

CGA Energy Nexus & Annual Technical Conference 2024

Fuelling the Future

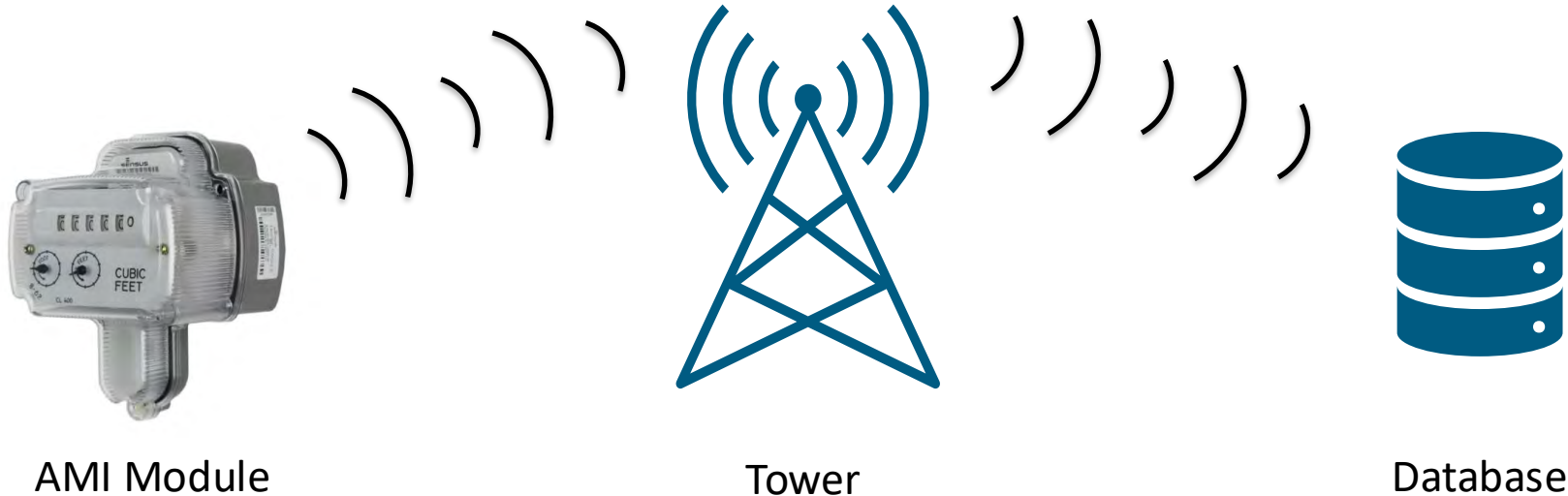
AMI for Distribution System Monitoring

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What is AMI

- Advanced Metering Infrastructure (AMI).
- AMI is a **communications network**.
 - With the primary purpose of collecting meter reads.





SaskEnergy's AMI Network

- SaskEnergy operates 72,000km of distribution pipelines serving 400,000 customers.
- SaskEnergy uses the Sensus FlexNet AMI technology.
- Nearly 100% of SaskEnergy's customers have AMI modules installed on their meters ($\approx 400,000$ AMI modules).
- There are 400 towers to collect the AMI data; these towers provide nearly 100% coverage of the SaskEnergy distribution system.



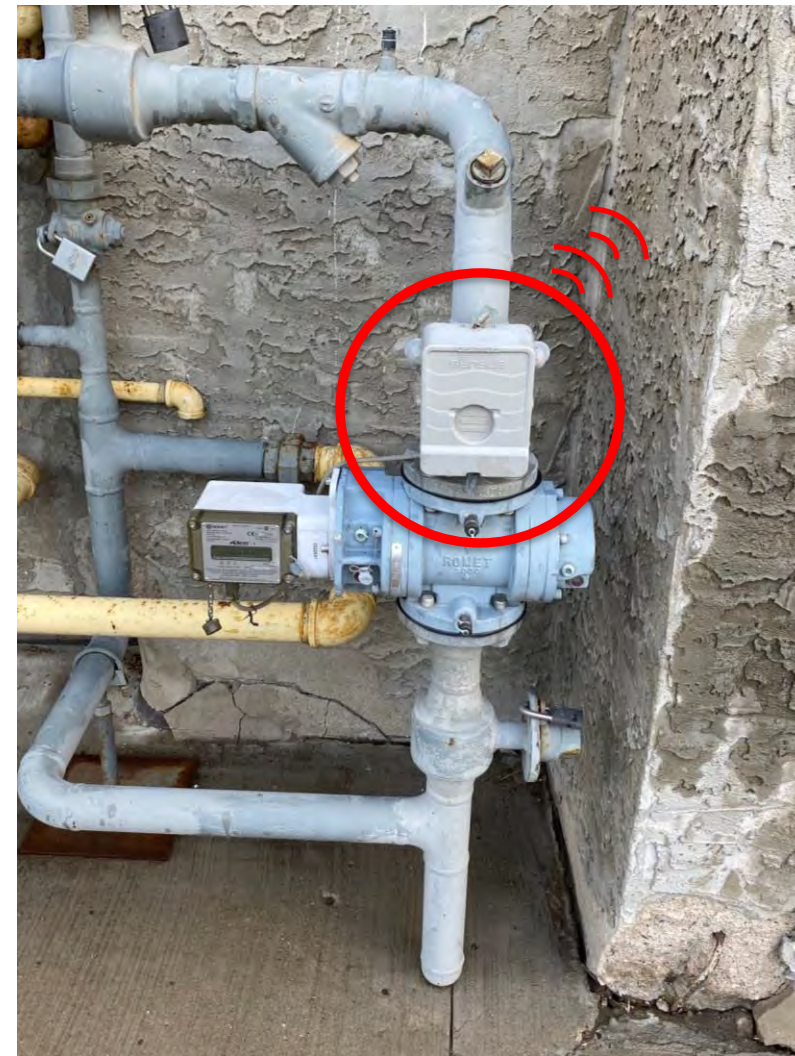
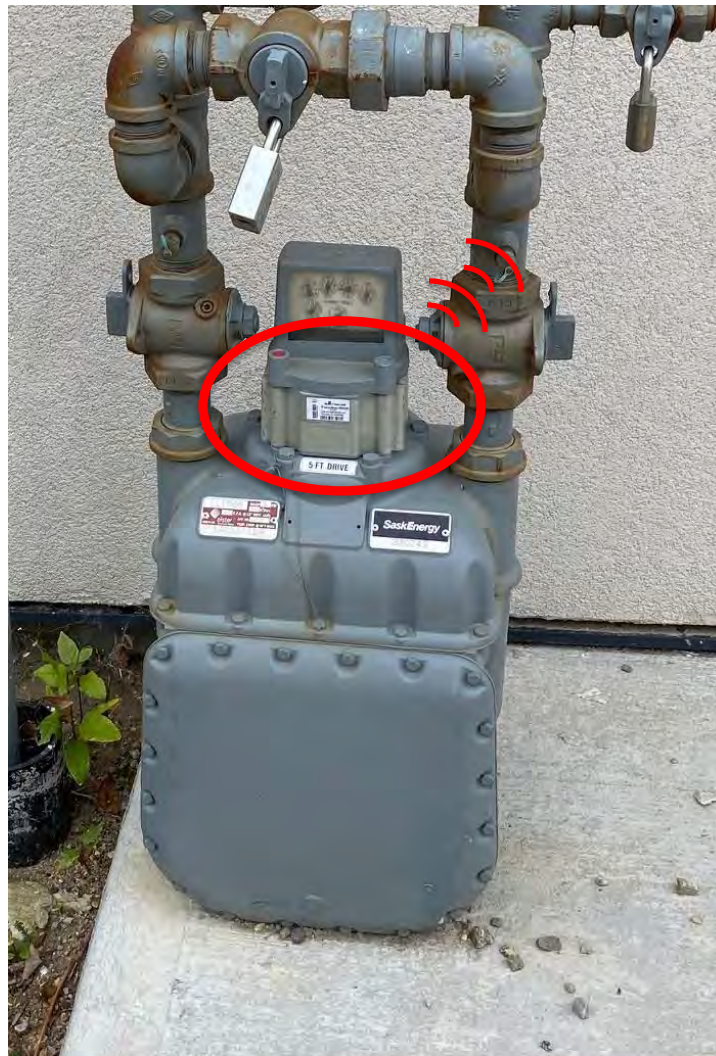


