

Accelerating Thermal Energy Network Deployment in Ohio – Policy Barriers and Opportunities

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by
The AnnDyl Policy Group



Doug Presley, Director of Government and Regulatory Affairs
Kate Moore, Policy Associate

About Midwest WBDC

The Midwest Building Decarbonization Coalition seeks to develop and implement equitable strategies to achieve zero emissions from the Midwestern building sector by 2050. Transitioning Midwestern buildings to carbon-free, renewable electricity has the potential to reduce utility costs, increase housing affordability, improve residents' health and safety, and help state and local governments achieve climate goals. Midwest BDC supports equitable deep decarbonization strategies to address the regional challenges of cold climates and purple state politics. The Coalition connects individuals representing a mix of local, state, regional, and national organizations - from local Environmental and Climate Justice advocates to nationally recognized "Big Greens," and has active participation from each state (Ohio, Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, and Wisconsin) in its region.

About AnnDyl

The AnnDyl Policy Group is an energy and environmental strategy firm that specializes in policy solutions to advance smart, efficient, energy technologies. AnnDyl staff have decades of experience working with contractors, contractor trade associations, and other stakeholders in home energy efficiency and are recognized as principal thought leaders behind adoption of the Home Energy Rebate Programs in the Inflation Reduction Act and geothermal heat pump policy issues.

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Disclaimer

This report reviews regulatory and statutory guidance from a policy perspective and does not constitute legal advice. Individuals or organizations seeking to own or operate a thermal energy network should seek appropriate legal counsel to assess all applicable laws and requirements.

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Executive Summary

Thermal energy networks (TENs) offer tremendous potential for significantly improving the efficiency of heating and cooling buildings across Ohio and the Midwest, reducing household and business energy bills, reducing harmful greenhouse gas and other emissions, and ensuring an equitable transition of all households towards renewable sources of energy. Thermal energy networks offer the highest efficiency of any heating and cooling system, and can be powered entirely by renewable and non-emitting sources, providing an important opportunity to reduce greenhouse gas emissions from the building sector.

1.0 Introduction and Policy Context

Scope

This report provides a detailed analysis of the legislative and regulatory landscape impacting the development of thermal energy networks in Ohio, including authorities for utility ownership, emissions requirements, labor and workforce provisions, consumer protections, and Public Utilities Commission of Ohio (PUCO) proceedings regarding cost recovery and ownership models.

What is a Thermal Energy Network?

A thermal energy network is a system consisting of ambient-temperature loops that connect multiple buildings and provide heating and cooling using a combination of geothermal heat pumps, wastewater, and other sources of heat, including surplus heat. In addition to being highly energy efficient, thermal energy networks produce no on-site emissions, resulting in better air quality. Thermal energy networks typically rely on ambient temperature water and heat pumps to simultaneously heat and cool different buildings (or different zones within a building), reducing thermal losses across the network and providing greater efficiency. Thermal energy networks are designed to take advantage of diverse loads on the system, and incorporating multiple thermal energy sources and sinks across a neighborhood (e.g. data centers, ice rinks, supermarkets, etc.) can further increase the efficiency of the overall system.

Addressing policy barriers to thermal energy network deployment

Thermal energy networks can be owned and operated by a range of entities, from individual private or non-profit owners (such as an apartment complex or a school campus), independent third-party energy service companies, or traditional electric or gas utilities such as municipal utilities, electric cooperatives, or investor-owned utilities. The range of different ownership and operation models raises numerous questions regarding how state laws and regulations apply to the implementation and deployment of thermal energy network systems, and this regulatory uncertainty frequently acts as a major policy barrier to advancing potential projects.

Pilot projects led by utilities in Minnesota, Colorado, Massachusetts, New York, and elsewhere are seeking to demonstrate how utility-scale projects can address up-front cost barriers to thermal energy network deployment, while also advancing equity, protecting

workers, and achieving significant reductions in greenhouse gases. As utilities and other stakeholders look towards expanding thermal energy networks beyond these initial pilot projects, they are faced with a range of regulatory and policy uncertainty over the authorities and restrictions on deploying these systems. Without explicit authority, utilities and private developers hesitate to invest their time and money into thermal energy networks, despite the long-term benefits.

Ohio Policy Context

Ohio policy promotes efficient use of energy as a state goal, while also prioritizing use of energy produced within the state (“indigenous energy resources”) and job creation. Thermal energy networks are consistent with prioritization of locally-produced energy and energy efficiency, and policymakers may consider specifically identifying thermal energy networks as a consistent with state energy policy.

2. Key Policy Issues for Thermal Energy Network Deployment

Section 2 of the report reviews statutory and regulatory provisions relating to thermal energy networks and recommends policy options for policymakers seeking to advance thermal energy network deployment in Ohio.

2.1. Pilot Projects

Pilot Projects Authorities and requirements: While the Commission may have broad authority to authorize utility pilot projects, there are no current requirements for utilities to propose thermal energy network pilot projects; legislators and regulators may consider issuing specific direction to accelerate the deployment of pilot projects.

Energy Efficiency Programs and the Renewable Energy Standard: While gas utilities are permitted to propose energy efficiency plans, the Commission has a recent history of taking a negative stance on the cost of such portfolios. HB 6 further removed the authority for electric utilities to propose energy efficiency programs. The Renewable Portfolio Standard is unlikely to be an effective avenue to support thermal energy networks without further legislation to strengthen the standard.

Reporting and evaluation of pilot projects, including technical metrics such as temperature and thermal output, financial metrics, customer/societal metrics, and safety/reliability metrics, can help ensure that pilot projects provide useful insights to inform future system development.

Priority locations for pilot projects can help to ensure that projects are built in disadvantaged, rural, or low-income communities to maximize public benefit.

2.2. Utility Authorities

Investor-owned utilities: A thermal energy utility business is likely allowable under state law as a heating or cooling utility. Electric, gas, and water utilities may need to

establish a subsidiary heating and cooling utility in order to provide thermal energy service. Some existing provisions in utility statutes and regulations specifically apply only to electric and gas utilities, while others apply to all public utilities, including heating or cooling utilities.

Cooperative utilities: Cooperative associations are authorized for “any lawful purpose,” and existing definitions of electric cooperatives are likely sufficiently broad to allow for adding thermal energy network service. Cooperative utilities may need to update their articles of incorporation to add thermal energy service, depending on how broadly they were established.

Municipal utilities: Cities and villages have broad authority to operate heating or other similar public utilities. However, nearly all of the specific or enabling authorities reference electric, gas, steam, or water utilities, which leaves uncertainty over the applicability of the statutes to a municipal thermal energy utility.

The obligation to serve requires utilities to provide customers with service that is “adequate and in all respects just and reasonable.” Uncertainty in interpretation of this provision makes it unclear if thermal energy service can provide a sufficiently viable alternative to gas service under the existing statute.

Size thresholds for thermal energy networks are not currently addressed in statutes or regulation, leaving uncertainty over how small-scale thermal energy networks might be regulated.

2.3. Landlord-Tenant Considerations and Consumer Protections

The Commission has generally found that landlords providing utility service to tenants are not subject to Commission regulation as a utility, but it is not clear how this would apply to a thermal energy network. Existing utility consumer protections would generally not apply to thermal energy networks as currently written.

2.4. Emissions requirements

Policymakers may be interested in defining emissions requirements for thermal energy network systems to ensure low- or zero-emission thermal sources.

2.5. Labor Standards

Labor and workforce provisions requiring prevailing wage and registered apprenticeships on thermal energy projects can help support the development of a robust, good-paying workforce and ensure protections for workers transitioning away from gas infrastructure work. Existing requirements regarding wage and labor standards for other public improvement projects may provide a model for similar requirements for thermal energy network projects.

2.6. Public Utilities Commission Regulatory Proceedings

Rates and cost recovery for thermal energy networks will differ significantly from existing rate structures due to the two-way flow of thermal energy, with changes across the seasons. As utilities begin to deploy thermal energy networks beyond initial pilot projects, regulators will need to consider maintaining a combined rate base of gas and thermal energy customers.

New ownership models for thermal energy sources will present a new opportunity for many different organizations and businesses to participate in thermal energy development. Municipal, cooperative, investor-owned utilities, and other private organizations may seek to own and operate thermal energy generation, transmission, or other portions of a network, without owning and operating the full system. Regulators will need to consider these various business models and issue regulatory guidance for ownership of specific components of a thermal energy network.

Infrastructure planning and analysis for gas system expansion provide important opportunities to consider thermal energy network investments. Current statutes and rules from the PSC establish a process for conducting an Integrated Resource Plan (IRP) for electric generation and transmission, but do not require a full IRP or analysis of alternatives prior to approving gas utility infrastructure. Rate cases, filings of planned major facility construction, and other regulatory planning requirements provide opportunities for policymakers to ensure that utilities, particularly gas utilities, have considered thermal energy networks as an alternative to gas system expansion before approving the requested rates or projects.

