Local Governments and Infrastructure:

Bridges, Dams, Drinking Water Systems and Combined Sewer Systems

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Presented by

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The Division of Local Government and School Accountability

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Our Focus

Agenda

- Bridges
- Dams
- Drinking Water Systems
- Combined Sewer Overflows

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Data Sources: Bridges and Dams

Bridges

- NYS Department of Transportation (data not public)
- Federal Highway Administration: National Bridge Inventory (available online)

Dams

- NYS Department of Environmental Conservation
- Army Corps of Engineers (data not public)

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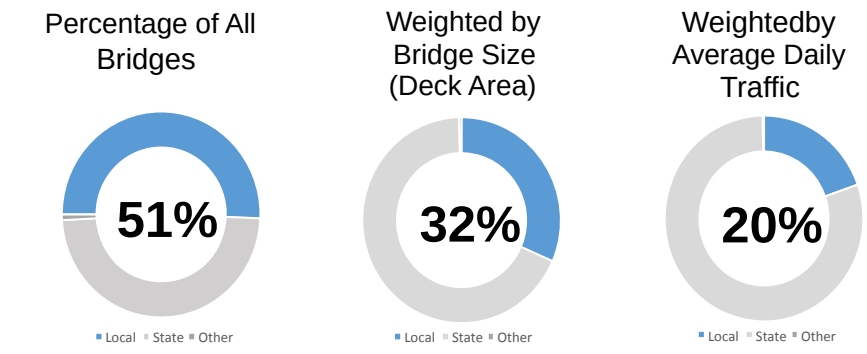
Local Government Bridges

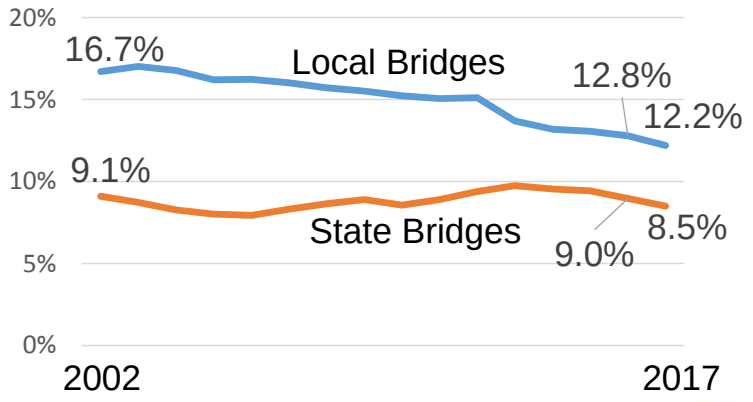
- Highway bridges in New York inspected at least every two years.
- Detailed data gathered on condition:
  - NYSDOT uses it to manage bridges
  - Reports some of the data to the Federal Highway Administration (FHWA).
- Bridge ratings
  - NYSDOT and FHWA have separate rating systems.

Local Government Bridges, 2016



Source: U.S. Department of Transportation, Federal Highway Administration, National Bridge Inventory, 2016.

Local Bridges Are More Likely to Be Structurally Deficient



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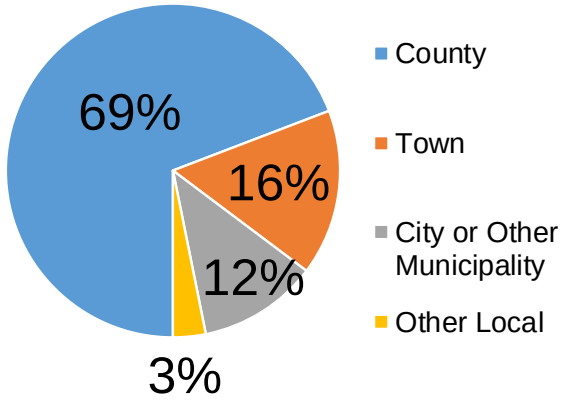
Counties Own Most Local Bridges



