Water Company Acquisition

Engineering

August 2018
Engineering Summary

• Background

• Water System Overview

• Operational Issues

• Objectives

• Approach under Town Ownership
  – Daily Operation & Maintenance
  – Accelerated Capital Improvement
Background: ~1.3% of MA residential water customers are serviced by a privately-owned water company.

Serviced by publicly owned companies:

Serviced by Aquarion MA/Eversource: 19,772 customers

Serviced by other privately owned companies: 12,988 customers

Sources: MA Department of Public Utilities
Background: MA water regulation

- The Massachusetts Dept. of Environmental Protection (DEP) regulates all MA public water suppliers, regardless of ownership
  - Monitors and regulates water quality and water supply
  - Certifies and licenses treatment and distribution system operators
Water System Overview

- **Water supply sources**
  - Surface water (Accord Pond)
  - Groundwater (Fulling Mill Wells and other wells)

- **Pumping**
  - 12 wells/pump stations
  - Booster station (Hull)

- **Water Storage**
  - 2 tanks: Turkey Hill, Accord Pond

- **Water Treatment Plant**

- **Distribution**
  - ~190 miles of mains
  - Average age = 64.4 years

Sources: March 2011 Tata & Howard Capital Efficiency Plan, Aquarion 2017 Report to DPU
**Issue:**
Lack of coordination with Hingham road-building program

113 roads were resurfaced or rebuilt between 2012 and 2017.
Water mains were replaced in all or some of 8 of them (7% of total).

<table>
<thead>
<tr>
<th>Year</th>
<th>Number roads resurfaced or rebuilt</th>
<th>Roads in which water mains were replaced</th>
<th>Limits of work</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>19</td>
<td>Fairview Leonard</td>
<td>Main -Colby St Colby St. - #6</td>
</tr>
<tr>
<td>2013</td>
<td>12</td>
<td>East</td>
<td>Hingham Rec Skating Club – Cohasset Line</td>
</tr>
<tr>
<td>2014</td>
<td>17</td>
<td>Union</td>
<td>Lazell – Driving Range</td>
</tr>
<tr>
<td>2015</td>
<td>12</td>
<td>Free</td>
<td>Lazell – Weir River Culvert</td>
</tr>
<tr>
<td>2016</td>
<td>33</td>
<td>0</td>
<td>#62 - #86 Croyden – Martin’s Lane #47 continuing around circle to #47</td>
</tr>
<tr>
<td>2017</td>
<td>20</td>
<td>Turkey Hill Lane Surry Tower</td>
<td></td>
</tr>
</tbody>
</table>

*Source: Hingham Town Engineer*
**Issue:**
Lack of coordination with Hingham road-building program

Of the **113** roads resurfaced or rebuilt between 2012 and 2017, **8** contain water mains that were prioritized for replacement by Aquarion commissioned capital studies. The mains were not replaced. Howe Street has already required an emergency street opening.

<table>
<thead>
<tr>
<th>Street</th>
<th>Year Rebuilt/ Resurfaced</th>
<th>2007</th>
<th>2011</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liberty Pole</td>
<td>2012</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Rockwood</td>
<td>2012</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Burditt</td>
<td>2014</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Fearing</td>
<td>2014</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Grist Mill</td>
<td>2016</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Howe</td>
<td>2016</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Howland</td>
<td>2016</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Whitcomb</td>
<td>2016</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
</tbody>
</table>

Sources: Hingham Town Engineer, Tata & Howard Capital Efficiency Plans 2007, 2011, 2014
Issue: Water main breaks and leaks -> lack of coordination with Town road building program

Updated: Hingham Street Opening Permits for Emergency Water Repairs: 2007 – May 2018

2011 – 2018 YTD: **22%** of emergency street openings occurred on roads under the 5-year moratorium. Several roads had more than one emergency repair.

