City of Ann Arbor, Michigan

Water Cost of Service Review & Rate Structure Alternative Analysis

Presented by: Robert Ryall, PE and Matt Carpenter, PE
March 11, 2019
Robert Ryall Qualifications

- 20-Years Water Industry Experience with over 200 Rate and Financial Studies Completed
- Arcadis National Financial Services Practice Lead
- Active Member of AWWA Rate and Charges and Finance, Accounting, and Management Controls Committees
- Contributing Author of M1 Manual; Principles of Water Rates, Fees, and Charges in addition, M29 Manual; Water Utility Capital Financing
Matt Carpenter’s Qualifications

- 20-Years Water Industry Management Experience including serving as the former Deputy Utilities Director in Dayton, Ohio (midwestern water, wastewater and stormwater utility serving 400,000 people).

- Numerous midwestern Rate and Financial studies

- Arcadis Michigan and Ohio Regional Vice President

- Expertise includes
  - Financial Services
  - Water Treatment Facilities
  - Utility Management, Asset Management, Capital Planning
Utility Operating Structures

**Enterprise Fund**
- Utility fully funded with rate revenues
- Cost are recovered based on proportional use of services received
- All customers of the utility pay for services received
- Most common structure

**General Government**
- Utility funded with tax proceeds
- Rates are based on income and/or property values
- Some customers of the utility may not pay for services (no earned income or do not own personal property)
- Extremely uncommon structure

**Privatized Utility**
- Utility owned by private corporation
- Utility earns a profit at the expense of rate payers
- Regulated by Public Service Commission and less accountable to local citizenry
- Somewhat common, particularly in certain geographical areas

<table>
<thead>
<tr>
<th>Methodology</th>
<th>Considerations</th>
</tr>
</thead>
</table>
| Utility Basis            | • Common rate methodology for electric and gas utilities  
• Most commonly used for water utilities when setting private utility rates or establishing wholesale rates  
• Considers Operation & Maintenance expenses, Depreciation, and Return on Rate Base                                                                                                                                                                                                                           |
| Commodity Demand & Base Extra Capacity | • Commodity Demand and Base Extra Capacity methods are more similar than different  
• Cost allocation methodology identified by the American Water Works Association; M1 Manual  
• Generally recognized and accepted by government-owned utilities  
• Costs are distributed to customer classes based on usage; average day, maximum day, and maximum hour  
• Considers the cash flow needs of the utility; Operation & Maintenance expenses, debt service, and direct capital investment |
Objectives of Cost-Based Rate Making

Rates should provide **Full Cost Recovery**; rates that recover the full cost of operating the system.

Rates should be **cost based and equitable**; fair apportionment of cost from different classes of rate payer.

Rates should be **easy to understand and administer**.

Rates should be **legal and defendable**.

Rates should be **stable and predictable in terms of revenue and customer perception**.

Rate Setting Process

Revenue Requirements

Compares the revenue of the utility to its expenses (operating, debt, capital) to determine the overall level of revenue adjustment needed.

Cost of Service

Allocates the revenue requirements (costs) to the various customer classes in a fair and equitable manner.

Rate Design

Develops rates for each customer class to meet the revenue requirements of the utility, along with any other rate goals and objectives (i.e. conservation).
Peer Review Scope

1. Review Rate Study Results for Compliance with Industry Best Practices
2. Identify Alternative Rate Structure Options (Alternative Options calculated by Stantec using the existing model)
3. Presentation to City Council
For Water and Sewer Revenue Sufficiency, consideration of the following has been met:

- 10-year Forecast Period
- Minimum Reserve Targets
- Debt Service Coverage Targets
- Capital Funding Plan
- Recommended Annual Rate Revenue Adjustments
Water and Sewer Cost Allocation

Guidelines based upon the following industry standards:

- American Water Works Association (AWWA)
- Base-Extra Capacity Method (AWWA Manual M1)
- Water Environment Federation (WEF)

Process

- Water cost allocations based on average day, max day, and max hourly usage, using newly available Automated Metering Infrastructure (AMI) data

- Allocation of costs to customer classes
  - Residential
  - Non-Residential
  - Multi-Family – Newly added Customer Class with this rate study
  - Water Only

<table>
<thead>
<tr>
<th>Sewer</th>
<th>Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue Sufficiency</td>
<td>✔️</td>
</tr>
<tr>
<td>Cost of Service</td>
<td>✔️</td>
</tr>
</tbody>
</table>
Changes recommended to Water Rate Structure

