TOWN HALL

UTILITY THERMAL ENERGY NETWORK (UTEN) DEMONSTRATION PROJECT

4/30/2026

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Xcel Energy®

AGENDA

1. What is a Thermal Energy Network?
2. How the demonstration project works
3. We’re not going at this alone
4. Discussion

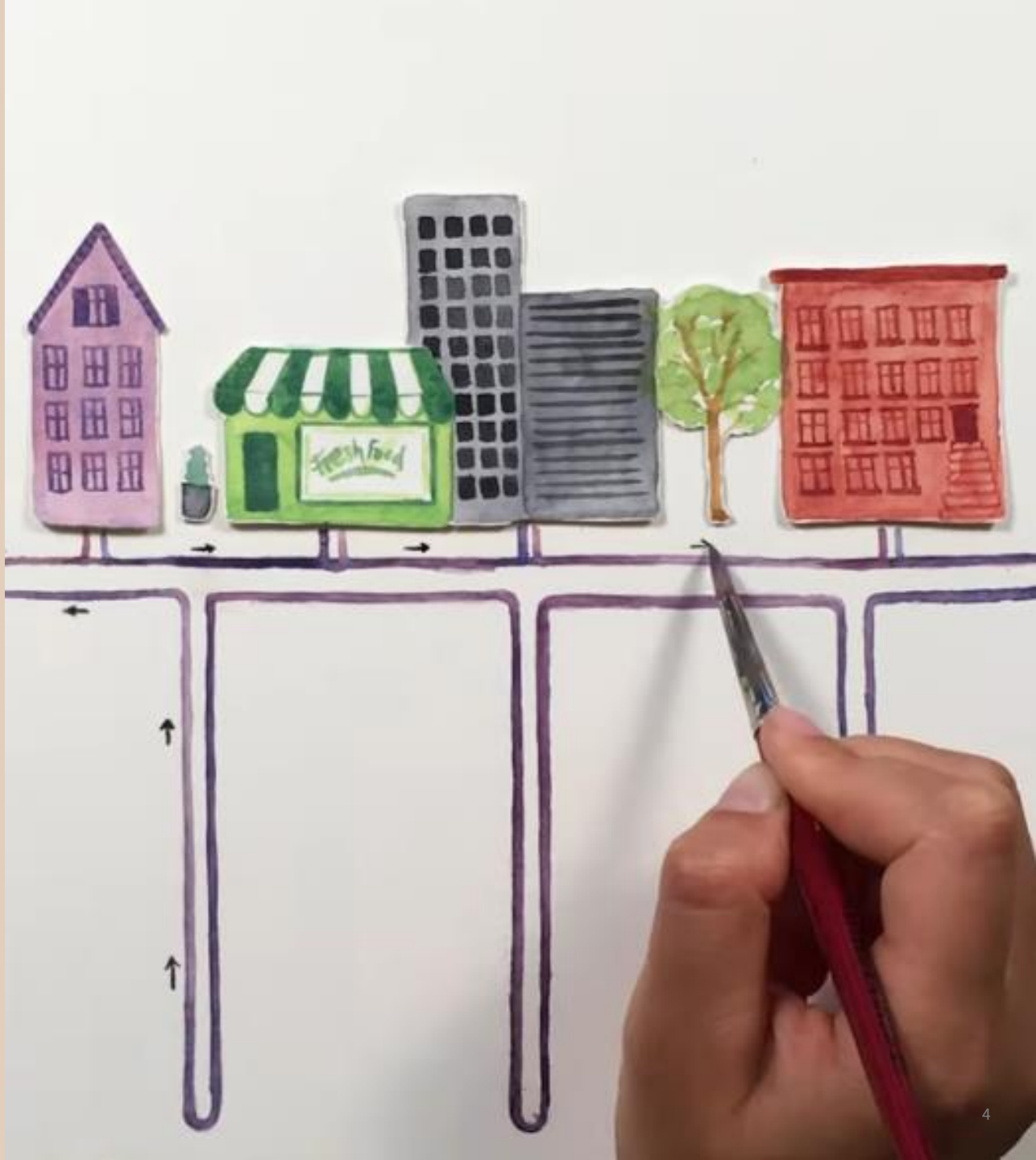
Why We're Doing This

SUSTAINABILITY

Net-Zero Natural Gas

We're committed to operating a gas system that's safe, reliable and increasingly clean while keeping customer bills as low as possible.

