



Strengthening Ohio's Water Infrastructure: Financing and Policy

With generous support from the Ohio
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Cover photo: "Southerly Wastewater Treatment Plant." Image by John Quinn. Credit: Northeast Ohio Regional Sewer District.

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EXECUTIVE SUMMARY

This report is written in fulfillment of a grant from the Ohio Water Development Authority (OWDA) to the Greater Ohio Policy Center (GOPC) to examine new and innovative financing techniques for water, wastewater, and stormwater infrastructure in the state of Ohio.¹ The OWDA's market-rate Fresh Water revolving loan fund and the Ohio Environmental Protection Agency's (EPA) subsidized revolving loan funds for water and wastewater projects have some of the largest loan volumes in the nation, but the escalating need for capital investment could mean decades of customer rate increases for Ohio's villages and cities. This work builds on our Phase I Gap Assessment report, released in Fall, 2015, which discussed the many challenges facing Ohio's cities as they upgrade water and sewer systems. Our March, 2016, report "Analysis of Green Water Infrastructure and its Viability in Achieving Financially Sustainable, Effective Sewer and Water Systems," discussed opportunities to use "green infrastructure" to reduce stormwater runoff while lowering capital costs and improving the quality of life in urban areas.

The fiscal sustainability of Ohio's water utilities cannot be ensured only by raising customer rates or increasing the level of state or federal financial assistance. Water utilities must adopt new management practices and sometimes even new organizational structures if they are to provide high quality services that meet regulatory requirements and customer expectations. The OWDA, EPA, and other agencies have made significant progress in encouraging structural changes to the water utility sector, but more could be achieved with targeted state action.

Our primary recommendations are as follows:

- *Increase incentives for regional coordination and consolidation of small drinking water and wastewater systems.* Small systems are often under severe financial stress to meet regulatory requirements and upgrade facilities. Sharing facilities, technical personnel, or administrative functions such as billing, can help to lower per capita costs and ensure that appropriate management and technical personnel are in place. Ohio's local governments have the option to create county or regional drinking water or wastewater systems through a statutory "Chapter 6119" arrangement or to devise a customized arrangement via contract. Additional state financial incentives can help to encourage this process.
- *Increase incentives for Asset Management Programs.* An asset management program (AMP) enables a utility to map the location and condition of all of its equipment and facilities, assess the risk of failure, and then integrate this information with capital planning and customer rate structures. The US EPA and national water utility associations promote asset management planning as a best practice, and state agencies in Ohio provide technical assistance to help utilities start an AMP. Still, the best evidence is that implementation is spotty, and that smaller utilities are less likely to implement an AMP. Ohio regulatory policy

¹ The opinions expressed in the report are those of Greater Ohio Policy Center, and do not necessarily reflect the views of the Board or staff of the Ohio Water Development Authority.

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may change significantly, however, as the legislature considered an AMP requirement for drinking water systems in 2016 and likely will do so again in 2017. Achieving widespread compliance with this change will require increased technical assistance and some cost-sharing incentives for smaller systems.

- Provide the OWDA or Ohio EPA with additional state funds to help keep affordability within acceptable bounds. Water and sewer user charges have increased at twice the rate of inflation since 2000. Ohio and federal agencies that finance water infrastructure have done an admirable job in coordinating informally but utilities seeking financial assistance are confronted with the need to understand the requirements of multiple federal and state funding sources and to adjust project financing based on uncoordinated agency funding schedules. The Ohio EPA revolving loan funds can offer principal forgiveness in limited circumstances, but these funds fall short of what is needed. Ohio can take an approach used in other states such as Pennsylvania and Minnesota to house some grant funding in OWDA or Ohio EPA to be used in conjunction with revolving loan funds.
- Couple asset management plans with improved statewide data collection on key utility performance benchmarking statistics. National water and wastewater industry associations are recommending performance benchmarking using financial, operational, and service standards as a best practice. Overall, comprehensive performance information about public water utilities is hard to find and is not assembled in any one place. The lack of significant performance and benchmarking information for water and wastewater utilities is an issue not only for the general public but for private investors. In Ohio, basic information such as the number of main breaks and the amount of water loss from drinking systems has to be gleaned from EPA reports on individual systems. At a time when water utilities are asking their customers, investors, and federal and state governments to increase the financial support to the sector, it is vital that water utilities provide useful and accurate information. The state should take the lead in creating a reporting system that is publicly accessible.

Public-private partnerships (P3s) are arrangements in which a public utility leases or transfers control of certain assets to private operators but stops short of complete privatization. P3s are increasingly discussed as a solution to infrastructure financing problems generally. P3s have been used more often in transportation, but their use by water and sewer utilities in Ohio has been limited, partly because the current low interest rate environment makes private financing less necessary and partly because of the ability of state agency revolving funds to increase their loan volumes. It is important to understand that although private operators may bring some up-front financing to a deal, the long-run the costs of increased investment is borne by customers paying increased rates. P3s are not a panacea for the public sector's underinvestment in infrastructure, and in other states they have been used inappropriately by cities to receive one-time cash infusions to shore up budget shortfalls. Nonetheless, there are certain specialized skills and technologies that are well-suited to P3 arrangements, such as electric power co-generation technologies at wastewater treatment plants.

- The state of Ohio should enact a P3 statute specifically for water sector projects that contains safeguards for accountability, transparency, and standardized procedures for Value for

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Money (VfM) analysis, including advance public notice requirements and opportunities for public comment and hearings. The state could also create a technical assistance unit through a state agency or nonprofit organization that can advise local systems on the appropriate use of P3s in water, wastewater, and stormwater issues.

INTRODUCTION

Providing clean drinking water, treating sewage, and controlling stormwater have been viewed as local responsibilities in Ohio, and across the U.S. Drinking water and sewage treatment responsibilities may be handled by departments in the same municipal corporation or they may be completely separate legal entities, potentially organized into county or regional districts. The major revenue sources for water and sewer services are user charges, typically placed into enterprise funds that are dedicated specifically to support the system's needs and separate from the general governmental budget. It is not unusual for 50 percent or more of user charges to be dedicated to capital expenditures and associated debt service payments.² Water utilities³ in Ohio finance their capital spending needs by issuing their own bonds and by accessing loans and grants from state or federal agencies, most notably the Ohio Environmental Protection Agency (EPA), Ohio Water Development Authority (OWDA), and the Ohio Public Works Commission (OPWC).

Over the last several decades, water utilities have faced increasing challenges that have stretched their financial, technical, and managerial capacities. The most important of these challenges is the difficulty of replacing aging infrastructure that may have been installed in the late 19th or early 20th centuries. The tremendous national focus on identifying and eventually replacing lead drinking water supply lines in the wake of the tragedy in Flint, MI, is part of this problem, one that is complicated by the fact that in most cases the homeowner owns the supply line from the street to the house. The recommendations below will not address the lead supply line issue specifically, but, the Flint, MI, and Sebring, OH, situations have shone a light on the fragility of the systems every citizen depends upon. Financing techniques that improve the overall fiscal situation of water and wastewater utilities will make a whole host of infrastructure modernization issues easier to resolve.

In addition to the age of the systems generally, Ohio's sewer utilities have come under increasing regulatory pressure to make large capital expenditures to comply with EPA Clean Water Act requirements that are typically related to fixing combined sewer overflows (CSOs). Combining stormwater and wastewater sewers was a common practice until the mid-20th Century. This practice leads to discharges of raw sewage into waterways during heavy rains, a clear violation of the Clean Water Act. In fact, CSO collection systems are often designed to overflow at specific locations in order to keep excessive flows from overwhelming wastewater treatment facilities. The problem of excessive stormwater is exacerbated greatly by aging infrastructure that is susceptible to "inflow and infiltration," (I/I), e.g., pipes that have cracked due to age, settling, or intrusion of tree roots, combined with illegal drain hookups. These factors cause large amount of stormwater to enter the system. It is not uncommon for aging systems to have a substantial portion of water entering a treatment facility derived from stormwater and not actual wastewater. In the Cincinnati

² Joseph F. Crea, "Identification of Revenue Requirements" *Water and Wastewater Finance and Pricing: The Changing Landscape*, 4th ed., George A. Raftelis, ed., CRC Press: 2015, pp. 149-180.

³ The term "water utilities" will be used generically to refer to drinking water, wastewater, and stormwater utilities in this report.

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Metropolitan Sewer District, for example, 57.5 percent of the wastewater treatment flow in 2014 was due to I/I.⁴

At present, there are 87 communities in Ohio that are under court-supervised consent agreements for CSOs, and over 120 others that have come under EPA findings and orders for various reasons since 2000.⁵ This work will cost large cities such as Akron, Cincinnati, Cleveland, and Columbus billions of dollars over the course of decades and relatively large amounts in small and medium-size cities. Addressing CSO issues can entail a range of interrelated actions, including:

- enlarging the capacity of wastewater treatment plants;
- separating sanitary and stormwater sewer systems, which may also include work on private property to replace lateral lines leading from a building to the main line;
- building deep tunnels to store millions of gallons of runoff during major storms and enlarging the capacity of stormwater conveyance systems;
- addressing infiltration and inflow (I/I) problems from cracked pipes or illegal drain hookups (often on private property) that add excess water to sewer systems;
- creating “green infrastructure” installations on public and private property to capture stormwater.

Taken together, these actions attempt to reduce the number of overflows by reducing the amount of stormwater entering the conveyance system and increasing the capacity of treatment plants.

Infrastructure Needs and Local Spending

Every four years, the EPA surveys drinking water and wastewater utilities to create an estimate that is used as part of the federal funding allocation process to the states. The drinking water survey uses a statistical sampling methodology of public systems to estimate state-level needs. The wastewater and stormwater “Clean Watersheds” survey relies on voluntary participation without a sampling method and is generally considered to be less reliable.⁶ Both surveys are regarded as underestimates of total capital spending needs, both because of sampling methodology and because they are designed to identify certain types of long-term projects. Nationally, the US EPA estimates that \$655 billion will be needed over 20 years to address wastewater, drinking water, and stormwater infrastructure needs. In Ohio, official EPA estimates are that \$14.6 billion is needed for wastewater and stormwater, over half of which will be for CSO corrections (Figure 1). For drinking water, \$12.2 billion will be needed (Figure 2). The largest single drinking water category of need is

⁴ Hamilton County Rate Affordability Task Force. Draft Report to Hamilton County Commissioners. May 13, 2016. Table 4: MSD Treatment Flow (2010 – 2014), p. 5, Affordability study.

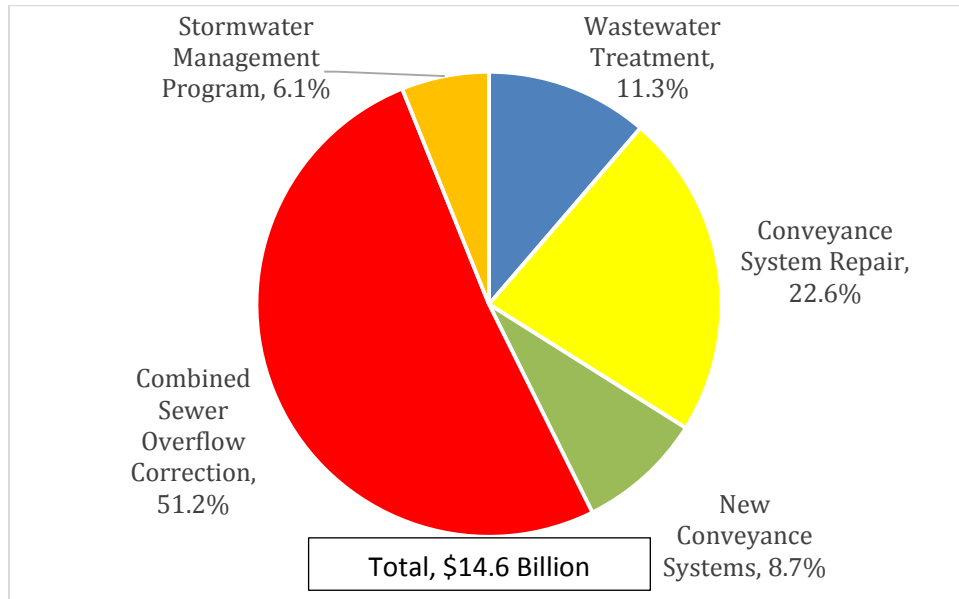
⁵ Findings and orders may be for violations of drinking water or wastewater regulations. Ohio Environmental Protection Agency, Division of Surface Water, “Combined Sewer Overflow Community Inventory.” April 2016 update. “Directors Final Findings and Orders” list, Accessed 6/23/2016, <http://www.epa.ohio.gov/dsw/enforcement/enf.aspx#126267105-directors-final-findings-and-orders-2001---2016---alphabetical-order>

⁶ Public Sector Consultants, Inc. *Michigan's Water Infrastructure Spending Needs*. (April 2016). Prepared for The Michigan Infrastructure & Transportation Association.

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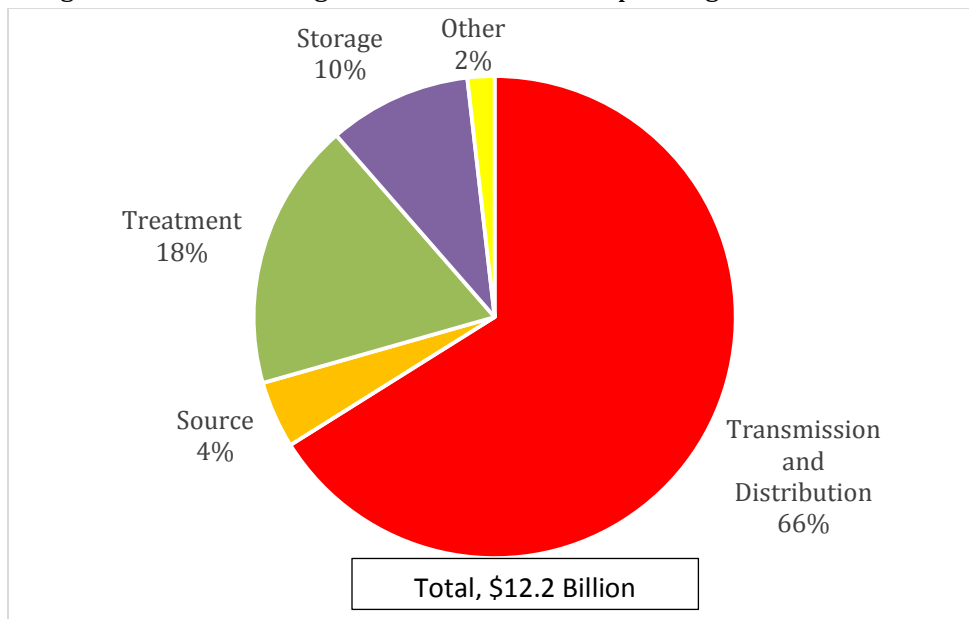
for transmission and distribution. Note that these estimates do not include maintenance costs or any commitment to replace lead drinking water supply lines.

