# District Energy St. Paul
# Operating Engineers Seminar 2022

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# Agenda

- Welcome
- Fuel Cost Trends
- Distribution Update
- Customer Projects
- Customer Resources
- Q&A
- Raffle

# Presenters

Steve Rambeck
Director of Business Development
Steve.Rambeck@districtenergy.com

Gerry Gubash
Distribution Services Manager
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Ray Watts
Lead Project Engineer
Ray.Watts@districtenergy.com

Jordan Debol
Business Analyst
Jordan.Debol@districtenergy.com

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# Fuel Cost Trends

Steve Rambeck

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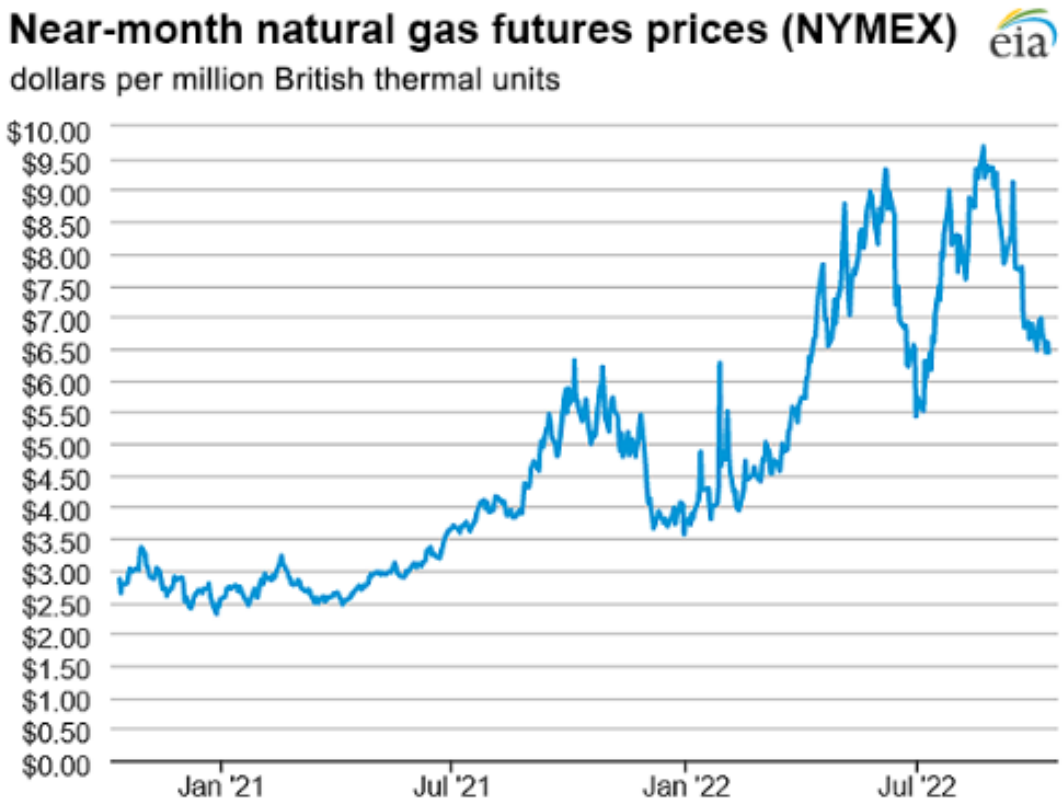
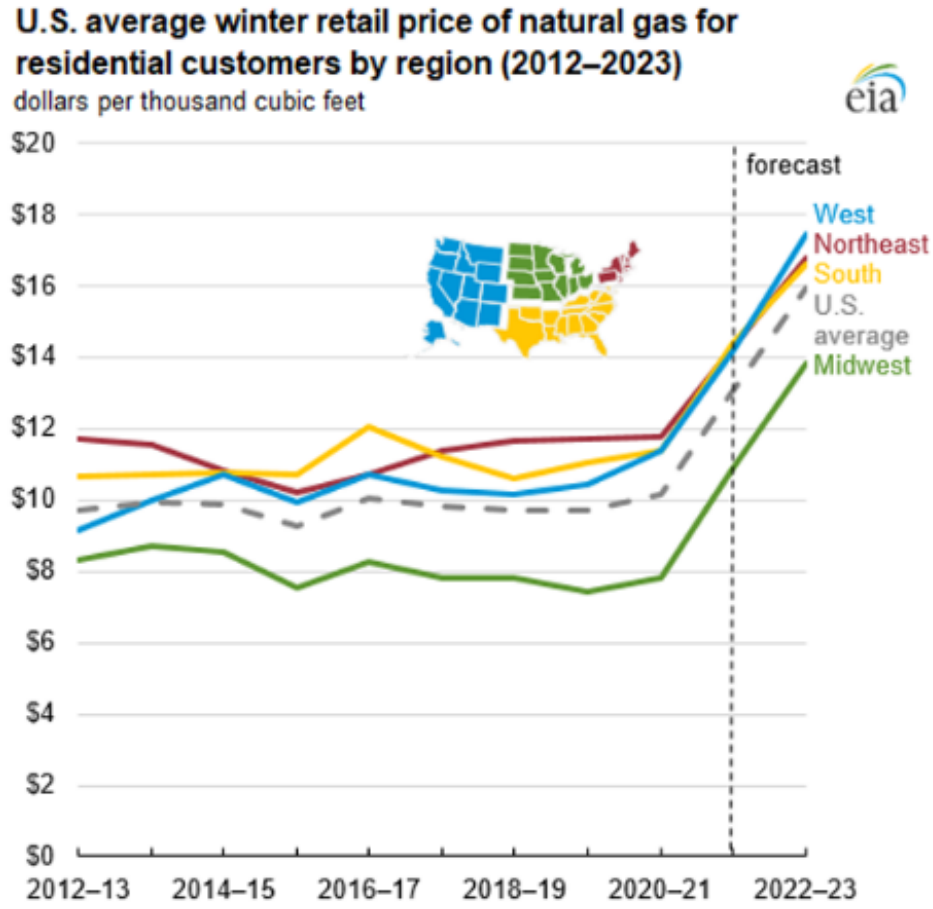
# Natural Gas Pricing




Data source: CME Group as compiled by Bloomberg, L.P.




