

Program 8089

Metro WWTP Asset Renewal

Metropolitan Wastewater Treatment Plant (MWWTP)

Description:

This program provides funding to continue the plant-wide renewal program at the Metropolitan Wastewater Treatment Plant (Metro WWTP), which was initiated under Program 8059 Metro WWTP Rehabilitation and Facilities Improvements.

Funds are for planning and implementation of capital improvements to the liquids processing and plant-wide facilities at the Metro WWTP.

Purpose and Justification:

The program provides for planning and implementation of projects to address renewal needs for continued, reliable and sustainable wastewater service at the Metro WWTP through the year 2040.

Program Location:

The active projects within this program are in the following Council Districts: 13

Active Projects in Program:

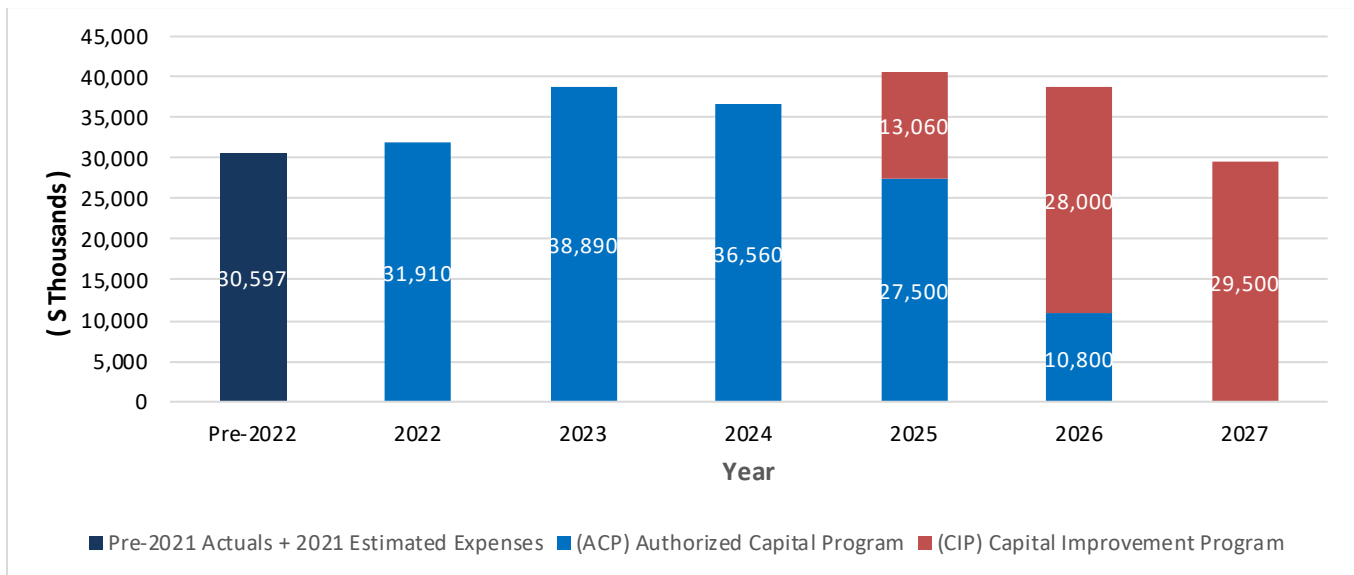
Project Number	Project Title
808915	Metro WWTP Electrical Distribution Renewal Phase 2
808916	Metro WWTP Electrical Distribution Renewal Phase 3
808920	Metro WWTP Roof Replacements Phase 1
808921	MWWTP Primary Settling Tank Chain
808922	Metro Effluent Pump Station Renewal
808923	MWWTP Site Preparation and Improvements - Phase 2
808925	Metro PLC Renewal
808930	Metro WWTP Secondary Renewal
808935	Metro WWTP Secondary & Primary Renewal
8089XX	Metro WWTP Primary Scum Improvements

8089XX	MWWTP Roof Replacement
8089XX	MWWTP HVAC Improvements – Phase 3
8089XX	Metro WWTP Electrical Distribution Renewal – Phase 4
8089XX	Metro WWTP Water Systems Renewal & Improvements Phase 2 – Reclaimed Water
8089XX	Metro WWTP Effluent Pump Station Renewal
8089XX	Metro Exterior Improvements

MCES 2022 – 2027 Capital Program:

Authorized Capital Program (ACP) \$176,257,000	Capital Improvement Plan (CIP) \$72,560,000
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Estimated Program Cash Flow 2022 - 2027:



Note: The ACP is the total amount of all past and present authorizations including Pre-2022 Expenses.

