

Internal Monitoring Report

Policy #: EL-2G Infrastructure

Date: March 26, 2019

Frequency: Annual

Policy Language:

The General Manager shall not cause or allow conditions, procedures, or decisions that prevent Madison Water Utility from meeting its obligation to serve current and future generations of customers within the City of Madison and its authorized service areas.

Accordingly, the General Manager shall not cause or allow conditions, procedures, or decisions that:

1. Fail to assure that required rates fund all expenditures for timely and prudent capital improvements to existing utility systems, and that those capital improvements are driven by reliability, operational or regulatory requirements, replacement of aging infrastructure, utility relocations for public works and road projects, or extension of the life of existing systems.
2. Fail to identify and plan for resource and infrastructure needs for the provision of water service to customers within the City of Madison and the Madison Water Utility's service areas consistent with a reasonable planning period for that service.
3. Fail to coordinate Madison Water Utility activities and policies with the City of Madison's Comprehensive Plan and other relevant guidelines for community development.
4. Fail to consider participation with other governmental or private entities on regional major water infrastructure or water supply planning projects.

General Manager's interpretation and its justification:

This Executive Limitations policy requires that the Utility budget for, fund, prioritize, plan for, and construct the necessary system improvements to replace and sustain the Utility infrastructure for current and future generations. This policy recognizes that any and all long term planning shall be consistent with and comply with any and all City and regional plans. The Utility has the responsibility to establish, manage, and plan for the necessary water rates to fund all expenditures to meet identified capital and operational requirements. The Utility shall administer and prepare long-term facility and system wide comprehensive plans to identify system needs and funding priorities. The Utility shall also maintain routine regular condition assessments of all facilities to allow for the planned upgrade and/or replacement of facilities to assure the long term capacity of the system to meet established levels of service. The Board has identified four specific areas: 1) utility financial planning, 2) asset management, 3) water system master planning, and 4) City and Regional planning as key components of this policy.

Data directly addressing the General Manager's interpretation:

1. *Assure that required water rates fund the full cost of utility system capital improvements, and that those capital improvements are prioritized by risk analysis, reliability, operational or*

regulatory requirements, replacement of aging infrastructure, utility relocations for public works and road projects, or extension of the life of existing systems.

Madison Water Utility actively updates and refines its long term Capital Improvement Program (CIP) to meet short and long-term utility goals for infrastructure renewal, system growth, and to sustain established levels of service. The Utility's Asset Management Program provides for asset condition assessment, evaluates the likelihood of failure (LoF) and the consequence of failure (CoF) to develop and prioritize projects to renew and upgrade system assets. The goal of asset management is to identify the right projects, for the right reasons, at the right time, for the right price.

Madison Water Utility prepared its first Water Master Plan in 1964 to guide the development and expansion of the water system. The Water Master Plan identifies and prioritizes projects to help ensure that the system wide level of service is maintained. The Water Master Plan is updated every 5 to 10 years. The current comprehensive update of the Plan is expected to be completed in June 2019.

Madison Water Utility prepares and submits an annual Capital Budget to the Mayor of Madison for inclusion in the City budget. The CIP budget for 2019 is based on the Utility's Water Master Plan, identified water quality issues, water quality regulations, level of service policies, the Utility's Asset Management Program, other known capital improvement needs, itemized maintenance of the system, and the Utility's financial capacity to fund the CIP.

A financial plan was developed and submitted to the Wisconsin PSC in January 2019. This plan lays out the projected capital budget through 2026. The approved 2019 Water Utility Capital budget conforms to the submitted financial plan. The 2019 CIP continues the reduced spending plan to make Utility debt manageable over the long term. The capital budget was developed by Utility staff and reviewed by the Water Utility Board in May 2018, the Common Council approved the 2019 capital budget in November 2018.

