

Office of the NEW YORK STATE

**COMPTROLLER**

# **Drinking Water Systems in New York**

## **The Challenges of Aging Infrastructure**

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New York State Comptroller  
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# Introduction

New York State has long benefitted from abundant and reliable water resources. Residents expect safe and affordable water for basic daily needs, and industrial, institutional and commercial users depend on the availability of water resources to produce their goods and deliver services. Local governments, water authorities and private water companies serve the important function of delivering water through an extensive but aging infrastructure. The work of upgrading New York’s water infrastructure merits sustained attention.

Local government officials and the communities they serve are increasingly concerned about the short and long-term outlook for their water systems. As new examples of the vulnerabilities of water systems, from contamination to water main breaks, continue to emerge in New York State as well as other areas of the country, the public and private sectors will expect government to offer solutions. Paying for these solutions will present a considerable challenge.

### New York’s Local Water Systems by the Numbers

- **939** local governments have water departments or districts, with a total revenue of **\$1.1 billion** (not including New York City).
- Major municipal water revenues:
  - **79%** water fees
  - **15%** property taxes
- Major municipal water expenditures:
  - **49%** contractual
  - **33%** personal services and benefits
  - **15%** debt service
- **27** public water authorities, with revenues of **\$4.6 billion** (including New York City).
- Typical monthly water costs for consumers range from **\$20** to over **\$100**.
- Estimated 20-year cost of needed water investments:
  - **\$22 billion** (EPA)
  - **\$39 billion** (DOH)

The following report offers an overview of the different ways in which public water supplies are provided, regulated and funded in New York State. It also focuses on some of the specific concerns facing local governments including their own funding trends, capital planning practices and the emerging risk areas of contamination and security.

# Water Systems

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The fundamental elements of water systems are their ownership, infrastructure and the governmental framework within which they operate. In sparsely populated areas, there may be no water system at all, other than privately maintained wells or surface-water sources. However, in most urban and suburban areas of the State, water is provided by a local government water department or district, a public water authority or a private company. The following discussion focuses on water systems operated by local governments and public authorities.

## Physical Infrastructure

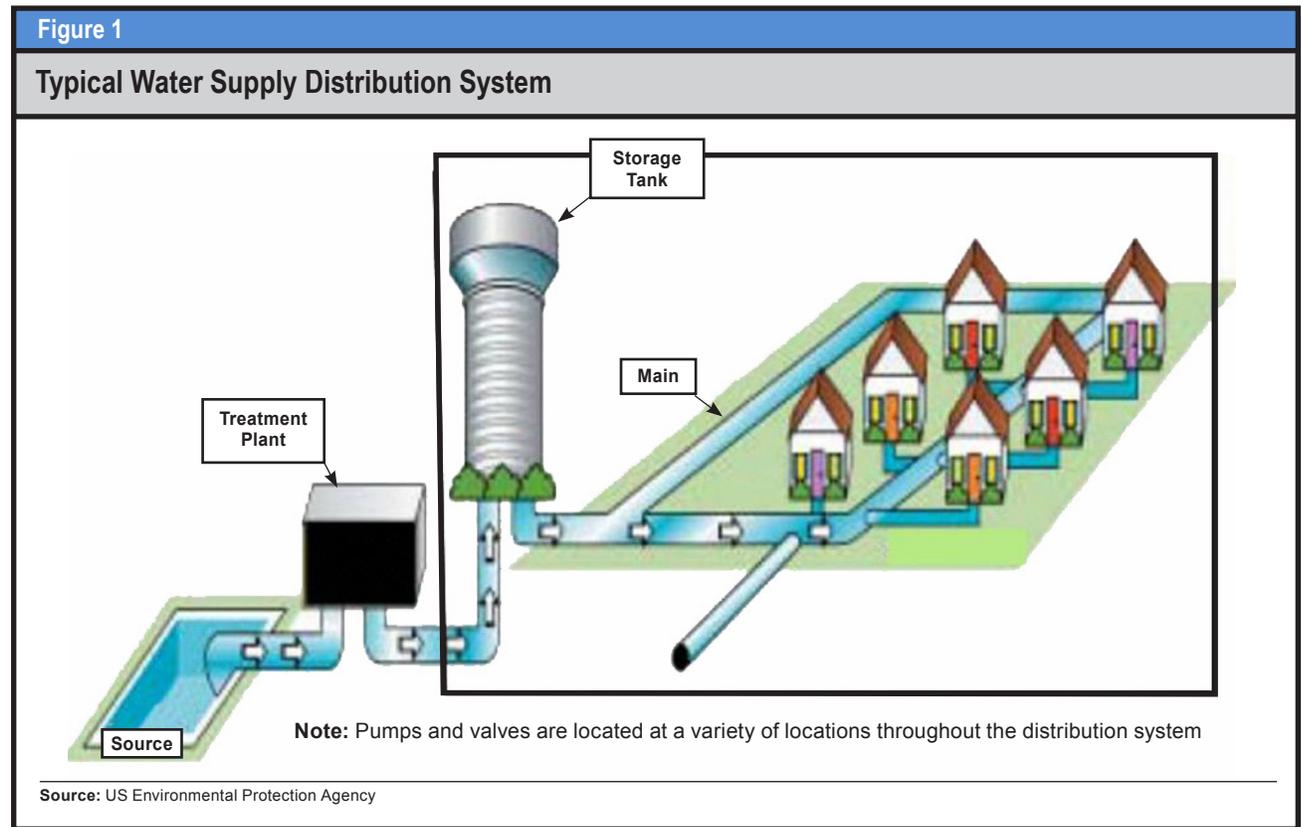
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Public water systems vary greatly in size and complexity. The smallest systems – for example, those that supply a single business or neighborhood – may use groundwater drawn from a well or nearby surface water source (typically a lake, reservoir or river). Larger systems – like those that serve suburban towns – may also draw from local sources or a regional supplier, and often depend on complex storage and distribution networks. Cities, with their historically dense development, generally import their water from outside their municipal boundaries (often from city-owned sources), both to ensure adequate capacity and to prevent contamination. New York City’s water system is by far the largest in the State, drawing water from City owned reservoirs as far away as the Catskill Mountains, conveyed through hundreds of miles of tunnels and aqueducts.<sup>1</sup>



## Water Distribution Systems

1. Water originates from a source or sources, generally from a collection point such as a river, lake, reservoir or a well tapping into an aquifer.
2. A treatment plant purifies the water through filtration and/or disinfection, and provides corrosion control if required.
3. Next, the water is often pumped to an elevated storage tank or pressure tank.
4. Finally, water mains and other distribution pipes use gravity or pumps to convey water to users.
5. Most large community public water systems and many small systems include meters to measure water usage for billing and conservation purposes.



