Regional Wastewater System Study
Naugatuck Valley Council of Governments

Workshop 2
Governance Model & Intro to Cost-Benefit Analysis
June 8, 2021
## Presenters

- David Colton
- Sarah Concannon

## Agenda

<table>
<thead>
<tr>
<th></th>
<th>Ownership Model Recommendation</th>
<th>5 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Review of Governance Models</td>
<td>10 minutes</td>
</tr>
<tr>
<td>3.</td>
<td>Introductory Discussion of Cost-Benefit Analysis</td>
<td>15 minutes</td>
</tr>
<tr>
<td>4.</td>
<td>Next Steps</td>
<td>&lt;5 minutes</td>
</tr>
<tr>
<td>5.</td>
<td>Q &amp; A Session</td>
<td>15 minutes (or more)</td>
</tr>
</tbody>
</table>
Ownership Model Recommendation

Ownership and rate models

• The Collins Center reviewed ownership and rate models and presented them at a workshop held October 15, 2020. Options discussed included:
  • Full Ownership/Retail Rate Structure
  • Partial Ownership/Wholesale Rate Structure
• Based on stakeholder preferences, a new option to consider is a Full Ownership/Wholesale Rate Hybrid Structure

Full Ownership is recommended

• More efficient, eliminating an unnecessary layer of bureaucracy
• Preferred by regulatory agencies because the regional authority is accountable for the entire system
• Greater opportunity for grant funding
• Previous workshop and follow-up survey produced no clear preference among municipal representatives

Equity is an essential issue for final rate design

• Final rate design will require a cost-of-service study and analysis to ensure that costs are recovered in an equitable manner
Locally-owned wastewater systems are transferred, *in their entirety*, to a newly created regional water pollution control authority that:

- collects, transports, treats, and disposes of all wastewater generated by the member communities;
- develops rates and charges, rules and regulations, and billing systems;
- and provides customer service directly to the end users of the system.
How Full Ownership Works

RESIDENTS & BUSINESSES

flow

REGIONAL WPCA

responsible for setting:
- rules & regulations
- retail rates

customer service relationship

DISSOLVED

LOCAL WPCA
Governance Models – Organizational Structure

The project team reviewed the governance models of a dozen regional authorities across southern New England.
Governance Models – Overview

Enabling legislation options

- Connecticut Model Legislation (Chapter 446K Sections 22a-501 to 519) or Special Legislation are used to create districts

Governance structure documents

- Ordinances, Bylaws, and Intergovernmental Agreements are commonly used to establish structure and operating procedures
- Collins Center will provide drafts of both the ordinance and bylaws
Enabling Legislation Recommendation –
Connecticut Model WPCA Statute

• **Established Track Record.** The model statute is in use in CT, most notably by the New Haven Region

• **It is Timely.** Creating Special Legislation would delay creation of the district

• **Meets Established Criteria.** It meets the criteria set forth by the State which will aid in obtaining necessary approvals

• **Grant Funding.** The statute contains language providing for increased grant funding to support regionalization

• **Comprehensive.** It is a complete statute that contains all the necessary language enabling district formation, financing, land acquisition, project planning and construction, and staff selection
How to Establish the Regional WPCA

- **Concurrent Action.** Each municipality’s legislative body must concurrently adopt an ordinance that establishes the regional WPCA.

- **Approval Required.** The ordinance and a “preliminary plan of operation” must be approved by the DEEP Commissioner and State Treasurer.

- **Board of Directors.** The ordinance establishes a Board of Directors that adopts sewer rules and regulations and hires officers.

