

**Annual Report to the USEPA
Kentucky Public Drinking Water System
Capacity Development Program**

**Federal Fiscal Year 2023
October 2022 – September 2023**



**Department for Environmental Protection
Division of Water
300 Sower Boulevard
Frankfort, Kentucky 40601**

Federal Fiscal Year 2023 Report to the USEPA

Kentucky Capacity Development Program

Kentucky's Drinking Water Capacity Development Program Implementation Report provides the U.S. Environmental Protection Agency (USEPA), Region 4, with pertinent updates covering all public drinking water capacity development program activities in the Commonwealth of Kentucky for Federal Fiscal Year (FFY) 2023.

A. New Systems Program Overview

1. *Has the State's legal authority (statutes/regulations) to implement the New Systems Program changed within the previous reporting year?*

Kentucky's legal authority, Kentucky Revised Statutes (KRS) 151.630, to implement the new systems program has not changed.

2. *Have there been any modifications to the State's control points?*

Kentucky uses the control points in the 1999 Capacity Development Report to the USEPA which have not changed since that time.

3. *List new systems (PWSID & Name) in the State within the past three years, and indicate whether those systems have been on any of the annual Significant Non-Compliers (SNC) lists.*

There have been no new systems added to the annual Significant Non-Compliers list. Four public drinking water systems were inactivated this fiscal year (Table 1).

As of September 30, 2023 there are:

- 427 regulated public drinking water systems:
 - 374 community
 - 53 non-community
- 5 state-regulated bottled water systems

TABLE 1
INACTIVATED PUBLIC WATER SYSTEMS DURING THE FEDERAL FISCAL YEAR

PWSID	Name	Source	Type	Inactivation Date
KY0082081	CAMP TURNABOUT	GW	NC	6/26/2023
KY0423492	CHIEF CORNERSTONE BAPTIST CHURCH	GW	NC	5/31/2023
KY0430063	CANEYVILLE MUNICIPAL WATER WORKS	SWP	C	12/31/2022
KY0533545	MT MORIAH BAPTIST CHURCH	GW	NC	7/31/2022

C - Community

NC - Non-community

GW - Groundwater

SWP - Surface Water Purchaser

B. Existing System Strategy

1. In referencing the State's approved existing systems strategy, which programs, tools, and/or activities were used, and how did each assist existing PWS in acquiring and maintaining Technical, Managerial, and Financial capacity? Discuss the target audience these activities have been directed towards.

Kentucky's approved existing systems strategy is outlined below, followed by a discussion of how each strategy assisted existing systems in acquiring and maintaining technical, managerial, and financial capacity:

- Prioritize systems most in need of improving capacity.
- Identify the factors that encourage or impair the capacity of water systems.
- Use the authority and resources of the Safe Drinking Water Act to enhance Technical, Managerial, and Financial capacity of systems.
- Establish a baseline and measure the capacity improvements of systems in the state.
- Involve stakeholders in state efforts to improve water system capacity.

Prioritize systems most in need of improving capacity

The Kentucky Division of Water in the Energy and Environment Cabinet implements Kentucky's Drinking Water Capacity Development Program in conformance with Section 1420(a), (c), and Section 1452(a)(3) of the federal Safe Drinking Water Act. The Division's Drinking Water Capacity Development program helps all public drinking water systems improve infrastructure, management, operations, and finances so they can consistently, and affordably, provide safe and reliable drinking water. Implementation of the program also ensures that Kentucky receives the full monetary benefit of the Drinking Water State Revolving Fund. The Drinking Water State Revolving Fund is a financial assistance program to help local public drinking water systems and states achieve the health protection objectives of the Safe Drinking Water Act through investments in drinking water capital infrastructure, primarily in disadvantaged communities.

[Kentucky's Drinking Water Capacity Development Strategy](#) describes the methodology for identifying and prioritizing the public drinking water systems most in need of improving technical, managerial, and financial capacity. Technical, managerial, and financial capacity indicates areas in short-term and long-term planning which may impact a public drinking water system's sustainability and resiliency to deliver safe and reliable drinking water. The term "capacity" should not be misinterpreted as the permitted design capacity of water treatment or distribution infrastructure. The strategy identifies partners and stakeholders available to help public drinking water systems develop and enhance capacity, or capability, and encourages development of implementation of asset management planning.

Technical, managerial, and financial capacity are assessed during the Drinking Water Sanitary Survey at all 374 community public drinking water systems every three years and at all 53 non-community public drinking water systems every five years, pursuant to the Safe Drinking Water Act. The majority of the managerial and financial criteria used to determine public drinking water system capacity are not regulated under the Safe Drinking Water Act. The benefits of the Drinking Water Sanitary Survey are:

- It provides an in-depth evaluation of public drinking water system source water, treatment, distribution, finished water storage, pumps and controls, data verification, management, and operation, according to the Safe Drinking Water Act.
- It assists public drinking water systems in understanding areas in need of improvement for compliance with state and federal regulations. However, the majority of the technical, managerial, and financial criteria used to determine public drinking water system capacity is not regulated under the Safe Drinking Water Act or by the state.
- It helps public drinking water systems understand their capacity development needs.