Timing of regulatory proceedings can help accelerate momentum behind thermal energy networks.

3.0. Conclusions

To fully accelerate the deployment of thermal energy networks on a wide scale, policymakers must continue to advance significant legislative and regulatory reforms to remove further policy barriers to thermal energy network deployment.

Figure ES1. Options for Policy Action

Section 1.4. Ohio Policy Context

- Add specific references to geothermal energy, surplus heat, and thermal energy networks to 1551.18 and 4933.42 to explicitly promote thermal energy networks as consistent with state energy policy goals.
- Establishing state emissions reduction targets, which can further provide key justification for increased investment in thermal energy network systems.

Section 2.1. Pilot Projects

- Establish requirements, via legislation or regulation, for electric and gas utilities to propose thermal energy network pilot projects.
- Endorse thermal energy networks as an energy efficiency resource for gas energy efficiency programs; this could include legislative support and/or favorable regulatory guidance from the Commission.
- Restore electric energy efficiency programs and include support for thermal energy networks in the authorizing legislation.
- Increase RPS requirements for 2027 and beyond and include specific requirements for thermal energy towards meeting the overall goal.
- Require any pilot projects to provide programmatic and technical performance metrics of thermal energy systems and require those details to be shared in publicly accessible formats and databases.
- Require a minimum number of pilot projects in low-income, rural, disadvantaged, or environmental justice communities.

Section 2.2. Utility Authorities

Investor-Owned Utility Provisions:

- Add specific references to thermal energy to the definition of heating or cooling utilities under [R.C. section 4905.03\(H\)](#).
- Authorize existing gas, electric, and water utilities under [Section 4933.02](#) (or similar provision) to provide thermal energy service without establishing a subsidiary utility.
- Update enabling authorities under sections [4929.111](#), [Sections 4929.16-167](#), [4933.23](#), [4935.03](#), and [5727.75](#) to include thermal energy network service.

Cooperative Utilities:

- Provide clear policy guidance that thermal energy service falls within the bounds of existing electric or gas utility cooperative service for the purposes of consistency with articles of incorporation.

Municipal Utilities:

- Add specific references to thermal energy in [section 715](#) and [section 735](#) authorities for cities and villages to operate public utilities and use public rights of way.
- Add specific authorities for thermal energy utilities in [section 743](#), including authority to operate, regulate prices, extend service beyond municipal boundaries, and leverage eminent domain where necessary.

Obligation to Serve:

- Update [section 4905.22](#) and [4933.41](#) to explicitly include “thermal energy” or alternative sources of heat as necessary and adequate alternatives to gas service.
- Issue PUC guidance stating that thermal energy service is a necessary and adequate replacement for gas or steam service.

Size Thresholds:

- Establish an exemption for small-scale thermal energy networks from regulation by the Public Utilities Commission, or exemption from specific reporting requirements, based on number of customers, annual revenues, the cost of the project, or the number of employees of the company.

Section 2.3. Landlord-Tenant Considerations and Consumer Protections

- Establish clear statutory or regulatory guidance that landlords providing thermal energy service to their tenants – including of multiple buildings across a campus – are not considered a public utility.
- Update consumer protection statutory and regulatory provisions in [Chapter 4933](#) and [Chapter 5117](#) to clarify that any utility providing thermal energy service – whether electric, gas, or thermal energy utility – is subject to the consumer protection requirements.

Section 2.4. Emission Requirements

- Include low-emissions requirements as part of pilot project authorizing legislation.
- Establish requirements for zero- or low-emissions from thermal energy networks as part of the requirements for Commission approval of utility infrastructure under [Section 4906.04](#) (if expanded to include thermal energy projects) or as a stand-alone requirement under Title 49.

Section 2.5. Labor Standards

- Include prevailing wage, apprenticeship, and fringe benefits requirements in the definitions for thermal energy networks over a certain size (e.g. using the federal tax credit threshold of 1MW thermal energy).
- Establish programs, or requirements for gas utilities to do so, to train gas workers on thermal energy network job skills and other relevant clean energy technologies.

Section 2.6. Public Utilities Commission Regulatory Proceedings

- Establish a combined rate base for thermal energy network and gas and/or electric customers to enable shared funding for utility investment in thermal energy networks.
- Direct utilities to seek lower-cost financing through green banks to help reduce overall project costs.
- Issue clarifying legislative or regulatory guidance regarding the sale of thermal energy between public utilities, municipal utilities, cooperatives, and other private organizations or persons.
- Establish exceptions within the statutory definitions of heating and cooling and other public utilities for surplus heat or small thermal energy providers under a certain threshold.
- Add a specific requirement to assess thermal energy networks or other alternatives to gas infrastructure to the certificate of need requirements in [Section 4906.04](#), the energy and infrastructure forecasts under [Section 4935.04](#), and in rate case filings.
- Direct the PSC or Commission staff to establish and complete regulatory proceedings to advance thermal energy networks within a certain timeframe.

1. Introduction and Policy Context

Thermal energy networks (TENs) offer tremendous potential for significantly improving the efficiency of heating and cooling buildings in Ohio and across the Midwest, reducing household and business energy bills, eliminating harmful greenhouse gas and other emissions, promoting reliable jobs for the energy workforce, and ensuring an equitable transition of all households towards renewable sources of energy. Thermal energy networks can be owned and operated by a range of entities, from individual private or non-profit owners (such as an apartment complex or a school campus), independent third-party energy service companies, or traditional electric or gas utilities such as municipal utilities, electric cooperatives, or investor-owned utilities. The range of different ownership and operation models raises numerous questions regarding how state laws and regulations apply to the implementation and deployment of thermal energy network systems, and this regulatory uncertainty frequently acts as a major policy barrier to advancing potential projects.

States such as Colorado, Maryland, Massachusetts, Minnesota, New York, Vermont, and Washington have recently passed legislation to update the statutory definitions of utilities to include “thermal energy” providers and/or to authorize or direct utilities to begin thermal energy network pilot projects to further explore the potential of these systems. Other states, such as Illinois and Rhode Island, among others, have proposed similar legislation which remains under consideration.

Scope

This report provides an analysis of the current legislative, statutory, and regulatory landscape surrounding thermal energy networks in Ohio, assessing Ohio statutes and regulations and drawing on lessons from various states that have also pursued thermal energy network policies. The report explores the existing authorities for municipalities, cooperatives, investor-owned utilities, and other private or non-profit organizations to own and operate thermal energy networks. The report also addresses integrating thermal energy networks into utility planning, labor and worker protections, and the application of thermal energy networks in multifamily buildings and under tenant leases. Finally, this report suggests areas of state laws and regulations that policymakers may seek to update to help advance the construction and operation of thermal energy networks.

This report is part of a series of similar assessments of thermal energy network policy considerations across the Midwest. Midwest BDC will continue to make these reports available as they are completed.

1.1. What are Thermal Energy Networks?

Thermal energy networks provide a campus, group of buildings, street segment, or neighborhood with heating, cooling, and/or domestic hot water through a combination of potential energy sources connected via a shared system of pipes used to transfer heat

through a moving fluid (typically water).¹ Non-emitting or renewable energy thermal networks utilize only renewable sources of energy, such as geothermal heat pumps or surplus heat.

- Note: Some definitions of thermal energy networks may include emitting sources of energy, such as methane gas, to produce heat and/or steam as in many existing “district energy” systems. Policymakers should be careful to specify expectations of allowable sources of energy for thermal energy network systems. Some policymakers have chosen to require thermal energy networks to be zero-emissions, while others have required thermal energy networks to align with state emissions goals (which may allow a slower glidepath to zero emissions).

Unlike traditional district energy systems, which typically use high-temperature steam or low-temperature chilled water, thermal energy networks typically rely on ambient temperature water and heat pumps to heat and cool, thereby reducing thermal losses across the network. These ambient temperature systems provide greater efficiency, and can simultaneously provide both heating and cooling to different buildings (or different zones within a building), representing a significant advancement over traditional district energy or dedicated chilled water systems. Thermal energy networks often rely on a system of networked ground-source heat pumps, where each building on the network has their own heat pump(s) which provide heating and cooling to the building.

Thermal energy for the heat pumps is delivered by a shared pipe loop that delivers water at a consistent ambient temperature. The geothermal boreholes provide stable heat transfer with the water loop to exchange heat with the ground, which remains at a relatively stable temperature year-round. Additional sources of heat transfer (such as industrial or commercial surplus heat, rivers, or lakes) may also provide additional thermal energy absorption or dissipation capabilities.

Unlike more common single-building systems, thermal energy networks are designed to take advantage of diverse loads on the system, reducing the number of boreholes required to serve the buildings. They also enable potential future expansion to new customers, especially when taking advantage of neighborhood thermal energy sources and sinks (data centers, ice rinks, supermarkets, etc.) which further increase the efficiency of the overall system.