WHAT IS A UTILITY THERMAL ENERGY NETWORK?



HEET, 2003

Heat Pumps Aren’t New

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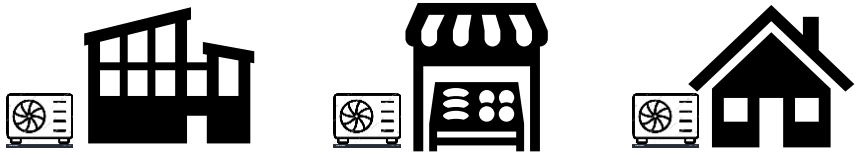
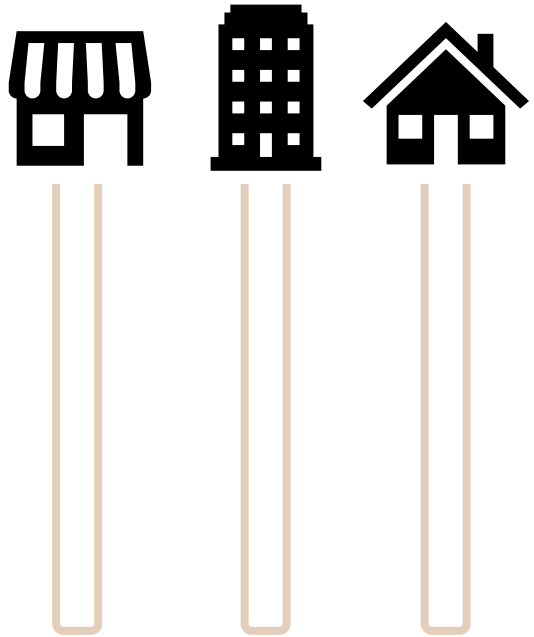
What Are Thermal Energy Networks

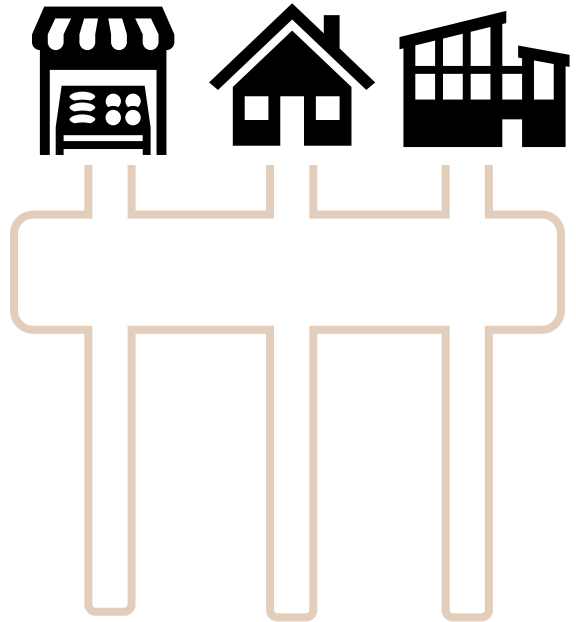
Air Source Heat Pump performance varies with outdoor temperature and conditions



Traditional Ground Source Heat Pumps (GSHP) are one of the most efficient heating/cooling systems you can buy



Utility Thermal Energy Networks connect multiple GSHPs into one shared geothermal network and increase efficiency even further