Figure 1. Ohio Wastewater and Stormwater Infrastructure Needs, 2012-2032



Source: US EPA, Clean Watershed Needs Survey (2012)

Figure 2. Ohio Drinking Water Infrastructure Spending Needs, 2011-2031



Source: US EPA Drinking Water Needs Survey (2011)

There is no completely reliable source for estimating total spending on water infrastructure. The U.S. Census Bureau estimates that Ohio wastewater utilities spent \$782.5 million on capital projects

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in 2013. For drinking water supply, the Census reports a total of \$1.8 billion spent by Ohio utilities in 2013 for all purposes (operations, maintenance, and capital).⁷ It does not separately identify capital spending. Experts interviewed for this report agreed that spending has increased significantly in recent years and that the upward trend is likely to continue for the foreseeable future. Trends in borrowing from the three state revolving funds seem to bear this out, with \$1 billion borrowed in 2015 and again in 2016.

FEDERAL REGULATORY AND FUNDING POLICY

Although EPA enforcement of the Clean Water Act stepped up in the 1990s, federal financial assistance moved in the other direction, setting the stage for a quiet crisis in water infrastructure. From Clean Water Act amendments of 1972 until the late 1980s, the federal government maintained a large construction grant program for wastewater treatment systems, administered by the EPA. This was the largest nonmilitary public works program since the construction of the interstate highway system.⁸ During the first decade of the program, the standard federal cost share was 75 percent.⁹ The federal cost share was reduced to 55 percent in 1981, where it remained until the Water Quality Act of 1987 began the phase-out of grants in favor of revolving loans for wastewater. Clean Water capitalization grants to the states to establish revolving loan funds began in federal fiscal year 1989. The Ohio Water Development Authority, which was a revolving fund capitalized with state resources in late 1960s, was a model for the national government.

With the increasing number of regulated contaminants creating more pressure, Congress added a drinking water revolving loan fund in 1996 legislation. The state revolving loan fund (or SRF), structure continues to this day, with Congress making annual appropriations which EPA distributes to individual state loan funds. States are required to provide annual matching funds equal to 20% percent of the federal allocation. In Ohio, the EPA state revolving loan funds are known as the Water Pollution Control Loan Fund and the Drinking Water Assistance Fund. The Ohio EPA administers the revolving funds by setting policy and scoring applications, but the financial system is managed by the OWDA (see Appendix 1 for more information on funding agencies). The federal subsidy is used to provide below-market interest rates. A limited number of projects are eligible for some level of principal forgiveness. Still, a loan structure means that local communities are paying for most of the cost of construction.

Part of the legacy of the federal wastewater construction grant program was that water utility services have been underpriced historically compared to other types of utilities. This underpricing was made worse by the reluctance of local political officials to raise rates and provoke a possible political backlash. Even today, national water utility surveys indicate that a majority of systems do

⁷ Source: U.S. Census Bureau, 2013 Annual Surveys of State and Local Government Finances. Table 1, State and Local Government Finances by Level of Government and by State.

⁸ Claudia Copeland, *Water Infrastructure Financing: History of EPA Appropriations*, Congressional Research Service (April 2012), CRS 7-5700.

⁹ Op. Cit.

not have “full cost pricing” that pays for maintenance, capital projects, and reserves.¹⁰ As a result, many cities and villages delayed needed projects until the situation was critical and water infrastructure systems were on the verge of failure. Ohio cities and their peers across the country are caught in a tug of war between complying with regulatory requirements and the need to maintain affordability. A limited number of grants are available from the Ohio Public Works Commission and certain federal sources (US Department of Agriculture, Community Development Block Grant, Appalachian Regional Commission), but these are typically small amounts with highly competitive application processes, and are targeted to certain communities based on population size, income criteria, or geographic location. Cost pressures are all the more acute in cities that are losing population. Unfortunately, it is extremely difficult for such cities to shrink their infrastructure commensurately with population decline and high rates of vacant housing.¹¹

Water Resources Reform and Development Act of 2014

There are signs of a renewed interest in water infrastructure at the federal and state levels, but no signs of greatly increased funding. The federal Water Infrastructure Finance and Innovation Act program (WIFIA), created as part of the Water Resources Reform and Development Act of 2014 (WRRDA), authorizes a new pilot program to provide market-rate financing for large projects with a minimum investment of \$20 million. Nationally, there is a perceived gap in SRF financing for large projects above this level.¹² This has not been the case in Ohio, however, as evidenced by the \$254 million loan for wastewater to Akron in 2015. WIFIA assistance can be in the form of loans, loan guarantees, or other credit enhancements, but generally cannot cover more than 49 percent of the project cost. The federal subsidy provides leverage to cover anticipated loan losses, it is not used for direct outlays. WIFIA's appeal is likely to be limited to a subset of large projects that meet its requirement for an investment grade rating for senior debt.

The 2014 legislation authorizes the EPA and U.S. Army Corps of Engineers to commit up to \$175 million over five years to WIFIA. Initially, Congress only provided funds for administration. As of December, 2016, WIFIA received its first \$20 million for program funding as part of a continuing resolution to keep the federal government operating through the end of April, 2017.¹³ In separate legislation also passed at the end of 2016, Congress appropriated funds for grant programs to replace drinking water infrastructure in small and disadvantaged communities and for replacing lead service lines.¹⁴

¹⁰ Among large and medium-sized water utilities surveyed in 2016, only 28 percent had implemented full cost pricing. For small utilities this was probably even more difficult. Black and Veatch, *2016 Strategic Directions: Water Industry Report*. <http://bv.com/reports/2016/water>

¹¹ US GAO, *Water Infrastructure: Information on Selected Midsize and Large Cities with Declining Populations*. (Oct. 2016) GAO 16-875.

¹² Jordan Dorfman, US EPA, “WIFIA: Introduction and Development,” powerpoint presentation, April 1, 2015; “WIFIA Status Update,” powerpoint presentation, March 23, 2016.

¹³ Section 197 of H.R. 2028, 114th Congress, Further Continuing and Security Assistance Appropriations Act, 2017 (P.L. 114-254).

¹⁴ The Water Infrastructure Improvements for the Nation (WIIN) Act also added special funding for Flint, MI. (S. 612, 114th Congress; P.L. 114-322).

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WRRDA also made important changes to the allowable activities of EPA clean water revolving loan funds and greatly increasing their flexibility. Ohio House Bill 512, passed in May, 2016, incorporated these changes into Ohio law. Prior law allowed the Water Pollution Control Loan Fund to pay for the construction of publicly-owned treatment works, the implementation of a nonpoint source pollution management program, and the implementation of estuary conservation and management programs.¹⁵

WRRDA added the following allowable purposes to the clean water state revolving funds:

- construction, repair, or replacement of decentralized wastewater treatment systems that treat municipal wastewater or domestic sewage;
- management of stormwater or subsurface drainage water;
- measures to reduce demand for publicly owned treatment capacity through water conservation by political subdivisions or state agencies;
- development and implementation of watershed projects meeting the criteria of the Clean Water Act;
- measures to reduce the energy consumption needs of publicly owned wastewater treatment works;
- reuse or recycling of wastewater, stormwater, or subsurface drainage water;
- increasing the security of publicly owned wastewater treatment works;
- funding for nonprofit agencies to assist owners and operators of small and medium-sized publicly-owned wastewater treatment projects to plan, develop, or obtain financing for preconstruction activities, and to assist with treatment works in achieving compliance with the Federal Water Pollution Control Act.

The increased flexibility is derived from a more holistic view of water management and the increased need for conservation. It is up to each state, however, to take full advantage of the new law.

EPA Integrated Planning Framework

With its ability to offer additional financial assistance constrained by Congress, the EPA tried to offer flexibility in its regulation of CSOs by allowing a longer time frame for low-income or financially weak cities to come into compliance. In its standard 1997 guidance, communities with a low financial burden were expected to fulfill CSO requirements in a normal construction schedule.¹⁶ Cities with a moderate financial burden received up to 10 years to make changes, and cities with a high burden were allowed a 15 to 20-year schedule.

The basic indicator of financial stress used by the EPA is the share of the average wastewater utility bill in a city or project area's median household income (MHI). MHI is typically measured by the U.S. Census Bureau's American Community Survey. A share above 2 percent is considered to cause

¹⁵ R.C. 6111.036(A).

¹⁶ US EPA, *Combined Sewer Overflows: Guidance for Financial Capability Assessment and Schedule Development* (Feb. 1997), EPA-832-B-97-004. <https://www.epa.gov/sites/production/files/2015-10/documents/csafc.pdf>. See p. 46.

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a large economic effect, and 2.5 percent is considered high.¹⁷ This residential income indicator is considered along with a secondary screening measure for a community’s financial capabilities, as demonstrated by socioeconomic characteristics, public debt capacity, and financial indicators. Financial indicators using local property tax burdens are added to produce an overall score (Fig. 3).

Figure 3. EPA Guidance Financial Capability Matrix

Permittee Financial Capability Indicators Score (Socioeconomic, Debt, and Financial Indicators)	Residential Indicator (Cost Per Household as a % of MHI)		
	Low (Below 1%)	Medium (1%-2%)	High (Above 2%)
Weak (Average below 1.5)	Medium Burden	High Burden	High Burden
Medium (Average between 1.5 and 2.5)	Low Burden	Medium Burden	High Burden
Strong (Average above 2.5)	Low Burden	Low Burden	Medium Burden

Source: US EPA¹⁸

Financial capability indicators include:

- Debt indicators:
 - Bond ratings for both general obligation and revenue bonds
 - Overall net debt as a percentage of full market property value
- Socioeconomic indicators (*in relation to the national average*)
 - Unemployment
 - Median Household Income
- Financial management indicators
 - Property tax revenues as a percentage of full market property value
 - Property tax revenue collection rate

The EPA’s approach has been subject to a number of criticisms by national organizations representing water utilities.¹⁹ For example, the exclusive focus on property taxes leads to an incomplete picture of total local tax effort. The consideration of the unemployment rate only in relation the national average leads to a cyclical snapshot of labor market conditions rather than a realistic appraisal of long-term labor market trends. The most forceful critique, however, is that median household income has little relationship to the actual poverty rate in some cities. Focusing on the median household obscures the fact that lower income groups may struggle significantly with rates that may seem affordable to middle class households.

¹⁷ A combined water and wastewater rate of 4.5 percent (2% wastewater, 2.5% water) would be considered unaffordable.

¹⁸ US EPA, “Combined Sewer Overflows: Guidance for Financial Capability Assessment and Schedule Development,” EPA 832-B-97-004, February 1997, p. 41

¹⁹ Stratus Consulting, *Affordability Assessment Tool for Federal Water Mandates*, Prepared for the U.S. Conference of Mayors, American Water Works Association, and Water Environment Association (2013).

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In practice, the EPA found that it had to allow schedules longer than 20 years for CSO work given its complexity and cost in many cities. In response to mounting cost pressures and the search for alternatives on the part of many communities, the EPA began to modify its approach. In 2012, the EPA formally announced the availability of an “integrated planning” framework.²⁰ This approach, which is voluntary on behalf of the municipality, allows the NPDES permit holder to integrate green infrastructure and other sustainable practices and to take into account the cost impact on the community and disproportionate financial burdens on certain segments of the community.

A number of cities with existing consent decrees were able to modify their approach to use green infrastructure and save substantial costs. The City of Columbus, for example, received approval to modify its original 2005 wet weather treatment plan by using green infrastructure and improved control of I/I to avoid constructing a planned deep tunnel. This saved \$700 million in construction costs and reduced the time needed to complete the CSO work by 10 years.²¹ Still, for cities in difficult financial situations, the flexibility of integrated planning will not solve all problems. The City of Lima, for instance, is required by a 2014 EPA consent decree to do extensive CSO and separate sanitary sewer overflow work. The city has an integrated planning framework (the first in Ohio) that allows for a temporary modification of a control measure if user charges for wastewater exceed 2.8 percent of median household income. As of 2014, however, user rates already posed a financial burden for some customers – nearly 13 percent of all accounts were over 30 days delinquent, and the consent decree work was just getting started.²²

WATER INFRASTRUCTURE FUNDING AGENCIES IN OHIO

Ohio has a diverse set of public financing mechanisms that can help water utilities cope with these challenges (For detailed information, see Appendix 1, “Landscape of Water Infrastructure Financing in Ohio”). In 2015, the Ohio Water Development Authority’s Fresh Water revolving loan fund and the Ohio EPA’s drinking water and clean water revolving loan funds, known as the Drinking Water Assistance Fund (DWAFF) and Water Pollution Control Loan Fund (WPCLF), combined to make \$1 billion in loans, a record amount.

The state of Ohio also makes a commitment to water and sewer infrastructure through the issuance of general obligation bonds. These proceeds are disbursed by the Ohio Public Works Commission through a mix of grants and loans, which totaled \$70 million in water, sewer, and stormwater projects in state fiscal year 2015 through the State Capital Improvement Program’s 19 local planning districts.²³ The OPWC also has a \$15 million set aside Small Government Program for

²⁰ U.S. EPA Memorandum, “Integrated Municipal Stormwater and Wastewater Planning Approach Framework,” From Nancy Stoner, Acting Assistant Administrator, Office of Water, to EPA Regional Administrators and Regional Permit and Enforcement Division Directors. June 5, 2012.

²¹ City of Columbus. Department of Public Utilities, *Blueprint Columbus: City of Columbus Integrated Plan and Updated 2015 WWMP*. (September 2015).

²² City of Lima, OH, Official Offering Statement, Sanitary Sewer System Improvement Revenue Bonds, Series 2014. (CUSIP 532578) Dated Dec. 4, 2014, page 7.

²³ Author’s analysis of data provided by the Ohio Public Works Commission.

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projects that were not funded through the districts, and a small emergency fund for immediate health and safety threats. The latest capital budget (SB 310, 131st G.A.) increases the annual appropriation level for the OPWC State Capital Improvements Fund from \$150 million to \$175 million, but this must be shared between transportation and water projects. Despite these hopeful signs, the overall trend in state and federal fiscal policy for the foreseeable future is the continuation of a tight budgetary framework.

