AWWA Utility Benchmarking: Performance Management for Water and Wastewater 2019

Benchmarking data from 2018 for 58 key performance indicators

Aggregate data from 38 US states, 2 US territories, and 2 Canadian provinces

Historical trends from previous AWWA utility benchmarking surveys

Copyright © 2019 American Water Works Association. All Rights Reserved.
## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreword</td>
<td>v</td>
</tr>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Performance Indicators—Organizational Development</td>
<td>23</td>
</tr>
<tr>
<td>Performance Indicators—Business Operations</td>
<td>45</td>
</tr>
<tr>
<td>Performance Indicators—Customer Relations</td>
<td>71</td>
</tr>
<tr>
<td>Performance Indicators—Water Operations</td>
<td>105</td>
</tr>
<tr>
<td>Performance Indicators—Wastewater Operations</td>
<td>121</td>
</tr>
<tr>
<td>Performance Indicator Historical Trends, 2004–2018</td>
<td>135</td>
</tr>
<tr>
<td>Bibliography</td>
<td>159</td>
</tr>
<tr>
<td>Appendix A: Participant Survey</td>
<td>161</td>
</tr>
<tr>
<td>Appendix B: FY18 Performance Summary by Type</td>
<td>162</td>
</tr>
<tr>
<td>Appendix C: FY18 Performance Summary by Region</td>
<td>176</td>
</tr>
<tr>
<td>Appendix D: FY18 Performance Summary by Population Served</td>
<td>201</td>
</tr>
</tbody>
</table>
AWWA would again like to thank the industry professionals at water and wastewater utilities for the important jobs they do each day, as well as the benefits they provide to their communities and beyond. A special thanks to those utilities that have provided their 2018 fiscal year data; this report represents the time and commitment of numerous organizations, utilities, and individuals, and the water and wastewater industry appreciates their participation and overall commitment to improvement.

If you work for a water, wastewater, or combined utility that may be interested in participating in future benchmarking efforts, please contact AWWA at benchmarking@awwa.org for more information about the next AWWA Utility Benchmarking Survey.

Stephanie Passarelli, PE
Benchmarking and Standards Engineer
Introduction

The primary objective of the American Water Works Association (AWWA) Utility Benchmarking Program is to provide objective performance measures for decision makers who are responsible for utilities that provide potable water (referred to in this report as simply water), wastewater, and/or stormwater services. Performance measurement is an essential management tool to help decision makers set a course to improve their organizations. Managers and public officials need useful metrics to gauge current performance and to set reasonable targets for the future. AWWA’s Utility Benchmarking Program tracks recognized utility performance indicators developed and applied by water industry professionals, providing this information as a tool for improving operational efficiency and managerial effectiveness for utilities regardless of size or system-specific issues.

This report presents the performance results for water, wastewater, and combined utilities for the fiscal year 2018 (FY18). Where data are available, it also provides historical trends from previous AWWA Utility Benchmarking Surveys. In addition to tracking individual utility performance year to year, utilities can use the data and analyses in this report to determine how their utility’s performance compares to other water, wastewater, or combined utilities. Decision makers interested in improving performance should determine which measures have the most meaning for their utility, track them on a consistent basis, and regularly evaluate the results to determine progress.

AWWA annually collects utility benchmarking data, and all survey participants receive a complimentary custom report that shows their individual utility’s performance indicators against the aggregate data for all participating utilities in the same service category (water, wastewater, or combined systems). By simply going through the process of responding to the survey, utility personnel will improve their understanding of management and operations practices at their utilities. For more information, visit AWWA’s Benchmarking webpage at www.awwa.org/benchmarking.

Water and Wastewater Utility Benchmarking

Benchmarking is a valuable tool for water and wastewater system managers and decision makers to systematically improve their utility’s performance. AWWA began development of a utility benchmarking program in 1995 with the goal of providing water, wastewater, and combined utilities with performance measurements for internal tracking and external comparisons. This process included many stakeholders but was primarily a partnership between AWWA and Water Research Foundation (formerly the AWWA Research Foundation) staff and volunteers.

The foundation of AWWA’s Utility Benchmarking Program was built from these joint efforts to a stand-alone Association program of well-defined and time-tested performance indicators specific to the water sector. These indicators were designed to help utilities providing water and/or wastewater services improve their efficiency and effectiveness. As much as possible, the performance indicators used in AWWA’s approach have been generalized or normalized to provide greatest general applicability. AWWA’s Utility Benchmarking Program does not define best practices based on central tendency measures, such as the median and quartile ranking.

AWWA provides the mechanism for data collection (i.e., an annual Utility Benchmarking Survey) to interested utilities; the current instrument automatically calculates values for each performance indicator where data are entered. By submitting
their data to AWWA, respondents receive a custom report that shows their individual utility’s performance indicators against the aggregate data for all participating utilities in the same service group. With benchmarking data in hand, utility managers can determine areas where performance should be improved. This information can assist them in establishing or revising policies and practices with the goal of improving utility operation and service.

**Data Collection**

The foundation of benchmarking is the consistent collection of data that, when assembled into useful metrics, allow users to gauge utility performance levels and, when tracked over time, utility performance trends. These metrics are performance indicators. They should be used to reveal areas for improvement, either based on previous results at the same utility or in comparison to the current or historical performance of other utilities. A benchmark is the level or degree of a performance indicator that serves as a reference or target for performance.

Accurate and consistent data collection and transfer are required for meaningful results. In this process, measurements are recorded, collected, and transmitted before they are ultimately analyzed. If the infrastructure is in place and quality control measures are implemented, automated processes are preferred over manual data collection to minimize effort and human error/bias.

Utilities should be aware that the data collection process can prove challenging in some cases because comprehensive utility benchmarking includes organization-wide measurement of operations, finance, customer service, and human resources activities. Ultimately, the success of utility benchmarking depends on the support and encouragement of upper management and decision makers at a utility, so organization-wide buy-in is needed.