Data source: U.S. Energy Information Administration, *Winter Fuels Outlook*
Note: winter = October–March

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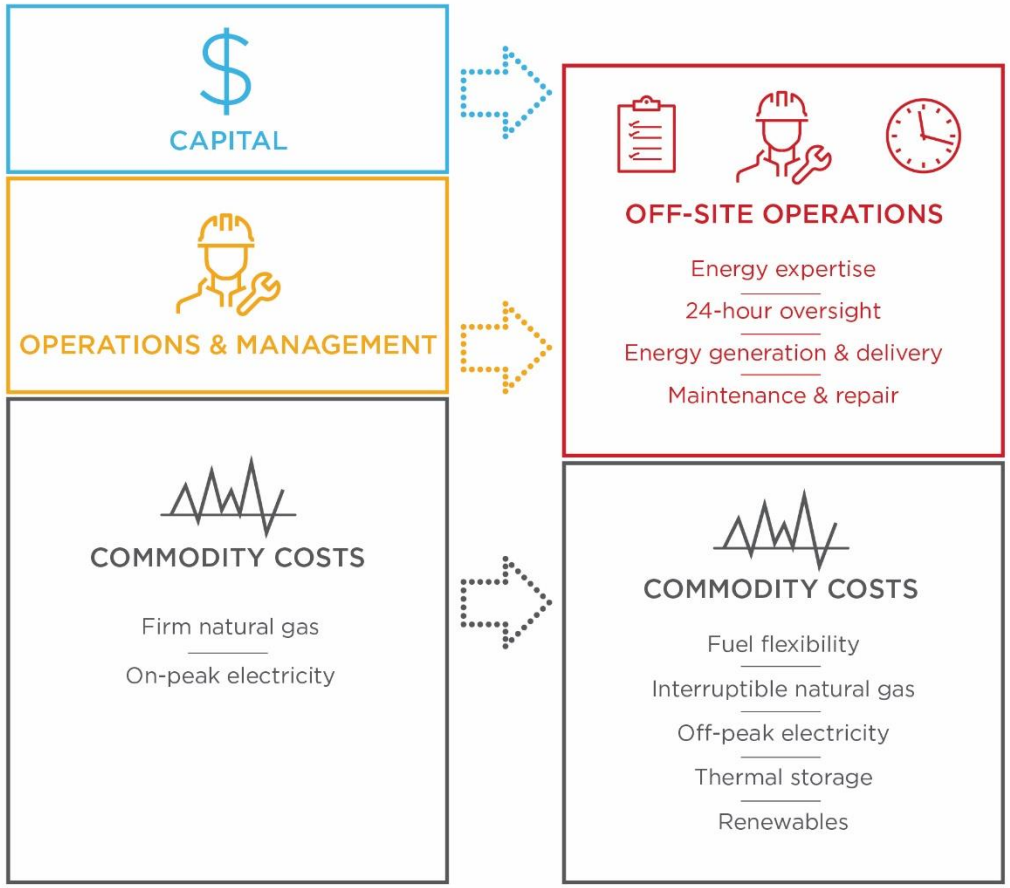
# Energy Budget On-site vs District Energy




- Reliability rate of 99.99%
- Stable rates
- Simplified operations
- Less mechanical space required
- Customer-driven nonprofit partner
- Flexible energy sources
- Sustainable solutions

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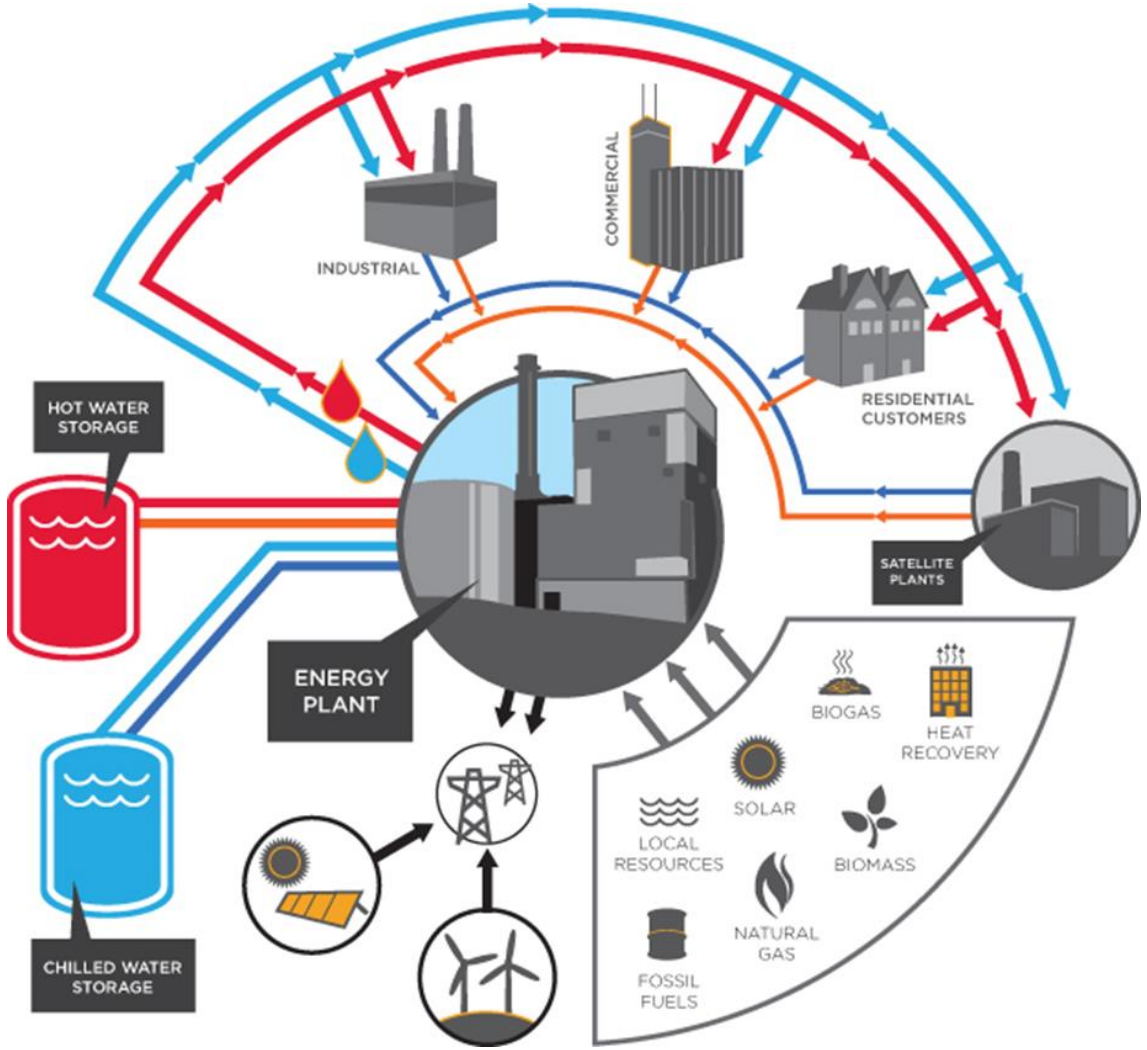
# Integrated District Heating and Cooling System

