2 Wastewater System Plan

The Wastewater System Plan fulfills the Met Council's statutory responsibility to provide information on policies for providing wastewater service and the capital budget for wastewater service (Minn. Stat. § 473.852, subdivision 8). We do more than treat wastewater; our services also recover water, energy, and nutrient resources. Our efforts and operations have shifted from one-time use of water to pursuing and promoting resource recovery and reuse to support our growing and changing region. ~~Therefore, our~~Our wastewater treatment plants have been renamed water resource recovery facilities to showcase these efforts.

The Wastewater System Plan provides an overview of existing facilities in the region, upcoming capital projects and associated budgets, long-term projections of service needs, and goals to protect our region's valuable resources. It also addresses future anticipated challenges and actions.

The Met Council's Environmental Services division partners, plans, and provides a variety of environmental services in the seven-county metropolitan area, including wastewater planning, conveyance, treatment, and resource recovery. A portion of our region uses wastewater treatment services through our collection and resource recovery system known as the Metropolitan Disposal System. The remaining areas depend on local municipal systems, private communal systems, or individual subsurface sewage treatment systems for service. The planning authority of the Met Council is described in Minnesota statutes and includes our wastewater collection and treatment planning and actions. We are authorized to set and adopt rules necessary to treat wastewater to federal standards.

Existing Facilities

Regional wastewater conveyance and water resource recovery system

The Met Council provides wastewater collection, treatment, and resource recovery services to nearly 3 million people in 111 communities, which represents about 95% of the seven-county metro region's population. The regional wastewater system includes nine water resource recovery facilities (formerly referred to as wastewater treatment plants), more than 60 lift stations and 640 miles of regional interceptors that convey flow from over 10,000 miles of local sewers.

The system collects and treats approximately 240 million gallons per day of wastewater at nine facilities (**Table 2.1**) from homes and businesses. The long-term service area map (Appendix B) shows the location of all regional interceptor sewers and water resource recovery facilities in the metro area as well as the 2050 and long-term (post-2050) wastewater service areas.

Communities pay for wastewater collection and treatment based on wastewater volume. Volume is measured by approximately 230 flow metering stations across the communities that use regional wastewater conveyance and treatment services. The flow meters are regularly calibrated and maintained to provide accurate measurements of wastewater flow rates and volumes from each community.

The Met Council works with approximately 900 industrial customers to properly dispose of their wastewater. Our Industrial Waste ~~division~~business unit monitors and regulates industrial discharge to the sewer system to ensure compliance with local, state, and federal regulations, and responds to sewer-related spills and community sewer problems. We also operate liquid and vactor (sanitary sewer debris collected by vacuum truck) waste receiving sites, where waste from private subsurface sewage treatment systems, community and/or cluster systems, biosolids from municipal wastewater plants, sand and grit from sewer cleaning activities, leachate from landfills, and other hauled industrial

wastewater may be disposed. Waste haulers pay for the cost of service through wastewater fees established by the Met Council.

Through the planning and hard work of Environmental Services staff and local communities, we consistently meet the National Pollutant Discharge Elimination System (NPDES) Permit requirements for wastewater treatment. ~~We strive~~Everyday, through intentional planning and operations, we provide efficient and effective wastewater treatment to ensure sustainable water resources for the region ~~through our intentional planning and operations~~.

~~Table 2.1: Regional water resource recovery facilities~~

Facility	Avg. Design Flow (mgd)	Current Flow (mgd)	Location	Receiving Water	Liquid Treatment	Solids Processing
Blue Lake	32	26	Shakopee	Minnesota River	NH3, P	AD, Drying, Land, Energy
Eagles Point	10	5.2	Cottage Grove	Mississippi River	NH3, P	To Metro, Energy
East Bethel	0.1	0.05	East Bethel	Ground Water	TN, P	To Metro
Empire	24	11	Empire	Mississippi River	NH3, P	AD, Land, Energy
Hastings	2.3	1.5	Hastings	Mississippi River	NH3, P	To Metro
Metropolitan	251	176	St. Paul	Mississippi River	NH3, P	Incineration, Energy
Rogers	1.6	0.9	Rogers	Crow River	NH3, P	Stabilization pond, Land
Saint Croix Valley	4.5	3.1	Oak Park Heights	St. Croix River	NH3, P	To Metro
Seneca	34	21	Eagan	Minnesota River	NH3, P	Incineration
Total	**360**	**240**	--	--	--	--
***Planned Water Resource Recovery Facilities**						
Crow River	3	N/A	Rogers	Crow River	TBD	To Metro
Hastings	2.6	N/A	Hastings	TBD	TBD	To Metro

~~Notes:~~

~~NH_3 = ammonia removal~~

~~P = phosphorus removal~~

~~TN = total nitrogen removal~~

~~AD = anaerobic digestion~~

~~Land = application to agricultural land (nutrient recovery)~~

~~Energy = energy recovery~~

~~* Initial phase capacity~~

NH_3 = ammonia removal; P = phosphorus removal; TN = total nitrogen removal; AD = anaerobic digestion; Land = application to agricultural land (nutrient recovery); Energy = energy recovery

* Initial phase capacity

Table 2.1: Regional water resource recovery facilities

The Crow River Water Resource Recovery Facility will replace the existing Rogers Water Resource Recovery Facility. ~~Environmental Services had identified the need to acquire the Rogers Wastewater Treatment Plant to provide the committed level of service to the region.~~ The City of Rogers initiated the acquisition process of the Rogers Wastewater Treatment Plant with a request for regional service. The Rogers facility will be decommissioned after the start-up of the Crow River facility, scheduled for 2030. After decommissioning of the Rogers facility, any portion of the site property not necessary to provide service per the Met Council's Wastewater System Plan will be reconveyed to the community.

The City of Hastings has identified short- and long-term service level needs that will require regional capacity investments. ~~Once the current Hastings facility is nearing capacity and unable to accommodate the upcoming growth, the~~ Met Council, in coordination with the City, will ~~provide new capacity~~time improvements to accommodate growth and/or maintain the plant's compliance with regulatory requirements.