## Government Framework

Many different governmental entities have a role in the ownership, operation and regulation of water services.

- Local governments (cities, villages, towns and a few counties) operate and fund the majority of water systems that supply significant populations.
- Water authorities, which are separate public corporations established by State legislation, also operate some water systems.

Regional water systems, often covering a metropolitan area, may be run by either water authorities or counties. Private water companies' operations range from small rural systems to large regional enterprises.

See Figure 8 for more information on the largest water systems in New York State.

### Municipal Water Departments

As part of their financial reporting to the Office of the New York State Comptroller (OSC), most cities and villages report having water departments – or divisions carrying out similar functions – that serve the entire municipality. Additionally, 9 counties and 40 towns report having entity-wide water departments. In all, 474 local governments and 1 joint activity provide water services to all of their residents.

### Water Districts

City and village systems generally provide water to the most densely populated areas. The majority of towns do not provide water to all of their residents, but instead provide water to properties in specific areas of the town, known as water districts.<sup>2</sup> This allows towns to serve only population centers that would benefit from a more centralized water system, while in undeveloped or less-developed areas, private well water may be a better solution.

Town boards generally establish and administer water districts. The properties in a particular district bear the district's costs, not the taxpayers of the town as a whole. A single town may have multiple water districts, and 484 towns (half of the towns in the State) have at least one.<sup>3</sup> Counties also may establish and administer water districts, which operate similarly to town districts.

**Figure 2**

**Local Government Water Provision**

County	City	Town			Village	Joint Activity	Total
		Town-Wide Only	Water Districts Only	Town-Wide and Water Districts			
9	54	20	464	20	371	1	939

**Source:** Office of the New York State Comptroller (OSC). Does not include New York City. Towns may provide water as a town-wide function, by water district or both. Joint Activity - Northern Westchester County Water Works, serving the Towns of Cortlandt, Yorktown and Somers and the Montrose Improvement District.

## Water Authorities

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At least 27 local authorities in the State report carrying out functions related to public water. They serve areas ranging from a single town or city to a region, and include several of the State's largest public water systems, including New York City's. While most of these authorities own and operate water systems, others have different functions. Water authorities may exist solely to issue bonds for water system improvements that are provided by separate water boards or authorities, for example, or they may conduct water-related activities other than water distribution. On the other hand, some water authorities provide services other than drinking water distribution, such as sewer services.<sup>4</sup>

## State and Federal Roles in Water Provision

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In New York, the federal and State governments have two major water-related roles: regulating public water systems and providing funding for local water projects.

The regulation of public water systems takes place mainly through the United States Environmental Protection Agency (EPA) and the New York State Department of Health (DOH).

- Federal laws, including the Safe Drinking Water Act (SDWA), and EPA regulations set the basic regulatory structure and standards.<sup>5</sup>
- State laws and DOH regulations then adopt and may expand these basic standards for public water systems in New York State.
- New York City and 36 counties oversee the water systems within their jurisdictions, while DOH has direct oversight of systems in the remaining 21 counties. For example, every public water system is required to create annual Water Quality Reports with information on water sources, treatment and quality. These reports are distributed to the systems' end users, and are filed with the overseeing agency.<sup>6</sup>

In addition, the New York State Department of Environmental Conservation (DEC) regulates drinking water sources (such as lakes and rivers) and their utilization.<sup>7</sup> Wells that supply individual private residences are generally not regulated, but wells that supply multiple dwellings or the public in stores, hospitals, schools, etc. are regulated as public water systems as described above.<sup>8</sup>

The 277 private water companies that provide water to about 800,000 people in the State are also subject to all the regulations discussed above. In addition, the New York State Department of Public Service regulates these companies as public utilities. Many are very small – homeowners associations run 145 of them – but a few are among the largest water suppliers in the State.<sup>9</sup>

The State and federal governments also provide funding for water infrastructure projects. (See “State and Federal Aid Is Limited” on page 19.)

# Water System Challenges

New York State is home to some of the oldest continuously settled communities in North America, and some of the water infrastructure is nearly as old. Many of New York’s water system assets are near or past their suggested useful lives. Water mains that carry water throughout the system, transmission lines to specific users, and the pump tanks and treatment facilities are susceptible to deterioration, leading to long-term – sometimes substantial – water loss from leaks, but more commonly evidenced by water main breaks. (See “Water Distribution Systems” on page 3.)

The City of New York’s water system is the prime example. It has components that date from the mid-nineteenth century and has become very large and complex. It supplies about one billion gallons of water per day to nine million customers through a system of dams, reservoirs, aqueducts, water tunnels and approximately 6,700 miles of water mains.<sup>10</sup>

## Water Loss

OSC has conducted audits of local government water departments and districts. These audits have identified numerous water systems that are experiencing excessive water loss in the transmission mains between the source of the water and its metered users. In some cases, this loss exceeds 50 percent.<sup>11</sup> Although some water loss is normal and to be expected in certain instances (for example, fire hydrants are unmetered) – high loss rates indicate significant leakage, originating from the underground infrastructure. This is indicative of unseen deterioration or other malfunctions in the distribution system that warrants attention. (See “Water Main Breaks.”)