1.2. Emerging Ownership Models

Thermal energy networks and networked geothermal systems have seen a growing number of high-profile deployments across the country in recent years. A range of different organizations have been involved in thermal energy network deployments, including utility-

¹ For additional information on thermal energy network systems and their impacts, see resources from the U.S. Department of Energy: <https://www.energy.gov/eere/geothermal/geothermal-district-heating-cooling>; the Building Decarbonization Coalition (BDC): <https://buildingdecarb.org/initiatives/tens>; and the Home Energy Efficiency team (HEET): <https://www.heet.org/gas-to-geo-transition>

owned systems as well as municipal, university, or private systems. These examples demonstrate the range of different ownership models – and resultant authorities and regulations – which may apply to a thermal energy network:

- **Utility-ownership:** Following legislation in Massachusetts in 2021, both Eversource and National Grid began development of utility-owned thermal energy networks. The Eversource project, the first utility-owned networked geothermal system in the country, includes 36 buildings and went online in Framingham, Massachusetts, on June 4, 2024. Residential customers will pay \$10 monthly to use the system, with income-qualified customers paying \$7. Commercial participants will pay a monthly fee of \$21.² There are similar utility-owned projects being pursued in Colorado, Maryland, Minnesota, and New York.
- **Municipal ownership:** The city hall in Rochester, Minnesota, was retrofitted with a thermal energy network in 2023, with plans to extend the network to include a nearby library and civic center. The resulting system will serve over one million square feet.³
- **University/Non-profit ownership:** Colorado Mesa University has one of the largest thermal energy networks in the United States. Their system, constructed in 2008, connects 16 buildings and serves over 1.2 million square feet. The University calculates that this system saves them nearly 15 million kilowatt hours and \$1.5 million in energy costs annually.⁴ There are numerous other university and campus systems currently active or in development across the country.
- **Private ownership:** The near century-old 345 Hudson St building in New York will be retrofitted with a thermal energy network with the capacity to simultaneously heat and cool different areas of the structure at the same time. This network will be connected to the existing geothermal ground loops of the neighboring 555 Greenwich St building, further maximizing efficiency. The project is expected to save 90% in emissions relative to 2019 levels by 2035.⁵ Various other campuses and private developers have installed thermal energy network systems to serve their community.

² Kempe, Ysabelle, *Smart Cities Dive*, “Geothermal system is a US first,” June 5, 2024, <https://www.smartcitiesdive.com/news/first-networked-geothermal-utility-eversource-framingham-building-decarbonization/718015>

³ Jossi, Frank, “Networked geothermal is catching on in Minnesota. New legislation aims to push the technology further,” *MinnPost*, April 5, 2024, <https://www.minnpost.com/other-nonprofit-media/2024/04/networked-geothermal-is-catching-on-in-minnesota-new-legislation-aims-to-push-the-technology-further/>

⁴ Colorado Mesa University, “Geo-Grid System,” <https://www.coloradomesa.edu/sustainability/initiatives/geo-grid.html>, accessed August 26, 2024

⁵ Takemura, Alison F., “This NYC high-rise is using heat pumps and waste heat to cut fossil fuels,” *Canary Media*, June 19, 2024, <https://www.canarymedia.com/articles/heat-pumps/this-nyc-high-rise-is-using-heat-pumps-and-waste-heat-to-cut-fossil-fuels>

- **Thermal Energy Source Ownership:** In addition to ownership of the full network, utilities are exploring options to own portions of the network while supplementing the system with energy purchased from other energy suppliers. In Troy, New York, National Grid is proposing a thermal energy network pilot which will purchase thermal energy from the locally-owned Troy Local Development Corporation, creating a business model with new opportunities for municipalities and private organizations to sell thermal energy to a utility.⁶

1.3. Ohio Policy Context

While Ohio does have state policies supporting energy efficiency, Ohio has not currently set statutory greenhouse gas emission reduction targets and the broader energy policy context may pose a significant challenge for the deployment of thermal energy networks in the state. The Ohio Revised Code Section 1551.18, *State purpose to promote efficient utilization of energy*, promotes efficient use of energy as a state goal, while also prioritizing use of energy produced within the state and job creation:

The general assembly finds and declares that it is an essential government function and public purpose of the state to promote the efficient utilization of energy, encourage the increased utilization of the state's indigeneous [sic] energy resources, promote the development of renewable energy resources, and foster increased cooperation amoung [sic] all levels of government for the preservation or creation of jobs and employment opportunities, the encouragement of economic growth, the promotion of the general welfare, the protection of the public health and safety, and the protection of environmental quality.

The Revised Code further provides policy guidance regarding support for “indigeneous energy resources,” including:

- Section 1551.31, *State policy to increase coal use*, establishes that it is the policy of Ohio to “assist in the development of facilities and technologies that will lead to increased, environmentally sound use of Ohio coal.”
- Section 4933.42 states that it is the public policy of the state to: “(A) Increase utilization of the state's indigenous energy resources as provided in section 1551.18 of the Revised Code. (B) Promote the availability of natural gas services and goods as provided in section 4929.02 of the Revised Code. (C) Encourage the utilization of propane.”

The Ohio Revised Code does not otherwise define “indigenous energy resources.”

⁶ Troy LDC Letter of Support, National Grid Final Utility Thermal Energy Network Pilot Proposal For Troy, New York, Appendix F, New York Department of Public Service Case 22-M-0429, December 11, 2023, <https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={500B6F8C-0000-CB17-954B-58355EC28049}>

Thermal energy networks are generally consistent with these policy priorities, leveraging inherently local thermal energy and maximizing efficiency of energy use. Policymakers may therefore consider adding specific references to geothermal energy, surplus heat, and thermal energy networks to 1551.18 and 4933.42 to explicitly promote thermal energy networks as consistent with state energy policy goals. This would clearly establish thermal energy networks as a priority within state policy, which would ensure they are appropriately viewed as an “indigenous energy resource” within state policy and regulation. Policymakers can also consider establishing state emissions reduction targets, which can further provide key justification for increased investment in thermal energy network systems.

1.4. Federal Policy Considerations

Federal tax incentives expanded under the Inflation Reduction Act (IRA) provide significant financial incentives for geothermal heat pump systems, which can form a core component of thermal energy networks. Section 48 of the Internal Revenue Code provides an investment tax credit of up to 30% of the project cost for geothermal heating and cooling systems for commercial taxpayers. Non-profit and municipal organizations are also newly eligible for “direct pay” provisions established by the IRA, allowing them to receive the value of the tax credit as a payment from the U.S. Treasury, even if they do not owe taxes.

- To receive the full 30% credit value, projects with an output of over 1MW of thermal energy must meet prevailing wage and registered apprenticeship requirements.
- The credit can increase by 10 percentage points for systems meeting certain domestic content requirements.
- The credit can increase by 10 percentage points for systems in designated “energy communities,”⁷ which includes significant portions of the state of Ohio.
- The IRS has issued guidance which requires the system owner to own at least one heat pump, in addition to the ground loop, to be eligible for the tax credit. Commercial customers purchasing their own heat pumps to connect to the thermal energy network would not benefit from the tax credit as they do not own a complete “system.” This guidance may encourage some utilities to own the interior heat pumps of commercial customers in order to maximize the value of the tax credits and reduce overall costs. Residential customers owning their own geothermal heat pump and connecting to a thermal energy network would be eligible for a 30% tax credit

⁷ “IRA Energy Community Tax Credit Bonus,” *Department of Energy*, 2024, <https://arcgis.netl.doe.gov/portal/apps/experiencebuilder/experience/?id=a2ce47d4721a477a8701bd0e08495e1d>.

under section 25D of the Internal Revenue Code, and utilities would not be required to own residential taxpayer systems.⁸

These federal tax provisions are currently under consideration for revision by the U.S. Congress, but are current as of the date of this publication. Utility ownership of thermal energy networks could become increasingly important if Congress reduces tax policy support for clean energy projects, as utility financing of thermal energy infrastructure within the rate base will be a critical means of financing large system deployment.

⁸*“Definition of Energy Property and Rules Applicable to the Energy Credit,”* Internal Revenue Service, Federal Register 89 FR 100598, December 12, 2024, <https://www.federalregister.gov/documents/2024/12/12/2024-28190/definition-of-energy-property-and-rules-applicable-to-the-energy-credit>

2. Key Policy Issues for Thermal Energy Network Deployment

2.1. Pilot Projects

Section Summary: Requirements to conduct pilot projects can help accelerate the organizational and industry learning among utilities and the thermal energy network industry. There is no current requirement or process for utilities to propose thermal energy network pilot projects, though the Commission may be able to consider such a proposal as part of a rate case, a gas energy efficiency program, or as a separate proceeding. Legislators and regulators may consider issuing specific direction to accelerate the deployment of pilot projects.

Policymakers in many states have often chosen to support the adoption of thermal energy networks by authorizing, encouraging, or requiring utilities to pursue thermal energy network pilot projects. These pilot projects provide learning opportunities for utilities and the geothermal and engineering industry in the state, and can set the stage for future widespread deployment of thermal energy networks.