Program Family: 8089
Project # 808915

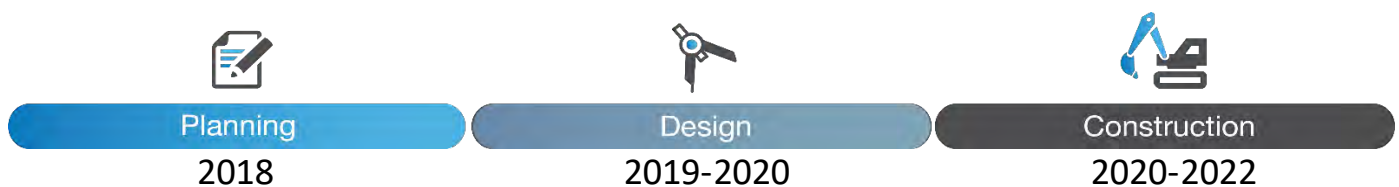
Metro WWTP Electrical Distribution Renewal Phase 2

Project Location:
Council District # 13
City of St. Paul
Metro WWTP



PROJECT TYPE:	Plant Improvements
OBJECTIVES:	Preservation
CUSTOMER LEVEL OF SERVICE:	Preserve Assets
SCOPE:	Maintenance staff will coordinate rehabilitation of seven compressor motors through specialty contracted services and install temperature and vibration monitoring for the motors.
PROJECT NEED:	The aeration compressors are critical to the continued performance of the aeration process and inspections by Maintenance staff indicate the compressor motors need to be replaced or rehabilitated to extend service life.

PROJECT SCHEDULE



FINANCIAL ANALYSIS

2022 Cash Flow \$1,700,000	Current ACP \$6,150,000	2022 – 2027 Cash Flow \$2,960,000	Total Project Cost \$6,150,000
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Program Family: 8089
Project # 808916

Metro WWTP Electrical Distribution Renewal Phase 3

Project Location:

Council District # 13

City of St. Paul

Metro WWTP



PROJECT TYPE:	Plant Improvements
OBJECTIVES:	Preservation, Expansion and Improvement
CUSTOMER LEVEL OF SERVICE:	Minimize Impacts, Meet Capacity Needs, and Preserve Assets
SCOPE:	Replace electrical distribution equipment (unit substations, switchgear, and motor control centers) with new equipment. Upgrade and expand the existing Main Substation Building to provide space for new equipment and to increase worker safety during maintenance.
PROJECT NEED:	Condition assessments determined that electrical equipment in the Main Substation Building and at various buildings throughout the plant are at or nearing the end of useful service life and need to be replaced.

PROJECT SCHEDULE



FINANCIAL ANALYSIS

2022 Cash Flow \$12,000,000	Current ACP \$59,500,000	2022 – 2027 Cash Flow \$57,800,000	Total Project Cost \$59,500,000
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Program Family: 8089
Project # 808920

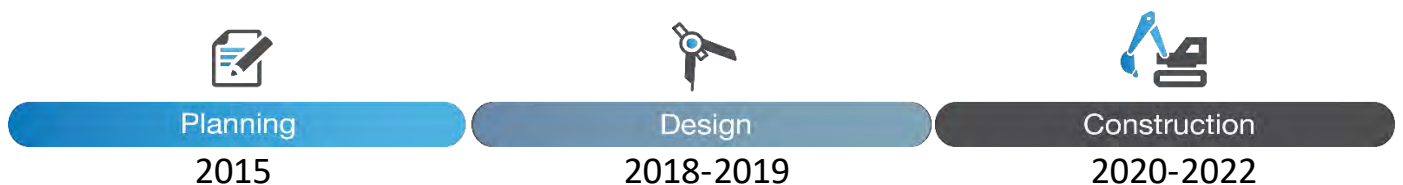
Metro WWTP Roof Replacements – Phase 1

Project Location:
Council District # 13
City of St. Paul
Metro WWTP



PROJECT TYPE:	Plant Improvements
OBJECTIVES:	Preservation
CUSTOMER LEVEL OF SERVICE:	Preserve Assets
SCOPE:	This project replaces eight roofs including East Secondary #2, West Secondary #3, Chlorine Pump & Blower and Tunnel Access Building.
PROJECT NEED:	Several building roofs are over 40 years old and in need of renewal.

