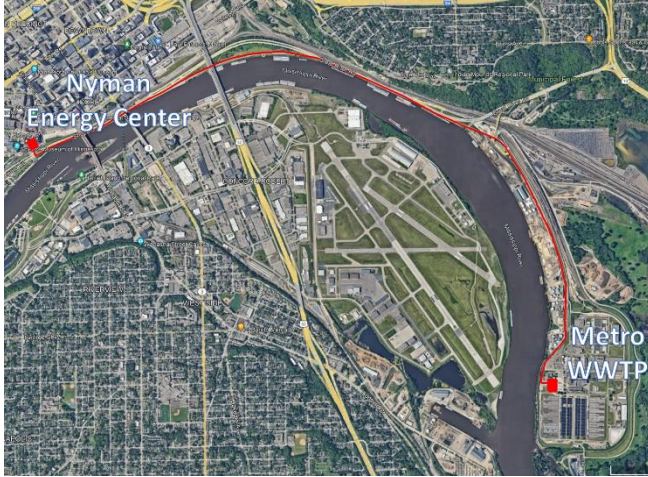


Climate Pollution Reduction Grants – General Competition
City of Saint Paul, Minnesota: Clean Heat Saint Paul Project (CHStP)

Section 1: Overall Project Summary and Approach

Project Summary: With the Clean Heat Saint Paul Project (CHStP), we propose to largely



decarbonize the country's largest hot water district heating system serving downtown Saint Paul and environs, using waste heat from the State of Minnesota's largest wastewater treatment plant. Today, cold climates like Minnesota's are dependent on the combustion of fossil fuels—especially natural gas—for space and domestic water heating. In downtown Saint Paul, over 80 percent of the buildings are served by the Nyman Energy Center operated by globally acclaimed District

Energy St. Paul (District Energy), which was developed by the City to be a model for the nation in response to the energy crises of the 1970s. The CHStP Project will decarbonize the district heating system using waste heat from the nearby wastewater treatment plant, to replace up to 85% of natural gas and fuel oil used to produce hot water for the district heating system.

88.1% of the buildings heated by District Energy St. Paul are located in EPA IRA low-income and disadvantaged census tracts.

This project is consistent with the City of Saint Paul's goal to reduce carbon pollution 50% by 2030 and down to net zero by 2050. CHStP would reduce GHG emissions up to 33,500 tons annually, beginning in 2028. More than 80% of the buildings served by District Energy are in low-income and/or disadvantaged census tracts. Residents of these census tracts and other nearby low-income and disadvantaged community (LIDAC) census tracts would benefit directly from improved air quality that would result from replacing heat generated from combusting fossil fuels with heat generated from waste heat recovered

from the region's wastewater. The cost for heat generated from wastewater is also expected to be much more stable than heat generated from natural gas, which tends to increase in cost and volatility during the heating season and extreme winter weather events, which are more becoming more prevalent due to climate change. Both contribute to the energy burden experienced by residents who are dependent on using fossil fuels for heating in a cold climate. In addition to GHG and cost reductions, we propose to use this innovative and historic project to build on pathways into union trades apprenticeships, including apprenticeship readiness programs for community members who live in our LIDAC census tracts, with a particular focus on recruiting women and individuals from racial/ethnic groups that are under-represented in the union construction trades.

The City of Saint Paul and District Energy are ideally suited to partner with the EPA and lead a transformative, replicable project using CPRG Phase II implementation grant funding to demonstrate an

innovative decarbonization solution available to hundreds of communities across the nation. Inspired by advanced energy systems in Europe, the development of the downtown district heating system was the City of Saint Paul's response to the energy crises of the 1970s to reduce the community's dependence on fossil fuels and increase energy security. The City led the historic development of the advanced district heating system in collaboration with the U.S. Environmental Protection Agency (EPA), U.S. Department of Energy (DOE), U.S. Department of Housing and Urban Development (HUD), the State of Minnesota, local units of government, the business and labor communities, and many others. The then Secretary of Housing and Urban Development stated that the federal government ***"has the responsibility to demonstrate what modern district heating systems could do for our cities and, as a result, for our country."*** The DOE/Oak Ridge National Labs determined Saint Paul was ***"ideally suited"*** to demonstrate the feasibility of an urban hot water system modeled after systems in Scandinavia.

For 41 years the City of Saint Paul and District Energy have inspired leaders and citizens in communities across the U.S. and around the world to lean in and set about the arduous work of advancing their energy systems. The City of Saint Paul has demonstrated it is up to the challenge of implementing transformative community energy projects and it stands ready to lead the way again—this time in decarbonization of a major heating system using the region's waste heat.

Our complete proposal is described in detail herein.

a. Description of GHG Reduction Measure

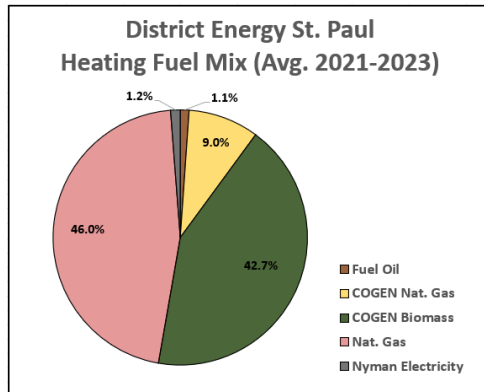
Measure Summary: This measure will substantially decarbonize the district heating system currently serving 33 million square feet (MSF) of building space in the central business district (CBD) of the City of Saint Paul by utilizing waste heat recovered from a nearby wastewater treatment facility to replace natural gas and fuel oil combustion, reducing carbon emissions up to 33,500 tons each year, or approximately 1,000 tons/MSF of building space heated by the system.

Description: Throughout the United States thermal energy is stored in the sewage and wastewater gathered from communities and processed in treatment plants. After processing, the effluent from these plants is frequently discharged into water bodies, taking with it unutilized thermal energy, also known as industrial waste heat. There is a growing list of applications globally that demonstrate how thermal energy embodied in wastewater can be recovered and utilized for building heating. This project, modeled after similar projects in Helsinki, Finland, would be the first of its kind in the country to recover heat from a wastewater treatment plant's effluent and integrate it into an existing district heating system serving the urban core of a major U.S. city.

The US Department of Energy estimates Americans are flushing 350 terawatt-hours of thermal energy down the drain every year.

The City of Saint Paul is the second largest city in and the capital of Minnesota. In 2019, it adopted a Climate Action and Resilience Plan (CARP) that includes goals to reduce greenhouse gas emissions 50% by 2030 and to be carbon neutral by 2050. Embedded in its 2030 goal is to decarbonize municipal buildings within the same period. Saint Paul's CBD is also the seat for both state and county government. Four City buildings are among the 33 MSF of commercial office, retail, and multifamily space served by the hot water district heating system operated by District Energy. CPRG implementation funds present an incredible opportunity to largely decarbonize the heating energy for over 500 buildings at one time.

By integrating recovered thermal energy from the Metro Plant, District Energy can nearly eliminate use of natural gas and fuel oil and supply up to 92% of the heating energy needed by its customers from carbon neutral sources.



Since becoming operational in 1983, District Energy St. Paul, a 501(c)(3) non-profit utility, has continuously advanced system efficiency and lowered its GHG emissions. In 2000 and 2022, District Energy aggressively reduced its GHG emissions 68% by discontinuing the use of coal and integrating technologies such as biomass combined heat and power, large scale solar thermal (a DOE funded project), thermal storage, and advanced metering. While District Energy has made great strides, the system still depends on natural gas and diesel oil (back-up only) for approximately 50% of its

annual heating energy, the combustion of which emits approximately 45,000 tons of GHG emissions and 120 tons of other air pollutants.

The Metropolitan Council (the Council) is the regional governing and planning body for the Minneapolis-Saint Paul metro area, and one of its core areas of service is wastewater treatment. The Council owns and operates the State's largest wastewater treatment plant located about 3.75 miles from the CBD, along the Mississippi River. Opened in 1938, the plant is among the nation's largest, processing over half of the wastewater collected from 640 miles of interceptors in the Minneapolis-Saint Paul metro area. Wastewater treated at the Metro Plant is discharged into the Mississippi river throughout the year at a temperature range from 55°F to 73°F. The warm temperature of the effluent makes a desirable source of thermal energy for water-to-water heat pumps, which efficiently generate hot water at a high coefficient of performance (COP). It is defined as the relationship between the output energy (kW or MW) generated from a heat pump as cooling or heat, and the input power (kW or MW) that is supplied to the heat pump.

