

#### RATE STRUCTURE OPTIONS

September 13, 2017

# Today's Presentation

- Identification of Rate Structure Options
- Details of Rate Structure Options and Bill Impacts
- Evaluation of Rate Structure Options
- Rates By Class



# Commission's Pricing Policy Prioritization

<b>Policy Considerations</b>	Score
Revenue Stability	17
<b>Conservation/Demand Management</b>	15
Rate Stability	15
Affordability	14
Ease of Understanding	12
Ease of Implementation	11
Minimize Customer Impacts	11
Cost Based Rates	6



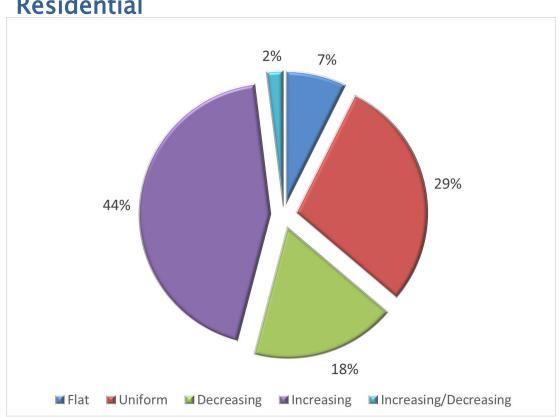
### Identification of Rate Structure Options

- Examined various volumetric rate structures
- Determined that an inclining block structure is best at addressing pricing policies
- Only one customer class per state law
- Basis for rate design is 3 person single family household
- Only consumption within a tier is billed at that tier's rate

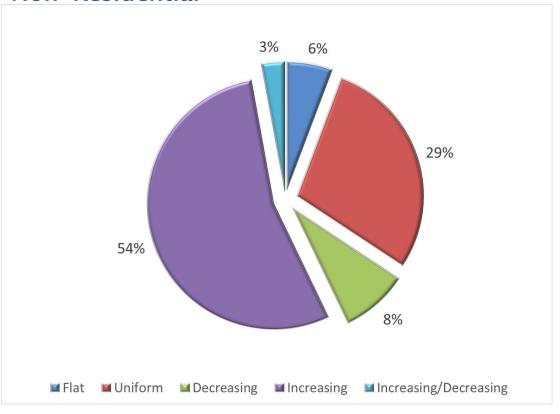


#### Water Rate Structures

#### Residential



#### Non-Residential

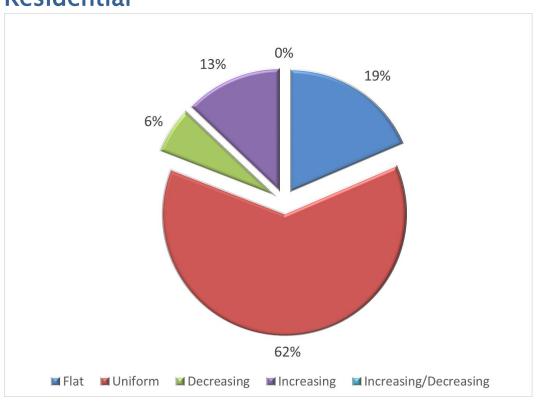




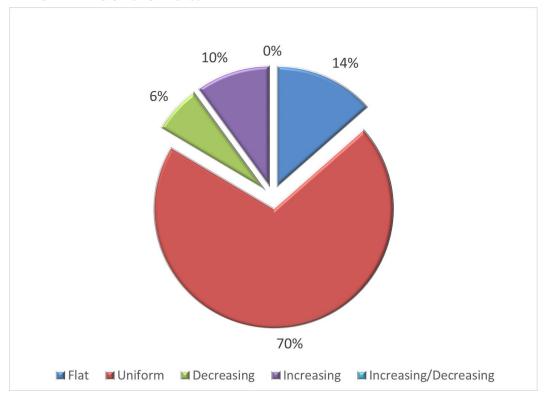
Data from 2016 AWWA/RFC Water and Wastewater Rate Survey