- No recommended changes to Water Fixed Rates
- No recommended changes to Water Only charge
- Concur with addition of Multi-Family class
- Residential 4th Tier may warrant additional consideration
Increasing, 58%
Uniform, 28%
Decreasing, 9%
Flat, 2%
Budget, 2%
Increasing/Decreasing, 1%

US Residential Water Rate Structures

“Increasing block rates are most commonly applied to residential customers because of their relatively homogeneous demand pattern”

Source: AMWA 2018 INSIGHT survey results
Increasing, 23%
Decreasing, 14%
Flat, 7%
Budget, 4%
Uniform, 52%

US Non-Residential Water Rate Structures

Source: AMWA 2018 INSIGHT survey results
### Benchmarking Information – National Residential Rates

<table>
<thead>
<tr>
<th>Usage (CCF)</th>
<th>National Average¹</th>
<th>National 75th Percentile¹</th>
<th>City of Ann Arbor²</th>
<th>Cumulative Percent of Residential Bills</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>$71.91</td>
<td>$86.49</td>
<td>$48.42</td>
<td>60%</td>
</tr>
<tr>
<td>30</td>
<td>$114.90</td>
<td>$142.74</td>
<td>$127.02</td>
<td>93%</td>
</tr>
<tr>
<td>45</td>
<td>$163.29</td>
<td>$205.38</td>
<td>$276.54</td>
<td>98%</td>
</tr>
<tr>
<td>90</td>
<td>$323.67</td>
<td>$399.69</td>
<td>$846.78</td>
<td>&gt;99%</td>
</tr>
</tbody>
</table>

¹ – Source, 2016 Water and Wastewater Rate Survey, AWWA
² – Includes 10% early payment discount
Increasing Block Rate Structure

“There is no single method of setting the size or unit price of the usage blocks under the Increasing Block Rate approach.”

“Increasing Block Rates require applying judgement and utility policy regarding the number of blocks, the point at which one block ends and the next begins, and the relative price levels of the blocks.”

Water Rate Calculation Alternatives

Residential
- Option 1 – Two Tier Structure – based on Winter and Summer usage
- Option 2 – Based on a consolidation of outdoor usage (consolidating Tiers 3 and 4)
- Option 3 – Uniform Rate (same uniform rate for all usage)
- Option 4 – Resetting Tiers and Tier cost allocation

Non-Residential
- Option A – Seasonal Rate Alternative
- Option B – “Peaking” Alternative – based on updated previous commercial structure
## Current and Past Residential Rates

<table>
<thead>
<tr>
<th></th>
<th>Current Rates</th>
<th>Past Rates</th>
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</thead>
<tbody>
<tr>
<td><strong>Base 5/8</strong></td>
<td>$20.89</td>
<td>$11.25</td>
</tr>
<tr>
<td><strong>Water</strong></td>
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<td></td>
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<tr>
<td>1-9'</td>
<td>$1.77</td>
<td>1.55</td>
</tr>
<tr>
<td>10-18'</td>
<td>$2.83</td>
<td>3.37</td>
</tr>
<tr>
<td>19-36'</td>
<td>$6.57</td>
<td>&gt;28'</td>
</tr>
<tr>
<td>&gt;36'</td>
<td>$14.08</td>
<td>5.89</td>
</tr>
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</table>
Current Residential Rates

**PROS**

- **Cost Based**
  - Meets Cost of Service Objectives

- **Conservation**
  - Tiered structure provides conservation signal

- **Affordability**
  - Limited bill impact to low usage customers

**CONS**

- **Revenue Stability**
  - Subject to revenue impacts with usage variations

- **Strong 4th Tier Rate**
  - ($14.08 / CCF)

- **Perception**
  - Receiving negative customer response

**OTHER CONSIDERATIONS**

- **Bill Impact**
  - High usage customers receive higher bills

- **Unit Cost Variability**
  - Delineation of blocks results in pronounced increase in unit costs
## Option 1 – Residential Two-Tier Rates

