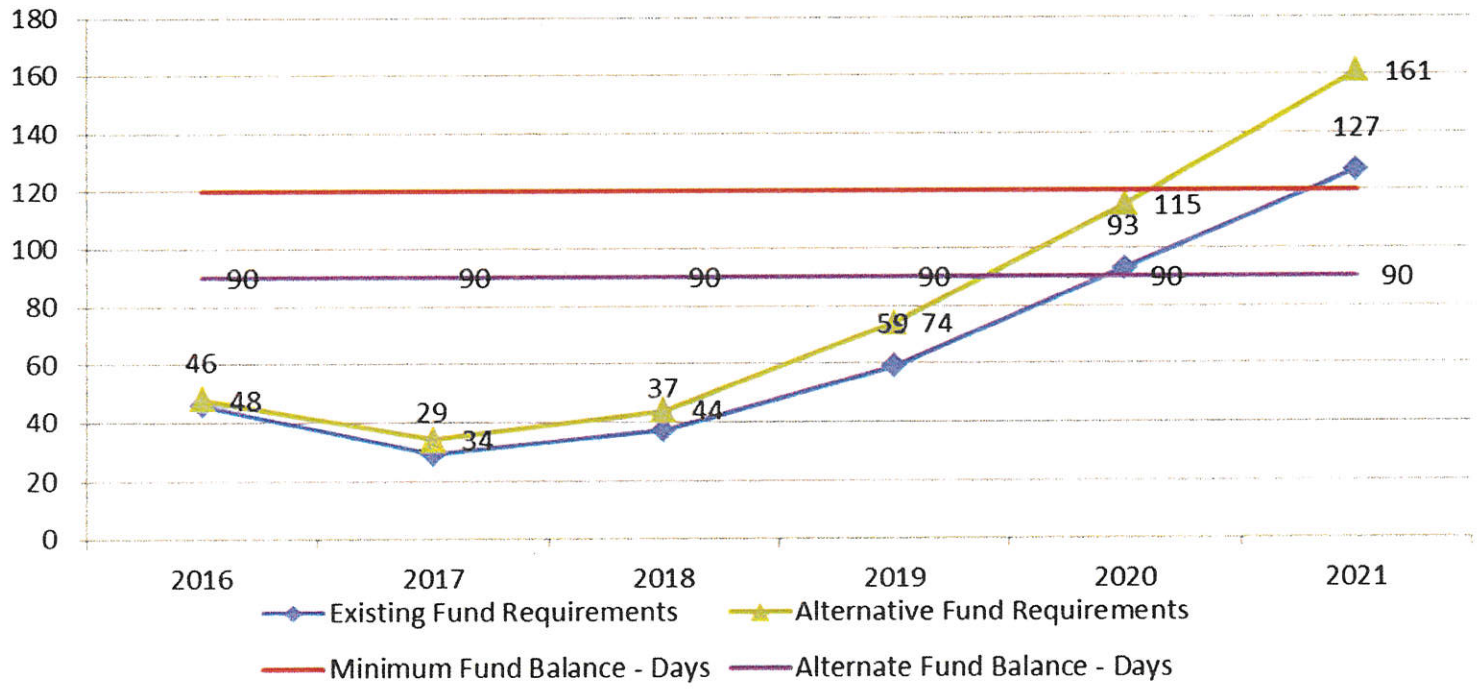


COMBINED REVENUE AND REVENUE REQUIREMENTS – SCENARIO 3



GO Bond funding available for Stormwater in FY 2019; None for Wastewater

COMBINED UTILITY FUND BALANCE – SCENARIO 3



PROPOSED REVENUE INCREASES - SCENARIO 1

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Water	2016	2017	2018	2019	2020	2021
Rate Increase		18.0%	6.0%	6.0%	6.0%	6.0%
Net Balance	2,809,500	1,270,100	2,329,900	3,082,300	3,640,200	3,883,100
Beginning Fund Balance	400,000	3,209,500	4,479,600	6,809,500	9,891,800	13,532,000
End of Year Balance	3,209,500	4,479,600	6,809,500	9,891,800	13,532,000	17,415,100
Emergency Reserve Fund (days)	69	84	122	168	217	263
ERF Excluding Revenue Bond Debt (days)	77	97	140	195	250	308

Wastewater	2016	2017	2018	2019	2020	2021
Rate Increase		18.0%	9.5%	9.5%	9.5%	9.5%
Net Balance	57,600	(828,500)	(99,800)	(419,000)	313,300	335,300
Beginning Fund Balance	1,300,000	1,357,600	529,100	429,300	10,300	323,600
End of Year Balance	1,357,600	529,100	429,300	10,300	323,600	658,900
Emergency Reserve Fund (days)	46	15	12	-	7	14
ERF Excluding Revenue Bond Debt (days)	47	18	14	-	10	20

Assumptions:

1. **Aim for positive net balance in wastewater by 2021**

GO Bond funding available for Wastewater and Stormwater in FY 2018 and FY 2020

PROPOSED REVENUE INCREASES - SCENARIO 1

BROKEN ARROW MUNICIPAL AUTHORITY

Stormwater	2016	2017	2018	2019	2020	2021
Rate Increase		29.0%	9.0%	9.0%	9.0%	9.0%
Net Balance	(575,400)	(1,334,400)	14,900	91,200	156,100	315,600
Beginning Fund Balance	100,000	(475,400)	(1,809,800)	(1,794,900)	(1,703,700)	(1,547,600)
End of Year Balance	(475,400)	(1,809,800)	(1,794,900)	(1,703,700)	(1,547,600)	(1,232,000)
Emergency Reserve Fund (days)	(34)	(97)	(105)	(92)	(77)	(57)
ERF Excluding Revenue Bond Debt (days)	(34)	(97)	(105)	(92)	(77)	(57)

Combined	2016	2017	2018	2019	2020	2021
Rate Increase		19.5%	7.5%	7.6%	7.6%	7.6%
Net Balance	2,291,700	(892,800)	2,245,000	2,754,500	4,109,600	4,534,000
Beginning Fund Balance	1,800,000	4,091,700	3,198,900	5,443,900	8,198,400	12,308,000
End of Year Balance	4,091,700	3,198,900	5,443,900	8,198,400	12,308,000	16,842,000
Emergency Reserve Fund (days)	46	30	49	69	98	124
ERF Excluding Revenue Bond Debt (days)	48	34	57	82	116	152

Assumptions:

2. Limit stormwater increases; Stormwater will carry a deficit balance
3. Aim for 120 days in Emergency Reserve Fund by 2021

GO Bond funding available for Wastewater and Stormwater in FY 2018 and FY 2020

PROPOSED REVENUE INCREASES – SCENARIO 2

BROKEN ARROW MUNICIPAL AUTHORITY

Water	2016	2017	2018	2019	2020	2021
Rate Increase		24.0%	6.0%	6.0%	6.0%	6.0%
Net Balance	2,809,500	1,925,000	3,359,400	4,183,900	4,818,400	5,142,900
Beginning Fund Balance	400,000	3,209,500	5,134,500	8,493,900	12,677,800	17,496,200
End of Year Balance	3,209,500	5,134,500	8,493,900	12,677,800	17,496,200	22,639,100
Emergency Reserve Fund (days)	69	96	151	214	279	341
ERF Excluding Revenue Bond Debt (days)	77	110	174	249	322	399

Wastewater	2016	2017	2018	2019	2020	2021
Rate Increase		24.0%	13.0%	13.0%	13.0%	13.0%
Net Balance	57,600	(1,527,500)	(505,500)	(619,500)	702,800	1,516,000
Beginning Fund Balance	1,300,000	1,357,600	(169,900)	(675,400)	(1,294,900)	(592,100)
End of Year Balance	1,357,600	(169,900)	(675,400)	(1,294,900)	(592,100)	923,900
Emergency Reserve Fund (days)	46	(4)	(17)	(28)	(12)	17
ERF Excluding Revenue Bond Debt (days)	47	(6)	(23)	(42)	(18)	27

Assumptions:

1. Aim for positive net balance in wastewater by 2021

GO Bond funding available for Wastewater and Stormwater in FY 2020

PROPOSED REVENUE INCREASES - SCENARIO 2

BROKEN ARROW MUNICIPAL AUTHORITY

Stormwater	2016	2017	2018	2019	2020	2021
Rate Increase		29.0%	9.0%	9.0%	9.0%	9.0%
Net Balance	(575,400)	(1,334,400)	(1,685,100)	(2,408,800)	156,100	315,600
Beginning Fund Balance	100,000	(475,400)	(1,809,800)	(3,494,900)	(5,903,700)	(5,747,600)
End of Year Balance	(475,400)	(1,809,800)	(3,494,900)	(5,903,700)	(5,747,600)	(5,432,000)
Emergency Reserve Fund (days)	(34)	(97)	(205)	(320)	(287)	(253)
ERF Excluding Revenue Bond Debt (days)	(34)	(97)	(205)	(320)	(287)	(253)

Combined	2016	2017	2018	2019	2020	2021
Rate Increase		24.7%	8.6%	8.7%	8.8%	8.9%
Net Balance	2,291,700	(936,900)	1,168,800	1,155,600	5,677,300	6,974,500
Beginning Fund Balance	1,800,000	4,091,700	3,154,800	4,323,600	5,479,200	11,156,500
End of Year Balance	4,091,700	3,154,800	4,323,600	5,479,200	11,156,500	18,131,000
Emergency Reserve Fund (days)	46	29	38	44	85	129
ERF Excluding Revenue Bond Debt (days)	48	34	45	55	105	162

Assumptions:

2. Limit stormwater increases; Stormwater will carry a deficit balance
3. Aim for 120 days in Emergency Reserve Fund by 2021