The majority of public drinking water systems in Kentucky (78%) serve populations of less than 10,000 people (Table 2). Although these public drinking water systems serve a quarter of Kentucky's overall population, historically they have the greatest need for assistance.

TABLE 2
PUBLIC WATER SYSTEMS BY POPULATION SERVED

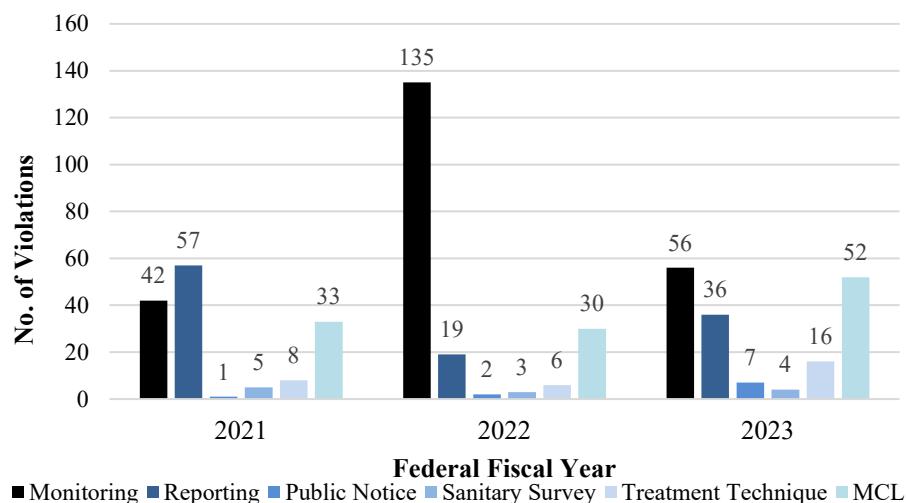
Population Served	Number of Water Systems	Percentage (%) of Total Water Systems	Total Population Served
≤ 10,000	332	78	1,062,241
> 10,000	95	22	3,446,082

In 2023, the Division moved away from static survey forms and began utilizing ArcGIS Survey 123 to conduct Drinking Water Sanitary Surveys and analyze historic data. ArcGIS Survey123 enhances the Division's ability to manage, extract, and analyze data. Previous data extraction and analysis methods from PDF documents were time-consuming and labor intensive. At the time of this report, the Division has transferred historic Drinking Water Sanitary Survey data as far back as 2017. This allows a comparison between the current three-year cycle of community public drinking water system surveys (from Federal Fiscal Years 2021 to 2023) to the previous three-year cycle of surveys (Federal Fiscal Years 2018 – 2020). Since non-community public drinking water systems are set on a five-year survey cycle, only one set of data is currently available to assess.

Identify the factors that encourage or impair the capacity of water systems

The Safe Drinking Water Act requires public drinking water systems to monitor treated water for contaminants and report results to the Division at regular intervals during the year. The Division issues a Notice of Violation (NOV) when contaminant levels exceed specific limits, or when monitoring or reporting requirements are not met or are conducted improperly. Assessing public drinking water system violations helps to identify complications with technical capacity and provides clear opportunities for targeted technical assistance to improve compliance. The majority of Safe Drinking Water Act infractions are monitoring and reporting in nature, however both treatment technique and maximum contaminant level violations increased since federal fiscal year 2022 (Figure 1).

Figure 1: Safe Drinking Water Act violation trends for Federal Fiscal Years 2021 through 2023.



The assessment of public drinking water system technical, managerial, and financial capacity is completed simultaneously with the Drinking Water Sanitary Survey. Technical capacity is demonstrated through adequate source water, treatment, distribution, and technical knowledge. Managerial capacity is demonstrated through adequate planning, communication mechanisms, and business practices. Financial capacity is demonstrated by annual and capital budgets, proper revenue, debt coverage, and audits.

Since federal fiscal year 2021, 15% of community public drinking water systems have demonstrated sufficient technical, managerial, and financial capacity to meet Safe Drinking Water Act objectives while the majority exhibit insufficient technical, managerial, and financial capacity in one or more areas of criteria in Kentucky's Drinking Water Capacity Development Strategy (Figure 2). An analysis of community public drinking water system responses indicates that insufficient managerial and financial capacity is related to a lack of asset management planning, financial planning, emergency response planning, operational documentation, and tracking water loss (Figure 3).

Figure 2: Community public drinking water system current and 3-year sanitary survey cycle Technical (T), Managerial (M), and Financial (F) Capacity.