**Utility Comparisons**

To make valid comparisons, performance indicators must be well defined and consistently used in context. If definitions are inconsistent or incomplete, the resulting performance data will not be comparable. The AWWA Utility Benchmarking Advisory Committee routinely reviews the performance indicator definitions to ensure consistent use and application in the industry. However, even when comparable data are collected, external comparisons are often not straightforward because numerous system-specific factors can influence the system performance. Important variables that may be outside of a utility’s control include the following:

- Water sources
- Treatment requirements
- System age/materials
- Topography/environment
- Organizational vision and culture
- Historical and current strategic and operating plans
- Budget
- Customer base
- External service providers (electricity, gas, telecoms, etc.)
- Services from enterprise/corporate functions (finance, IT, HR, etc.)
- Regulations
- Governance
- Political environment

In addition, certain economic phenomena make utility-to-utility comparisons difficult and can influence the observed levels of performance. They include the following:

- Economies of scale (as system size increases, efficiency may improve)
- Economies of scope (diversification of services may lead to efficiencies)
- Economies of density (as population density increases, unit costs may decrease)

Given these various factors that must be identified and the range and complexity of information required to understand the specific nuances of a given utility’s performance indicators, utilities must first examine and understand their own specific operating environment and characteristics so that they can effectively use performance measurement data best suited for their organization. The AWWA Utility Benchmarking Survey will allow utilities to make meaningful comparisons, first against their own internal data and performance...
Introduction

and then against data from other utilities. These differences are not identified to diminish the quality of the data collected through the survey but to provide an understanding of variations in the data from utility to utility, and for that matter, from year to year. Understanding there may never be perfect utility-to-utility comparisons, benchmarking can still be a useful tool for system improvement. The benchmarking process provides both a starting point to determine where inefficiencies may lie and guidance regarding possible improvements. Ultimately, the benchmarking process supports utilities in meeting their obligation to safeguard public health, ensure adequate and reliable supplies, and provide efficient services to customers and the environment.

Methodology

The 2019 Benchmarking Performance Indicator report is a summary of the performance results of various water, wastewater, and combined utilities for the fiscal year 2018 (FY18). AWWA made an open announcement for participation in the annual Utility Benchmarking Survey in January 2019 and continued to solicit participation through April 2019. The survey was administered through AWWA’s online Benchmarking Program and data collection site. Utilities entered corresponding utility data for the complete 12-month financial period used at the participating utility (i.e., fiscal year, calendar year, or otherwise).

Utility participants are grouped by core service type, defined as follows:

1. Water utilities—do not provide wastewater services.
2. Wastewater utilities—do not provide water services.
3. Combined utilities—provide both water and wastewater services.

Likewise, utilities were asked to report their operations related only to water, wastewater, and stormwater. If a utility conducted other operations, e.g., power or electricity, they were asked not to include these data points and were classified accordingly. For example, a utility providing water and power would report only their water operations and be classified as a water utility. Likewise, those performing both water and wastewater operations would be classified as a combined utility.

Just as in prior years of conducting this survey, AWWA used several approaches to ensure data quality and consistency. First, utility participants were provided with a definitions document for all benchmarking terminology used in the survey to ensure a consistent basis of information. Definitions were reviewed and aligned with related AWWA management committees to ensure consistent communication among programs and will continue to be reviewed from year to year to clarify any discrepancies as needed. Second, clear guidance was provided in the survey questions to ensure consistent data collection and resulting assessment. Next, AWWA worked with survey participants to identify and correct questionable metric data as they were submitted and before they were included in the final data set. Finally, AWWA conducted an analysis of outliers to confirm unusually high or low calculated performance indicators. Because all data are self-reported, the validity and accuracy of comparative measures depends on each utility’s consistent application of the definitions and accurate data collection, and AWWA works with the utilities to ensure this is consistent from year to year.

Performance indicator levels are provided as quartiles—namely, the 25th percentile, 50th percentile (median), and 75th percentile. Results are only reported when there are three or more utility responses. A designation of “na” signifies that data were not available or not applicable for that metric. In most cases, the preferred placement for each indicator is designated by the top quartile. However, in some cases, the top quartile of indicators reflects only the statistical division of the responses and does not indicate preferred placement. Utilities using these data will determine which is their individual preferred quartile range depending on utility priorities, resources, and year-to-year performance.

In this report’s tables, the middle half of all results are reported as the difference between the top and bottom quartiles for any grouping (Water, Wastewater, Combined, or, in some instances, Stormwater). Outside of the middle 50th percentile of respondents, the top and bottom quartiles define the 25th percentile of respondents’ results above or below this middle portion, respectively.

Where regional data are provided, the following region categories were used to align with the AWWA Sections:

- Region I: CT, DC, DE, MA, MD, ME, NH, NJ, NY, PA, RI, VT, CAN-NB, CAN-NL, CAN-NS, CAN-PE, CAN-Q
- Region II: AL, FL, GA, KY, MS, NC, PR, SC, TN, VA, WV
- Region III: IA, IL, IN, MI, MN, ND, OH, SD, WI, CAN-ON
Participants

Since AWWA has been Benchmarking water utility performance, a number of utilities have been involved. Some participate consistently each year, while others opt to participate every other year. The AWWA Benchmarking Survey is now conducted annually to provide the means for interested utilities to track their data with annual performance. Figure 1 tracks participation in the survey over the most recent seven years. While the number of participating utilities has varied, participation continues to trend upward, peaking in 2016 with 163 utilities. One hundred forty-four utilities participated in the current year.

**Figure 1** Historical utility participation
A closer look at the number of utility participants in Figure 2 shows that the majority of the survey participants in 2019 are combined utilities offering both water and wastewater services. Likewise, Figure 3 shows the range of utility sizes that participated in 2019 (FY18), with the largest set of utilities serving a population range between 100,000 and 500,000 people.
AWWA encourages utility participation in the Utility Benchmarking Program and solicits responses from as many utilities as possible. Goals of the program are focused on continued growth, outreach efforts, and updating metrics and performance indicators routinely to meet the needs of participants and the industry. Included in these outreach goals are the efforts to ensure a wide representation of utilities across North America. Figure 4 shows that the 2019 utility participants represent a large portion of the United States, with at least one utility from 38 states. In addition, utilities in two Canadian provinces and two US territories also provided their utility data. The complete list of participants can be found on the following pages.

