



# Water Supply Institutions Structures, Politics, & Behavior



# Agenda

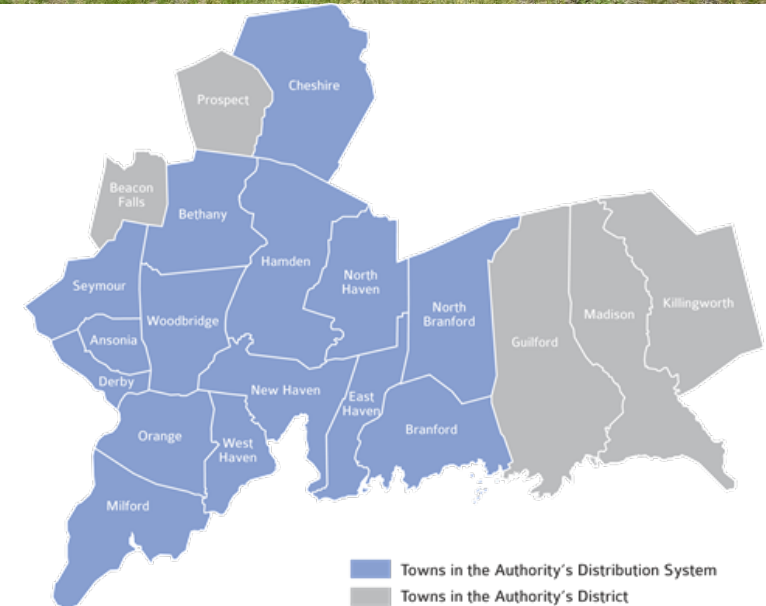
1. Water Provider Types
2. Municipal Government
3. Town-Water Provider Dynamics
4. Internal Water Provider Dynamics
5. Fed/State Interactions

# Public Water Suppliers

**Municipal Utility:** Town or City owned and operated water works.

**Regional Public Utility:** spans multiple jurisdictions

**Special District:** independent, special-purpose governmental units that exist separately from local governments such as county, municipal, and township governments, with substantial administrative and fiscal independence



# Non-Public Water Suppliers

- Investor-owned
- Homeowners associations
- Cooperative
- Non-for-profit



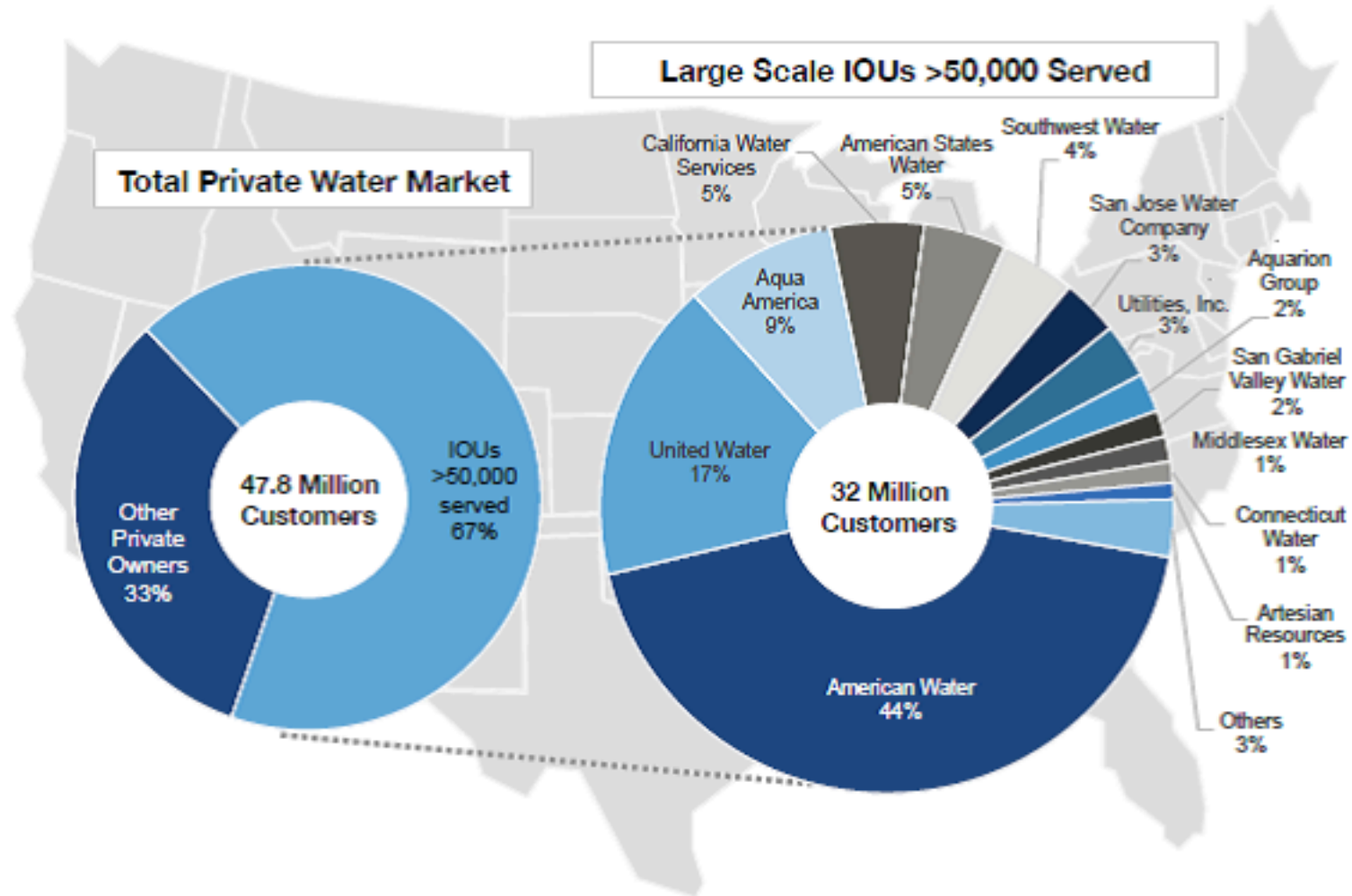
# Water Providers in the USA

Table 2. Water systems in the US. (2006).

	Number	Systems (%)	Delivered water (%)	Revenues (%)
Publicly-owned systems	24,846	50.6%	91.4%	86.9%
Publicly-owned and operated	23,799	48.4%		
Private operation	1047	2.1%		
Privately-owned systems	24,287	49.4%		
Private for-profit	5406	11.0%	6.8%	8.0%
Not-for-profit	9327	19.0%	1.6%	4.9%
Ancillary	9554	19.4%	0.2%	0.1%

Source of data: USEPA (2009). Weighting and rounding affect estimates.