Federal funders, such as the U.S. Department of Agriculture, U.S. Department of Housing and Urban Development (HUD) Community Development Block Grant Program (CDBG), and Appalachian Regional Commission (ARC) also provide financing assistance that are focused on small, low income communities. The US EPA, USDA, and OWDA combine to support the nonprofit Rural Community Assistance Program (RCAP), which provides technical assistance for small communities. Local economic development organizations in Appalachia also provide technical assistance. Funding sources vary significantly in their administrative complexity for applicants, with the EPA and USDA agencies requiring an environmental impact study and a higher level of administrative review.

State and federal agencies coordinate financial assistance informally. The Small Communities Environmental Infrastructure Group (SCEIG), which meets under the auspices of the OWDA, has representatives from all major funding agencies. The group shares information about technical assistance and educational activities, and provides an opportunity for smaller systems to present their projects and receive advice about where to apply for financial assistance. Applicants can use this advice to piece together grants from various sources combined with revolving loans to lower project costs. Still, communities seeking funding must contend with the uncertainty and increased transaction costs of multiple agencies' application criteria and deadlines, making it difficult to achieve an optimal outcome.

GROWING CONCERN OVER CUSTOMER WATER AND SEWER CHARGES

With the federal government emphasizing loan-based assistance rather than grants, the need to greatly increase capital spending has driven user charges higher. In 2014, average annual combined water and sewer charges were \$1,199 in Ohio. Average charges for drinking water increased by 75 percent between 2000 and 2014, and sewer charges by 85 percent, while consumer inflation increased just 37 percent.²⁴ While the growth trend may moderate in future years, it is likely that customer charges will continue to increase at a rate faster than consumer inflation, and faster than household income. Population decline in some cities, and changes in water usage patterns will also drive rates higher, and force changes away from traditional volume pricing. The amount of drinking water supplied from public sources in Ohio declined by 7.8 percent from 2005 to 2010 on a per capita basis, although this was less than the national rate of decline.²⁵

²⁴ Author's analysis of average user charges from Ohio EPA, *2014 Water and Sewer Rate Survey*.

²⁵ U.S. Geological Survey, Water Use Data for Ohio, http://waterdata.usgs.gov/oh/nwis/water_use/. Nationally, per capita water consumption declined by 26 percent from 2000 to 2012. Rocky Craley, "Benchmarking Rates and Charges," in George A. Raftelis, ed. *Water and Wastewater Finance and Pricing: The Changing Landscape*, 4th Edition, Boca Raton: CRC Press, 2015, p. 416. National average daily usage declined from 150 gallons per day in 2000 to 112 gpd in 2012. (Exhibit 20.10, Comparison of Water Rate Structures).

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It is more typical for funding and regulatory agencies to acknowledge significant affordability issues in small villages with very low incomes. Affordability issues are not unique to small communities, however. At least eight major Ohio cities with populations above 20,000 have combined water and sewer rates above 3 percent of median household income (MHI), including major population centers of Akron, Cleveland, and Cincinnati (Table 2).²⁶ All of these cities have a median household income below that of the state (\$48,849).²⁷ Given the high concentrations of poverty in many Ohio cities, the impact of continued increases in water and sewer rate on low-income populations is a cause for deep concern. For example, the poverty rate in Akron is 27 percent, in Cincinnati, 31 percent, and in Cleveland, 36 percent.²⁸

Table 2. Ohio cities with population above 20,000 and Combined Annual Water and Sewer Rates over 2.5% of MHI (2013)

MUNICIPALITY	Water & Sewer Rates as % MHI	2013 MHI
Youngstown	5.6	\$24,012
Athens	4.8	\$17,774
Cleveland	4.4	\$25,696
Euclid	4.3	\$34,290
Cincinnati	3.7	\$32,316
Akron	3.5	\$33,209
Maple Heights	3.2	\$35,639
Chillicothe	3.0	\$35,421

Source: GOPC analysis of Ohio EPA and U.S. Census data.²⁹

Some water utilities offer discounts to customers, usually homeowners, based on income, disability, age, or some other criteria, but such customer assistance programs are not the norm. They are far more likely to be offered by larger cities that can spread the costs among a sizeable customer base. Nationally, a US EPA survey found that 31 percent of large utilities in cities with 100,000 or more people had a customer assistance program; 22 percent of smaller utilities had a program.³⁰ Some of these programs offer payment plans for customers who have fallen behind on their bills but they are not true discount programs. In Ohio, Akron, Ashland, Canton, Cleveland Water, Northeast Ohio Regional Sewer District, Columbus, Dayton Water, Montgomery County Water, and Toledo provide customer assistance plans. The Metropolitan Sewer District of Cincinnati has proposed a discount program to the Hamilton County Commissioners. It is a challenge to design a discount program for tenants who do not receive water bills separate from rental charges. Columbus is unique in that its

²⁶ The concept of “affordability” is subject to different interpretations and the use of MHI, especially by the EPA in its affordability screenings, has been subject to strong criticism. Nonetheless it is commonly used as a criteria by financing programs. For criticisms of the EPA approach see Stratus Consulting, *Affordability Assessment Tool for Federal Water Mandates*. Prepared for the American Water Works Association, Water Environment Federation, and U.S. Conference of Mayors. 2013.

²⁷ U.S. Census, Ohio, Selected Economic Characteristics, 5-year ACS estimates, 2010-2014.

²⁸ Ohio Department of Development Services, *The Ohio Poverty Report*, (February 2016), p. 18. Using 5-year pooled ACS samples. <https://www.development.ohio.gov/files/research/p7005.pdf>

²⁹ Ohio EPA, *2013 Water and Sewer Rate Survey*, Office of Administration, September 2014. Income data are from the American Community Survey, 2013 3-year pooled sample.

³⁰ U.S. EPA, *Drinking Water and Wastewater Utility Customer Assistance Programs*, April 2016.

programs include a discount for tenants of multi-unit rental buildings with a majority of low-income renters. Programs from Ohio water utilities are shown in Appendix 2.

The steep rise in rates and the limited reach of consumer assistance programs in Ohio and the nation motivated Cleveland Congresswoman Marcia Fudge to propose a national consumer assistance program based on the existing Low-income Heating Assistance Program (LIHEAP). The "Low-Income Sewer and Water Assistance Program Act of 2016" (H.R. 4542, 114th Congress) would authorize the EPA to award grants to at least 10 U.S. cities subject to EPA consent decrees in order to lower consumers' water and sewer bills.³¹ The bill did not pass in 2016 and would have to be reintroduced in the 115th Congress.

APPROACHES TO AFFORDABILITY IN OTHER STATES

Other states have taken small steps to address affordability in the project financing stage by providing grant funds that are coordinated by the same agency that provides revolving loan funds. As noted above, state and federal funding agencies in Ohio undertake regular, informal coordination through the SCEIG but funding applicants must go through separate processes with unique criteria and timing. The experiences of Pennsylvania and Minnesota demonstrate that there is significant value in having flexible grant funding coordinated under one agency.

Pennsylvania Infrastructure Investment Authority

A coordinated approach to blending different funding sources is taken in Pennsylvania, where the Pennsylvania Infrastructure Investment Authority (PENNVEST) administers multiple loan funds, including both the EPA revolving loan funds, and state loan and grant funds derived from bond proceeds. Starting in 1981, the state periodically capitalized PENNVEST's revolving loan funds with five general obligation bond issuances totaling \$1.17 billion, and \$64.2 million from the former Water Facilities Loan Board, for a total of over \$1.2 billion to date. Only \$300 million of the total state general obligation bond proceeds must be repaid to the state.³² Additionally, since inception, \$541.9 million in state revenue bond proceeds have been used to finance grants, supplemented from time to time with state appropriations from the capital budget or operating budget.

Although the overall amount of financing from revolving loan funds is less than what is available in Ohio, access to multiple sources of capital allows PENNVEST to tailor and combine its loan and grant offerings for different needs. A project can receive funding from multiple PENNVEST programs. Grants are considered when an applicant is unlikely to be able to undertake the project using only loans, and payback of a loan is unlikely.

Affordability is a key component of setting interest rates on PENNVEST state loans.³³ A rate between one and two percent of MHI for water or sewer is considered affordable, with a specific

³¹ Congresswoman Marcia L. Fudge website, February 12, 2016. <https://fudge.house.gov/press-statements/congresswoman-marcia-l-fudge-introduces-legislation-to-help-lowincome-families-pay-water-and-sewer-bills-with-members-of-the-ohio-and-michigan-delegations/>

³² PENNVEST Annual Report, Notes for Financial Statements for Years ended June 30, 2015 and 2014. Note 8: Capital Contributions, p. 23.

³³ Interview with Brion Johnson, Deputy Executive Director, PENNVEST, 5-17-2016.

affordability target set for each project. The target is adjusted based on a community's socioeconomic variables such as tax burden, population shift, and age range. Once PENNVEST establishes a target rate, then the project interest rate can be adjusted to keep affordability on target based on estimated costs. Counties with higher unemployment rates receive lower rates, but state law requires that PENNVEST must charge at least a one percent interest rate. Interest rates in program year 2015 were less generous than Ohio programs, and varied between 1.0 percent and 4.186 percent.³⁴ Loan terms can also be extended to 30 years to keep affordability in bounds. If the projected affordability remains above the target rate even with the lowest loan rate, grants are applied in an attempt to keep project costs within acceptable limits.

Minnesota Wastewater Infrastructure Funding Program

The state of Minnesota uses a similar concept in which the state provides funding for grants to keep the affordability of wastewater infrastructure projects within acceptable bounds. Grants are not available for drinking water. The Minnesota Public Facilities Authority (MPFA), which manages the state drinking water and wastewater (clean water) revolving loan funds, can provide grant funding for certain projects on the EPA priority list or projects receive funding through the USDA Rural Economic and Community Development Program.³⁵ Project assistance for any project is limited to a maximum of \$4 million per project or \$15,000 per connection, whichever is less. For USDA-approved projects, the state share cannot exceed 65 percent of the project cost. For projects receiving clean water revolving loans, the goal is to reduce annual residential wastewater system cost to 1.4 percent of median household income. The grant is limited to 80 percent of the eligible project cost.

For 2016, the MPFA committed \$8.3 million in grant funding to projects using the clean water revolving loan fund, and \$10.2 million for projects approved for USDA funds.³⁶ The clean water revolving fund also pledged \$8.4 million for principal forgiveness for eligible projects receiving loans.

The tighter coordination of grants and loans in Pennsylvania, Minnesota, and other states makes it easier for them to keep rates affordable. Although the use of principal forgiveness in the Ohio EPA revolving funds can partially fulfill this purpose, in the long run, Ohio would be better served by a similar coordinated process.

DEVELOPING A COMPREHENSIVE FRAMEWORK FOR PUBLIC-PRIVATE PARTNERSHIPS (P3 APPROACHES)

³⁴ PENNVEST Annual Report, 2014-2015, Notes to Financial Statements, p. 19.

³⁵ Minnesota Statutes 446A.072; The Minnesota Public Facilities Authority is part of the Minnesota Department of Economic Development. Information is available at <https://mn.gov/deed/government/public-facilities/funds-programs/wastewater.jsp>.

³⁶ Minnesota Public Financing Authority, 2016 Report to the House Environment and Natural Resources Policy and Finance Committee and the Senate Environment, Economic Development and Agricultural Budget Division (January 2016), https://mn.gov/deed/assets/wastewater-infrastructure-fund-report_tcm1045-257295.pdf

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Water and sewer utilities remain largely publicly-owned by municipalities or other political subdivisions in the U.S., particularly in Ohio. An example of a large private operator in the state is Aqua Water, Inc. which supplies drinking water to approximately 500,000 customers in nineteen Ohio counties. As an investor-owned utility, Aqua's rate structure and services come under the jurisdiction of the Public Utilities Commission of Ohio (PUCO), while those of municipal utilities do not. Aqua Water is largely an example of privatization, but individual utilities also have the option of leasing assets to private operators as well.

Between outright privatization of an entire system, and contracting out of specific pieces of existing infrastructure and operations, lies a mix of options known public-private partnerships (P3s). P3s have become increasingly common in transportation infrastructure, with 34 states (including Ohio) enacting some form of P3 statute for transportation projects.³⁷ The impetus for P3 arrangements in transportation and other fields is the opportunity to integrate design, construction (building), operations, and maintenance (DBOM) into one contractual arrangement, and the transfer of various kinds of risk to the private partner. In some cases the private partner can also arrange financing (DBOMF). (This report will refer to both types of situation generically as DBO).

By using a DBO P3 arrangement, a public entity achieves various advantages:³⁸

- Creating a single source of responsibility for design, construction, and operation by an integrated team that can carefully consider long-term impacts of design decisions;
- The opportunity to receive significant guarantees for performance both in the construction phase and for ongoing services;
- Arranging for the transfer of design, permitting, construction, and operational risks to the contractor;
- Shortening the design/build schedule compared to a traditional bidding arrangement, although the DBO procurement and negotiation process may be lengthy;
- Increasing the incentives for long-run innovation to achieve cost savings and efficiencies;
- Creating greater long-run cost certainty.

Ohio law permits the Ohio Department of Transportation to enter into DBO P3 contracts.³⁹ More general statutes allow the state or political subdivisions to use "construction manager-at-risk" arrangements or a "design-build" partnership, but state law does not explicitly define a full DBO P3 situation.⁴⁰ Under their home rule authority, municipalities that have adopted a charter can utilize any type of project delivery system that their charter authorizes.⁴¹ By combining design-build partnerships with the ability to contract out or lease operations, however, non-charter cities and other public authorities can create an arrangement resembling a P3. Regional water and sewer

³⁷ U.S. Department of Transportation, Federal Highway Administration, Innovative Program Partnership, "State P3 Programs" webpage, http://www.fhwa.dot.gov/ipd/p3/state_legislation/. Accessed 6/2/16.

³⁸ Adapted from Howard J. Smith and Gordon L. Culp, "Role of the Private Sector and Alternative Delivery Methods," in George A. Raftelis, ed. *Water and Wastewater Finance and Pricing: The Changing Landscape*, 4th Edition, Boca Raton: CRC Press, 2015, pp. 342-343.

³⁹ RC 5501.77.

⁴⁰ R.C. 9.33 defines construction-manager-at-risk authority while R.C 153.65 – 153.73 outlines design-build arrangements.

⁴¹ Jack Rosati, "Design-Build for Water and Wastewater Projects," *Water and Wastewater Law*, Bricker & Eckler, Attorneys at Law. Spring 2014.

districts, for example, must follow the “lowest and best bidder” requirements of the revised code but are also permitted to lease projects to or from other entities.⁴² The policy issue is that these arrangements are taking place without standardization and few guidelines to ensure accountability.