Water is a valuable asset and it is important to control its loss. Since the local government cannot recoup the cost of lost water with fees, it represents waste of a public resource.

### Water Main Breaks

Breaks in water mains can affect an entire community’s water supply. Some examples of recent notable water main breaks include:

- The City of Syracuse had 372 water main breaks in 2015 and another 114 through September 2016.<sup>12</sup>
- The City of Albany established water restrictions in 2016 after a water main break caused a sinkhole to form, swallowing a car.<sup>13</sup>
- In the City of Troy, officials declared a state of emergency in January 2016 due to a large water main break that also led to citywide water restrictions. This was one of at least 13 significant water breaks in the City over the last five years.<sup>14</sup>
- New York City’s large system also suffers from frequent water main breaks. In 2015, there were 562 water main breaks reported. The number of breaks has varied between 350 and 600 a year between 1999 and 2015. Colder temperatures can increase the number of the system’s water main breaks.<sup>15</sup>

## Contamination

The age of many of the State’s local water systems and the diverse sources of water pollution make drinking water contamination a highly complex challenge.

Water source contamination often comes from industrial sites (see “Water Source Contamination (Chemical)”), a legacy of manufacturing facilities, both currently operating and abandoned, in the State. Inadequate treatment and separation of sewage and agricultural and storm water runoff are other major contributors (see “Water Source Contamination (Wastewater)”). These are covered by DEC’s regulations and are the target of clean-up and prevention programs, including the federal and State Superfund programs for hazardous waste disposal sites.<sup>16</sup>

Lead contamination is a growing concern in public water systems. The primary source of lead in drinking water is the corrosion of materials containing lead in the system. In the past, water systems may have used lead service pipes, lead joints in mains, and solder used in home plumbing as well as plumbing fixtures containing lead. This lead can leach into drinking water, especially — as was the case in Flint, Michigan — when the water is corrosive and is not properly treated.<sup>17</sup> In accordance with the SDWA, EPA and the State have established limits for lead in drinking water. The use of lead materials for water infrastructure, solder and plumbing fixtures has been banned since 1986.<sup>18</sup>

Recently, after some New York school districts discovered higher-than-acceptable lead levels in their drinking water, the State Legislature enacted legislation that requires all public school districts to periodically test the water supplies for lead contamination, except those determined to be lead-free pursuant to the SDWA.<sup>19</sup> Schools with high levels of lead contamination are required to shut off contaminated outlets, such as water fountains and sinks, and address the problematic fixtures and systems.

### Water-source Contamination (Chemical)

In the Village of Hoosick Falls and the Town of Petersburg in Rensselaer County, plastic manufacturing plants had released perfluorooctanoic acid (more commonly known as PFOA) into the environment as a by-product of their industrial processes. The PFOA ultimately found its way into the groundwater sources for both municipalities’ drinking water.<sup>20</sup>

In the City of Newburgh, runoff at the Stewart Air National Guard Base caused contamination by perfluorooctanesulfonic acid (PFOS, a similar chemical to PFOA). The PFOS ended up in Lake Washington, the City’s main reservoir. The EPA has issued health advisory warnings regarding PFOA and PFOS, which have been linked to a variety of adverse health effects.<sup>21</sup>

Chemical contamination has also been reported in other parts of the State, including but not limited to Long Island.<sup>22</sup>

## Water-source Contamination (Wastewater)

Nassau and Suffolk counties on Long Island obtain all of their drinking water from a network of aquifers that underlie the island.<sup>23</sup> Suffolk County's particularly heavy reliance on onsite septic systems has jeopardized local water sources. In many cases, the septic systems were intended for sparse development and seasonal use in areas now densely developed with primarily full-time residents and other users. Many of these systems have effectively failed, but funding to replace them is limited, making solutions including expensive wastewater collection and treatment systems difficult.<sup>24</sup> As a result, these systems contribute the majority of nitrogen pollution in the County's drinking water sources, as well as in the Long Island Sound and the eastern and southern coastal areas.<sup>25</sup>

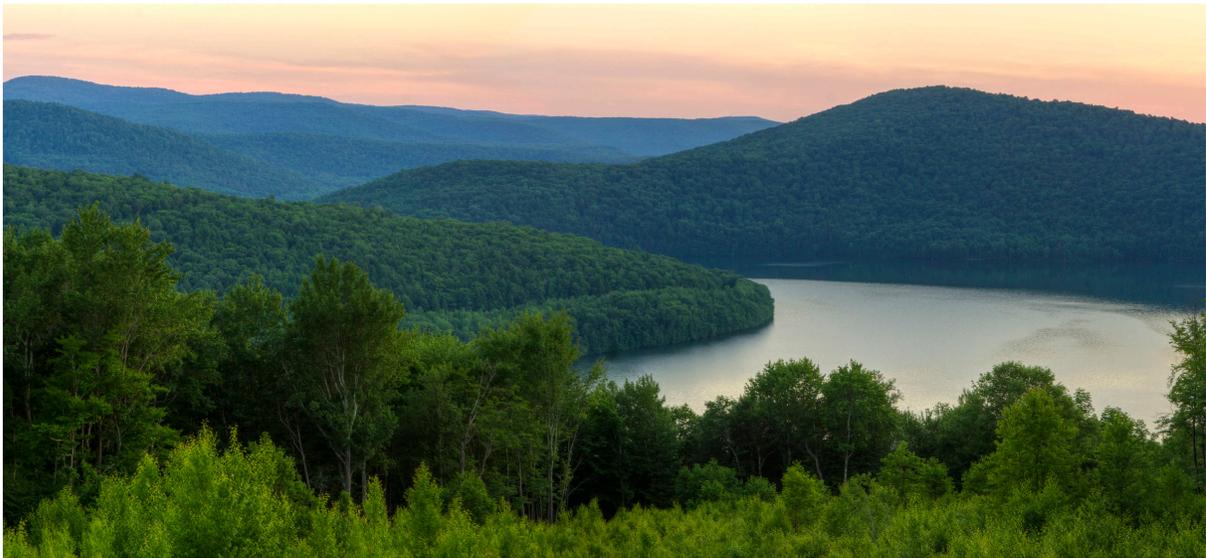


## Security

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Water systems can be vulnerable to natural disasters or vandalism that can compromise the purity of their sources or the integrity of their infrastructure. In recent years, however, the danger of terrorist attacks on water systems has become more of a concern. A 2002 federal law requires community water systems that serve more than 3,300 people (covering 90 percent of public water users) to assess their vulnerabilities and create security and emergency response plans.<sup>26</sup>