GO Bond funding available for Wastewater and Stormwater in FY 2020

PROPOSED REVENUE INCREASES – SCENARIO 3

Water	2016	2017	2018	2019	2020	2021
Rate Increase		24.0%	4.5%	4.5%	4.0%	4.0%
Net Balance	2,809,500	1,925,000	3,155,900	3,650,000	3,840,400	3,633,200
Beginning Fund Balance	400,000	3,209,500	5,134,500	8,290,400	11,940,400	15,780,800
End of Year Balance	3,209,500	5,134,500	8,290,400	11,940,400	15,780,800	19,414,000
Emergency Reserve Fund (days)	69	96	147	202	253	294
ERF Excluding Revenue Bond Debt (days)	77	110	170	235	292	344

Wastewater	2016	2017	2018	2019	2020	2021
Rate Increase		24.0%	14.0%	14.0%	14.0%	14.0%
Net Balance	57,600	(1,527,500)	(426,600)	(568,000)	900,200	1,802,500
Beginning Fund Balance	1,300,000	1,357,600	(169,900)	(596,500)	(1,164,500)	(264,300)
End of Year Balance	1,357,600	(169,900)	(596,500)	(1,164,500)	(264,300)	1,538,200
Emergency Reserve Fund (days)	46	(4)	(15)	(25)	(5)	28
ERF Excluding Revenue Bond Debt (days)	47	(6)	(20)	(38)	(8)	45

Assumptions:

1. **Aim for positive net balance in wastewater by 2021**

GO Bond funding available for Stormwater in FY 2019; None for Wastewater

PROPOSED REVENUE INCREASES – SCENARIO 3

BROKEN ARROW MUNICIPAL AUTHORITY

Stormwater	2016	2017	2018	2019	2020	2021
Rate Increase		29.0%	9.0%	9.0%	9.0%	9.0%
Net Balance	(575,400)	(1,334,400)	(1,685,100)	91,200	156,100	315,600
Beginning Fund Balance	100,000	(475,400)	(1,809,800)	(3,494,900)	(3,403,700)	(3,247,600)
End of Year Balance	(475,400)	(1,809,800)	(3,494,900)	(3,403,700)	(3,247,600)	(2,932,000)
Emergency Reserve Fund (days)	(34)	(97)	(205)	(185)	(162)	(137)
ERF Excluding Revenue Bond Debt (days)	(34)	(97)	(205)	(185)	(162)	(137)

Combined	2016	2017	2018	2019	2020	2021
Rate Increase		24.7%	8.1%	8.3%	8.2%	8.4%
Net Balance	2,291,700	(936,900)	1,044,200	3,173,200	4,896,700	5,751,300
Beginning Fund Balance	1,800,000	4,091,700	3,154,800	4,199,000	7,372,200	12,268,900
End of Year Balance	4,091,700	3,154,800	4,199,000	7,372,200	12,268,900	18,020,200
Emergency Reserve Fund (days)	46	29	37	59	93	127
ERF Excluding Revenue Bond Debt (days)	48	34	44	74	115	161

Assumptions:

2. Limit stormwater increases; Stormwater will carry a deficit balance
3. Aim for 120 days in Emergency Reserve Fund by 2021

GO Bond funding available for Stormwater in FY 2019; None for Wastewater

PROPOSED REVENUE INCREASES

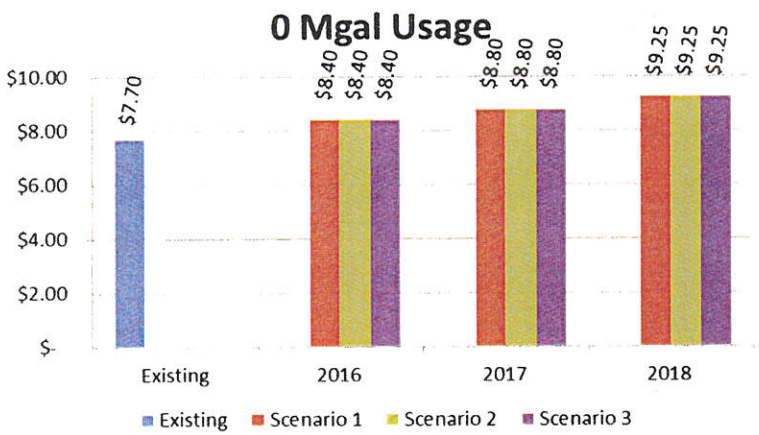
	2017	2018	2019	2020	2021	Cumulative
Scenario 1						
Water	18.0%	6.0%	6.0%	6.0%	6.0%	49.0%
Wastewater	18.0%	9.5%	9.5%	9.5%	9.5%	69.6%
Stormwater	29.0%	9.0%	9.0%	9.0%	9.0%	82.1%
Combined	19.5%	7.5%	7.6%	7.6%	7.6%	60.0%
Scenario 2						
Water	24.0%	6.0%	6.0%	6.0%	6.0%	56.5%
Wastewater	24.0%	13.0%	13.0%	13.0%	13.0%	102.2%
Stormwater	29.0%	9.0%	9.0%	9.0%	9.0%	82.1%
Combined	24.7%	8.6%	8.7%	8.8%	8.9%	74.4%
Scenario 3						
Water	24.0%	4.5%	4.5%	4.0%	4.0%	46.5%
Wastewater	24.0%	14.0%	14.0%	14.0%	14.0%	109.4%
Stormwater	29.0%	9.0%	9.0%	9.0%	9.0%	82.1%
Combined	24.7%	8.1%	8.3%	8.2%	8.4%	71.2%