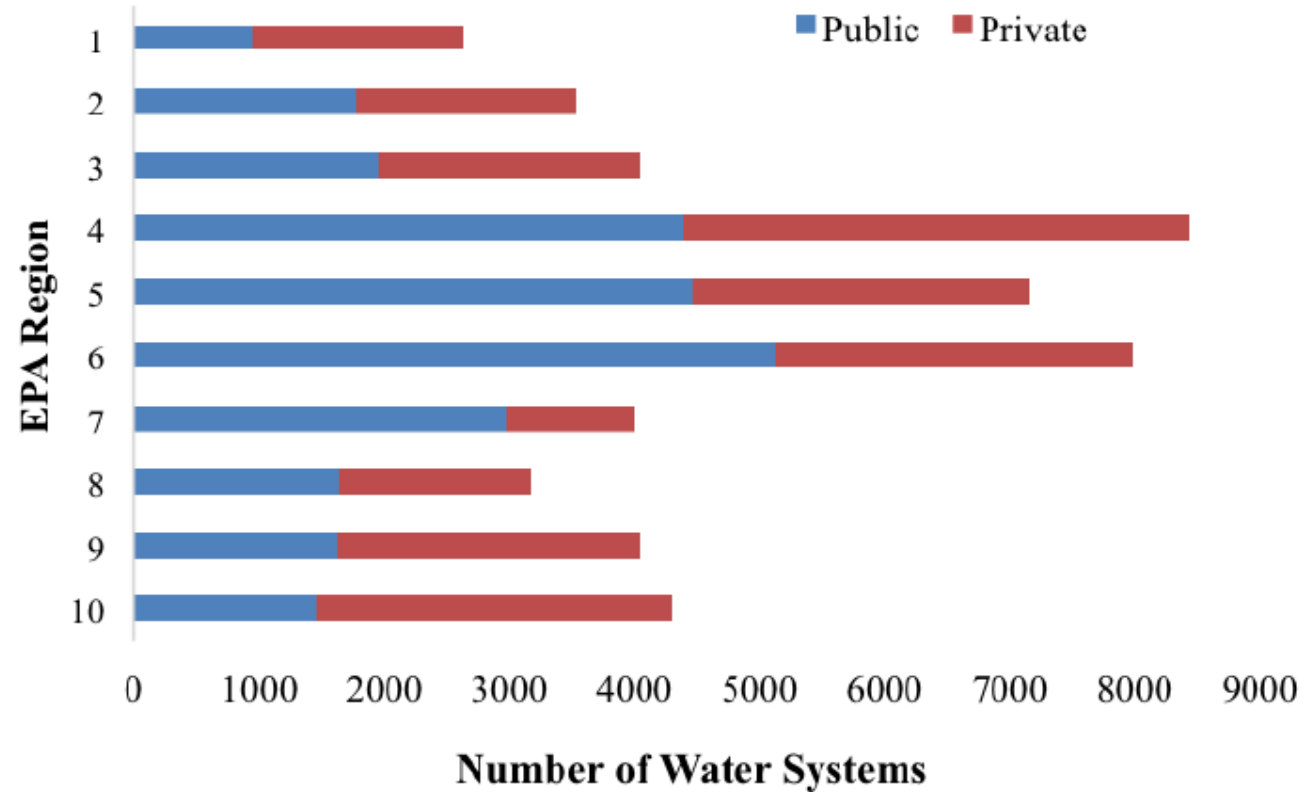
## Large-Scale IOUs Capture Major Portion of US Private Water Market



Source: EPA, Investor-Owned Utilities, Bluefield Research

Six companies account for over half the USA investor-owned utility market

## Public vs Private Community Water Systems



EPA Regions: 1) Connecticut, Massachusetts, Maine, New Hampshire, Rhode Island, Vermont; 2) New Jersey, New York, Puerto Rico, US Virgin Islands; 3) Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia; 4) Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee; 5) Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin; 6) Arkansas, Louisiana, New Mexico, Oklahoma, Texas; 7) Iowa, Kansas, Missouri, Nebraska; 8) Colorado, Montana, North Dakota, Utah, Wyoming; 9) Arizona, California, Hawaii, Nevada, American Samoa, Guam; 10) Alaska, Idaho, Oregon, Washington

## Public Utility

- Public entity managed by locally elected officials/ public employees
- Optimize benefits for local customer owners usually in the form of lower rates.
- Public utilities have access to tax-free bonds and co-ops have access to low-interest loans usually at the local level.

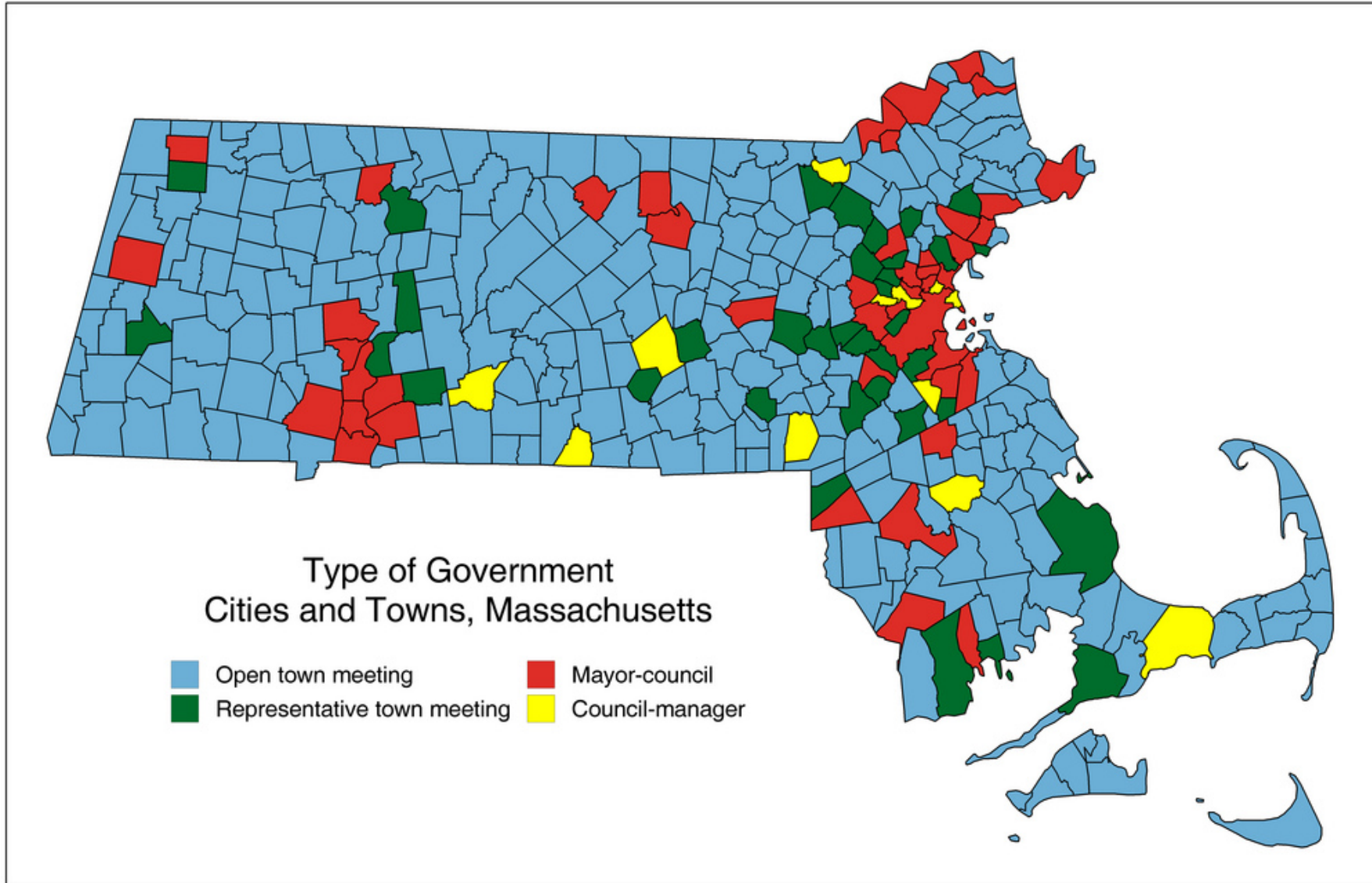
## Investor Owned Utility

- Private company. Shareholder-elected board appoints management team of private sector employees.
- Optimize return on investment for shareholders.
- Stockholders (investors), the sale of bonds and bank borrowing help finance the utility's operations.