Non-Council wastewater treatment plants

Fourteen municipalities in the metro region own and operate wastewater treatment plants (**Table 2.2**). Any Met Council acquisition of a rural wastewater treatment plant would comply with the Regional Wastewater Service Area Policy in the Water Policy Plan and would be funded through rural sewer availability charges (SAC) as described in the SAC Procedure Manual. Current rural wastewater treatment plants being considered for acquisition are as follows:

1. **New Germany:** The Met Council and the City entered into a wastewater treatment plant acquisition agreement in 2010 that was amended in 2015. The amended agreement outlines the conditions for the Met Council's acquisition of the City's wastewater treatment plant. For the acquisition process to commence, the City will need to provide a written request to convey ownership to the Met Council no later than Dec. 31, 2030. After that date, the Met Council has the option to reconsider acquisition of the facility and extend the notice period to Dec. 31, 2040. The City has expressed its desire to maintain its own wastewater service and has pursued state funding for the necessary capital improvements to address future capacity and regulatory needs. The City has not officially requested the acquisition of its wastewater treatment plant.

~~Table 2.2: Municipal wastewater treatment plants in the metropolitan area~~

City or Township	Design capacity[1] mgd average (wet weather)	Design capacity[1] mgd average (dry weather)	Receiving water	Permitted effluent limits[2]
Afton	0.051	N/A	Groundwater	BOD, TSS, NH3
Belle Plaine	0.840	0.400	Minnesota River	BOD, FC, pH, TP, TSS
Bethel	0.038	0.031	Groundwater	BOD, TSS
Cologne	0.325	0.185	Ditch to Lake Benton	BOD, Cl-, FC, pH, TP, TSS
Greenfield	0.200	0.150	Crow River	BOD, FC, pH, TP, TSS
Hamburg	0.063	N/A	Ditch to Bevens Creek (to Minnesota River)	TP, BOD, TSS
Hampton	0.101	N/A	Ditch to South Branch Vermillion River	BOD, FC, pH, TP, TSS
Jordan	1.289	0.580	Sand Creek (to Minnesota River)	BOD, NH3, TP, TSS, Cl-
Mayer	0.435	0.320	South Fork Crow River	BOD, FC, Hg, NH3, DO, TP, TSS
New Germany	0.520	N/A	Ditch to South Fork Crow River	BOD, FC, pH, TP, TSS
Norwood Young America	0.908	0.517	Ditch to Bevens Creek (to Minnesota River)	TP, Cl-, BOD, TSS
St. Francis	0.814	0.647	Seelye Brook	BOD, Cl-, TRC, FC, Hg, NH3, pH, DO, TP, TSS. Reuse: E. Coli, Turbidity
Vermillion	0.054	N/A	Ditch to Vermillion River	BOD, TRC, FC, DO, pH, TP, TSS
Watertown	1.262	0.362	Crow River, South Fork Crow River	BOD, Cl-, TRC, FC, NH3, pH, TP, TSS

[1]Flow as stated in NPDES Permits

~~[2]Effluent~~[2]NPDES Effluent Limits:

- BOD = Biochemical Oxygen Demand; NH3 = Ammonia; TP = Total Phosphorus; TSS = Total Suspended Solids; FC = Fecal Coliform; Hg = Mercury; DO = Dissolved Oxygen

~~CL~~; Cl- = Chloride; TRC = Total Residual Chlorine

Table 2.2: Municipal wastewater treatment plants in the metropolitan area

Wastewater flow projections

Sewered population and employment forecasts, and the associated average wastewater flow projections, are shown in **Table 2.3** and **Table 2.4** by water resource recovery facility service area (forecasts and projections by community are found in **Tables 6.~~1~~1a-h** and **Table 6.2** in Appendix E. Those forecasts are based on wastewater generation rates of 60 gallons per day (gpd) per person and 15 gpd per employee. These generation rates are lower than the actual measured flow to reflect the use and implementation of water conservation efforts, water efficient fixtures and appliances, and inflow and infiltration mitigation. Current actual average daily flow, calculated from the region's metered wastewater flow, is approximately 70 gallons per capita per day.

Sanitary sewers are designed to handle daily and seasonal variations in wastewater flow. Flow variation factor tables are used to design sewers to accommodate those daily variations and allow for a reasonable volume of flow. **Table 6.3** in Appendix F contains flow variation factors for sanitary sewers (local and regional) that have been designed for an average residential, commercial, and industrial flow of 100 gallons per person per day.

Table 6.4 in Appendix F contains peaking factors used for inflow and infiltration design. These factors are adjusted from the flow variation factors in Table 6.3 in response to lower regional flow. Lower flow means the system has more capacity than it was originally designed for. The adjusted factors allow for greater capacity to be given for inflow and infiltration from communities. The Met Council may revisit those peaking factors as regional flow changes.

~~**Table 2.3: Sewered population and employment forecasts (thousands)**~~

Water Resource Recovery Facility	2020 ~~Pop.~~Population	2050 ~~Pop.~~Population	2020 ~~Emp.~~Employment	2050 ~~Emp.~~Employment
Blue Lake	~~320,220~~319,300	~~437,160~~443,710	177,~~050~~410	~~243,740~~251,630
Crow River / Rogers	~~11,000~~10,700	39,~~400~~600	9,300	22,~~450~~650
Eagles Point	~~82,800~~85,000	~~110,300~~118,500	16,~~660~~290	~~27,940~~28,900
East Bethel	~~300~~580	~~4,100~~3,200	~~1,300~~140	2,~~600~~000
Empire	169,~~200~~400	~~220,800~~218,200	~~39,610~~38,850	~~68,570~~69,410
Hastings	22,100	~~27,600~~26,400	~~7,000~~6,900	~~9,500~~8,900
Metropolitan	~~2,003,760~~1,999,700	2,~~380,480~~345,730	1,~~077,850~~070,670	1,~~375,680~~369,090
Saint Croix Valley	27,100	~~33~~31,700	16,600	22,900
Seneca	~~266,340~~267,580	~~319,000~~318,300	166,~~830~~680	~~230,670~~228,960
Total	**2,~~902,820~~901,460**	**3,~~572,540~~545,340**	**1,~~512,200~~502,840**	**2,004,~~050~~440**