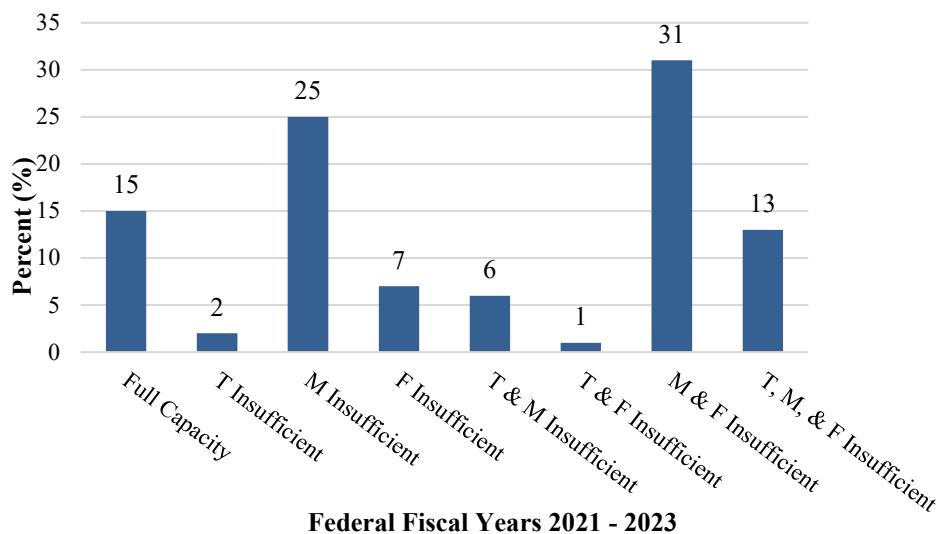
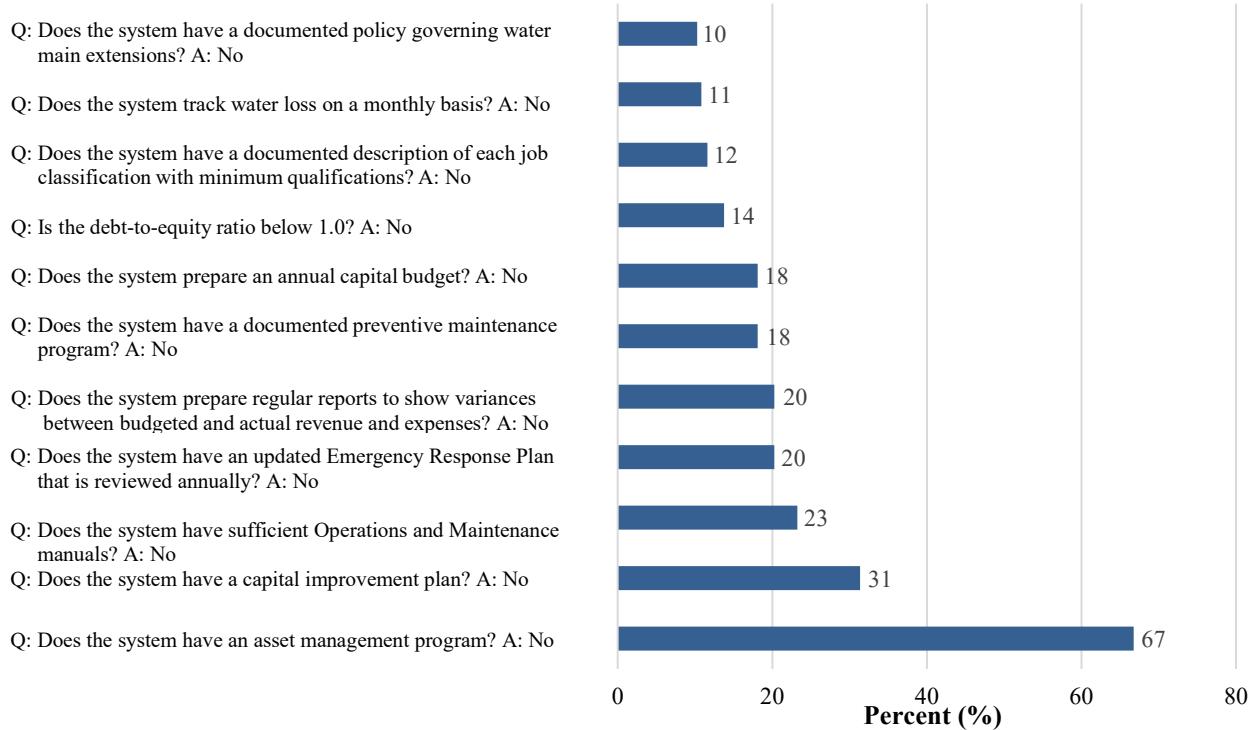


Figure 3: Analysis of negative community public drinking water system responses to criteria used to determine technical, managerial, and financial capacity.