- **Bylaw Required.** The powers and duties of the Board and officers are spelled out in the ordinance, and initial bylaws are also adopted by the constituent municipalities.
<table>
<thead>
<tr>
<th>Regional Entity</th>
<th>Size</th>
<th>Terms</th>
<th>Representation Model</th>
<th>Appointment and Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolton Lakes Regional Water Polln Control Authority</td>
<td>8</td>
<td>3 years</td>
<td>Bolton - five (5) members and two (2) alternates; Vern - three (3) members and one (1) alternate</td>
<td>Bolton via Selectmen; Vernon via Mayor with approval of Town Council</td>
</tr>
<tr>
<td>Greater New Haven Water Polln Control Authority</td>
<td>9</td>
<td>3 years</td>
<td>New Haven - four (4) members; East Haven &amp; Hamden - two (2) members each; Woodbridge - one (1) member</td>
<td>New Haven via Mayor with approval of Aldermen; East Haven &amp; Hamden via Mayor with approval of Town Council; Woodbridge via Selectmen</td>
</tr>
<tr>
<td>Metropolitan District Comm.</td>
<td>29</td>
<td>Varies</td>
<td>Member municipalities – one (1) commissioner each [total 17]; Governor - eight (8) commissioners; Connecticut Legislature- four (4) commissioners Non-member towns - Four (4) ex-officio commissioners</td>
<td>Appointments by Governor &amp; Legislature are for terms of six (6) years, while municipal appointments last until they are replaced</td>
</tr>
<tr>
<td>Mattabassett District</td>
<td>15</td>
<td>3 years</td>
<td>Formula determines Board representation, which can change</td>
<td>Middletown &amp; New Britain via Mayor with approval of Common Council; Berlin &amp; Cromwell via Town Council</td>
</tr>
<tr>
<td>New London Water &amp; Water Polln Control Authority</td>
<td>N/A</td>
<td>N/A</td>
<td>This regional wastewater entity was established by an intermunicipal agreement and has no unifying board</td>
<td>N/A</td>
</tr>
<tr>
<td>Charles River Water Polln Control District</td>
<td>5</td>
<td>3 years</td>
<td>Franklin appoints three (3) members; Medway appoints two (2) members</td>
<td>Franklin via Town Council; Medway via Selectmen</td>
</tr>
<tr>
<td>Massachusetts Water Resources Authority</td>
<td>11</td>
<td>Varies</td>
<td>Governor - three (3) members; Mayor of Boston - three (3) members; Mayor of Quincy - one (1) member; Council President of Winthrop - one (1) member; MWRA Advisory Board - three (3) members</td>
<td>Appointments made by the Governor and Mayors of Boston and Quincy are coterminous with their respective terms in office; appointments made by Council President of Winthrop are four (4) years; MWRA Advisory Board appointments serve for terms of six (6) years</td>
</tr>
</tbody>
</table>
# Representation Models of Peer Entities

<table>
<thead>
<tr>
<th>Regional Entity</th>
<th>Size</th>
<th>Terms</th>
<th>Representation Model</th>
<th>Appointment and Term</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mansfield Foxborough Norton Regional Wastewater District</strong></td>
<td>7</td>
<td>3 years</td>
<td>Foxborough - two (2) Commissioners; Mansfield - three (3) Commissioners; Norton - two (2) Commissioners</td>
<td>Each member municipality appoints their Commissioners through their respective Water &amp; Sewer Boards/Commissions. One (1) of Norton’s Commissioners is appointed by the Board of Selectmen.</td>
</tr>
<tr>
<td><strong>South Essex Sewerage District</strong></td>
<td>6</td>
<td>Varies</td>
<td>Member municipalities – one (1) member each Governor – one (1) member *some specific requirements for membership</td>
<td>It mandated that the DPW Directors of Beverly and Salem serve on the Board. Danvers and Marblehead Selectmen appoint their Board Members. Governor’s appointment must live outside the district.</td>
</tr>
<tr>
<td><strong>Springfield Water &amp; Sewer Commission</strong></td>
<td>3</td>
<td>3 years</td>
<td>Mayor of Springfield – all three (3) commissioners</td>
<td>Appointed by the Mayor of Springfield, with approval from the City Council</td>
</tr>
<tr>
<td><strong>Upper Blackstone Water Pollution Abatement District</strong></td>
<td>11</td>
<td>3 years</td>
<td>Worcester – five (5) members; Other member municipalities – one (1) member [Total 6]</td>
<td>Auburn &amp; Cherry Valley Sewer District via Sewer Commissioners; Holden &amp; Millbury via Town Manager; Rutland via Selectmen; West Boylston via Town Administrator; Worcester via City Manager</td>
</tr>
<tr>
<td><strong>Narragansett Bay Commission</strong></td>
<td>19</td>
<td>3 years</td>
<td>Governor – ten (10) commissioners; Mayor of Providence – two (2) commissioners; Other member municipalities – one (1) commissioner [Total 7]</td>
<td>Municipal members are appointed by respective mayors and administrators</td>
</tr>
</tbody>
</table>
Recommended Design of the Board of Directors

- **Recommended Representation.** Three members from each municipality, three-year staggered terms, and the appointing authorities are the same as for the existing local WPCAs.