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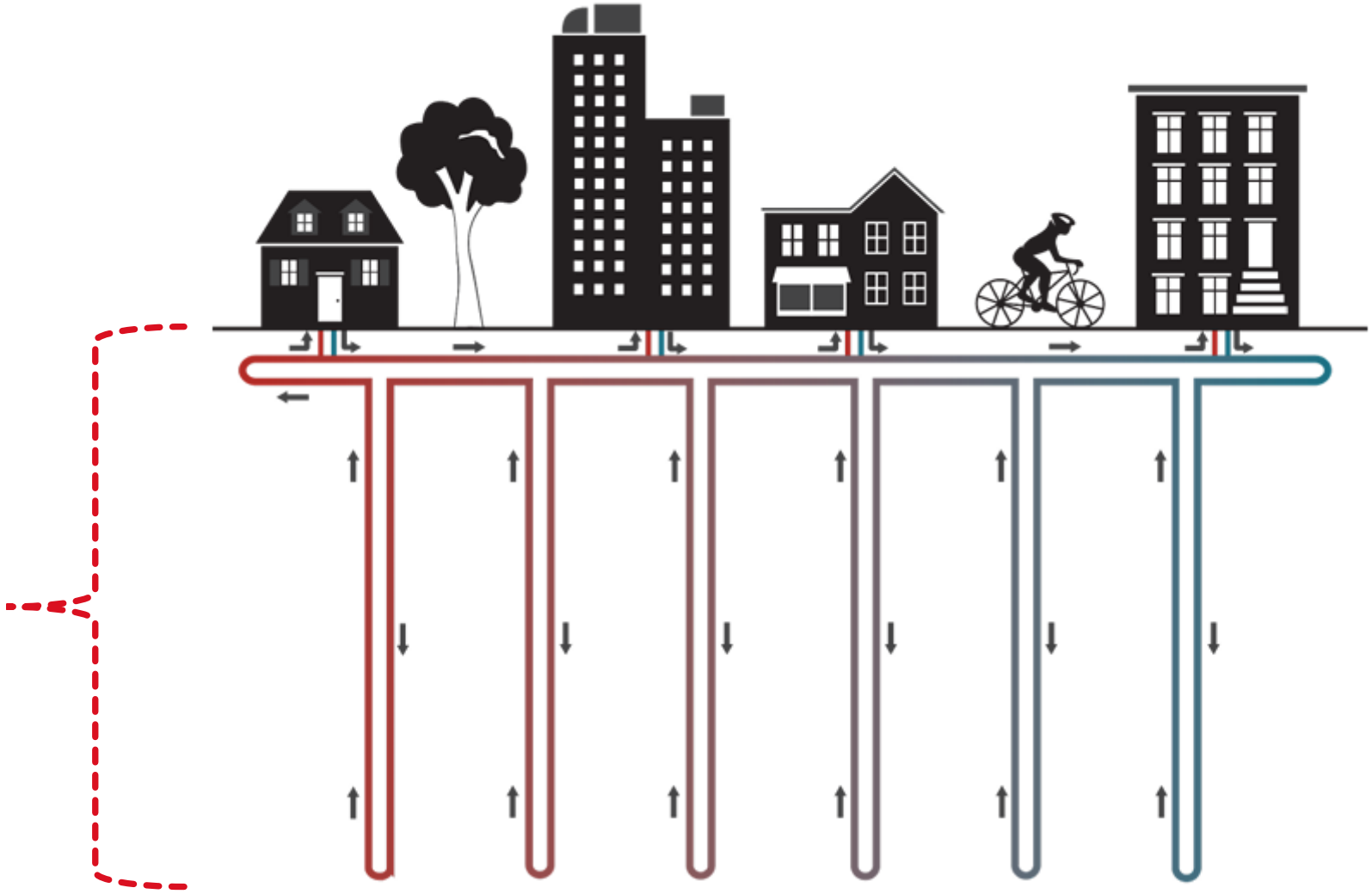
What's New is the Business Model

Just like our gas business, we would install, own, and maintain all the pipes in the street