An analysis of community public drinking water system technical, managerial, and financial capacity based on population size shows that all systems serving populations of 100,000 or greater demonstrated sufficient technical, managerial, and financial capacity as opposed to only 32% of medium and 9% of small systems (Figure 4). Figure 5 provides an overall view of state-wide technical, managerial, and financial capacity of all community public drinking water systems. This data takes into account community public drinking water systems that have corrected deficiencies identified during the Drinking Water Sanitary Survey through the end of federal fiscal year 2023.

Figure 4: Community public drinking water system Technical (T), Managerial (M), and Financial (F) Capacity by population.

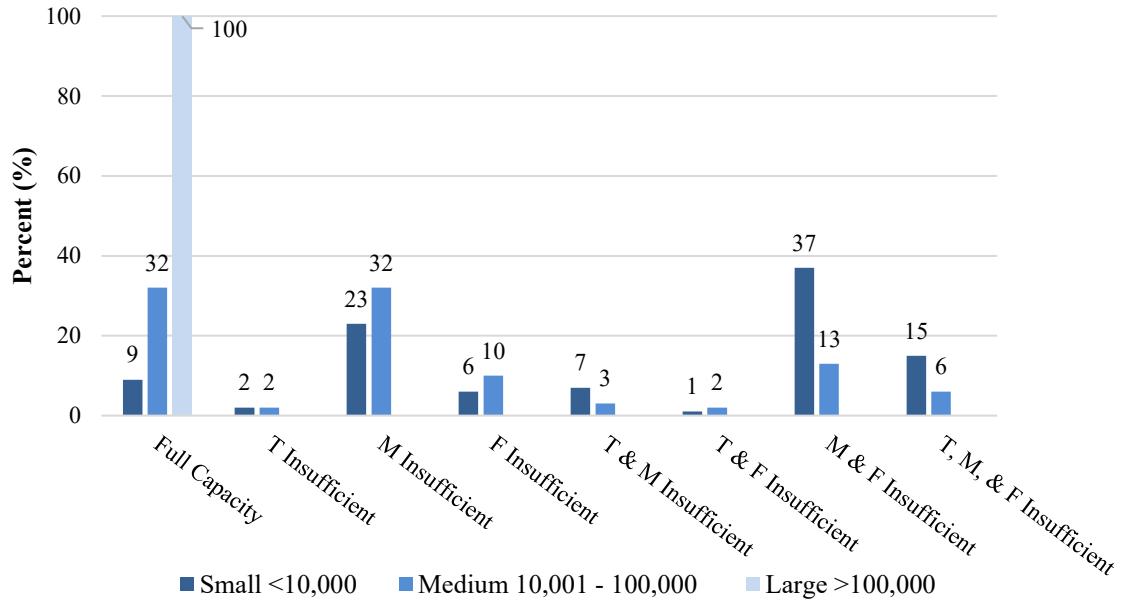
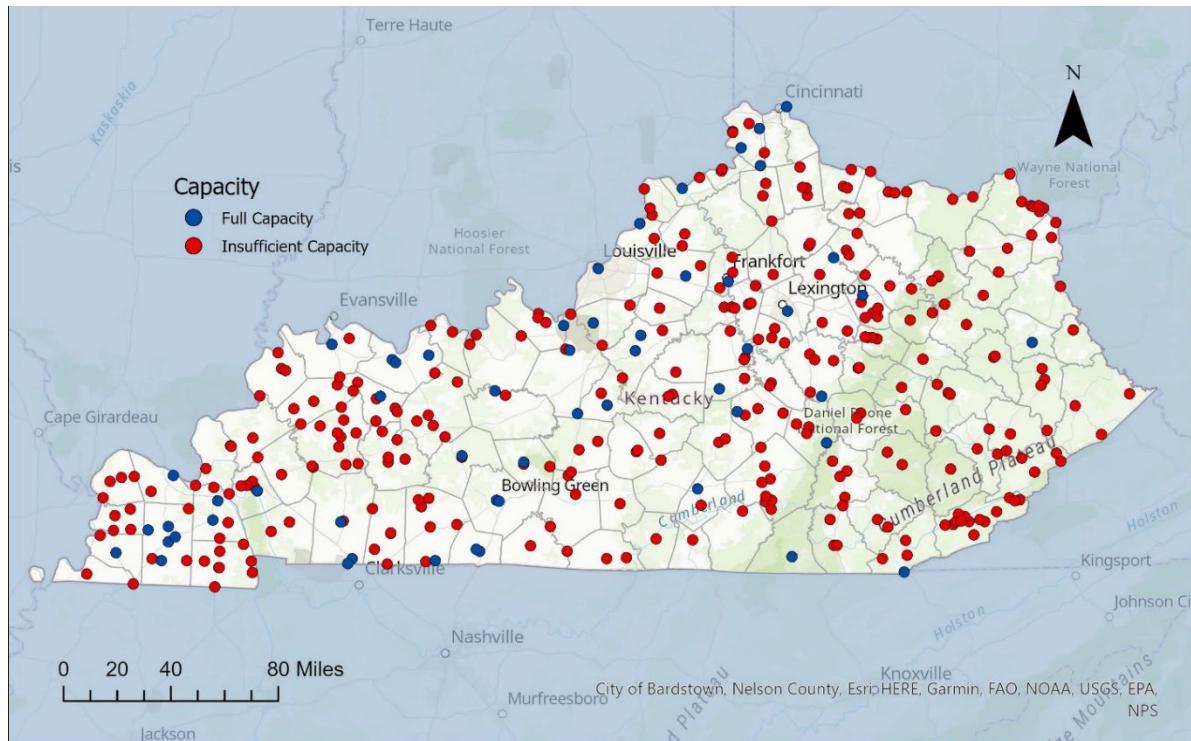