PROJECT SCHEDULE



FINANCIAL ANALYSIS

2022 Cash Flow \$0	Current ACP \$2,840,000	2022 – 2027 Cash Flow \$0	Total Project Cost \$2,840,000
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Program Family: 8089
Project # 808921

MWWTP Primary Settling Tank Chain

Project Location:
Council District # 13
City of St. Paul
Metro WWTP



Primary Tank Sludge Collection Equipment

PROJECT TYPE:	Plant Improvements
OBJECTIVES:	Preservation
CUSTOMER LEVEL OF SERVICE:	Preserve Assets
SCOPE:	The project will remove and replace existing collection equipment in 5 Primary Settling Tanks and provide Maintenance with spare equipment for future replacements
PROJECT NEED:	The sludge collection equipment is critical to the continued performance of the primary process and inspections by Maintenance staff indicate the chain and flight systems need to be replaced or rehabilitated to extend service life.

PROJECT SCHEDULE



FINANCIAL ANALYSIS

2022 Cash Flow \$1,500,000	Current ACP \$3,620,000	2022 – 2027 Cash Flow \$2,000,000	Total Project Cost \$3,620,000
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Program Family: 8089
Project # 808922

Metro Effluent Pumps Rehabilitation

Project Location:
Council District # 13
City of Saint Paul
Metro WWTP



PROJECT TYPE:	Plant Improvements
OBJECTIVES:	Preservation and Expansion
CUSTOMER LEVEL OF SERVICE:	Preserve Assets
SCOPE:	Rehabilitate key components of the effluent pumps and/or motors.
PROJECT NEED:	These improvements benefit MCES by maximizing the effluent pumping capacity to minimize the potential for bypassing from the interceptor system upstream of the plant.

PROJECT SCHEDULE



Planning
2019-2020



Design
2021



Construction
2021-2022

FINANCIAL ANALYSIS

2022 Cash Flow \$700,000	Current ACP \$1,050,000	2022 – 2027 Cash Flow \$700,000	Total Project Cost \$1,050,000
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Program Family: 8089
Project # 808923

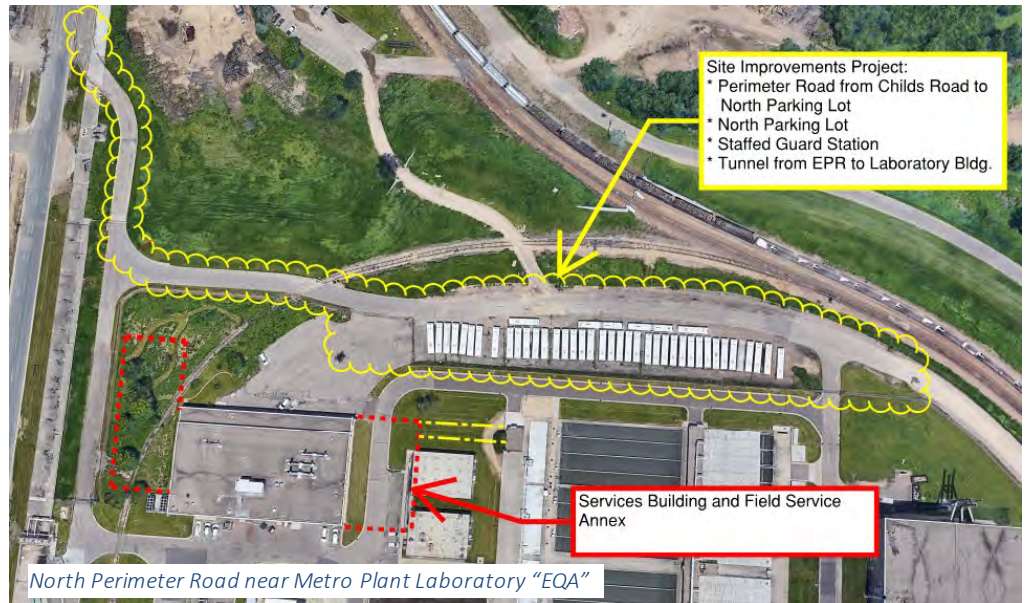
MWWTP Site Preparation & Improvements – Phase 2