Figure 4  2019 utility participation by state
# 2019 List of Utility Participants by State

## Alabama
- Decatur Utilities
- Huntsville Utilities
- Riviera Utilities

## Alaska
- Anchorage Water & Wastewater Utility

## Arkansas
- Beaver Water District
- Central Arkansas Water
- Little Rock Reclamation Authority

## Arizona
- City of Tucson Water Department ~ Tucson Water
- Phoenix Water Services Department
- Town of Clarkdale

## California
- Central Contra Costa Sanitary Dist.
- City of Corona Department of Water and Power
- City of Ontario
- City of Riverside Public Utilities
- Coachella Valley Water District
- El Dorado Irrigation District
- Lake Arrowhead Community Services
- Los Angeles Water and Power
- Nevada Irrigation District
- San Francisco Public Utilities Commission
- Santa Rosa Water
- Southern California Edison-Catalina
- Sweetwater Authority
- Victor Valley Wastewater Reclamation Authority
- Yorba Linda Water District

## Colorado
- City of Boulder Dept. of Public Works
- City of Westminster Utilities
- Fort Collins Utilities
- Pueblo Board of Waterworks
- Town of Castle Rock

## Connecticut
- Regional Water Authority
- Town of Bethel

## Florida
- Broward County Water & Wastewater Services
- Charlotte County Utilities
- City of St. Petersburg Water Resources Department
- City of Winter Haven
- Cooper City Utilities
- Gainesville Regional Utilities
- Hillsborough County
- JEA
- Miami-Dade Water and Sewer Department
- NMB Water
- Orange County Utilities
- Orlando Utilities Commission
- Tampa Bay Water
- Toho Water Authority

## Georgia
- Athens-Clarke County Public Utilities Department
- City of Atlanta /Atlanta Dept. of Watershed Management
- Columbus Water Works
- Douglasville Douglas Co. Water/Sewer Authority
- Gwinnett County Dept. of Water Resources

---

Copyright © 2019 American Water Works Association. All Rights Reserved.
<table>
<thead>
<tr>
<th>State</th>
<th>Utility Name</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hawaii</td>
<td>Honolulu Board of Water Supply</td>
<td>W</td>
</tr>
<tr>
<td>Illinois</td>
<td>City of Rockford Water Division</td>
<td>W</td>
</tr>
<tr>
<td>Indiana</td>
<td>Citizens Energy Group</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>City of Bloomington Utilities</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Fort Wayne City Utilities</td>
<td>C</td>
</tr>
<tr>
<td>Kansas</td>
<td>City of Olathe</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Water District No. 1 of Johnson County</td>
<td>W</td>
</tr>
<tr>
<td>Kentucky</td>
<td>Louisville Water Company</td>
<td>W</td>
</tr>
<tr>
<td></td>
<td>Northern Kentucky Water District</td>
<td>W</td>
</tr>
<tr>
<td></td>
<td>Owensboro Municipal Utilities</td>
<td>W</td>
</tr>
<tr>
<td>Maine</td>
<td>Portland Water District</td>
<td>C</td>
</tr>
<tr>
<td>Maryland</td>
<td>Anne Arundel County MD–Bureau of Utility Operations</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Washington Suburban Sanitary Commission</td>
<td>C</td>
</tr>
<tr>
<td>Michigan</td>
<td>City of Ann Arbor</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Great Lakes Water Authority</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Lansing Board of Water &amp; Light</td>
<td>W</td>
</tr>
<tr>
<td></td>
<td>Sebewaing Light &amp; Water Dept</td>
<td>C</td>
</tr>
<tr>
<td>Minnesota</td>
<td>City of Minneapolis–Surface Water &amp; Sewer</td>
<td>WW</td>
</tr>
<tr>
<td></td>
<td>Lincoln Pipestone Rural Water</td>
<td>W</td>
</tr>
<tr>
<td></td>
<td>Minneapolis Water Works</td>
<td>W</td>
</tr>
<tr>
<td></td>
<td>St. Cloud Public Utilities</td>
<td>C</td>
</tr>
<tr>
<td>Missouri</td>
<td>City of Springfield</td>
<td>WW</td>
</tr>
<tr>
<td></td>
<td>KC Water</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Metropolitan St. Louis Sewer District</td>
<td>WW</td>
</tr>
<tr>
<td>Nebraska</td>
<td>Metropolitan Utilities District</td>
<td>W</td>
</tr>
<tr>
<td>Nevada</td>
<td>Carson City Public Works</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>City of Henderson</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Las Vegas Valley Water District</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Truckee Meadows Water Authority</td>
<td>W</td>
</tr>
<tr>
<td></td>
<td>Virgin Valley Water Dist.</td>
<td>W</td>
</tr>
<tr>
<td></td>
<td>Queensbury Water Department</td>
<td>W</td>
</tr>
<tr>
<td>New Jersey</td>
<td>American Water Company</td>
<td>C</td>
</tr>
<tr>
<td>New Mexico</td>
<td>Albuquerque Bernalillo County Water Utility Authority</td>
<td>C</td>
</tr>
<tr>
<td>North Carolina</td>
<td>Charlotte Water</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>City of Greensboro Water Department</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>City of Raleigh</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Orange Water and Sewer Authority</td>
<td>C</td>
</tr>
<tr>
<td>Ohio</td>
<td>Avon Lake Regional Water</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Butler County Water &amp; Sewer</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>City of Gahanna</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>City of Painesville</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>City of Toledo Water Division</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Northeast Ohio Regional Sewer District</td>
<td>WW</td>
</tr>
<tr>
<td>State</td>
<td>Utility Name</td>
<td>Type</td>
</tr>
<tr>
<td>---------------</td>
<td>--------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Oklahoma</td>
<td>Oklahoma City Utilities Department</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Tulsa Metropolitan Utility Authority</td>
<td>C</td>
</tr>
<tr>
<td>Oregon</td>
<td>City of Bend, Utility Department</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Clean Water Services</td>
<td>WW</td>
</tr>
<tr>
<td></td>
<td>Portland Water Bureau</td>
<td>W</td>
</tr>
<tr>
<td></td>
<td>Rockwood Water People's Utility Dist.</td>
<td>W</td>
</tr>
<tr>
<td></td>
<td>Tualatin Valley Water District</td>
<td>W</td>
</tr>
<tr>
<td></td>
<td>West Slope Water District</td>
<td>W</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>Bucks County Water &amp; Sewer Authority</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Philadelphia Water</td>
<td>C</td>
</tr>
<tr>
<td>South Carolina</td>
<td>Charleston Water System</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Powdersville Water District</td>
<td>W</td>
</tr>
<tr>
<td></td>
<td>Renewable Water Resources</td>
<td>WW</td>
</tr>
<tr>
<td></td>
<td>Startex Jackson Wellford &amp; Duncan Water District</td>
<td>W</td>
</tr>
<tr>
<td>South Dakota</td>
<td>City of Sioux Falls–Water Purification</td>
<td>W</td>
</tr>
<tr>
<td>Tennessee</td>
<td>Johnson City Water Department</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Nashville Metro Water and Sewer</td>
<td>C</td>
</tr>
<tr>
<td>Texas</td>
<td>Austin Water Utility</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>City of Corpus Christi</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>City of Longview</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>City of Sugar Land</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Dallas Water Utilities</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Denton Municipal Utilities</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Fort Bend County MUD No. 25</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Fort Worth Water Department</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Houston Water</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>McAllen Public Utility</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>San Antonio Water System</td>
<td>C</td>
</tr>
<tr>
<td>Utah</td>
<td>Salt Lake City Public Utilities</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Taylorsville–Bennion Improvement District</td>
<td>C</td>
</tr>
<tr>
<td>Virginia</td>
<td>Arlington County/DPW/WSS</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Chesapeake Dept. of Public Utilities</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>City of Richmond Public Utilities</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>County of Chesterfield</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Fairfax Water</td>
<td>W</td>
</tr>
<tr>
<td></td>
<td>Hanover County Department of Public Utilities</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Newport News Public Utilities Department</td>
<td>W</td>
</tr>
<tr>
<td></td>
<td>Prince William County Service Authority</td>
<td>C</td>
</tr>
<tr>
<td>Washington</td>
<td>Cascade Water Alliance</td>
<td>W</td>
</tr>
<tr>
<td></td>
<td>North City Water District</td>
<td>W</td>
</tr>
<tr>
<td></td>
<td>Northshore Utility District</td>
<td>W</td>
</tr>
<tr>
<td></td>
<td>Pierce County Sewers</td>
<td>WW</td>
</tr>
<tr>
<td></td>
<td>Seattle Public Utilities</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>Tacoma Public Utilities</td>
<td>W</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>Milwaukee Water Works</td>
<td>W</td>
</tr>
</tbody>
</table>
Canadian and US territory participants