The Public Utilities Commission holds broad authority to regulate public utilities under [Revised Code Section 4905.04](#). The Commission also has further authority to promote energy efficiency programs under [Revised Code Section 4905.70](#), *Energy conservation programs*, which requires that the Commission “shall initiate programs that will promote and encourage conservation of energy and a reduction in the growth rate of energy consumption, promote economic efficiencies, and take into account long-run incremental costs.”

Currently, there is no active docket within the Public Utilities Commission which would serve as an obvious vehicle for gas or electric utilities to propose thermal energy network pilot projects. Gas utilities may be able to propose thermal energy network pilots under the energy efficiency program (see section 2.1.1. below), and gas and electric utilities may be able to propose pilots as part of rate cases or stand-alone proposals under the Commissions regulatory approval authority. However, without specific guidance and support from policymakers and the Commission, utilities may be reluctant to propose pilots for thermal energy network projects due to the regulatory uncertainty of their approval.

- As an example, policymakers in New York and Colorado have established specific requirements for utilities over a certain size to submit pilot projects for commission approval to help accelerate the adoption of thermal energy networks.

2.1. Pilot Projects – Assessment and Policy Actions:

While the Commission may have broad authority to authorize utility pilot projects, there is no current requirement for utilities to propose thermal energy network pilot projects.

Options for Policy Action:

- Establish requirements, via legislation or regulation, for electric and gas utilities to propose thermal energy network pilot projects.

2.1.1. Energy Efficiency Programs and the Renewable Energy Standard

Section Summary: Gas utilities may propose energy efficiency programs, but the Commission has recently taken a negative stance on the costs of many such programs, while still approving programs for low-income households. HB 6 removed authority for electric energy efficiency programs.

Energy Efficiency Programs

In 2019, the Ohio General Assembly passed, and the Governor signed, [HB 6](#), which effectively repealed the state’s electric utility energy efficiency programs starting in 2021.⁹ The bill amended the Revised Code section [4928.66](#) to require that “any electric distribution utility cost recovery mechanisms authorized by the commission for compliance with [energy efficiency program requirements] shall terminate” once the program achieved a cumulative savings of 17.5%.¹⁰

- [House Bill 79](#), proposed during the 2023-2024 legislative session, would have reinstated voluntary electric energy efficiency programs meeting certain cost-effectiveness criteria. The draft legislation does not reference thermal energy networks. The legislation passed the House but did not clear the Energy and Public Utilities Committee in the Senate before the end of the session. It is not clear whether a similar bill will be introduced in the current 2025-2026 session.¹¹

⁹ Creates Ohio Clean Air Program, H.B. 6, 133rd General Assembly. (2019). https://search-prod.lis.state.oh.us/api/v2/general_assembly_133/legislation/hb6/06_EN/pdf/.

¹⁰ Cost recovery for previously incurred costs was still authorized.

¹¹ Permit electric distribution utility establish certain portfolios, H.B. 79, 135th General Assembly. (2023). https://search-prod.lis.state.oh.us/api/v2/general_assembly_135/legislation/hb79/02_PH/pdf/

HB 6 did not repeal authorities for gas utilities to offer energy efficiency programs, though the Commission has taken a skeptical stance regarding the necessity of such programs for market rate customers.

- Dominion Energy Ohio filed an application for approval of its gas Demand Side Management programs in November 2021, and CenterPoint Energy of Ohio (CEOH) filed an application to continue its DSM program in November 2022. In October 2023, and August 2024, respectively, the Commission ruled that Dominion and CenterPoint may only continue low-income and school education programs and directed termination of the residential and commercial market-rate programs. Using nearly identical language in both cases, the Commission stated that it is “*not convinced by the record of [these cases] that there continues to be a need for [several of the] expansive, utility-sponsored DSM/EE programs... We find that the subsidization of the full costs [can be] ... a burden on the Company’s ratepayers.*”¹²

While natural gas utilities therefore retain the authority to offer energy efficiency and DSM programs, the Commission may be disinclined to approve projects unless they show strong benefits-to-cost ratios, with a particular focus on supporting low-income customers.

Long-term support for customer geothermal heat pumps in energy efficiency programs

Where they have been deployed, many pilot programs for thermal energy networks include authority for utilities to recover the full costs of both the utility-side thermal energy generation and distribution infrastructure as well as customer-side equipment and upgrades. In other cases, the customer-side equipment must be procured by the customer in order to participate. Energy efficiency program incentives for ground- or water-source heat pumps can therefore provide an important support to offset costs not directly covered by the pilot program. Establishing incentives for ground-source heat pumps within gas or electric (if re-authorized) energy efficiency programs would provide an important support to the industry to support long-term deployment of thermal energy networks.

¹² In the Matter of the Application of the East Ohio Gas Company DBA Dominion Energy Ohio for Approval of An Alternative Form of Regulation to Continue and to Expand its Demand-Side Management and Energy Efficiency Programs. Opinion and Order. Public Utilities Commission of Ohio. October 4, 2023. Case No. 21-1109-GA-ALT, <https://dis.puc.state.oh.us/ViewImage.aspx?CMID=A1001001A23J04B42855B00506>, p. 18. & In the Matter of the Application of Vectren Energy Delivery of Ohio, LLC for Approval to Continue its Demand Side Management Programs. Opinion and Order. Public Utilities Commission of Ohio. August 21, 2024. Case No. 22-1015-GA-UNC, <https://dis.puc.state.oh.us/ViewImage.aspx?CMID=A1001001A24H21B42817H00746>, p. 23.

Renewable Portfolio Standard

Another potential source of funding to support thermal energy network deployment is the renewable portfolio standard, which has been used in other states¹³ to provide additional incentives for thermal energy projects on a British thermal unit (BTU)-equivalent basis. HB 6 modified Ohio’s renewable portfolio standard under [Revised Code 4928.64](#), *Electric distribution utility to provide electricity from qualifying renewable energy resources*, reducing the overall requirement to 8.5% of overall sales by 2026, and removing any requirements post-2026. [Section 4928.01](#) already includes geothermal energy in the definition of “renewable energy resources” eligible for the RPS.

- A key downside to leveraging the renewable portfolio standard is that thermal energy projects would essentially offset other renewable projects. While this could benefit thermal energy network deployment, particularly in its early stages, it comes at the expense of other renewable energy projects.

2.1.1. Energy Efficiency Programs and Renewable Portfolio Standard – Assessment and Policy Actions:

Gas utilities may propose energy efficiency programs, but the Commission has recently taken a negative stance on the costs of many such programs, while still approving programs for low-income households. HB 6 removed authority for electric energy efficiency programs. Energy efficiency programs could nevertheless provide one mechanism to support utility pilots of thermal energy networks by helping offset customer costs not covered by a pilot.

The RPS standard likely does not provide a reasonable avenue to support thermal energy networks without further legislation strengthening the standard.

Options for Policy Action:

- Endorse thermal energy networks as an energy efficiency resource for gas energy efficiency programs; this could include legislative support and/or favorable regulatory guidance from the Commission.
- Restore electric energy efficiency programs and include support for thermal energy networks in the authorizing legislation.
- Increase RPS requirements for 2027 and beyond and include specific requirements for thermal energy towards meeting the overall goal.

¹³ While renewable portfolio standards typically only apply to electric generation, states such as Maryland and Virginia have included thermal energy as eligible sources of renewable energy credits, allowing utilities to procure an equivalent amount of thermal energy credits to offset electric generation requirements; for further information on these state examples, see: <https://www.psc.state.md.us/electricity/description-documents-maryland-renewable-energy-portfolio-standard-program/geothermal-rec-frequently-asked-questions/> and <https://law.lis.virginia.gov/vacode/title56/chapter23/section56-585.5/>.

2.1.2. Reporting and Evaluation

Section Summary: Reporting and evaluation of pilot projects, including technical metrics such as temperature and thermal output, financial metrics, customer/societal metrics, and safety/reliability metrics, can help ensure that pilot projects provide useful insights to inform future system development.

To ensure that pilot projects provide useful insights to inform future system development, legislators and regulators may choose to specify the areas of data collection for pilot projects, as well as mandating how that information will be shared publicly.

- As an example, the non-profit Home Energy Efficiency Team (HEET) has established a database of thermal energy network project and performance data (LeGUp), starting with the pilot projects from the utilities Eversource and National Grid in Massachusetts; the database is intended to facilitate comparison and promote industry best practices across different system designs in states nationwide.¹⁴ Subsequent legislation in Maryland requires the Maryland gas utility thermal energy network projects to include LeGUp data in their reporting to the Commission.¹⁵
- Regulatory proceedings in New York are specifically considering the appropriate performance metrics for thermal energy network systems, including technical metrics such as temperature and thermal output, financial metrics, customer/societal metrics, and safety/reliability metrics.¹⁶

2.1.2. Reporting and Evaluation – Assessment and Policy Actions:

Regulatory proceedings in other states have established detailed reporting requirements for thermal energy pilots to further develop technical and programmatic lessons learned in support of future thermal energy projects.