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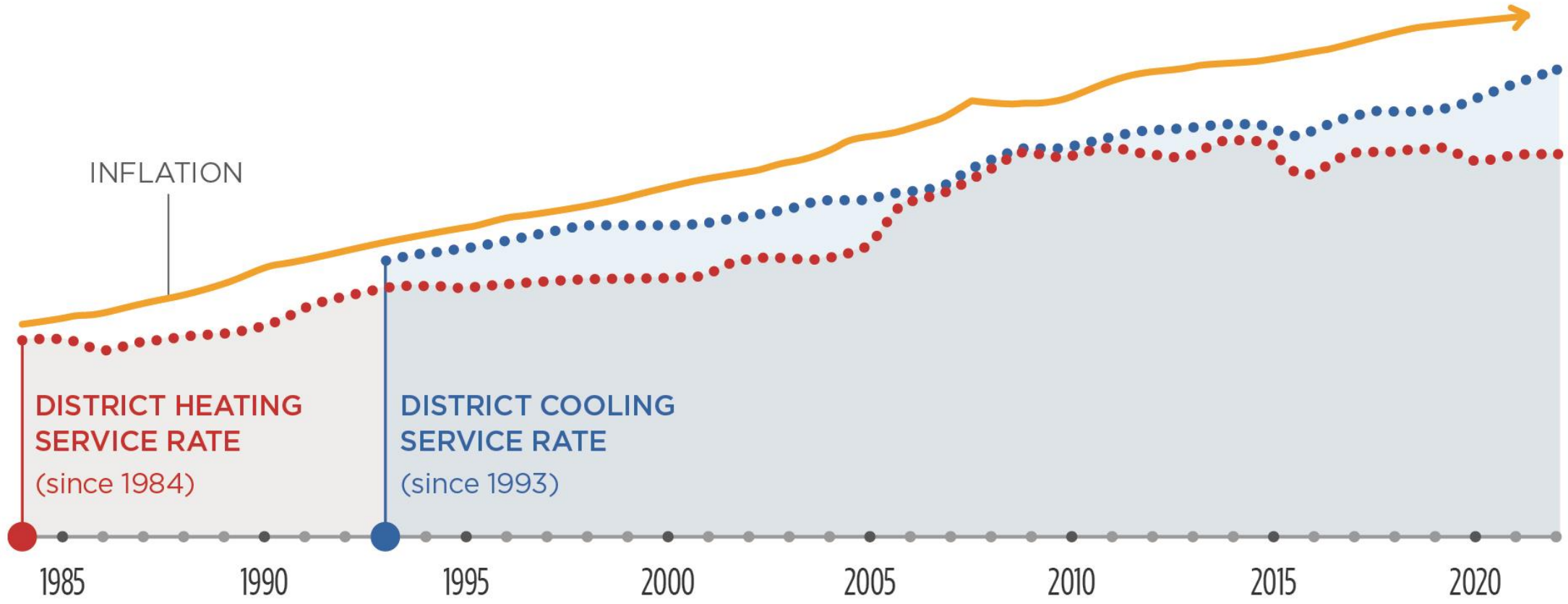
# District Energy Fuel Costs

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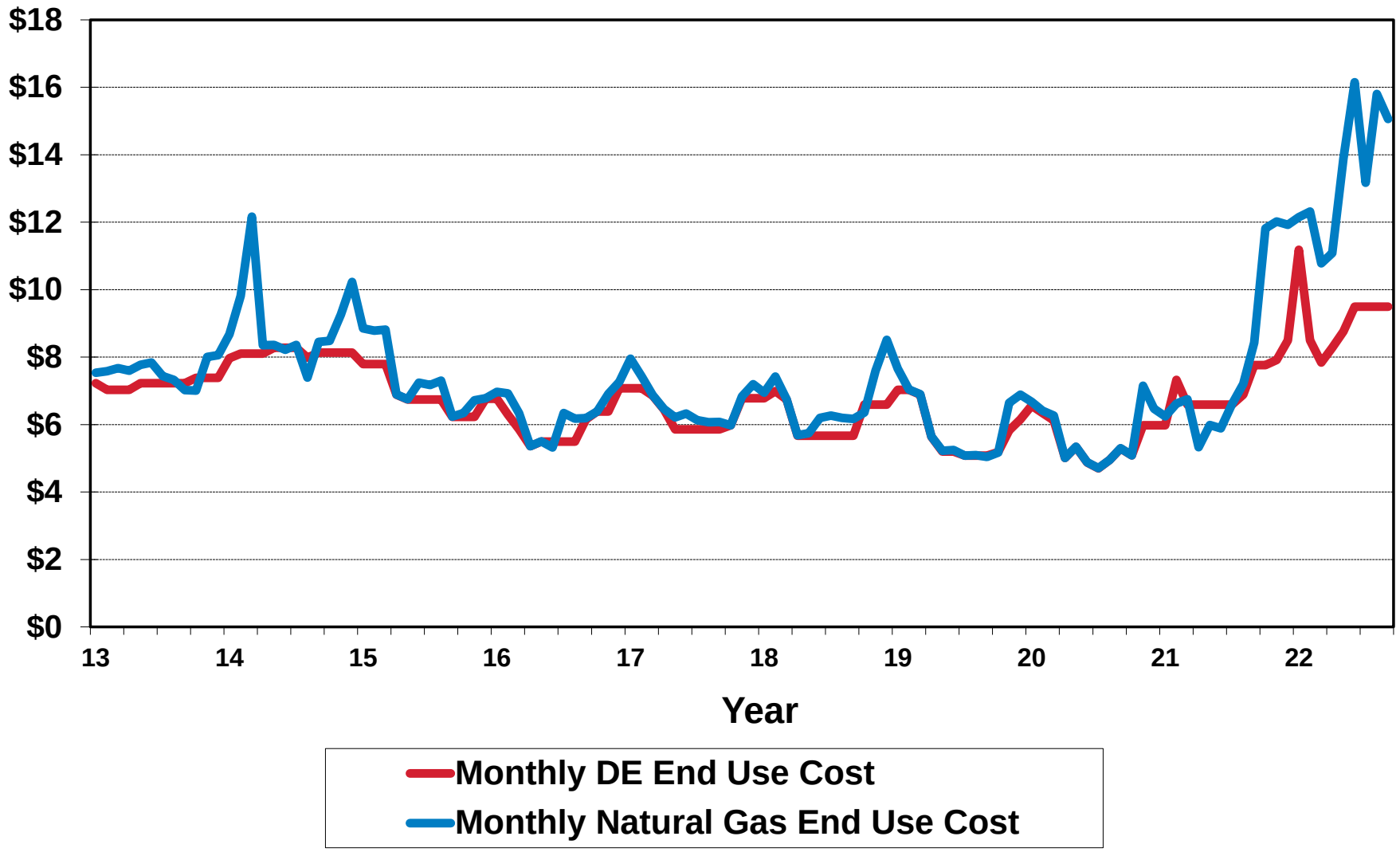
# District Energy Fuel Costs

