Strategies for Water Utility Resilience: Chemical Consortiums and Emergency Preparedness

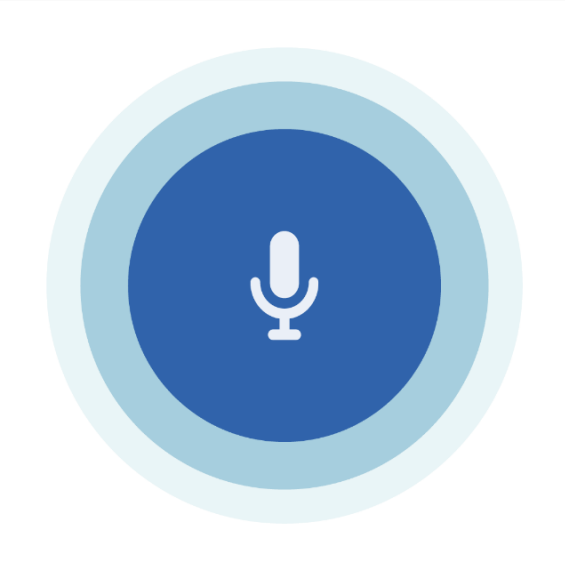


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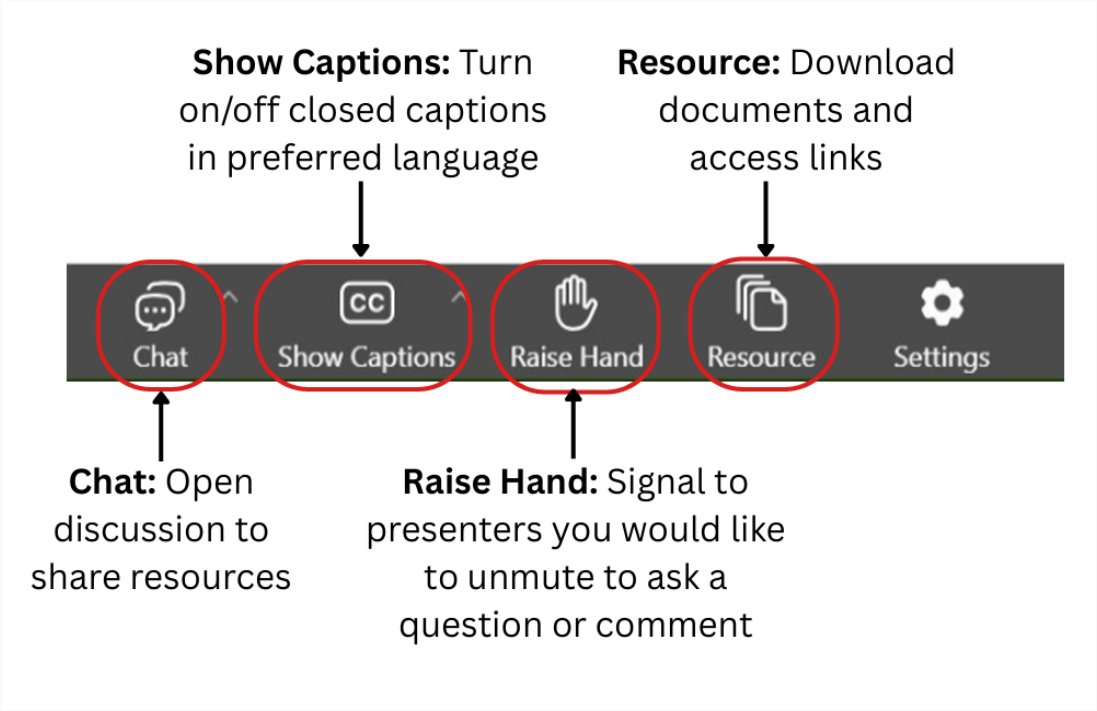
MassDEP

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TCH certificates will be emailed within two (2) weeks to eligible participants.