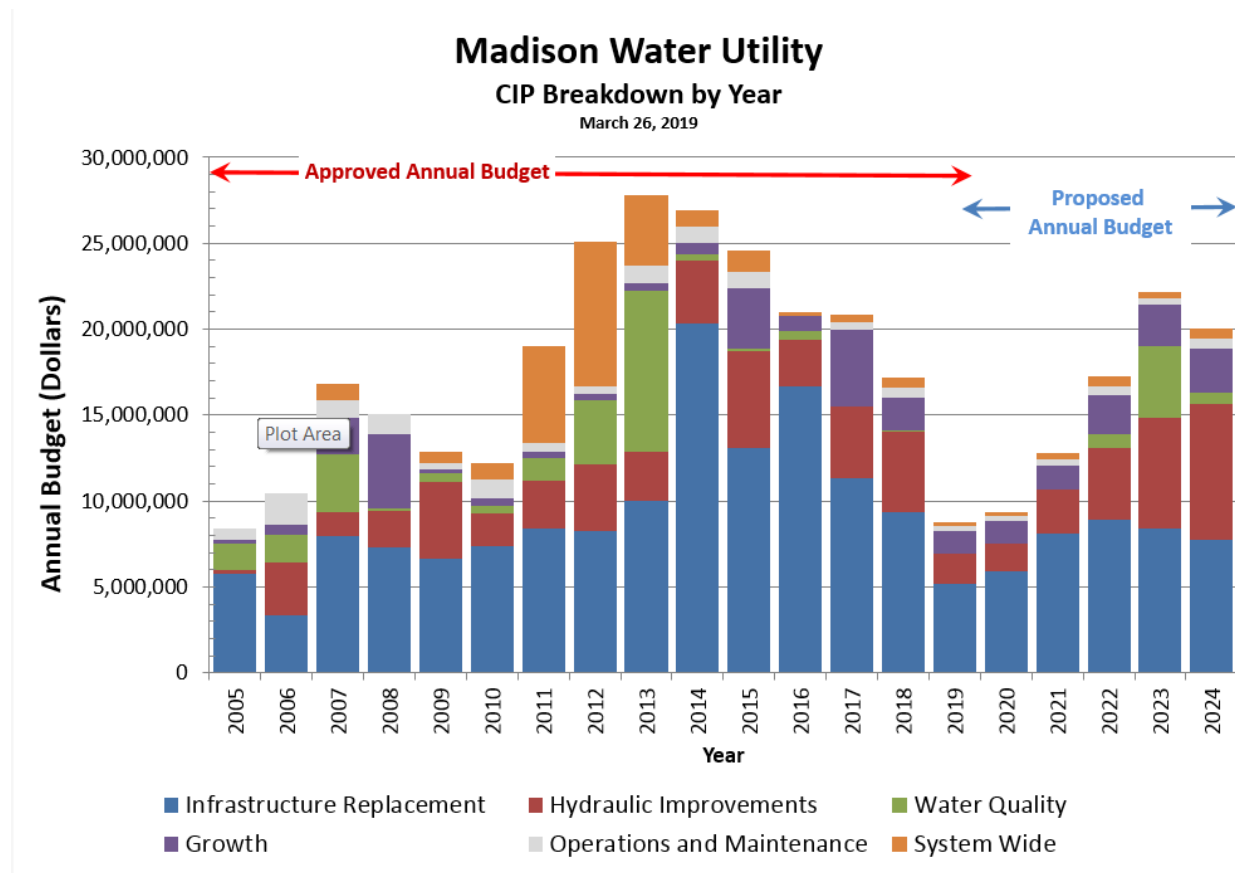
The 2019 CIP budget provides budget projections through the year 2024 for long term planning purposes. Budget planning currently goes to the year 2030 and the Master Plan will be looking at capital needs through the year 2040.

Projects identified as required to meet minimum levels of service established by the Utility are included in the CIP. Projects include infrastructure renewal, hydraulic upgrades, water quality improvements, and facility projects identified and prioritized in the Water Master Plan, the Asset Management Program, and the East Side Water Supply Plan. Asset management techniques are being refined to aide in the ranking and prioritization of identified projects.

As outlined in the financial plan, the Utility's total annual CIP budget capacity is based on the current water rate structure and the Utility's borrowing capacity. Water rates and any projected rate increases are in compliance with Water Board policy on the affordability of water. The water rate structure shall cover anticipated capital expenditures and provide infrastructure renewal.

A copy of the approved Water Utility 2019 CIP Budget prepared in May 2018 and approved in November 2018 is attached for your information and use. A graph illustrating the approved

annual capital budgets from 2005 to 2019 and the projected annual budgets through the year 2024 is included below. The graph shows the total capital budget by year and also the breakdown by infrastructure replacement, hydraulic improvements, water quality improvements, growth, operations and maintenance, and system wide projects. This graph illustrates that the Utility has aggressively increased capital budget spending over the past decade to replace and upgrade its aging infrastructure. This graph also illustrates that the Utility is making a significant investment in infrastructure replacement throughout the system. The need for investment in infrastructure renewal has outpaced the Utility's debt financing system and a significant reduction in spending is currently in place.



Recommendations in the 2005 Infrastructure Management Plan indicated a need to significantly increase funding for infrastructure renewal. To meet infrastructure renewal needs identified in 2005, it was recommended that the CIP annual budget include \$2.5 million for facility projects and \$9.0 million (2005 dollars) for pipe replacement. That \$11.5 million recommendation combined with water quality and facility upgrade needs resulted in a total annual budget of up to \$20 to \$25 million. Reflecting that effort, funding of the CIP was increased from \$6 to \$8 million per year in 2004 and 2005 to a level over \$20 million per year from 2012 to 2017. With this increase in spending came an associated increase in debt. Total Utility debt grew to unacceptable levels. The current rate structure cannot sustain a \$20 million annual capital program without appropriate cash reserves in place.