It is estimated that the CHStP Project will supply up to 280 GWh of carbon free heating energy annually to the heating system, or approximately 92 percent of the total annual heating energy needs of those buildings beginning in 2031 when the use of biomass is currently expected to be discontinued. District Energy is extending the power purchase agreement for the biomass cogeneration plant with the local electric utility through 2030. The terms of that agreement would limit the amount of heat the CHStP Project could supply to District Energy prior to 2031.

In addition to reducing GHG emissions, the CHStP Project will also:

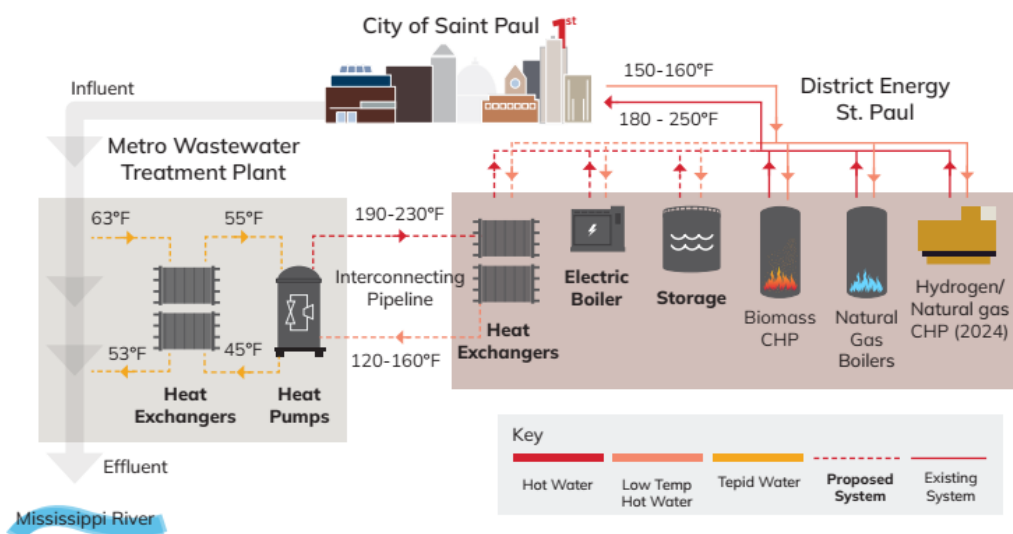
- reduce local air pollutant emissions from District Energy
- substantially decrease customer exposure to seasonal natural gas and fuel oil price volatility
- Expand pathways to good jobs in the energy and water sectors and union construction trades

This project will significantly move the City of Saint Paul toward achieving its GHG reduction goals and provide a cost-effective solution to decarbonize a dense urban area with hard-to-abate buildings (e.g., hospitals, historic buildings) using existing district heating infrastructure. Future expansion of the district heating system (not included in this project) to new customers will further increase access to carbon free thermal energy and decrease fossil fuel combustion for building space and domestic water heating. Implementation of this project also opens a pathway for the Metro Plant to increase its efficiency in the future by using the heat recovery infrastructure to recover thermal energy and heat the Metro Plant buildings.

Key Features &

Approach:

1. Install a Heat



Recovery System at the Metro Plant: The CHStP Project will install a heat recovery system (HRS) at the Metro Plant, consisting of heat exchangers that will integrate into the effluent processing system, and water-to-water heat pumps that will increase the recovered thermal energy to a suitable temperature for integration into the district heating network. The system will be designed to supply up to 60 MW of carbon free thermal energy to District Energy. At peak conditions, up to 25% of the Metro Plant’s effluent will flow through the HRS’ heat exchangers, cooling the effluent water flowing through heat exchangers before returning to be blended with the remaining effluent for final processing and discharge. On the secondary side of the heat exchangers, the water warmed through them will be used as source of thermal energy for the water-to-water heat pumps. The heat pumps will be capable of increasing the temperature of the thermal energy recovered from the effluent up to 230°F, making it suitable for integration into the heating network. The heat exchangers, heat pumps and supporting pumps, valves and electrical equipment providing service to the equipment will be housed in a new equipment building constructed at the Metro Plant.

2. **Construct interconnecting pipeline from Metro Plant to District Energy’s Nyman Energy Center:** The heated water from the HRS will be pumped approximately 3.75 miles via a highly insulated interconnecting pipeline to District Energy’s Nyman Energy Center for integration into the hot water thermal energy network. The pipeline will include a supply line and a return line.

Milestone Summary Table				
Recipient Name:		City of Saint Paul		
Project Title:		Clean Heat Saint Paul		
Task Number	Task or Subtask	Milestone Description	Milestone Verification	Anticipated Date
1	1.1	Funding Awarded	Grant agreements completed. Project given notice to proceed.	10/1/2024
1	1.2	Grant Management	Grant and subawards managed by the City and updates included in progress reports.	Every 6 months beginning March 2025
2	2.0	Community Engagement	Progress on community engagement and outreach included in progress reports	Every 6 months beginning March 2025
3	3.0	Workforce Recruitment and Placement	Progress on recruitment and placement efforts and results included in progress reports	Every 6 months beginning March 2025
4	4.0	Quality Assurance Project Plan	Plan Received by the EPA	10/15/2024
5	5.0	Semi Annual Progress Reports to EPA	Reports Received by the EPA	Every 6 months beginning March 2025
6	6.2	Complete Services Bidding & Contracting	All services contracts in place for engineering, permitting, and construction admin/mgmt	March 2025
8	8.0	Compliance & Construction Permitting	All permits in hand to permit commencement of construction activities	May 2026
9	9.1	Complete Eqmt Procurement Contracts	All contracts awarded and issued for long lead major equipment and materials	Sept 2025
10	10.0	Bidding and Contracting for Construction	All construction related contracts awarded, including commissioning	Sept 2026
11	11.1	Ground Breaking	Ground breaking event and commencement of construction.	March 2026
13	13.0	Substantial Completion / System Operational	Start up and commissioning complete, system is operational	1/1/2028
14	14.0	Project Completion & Closeout Complete	All contracts complete. Project closed out	May 2028
14	14.1	Project Record Documents Complete	Conformed to construction and record documentation completed	May 2028
15	15.0	Final Report to EPA	Final project report received by the EPA	Dec 2029

Based upon District Energy’s 41 years of operating the extensive hot water network in Saint Paul, minimal heat losses will occur during transport of the hot water from the Metro Plant to the Nyman Energy Center.

3. Integrate the hot water piping from the Metro Plant supply into District Energy’s hot water heating network and install the electric boiler:

Once delivered to the Nyman Energy Center, the hot water from the Metro Plant will flow through heat exchangers installed to enable integration into the existing heating network. The project will also install an electric boiler at the Nyman Energy Center and integrate an existing chilled water storage tank located at Nyman to store hot water generated by the electric boiler using off-peak electricity. The electric boiler and hot water thermal storage will operate during peak heating conditions.

- 4. Cooler water returned to Metro Plant:** After thermal energy recovered from the Metro Plant is delivered to District Energy’s existing hot water network, cooler water will be returned to Metro Plant to be reheated by the HRS and returned to District Energy.