**How does institutional structure influence  
municipal water provision?**

# Massachusetts: 50 Cities, 301 Towns



## **Open Town Meeting (most Communities)**

- Population < 6000
- All registered voters may participate in town meeting
- Board of Selectmen serves as chief executive
- No town manager

**Hinsdale  
Monroe  
Royalston**

## **Representative Town Meeting (39 Communities)**

- Population  $\geq$  6,000
- Representatives elected from precincts of the town. Serve 3-year terms
- Board of Selectmen serves as chief executive
- Board of Selectmen may appoint town manager/administrator

# Town of Hawley MA



## Government [\[ edit \]](#)

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Hawley employs the [open town meeting](#) form of government, and is led by a [board of selectmen](#) and an administrative assistant. The town only has two full-time employees with most being part-time or volunteer, as in the case with the fire department and emergency services. There is no library or post office in Hawley; neighboring Charlemont provides these services. The nearest hospitals are in Greenfield and North Adams.

# Many towns run on volunteer government

- Town Clerk, Highway/Road Foreman → paid (often part-time)
- Board of Selectmen → varies, but often < \$2000
- Committees, etc → Goodwill of the individuals

# Town of Hinsdale



## WASTE WATER MAINTENANCE

Dalton Noel

## WATER TREATMENT FACILITY

Bernie St. Martin, Primary Operator

Nate Murphy, Secondary Operator

## WATER & SEWER SUPERINTENDENT

Larry Turner

## WATER & SEWER COMMITTEE

Laurel Scialabba, Chair

Ryan Aylesworth

Laura Galliher

Russell Parks

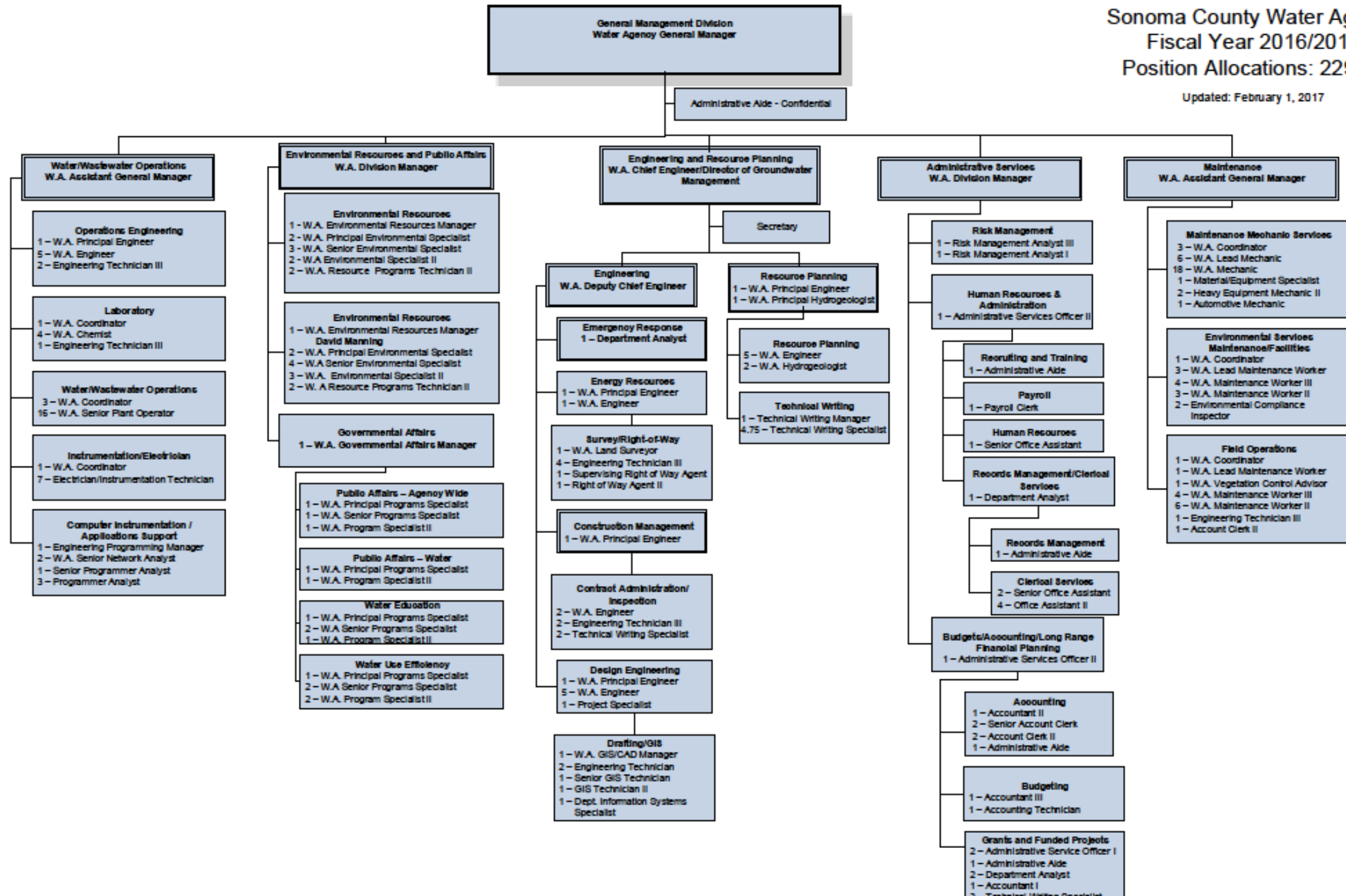
Mary Rice

Bernie St. Martin

Larry Turner

Sonoma County Water Agency  
 Fiscal Year 2016/2017  
 Position Allocations: 229.75