~~**Table 2.3**~~ **Sewered population and employment forecasts**

Water Resource Recovery Facility	2020 Flow (mgd)	2030 Flow (mgd)	2040 Flow (mgd)	2050 Flow (mgd)
Blue Lake	26	29.72	31.54	34.32
Crow River / Rogers	0 / 0.9	1.18 / 0	1.39 / 0	2.82 / 0
Eagles Point	5.2	6.30	6.74	7.48
East Bethel	0.05	0.12	0.17	0.23
Empire	11	12.67	13.42	14.59
Hastings	1.5	1.61	1.68	1.80
Metropolitan	176	180.62	184.26	188.97
Saint Croix Valley	3.1	3.20	3.28	3.39
Seneca	21	22.52	23.19	24.51
Total	**245**	**257.94**	**265.67**	**278.11**

Table 2.4: Water Resource Recovery Facility flow projections (million gallons per day)

~~Water Resource Recovery Facility~~	~~2020~~	~~2030~~	~~2040~~	~~2050~~
~~Blue Lake~~	~~26~~	~~28.90~~	~~30.85~~	~~33.81~~
~~Crow River / Rogers~~	~~0 / 0.9~~	~~1.10 / 0~~	~~2.17 / 0~~	~~2.79 / 0~~
~~Eagles Point~~	~~5.2~~	~~5.73~~	~~6.19~~	~~7.10~~
~~East Bethel~~	~~0.05~~	~~0.15~~	~~0.22~~	~~0.29~~
~~Empire~~	~~11~~	~~12.45~~	~~13.30~~	~~14.74~~
~~Hastings~~	~~1.5~~	~~1.72~~	~~1.79~~	~~1.88~~
~~Metropolitan~~	~~176~~	~~182.85~~	~~185.97~~	~~190.85~~
~~Saint Croix Valley~~	~~3.1~~	~~3.32~~	~~3.47~~	~~3.51~~
~~Seneca~~	~~21~~	~~22.48~~	~~23.29~~	~~24.65~~
~~Total~~	~~245~~	~~258.70~~	~~267.24~~	~~279.61~~

Long-term wastewater service

Concept plan

The Wastewater System Plan is the 20-year and post-20-year vision for how, where, and when regional wastewater service will be provided. Local comprehensive sewer plans, created by the communities ~~we serve~~the Met Council serves, are reviewed for conformance with the regional Wastewater System Plan, consistency with Met Council policies, and compatibility with neighboring communities' comprehensive plans. Per statute, the Wastewater System Plan is required to identify the major wastewater system investments needed to accommodate the forecasted growth in the region and the costs associated with the necessary capital improvements to provide service as planned.

The Met Council develops a long-term wastewater service area map (Appendix B), which is illustrative of areas that could be served by our water resource recovery facilities (existing and future), based on known regulatory requirements and treatment technologies. Areas are defined based on the:

- Capacity of each water resource recovery site.
- Capacity of existing interceptors.
- Potential surface area that could be served by the facility, including those areas currently served.
- Potential new water resource recovery facilities and service area revisions.
- Wastewater generation rates based on location, proximity to transit and major highways, and physical features of area.

The area effectively available for future development excludes major parks, cemeteries, lakes, rivers, wetlands, and transportation uses (railroad, right of ways, highways, roads, etc.).

~~The Met Council will expand~~The Metropolitan Urban Service Area (MUSA) is a means to differentiate between urban and rural land to deliver efficient regional services, including wastewater service. It represents the areas that already have regional wastewater service or are planned to receive service within the planning horizon. The Met Council monitors available land and density of development while working with communities to refine those areas to accommodate regional and local growth projections. The MUSA boundary is modified as necessary to include areas that will receive regional service, that weren't originally included in a community's planned growth.

The Met Council expands the regional wastewater system as needed to facilitate development in communities consistent with their approved comprehensive sewer plans. Communities must address the staging of sewered development within their boundaries through 2050 as well as protection, through land-use guiding, of the remaining long-term service areas for future sewered development in their local comprehensive sewer plans, surface water management plans, and water supply plans.

Integrated water planning is necessary to support a growing region as regional growth needs both water supply and wastewater treatment. The long-term service area map assumes that water supply is adequate to provide service for growth. The Met Council's Metro Area Water Supply Plan is another tool for communities when considering long term planning. It is included in the Water Policy Plan and identifies water supply considerations unique to each sub-region of the seven-county metro region. It identifies specific topics and projects that are of importance for each of the sub-regions that will be useful in long-term planning. Communities are required to consider water supply in their local Water Supply Plans when planning for future growth and development and requests for wastewater service. The consideration of water supply with wastewater service growth is critical for integrated planning as the needs of each community and sub-region vary.

The Met Council will make decisions for system growth and service improvements based on whether they provide a regional benefit to the system. From the wastewater perspective, an action or decision is a regional benefit if it supports regional growth, is a benefit to more than one community, is cost effective, and enhances knowledge and experience that can be used to further our mission and goals.

Providing long-term service to the region is not only system expansion but also includes work to maintain capacity. Rehabilitation and maintenance of existing assets are ways to maintain capacity, which is done through an asset condition assessment program. The asset condition is assessed while considering risks and consequences of no action. Projects are prioritized based on their potential to impact public health or impact the level of service if the maintenance or rehabilitation were delayed. Those areas with the highest ratings are ~~added to~~included in our Capital Program for project work. The

assessment cycle and process ensure the assets needing the quickest attention are addressed, which results in an ever-evolving list of projects.

Another component of providing long-term service is understanding the current and future capacity of the interceptor conveyance system. We do capacity analyses ad-hoc as project needs arise, but we also improve and apply hydraulic models and other planning tools to systematically assess capacity throughout the system.

Capital Program

The Capital Program provides capital investments to preserve and rehabilitate existing wastewater infrastructure, meet more stringent water and air quality regulations, and expand the system capacity to meet regional growth needs. The Capital Program consists of two components:

- Authorized Capital Program
- Capital Improvement Plan

The Authorized Capital Program provides multi-year authorization to spend on program costs where funding has been secured and the Met Council has given final approval to proceed. The Capital Improvement Plan is a six-year capital investment plan, without final approval to proceed. It identifies programs and projects that preserve assets, provide capacity for growth, or improve the safety, efficiency, or quality of existing services. The plan is guided by the 2050 Water Policy Plan, the Wastewater System Plan, and the ~~Metropolitan Council~~ Environmental Services Customer Level of Service (Appendix C), which sets expectations for organizational performance, communication, project coordination, and economic outcomes.