Critics of P3 approaches maintain that many of these advantages can also be achieved through more carefully constructed contracts that do not require a loss of public sector control.⁴³ Disadvantages of P3 arrangements for public entities include loss of control over essential system components, potential excessive reduction in staffing positions, exposure to marketplace (or counterparty) risk if a contractor is bought out or experiences some other change, and a very real possibility of having to choose from a limited pool of potential private partners with the expertise to manage a large DBO project.⁴⁴

Many cautionary examples exist of P3s that did not meet expectations. A well-known example from transportation is the Indiana Toll Road, which was leased in 2006 through a 75-year concession to an international partnership, and later went bankrupt because traffic volumes did not support the deal's highly leveraged financial structure. In water and wastewater, the City of Camden, NJ, changed its private system operator due to severe underinvestment that led a state report to compare the system's infrastructure to that of a third world country, with water loss rates of nearly 45 percent.⁴⁵ The state of Virginia recently changed its transportation P3 statute in light of several well-publicized bad projects. The statute now requires a “finding of public interest” by the contracting authority which compares the P3 proposal to a public alternative, and allows for a 30-day public comment period prior to the issuance of a RFP.⁴⁶

P3s in the Water Sector

Nationally, it has become increasingly common for water or wastewater systems to privatize or contract out particular functions to private operators. About 50 P3 arrangements existed in the US water infrastructure sector as of 2014.⁴⁷ The Milwaukee Metropolitan Sewer District, for example, has a ten-year term contract with Veolia Water to manage several wastewater treatment plants, while the district retains ownership of the transmission infrastructure. More far-reaching examples come from both coasts. The city of Rialto, CA, leased both its water and wastewater systems in a 30-year concession agreement with Veolia Water, and the city of Bayonne, NJ, signed a 40-year concession agreement with a consortium of investors led by Kohlberg Kravis Roberts

⁴² Regional district leasing authority is found in R.C. 6119.06(G).

⁴³ Aidan R. Vining and Anthony E. Boardman, “Self Interest Springs Eternal: Political Economy Reasons Why Public-Private Partnerships do not work as well as expected,” CESifo DICE Report (Sep. 2014).

⁴⁴ Howard J. Smith and Gordon L. Culp, “Role of the Private Sector and Alternative Delivery Methods,” in George A. Raftelis, ed. *Water and Wastewater Finance and Pricing*.

⁴⁵ Alison Steele, “American Water to Operate Camden System.” *Collections - Water Supply*. Philly News, 23 Dec. 2015. Web. 16 May 2016.

⁴⁶ Virginia Code Chapter 612, Sec. 33.2-1803 and 33.2-1820 as amended by H. 1886, 2015 Regular Session.

⁴⁷ Three projects were in Ohio. Jim Gebhardt, US EPA Water Infrastructure and Resiliency Finance Center, “Current Water P3 Market and USEPA Activities,” Powerpoint presentation given to the National Governors' Association State Planning Retreat on Public-Private Partnerships, Seattle, WA. April 21-22, 2016. Citing *Public Works Financing*, Oct. 2014.

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(KKR) and United Water, a unit of French Suez Environnement.⁴⁸ Both deals provided up-front payments to cash-strapped municipalities with poorly maintained systems, and improved municipal credit ratings by taking existing debt off their books. The contracting companies pledged to make additional investments in the system, but both deals arranged for automatic annual increases in customer rates to support the higher rates of capital investment. Insulating rate increases from political control was a major motivation for these arrangements.

A more recent example of outright privatization (not a true P3) is Scranton, PA, which sold its wastewater system to Pennsylvania American Water Co. in December, 2016 for \$195 million. The city stands to make a net return between \$66 million and \$96 million, depending on the final disposition of certain sale proceeds that are held in escrow. The proceeds may be used to shore up the city's pension liabilities, pay for infrastructure, or retire high-interest debt.⁴⁹ The city has been under state fiscal oversight for years. Unfortunately, such sales produce a one-time windfall that is not repeated.

Aside from the possibility of receiving up-front concession payments, the main advantage for undertaking a P3 for a public entity with a poor debt rating is avoiding a large initial payment or an immediate increase in its debt.⁵⁰ A P3 project may or may not be "off-balance sheet," however, depending on how it is structured. In a "demand-risk" payment, the private sector partner bears the risk if user charges or other project revenues are insufficient to cover expected returns.⁵¹ In return, the private concessionaire typically requires a higher share of project equity (30 – 40 percent) and overall project costs are higher.

In the "availability payments" model, which is more common, the public sector guarantees a basic rate of return to make up for any potential shortfall in tolls or user charges. In the availability payment model, the project can implicitly create a claim on general revenues and rating agencies may take them into account. Even if a project is off the public sector balance sheet, however, there is a negative consequence as private sector financing is generally more expensive than the tax-

⁴⁸ Randall Jenson. "Southern California City Enters Into P3 for Its Water and Sewer Systems." *Bondbuyer.com*. The Bond Buyer, 6 Dec. 2012. Web. 19 Apr. 2016. http://www.bondbuyer.com/issues/121_234/rialto-california-water-sewer-utilities-public-private-partnership-1046568-1.html; Reinhardt, William G. "Three Water P3s Reach Financial Close in December, 2012: United Water, KKR Seal A 40-Year P3 In Bayonne, N.J." *Public Works Financing* (n.d.): n. pag. *Pwfinance.net*. Public Works Financing, Dec. 2012. Web. 2 May 2016; Table Rock Capital. "Table Rock Capital, Ullico Affiliate and Veolia Water Deliver Solution to Strengthen California City's Finances, Create Jobs and Deliver Sustainable Water Services." *Prnewswire.com*. PRNewswire - a UBM Plc Company, 12 Dec. 2012. Web. 19 Apr. 2016. <<http://www.prnewswire.com/news-releases/table-rock-capital-ullico-affiliate-and-veolia-water-deliver-solution-to-strengthen-california-citys-finances-create-jobs-and-deliver-sustainable-water-services-183249922.html>>.

⁴⁹ Jim Lockwood, "Scranton \$96 Million Sewer Sale Cash Largest Windfall for the City," *Scranton Times-Tribune*, Dec. 11, 2016. See also, "Bill for Scranton Sewer Costs Yet to Come," *Scranton Times-Tribune*, December 31, 2016. The sale was accompanied by significant controversy.

⁵⁰ Katja Funke, Tim Irwin, and Isabel Rial, "Budgeting and Reporting for Public-Private Partnerships," in *Better Regulation of Public Private Partnerships for Transport Infrastructure*. Paris: OECD Publishing, 2013.

⁵¹ Julie Kim, New Cities Foundation (2016), *Handbook on Urban Infrastructure Finance* [online: <http://bit.ly/NCFUrbanFinance>], pp. 44-45

exempt bonds issued by public sector entities.⁵² Usually, P3 participants (the joint public and private partnership) will receive a poorer rating together than if the public sector were to pursue traditional bond financing.⁵³ This disadvantage in financing may be offset in the long-run by the some of the increased efficiencies of a P3 model.

Some of this differential between public sector projects and P3s can be mitigated if the partnership can access a tax-exempt "private-activity bond" issuance.⁵⁴ A private-activity bond is a bond issued by a local or state government entity to finance a project of a private contractor or user. The federal government imposes aggregate statewide limits on the issuance of private activity bonds (the state "volume cap"). Ohio's volume cap, set at \$1.16 billion in 2016, is overseen by the Ohio Development Services Agency, but Ohio does not come close to using its full allocation.⁵⁵ Both water and wastewater treatment facilities are eligible purposes for private activity bonds.⁵⁶ Alternatively, a nonprofit organization can serve as the issuer of the bonds in certain circumstances, thereby allowing the project to access tax exempt financing. This approach has been used successfully in housing by the National Development Council.⁵⁷

P3s are common internationally for infrastructure projects

Other nations, such as the U.K. and Canada, have promoted P3 approaches in a variety of infrastructure projects, and their experience is instructive. In Canada, P3s have been used to finance hospitals, court buildings, roads, bridges, water systems, and schools. Between 1991 and 2012, 206 P3 projects were initiated in Canada, including many for water and wastewater.⁵⁸ The Federal Canadian government and several provinces have P3 agencies that centralize the procurement and design process for these projects.⁵⁹ This increases accountability and transparency because the contracts must remain publicly accessible.⁶⁰ Using a standardized process removes the administrative time and effort of creating new applications and procedures for each project. Provincial or municipal projects are also eligible for a federal subsidy on a competitive basis through the P3 Canada fund.

⁵² J. Ben Watkins and Nora Wittstruck, "P3s, An Infrastructure Investment Tool to Evaluate with Caution," *Government Finance Review* (April 2015). <http://www.gfoa.org/sites/default/files/GFR081532.pdf>

⁵³ Dan Huges and William Jones, "Connecting P3s, Bond Ratings, and Debt Calculations," *Government Finance Review* (December 2015). <http://www.gfoa.org/sites/default/files/1215GFR08.pdf>

⁵⁴ DeGood, Kevin. "Understanding the Difference Between Procurement and Finance." *Public-Private Partnerships*. Center for American Progress (Dec. 8, 2014) Web vers. May 2, 2016. <<https://www.americanprogress.org/issues/economy/report/2014/12/08/102515/public-private-partnerships/>>.

⁵⁵ Council of Development Financing Agencies, *C DFA Annual Volume Cap Report. An Analysis of 2014 Private Activity Bond & Volume Cap Trends* (July 2015). ODSA, https://development.ohio.gov/bs/bs_volume.htm.

⁵⁶ 26 U.S.C. Sec. 142(a).

⁵⁷ Keeley Webster, "NDC Highlights 'American' P3 Model, Funded with Tax Exempt Debt," *The Bond Buyer*, March 31, 2016.

⁵⁸ Intervistas Consulting, Inc., "10-Year Economic Impact Assessment of Public-Private Partnerships in Canada, (2003-2012)," Prepared for the Canadian Council of Public Private Partnerships, June 2014.

⁵⁹ Ilan Dunsky and Lampros Stougiannos, "Canada: The Success of P3 in Canada," *mondaq.com*, April 8, 2013. <http://www.mondaq.com/canada/x/256856/Government+Contracts+Procurement+PPP/The+Success+of+P3+in+Canada+Ilan>

⁶⁰ Ibid.

These projects have generally been completed on time and on budget, but they are not without their critics.⁶¹ In some cases, the negotiation process yielded a much higher budget than originally thought as contractors demanded premiums to hedge against unforeseen difficulties such as construction delays and cost-overruns. Contractors have entered arrangements using highly-leveraged special purpose legal vehicles that insulate parent corporations from financial risk, and escalation clauses in user fees have created long-term affordability issues. Governments also have underestimated the long-run transaction costs of having to monitor contractor performance. Still, P3s seem to have become an accepted option for infrastructure development in Canada, and the discussion is now around improving their performance and accountability.

One of the critical elements of deciding whether to pursue P3 arrangement is constructing a valid comparison with a public sector alternative. A best practice used internationally for this purpose is a Value for Money (VfM) assessment. A VfM analysis estimates the costs and efficiencies of a project for its lifetime if completed by the public sector ("public sector comparator") as compared to completion through the P3. Canada requires a VfM assessment for projects costing over \$100 million.⁶² Although it is considered best practice, there is no internationally accepted consensus on how a VfM analysis should be done. Issues such as measuring quality and the financial benefits of risk transfer are difficult, and in some cases the detailed historical data on the performance of traditional projects may not be available.⁶³ In this respect, there is a benefit to the public sector in undertaking a VfM analysis in that it compels decision-makers to estimate lifecycle costs and to budget accordingly, which is not a common practice.⁶⁴

Prospects for Water Infrastructure P3s in Ohio

Given the plethora of financing options available for water and wastewater systems in Ohio, at present there does not seem to be an enormous demand for privately-arranged financing, at least for typical capital projects. While there are other means to create off-balance sheet financing in the bond market, such as a securitization, or "rate reduction bond" structure, this requires special state legislation and a highly complex legal structure.⁶⁵ California's securitization law for water utilities

⁶¹ Anthony E. Boardman, Matt Siemiatycki and Aidan R. Vining, "The Theory and Evidence Concerning Public-Private Partnerships in Canada and Elsewhere," University of Calgary, *School of Public Policy Research Papers*, Vol. 9, Issue 12, (March 2016).

⁶² U.S. Department of the Treasury, Office of Economic Policy. *Expanding the Market for Infrastructure Public-Private Partnerships* (April 2015), p. 2. Available at: <https://www.treasury.gov/connect/blog/Documents/Treasury%20Infrastructure%20White%20Paper%20042215.pdf>

⁶³ Boardman et al., "The Theory and Evidence Concerning Public-Private Partnerships," op. cit.

⁶⁴ Remarks of Roderick Devlin, Attorney, Squire Patton Boggs, *Bond Buyer* Executive Roundtable, "Are P3s the Future of Infrastructure Financing?" BNY-Mellon (2016).

http://pages.marketing.sourcemediacom.com/rs/555-ETU-514/images/BNY-Mellon_Roundtable.pdf

⁶⁵ The three essential elements of a securitization bond are: (1) state legislation that creates an irrevocable right to a clearly identifiable income stream for a special purpose entity; (2) a non-by-passable surcharge on customer bills that continues until bonded debt is retired, and contains an automatic true-up mechanism if collections fall short; and (3) a special purpose entity that cannot declare bankruptcy. Chris Mauro, CFA. "US Municipal Focus: Municipal Securitization – A New Financing Trend in the Municipal Market?" *RBC Capital Markets*, Nov. 6, 2014.

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was enacted in 2013 but has yet to be utilized,⁶⁶ although the state of Hawaii used similar legislation to finance clean energy systems.⁶⁷

A major opportunity for cost savings is the generation of electricity through renewable sources at wastewater treatment plants, made possible by significant advances in technologies such as anaerobic digestion to create biogas for heating or fuel for microturbines.⁶⁸ It is common for electricity costs to consume as much as 30 percent of a utility's operations and maintenance costs, so lowering energy consumption can produce major savings.⁶⁹ For example, D.C. Water's new anaerobic digester is expected to generate up to 30 percent of the energy costs of the Blue Plains treatment plant, and annual operational savings of \$11 million.⁷⁰ Another promising approach is to combine anaerobic digestion technology with other renewable energy sources. Ridgewood, New Jersey's wastewater treatment plant uses an anaerobic digester and solar technology through a 20-year partnership among Middlesex Water Company, Natural Systems Utilities, and American Refining and Biochemical.⁷¹ There are existing examples of anaerobic digesters in use at wastewater treatment plants in Ohio, such as the KB Bioenergy facility in Akron, but most of them are not being used to generate electricity.⁷² Another anaerobic digestion facility in Wooster provides power to the wastewater and drinking water treatment plants and generates excess electricity that could be sold to the grid, but Ohio utility regulations do not allow net metering.⁷³

Another opportunity for P3 approaches may be the installation of stormwater infrastructure. For a utility to install green infrastructure on hundreds, or even of thousands, of individual parcels creates enormous transaction costs. Prince George's County, MD, had an urgent need to address pollution and stormwater runoff under the EPA-mandated Chesapeake Bay Total Maximum Daily Load. The county established a goal of creating permeable surfaces on about five percent of its total land areas (about 15,000 acres).⁷⁴ To solve this problem, Prince George's County partnered with Rhode Island-based Corvias Solutions, a private firm that has been involved in P3s in the U.S.