Project Schedule and Key Milestones:

Based upon the scope of the project, expected permitting timelines, and lead times for equipment purchases, it is estimated that it will take 39 months to complete the CHStP Project after receipt of the funding. Upon receipt of notification of funding award, the City and District Energy will begin further community outreach efforts, preparation of the quality assurance plan, and further develop the plan for workforce development in concert with our partners. Once grant agreements are in place, we will move quickly into an RFP needed to procure consulting and engineering services. The project will be completed using a design, bid, build approach. The schedule assumes that certain major pieces of equipment and materials with long lead times will be procured

Task Description	Milestones	2024				2025				2026				2027				2028		2029		
		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Q1	Q2	Q3
Notification of Funding Selection	7/1/2024	X																				
1. Complete Grant Agreements																						
1.1 Funding Awarded	10/1/2024			X																		
1.2 Grant Management																						
2. Community Engagement & Outreach																						
3. Workforce Recruitment and Placement																						
4. Quality Assurance Project Plan	10/15/2024			X																		
5. Semi Annual Progress Reports to EPA	Every 6 mos						X			X				X				X		X	X	X
6. Eng & Consulting RFPs & Contracting																						
6.1 Prepare RFPs for NEPA, Eng & Const. Mgr																						
6.2 Complete Services Bidding & Contracting																						
7. Engineering & Design																						
7.1 Heat Recovery Sys & Metro Plant Integration																						
7.2 Interconnect Pipeline																						
7.3 Nyman Energy Plant Integration																						
8. Compliance & Construction Permitting																						
9. Equipment RFPs, Bidding and Procurement																						
9.1 Complete Eqmt Procurement Contracts	Sep 2025									X												
10. Bidding and Contracting for Construction																						
11. Construction & Major Eqmt Installation																						
11.1 Ground Breaking / Begin Construction	Mar 2026									X												
11.2 Heat Recovery Sys & Metro Plant Integration																						
11.3 Interconnect Pipeline																						
11.4 Nyman Energy Center Integration																						
12. Startup and Commissioning																						
13. Substantial Comp. / System Operational	1/1/2028																		X			
14. Project Closeout Complete	May 2028																					
14.1 Project Record Documents Complete	May 2028																					X
15. Final Report to EPA	Dec 2029																					

provided to the construction contractor for installation.

Underlying Assumptions & Risks of Delay:

- Based on experience, it is estimated that the compliance and construction permitting process will take up to 17 months to complete. An unforeseen permitting issue, such as a delay in the permit to allow an underground pipe crossing of a railroad, could cause a setback in the startup of the operation of CHStP.
- Lead times for equipment and materials is based upon vendor supplied information and recent project experiences. Delay in delivery of procured equipment could also delay project start-up and the GHG reductions achieved in year one and cumulative totals.
- Based upon preliminary communications with Xcel Energy, the Battle Creek Substation located on the Metro Plant site has sufficient capacity to serve the HRS installation at the Metro Plant. A new breaker will need to be installed at the substation. As of today, the lead time for such breakers is two years, providing sufficient time for the utility to receive and install the breaker and supply service for the HRS at the Metro Plant, but a longer lead time could slow the overall project implementation.
- Based on preliminary engineering and input from Metro Plant staff, the HRS integration into the Metro Plant is not expected to have meaningful impacts on the Metro Plant's processes, operations, or operating permits. Time has been included in the schedule to complete a thorough review during the system design and permitting effort.
- The estimated GHG emissions reductions are based upon the CHStP Project starting full operation and supplying heat to District Energy by January 1, 2028. A delay in start-up of the HRS

will reduce resulting GHG emissions in year 1 of operation, and the cumulative totals from 2025-2030 and 2025-2050.

State and Regional Priority Climate Action Plans (PCAPs) Both Prioritize the Recovery of Waste Heat from Wastewater: A GHG reduction measure that recovers waste heat from a regional wastewater treatment plant for integration into existing district heating network is prioritized in both the State of Minnesota's PCAP and the Twin Cities Metropolitan Statistical Area (MSA) PCAP. Both PCAPs are attached to this application.

The relevant measure in the Minnesota PCAP can be found the Clean Economy section on Page 42 where the following is stated:

4.1 Increase industrial efficiency, transition to cleaner energy sources, and reduce process emissions; switch to climate-friendly refrigerants in commercial and industrial settings.

4.1.5 Expand energy and heat recovery from wastewater and waste heat, implementing measures including, but not limited to, district heating, combined heat and power, and anaerobic digestion.

The Metropolitan Council prepared the PCAP for the Twin Cities MSA, which includes the project site for this reduction measure in the City of Saint Paul. The relevant measure in the Metro PCAP can be found on page 35 under Manage Wastewater Efficiently. Specifically, the measure includes the following:

[...]there is an opportunity to recover wasted thermal energy from wastewater to produce clean, carbon-free thermal energy for integration into existing hot water district heating systems, further reducing reliance on fossil fuels.

This project was selected by the City of Saint Paul because it presents an enormous opportunity to nearly eliminate carbon emissions from heating over 500 buildings connected to the existing district heating network, 88% of which are in LIDACs. The CHStP Project offers one of the largest single-project GHG emissions reduction opportunities in the Building Sector in the State of Minnesota.

The CHStP Project is well-aligned with the goals of the Climate Pollution Reduction Grants Program:

- 1. Implement ambitious measures that will achieve significant cumulative GHG reductions by 2030 and beyond.**

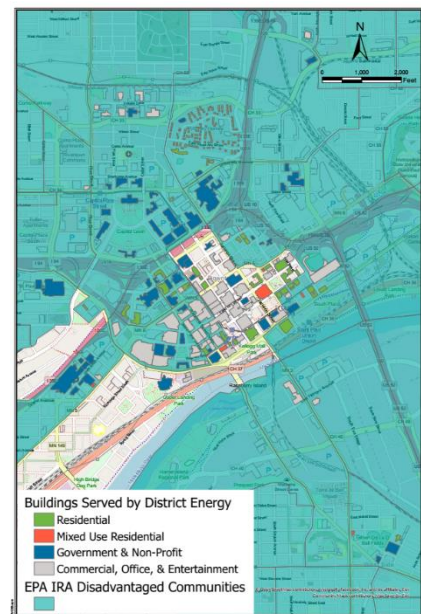
The CHStP project is ambitious in its scope and scale. Upon completion of construction, this project will result in immediate and significant GHG reductions for over 500 buildings.



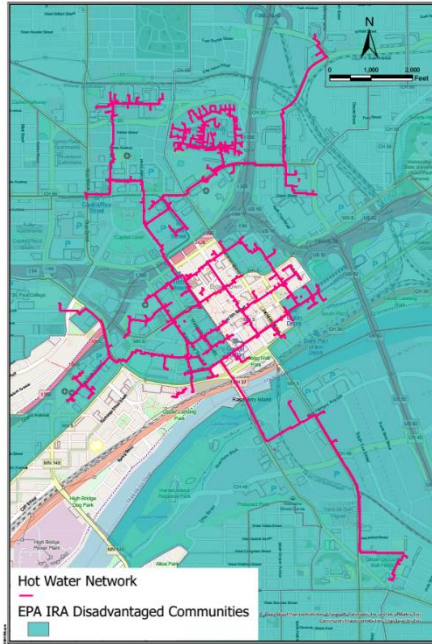
The success of this project will demonstrate to communities across the U.S. that low-carbon heating from waste heat is possible. Not only will this project result in the reduction in GHG and other pollutants from the buildings already on the network, but this project will also expand access to a low carbon heating alternative to buildings in many additional neighborhoods. In addition, integrating the downtown district heating system with the Metro Plant creates a future opportunity for the Metro Plant to transition to decarbonize building heating on its campus. The CHStP Project will also demonstrate strong partnerships between local government, utilities, and union construction trades to build new pathways of opportunity into good-paying jobs for residents of lower-income and disadvantaged communities.

2. Pursue measures to achieve substantial community benefits, particularly in low-income and disadvantaged communities

It is a priority for the City of Saint Paul and the State of Minnesota to reduce energy cost burdens on its residents and businesses, particularly in low-income and disadvantaged communities, and implement solutions to reduce GHG emissions. More than 88% of the buildings served by the CHStP Project are in EPA IRA-qualified LIDACs. Reducing energy cost burden on low-income residents is a top priority of the City's Climate Justice Advisory Board. This project will primarily benefit disadvantaged communities by significantly reducing the combustion of natural gas at the Nyman Energy Center, thereby reducing air pollution for residents and visitors in the nearby vicinity. Income-qualified residents served by the District Energy network will also benefit from the price stabilization that comes with using recovered thermal energy versus the volatility of natural gas and fuel oil prices, especially in winter months, that are currently affecting these residents.



