

Internal Monitoring Report

Policy #: EL-2G Infrastructure
Frequency: Annual

Date: May 22, 2018

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 conduct long term facility and system wide comprehensive planning 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 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) financial planning, 2) asset management, 3) long term 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 and to sustain established levels of service. The Utility's Asset Management Program looks at the risk of failure and the consequence of failure to develop a Business Case Evaluation (BCE) for projects to identify critical replacement needs. The goal of the CIP is to identify the right projects, for the right reasons, at the right time, for the right price. Since 1964 the Utility has used a Water Master Plan to guide the development and expansion of the water system. This document is updated every 5 to 10 years. The 2018 update will be completed by the end of the year.

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 2018 is based on the Utility's Water Master Plan, water quality issues, level of service policies, the Utility's Infrastructure Management Plan, other known capital improvement needs, itemized maintenance of the system, and the Utility's financial capacity to fund the CIP. Developed by Utility staff and reviewed by the Water Utility Board in May 2017, the Common Council approved the 2018 budget in November 2017.

The draft 2019 CIP budget was submitted to the Mayor on May 9th and will be reviewed by the Water Utility Board at their May meeting. The proposed 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.

Due to lower than expected revenues and rising debt load, the draft 2019 CIP budget is proposed to be less than 50% of recent annual levels. It is proposed to delay CIP projects until 2021 to allow time to implement necessary rate increases.

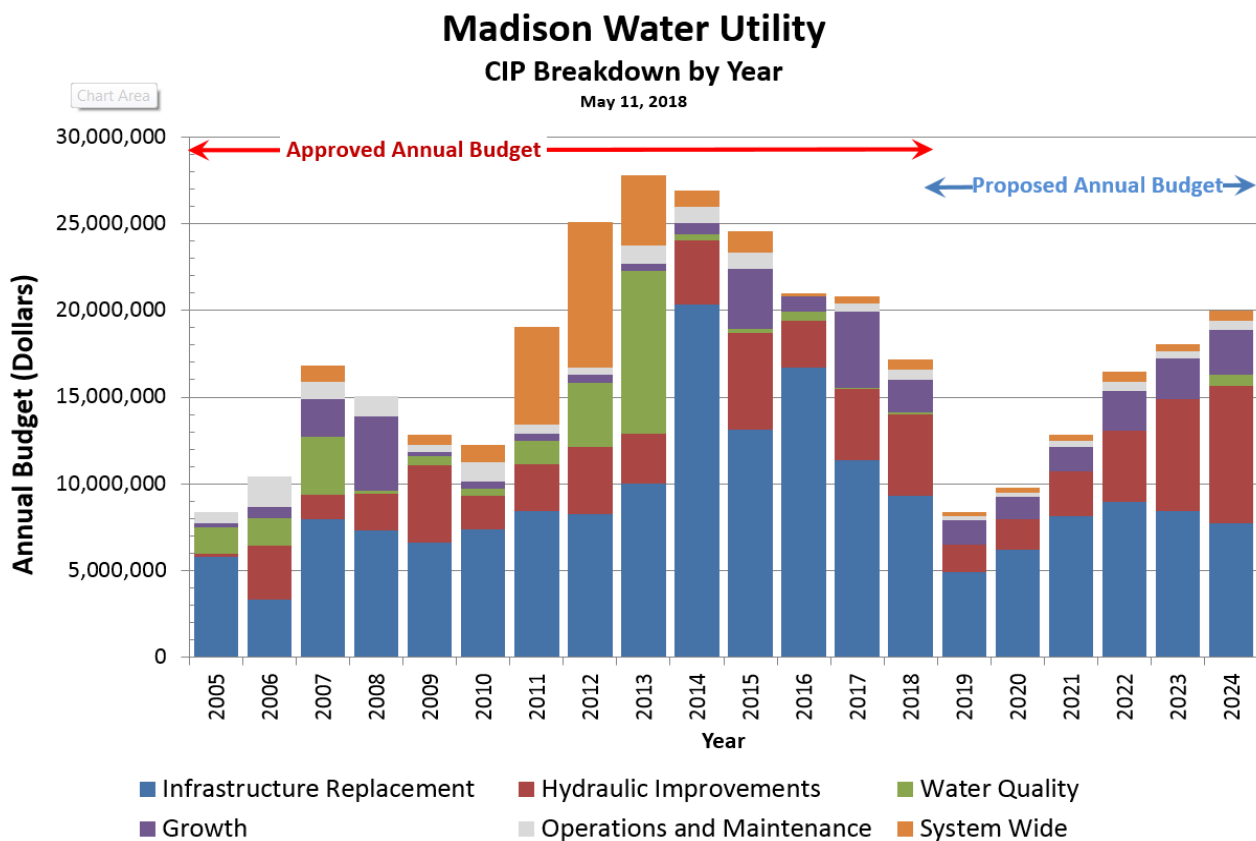
Projects identified as required to meet minimum levels of service established by the Utility are included in the CIP. Projects include infrastructure renewal, hydraulic upgrades, water quality improvements, and facility projects identified and prioritized in the Water Master Plan, the Infrastructure Management Plan, and the East Side Water Supply Plan. Business Case Evaluation (BCE) techniques are being refined to aide in the ranking and prioritization of identified projects. The objective of a BCE is to minimize risk and maximize return on investment using data based decisions.