Project Location:

Council District # 13

City of St. Paul

Metro WWTP



PROJECT TYPE:	Plant Improvements
OBJECTIVES:	Preservation
CUSTOMER LEVEL OF SERVICE:	Financial
SCOPE:	Construction of staffed guard station, tunnel access to the Services Building and road and parking lot rehabilitation
PROJECT NEED:	Road, tunnel, parking and security improvements are required for the new Services Building and Field Service Annex

PROJECT SCHEDULE



Planning
2015-2020



Design
2020-2021



Construction
2022-2024

FINANCIAL ANALYSIS

2022 Cash Flow \$1,500,000	Current ACP \$8,552,561	2022 – 2027 Cash Flow \$8,000,000	Total Project Cost \$8,552,561
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Program Family: 8089
Project # 808925

Metro PLC Renewal

Project Location:
Council District # 13
City of St. Paul
Metro WWTP



PROJECT TYPE:	Plant Improvements
OBJECTIVES:	Preservation
CUSTOMER LEVEL OF SERVICE:	Preserve Assets
SCOPE:	Replace out-of-date process control systems at the Metropolitan Wastewater Treatment Plant.
PROJECT NEED:	Key elements in the process control system for the Metropolitan Wastewater Treatment Plant are out-of-date and in need of replacement in order to continue to provide reliable treatment plant process control.

PROJECT SCHEDULE



Planning
2021-2022



Design
2022-2025



Construction
2022-2027

FINANCIAL ANALYSIS

2022 Cash Flow \$500,000	Current ACP \$2,000,000	2022 – 2027 Cash Flow \$5,500,000	Total Project Cost \$9,500,000
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Program Family: 8089
Project # 808930

Metro WWTP Secondary Renewal

Project Location:
Council District # 13
City of St. Paul
Metro WWTP



Diffusers at the Metro Plant's Secondary Treatment.

PROJECT TYPE:	Plant Improvements
OBJECTIVES:	Preservation
CUSTOMER LEVEL OF SERVICE:	Preserve Assets
SCOPE:	This project replaces the aeration tank diffusers, install aeration control upgrades, rehabilitate underdrain, and meter pits, install final settling tank backfill gates and air header leak assemblies.
PROJECT NEED:	The aeration system equipment was last replaced in the early 2000s and needs replacement. The new aeration equipment will result in significant energy savings due to improvements in air transfer efficiency.

PROJECT SCHEDULE



Planning
2019-2020



Design
2020-2021



Construction
2021-2025

FINANCIAL ANALYSIS

2022 Cash Flow \$10,000,000	Current ACP \$49,502,000	2022 – 2027 Cash Flow \$34,500,000	Total Project Cost \$49,502,000
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Program Family: 8089
Project # 808935

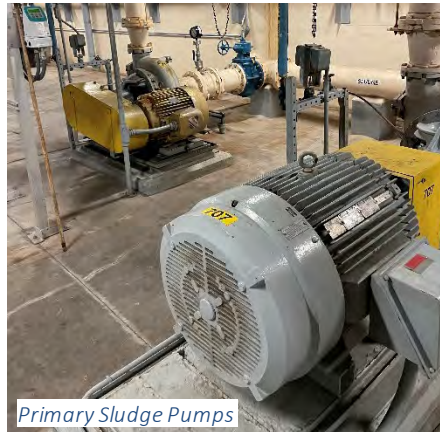
Metro WWTP Secondary and Primary Renewal

Project Location:

Council District # 13

City of St. Paul

Metro WWTP



Primary Sludge Pumps



Odor Control Fan

PROJECT TYPE:	Plant Improvements
OBJECTIVES:	Preservation
CUSTOMER LEVEL OF SERVICE:	Preserve Assets
SCOPE:	The following improvements are planned: East Secondary FST inlet gates, sluice gate replacements, Compressor system monitoring/diagnostic instrumentation, E-Valve gate actuator replacement, primary sludge pump replacement, and odor control improvements.
PROJECT NEED:	Primary and Secondary equipment is approaching 40 years old and needs replacement. The odor control systems for Pretreatment and Sludge Storage need to be rehabilitated to mitigate odors.