Updated: February 1, 2017

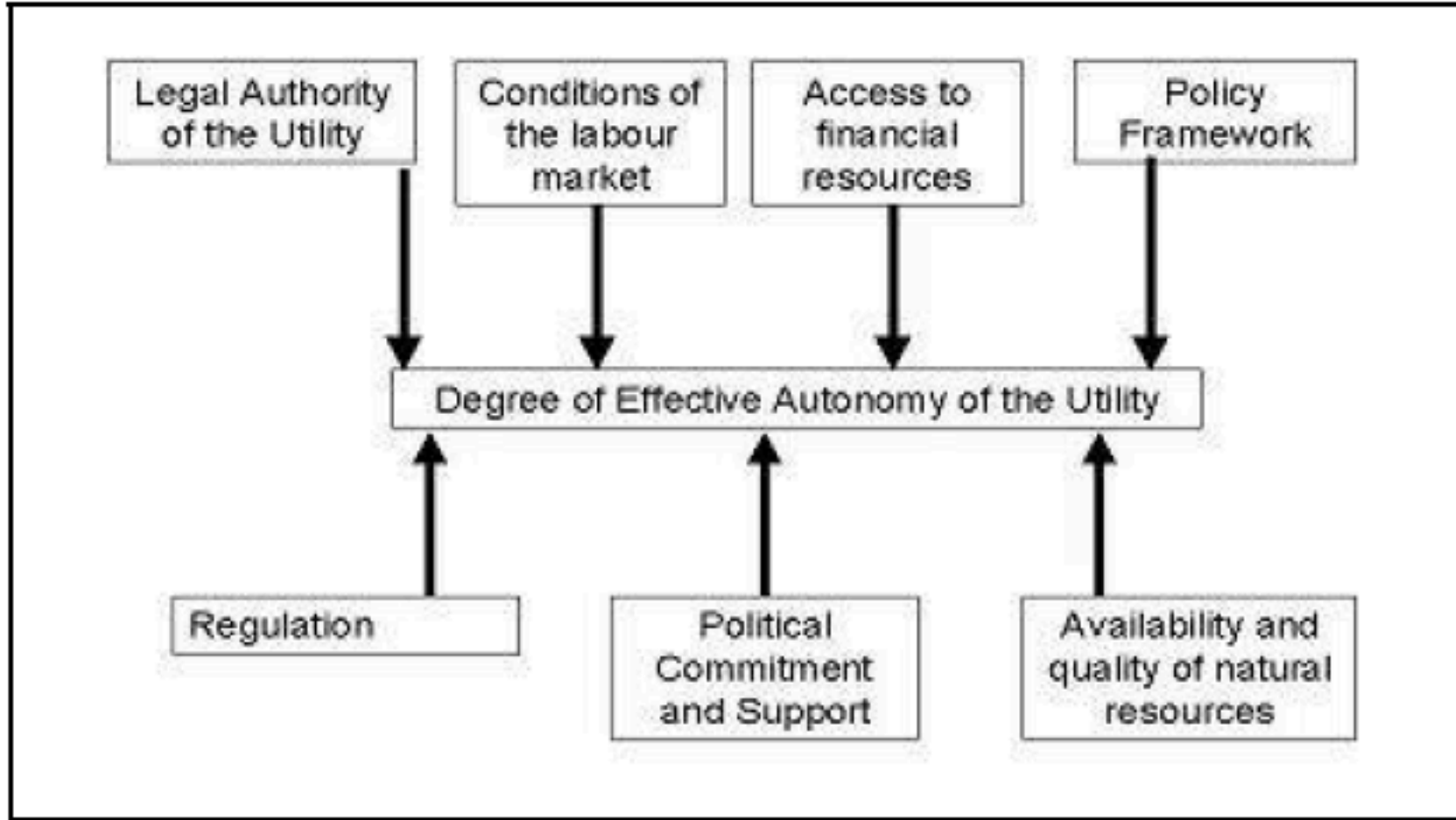


So clearly there's a capacity issue...

what else?



# Autonomy & Accountability



Autonomy to

- Set tariffs
- Set Salaries
- Determine procurement rules
- Obtain financing

Accountability

- To public
- Of Individual staff
- To regulators



# A common dynamic of municipal water utilities

- Economies of scale/ density

**Consumers see utility as a monopoly, see prices as too high**

- Water is perceived as a basic service

**Politicians use pricing as an instrument of political mobilization**

- Large sunk costs, operating costs  $\ll$  capital costs

**Continue to operate even if prices are below total average costs**



WATER BILLS  
UP 85%  
\$346/QTR by 2015  
CAN YOU AFFORD IT?

\$1 BILLION  
FOR WHAT WE  
DONT NEED  
CAN YOU  
AFFORD  
THAT?

WATER BILLS  
UP 85%  
BY 2015  
NO!

Save Our  
Reservoirs

Corporate  
+ L  
our

VOL 289

# Proposed Northampton water rates reduced

Council to consider water fee changes next week

By MICHAEL MAJCHROWICZ  
@mjmajchrowicz

Friday, April 01, 2016

NORTHAMPTON — After hearing concerns from the business community and some fixed-income residents, Mayor David J Narkewicz will ask the City Council next week to approve revised water rates that are lower than councilors approved last month.

“I think the ethos of this is to offset the bigger pressures on people who are experiencing financial duress,” Dwight added. “If you want to maintain the ability for people to live here, it’s incumbent upon us to reduce those pressures.”

Narkewicz said in the memo that the lower rates are made possible by shifting about \$420,000 within the budget and delaying issuing a bond for a capital expense.

# Water rates in Amherst to go up \$18 a year

Town Manager Paul Bockelman said the increase in the water rate is needed, in part, to address potential lost revenue from the mandatory water ban that was imposed last summer. If a similar ban, or other mechanism to reduce water use, is used in 2017, that could reduce the enterprise fund, he said.