#### Wastewater Rate Structures

#### Residential



#### Non-Residential





### **Key Considerations**

- Customer base is overwhelmingly residential with 93% of bills to Single Family Residential (SFR) and Multifamily (MF)
  - SFR about 2/3 of all households
  - Nearly ¾ of households are 3 or less; 95% 5 or less
  - Typical household size in WSSC service area is 3 people
- ▶ 100 litres (26 gallons) World Health Organization (WHO) estimate of minimum sanitary needs
- 55 gallons per day Average per capita consumption in WSSC service area



# Rate Structure Options

	W/WW Tier Cut-offs (gpd)			
Uniform		N	IA	
	Option A	80		165
3 Block Inclining		165	Option B	275
		>165		>275
		80		80
4 Blook Inclining	Ontion A	165	Ontion B	165
4 Block Inclining	Option A	275	Option B	9,000
		>275		>9,000



#### Distribution of Customers and Volume

- All options reflect "billing through tiers"
- Estimated % of customers with bills stopping within each tier varies depending on range of tiers
- Estimated % of volume billed in tier varies for water and sewer
   amount shown is approximate for combined

:	3 Block Opti	ion A	
		% Customers	% Vol. Billed in
Tier (gpd)	Kgal/Qtr	Ending in Tier	Tier
0-80	7	27.9%	30%
81-165	15	40.4%	20%
>165	>15	31.7%	50%
	3 Block Opt	ion B	
		% Customers	% Vol. Billed in
Tier (gpd)	Kgal/Qtr	<b>Ending in Tier</b>	Tier
0-165	15	68.3%	50.0%
166-275	25	21.6%	8.5%
>275	>25	10.1%	41.5%
	4 Block Opti	ion A	
		% Customers	% Vol. Billed in
Tier (gpd)	Kgal/Qtr	Ending in Tier	Tier
	• , ,		
0-80	7	27.9%	30%
		_	30% 20%
81-165	7	27.9%	
81-165 166-275	7 15	27.9% 40.4%	20%
81-165 166-275 >275	7 15 25	27.9% 40.4% 21.6% 10.1%	20% 8.5%
81-165 166-275 >275	7 15 25 >25	27.9% 40.4% 21.6% 10.1%	20% 8.5% 41.5%
81-165 166-275 >275	7 15 25 >25 4 Block Opt	27.9% 40.4% 21.6% 10.1% ion B	20% 8.5%
81-165 166-275 >275 Tier (gpd)	7 15 25 >25	27.9% 40.4% 21.6% 10.1%	20% 8.5% 41.5% <b>% Vol. Billed in</b>
81-165 166-275 >275 Tier (gpd) 0-80	7 15 25 >25 4 Block Opt Kgal/Qtr 7	27.9% 40.4% 21.6% 10.1% ion B % Customers Ending in Tier 27.9%	20% 8.5% 41.5% <b>% Vol. Billed in</b> Tier 30%
81-165 166-275 >275 Tier (gpd) 0-80 81-165	7 15 25 >25 4 Block Opti	27.9% 40.4% 21.6% 10.1% ion B % Customers Ending in Tier 27.9% 40.4%	20% 8.5% 41.5% <b>% Vol. Billed in</b> Tier 30% 20%
	7 15 25 >25 4 Block Opt Kgal/Qtr 7 15	27.9% 40.4% 21.6% 10.1% ion B % Customers Ending in Tier 27.9%	20% 8.5% 41.5% <b>% Vol. Billed in</b> Tier 30%



### **Customer Impact Examples**

- All customer bill examples include Ready-to-Serve charges
- Rates are based on FY18 Budget with additional 2% added to account for revenue risk of new structure and billing system
- Impact is based on quarterly bills



#### **Uniform Rates**

			Average Family Impact					
	Combined Rate (\$/kgal)	Current Bill (\$/quarter)	Bill (\$/quarter)	\$ Change (\$/quarter)	% MHI PGC	% MHI MC	% LQI PGC	% LQI MC
Uniform	\$14.73	\$205.45	\$248.95	\$43.50	1.3%	1.0%	5.0%	4.0%