- **Super Majorities Recommended.** Six votes are required to adopt budgets, determine user fees, and issue debt and at least one voting member from each community must be among the super-majority.

- **Recommended Eligibility.** Directors must reside in the district and have relevant environmental, engineering, or financial knowledge or experience.
Key Ordinance and Bylaw Provisions

• **Officers.** Board appoints an Executive Director (CEO), Treasurer, and Secretary

• **Budgeting.** Executive Director prepares operating and capital budgets for Board approval

• **Cost-of-Service Study.** Annual requirement prior to rate setting

• **Annual Audit.** An external and independent audit is required

• **Rules and Regulations.** Board must adopt sewer user rules and regulations
Cost-Benefit Analysis – Scope of Work

“Complete a cost-benefit analysis that compares capital and O&M costs of preferred alternative(s) with base case costs for the jurisdictions that are part of the preferred regional alternative(s) in the aggregate” and

“Model costs to each jurisdiction participating in the proposed regional system under the agreed upon wholesale rate-setting procedures as defined in the draft by-laws, using data provided by B&V regarding wastewater flows...”

Notes:

• Wholesale rate structure may not necessarily be the preferred or recommended model, so we will also explore modeling costs using a retail rate structure (discussed later)

• Our work relies on the work of B&V, but was developed independently and with different goals
Goals and Limitations

- **Comprehensive** - As much as possible given available data, the analysis incorporates all known, quantifiable financial implications of regionalization;

- **Valid** – In order to have a valid finding, the analysis should make only “apples-to-apples” comparisons; and

- **Equitable** – When determining how to model the treatment of certain costs, the project team defaulted to the most equitable option. However, there are multiple ways to consider equity, and some decisions must be left to the municipal leaders to make

- Limitations include unknown and/or unquantifiable financial implications such as infrastructure decommissioning or transition costs and future regulatory costs
Assumptions

- **Timeline** — The model assumes that regional WPCA will be formed in FY22, Phase I collection system investment will begin immediately with debt repayment starting in FY24, and for pumping station, treatment, and conveyance capital: engineering in FY23, construction in FY24-25, and debt repayment beginning in FY26.

- **Operating & maintenance cost projections** — The model relies on O&M costs projected by B&V, annualized for the study period using the same methodology for each scenario. They are, in some cases, materially different from the budgets of the existing WPCAs because they are based on industry standard practices and costs. The project team determined that, despite these differences, the model should rely on projected O&M costs to ensure a valid finding. A 9% adjustment was added.

- **Existing debt and future capital costs** — The model relies on existing debt as reported by the municipalities and projected capital costs from B&V. Phase II collection system costs are treated as pay-as-you-go capital. The project team included costs for non-infrastructure capital such as vehicles at an annual rate of 3% of the O&M budget.

- **Structure of debt** — In order to project annual debt service, the project team assumed that all debt would be issued through the CT Clean Water Fund for a 20-year term at 2% interest with level debt repayment. No borrowing costs or short-term debt were modeled.
Assumptions continued

• **Financial incentives**— The model includes grants from DEEP to partially reimburse debt associated with capital improvements. For single-jurisdiction WPCAs (i.e., the base cases), the model assumes a 20% reimbursement, whereas for a regional WPCA, the model assumes 25%.

• **Apportionment of costs**— The shared costs in a regional system are apportioned to the municipalities based on the average annual flow forecasted by B&V.

• **Funds held in reserve**— To the extent the existing WPCAs hold any reserve or stabilization funds, the model does not account for these funds. These funds may be used to stabilize user fees during or after the transition to regionalization, or for any other legal purpose.

• **Strength of influent**— The model does not account for differing costs for treatment of sewerage based on its strength. Based on the project team’s understanding of the user base, there are no significant industrial or other users that would produce waste that is significantly costlier to treat.
Total Annual Cost Analysis

• This analysis will model the total annual cost to each municipality for the study period for the base case and regional alternative 5b. The regional alternative scenario was modeled under the full ownership option.

