**Program 8089 – Metro WWTP Asset Renewal**

**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 district: 13

**Active projects in program**

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**Environmental Services 2024 through 2029 Capital Program**
- Authorized Capital Program (ACP): $283,861,214
- Capital Improvement Plan (CIP): $119,900,000

**Estimated program cash flow from 2024 through 2029**
Note: the ACP is the total amount of all past and present authorizations including pre-2024 expenses.
Project location: Council district #13, City of Saint Paul, Metro WWTP

Project type
Plants

Objectives
Asset Preservation

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
- 2024 cash flow: $0
- Current ACP: $3,603,000
- 2024 through 2029 cash flow: $0
- Total project cost: $3,603,000
Metro WWTP Electrical Distribution Renewal - Phase 3
Program family 8089

Project location: Council district #13, City of Saint Paul, Metro WWTP

Project type
Plants

Objectives
Asset Preservation, System Expansion, and Quality Improvements

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:

- Planning: 2010 through 2015
- Design: 2018 through 2021
- Construction: 2022 through 2026

Financial analysis
- 2024 cash flow: $12,000,000
- Current ACP: $60,934,000
- 2024 through 2029 cash flow: $34,800,000
- Total project cost: $60,934,000
Metro WWTP Secondary Conduit and Conductor Replacement
Program family 8089

Project location: Council district #13, City of Saint Paul, Metro WWTP

Electrical Conduit for Secondary Collector Motors

**Project type**
Plants

**Objectives**
Asset Preservation

**Scope**
The project replaces electrical conduit and conductors for secondary collector motors.

**Project need**
The east and west secondary collector motor conduits and conductors were installed over 40 years ago. Work on the collectors is a safety hazard for personnel.

**Project schedule:**
- Planning: 2010 through 2015
- Design: 2023
- Construction: 2023 through 2025

**Financial analysis**
- 2024 cash flow: $1,200,000
- Current ACP: $3,208,000
- 2024 through 2029 cash flow: $2,200,000
- Total project cost: $3,200,000
Metro WWTP Flood Control Improvements
Program family 8089
Project #808918

Project location: Council district #13, City of Saint Paul, Metro WWTP

Flood control measure location at the Metro WWTP at Pig’s Eye Lake Road and 5th Avenue

**Project type**
Plants

**Objectives**
Asset Preservation

**Scope**
Increase the road elevation or install stop logs at the intersection of Pig’s Eye Lake Road and 5th Avenue to the existing levee height.

**Project need**
There is a need to install flood control measure in the event of a 500-year flood.

**Project schedule:**

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<th>Design: 2023 through 2024</th>
<th>Construction: 2025 through 2026</th>
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**Financial analysis**

- 2024 cash flow: $500,000
- Current ACP: $1,138,000
- 2024 through 2029 cash flow: $1,100,000
- Total project cost: $1,100,000
Project location: Council district #13, City of Saint Paul, Metro WWTP

Project type
Plants

Objectives
Asset Preservation

Scope
This project rehabilitates, removes portions of buildings, or demolishes the 408 and F&I#2 buildings based on condition assessments and a business case evaluation.

Project need
The 408 and F&I#2 buildings are over 45 years old and in need of renewal or demolition.

Project schedule:
- Planning: 2010 through 2015
- Design: 2022 through 2023
- Construction: 2024 through 2026

Financial analysis
- 2024 cash flow: $4,000,000
- Current ACP: $15,000,000
- 2024 through 2029 cash flow: $15,000,000
- Total project cost: $15,000,000
Metro WWTP Site Preparation & Improvements – Phase 2
Program family 8089

Project location: Council district #13, City of Saint Paul, Metro WWTP

Construction of the new tunnel from EPR to Services Building

Project type
Plants

Objectives
Asset Preservation, Quality Improvements

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:


Financial analysis

- 2024 cash flow: $3,000,000
- Current ACP: $7,595,100
- 2024 through 2029 cash flow: $5,500,000
- Total project cost: $7,595,100
Metro WWTP PLC Renewal
Program family 8089

Project location: Council district #13, City of Saint Paul, Metro WWTP

Typical PLC (Programmable Logic Controller)

Project type
Plants

Objectives
Asset Preservation

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 to continue to provide reliable treatment plant process control.