2. Complement other funding sources to maximize these GHG reductions and community benefits



District Energy is regularly expanding its network to serve additional customers. In addition to funding from District Energy, expansion of the system and interconnection of new customers is frequently supported by state bonding, City and county investments, community foundations, regulated utility conservation improvement programs, and property assessed clean energy (PACE) financing. The greatest opportunity to connect additional customers is in disadvantaged communities where 80% of the existing heating network is located. Implementation of the CHStP Project will enable future investments from these sources to further expand access to low carbon thermal energy, and further decrease the use of natural gas in those neighborhoods. Except for hospitals, buildings served by the district heating network typically discontinue on-site natural gas combustion due to the reliability of the district heating system because of the redundancy and diversity in energy

sources designed into the system.

3. Pursue innovative policies and programs that are replicable and scalable

There is vast potential to scale the integration demonstrated by CHStP to thousands of other communities where waste heat can be recovered from treatment facilities. The US Department of Energy estimates Americans are flushing 350 terawatt-hours (TWh) of thermal energy down the drain every year—enough to power approximately 30 million homes. Carbon free energy that can be recovered and recycled to heat millions of square feet of building space, displacing fossil fuels, reducing GHG emissions and increasing energy security.

In communities and campuses across Minnesota, natural gas is the primary fuel for commercial and residential heating, with few low carbon alternatives to generate the volume of thermal energy needed for space heating in a cold climate state. To decarbonize building heating, Minnesota and other cold climate states need to prioritize innovative solutions that can produce large volumes of low- and no-carbon thermal energy. There is a real opportunity to continue to innovate in this space and scale low-carbon heating solutions from the recovery and utilization of industrial waste heat. This project will demonstrate that it is possible, reliable, and replicable.

b. Demonstration of Funding Need

The City of Saint Paul tracks state and federal funding opportunities. We receive updates from the Minnesota Department of Commerce, review the White House Guidebook, utilize grants.gov, subscribe to announcements from various federal agencies, and follow updates from the IRS regarding the federal tax incentives for clean energy. Federal funding opportunities that are

relevant to the City are tracked in a database and we seek funding based on opportunities and priorities.

We have been unable to find federal or other grant funding suitable for this project other than the CPRG. For example, funding for thermal energy technologies does not include waste heat recovery but focuses on geothermal technologies such as heat exchange or electricity generation. We were hopeful that direct payments from the Investment Tax Credits program could be used for the project, but geo-exchange technologies that use treated effluent as a heat source are ineligible.

District Energy explored securing a loan through the DOE Loan Program Office (LPO). The application fees were found to be cost prohibitive and the rates were not compelling. As a S&P A-Stable rated 501(c)(3) company, District Energy can secure bond funding through the capital markets at interest rates comparable to those available from the LPO.

Regardless, the CHStP Project entails switching from using thermal energy generated in boilers using less expensive fossil fuels to using thermal energy recovered from industrial waste heat using heat pumps powered by electricity, which is a significantly more expensive energy source. The project does not generate fuel cost savings that can be used to generate a return on investment to justify the project's financing through the capital markets or the LPO.

While there is great interest and support for the CHStP Project and the Minnesota Pollution Control Agency has recently issued guidance supporting heat recovery from wastewater, to date no potential state grant funding source has been identified.

Why CPRG implementation grant is needed: The CHSTP Project will have enormous societal benefits as a pioneering project with promise to scale decarbonization of thermal energy. However, the project's scale and attributes make it difficult to finance through traditional means. District Energy currently spends \$5-6 million annually on natural gas and fuel oil. The CHStP Project proposes to replace up to 85% of natural gas and fuel oil British Thermal Units (Btus) with thermal energy recovered from wastewater using efficient electricity-powered heat pumps. As explained in the description of GHG reduction measure section, the efficiency of heat pumps is rated using coefficient of performance (COP). Heat pumps that will be used for the CHStP project are estimated to have an average COP of 3 which means approximately 3 MW of thermal energy can be produced by a heat pump from 1 MW of input electricity. While the average COP is projected to be 3, the cost for the electricity used to power the heat pumps is expected to cost approximately 3 times that of the natural gas being replaced. Therefore, there are no fuel cost savings available from switching from natural gas to thermal energy recovered from waste heat to generate a payback to justify the investment in the project.

Carbon-emitting fossil fuels, like natural gas, have a competitive advantage for funding upgrades and expansion. Unlike regulated utilities that can socialize the cost for system upgrades or expansions over their entire customer base, as a 501(c)(3) company with a small customer base, District Energy and its customers are not able to bear the cost of financing such a project nor

justify the investment based upon GHG emissions reductions alone. The customer base is unable to bear the cost of the investment, particularly those in LIDACs. While this project would be transformative, the City of Saint Paul also cannot justify using its limited resources to fund such a project at the expense of other core services it provides to its citizens.

The CHStP project is an ideal candidate for the Climate Pollution Reduction Grant Program. It offers enormous societal benefits, but due to the economics of the project and lack of available funding and incentives for this type of technology, the City and District Energy cannot justify bearing the cost without assistance. This creates an unknown timeline for when the project could be implemented. With CPRG funding this project can begin delivering emissions reductions by 2028.

c. Transformative Impact

One of the greatest challenges to decreasing carbon emissions in the U.S. is to convert cold-climate building heating systems from fossil fuels to low- or no-carbon sources. With CPRG funding, the City of Saint Paul can demonstrate the transition to clean heat in a manner that can be scaled across the country using new or existing district heating or thermal energy networks.

Due to our reliance on fossil fuels for thermal energy, we have left vast amounts of carbon free energy untapped. In recent years, there have been many innovations in utilizing these energy sources to decarbonize thermal systems. Internationally, the utilization of industrial waste heat for building heating is playing a pivotal role in decarbonizing the building sector, particularly in the European Union. Increasingly, the heat embodied in communities' sewage and wastewater is being used as a thermal source for heat pumps to efficiently heat buildings.

The City of Saint Paul wants to advance these technologies in the U.S., and we believe this can be a game changer for low-carbon, networked heating in cold climates. Successful implementation of the CHStP project will:

1. Demonstrate large-scale decarbonization of an existing cold climate heating system
2. Substantially reduce carbon pollution
3. Significantly decrease criteria air pollutants within a LIDAC census tract
4. Stabilize energy costs for customers; 88% of whom are in LIDAC census tracts
5. Serve as a model to more than 16,000 publicly owned wastewater treatment systems that serve approximately 75% of the U.S. population
6. Build upon existing partnerships to expand opportunities for residents of low-income and disadvantaged communities to get onto career pathways to good-paying jobs in the union construction trades, particularly steamfitters/pipefitters and electrical workers.
7. Reduce the temperature of the effluent discharged into the Mississippi River, which should have positive ecological effects.

Each of these outcomes is described in more detail below.

1. Demonstrate large-scale decarbonization of an existing cold climate heating system

Saint Paul has demonstrated its ability to lead and accomplish transformative energy projects that inform and inspire other communities. The establishment of District Energy was a massive undertaking, predicated upon innovative vision of local and national leadership. Throughout its history, it has continued to demonstrate and advance innovative technologies and practices in the face of the 1970's energy crises achieving energy efficiency and fuel flexibility. It has hosted, educated, and guided political leaders— from presidents to mayors, and numerous other communities— in their efforts to develop and advance the energy systems used in their communities. The CHStP Project builds on this legacy. Its implementation would accelerate the decarbonization of the nation's largest hot water district heating system.

2. Substantially reduce carbon pollution

The CHStP project will reduce GHG emissions from the building sector in a concentrated area up to 33,000 tons annually from 2028-2030. The CHStP Project will effectively decarbonize the heating of 505 buildings by up to 92%. The estimated cumulative GHG emissions reduction from 2025-2050 is 842,500 tons, which is more than would be reduced by replacing 188,000 gasoline fueled light duty vehicles with fully electric vehicles. Further, this project will be designed such that 1) any eventual expansion of the District Energy system would benefit from low-carbon thermal energy, and 2) the future heating of the buildings on the Meto Plant campus can be integrated and reduce its carbon emissions.

3. Significantly decrease criteria pollutants from fossil fuel combustion in a LIDAC census tract.

The combustion of natural gas and fuel oil at the Nyman Energy Center causes the emissions of criteria air pollutants such as particulate matter, ozone, carbon monoxide, sulfur dioxide and nitrogen dioxide. Implementation of the CHStP Project will dramatically decrease emissions of criteria air pollutants by up to 85% by supplanting heat generated from fossil fuel combustion with heat recovered from wastewater, thereby contributing to the enhancement of ambient air quality.