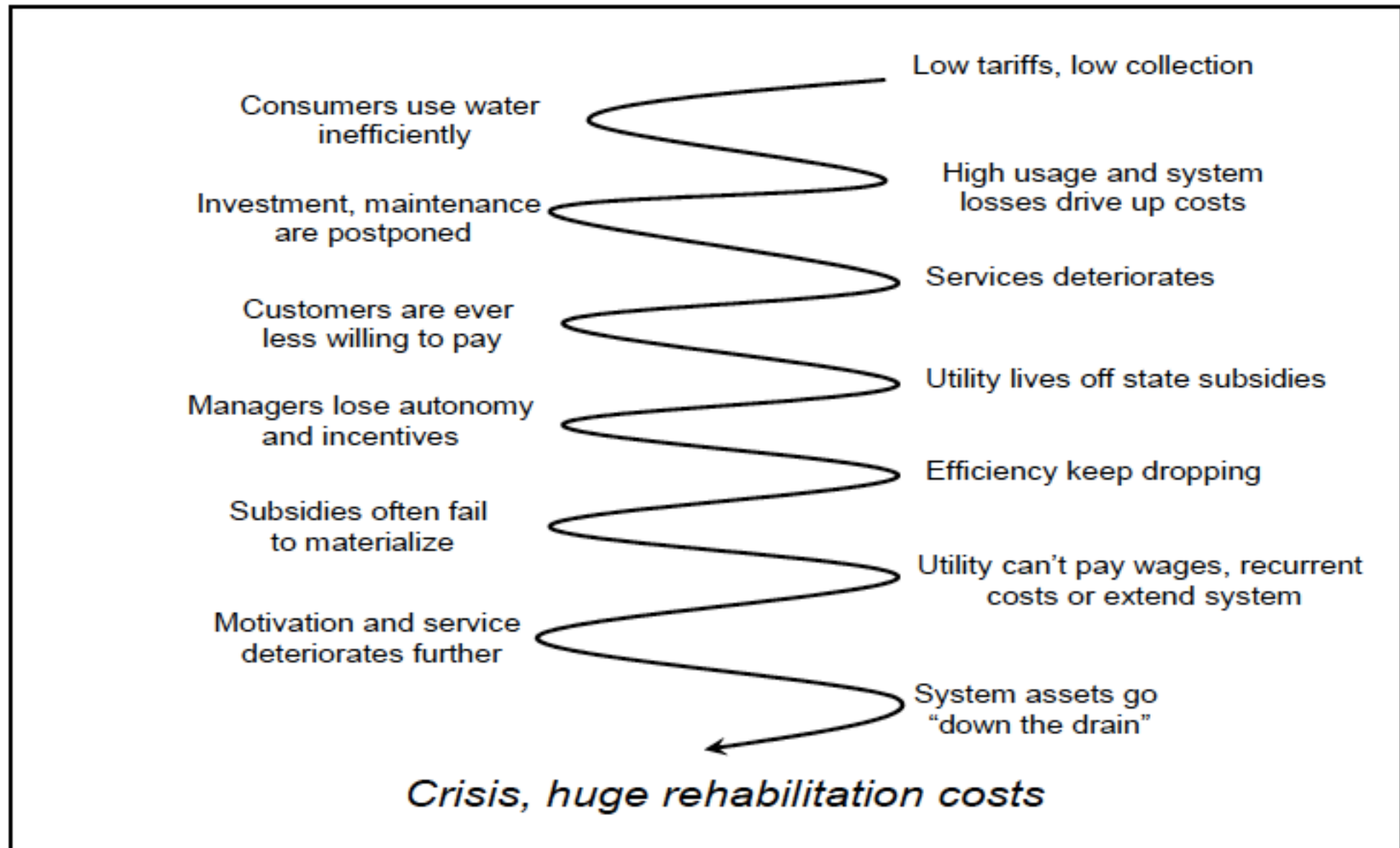
By **SCOTT MERZBACH**  
Staff Writer

Thursday, January 26, 2017

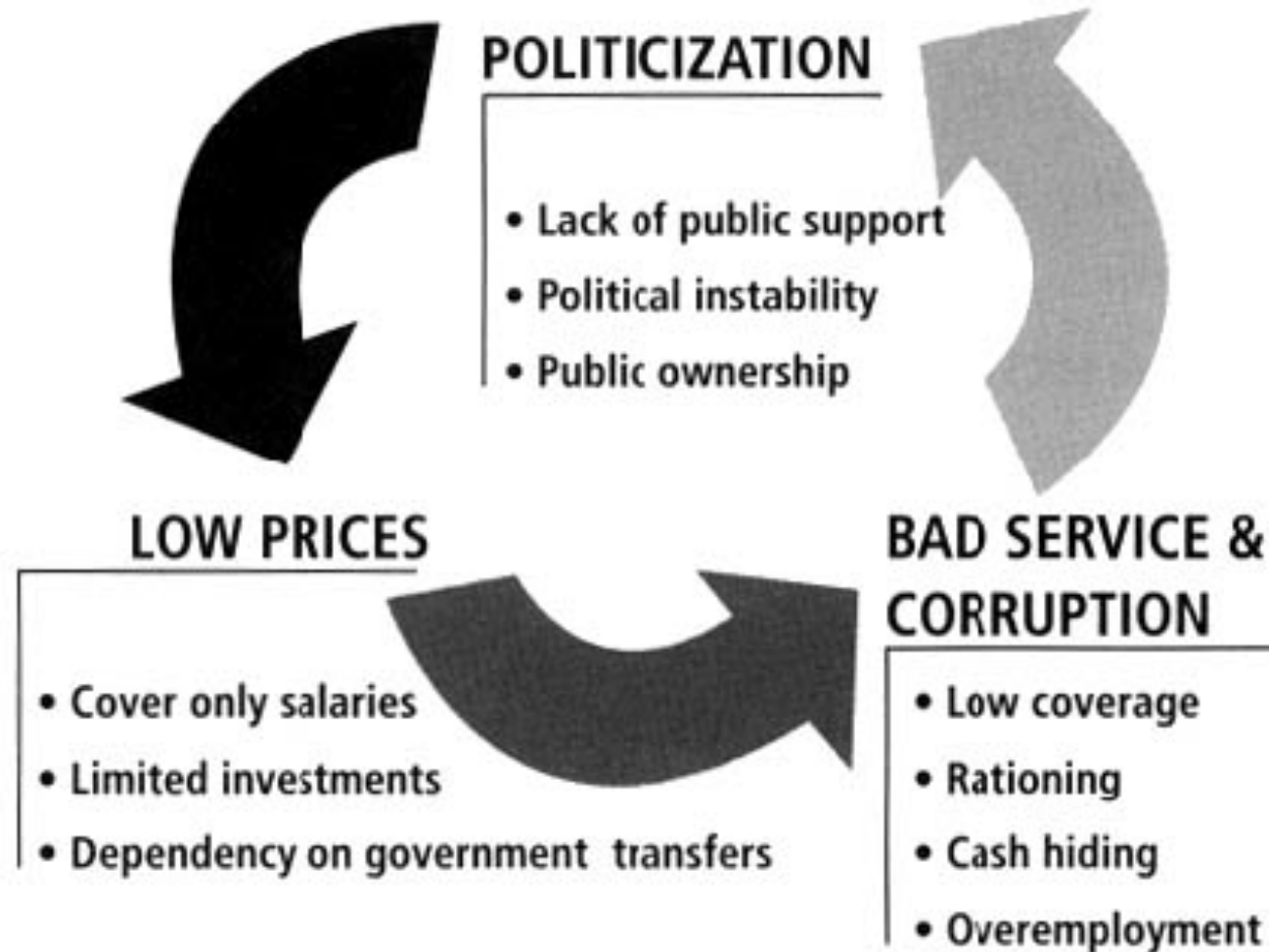
Adoption of the new water rate comes as the Atkins Reservoir, which was taken offline in September due to low levels, is again providing drinking water to Amherst homes and businesses.



**Figure 1 The Vicious Spiral of Performance Decline of Utilities**



# Low-Level Equilibrium Trap





What's happening inside the utility?

# Characteristics of Water Providers

- Long time horizons for planning & implementation
- Strong reliance on locally knowledge
- Generally staffed by technicians, accountants
- Want to avoid attention

83 Tex L. Rev. 2027 (2004-2005)

Maintaining the Status Quo: How Institutional Norms and Practices Create Conservative Water Organizations

Town Selectman just called a meeting for 7pm tmrw, but I am supposed to be home watching the kids

Need to do the data analysis so can revise the tariffs

Gotta fill out the monitoring report

Is the pump working?

Electrical bill needs to be paid



We need to dig up that pipe, but that'll require a permit under the Wetlands Protection Act