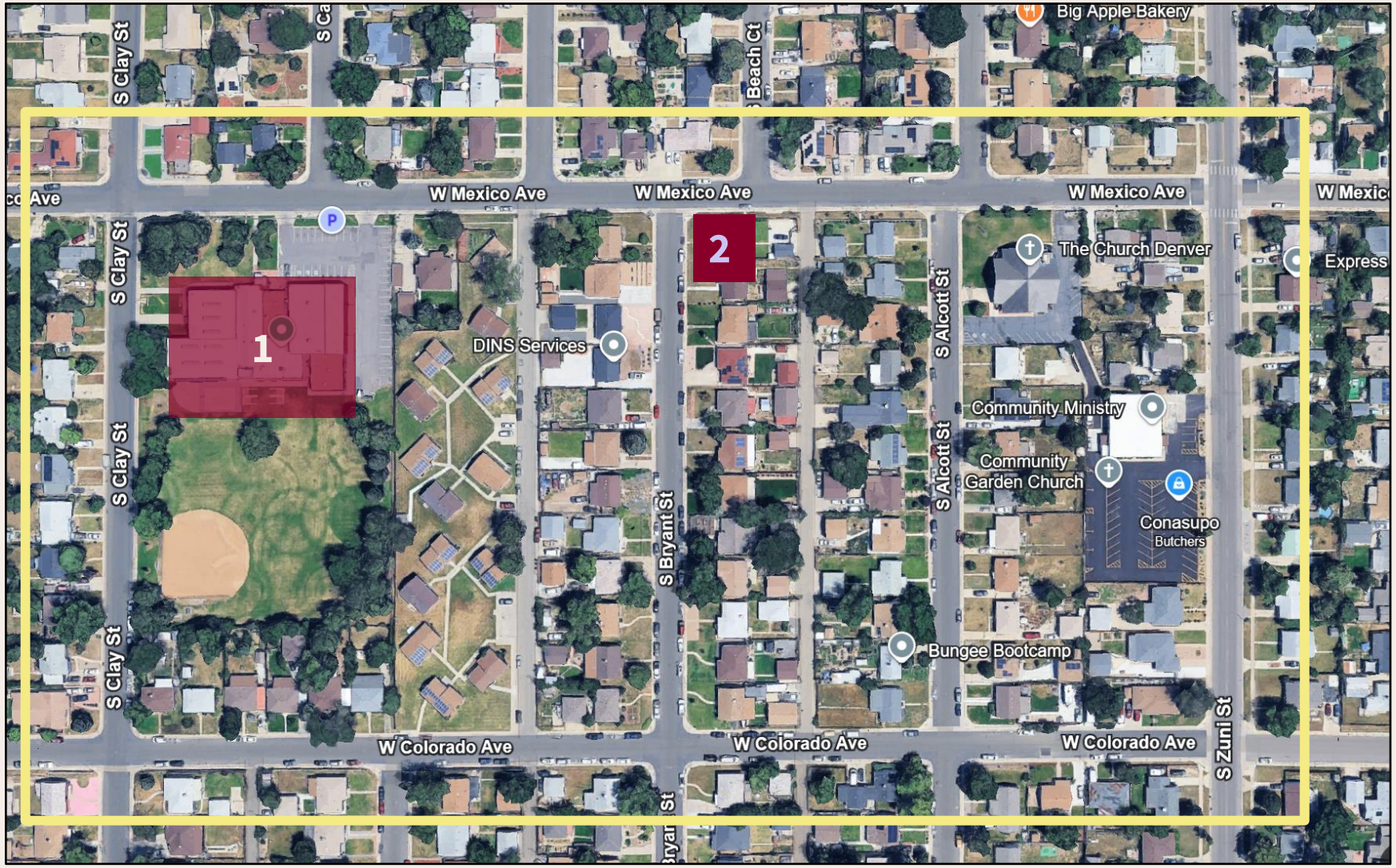


Workforce Development

- We’ll be supporting this with utility grade reliability
- We’re committed to developing the workforce for the future, so you have the expertise available to service your equipment after the demonstration project ends

HOW THE DEMONSTRATION PROJECT WORKS

RUBY HILL DEMONSTRATION AREA



Anchor Customers

1. **Athmar Rec Center**
2. **Keystone Church (formerly The Church Denver)**

Demonstration Project Timeline

2026	Dec ‘26 – June ‘27	2028	2029	2030-2032	2033+
Engagement and Design	**Regulatory Approval**	**Central System Installation**	**Customer Retrofits**	**Operations**	**Post Pilot**
• Educating the community • Secure participation • Design the system	• File in December 2026 • Approval decision estimated in June 2027	• Trench the streets • Install the distribution (horizontal) pipes • Install pumps, valves, and architectural structures (i.e. pump houses) • Streets will remain open and traffic will be redirected	• Schedule customer installation • Pipes will be installed via drilling from the street (we will not disturb your lawn) • We will take out your old HVAC equipment, and replace it with a new heat pump • Process will take 2-3 days • Won’t occur during times when you’ll need heating	• Operate system for 3 years • We’re going to survey you, see how you feel about everything • Xcel creates energy and cost analysis • There is no cost for using the geothermal system, but you’ll still pay regular rates for electricity and gas	• If you don’t like the new system, we will put it similar equipment that we took out, but new • Or you can choose to have us install an air source heat pump • After the analysis, there may be a small fee for the ongoing geothermal service – but we don’t want your utility bills to go up