Options for Policy Action:

- Require any pilot projects to provide programmatic and technical performance metrics of thermal energy systems and require those details to be shared in publicly accessible formats and databases.

¹⁴ Home Energy Efficiency Team (HEET), “Learning From the Ground Up,” <https://www.heet.org/legup>

¹⁵ *An act concerning Public Utilities - Thermal Energy Network Systems - Authorization and Establishment (Working for Accessible Renewable Maryland Thermal Heat (WARMTH) Act)*, H.B. 0397, <https://mgaleg.maryland.gov/2024RS/bills/hb/hb0397f.pdf>.

¹⁶ New York Public Service Commission, Order Providing Guidance on Development of Utility Thermal Energy Network Pilot Projects, Case 22-M-0429, September 14, 2023, p. 47, <https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={80C1948A-0000-CD12-974A-0171B90CAA9E}>

2.1.3. Priority Locations

Section Summary: Priority locations for pilot projects can help to ensure that projects are built in disadvantaged, rural, or low-income communities to maximize public benefit.

Thermal energy networks provide a significant opportunity for reducing household energy costs, especially in low-income and disadvantaged communities where energy burdens are the highest. Policymakers hoping to maximize the impacts of thermal energy networks should include guidance in the development of pilot project requirements to prioritize low-income, disadvantaged, or rural communities to ensure the benefits of thermal energy are shared equitably. For example:

- Legislation in New York requires that each utility must propose at least one thermal energy network pilot project in a disadvantaged community.¹⁷ Proposed legislation in Illinois similarly would require each utility to propose at least one pilot project in a disadvantaged community.¹⁸
- Legislation in Colorado requires each utility to propose a pilot project in a disproportionately impacted community, a mountain community, or a capacity-constrained or electrification target community.¹⁹
- Legislation in Maryland requires that at least 80% of the customers served by the thermal energy network pilots meet low- or moderate-income requirements.²⁰

Policymakers developing requirements for pilot projects may consider requirements to ensure that a portion of any thermal energy pilot projects are deployed in disadvantaged, rural, or low-income communities to maximize public benefit.

2.1.4. Priority Locations – Assessment and Policy Actions:

Policymakers may wish to establish requirements to ensure thermal energy networks pilot projects benefit priority communities.

Options for Policy Action:

- Require a minimum number of pilot projects in low-income, rural, disadvantaged, or environmental justice communities.

¹⁷ An Act to amend the public service law, the transportation corporations law, the labor law and public authorities law, in relation to thermal energy networks, S. 9422 (2022), <https://legislation.nysenate.gov/pdf/bills/2021/s9422>.

¹⁸ An Act concerning utilities, H.B. 2875, 103rd General Assembly, <https://www.ilga.gov/legislation/103/HB/10300HB2875.htm>.

¹⁹ Concerning the implementation of measures to advance thermal energy service, H.B. 23-1252, 74th General Assembly (2023), https://leg.colorado.gov/sites/default/files/2023a_1252_signed.pdf.

²⁰ Maryland WARMTH Act, HB 397, <https://mgaleg.maryland.gov/2024RS/bills/hb/hb0397f.pdf>

2.2. Authorities to Own and Operate Thermal Energy Networks

The following sections describe existing statutory and regulatory authorities as they may apply to thermal energy networks for investor-owned utilities, cooperatives, and municipal utilities, and identifies areas of potential interest to policymakers seeking to support the deployment of thermal energy network systems. Ohio statutes and regulations also provide various enabling authorities and exemptions, and enact various requirements, for utilities to facilitate the provision of utility service to residents and customers, which may or may not apply to thermal energy networks, depending on the circumstances.

2.2.1. Authorities for Investor-Owned Utilities

Section Summary: A thermal energy utility business is likely allowable under state law as a heating or cooling utility. Electric, gas, and water utilities may need to establish a subsidiary heating and cooling utility in order to provide thermal energy service. Some existing provisions in utility statutes and regulations specifically apply only to electric and gas utilities, while others apply to all public utilities, including heating or cooling utilities.

Ohio statutes currently include “heating or cooling company” as a class of public utility as defined under [Revised Code Section 4905.03](#), *Public utility company definitions*. Paragraph (H) provides that a “heating or cooling company, when engaged in the business of supplying water, steam, or air through pipes or tubing to consumers within this state for heating or cooling purposes” is considered a public utility; this definition would reasonably cover the design of a thermal energy network providing ambient water for heating and cooling purposes.²¹

- To further emphasize policy support for thermal energy networks, policymakers may wish to add specific references to thermal energy to the definition of heating or cooling utilities under R.C. [section 4905.03\(H\)](#).

There are currently multiple registered “heating,” “cooling,” or “heating and cooling” utilities in operation across Ohio; none of them appear to be operating an ambient temperature thermal energy system, and instead they predominantly fit the definition of a district energy system using a central heat plant or a chilled water system, or both.²²

While there is therefore clear statutory and regulatory authority for investor-owned heating and cooling utilities, existing electric, natural gas, and water-works utilities may not have clear authority to also offer thermal energy service, as it would fall outside the

²¹ Section 5727.01, *Public utilities definitions*, also provides definitions of utilities for tax purposes. The definitions under (D)(8) include a “heating company when engaged in the business of supplying water, steam, or air through pipes or tubing to consumers within this state for heating purposes;” this definition should be sufficient to include a thermal energy network utility.

²² Examples include Cleveland Thermal (<https://www.corix.com/cleveland-thermal/>), SOBE Thermal Energy [formerly Youngstown Thermal] (<https://www.sobethermalenergy.com/>), CoolCo by Ever-Green Energy (<https://coolco.com/>), and Akron Energy Systems (<https://www.akronenergysystems.com/>)

definitions of their class of utility. Such utilities likely would need to establish a subsidiary utility to operate the thermal energy network.²³

- There is specific statutory authority for gas companies to sell electricity, and for electric companies to sell gas; no such authority exists for gas or electric utilities regarding heating and cooling services. [Revised Code Section 4933.02](#), *Gas or electric companies may manufacture and supply both electricity and gas*, specifically allows that:

Every corporation organized under the laws of this state to manufacture and supply artificial gas for light, heat, power purposes and every corporation organized under the laws of this state to manufacture and supply electricity for light, heat, or power purposes... may manufacture and supply electricity and artificial gas, respectively, for light, heat, or power purposes. Such corporations may make all contracts and do all things necessary and convenient for furnishing electricity and artificial gas for both public and private objects.

Adding a similar authority for gas, electric, and water utilities to provide thermal energy service would allow existing utilities to deploy thermal energy networks without the additional financial and regulatory processes of creating subsidiary utility companies. Legislation in states such as New York and Maryland provide an example of how other states have expanded the definition of electric and gas utilities or specifically authorized electric, gas, and water utilities to own and operate thermal energy systems.²⁴

While Ohio Statutes provide authority for heating and cooling utilities, the Public Utilities Commission regulations within the Administrative Code generally do not address heating and cooling service or thermal energy. Broad deployment of thermal energy by utilities could require updates to administrative code to establish service requirements and new processes and procedures for filings before the Commission. The PUC may need to establish a regulatory proceeding to update PUC rules for thermal energy service based upon statutory changes or broader deployment of heating and cooling utilities.

Enabling Authorities

In addition to the fundamental authorities to operate thermal energy networks, policymakers may wish to apply additional enabling authorities and operating regulations which currently only apply to electric and gas utilities. Consumer protection provisions are further addressed in section 2.3 below.

²³ See, for example, the corporate structures described in Case No. 04-1179-HT-UNC, where Dominion sold the Cleveland Thermal steam and chilled water systems, July 26, 2004, <https://dis.puc.state.oh.us/ViewImage.aspx?CMID=YOX@A@MDRSOFW1V1>

²⁴ New York “Utility Thermal Energy Network and Jobs Act,” S9422, <https://www.nysenate.gov/legislation/bills/2021/S9422> and An act concerning Public Utilities - Thermal Energy Network Systems - Authorization and Establishment (Working for Accessible Renewable Maryland Thermal Heat (WARMTH) Act), H.B. 0397, <https://mgaleg.maryland.gov/2024RS/bills/hb/hb0397f.pdf>.