4. Stabilize energy costs for customers; 88% of whom are in LIDAC census tracts.

Natural gas prices are susceptible to price volatility that can dramatically increase the cost of energy. For example, in 2021 natural gas prices surged in Minnesota and other parts of the country after a winter storm in Texas froze critical gas infrastructure. These kinds of price spikes are particularly harmful to households with lower incomes where residents are less able to bear even small increases in monthly utility bills. While this project will not reduce the energy burden for income-qualified residents, there will be economic benefits from the price stabilization that comes with using recovered thermal energy versus the volatility of natural gas and fuel oil prices.

5. Serve as a model to more than 16,000 publicly owned wastewater treatment systems

According to the U.S. Cybersecurity & Infrastructure Security Agency, the United States has more than 16,000 publicly owned wastewater treatment systems, responsible for treating the sewerage of approximately 75% of the U.S. population, of which there are 800 in Minnesota. Frequently these treatment facilities are in industrial settings with nearby buildings and neighborhoods that would make

good applications for this technology. While not all projects can be integrated into an existing district energy system, there are certainly opportunities to utilize this technology for individual buildings or smaller networked systems. This is a widely available resource that can be scaled as thermal energy solution across the country.

6. Build upon existing partnerships to expand opportunities for residents of low-income and disadvantaged communities to get onto career pathways to good-paying jobs in the union construction trades, particularly steamfitters/pipefitters and electrical workers.

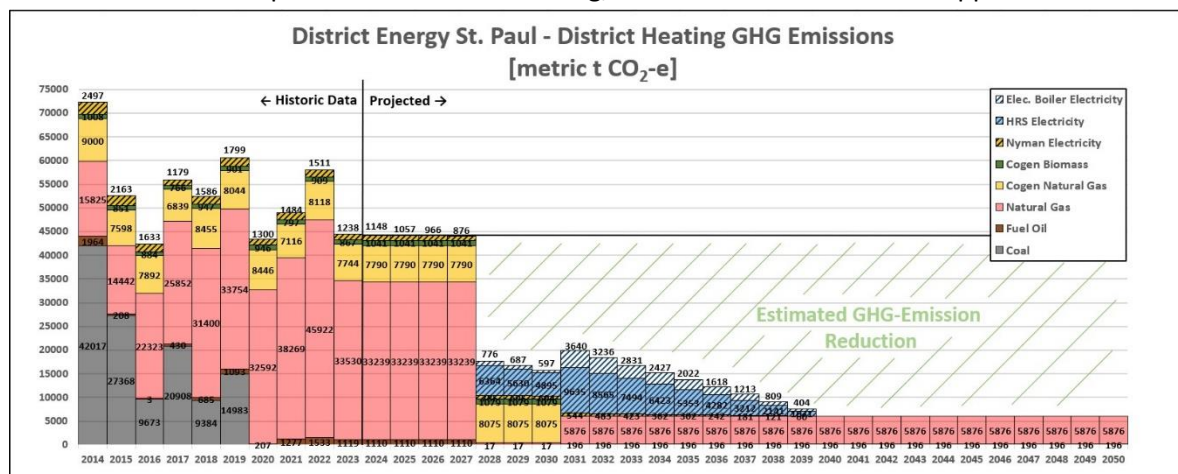
This project would expand opportunities to build on existing partnerships designed to increase access to quality jobs for disadvantaged community members in Saint Paul. These opportunities would include quality construction jobs and permanent jobs at District Energy and in related industries.

7. Reduce the temperature of the effluent discharged into the Mississippi River

Extracting thermal energy from the effluent of the Metro Plant will also reduce the temperature of the effluent that flows through the Heat recovery System (HRS), reducing the volume of thermal pollution flowing into the Mississippi. Thermal pollution negatively impacts the ecology of our rivers, lakes, and waterways. According to The Cost of Nutrients (Earth Economics, 2021) there are at least 54 wastewater treatment plants across 48 cities and towns that discharge effluent into the Mississippi River from the Headwaters to the Gulf of Mexico. Recovering some of the thermal energy before discharging the effluent at more of these facilities can help reduce thermal pollution that enters the river.

Section 2: Impact of GHG Reduction Measures

Implementation of the CHStP Project will result in a dramatic decrease in GHG emissions from combustion of natural gas and fuel beginning in 2028. For additional details on the estimated GHG reductions and assumptions used in the modeling, see the attached Technical Appendix.



a. Magnitude of GHG Reductions from 2025 through 2030

Modeling estimates that total cumulative CO₂-equivalent emissions will be reduced by up to 100,500 metric tons from 2025 to 2030 which is approximately 3 metric tons of reduction for each 1,000 square feet of building space heated by District Energy. According to the DOE's Alternative Fuels Data Center, this is a greater CO₂ equivalent emissions reduction than would result from replacing 22,400 gasoline fueled light duty vehicles with fully electric vehicles.

b. Magnitude of GHG Reductions from 2025 through 2050

Modeling estimates the total CO₂-equivalent emissions reduction from 2025 to 2050 will be approximately 842,500 metric tons, which equates to approximately 25.5 tons of reduction for every 1,000 square footage of building space currently served by District Energy. This is a greater CO₂ equivalent emissions reduction than would result from replacing 188,000 gasoline fueled light duty vehicles with fully electric vehicles.

c. Cost Effectiveness of GHG Reductions

The Cost effectiveness of the CHStP Project GHG reductions from 2025 to 2030 is calculated as follows,

Cost effectiveness of GHG reductions from 2025 – 2030 =

$$\text{\$150,510,586} / 100,500 \text{ tons} = \text{\$1,498/ton}$$

- During the 2025 – 2030 period, the CHStP Project is estimated to reduce GHG emissions by approximately 3 tons per 1,000 square feet of building space served, at a cost of approximately \$4.56/SF.
- The requested CPRG funding includes a 25% contingency reserve on the Equipment, Contractual and Construction budgets. Without the contingency reserve, the Cost effectiveness of GHG reductions from 2025 – 2030 = \$120,704,299 / 100,500 tons = \$1,201/ton or approximately \$3.66/SF of building space served.

d. Documentation of GHG Reduction Assumptions

The CHStP Project is modeled after two similar projects implemented in the past decade in Helsinki, Finland that recover waste heat from the effluent of wastewater treatment plants and integrate the recovered thermal energy into existing district heating networks. District Energy obtained data and operational information from representatives in Finland, which has been factored into GHG reduction modeling and analysis performed. Modeling of the estimated emissions reduction is based upon historical operating data for District Energy's district heating system and the Metro Plant data. The following assumptions are factored into the analysis:

- The project schedule forecasts the CHStP Project will be fully operational and able to supply heat to the district heating network by January 1, 2028.
- Calculated reductions assume average weather and system heating load conditions with no change in the square footage of building space served.
- District Energy is in the process of extending a power purchase agreement with Xcel Energy enabling continued operation of its biomass cogeneration plant through 2030 which limits the

amount of thermal energy the CHStP Project can supply to District Energy prior to 2031. The actual terms and conditions of that agreement must be approved by Minnesota's Public Utility Commission (MNPUC), which is anticipated to occur late 2024. The analysis assumes the biomass cogeneration plant discontinues operation in 2031.

- The analysis assumes all electricity purchased to operate the CHStP Project will be from carbon free sources until the Minnesota electric grid is fully carbon neutral in 2040. District Energy currently purchases Renewable Energy Credits for its district cooling network to provide 100% carbon neutral cooling services to customers.

For additional description of the GHG reduction analysis methodology and assumptions see the Technical Appendix. Also attached with the application is a GHG emission reduction calculation spreadsheet.