Figure 5: Community public drinking water systems with full and insufficient technical, managerial, and financial capacity.



Non-community public drinking water systems' technical, managerial, and financial capacity are currently assessed using the same criteria as community public drinking water systems. An analysis of non-community public drinking water systems indicates that nearly all demonstrated insufficient technical,

managerial, and financial capacity (Figure 6). An analysis of adverse non-community public drinking water system responses indicates that insufficient managerial operation is related to a lack of asset management planning, emergency response, and preventive maintenance planning (Figure 7).

Figure 6: Non-community public drinking water system 5-year sanitary survey cycle Technical (T), Managerial (M), and Financial (F) Capacity.

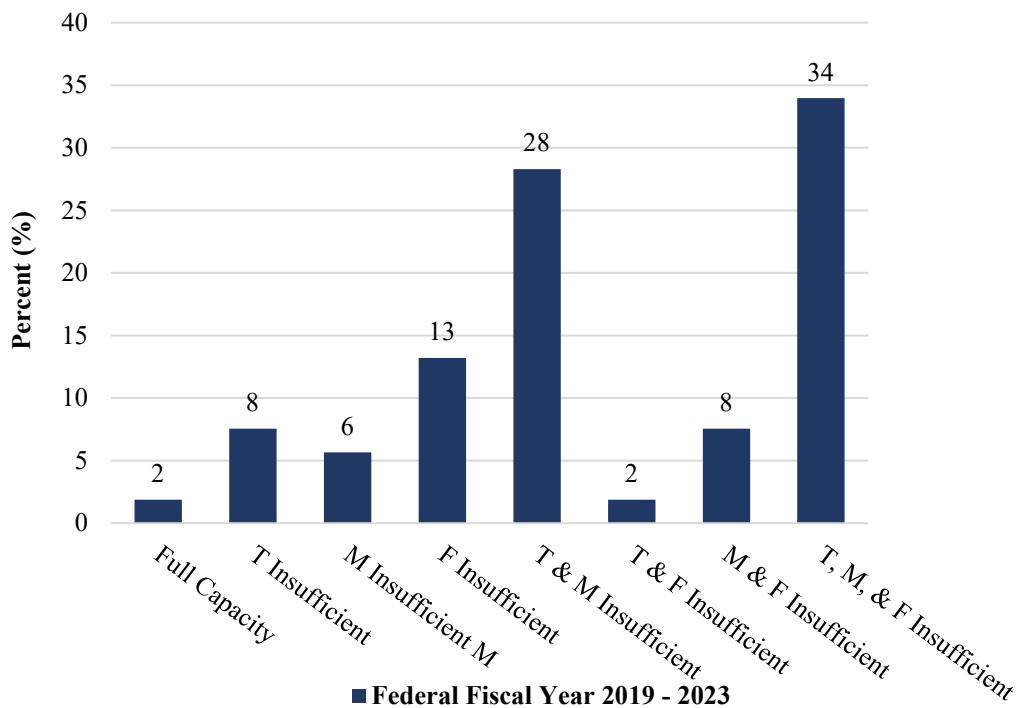
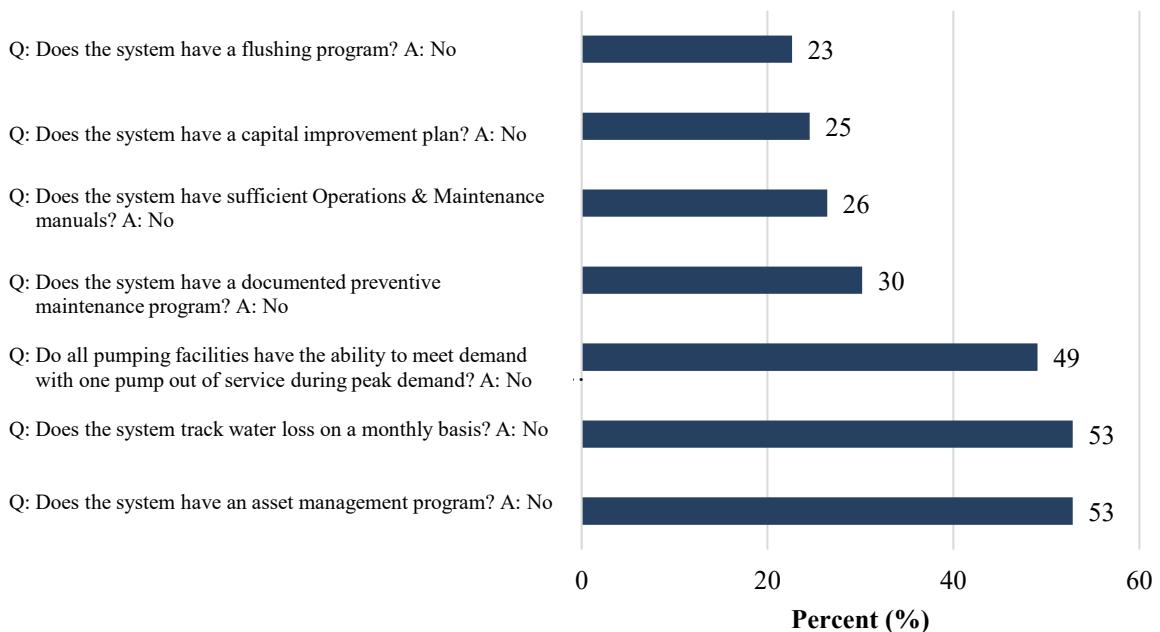


