Rick Giardina  
Executive Vice President  
Raftelis Financial Consultants, Inc.

- Over 40 years utility rate and finance experience  
- Former Chair American Water Works Association, Rates and Charges Committee  
- 2 terms on the US EPA, Environmental Financial Advisory Board  
- Advisor to some of the largest water utilities across the US, Canada and Puerto Rico  
- Served as an arbiter/mediator and expert witness in numerous rate disputes
Demand Management “Assignment”

• April 2018 Board directive to determine the most appropriate method for the allocation and recovery of demand management (DM) costs

  » Phase 1 – Prepare a recommended methodology for updating Metropolitan’s functionalization of demand management program costs – WaterDM

  » Phase 2 – Develop demand management cost recovery mechanisms; whether through Metropolitan’s existing rate structure or alternative cost recovery mechanisms – Raftelis
Metropolitan Cost of Service Process

Step 1: Develop of Revenue Requirements

Step 2: Functionalize Costs

Step 3: Allocate Costs

Step 4: Distribute Costs To Rate Elements
Raftelis Financial Consultants, Inc.

Metropolitan Cost of Service Process

Step 1: Develop of Revenue Requirements
Step 2: Functionalize Costs
Step 3: Allocate Costs
Step 4: Distribute Costs To Rate Elements
History of Metropolitan Functional Assignment for Demand Management

1996
IRP establishes Demand Management in preferred resource mix
Rates unbundled. Demand Management is a functional cost category and the rate is included in transportation based on expected avoided future infrastructure costs.

2001

2015
IRP Update focuses on Adaptive Management. “Climate change may prove to be the most significant challenge to water supply reliability for Southern California.”

2016, 2018
WaterDM project to review and update functional assignment approach

2018-19
Metropolitan retrospectively documents ~ $3 billion in avoided transportation infrastructure.
Adaptive Management
Update Functional Assignment Approach

► **1996 IRP – 25-year forecast through 2020**
  Identified demand management yet to be implemented, avoided future projects

► **Conclusion of 25-year period – Adaptive management**
  No longer infrastructure-driven
  Changes in regional water supply
  Regulatory constraints
  Climate change
  Reliability and variability of imported supply
  Consideration of new supplies

► **2018-19 Project to Update Functional Assignment Approach**
  Research and develop a well-considered, updatable functional assignment method for demand management, to be used as part of Metropolitan’s cost of service process.

*1996 Integrated Water Resources Plan Vols. 1, 2, and 3. Metropolitan Water District of Southern California, pp. 6-1
“Avoided Cost is the marginal cost avoided or saved by choosing one option over another to achieve the same goal.” – AWWA M1, 7th ed.
Functional assignment establishes the allocation of the real costs for demand management to the appropriate cost components, in the appropriate relative share.

Adapted from:


To estimate the relative share of impact of demand management offsets into the foreseeable future for the purpose of setting rates...

WaterDM recommends an incremental cost approach to estimate the relative share of avoided marginal costs using Metropolitan’s categorized budgeted revenue requirements.
## WaterDM – Hypothetical Example

<table>
<thead>
<tr>
<th>Relevant Functional Category</th>
<th>Hypothetical Revenue Requirements* (M$/year)</th>
<th>Demand Management Functional Assignment %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply</td>
<td>$240</td>
<td>20%</td>
</tr>
<tr>
<td>Conveyance and Aqueduct</td>
<td>$600</td>
<td>51%</td>
</tr>
<tr>
<td>Storage</td>
<td>$140</td>
<td>12%</td>
</tr>
<tr>
<td>Distribution</td>
<td>$200</td>
<td>17%</td>
</tr>
<tr>
<td><strong>Total Relevant Category</strong></td>
<td><strong>$1,180</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

*Includes
- Operations and maintenance
- Administrative and general
- Long-term investments and planning

*Excludes
- Demand Management
<table>
<thead>
<tr>
<th>Rate Design Element</th>
<th>Functional Costs Recovered</th>
<th>Type of Charge</th>
<th>2019 [1]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier 1 Supply Rate</td>
<td>Supply</td>
<td>Volumetric ($/af)</td>
<td>$209</td>
</tr>
<tr>
<td>Tier 2 Supply Rate</td>
<td>Supply</td>
<td>Volumetric ($/af)</td>
<td>$295</td>
</tr>
<tr>
<td>System Access Rate</td>
<td>Conveyance/Distribution (Average Capacity)</td>
<td>Volumetric ($/af)</td>
<td>$326</td>
</tr>
<tr>
<td>Water Stewardship Rate</td>
<td>Demand Management</td>
<td>Volumetric ($/af)</td>
<td>$69</td>
</tr>
<tr>
<td>System Power Rate</td>
<td>Power</td>
<td>Volumetric ($/af)</td>
<td>$127</td>
</tr>
<tr>
<td>Treatment Surcharge</td>
<td>Treatment</td>
<td>Volumetric ($/af)</td>
<td>$319</td>
</tr>
<tr>
<td>Capacity Charge</td>
<td>Peak Distribution Capacity</td>
<td>Fixed ($/cfs)</td>
<td>$8,600</td>
</tr>
<tr>
<td>Readiness-to-Serve Charge</td>
<td>Conv./Distr./Emergency Storage &amp; Available Capacity</td>
<td>Fixed (ten-year rolling average $M)</td>
<td>$133</td>
</tr>
</tbody>
</table>

