

Wastewater Energy Capture Opportunities for Minnesota Communities

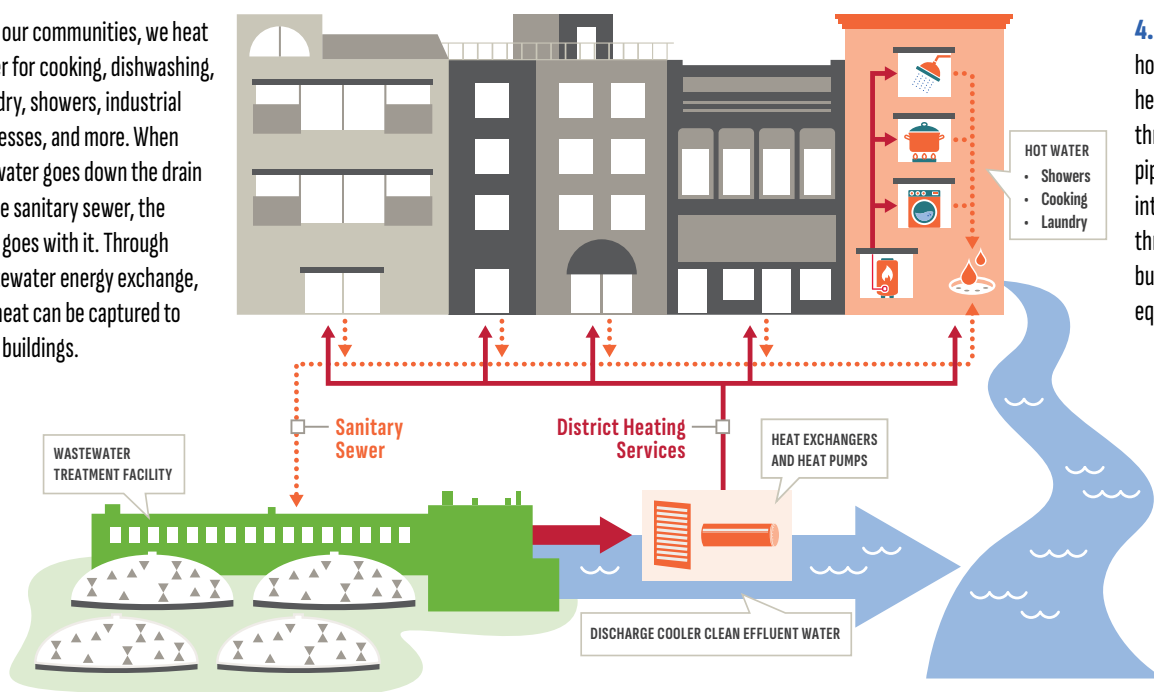
In Minnesota, there are 800 public wastewater treatment facilities. Based on the characteristics and location, some of these facilities could provide a much-needed heating solution for industry, agriculture, and communities. The potential is demonstrated by two recently completed wastewater energy capture studies in Duluth and Saint Paul that concluded favorable results for wastewater energy capture as a consistent, sustainable, and cost-stable heating resource. The available energy from the wastewater treatment facilities in those two communities is enough to provide primary heating capacity for over 40 million square feet of building space.

Request for Support

Additional support is needed in the amount of **\$750,000** in order to establish a program that will quantify the total amount of energy available state wide. Once quantified, the information will be provided to the communities served by public wastewater facilities for utilization in resource planning and economic development activities. Additionally, two projects will be supported in order to further advance and demonstrate the opportunity—one in the seven-county metro area and one in greater Minnesota.

How it Works

1. In our communities, we heat water for cooking, dishwashing, laundry, showers, industrial processes, and more. When the water goes down the drain to the sanitary sewer, the heat goes with it. Through wastewater energy exchange, the heat can be captured to heat buildings.



4. A district energy system pumps hot water to buildings for space heating and domestic hot water through a network of underground pipes. At the building's mechanical interface, energy is transferred through a heat exchanger to the building's hydronic loop for HVAC equipment and water faucets.

5. Once a building takes the energy it requires, the water is returned to the district loop to be reheated to the ideal temperature and then recirculated to connected buildings through the closed loop network.

2. Ever-Green Energy's studies found that the treated, clean effluent water is still 55°F – 73°F in Saint Paul and 85°F – 90°F in Duluth. These temperatures were found to be fairly constant.

3. After the water treatment process at the waste water treatment plant, the clean effluent runs through a heat exchanger to capture the heat. The heat is transferred to a district energy system loop, which uses heat pumps to increase the water to the ideal temperature for the district system supply.

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