Presenters

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Poll Questions

1. What is the population of your system? (multiple choice)
    a) 3,300 or less
    b) 3,301 to 10,000
    c) over 10,000
    d) Unknown population/not a system

2. List top three (3) chemicals purchased (short answer)

3. What is your estimated cost per year for chemicals? (short answer)

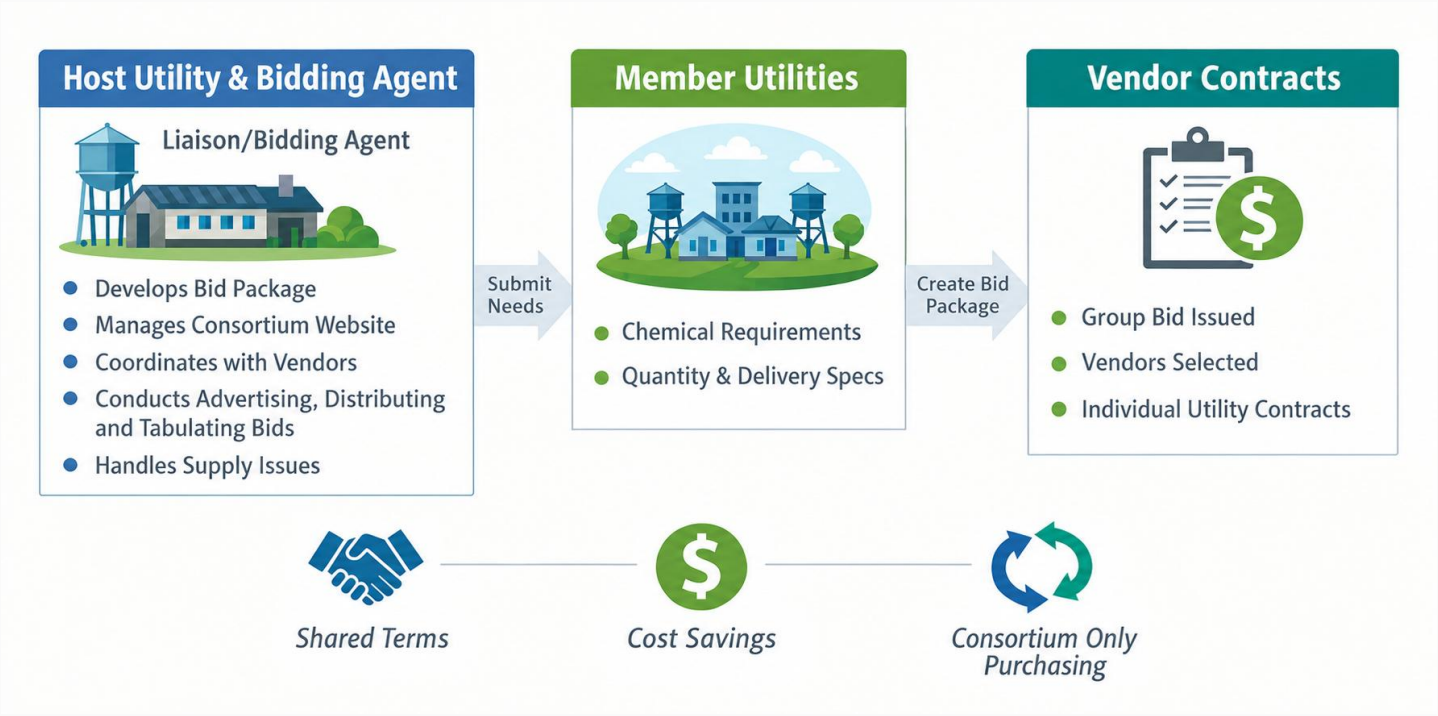
The Problem

- Water utilities depend on a reliable chemical supply
- These chemicals are essential for:
  - Disinfection
  - Corrosion control
  - pH adjustment
- COVID-19 exposed vulnerabilities with supply chain
- Even short-term shortages can lead to:
  - Operational challenges or treatment interruptions
  - Increased costs from emergency purchase
  - Risk of regulatory non-compliance and public health impacts