Process for Participating

Now	Through June ‘26	Through end of summer	By end of September	By end of September	Ongoing
Tell us you’re interested	**Schedule a home assessment**	**Receive a utility bill analysis**	**Sign the application**	**If you’re a tenant or landlord**	**Revel in your success**
• Fill out the interest form • Even if you’re not in the target area! Pipe routing is not finalized • Recruit your neighbors! • This will also help us potentially expand it in the future • Receive communication from us to schedule a home assessment	• We’ll come to your home or business and assess your existing equipment • We’ll need access to all rooms of your home or business • At the assessment, fill out the utility bill disclosure form • Become a neighborhood champion and put a lawn sign!	• Our team will run the numbers and compare your existing usage to the expected usage under the new system	• If you agree to participate, you’ll need to fill out the application and terms and conditions • Participation is first-come-first-served	• Property owners will need to submit a signed application and Terms and Conditions • If the utility bills are in a tenants name, they will need to submit a signed application and Terms and Conditions as well • Property owner or a representative must be present at all home visits	• You’re the best, and we appreciate you!

WE’RE NOT GOING AT THIS ALONE

Our Partners

COLORADO
Energy Office

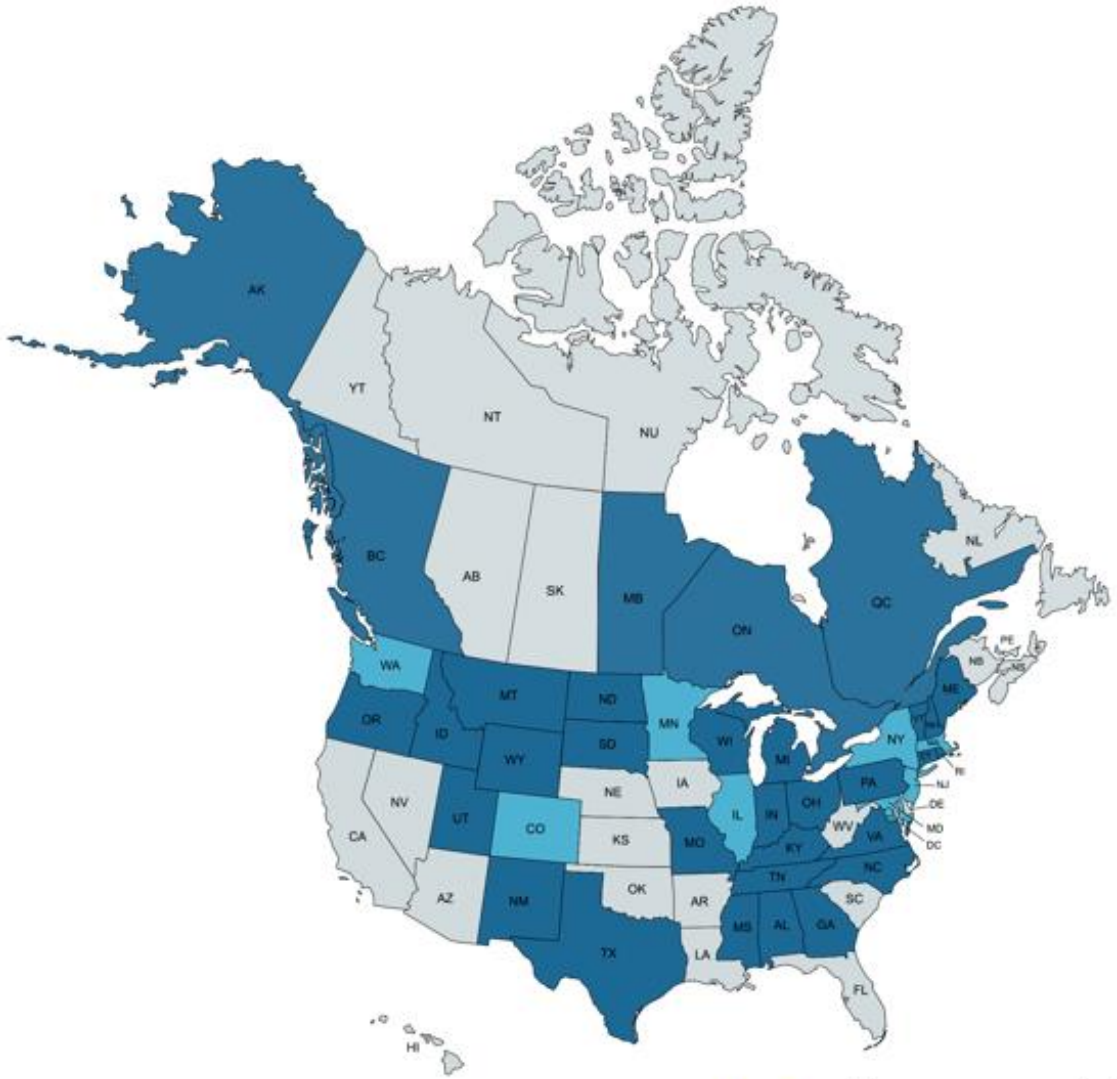
KEYSTONE
CHURCH

DENVER CITY COUNCIL
LUCKY DISTRICT 7
Councilwoman, Flor Alvidrez

DENVER
CLIMATE ACTION,
SUSTAINABILITY &
RESILIENCY

Office of Climate Action,
Sustainability & Resiliency

Our Peers



BDC heet

Utility NetGeo Collaborative

Utility Pilots

CenterPoint Energy · spire · nationalgrid · BGE An Exelon Company · AVANGRID · National Fuel · AVISTA · PGW · Xcel Energy · Unitil · VGS · conEdison · MiSource · gti · EVERSOURCE ENERGY · PSE Puget Sound Energy · NW Natural · Cascade Natural Gas · ENBRIDGE · CMS ENERGY · Nicor Gas · Consumers Energy Count on Us · FORTIS BC · Liberty · Southern Company Gas · energir · Manitoba Hydro · Richmond Gas Works · New Jersey Natural Gas · Washington Gas