<table>
<thead>
<tr>
<th>Current Rates</th>
<th>2 Tiers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Water</strong></td>
<td><strong>Water</strong></td>
</tr>
<tr>
<td>Base 5/8</td>
<td>Base 5/8</td>
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<tr>
<td>$20.89</td>
<td>$20.89</td>
</tr>
<tr>
<td>1-9'</td>
<td>1-18'</td>
</tr>
<tr>
<td>$1.77</td>
<td>2.19</td>
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<tr>
<td>10-18'</td>
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<td>$2.83</td>
<td>9.19</td>
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<tr>
<td>19-36'</td>
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<td>$6.57</td>
<td></td>
</tr>
<tr>
<td>&gt;36'</td>
<td></td>
</tr>
<tr>
<td>$14.08</td>
<td></td>
</tr>
</tbody>
</table>
## Option 1 – Residential Two-Tier Rates

<table>
<thead>
<tr>
<th></th>
<th>15 CCF</th>
<th>30 CCF</th>
<th>45 CCF</th>
<th>90 CCF</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Average&lt;sup&gt;1&lt;/sup&gt;</td>
<td>$71.91</td>
<td>$114.90</td>
<td>$163.29</td>
<td>$323.67</td>
</tr>
<tr>
<td>National 75&lt;sup&gt;th&lt;/sup&gt; Percentile &lt;sup&gt;1&lt;/sup&gt;</td>
<td>$86.49</td>
<td>$142.74</td>
<td>$205.38</td>
<td>$399.69</td>
</tr>
<tr>
<td>City of Ann Arbor Current &lt;sup&gt;2&lt;/sup&gt;</td>
<td>$48.42</td>
<td>$127.02</td>
<td>$276.54</td>
<td>$846.78</td>
</tr>
<tr>
<td>Option 1 – Two-Tier &lt;sup&gt;2&lt;/sup&gt;</td>
<td>$48.37</td>
<td>$153.53</td>
<td>$277.60</td>
<td>$649.79</td>
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</tbody>
</table>

<sup>1</sup> Source: 2016 Water and Wastewater Rate Survey, AWWA

<sup>2</sup> Includes 10% early payment discount

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### Option 1 – Two-Tier Graph

- **BILL TOTAL**
  - $50.00
  - $40.00
  - $30.00
  - $20.00
  - $10.00
  - $0
  - $(10.00)
  - $(20.00)

- **QUARTERLY CCF BILLED**
  - 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

- **Average customer** 71% of customers less than 18 CCF
Option 1 – Residential Two-Tier Rates

**PROS**
- Cost Based
  - Meets Cost of Service Objectives
- Simplicity
  - Easier to understand than 4-tiers
- Compatibility
  - Consolidates existing rate structure tiers
- Eliminates
  - 4th Tier Rate

**CONS**
- Conservation
  - “Weaker” price signal when compared to 3 and 4 tier structures
- Bill Impact
  - Residential customers will see bill changes

**OTHER CONSIDERATIONS**
- Bill Impacts
  - Bills between 20 and 45 CCF will increase (20% of bills)
  - Bills above 45 CCF will decrease
Option 2 – Residential Three-Tier Rates
(Consolidate Tiers 3 and 4)

<table>
<thead>
<tr>
<th>Current Rates</th>
<th>3 Tiers-Consolidate</th>
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<tbody>
<tr>
<td><strong>Water</strong></td>
<td><strong>Water</strong></td>
</tr>
<tr>
<td>Base 5/8</td>
<td>$ 20.89</td>
</tr>
<tr>
<td>1-9'</td>
<td>$ 1.77</td>
</tr>
<tr>
<td>10-18'</td>
<td>$ 2.83</td>
</tr>
<tr>
<td>19-36'</td>
<td>$ 6.57</td>
</tr>
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<td>&gt;36'</td>
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</tr>
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<td>$ 1.77</td>
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<tr>
<td>10-18'</td>
<td>$ 2.83</td>
</tr>
<tr>
<td>&gt;18</td>
<td>$ 9.19</td>
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</tbody>
</table>
## Option 2 – Residential Three-Tier Rates (Consolidate Tiers 3 and 4)