How a Chemical Consortium Works



How a Chemical Consortium Works continued

- A lead utility serves as the host and primary point of contact for the consortium
- A designated Liason/Bidding Agent coordinates procurement by:
    - Developing the annual bid package and managing the consortium website and bid materials
    - Communicating and coordinating with vendors
    - Addressing issues during the contract period (e.g., supply disruptions, force majeure)
- Each year, member utilities submit:
    - Required treatment chemicals and lab supplies
    - Estimated quantities and delivery specifications
- The consortium compiles this information into a single bid package and solicits vendor responses
- After vendor selection:
    - Each utility signs its own contract with selected vendors
    - Contracts follow shared consortium terms and conditions, including requiring members agree to procure through consortium vendors only

Eastern Mass Chemical Cooperative

- Established to increase purchasing power for treatment chemicals for water and wastewater utilities in southeast Massachusetts
- Lead by a host utility that rotates annually and is responsible for:
  - Coordinating communication among participating utilities
  - Maintaining and sharing a list of suppliers
  - Advertising bids through COMMBUYs and local newspapers
  - Managing the bid process, including tabulating and distributing bid results to participating communities

Eastern Mass Chemical Cooperative continued

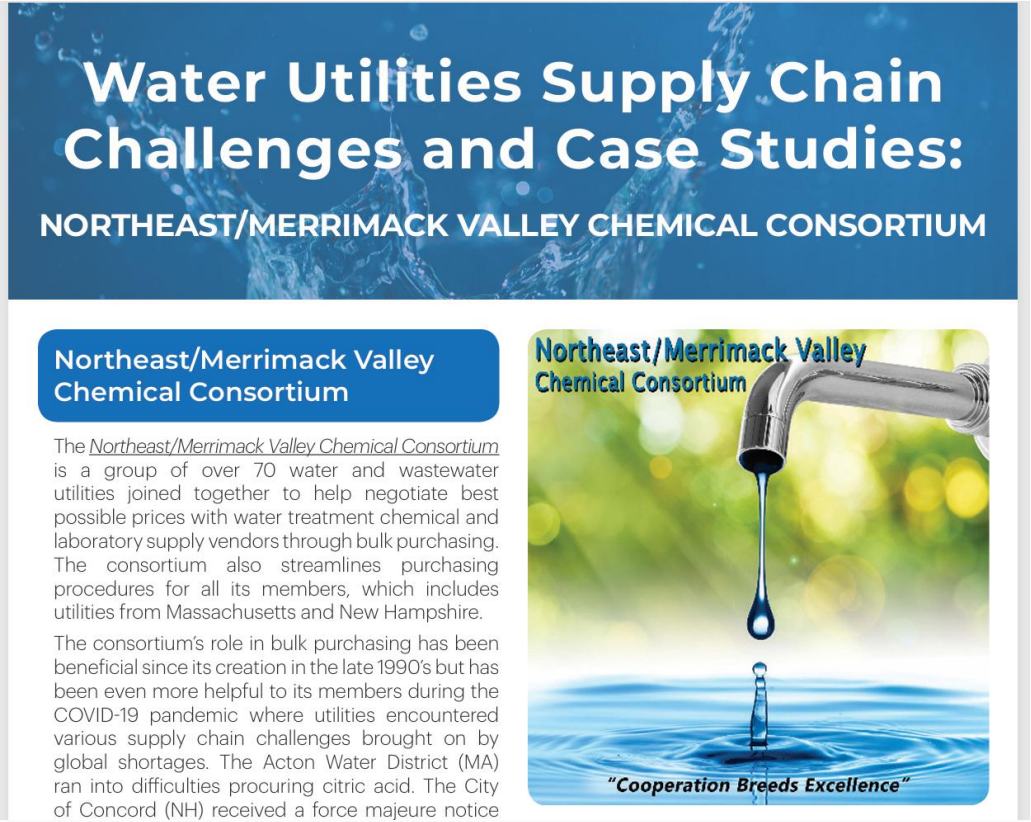
- Members utilities review bids and contract directly with the lowest-cost supplier
  - Suppliers are held accountable to contract conditions, including delivery timeline and chemical standards; failure to meet requirements results in covering cost difference for chemicals sourced from second lowest-cost supplier
  - Uses American Water Works Association standards for chemicals. When standards are not available, the consortium creates their own standards
- Utilities are required to agree to membership conditions, attend at least one meeting, and submit chemical needs and delivery information
- No cost to participate; members may choose to not renew at the end of a contract with no penalty