Source: Hingham Town Engineer
Issue: Unaccounted for Water

Updated: Service Area A Unaccounted for Water as Reported by Aquarion

( - MA Standard = 10%)

Sources: MA DEP Website
Issue: Underinvestment in Water Main Replacement

Service Area A: ~ 1 million feet of water mains
10-year average ~ .2% of mains replaced each year
5- and 10-year averages heavily influenced by 2016 (rate-case test year)

“The Company is not in a position to increase the capital budget without introduction of the WRIM mechanism” (Source: D.P.U. 17-90 Exhibit: Towns 7-3, 8 Jun 2018)
Importance of water main investment

“Regular rehabilitation of water mains reduces main failures, leakage, and water quality issues.”

Sources: Tata & Howard 2014 Capital Efficiency Plan Update
Objectives Under Town Ownership

- Ensure daily operations & maintenance result in consistent, high quality service to ratepayers
- Accelerate capital improvement
  - Develop and implement a long-term, comprehensive asset management plan
- Identify and, where appropriate, adopt new technology
- Improve coordination with road-building programs
- Reduce emergency street openings (especially for roads under 5-year moratorium)
- Reduce Unaccounted for Water
- Reduce discolored water complaints
Town’s Initial Approach: Daily Operations & Maintenance

- Contract Operations & Maintenance to experienced water system operator
  - Ensures smooth functioning of operations (including customer service)
  - Provides access to technical and administrative expertise, including new technologies and best practices

- Hire Superintendent who meets MA DEP certification and licensing requirements
  - Ensures effective Town oversight
  - Enables coordination with Town

- Capture and report performance metrics to ratepayers, Town Committees
  - Provides easy public access and visibility
  - Ensures transparency and accountability
  - Facilitates evaluation of Operations & Maintenance system operator
Daily Operations & Maintenance: RFP Status

• Developed RFP based on:
  – DEP requirements
  – Input from former water company employees
  – MA procurement laws

• RFP specifies:
  – 13 minimum requirements (see Appendix)
  – 5 comparative criteria

• Issued RFP on July 16
  – Responses due August 13

• While binding, responses are contingent upon Town Meeting approval of purchase

*RFP responses will also allow the Town to validate operations & maintenance costs included in the financial analysis.*
1. Contract experience with the provision of water system operations & maintenance of at least 12,000 customers

2. Experience with transition from a current water system operator to a new water system operator with uninterrupted operations and customer service

3. Experience with a water distribution system with miles of water mains

4. Experience in sludge dewatering process plants

5. Experience in dealing with various sources of water supply
Towns Approach to Accelerated Capital Improvement

- Needs and priorities
- Funding
- Coordination and communication
Capital Needs and Priorities

- Utilize DPU Annual Report, infraPLAN KANEW study and Tata & Howard Capital Efficiency Plans (2007, 2011, 2014) to prioritize capital needs (highlights in Appendix)

- Where appropriate, apply methodologies used by Capital Outlay Committee and Town road-building program

- Commission additional capital/engineering studies as needed

- Utilize state procurement process to select capital improvement vendors
Funding for Capital Investment

- Ensure Town financial analysis includes sufficient funding for capital
  - $3 million funding available upon purchase
  - $2 million annual investment (starting Year 1)
  - Cumulative Capital Investment:
    - 5 years = $13 million (avg $2.6 million/year)
    - 10 years = $23 million (avg $2.3 million/year)
    - 30 years = $63 million (avg $2.1 million/year)
- Pursue federal and state grants available to publicly-owned water companies
Cost of Capital Improvements: Town vs. Aquarion

There are important differences in the cost of capital improvement projects under Town ownership.