⁶⁶ Author's Interview with Deana Hamlin, Bond Manager, California Pollution Control Financing Agency, May 17, 2016.

⁶⁷ Chris Mauro, "Municipal Securitization," *op. cit.*

⁶⁸ Black and Veatch, *2016 Strategic Directions: Water Industry Report*. (Overland Park, KS, 2016), p. 71-72.

⁶⁹ *Ibid.*, p. 69.

⁷⁰ District of Columbia Water and Sewer Authority, Official Offering Statement, Public Utility Senior Lien Revenue Bonds, Series 2014a. (Green bonds). CUSIP No. 254845 JZ4. Dated July 10, 2014, page 76 "Historical and Projected Operation & Maintenance Costs on a Cash Disbursement Basis."

⁷¹ New Jersey Future, *Ripple Effects: The State of Water Infrastructure in New Jersey Cities and why it Matters*, 2014.

⁷² Press Release: 100% of wastewater to be treated at Akron, OH's digester facility. January 17, 2014. BIOFERM Energy Systems. <http://www.biofermenergy.com/press-release-100-wastewater-treated-akron-ohs-anaerobic-digester/>. The facility was expected to produce over 12,000 megawatt hours of electricity in 2014

⁷³ Author's interview with Caroline Henry, V.P., Marketing, and Alan Johnson, V.P., Project Management. Quasar Energy Group, 7-14-2016.

⁷⁴ Vock, Daniel C. "Maryland County Tests Public-Private Partnership for Green Infrastructure Projects." *Future Structure*. Governing, May 28, 2015. Web. Accessed, Apr. 26, 2016. <<http://www.govtech.com/fs/Maryland-County-Tests-Public-Private-Partnership-for-Green-Infrastructure-Projects-.html>>.

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before.⁷⁵ The contract is a fee-based \$100 million, 30-year Clean Water Partnership that puts Corvias in charge of design, construction, and long-term maintenance. The contract also has local hiring requirements and requires Corvias to maintain a training program.⁷⁶

With the WRRDA changes to federal revolving fund, energy conservation, and stormwater management projects are eligible for state revolving loan fund assistance, assuming that public entities maintain control of the infrastructure.

Kentucky is the latest of many states around the country that have adopted P3 legislation.⁷⁷ The new law, passed in 2016, may provide a useful starting point for Ohio's consideration. It defines qualitative and quantitative considerations that a local government must use when evaluating a P3 proposal. Unsolicited proposals trigger a public notice requirement and an automatic 90 day window for the submission of competing proposals. It creates a new Local Government Public-Private Partnership Board that must approve P3 agreements that have a total contractual value over their lifetime of 30 percent or more the local government's annual revenues. State agency P3 capital projects worth over \$25 million must be approved by the General Assembly. Although the law does not go far enough in requiring the construction of an alternative public sector cost scenario of VfM analysis, it contains many safeguards to protect the public interest.

Recommendation: Enact an Ohio P3 statute specifically for water sector projects that contains safeguards for accountability, transparency, and standardized procedures for Value for Money (VfM) analysis, including advance public notice requirements and opportunities for public comment and hearings. Create a technical assistance unit through a state agency or nonprofit organization that can advise local systems on the appropriate use of P3s in water, wastewater, and stormwater issues.

ENCOURAGING REGIONALIZATION AND CONSOLIDATION

The extreme fragmentation of the water utility industry is a financial, administrative and regulatory issue. Nationally, 150,000 public drinking water systems exist, and 97 percent of them service fewer than 10,000 people. These very small systems are far more likely to have difficulty with Safe Drinking Water Act compliance issues.⁷⁸ As part a long-term plan to address these issues, the latest US EPA Drinking Water Action Plan announced the launch of a national initiative to promote regional partnerships.⁷⁹ There are a number of reasons why this makes sense, starting with the significant economies of scale available to larger systems. For example, information from Indiana

⁷⁵ One of their more notable involvements was with the U.S. Department of Defense where they built military housing and installed green retrofits and infrastructure. Jeff Day, "Public-private Partnerships Expected to Lower Stormwater Retrofit Costs." *Bay Journal RSS*. N.p., 24 Apr. 2016. Web. 26 Apr. 2016. Available at: <http://www.bayjournal.com/article/public_private_partnerships_expected_to_lower_stormwater_retrofit_costs>.

⁷⁶ Taylor, Charles. "Storm Water Public-partnership Is 'twofer' for Prince George's County Maryland." *County News*. NACO, June 10, 2015. Web. Apr. 26, 2016. <<http://www.naco.org/articles/storm-water-public-partnership-twofer-prince-george-s-county-maryland>>.

⁷⁷ Kentucky Revised Statutes, 45A.077 and 65.028; 200 KY Admin. Code 5:355.

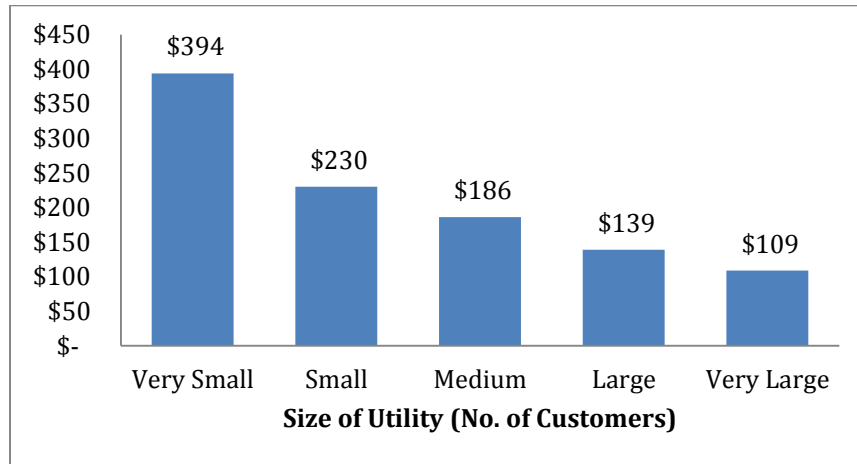
⁷⁸ U.S. EPA, Office of Water. *Drinking Water Act Compliance* (Nov. 2016).

⁷⁹ *Ibid*, p. 4.

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indicates that the cost to operate a very small water system is over three times as high as the largest metropolitan systems. (Figure 4).

Figure 4. Annual Costs per Capita, Indiana Water Utilities



Source: Indiana Finance Authority.⁸⁰

Ohio has encouraged regionalization of systems through technical assistance and financial incentives. Ohio agencies and the USDA are encouraging regional approaches by providing preferential financing and by supporting technical assistance through the Rural Community Assistance Program (RCAP), which is housed in the WSOS Community Action Agency. The Ohio EPA provides incentives in the Drinking Water Assistance Fund by allowing up to 50 percent principal forgiveness for consolidation of disadvantaged communities, with the balance of the loan provided at zero percent interest. Disadvantaged communities have documented public health issues and economic affordability issues identified in the standard scoring methodology, and also have other distress indicators such as poverty rates higher than the state average, or MHI lower than the state median.⁸¹

The OWDA Fresh Water Fund will provide a 50 basis point interest rate discount for loans to systems that connect to another system or purchase another system. The EPA Water Pollution Control Loan Fund (WPCLF) does not have explicit scoring criteria encouraging regionalization or consolidation, although these approaches are encouraged informally through the Small Community Environmental Infrastructure Group. The WPCLF makes zero percent interest rate planning loans available for fiscal sustainability plans that can be used for regionalization. Smaller, low income communities can access “hardship” loans at zero or one percent interest rates.

⁸⁰ Indiana Finance Authority. *Evaluation of Indiana’s Water Utilities: An analysis of the State’s aging infrastructure* (Nov. 2016). Graphic from p. 10, Figure 2, “Average annual Operating Cost per capita by Utility Size.”

⁸¹ Ohio law directs the state to set aside at least 20 percent, but not more than 30 percent, of the federal capitalization grant for additional subsidies. This amount was \$7.3 million in PY 2016. Ohio uses the additional subsidy to assist “disadvantaged communities.” Recipients are eligible for loans with principal forgiveness ranging from 20 to 40 percent of the principal amount and the balance in a zero percent loan with a repayment schedule up to 30 years. Projects involving regionalization are also eligible for up to 50 percent of principal forgiveness.

Strengthening Ohio’s Water Infrastructure: Finance and Policy

For very small systems in particular, a regional approach may be the only way to ensure long-run financial sustainability. Partnerships among water utilities can take many forms, and include both formal and informal arrangements (Figure 5). For example, two villages might agree to share an operator or billing functions without creating a formal merger and creating a physical connection. Ohio law gives political subdivisions the option of creating a formal regional district for water or sewer district (Revised Code Chapter 6119) but cities can also devise their own arrangements via contract. In so doing, they can carefully construct how they will share authority and control. There is no “one size fits all” approach. The best arrangement depends on the needs and resources of the systems involved. There are many ways to create change, and a formal merger is only one potential outcome of discussions.

Figure 5. Restructuring Options for Water Utilities

Initial Changes	<ul style="list-style-type: none"> • Completely self-contained, requires no cooperation or interaction • Examples: Installing meters, changing billing system, implementing an environmental management system, reviewing rate structure and making appropriate changes
Informal Cooperation	<ul style="list-style-type: none"> • Work with other systems, but without contractual obligations • Examples: sharing equipment, sharing bulk supply purchases, mutual aid agreements
Contractual Assistance	<ul style="list-style-type: none"> • Requires a contract but contract is under system's control • Examples: Contracting operation & management, outsourcing engineering services, purchasing water
Joint Powers Agency	<ul style="list-style-type: none"> • Creation of a new entity by several systems that continue to exist as independent entities (e.g. regional water system) • Examples: sharing system management, sharing operators, sharing source water
Ownership Transfer	<ul style="list-style-type: none"> • Takeover by existing or newly created entity • Example: acquisition and physical interconnection, acquisition and satellite management, one system transferring ownership to another to become a larger existing system or new entity

Source: US EPA.⁸²

Other states are also looking closely at regionalization. The Indiana Finance Authority (IFA), which manages the state’s revolving funds, is encouraging mergers among drinking and wastewater utilities by offering loans that provide principal forgiveness after 4 years, if a recipient has fulfilled

⁸² US EPA. Restructuring and Consolidation of Small Drinking Water Systems: A Compendium of State Authorities, Statutes, and Regulations. Office of Water (4606M). EPA 816-B-07-001. (October 2007) www.epa.gov/safewater

all requirements.⁸³ The IFA also looks to refinance existing loans, or to extend their term, in order to make the merger decision easier for the receiving system that has to undertake a new project in order to connect. For example, the City of Bluffton, IN, needed to extend its sewer lines to rural areas surrounding the town. The city had an existing loan with \$7.47 million in debt service, payable at a 3.02% interest rate. By refinancing the loan at 0%, the city was able to save \$1.86 million to fund the connection project.⁸⁴ Refinancing loans impacts the ability of the IFA to increase its loan volume as much as it otherwise might, but only a handful of consolidation projects are done each year, and the IFA has made a policy decision that regionalization is an important tool.

California, which has a number of systems in agricultural areas with chronic groundwater contamination, has gone a step farther. In addition to encouraging regionalization with financial incentives, the state recently enacted a law requiring consolidation if a drinking water utility fails to correct chronic quality issues or unreliable water supplies even after receiving technical assistance.⁸⁵ The law enables the state water board to commence discussion of consolidation with nearby systems and to order consolidation if it is economically and technical feasible and no other alternatives can be found. To date, the state has sent letters to 13 systems warning of potential consolidation if corrective action is not undertaken. The quality issues identified include contamination by uranium, arsenic, and nitrates.

In 2016, the Ohio General Assembly considered legislation, Senate Bill 333, which would have allowed the EPA to initiate a court-approved receivership process for very small utilities with 500 or fewer consumers if the system posed a threat to public health or welfare. This provision of the bill mostly would have affected mobile home parks. Although not aimed explicitly at regionalization, the receiver could have explored consolidation and other options with the aid of EPA technical assistance. The bill did not pass in 2016 and will have to be reintroduced in the 2017-2018 legislation session. Other parts of the bills would have required asset management programs (see below).

Recommendation: Consider expanding incentives for regionalization, including greater use of principal forgiveness and grants. A pilot program during the FY 2018-2019 budget could be used to promote regionalization and asset management. An additional incentive could be a time-limited state cost sharing of capital expenses for newly-created regional or county systems. Any new state general obligation bonding authority for water and sewer infrastructure should be linked to grants for regionalization and consolidation.

ASSET MANAGEMENT INCREASES THE SUSTAINABILITY OF WATER UTILITIES

⁸³ Author's interview with James (Jim) McGoff, COO and Director of Environmental Programs, Indiana Finance Authority, 9-8-2016.

⁸⁴ James McGoff, Indiana Finance Authority, "Small Communities and Regionalization" powerpoint presentation, CIFA 2015 SRF Workshop, November 1-3, 2015.

⁸⁵ California Senate Bill 88 (2015); California EPA, State Water Control Board, "Frequently Asked Questions on Mandatory Consolidation or Extension of Service for Water Systems," Updated 11-7-2106.

Strengthening Ohio's Water Infrastructure: Finance and Policy

Asset management is an essential component of infrastructure planning and administration. A strong asset management program (AMP) that identifies the location of key assets, evaluates their condition, and ties this information to maintenance and scheduled replacement, user charges, and a long-term capital plan is considered best practice for both drinking water and wastewater utilities. Unfortunately, some utilities, particularly in smaller communities, do not have a complete map of where their assets are, and do not have an up-to-date understanding of their condition. This lack of information can have many consequences, including missed opportunities to repair or replace critical assets before they fail. In the absence of an AMP, long-term capital planning becomes guesswork.