The three objectives of the Capital ~~Improvement Plan~~Program are:

- **Asset Preservation:** Preserve the existing regional wastewater infrastructure investments through rehabilitation and replacements.
- **System Expansion:** Expand the system capacity through water resource recovery facility and interceptor expansions and interceptor extensions to meet the needs of a growing region.
- **Quality Improvements:** Improve the quality of service by responding to more stringent regulations, improving safety, pursuing wastewater reuse and evaluating opportunities for internal and external reuse, increasing system reliability, and conserving and generating energy.

Table 2.5 presents a general description of projected capital improvement needs for the water resource recovery facilities and interceptor system for 2025 – 2050. **Table 2.6** presents the estimated present value of the regional wastewater system.

A large component of the Capital Program focuses on preserving ~~the~~our valuable regional wastewater assets. In the next planning cycle, the focus will likely shift to a higher investment in system expansion, as new water resource recovery facilities and interceptors are constructed.

The average projected capital investment by type of infrastructure is approximately 75% interceptors and 25% water resource recovery facilities through the 2050 planning cycle. Investment by objective is approximately 60% for asset preservation, 20% for system expansion, and 20% for quality improvement. These costs exclude costs associated with potential future regulatory requirements.

Capital improvements for the regional wastewater system are primarily financed by Met Council wastewater bonds and Minnesota Public Facilities Authority loans. Bonds and loans are repaid using municipal wastewater and service availability charges (MWC and SAC).

Water Resource Recovery Facilities Project Name	Purpose	2024-2030	2031-2040	2041-2050
Metropolitan Rehabilitation & Facilities Improvements	R	45	--	--
St. Paul Interceptor Rehabilitation Metropolitan Solids Improvements	R R, G	30 235	80 --	-- --
Empire Facility Rehabilitation	R	--	90	--
Interceptor Rehabilitation Regional Facility Improvements	R R, G, Q	120 75	310 100	100
Joint Interceptor Rehabilitation Metropolitan Facility Asset Renewal	R R	130 330	210 250	460 200
Brooklyn Park – Champlin Interceptor Renewal Wastewater Reclamation Facilities	R R, G, Q	1 15	-- 15	-- 15
Hanlins System Improvements Blue Lake Facility Improvements	R R, G, Q	2 180	-- 155	-- 130
Lift Station Improvements Seneca Facility Rehabilitation	R R	180 --	400 30	55
Meter Improvements Future Hastings Facility	R G	90 --	220 160	340 --
St. Bonifacius Lift Station and Forcemain Rehabilitation Future Crow River Facility	R G	10 105	-- --	-- --
Future Northeast Facility	G	--	--	300
Sub totalTotal Brooklyn Park Lift Station 32	R	985 150	800 --	800 --
Total		**2,398**	**3,830**	**5,080**
Sub Total		**1,413**	**3,030**	**4,280**

Capital Improvement Program ($ millions)

Interceptor System

Table 2.5: Long-Term

Inserted Cells

Inserted Cells

Inserted Cells

Inserted Cells

G = Growth; Q = Quality Improvement; R = Rehabilitation/Replacement

~~Table 2.6: Estimated present value of regional wastewater system~~

Table 2.5: Long-Term Capital Improvement Program (millions of dollars)

Facility Component	Quantity	Estimated Present Value ($ Millions)*
Wastewater Pipes	648 miles	4,600
Joint Interceptor	10 miles	600
Lift Stations	60	400
Meter Stations	230	100
Metropolitan Facility	1	1,800
Regional Facilities	8	1,700
Total System		**9,200**

*2024 (March) ENR Construction Cost Index = 13,532

Table 2.6: Estimated present value of regional wastewater system

Long-term service considerations of existing water resource recovery facilities

Blue Lake. The previous Wastewater System Plan had wastewater service to Loretto, northwest Medina, and southwest Corcoran planned through the Blue Lake Water Resource Recovery Facility via Maple Plain and the downstream interceptor system. A study will be conducted to determine whether Loretto and surrounding areas will be served by the Blue Lake facility, as depicted in the previous Wastewater System Plan, or the new Crow River facility in Rogers. The study will also include

consideration of a diversion of portions of the flow from Independence and Greenfield to the Crow River facility.

Crow River. The Met Council is constructing a new water resource recovery facility in western Rogers. This facility, anticipated to be fully operational and accepting flow in 2030, will serve Rogers, eastern Corcoran, western Dayton, and northwest Maple Grove, provide long-term capacity relief for the Elm Creek Interceptor, and potentially those communities identified above. The Crow River facility is planned to have future (long-term) solids processing facilities.

Eagles Point. Solids processing facilities will be added in the future (long-term) such that hauling of Eagles Point wastewater solids to the Metropolitan facility will be discontinued.

East Bethel. Wastewater from the community of East Bethel is treated via membrane bioreactors and ultraviolet and hypochlorite disinfection before being discharged for subsurface infiltration. Currently, 70,000 gallons of water per day are reclaimed for infiltration. The facility has a capacity to reclaim up to 410,000 gallons of water per day.

Empire. This facility provides a land application biosolids program and implements energy recovery from biogas collection for heat and power at the plant. The resource recovery program will continue as planned.

Hastings. ~~We are~~The Met Council is exploring the most feasible way to provide additional regional capacity investments for this area to meet the upcoming need for increased service. Additional capacity will not be provided via the existing water resource recovery facility. The improvements will serve Hastings and may also serve land areas currently in Marshan, Nininger, and Vermillion townships.