Eastern Mass Chemical Cooperative Participating Communities

Abington	Avon	Braintree	Cohasset
Dedham	Duxbury	East Bridgewater	Edgartown
Halifax	Hanson	Holbrook	Hopkinton
Kingston Sewer	Kingston Water	Norwell	Pembroke
Plymouth	Randolph	Rockland	Scituate Sewer
Scituate Water	Tisbury	Westwood	Weymouth

Chemicals Previously Purchased Through Eastern MA Chemical Cooperative

1. Aluminum Sulfate
2. Copper Sulfate
3. Ferric Chloride
4. Hydrated Lime
5. Hydrofluorosilicic Acid (25%)
6. Liquid Chlorine
7. Magnesium Oxide
8. Methanol
9. Ortho/Poly Blended Phosphate
10. Phosphoric Acid (75%)
11. Polyaluminum Chloride
12. Polymer- Cationic, Dry Polymer
13. Polymer – Nonionic, Polyacrylamide
14. Polymer – Cationic, PolyDADMAC
15. Potassium Hydroxide (45%)
16. Powdered Activated Carbon
17. Sodium Bicarbonate
18. Sodium Bisulfate
19. Sodium Carbonate
20. Sodium Chlorite (25%)
21. Sodium Fluoride
22. Sodium Hexametaphosphate
23. Sodium Hydroxide
24. Sodium Hypochlorite
25. Sodium Permanganate
26. Zinc Metaphosphate



Water Utilities Supply Chain Challenges and Case Studies:

NORTHEAST/MERRIMACK VALLEY CHEMICAL CONSORTIUM

Northeast/Merrimack Valley Chemical Consortium

The *Northeast/Merrimack Valley Chemical Consortium* is a group of over 70 water and wastewater utilities joined together to help negotiate best possible prices with water treatment chemical and laboratory supply vendors through bulk purchasing. The consortium also streamlines purchasing procedures for all its members, which includes utilities from Massachusetts and New Hampshire.

The consortium's role in bulk purchasing has been beneficial since its creation in the late 1990's but has been even more helpful to its members during the COVID-19 pandemic where utilities encountered various supply chain challenges brought on by global shortages. The Acton Water District (MA) ran into difficulties procuring citric acid. The City of Concord (NH) received a force majeure notice

EPA Article: Water Utilities Supply Chain Challenges and Case Studies: Northeast/Merrimack Valley Chemical Consortium