Statutory authorities requiring updates to fully address thermal energy networks

- **Emergency Powers:** [R.C. Section 4935.03](#), *Rules for energy emergencies*, authorizes the governor to “order, during a declared emergency, any electric light, natural gas or gas, or pipeline company; [competitive electric suppliers and local electric aggregators]; electric power or gas utilities that is owned by a municipal corporation or not for profit; coal producer or supplier; electric power producer marketer; or petroleum fuel producer, refiner, wholesale distributor, or retail dealer to sell electricity, gas, coal, petroleum fuel in order to alleviate hardship, or if possible to acquire or produce emergency supplies to meet emergency needs.” These authorities do not currently extend to thermal energy or heating and cooling utilities. While these authorities are unlikely to be required during pilot scale deployment, as thermal energy networks proliferate, there may be requirements to allocate thermal energy to support the public good during a declared emergency.
- **Equipment Protections:** [Section 4933.23](#), *Interfering with pipes and meters*, prohibits destruction or interference with “any pipe, valve, regulator, gauge, gate, stopcock, trap, meter, or other regulating or measuring device or appliance used in the construction or operation of any plant furnishing or distributing hot water or steam for heating purposes.” As currently defined, these protections would only apply to hot water and steam for heating, and may not apply to cooling or to ambient temperature systems.
- **Capital Expenditure Program:** [Section 4929.111](#), *Implementation of capital expenditure program*, allows a natural gas company to file an application for a capital expenditure program for “any infrastructure expansion, infrastructure improvement, or infrastructure replacement program;” paragraph (C) further states that if the application is consistent with the natural gas utility’s obligation to serve under [4905.22](#) and is just and reasonable, the Commission shall approve the application. Policymakers should consider including thermal energy networks as an allowable technology for inclusion in capital expenditure plans. [See also section 2.2.4. regarding the obligation to serve].
- **Economic Development Authorities:** [Sections 4929.16 – 167](#) establish specific authorities for economic development projects to support line extension costs or natural gas service to projects supported by JobsOhio, any JobsOhio network or regional partner, or the Department of Development. Policymakers should consider extending similar authorities to gas utilities pursuing thermal energy network projects as an alternative to gas service (see also section 2.6.4 regarding analysis of alternatives for gas service).
- **Tax Exemption:** [Section 5727.75](#) provides tax exemption for energy projects using renewable energy resources – but currently only for electric power generation.

Policymakers should consider extending the tax exemption to include development of thermal energy network infrastructure.

Statutory provisions that do not require updates and can support thermal energy networks

Certain statutory provisions are defined broadly enough that they would encompass thermal energy service and do not require updates to incorporate thermal energy networks:

- **Tamper Protections:** [Section 4933.18](#), *Tampering with utility equipment*, sets standards for evidence in theft cases involving utility service tampering; the definitions currently include protections for “any electric light company, gas company, natural gas company, pipe-line company, waterworks company, or heating or cooling company,” and would therefore similarly apply to thermal energy network service.
- **Energy Efficiency Revolving Loan Fund (RLF):** [Section 4928.62](#) creates a revolving loan fund to support projects utilizing “advanced energy resources” (defined to include demand-side management and energy efficiency) and “renewable energy resources” (defined to include geothermal energy). These existing definitions likely encompass most thermal energy network technology, making thermal energy networks eligible for funding under the RLF.
- **Underground Utility Infrastructure:** [Section 3781.25](#) through [3781.38](#), along with [Chapter 4913](#), establish requirements for protection of underground utility facilities. The definitions are broadly established to include all underground utility infrastructure, to include:

“Any item buried or placed below ground or submerged under water for use in connection with the storage or conveyance of water or sewage; electronic, or telephonic communications; television signals; electricity; crude oil; petroleum products; artificial or liquefied petroleum; manufactured, mixed, or natural gas; synthetic or liquefied natural gas; propane gas; coal; steam; hot water; or other substances. ‘Underground utility facility’ includes all operational underground pipes, sewers, tubing, conduits, cables, valves, lines, wires, worker access holes, and attachments, owned by any person, firm, or company. “

The definition of utility specifies that it includes “any owner or operator, or an agent of an owner or operator, of an underground utility facility,” and would include investor-owned, cooperative, or municipal utilities.

- The Underground Technical Committee established under [section 3781.34](#) includes representatives from electric, gas, and water utilities; policymakers

may consider expanding the composition to include representatives thermal energy networks operators as thermal energy heating and cooling utilities proliferate.

2.2.1. Investor-Owned Utility Authorities – Assessment and Policy Actions:

Ohio revised Code establishes “heating or cooling” as a specific class of utility service, which would include thermal energy service. Existing electric, gas, and water utilities may not currently have authority to provide thermal energy service, however, without first establishing a subsidiary utility.

While certain enabling statutory provisions likely apply to thermal energy service, others use a narrower definition and may need to be updated if policymakers wish to apply these additional enabling authorities and operating regulations to thermal energy networks.

Options for Policy Action:

- Add specific references to thermal energy to the definition of heating or cooling utilities under [R.C. section 4905.03\(H\)](#).
- Authorize existing gas, electric, and water utilities under [Section 4933.02](#) (or similar provision) to provide thermal energy service without establishing a subsidiary utility.
- Update enabling authorities under sections [4929.111](#), [Sections 4929.16-167](#), [4933.23](#), [4935.03](#), and [5727.75](#) to include thermal energy network service.

2.2.2. Authorities for Cooperative Utilities²⁵

Section Summary: Cooperative associations are authorized for “any lawful purpose,” and existing definitions of electric cooperatives are likely sufficiently broad to allow for adding thermal energy network service. Cooperative utilities may need to update their articles of incorporation to add thermal energy service, depending on how broadly they were established.

[Chapter 1729](#), Ohio Cooperative Law, establishes the governing authorities for cooperatives, and [section 1729.02](#) allows that “An association may be organized under this chapter for any lawful purpose permitted to corporations by the laws of this state.”

Utility statutes exempt cooperative utilities from regulation by the Commission under [section 4905.02\(A\)](#), which includes an exemption for “(2) A public utility, other than a telephone company, that is owned and operated exclusively by and solely for the utility's customers, including any consumer or group of consumers purchasing, delivering, storing, or transporting, or seeking to purchase, deliver, store, or transport, natural gas exclusively by and solely for the consumer's or consumers' own intended use as the end user or end users and not for profit.”

- [Section 4928.01](#) also establishes a specific definition for an electric cooperative, which is referenced throughout Chapter 49 and other areas of statute, stating that an “Electric cooperative” means a not-for-profit electric light company that both is or has been financed in whole or in part under the “Rural Electrification Act of 1936,” 49 Stat. 1363, 7 U.S.C. 901, and owns or operates facilities in this state to generate, transmit, or distribute electricity, or a not-for-profit successor of such company.’ This definition based on financing and asset ownership should not preclude such an electric cooperative from also owning and operating a thermal energy network system.

These broad definitions of cooperative utilities provides flexibility for existing cooperatives to add thermal energy services without jeopardizing their status as a cooperative utility. Existing cooperatives wishing to offer thermal energy service may need to alter their articles of incorporation if they were narrowly established:

- Per [section 1729.07](#), *Article of Incorporation*, cooperatives must have articles of incorporation which establish the association’s purpose. These may be very broad, as the statute allows that “it is sufficient to state in the articles that the association may engage in any activity within the purposes for which associations may be organized under this chapter.”

²⁵ Cooperative utilities in Ohio have historically served rural areas not serviced by investor-owned or municipal utilities. The geography of these service territories may make thermal energy networks more expensive to deploy, but they may still provide opportunities for replacing existing delivered fuels or other legacy fossil fuel heating systems, and are therefore still included in this report.

Policymakers interested in streamlining the process for existing cooperatives to expand their service to include thermal energy services could consider providing a presumption of thermal energy service as an authorized function for existing cooperatives without requiring updates to article of incorporation or establishment of a subsidiary cooperative.

2.2.2. Cooperative Utility Authorities – Assessment and Policy Actions:

Cooperatives associations may be established for any lawful purpose under Chapter 1729. Existing definitions of electric cooperatives are likely sufficiently broad to allow for adding thermal energy network service, but may require updates to articles of incorporation.

Options for Policy Action:

- Provide clear policy guidance that thermal energy service falls within the bounds of existing electric or gas utility cooperative service for the purposes of consistency with articles of incorporation.

2.2.3. Authorities for Municipal Utilities

Section Summary: Cities and villages have broad authority to operate heating or other similar public utilities. However, nearly all of the specific or enabling authorities reference electric, gas, steam, or water utilities, which leaves uncertainty over the applicability of the statutes to a municipal thermal energy utility.

The Ohio Constitution provides clear authority for cities (population over 5,000) and villages (populations under 5,000) to own and operate a public utility. [Article XVIII, Section 4](#) states that “any municipality may acquire, construct, own, lease and operate within or without its corporate limits, any public utility the product or service of which is or is to be supplied to the municipality or its inhabitants, and may contract with others for any such product or service.” [Section 5](#) requires that a municipality pass an ordinance to authorize operation of a utility, which may be put to a further referendum if 10% of electors request it.