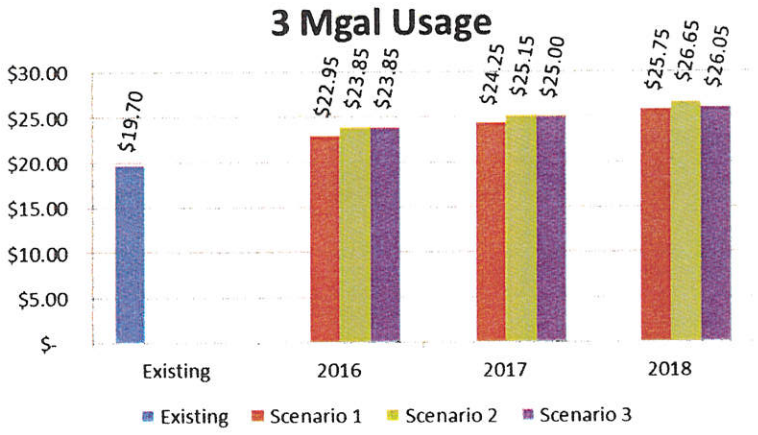
RATE SETTING PRINCIPLES

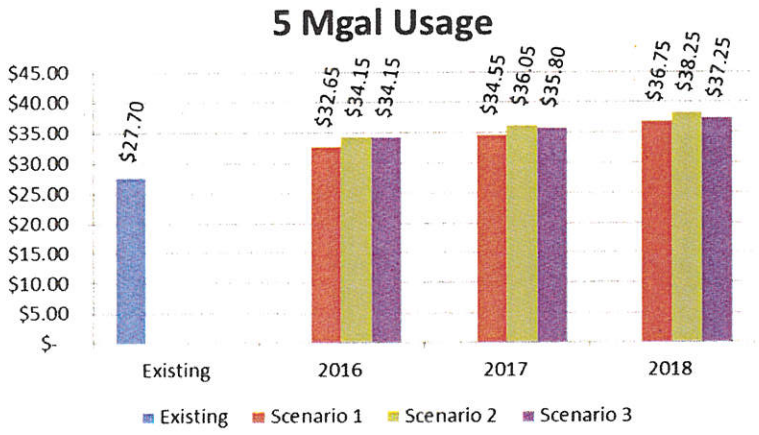
- Equitability
- Revenue Stability
- Provides Appropriate Price Signals
- Recognizes Customer Usage Patterns & Demands
- Easy to Understand and Administer
- Customer Acceptance
- Consistent with City Policies
- Legally Acceptable/Defensible