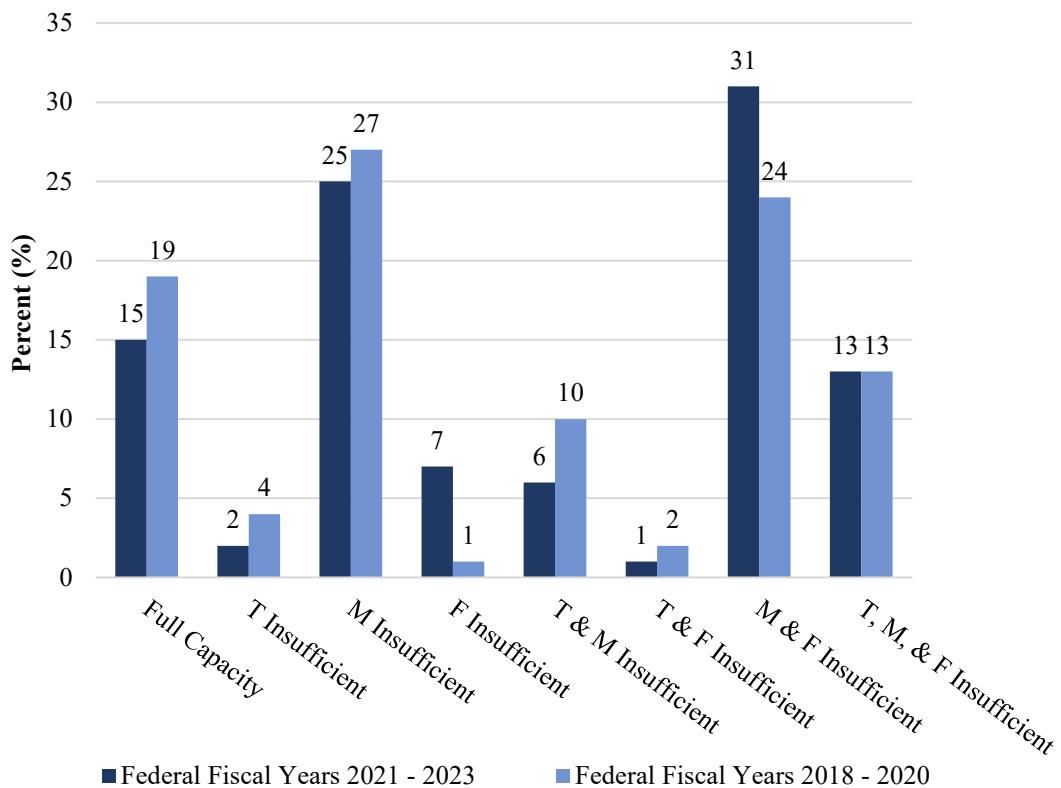
Figure 7: Analysis of negative non-community public drinking water system responses to criteria used to determine technical, managerial, and financial capacity.



Establish a baseline and measure the capacity improvements of systems in the State

Since federal fiscal year 2021, 15% of community public drinking water systems have demonstrated sufficient technical, managerial, and financial capacity to meet Safe Drinking Water Act objectives, a decrease from the 19% during the previous sanitary survey cycle (Federal Fiscal Years 2018 – 2020). The majority of community public drinking water systems exhibit insufficient technical, managerial, and financial capacity in one or more areas of criteria in Kentucky's Drinking Water Capacity Development Strategy (Figure 8).