Average Family - 3 person household using 55 gpd/person



#### Uniform

Basis For Tiers	Costs Included In Tier Rates		
No Tiers	All costs recovered through uniform rate		
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#### Responsiveness to Key Pricing Policies

- Revenue Stability Best structure in terms of revenue stability
- Conservation Worst structure in terms of conservation message
- Rate Stability Largest change from current rates
- Affordability Worst structure in terms of affordability
- Cost of Service Closest option to Cost of Service



### Bill Impacts - Residential

Single Family Residential 3/4" meter, 26 gpd

	Current	Uniform		
			\$ Change from	
	Bill Amount	Bill Amount	Current	
<b>Total Bill</b>	\$ 43.90	\$ 57.46	\$ 13.56	

Single Family Residential 3/4" meter, 55 gpd

	Current	Uniform		
			\$ Change from	
	Bill Amount	Bill Amount	Current	
Total Bill	\$ 73.60	\$ 101.65	\$ 28.05	

Single Family Residential 3/4" meter, 80 gpd

	Current	Uniform		
			\$ Change from	
	Bill Amount	Bill Amount	Current	
<b>Total Bill</b>	\$ 91.84	\$ 131.11	\$ 39.27	

Single Family Residential 3/4" meter, 100 gpd

	Current	Uniform		
			\$ Change from	
	Bill Amount	Bill Amount	Current	
<b>Total Bill</b>	\$ 121.42	\$ 160.57	\$ 39.15	

Single Family Residential 3/4" meter, 165 gpd

	Current	Uniform		
			\$ Change from	
	Bill Amount	Bill Amount	Current	
Total Bill	\$ 205.45	\$ 248.95	\$ 43.50	

Single Family Residential 3/4" meter, 500 gpd

	Current	Uniform		
			\$ Change from	
	Bill Amount	Bill Amount	Current	
Total Bill	\$ 822.88	\$ 705.58	\$ (117.30)	



## Bill Impacts - Non-Residential

Nonresidential 2" meter, 750 gpd

	Current	Uniform		
			\$ Change from	
	Bill Amount	Bill Amount	Current	
<b>Total Bill</b>	\$ 1,414.24	\$ 1,213.64	\$ (200.60)	

Nonresidential 2" meter, 2,000 gpd

	Current	Uni	form
			\$ Change from
	Bill Amount	Bill Amount	Current
otal Bill	\$ 3,553.58	\$ 2,907.59	\$ (645.99)

Nonresidential 8" meter, 10,000 gpd

	Current	Uniform		
			\$ Change from	
	Bill Amount	Bill Amount	Current	
Total Bill	\$ 20,720.68	\$ 16,493.49	\$ (4,227.19)	

Nonresidential 8" meter, 350,000 gpd

	Current	Uni	form
			\$ Change from
	Bill Amount	Bill Amount	Current
Total Bill	\$ 621,364.68	\$ 473,491.74	\$ (147,872.94)



# 3 Tier Inclining Block Structure

							Average Fa	mily Impact		
		W/WW Tier Cut- offs (gpd)	Combined Rate (\$/kgal)	Current Bill (\$/quarter)	Bill (\$/quarter)	\$ Change (\$/quarter)	% MHI PGC	% MHI MC	% LQI PGC	% LQI MC
3 Block Inclining	Option A	80	\$10.66	\$205.45	\$210.06	\$4.61	1.1%	0.8%	4.2%	3.4%
		165	\$13.43							
		>165	\$17.61							
	Option B	165	\$10.41	\$205.45		(\$21.30)	1.0%	0.7%	3.7%	3.0%
		275	\$13.89		\$184.15					
		>275	\$19.96							