<table>
<thead>
<tr>
<th></th>
<th>15 CCF</th>
<th>30 CCF</th>
<th>45 CCF</th>
<th>90 CCF</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>National Average</strong>&lt;sup&gt;1&lt;/sup&gt;</td>
<td>$71.91</td>
<td>$114.90</td>
<td>$163.29</td>
<td>$323.67</td>
</tr>
<tr>
<td><strong>National 75&lt;sup&gt;th&lt;/sup&gt; Percentile</strong>&lt;sup&gt;1&lt;/sup&gt;</td>
<td>$86.49</td>
<td>$142.74</td>
<td>$205.38</td>
<td>$399.69</td>
</tr>
<tr>
<td><strong>City of Ann Arbor Current</strong>&lt;sup&gt;2&lt;/sup&gt;</td>
<td>$48.42</td>
<td>$127.02</td>
<td>$276.54</td>
<td>$846.78</td>
</tr>
<tr>
<td><strong>Option 2 – Three-Tier Consolidate</strong>&lt;sup&gt;2&lt;/sup&gt;</td>
<td>$48.42</td>
<td>$155.31</td>
<td>$279.38</td>
<td>$651.57</td>
</tr>
</tbody>
</table>

1 – Source, 2016 Water and Wastewater Rate Survey, AWWA
2 – Includes 10% early payment discount

Average customer 71% of customers less than 18 CCF
Option 2 – Residential Three-Tier Rates (Consolidate Tiers 3 and 4)

**PROS**

- **Cost Based**
  - Meets Cost of Service Objectives

- **Simplicity**
  - Easier to understand than 4-Tier

- **Compatibility**
  - Consolidates existing rate structure tiers

- **Eliminates**
  - 4th Tier Rate

**CONS**

- **Bill Impact**
  - Residential customers will see bill changes

**OTHER CONSIDERATIONS**

- **Bill Impacts**
  - Bills below 18 CCF will not change
  - Bills between 20 and 45 CCF will increase (20% of bills)
  - Bills above 45 CCF decrease
## Option 3 – Residential Uniform Rates

<table>
<thead>
<tr>
<th>Water</th>
<th>Current Rates</th>
<th>Uniform</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base 5/8</td>
<td>$ 20.89</td>
<td>Base 5/8</td>
</tr>
<tr>
<td>1-9'</td>
<td>$ 1.77</td>
<td>All Use</td>
</tr>
<tr>
<td>10-18'</td>
<td>$ 2.83</td>
<td></td>
</tr>
<tr>
<td>19-36'</td>
<td>$ 6.57</td>
<td></td>
</tr>
<tr>
<td>&gt;36'</td>
<td>$ 14.08</td>
<td></td>
</tr>
</tbody>
</table>
## Option 3 – Residential Uniform Rates

<table>
<thead>
<tr>
<th></th>
<th>15 CCF</th>
<th>30 CCF</th>
<th>45 CCF</th>
<th>90 CCF</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Average¹</td>
<td>$71.91</td>
<td>$114.90</td>
<td>$163.29</td>
<td>$323.67</td>
</tr>
<tr>
<td>National 75th Percentile ¹</td>
<td>$86.49</td>
<td>$142.74</td>
<td>$205.38</td>
<td>$399.69</td>
</tr>
<tr>
<td>City of Ann Arbor Current ²</td>
<td>$48.42</td>
<td>$127.02</td>
<td>$276.54</td>
<td>$846.78</td>
</tr>
<tr>
<td>Option 3 – Uniform ²</td>
<td>$74.96</td>
<td>$131.12</td>
<td>$187.28</td>
<td>$355.76</td>
</tr>
</tbody>
</table>

1 – Source, 2016 Water and Wastewater Rate Survey, AWWA
2 – Includes 10% early payment discount
Option 3 – Residential Uniform Rates

**PROS**

- **Cost Based**
  Meets Cost of Service Objectives

- **Simplicity**
  Easily understood and implemented

- **Revenue Stability**
  Generally more stable than other more complex rate forms

- **Consistency**
  A uniform residential rate structure is the same as other customer classes

**CONS**

- **Equity**
  Given residential usage patterns, other rate forms will provide greater equity

- **Structural Change**
  Uniform residential rates are a change from the existing and past structures

- **Affordability**
  Negatively impacts lower consumption customers, which can create affordability issues

**OTHER CONSIDERATIONS**

- **Price Signal**
  Lower consumption customer bills will increase, and higher consumption bills will decrease thereby not promoting conservation
Option 4 – Residential Three-Tier (Resetting Tiers)

Tier Volumes | Basis for Tier Rates
---|---
Above Average Usage | Maximum Consecutive 90 Day Usage | Represents above average use considering a quarterly billing cycle
Average Outdoor Usage | Summer Average Usage | Correlates with average outdoor water usage
Average Indoor Usage | Winter Average Usage | Correlates with average indoor water usage