<table>
<thead>
<tr>
<th>Region</th>
<th>Utility Name</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada - BC</td>
<td>Metro Vancouver</td>
<td>C</td>
</tr>
<tr>
<td>Canada - PE</td>
<td>Charlottetown Water &amp; Sewer Utility</td>
<td>C</td>
</tr>
<tr>
<td>AS</td>
<td>American Samoa Power Authority</td>
<td>C</td>
</tr>
<tr>
<td>Puerto Rico</td>
<td>Puerto Rico Aqueduct and Sewer Authority</td>
<td>C</td>
</tr>
<tr>
<td>Curacao</td>
<td>Aaquelectra N.V.</td>
<td>W</td>
</tr>
</tbody>
</table>

C—combined utility; W—water utility; WW—wastewater utility
Business Drivers

Beginning with the FY15 Utility Benchmarking Survey, AWWA began to look at what drives a utility to participate in performance improvement and AWWA’s annual survey as well as the utility’s goals and drivers that affect their day-to-day operations. Although each of the utilities involved has a variety of goals and drivers, in general, the responding utilities identified regulations and standards, financial obligations, and customer expectations as the top high-priority drivers that lead them on their daily efforts of continuous improvement. Figure 5 shows how the responding utilities rated the business drivers as a high, medium, or low priority to their organization. A low priority in this case does not indicate lack of interest—only that other identified drivers have a more immediate priority during the fiscal year.

Figure 5  Business drivers
Performance Indicators

The AWWA Utility Benchmarking Program categorizes performance indicators into five key areas of the utility structure: organizational development, business operations, customer relations, water operations, and wastewater operations. The full list of indicators in each category is as follows, and each performance indicator is fully defined in subsequent chapters.

Organizational Development

- Organizational best practices
- Staffing levels
  - Total full-time equivalents (FTEs)
  - FTEs by job category (%)
- Training (hours per employee)
- Emergency response readiness training (hours per employee)
- Customer accounts (accounts per employee)
- Employee turnover (%)
- Retirement eligibility (%)
- Employee health and safety severity rate
- Recordable incident rate of injury or illness
- Near misses
- Strategic workforce planning (*new in 2019*)
- Employee vacancy indicators (*new in 2019*)

Business Operations

- Debt ratio (%)
- Return on assets (%)
- Days of cash on hand
- Debt-service coverage ratio
- Days of working capital
- Operating ratio (%)
- Bond rating
- Insurance
  - Insurance claims (*new in 2019*)
  - Severity of insurance claims (*new in 2019*)
  - Average severity (*new in 2019*)
- System inspection (%)
- System renewal/replacement (%)
- Triple bottom line index (%)
- Sustainability
  - Nutrient recovery (%)
  - Biosolids reuse (%)
  - Nonpotable consumptive use (%)
  - Habitat/watershed protection goals
  - Green infrastructure planning
  - Energy optimization planning
- Risk and resiliency (*new in 2019*)
  - Risk assessment and response preparedness (*new in 2019*)
  - Emergency response planning (*new in 2019*)
  - Recovery and mitigation plan (*new in 2019*)
  - Cybersecurity preparedness (*new in 2019*)

Customer Relations

- Service complaints
  - Customer service complaints/1,000 accounts
  - Customer service complaints/population served (*new in 2019*)
– Technical service complaints/1,000 accounts
– Technical service complaints/population served (new in 2019)
• Call center indicators
  – Average talk time (minutes)
  – Average wait time (minutes)
  – Abandoned call ratio (%)
  – Average calls per call center representative
  – First call resolution
• Customer service cost per account ($/account)
• Residential service charges
  – Residential cost of water service ($/month)
  – Residential cost of wastewater service ($/month)
  – Residential cost of stormwater service ($/month)
• Billing accuracy (errors/10,000 billings)
  – Frequency of billing (new in 2019)
  – Estimated billing rate (new in 2019)
  – Metering prevalence (new in 2019)
  – Metering: frequency of meter reads (new in 2019)
  – Metering: read success rate (new in 2019)
• Per capita consumption (gal/person/day)
• Service affordability
  – Water service affordability (%)
  – Wastewater service affordability (%)
  – Stormwater service affordability (%)
• Delinquency rate
• Low-income assistance program offered
  – Low-income billing assistance rate
• Stakeholder outreach index
• Customer service contact
• Water service disruptions
  – Disruptions of water service (outages/1,000 accounts)
    • Planned by event duration (<4 hr, 4–12 hr, >12 hr)
    • Unplanned by event duration (<4 hr, 4–12 hr, >12 hr)
  – Average time to address water service disruptions (hr)
  – Disruption frequency of water service
• Wastewater service disruptions
  – Disruptions of wastewater service (outages/1,000 accounts)
    • Planned by event duration (<4 hr, 4–12 hr, >12 hr)
    • Unplanned by event duration (<4 hr, 4–12 hr, >12 hr)
  – Average time to address wastewater service disruptions (hr)
  – Disruption frequency of wastewater service

