FLINT WATER LESSONS: REGULATORY

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The Institute of Public Utilities at MSU

- IPU-MSU has served the regulatory policy community since 1965
  - More than 20,000 domestic and international program alumni
  - Celebrated 50 years at MSU in 2015

- IPU’s mission
  - To support informed, effective, and efficient regulation of the electricity, natural gas, telecommunications, and water industries providing that provide essential services to the public.
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In May 2016, Journal AWWA editor-in-chief, Michael McGlinn, hosted a roundtable discussion on the water crisis in Flint, Mich. All four participants in this roundtable discussion are professors at Michigan State University (MSU) in East Lansing. Thoroughly engaged with water professionals active in many areas of water research, the panel discussion was the centerpiece of the network of research and education program before the Flint crisis, and all four of these researchers were busy doing their usual jobs. After the crisis became known, they had jury on top of their usual jobs. They all felt a strong obligation to understand the issues and conduct a forensic analysis of what went wrong from their different disciplinary perspectives so that everyone would have a better understanding. This crisis happened in their area, in their neighborhood. We can benefit from their knowledge and passion of view. The panelists were: James A. Bonilla, dean, School of Public Health, MSU; Maria Hauria-Attina, director, Pediatric Public Health Initiative, Hurley Children’s Hospital, MSU; Paul J. Soucy, professor, Department of Civil and Environmental Engineering, MSU, and June E. Rose, professor, Department of Fisheries and Wildlife, MSU. (Editor’s note: The transcript of the roundtable discussion that follows has been edited for length and clarity.)
Flint water crisis organizational chart

Federal government:
- CDC
- USEPA
- Region 5
- Flint SDWTF

State of Michigan:
- Attorney General
- Governor
- Legislature
- Auditor Gen.

Local gov:
- Genesee County
- GCHD
- GCDC

Outsiders:
- Parents
- Academics
- Media

Flint water crisis organizations:
- FWATF
- MDEQ
- MDHHS
- EMs
- Detroit
- Flint
- DPW
- WTP
- KWA
Flint water crisis as institutional failure

- Pipeline politics
  - Genesee
  - KWA
  - DWSD

- Institutional failure
  - Governance
  - Regulation
  - Public science

- Fiscal politics
  - Structural constraints
  - Local finances
  - Emergency management
Pipeline politics
Fiscal politics

- **Headlee amendment to the Michigan Constitution (1978), Art. IX, Sec. 31**
  - Sec. 26. “There is hereby established a limit on the total amount of taxes which may be imposed by the legislature in any fiscal year on the taxpayers of this state. This limit shall not be changed without approval of the majority of the qualified electors voting thereon…”
  - Sec. 31. “Units of Local Government are hereby prohibited from levying any tax not authorized by law or charter when this section is ratified or from increasing the rate of an existing tax above that rate authorized by law or charter when this section is ratified, without the approval of a majority of the qualified electors of that unit of Local Government voting thereon…”

- **Bolt v. City of Lansing (1998)**
  - User fees
    1. must serve a regulatory purpose rather than a (general) revenue raising purpose;
    2. be proportionate to the necessary cost of the service; and
    3. be voluntary in that users can refuse or limit their use of the commodity or service
## Water federalism and regulation in the U.S.

<table>
<thead>
<tr>
<th></th>
<th>Water quality</th>
<th>Water quantity</th>
<th>Water funding</th>
<th>Water prices</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Federal</strong></td>
<td><strong>Congress and EPA</strong></td>
<td>Court review as applicable</td>
<td>Congress and EPA</td>
<td>Judicial review</td>
</tr>
<tr>
<td><strong>Interstate</strong></td>
<td>Basin commissions</td>
<td>Basin commissions</td>
<td><em>n/a</em></td>
<td><em>n/a</em></td>
</tr>
<tr>
<td><strong>States</strong></td>
<td><strong>Primacy agencies (health &amp; environmental)</strong></td>
<td><strong>Resource agencies</strong></td>
<td><strong>Revolving loan funds (SRF)</strong></td>
<td><strong>PUCs and/or judicial review</strong></td>
</tr>
<tr>
<td><strong>Substate</strong></td>
<td>Management districts (varies)</td>
<td>Management districts (varies)</td>
<td><em>n/a</em></td>
<td><em>n/a</em></td>
</tr>
<tr>
<td><strong>Local</strong></td>
<td><strong>Local health departments</strong></td>
<td>Local zoning and fire officials (pressure)</td>
<td>Local financing (bonds)</td>
<td>Municipal and other local boards</td>
</tr>
</tbody>
</table>
Federal water-quality legislation and goals

Clean Water Act
To achieve “fishable and swimmable waters” through pollution control, wastewater treatment, and stormwater management

Safe Drinking Water Act
To achieve a level of drinking water quality as close as feasible to that for which there are no known or anticipated adverse impacts to human health, including an adequate margin of safety
SDWA compliance is not optional

- Passed in 1974, with major amendments in 1986 and 1996
- States can be more but not less stringent than federal law – MI act mirrors
- Regulation is meant to provide multiple protective barriers
Regulatory chain of command

Federal EPA (standards) ➔ Regional EPA (oversight)