Planned 2019 CIP projects currently underway include approximately 5 miles of water main replacement. No pipe lining work or facility work is planned for 2019 as a part of the capital spending cut backs. It is noted that over the past decade only a small percentage of CIP spending has been for assets required to support growth or expansion of the system.

I report compliance.

2. *Identify and plan for resource and infrastructure needs for the provision of water service to customers within the City of Madison and the Madison Water Utility's service areas consistent with a reasonable planning period for that service.*

Madison Water Utility has used a Water Master Plan for long term system planning since 1964. Routinely updated every 5 to 10 years, the Water Master Plan outlines the needed improvements to facilities and piping systems to support current demands and projected growth. The latest version of the full Master Plan was approved by the Water Utility Board in December 2006. A partial update of the plan, the East Side Water Supply Plan, was completed in 2012. The East Side Water Supply Project verified the need for several water supply projects and guided development of several water quality improvement projects.

Madison Water Utility hired the consulting firm, Short Elliot and Hendrickson, to assist with the current comprehensive update of the Utility's Water Master Plan. This update will use water demand data from the Utility's AMI system to update and refine the distribution system computer model. Using AMI data to update computer model demands, develop diurnal water demand curves, and evaluate seasonal peaking factors will be instrumental in improving system planning. Demand projections through the year 2040 include the latest water conservation trends. City Planning provided the Utility with population and employment projections to support future estimates of water needs. Extensive modeling on system reliability, impacts of water conservation, and asset criticality provides an excellent picture of long term capital needs. Information from the recently completed Utility Financial Plan will provide guidance for long term financial capacity based on the current rate structure. A 2020 and 2040 CIP will be developed as part of the Water Master Plan update.

To enhance distribution system analysis skills, a limited term employee (LTE) modeling engineer has been hired to use the distribution system hydraulic computer model. The modeling engineer has completed an update of the well service area maps, is investigating optimized system pressure management, and has updated the system wide fire protection capacity map. Long term, it would be a benefit to Madison Water to have distribution system modeling expertise on staff. This skillset would provide an excellent resource for system evaluation and project development.

Madison Water Utility completed an Infrastructure Management Plan in 2005. This Plan evaluated and documented the condition of the Utility's assets with the objective of planning and budgeting for infrastructure renewal. The information gathered during the preparation of the 2005 Infrastructure Management Plan is used to identify needs, prioritize maintenance and replacement, and assist in the development of the annual CIP budget.

Since completion of the 2005 Infrastructure Management Plan, the pipe replacement budget increased by over 350% as the Utility works to replace an aging water distribution system. The Utility has replaced approximately 100 miles of pipe in an effort to reduce the number of breaks that occur every year. The Asset Management Program replaced the Infrastructure Management Plan and will guide the infrastructure renewal program going forward.

The Asset Management Program (AMP) works to document the condition of all Utility assets and plan for maintenance or replacement. As a part of the AMP, Utility staff will be assessing the “business risk exposure” of each of the utility’s assets. The business risk exposure (BRE) can best be understood as the probability an asset will fail (PoF) multiplied by the asset’s consequence of failing (CoF). The BRE will then provide MWU with a way to A) rank potential capital improvements and B) prioritize maintenance strategies for existing facilities. All of this will assist the Utility in making data based decisions and maximize return on investment.

I report compliance.

3. *Coordinate Madison Water Utility activities and policies with the City of Madison’s Comprehensive Plan and other relevant guidelines for community development.*

Madison Water Utility works closely with the City Planning Department to ensure coordination and compliance with City long term planning efforts. Population estimates, development patterns and neighborhood plans are drawn from the City of Madison Planning Department’s Comprehensive Plan and other planning documents. The Madison Planning Department recently updated the City Comprehensive Plan and is continually developing and updating neighborhood development plans. This coordination allows the Utility to support development throughout the City.

I report compliance.

4. *Participate with other governmental or private entities on regional major water infrastructure or water supply planning projects.*

During the past year, no major regional water infrastructure or water supply projects were developed or planned. Madison Water Utility participates on a working group with Madison Metropolitan Sewerage District and City Engineering to develop a comprehensive water sustainability plan. The Utility is dedicated to protecting the groundwater resource and promoting long term water conservation initiatives.

To address regional planning issues, Madison Water Utility participates in regional water groups as they develop and is an advocate of regional water supply planning. Utility management, water quality and engineering staff actively participate on Wisconsin Section of the American Water Works Association committees. WiAWWA committee participation facilitates the exchange of information and ideas with regard to drinking water industry issues and regulations.

I report compliance.