**Differences that will reduce the cost of capital improvements**

- Greater coordination of water main replacement with road-building projects:
  - Lower cost to replace mains
  - Fewer emergency repairs (often more expensive)
  - Increases longevity of road, reducing road maintenance costs
- Lower interest rates on capital projects financed with debt
- No guaranteed profit

**Differences that will increase the cost of capital improvements**

- MA Prevailing Wage Law
Coordination and Communication

- Coordinate main replacements with Town road-building work
- Review 5-year capital plan with governing bodies
- Publish annual capital report and make available to ratepayers
  - Similar in scope to annual report of Capital Outlay Committee
Summary: Town’s Approach

- **Daily Operations & Maintenance**
  - Contract Operations & Maintenance to experienced water system operator
  - Hire full-time water-system manager who meets MA DEP certification and licensing requirements
  - Capture and report performance metrics to ratepayers, Town Committees

- **Accelerated Capital Improvement**
  - Use existing studies to identify and prioritize capital needs; commission additional studies as needed
  - Adequately fund capital needs
  - Coordinate water main replacements with road-building schedules, publish annual capital report
Water Company Acquisition

*Engineering Appendix*

August 2018
Daily Operations & Maintenance: RFP Minimum Criteria

- Contract **experience** with full-service water system operations and maintenance for systems of similar size
- Understanding and **compliance with MA Dept. of Environmental Protection** monitoring requirements and regulatory conditions
- **Staffing levels**
  - Meet MA certification requirements
  - Willingness to accommodate Town’s preference to **first consider existing water company employees for employment**
  - **Plant operators licensed** by the Licensing Board of Drinking Water Supply Facilities
- **Experience in the procurement** of all necessary chemicals, consumables...to operate and monitor Service Area A assets
- **Experience with the Supervisory Control And Data Acquisition (SCADA) software** currently installed
- **Experience utilizing a Computerized Maintenance Management System** for keeping records (corrective and preventive maintenance)
Daily Operations & Maintenance: RFP Minimum Criteria

- Process implementation and proposed schedules with adequate:
  - Pumping station and water treatment plant meter calibration
  - Customer meter reading and meter replacement
  - Water main flushing
  - Exercising of gates and valves
  - Corrosion protection
  - Leak detection
  - Hydrant inspection and functioning
  - Seasonal services
  - Routine building and ground maintenance

- Company organization and financials
- Explanation of company’s customer service procedures
- 100% Performance Bond
- At least 3 municipal references
- Certificate of Non-Collusion
- Insurance coverage
DPU Annual Return Highlights

- Financial statements
- Real-estate holdings; land and buildings
- Supply information
- Pumping information
  - Including equipment type and age, amount of water pumped
- Distribution information
  - Size, material, and length of water mains
  - Water towers and stand pipes
  - Service pipe
  - Gates and valves (number, type, size)
  - Hydrants
  - Meters
- Consumption
- Rates
Water Distribution System overview

Water Supply and Storage Evaluation

Hydraulic Model Verification and Evaluation (flow)

Critical Component Assessment

Asset Management
  - Rating of all water mains

Recommendations and Conclusions
  - Including prioritization of improvements
infraPLAN KANEW Study Content

- Water main data
  - Number
  - Age
  - Break rate

- Break rate and investment cost

- Future rehabilitation needs per asset type

- Capital investment scenarios
  - Recommendation: $1.8 million annual capital investment for water mains for all of MA through 2070
    ➔ (@72% = ~ $1.3 million/year for Service Area A)
Capital Improvements to water system since previous rate case (2012)*

• **Water Treatment Plant improvements**
  – New SCADA system
  – New roof
  – Rehabilitation of centrifuges
  – New chemical system tank and pumps
  – New instrumentation and water quality analyzers
  – New electrical equipment and lighting
  – VFDs for distribution pumps

• **Water system improvements**
  – New transmission main piping
  – Pump station rehabilitation and upgrades
  – New water supply pumps
  – Emergency generator

• **Water main replacements**
  – Hingham: Union, Lazell, Free, East, Fairview, Leonard, Playground
  – Hull: Edgewater, Sunset, Cadish, Atherton, Prospect, Rockland

* Source: Aquarion “Request for Water Rate Increase” presentation to Town 20 March 2017