AMI Hardware





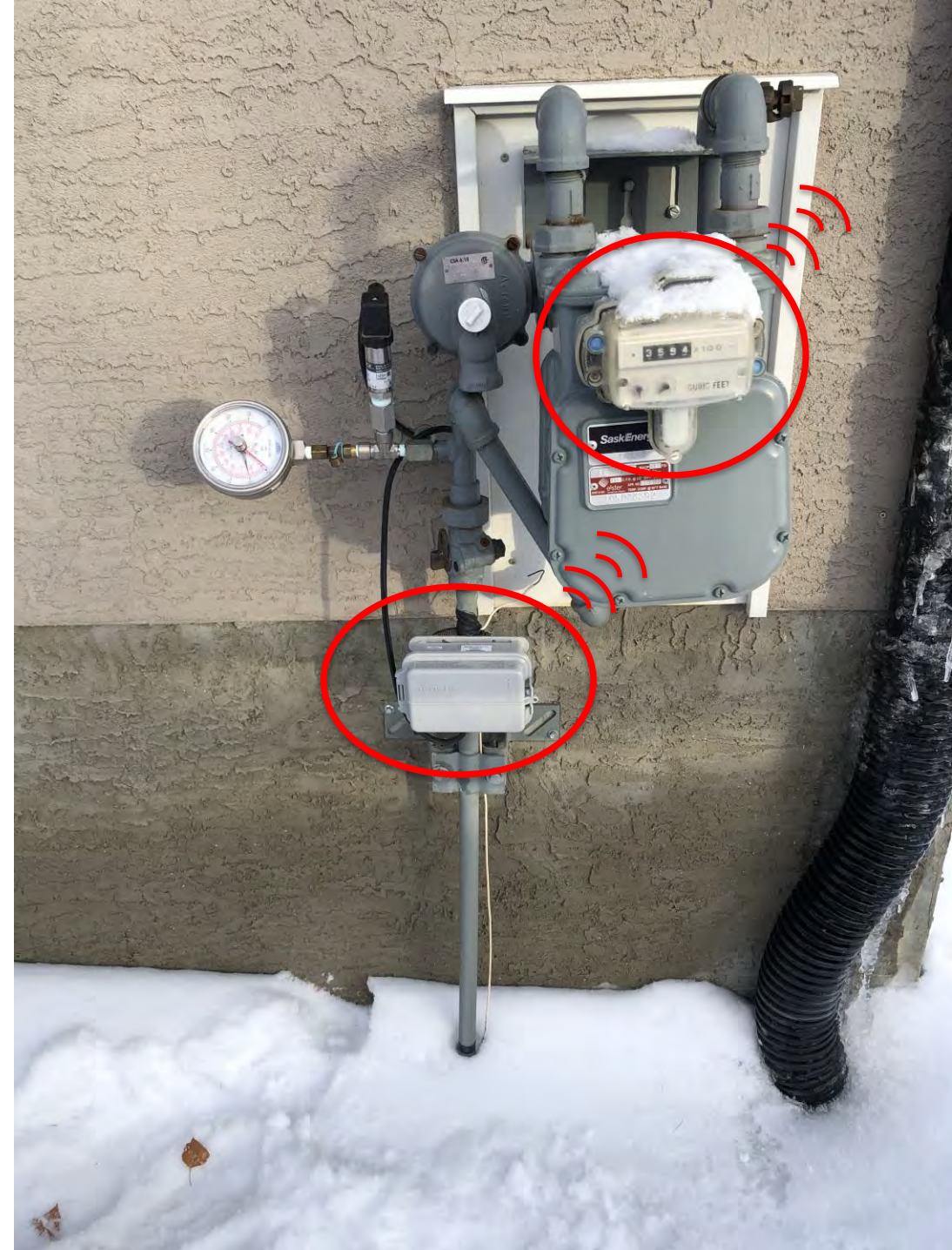
AMI Hardware





AMI Hardware

- AMI modules can be used for more than just collecting meter reads.
- For example, a Senus SmartGateway can monitor two analog and two discrete inputs.
- Picture on the right shows a SmartGateway monitoring a pressure transducer (via analog input).