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# Distribution Update

Gerry Gubash

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# Distribution Team

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# Distribution Projects


- 290,000 feet of pipe
  - 40 miles of heating
  - 15 miles of cooling
- Pipe replacement
- Underground vault conversions

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# Leak Detection System


Logstor


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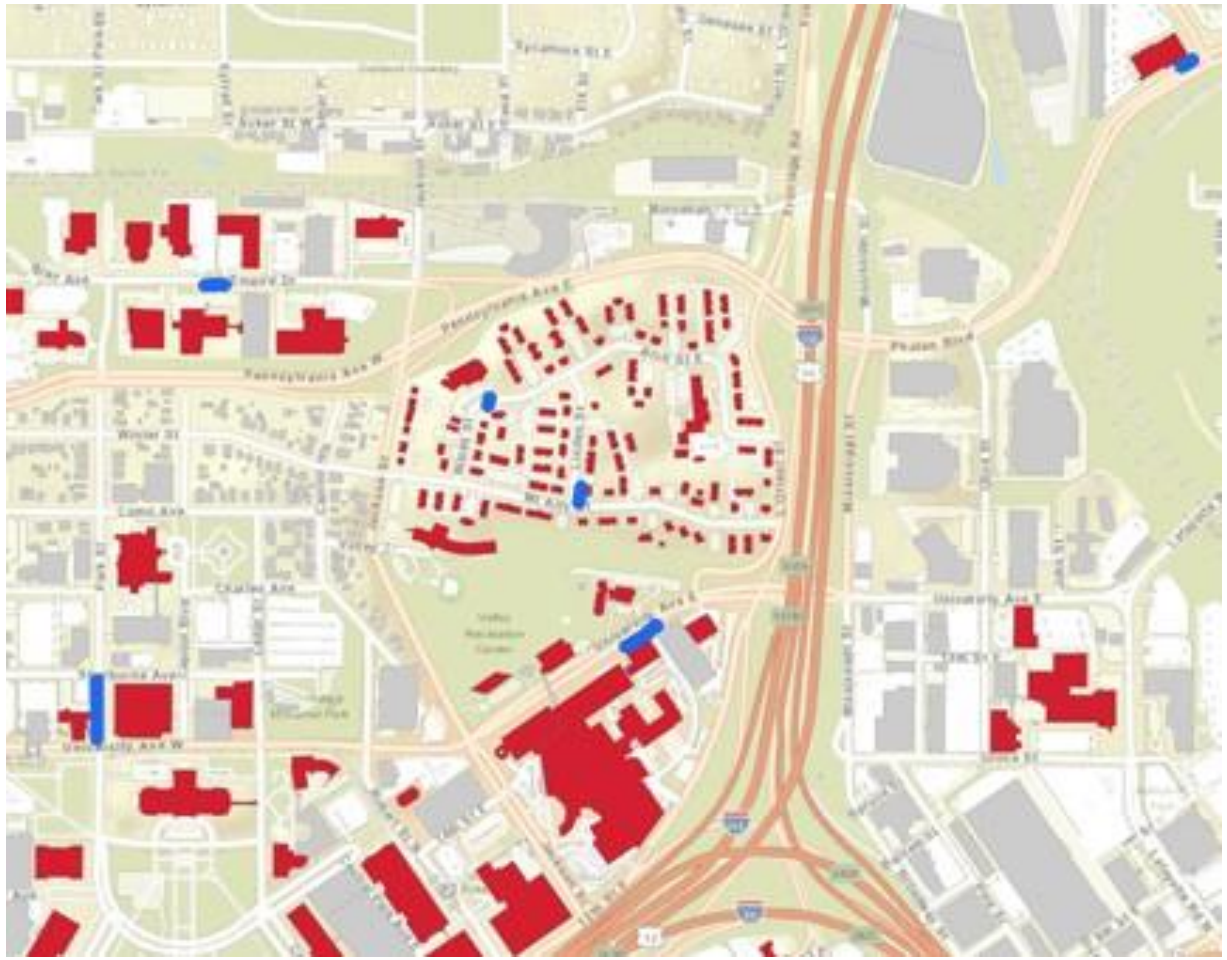
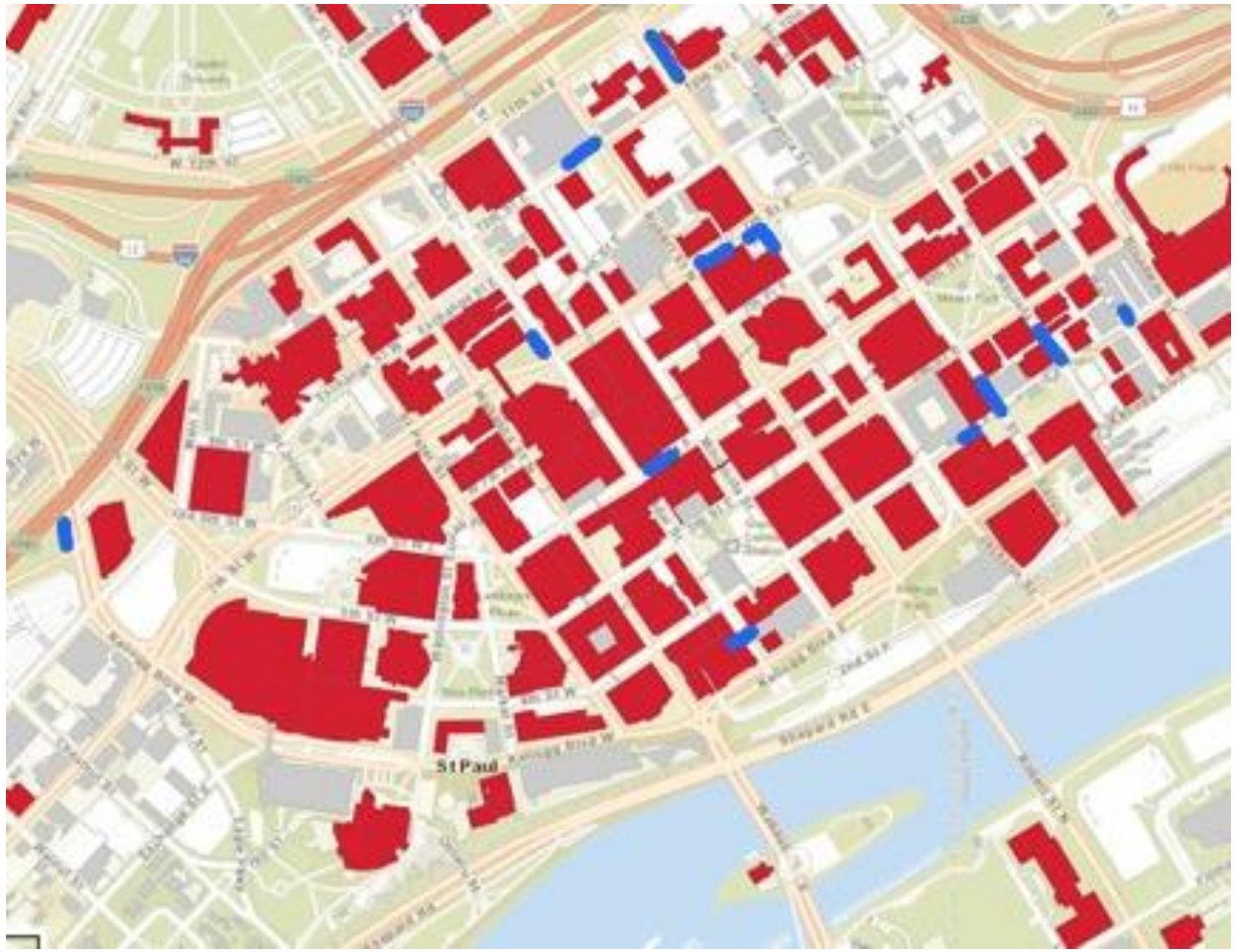
# North of 94