The U.S. EPA has officially encouraged asset management programs since 2003, and issued a best practice guide in 2008.⁸⁶ In 2011, the EPA signed an agreement with the U.S. Department of Agriculture (USDA) to provide technical assistance to communities trying to improve their long-term technical, managerial, and financial sustainability.⁸⁷ In Ohio, the state EPA, USDA, and Ohio Water Development Authority support the Rural Community Assistance Program (RCAP), a nonprofit organization that deploys technical experts around the state to help small communities with water infrastructure issues, including how to start and implement an AMP. Local economic development districts also have technical assistance programs that have helped small communities to create an inventory of their assets and begin an AMP.

Limited financial incentives are available for AMPs from the Ohio EPA and federal sources. Both the Ohio EPA's Drinking Water Assistance Fund and the Water Pollution Control Loan Fund (wastewater) offer zero percent loans up to \$100,000 for asset management planning. The Drinking Water Assistance Fund also awards bonus points in the project priority ranking system for applications from systems that have established an AMP. The USDA Rural Development – Water and Waste Disposal Loan and Grant Program encourages systems to create asset management plans that contemplate long-term replacement schedules. The Community Development Block grant will allow some planning activities to be rolled into project assistance.

Despite official encouragement and resources, small systems may find it difficult to afford AMPs and may lack staff capacity to implement an ongoing AMP. A 2013 McGraw-Hill national survey of water utilities found that implementation of AMP practices was significantly higher among larger utilities serving populations of over 50,000.⁸⁸ In order to encourage greater adoption of AMP practices (particularly among smaller systems), the report recommended greater education of utility practitioners on the benefits of AMP; greater funding and more focused regulation; and a gradual approach to implementation.

Michigan's Stormwater and Wastewater Asset Management Program

⁸⁶ U.S. EPA, *Asset Management: A Best Practices Guide*. EPA 816-F-08-014. (April 2008).

⁸⁷ Memorandum of Agreement Between the United States Environmental Protection Agency and the United States Department of Agriculture - Rural Development Rural Utilities Service, available at U.S. EPA, <https://www.epa.gov/sites/production/files/2015-04/documents/epausdamoaruraldevelopmentruralutilitiesservicejune2011.pdf>

⁸⁸ McGraw-Hill Construction, *Water Infrastructure Asset Management: Adopting Best Practices to Enable Better Investments*. 2013. Available from Dodge Data and Analytics, <http://www.construction.com/>

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Michigan's experience with asset management may provide some lessons for Ohio. The Michigan Department of Environmental Quality's Asset Management Grant Program started in 2013. The program was created to support cities' stormwater and wastewater asset management plans. Starting in 2012, all municipalities are required to submit an asset management program (AMP) in order to keep their operating permits. In practice, the MDEQ started by providing technical assistance to the largest systems in the state and using the lessons learned to inform work with smaller systems. The core elements of the AMP are to inventory the current state of the assets, and determine the required sustainable level of service, assets critical to sustained performance, minimum life-cycle costs, and the best long-term funding strategy. Michigan's asset management plan requires:

- (a) Provision of appropriate maintenance staff;
- (b) Collection system map of all systems owned and operated based on current conditions;
- (c) Inventory and assessment of fixed assets;
- (d) Operation, Maintenance and Repair budget (rates should be sufficient to cover OMR).

A total of \$450 million will be available over the 5-year life of the program.⁸⁹ The grant amount is capped at \$2 million per community, with the first \$1 million requiring a 10 percent match, and the second \$1 million requiring a 25 percent match. Utilities are required to make a summary of the AMP public and submit the full report to the state after project completion. Several problems became apparent in the program's structure.⁹⁰ First, the MDEQ decided to use a lottery approach to awarding funding because of the overwhelming interest in the program. This meant that awards were not based on need. Secondly, some smaller communities relied too much on consultants to prepare their applications and to develop their asset management programs. If a similar program is undertaken in Ohio, state agencies must be certain that local officials and water utility staff support the long-term development of an AMP.

The state of Delaware is using a different approach to fund an asset management grant program. The program offers up to \$100,000 per municipality (or \$200,000 combined for wastewater and drinking water) to support the development of an AMP.⁹¹ There is no match requirement. The funding source uses the fees collected from SRF borrowers (both clean water and drinking water). Although this source limits the number of recipients each year, it does not require the state to provide a new source of funding. Recipients are required to sign a five-year agreement with the

⁸⁹ Michigan Department of Environmental Quality, Stormwater, Asset Management, and Wastewater Program, http://www.michigan.gov/deq/0,4561,7-135-3307_3515_4143-294952--,00.html.

⁹⁰ Lessons learned from the program are taken from an interview with Robert Schneider, Revolving Loan Section, Michigan Department of Environmental Quality, 8-17-16.

⁹¹ US EPA, Office of Water. "Delaware Drinking Water Asset Management Grant Program." *National Water Program Performance, Trends and Best Practices Report*. Fiscal Year 2015. (June 2016).

www.epa.gov/sites/production/files/2016-8/documents/fy_2015_national_water_program_web.pdf. See also Delaware Water Infrastructure Advisory Council, "Wastewater and Drinking Water Asset Management Incentive Program," April 2015.

<http://www.dnrec.delaware.gov/fab/Documents/Asset%20Management%20Incentive%20Program/WW%20and%20DW%20Asset%20Management%20Incentive%20Program%20-%20Guidelines%20and%20Application.pdf>

Delaware Department of Natural Resources and Environmental Control that requires development and implementation of an AMP.

Ohio Asset Management Legislation (Senate Bill 333, 131st G.A.)

Ohio Senate Bill 333, introduced in 2016, proposed that public water systems (drinking water utilities) be required to report on and assess their asset management capabilities. The bill did not pass before the end of the legislative session, but it is likely to be reintroduced with the support of the Ohio EPA for the next legislative session in 2017. SB 333 stated that public water systems must demonstrate technical, financial, and managerial competency through the implementation of an asset management program.⁹² It did not contain an appropriation or otherwise address the issue of the financial cost of asset management, so it is possible that some stakeholders would see it as an unfunded mandate. The bill also provided that if a municipality whose water system serves less than 500 service connections is seen as being incapable of adequate asset management, a court of common pleas may appoint a receiver with no stake in the system to take possession of and operate the public water system.

The bill required asset management plans to include the following elements:

- (a) An inventory and evaluation of all assets;
- (b) Operation and maintenance programs;
- (c) An emergency preparedness and contingency planning program;
- (d) Criteria and timelines for infrastructure rehabilitation and replacement;
- (e) Approved capacity projections and capital improvement planning;
- (f) A long-term funding strategy to support asset management program implementation.

Asset management should be part of a larger framework for increased transparency and accountability that will bolster public confidence in water utilities and public understanding of the need for rate increases. The lack of significant performance and benchmarking information for water and wastewater utilities has been noted as an issue not only for the public but for private investors.⁹³ A state that has led the way in making information access is Wisconsin, through its utility regulation agency, the Public Service Commission. The Commission publishes information on local utilities' water loss rates; maintenance costs for mains, services, and hydrants; physical indicators of growth and replacement in the system; costs of fuel and power; and other indicators, such as main breaks. Data collection and verification on this scale entails considerable administrative costs, but if the indicators are integrated into the utility's strategic planning process this cost will be lessened. It is worth noting that the Public Utilities Commission of Ohio has a water loss rule that requires remedial action by a private system if water loss rate exceeds 15 percent.⁹⁴

Recommendation: Consider (1) improved cost-sharing incentives to accelerate asset management implementation and create requirements to make summaries of asset management plans public; and (2) study how asset management should be put in place in small systems, particularly those that lack a

⁹² R.C. 6109.24(B)(1) of SB 333, As Introduced.

⁹³ Johnson Foundation, *Financing Sustainable Water Infrastructure*, p. 21.

⁹⁴ OAC 4901:1-15-14.

full-time operator. Couple asset management plans with improved statewide data collection on key utility performance benchmarking statistics.

CONCLUSION

Water utilities are facing challenges from many directions, including regulatory pressures, aging plant and equipment, and demographic and economic changes in their service areas that make it difficult to continue doing business in the same way. State agencies in Ohio provide revolving loans and grants that are the envy of many other states, and they have taken significant steps to make communities aware of the funding options available to them. Still, these efforts are not enough to prevent seemingly endless increases in water and sewer rates in many communities and continued discussions about long-term viability in others. What is needed is a new paradigm, and at least part of its outline is known. Asset management will save costs through predictive maintenance and better targeting of resources, while allowing utilities to better justify their capital improvement plans to governing bodies and encouraging them to benchmark against their peers. Regionalization allows utilities to achieve economies of scale and increases their financial sustainability. Utilizing new technology to save energy costs in treatment systems can also help to change the financial equation. With the proper guidelines in place, P3 arrangements can add to the flexibility and timeliness of many infrastructure projects.

Fundamentally, however, water and sewer infrastructure in Ohio are still looked upon as local responsibilities and local issues, just as they were in the early 20th Century. The federal government shifted the EPA grant program to a revolving loan structure even as regulatory burdens increased and state grant programs, while significant, have never filled the gap. After decades of underpricing water infrastructure, many experts feel that it is time to move the industry forward to "full cost pricing," in which customer charges cover the utility's total cost of operations, capital investment, and reserves. While this may be within the realm of possibility for some of Ohio's larger metro areas, it is likely out of reach for smaller towns and villages, especially if they are losing population and economic vitality. Discussions about long-term infrastructure policy are inseparable from larger issues of economic growth and land use, but the state has yet to figure out a way to turnaround the economic fortunes of many of its small towns. Until this happens, the state must take a leadership role in helping localities to modernize their infrastructure in an affordable manner and to make the tough choices about how to structure service delivery.

Individuals Interviewed for this Report

We are grateful for the participation of the following individuals who were interviewed for the report. The author bears sole responsibility for any errors or omissions.

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APPENDIX 1: THE LANDSCAPE OF WATER INFRASTRUCTURE FUNDING IN OHIO

Ohio is fortunate to have a significant number of options for water infrastructure financing (Table 1). The Ohio EPA maintains two revolving loan funds for drinking water and wastewater that provide below-market interest rates, but require significant administrative hurdles. The Ohio Water Development Authority (OWDA) administers a state-capitalized revolving loan fund that provides market interest rates but fewer administrative requirements. Other agencies also provide funding, mostly in the form of grants, but in smaller amounts than the OEPA and OWDA. The Ohio Public Works Commission (OPWC) consistently provides funding for water as part of a broader portfolio that includes transportation and other capital projects. Several small federal programs are also available, including, the U.S. Department of Agriculture’s (USDA) Rural Development Assistance Program, the Community Development Block Grant (CDBG), and the U.S. Army Corps of Engineers. CDBG originates with the U.S. Department of Housing and Urban Development, and is administered at the state level by the Ohio Development Services Agency. Eligible counties in Eastern and Southern Ohio can also access funding from the Appalachian Regional Commission (ARC).

Table 1. Major Drinking Water and Wastewater Funding Sources in Ohio

Agency and Program	Purpose
OWDA - Fresh Water Fund	Market rate revolving loan fund for drinking water, and wastewater projects; originally capitalized with state funds
OEPA – Water Pollution Control Loan Fund	Below market rate revolving loan fund for wastewater projects; applicants must complete an environmental impact study; receives annual federal capitalization grant from US EPA
OEPA – Drinking Water Assistance Fund	Below market rate revolving loan fund for drinking water projects; applicants must complete an environmental impact study; receives annual federal capitalization grant from US EPA
OPWC – State Capital Improvement Program and Small Government Projects	Grants and loans for water, wastewater, and stormwater projects, mostly focused on repair and replacement; SCIP projects are selected by 19 district committees; receives proceeds of state general obligation bonds
USDA, Rural Development	Loans and grants for water, wastewater, and stormwater projects focused on communities with population under 10,000; applicants must complete an environmental impact study; receives annual federal appropriation, all loan repayments go to US Treasury
ODSA – Community Development Block Grant	Grants for water, wastewater, and stormwater for low and moderate-income areas; receives annual federal appropriation from US Department of Housing and Urban Development
Appalachian Regional Commission /	Grants for water, wastewater, and stormwater

ODSA - Governor’s Office of Appalachia	projects for 32 Ohio Appalachian counties; receives federal Appalachian Regional Commission appropriation
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Ohio Water Development Authority

The OWDA’s revolving loan structure provided a model for how to structure the federal revolving loan funds several decades later. The authority operates as an independent agency, with an eight-member board. Three board members are directors of state agencies and serve ex-officio (Development Services Agency, EPA, and Department of Natural Resources). Five appointed members serve staggered eight-year terms. The authority was created in 1968 and was capitalized by a \$100 million state general obligation bond issuance, an amount equal to \$685 million in today’s dollars.⁹⁵ The funds were used to create a revolving loan fund for drinking water, waste water, and storm water infrastructure that could be recapitalized periodically through the issuance of revenue bonds. The funds held by the authority are not part of the state treasury and are not considered funds of the state.

Known today as the Fresh Water Fund, it continues to accept loan applications on a monthly basis. Due to U.S. Treasury rules for tax exempt bonds that require expending 30 percent of bond proceeds in the first year and 95 percent within three years, the Fund raises capital by establishing lines of credit with major banks and then uses bond issuances to retire debt from the lines of credit.

Fresh Water Fund interest rates are pegged to the Municipal Market Data Index.⁹⁶ Borrowers can receive a 50 basis point (0.5%) discount for being under an EPA consent order; connecting to another system for treatment services; having been a previous borrower from OWDA; purchasing another system; addressing health concerns, or having a state-approved balanced growth plan.⁹⁷ Borrowers with expected higher than average customer charges, as measured by median household income, can qualify for a reduced interest rate through the Community Assistance Program. Community Assistance Program loans are limited to \$5 million (formerly \$3 million) with interest rates 150 basis points less than the benchmark. For drinking water loans, user charges must be above 1.1 percent of MHI, and for wastewater, above 1.5 percent. Applicants can also qualify if combined projected user charges are 2.6 percent or more of MHI.⁹⁸

The Fresh Water Fund’s loan volume has fluctuated significantly over the last several years. In 2014, the Fresh Water fund disbursed \$227.1 million for 97 loans for both design and construction of drinking water, waste water, and storm water (Table 2).⁹⁹ In 2015, the Fund made 116 loans totaling \$114.4 million, a decrease of nearly 50 percent. In 2015, more loan activity shifted to the Ohio EPA revolving funds, both of which more than doubled their total lending amount from the

⁹⁵ Inflation adjustment using the U.S. Department of Labor, Bureau of Labor Statistics Consumer Product Inflation Calculator. Available at http://www.bls.gov/data/inflation_calculator.htm.