Section 3: Environmental Results – Outputs, Outcomes, and Performance Measures Expected

Outputs and Outcomes

a. Expected Outputs and Outcomes

Implementation of the CHStP Project will result in the following outputs:

- Construction of a 60 MW thermal heat recovery system that recovers waste heat from the Metro Plant's effluent using heat pumps, and transfers and integrates the recovered thermal energy into District Energy's district heating network. The system will include a 30 MW electric boiler and hot water storage at the Nyman Energy Center.
- Engagement with residents and NGOs to disseminate project/technology information via websites, journals, and outreach events.
- Establishment of a clear point of contact in a public platform for community questions, issues, and complaints.
- Recruitment of residents from impacted disadvantaged and low-income communities into apprenticeship-readiness programs and union apprenticeships that leads to quality jobs in the union construction trades.
- Submission of semi-annual progress reports to the EPA that will summarize community engagement activities, technical progress, accomplishments, milestones achieved including a description of outputs and outcomes, planned activities for the next 6 months including community engagement efforts, a summary of the expenditures to date, strategy for mitigating environmental risks and progress on job quality. The second semi-annual progress report will also include quantification of the LIDAC benefits resulting from the project.
- A detailed final report to the EPA that includes a summary of the completed project including outputs and outcomes achieved, total cost, total GHG emissions and other pollutant reductions, a summary of community engagement efforts, and a discussion of obstacles and challenges overcome, successes, and lessons learned.

Implementation of the CHStP Project will result in the following outcomes:

- GHG reductions up to 33,500 tons/year for 2028-30 and up to 37,000 tons starting in 2031
- Cumulative GHG emissions reduction of up to 100,500 tons between 2028-2030
- Cumulative GHG emissions reduction of up to 842,500 tons between 2028 and 2050
- Reduction in natural gas and fuel oil consumed in boilers at the Nyman Energy Center, located in a LIDAC, beginning in 2028.
- Decrease in the temperature of the Metro Plant's effluent discharged to the Mississippi
- Decreased exposure of the heating systems customers to the volatility of natural gas prices
- Increased participation by residents of Saint Paul LIDACs in apprenticeship readiness programs and apprenticeships in union construction trades. We will aim to enroll at least 20 LIDAC residents in apprenticeship readiness programs and at least 10 in apprenticeships over the grant period.
- Significant acceleration of the decarbonization efforts of the City of Saint Paul and the nation's largest hot water district heating system.

b. Performance Measures and Plan

The City of Saint Paul, in collaboration with subrecipients District Energy and Ramsey County, other project partners including the Metropolitan Council, consultants, and construction contractors will create monthly status reports that track, measure and report progress on the schedule of tasks and deliverables, expenditures and purchases, project timeline and milestones, and progress on the project's outcomes and outputs. For performance on GHG and CAP/HAP emissions reduction, District Energy is required to routinely submit emissions reports to the Minnesota Pollution Control Agency and the EPA. Since 2021, District Energy has voluntarily reported its emissions in an Environment, Social, Governance (ESG) report published for the public by District Energy's wholly owned subsidiary Ever-Green Energy. Data on District Energy's fuel use, scope 1 and scope 2 emissions, and fuel mix are all readily available and openly accessible. During the Period of Performance, the City will coordinate with District Energy to track these reports to obtain actual GHG emissions reductions as well as reductions in criteria air pollutants for inclusion in the progress reports to the EPA. The City has established a Climate Action dashboard to track the progress toward its Climate Action and Resilience Plan. The CHStP project will be included in this dashboard which will serve as a key resource to track and communicate actual emissions reductions resulting from the project. District Energy will also expand its ESG report to reflect the impacts of the CHStP Project.

c. Authorities, Implementation Timeline, and Milestones

The City of Saint Paul: As the grant recipient, the City of Saint Paul will be responsible for grant management and oversight to achieve the grant agreements requirements and the CHStP Project's outputs and outcomes, and responsible management of the awarded grant funds. Responsibilities include management of the sub-awardees, workforce and community engagement and outreach, and thorough progress reporting to the EPA. The City also plays a key role in permitting construction projects.

District Energy St. Paul: As a sub-awardee, District Energy will be responsible for project management of the capital project, including management of the RFP and procurement processes for consultants and contractors; design, engineering, permitting, equipment procurement and construction; commissioning and start-up; project progress reporting, and operation of the completed capital project. District Energy will also support community engagement, measurement of performance against project outputs and outcomes.

Ramsey County: As a sub-awardee, Ramsey County’s Workforce Solutions will be responsible for coordinating the project’s workforce development initiatives in concert with the trade union locals, to bolster recruitment and placement opportunities for residents of Saint Paul LIDAC’s into apprenticeship readiness programs and apprenticeships.

Metropolitan Council Environmental Services (MCES): As owner of the Metro Plant and host for the heat recovery system that will be constructed on the site, MCES will need to enter into agreements enabling it to serve as host, and actively participate in the technical design, permitting, construction, and start-up and commission activities, and establish procedures related to the integration of the heat recovery system into the Metro Plant’s treatment process.

For a detailed list of milestones and implementation timeline see Section 1 of this application.

Section 4: Low-Income and Disadvantaged Communities

a. Community Benefits

One of the stated goals of the CPRG is to *pursue measures that will achieve substantial community benefits, particularly in low-income and disadvantaged communities*. The CHStP project will not only deliver massive carbon pollution reductions but will also provide additional air quality benefits to those living and working nearby, stabilize energy prices for businesses and residents that are served by the system, and create opportunities for more residents to embark on careers in the energy, water, and construction fields. Customers of the system include Saint Paul Public Housing Authority’s 455-unit Mt. Airy Homes, an additional 1,699 subsidized affordable housing units, and the Saint Paul Opportunity Center and Dorothy Day Center, the largest shelter for the unhoused in Saint Paul. Customers also include the two largest hospitals in Saint Paul (Regions Hospital and United Hospital), the Saint Paul Union Depot transit hub, City, County, Regional, State, and Federal Government offices and courts.

This project will result in lasting societal benefits that reach far beyond the decarbonization of the district heating network. Implementation of the CHStP project will directly impact low-income and disadvantaged communities—as designated by the CEJST and EPA’s EJ Screen tools—in three ways:

1. Reduced exposure to criteria air pollutants
2. Decreased exposure to the price volatility of natural gas and fuel oil

3. New career pathway opportunities for area residents in the energy, water, and construction industries

1. Reduced exposure to criteria pollutants emissions

According to the Minnesota Pollution Control Agency (MPCA), air pollution played a role in 10% of deaths that occurred in the Twin Cities metro in 2015. Poor air quality was also a major factor in hospital and emergency room visits for nearly 500 people who experienced heart and lung problems that same year. The highest rates of death and disease that can be attributed to poor air quality disproportionately affect low-income residents, uninsured residents, residents of color, and residents living with a disability.

The CHStP Project is located in an environmental justice area of concern, where disadvantaged communities experience higher levels of air pollution from mobile and stationary sources as compared to more affluent communities in Saint Paul. Each year, District Energy reports facility pollutants and emissions to the MPCA. As can be seen in the table below, District Energy's current operations create substantial amounts of criteria air pollution due to the combustion of natural gas and fuel oil.

District Energy St. Paul Pollutants and Emissions from Natural Gas/Fuel Oil Boilers (2022)		
Pollutant	Emissions (LB)	Emissions (Tons)
Nitrogen Oxides	176,220.00	88.11
Carbon Monoxide	57,700.00	28.85
PM Primary	2,200.00	1.10
PM10 Primary	1,640.00	0.82
Volatile Organic Compounds	3,740.00	1.87
PM2.5 Primary	1,160.00	0.58
Sulfur Dioxide	1,700.00	0.85
Ammonia	2,540.00	1.27
Lead	0.00	0.00
Mercury	0.00	0.00
Total	246,900.00	123.45

By replacing most of the natural gas and heating fuel with a non-combustion thermal energy source, we estimate the project will reduce criteria pollutants by up to 85%. These reductions will help ease the cumulative impacts of air pollution on residents who live near and downwind from the facility.

Reporting Plan: The City of Saint Paul will work with

District Energy to include the emissions reports that District Energy submits to the MPCA and the EPA in the semi-annual progress reports and the final report submitted to the EPA.

2. Decreased exposure to the price volatility of natural gas and fuel oil.

In 2023, 72.5% of District Energy's heating energy sales were to customers in EPA IRA Disadvantaged Communities. Approximately 50% of the heating energy that District Energy delivers to those customers is currently generated from the combustion of natural gas and fuel oil. Implementation of the project will replace up to 85% of the heating energy generated from the combustion of natural gas and fuel oil with heat recovered from wastewater using a process that requires no combustion. This will decrease customer exposure to the fossil fuel price volatility that occurs during severe winter weather events, natural gas pipeline disruptions, and global events such as the war in Ukraine.