TIER 3  > 20 CCF
TIER 2  17-20 CCF
TIER 1  1-16 CCF
Option 4 – Residential Three-Tier (Resetting Tiers)

<table>
<thead>
<tr>
<th>Current Rates</th>
<th>Resetting Tiers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Water</strong></td>
<td><strong>Water</strong></td>
</tr>
<tr>
<td>Base 5/8</td>
<td>Base 5/8</td>
</tr>
<tr>
<td>$ 20.89</td>
<td>$ 20.89</td>
</tr>
<tr>
<td>1-9'</td>
<td>1-16'</td>
</tr>
<tr>
<td>$ 1.77</td>
<td>2.17</td>
</tr>
<tr>
<td>10-18'</td>
<td>17-20'</td>
</tr>
<tr>
<td>$ 2.83</td>
<td>4.10</td>
</tr>
<tr>
<td>19-36'</td>
<td>&gt;20'</td>
</tr>
<tr>
<td>$ 6.57</td>
<td>8.90</td>
</tr>
<tr>
<td>&gt;36'</td>
<td></td>
</tr>
<tr>
<td>$ 14.08</td>
<td></td>
</tr>
</tbody>
</table>
Option 4 – Residential Three-Tier (Resetting Tiers)

<table>
<thead>
<tr>
<th>Tier</th>
<th>15 CCF</th>
<th>30 CCF</th>
<th>45 CCF</th>
<th>90 CCF</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Average¹</td>
<td>$71.91</td>
<td>$114.90</td>
<td>$163.29</td>
<td>$323.67</td>
</tr>
<tr>
<td>National 75th Percentile ¹</td>
<td>$86.49</td>
<td>$142.74</td>
<td>$205.38</td>
<td>$399.69</td>
</tr>
<tr>
<td>City of Ann Arbor Current ²</td>
<td>$48.42</td>
<td>$127.02</td>
<td>$276.54</td>
<td>$846.78</td>
</tr>
<tr>
<td>Option 4 – Three-Tier Resetting ²</td>
<td>$48.10</td>
<td>$144.91</td>
<td>$265.06</td>
<td>$625.51</td>
</tr>
</tbody>
</table>

¹ – Source, 2016 Water and Wastewater Rate Survey, AWWA
² – Includes 10% early payment discount

Average customer 71% of customers less than 18 CCF

BILL TOTAL

$30.00
$5.00
$(20.00)

QUARTERLY CCF BILLED

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49
Option 4 – Residential Three-Tier (Resetting Tiers)

**PROS**

- **Cost Based**
  - Meets Cost of Service Objectives

- **Perception**
  - Eliminates high 4th Tier Rate

- **Methodology**
  - Tier design is correlated with customer usage; winter usage, summer usage, maximum 3-months

**CONS**

- **Bill Impact**
  - Residential customers will see bill changes

**OTHER CONSIDERATIONS**

- **Bill Impacts**
  - Minimal impact for usage below 23 CCF (less than $5 per quarter)
  
  - Bills for usage between 22 and 42 CCF will increase; some as much as $34 per quarter (36 CCF)
  
  - Bills above 43 CCF will decrease

- **Tier Thresholds**
  - Tier usage thresholds change from the existing structure
Water Rate Calculation Alternatives

Residential
• Option 1 – Two Tier Structure – based on Winter and Summer usage
• Option 2 – Based on a consolidation of outdoor usage (consolidating Tiers 3 and 4)
• Option 3 – Flat Rate (same uniform rate for all usage)
• Option 4 – Resetting Tiers and Tier cost allocation

Non-Residential
• Option A – Seasonal Rate Alternative
• Option B – “Peaking” Alternative – based on updated previous commercial structure
## Current and Past Non-Residential Rates

### Current Rates

<table>
<thead>
<tr>
<th>Non-Residential / Commercial</th>
<th>Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Non-Residential Customers</td>
<td>$3.83</td>
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</table>

### Past Rates

<table>
<thead>
<tr>
<th>Non-Residential / Commercial</th>
<th>Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak 1, factor less than 5</td>
<td>$3.81</td>
</tr>
<tr>
<td>Peak 2, factor between 5 and 8</td>
<td>$7.26</td>
</tr>
<tr>
<td>Peak 3, factor greater than 8</td>
<td>$12.44</td>
</tr>
</tbody>
</table>

### National Average

- National Average¹: $304.77
- National 75th Percentile ¹: $383.28
- City of Ann Arbor Current ²: $330.42