# South of 94

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# Project Support

Ray Watts

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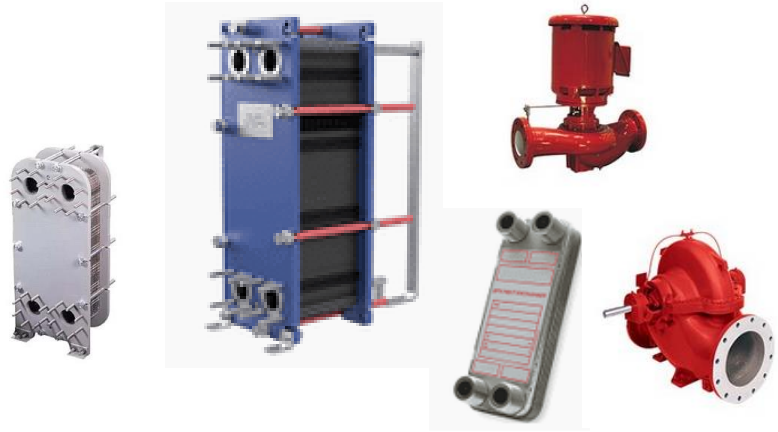
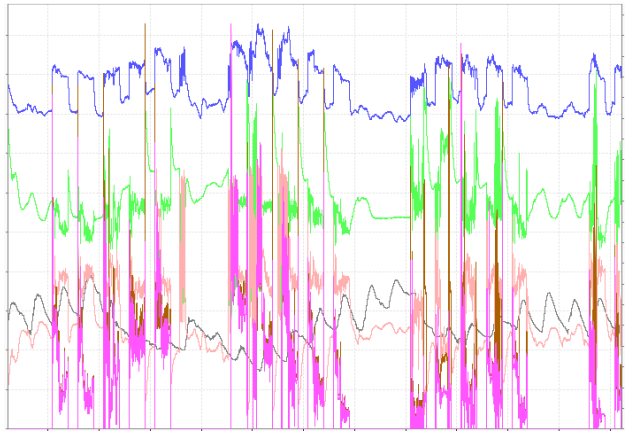
# Potential Project & Customer Inquiries

- Types of projects
  - Upgrade - direct connect → primary & secondary
  - Heat exchanger
    - Upgrade or replacement
    - ΔT Improvement
  - Domestic hot water
  - System overhaul
- System requirements
  - Load
    - Average
    - Typical
    - Peaks
    - Records
    - What is normal & abnormal





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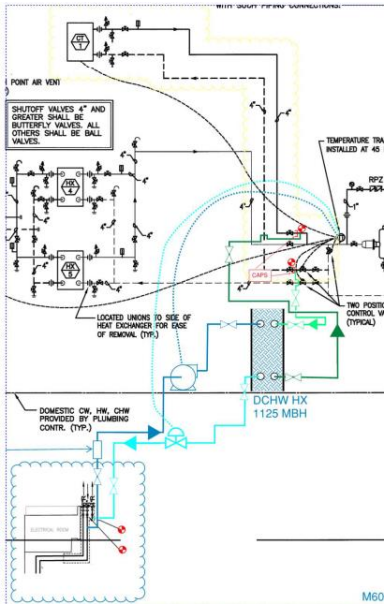
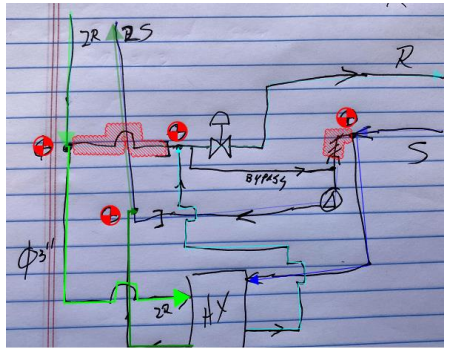
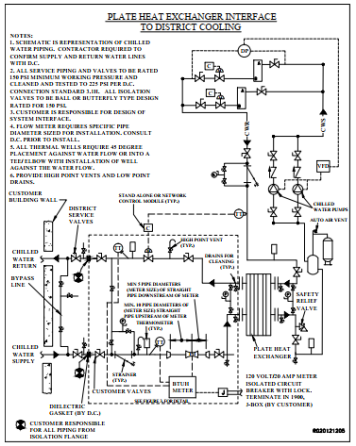
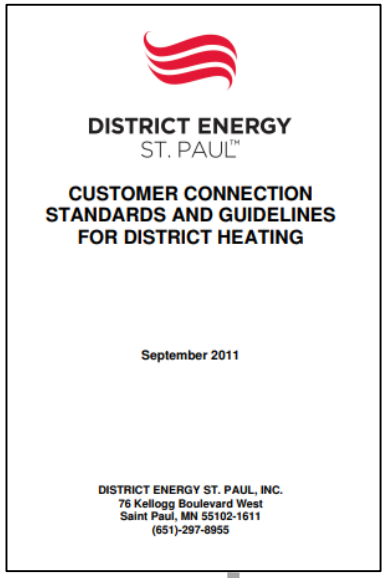
# Initial Steps