Average Family - 3 person household using 55 gpd/person



### 3 Tier – Option A

Basis For Tiers	Costs Included In Tier Rates
<ul> <li>80 gpd - Minimum household sanitary needs for 3 person household (26 gallons/person/day)</li> <li>165 gpd - Average use by a typical 3 person household (55 gallons/person/day)</li> </ul>	<ul> <li>Tier 1</li> <li>Water: allocated share of base costs, 25% share of MD costs, 100% unrecovered fixed charge revenue</li> <li>Sewer: allocated share of volume costs; 25% share of capacity, 100% unrecovered fixed charge revenue</li> <li>Tier 2</li> <li>Water: allocated share of base costs, 150% share of MD costs</li> <li>Sewer: allocated share of volume costs, 75% share of capacity costs</li> <li>Tier 3</li> <li>Water: allocated share of base costs; remaining MD and MH costs</li> <li>Sewer: allocated share of volume costs, remaining capacity costs</li> </ul>
Responsiveness t	o Kev Pricina Policies

#### Responsiveness to Key Pricing Policies

- Revenue Stability Moderate with respect to other tiered structures
- Conservation Promotes conservation from all that use more than average household
- Rate Stability 3 Tier Options are closer to current that Uniform, but not as close as 4 tiers options
- Affordability Minimum water needs should be more affordable
- Cost of Service Second closest to Cost of Service after Uniform



### 3 Tier – Option B

Basis For Tiers	Costs Included In Tier Rates
<ul> <li>165 gpd – Average use by a typical 3 person household (55 gallons/person/day)</li> <li>275 gpd – Average use by 5 person household</li> </ul>	<ul> <li>Tier 1</li> <li>Water: allocated share of base costs; 25% share of MD costs; 100% unrecovered fixed charge revenue</li> <li>Sewer: allocated share of volume costs, 25% share of capacity costs, 100% unrecovered fixed charge revenues</li> <li>Tier 2</li> <li>Water: allocated share of base costs; 150% share of MD costs; 25% of allocated share of MH costs</li> <li>Sewer: allocated share of volume costs, 75% share of capacity costs</li> <li>Tier 3</li> <li>Water: allocated share of base costs; remaining MD and MH costs</li> <li>Sewer: allocated share of volume costs; remaining capacity costs</li> </ul>
Pacnoncivaness t	o Key Pricing Policies

#### Responsiveness to Key Pricing Policies

- Revenue Stability Most stable of tiered options
- Conservation Promotes conservation for all use over average, particularly for larger volume customers
- Rate Stability 3 Tier Options are closer to current that Uniform, but not as close as 4 tiers options
- Affordability Does not have a tier for minimum sanitary use
- Cost of Service Farthest option from Cost of Service, but closer than current



# Bill Impacts - Residential

Single Family Residential 3/4" meter, 26 gpd

	Current	3 Block C	ption A	3 Block (	Option B
			\$ Change from		\$ Change from
	Bill Amount	Bill Amount	Current	Bill Amount	Current
Total Bill	\$ 43.90	\$ 49.32	\$ 5.42	\$ 48.82	\$ 4.92

Single Family Residential 3/4" meter, 55 gpd

	Current	3 Block Option A		3 Block C	Block Option B	
			\$ Change from		\$ Change from	
	Bill Amount	Bill Amount	Current	Bill Amount	Current	
<b>Total Bill</b>	\$ 73.60	\$ 81.30	\$ 7.70	\$ 80.05	\$ 6.45	

Single Family Residential 3/4" meter, 80 gpd

	Current	3 Block Option A		3 Block (	Option B
			\$ Change from		\$ Change from
	Bill Amount	Bill Amount	Current	Bill Amount	Current
<b>Total Bill</b>	\$ 91.84	\$ 102.62	\$ 10.78	\$ 100.87	\$ 9.03

Single Family Residential 3/4" meter, 100 gpd

	Current	3 Block C	Option A	3 Block Option B		
	Current	3 Block Option /		5 Block Option B		
			\$ Change from		\$ Change from	
	Bill Amount	Bill Amount	Current	Bill Amount	Current	
Total Bill	\$ 121.42	\$ 129.48	\$ 8.06	\$ 121.69	\$ 0.27	

