



Community Asset Management Metrics

All public water systems are required to track and annually document asset management metrics in accordance with Ohio Administrative Code Rule 3745-87-05.

Metrics are performance measures that allow public water systems (PWSs) to gauge the status of their water system. Metrics must be tracked and reported annually to Ohio EPA. PWSs are encouraged to set goals for their metrics to improve operations and reduce costs over time.

Community Metrics

All community PWSs are required to review and document the following metrics:

- Operating ratio
- Operating cost to produce water per service connection
- Breaks per 10 miles of distribution pipe
- Non-revenue water
- Maintenance tasks per year on vertical assets
- One additional customer service metric to be tracked as determined by the PWS

Some of the metrics are determined based on a calculation. For those metrics, the PWS will be required to report the data, and Ohio EPA will complete the calculation. Therefore, the following metrics data are required to be reported to Ohio EPA on an annual basis using the Drinking Water Online Portal (DROP). Additional instructions for how to access the portal will be provided.

Metrics Data to Report

Metric	Report to Ohio EPA annually using total from previous year
Operating ratio	<ul style="list-style-type: none"> • Total PWS Expenses • Total PWS Revenue
Operating cost to produce water per service connection	<ul style="list-style-type: none"> • Total PWS Expenses • Total number of service connections
Breaks per 10 miles of distribution pipe	<ul style="list-style-type: none"> • Total number of distribution line breaks • Total miles or feet of distribution pipe
Non-revenue water	<ul style="list-style-type: none"> • Total gallons of billed water exported (e.g., interconnections) • Total gallons of billed, metered consumption (e.g., water billed to service connections or sold through a bulk station) • Total gallons of billed, unmetered consumption (e.g., flat fee structure accounts). This usage must be estimated if unknown. • Total gallons produced
Maintenance tasks per year on vertical assets	<ul style="list-style-type: none"> • Total number of planned maintenance tasks (e.g., routine) • Total number of unplanned maintenance tasks (e.g., emergency)
One additional customer service metric to be determined by the PWS	The PWS must determine one additional customer service metric to track and report each year. Some examples are listed toward the end of this fact sheet.

Reporting Metrics

Beginning in 2020, metrics must be documented online every year between Aug. 1 and Nov. 15 using DROP. The metrics data will be reported for the previous year. For example, in 2020, water systems will report their 2019 metrics data. Each water system must have a designated person (“Metrics Submitter”) who will be submitting the metrics data. This person

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must have a valid email address in order to log in. Please contact Ohio EPA if the Metrics Submitter for your water system has changed.

Metrics Data

The following metrics are required to be tracked and reported every year. The metrics are intended to gauge the status of the water system and can be used as measures to continuously improve and set future goals.

- **Operating ratio**

The operating ratio is calculated as follows:

$$\text{Operating Ratio} = \frac{\text{Expenses}}{\text{Revenue}}$$

Expenses = Any funds spent, or costs incurred, by the PWS (e.g., chemicals, operation, and maintenance costs, PWS personnel wages and benefits, debt service).

Revenue = Any funds brought in by the PWS (e.g., water bill payments). If the bill is combined with other dues (e.g., combination of water and sewer bill), report only the water portion of the revenue. If the water system does not bill directly for water, enter the total amount budgeted for the water system for the previous year.

The operating ratio is the relationship between revenue and expenses. The purpose is to determine if the PWS has enough funds to cover the expenses. If the operating ratio is greater than 1, this indicates expenses are greater than the revenue. In this, more money is being spent than received. This is an indicator that the PWS should evaluate if revenue can be increased (e.g., increase water rates, calibrate meters to ensure accurate meter readings) or expenses can be reduced (e.g., repair leaks, perform repairs on a routine rather than emergency basis).

- **Operating cost to produce water per service connection**

The operating cost to produce water per service connection is calculated as follows:

$$\text{Operating cost to produce water per service connection} = \frac{\text{Expenses}}{\text{\# of service connections}}$$

Expenses = Any funds spent, or costs incurred, by the PWS (e.g., chemicals, operation and maintenance costs, PWS personnel wages and benefits, debt service).

The cost per service connection can be compared to industry standards to determine if costs are higher than what would be expected for the system's size (e.g., "AWWA Utility Benchmarking: Performance Management for Water and Wastewater" report).