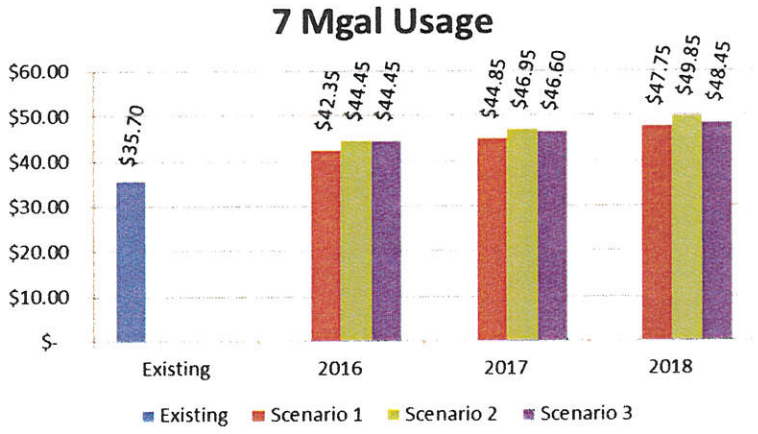
Modeled after AWWA M1 and WEF MoP 27

TYPICAL RESIDENTIAL BILLS – WATER

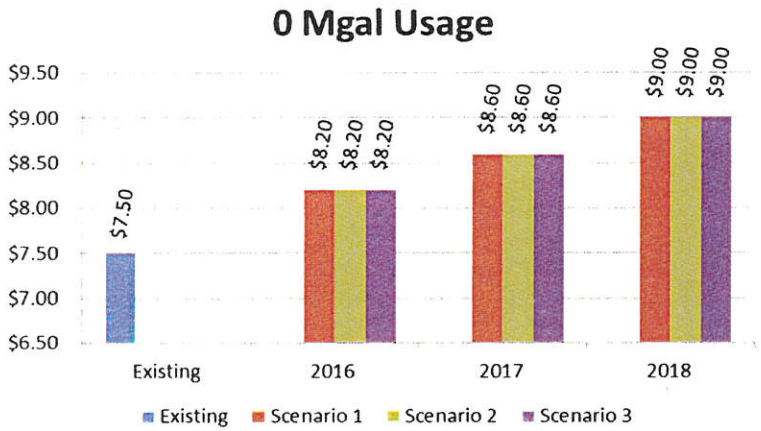


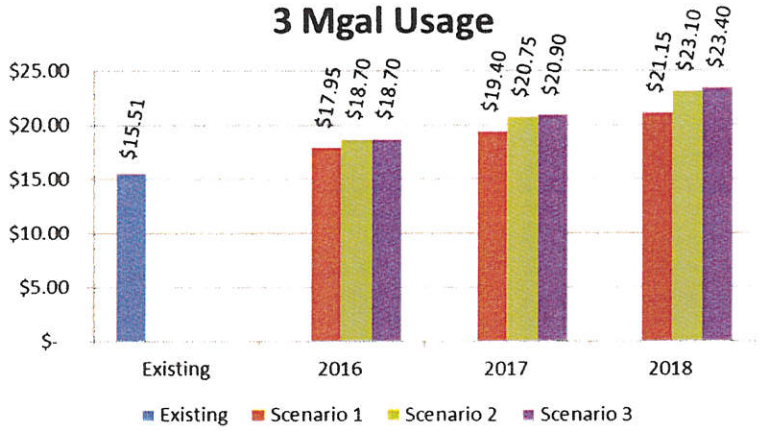


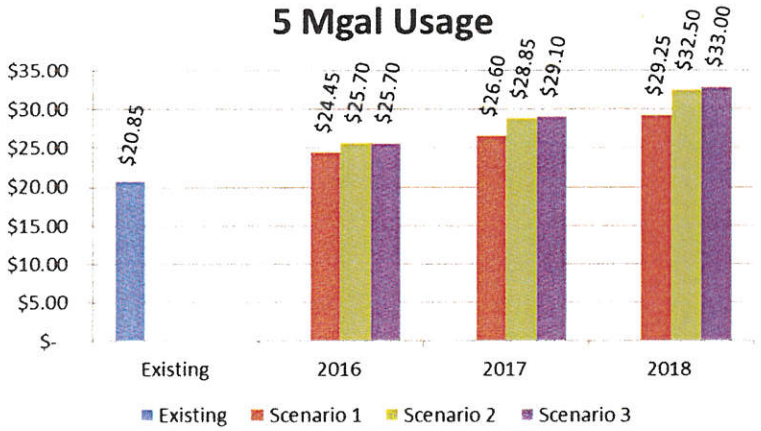


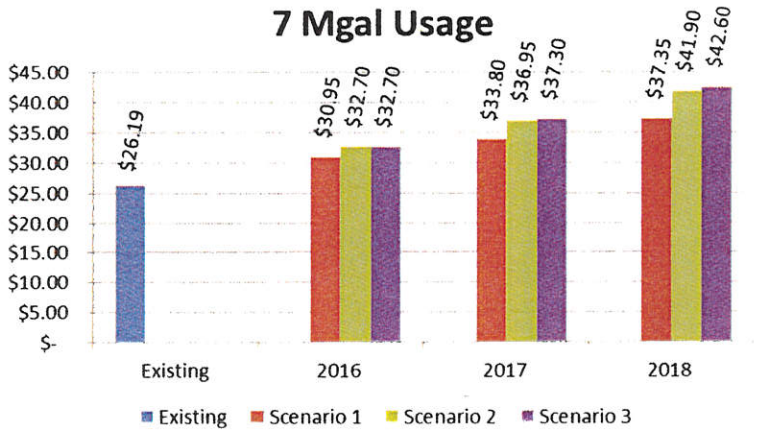


TYPICAL RESIDENTIAL BILLS – WASTEWATER









TYPICAL RESIDENTIAL BILLS – STORMWATER

Description	Existing	Effective October 1, 2016	Effective October 1, 2017	Effective October 1, 2018
	$	$	$	$
Service Charges - $/ESU/Month (a)				
Residential	5.01	6.47	7.05	7.68
Non - Residential	5.01	6.47	7.05	7.68

(a) 1 Equivalent Stormwater Unit (ESU) is equal to 2,650 square feet of impervious area.