Metropolitan. The Met Council forecasts that the population within this service area ~~population~~ will grow by over 350,000 new residents by 2050. ~~To serve the growing service area, we are constructing~~The Met Council plans to construct a fourth incinerator to ~~support~~ preserve existing wastewater treatment plant infrastructure and to serve regional growth. In 2025, the existing incinerators will be 20 years old and additional solids processing~~.~~ capacity is needed to take the existing incinerators down for extended periods of time to renew them. The fourth incinerator ~~will also recover~~includes energy ~~to be used for heat and electricity and include additional~~ recovery, air pollution control, and related solids processing equipment. The existing incineration facilities will be rehabilitated after completion of the fourth incinerator. ~~Energy continues to be harvested using steam turbines. Wastewater from the northwest part of the service area will be re-routed from the Metro facility to the new Crow River facility after the new facility is completed.~~

St. Croix Valley. Previously, the Wastewater System Plan assumed a future ~~plant~~facility expansion. The current regulatory trends indicate the likelihood of much more stringent future discharge permit limits. The additional facilities needed to meet these limits are likely to fully utilize the remaining capacity at this ~~plant~~ site. Consequently, no ~~plant~~facility capacity expansion is planned, but it is recommended to perform a study investigating options to increase treatment services for the northeast area of the region.

Seneca. Service will be extended to the City of Credit River who officially requested service in their 2020 Comprehensive Plan update. Service will ultimately be provided through acquisition of a trunk sewer and lift station owned by the City of Savage. Adequate capacity was already provided in the trunk sewer to serve Credit River. Acquisition of the necessary infrastructure from Savage will be completed prior to 2030.

Environmental Service Customer Level of Service

The ~~Environmental Services~~ Customer Level of Service ~~is~~and the Water Policy Plan are the foundation of the Capital Program. ~~It guides~~They guide how we serve our customers. The three pillars to the level of service are:

- Financial
- Public health, safety, and environmental protection
- Customer service

The Customer Level of Service defines how we engage with communities, serve communities through infrastructure and site improvements, and how we are financially responsive to the needs of our region, among other guiding criteria.

~~We work~~The Met Council works daily to improve project communication to provide the level of service we have committed to the region. ~~One example is~~New procedures include scheduling communication and outreach efforts outside the traditional workday to reach a broader audience. It is also now the standard ~~now~~ to provide information and resources in multiple languages. We subscribe to a service which provides access to interpreters who speak more than 240 different languages, and are available 24 hours a day, seven days a week. This facilitates communication with persons with limited English proficiency or who use American Sign Language. It gives us the ability to communicate with these residents on project information and allows them to ask questions in their preferred language.

Potential future service considerations

To support long-term sewered development of the region, Environmental Services assesses areas for future service attention. Accommodating growth includes both sufficient treatment systems as well as improvements or increased capacity of conveyance systems. The areas or enhancements to the regional collection system to support growth areas as anticipated are below.

Carver County. The potential wastewater generation for the long-term service area of the Blue Lake facility could exceed the build-out capacity of the plant site sometime after 2050. One option to address this possibility is a service area revision that diverts wastewater from western communities to a new regional water resource recovery facility in Carver County. This new facility would be located so that it could serve development along the corridor between Chaska and Cologne. The Met Council and Carver County have a memorandum of understanding whereby the County preserves low density in its agricultural area, consistent with the region's potential need for additional area for sewered development.

Scott County. The Scott County 2030 comprehensive plan, prepared in coordination with the regional Wastewater System Plan, designates portions of western Scott County for potential long-term sewered development. The Met Council is planning to acquire a site for a water resource recovery facility to provide service to western Scott County and potentially provide capacity relief for the Blue Lake facility.

Dakota County. Portions of rural Dakota County are within the long-term wastewater service area and may be served by a future water resource recovery facility. This designation of being in the long-term wastewater service area will support interim low-density development to enable future economical sewered development and preserve land for continued agricultural uses.

Northeast Area. The long-term northeast wastewater service area has the potential to generate wastewater flows that slightly exceed the capacity of the interceptors serving this area. Rather than constructing an extensive capacity relief interceptor system, a potential alternative is to construct a water resource recovery facility with groundwater recharge and wastewater reuse. Studies investigating

this potential flow diversion and reuse facility were performed around 2010-2015. This study will be revisited to investigate options for wastewater treatment and potential resource recovery technologies for this area. Other considerations for the Northeast Area include:

- *White Bear Lake.* A working group has been established to develop a comprehensive plan to ensure communities in the White Bear Lake area have access to sufficient safe drinking water to allow for municipal growth while simultaneously ensuring the sustainability of surface water and groundwater resources to supply the future needs. The recommendations from this working group may influence how wastewater service is provided for this area.
- *Eastern Hugo.* Eastern Hugo currently is not connected to regionalized wastewater treatment services. Studies are under way to determine the relationships among groundwater withdrawal for municipal water supply, groundwater recharge, and lake levels, and then develop a water sustainability plan for the northeast part of the region. This area could be connected to a new Northeast Area water resource recovery facility if that is the proposed option for wastewater service for this area.

Corcoran. Corcoran is a rapidly growing community requesting wastewater service. We recommend ~~that~~ a study ~~be done~~ to evaluate the long-term service needs of this area and whether wastewater flow from Corcoran should be conveyed to the Metro or Crow River facility.

Interceptor Capacity Augmentation. Hydraulic modeling is one way to understand and plan for future capacity needs. Modeling is a tool used to make decisions about next priorities and capacity enhancements. Areas that are either known to have capacity enhancement needs or are marked for future hydraulic modeling and capacity analysis include the northeast and northwest areas of the metro, Interceptor 1-MN-310 in Minneapolis, Interceptor 1-MN-345 in South Minneapolis, Edina, Farmington, and Credit River.

Table 2.7 summarizes the planned capacity of the regional water resource recovery facilities.

~~**Table 2.7: Planned water resource recovery facility capacity (million gallons per day)**~~

Water Resource Recovery Facility	Current Capacity	Current Flow (2018-2022)	Planned Capacity 2050	Planned Capacity Long-Term
Blue Lake	32	27	40	50
Future Carver County	-	-	-	10
Crow River	-	0.93	3	16.9
Eagles Point	10	4.4	10	20
East Bethel	0.4	0.07	1.2	2
Empire	24	10	24	50
Hastings*	2.3	1.6	4	10
Metropolitan	251	180	251	280
Future Northeast	-	-	3	3

Seneca	34	24	34	40
St. Croix Valley	4.5	3.0	4.5	4.5
Future Scott County	-	-	-	25
Total	**358**	**251**	**375**	**511**
Service Population	**-**	**2,900,000**	**3,600,000**	**6,100,000**

*Long term service study will determine ultimate means of service to Hasting

Table 2.7: Planned water resource recovery facility capacity (million gallons per day)

Climate Change

The Met Council's Climate Vulnerability Assessment[1] ~~(Metropolitan Council, 2018)~~ is a tool that helps us plan for and respond to the effects of climate change. It has identified warm winters, extreme rainfall, heat waves, drought, and intense storms as the region's top climate hazards. Each of those hazards may impact wastewater operations in different ways.