**Water Operations**
• Regulatory compliance—water (%)
• Water produced per employee (MGD)
• Water supply
  – Current water demand (%)
  – Available water supply (years)
• Water distribution system integrity
  – Leaks/100 miles of pipe
  – Breaks/100 miles of pipe
  – Combined leaks and breaks
• Hydrant effectiveness/out of service rate
• Operations and maintenance (O&M) costs for water services
  – ($/account)
  – ($/MG)
  – ($/100 miles of pipe)
  – Treatment O&M costs ($/MG)
  – Distribution O&M costs ($/100 miles of pipe)
  – O&M percentage of water services
• Maintenance—water
  – Planned maintenance (%)—overall, linear, and vertical ratios
  – Corrective vertical maintenance to production (hr/MG)
  – Planned vertical maintenance to production (hr/MG)
  – Corrective linear maintenance to distribution system length (hr/100 miles of pipe)
  – Planned linear maintenance to distribution system length (hr/100 miles of pipe)
  – Water planned maintenance ratio
• Energy consumption—water (kBTU/year/MG)
• AWWA Water Audit—summary of results

**Wastewater Operations**

• Regulatory compliance—wastewater (%) *(modified reporting)*
  – Wastewater treatment operations (%) *(new in 2019)*
  – Collection system operations (%) *(new in 2019)*
• Wastewater processed per employee (MGD)
• Noncapacity sewer overflow rate (per 100 miles of pipe)
• Capacity sewer overflow rate (per 100 miles of pipe)
• Collection system integrity (failures/100 miles of pipe)
• O&M costs for wastewater service
  – ($/account)
  – ($/MG)
  – ($/100 miles of pipe)
  – Collection O&M costs ($/100 miles of pipe)
  – Treatment O&M costs ($/MG)
  – O&M percentage of wastewater services
  – O&M percentage of stormwater services
• Maintenance—wastewater
  – Total wastewater planned maintenance ratio (%)
  – Planned maintenance (%)—overall, linear, and vertical ratios
  – Corrective vertical maintenance to treatment (hr/MG)
  – Planned vertical maintenance to treatment (hr/MG)
  – Corrective linear maintenance to distribution (hr/100 miles of pipe)
  – Planned linear maintenance to distribution (hr/100 miles of pipe)
• Energy consumption—wastewater (kBTU/year/MG)
Definitions

The performance indicators used in AWWA's Utility Benchmarking Program are based on the following definitions and were identified in the FY18 survey.

**Active account:** A formal arrangement providing for regular services for some or all of the reporting period.

**Actual maximum daily production:** The observed maximum production of all treatment plants in a system over the reporting period in million gallons per day (MGD).

**Apparent losses:** Unauthorized use and inaccuracies associated with metering. Apparent losses consist of unauthorized consumption, customer metering inaccuracies, and systematic data-handling errors.

**Average annual available water supplies based on current yields:** The annual water volume available based on current yield within regulated, authorized withdrawals and delivery system or infrastructure limitations. Participants are to use the past five years of data to come up with a representative annual average.

**Average daily production:** The production per day from all of a utility’s water or wastewater treatment plants averaged over the reporting period in MGD.

**Average total time per call (or talk time):** The average time spent on the phone with a customer by an agent or customer service representative (CSR).

**Average wait time per call:** The average time a caller must wait on hold before he or she can speak to an agent or CSR during the reporting period. It does not include time spent navigating through computerized menu options.

**Bill:** A periodic statement of charges (volumetric, surcharges, and taxes) for utility services. For purposes of benchmarking, multiple-service utilities that send a single bill count each service as a single bill (e.g., if water and wastewater services are combined, this is counted as two bills).

**Break:** Physical damage to a pipe, valve, hydrant, or other appurtenance that results in a disruption of service. Physical damage can also be a result of aging infrastructure or construction and/or installation defects. Breaks often require prompt or emergency response from utility staff. For reporting purposes, do not include planned outages for maintenance, flow testing, construction, etc. Do not include breaks from lateral service lines.

Business drivers: Key categories that affect a utility’s day-to-day operations. Definitions of these categories are as follows.

**Asset life cycle management:** Increasing asset acquisition/capital delivery requirements, aging infrastructure, asset criticality (failure risk or low reliability).

**Customer expectations and demand:** Customer-driven, service-level improvement; customer focus and invited stakeholder involvement.

**Efficiency and continual improvement:** Continuous-improvement commitments, increasing competition, new market entrants, efficiency improvements.

**Financial:** Affordability constraints, demonstrating value for money, capital expenditure reduction/reduce debt, determination of revenues and/or prices/rates.

**Regulation and standards:** Regulatory compliance, industry or business structural reform, business performance improvement requirements.

**Resiliency:** Ability to work with internal staff and external partners to anticipate and avoid problems. Proactively establishes tolerance levels and effectively manages risks (including legal, regulatory, financial, environmental, safety, security, cyber, knowledge-loss, talent, and natural disaster-related). Involves planning for and actively managing operations to maintain business continuity.

**Resources and service demand:** Water supply, water source constraints, including drought and demand management; demand growth or primary resource limitations.

**Security:** Infrastructure/physical asset resilience and security, IT and cyber-systems resilience and security.

**Sustainability:** Inter-generational equity (balancing of economic, social, and environmental outcomes for current and future generations), climate change and environmental uncertainty, reduction of carbon emissions and resource life cycle impacts, resource recovery (nutrients, energy, etc.).

**Technology and innovation:** Technology advancements and innovation for customer interaction and services delivery. Includes issues related to IT, process, and innovation.
Workforce evolution: Staff skills and experience retention during periods of change, succession planning and training, sourcing and recruiting, knowledge management, safety culture.

