Risk Based Capital Planning and Management Approach

Presented by
Chuck Wolf
Technical Services Manager

Meeting Date: January 28, 2019
Risk Based Capital Management

Objectives
• Improve decision making on asset renewal through improved prioritization of assets across BRA
• Improve long-term capital forecasting through improved assessment of renewal needs

Steering Team
• Blake Kettler, Don Malovets, Jay Middleton, Davy Moore, Brett Thomas, and Connie Tucker
• Brad Brunett, David Collinsworth, Jim Forte, Michael McClendon, David Thompson, and Lauralee Vallon
Risk Based Capital Management

Process, In General

Assess
- Asset Condition & Criticality

Build
- Relative Risk by Asset
- BRA Asset Risk Profile

Prioritize
- Asset Renewal to Lower Risk Profile

Manage
- Long-Term Capital Forecasting
# Risk Based Capital Management

## Assessing Assets...

### 2011 Condition Assessment Standards

<table>
<thead>
<tr>
<th>Condition</th>
<th>Physical Condition</th>
<th>Performance Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>New or practically new</td>
<td>Meets current &amp; future capacity needs OR Meets current and anticipated future regulations OR Minimal maintenance required to function</td>
</tr>
<tr>
<td></td>
<td>&gt;75% of effective useful life remaining</td>
<td>Meets current capacity needs but not future OR Meets current regulations but not future OR Routine maintenance required to function</td>
</tr>
<tr>
<td></td>
<td>75% to 25% of effective useful life remaining</td>
<td>NOT USED OR NOT USED OR NOT USED</td>
</tr>
<tr>
<td></td>
<td>&lt;25% of effective useful life remaining</td>
<td>Does not meet current capacity needs OR Does not meet current or future regulations OR Frequent, costly maintenance required to function</td>
</tr>
<tr>
<td></td>
<td>Failed or failure imminent</td>
<td>2011 Criticality Assessment Standards</td>
</tr>
</tbody>
</table>

### 2011 Criticality Assessment Standards

<table>
<thead>
<tr>
<th>Criticality</th>
<th>1 Low Consequence</th>
<th>2 Medium Consequence</th>
<th>3 High Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety (30%)</td>
<td>No Impact</td>
<td>Minor safety issue resulting in less than 1 day lost time</td>
<td>Serious injury or death to personnel or public</td>
</tr>
<tr>
<td>Customer Service (40%)</td>
<td>No Impact OR Full Redundancy</td>
<td>Short duration localized service outages impacts OR Partial Redundancy</td>
<td>Long duration or Widespread service outages or impacts</td>
</tr>
<tr>
<td>Regulatory Compliance (30%)</td>
<td>No Impact OR Full Redundancy</td>
<td>Minor non-compliance event OR Partial Redundancy</td>
<td>Major State or Federal non-compliance event</td>
</tr>
<tr>
<td>O&amp;M Issues (10%)</td>
<td>No Extraordinary Cost Impact</td>
<td>Significant cost to repair, performed with existing contracts or forces</td>
<td>Large cost to repair, requiring emergency contracts</td>
</tr>
</tbody>
</table>
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Identifying relative asset risk...

Likelihood of Failure x Consequence of Failure x Redundancy = Risk Score

Condition
• Mortality
• Capacity
• Availability
• Obsolescence
• Level of Service

Criticality
• Economic Factors
• Regulatory Factors
• Organizational Factors

Risk Control
• No. of Units Required vs. No. of Units Provided

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Reviewing Risk Profile…

E. Williamson County WTP

- Intake Pumping
- Raw Water Terminal Storage
- Raw Water Pumping
- Rapid Mixing
- East Plant Solids Clarification
- West Plant Solids Clarification
- East Plant Filtration
- West Plant Filtration
- Backwash Recycle
- Finished Water Storage
- High Service Pumping
- Residuals Handling
- Chemical Handling
- Instrumentation & Controls
- Buildings & Grounds
- Yard Piping

Risk Score (Maximum 25)
**Risk Based Capital Management**

Prioritize Assets to Reduce Risk Profile…

- **Business Rule #1: Risk Score**
- **Business Rule #2: Condition Score**
- **Business Rule #3: Remaining Useful Life (RUL)**

<table>
<thead>
<tr>
<th>CIP Group</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediate</td>
<td>Repair/Replace 1 – 5 Years</td>
</tr>
<tr>
<td>Short-Term</td>
<td>Repair/Replace 6 – 10 Years</td>
</tr>
<tr>
<td>Mid-Term</td>
<td>Repair/Replace 11 – 20 years</td>
</tr>
<tr>
<td>Long-Term</td>
<td>Repair/Replace &gt;20 Years</td>
</tr>
</tbody>
</table>
Risk Based Capital Management

Use Asset Groups to Improve Long-Term Capital Forecasting...

<table>
<thead>
<tr>
<th>CIP Group</th>
<th>Definition</th>
<th>Number of Assets</th>
<th>Replacement Cost (000s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediate</td>
<td>1 – 5 Years</td>
<td>371</td>
<td>$20,695</td>
</tr>
<tr>
<td>Short-Term</td>
<td>6 – 10 Years</td>
<td>466</td>
<td>$19,122</td>
</tr>
<tr>
<td>Mid-Term</td>
<td>11 – 20 years</td>
<td>620</td>
<td>$65,156</td>
</tr>
<tr>
<td>Long-Term</td>
<td>&gt;20 Years</td>
<td>25</td>
<td>$3,754</td>
</tr>
</tbody>
</table>

Average Annual Replacement Costs
Next Steps

• FY19 Efforts
  • Establish asset hierarchy to assign criticality information to groups of assets
  • Map hierarchy to Infor financial database
  • Perform gap analysis on asset database
  • Initial assignment of criticality data to asset list
Risk Based Capital Management

Next Steps

• FY20 Efforts
  • Develop condition assessment data for all assets
  • Finalize criticality data for all assets
  • Use prioritization to frame FY21 CIP planning decisions
  • Develop initial estimates of replacement cost and timing for all assets