• How will this be different from B&V’s Present Worth Cost Comparison?
  • Shows costs each year for the study period
  • Includes an adjusted O&M cost
  • Includes all existing debt service
  • Amortizes future debt for capital investment to calculate annual debt service
  • Adds a non-infrastructure capital cost (3% of annual O&M)
  • Costs are not reported in the aggregate, but rather are allocated to the municipalities
## How Costs are Allocated

<table>
<thead>
<tr>
<th>Cost Category</th>
<th>Full Ownership</th>
<th>Base Case</th>
</tr>
</thead>
<tbody>
<tr>
<td>O&amp;M Expenses</td>
<td>Apportion by flow</td>
<td>100% to each municipality</td>
</tr>
<tr>
<td>Existing Debt</td>
<td>Apportion by flow</td>
<td>100% to each municipality</td>
</tr>
<tr>
<td>New Treatment &amp; Conveyance Capital</td>
<td>Apportion by flow 25% DEEP grant</td>
<td>100% to each municipality 20% DEEP Grant</td>
</tr>
<tr>
<td>New Collection &amp; Pumping Capital</td>
<td>Apportion by flow 25% DEEP grant</td>
<td>100% to each municipality 20% DEEP Grant</td>
</tr>
</tbody>
</table>
Cost Recovery Rate Analysis

- This analysis will calculate a cost recovery rate for each municipality and scenario for the study period under a full ownership structure. The rate is calculated as the cost per hundred cubic feet (ccf) of billable water.

- Billable water consumption is frequently used as a proxy for quantifying estimated consumer sewer usage. All three municipalities at least partially employ this method.

- A cost recovery rate is **not** the same as the rate that will ultimately be billed to customers. Reasons include:
  - Rate design features, such as flat fees and inclining block rate structures
  - Off-setting revenue (including well user fees)
Retail Rate versus Wholesale Rate Hybrid Structure

Process for calculating rates

<table>
<thead>
<tr>
<th>Retail Rate Structure</th>
<th>Wholesale Rate Hybrid Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Costs are aggregated</td>
<td>1. Costs are aggregated</td>
</tr>
<tr>
<td>2. Billable water data is aggregated</td>
<td>2. Costs are apportioned based on actual flow data</td>
</tr>
<tr>
<td>3. Total cost is divided by total billable water</td>
<td>3. Each municipality’s total cost is divided by its total billable water</td>
</tr>
<tr>
<td>4. Single rate is calculated, applicable to all users</td>
<td>4. Multiple rates are calculated, one for each municipality</td>
</tr>
</tbody>
</table>

Although the retail rate structure may be preferred for its administrative simplicity and perceived equity, the wholesale rate hybrid structure has certain benefits:

- Addresses any differences in how or how efficiently billable water is measured and subsequent inequities between users in different municipalities
- Could allow each municipality to have local control over rate design, if the regional WPCA assessed the community and each recovered costs from users as it saw fit
- Still allows the regional WPCA to be structured under a full ownership model
Challenges in Modeling the Retail Rate Structure

- To ensure inter-municipal equity when using the retail rate structure, billable water should be close to proportionally accurate, but this does not seem to be the case.

  *Average Annual Flow, 2015-2017 (MGD)*

<table>
<thead>
<tr>
<th></th>
<th>Ansonia</th>
<th>Derby</th>
<th>Seymour</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>37.5%</td>
<td>28.6%</td>
<td>33.9%</td>
</tr>
<tr>
<td>2016</td>
<td>40.9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td>25.3%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- At this phase, modeling cost recovery rates with the wholesale rate hybrid structure may be the more accurate, equitable, and useful analysis for the stakeholders.

- A retail rate model could eventually be used after deeper analysis of billable water data to understand why there appear to be differences.

- This demonstrates the need for a cost-of-services study and rate and fee structure design.
Next Steps

Final Workshop
• Date to be announced
• Focus will be on the findings of the cost-benefit analysis
• All recommendations will be summarized and reviewed

Final Report
• Collins Center will prepare and transmit the final report to NVCOG after completion of the final workshop
• Additional public presentation is possible
Thank you!

PLEASE CONTACT WITH ANY QUESTIONS:

David Colton
David.Colton@umb.edu
Cell Phone: 781-964-6713