Calls abandoned: Calls during the reporting period terminated by the calling party before being answered by an agent or CSR.

Calls received: The number of calls during the reporting period attempting to reach the contact center that are not blocked, incomplete, or denied.

Collection system: All gravity sewerage piping, access holes, pressure sewers, and lift stations under control of the utility from the point of customer property lines to the treatment facility or point of interception by another wastewater utility. Portions of the collection system may convey both sanitary sewage and stormwater.

Collection system failure: A loss of capacity resulting from a flow restriction in gravity or pressurized wastewater systems. Flow restrictions may be caused by deposition of foreign materials; structural failures of pipes, appurtenances, or access holes; deterioration of collection system materials; and root intrusion. Low spots in gravity sewers (sometimes called swags) are failures if there is potential for deposition and diminished sewer capacity.

Electrical and mechanical lift station failures unrelated to flow restrictions, electrical power outages at lift stations, and failures that occur on customer properties should not be considered collection system failures. Also excluded are any failures directly caused by the action of a person authorized by the utility, such as failure caused by incidental damage during construction or repair.

Combined utility: A combined utility provides both potable water and wastewater services. If the utility provides multiple services (i.e., power, transportation, electric) in addition to potable water or wastewater, for this publication, the utility is considered a water or wastewater utility, respectively. (For example, if a utility provides water and power services, for Utility Benchmarking Survey purposes, the utility is considered a water organization. However, if the utility provides both water and wastewater or water, wastewater, and power, then the utility is considered a combined utility.)

Complaint: An expression of dissatisfaction conveyed to a utility employee acting in his or her official capacity. A complaint is a request for action, whereas an inquiry is a request for information. Complaints may be communicated orally or in writing.

Customer service complaints refer to relationship factors, such as personal appearance, courteousness, helpfulness, professionalism, responsiveness, adherence to traffic laws while driving a vehicle, and timeliness. They also include issues with customer support services, such as turn on/turn off, billing, rate setting, and communication.

Technical service complaints are directly related to core services of the utility. They include complaints associated with water quality, taste, odor, appearance, pressure, sewage backups and overflows, disruptions of service, disruptions of traffic, and facilities upkeep.

Confidence level: The level of assurance the utility can provide in the data that is reported for a given question using the following rating scale:

4 – Audited data: Data collected are from fully verifiable sources with audited processes (data QA/QC functions in place).

3 – Verified data: Data collected are from verifiable sources based on regular recording and reporting systems (typically from utility/enterprise information systems).

2 – Partially verified: Data collected are from verifiable sources with some estimates included (e.g., fill-in “gaps” for some utility groups, functions, or durations).

1 – Estimated: Data are estimated data by knowledgeable staff with some verifiable sources (e.g., based on data sampling, correlated data, or other estimating techniques).

Corporate bond rating: The creditworthiness of a utility’s corporate or government bonds as rated by independent rating agencies. Rating categories are grouped as follows:

Prime: An obligor has extremely strong capacity to meet its financial commitments.

High grade: An obligor has very strong capacity to meet its financial commitments. It differs from the highest-rated obligors by only a small degree.

Upper medium grade: An obligor has strong capacity to meet its financial commitments but is somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions than obligors in higher-rated categories.
Lower medium grade: An obligor has adequate capacity to meet its financial commitments. However, adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity of the obligor to meet its financial commitments.

Corrective maintenance: All maintenance undertaken after asset failure. Corrective maintenance is always responsive but may not necessarily result in service disruption. Total time for corrective maintenance should include overtime attributed to these activities, including contractors’ time. Separate maintenance time as allocated to linear resources (distribution and collection systems) and vertical resources (plants and pump stations).

Customer: The term used to describe an individual service agreement for water or wastewater service at a single property regardless of size or billing category. An individual may own more than one property and be counted as a customer more than once.

Design maximum daily production: The maximum design capacity of all treatment plants in a system in millions of gallons per day.

Disruption of service: Any event within treatment facilities, or the distribution or collection system under control of the utility, whereby a customer loses service. For potable water service, disruptions include system repairs during which the delivery pressure is reduced below 20 psi. Disruption of sewer service includes backup of flow into the customer’s sewer from a utility-caused backup, blockage, or flow restriction originating downstream of the customer’s sewer connection. Specific exclusions include complaints of low pressure that are unrelated to a system condition requiring repair work, repairs to service piping under control of the customer, and shutoffs resulting from nonpayment.

Planned service disruptions are those for which prior notice is given to all affected customers. Planned disruptions include new construction tie-ins and replacements of valves, hydrants, meters, and other appurtenances under nonemergency conditions. Meter replacements of 30 minutes or less are not included. The total time to address planned service disruption is the total time taken by all utility employees and contractors working for the utility to restore services following a planned disruption. Total time to address planned service disruptions includes overtime attributed to these activities.

Unplanned service disruptions are those performed under emergency conditions when prior customer notice is not possible. Examples of unplanned service disruptions include emergency pumping facility failures and pipeline breaks. Total time to address unplanned service disruptions is the time taken for all unplanned or emergency corrective activities by all utility employees and contractors working for the utility after discovery of an unplanned service disruption during the reporting period. Total time to address unplanned service disruptions includes overtime attributed to these activities.

Emergency response readiness training: Formal training by all employees for emergencies as defined by a utility’s emergency response plan(s), including safety training.

Employee departures: Separations from employment through voluntary, involuntary, or retirement reasons during the reporting period.

Error-driven billing adjustment: Any change to a customer’s charges resulting from an error on the original bill sent to the customer regardless of cause and including all such discoveries made by utility staff, the customer, or a third party. Errors include all those under control of the utility, such as meter reads (whether by utility staff or the customer), data entry, and calculations or computer programming. Bills reissued for estimated use are not counted as a billing error.

First call resolution: Properly addressing the customer’s need the first time a call is received, thereby eliminating the need for the customer to follow up with a second call. Likewise, if a customer is transferred to a different department or staff member to have a question addressed, then the call was not resolved during the first call.

Fiscal year: The 12-month period that an organization uses for budgeting, forecasting, and reporting. Although many organizations follow the calendar year, a fiscal year can start at any point in the year and end 12 months later. Fiscal years are identified per the year in which they end. Fiscal year is abbreviated as FY.

Five-year annual average water demand: The sum of the total water demand for the last five years divided by five.