[1] Rates and Charges effective January 1st
Demand Management Cost Recovery Options

Alt #1 – Existing COS Methodology
Alt #2 – Modified COS Methodology
Alt #3 – Functionalized Fixed Charge

Under all options the Water Stewardship Rate would be eliminated
## Alt #1 – Existing COS Methodology

<table>
<thead>
<tr>
<th>Cost Recovery Component</th>
<th>Approx. % of DM Costs (1)</th>
<th>Charge / Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alt #1 T1 Supply</td>
<td>25%</td>
<td>$/AF</td>
</tr>
<tr>
<td>System Access Rate</td>
<td>75%</td>
<td>$/AF</td>
</tr>
</tbody>
</table>

Demand Management Costs recovered under two volumetric rates.

(1) Using hypothetical revenue requirement share
Alt #1 – Existing COS Methodology

Functionalized DM costs recovered from only the Supply Rate and the System Access Rate

• Considerations
  › Consistent with existing Metropolitan cost of service methodology – DM costs allocated like other fixed O&M costs and recouped through the Supply Rate and the System Access Rate
  › Can be consistently repeated using a standardized process
  › Minimal administrative burden
  › Consistent with WaterDM recommendation, i.e., functionalization of DM costs
  › DM costs are only recouped via rates associated with average system demands; not peak or standby
## Alt #2 – Modified COS Methodology

<table>
<thead>
<tr>
<th>Cost Recovery Component</th>
<th>Approx. % of DM Costs (1)</th>
<th>Charge / Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alt #2 T1 Supply</td>
<td>25%</td>
<td>$/AF</td>
</tr>
<tr>
<td>System Access Rate</td>
<td>50%</td>
<td>$/AF</td>
</tr>
<tr>
<td>System Power Rate</td>
<td>13%</td>
<td>$/AF</td>
</tr>
<tr>
<td>Readiness-to-Serve Charge</td>
<td>10%</td>
<td>$/M</td>
</tr>
<tr>
<td>Capacity Charge</td>
<td>2%</td>
<td>$/cfs</td>
</tr>
</tbody>
</table>

Demand Management Costs recovered under variable and fixed rates and charges.

(1) Using hypothetical revenue requirement share
Alt #2 – Modified COS Methodology

Functionalized DM costs recovered from variable and fixed charges and rates

• Considerations
  › Consistent with WaterDM recommendation, i.e., functionalization of DM costs
  › DM costs are recouped via charges and rates associated with average and peak demands, and standby capacity
  › Can be consistently repeated using a standardized process
  › Minimal administrative burden
  › Change from current cost of service approach – this Alt would add DM costs to System Power Rate, Capacity Charge and Readiness-to Serve Charge
    – Unique O&M costs incurred to avoid capital costs and variable power costs
<table>
<thead>
<tr>
<th>Cost Recovery Component</th>
<th>Approx. % of DM Costs (1)</th>
<th>Charge / Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alt #3A DM Charge - Functionalized</td>
<td>100%</td>
<td>Fixed $</td>
</tr>
<tr>
<td>Alt #3B DM Charge – Non-Functionalized</td>
<td>100%</td>
<td>Fixed $</td>
</tr>
</tbody>
</table>

(1) Using hypothetical revenue requirement share
Alt #3A – Functionalized Fixed Charge

Member agencies pay an annual fixed charge based on allocated Demand Management costs

- **Considerations**
  - Consistent with WaterDM recommendation, i.e., functionalization of DM costs
  - Consistent with underlying WaterDM recommendation, i.e., DM expenditures avoid average, peak and standby costs
  - Demand Management costs are largely fixed in nature and this approach provides a fixed revenue source
  - Depending on the allocation approach, potential exists for member agencies to not be allocated any DM costs even though they may demand services at any time
## Alt #3A – Functionalized Fixed Charge (hypothetical)