Figure 8: Comparison of community public drinking water system current and previous 3-year sanitary survey cycle Technical (T), Managerial (M), and Financial (F) Capacity.



The Division dedicates set-aside funds from the Drinking Water State Revolving Fund for personnel to provide on-site technical assistance to small public drinking water systems in need of improving technical capacity. A successful component of technical assistance is the Area-Wide Optimization Program which the Environmental Protection Agency developed to provide tools and approaches for public drinking water systems to meet water quality goals that are more stringent than Safe Drinking Water Act regulations on a long-term basis. Kentucky participates in and incorporates the Area-Wide Optimization Program into its technical assistance activities by teaching operators problem-solving skills to improve operations. In calendar year 2023, 68 public drinking water systems serving over 1.74 million Kentuckians achieved microbial Area-Wide Optimization Program goals and 263 public drinking water systems serving more than 3.16 million Kentuckians achieved Area-Wide Optimization Program Disinfection By-Product goals. Public drinking water systems who actively participate in and meet Area-Wide Optimization Program goals are recognized with certificates of achievement and awards.

In federal fiscal year 2023, Division personnel conducted 176 on-site visits to provide comprehensive technical assistance focused on health-based compliance and to address technical capacity deficiencies identified in the Sanitary Survey. Division personnel conducted trainings across the state to educate water

operators and local decision-makers on corrosion control, Safe Drinking Water Act compliance with an emphasis on new rules and rule revisions [Lead and Copper Rule Revision and Per-and Polyfluoroalkyl Substances (PFAS) Rule], disinfectant by-product mitigation, asset management, public drinking water system funding capital projects, and electronic reporting of drinking water compliance data. Investments in technical assistance continue to have a positive impact on the overall reduction of Safe Drinking Water Act violations across the state.

The Division continued to provide funding to the Kentucky Rural Water Association to support a small system assistance program that focuses on geographic information system-based asset management, lead service line detection, compliance, rate studies, and water loss management. Fifty-two small public drinking water systems have been targeted for assistance through the program with asset management, financial capacity, and compliance. An additional 195 systems were provided with technical assistance through compliance reporting and assessments. Trainings were conducted covering topics on electronic reporting, chloramines, lead service line inventory, geographic information system-based asset management, risk and resiliency assessments, and PFAS in water and wastewater.

According to the Water Resource Information System, which is Kentucky's repository for water infrastructure data, the average age of water treatment plants is 44 years old, and the average age of water tanks is 32 years old. Nearly 27% of water lines are over 50 years old. This capital infrastructure is nearing the end of its useful life. The Division and Kentucky Infrastructure Authority co-administer the Drinking Water State Revolving Fund, which provides low interest loans to communities for infrastructure projects. Since State Fiscal Year 2023, 11 communities received over \$40 million dollars to improve drinking water infrastructure. Projects that received funding represent investments in regionalization, rehabilitation, and construction of new water treatment facilities, replacement of inadequate and aging water lines, lead service lines, and tanks, and extending service to residents. Such projects improve the quality and availability of drinking water and strengthen local economies (Table 3).

TABLE 3

APPROVED PROJECTS	SFY	PROJECT NUMBER	TOTAL PROJECT AMOUNT	DWSRF LOAN COMMITMENT
Nicholasville, City of	2023	WX21113040	\$5,572,942	\$4,165,910
Paris, City of	2023	WX21017022	\$3,275,000	\$3,275,000
Canonsburg Water District	2023	WX21019057	\$2,809,600	\$1,685,083
Adair County Water District	2023	WX21001032	\$4,377,650	\$4,377,650
Hyden-Leslie County Water District	2023	WX21131013	\$3,891,690	\$2,001,013
Lebanon, City of	2023	WX21155060	\$3,850,060	\$3,850,060
Scottsville, City of	2023	WX21003028	\$100,000	\$100,000
Harrodsburg, City of	2023	WX21167034	\$4,666,424	\$4,280,000
Northern Kentucky Water District	2023	WX21037311	\$8,855,000	\$4,000,000
TOTALS			\$37,398,366	\$27,734,716
Barkley Lake Water District	2024	WX21221017	\$4,055,104	\$3,678,453
South Shore, City of	2024	WX21089119	\$10,382,805	\$8,590,500
TOTALS			\$14,437,909	\$12,268,953
GRAND TOTALS - COMMITMENTS			\$51,836,275	\$40,003,669

Five public drinking water systems were referred to the Division of Enforcement, three of which were based on the Enforcement Targeting Tool (ETT) once each system accrued eleven or more points calculated in FFY 2023 (Table 4). The Division updates the ETT internally each month. Systems with ETT points are

evaluated and referred to the Division of Enforcement if they are not expected to return to compliance. Division of Water and Division of Enforcement personnel meet with USPEA Region 4 for updates and guidance on using the ETT as needed.