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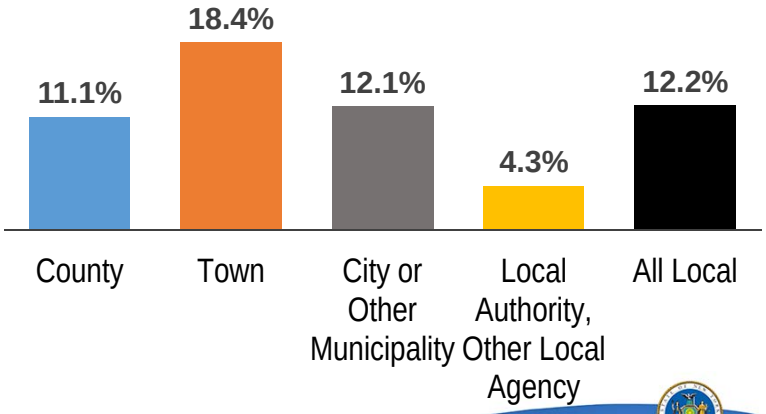
Bridge Condition Varies by Ownership

Percentage of Local Bridges that Are Structurally Deficient (2017)



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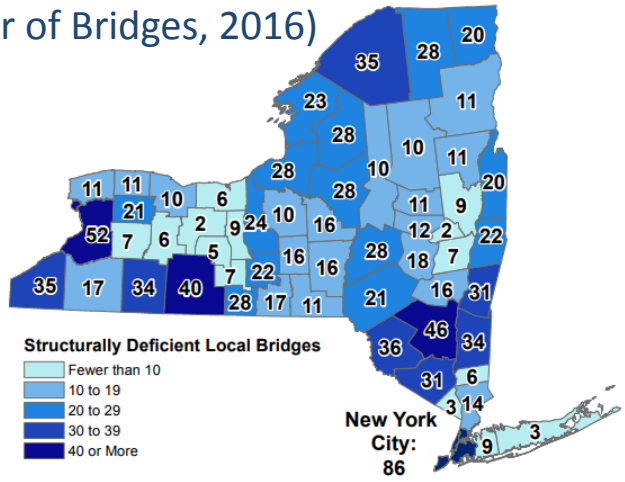
Structurally Deficient Local Bridges

(Number of Bridges, 2016)



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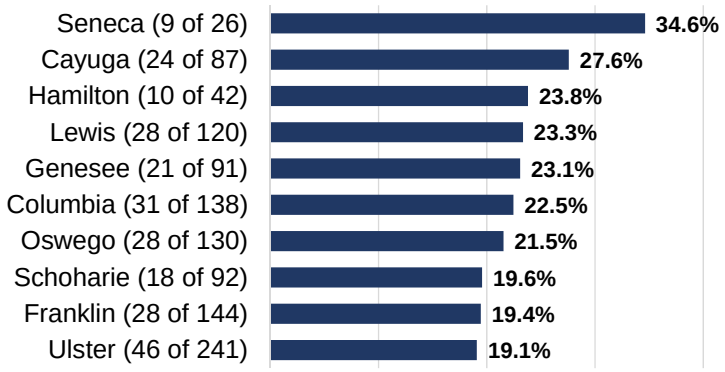
Structurally Deficient Local Bridges

(Percentage of Local Bridges, 2016)



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Estimated Costs for Bridges, 2017

$68.7 Billion	All highway bridges
$30.4 Billion	Local bridges (including NYC and local authorities)
$6.9 Billion	Local bridges (excluding NYC and local authorities)

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Funding for Bridges

Federal Funding (for Transportation)

- Often matching programs:
  - Typically 80% federal, 20% state/local match.
- Federal funds typically flow through state DOTs.
- In urbanized areas with over 50,000 residents, Metropolitan Planning Organizations must be involved in the planning process.

Funding for Bridges

State Programs

- Five-Year Capital Plan
  - Includes federally funded projects.
- State Programs:
  - Consolidated Local Street and Highway Improvement Program (CHIPs) ($438 million)
  - Marchiselli Aid ($39.7 million)
  - BridgeNY

BridgeNY

- Round One
  - January 2017: $200.4 million awarded to 132 local bridge and culvert projects across the State.
- Round Two
  - Applications were due in April 2018.
  - Awards expected in late summer 2018.