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¹ – Source, 2016 Water and Wastewater Rate Survey, AWWA
² – Includes 10% early payment discount
Current Non-Residential Rates

**PROS**

- Cost Based
  - Meets Cost of Service Objectives

- Revenue Stability
  - Single rate flattens revenue impacts with usage variations

- Simplicity
  - Easier to administer

- Industry Practice
  - Uniform rates are consistent with industry practice

**CONS**

- Perception
  - More difficult to explain why residential class has inclining block structure

- Conservation
  - Weaker conservation signal as higher usage does not cause higher unit cost

**OTHER CONSIDERATIONS**

- Bill Impact
  - Higher peaking customers receive lower bills than under previous structure
Option A – Non-Residential (Seasonal Alternative)

Volume Trends

<table>
<thead>
<tr>
<th>Month</th>
<th>$2.41</th>
<th>$4.72</th>
<th>$4.72</th>
<th>$4.72</th>
<th>$4.72</th>
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<td>6</td>
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<tr>
<td>7</td>
<td>$4.72</td>
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<tr>
<td>8</td>
<td>$4.72</td>
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<tr>
<td>9</td>
<td>$4.72</td>
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<tr>
<td>10</td>
<td>$4.72</td>
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<tr>
<td>11</td>
<td>$4.72</td>
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<tr>
<td>12</td>
<td>$2.41</td>
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</tr>
</tbody>
</table>

CF

Month

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12

- | $2.41 | $2.41 | $2.41 | $2.41 | $4.72 | $4.72 | $4.72 | $4.72 | $4.72 | $4.72 | $2.41 | $2.41

35
Option A – Non-Residential (Seasonal Alternative)

Number of Bills

% Change in Monthly Water Bill

-40% -38% -36% -34% -32% -30% -28% -26% -24% -22% -20% -18% -16% -14% -12% -10% -8% -6% -4% -2% 0% 2% 4% 6% 8% 10% 12% 14% 16% 18% 20% 22% 24% 26% 28% 30% 32% 34% 36% 38% 40% 42% 44% 46% 48% 50%
Option A – Non-Residential (Seasonal Alternative)

**PROS**
- **Cost Based**
  - Meets Cost of Service Objectives
- **Conservation**
  - Greater conservation signal
- **Comparable**
  - Similar structure when compared to Residential
- **Consistent**
  - Same rates for all Non-residential customers

**CONS**
- **Bill Impact**
  - Non-Residential customers will see bill changes
- **Customer Awareness**
  - New structure for Non-residential customers and may require customer education.
- **Revenue Stability**
  - Price signal may result in curtailed usage and lower revenues

**OTHER CONSIDERATIONS**
- **Seasonality**
  - Clear seasonal usage pattern within the Non-residential class
- **Administrative Effort**
  - More effort to implement than uniform rate
Option B – Non-Residential ("Peaking" Alternative)

This alternative is being presented, however it is currently not feasible to be automated in the City’s billing system.

### Uniform Price by Class

- **Peaking >14**: $4.86
- **Peaking >3 and <14**: $3.66
- **Peaking <3**: $2.38

### Customers By Peak Ratio

- Peaking >14: 18%
- Peaking >3 and <14: 54%
- Peaking <3: 28%
This alternative is being presented, however it is currently not feasible to be automated in the City’s billing system.
### Option B – Non-Residential ("Peaking" Alternative)

<table>
<thead>
<tr>
<th>PROS</th>
<th>CONS</th>
<th>OTHER CONSIDERATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cost Based</strong>&lt;br&gt;Meets Cost of Service Objectives</td>
<td><strong>Bill Impact</strong>&lt;br&gt;Some significant bill impacts</td>
<td><strong>Impact to University</strong>&lt;br&gt;Some University establishments, such as the stadium, would be high &quot;Peaking&quot; customers</td>
</tr>
<tr>
<td><strong>Conservation</strong>&lt;br&gt;Greater conservation signal</td>
<td><strong>Simplicity (or lack of)</strong>&lt;br&gt;Structure is more complicated to explain and understand</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Significant Administrative Efforts</strong>&lt;br&gt;Administration effort to initially classify customers and maintain records as changes occur over time</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Implementation</strong>&lt;br&gt;Billing System is not set up for this rate structure</td>
<td></td>
</tr>
</tbody>
</table>
### Residential Summary