Environmental Services is already working to prepare for changes or impacts that may be the result of climate change. ~~Among many actions, we are~~A few of our efforts include adding permanent back-up power at our facilities to prepare for potential power outages, protecting our infrastructure from flooding, and reassessing our odor control to handle changes in odor frequency that could come from warmer temperatures. Increased climate resiliency protects our investments, customers, and environment and increases the reliability of our services.

We follow and support the goals and actions set forth by the Met Council's Strategic Plan, the Regional Development Guide, the internally focused Climate Action Work Plan, and the Minnesota Climate Action Framework. We are committed to innovate, adjust, and respond to changing conditions. We are unifying our efforts to reduce our contributions to greenhouse gas emissions and make our facilities climate resilient.

System capacity and regional growth

Our region's population is anticipated to exceed 3.8 million residents in the next 20 years. Through comprehensive planning with local communities, efficient and economical wastewater treatment, inflow and infiltration mitigation, and water conservation efforts, Environmental Services has been able to accommodate the regional growth without new major infrastructure investments. Through inflow and infiltration mitigation work alone, it is estimated that $1 billion in capital investments for system expansion has been deferred.

As the service area grows and the population increases, we face decisions about how we can best serve our customers. Options include upsizing the conveyance system or building new water resource

[1] Metropolitan Council. (2018). *Climate Vulnerability Assessment.*

recovery facilities. Two system growth models are commonly discussed: a centralized or decentralized system.

A centralized system has fewer treatment facilities with wastewater traveling farther for treatment. Alternatively, a decentralized system typically consists of multiple smaller, satellite facilities across the service area. Under a decentralized system model, it may be more cost effective to install new treatment and discharge technologies that could be a direct benefit to that part of the region, opening more opportunities for wastewater reuse or groundwater infiltration for the service area of that plant. A centralized system may more efficiently utilize the existing investments.

As our region's population and industry grows, both inside and outside the urban core, we continually review and assess how we are serving the region and what, if any, changes need to be made to provide the level of service we commit to. Our services not only include wastewater treatment; they also include vactor (sanitary sewer debris collected by vacuum truck) and liquid waste receiving sites, monitoring wastewater for health-related indices, and beneficial reuse of solids for soil enrichment. We continually assess the needs of all our customers and work towards improving how we meet their needs, especially as new technologies and regulations emerge.

Resource recovery

Wastewater reuse

Wastewater reuse is the practice of treating wastewater from a wastewater treatment plant to a higher standard for beneficial use before releasing it back into the water cycle. The highly treated wastewater, called reclaimed water, must meet water quality guidelines established by the Minnesota Pollution Control Agency (MPCA) before it can be used. The agency's reuse guidelines for ~~treated effluent~~reclaimed water are protective of public health by minimizing human exposure to pathogens and microorganisms that could cause illness.

Met Council promotes wastewater reuse as a means of making the region's waters more sustainable. As the Twin Cities region continues to grow and prosper, creative solutions will be needed in some portions of the metro area to address limited sustainable water supplies and impacts to surface water features from our water consumption. The region's wastewater is a potential untapped resource that could be employed to serve non-potable uses such as industrial processes and preserve high quality groundwater for domestic and other high value uses.

In 2018, the Met Council adopted a policy for wastewater reuse, including cost sharing criteria, to address requests from external parties for Environmental Services to provide reclaimed ~~wastewater. This~~water. A task force established policies to balance the need for sustainable water solutions with our customers' desire for fair and equitable use of wastewater fees. The Met Council is supportive of expanding wastewater reuse within our operations and across the region and will work with interested ~~partners~~parties to see if a partnership can be formed to benefit both the partner and the region.

Internal use of reclaimed water

The Met Council continues to look for ways to reuse treated wastewater where economically feasible and appropriate. Barriers, both internally and externally, exist that make reuse challenging in certain cases.

At our water resource recovery facilities, reclaimed water provides multiple benefits. The Eagles Point facility recovers heat from the reclaimed water for in-facility use. The Metro and Seneca facilities use reclaimed water for cooling water in the solids incineration process. Other reclaimed water uses across the facilities include tank cleaning and cooling water to keep pumps from overheating.

We are investigating a project to increase the amount of reclaimed water utilized in daily operations at the Metro facility. This reclaimed water will take the place of the treated effluent and groundwater used now for many plant activities. Using reclaimed water would provide a higher level of worker health protection than wastewater effluent and would reduce groundwater use.

Industrial Reuse

Environmental Services continues to receive inquiries and interest in reuse of our reclaimed water for industrial purposes. We have explored conceptual models and a regulatory framework for providing this service, given the demand for this alternative water source for industrial processes. MPCA guidance on wastewater reuse guides treatment standards for industrial and other non-potable uses for reclaimed water.

Met Council is committed to working with community partners to make reclaimed water available for industrial and other non-potable uses where it is technically feasible, economical, and equitable to do so. Our policies on wastewater reuse, drafted together with our regional partners, guide us to provide wastewater reuse on a cost-of-service basis to external parties. Therefore, the capital, operational, and societal costs of treatment and distribution of reclaimed water would be paid by the end user of the water. Where there is a benefit to the regional wastewater system, the Met Council will explore a limited cost share in these systems, in accordance with our policies.

Infiltration and Groundwater Recharge

In addition to the use of reclaimed water as a water supply for secondary uses, groundwater recharge and infiltration have been suggested for wastewater effluent, as potential means to support water conservation in the region. Groundwater recharge and infiltration supplement the groundwater tables and aquifers and promote water sustainability for the future. Both possibilities would need to be thoroughly researched with the appropriate analysis for water quality and risk of negatively impacting water supplies and public health. These activities will need to be approved of by state agencies and the permitting rules and regulations set before implementation would be considered.