TYPICAL RESIDENTIAL BILLS – COMBINED

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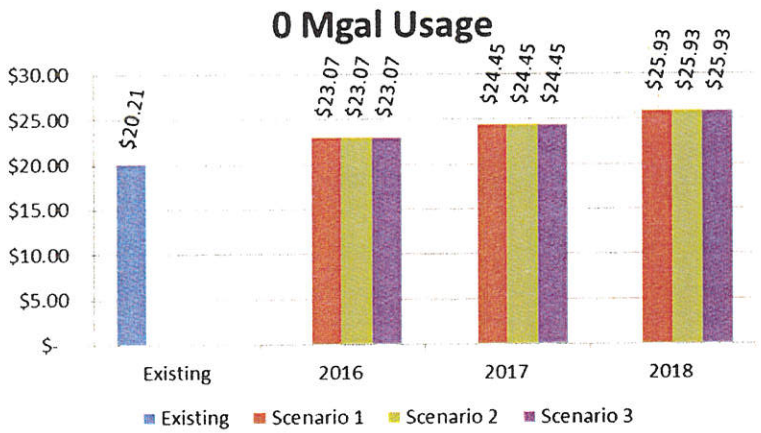
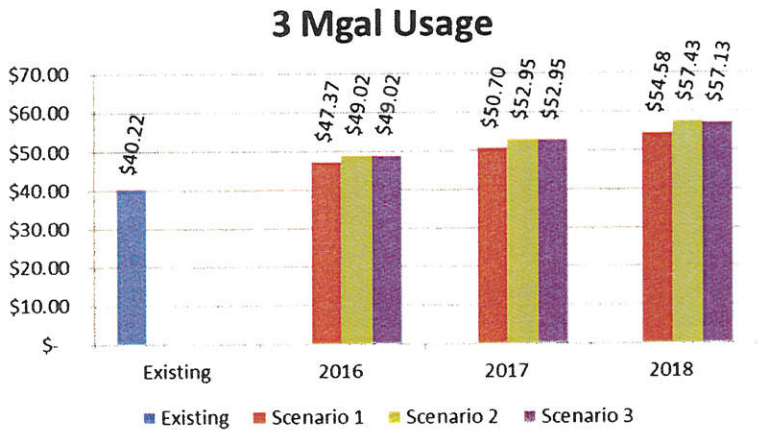
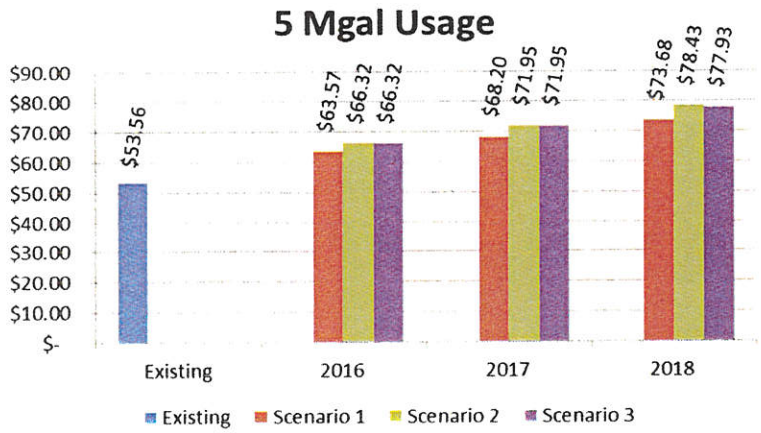
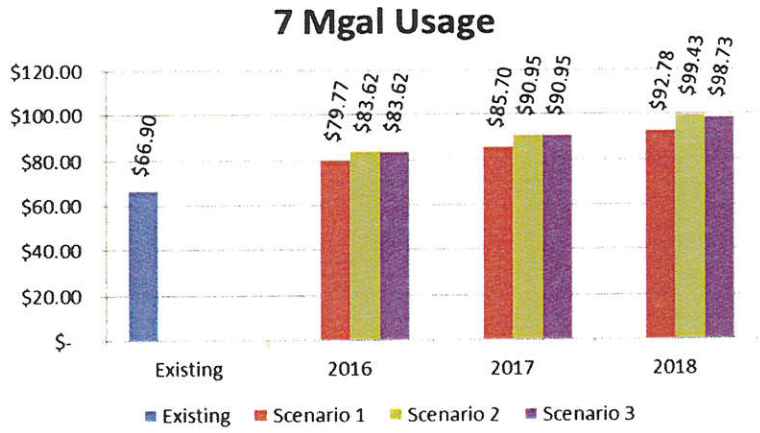
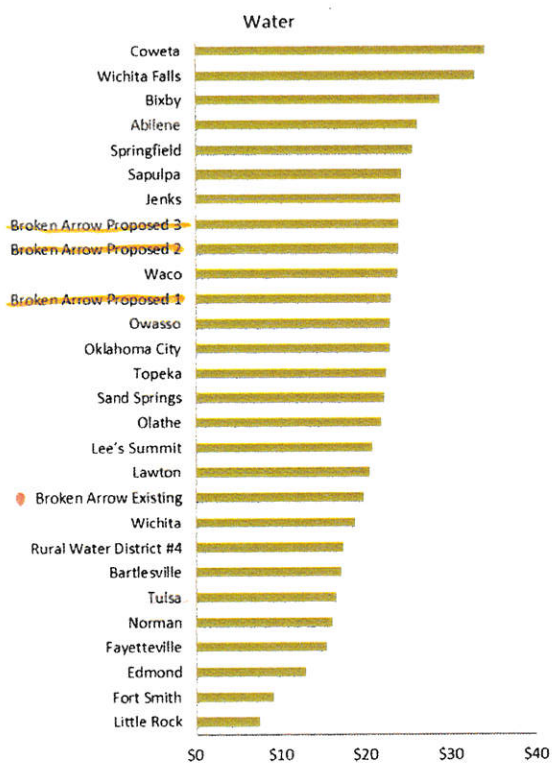