Northeast/Merrimack Valley Chemical Consortium

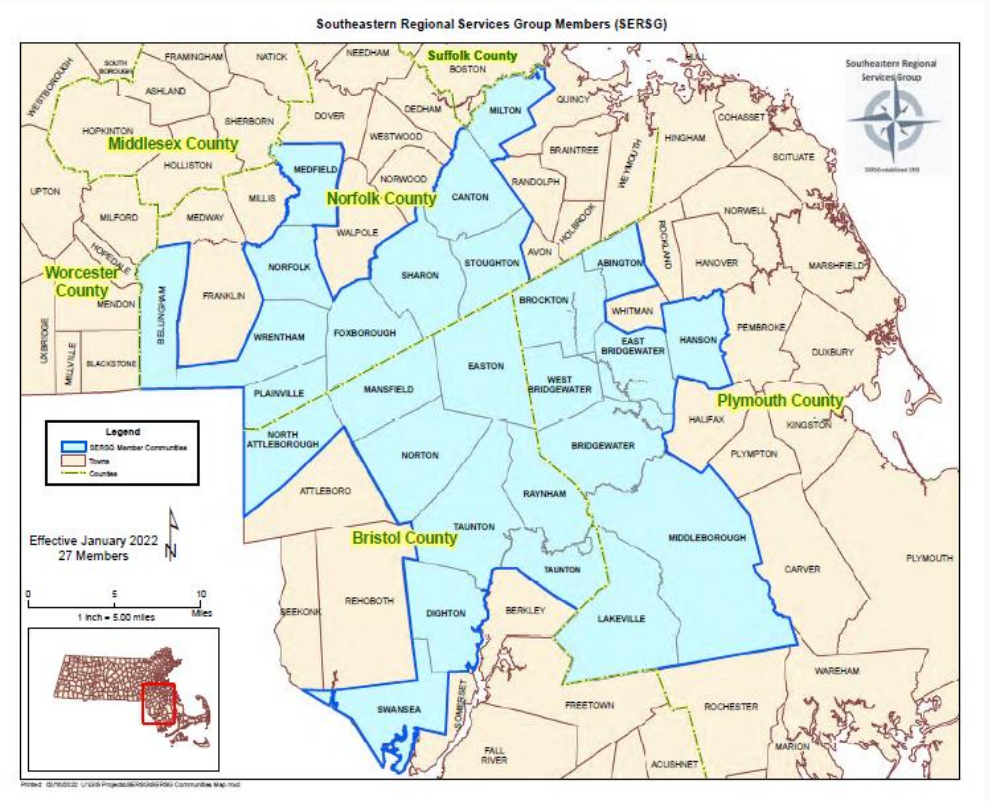
- Regional consortium over 70 water and wastewater utilities in Massachusetts and New Hampshire
- A collaborative procurement and support network that:
  - Coordinates bulk chemical purchasing and reliable delivery
  - Shares supply information across utilities
  - Supports members during shortages
  - Acts as a communication hub

Northeast/Merrimack Valley Chemical Consortium Participating Communities (2026)

- Acton
- Amesbury
- Amesbury Wastewater
- Andover
- Ashland
- Auburn
- Ayer Wastewater Dept.
- Ayer Water Dept.
- Barre Water Dept.
- Billerica Water TP
- Billerica Wastewater
- Burlington
- Canobie Lake Park
- Chelmsford
- Concord, MA
- Concord, NH
- Danvers
- Dover, NH
- Dracut
- East Chelmsford
- Essex
- Fitchburg Water Divison
- Fitchburg Wastewater Divison
- Georgetown
- Grafton
- Greater Lawrence Sanitary District
- Groton
- Groveland
- Hamilton
- Hudson
- Hudson
- Holden
- Holliston
- Hooksett, NH Village
- Hooksett, NH Wastewater Treatment Plant
- Ipswich
- Jaffrey, NH Utilities
- Keene N.H. Water & Wastewater Depts.
- Laconia, NH Water Works
- Lawrence
- Lincoln
- Littleton Water Dept.
- Lowell Regional Wastewater Utility
- Lunenburg
- Lynn
- Manchester
- Maynard
- Merrimac
- Methuen
- Millis
- Newburyport Water Works
- Newburyport Wastewater TP
- Natick
- Nashua N.H. Wastewater Treatment Facility
- North Andover
- North Chelmsford
- North Reading
- Peabody
- Peterborough WWTF
- Raymond NH Water Dept.
- River Crossing Condominium
- Rowley
- Salisbury
- Shirley
- Shrewsbury
- Salem, N.H.
- Sterling
- Sudbury
- SWSS
- Tewksbury
- Topsfields
- Townsend
- Webster
- Upper Blackstone Clean Water
- Wellesley
- West Boylston
- West Brookfield
- West Groton
- Westford
- West Newbury
- Wilmington
- Winchester
- Woburn
- Worcester

Southeastern Regional Services Group (SERSG)

- Consortium of 27 municipalities located in Bristol, Norfolk, and Plymouth Counties
- Administers bids
  - **Annually** for Water & Sewer Treatment Chemicals, DPW Services, DPW Supplies
  - **Every two years** for Office Supplies
  - **Every three years** for Drug & Alcohol Testing services



Benefits of a Chemical Consortium

Information Sharing

- Real-time communication on:
  - Supply shortages
  - Vendor issues
  - Topics unrelated to chemicals and supplies, such as salaries and cross-connection control programs
- Early warning system for disruptions