- **Breaks per 10 miles of distribution pipe**

The number of breaks per 10 miles is calculated as follows:

$$\text{Breaks per 10 miles of distribution pipe} = \frac{\text{Total number of distribution line breaks}}{\text{Total miles of distribution pipe}} \times 10$$

Therefore, the PWS must report the total number of distribution line breaks during the previous year, and the total miles of distribution pipe as of Dec. 31 the previous year. For small distribution systems, the PWS can report the total feet of distribution pipe. The total feet will then be converted to miles by Ohio EPA.

- **Non-revenue water**

The amount of non-revenue water must be documented as percentage of water loss, and is calculated as follows:

$$\text{Non-revenue water (\%)} = [1 - (\text{revenue water (gal)}/\text{total gallons produced})] \times 100$$

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Revenue water = Total for the past 12 months and includes the sum of the following:

- **Billed water exported** (e.g., interconnections).
- **Billed metered consumption** (e.g., water billed to service connections, water billed to consecutives and sold through a bulk station). This does not include billed metered consumption that will not be collected (e.g., payment not collected for leak adjustments, bad debt, forgiveness).
- **Billed unmetered consumption** (e.g., flat fee structure accounts).

If the PWS does not have distribution meters, the PWS is required to estimate the amount of consumption (e.g., Appendix D of Greenbook: <https://epa.ohio.gov/portals/28/documents/engineering/greenbook.pdf>).

Total gallons produced = Total gallons of water produced over the past 12 months (e.g., production total from the past 12 monthly operating reports). If the PWS does not have a finished water meter, the PWS is required to estimate the amount of water produced and should include meter installation in its capital improvement plan.

Public water systems interested in pursuing a formal water audit can reference the M36 Water Audits and Loss Control Programs manual by the American Water Works Association (AWWA).

For example, if a PWS has 235,000 gallons of revenue water and a total production of 275,000 gallons, the calculation would be:

$$\begin{aligned} & [1 - (235,000/275,000)] \times 100 = \\ & [1 - (0.855)] \times 100 = \\ & 0.145 \times 100 = \mathbf{14.5\%} \end{aligned}$$

In this example, the PWS has 14.5 percent non-revenue water.

- **Maintenance tasks per year on vertical assets**

Community PWSs must track and report the total number of maintenance tasks performed on vertical assets. Vertical assets are above-ground assets located within a building or facility associated with the water system (assets in the water treatment plant, pump station, storage facility, etc.). Planned and unplanned maintenance tasks must be tracked separately on an ongoing basis.

- Planned = Maintenance tasks that were planned to be conducted prior to the work being completed. These tasks will generally include routine maintenance (e.g., greasing pumps, changing pump tubing, replacing cartridge filters, cleaning storage tanks).
- Unplanned = Maintenance tasks that were not anticipated or planned prior to the work needing to be completed. These tasks will generally include emergency maintenance (e.g., asset broken or leaking, unexpected maintenance).

- **One additional customer service metric to be tracked as determined by the PWS**

Community PWSs must select one additional customer service metric to track. PWSs should select a metric that is relevant and useful to track. Some examples include:

- Disruptions of Service
 - Disruptions of water service (outages/1,000 accounts)
 - Planned, track event duration in separate categories (<4, 4-12 hr, >12 hr)
 - Unplanned, track event duration in separate categories (<4, 4-12 hr, >12 hr)
 - Average time to restore service (# hrs)
- Number of water complaints/1,000 accounts
- Call center indicators
 - Average wait time (minutes)
 - Average talk time (minutes)
 - First call resolution (%)
 - Percentage of calls that address the customer's need the first time a customer calls
- Customer service cost per account (\$/account)

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- Total annual customer service costs/(number of active residential accounts + number of nonresidential accounts)
- Customers service costs would include:
 - New account activation
 - Meter reads, maintenance, repair, or replacement
 - Bill preparation and delivery
 - Payment receipt and processing
 - Records maintenance
 - Delinquent account collections
 - Bankruptcy processing
 - Provision of turn-on/turn-off services
 - Receipt, investigation, and resolution of complaints
 - Preparation and provision of outreach and education materials, including the Consumer Confidence Report
- Billing accuracy (# errors/10,000 billings)
- Per capita consumption (gal/person/day)
- Residential service charges
 - Residential cost of water service (\$/month)
- Service affordability
 - (Average residential monthly water bill x 12)/Real median annual household income
- Delinquency rate (%)
 - Percentage of total accounts delinquent over the past 12 months
- Low-income billing assistance rate
 - # of customers in low-income assistance program/# of customers eligible for program

Contact

For more information regarding metrics, visit: <https://epa.ohio.gov/ddagw/pws/assetmanagement> or contact Ohio EPA's Central Office at (614) 644-2752.