<table>
<thead>
<tr>
<th>Quarterly Residential Water Bill Usage</th>
<th>15 CCF</th>
<th>30 CCF</th>
<th>45 CCF</th>
<th>90 CCF</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Average&lt;sup&gt;1&lt;/sup&gt;</td>
<td>$71.91</td>
<td>$114.90</td>
<td>$163.29</td>
<td>$323.67</td>
</tr>
<tr>
<td>National 75&lt;sup&gt;th&lt;/sup&gt; Percentile&lt;sup&gt;1&lt;/sup&gt;</td>
<td>$86.49</td>
<td>$142.74</td>
<td>$205.38</td>
<td>$399.69</td>
</tr>
<tr>
<td>City of Ann Arbor Current&lt;sup&gt;2&lt;/sup&gt;</td>
<td>$48.42</td>
<td>$127.02</td>
<td>$276.54</td>
<td>$846.78</td>
</tr>
<tr>
<td>Option 1 – Two-Tier&lt;sup&gt;2&lt;/sup&gt;</td>
<td>$48.37</td>
<td>$153.53</td>
<td>$277.60</td>
<td>$649.79</td>
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<tr>
<td>Option 2 – Three-Tier Consolidate&lt;sup&gt;2&lt;/sup&gt;</td>
<td>$48.42</td>
<td>$155.31</td>
<td>$279.38</td>
<td>$651.57</td>
</tr>
<tr>
<td>Option 3 – Uniform&lt;sup&gt;2&lt;/sup&gt;</td>
<td>$74.96</td>
<td>$131.12</td>
<td>$187.28</td>
<td>$355.76</td>
</tr>
<tr>
<td>Option 4 – Three-Tier Resetting&lt;sup&gt;2&lt;/sup&gt;</td>
<td>$48.10</td>
<td>$144.91</td>
<td>$265.06</td>
<td>$625.51</td>
</tr>
</tbody>
</table>

1 – Source, 2016 Water and Wastewater Rate Survey, AWWA
2 – Includes 10% early payment discount

60% 93% 98% >99%
### Average Residential Customer Summary

**Quarterly Residential Water Bill Usage**

<table>
<thead>
<tr>
<th>Option</th>
<th>Bill Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Ann Arbor Current ²</td>
<td>$56.06</td>
</tr>
<tr>
<td>Option 1 – Two-Tier ²</td>
<td>$54.28</td>
</tr>
<tr>
<td>Option 2 – Three-Tier Consolidate ²</td>
<td>$56.06</td>
</tr>
<tr>
<td>Option 3 – Uniform ²</td>
<td>$86.19</td>
</tr>
<tr>
<td>Option 4 – Three-Tier Resetting ²</td>
<td>$57.43</td>
</tr>
</tbody>
</table>

2 – Includes 10% early payment discount
<table>
<thead>
<tr>
<th>Non-Residential Summary</th>
<th>90 CCF</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>National Average</strong>&lt;sup&gt;1&lt;/sup&gt;</td>
<td>$304.77</td>
</tr>
<tr>
<td><strong>National 75&lt;sup&gt;th&lt;/sup&gt; Percentile</strong>&lt;sup&gt;1&lt;/sup&gt;</td>
<td>$383.28</td>
</tr>
<tr>
<td><strong>City of Ann Arbor Current</strong>&lt;sup&gt;2&lt;/sup&gt;</td>
<td>$330.42</td>
</tr>
<tr>
<td><strong>Option A – Seasonal (Winter)</strong>&lt;sup&gt;2&lt;/sup&gt;</td>
<td>$215.40</td>
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<tr>
<td><strong>Option A – Seasonal (Summer)</strong>&lt;sup&gt;2&lt;/sup&gt;</td>
<td>$402.51</td>
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<tr>
<td><strong>Option B – Peak &lt;3</strong>&lt;sup&gt;2&lt;/sup&gt;</td>
<td>$212.97</td>
</tr>
<tr>
<td><strong>Option B – Peak &gt;3 &amp; &lt;14</strong>&lt;sup&gt;2&lt;/sup&gt;</td>
<td>$316.65</td>
</tr>
<tr>
<td><strong>Option B – Peak &lt;14</strong>&lt;sup&gt;2&lt;/sup&gt;</td>
<td>$413.85</td>
</tr>
</tbody>
</table>

1 – Source, 2016 Water and Wastewater Rate Survey, AWWA
2 – Includes 10% early payment discount
Questions and Discussion