DISCUSSION

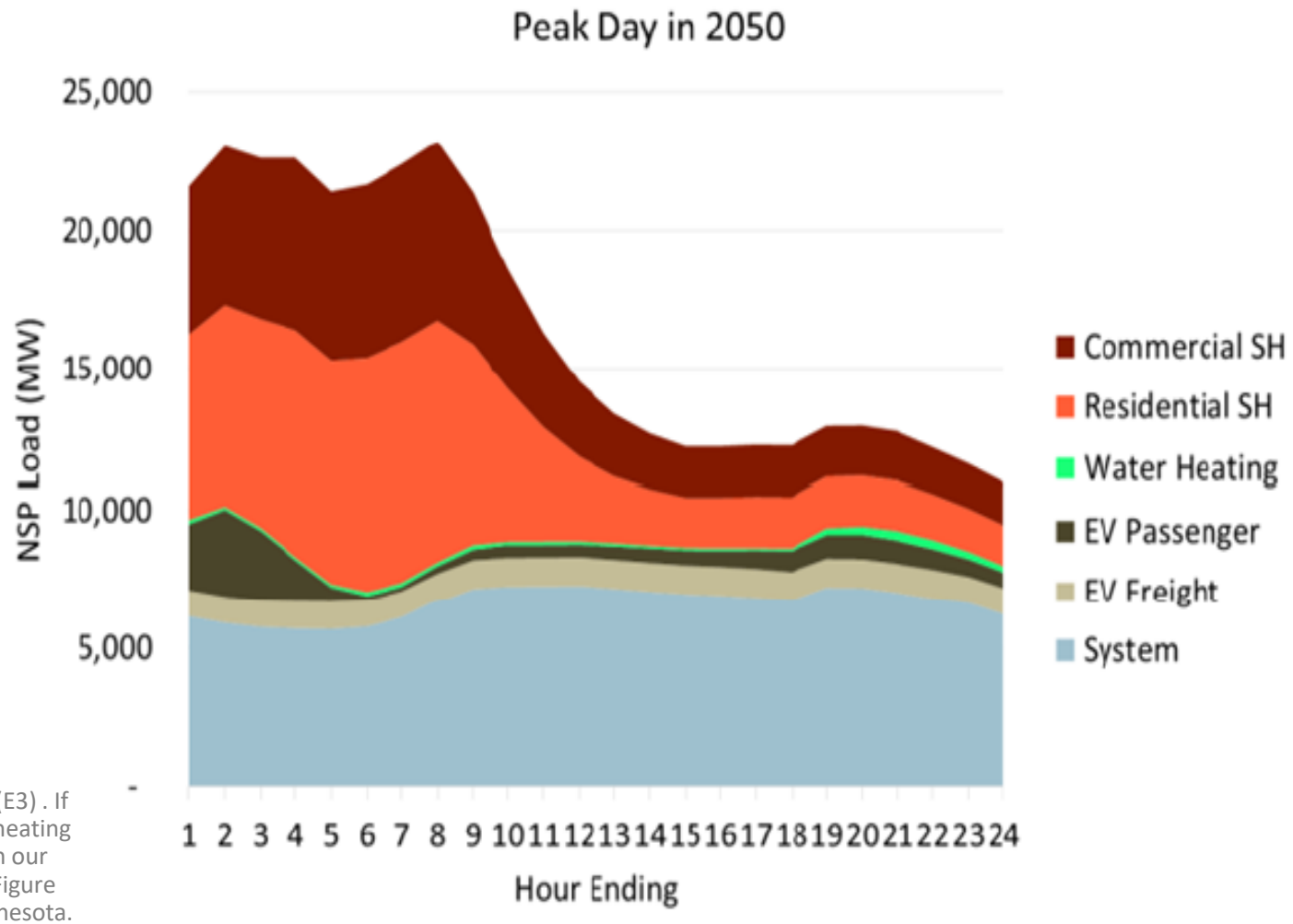
APPENDIX

On The Coldest Days, Heating Uses The Most Energy

Space Heating

Electric Vehicles

Everything Else



Modeling for Xcel Energy's system by Energy & Environmental Economics (E3) . If most of our customers (both residential and commercial) converted their heating equipment to ASHPs with electric resistance backup heat, peak demand on our electric system would increase by roughly 2.5 times what we have today. Figure shows the breakdown of that demand by end use, on NSP's system in Minnesota.

ASHPs Are Not Going to Advance Enough To Handle Peak Cold Conditions Efficiently

Current Generation

- NEEA ccASHP specs
- Capacity @ 5 F > 70% rated
- COP @ 5 F > 1.75

2025

2026+

Future Generation

- DOE ccASHP Challenge
- Capacity @ 5 F = 100% rated
- COP @ 5 F > 2.4

Imaginary Future Systems

- Modeled by the MNCEE
- Capacity @ -25 F >= 90% rated

Never

- Researchers modelled hypothetical future ASHPs of unparalleled performance, and still found that these systems would drive unprecedented winter system peaks.
- Furthermore, this analysis was only performed at the design temperature, which doesn't account for true peak cold events of 1h, 8h, 1day, or rare polar vortex events.

Legend:
- NEEA: Norwest Energy Efficiency Alliance
- DOE: Department of Energy
- MNCEE: MN Center for Energy and Environment
- COP: Coefficient of Performance
- ASHP: air source heat pump
- ccASHP: cold climate ASHP

UTENs - Most Efficient Heating and Cooling System Currently Available

Heating from the ground instead of air	Is roughly 2.4x more efficient on a peak cold day.