PROJECT SCHEDULE



Planning
2019-2020



Design
2021-2022



Construction
2022-2024

FINANCIAL ANALYSIS

2022 Cash Flow	Current ACP	2022 – 2027 Cash Flow	Total Project Cost
\$0	\$7,000,000	\$7,000,000	\$7,000,000

Program Family: 8089
Project # 8089XX

Metropolitan WWTP Primary Scum Improvements

Project Location:
Council District # 13
City of St. Paul
Metro WWTP



PROJECT TYPE:	Plant Improvements
OBJECTIVES:	Preservation
CUSTOMER LEVEL OF SERVICE:	Lead by example and Preserve Assets
SCOPE:	This project will install improvements for the processing of primary scum at the Metro WWTP.
PROJECT NEED:	Approximately 2.0 tons per day of scum is conveyed on a batch process from the primary clarifiers to the dumpsters at the Solids Management Building. There is a need to evaluate alternatives for the ultimate location for primary scum and to renew the Primary Scum process.

PROJECT SCHEDULE



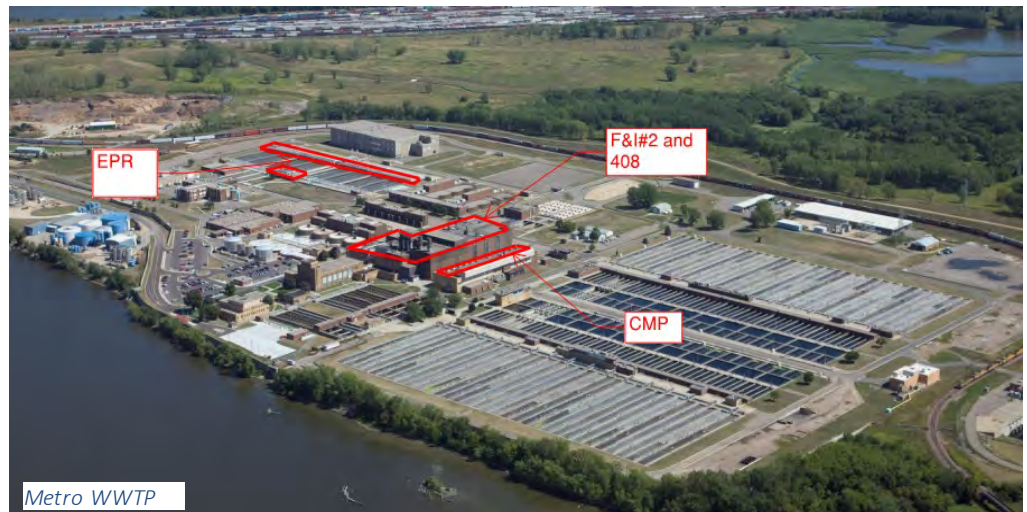
FINANCIAL ANALYSIS

2022 Cash Flow \$1,000,000	Current ACP \$1,500,000	2022 – 2027 Cash Flow \$1,000,000	Total Project Cost \$1,500,000
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Program Family: 8089
Project # 8089xx

Metro Roof Replacements

Project Location:
Council District # 13
City of Saint Paul
Metro WWTP



PROJECT TYPE:	Plant Improvements
OBJECTIVES:	Preservation
CUSTOMER LEVEL OF SERVICE:	Preserve Assets
SCOPE:	Replace the following roofs: FLT, EPR, MWH (low roof) and CMP above the compressor floor. Rehabilitate or repair roofs for decommissioned buildings 408, REL and F&I#2 to preserve building envelopes.
PROJECT NEED:	Condition assessment determined that several roofs are at or nearing the end of useful service life and need to be replaced.