Single Family Residential 3/4" meter, 165 gpd

	Current	3 Block Option A		3 Block (	Option B
			\$ Change from		\$ Change from
	Bill Amount	Bill Amount	Current	Bill Amount	Current
Total Bill	\$ 205.45	\$ 210.06	\$ 4.61	\$ 184.15	\$ (21.30)

Single Family Residential 3/4" meter, 500 gpd

	Current	3 Block Option A		3 Block Option B	
			\$ Change from		\$ Change from
	Bill Amount	Bill Amount	Current	Bill Amount	Current
Total Bill	\$ 822.88	\$ 755.97	\$ (66.91)	\$ 742.21	\$ (80.67)



### Bill Impacts - Non-Residential

Nonresidential 2" meter, 750 gpd

	(	Current	3 Block Option A			3 Block (	)pti	on B	
			\$ Change from				\$ C	Change from	
	Bil	l Amount	Bil	l Amount	Current	Bi	ll Amount		Current
Total Bill	\$	1,414.24	\$	1,327.39	\$ (86.85)	\$	1,365.33	\$	(48.91)

Nonresidential 2" meter, 2,000 gpd

	Current	3 Block Option A		3 Block (	Option B
			\$ Change from		\$ Change from
	Bill Amount	Bill Amount	Current	Bill Amount	Current
<b>Total Bill</b>	\$ 3,553.58	\$ 3,352.54	\$ (201.04)	\$ 3,660.73	\$ 107.15

Nonresidential 8" meter, 10,000 gpd

	Current	3 Block Option A		3 Block C	Option B
			\$ Change from		\$ Change from
	Bill Amount	Bill Amount	Current	Bill Amount	Current
Total Bill	\$ 20,720.68	\$ 19,040.84	\$ (1,679.84)	\$ 21,064.53	\$ 343.85

Nonresidential 8" meter, 350,000 gpd

	Current	3 Block Option A		3 Block C	Option B
		\$ Change from			\$ Change from
	Bill Amount	Bill Amount	Current	Bill Amount	Current
Total Bill	\$ 621,364.68	\$ 565,391.09	\$ (55,973.59)	\$ 640,323.53	\$ 18,958.85



# 4 Tier Inclining Block Structure

							Average Fa	mily Impact		
		W/WW Tier Cut- offs (gpd)	Combined Rate (\$/kgal)	Current Bill (\$/quarter)	Bill (\$/quarter)	\$ Change (\$/quarter)	% MHI PGC	% MHI MC	% LQI PGC	% LQI MC
		80	\$10.66		\$200.62	(\$4.83)	1.1%	0.8%	4.0%	3.3%
	Option A	165	\$12.25	\$205.45						
		275	\$14.86							
4 Plack Inclining		>275	\$18.74							
4 Block Inclining		80	\$10.66							3.4%
		165	\$13.09	620F 4F	¢207.24	ć1 80	1.10	0.8%	4.1%	
	Option B	9,000	\$16.16	\$205.45	\$207.34	\$1.89	1.1%			
		>9,000	\$20.52							

Average Family - 3 person household using 55 gpd/person



#### 4 Tier – Option A

Basis For Tiers	Costs Included In Tier Rates
<ul> <li>80 gpd - Minimum household sanitary needs for 3 person household (26 gallons/person/day)</li> <li>165 gpd - Average use by a typical 3 person household (55 gallons/person/day)</li> <li>275 gpd - Average use by 5 person household</li> </ul>	<ul> <li>Tier 1</li> <li>Water: allocated share of base costs, 25% share of MD costs, 100% unrecovered fixed charge revenue</li> <li>Sewer: allocated share of volume costs, 25% share of capacity costs, 100% of unrecovered fixed charge revenue</li> <li>Tier 2</li> <li>Water: allocated share of base costs; 125% share of MD costs</li> <li>Sewer: allocated share of base costs, 50% share of capacity costs</li> <li>Tier 3</li> <li>Water: allocated share of base costs; 125% share of MD costs; 50% share of MH costs</li> <li>Sewer: allocated share of volume costs, 125% share of capacity costs</li> <li>Tier 4</li> <li>Water: allocated share of base costs; remaining MD and MH costs</li> <li>Sewer: allocated share of volume costs, remaining capacity costs</li> </ul>
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#### Responsiveness to Key Pricing Policies