One emerging security concern is the potential for cyber-attacks through the growing number of Internet-connected industrial control systems (ICS). Although water system operators at one time controlled their industrial processes manually on site, most facilities now have more automated ICSs. In recent years, facilities have shifted to widely-available lower-cost IT processes with greater Internet connectivity. Increased connectivity enables ICS operators and other support personnel to monitor the system remotely, but it also increases the opportunities for a potential attack. A recent example is a reported cyber-attack on a dam in Rye, New York by operatives linked to the Iranian government. In response, a recently enacted State law requires all water systems to include the possibility of cyber-attacks in their assessments of vulnerability to terrorist attacks.<sup>27</sup> During the fiscal year ending September 30, 2015, the U.S. Department of Homeland Security received notice of and responded to 295 ICS cyber-attacks.<sup>28</sup>



## Constraints on Water Supplies

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Insufficient water supplies and inadequate infrastructure also cause problems in some parts of the State. For example, water mains that are too small can lead to insufficient water pressure that can hamper development, or result in contaminants entering the system from cross-connections with contaminated flows.

Another issue, although less common in New York State than in other parts of the United States, is restricted development because of a lack of available water sources.

- Orange County, for example, has limited local water sources. Although its local public water systems could tap into the New York City water system through the aqueduct, doing so would be expensive. Municipalities that do this must not only purchase the water but must also build pipelines to the aqueduct, facilities to treat the water and a distribution network. Concerns over how recent growth had affected water supplies have led to building moratoriums in the past.<sup>29</sup> Recently, some localities within the County have imposed their own temporary building moratoriums, due in part to limitations in the development of their own water and sewer systems.<sup>30</sup>
- In Rockland County, a densely populated suburban area, rapid population growth has stretched its water resources to the limit. The County gets 61 percent of its water from groundwater wells. Surface water is also limited in the County and most available surface water sources are already being used. Cyclic declines in precipitation have pushed the whole County into periods of water shortage.<sup>31</sup>
- Long Island's water supply is under intense pressure from population growth and related development. Ground water outflow and saltwater intrusion are documented concerns. The aquifers providing fresh water are entirely reliant upon precipitation to recharge this supply. These issues are the subject of study and initiatives by federal, State and local groups.<sup>32</sup>

## Potential Effects of Climate Change

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Climate change may shrink water supplies as well as degrade the quality of remaining supplies. The EPA has published reports indicating that drought conditions have been increasing in intensity, frequency and duration in many areas of the United States. Together with increasing demand, this trend may affect the sufficiency of ground and surface water.

Overall precipitation has actually been increasing in some areas, including the Northeastern United States. However, more of the precipitation is coming in the form of very heavy rains and snowfalls, which can create runoffs that have adverse impacts on the quality of water sources, not to mention the destructive effect of floods on property and infrastructure of all kinds.

Higher air and water temperatures and intensifying droughts can also negatively affect the quality of water in rivers and lakes, the source for the majority of water in New York State. The location of infrastructure can also be an issue. Relocating facilities to protect them from damage due to the potential rise of sea level or other climate-related changes would be costly and disruptive.<sup>33</sup>

# Paying For Water Systems

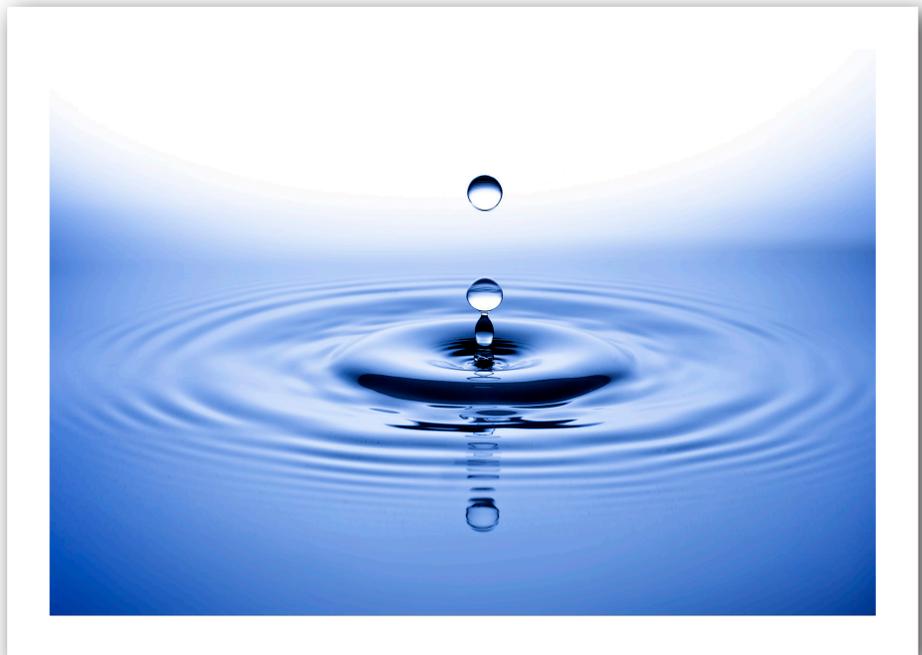
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Addressing these serious present and future challenges for local water systems will be extremely expensive. The EPA has estimated that New Yorkers will need to invest \$22 billion over the 20 years between 2011 and 2030 in order to maintain the State's existing drinking water infrastructure.<sup>34</sup> A 2007 DOH estimate is higher: over a 20-year period, the agency concluded the State will need \$39 billion in capital financing just for drinking water infrastructure projects.<sup>35</sup>

## Current Water Finances

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As previously discussed, the delivery of potable water is often a local government service, but the local entity providing water may be either a municipal government, a local public authority or a private water company. Municipal water departments and water districts may fund this service through property taxes, assessments or fees for usage.<sup>36</sup> Municipalities also use property taxes and assessments to pay for capital improvements, including replacement and new construction. Water authorities and private water companies are not permitted to levy property taxes, so they generally must raise revenues through the imposition of fees and other charges and must structure water rates to include the cost of infrastructure maintenance, improvements and expansion. For any of these providers, their financial resources may be used to fund capital projects on a pay-as-you-go basis or to support the issuance of debt (dependent upon their specific authorization).