So...

Bridge Takeaways

- Federal government has a strategic interest in highway bridges and is willing to help pay for them.
  - Commerce, military and public safety
- Lots of information on needs.
- Rational basis for allocating scarce resources.
- Needs are great, but appear manageable.

However...

Many Areas of Uncertainty

- Federal funding reforms are possible:
  - Interest in public/private partnerships (P3s)
  - Privatization
  - Changes to matching programs
- Uncertainty in the State budget.

Where to Get Bridge Data

OSC's County-Level Tabulation of 2016 National Bridge Inventory Data

http://wwe1.osc.state.ny.us/localgov/bridges/bridges.cfm

The Federal Highway Administration's National Bridge Inventory Data

https://www.fhwa.dot.gov/bridge/nbi.cfm

Meanwhile in Mississippi...

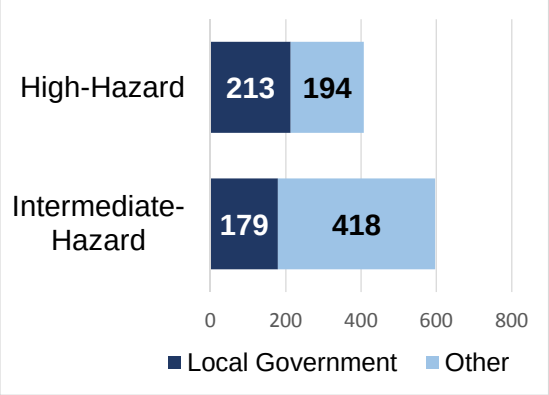
Drivers face more than 100 bridges slated for immediate closure

BY KENDRA ABLAZA APRIL 16, 2018

Dams

- Little federal role for oversight of non-federal dams:
  - Army Corps of Engineers
  - Federal Energy Regulatory Commission
- The Department of Environmental Conservation classifies dams based on risks:
  - No hazard, low, intermediate, and high-hazard
- Data is not as complete as the bridge data.

Dams by Hazard Status, 2017

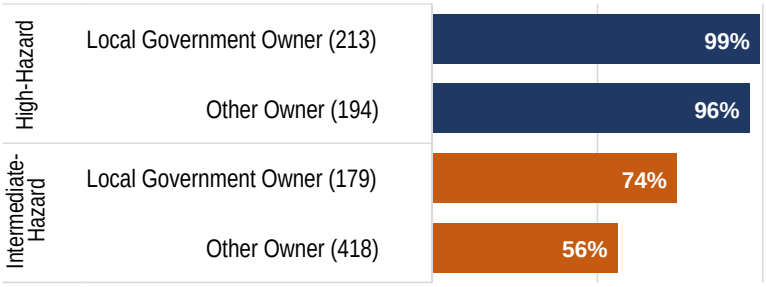


Local governments own (or co-own) 392 of the 1,004 intermediate- and high-hazard dams in New York State.

Owners Responsible for Dam Safety

- Owners are responsible for inspecting and maintaining dams.
  - Large dams, intermediate-/high-hazard dams
- Owners of intermediate-/high-hazard dams:
  - Must have Emergency Action Plans,
  - Must perform engineering assessments at least every 10 years, and
  - Must certify compliance annually.

Most Intermediate- and High-Hazard Dams Have Emergency Action Plans



Source: DEC data with OSC calculations. An EAP is not required for a small number of intermediate and high-hazard dams.