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 the Water Board policy on the affordability of water. The water rate structure shall cover anticipated capital expenditures and provide infrastructure renewal. The Utility is currently working on a rate case that uses expense depreciation as a means to finance water main

replacement and reduce reliance on revenue bond funding. This move away from debt financing will ultimately reduce Utility total debt load.

The 2019 CIP Budget is an attachment to the Financial Planning and Budget Report.

The proposed 2018 CIP budget provides projections through the year 2023. A graph illustrating the approved annual capital budgets from 2005 to 2018 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 water quality improvements throughout the system. However, the need for investment in infrastructure renewal has outpaced the Utility's debt financing system and a significant reduction in spending is proposed for 2019 and 2020.



Recommendations in the 2005 Infrastructure Management Plan indicated a need to significantly increase funding for infrastructure renewal. To meet infrastructure renewal needs, the CIP annual budget is recommended to be between \$20 and \$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 required borrowing. Total Utility debt has grown significantly in the last 10 years.

The current financing model cannot sustain a \$20 million annual capital program without appropriate rate increases and a move to expense depreciation for main replacement.

2018 CIP projects currently underway include over 6 miles of water main replacement, over two thousand feet of pipe lining work, construction of the Blackhawk Reservoir, and construction of Unit Well 31. Reconstruction of Well 12 has been delayed until 2022 due to current revenue shortfalls. 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. The plan is routinely updated every 5 to 10 years and outlines the needed improvements to facilities and piping systems. The latest approved version of the full Master Plan was approved by the Water Utility Board in December 2006.

The Water Master Plan is a key planning tool for the preparation of the annual CIP budget. During 2010 to 2012 the area east of the Yahara River including the north side and the southeast corner of the City, was evaluated for long term water demand and water quality needs. This planning project was titled the "East Side Water Supply Project". The East Side Water Supply Project verified the need for several water supply projects and identified several water quality improvement projects. The Utility has been actively completing those recommended projects over the last few years.

The consulting firm, Short Elliot and Hendrickson, was hired to assist with the current update of the Utility's Water Master Plan. It is expected that the update of the Water Master Plan will be completed by the end of 2018. 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 our system planning model. Extensive modeling on system reliability, impacts of water conservation, and asset criticality will provide an excellent picture of long term capital needs. The Water Master Plan update will also look at financial planning parameters, financial capacity, and long term rate needs. A 5 year and 20 year CIP will be developed as part of the Water Master Plan.

To enhance Water Utility engineering staff distribution system analysis skills, an LTE modeling engineer has been hired to review and develop the in house use of the distribution system hydraulic model. Detailed calibration and verification of model operation will provide a reliable analysis tool to engineering staff. Model scenario development will aide in evaluation of project alternatives, will evaluate pressure management, and serve to optimize operations. The goal is to train staff engineers in the use of the model to enable detailed analysis of system operations and hydraulic impacts and limitations of proposed projects.

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 has increased by over 350% as the Utility works to replace an aging water distribution system. During the first 10 years of the program, approximately 100 miles of pipe was replaced. The need for pipeline renewal in the Madison system is still great and the Utility has approximately 300 miles of pipe remaining to replace over the next several decades.

The asset management team continues to work with GHD, Inc. to develop the Asset Management Program (AMP). The asset management development effort is a multi-year, phased initiative focused on improving Madison Water Utility's overall efficiencies and effectiveness in delivering services to its customers. Ultimately, the AMP will replace the 2005 Infrastructure Management Plan. 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 during the preparation of the Water Master Plan 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 is in the process of updating the City Comprehensive Plan. As a part of this update, the Planning Department has worked with Utility staff in defining future water needs.

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.