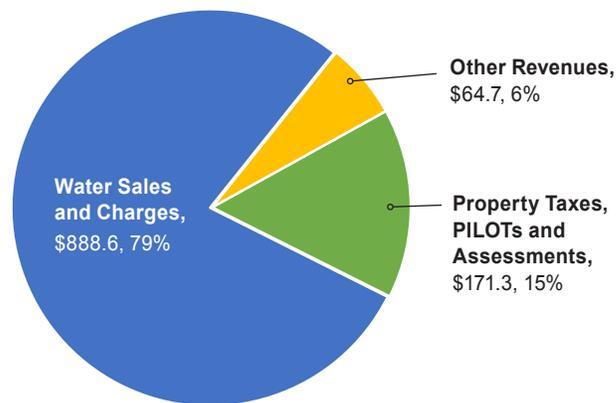
## Municipal Operators

Municipal governments file financial data with OSC annually, including information about water fund operating revenue and expenditures. However, municipalities with water systems are not required to have water funds and may report their water-related activities in their general fund. Even if they do have a water fund, they are not required to use it to report water-related debt. Therefore, the amount actually spent on water-related services may be higher than indicated in this report. Additionally, the residents of most large cities and many of the more populous suburbs receive their water from water authorities, not from their municipality.

- In 2015, local governments reported collecting an estimated \$1.1 billion in water fund revenue.
- The bulk of this revenue (\$889 million, or 79 percent of total revenue) was from fees and charges related to the sale of water (see Figure 3).
- Many water funds also received property tax revenue (\$171 million, or 15 percent of revenue).
- Only a small amount of municipal water revenue comes from other sources (\$65 million, or 6 percent), including grants and aid from the State.
- Water fund revenue grew by 35 percent between 2005 and 2015, compared to 27 percent for all local government funds, combined.

**Figure 3**

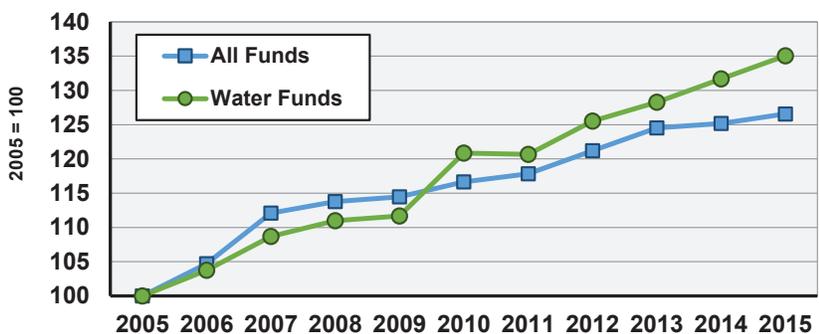
**Municipal Water Revenues, FY 2015 (Millions of Dollars)**  
Excluding New York City and other water authorities



Source: OSC. Includes estimates for some local governments.

**Figure 4**

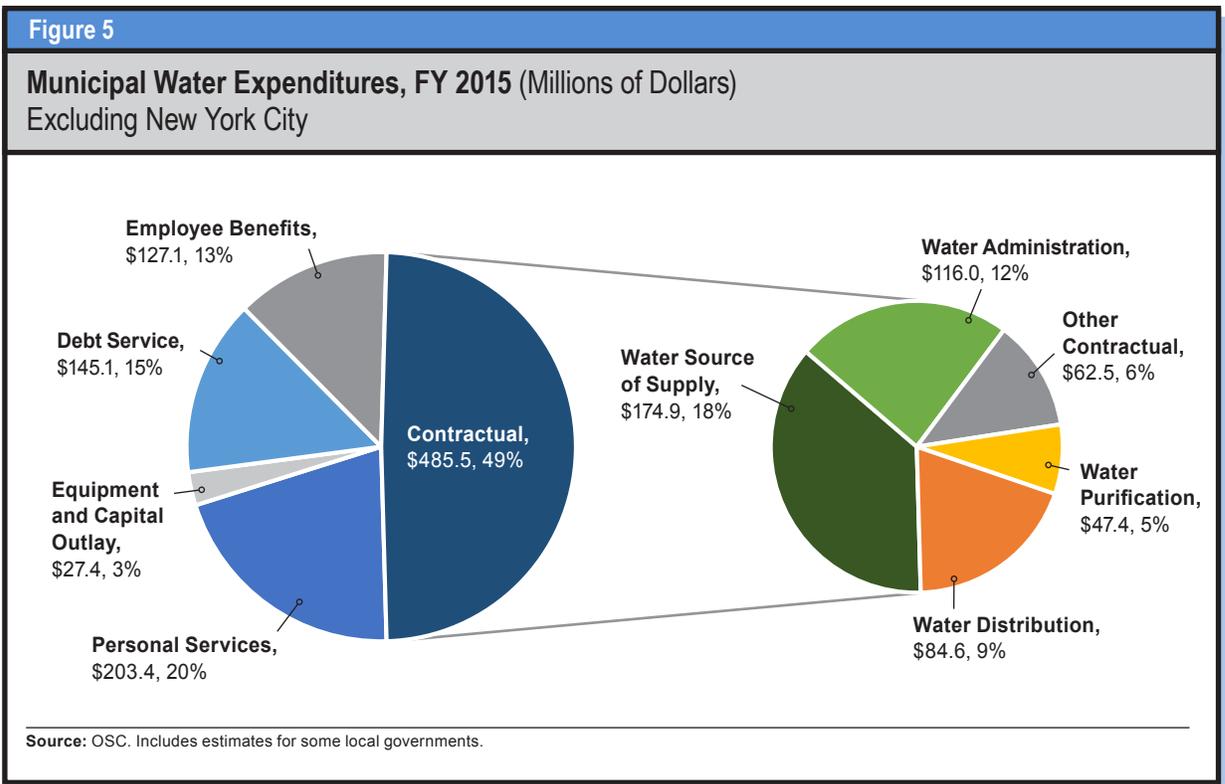
**Water and All Funds Revenue Growth, 2005 to 2015**