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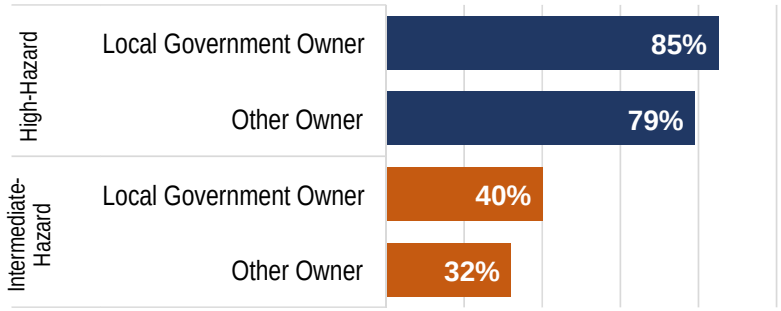
Local Government Dams Are More Likely to Have Engineering Assessments



Source: DEC data with OSC calculations. Excludes FERC-regulated dams.

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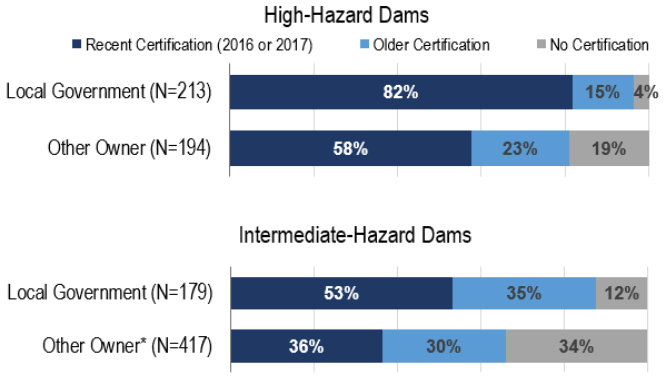
Meeting the Certification Requirements

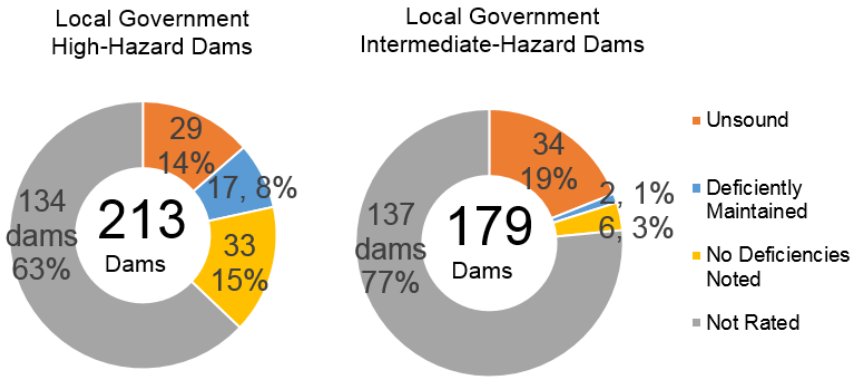


Source: DEC data with OSC calculations. Figures may not sum to 100 percent due to rounding.
* Includes dams with unknown owners; excludes one dam with a certification date in 2020.

Monitoring Dams in New York State

- DEC can investigate/inspect/evaluate dams and assign condition ratings:
  - "unsafe," "unsound" or "deficiently maintained."
- DEC can order owners to repair or remove dams and even do the repairs and removal itself if the owner fails to comply.

Few Dams Have Condition Ratings



Source: DEC data with OSC calculations.

Funding for Dams

- Much less than for bridges:
  - National Dam Safety Program ($13.9 million/yr)
  - Federal High-Hazard Potential Dam Rehabilitation Program ($10 million/yr)
  - United States Department of Agriculture watershed protection programs
- DEC may charge dam owners for repairs through a property tax levy type mechanism.

Promoting Dam Safety

What Local Officials Can Do

- Comply with dam safety laws and regulations.
- Include dams in capital asset planning.
- Raise awareness about other dams that could affect residents:
  - Verify the Emergency Action Plans for those dams.
  - If your municipality lies within the inundation area for a dam, request a copy of the field inspection report for that dam from DEC.

Promoting Dam Safety

What Residents Can Do

- Understand risks dams pose:
  - Local emergency management agencies can help residents identify risks.
  - FEMA Flood Insurance Rate Maps and USGS streamflow maps.
  - Understand emergency warning systems and alert notifications.
- Help identify neglected or orphan dams.