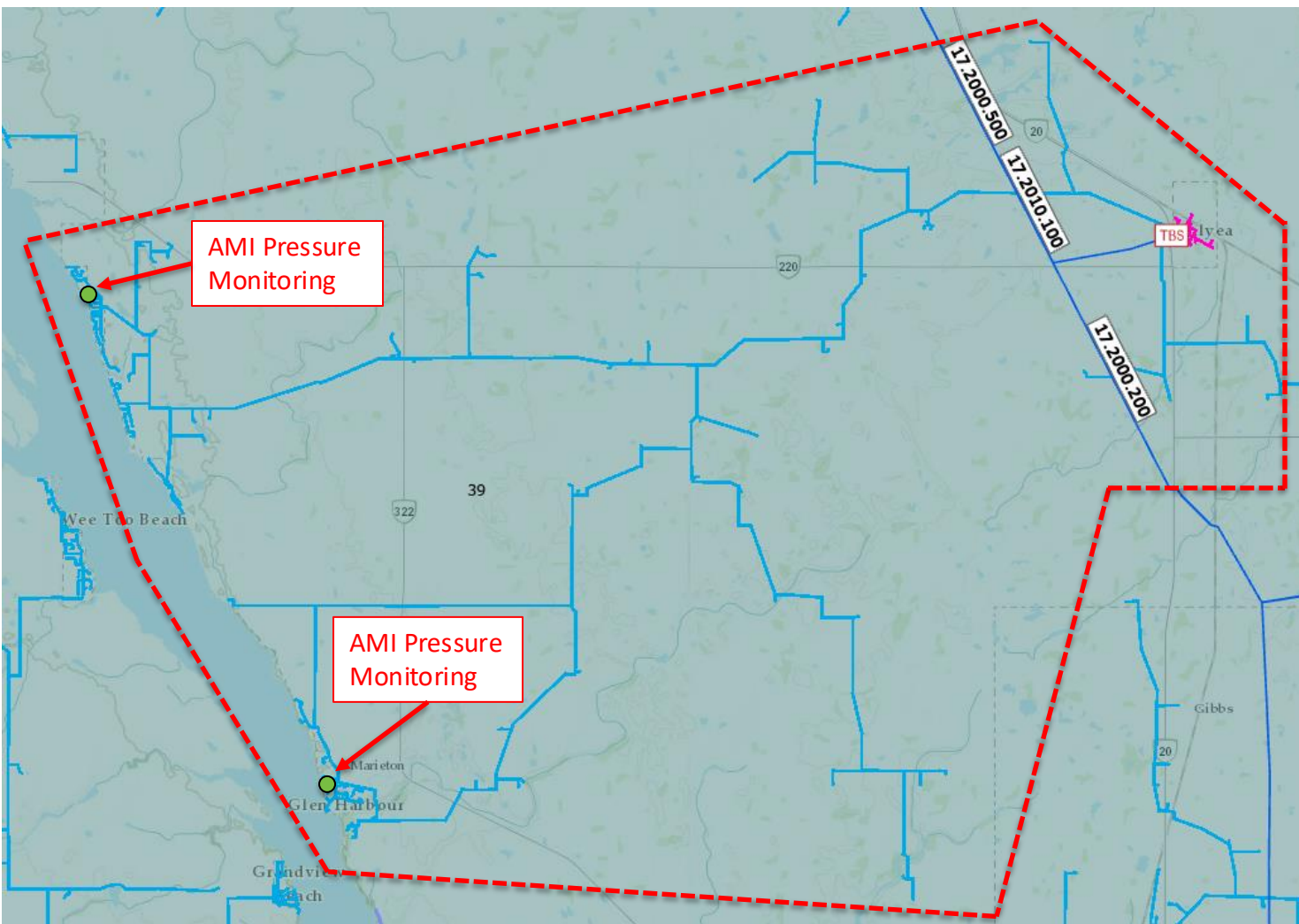


*If you could monitor anything, anywhere,
at a low cost, what would you do?*

What could you do?