Source: OSC. 2015 includes estimates for some local governments.

Municipalities spend most of this revenue on the day-to-day operation of the water systems, including routine maintenance.

- Contractual spending is the single largest expenditure category (49 percent of expenditures), and typically includes the costs of:
  - The water itself;
  - Purifying (treating) the water;
  - Distributing the water; and
  - Administering the water system.
- Personal services (20 percent) and employee benefits (13 percent) are also major areas of expenditure.
- Debt service that is paid through water funds accounts for about 15 percent of municipal water spending.



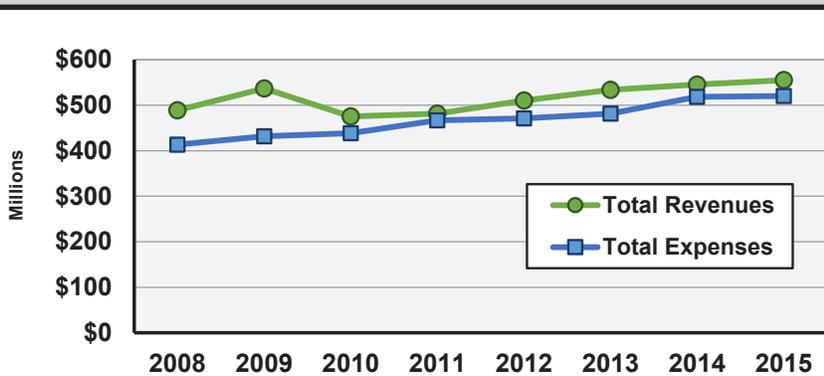
## Water Authorities

New York's 27 local water authorities file financial data in a different way than municipal water systems, making direct comparisons difficult. In 2015, however, New York's water authorities reported \$4.6 billion in revenues.<sup>37</sup> New York City's water system accounted for \$4.0 billion of the revenues. As mentioned above, some of these authorities have functions other than water provision, so revenue associated with functions such as wastewater and economic development account for some of the total revenue.

As with municipal water funds, there was a spike in water authority revenues around the time of the last recession, with additional federal grant funds and interest rate subsidies for debt, both provided under the American Recovery and Reinvestment Act of 2009.<sup>38</sup> However, in general, water authority revenue has been growing at a relatively modest compound annual rate of 1.8 percent between 2008 and 2015, slower than the growth in municipal water revenues.

Figure 6

### Water Authority Finances, 2008 to 2015 Excluding New York City



Source: OSC, Public Authorities Reporting Information System.  
Data only available beginning in 2008. Includes only Water Authorities that reported in all years.

## Public Water Revenues by Region

The mix of water systems varies by region, although it can be difficult to quantify. Figure 7 shows total revenue collected in municipal water funds and by water authorities, though the measures are not entirely comparable, as discussed above. The table does not reflect the revenue of private water companies, which provide water to most of Rockland County and a significant amount of Nassau County, and therefore it understates the revenues of the Mid-Hudson and Long Island regions. It also does not cover private wells, which supply users in many less-developed areas.

In general, municipal water systems account for the bulk of water revenues collected in most regions. In some cases, this includes revenues that the municipalities pay to water authorities for water supplies.

New York City has the largest authority operated system.<sup>39</sup> Other large water authorities serve Erie, Monroe, Onondaga and Suffolk counties and the cities of Albany, Buffalo and Niagara Falls. There are no water authorities at all in the Southern Tier region.

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**Figure 7**

### Water Revenues By Region, FY 2015 (millions of dollars)

Economic Region	Municipal Water Revenues	Water Authority Revenues
Capital District	\$120.5	\$58.0
Central New York	\$74.4	\$45.4
Finger Lakes	\$107.3	\$73.7
Long Island	\$192.3	\$216.3
Mid-Hudson	\$329.9	\$10.9
Mohawk Valley	\$33.4	\$22.4
North Country	\$48.2	\$26.0
Southern Tier	\$69.5	NA
Western New York	\$132.9	\$148.8
New York City	NA	\$3,977.2
<b>Total</b>	<b>\$1,108.3</b>	<b>\$4,578.8</b>

**Source:** OSC and Public Authorities Reporting Information System. Does not include private water companies. Some water authority revenues may be from charges to local governments and, therefore, also included under municipal water revenues. Figures may not add due to rounding.

## Cost to the Consumer

The cost of water for the consumer varies considerably. (See Figure 8.) For most of the major water systems, the typical cost for a residential customer using 12,000 gallons per month is between \$30 and \$60. The most expensive of the major water providers with a typical cost of over \$110 a month is Suez Water (also known as United Water), a private water company that supplies much of Rockland County. New York American Water in Nassau County, the second highest cost major water system at about \$93 a month, is also a private water system. At the other extreme, the Town of Hempstead Water Department provides water to its residents at a typical cost of only about \$20 each month (system expenses may also be funded with assessments).