So...

Dam Takeaways

- We know much less about dams than we do about bridges.
- Federal role is limited.
- State has an oversight role, but owners bear most of the responsibility for dam safety.

More on New York Dams

OSC's Report on Local Dams

http://www.osc.state.ny.us/localgov/pubs/research/dam-infrastucture-2018.pdf

Interactive Map and Data

http://wwe1.osc.state.ny.us/localgov/dams/dams.html

Drinking Water Systems and Combined Sewer Systems

Drinking Water Systems

- New York's water systems may require nearly **$40 billion** in repairs and improvements over the next two decades.
- Many of the State's water systems are over **50**, or even **100**, years old and operating far beyond their useful life.

Drinking Water Systems

- Recent high-profile water system failures and problems are the latest signs of the need to spend more on water delivery systems.
  - **Hoosick Falls** – PFOA contamination of ground water.
  - **Newburgh** – PFOS contamination of reservoir.
  - **New York City, Syracuse, Albany,** and **Troy** have all had serious water main breaks.

Drinking Water Systems

Audit Findings

- **Water Loss** – Many water systems are losing water, in some cases exceeding 50 percent.
- **Weak Internal Controls** and **Improper Financial Practices**.
- **Lack of Planning** – Needed to address necessary, and potentially costly replacements and renovations.

Drinking Water Systems

Security

- There is concern over the security of water systems from cyberattacks on their industrial control systems.
- A recent example was a cyberattack on a dam in Rye, NY.

Drinking Water Systems

- **939** local governments have water departments or districts, with revenues of **$1.1 billion**.
- **27** public water authorities, with revenues of **$4.6 billion** (including New York City).
- **277** private water companies.

Learn More

OSC's Report on Drinking Water Systems in New York State

http://www.osc.state.ny.us/localgov/pubs/research/drinkingwatersystems.pdf

OSC's Report on Oversight and Monitoring of Municipal Water Systems

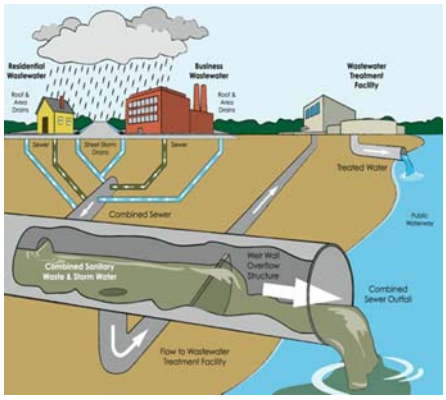
http://www.osc.state.ny.us/localgov/pubs/research/municipal-water-systems.pdf

Combined Sewer Systems

Collect and commingle **stormwater** (rain and snow melt) with **wastewater** (untreated human and industrial waste, toxic materials, and debris).

Combined Sewer Systems

- Untreated or partially untreated discharge is sent directly to rivers, lakes, and coastal waters.
- The "outfall" is the point of discharge.
- Combined Sewer Overflows (CSOs) are:
  - Deliberate.
  - Regulated and permitted by State and federal government.



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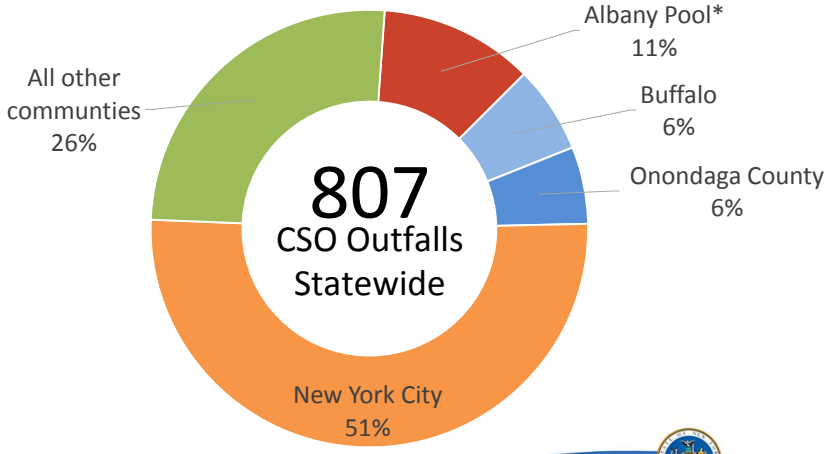
Combined Sewer Systems

New York State Distribution



Source: Department of Environmental Conservation, 2015.
*The Albany Pool is a group of six Capital District communities.