AMI Pressure Monitoring – System Planning



Old Way



New Way

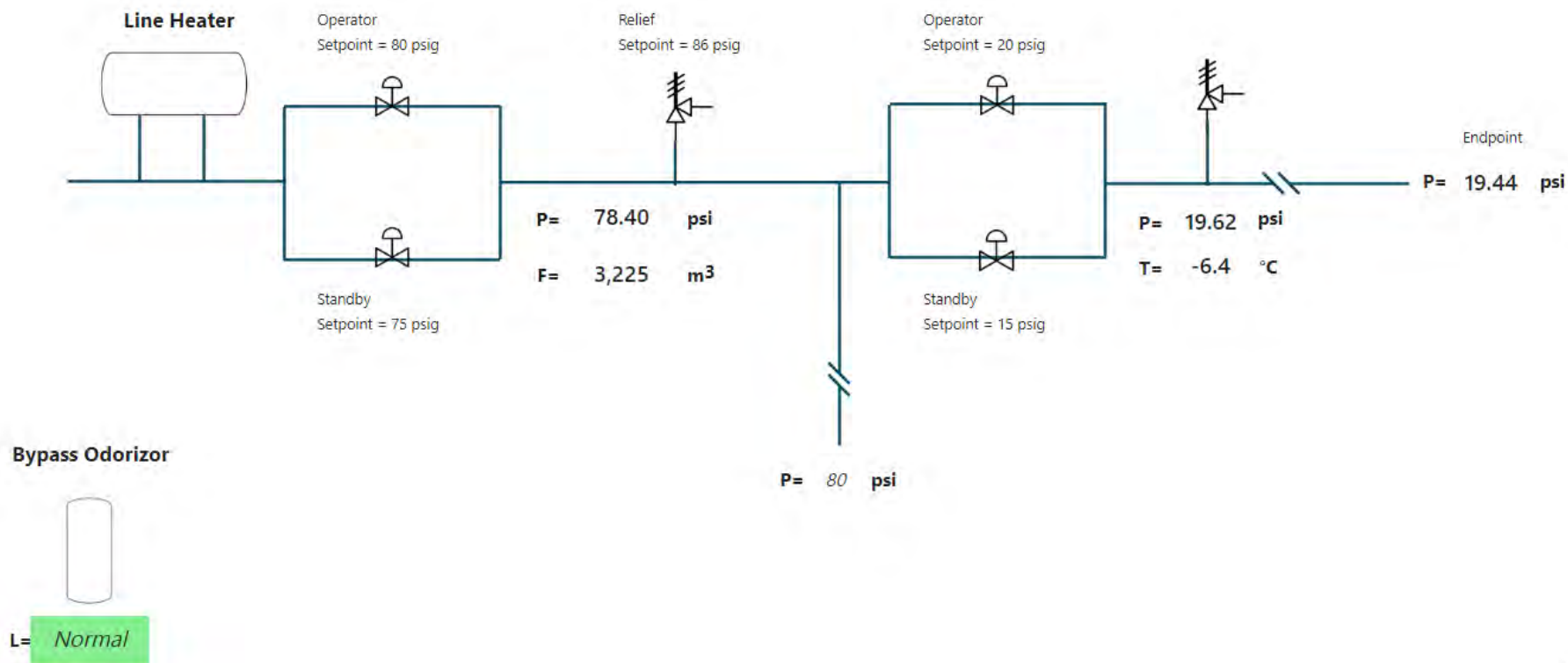


AMI for System Monitoring

- SaskEnergy operates many small gate stations; about 50% of those are unmonitored.
- AMI modules provide a low-cost option to monitor pressure, temperatures, or statuses at these unmonitored locations.
- AMI modules can be used to monitor system endpoints for each station as well.
- AMI is not a replacement for a SCADA system, but can complement/supplement an existing SCADA system.



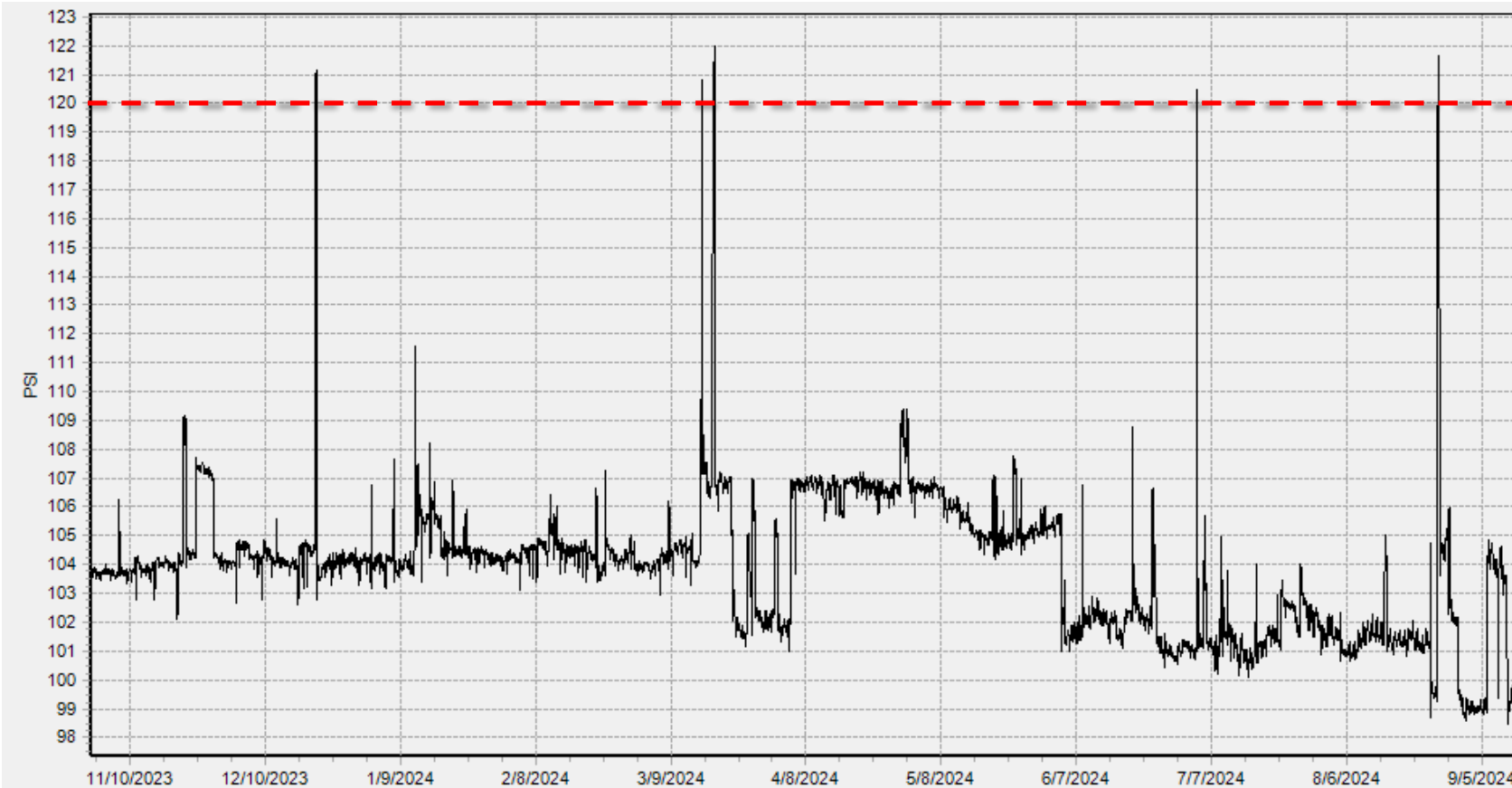
Distribution System Operational Monitoring