Using waste heat as a source energy will naturally dampen the price volatility of the thermal energy produced by the system. The City of Saint Paul and District Energy will work directly with the Met Council to develop a pricing model for the thermal energy recovered from the Metro Plant that is sustainable, does not increase energy burden, and minimizes energy price volatility, which disproportionately harms residents with lower incomes.

Future growth and addition of customers will largely occur in qualifying neighborhoods, further expanding the benefits of stable energy prices to more building owners and households.

3. Increased career pathway opportunities for area residents into energy, water, and union construction trades jobs

This project will expand opportunities to build upon existing partnerships designed to increase access to quality jobs for disadvantaged community members in Saint Paul. These opportunities would include quality construction jobs and permanent jobs at District Energy Saint Paul and in related industries, and in the union construction trades. Workforce partners are developing programs to address an existing shortage of water workforce employees that will intensify after an expected wave of retirements in the current workforce. This project would offer opportunities to build on programs such as:

- The [Building Strong Communities program](#) is a multi-trade apprenticeship preparatory program aligning stakeholders to provide industry driven apprenticeship readiness pathways into union construction careers. This program offers individuals the opportunity to receive Union endorsed training, exposure and a “foot in the door” to a career in the trades.
- Saint Paul Regional Water Services created a “water utility trainee” position in 2023 to build a diverse workforce for the future and Met Council is interested in using this as a model to create a similar program in their Environmental Services division.
- The City of Saint Paul has partnered closely with the Ramsey County Workforce Innovation Board to create a Green and Construction Careers pathways focus in the past three years. The City and County have invested a total of over \$2 million in American Rescue Plan funds into these new pathways into careers in residential insulation, HVAC, and other green construction related careers.
- Ramsey County Workforce Solutions has pioneered programs in the past few years to reduce and remove barriers to access for lower-income residents to get into pathways to good-paying jobs. One such program has helped hundreds of income-qualified residents obtain driver’s licenses in the past year, a pre-requisite for most jobs in the construction sector.
- District Energy Saint Paul employs union workers who are members of the Steamfitters-Pipefitters Local 455 and IBEW Local 110, both of which have their regional training centers within Saint Paul, which reduces potential transportation-related barriers to accessing these programs for low-income residents. Steamfitters-Pipefitters Local 455 and Saint Paul College jointly offer a Pipefitting Diploma program for enrolled apprentices in Local 455. The Saint Paul Pipefitters Joint Apprenticeship Training Committee has held 15 recruitment and outreach events in the past 12 months.

Reporting: District Energy records and reports the pricing and expenses it experiences for natural gas and fuel oil monthly. The City of Saint Paul and District Energy will include energy price and cost information for natural gas, fuel oil and heat recovered from wastewater in the progress reports and final report. District Energy will also report on expansion of the system in qualifying neighborhoods

during the Period of Performance. The City of Saint Paul will work with partners to track the impact on enrollments and completions in apprenticeship readiness programs, apprenticeships and job placements, and job creation.

The geographies of Low Income and Disadvantaged Communities (LIDAC) were identified from EPA's EJScreen. The map layer EPA Inflation Reduction Act Disadvantaged Communities was downloaded and overlaid with the buildings and distribution system served by District Energy. The list of project relevant census block group IDs is attached with this application.

b. Community Engagement

The City of Saint Paul, District Energy and the Metropolitan Council have been studying and analyzing this project's potential since 2022. During that effort, the partners shared early information about the potential of the project with community leaders. The project has been presented to the Saint Paul City Council and Saint Paul Climate Justice Advisory Board, a volunteer group of stakeholders who advise Saint Paul policymakers to ensure an equitable approach to climate action work in the City. The project has also been presented to the Metropolitan Council Environment Committee. District Energy has also shared information through its customer and community engagement efforts, including with legislators and state agencies.

Beyond direct customer engagement and communication, District Energy actively works to improve energy literacy in the community by hosting plant tours, presentations to community organizations, participating in community events, through media opportunities, and creative use of public art exhibits. One example of District Energy's community engagement efforts in LIDACs is with the Saint Paul Public Housing Agency. Each fall, District Energy team members meet with residents of Mount Airy Homes. To facilitate this meeting, meeting invitations and materials are translated into seven languages and residents' interpretive service needs are gathered, so interpreters can be present to support participants in the meeting. The partner organization Community Action Partnership of Ramsey and Washington County joins the meeting to help residents understand their options for energy and emergency assistance.

Based on a breadth of customer and community engagement experience, the City of Saint Paul and District Energy will coordinate with project stakeholders to develop an outreach and engagement plan that will prioritize early and frequent opportunities for community conversations and information sharing, particularly in the LIDACs. The public engagement and awareness campaign will utilize proven tactics like public meetings, customer meetings, surveys, community leader engagement, resident and tenant engagement, and media. By utilizing the channels and audiences from all partners, the campaign will be comprehensive with regular opportunities for gathering input and sharing project updates.

Section 5: Job Quality

The City of Saint Paul has a Project Labor Agreement Policy stating that for all capital projects flowing through the City of \$250,000 or more, local union construction trades have the first right of refusal to request that a Project Labor Agreement be included in the contracting process. This policy would apply to the implementation of this project, to help ensure that the project can be delivered on time, by qualified professionals, without labor disruptions. Prevailing wage rules will apply.

The City works closely with the Ramsey County Workforce Innovation Board and the staff at Ramsey County Workforce Solutions. A focus of the County's adult workforce development programs is increasing job quality for low-income County residents, most of whom are Saint Paul residents. As part of this project, Ramsey County will lead the recruitment of low-income residents from disadvantaged communities into apprenticeship readiness and apprenticeship programs in the energy, water, construction trades, and related job sectors.

District Energy is an affirmative action/equal opportunity employer with a commitment to actively recruiting applicants from underserved communities and ensuring equal treatment in a structured selection process. District Energy supports unions, and currently has two unions and two collective bargaining agreements. It employs members of Steamfitters-Pipefitters local 454 and International Brotherhood of Electrical Workers Local 110.

Since its founding, District Energy has had a member of the labor community on its Board of Directors. The President of the Minnesota PipeTrades Association, David Ybarra, is currently a board member, which demonstrates the close connections between these two key partners. Apprentices at Local 454 are eligible to enroll at Saint Paul College and receive a Pipefitting Diploma to bolster their skills, which has helped the Steamfitters-Pipefitters accept a broader group of individuals into apprenticeships.

District Energy's salary ranges are based on market conditions for non-union positions of similar education, skill, and responsibility. The company provides an integrated rewards program that supports attraction, retention, and motivation of employees. District Energy's pay programs support a long-term view and the values and integrity of the organization, and it administers the compensation program in a manner that is consistent and free of discrimination, ensuring pay equity and equal pay, as we continue to foster a diverse, mission-focused, equitable, performance-driven culture. As part of District Energy's total compensation offerings, all full- and part-time employees are provided health and wellness benefits designed to support the diverse needs of its staff and their families. This includes health insurance, life insurance, paid leave programs, worker's compensation, disability, critical illness and accident insurance, and a retirement plan.

Section 6: Programmatic Capability and Past Performance

a. Past Performance

1. **Project Title:** Twin Cities Electric Vehicle Mobility Network (now known as EV Spot Network/Evie Carshare) City of Saint Paul is a subrecipient to American Lung Association

Federal Agency and Listing Number: USDOE Vehicle Technical Office Grant Energy Efficiency & Renewable Energy EE-1, U.S. Department of Energy. Award No. DE-EE0009226.

CFDA No.: 81.086

Brief Description: Install a network of 70 public EV charging stations and lease a fleet of electric vehicles to be used as a publicly accessible community electric carshare program.

Contact: David Kirschner, National Energy Technology Laboratory, Kirschner, David (NETL), david.kirschner@netl.doe.gov

Reporting Requirements: The City of Saint Paul has met all reporting requirements on time.

2. **Project Title:** City of Saint Paul - Municipal Building Decarbonization Plan Development

Federal Agency and Listing Number: Department of Energy DE-SE0000368

CFDA No.: 81.128

Brief Description: The City of Saint Paul was awarded \$317,800 from the U.S. Department of Energy's Energy Efficiency and Conservation Block Grant (EECBG) Program in January 2024. The grant funds will be used for technical consulting services to develop a Municipal Buildings Decarbonization Plan, identifying pathways for the City of Saint Paul to achieve carbon neutrality in municipal building operations by 2030.