Enormous potential for recovering waste heat	Natively recovers heat from low temperature sources. In urban areas, waste heat can reach 50–120% of total heat demand.
Diversification of building types leads to load flattening	Greater size and diversity yields greater performance. In one real-world example peak demand was mitigated by 45%.
Saves space	Reduces footprint compared to drilling individual boreholes/bore-fields for each building.
Enables seasonal energy storage	Can utilize boreholes or aquifers as a thermal storage medium.
Access to opportunistic resources	Such as industrial heat processes, municipal wastewater systems, or surface water bodies.

UTENs are the Next Generation of District Energy

Traditional District Energy Systems		UTEN
Require large heating or cooling plants	→	Does not require heating/cooling plants. Can be designed with supplemental heating or cooling. Only requires electricity for pumping
Distribute hot/cold fluid	→	Distributes temperate fluid (water + glycol) close to ground temperature Uses boreholes to absorb/exude energy from/to the ground
Customers don't require heating/cooling equipment	→	Customers require a heat pump to extract energy from the fluid to heat or cool their facility
Centralized and built in one fell swoop	→	Not centralized and can be expanded in small, incremental pieces
Not very efficient. Loses energy to the ground. The larger it becomes, the less efficient it becomes.	→	Ultra efficient. Gains energy from the ground and enables energy sharing between customers. The larger it becomes, the more efficient it becomes.