- Site visit
- Customer connection standards
  - Comprehensive
  - Heat exchanger requirements
  - ΔT
  - Pump
- Drawings





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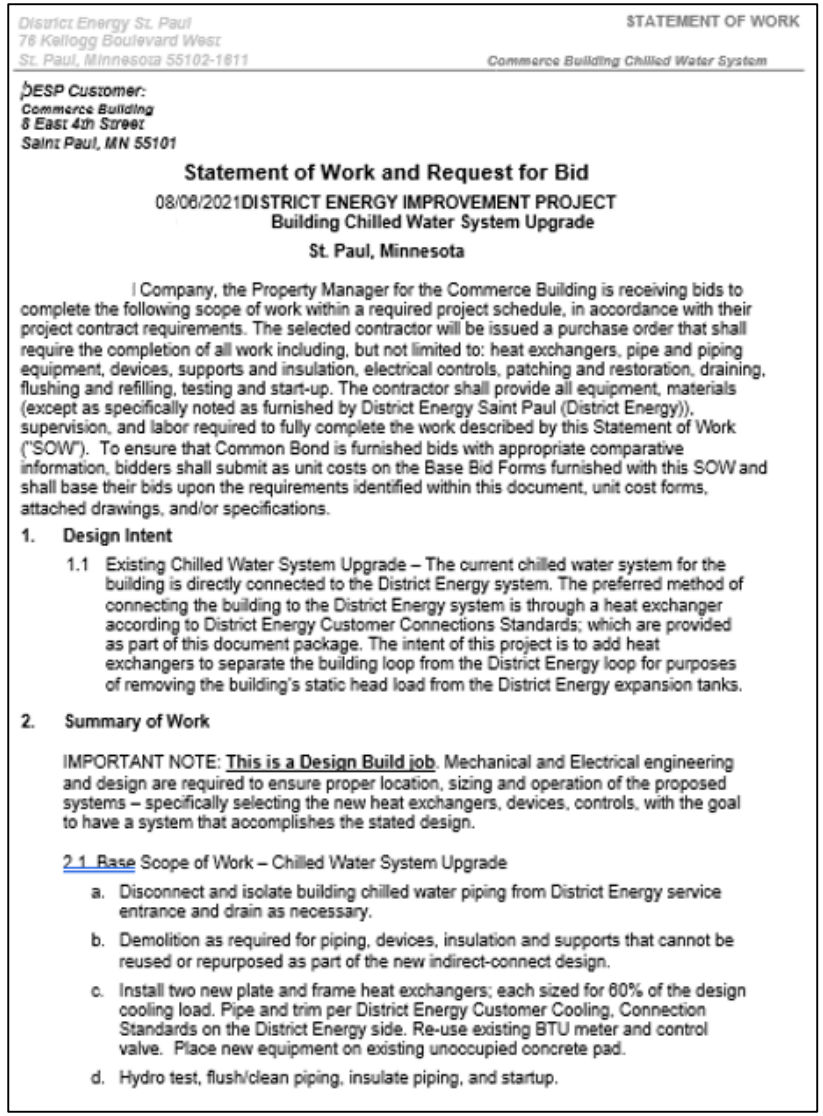
# Customer Visits

- Statement of Work (SOW)
  - Define customer
  - Engineer of record required
  - Work scope
  - Schedule guideline
  - District Energy role



District Energy St. Paul
76 Kellogg Boulevard West
St. Paul, Minnesota 55102-1611

STATEMENT OF WORK
Commerce Building Chilled Water System

DESP Customer:
Commerce Building
8 East 4th Street
Saint Paul, MN 55101

**Statement of Work and Request for Bid**

08/06/2021 **DISTRICT ENERGY IMPROVEMENT PROJECT**
**Building Chilled Water System Upgrade**

**St. Paul, Minnesota**

I Company, the Property Manager for the Commerce Building is receiving bids to complete the following scope of work within a required project schedule, in accordance with their project contract requirements. The selected contractor will be issued a purchase order that shall require the completion of all work including, but not limited to: heat exchangers, pipe and piping equipment, devices, supports and insulation, electrical controls, patching and restoration, draining, flushing and refilling, testing and start-up. The contractor shall provide all equipment, materials (except as specifically noted as furnished by District Energy Saint Paul (District Energy)), supervision, and labor required to fully complete the work described by this Statement of Work ("SOW"). To ensure that Common Bond is furnished bids with appropriate comparative information, bidders shall submit as unit costs on the Base Bid Forms furnished with this SOW and shall base their bids upon the requirements identified within this document, unit cost forms, attached drawings, and/or specifications.

1. **Design Intent**

1.1 Existing Chilled Water System Upgrade – The current chilled water system for the building is directly connected to the District Energy system. The preferred method of connecting the building to the District Energy system is through a heat exchanger according to District Energy Customer Connections Standards; which are provided as part of this document package. The intent of this project is to add heat exchangers to separate the building loop from the District Energy loop for purposes of removing the building's static head load from the District Energy expansion tanks.

2. **Summary of Work**

IMPORTANT NOTE: **This is a Design Build job**. Mechanical and Electrical engineering and design are required to ensure proper location, sizing and operation of the proposed systems – specifically selecting the new heat exchangers, devices, controls, with the goal to have a system that accomplishes the stated design.

2.1 Base Scope of Work – Chilled Water System Upgrade

a. Disconnect and isolate building chilled water piping from District Energy service entrance and drain as necessary.

b. Demolition as required for piping, devices, insulation and supports that cannot be reused or repurposed as part of the new indirect-connect design.

c. Install two new plate and frame heat exchangers; each sized for 60% of the design cooling load. Pipe and trim per District Energy Customer Cooling, Connection Standards on the District Energy side. Re-use existing BTU meter and control valve. Place new equipment on existing unoccupied concrete pad.

d. Hydro test, flush/clean piping, insulate piping, and startup.