Figure 8					
Largest Water System Operators in New York State, 2016					
System	Service Area	Population Served	Water Source	Typical Monthly Water Cost*	Notes
New York City Water System	New York City	8,271,000	Surface (Catskills/ Delaware and Croton Watersheds)	\$61.12	
Suffolk County Water Authority	Suffolk County	1,100,000	Ground	\$29.22	
Monroe County Water Authority	Suburban Monroe County and Parts of Surrounding Counties	496,753	Surface (Lake Ontario, Hemlock Lake)	\$40.38	
Erie County Water Authority	Suburban Erie County	480,939	Surface (Lake Erie, Niagara River)	\$38.04	Operates 15 Systems
Suez Water (United Water)	Parts of Rockland and Westchester Counties.	471,028	Ground and Surface (Lake DeForest)	\$111.85	Private Water Company - 3 Systems
New York American Water	Parts of Nassau County	422,540	Ground	\$92.71	Private Water Company - 4 Systems
Onondaga County Water Authority	Suburban Onondaga County and Parts of Surrounding Counties	300,000	Surface (Lake Ontario, Otisco and Skaneateles Lakes)	\$42.89	
Buffalo Water Authority	City of Buffalo	276,000	Surface (Lake Erie)	\$48.19	
Rochester City	City of Rochester	214,000	Surface (Hemlock and Canadice Lakes)	\$50.00	
Yonkers City	City of Yonkers	196,086	Surface (Purchased from NYC System)	\$79.16	
Syracuse City	City of Syracuse	192,000	Surface (Skaneateles Lake)	\$46.68	
Mohawk Valley Water Authority	Parts of Herkimer and Oneida Counties	130,000	Surface (Hinckley Reservoir)	\$61.08	
Water Authority of Western Nassau	Part of Nassau County	120,000	Ground	\$48.67	
Town of Hempstead Water Department	Part of Nassau County	110,000	Ground	\$20.18	
Albany City	City of Albany	101,082	Surface (Alcove Reservoir)	\$42.83	

**Source:** Safe Drinking Water Information System, United States Environmental Protection Agency, <https://www3.epa.gov/enviro/facts/sdwis/search.html>.

\* Cost for residential customer using 12,000 gallons per month. Calculated by OSC based on information from each water system for the latest available year. Municipal water systems may also be funded with ad valorem or benefit assessments.

## Paying for Water Improvements

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### Water System Repair and Replacement is Urgently Needed

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As discussed above, much of the water infrastructure in New York State is aging and reaching the end of its useful life. Municipal development in the State has been taking place for many decades, in some cases centuries. Therefore, municipal water infrastructure has been in place for a long time, often over 50 years and sometimes over 100 years. In recent decades, having developed infrastructure was financially advantageous because communities did not need to invest in new water systems. As a result, local leaders managed to keep water bills low and focus financial resources elsewhere.

Since much of the water infrastructure is underground, it does not typically draw the attention of residents until failure or contamination occurs. Therefore, it can be difficult for local leaders to give water systems the attention and priority that they deserve. This same characteristic also makes it difficult to determine a water system's condition and accurately budget for needed repairs and replacement. Adding to the desire to keep water bills low was the common perception of water access as a right, a resource that should be available to all property owners, residents and businesses, at nominal prices. However, delays in improvements and replacement add to the cost of these repairs, as they can lead to degraded and disrupted water service and increasing expenditures if emergency repairs become necessary.

#### Fiscal Impact of Water Conservation

The success of water conservation efforts in recent decades has added to the cost of water for some users. The movement from real property tax-based revenues to metered water sales in the form of fees, combined with the more recent implementation of low-flow water fixtures and efficient appliances, has decreased water usage greatly.<sup>40</sup> Between 1990 and 2010, the per capita daily use of public water nationally declined from 153 gallons to 134 gallons.<sup>41</sup> Yet the water systems in many larger population centers predate these changes. While water conservation can help with water sufficiency issues and has clear environmental benefits, it also means that users must now pay higher prices per gallon for the water they still use in order to support the existing water infrastructure.<sup>42</sup>

Water infrastructure replacement will be very expensive, and many local governments face potential costs that are many times their current annual water budgets. For local governments that have been making only minimal investments in their water systems, it may be difficult to quickly and effectively develop the oversight, planning and financial capacity needed to deal with these problems.

Local governments that are in poor financial condition or have urgent competing financial priorities will often postpone or cancel infrastructure projects. Marginal water systems, however, can hinder economic development, as businesses do not want to expand or relocate to areas with unstable or insufficient infrastructure. This can create a vicious cycle where infrastructure problems limit development. Limited development leads to strained finances, and financial problems increase the difficulty of addressing infrastructure needs adequately. (See “Water and Industrial Development.”)

### Water and Industrial Development

In some cases, investing in major water system upgrades to aid development can backfire. Businesses can make decisions that have financial implications for water providers and may raise the water cost of other consumers.

- In the early 1990s, the Village of Canajoharie built up its water and sewer infrastructure to support the needs of a Beech-Nut plant. About 15 years later, long before the Village paid off the cost of the upgrade, Beech-Nut moved to a different locale, leaving the village to pay for the now oversized system.<sup>43</sup>
- The Saratoga Water Authority built a new facility, chiefly to meet the needs of a GlobalFoundries plant in Malta, NY. However, GlobalFoundries then contracted with a private water supplier for a portion of its water needs. This reportedly has left the authority unable to sell enough water to balance its budget.<sup>44</sup>

## State and Federal Aid Is Limited

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Given the high cost of major water system repairs and upgrades, local governments often look for federal and State funding to defray these costs. This funding is limited, but there are some recent initiatives that local officials should be aware of.