Solids and biosolids

Two valuable resources are produced from wastewater treatment: solids and biosolids. Solids produced in the early stages of wastewater treatment are incinerated at the ~~Metropolitan~~Metro and Seneca facilities. Heat energy is recovered from the incineration process and converted to electricity and steam for in-plant uses. This energy recovery saves money for our rate payers while decreasing our need for purchased energy. We are also evaluating ash from incineration for use as a phosphorus fertilizer. Solids obtained later in the wastewater treatment process are anaerobically digested to produce biosolids. Those biosolids are a nutrient rich fertilizer provided to our local farmers and community partners. Biogas, a byproduct of biosolids production, is used for heat generation and in-plant uses.

Not all our facilities currently benefit from resource recovery from solids and biosolids. We are aiming for a regionalized approach to solids waste management by expanding our solids and biosolids processing across our facilities, so the benefits of those recovered resources are shared and used across our region by all our customers.

Energy

Energy use is a major expense for Environmental Services – costing approximately $15 million per year. It is also our leading source of carbon emissions. Managing our energy use helps us keep costs to rate payers fair and reasonable and reduces our contribution to climate change.

We manage our energy use and costs by pursuing energy efficiency in our treatment processes and buildings, investing in renewable energy resources, and recovering energy from our treatment

processes. We continually work to improve our energy efficiency as we design and install energy efficiency technologies and equipment in our resource recovery processes. Environmental Services supports the use of renewable energy in the region by hosting solar energy projects on Met Council-owned property and subscribing to community solar gardens. We are working toward purchasing 100% of our electricity from renewable energy sources – like wind and solar – by 2040.

Wastewater treatment is a rich energy source – from the heat coming off raw and treated wastewater to the stored energy in biosolids. We recognize the benefit for us and the region of recovering and converting these energy resources to reduce our reliance on fossil fuel energy resources and the associated carbon pollution. Harvesting thermal energy from wastewater effluent as it leaves the water resource recovery facility is one opportunity that may arise in the future. There is an additional cost associated with this for the capture piping and delivery system that would need to be considered when evaluating the technology. Environmental Services supports implementation of reuse and resource recovery activities where feasible and appropriate.

Regulatory scenarios for wastewater treatment

The MPCA develops regulatory ~~structure~~limits and standards for contaminants. These standards are enacted to protect aquatic life, human health, and air quality. The Met Council ~~continues to monitor~~monitors for new and changing regulatory limits to meet permit requirements.

New and changing contaminant regulatory limits and treatment technologies often result in additional, and significant, capital costs and operating expenses for the Met Council. We are proud of our compliance records and respond to changing limits and technologies as needed to cost effectively meet regulatory standards. In certain cases, the most effective way to reduce the amount of a contaminant in wastewater and the environment is to reduce the sources of the contaminant.

Phosphorus. The Minnesota Nutrient Reduction Strategy set a statewide goal to, by 2040, reduce phosphorus levels in the Mississippi River basin by 45% from the average phosphorus levels from the 1980 to 1996 timeframe. In support of that goal, since 2010, the Met Council has taken an estimated 70% reduction in permitted total phosphorus levels at our facilities. ~~Most~~All of our water resource recovery facilities ~~now have biological phosphorus removal systems and can~~ consistently meet ~~the~~a total phosphorus ~~limits for the Lake Pepin Total Maximum Daily Load, which range from 0.27 to~~limit of 1.~~0~~ mg/L ~~at our facilities. We~~. We have invested $750 million to date in capital improvements ~~to meet the phosphorus limits~~ and estimate $25 million annually in operation and maintenance costs to treat phosphorus.

~~The~~ Blue Lake will be the first Met Council Water Resource Recovery Facility ~~will be the last~~ to incorporate ~~new total phosphorus limits into its permit. Because of the facility's large size, the Met Council anticipates it will be required~~ tertiary filtration to ~~meet a low loading standard, developed from~~achieve a 0.3 mg/L total phosphorus concentration. Tertiary filtration and chemical addition facilities are needed to meet ~~the~~ 0.3 mg/L total phosphorus concentration, the estimated cost of which is estimated to be ~~a~~ $95 million ~~investment.~~ .

~~The Crow River Water Resource Recovery Facility will discharge to the North Fork of the Crow River. The total phosphorus river eutrophication standard limit for that river is more stringent than the annual loading limits in the Lake Pepin total maximum daily load.~~

~~A future challenge will be that the total phosphorus loading limit specified in the total maximum daily load will remain constant even if a water resource recovery facility expands its capacity. We are currently preparing and planning for these reductions for the Blue Lake and Rogers facilities, which will involve capital investment to make the necessary operational changes.~~

Nitrogen. The MPCA published the Wastewater Nitrogen Reduction and Implementation Strategy in April 2024. The strategy requires wastewater treatment facility designs to include treatment systems to reduce nitrogen effluent limits to protect drinking water, human health, and aquatic life. Environmental Services will be addressing the regulatory requirements after rulemaking and will make the necessary improvements. We will need to make upgrades to the wastewater treatment system to meet the regulatory requirements, which could be costly.

We estimate $1.6 billion in capital costs for our water resource recovery facilities to treat total nitrogen to a 10 mg/L standard. ~~As an example~~The cost of ~~the scale of upgrades, the Metro~~ each facility upgrade is highly dependent on whether that facility is sized to nitrify (convert ammonia to nitrate) year-round. Some facilities which are designed to nitrify year-round would require a 20% - 30% expansion in secondary treatment. The Metro WRRF, which does not nitrify year-round, would ~~still~~ require a 70% increase in aeration tank volume (11 aeration tanks) and a 40% increase in final clarifiers (10 final clarifiers).

PFAS, PFOS, PFOA. More than 9,000 different human-made per- and polyfluoroalkyl substances (PFAS, PFOS, PFOA) compounds exist today. Known PFOS-impacted areas near our operations include the lower portion of Pool 2 of the Mississippi River, the Pigs Eye Dump (where PFAS waste products were dumped), and Lake St. Croix (which has also been impacted by landfills in the East Metro area).