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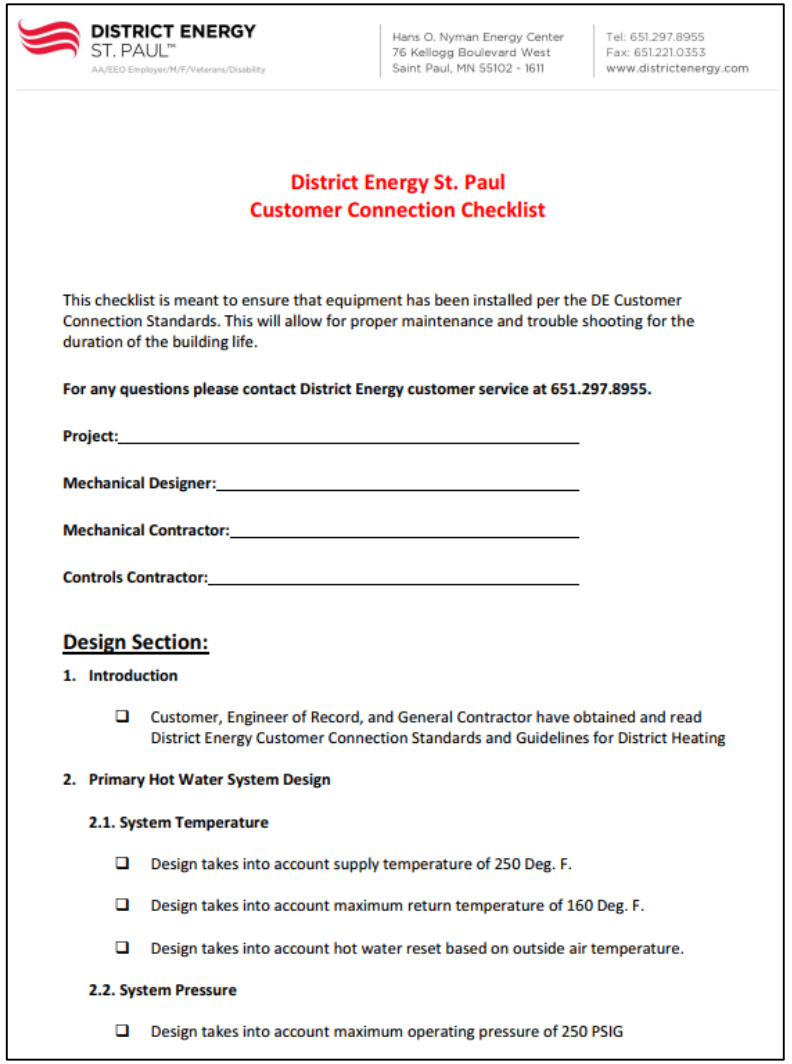
# Requirements

- Project manager
  - Coordinate work
  - Complete checklists
  - Start up
- Engineer of record
  - Approve submittals
  - Engineered drawings
- Project funding
  - Reimbursement
    - Post construction
    - Pressure testing
    - Flushing
    - Start up
    - Record drawings
- Submittals
  - Invoice
  - Test records
  - Check lists
  - Drawings



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AA/EEO Employer/M/F/Veterans/Disability

Hans O. Nyman Energy Center
76 Kellogg Boulevard West
Saint Paul, MN 55102 - 1611

Tel: 651.297.8955
Fax: 651.221.0353
www.districtenergy.com

**District Energy St. Paul**
**Customer Connection Checklist**

This checklist is meant to ensure that equipment has been installed per the DE Customer Connection Standards. This will allow for proper maintenance and trouble shooting for the duration of the building life.

**For any questions please contact District Energy customer service at 651.297.8955.**

**Project:**_____

**Mechanical Designer:**_____

**Mechanical Contractor:**_____

**Controls Contractor:**_____

**Design Section:**

**1. Introduction**

- ❑ Customer, Engineer of Record, and General Contractor have obtained and read District Energy Customer Connection Standards and Guidelines for District Heating

**2. Primary Hot Water System Design**

**2.1. System Temperature**

- ❑ Design takes into account supply temperature of 250 Deg. F.
- ❑ Design takes into account maximum return temperature of 160 Deg. F.
- ❑ Design takes into account hot water reset based on outside air temperature.

**2.2. System Pressure**

- ❑ Design takes into account maximum operating pressure of 250 PSIG

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# Customer Resources

Jordan Debol

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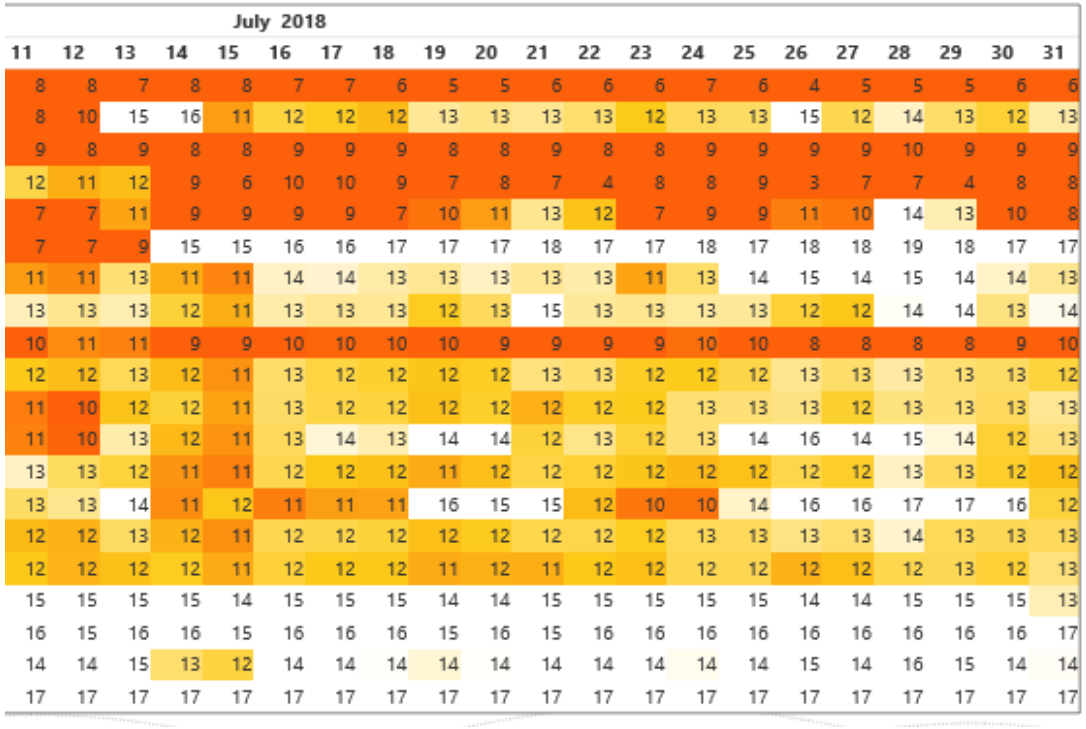
# Proactive Monitoring




- Monitored weekly/monthly
- Outreach and support to identify and sometimes solve the issue
- Goal to reduce customer charges and improve overall system efficiency
- Hot water < 160°F
- Chilled water $\Delta T > 14°F$

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# Customer Portal


- Simple dashboard and navigation
- Multiple comparisons available
- Quickly identify opportunities