Date Last Refreshed
Wednesday, October 02, 2024



Pressure Monitoring



Relief Valve Setpoint

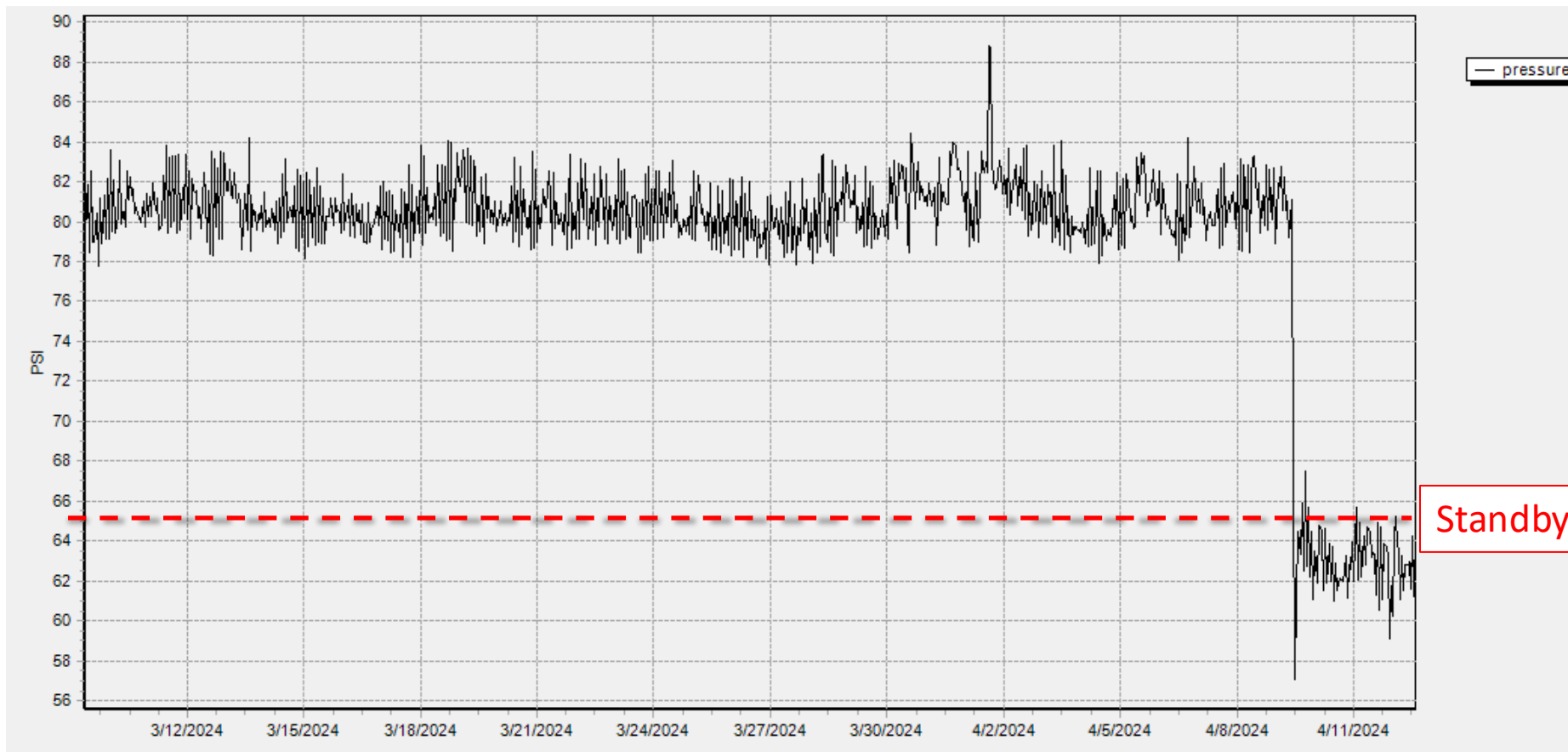
Relief Setpoint = 120 psig

Operating Regulator
Setpoint = 105 psig

Standby Regulator
Setpoint = 95 psig



Pressure Monitoring



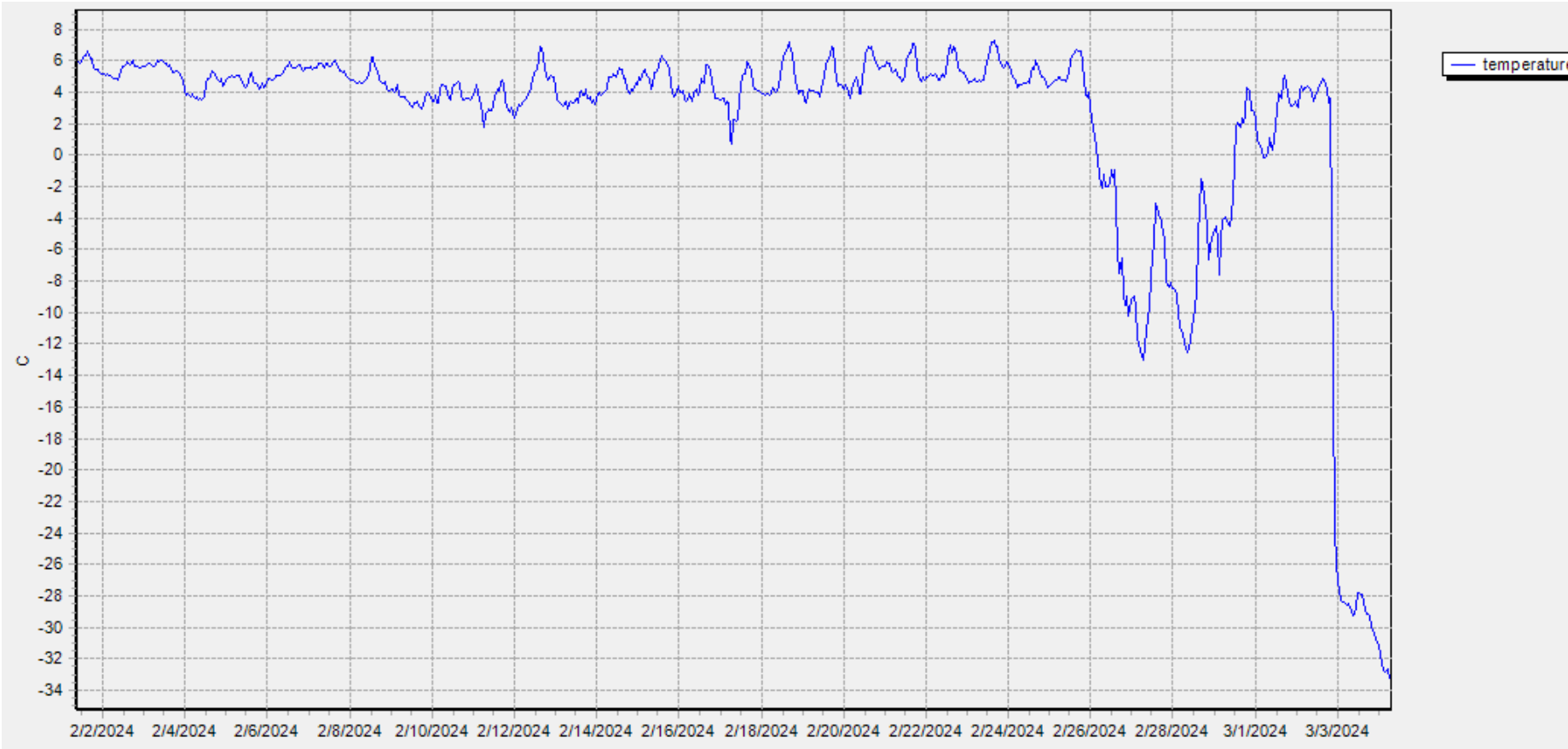
Relief Setpoint = 88 psig

Operating Regulator