PROJECT SCHEDULE



FINANCIAL ANALYSIS

2022 Cash Flow	Current ACP	2022 – 2027 Cash Flow	Total Project Cost
\$1,000,000	\$2,000,000	\$2,000,000	\$2,000,000

Program Family: 8089
Project # 8089XX

MWWTP HVAC Improvements – Phase 3

Project Location:
Council District # 13
City of St. Paul
Metro WWTP



PROJECT TYPE:	Plant Improvements
OBJECTIVES:	Preservation
CUSTOMER LEVEL OF SERVICE:	Preserve Assets
SCOPE:	This project replaces various HVAC equipment at West Secondary and the top floor computer room insulated to improve energy efficiency. Other HVAC equipment will be replaced based on the outcome from the condition assessment.
PROJECT NEED:	HVAC equipment near end-of-life needs to be rehabilitated or replaced based on condition assessment and business case evaluations

PROJECT SCHEDULE



FINANCIAL ANALYSIS

2022 Cash Flow	Current ACP	2022 – 2027 Cash Flow	Total Project Cost
\$0	\$3,000,000	\$3,000,000	\$3,000,000

Program Family: 8089
Project # 8089XX

Metro WWTP Electrical Distribution Renewal Phase 4

Project Location:

Council District # 13

City of St. Paul

Metro WWTP



Motor Control Center

PROJECT TYPE:	Plant Improvements
OBJECTIVES:	Preservation, Expansion and Improvement
CUSTOMER LEVEL OF SERVICE:	Minimize Impacts, Meet Capacity Needs, and Preserve Assets
SCOPE:	Replace electrical distribution equipment (unit substations, switchgear, and motor control centers) with new equipment.
PROJECT NEED:	Condition assessment determined that electrical equipment in various buildings throughout the plant are at or nearing the end of useful service life and need to be replaced.

PROJECT SCHEDULE



Planning

2012-2023



Design

2023-2024



Construction

2024-2027

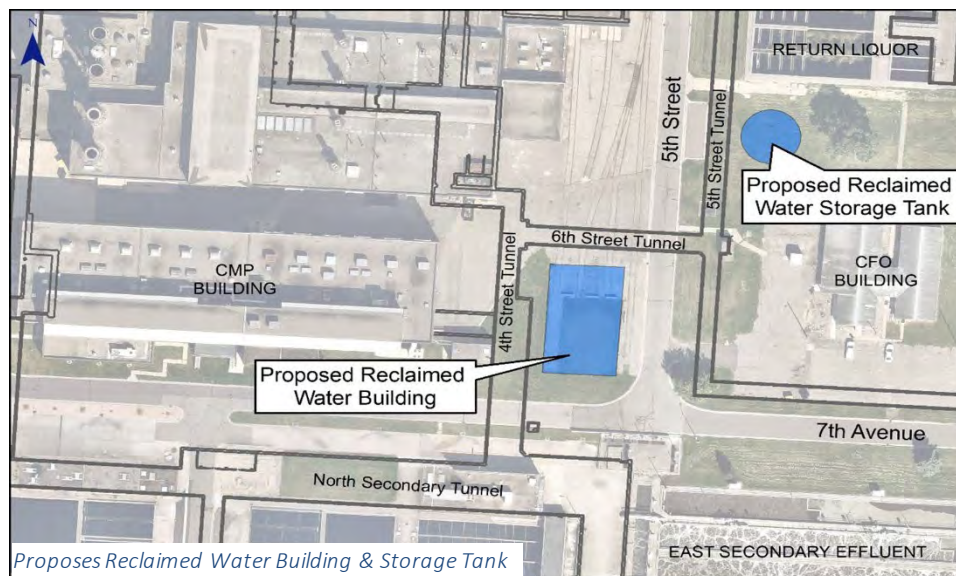
FINANCIAL ANALYSIS

2022 Cash Flow \$12,000,000	Current ACP \$59,500,000	2022 – 2027 Cash Flow \$57,800,000	Total Project Cost \$59,500,000
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Program Family: 8089
Project # 8089XX

MWWTP Water Systems Renewal & Improvements Phase 2 – Reclaimed Water

Project Location:
Council District # 13
City of Saint Paul
Metro WWTP



PROJECT TYPE:	Plant Improvements
OBJECTIVES:	Preservation and Expansion
CUSTOMER LEVEL OF SERVICE:	Preserve Assets
SCOPE:	This project constructs a new reclaimed water system to replace the water source for processes which are currently served by the Prairie du Chien aquifer through the plant service water system
PROJECT NEED:	There is a need to rehabilitate and repurpose the Metro Plant water systems and reduce use of the Prairie du Chien aquifer.