# Arsenic Standards

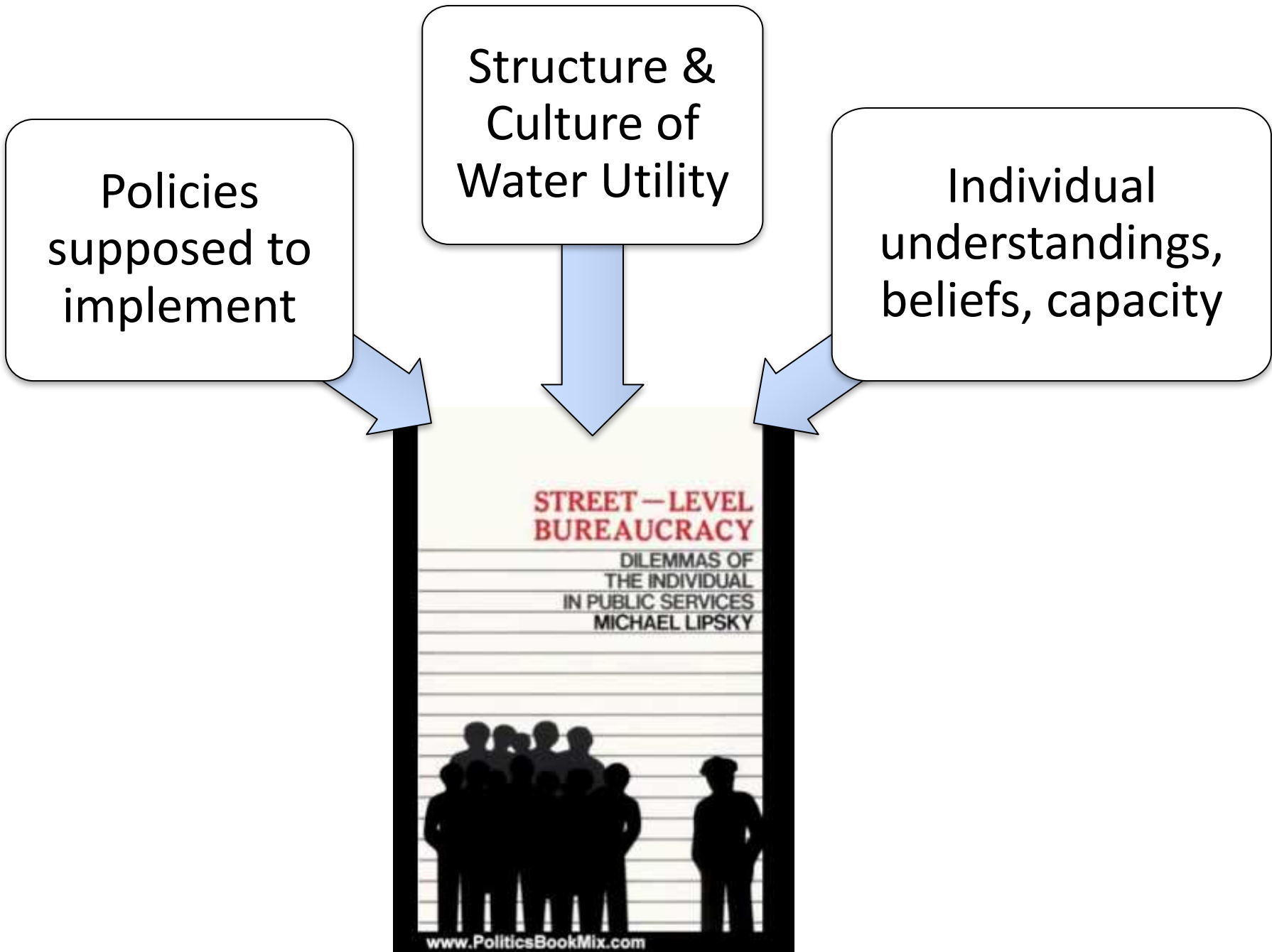
- 2000 EPA proposed to lower the standard for drinking water
- 2000 Review panel concerned about costs & impacts on low income customers
- 2001 EPA reduced max level to 10 ppb

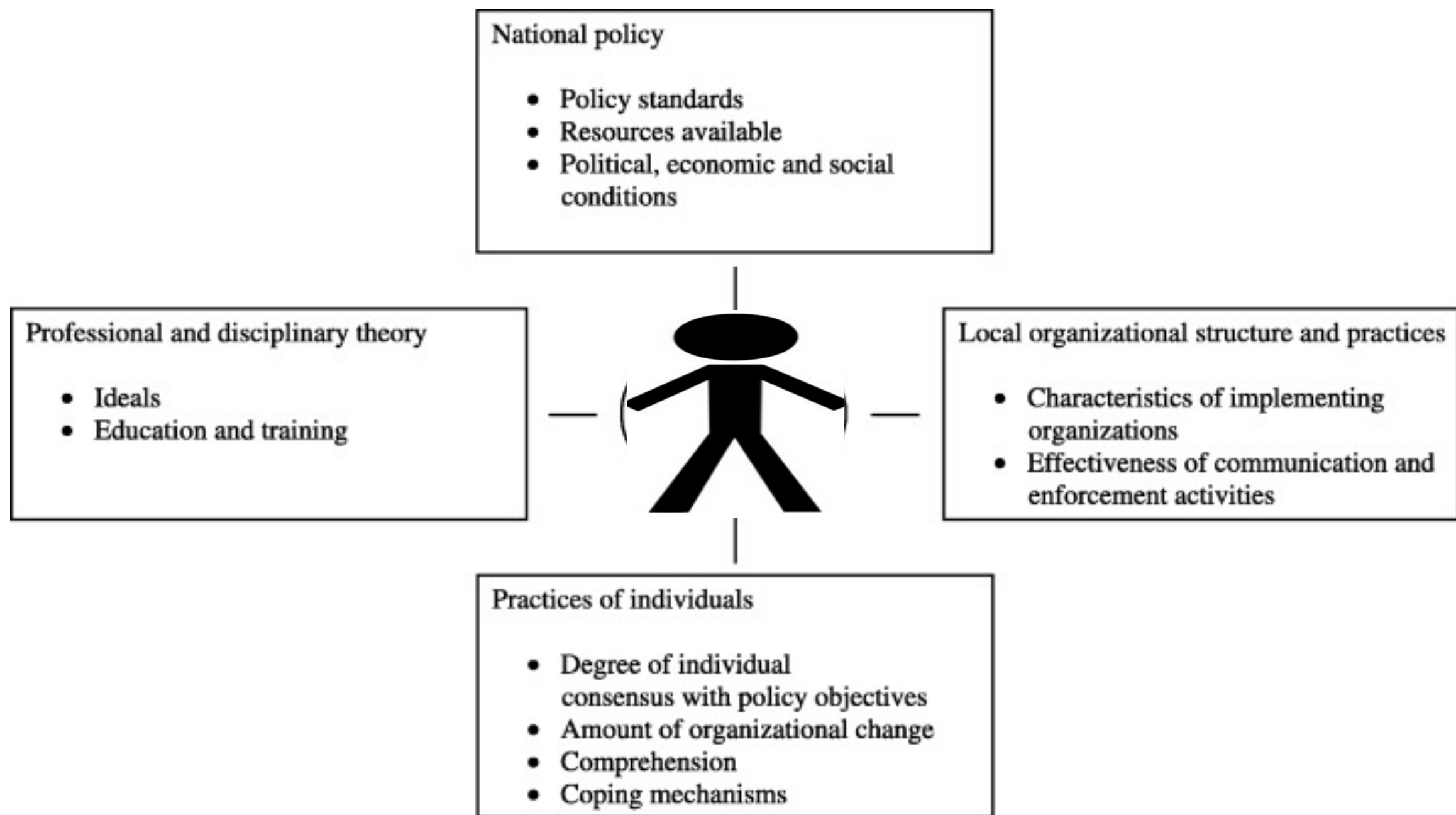
“This is going to cost more than all our reserves”

“We would like some definitive scientific evidence that this is worth doing ... the data just don't justify the new level”

“We've lived a long time with high arsenic levels...”







The Utility is Embedded in a Larger Structure

# State and Federal Regulations

- Safe Drinking Water Act
- Clean Water Act



# State and Federal Regulations

- Safe Drinking Water Act
- Clean Water Act
- Wetlands Protection Act
- Mass Water Conservation Guidelines
- Etc...