<table>
<thead>
<tr>
<th>Function</th>
<th>% Rev Req</th>
<th>Supply Portion $M</th>
<th>Transportation Portion $M</th>
<th>Total $M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply</td>
<td>20%</td>
<td>$20</td>
<td></td>
<td>$20</td>
</tr>
<tr>
<td>Conveyance and Aqueduct</td>
<td>51%</td>
<td></td>
<td>$51</td>
<td>51</td>
</tr>
<tr>
<td>Storage - Emergency</td>
<td>4%</td>
<td></td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Storage - Drought</td>
<td>7%</td>
<td>7</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>Storage - Regulatory</td>
<td>1%</td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Distribution</td>
<td>17%</td>
<td>$27</td>
<td>$73</td>
<td>$100</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
<td><strong>$27</strong></td>
<td><strong>$73</strong></td>
<td><strong>$100</strong></td>
</tr>
</tbody>
</table>

Allocate Supply and Transportation Portion of DM costs to member agencies based on some measure of sales and all transactions. For example: historic water deliveries – over a pre-determined historic period: a long-term, multi-year, rolling average of all sales and transactions.
Alt #3A – Functionalized Fixed Charge

Hypothetical Example

**Member Agency A:** for the historic period, had 5% of total Supply Portion and 4% of total Transportation Portion

Supply Portion of DM Costs:

\[ 5\% \text{ of } \$27\text{M} = \$135\text{M} \]

Transportation Portion of DM Costs:

\[ 4\% \text{ of } \$73\text{M} = \$2.92\text{M} \]

Member Agency A – Total Demand Management

Annual Fixed Charge: \$4.27\text{M}
Regional Benefits of Demand Management

• Metropolitan’s annual expenditures for demand management programs are a necessary and legislated expense for the provision of water service across the region.

• For Metropolitan, Demand Management Investments
  › reduce and avoid future capital and other costs
  › increase reliability
  › reduce the region’s reliance on imported water supplies
  › decrease burden on infrastructure
  › free up conveyance capacity

...to the benefit of all existing and potential system users
Alt #3B – Non-Functionalized Fixed Charge

Member agencies pay an annual fixed charge based on allocated Demand Management costs

• Considerations
  › Functionalization of DM costs is not necessary
  › All member agencies would be subject to the DM Fixed Charge
  › Demand Management costs are largely fixed in nature and this approach provides a fixed revenue source
### Alt #3B – Non-Functionalized Fixed Charge (hypothetical)

<table>
<thead>
<tr>
<th>Function</th>
<th>% Rev Req</th>
<th>Total $M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conveyance and Aqueduct</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage - Emergency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage - Drought</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage - Regulatory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distribution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>$100</td>
</tr>
</tbody>
</table>

Allocate DM costs to member agencies based on: population, acreage, assessed value, or some combination thereof.
Alt #3B – Non-Functionalized Fixed Charge

Hypothetical Example

**Member Agency A:** has 5% of the selected metric, e.g., population, acreage, assessed valuation, etc.

Member Agency A – Total Demand Management
Annual Fixed Charge:

\[
5\% \text{ of } \$100M = \$5.0M
\]
## Demand Management Cost Recovery Alternatives

<table>
<thead>
<tr>
<th>Alt</th>
<th>Cost Recovery Component</th>
<th>Approx % of DM Costs</th>
<th>Charge / Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>T1 Supply</td>
<td>25%</td>
<td>$/AF</td>
</tr>
<tr>
<td></td>
<td>System Access Rate</td>
<td>75%</td>
<td>$/AF</td>
</tr>
<tr>
<td>#2</td>
<td>T1 Supply</td>
<td>25%</td>
<td>$/AF</td>
</tr>
<tr>
<td></td>
<td>System Access Rate</td>
<td>50%</td>
<td>$/AF</td>
</tr>
<tr>
<td></td>
<td>System Power Rate</td>
<td>13%</td>
<td>$/AF</td>
</tr>
<tr>
<td></td>
<td>Readiness-to-Serve Charge</td>
<td>10%</td>
<td>$/M</td>
</tr>
<tr>
<td></td>
<td>Capacity Charge</td>
<td>2%</td>
<td>$/cfs</td>
</tr>
<tr>
<td>#3A</td>
<td>Functionalized Charge</td>
<td>100%</td>
<td>Fixed $</td>
</tr>
<tr>
<td>#3B</td>
<td>Non-Functionalized Charge</td>
<td>100%</td>
<td>Fixed $</td>
</tr>
</tbody>
</table>
Next Steps

• Discussion and feedback
• Direction regarding a Preferred Alternative
• Subsequent F&I meeting incorporating feedback – November 4\textsuperscript{th}
• Complete process before the budget and rate cycle begins in January of 2020
Raftelis is a Registered Municipal Advisor within the meaning as defined in Section 15B (e) of the Securities Exchange Act of 1934 and the rules and regulations promulgated thereunder (Municipal Advisor Rule).

However, except in circumstances where Raftelis expressly agrees otherwise in writing, Raftelis is not acting as a Municipal Advisor, and the opinions or views contained herein are not intended to be, and do not constitute “advice” within the meaning of the Municipal Advisor Rule.
Thank you!

Contact: Rick Giardina, CPA
303 305 1136 / rgiardina@raftelis.com