TABLE 4
ENFORCEMENT TARGETING TOOL REFERRALS

PWSID	PUBLIC WATER SYSTEM NAME	CAUSE(S)
KY0270003	Albany Water Works	Violations observed by Field Inspector
KY0670213	Jenkins Water System	DBP MCL, operations and maintenance
KY0700401	Smithland Water & Sewer	DBP MCL
KY0870367	Reid Village Water District	DBP MCL
KY1020253	Livingston Municipal Water Works	Violations observed by Field Inspector

Involve Stakeholders in State Efforts to Improve Water System Capacity

The Drinking Water Advisory Workgroup (DWAW) is a group of industry stakeholders, which includes public and private utility representatives, consultants, regulatory agencies, and water-related organizations. The long-standing advisory group convenes on a quarterly basis to address issues that affect consumers and impact the regulated community. The DWAW Lead in Drinking Water Work Group has been actively involved in interpreting the Lead and Copper Rule Revisions (LCRR) and developing guidance materials for small water systems. Stakeholders from 30 stakeholder groups representing industry, public water systems, non-profit partners, and state agencies have been engaged in meetings at least monthly. In addition, during 2023, this group developed three all-day training sessions for public water systems on the service line inventory requirement of the LCRR. The Division has begun the process of planning a major update of the WRIS, and will be seeking stakeholder input via a WRIS workgroup within the DWAW in early 2024.

2. *Based on the existing systems strategy, how has the State continued to identify systems in need of capacity development assistance?*

The drinking water sanitary survey, compliance data, and the ETT are the primary means for determining assistance provided to public drinking water systems. Based on these data, Division personnel and stakeholders conduct targeted technical assistance and training to improve public drinking water system TMF capacity development.

3. *During the reporting period, if statewide PWS capacity concerns or capacity development needs (TMF) have been identified, what was the State's approach in offering and/or providing assistance?*

The Division continues to provide on-site assistance and training to prioritized public drinking water systems identified by the ETT, compliance data, and sanitary survey. Additionally, the Division works with stakeholders to provide training and support through the Kentucky Division of Compliance Assistance (which has recently been combined with the Division of Enforcement within the Department for Environmental Protection), the Kentucky Public Service Commission, Rural Community Assistance Partnership, Kentucky Rural Water Association, and Kentucky Water & Wastewater Operators Association.

4. *If the State performed a review of implementation of the existing systems strategy during the previous year, discuss the review and how findings have been or may be addressed?*

Modifications to Kentucky Drinking Water Capacity Development Strategy were approved by EPA in January 2023.

5. Did the State make any modifications to the existing system strategy?

No modifications to Kentucky's Drinking Water Capacity Development Strategy were made during federal fiscal year 2023.

C. Looking Ahead

Asset management is a process that water utilities may use to ensure that planned maintenance is being conducted and capital assets are repaired, replaced, or upgraded on time and that there is sufficient funding for the utility to do so. Asset management planning is one of the criteria the Division uses to determine managerial capacity of public drinking water systems. A majority of community and non-community public drinking water systems do not have an asset management program. To promote implementation of asset management planning at public drinking water systems, the Division has allocated priority to proposed Drinking Water State Revolving Fund infrastructure projects from public drinking water systems that have an asset management program. Technical assistance is provided to public drinking water systems by Division personnel and by the Kentucky Rural Water Association to build asset management planning through a contract utilizing drinking water set-aside funding.

[Senate Bill 263](#) modified KRS Chapter 224A in relation to regionalization and shared services to further promote public drinking water system asset management planning. The bill created a process and a fund to assist public drinking water systems with detecting water loss, developing and maintaining asset management plans, shared services, and regionalization. The statutory changes authorize the Kentucky Infrastructure Authority to promulgate regulations and receive technical support from Energy and Environment Cabinet to implement the program.

To continue supporting public drinking water system capacity development, resiliency, and sustainability, the following actions are recommended to be carried out by the Division:

- Develop asset management planning guidance and support as required by the 2018 America's Water Infrastructure Act;
- Encourage regular utility rate reviews and promote rate indexing;
- Utilize State Revolving Fund set-aside funds to support recruitment and training of new drinking water operators;
- Promote technology to support public drinking water system operational decision-making and operations;
- Update drinking water and capacity development data management, including an electronic data collection and submittal system for public drinking water system compliance
- Increase collaboration with Area Development Districts and the Kentucky Infrastructure Authority to update and enhance the Water Resource Information System;
- Revise applicable state regulations to improve technical, managerial, and financial capacity of public drinking water systems
- Continue collaborative relationships with stakeholders to:
 - Enhance regulatory programs and guidance;
 - Provide resources for best practices;
 - Promote workforce development, education, and process improvement;
 - Continue advocacy and funding for renewing aging water infrastructure through the State Revolving Fund loan program and other funding sources;

- Support funding of applied research and development in water technology, sustainability, security, quality, reuse, and infrastructure resiliency; and,
- Promote and protect water resources.