The Official Website of the Executive Office of Energy and Environmental Affairs

# Energy and Environmental Affairs

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Recreation & Conservation

Services & Assistance

**Agencies**

EEA Home > Agencies > MassDEP > Water Resources > Water Resources Laws & Rules

## Water Resources Laws & Rules

CMR **Regulations** & Standards

POL **Policies** & Guidance

MGL **Laws** Federal & State

### Environmental Laws & Regulations

Administered by MassDEP

Activity or Issue	Applicable Laws	Regulations
Administrative Penalties	<a href="#">MGL c. 21A s. 16</a> Administrative Penalties Act	MassDEP <a href="#">310 CMR 5.00</a>
Adjudicatory Proceedings / Adjudicatory Appeals & Hearings	<a href="#">MGL c. 30A</a> Administrative Procedures Act; <a href="#">MGL c. 30 s. 37</a>	MassDEP <a href="#">310 CMR 1.00</a> <a href="#">310 CMR 2.00</a>
Air Quality	<a href="#">MGL c. 111 s. 2B-2C</a> ; <a href="#">MGL c. 21H</a> ; <a href="#">MGL c. 111 s. 142A-142M</a> Mass. Air Pollution Control Laws	MassDEP <a href="#">310 CMR 6.00</a> <a href="#">310 CMR 7.00</a> <a href="#">310 CMR 8.00</a> <a href="#">310 CMR 60.00</a>



A to Z Quick Links

Water Resources Index

Water Resources Contacts

### Regulations Topics

MassDEP Regulatory Evaluation for Executive Order 562

# MA Wetlands Protection Act

- Protects:
  - rivers and streams, lakes and ponds;
  - the vegetated wet areas bordering rivers, streams, lakes or ponds;
  - the 100-year floodplain;
  - isolated areas that flood seasonally, such as vernal pools.
- Requires review and permitting to build construct or other wise alter these resource areas or buffer zones around them.



# Massachusetts Water Management Act

- Authorizes (MassDEP) to regulate the quantity of water withdrawn from both surface and groundwater supplies to ensure adequate water supplies for current and future water needs.
- Key components
  - including a registration and a permit program
  - best management practices
  - rules for restrictions
  - annual reporting
  - conservation standards (leak detection, gpcd, program requirements)





COMMONWEALTH OF MASSACHUSETTS  
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
**Metropolitan Boston – Northeast Regional Office**

MITT ROMNEY  
Governor

ELLEN ROY HERZFELDER  
Secretary

KERRY HEALEY  
Lieutenant Governor

EDWARD P. KUNCE  
Acting Commissioner

**MODIFIED WATER WITHDRAWAL PERMIT**  
**MGL c 21G**

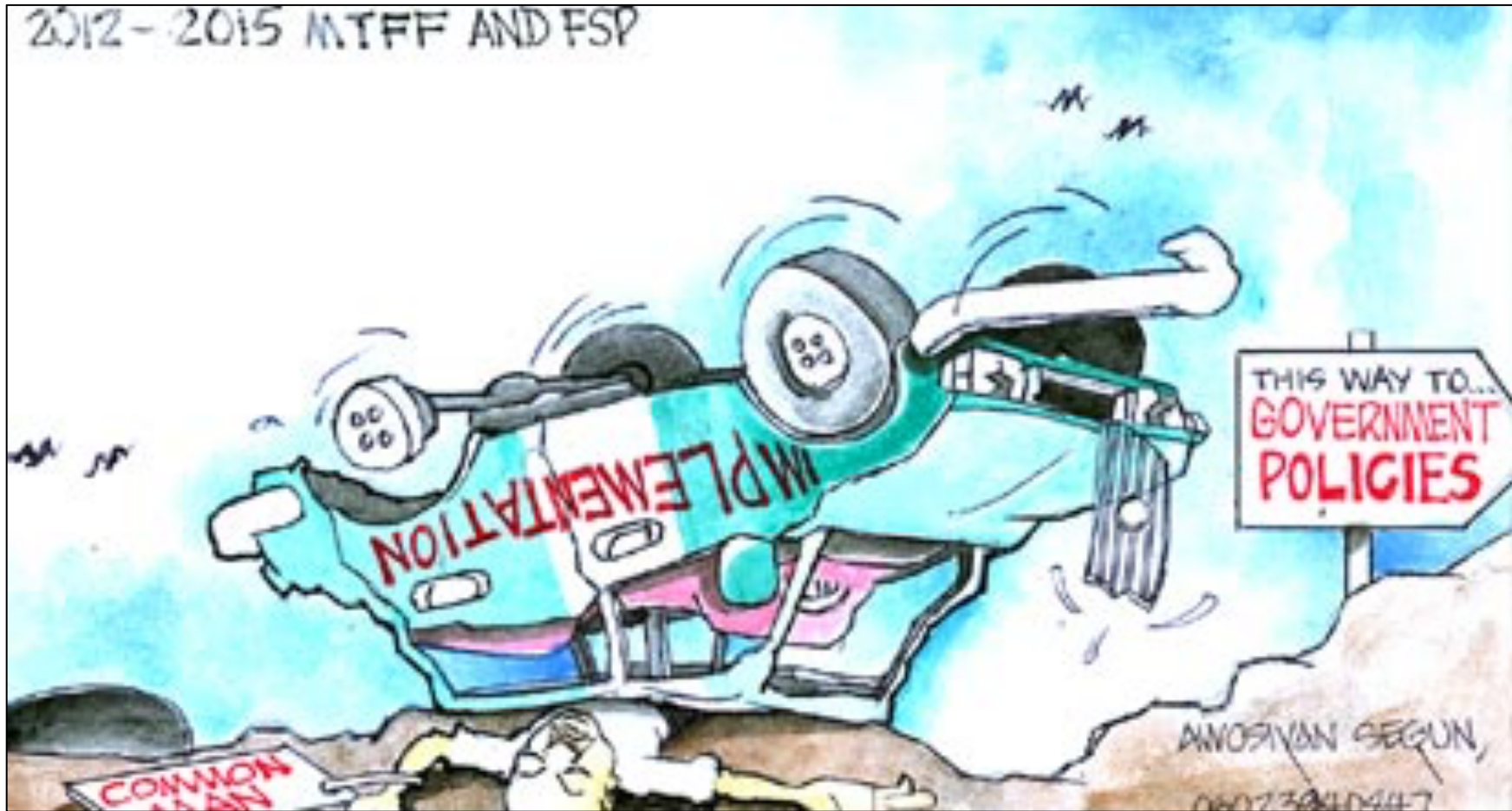
This Modified Permit is issued pursuant to the Massachusetts Water Management Act (the “Act”) for the sole purpose of modifying the terms and conditions governing the withdrawal of water authorized herein. This Modified Permit conveys no right in or to any property beyond the right to withdraw the volume of water for which it is issued.

# State and Federal Regulations

- Safe Drinking Water Act
- Clean Water Act
- Wetlands Protection Act
- Mass Water Conservation Guidelines
- Etc...

**These requirements have a high toll on small municipal water providers**

# Policy Implementation



### TRACTABILITY OF THE PROBLEM

- 1 Technical difficulties
- 2 Diversity of target group behaviour
- 3 Target group as a percentage of the population
- 4 Extent of behavioural change required

### ABILITY OF STATUTE TO STRUCTURE IMPLEMENTATION

- 1 Clear & consistent objectives
- 2 Incorporation of adequate casual theory
- 3 Initial allocation of financial resources
- 4 Hierarchical integration within and among implementing institutions
- 5 Decision rules of implementing agencies
- 6 Recruiting of implementing agencies
- 7 Formal access by outsiders

### NONSTATUTORY VARIABLES AFFECTING IMPLEMENTATION

- 1 Socioeconomic conditions & technology
- 2 Public support
- 3 Attitudes & resources of constituency groups
- 4 Support from sovereigns
- 5 Commitment & leadership skill of implementing officials