- Most of the State funding for local water projects comes from the Drinking Water State Revolving Fund (DWSRF), which provides low-cost financing for such improvement projects throughout the State. DOH and the Environmental Facilities Corporation jointly administer this fund. As borrowers pay back the revolving fund's loans, the money becomes available for new projects. The DWSRF can provide market rate financing, reduced interest rate loans, and limited grants for eligible water system projects. The EPA administers the federal money that primarily funds this program.
- Since its establishment in 1996, the DWSRF has assisted public water systems with over \$5.24 billion in financing for drinking water infrastructure throughout the State, although only \$337 million of this was in grants.<sup>45</sup> However, 95 percent of the drinking water infrastructure improvement projects submitted to the DWSRF have received no assistance of either kind.<sup>46</sup>
- The DWSRF has also financially supported the proper training and certification of water system operators.<sup>47</sup>
- In response to the significant need for water infrastructure funding (both drinking water and wastewater), the State established the NYS Water Infrastructure Improvement Act (Water Grants Program) in 2015. To date, this program offered a total of \$107.5 million in drinking water grants in State fiscal years 2015-16 and 2016-17, just a small fraction of the decade-old, \$39 billion estimate by DOH for work needed over 20 Years.<sup>48</sup>
- The EPA also administers the Water Infrastructure Finance and Innovation Act (WIFIA), which operates in coordination with the DWSRF in order to provide subsidized funding for large projects.<sup>49</sup>
- The Executive Budget for State Fiscal Year 2017-18 proposes a \$2 billion capital appropriation for water quality improvements, providing \$400 million in spending authority annually over five years. The proposal would provide financing for drinking water and wastewater infrastructure upgrades, land acquisition to protect water sources, replacement of lead-contaminated drinking water lines, and remediation of drinking water contamination from solid waste sites. Part of the appropriation would fund a new Regional Water Infrastructure Grants Program that would provide State assistance to municipalities, public benefit corporations and public authorities for water infrastructure projects that have a regional impact.

# Conclusion and Recommendations

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There are many ways in which the responsibility of operating and maintaining a water system can be a significant challenge for a local government and the people it serves. A failure in a water system, whether through contamination, main breaks or deliberate sabotage, can be catastrophic for a community. To further complicate matters, developing the proper safeguards to protect against certain types of risk can require local officials to develop special expertise in more complex areas such as security.

Certain problems cannot be predicted and may unfold without any forewarning. Even when officials are able to think strategically about their short-term and long-term needs, identifying adequate financial resources to pay for improvements and repairs can be a daunting task.

Ideally, water rates and/or property taxes should be sufficient to support all water service expenses, including capital improvements. Municipalities must plan for these realistically and budget with them in mind. While State and federal aid may be of some assistance, it is not currently at a level that will solve the problems associated with water system costs. Capital planning is the only realistic path toward effectively maintaining and improving water systems. Unfortunately, OSC audits have found that many local governments do not consistently use capital planning as a tool. Furthermore, even the most thoughtful plans sometimes take a back seat during tough fiscal times.

As one water industry group has put it, the United States is now in an “Era of Infrastructure Replacement,” when we will need to rebuild our now aging water systems.<sup>50</sup> Local governments have the primary responsibility for this task, even as their resources are already stretched thin and there is little appetite for increasing taxes, assessments and fees. In addition, many of the existing water systems were designed to serve populations that have shifted, leaving older water systems with excess supply. The potential effects of climate change add another layer of uncertainty to the long-term availability of clean drinking water and dependability of existing infrastructure.

All of these facts make for a challenging environment for municipalities. However, there are some simple steps that can help local officials confront this important issue.

## Sustained Commitment to Planning

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Every local government should have a multiyear financial plan, a corresponding capital plan, and a workable process to keep both of them up-to-date. A financial plan projects revenues and expenditures for several years into the future, given a set of economic and policy assumptions, while a capital plan balances the need to maintain and improve the local government’s capital assets (essentially everything a local government owns) within the local government’s fiscal constraints. The best capital plans include water asset needs in the context of all municipal needs. For example, repairs and upgrades to drinking water systems should be coordinated with similar wastewater system needs, or even road repairs and other related infrastructure repairs and improvements. Local governments often borrow to achieve these ends, and a good capital plan will include a consideration of how much debt is sustainable.

## **Understand and Effectively Utilize Capital Reserves**

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In conjunction with strong planning practices, local governments should also consider appropriate use of capital reserves for water assets. When municipal officials create and use financial plans, they can identify when water rates are insufficient to meet the true costs of water asset repairs, upgrades and replacements. Good planning can help officials avoid situations where they may be tempted to follow unsound practices, such as diverting water fund reserves to plug a structural budget gap in the general fund, for example.

OSC provides training and publications that can help local government officials learn more about capital planning, multiyear financial planning and establishing capital reserves. These can be found at The Academy for New York State's Local Officials.

## **Develop a Cogent Communication Strategy**

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Clean, safe drinking water is universally considered to be a critical resource. However, with respect to matters of responsibility and cost, reasonable people may disagree. Local leaders must work diligently to increase civic engagement on this important issue. Communication strategies must convey a simple message about needs, tradeoffs and risks if no action is taken. Such a process can help set the tone for thoughtful deliberation by the community.

A particularly important element in the process is to develop and communicate a long-term approach toward any anticipated rate changes. This requires municipal officials to create a reasonable and defensible estimate of required annual increases to achieve a long-term capital plan, and then ensuring that rate-payers understand what those increases represent and how they are necessary to achieve the established goals.

## **Be Aware of Funding Opportunities**

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Although there is more need than funding available, federal and State grants and loans are an important part of a local government's overall resources. As new programs are unveiled, it is critical that local officials stay informed about these opportunities and any conditions that might be attached.

Comptroller DiNapoli has called for more comprehensive capital planning by New York State to inform policymakers and the public as to the level of investment needed for both State and local infrastructure. Such a process would provide a stronger foundation for effective planning and investment.

Future work from this Office will focus on helping local governments learn more about the critical challenges of maintaining and paying for water systems.

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- <sup>4</sup> Some separate public authorities have been created because the State Constitution generally prohibits the creation of public corporations having the power both to contract indebtedness and the power, within a city, to collect fees for services, if the services are of the nature formerly furnished by the city and there is no voter approval.
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