Bulk Purchasing

- Aggregates demand across utilities
- Negotiates better pricing with vendors
- Improves contract stability
- Reduces competition between utilities

Emergency Resource Sharing

- Utilities redistribute chemicals when shortages occur
- Support network with peers
- Prevents treatment interruptions

Case Example: Acton Water District

- Acton Water District was running low on their supply of liquid citric acid
- Littleton Electric Light & Water Department is another consortium member and uses granular citric acid
- Following discussion, Littleton Water Department split its last delivery of granular citric acid with Acton Water District
- Acton Water District purchased a mixer, tank, and a transfer pump to make liquid citric acid and avoid disruptions in their treatment process

Poll 2 (Proposed place)

1. Which of the following is **NOT** a benefit of a chemical consortium?
    a) Bulk purchasing
    b) Outsourcing employees
    c) Information sharing
    d) Emergency response sharing

Operational Strategies to Prevent Supply Disruptions

Storage Adjustments

- Increasing on-site chemical storage capacity where possible
- Stockpiling critical chemicals

Financial Adjustments

- Working with vendors on a payment plan
- Spreading costs over time to manage budget impacts from price increases

Flexible Operations

- Accepting deliveries at any time/day to avoid missed shipments
- Adjusting procurement timelines based on availability

Emergency Response Planning (ERP) for Chemical Supply Disruptions

- Including chemical supply disruptions in your ERP helps ensure an efficient and effective response in the event of an emergency
- This can look like:
  - **Identifying critical treatment chemicals** and establishing minimum inventory thresholds
  - **Developing contingency plans** for supply disruptions, including:
    - alternate suppliers,
    - approved substitute chemicals (where appropriate)
    - operational strategies to conserve inventory

Emergency Response Planning (ERP) for Chemical Supply Disruptions (continued)

- This can look like:
  - **Coordinating with suppliers** to
    - prioritize deliveries during emergencies
    - establish procedures for expedited or after-hours deliveries
  - **Leveraging mutual aid and regional partnerships** (e.g., MaWARN, chemical consortium) to facilitate emergency resource sharing and resource coordination
  - **Establishing communication protocols** for notifying MassDEP, suppliers, and other key stakeholders if shortages reach a critical value

Massachusetts Water/Wastewater Agency Response Network (MAWARN)

- Voluntary mutual aid network for public water and wastewater utilities in Massachusetts
- Enables utilities to quickly give and receive mutual aid and assistance, including personnel, equipment, and supplies, during an emergency
    - Activated to restore services damaged by natural or man-made incidents
- Operates under a pre-signed statewide mutual aid agreement
- No cost to join. Participation and resource sharing are voluntary.

Chemical Purchasing Groups in MA

Northeast / Merrimack Valley

- Over 70 Communities
- One annual bid managed by bidding agent

SERSG (Southeast MA)

- Southeastern Regional Services Group
- 27 Communities
- Annual Contracts/bids (July 1)

Barnstable County (Cape Cod)

- County-run cooperative
- One chemical contract, Separate invoices per community/user

State Contracts FAC121 Contract

- State managed, use COMMBUYS
- Operational Services Division
- Not a consortium, open to anyone

Join or Start One?

- Join an Existing group if:
  - one already exists that covers your area
  - Terms and conditions are amenable

- Start a new group if:
  - no group serves your area
  - Unique chemical needs
  - joining one logistically impractical.
  - Other unique issues/limitations

Chemical Purchasing Groups in MA – Next Steps

If you are interested in:

- Joining a consortium
- Considering starting a new one
- Would like to meet with a DEP Technical Assistance Provider to discuss your needs

Please contact us:
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Poll 3

1. What are important criteria for purchasing chemicals?
a) AWWA standards
b) NSF Approved
c) All of the above
d) None of the above

Resources

Chemical Consortiums

- Water Utilities Supply Chain Challenges and Case Studies: Northeast/Merrimack Valley Chemical Consortium Article
- Northeast/Merrimack Valley Chemical Consortium Website

MassDEP

- Emergency Response for Public Water Systems Website

MAWARN

- MAWARN: Massachusetts Water/Wastewater Agency Response Network Website

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Questions?