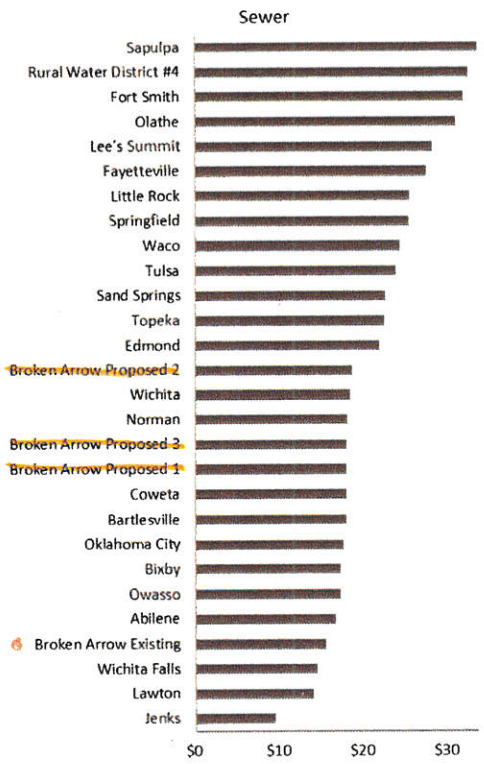


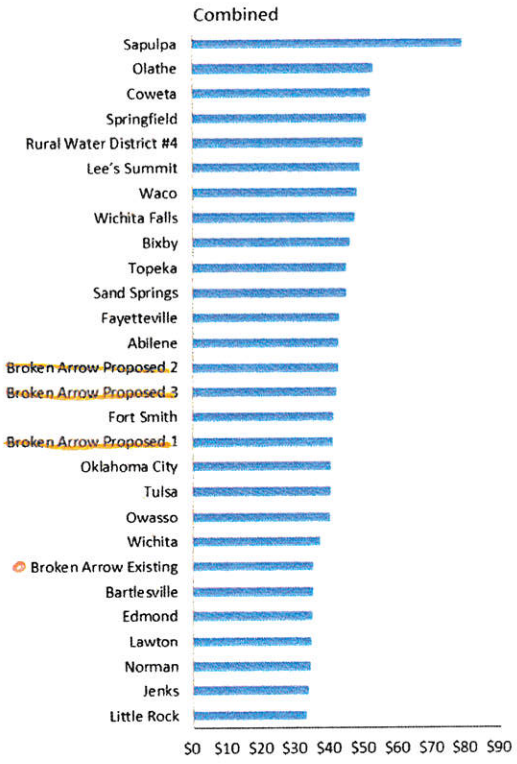




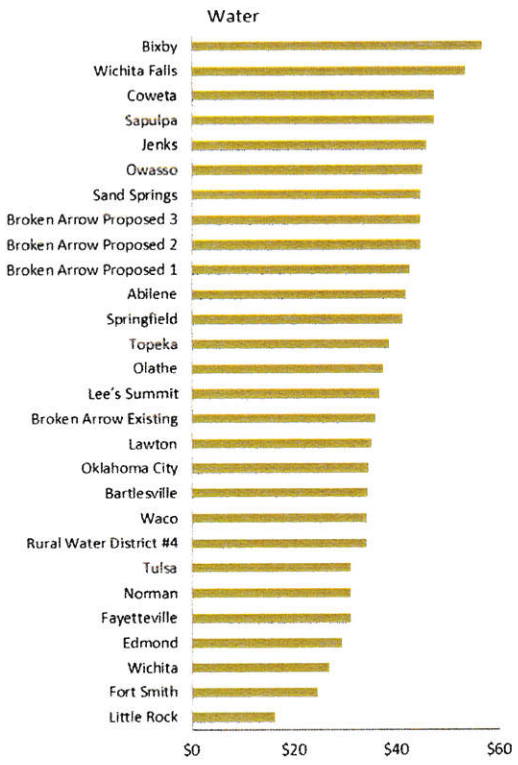
RATE COMPARISON – 3,000 GALLONS

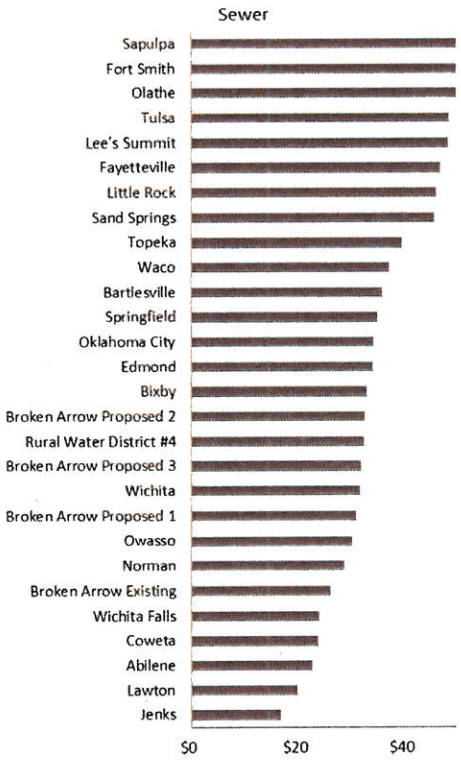


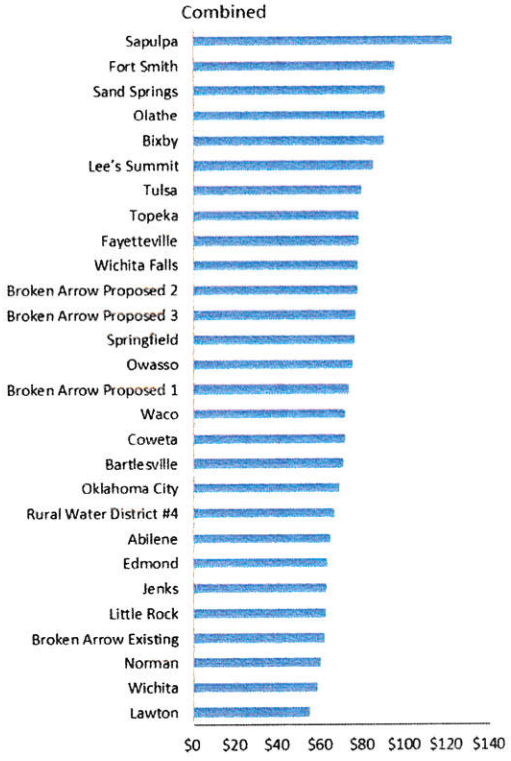




RATE COMPARISON – 7,000 GALLONS







RATE COMPARISON – STORMWATER

BROKEN ARROW MUNICIPAL AUTHORITY

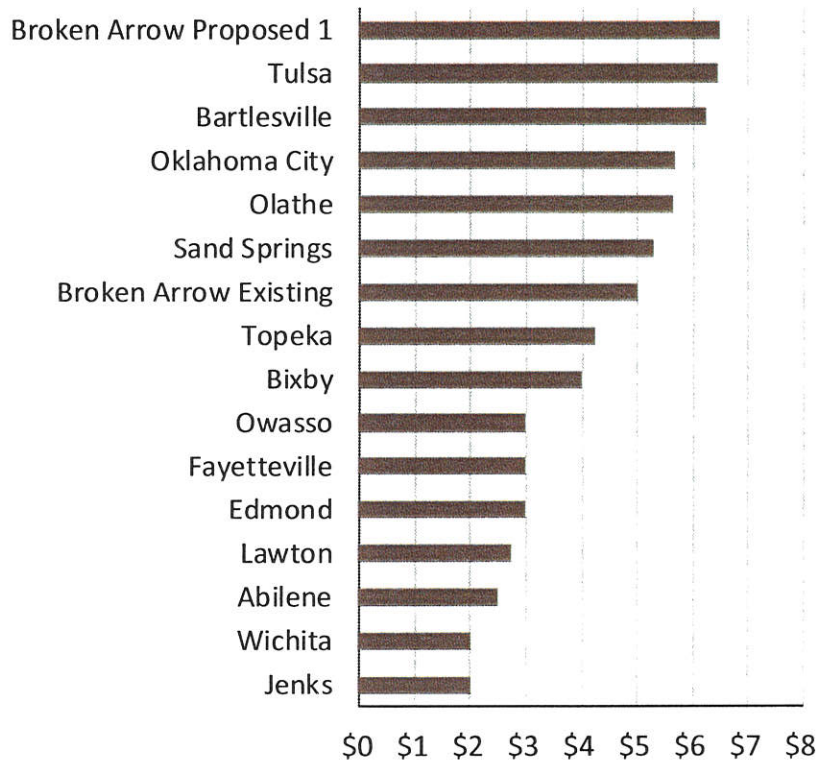
Typical Monthly Stormwater

Residential Customers (1 ESU)

Ranked from Lowest (1) to Highest (16)

Community	State	Stormwater $	*Rank*
Abilene	Texas	2.50	3
Bartlesville	Oklahoma	6.25	14
Bixby	Oklahoma	4.00	8
Broken Arrow Existing	Oklahoma	5.01	10
Broken Arrow Proposed 1	Oklahoma	6.47	16
Edmond	Oklahoma	3.00	5
Fayetteville	Arkansas	3.00	5
Jenks	Oklahoma	2.00	1
Lawton	Oklahoma	2.75	4
Oklahoma City	Oklahoma	5.69	13
Olathe	Kansas	5.66	12
Owasso	Oklahoma	3.00	5
Sand Springs	Oklahoma	5.30	11
Topeka	Kansas	4.25	9
Tulsa	Oklahoma	6.45	15
Wichita	Kansas	2.00	1
Average		**4.21**	
Median		**4.13**	

Note: Assumes 1 ESU per residential customer.
ESU definition will vary by utility.



world