### STAGES (DEPENDENT VARIABLES) IN THE IMPLEMENTATION PROCESS

Policy outputs of implementing agencies

1

Compliance with policy outputs by target groups

2

Actual impacts of policy outputs

3

Perceived impacts of policy outputs

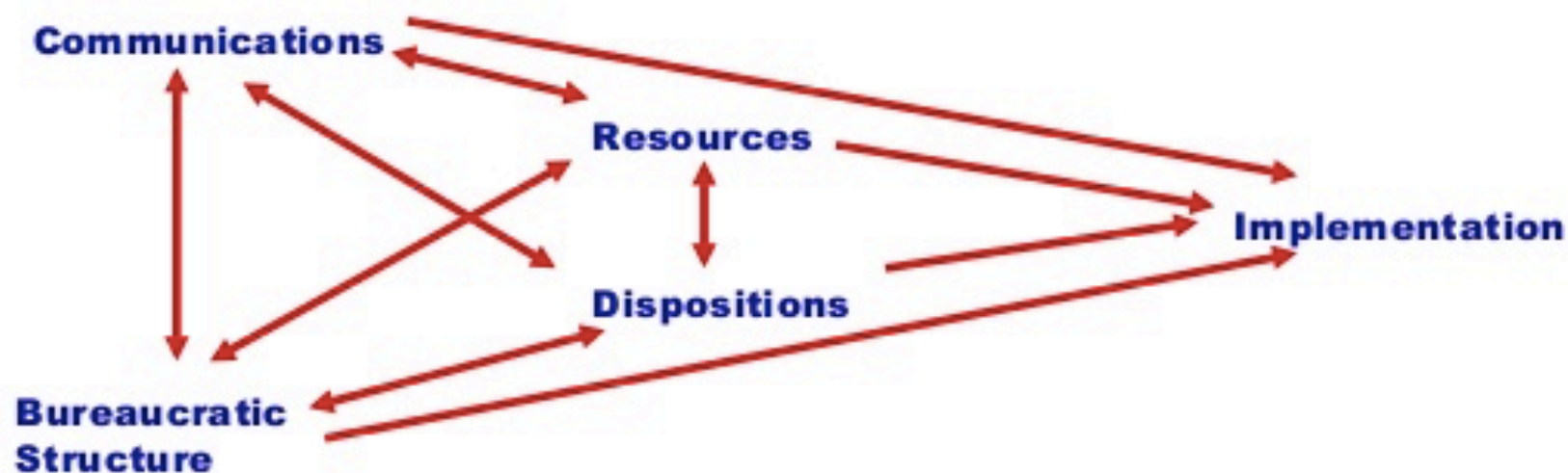
4

Major revision in statute

5



## **Direct and Indirect Impacts on Implementation**



Source : G.C. Edwards III, 1980, *Implementating Public Policy*, pp. 148

### **Communications**

- Transmission
- Clarity
- Consistency

### **Resources**

- Staff
- Information
- Authority
- Facilities

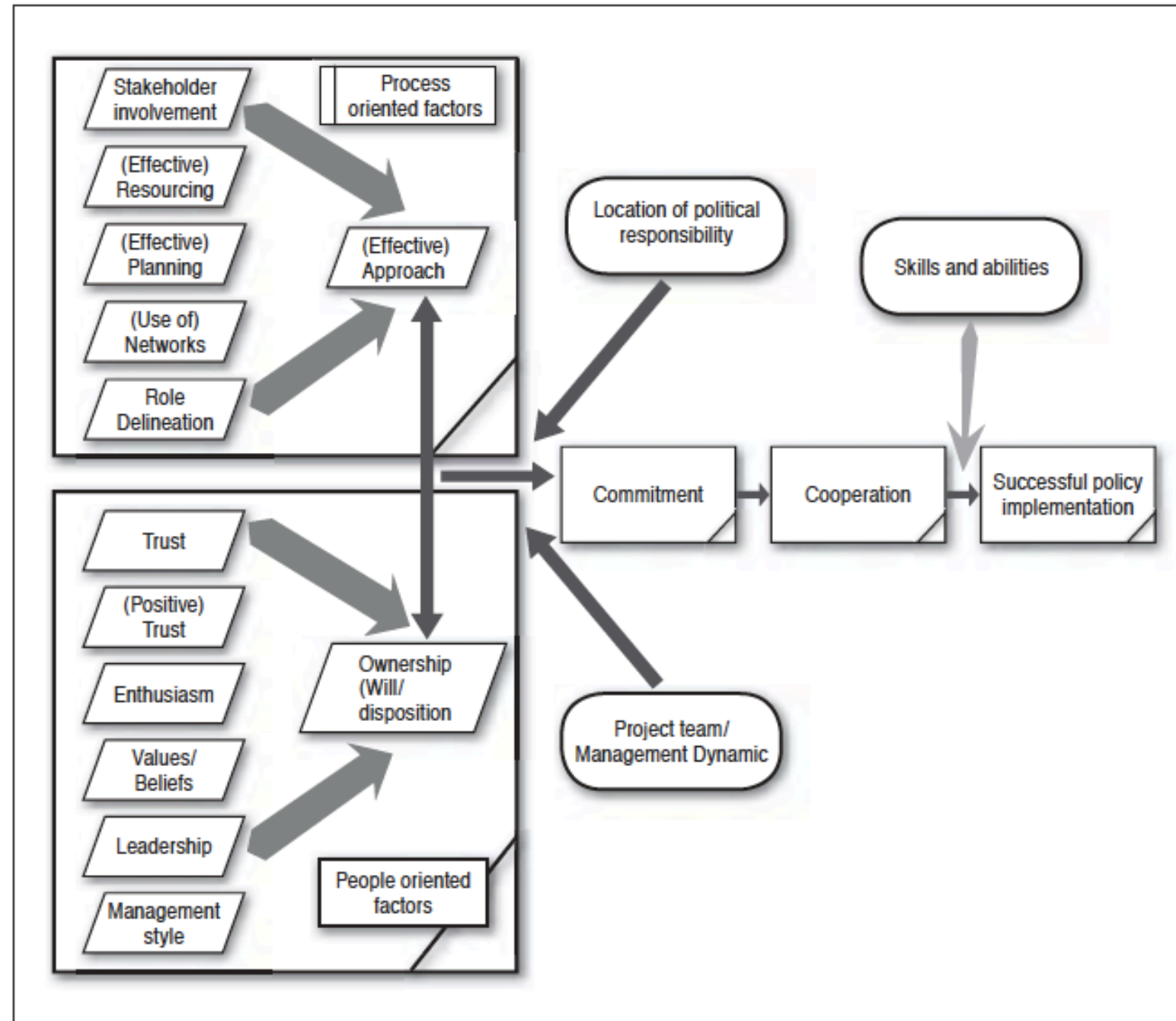
### **Bureaucratic Structure**

- Standard Operating Procedures
- Fragmentation

### **Dispositions**

- Effect of Dispositions
- Staffing the Bureacracy
- Incentives

**Figure 1: Relationship of factors influencing successful policy implementation**



# Local Responses to State Polices

“We have a volunteer town government. Being aware of all of the regulations and rules coming down, I suppose is the real difficulty. We all have other jobs and occupations”

“even to read and understand these things can be very difficult for us”

# Local Responses to State Policies

“the state has to paint its policies with a broad brush, so we get pulled into requirements that are really inappropriate for us”

“the state always adopts a one-size fits all approach, but we’re a size small”

“blanket rules affect each town differently...”

# Local Responses to State Policies

“it’s easy to pass a law ... it’s much more difficult to abide by that law when your towns don’t have the resources”

“unfunded mandates from the state are a major hindrance to action, with demands should come money”

Anything here that might apply to Hinsdale,  
Monroe, or South Royalston?

How could we find out?