⁹⁶ The rate is calculated as the 8 week average of the 20 and 30 Year MMD Aa Index plus 0.30%.

⁹⁷ OWDA 2015 Annual Report, p. 6. Discounted loans are limited to \$15 million at the 1.0% rate.

⁹⁸ OWDA 2014 Annual Report, p. 9.

⁹⁹ Information from Ohio Water Development Authority *2014 Annual Report* and *2015 Annual Report*.

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previous year. The increase in the WPCLF was driven in part by a single \$250 million loan to Akron. Total lending by all three funds increased by over \$400 million or 68 percent.

Table 2. Total Lending by OWDA Fresh Water Fund and Ohio EPA Revolving Funds, 2014 – 2015

Fund	2014 Lending (in millions)	2015 Lending (in millions)	Change
OWDA Fresh Water	\$227.1	\$114.4	(49.6%)
OEPA Water Pollution Control Loan Fund	\$316.6	\$759.6	139.9%
OEPA Drinking Water Assistance Fund	\$49.4	\$120.9	144.6%
Total	\$593.2	\$995.0	67.7%

Source: OWDA 2015 Annual Report.

Table 3. OWDA and Ohio EPA Loan Purposes, 2015

Fresh Water Fund	Loans	Loan Amount
Drinking Water Construction	34	\$ 53,920,053
Drinking Water Planning & Design	15	\$ 2,964,625
Subtotal Drinking Water		\$ 56,884,678
Wastewater Construction	46	\$ 54,807,142
Wastewater Planning & Design	21	\$ 2,725,563
Subtotal Wastewater		\$ 57,532,705
Total Fresh Water Fund	116	\$ 114,417,383
Water Pollution Control Loan Fund (EPA)		
Construction	78	\$ 729,795,752
Planning and Design	17	\$ 29,804,670
Total WPCLF	95	\$ 759,600,422
Drinking Water Assistance Fund (EPA)		
Construction	48	\$ 117,898,360
Planning and Design	8	\$ 3,042,235
Total DWAF	56	\$ 120,940,595

Source: OWDA 2015 Annual Report. Numbers are rounded.

As of December 31, 2015, the Fresh Water Fund had 279 local government borrowers with loans outstanding. The combined principal amount of these loans was \$1.27 billion. Just thirteen of these borrowers accounted for over 50 percent of the total outstanding loan repayments, as shown in Table 4 below.

Table 4. Largest Local Government Agency Borrowers, OWDA Fresh Water Fund, December 2015

Local Government	Number of Projects	Project Costs Funded with Fresh Water Loans (in millions)	Projected Remaining Loan Repayments (in millions)	Percent of Projected Amount of All Loans Remaining to be Repaid
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Fremont	1	\$65.9	\$116.0	6.30%
Lima	8	\$74.8	\$113.5	6.17%
Columbus	27	\$89.4	\$95.2	5.17%
Erie County	25	\$66.9	\$79.3	4.31%
Piqua	2	\$49.8	\$76.4	4.15%
Lorain	18	\$60.7	\$76.1	4.13%
Avon Lake	9	\$50.3	\$69.0	3.75%
Sandusky	13	\$67.6	\$67.9	3.69%
Akron	17	\$49.7	\$66.8	3.63%
Medina County	40	\$72.4	\$54.7	2.97%
Delaware	3	\$35.4	\$49.5	2.69%
Toledo	7	\$33.2	\$44.3	2.40%
Elyria	7	\$31.9	\$43.8	2.38%
Total		\$748.1	\$952.5	51.72%

Source: OWDA.¹⁰⁰ Numbers are rounded.

Ohio EPA State Revolving Loan Funds

The revolving loan mechanism of the Fresh Water Fund and its precursors became a model for federal action in the 1980s when Congress began appropriating funds to the U.S. EPA to distribute to the states for establishment of wastewater revolving loan funds to assist compliance with the Clean Water Act. Federal assistance for state drinking water revolving funds was added under the Safe Water Drinking Act Amendments of 1996, and federal funds were received to start the program in 1998. The OEPA is the official administrator of these two funds, setting policies within the guidelines of federal law, receiving applications, and evaluating individual projects. Federal law requires each state to provide at least a 20 percent match for both waste water and drinking water funds. OWDA meets this requirement by using bond or note proceeds.

Applicants to both funds are required to submit an environmental review. Project construction is subject to federal Davis-Bacon and American Iron and Steel requirements. Within the policy framework of federal law, however, states are permitted to tailor the program to their own individual needs.

Water Pollution Control Loan Fund (Ohio EPA)

The national program for wastewater is known as Clean Water State Revolving Fund. In Ohio the program is called the “Water Pollution Control Loan Fund” (WPCLF) and receives a capitalization grant of approximately \$78 million each year from the U.S. EPA. This is the third largest amount nationwide in 2016. The fund has grown substantially since its creation in the 1980s from the use of loan repayments to support more lending. Until 2016, its purposes were limited to waste water treatment plants, nonpoint source pollution, and estuary conservation management. Under House Bill 512 (131 G.A., 2016), the WPCLF purposes are made consistent with recent changes in federal law to include a much wider scope of activities, including:

¹⁰⁰ Ohio Water Development Authority, Fresh Water Revenue Bonds, Series 2016a. Initial Offering Statement, Dated March 9, 2016, CUSIP 67765Q, p. 11.

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- decentralized wastewater treatment systems;
- management of stormwater or subsurface drainage water;
- measures to reduce demand for publicly owned treatment capacity through water conservation by political subdivisions or state agencies;
- development and implementation of watershed projects meeting the criteria of the Clean Water Act;
- measures to reduce the energy consumption needs of publicly owned wastewater treatment works;
- reuse or recycling of wastewater, stormwater, or subsurface drainage water;
- increasing the security of publicly owned wastewater treatment works;
- funding for nonprofit agencies to assist owners and operators of small and medium-sized publicly-owned wastewater treatment projects to plan, develop, or obtain financing for preconstruction activities, and to assist with treatment works in achieving compliance with the Federal Water Pollution Control Act.¹⁰¹

Program administration funds come from a 0.2 percent loan original fee for each loan and a 4 percent draw from the annual federal capitalization grant.

OEPA sets priorities for the WPCLF through the annual Program Management Plan.¹⁰² The program operates on a calendar year basis. Project submissions for 2016 had to be submitted by August 1, 2015 and projects on the intended priority list are announced in December. The project priority system is the combination of the Integrated Priority System (IPS) and economic need factors. The IPS scoring process rates applications based on two priority categories, (1) the protection of human health, and (2) the protection or restoration of water resources. The latter categories includes aquatic life uses of surface waters resources, ecological integrity of wetlands, and the quality of ground water resources for human use.¹⁰³ Economic need factors are used to determine eligibility for “hardship” interest rates (see below).

The program offers three basic types of interest rates, as well as a limited set-aside for principal forgiveness (Table 5). The standard interest rate is 1.25 percentage points (125 basis points) less than the OWDA Fresh Water interest rate. These rates apply to both planning and design, and construction phases of the project. The standard loan term is 20 years. A thirty year loan is available if the design life of the project is at least 30 years. Small communities, which receive a 50 basis point reduction in interest rate, are incorporated areas with a population under 5,000 or any service area that charges the entire project debt to an area with less than 5,000 people. Borrowers cannot break a project into smaller portions simply to access the small community rate, however. In PY 2017, the department added a special zero percent interest rate incentive for communities that undertake sewer separation projects in order to comply with a consent decree.

Table 5. Loan Type and Interest Rate Methodology, OEPA Water Pollution Control Loan Fund, PY 2016

Loan Type	Interest Rate Methodology
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¹⁰¹ HB 512, amendments to RC § 6111.036(A).

¹⁰² Ohio EPA, Division of Environmental and Financial Assistance. Water Pollution Control Loan Fund. Final 2016 Program Management Plan. December 18, 2015.

¹⁰³ Ibid, p. 11.

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Standard Rate (20 year)	Benchmark minus 125 basis points
Small Community (Under 5,000 population)	Standard Rate minus 50 basis points
Hardship	0.0%, Under 2,500 population, MHI under \$49,432 1.0%, 2,500 – 10,000 population, MHI under \$46,047
Principal Forgiveness	Limited to a set-aside of \$25.5 million, with \$13.3 million reserved for household sewage treatment system (septic) failures, and \$10.2 million for wastewater
Fiscal sustainability plans, energy audits, asset management, resilience, and extreme weather planning	0.0% for all borrowers

Source: Ohio EPA

Hardship interest rates are reserved for communities with a population size under 10,000 that meet certain benchmark median household incomes (MHI) relative to their peers. For very small communities with a population under 2,500, the benchmark is \$49,432, which is the 75 percentile of their peer group. For areas with populations between 2,500 and 10,000, the MHI benchmark is \$46,047, or the 50th percentile of the peer group. All borrowers are eligible for smaller discounts for projects emphasizing green infrastructure or from areas with a sustainable growth plan but the interest rate cannot be reduced below zero percent for a non-hardship loan.

As of January, 2016, the WPCLF had outstanding loans to 340 government agencies for 1,073 individual projects. The principal balance of outstanding loans was over \$4.28 billion. Ten local governments, shown in Table 6 below, accounted for over 70 percent of the projected repayments. The City of Columbus accounts for nearly one quarter of the anticipated future repayments.

Table 6. Largest Local Government Agency Borrowers, OEPA Water Pollution Control Loan Fund, January 2016

Governmental Agency	Number of Projects	Estimated Project Costs Funded with WPCLF Loans (in millions)	Projected Remaining Water Quality and WPCLF Series Repayment	Percent of Total Projected Remaining Repayments
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			(in millions)	
Columbus	105	\$1,272.6	\$1,144.1	24.61%
NEORS	50	\$810.0	\$670.3	13.97%
Toledo	46	\$535.5	\$548.0	11.62%
Akron	24	\$409.1	\$534.4	6.95%
Hamilton County	37	\$299.5	\$319.9	3.50%
Euclid	8	\$120.4	\$141.7	2.54%
Lorain	8	\$110.3	\$113.5	2.44%
Canton	7	\$99.0	\$118.7	1.61%
Montgomery Co.	25	\$69.5	\$29.5	1.53%
Greene Co.	5	\$66.3	\$62.8	1.40%
Total	315	\$3,792.1	\$3,682.6	70.14%

Source: OWDA.¹⁰⁴

Drinking Water Assistance Fund (Ohio EPA)

The purpose of the Drinking Water Assistance Fund (DWAFF) is to support capital projects that help local drinking water systems protect public health and stay in compliance with the federal and state law. The program receives a capitalization grant between \$21 and \$24 million each year. The general focus of the program in Ohio is on small systems with populations under 10,000. Standard loan repayment schedules can extend up to 20 years. Borrowers are charged a loan origination fee of one percent of principal by the OPEA and 0.35 percent by the OWDA. The program year coincides with the state fiscal year, which begins on July 1. Project nominations are due by March. A draft management plan is released in May, and a public meeting with an opportunity to comment on the plan occurs in June before the plan is finalized.

DWAFF funds cannot be used to support operations and maintenance, or to construct reservoirs that are not adjacent to treatment facilities. Planning and design loans are available for zero percent interest for a five year term. Within the framework of federal and state law, OEPA has some discretion to set priorities for assistance through annual revisions to the state Intended Use Plan. The clear priority of the DWAFF is to provide assistance to smaller systems. In PY 2016, systems serving areas with populations over 10,000 could not receive more than \$40 million of the total \$248 million intended funding. The draft plan for FY 2017 removes this “proportionate share” for the first time in the history of the program.

The intended use plan establishes a point scoring system with six general criteria (Table 7). Systems with more pressing needs receive a higher score and priority.

Table 7. Ranking Criteria for the OEPA Drinking Water Assistance Fund

Criteria	Explanation
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¹⁰⁴ OWDA. Official Statement of Water Pollution Control Fund Revenue Refunding Bonds, Series 2016A. Dated April 27, 2016. CUSIP 67766WXX3.

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Public Health Issues	Systems with presence of contamination from bacteria, chemicals, lead, copper, nitrates, or cyanotoxins, or violations of EPA groundwater or surface water treatment rules receive more points;
Compliance with Federal Safe Drinking Water Act	The condition of physical infrastructure is used as a proxy for the ability to comply. Systems with greater deficiencies in design, storage, or distribution receive more points.
Effective Management	Bonus points are awarded for effective management, such as having a certified operator that exceeds minimum standards, backflow prevention program, water conservation program, preventive maintenance program, or an asset management plan.
Consolidation/Regionalization	This criterion is meant to encourage systems to achieve economies of scale and awards points if more than one system is involved. Projects involving consolidation also receive a discounted loan rate.
Economic Affordability	Systems with average user rates that exceed benchmarks receive points. Systems with median household income above the state average have higher benchmarks.
Population	Systems receive points inversely related to the size of the service population.

Source: Ohio EPA.¹⁰⁵

The Intended Use Plan scoring system takes into account relative income levels of local areas by referencing the median household income (MHI) level for systems that applied for funding in 2011. The reference level of median household income is \$40,924. As shown in Table 8 below, a system with a median household income above \$40,924 must have combined water and sewer charges above 4.3 percent of MHI in order to receive points for a lack of affordability. A system below the MHI reference level would need to exceed the combined charge benchmark of 3.2 percent of MHI to receive points.

Table 8. Affordability Benchmarks in FY 2016 DWAF Intended Use Plan

Utility	Benchmark Charges as % of MHI	
	Local MHI above State MHI	Local MHI below State MHI
Sewer Charges	2.2%	1.7%
Water Charges	1.9%	1.5%
Combined	4.3%	3.2%

¹⁰⁵ Ohio Environmental Protection Agency, Division of Drinking and Ground Waters *Final Program Management and Intended Use Plan*, Program Year 2016. Effective July 1, 2015 through June 30, 2016. (June 2015).

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Source: Ohio EPA, DWAF Intended Use Plan, PY 2016.

Ohio law directs the state to set aside at least 20 percent, but not more than 30 percent, of the federal capitalization grant for additional subsidies. This amount was \$7.3 million in PY 2016 and the draft PY 2017 plan calls for an increase to \$11.5 million. Ohio uses the additional subsidy to assist “disadvantaged communities.” Disadvantaged communities have public health and economic affordability issues identified in the standard scoring methodology, and also have other distress indicators such as poverty rates higher than the state average, or MHI lower than the state median. Applicants with less than 10,000 population are scored higher. Recipients are eligible for loans with principal forgiveness ranging from 20 to 40 percent of the principal amount and the balance in a zero percent loan with a repayment schedule up to 30 years. Projects involving regionalization are also eligible for up to 50 percent of principal forgiveness.