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Combined Sewer Systems

Effects on Human and Environmental Health

- Sewage and collected runoff increase nutrient density of receiving waterbody.
  - Harmful algal blooms (HABs)
- Swimming and recreation.
- Fishing.
- Economic development – unpleasant odor and appearance.

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Combined Sewer Systems

Magnitude of the Problem in New York State

- **10+ million** residents live in communities with combined sewer systems.
- **46** communities have combined sanitary and storm sewers.
- **43 percent** of CSO outfalls are in urban upstate communities.
- **807** combined sewer overflows.
- **6.5 billion** gallons of untreated water were discharged in 2017.
- **220** waterbodies are affected in New York State.

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Combined Sewer Systems

Federal and State Roles

- US Environmental Protection Agency:
  - Clean Water Act.
- New York State:
  - State Pollution Discharge Elimination System (SPDES) permits wastewater facilities to discharge.
  - Consent orders.
  - Sewage Pollution Right to Know Act.

Combined Sewer Systems

Sewage Pollution Right to Know Act (SPRTK)

- Human health can be affected by contact with contaminated water.
- Muni must report discharge of untreated sewage:
  - to DEC and local health department immediately, and
  - to local officials in nearby affected communities within four hours.
- In CSO communities, discharge is likely to happen at any wet weather event.

Combined Sewer Systems

Number and Volume of Discharges – Data

- 1900 unique overflow events in SFY 2016-17.
- Not all reports are CSO related.
- Sewage discharge volumes from most CSOs are estimates.
- Difficult to judge whether events/volume have changed due to underreporting.

Combined Sewer Systems

Strategies

- **Separate sanitary from storm sewers** in sectors where feasible or new.
- Use **green infrastructure** to manage and slow the water before it reaches the pipe.
- **Traditional infrastructure** upgrades.
- Residential programs and education.
- Regulations on development.

Combined Sewer Systems

Strategy: Separate System

- Separation after the fact is disruptive and expensive.
- Less variability in volume sent to the Wastewater Treatment Plan.
- Albany Pool designated $11.8 million to separate sections in Troy, Albany, and Cohoes.

Combined Sewer Systems

Strategy: Green Infrastructure

- Land-use changes for stormwater retention:
  - Install permeable pavement in parking lots.
  - Preserve green space and use vegetation to slow movement of water.
  - Create catchments or low areas that detain water.

Combined Sewer Systems

Strategy: Traditional Infrastructure +

- Onondaga County-Syracuse Metro CSO use gray and green solutions:
  - $107 million to build two underground detention basins (holding over 11 million gallons) to meet court-ordered goals.
  - Community rain barrel program.
  - Green roofs.

Learn More

OSC's Report on Overflows From Combined Sewer Systems

http://www.osc.state.ny.us/localgov/pubs/research/infrastructure-series/combined-sewers.pdf

Water Infrastructure and Fiscal Stress

- Financial and operational responsibility ultimately lies with local governments.
- Long-term approach and capital planning are key.
- Farsighted responses are more difficult when fiscal stress is immediate.
- Cost of inaction is unacceptable to human health and the environment over both short and long term.

Policy Considerations

Intergovernmental Roles and the Value of Data

- Getting good infrastructure data is costly.
- State-level data is valuable for:
  - Allocating State and federal resources.
  - Ensuring public safety.
  - Offering technical support to local governments.
  - Evaluating the effectiveness of aid programs.

Thank You

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