Setpoint = 80 psig

Standby Regulator
Setpoint = 65 psig

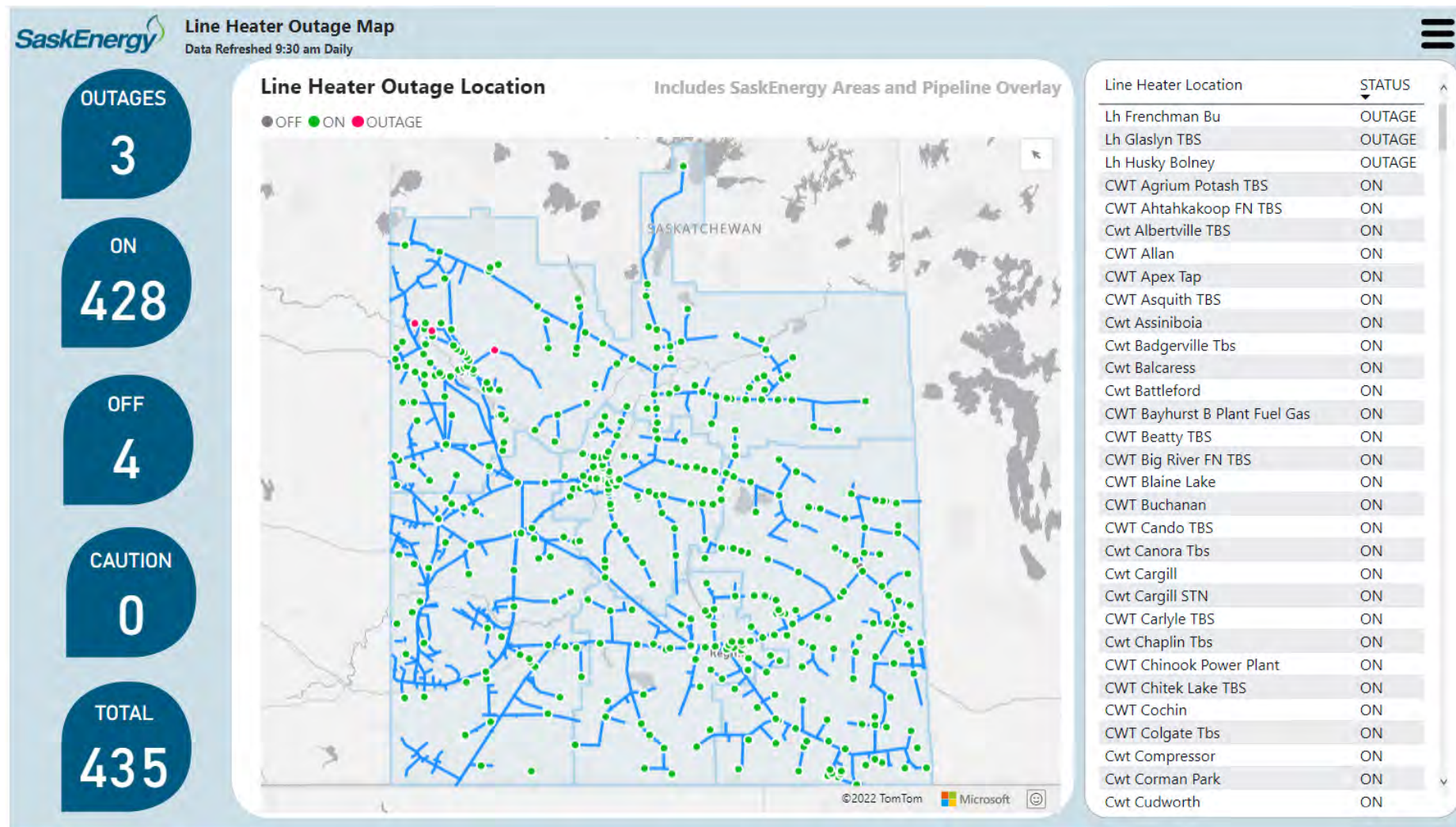


Temperature Monitoring



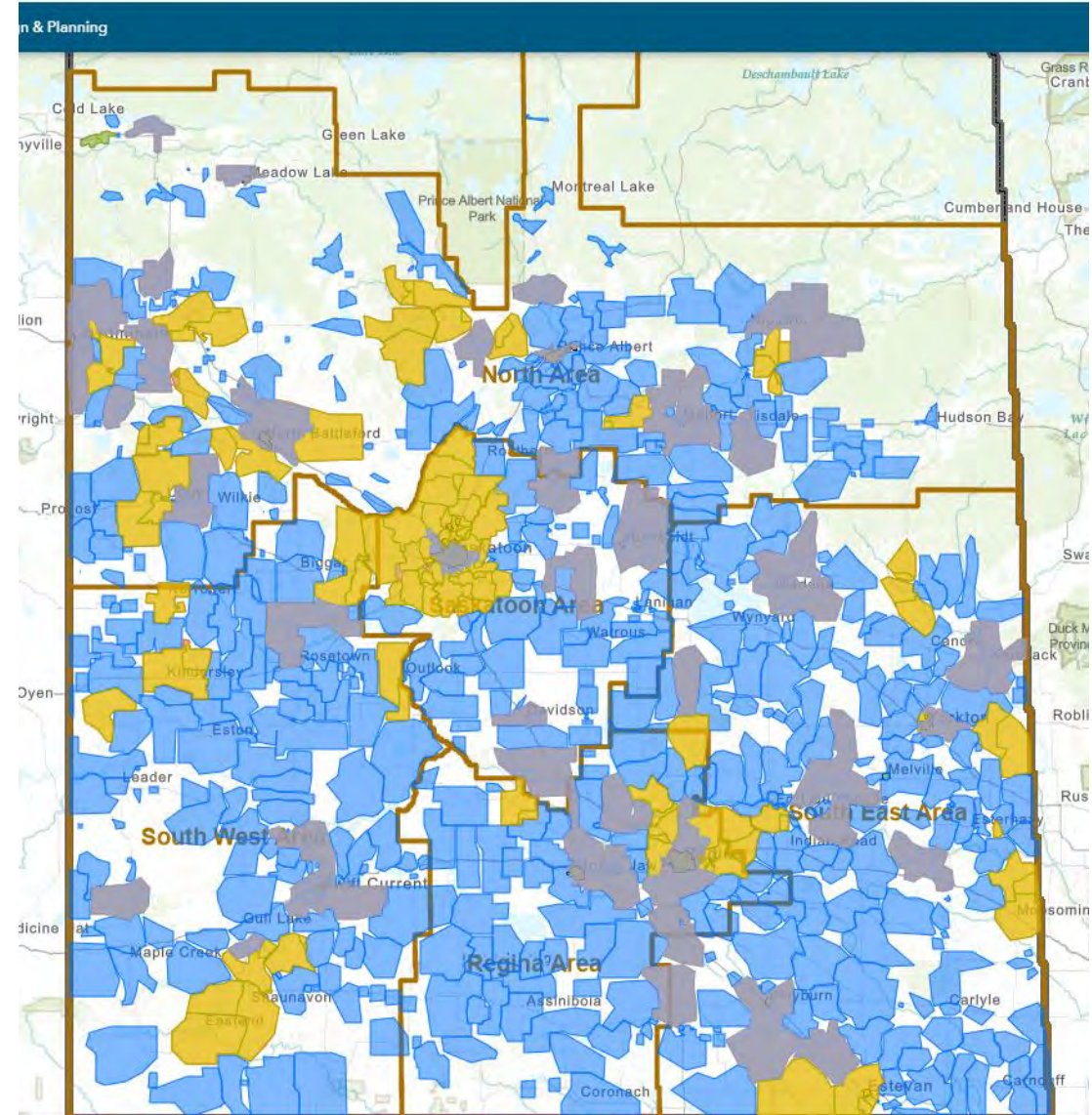
TBS gas temperature

AMI for Line Heater Monitoring



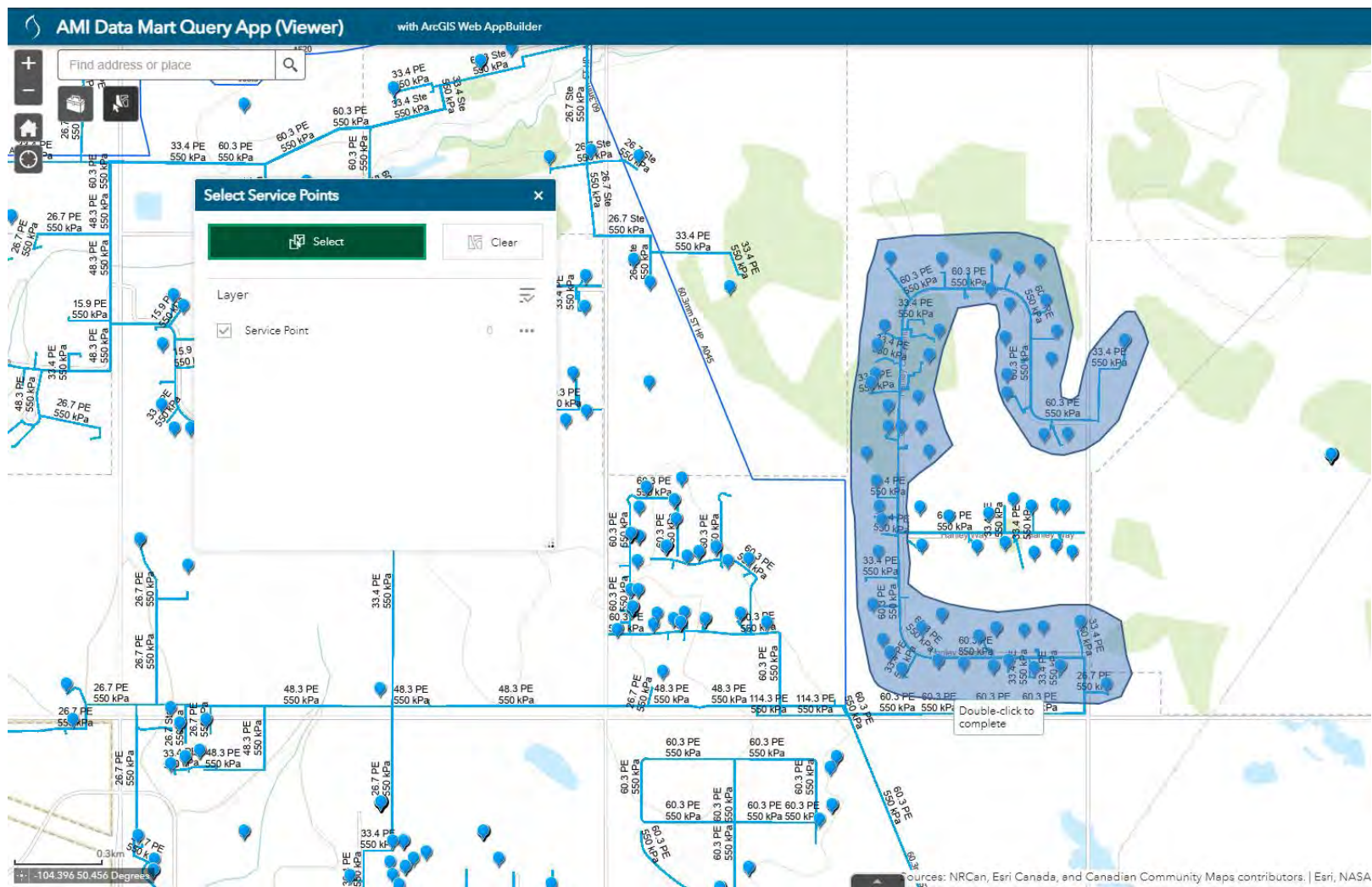
AMI for System Flows

- SaskEnergy operates both the transmission and distribution systems in Saskatchewan.