Full-time equivalent (FTE): The allocation of employee time equal to 2,080 hours per year on the basis of 40 hours/week and 52 weeks/year. Part-time,
temporary, and seasonal employees are converted to FTEs based on their total number of compensated hours divided by 2,080 hours. Consultants are not included in these estimates, and employee time from engineering and construction of new facilities is also not to be counted.

Utilities should account for contractor work if it applies directly to necessary utility functions to include all relevant functions to ensure utility-to-utility comparisons. Utilities supported by larger organizations should estimate the contribution of nonutility staff time applied to utility work. For example, city governments may use centralized services for human resources, fleet management, and purchasing that are not recognized at the utility level, but they should be reasonably accounted for to reduce bias in utility-to-utility comparisons.

Future year when demand exceeds supply: Future demand is based on predictions that include at least a 90% reliability level for known and projected uses. This includes infrastructure projects to deliver future water supplies that are planned/authorized/budgeted in this estimate.

General fund: This refers to publicly owned utility transfers to the local government’s general fund. Transfers from publicly owned utilities to the local government’s general fund historically have been based on one or more of the following methods:

- Actual general fund costs allocable to the utility (e.g., reimbursement for an indirect cost)
- A percentage of gross revenue, rate revenue, or net revenue (e.g., the equivalent of the franchise fee)
- A return on the rate base
- A property tax equivalent, often a millage rate applied to utility property or asset values
- A predetermined amount or a percentage of surplus funds after all enterprise fund obligations have been met
- A specific revenue stream related to utility service, including funds received from the sale of property or surcharges for customers located outside the municipality
- Fixed-fee transfers to meet general fund budget requirements with or without basis

If a transfer represents a payment for services provided by the general fund, it is considered an exchange transaction, or a reciprocal interfund activity, by the Government Accounting Standards Board (GASB) and is usually treated as a utility operating expense. A transfer that represents a return on investment or profit is a nonexchange transfer, or a nonreciprocal interfund activity, and may be treated as an operating expense in the utility’s financial statements or as a below-the-line operating transfer. Frequently, utilities make more than one type of general fund transfer. Common names for other types of general fund transfers include:

- Indirect cost reimbursement
- General administrative charge
- Administrative overhead charge
- Payment in lieu of taxes (PILOT)
- Payment in lieu of franchise fees
- Return on investment

Hydrant: A “full-service” hydrant must be confirmed by annual inspection and testing to demonstrate that it is readily accessible (no obstructions), fully operable (stem and caps), and not leaking and that it meets fire flow standards as tested annually to meet fire code specification. This metric only applies to water utilities that include distribution services.

Leak: A leak is an unintended hole or crack in a transmission or distribution pipeline, valve, hydrant, appurtenance, or service connection that continuously loses water but that does not result in a disruption of service. For reporting purposes, exclude any leak caused directly by the action of a person authorized by the utility. Do not include leaks from lateral service lines.

Near miss: An unsafe situation or condition where no personal injury was sustained and no property was damaged, but where, given a slight shift in time or position, injury and/or damage could have occurred.

Net income: All revenues and gains minus expenses for the reporting period; it is titled as such on a utility’s financial statement. In the United States, net income is defined and designated by the (GASB) or the Financial Accounting Standards Board (FASB) as applicable to a specific utility.
Noncompliance: An exceedance of an applicable regulation or standard, such as a permit violation or a maximum contaminant level violation, or less than full compliance with an applicable treatment technique during the reporting period.

Nonresidential accounts: Institutional, commercial, and industrial (ICI) customers, including hotels/motels, schools/universities, restaurants, laundromats, car washes, office buildings, hospital/medical offices, grocery stores, auto shops, and industries.

Pipe system length: The total length of the distribution or collection pipe network in a service area in miles. This includes mains of all diameters but does not include lateral service lines. Collection systems may convey both sanitary sewage and stormwater.

Planned maintenance: All regular maintenance activities undertaken in advance of asset failure during the reporting period. Planned maintenance may be predictive or preventive and may not necessarily result in service disruption. Preventive maintenance is performed according to a predetermined schedule rather than in response to failure. Predictive maintenance is initiated when condition-monitoring signals from activities such as vibration and oil analysis indicate that maintenance is due. The total time for planned maintenance includes overtime attributed to these activities, including contractors’ time. Utility data separate maintenance time as allocated to linear resources (distribution and collection systems) and vertical resources (plants and pump stations).

Real median household annual income: Real median household annual income is based on the latest data as reported by the US Census Bureau or other government agency for the area served.

Real water losses: True losses of water from the utility’s system up to the point of customer metering. They consist of leakage on transmission and distribution mains, leakage and overflows at utility storage tanks, and leakage on service connections up to the point of customer metering.

Regular employees: Those who worked more than 1,000 hours during the reporting period. Include contractor work if it applies directly to necessary utility functions in an effort to reduce bias in utility-to-utility comparisons. (Prior to the 2012 AWWA Benchmarking Survey, contractors were explicitly not included; recent revisions allow for contractors to be included.)

Renewable energy: Energy from renewable resources, such as solar and wind energy (wastewater-sourced energy is included in “resource recovery”). Include energy purchased from electricity suppliers or produced directly by your water or wastewater utility.

Residential accounts: Single-family and multifamily customers.

Resource recovery: Energy generated from wastewater resources, such as biogas production for electricity generation, combined heat and power, or thermal energy recovery.

Retirement eligibility: Retirement eligibility for an employee is based on known eligibility from age and employment history according to a utility’s retirement program and policies. An individual’s eligibility to receive employer contributions is determined by whether he or she has satisfied the age and service requirements. Include both early and regular retirement.

Sewer overflow: A discharge from a sewer through a manhole, cleanout, pumping facility, customer floor drain, or the drain in a fixture if that discharge is related to limitations or problems with collection or treatment system components under control of the utility. Overflows caused by limitations or problems within customer-controlled piping and facilities are specifically excluded from this definition. A dry-weather sewer overflow is an overflow from a combined sanitary/storm sewer experienced during weather conditions when the portion of flow attributed to stormwater is negligible.

Noncapacity overflow: A discharge that is related to maintenance issues. These include grease buildup, root intrusion, and a need to clean and rod the system. Overflows caused by limitations or problems within customer-controlled piping and facilities are specifically excluded from this definition.