- Revenue Stability Moderate with respect to other tiered structures

  Conservation Promotes conservation for larger volume users better than three tier options
  Rate Stability 4 tier options are closest to the current rates

  Affordability Minimum water needs should be more affordable
  Cost of Service 4 tier options are better than current and fall between the two 3 tier options



### 4 Tier – Option B

Basis For Tiers	Costs Included In Tier Rates
<ul> <li>80 gpd - Minimum household sanitary needs for 3 person household (26 gallons/person/day)</li> <li>165 gpd - Average use by a typical 3 person household (55 gallons/person/day)</li> <li>9,000 gpd - Consistent with current structure. Recognizes non-residential customers</li> </ul>	<ul> <li>Tier 1</li> <li>Water: allocated share of base costs, 25% share of MD costs, 100% unrecovered fixed charge revenue</li> <li>Sewer: allocated share of base costs25% share of capacity costs, 100% of unrecovered fixed charge revenue</li> <li>Tier 2</li> <li>Water: allocated share of base costs; 125% share of MD costs</li> <li>Sewer: allocated share of base costs, 75% share of capacity costs</li> <li>Tier 3</li> <li>Water: allocated share of base costs; 125% share of MD costs; 75% share of MH costs</li> <li>Sewer: allocated share of volume costs, 125% share of capacity costs</li> <li>Tier 4</li> <li>Water: allocated share of base costs; remaining MD and MH costs</li> <li>Sewer: allocated share of volume costs, remaining capacity costs</li> </ul>
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#### Responsiveness to Key Pricing Policies

- Revenue Stability Least stable of the tiered options Conservation Best at promoting conservation for large volume users Rate Stability 4 tier options are closest to the current rates Affordability Minimum water needs should be more affordable Cost of Service 4 tier options are better than current and fall between the two 3 tier options



# Bill Impacts - Residential

Single Family Residential 3/4" meter, 26 gpd

	Current	4 Block Option A		4 Block C	Option B
		\$ Change from			\$ Change from
	Bill Amount	Bill Amount	Current	Bill Amount	Current
<b>Total Bill</b>	\$ 43.90	\$ 49.32	\$ 5.42	\$ 49.32	\$ 5.42

Single Family Residential 3/4" meter, 55 gpd

,									
	Current	4 Block C	Option A	4 Block C	Option B				
		\$ Change from			\$ Change from				
	Bill Amount	Bill Amount	Current	Bill Amount	Current				
Total Bill	\$ 73.60	\$ 81.30	\$ 7.70	\$ 81.30	\$ 7.70				

Single Family Residential 3/4" meter, 80 gpd

	Current	4 Block C	Option A	4 Block C	Option B
			\$ Change from		\$ Change from
	Bill Amount	Bill Amount	Current	Bill Amount	Current
Total Bill	\$ 91.84	\$ 102.62	\$ 10.78	\$ 102.62	\$ 10.78

Single Family Residential 3/4" meter, 100 gpd

	Current	4 Block Option A		4 Block C	Option B
			\$ Change from		\$ Change from
	Bill Amount	Bill Amount	Current	Bill Amount	Current
Total Bill	\$ 121.42	\$ 127.12	\$ 5.70	\$ 128.80	\$ 7.38

Single Family Residential 3/4" meter, 165 gpd

	Current	4 Block Option A		4 Block C	Option B
		\$ Change from			\$ Change from
	Bill Amount	Bill Amount	Current	Bill Amount	Current
<b>Total Bill</b>	\$ 205.45	\$ 200.62	\$ (4.83)	\$ 207.34	\$ 1.89

Single Family Residential 3/4" meter, 500 gpd

	Current	4 Block Option A		4 Block Option B	
			\$ Change from		\$ Change from
	Bill Amount	Bill Amount	Current	Bill Amount	Current
Total Bill	\$ 822.88	\$ 742.76	\$ (80.12)	\$ 708.30	\$ (114.58)