Project schedule:
- Planning: 2010 through 2015
- Design: 2023 through 2027
- Construction: 2024 through 2028

Financial analysis
- 2024 cash flow: $1,000,000
- Current ACP: $2,556,000
- 2024 through 2029 cash flow: $2,500,000
- Total project cost: $6,056,000
Metro WWTP Steam System Improvements & Turbine Rehabilitation
Program family 8089

Project location: Council district #13, City of Saint Paul, Metro WWTP

Metro Plant staff performing maintenance on the G7 steam turbine generator.

Project type
Plants

Objectives
Asset Preservation

Scope
This project will rehabilitate the existing steam turbine generator and make improvements to boiler feedwater chemistry, instrumentation and controls, moisture mitigation, steam traps, and structural modifications to get an additional 7 to 10 years out of the existing G7 steam turbine generator.

Project need
Rehabilitation and improvements to the G7 steam turbine generator system is needed since G7 can save the Metro Plant roughly $1,000,000 per year in purchased electricity.

Project schedule:

- Design: 2023 through 2024
- Construction: 2024 through 2025

Financial analysis
- 2024 cash flow: $2,000,000
- Current ACP: $10,000,000
- 2024 through 2029 cash flow: $10,000,000
- Total project cost: $10,000,000
Metro WWTP Effluent Pump Station Rehabilitation
Program family 8089

Project #808928

Project location: Council district #13, City of Saint Paul, Metro WWTP

Project type
Plants

Objectives
Asset Preservation

Scope
This project enhances the effluent pumping reliability by providing a more robust facility to handle peak flows during flood conditions. These improvements include upgrades to address pump vibration issue; interior and exterior building improvements; structural repairs; replacement of switchgear, transformers, MCCs and other electrical equipment; replacement of PLC, HVAC equipment, and sluice gates; demolition of unused structures and decommissioned processes.

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 to 40 years of service life.

Project schedule:

- Planning: 2010 through 2015
- Design: 2021 through 2024
- Construction: 2025 through 2027

Financial analysis
- 2024 cash flow: $3,221,000
- Current ACP: $21,474,000
- 2024 through 2029 cash flow: $21,474,000
- Total project cost: $21,474,000
Metro WWTP Solids Control Room Improvements
Program family 8089

Project #808929

Project location: Council district #13, City of Saint Paul, Metro WWTP


**Project type**

Plants

**Objectives**

Quality Improvements

**Scope**

This project replaces the solids management building existing control room, conference room, and sludge storage operator control area. The project also includes ergonomic improvements to the centrifuge operator control area, ash loadout operator control area, business unit coordinator’s office, and other offices in the Solids Management Building.

**Project need**

The Metro Plant solids control room, conference room, offices, and operator control areas are nearing 20 years old and in need of ergonomic, performance monitoring, and work environment improvements.

**Project schedule:**

Design: 2023 through 2024

Construction: 2024

**Financial analysis**

2024 cash flow: $300,000

Current ACP: $1,600,000

2024 through 2029 cash flow: $1,600,000

Total project cost: $1,600,000
Project location: Council district #13, City of Saint Paul, Metro WWTP

**Project type**
Plants

**Objectives**
Asset Preservation

**Scope**
This project replaces the aeration tank diffusers, installs aeration control upgrades, rehabilitates underdrains and meter pits, and installs 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: 2010 through 2015
- Design: 2020 through 2021
- Construction: 2021 through 2025

**Financial analysis**
- 2024 cash flow: $10,000,000
- Current ACP: $41,387,000
- 2024 through 2029 cash flow: $14,500,000
- Total project cost: $41,387,000
Project type  
Plants

Objectives  
Asset Preservation

Scope  
The following improvements are planned: East Pretreatment Improvements and building expansion, sluice gate replacements, road improvements, East Primary and Compressor building and equipment improvements, and PLC replacements.