While the state constitution does not further define a “public utility,” statutory municipal corporation authorities provide a broad definition of utility service:

- **Cities:** [Section 735.02](#), establishes the responsibilities of the Director of Public Service to include management of “municipal water, lighting, heating, power, garbage, and other undertakings of the city.” [Emphasis added]
- **Villages:** [Section 735.28](#) requires the establishment of a board of trustees of public affairs in “each village in which a water works, electric light plant, artificial or natural gas plant, or other similar public utility is situated.” [Emphasis added]
 - [Section 735.29](#) further authorizes “a water rent or charge, or a light, power, gas, or utility rent,” to fund the operation of the public utility service. [Emphasis added]
 - [Section 703.31](#), *Village dissolution definition*, also provides a definition for purposes of [sections 703.31](#) to [703.39](#), which states that “utility services” means “electric, water, sewer, and other similar utilities.” [Emphasis added]
- **Prohibition on Monopoly Gas Service:** [Section 743.33](#), *Exclusive monopoly shall not be allowed to gas companies*, prohibits a municipality from providing a gas company with “exclusive privilege of using the streets, lanes, commons, or alleys for the purpose of conveying gas to the municipal corporation or the citizens thereof.” Municipalities should therefore retain authority to use the rights of way for thermal energy service as well as gas service under existing statutes. Policymakers may consider extending a similar prohibition to exclusive thermal energy service as the thermal energy market develops.

While these statutes establish oversight mechanisms and refer to other utility services such as heating, they do not explicitly authorize municipalities to operate such services. While this implied authority may be sufficient for a municipality to pursue a thermal energy

network, explicit statutory authority including thermal energy or “heating or cooling” service in the classifications of municipal utilities would strengthen policy support for thermal energy networks.

- [Section 715.34](#), *Hot Water and Steam Heating*, provides authorities for municipal corporations to use public rights of way for providing “steam or hot water” to municipal buildings or residents. This reference to “hot water” does not clearly include ambient-temperature thermal energy networks, leaving regulatory uncertainty over whether the authority would apply.
- [Section 743](#), *Utilities - Electric; Gas; Water*, provides specific municipal authorities for electric, gas, and water utility service – but does not provide any specific authority for thermal energy, heating, or cooling. Policymakers may consider adding similar authorities for thermal energy utilities within Section 743, including specifically:
 - [Section 743.34](#), *Legislative authority may erect or purchase gas or electric works*, provides explicit authority for municipal gas and electric utilities, stating “the legislative authority of a municipal corporation may erect gasworks or electric works at the expense of the municipal corporation, or purchase any such works already erected therein.” [Section 743.01](#) provides similarly direct authority for the construction of water utility works.
 - [Section 743.26](#), *Regulation of price of electric light, gas, sewage disposal, and water*, authorizes the municipal legislative authority to set rates for “electric light, or for gas for lighting or fuel purposes, or for the disposal of sewage, industrial wastes, or other wastes, or for water for public or private consumption.” There is no specific reference to thermal energy, power, or heat under this authorizing statute.
 - [Section 743.12](#), *Extension of public utility service beyond municipal corporation limits*, authorizes municipal electric and water service to persons outside the bounds of the municipality. [Section 743.18](#), *Authority to supply other municipal corporations*, similarly authorizes a municipal water or electric utility to provide service to another municipality. [Sections 743.35](#) and [743.36](#) provide additional authorities for municipal gas utilities to provide service outside the municipal boundaries.
 - [Section 743.19](#), *Construction of water works by two or more municipal corporations*, authorizes joint construction of water works by multiple municipalities. If they were authorized, municipalities may seek to establish combined thermal energy network utilities to share surplus heat or reduce expenses on borefield construction.
 - [Section 743.23](#), *Laying pipes in highway*, authorizes municipalities to “prescribe by ordinance for the laying of water pipes in all highways about to

be paved, macadamized, or otherwise permanently improved, and for the assessment of the cost and expense thereof upon the lots or parcels of land adjoining or abutting upon the highways in which they are laid.” Such an authority could be similarly useful to a thermal energy network utility.

- [Section 743.39](#), *Right of eminent domain in municipal corporations for public service enterprises*, provides rights of eminent domain “to carry and transmit electricity, transporting natural gas, petroleum, water, or electricity through or by means of tubing, pipes, conduits, wires, or cables, storing, transporting, or transmitting water, natural gas, or petroleum, or generating and transmitting electricity.” While a thermal energy network could be considered as transmitting water for purposes of the statute, this likely exceeds the original intent of the authority.
- **Franchises for Utility Service:** Various authorities regarding municipal franchises with utilities also may require updates to fully address thermal energy networks:
 - [Section 4933.16](#), *Municipal control of electricity*, states that “no person or company shall place, string, construct, or maintain a line, wire, fixture, or appliance of any kind conduct electricity for lighting, heating, or power purposes through a street, alley, lane, square, place, or land of a municipal corporation without the consent of such municipal corporation.” Such authority only applies to electric service, and would not extend to thermal energy networks.
 - [Sections 4909.34-4909.39](#) establish the authority of municipal corporations to set rates via ordinance for public utilities operating in their territory; the underlying authorities reference sections [715.34](#), [743.26](#), and [743.28](#), which as discussed above, may not apply to a thermal energy utility.

Statutory provisions that do not require updates and can support thermal energy networks

- [Section 4905.39](#), *Power to require additions and extensions*, allows a municipality to “require of any public utility, by ordinance or otherwise, such additions or extensions to its distributing plant within such municipal corporation as the legislative authority deems reasonable and necessary in the interest of the public.” This authority is likely sufficiently broad to include authorities for municipalities to direct extension of thermal energy network infrastructure, if appropriate.
- As discussed above in section 2.2.1, the underground utility infrastructure protections in [3781.25-3781.34](#) and [section 4913](#) would currently apply to municipal thermal energy network utilities as well.

Municipal utilities are exempt from Public Utilities Commission regulation per [Section 4905.02\(A\)\(3\)](#), and therefore are generally not addressed in Commission regulations.

2.2.3. Municipal Utility Authorities – Assessment and Policy Actions:

Cities and villages have broad authority to operate heating or other similar public utilities. However, nearly all of the specific or enabling authorities reference electric, gas, steam, or water utilities, which leaves uncertainty over the applicability of the statutes to a municipal thermal energy utility.

Options for Policy Action:

- Add specific references to thermal energy in [section 715](#) and [section 735](#) authorities for cities and villages to operate public utilities and use public rights of way.
- Add specific authorities for thermal energy utilities in [section 743](#), including authority to operate, regulate prices, extend service beyond municipal boundaries, and leverage eminent domain where necessary.

2.2.4. Obligation to Serve

Section Summary: The obligation to serve requires utilities to provide customers with “adequate and in all respects just and reasonable” service. Current statutes likely do not allow for thermal energy service as an alternative to natural gas service.

Electricity and heating are public goods; the statutory “obligation to serve” helps to ensure that all customers are able to receive ongoing and reliable service.²⁶ This ensures that utilities may not arbitrarily terminate service to any customer, and allows new customers to connect to utility services if they so desire.²⁷

Substituting thermal energy service for natural gas service may allow gas utilities to continue to meet their service obligations while allowing them to decommission parts of the existing gas infrastructure. Of primary interest to utilities and policymakers are situations where less than 100% of customers switch from gas to thermal energy service – under existing obligation to serve requirements, the utility may need to maintain the gas systems to serve those remaining customers, eliminating potential cost savings. If policymakers clearly establish thermal energy as an adequate and reasonable replacement to natural gas service for customers, then utilities have greater policy support for terminating the gas service, as “adequate” replacement service would have been deemed to be available.

Divisions between the types of utilities in the Ohio Revised Code and specific requirements for natural gas service, as described below, likely prohibit gas utilities for substituting thermal energy service under the existing obligation to serve. While the obligation to serve therefore does not prevent the establishment of a thermal energy network project, it may prohibit a utility from decommissioning the existing gas infrastructure in an area served by the network, eliminating any potential cost savings.

The Revised Code includes multiple provisions regarding the obligation to serve, including:

- [Section 4905.22](#), *Service and facilities required - unreasonable charge prohibited*, requires that “every public utility shall furnish necessary and adequate service and facilities, and every public utility shall furnish and provide with respect to its business

²⁶ For more details, see Bagdanov, Kristin George, “Decarbonizing the Obligation to Serve,” Building Decarbonization Coalition, March 2024, https://buildingdecarb.org/wp-content/uploads/FINAL_Decarbonizing-the-Obligation-to-Serve_March2024.pdf

²⁷ Utilities do have mechanisms to terminate service where it is not cost effective, and new customers may need to pay an up-front fee to cover the costs of the new infrastructure. States and utilities often provide a line extension allowance (LEA) to determine what portion of the cost the utility will cover, often based upon the expected customer revenue over the lifetime of the infrastructure or a set distance of infrastructure (e.g. 100’ from a distribution main); customers typically only pay the cost over this LEA.

such instrumentalities and facilities, as are adequate and in all respects just and reasonable.”