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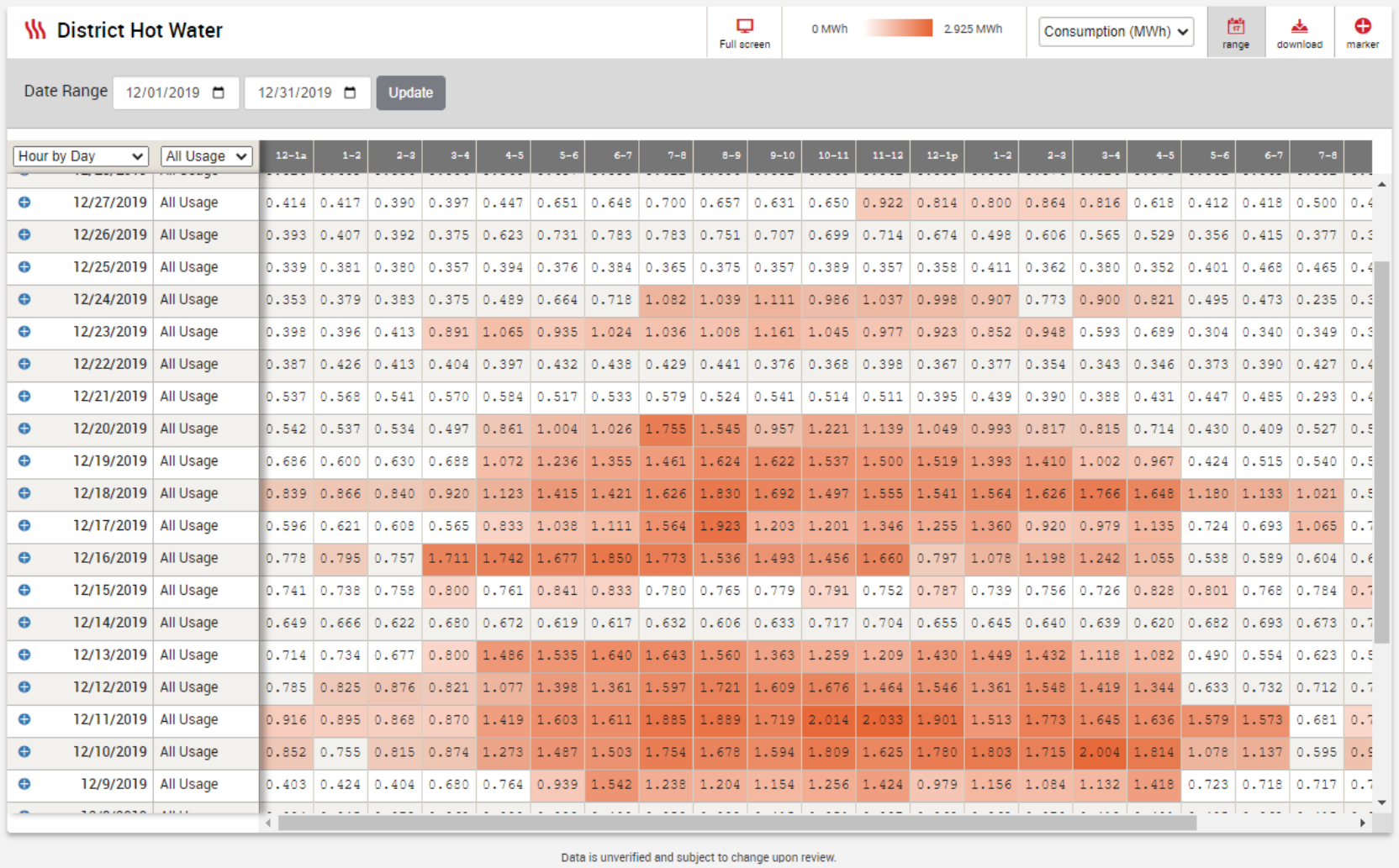
# Customer Portal




- Data readily available
- Set markers and track projects
- Set up custom alerts
- Link to EnergyStar
- Grant temporary access

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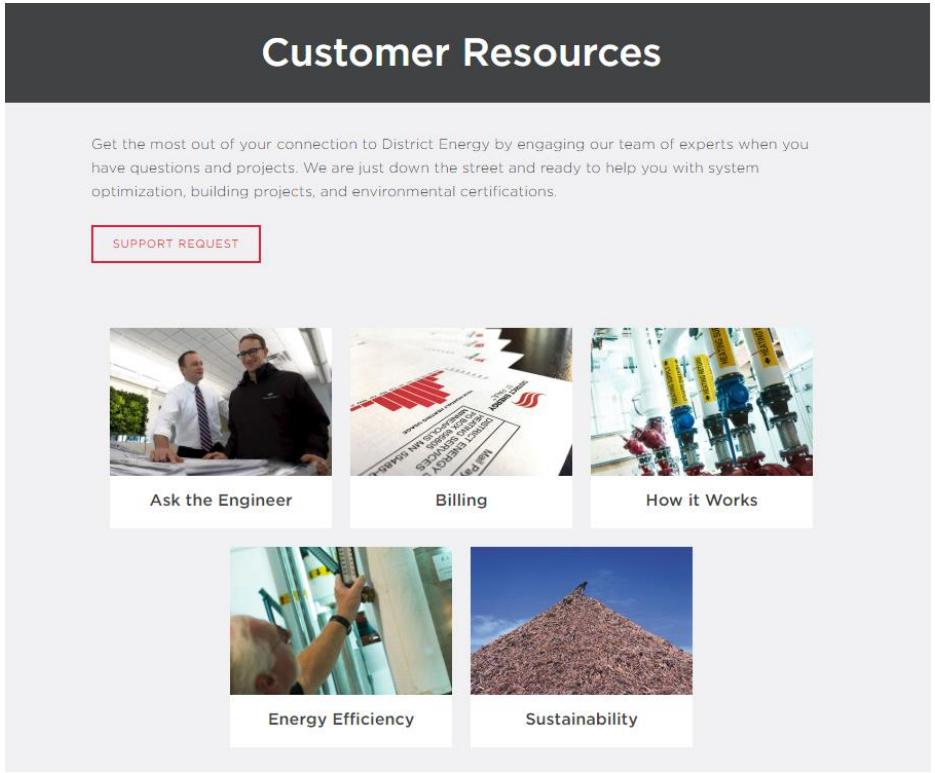
# Customer Resources at DistrictEnergy.com

- Ask the Engineer
- Past operating engineers presentations
- Maintenance checklist
- Request service or submit a question
- Energy Efficiency Program
- Customer Portal

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# Questions

651.297.8955
info@districtenergy.com

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# Raffle

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