Ohio Public Works Commission

The OPWC is a state authority overseen by a 12 member board. Seven voting members are appointed by the legislature, and five non-voting agency directors serve ex-officio. The OPWC provides funding for both transportation and water infrastructure assets using the proceeds of state general obligation bond issuances. Water infrastructure projects are funded mostly through the State Capital Improvement Program (SCIP) and in smaller amounts through the Small Government Program. In recent years, the OPWC could issue a total of \$150 million in general obligation bonds each year. Under S.B. 310 (131st G.A., 2016), OPWC will be authorized to issue up to \$175 million per year.¹⁰⁶ This is the annual maximum allowed by Article VIII, Section 2s of the Ohio Constitution for 5 years; the annual maximum will increase to \$200 million for a subsequent five year period. The authority to issue bonds is discretionary and subject to OBM approval.

SCIP projects are nominated by committees of local government officials in 19 local districts. Districts receive their funding allocations on a per capita basis. Districts must rank water infrastructure projects along with transportation projects. Most of the assistance is provided in the form of grants, but at least 15 percent of each district's funding allocation comes in the form of revolving loans. By law, OPWC grants cannot exceed 90 percent of the costs of infrastructure repairs and replacement, or 50 percent of the costs of new or expanded infrastructure.¹⁰⁷ Loans can cover the full amount of project expenses.

Local areas tend to recommend water and sewer projects for loans because a revenue source is identified from user charges. Most SCIP loans have an interest rate of zero percent and can extend up to 30 years, but they cannot exceed the expected life of the equipment. OPWC also has the option of using “loan assistance” to pay for the interest on a loan from a different funding source, such as OWDA, during the construction phase, before new user charges can be implemented. Credit enhancement is another option that pays that can pay the premium for a bond insurance policy to

¹⁰⁶ Author's interview with Mike Miller, Executive Director, Ohio Public Works Commission, 4-20-2016.

¹⁰⁷ R.C. 164.05(D).

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allow a borrower to improve its credit rating. These two options create the highest leverage for OPWC funds.

Ohio law provides set of 10 criteria that district committees must use to rank projects, but districts have discretion in weighting the criteria and developing specific methodologies. The ten criteria are:

- The infrastructure repair and replacement needs of the district;
- The age and condition of the system to be repaired or replaced;
- Whether the project would generate revenue in the form of user fees or assessments;
- The importance of the project to the health and safety of the citizens of the district;
- The cost of the project and whether it is consistent with the district's allocation for grants, loans, and local debt support and credit enhancements for that year;
- The effort and ability of the benefited local subdivisions to assist in financing the project;
- The availability of federal or other funds for the project;
- The overall economic health of the particular local subdivision;
- The adequacy of the planning for the project and the readiness of the applicant to proceed should the project be approved;
- Any other factors relevant to a particular project.¹⁰⁸

For water and sewer projects, most districts set a threshold of 2 percent of MHI to determine whether user charges are unaffordable. Generally, district committees in Appalachia tend to rank water projects more highly than other parts of the state in order to address the needs of unsewered areas.

The small government program is a \$15 million annual set-aside intended for projects not funded through the SCIP process. Under S.B. 310, this rule is modified to 10 percent of the annual net proceeds from new bond issuances. Projects must be from local governments with population sizes under 5,000. OPWC determines the final ranking. Water projects are asked for an analysis of user charges to establish affordability and level of effort.

Table 9. OPWC Funding for Water Infrastructure, SFY 2014

	SCIP	Small Govt.	Total
Stormwater	\$ 7,425,778	\$ 531,391	\$ 7,957,169
Wastewater	\$ 40,559,755	\$ 8,061,794	\$ 48,621,549
Water Supply	\$ 24,932,868	\$ 2,362,238	\$ 27,295,106
Total SCIP	\$ 72,918,401	\$ 10,955,423	\$ 83,873,824

Source: OPWC Annual Report, Program Year 27.

¹⁰⁸ R.C. 164.06(B)

Assistance through the SCIP program for water-related projects totaled \$70.7 million in FY 2015.

USDA, Rural Development – Water and Waste Disposal Loan and Grant Program

The U.S. Department of Agriculture is an important source of funding for small water and wastewater systems in Ohio through the Water and Waste Disposal Loan and Grant Program. Eligible agencies must serve areas with populations less than 10,000. The program is headquartered in Columbus but also has regional staff.¹⁰⁹ Unlike the EPA program, it is not set up to be a revolving account. Loan repayments go the U.S. Treasury and the program is dependent on annual appropriations. In Federal Fiscal Year 2015, the program made loans of \$27.9 million and grants of \$12.3 million in Ohio.¹¹⁰ The program had approximately 290 borrowers as of April, 2016. Grants are limited to areas with a median household income below that of the statewide median for nonmetropolitan areas, and cannot exceed 75 percent of project costs.¹¹¹ Principal forgiveness is an option but it is used sparingly for high need projects. The program’s rule of thumb for customer affordability is 3.0 percent of MHI for combined water and sewer charges.

Like the EPA revolving loan funds, USDA requires an environmental assessment. Applicants also must submit a preliminary engineering report and information about how the funds will be utilized. This ensures that plant and equipment is sized correctly for long-term needs and user charges will not be higher than necessary. USDA also employs engineers to monitor construction and can assist in mediating disputes with contractors if necessary.

USDA loans have are below market rate but not as low as the EPA revolving funds. The program uses three tiers of interest rates, with more preferential rates tied to median household income (Table 10).¹¹² Loan repayment periods can extend up to 40 years if consistent with the expected life of the asset.

Table 10. USDA Interest Rate Categories and Income Eligibility Criteria

Borrower Category	Interest Rate (2016)	Income Eligibility Criteria
Poverty	1.75% (60% of market)	The median household income of the service area is below the higher of the poverty line, or 80 percent of the statewide nonmetropolitan median household income.
Intermediate	2.25% (80% of market)	The median household income of the service area is not more than 100 percent of the statewide nonmetropolitan median household income.

¹⁰⁹ Information in this section relies on the author’s interview with David Douglas, Community Programs Director, USDA, Rural Development - Ohio, April 4, 2016.

¹¹⁰ USDA. Rural Development, 2015 Progress Report. www.rd.gov/files/USDARDProgressReport.pdf, Chart: “Ohio Rural Development Programs FY 2009 – FY 2015 Yearly Total,” p. 48.

¹¹¹ 7 CFR 1780.10(b).

¹¹² 7 CFR 1780.13.

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Market	2.875%	All other areas.
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Source: 7 CFR 1780.13; USDA

Borrowers often use USDA funds in conjunction with resources from the Appalachian Regional Commission, CDBG, and OPWC. It is unusual for borrowers to combine USDA funds with OWDA or the revolving loans because they tend to go one with major lender or the other. The overall intent of the program is to move systems toward the creation of asset management plans that contemplate long-term replacement schedules. Along with OWDA and EPA, USDA supports technical assistance provided by RCAP and participates in the Small Community Environmental Infrastructure Group.

Community Development Block Grant

Community Development Block Grant (CDBG) funds are distributed by the U.S. Department of Housing and Urban Development to the Ohio Development Services Agency to assist low and moderate-income individuals and to eliminate blighted structures and assist neighborhood revitalization. Generally, at least 51 percent of a project’s beneficiaries must be low and moderate income.¹¹³ Low and moderate income households have less than 80 percent of the area median income. The total amount of federal funding distributed to the states through the formula grant (as opposed to disaster recovery) has declined in recent years from \$5 billion in FFY 2000 to just over \$3 billion in recent years.¹¹⁴ Ohio’s allocation was just under \$42 million in Program Year 2014.¹¹⁵ Funding is distributed within the state according to an annual plan that allocates resources to specific initiatives. In program year 2014, water and sewer projects received nearly \$2.8 million in grants through the Community Development Program, and just over \$7 million in grants through the Residential Public Infrastructure Program.¹¹⁶ The purpose of the latter program is to provide access to safe drinking water and to increase access to sanitary systems for distressed or low income communities. Many projects combined CDBG grants with financing from other sources discussed above. Although the overall amount of CDBG financing is not large, it is an important tool for communities that cannot afford to finance projects entirely with loans.

Appalachian Regional Commission

The Appalachian Regional Commission (ARC) is a federal agency established for the purpose of improving economic development and quality of life in the 13 states in the Appalachian region. Thirty-two Ohio counties are in the ARC service area. ARC funds are granted to the state of Ohio and administered by the Governor’s Office of Appalachia within the Ohio Development Services Agency in cooperation with four local development districts (Ohio Valley Regional Development

¹¹³ Community Development Block Grant Program, National Low Income Housing Coalition. Fact Sheet. <http://nlihc.org/sites/default/files/2014AG-285.pdf>

¹¹⁴ Eugene Boyd, “Community Development Block Grants: Recent Funding History,” Congressional Research Service, February 6, 2014. R-43394.

¹¹⁵ Ohio Development Services Agency, *PY 2014 Ohio Consolidated Plan Annual Performance Report*, September 2015. Available at <https://development.ohio.gov/files/cs/Final%20PY%202014%20CAPER.pdf>. Table 1: PY 2014 Consolidated Plan Annual Performance Report Program Summary, p. 2.

¹¹⁶ *Ibid.*, Table 19: Activities Funded with PY 2014 CDP Funds, p. 23; Table 23: PY 2014 Residential Public Infrastructure Grant Program Activities by Source of Funds p. 26.

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Commission, Buckeye Hills-Hocking Valley Regional Development District, Ohio Mid-Eastern Governments Association, Eastgate Regional Council of Governments). The districts have the status of regional councils of government under Ohio law. They receive and score applications but final grant award decisions are made by ODSA.

ARC funding must benefit low and moderate income communities. ARC grants generally can be used for five broad purposes:

- Business Development and entrepreneurship
- Education and Training
- Health Care
- Physical Infrastructure
- Leadership development and civic capacity.¹¹⁷

ARC grants for infrastructure can be used for drinking water, wastewater, and stormwater projects, and are a valuable way to match other state and local resources and fill gaps in project financing. In federal fiscal year 2015, a total of \$3,025,000 ARC grants were used for 13 water-related projects in Ohio, with an average grant amount of \$232,000.¹¹⁸ (The maximum grant amount is \$250,000.) Total funding for these projects was \$39.1 million. The largest projects were for wastewater treatment plants in Jackson and Marietta.

¹¹⁷ <http://www.arc.gov/funding/ARCProjectGrants.asp>

¹¹⁸ Appalachian Regional Commission, ARC Projects Approved in FY 2015, <http://www.arc.gov/images/grantsandfunding/ARCProjectsApprovedinFY2015.pdf>

APPENDIX 2: CUSTOMER AFFORDABILITY PROGRAMS IN OHIO

Authority	Program	Target Population	Criteria	Discount
City of Akron	Ohio Home Energy Assistance Program	Low Income	<ul style="list-style-type: none"> Must have been approved for the Ohio Home Energy Assistance Program 	36% per CCF
Ashland Ohio Water Billing Dept.	Senior Discount	Low-Income Seniors	<ul style="list-style-type: none"> Total annual income \$12,000 or less 	50% of total bill
City of Canton	Homestead Exemption Discount	Low-Income Seniors Low Income Disabled Persons	<ul style="list-style-type: none"> At least 65 years of age or permanently and totally disabled Income below \$30,500, Home must be within city limits 	10% on sewer and 50% on sanitation
Cleveland Division of Water	The Homestead Discount Program	Low-Income Seniors, Low Income Disabled Persons	<ul style="list-style-type: none"> At least 65 years of age or permanently and totally disabled Income less than \$32,500 	Lower fixed charge and consumption rate on water bill
Cleveland Division of Water	The Affordability Program	Low-Income	<ul style="list-style-type: none"> Household income must meet program guidelines (23,340/year for 1 person with \$8,120 for each additional person) Must own and live and service address 	40% discount on all standard water charges
Northeast Ohio Regional Sewer District	Homestead Rate Program	Low-Income Seniors, Low-Income Disabled Persons	<ul style="list-style-type: none"> At least 65 years of age or totally disabled Household income less than \$32,000 Own and live at the service address 	40% on wastewater charges
	Wastewater Affordability Program	Low-Income	<ul style="list-style-type: none"> Household income below 200% of the federal poverty guidelines 	40% on sewer charges
	Sewer Crisis Assistance Program	Financial Hardship	<ul style="list-style-type: none"> Must have experienced an emergency in the past 6 months (job loss, divorce, death) 	50% credit of the outstanding sewer balance (up to \$300) once in a 12-month period

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City of Columbus Department of Public Utilities	Senior Citizen Discount Program	Low-Income Seniors	<ul style="list-style-type: none"> At least 60 years of age Single-family home with one water meter Household income must be less than 150% of the federal poverty guidelines 	Provides discount on water service charges for eligible senior citizens
	Low Income Water and Sewer Discount, Single Family Property	Low-Income	<ul style="list-style-type: none"> Household income must be less than 150% of the federal poverty guidelines Currently enrolled in listed low-income programs (list available) 	20% discount on water and sewer consumption charges
	Low Income Water and Sewer Discount, Multi-Unit	Low-Income Multi-Unit / Master Metered Properties	<ul style="list-style-type: none"> Property owner or agent bills tenants/renters for water and sewer services At least 80% of the units have a household income less than 150% of the federal poverty guidelines or are enrolled in an Ohio low-income program 	20% discount on water and sewer commodity charges
City of Dayton Department of Water	Payment Plan	Financial Hardship	<ul style="list-style-type: none"> Must contact the utility to determine eligibility 	Ability to create a payment plan
Montgomery County Water Services	Designated Senior Citizen Program	Seniors	<ul style="list-style-type: none"> Must contact the utility to determine eligibility 	Provides a customized payment period to correspond to the date of pension checks
	Payment Arrangements	Financial Hardship	<ul style="list-style-type: none"> Must contact the utility to determine eligibility 	Payment arrangements may be available if in good standing
Toledo Department of Public Utilities	Senior Water Discount Program	Low-income seniors Low-income disabled persons	<ul style="list-style-type: none"> At least 65 years of age or totally disabled Owner-occupied residence 	25% discount, with additional discount available for those with incomes that meet income guidelines
	Voluntary Monthly Budget Plan	All Residential Customers	<ul style="list-style-type: none"> Must contact utility 	Offers customer the ability to pay smaller, more frequent payments

Source: US EPA¹¹⁹

¹¹⁹ U.S. EPA, *Drinking Water and Wastewater Utility Customer Assistance Programs*, April 2016.

Authors

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