### Bill Impacts - Non-Residential

Nonresidential 2" meter, 750 gpd

	Current	4 Block C	Option A	4 Block C	Option B
			\$ Change from		\$ Change from
	Bill Amount	Bill Amount	Current	Bill Amount	Current
Total Bill	\$ 1,414.24	\$ 1,339.04	\$ (75.20)	\$ 1,247.82	\$ (166.42)

Nonresidential 2" meter, 2,000 gpd

	Current	4 Block C	option A	4 Block (	Option B
			\$ Change from		\$ Change from
	Bill Amount	Bill Amount	Current	Bill Amount	Current
Total Bill	\$ 3,553.58	\$ 3,494.14	\$ (59.44)	\$ 3,106.22	\$ (447.36)

Nonresidential 8" meter, 10,000 gpd

	Current	4 Block Option A		4 Block Option B	
		\$ Change fror			\$ Change from
	Bill Amount	Bill Amount	Current	Bill Amount	Current
<b>Total Bill</b>	\$ 20,720.68	\$ 20,007.34	\$ (713.34)	\$ 18,137.14	\$ (2,583.54)

Nonresidential 8" meter, 350,000 gpd

	Current	4 Block Option A		4 Block Option B	
		\$ Change from			\$ Change from
	Bill Amount	Bill Amount	Current	Bill Amount	Current
Total Bill	\$ 621,364.68	\$ 601,415.84	\$ (19,948.84)	\$ 654,770.14	\$ 33,405.46



### Rate Structure Evaluation

	Revenue	Conservation/ Demand			Ease of	Ease of	Minimize Customer	
	Stability	Management	Rate Stability	Affordability	Understanding	Implementation	Impacts	<b>Cost Based Rates</b>
Uniform	+	_	_	_	++	+	_	+
3 Block Option A	0	+		0	+	0	+	+
3 Block Option B	0	0	0	+	+	0	+	+
4 Block Option A	0	+	0	+	0	0	0	0
4 Block Option B	_	+	0	0	0	0	0	0



# Rates By Class

- There are numerous alternative rate structures that vary by class.
  - Typically rates for each class are based on some cost of service analysis
  - Need water demands (maximum day and hour) and sewer capacity needs by customer class
- Current Billing system data base doesn't provide a good breakdown.
   Unclear what classes it could accommodate (if any)
- Could use meter sizes as proxy for classes (small, medium, large, very large)
- AMR (Automated Meter Reading) can provide for more frequent billing and better choice of classes.
- By segregating smaller residential customers, more ability to target life-line rates



### Rates By Class

- Two customer classes Residential and Non-residential
- Three options:
  - Uniform
  - 3 Tier Residential/Uniform Non-residential
  - 4 Tier Residential/Uniform Non-residential
- Same tier cut-offs as 3 Tier-Option A and 4 Tier-Option A, respectively



# Rates By Class Options

				Combined Water/Sewer				
Options	Tiers	Water (\$/kgal)	Sewer (\$/kgal)	Rate (\$/kgal)				
	Uniform							
Residential	N/A	\$6.39	\$8.95	\$15.34				
Non-Residential	N/A	\$5.50	\$6.97	\$12.47				
		3 Tier						
	0-80	\$5.11	\$6.50	\$11.61				
Residential	81-165	\$5.53	\$7.95	\$13.48				
	>165	\$8.24	\$12.28	\$20.52				
Non-Residential	N/A	\$5.50	\$6.97	\$12.47				
		4 Tier						
	0-80	\$5.11	\$6.50	\$11.61				
Residential	81-165	\$5.22	\$7.08	\$12.30				
Nesidefitial	166-275	\$6.63	\$8.83	\$15.46				
	>275	\$9.16	\$14.56	\$23.72				
Non-Residential	N/A	\$5.50	\$6.97	\$12.47				



### Summary

- All five rate structures are viable options that address WSSC's pricing policies and customer concerns.
- All five rate structures would be considered "best in class" solutions to WSSC's complex pricing challenges.