Project need  
Primary and Secondary equipment and infrastructure is approaching 40 years old and needs replacement. Condition assessment determined that roofs and roads are at or nearing the end of useful service life and need to be replaced.

Project schedule:

| Planning: 2010 through 2015 | Design: 2021 through 2024 | Construction: 2025 through 2028 |

Financial analysis:

- 2024 cash flow: $4,000,000
- Current ACP: $32,051,000
- 2024 through 2029 cash flow: $32,000,000
- Total project cost: $32,051,000
Project location: Council district #13, City of Saint Paul, Metro WWTP

Left: Deteriorated service water piping to be renewed/replaced. Center: Aeration tank spray water piping to be repurposed. Right: Abandoned/obsolete process piping to be removed.

**Project type**
Plants

**Objectives**
Asset Preservation

**Scope**
The project replaces the service water piping network throughout the plant with a new piping network in preparation for a future reclaimed water system.

**Project need**
Rehabilitate and repurpose the Metro Plant water systems and reduce withdrawal of water from the Prairie du Chien aquifer.

**Project schedule:**
- Planning: 2006 through 2008
- Design: 2020 through 2023
- Construction: 2024 through 2027

**Financial analysis**
- 2024 cash flow: $7,500,000
- Current ACP: $49,000,000
- 2024 through 2029 cash flow: $48,000,000
- Total project cost: $49,000,000
Project location: Council district #13, City of Saint Paul, Metro WWTP

**Project type**
Plants

**Objectives**
Asset Preservation, System Expansion, and Quality Improvements

**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: 2010 through 2015
- Design: 2023 through 2024
- Construction: 2024 through 2027

**Financial analysis**
- 2024 cash flow: $0
- Current ACP: $0
- 2024 through 2029 cash flow: $20,000,000
- Total project cost: $20,000,000
Project location: Council district #13, City of Saint Paul, Metro WWTP

**Project type**
Plants

**Objectives**
Asset Preservation

**Scope**
The following improvements are planned: odor control improvements at East Pretreatment and Sludge Storage.

**Project need**
The odor control systems for pretreatment and sludge storage need to be rehabilitated to mitigate odors.

**Project schedule:**

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<th>Design: 2026</th>
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**Financial analysis**
- 2024 cash flow: $0
- Current ACP: $0
- 2024 through 2029 cash flow: $5,000,000
- Total project cost: $5,000,000
Metro WWTP Water Systems Renewal and Improvements - Phase 2: City Water
Program family 8089

Project location: Council district #13, City of Saint Paul, Metro WWTP

Project type
Plants

Objectives
Asset Preservation

Scope
This project replaces the city water piping network throughout the plant with a new piping network.

Project need
Rehabilitate the Metro water system that was installed beginning in the 1930s.

Project schedule:


Financial analysis

| 2024 cash flow: | $0 |
| Current ACP: | $1,000,000 |
| 2024 through 2029 cash flow: | $11,000,000 |
| Total project cost: | $21,000,000 |
Project location: Council district #13, City of Saint Paul, Metro WWTP

**Project type**
Plants

**Objectives**
Asset Preservation, System Expansion

**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 system and reduce use of the Prairie du Chien aquifer.

**Project schedule:**

| Planning: 2006 through 2008 | Design: 2027 through 2028 | Construction: Starts in 2029 |

**Financial analysis**
- 2024 cash flow: $0
- Current ACP: $0
- 2024 through 2029 cash flow: $5,000,000
- Total project cost: $25,000,000
Metro WWTP Underdrain & Meter Pit Rehabilitation
Program family 8089

Project location: Council district #13, City of Saint Paul, Metro WWTP

This project rehabilitates the underdrain and meter pits in East and West Secondary.

Condition assessment determined the underdrain and meter pits need to be rehabilitated.

Plants

Scope

Project need

Financial analysis

2024 cash flow: $0
Current ACP: $0
2024 through 2029 cash flow: $10,000,000
Total project cost: $10,000,000

Planning: 2010 through 2015
Design: 2026
Construction: 2027 through 2028

Typical underdrain pit to be rehabilitated.