Contact: Thomas Schultz, DOE Project Officer; thomas.schultz@hq.doe.gov, 240-848-8950

Reporting Requirements: The City of Saint Paul has met all reporting requirements on time.

3. **Project Title:** Westside Intersection Control Enhancements

Federal Agency and Listing Number: Under DCP agreement. Federal project #: CMAQ 6223(194); State project #: 164-030-016

CFDA No.: n/a

Brief Description: \$1,196,000 federal funding to implement improvements to the traffic signals on its West Side. The work consists of the installation of three miles of fiber-optic cable, reconstruction of the traffic signal at the intersection of Cesar Chavez Street, State Street, and George Street, and other traffic signal improvements throughout the area. This work is on pace to be complete in the Summer of 2024.

Contact: Colleen Brown, 651-234-7779, colleen.brown@state.mn.us

Reporting Requirements: The City of Saint Paul has met all reporting requirements on time.

4. **Project Title:** Capital City Bikeway on Kellogg Phase 1

Federal Agency and Listing Number: Under DCP agreement. Federal project #: TA 6223(045); State project #: 164-080-081, 164-158-026

CFDA No.: n/a

Brief Description: \$6,761,880 federal funding to construct a protected, off-street bikeway along the north side of Kellogg Blvd between Jackson Street and St. Peter Street in downtown Saint Paul, as part of the City's Capital City Bikeway Project.

Contact: Colleen Brown, 651-234-7779, colleen.brown@state.mn.us

Reporting Requirements: The City of Saint Paul has met all reporting requirements on time.

5. **Project title:** Snelling/Lexington ITS Traffic Management

Federal Agency and Listing Number: Under DCP agreement. Federal project #: CMAQ 6221(138); State project #: 164-010-069

CFDA No.: n/a

Brief Description: 2,001,320 federal funding to relieve congestion and improve traffic signal operations, incident and emergency management, and event management along Snelling Avenue and Lexington Parkway through the installation of new signal controllers, robust detection, interconnect, changeable message signs, implementation of adaptive traffic signal control, travel time monitoring, and signal timing optimization.

Contact: Colleen Brown, 651-234-7779, colleen.brown@state.mn.us

Reporting Requirements: The City of Saint Paul has met all reporting requirements on time.

b. Reporting Requirements

For each of these listed projects, City of Saint Paul has met all reporting requirements on time. For the Twin Cities Electric Vehicle Mobility Network Project, the City provided detailed reports to USDOE, via the lead grantee American Lung Association, of project delays caused by global supply chain issues related to the availability of EV charging equipment (EVSE) and by a battery-related recall of the fleet of Chevy Bolts used in the carshare program.

For the Capital City Bikeway Kellogg Phase I project, the City completed most of the project in 2023 and reported clearly and thoroughly on the reasons why a portion of the construction project would not be completed until summer of 2024, due to unforeseen challenges in the complexity of underground utilities. The remaining projects listed above were either completed as proposed or are still in the initial stages of project implementation.

The project team has put much time and care into the calculations for greenhouse gas emissions and reductions in criteria air pollutants that would result from the CHStP project, and we are confident in our ability to report on these reductions accurately. The project team is also prepared to provide regular progress reports regarding the project workforce development goals.

c. Staff Expertise

The City of Saint Paul and its partners are committed to transparent, accountable, and efficient use of grant funds to achieve the measures, outputs and outcomes described in this application.

Project Management- Overall project management will be led by the Primary Contact, Russ Stark, with assistance from a City grants specialist, along with a project manager, project administrator, and community outreach coordinator from District Energy. The CHStP Project will be financially managed by the City of Saint Paul staff experienced in federal grants and reporting under Russ Stark's guidance. The project's Leadership Team will meet at least monthly to ensure integrated progress toward project goals, deliverables, interdependencies, critical handoffs, and milestones for the project including the work of each subrecipient. The project manager, with the Leadership Team, consultants, and contractors, will

create monthly status reports to identify and address the schedule of tasks and deliverables, for use in progress reports to the EPA.

Risk Management and Project Changes- The CHStP Project has been de-risked by building a partnership with highly experienced organizations that have demonstrated local knowledge and existing relationships. The deeper system technical design will be led by District Energy in collaboration with staff from the Met Council. Ramsey County Workforce Solutions will lead the career pathways effort. These organizations are considered the best-in-field. Project timeline will be monitored through City project management and monthly leadership meetings. Any changes will be determined at those meetings and communicated to the EPA by the Primary Contact, Russ Stark.

Section 7: Budget

a. Budget Detail

A detailed description and breakout of the CHStP Project budget is included in the Budget Narrative and Budget Spreadsheet. Also included in the narrative is a detailed budget table that includes the subawards to Ramsey County and District Energy St. Paul.

b. Expenditure of Awarded Funds

The City of Saint Paul has a robust set of procedures and controls in place to manage Federal funds. In August 2023, the City received AAA Outlook Stable bond ratings from both S&P Global Ratings and Fitch Ratings, indicating sound fiscal management across the City's enterprise. The City Council and the Mayor must approve a resolution allowing departments to apply for all grants, and another resolution to accept and budget grants that have been awarded. Accounting and Budget procedures are in place to accurately account for grant revenue, spending, and budgeting, and Procurement procedures are in place to adhere to Federal requirements for contracting.

The City is also establishing a central Grants Division within its Office of Financial Services this year to provide broad oversight, best practices, and audit preparation for all City grants, and this division will ensure compliance with Federal requirements for subrecipients. The City's new Grants Manager, who will lead this new division, has recently been hired. A new City of Saint Paul Grants Manual is a 43-page document currently in draft form and is being circulated internally for feedback prior to final approval. The Grants Manual identifies, among many other things, procurement procedures, the key elements that must be kept in grant files, personnel, and non-personnel budgeting, how to approach subrecipients, beneficiaries and contractors, and grant award modifications.

The development of this application as well as the procedures and controls to be used during project implementation are designed to ensure that grant funds are expended in a timely and efficient manner within the five years of the grant period. As the primary applicant, the City of Saint Paul will be the recipient of funds and is prepared to be responsible for any funds awarded through this program as the pass-through entity. The sections below outline Saint Paul's Approach, Procedures and Controls.

Approach

1. Clarity – The project objectives, timeline and budget allocations have been clearly defined to ensure that collaborators and stakeholders understand the proposed scope of work and the expectations of partnership from the beginning stages of project development.
2. Accountability – Robust financial and project management systems will be used to track expenses, monitor progress, and address deviations from the plan. Each expense will be documented and subject to review processes to maintain transparent accounting.
3. Adaptability – Unforeseen challenges may arise during the grant period. The project team is well equipped with the management tools necessary for agile decision making and resource reallocation while staying within the funding parameters.

Procedures

1. Execution of Agreements – the project team has been working very closely with District Energy St. Paul and other project partners and will be prepared to enter into agreements quickly should funds be awarded.
2. Budget Allocation – Funds will be allocated according to the approved budget by organization, as outlined in the budget narrative. A dedicated team will oversee the management of grant funds, including budget monitoring, expense tracking and financial reporting.
3. Financial Oversight – Internal audits are regularly conducted at the City of Saint Paul (Prime Recipient) to assess project fund health and mitigate any errors.

Controls

1. Segregation of Duties—Responsibilities related to grant fund management, procurement, and financial reporting are segregated among team members to prevent conflicts of interest and ensure accountability.
2. Documentation and Recordkeeping – All financial transactions and supporting documentation are recorded and retained in accordance with industry best practices and regulatory requirements.
3. Compliance Monitoring – Periodic reviews will be conducted to ensure compliance with the terms and conditions of the grant agreement and relevant laws and regulations. At minimum, the project team will comply with the City of Saint Paul annual auditing process; it is expected that more regular reviews will occur as reimbursement requests are processed.

c. Reasonableness of Costs

A detailed breakout of the requested funding for each major task and functional area of the project are described in the Budget Narrative and Budget Spreadsheet. Also included with the Budget Spreadsheet is a detailed breakout of subrecipient District Energy St. Paul's budget. Budgets for Equipment, Contractual and Construction are based upon input from contractors, vendors, consultants, and past projects.