Capacity overflow: A capacity overflow is a discharge that is a direct result of rain events that generally occur as a result of inflow and infiltration.

Total assets: The entire resources of the utility, both tangible and intangible, categorized as such on a utility’s financial statement. They include the total value of properties and claims against others that are owned by the utility as expressed at original cost unless otherwise indicated. Utility assets can include accounts receivable, cash, inventories, service delivery facilities (less depreciation), cost of easements, cost of water rights, and all other items of value owned.
by the utility. In the United States, assets are defined and designated by the GASB or the FASB as applicable to a specific utility.

**Total customer service costs:** All direct salaries, employee benefits, and direct costs, including contracts that are associated with providing the following services to customers plus a proportional share of total utility indirect costs.

- Activation of new accounts (including meter and service installation costs)
- Meter reads, maintenance, and repair or replacement
- Preparation and delivery of bills
- Receipt and processing of payments
- Records maintenance
- Collection of delinquent accounts
- Processing of bankruptcies
- Provision of turn-on/turn-off services
- Receipt, investigation, and resolution of complaints
- Preparation and provision of outreach and educational materials including the Consumer Confidence Report

Specifically excluded are all costs associated with lateral service lines and plumbing on the customer side of the meter if present or service property line if no meter is present.

**Total debt service:** The annual sum of principal and interest payments as required by short- and long-term obligations.

**Total liabilities:** The entire obligations of the utility under law or equity, categorized as such on a utility’s financial statement. In essence, they are the aggregate of all debts owed to others. They include outstanding bonds, outstanding long- and short-term debt, payments owed to others, accounts payable, and deposits collected from customers. In the United States, liabilities are defined and designated by the GASB or FASB as applicable to a specific utility.

**Total operating revenue:** The revenue derived directly from sales plus other regular income sources related to the normal business operations of the utility.

**Total operations and maintenance costs:** Costs for salaries, direct benefits, and all costs necessary to support utility services. They include pumping costs associated with treatment and distribution or collection. They also include supporting functions, such as any related portion of centralized human resources services, call center, health and safety, etc.

**Total replacement value of renewal and replacement needs:** The cost to replace assets in today’s dollars. Utilities may use either an actual replacement value estimate or a value based on the original cost as calculated by the *Engineering News-Record* Construction Cost Index (CCI). It is calculated by multiplying the historic cost (full cost at the time of expenditure) by the CCI for the reporting period year divided by the CCI for the expenditure year.

**Training:** Training meets at least one of the following descriptions:

- A professionally developed program or session with a fixed agenda that is offered on- or offsite during compensated working hours
- The classroom and study portions of a formal apprenticeship program completed during compensated working hours
- A compensated training or related educational program, including an apprenticeship program, completed by an employee during nonwork hours

Training includes technical training, certification training, apprenticeship training, employee skills and development training, attendance at professional seminars and conferences, and college classes during the reporting period. Training is not limited to events for which continuing education credits are awarded. Training does not include initial on-the-job training for new hires and promotions.

An apprenticeship program is a formal program designed to prepare an individual for journeyman status in any of several job categories.

Total training time includes all hours spent at the event from opening to closing, including all scheduled breaks. Travel time to and from the event and associated travel planning are not included. The trainer’s time is not to be included in estimates of total training time.

**Triple bottom line:** A measure of a utility’s sustainability efforts based on a balanced view of environmental, social, and economic considerations.
Unrestricted cash: The paramount resource utilities should use to meet expenses, cope with emergencies, and navigate business interruptions. Utilities with a lot of cash and cash equivalents are able to survive temporary disruptions and cashflow shortfalls without missing important payments. A large cash balance can also partially compensate for the lack of a debt service reserve fund. A low cash balance indicates poor flexibility to manage contingencies. This measure is included to measure any cash or cash equivalent that is both unrestricted and liquid. The measure does not include cash held in a debt service reserve fund, unspent bond proceeds, or cash that is restricted for capital.

Wastewater utility: A wastewater utility normally collects and treats used water and water-carried solids (including solids disposal). Wastewater collection assets include all piping, manholes, cleanouts, pumping facilities, and force mains used to convey wastewater to a central treatment location. Wastewater treatment facilities include all assets used to treat wastewater, treat and dispose of solids, and protect air quality.

Water utility: A water utility produces and delivers potable water, i.e., water that is safe for drinking. Potable water treatment facilities include all assets associated with treating source water to make it ready for distribution, including equipment associated with disposal of solids accumulated during treatment. A potable water distribution system includes all piping, valves, hydrants, pump stations, storage facilities, service taps and meters, and other appurtenances conveying drinking water to customers.

Workdays away from work: Total workdays away from work are obtained directly from OSHA Form 300A Item K (www.osha.gov/recordkeeping/RKforms.html), Summary of Work-Related Injuries and Illness.

An injury or illness is considered work-related if an event or exposure in the work environment caused or contributed to the condition or significantly aggravated a preexisting condition.

Record those work-related injuries and illnesses that result in

- Restricted work activity or job transfer
- Medical treatment beyond first aid

Do not record the following:

- Using nonprescription medications at nonprescription strength
- Administering tetanus immunizations
- Cleaning, flushing, or soaking wounds on the skin surface
- Using wound coverings, such as bandages, adhesive strips, gauze pads, butterfly bandages, etc.
- Using hot or cold therapy
- Using any nonrigid means of support, such as elastic bandages, wraps, nonrigid back belts, etc.
- Using temporary immobilization devices while transporting an accident victim (splints, slings, neck collars, or backboards)
- Drilling a fingernail or toenail to relieve pressure or draining fluids from blisters
- Using eye patches
- Using simple irrigation or a cotton swab to remove foreign bodies not embedded in or adhered to the eye
- Using irrigation, tweezers, cotton swabs, or other simple means to remove splinters or foreign material from areas other than the eye
- Using finger guards
- Using massages
- Drinking fluids to relieve heat stress

Restricted work activity occurs when, as the result of a work-related injury or illness, an employer or health care professional keeps, or recommends keeping, employees from doing the routine functions of their jobs or from working the full workday.

Count the number of calendar days the employee was on restricted work activity or was away from work as a result of the recordable injury or illness. Do not count the day on which the injury or illness occurred in this number. You may stop counting days of restricted work activity or days away from work once the total of either or their combination reaches 180 days.

Copyright © 2019 American Water Works Association. All Rights Reserved.