- No measurement at most gate stations where gas goes from transmission to distribution.
- Can use spatial AMI data to create “virtual meters”.

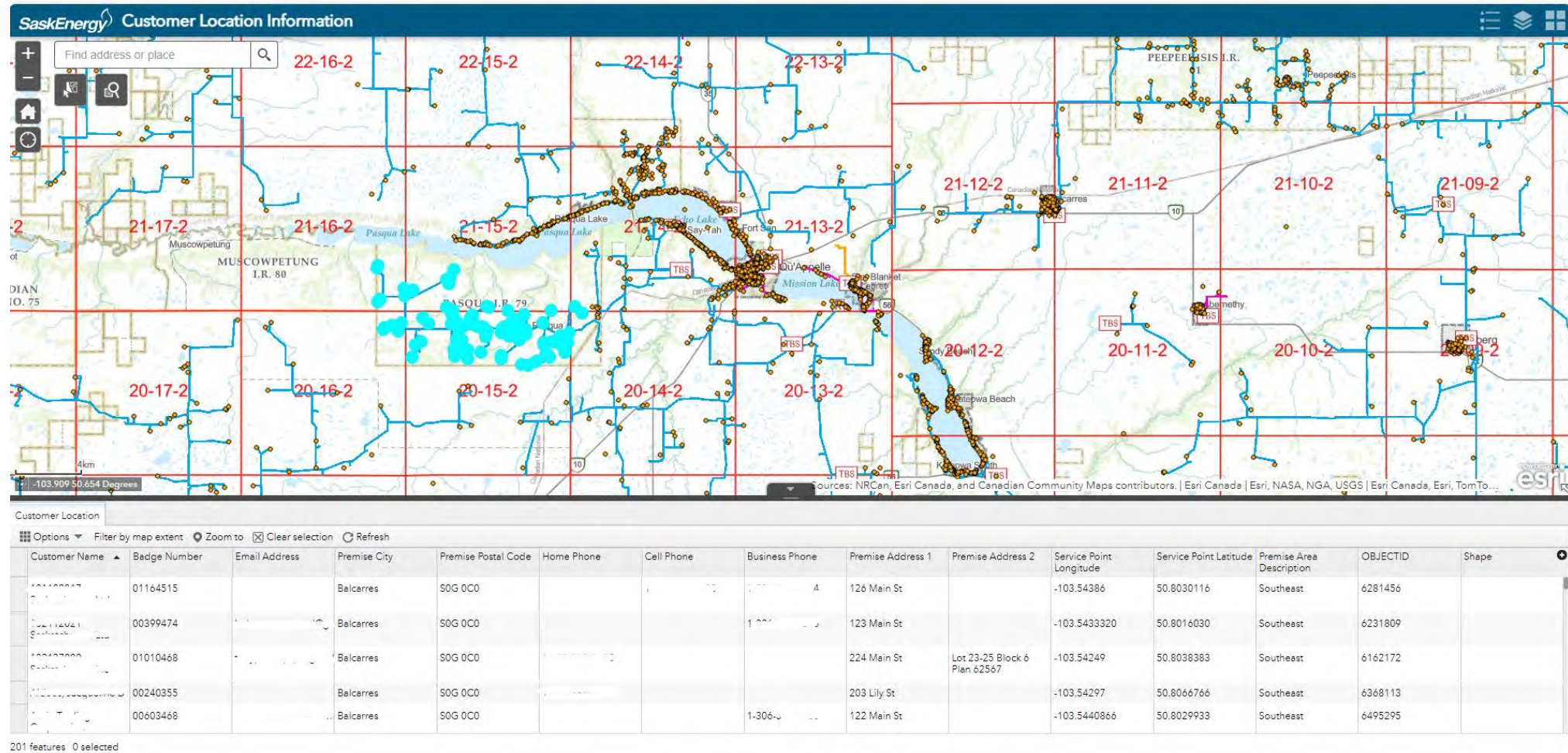




AMI for System Flows



AMI for Customer Contact Information



AMI for Remote Shut-in

- New meter technology that includes a shut-off valve in the meter.
- AMI can be used to issue a shut-in command remote.



AMI for Cathodic Protection Monitoring





Concluding Remarks

- AMI is for more than just collecting meter reads.
- AMI is a communications network that can be used to collect a variety of useful operational data.
- Once AMI Network is setup, installing AMI modules is a low-cost method to enhance system monitoring.

SaskEnergy 