



Asset Management Key Performance Indicators (KPIs): Rule Recommendations for State Government

Issued jointly by the Asset Management and Finance Committee of Jersey Water Works and the Infrastructure Management Committee of American Water Works Association New Jersey section

The following ideas are proposed as potential high-priority metrics for asset management program development and implementation, based where possible on existing information but also recognizing that the Water Quality Accountability Act will be forcing new actions. The Infrastructure Management Committee (IMC) of the AWWA-NJ Section recommended that this effort focus on three major aspects of the asset management planning process as priorities for metrics development. This document was developed based on discussions with Ed Carpenetti of Louis Berger, available guidance and concepts from a variety of sources, and input from the IMC and the Jersey Water Works Asset Management & Finance Committee.

A critical point is that this white paper provides a number of ideas that may be more relevant to internal utility use, some that may be appropriate for reporting to state agencies (either as written or with the utility simply verifying that they have incorporated the KPI in their management system), and a few that may be appropriate (perhaps in a lay-person summary form) for the general public. Those recommended for submittal to state agencies for their consideration in use are noted in the right hand column. In addition, many utilities will need to address these KPIs over an extended period, gaining experience with early steps so that later steps can be effectively implemented.

This document underwent a development stage with varied stakeholder input. This document is not intended for direct cut-and-paste use of the text and ideas without full understanding and consensus of the approach and impacts of these processes.

Baseline Condition Assessment	Potential State Reporting Requirement
<ul style="list-style-type: none"> • Water Loss Audit. Real and apparent losses per service connection per day. Economically recoverable annual real and apparent losses identified based on utility factors (and environmental stresses if relevant). The Delaware River Basin Commission (DRBC) reports on non-revenue water can be used as an initial benchmark, until sufficient New Jersey results are available. 	Water Audit summary table from AWWA M36 process.
<ul style="list-style-type: none"> • Customer Metering. Percentage and number of service lines with individual customer meters by customer class; age of meters by customer class. 	
<ul style="list-style-type: none"> • Leaks and breaks per mile (or 100 miles) of pipeline and assessment of how these are geographically concentrated or related to pipeline type/construction/age. Results from New Jersey utilities can be assessed for an initial benchmark. 	Number of water main breaks per mile of the purveyor system (not including service line breaks) for the past five years. Request break data for the four most common material types owned by the purveyor and one catchall category, by pipe material category (e.g. Cast Iron; Ductile Iron; Pre-stressed Concrete Cylinder Pipe (PCCP); concrete steel cylinder (CSC) pipe; PVC; Asbestos Cement; Other). Possibly also track by pipe size categories (e.g., 6-inch and smaller; 8 to 12 inch; >12 to 24; >24).
<ul style="list-style-type: none"> • Water Availability. Current demand as a percent of available supply (per AWWA benchmarking evaluations). For example, five-year annual average demand divided by the average annual available water supplies considering firm capacity, annual water allocation plus net bulk water sales and purchases, and condition of withdrawal facilities (e.g., specific capacity of wells). 	
<ul style="list-style-type: none"> • Energy and Chemical Demand Trends. Rolling multi-year (two to three years) average energy demands (not costs) and chemical use per million gallons of total delivered water. 	
<ul style="list-style-type: none"> • Treatment System Functionality. Status of delivered drinking water quality relative to established SDWA MCLs and action levels, providing a sense of how much better the water quality is than the minimum level required. 	
Operations and Maintenance Asset Management Program	
<ul style="list-style-type: none"> • Definition of Assets, Asset Inventory and Asset Register using a database or Computerized Maintenance Management System (CMMS) that can be integrated 	1. Certification letter that an Initial Asset Management Plan is developed that meets the spirit

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<p>with GIS (except for where GIS is not cost-effective for a small system). Small systems can use alternative data tracking tools.</p>	<p>of the September 2016 NJ DEP Asset Management Technical Guidance document, EPA Asset Management Guidance documents by 4/19/2019.</p> <ol style="list-style-type: none"> 2. Within five years of the Initial Asset Management Plan, submit an Asset Registry Certification letter stating that Level of Service Goals have been developed and presented to the public; and at least 80% of the systems assets are digitally mapped and digitally entered into an asset registry that meets the spirit of the above-referenced guidance documents and standard. 3. Within five years of the Asset Registry Certification letter, submit an Asset Management Plan Certification Letter and an AMP Summary Letter outlining the purveyor’s plan to operate and maintain the system for the next 10 or more years. 4. Submit on a five-year basis revised AMP Summary Letters.
<ul style="list-style-type: none"> • Commitment to and tracking of frequency of valve and hydrant exercising. Frequency of exercise program should optimize resources to maintain the system (i.e., frequencies can vary, but for utilities subject to the Water Quality Accountability Act valves must be exercised every two or four years, depending on valve size, and hydrants at least annually). 	
<ul style="list-style-type: none"> • Parameters for asset condition assessment (addressing assets as defined above) that would trigger more frequent assessment or CIP activity. The parameters are based upon a risk assessment incorporating a specified analysis of Likelihood of Failure (LoF) and Consequence of Failure (CoF). 	
<ul style="list-style-type: none"> • Commitment to a strategic program for pipeline condition assessment (e.g., priority system based on the parameters discussed above; assessment method; schedule and frequency; results tracking). Results of the condition assessments can be used to reset the estimate remaining useful life of an asset. 	
<ul style="list-style-type: none"> • Report – Did the utility follow the plan? Did the utility change the plan based on 	

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<p>new information or results? Did something go wrong that was not addressed by the plan?</p>	
Capital Improvement Plan Asset Management Program	
<ul style="list-style-type: none"> • Capital Expenditures relative to planned/budgeted capital expenditures. Under the WQAA, three years of capital projects must be reported. A rolling multi-year average (three to five years) may be appropriate here, given that a slight delay could shift a major project into the next fiscal year. 	<ul style="list-style-type: none"> • Capital budget for the past five years in thousands of dollars • Capital expenditures on planned projects for the past five years in thousands of dollars • Capital expenditures on unscheduled or unplanned projects for the past five years in thousands of dollars.
<ul style="list-style-type: none"> • Water System Value. Related to capital expenditures is an ongoing assessment of net capital value of the system, which would serve as an indicator of the balance between investment and structural decline. While many individual assets may render proper service well beyond the average service life used to develop financial depreciation rates, the Original Cost Less Depreciation (OCLD) value of the system should be tracked. Investor-owned entities will do this following the Uniform System of Accounts adopted by the NJ Board of Public Utilities while municipal entities will follow Government Accounting Standards Board (GASB) procedures. In either case, assets will be recorded to the utility asset register at original cost and depreciated using acceptable depreciation methods. At least annually, retirements and additions to the asset register will be made to reflect changes in the net value of the system. 	
<ul style="list-style-type: none"> • Emergency Versus Planned Capital Projects. Costs and cost trends for implemented emergency repairs relative to implemented planned capital projects. Initially could use work orders as a proxy for costs. Includes definition of how costs are identified as emergency repairs (unplanned capital projects) and planned capital projects. While there would be a definite advantage to consensus definitions for these terms, the most critical point is consistent use of definitions and identification of trends by individual utilities. This KPI differs from the Capital Expenditures KPI in that it allows tracking both types of costs with the expectation that well-managed systems will either have or progress toward a low rate of emergency relative to planned capital project costs. 	