Three water resource recovery facility outfalls, at Metro, Empire and Eagles Point, have had MPCA-established site-specific water quality criteria for PFOS and ~~perfluorooctanoic acid (~~PFOA~~)~~ since 2013. Prior to 2020, treated effluent from those facilities did not cause the receiving water body, Pool 2 of the Mississippi River, to have reasonable potential to exceed specific water quality criteria for that area, and no permit limits were assigned to those water resource recovery facilities. In 2017, the Empire facility was also required to have a PFAS reduction plan in its NPDES/SDS permit. ~~In~~ In 2020, the PFOS site-specific water quality criteria was significantly lowered and in 2023 five additional PFAS site-specific water quality criteria were added to Pool 2.

Our water resource recovery facilities and other wastewater treatment plants are not sources of PFAS, PFOS, or PFOAs. Our plants receive these contaminants in wastewater discharged from businesses and homes. Source reduction is the most cost-effective way to remove these contaminants for the region. Our water resource recovery facilities that do not currently discharge into waters subject to a water quality criterion or standard are following Minnesota's PFAS Wastewater Monitoring Plan. That approach could change, as the Minnesota Pollution Control Agency has announced it is planning to adopt a statewide PFOS water quality standard for human health in the future. - PFAS regulation is rapidly evolving and there is the potential for all Environmental Services water resource recovery facilities to be subject to PFAS permit limits or other regulation in the future.

The Met Council finalized a pollutant management plan for PFAS in partnership with the Minnesota Pollution Control Agency in 2024. The plan's goal is to identify and reduce PFAS in the environment. Initial efforts will include source identification and reduction within the Blue Lake Water Resource Recovery Facility service area and will be continued in the remaining water resource recovery facility service areas. Sampling for both industrial customers and residential areas will be conducted to help prioritize source reduction efforts and learn the amount of PFAS coming from households.

Minnesota's PFOS site-specific water quality criteria are among the lowest in the nation. This water quality criteria change creates the possibility of permit limits or other regulation at the ~~Metropolitan~~Metro, Empire, Eagles Point, and St. Croix Valley water resource recovery facilities.

~~As of 2024, there are no human health~~EPA announced final National Primary Drinking Water Regulation (NPDWR) for six PFAS ~~water quality criteria at the federal level.~~compounds in April 2024. The Environmental Protection Agency (EPA) also announced a draft aquatic life water quality criterion for PFOS and PFOA, which all our water resource recovery facilities currently meet.

Biosolids. Met Council water resource recovery facilities produce over 100,000 dry tons of biosolids per year. The Blue Lake and Empire facilities have the technology to anaerobically digest solids that settle from the treatment process to use on farm fields as fertilizer. We have a Land Application Program where biosolids are shared with local farmers and community partners for in-field use. At Empire, as much biosolids that can be land applied, based on request and nutrient needs of the land application sites, in the fall are land applied. Biosolid use can improve soil health, improve drought tolerance, promote plant growth, and reduce the need for commercial fertilizers. The program follows quality standards and best management practices set by the EPA and MPCA. ~~All our biosolids are land applied except when the weather doesn't allow for application; those biosolids are landfilled.~~ Biosolids produced at Blue Lake are very high quality, so they are distributed as pelletized biosolids.

The EPA is developing a risk analysis process for PFAS in biosolids. ~~The~~The MPCA has just proposed a biosolids strategy that will be implemented until the EPA issues risk~~ analysis could eventually lead to regulation of~~ -based limits for PFAS in biosolids. This strategy includes sampling for PFAS in biosolids and acting based on the sampling results. This could result in additional requirements by Fall 2025, such as reducing the rate of biosolids land applied, calculating the cumulative loading rate of PFAS at each site, or prohibiting land applications of the sampled biosolids entirely. If regulation is proposed and adopted, we will pivot and adjust our operations and activities accordingly to maintain regulatory compliance and protect public health and the environment.

Sulfate. Wild rice is an important part of the ecosystem in many Minnesota lakes and streams. Wild rice is also a cultural resource to many, particularly members of Minnesota's Dakota and Ojibwe tribal communities, and is an important economic resource to those who harvest and market it. In 1973, Minnesota adopted a sulfate standard to protect wild rice based on studies showing that wild rice was found primarily in low sulfate waters. A new water quality standard for sulfate will be implemented during the update process for our NPDES/SDS permits. This will likely affect all ~~the~~ Met Council water resource recovery facilities except for St. Croix Valley and East Bethel facilities.

Substantial impacts and substantial departures from the Metropolitan Wastewater System Plan

Imagine 2050 and the regional system plans comprise the Met Council's Regional Development Guide, which is the region's plan to ensure orderly and economical development and redevelopment of the region. Local comprehensive plans and plan amendments that have substantial impacts on – or contain substantial departures from – the regional wastewater system plan affect how the Met Council constructs, operates, and maintains the regional wastewater system and can result in system inefficiencies if the nonconforming plans are allowed to be implemented.

Substantial impacts or departures from the regional wastewater system plan may result from either overutilization or underutilization. Overutilization occurs when local development will use more regional capacity than currently available or planned. Underutilization occurs when low-density development uses less than currently available or planned regional capacity. Underutilization is likely to require added infrastructure elsewhere in the region to accommodate household growth that would be reasonably expected in the local governmental unit.

As permitted by Minnesota Statutes section 473.175, subdivision 1, the Met Council may require a local governmental unit to modify any comprehensive plan or part thereof that is inconsistent with the

metropolitan system plan if the Met Council concludes that the local plan is more likely than not to have either a substantial impact on, or to contain a substantial departure from, the Met Council's adopted policy plans and capital budgets for regional wastewater service. Inconsistencies will provide the Met Council with grounds for requiring modifications to the local comprehensive plan.

A substantial system impact occurs under various scenarios, including when any of the following happens:

- The regional wastewater system was not designed to provide wastewater service for the proposed sewer service area.
- The projected flow from the sewer service area is greater than planned.
- The timing for the proposed growth is prior to implementation of a planned improvement to, and greater than what can be accommodated by, the regional wastewater system.
- The peak wet-weather flows from the local government unit exceeds its designed capacity within the regional wastewater system, and thus there is inadequate capacity to accommodate the planned growth for the local government unit or tributary local governmental units.

A substantial departure occurs under either of these conditions:

- A local governmental unit proposes sewer service land use densities that are lower than Met Council density standards, which are the basis for regional infrastructure planning purposes.

When a local governmental unit proposes densities that exceed Met Council policy for unsewered areas that are within the long-term regional wastewater service area, thus precluding future economical sewered development.