PROJECT SCHEDULE



Planning
2022-2023



Design
2023-2024



Construction
2025-2026

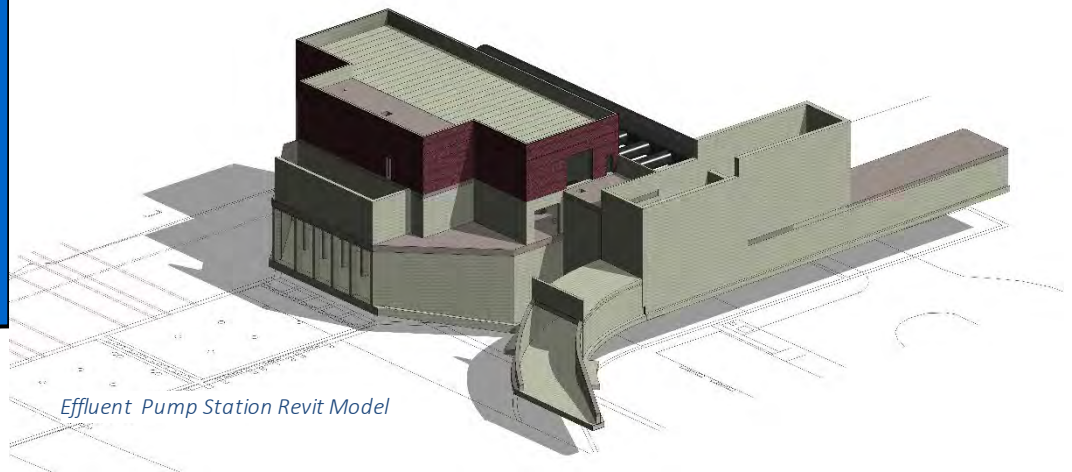
FINANCIAL ANALYSIS

2022 Cash Flow	Current ACP	2022 – 2027 Cash Flow	Total Project Cost
\$0	\$0	\$0	\$24,000,000

Program Family: 8089
Project # 8089XX

Metro Effluent Pump Station Rehabilitation

Project Location:
Council District # 13
City of Saint Paul
Metro WWTP



PROJECT TYPE:	Plant Improvements
OBJECTIVES:	Preservation and Expansion
CUSTOMER LEVEL OF SERVICE:	Preserve Assets
SCOPE:	This project enhances the effluent pumping reliability by providing a more robust facility to handle peak flows and during flooding and adverse weather conditions. These improvements include interior and exterior building improvements; replace switchgear, transformers, MCCs and other electrical equipment; replace HVAC equipment; inspect wet wells and replace gates
PROJECT NEED:	The pump station has experienced problems with pump service availability. There is a need to rehabilitate the station to increase system reliability for an additional 30-40-year service life.

PROJECT SCHEDULE



FINANCIAL ANALYSIS

2022 Cash Flow	Current ACP	2022 – 2027 Cash Flow	Total Project Cost
\$0	\$15,000,000	\$15,000,000	\$15,000,000

Program Family: 8089
Project # 8089XX

Metro Exterior Building Improvements

Project Location:

Council District # 13

City of St. Paul

Metro WWTP



Exterior Brick and Mortar Concerns



PROJECT TYPE:	Plant Improvements
OBJECTIVES:	Preservation
CUSTOMER LEVEL OF SERVICE:	Preserve Assets
SCOPE:	This project rehabilitates the exterior façade for several buildings based on condition assessment.
PROJECT NEED:	The building envelopes for several buildings are over 40 years old and in need of renewal.

PROJECT SCHEDULE



Planning
2022



Design
2022



Construction
2022-2024

FINANCIAL ANALYSIS

2022 Cash Flow \$0	Current ACP \$2,840,000	2022 – 2027 Cash Flow \$0	Total Project Cost \$2,840,000
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