State government ➔ State primacy agency (enforcement)

Local government ➔ Water system operator (compliance)
Regulatory framework under the SDWA (√Flint)

- Microbial contaminants √
- Chemical, metal, and radiological contaminants (including lead) √
- Disinfectants and disinfection byproducts √
- Contaminant candidate listing
- Monitoring and reporting √
- Public information and notice √
- Certification, capacity, and planning √
- Funding (DWSRF) and incentives
- Variances and exemptions
- Six-year regulatory review
- EPA emergency powers √
- Secondary standards for aesthetics (non-enforceable) √
Lead infrastructure challenge

Source: Adapted from Hayes 2010

Figure 1.1 Depiction of water main in street, household plumbing, and the service line owned by utility/city to the property line and the remainder owned by customer.
Capacity development for new and existing water systems (EPA)

Capacity development is the process through which water systems acquire and maintain adequate technical, managerial, and financial capabilities to enable them to consistently provide safe drinking water.

- **Technical Capacity**
  - Source water adequacy
  - Infrastructure adequacy (including source, treatment, distribution, storage)
  - Technical knowledge and ability to implement it

- **Managerial Capacity**
  - Ownership accountability
  - Staffing and organization
  - Effective external linkages

- **Financial Capacity**
  - Revenue sufficiency
  - Credit worthiness
  - Fiscal management and controls

- **Short- and Long-Term Planning**
Michigan’s capacity development model

Michigan’s Decision Model

Is Evaluation Current?  
Yes → Update Evaluation  
No → Critical Problem 1

Critical Problem 1

Yes → Willingness  
No → Enforcement Action

Willingness

No → TFM Analysis  
Yes → TFM Capacity Assistance

TFM Analysis

TFM Capacity Assistance

No TFM Assistance Provided

Is System in Compliance and Evaluation Satisfactory?  
No → Serious Problem 2  
Yes → Potential Problem 4

Serious Problem 2

No → Request Assistance S  
Yes → Willingness

Willingness

No → No TFM Assistance Provided  
Yes → TFM Analysis

TFM Analysis

Figure 1

Michigan Department of Environmental Quality  
Drinking Water and Radiological Protection Division

CAPACITY DEVELOPMENT STRATEGY FOR EXISTING PUBLIC WATER SYSTEMS

August 1, 2000
Fiscally sustainable systems ("enterprises")

<table>
<thead>
<tr>
<th>Rate revenues relative to expenditures</th>
<th>&lt; 1 rate revenues are below expenditures (&quot;price avoidance&quot;)</th>
<th>= 1 rate revenues are equal to expenditures</th>
<th>&gt; 1 rate revenues are above expenditures (&quot;profit seeking&quot;)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Deficient system</td>
<td>SELF-SUSTAINING SYSTEM</td>
<td>Revenue-diverting system</td>
</tr>
<tr>
<td></td>
<td>Subsidized system</td>
<td></td>
<td>Surplus system</td>
</tr>
<tr>
<td></td>
<td>Budget-deficit system</td>
<td></td>
<td>Excessive system</td>
</tr>
</tbody>
</table>

Expenditures relative to optimized compliant service level

- < 1 expenditures are below optimum ("cost avoidance")
- = 1 expenditures are optimal
- > 1 expenditures are above optimum ("gold plating")
Revenue sources in Flint

- Charges for services
- Income taxes
- Property taxes
- State-shared revenues
- Operating grants and contributions
- Wastewater revenues
- Water revenues


Values: $0, $5,000,000, $10,000,000, $15,000,000, $20,000,000, $25,000,000, $30,000,000, $35,000,000, $40,000,000, $45,000,000, $50,000,000
Transfers from water funds

Transfers from Flint water revenues by type ($):

- Payment in lieu of taxes (PILOT)
- Other
- Direct charges for services
- Indirect cost allocation

Transfers by type (% of total budget):

- Payment in lieu of taxes (PILOT)
- Other
- Direct charges for services
- Indirect cost allocation

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Water bills relative to income

Water only bills as a percentabae of median household income

- Monthly water bill (Raftelis, 2016)
- Water bill/household income in 2014

Kalamazoo, MI: $9.48, 0.35%
Saginaw, MI: $10.60, 0.44%
Wyoming, MI: $11.00, 0.28%
South Bend, IN: $13.15, 0.46%
Ann Arbor, MI: $13.76, 0.29%
Troy, MI: $17.20, 0.24%
Dayton, OH: $18.17, 0.77%
Dearborn, MI: $18.53, 0.48%
Average (excl. Flint): $19.42, 0.78%
Canton, OH: $19.47, 0.88%
Lansing, MI: $26.15, 1.41%
Youngstown, OH: $28.66, 1.43%
Burton, MI: $49.95, 2.62%
Flint, MI: $53.84, 2.62%
Efficiency and equity: the case for progressive rates

- Utility rates are regressive and may call for “lifelines” to protect public health (e.g., 25 gallons per person per day) and income thresholds

![Bar graph showing monthly commodity charge, capacity charge, and customer charge based on usage and fixed per customer.](image-url)
Reform as response

Federal

State

Local

Education
Committing to infrastructure