- [Section 4905.26](#), *Complaints as to service*, also authorizes the Commission to hold hearings regarding service from any public utility (as defined under [section 4905.02](#) and [4905.03](#)) that is *“in any respect unjust, unreasonable, unjustly discriminatory, unjustly preferential, or in violation of law,”* or *“that any service is, or will be, inadequate or cannot be obtained.”* [Section 4905.37](#) provides that pursuant to a hearing, the Commission may determine *“the service to be installed,”* and [section 4905.38](#) provides that the Commission may order the *“repairs, improvements, or additions to the plant or equipment of any public utility should reasonably be made, in order to promote the convenience or welfare of the public or of employees, or in order to secure adequate service or facilities.”*

Since thermal energy network “heating and cooling” utilities are likely to be formed as separate entities from the regulated natural gas utility, there is regulatory uncertainty over whether the obligation to serve requirements could be met through thermal energy service of a separate or subsidiary utility.

Additionally, the Revised Code further specifies obligations regarding natural gas service:

- [Section 4933.41](#), *Access to natural gas service, propane; political subdivision restriction*, provides specific service requirements for natural gas utilities, stating that *“every person seeking to obtain distribution service or retail natural gas service has the right to obtain any available distribution service or retail natural gas service from a natural gas company with capacity to provide service to the person in that location.”* The section also prohibits any ordinance, resolution, building code, contractual provision, or other requirement that *“limits, prohibits, or prevents residential, commercial, or industrial consumers within their boundaries from using the following: (1) Distribution service or retail natural gas service that would otherwise be available to those consumers... [or] (2) Propane.”*

This specific statutory support for natural gas service likely would make it difficult for the Commission to approve thermal energy network service as a substitute for natural gas service without full consent of every customer served by that portion of the gas infrastructure. While customers may voluntarily switch to thermal energy service, without full customer consent, the gas utility may not be able to decommission existing gas infrastructure to achieve the desired infrastructure savings.

Within the Ohio Administrative Code, regulations surrounding waterworks and sewage disposal companies offer a potential framework for the substitution of gas service with thermal energy service:

- [Rule 4901:1-15-08](#), *Abandonment, cancellation, and substitution of service*, states that waterworks and sewage disposal system companies may apply for the authority to abandon, cancel, or substitute portions of their service. Applications are to “*contain a complete description of the nature of any operations proposed to be abandoned, cancelled, or substituted and the portion or portions of the service area to be abandoned, cancelled, or substituted and shall set forth the reasons for the abandonment, cancellation, or substitution.*” Establishing a similar routine procedure for the substitution of gas service with thermal energy network service could enable the Commission to approve thermal energy as “adequate service” with respect to Revised Code Section 4905.22.

Policymakers in other states have provided exceptions to the obligation to serve when they have sufficient popular support or can be justified by available thermal energy alternatives. For example:

- Colorado enacted HB24-1370, which authorizes the Public Utilities Commission to “modify the gas utility’s service requirement for select premises with an alternate energy service requirement” within specific participating “gas planning pilot communities.”²⁸
- California enacted SB 1221, which would facilitate the transition to clean energy for residential neighborhoods by updating the obligation to serve and allowing utilities to shift away from investments in aging natural gas pipelines towards more cost-effective and community-scale clean energy pilot projects. SB1221 authorizes natural gas utilities to launch up to 30 Neighborhood Decarbonization Pilots in priority zones, subject to Commission approval; in these designated zones, gas utilities may pursue neighborhood electrification projects if they receive consent for at least 67% of customers.²⁹
- Massachusetts recently enacted S2967, which, among other provisions, modified the obligation to serve for gas utilities by requiring the Department of Public Utilities to consider: “(i) *whether the grant of the petition is in the public interest, including the public interest in reducing greenhouse gas emissions... and (ii) whether, in the totality of the circumstances, the petitioner can secure adequate substitutes for gas-fired services for space heating, water heating and cooking appliances which, in the case*

²⁸ Codified at C.R.S. 40-3.3-103(4), see Colorado General Assembly HB24-1370, <https://www.leg.colorado.gov/bills/hb24-1370>

²⁹ California Legislature, (2023), SB 1221, https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=202320240SB1221

of space heating, may include thermal energy that provides heating or cooling without combustion.”³⁰

2.2.4. Obligation to Serve – Assessment and Policy Actions:

Since thermal energy network “heating and cooling” utilities are likely to be formed as separate entities from the regulated natural gas utility, there is regulatory uncertainty over whether the obligation to serve requirements could be met through thermal energy service provided by a separate or subsidiary utility. Additionally, specific statutory support for natural gas service under section 4933.41 likely would make it difficult for the Commission to approve thermal energy network service as a substitute for natural gas service without full consent of every customer served by that portion of the gas infrastructure.

Options for Policy Action:

- Update [section 4905.22](#) and [4933.41](#) to explicitly include “thermal energy” or alternative sources of heat as necessary and adequate alternatives to gas service.
- Issue PUC guidance stating that thermal energy service is a necessary and adequate replacement for gas or steam service.

³⁰ “An Act promoting a clean energy grid, advancing equity and protecting ratepayers,” Massachusetts S2967, section 77, enacted November 20, 2024, <https://malegislature.gov/Bills/193/S2967>

2.2.5. Size Thresholds

Section Summary: Size thresholds for thermal energy networks are not currently addressed in statutes or regulation, leaving uncertainty over how small-scale thermal energy networks might be regulated.

The Revised Code does not establish any specific minimum size requirements for public utilities. In defining categories of ownership and regulation for thermal energy networks, policymakers may wish to establish guidance regarding the required size to be considered a regulated thermal energy utility. Without exemptions for small systems, private companies looking to provide thermal energy service could be regulated as public utilities, which may deter investment and participation while also increasing the oversight and regulation of such activities.

- Without specific size exemptions, a facility (such as a data center or hockey rink) on contract to provide surplus heat to a neighboring building could be considered as furnishing thermal energy utility service to the public, and therefore subject to regulation by the Commission.
- Policymakers seeking to enable various ownership models for thermal energy networks therefore may wish to establish minimum size requirements to be considered a regulated thermal energy or heat utility.
- Uncertainty regarding potential regulation is likely to dissuade many private owners unless policymakers clearly establish rules to determine which thermal energy networks need to be regulated by the Commission.

Policymakers may also consider exempting smaller thermal energy network operators from certain reporting requirements or specific regulatory provisions, if not fully exempting them from regulation. As precedent, various regulatory statutes establish size thresholds for certain requirements:

- Utilities with fewer than 15,000 customers are exempt from annual energy information reporting requirements under [section 4935.04](#), and the Commission may waive a hearing under [section 4929.04](#) for gas utilities with fewer than 15,000 customers providing commodity or ancillary service.
- [Section 4909.051](#) defines certain appraisal requirements which only apply to acquisitions by "large water-works or sewage disposal system company" with annual operating revenues of \$250,000 or more.

For example, Minnesota statutes provide that “no person shall be deemed to be a public utility if it produces or furnishes service to less than 25 persons.” Minnesota also provides

that gas utilities providing service under a franchise agreement to fewer than 650 customers may receive exemption from Commission regulation following a resolution from the city council in the area in which they operate.³¹

2.2.5. Size Thresholds – Assessment and Policy Actions:

Establishing a size threshold for what constitutes “utility-scale” thermal energy network service and requiring regulatory oversight will help remove uncertainty in the development of small-scale thermal energy networks.

Options for Policy Action:

- Establish an exemption for small-scale thermal energy networks from regulation by the Public Utilities Commission, or exemption from specific reporting requirements, based on number of customers, annual revenues, the cost of the project, or the number of employees of the company.

³¹ Minnesota statutes 216B.02 Subd. 4.

2.3. Landlord-Tenant Considerations and Consumer Protections

Section Summary: The Commission has generally found that landlords providing utility service to tenants are not subject to Commission regulation as a utility, but it is not clear how this would apply to a thermal energy network. Existing utility consumer protections would generally not apply to thermal energy networks as currently written.

2.3.1 Landlord and Utility Service Distinctions

The regulatory treatment of landlords or property owners providing utility service to tenants remains an area of debate among Ohio policymakers. The Office of the Consumer Counsel has expressed concerns over submetering practices by landlords and property managers,³² while other policymakers have sought to protect behind-the-meter services by landlords from commission jurisdiction. [SB No. 123](#), introduced in 2023, would have specifically exempted “utility related service,” including “service or benefit from an advanced energy resource,” from utility regulation. The draft legislation only included electric, gas, or water utilities, however.³³

The Commission has generally found that landlords providing *resale* of utility service are not considered a regulated utility, and private building owners participating in a thermal energy network to provide service to their tenants, even across multiple buildings, likely are not considered as providing utility service. It is unclear, however, whether a landlord that also *generated* the thermal energy, such as through their own geothermal borefield or surplus heat, might be treated differently.

Key Example: Ohio Power Company v. Nationwide Energy Partners

In Case Number 21-990-EL-CSS, the Commission ruled that Nationwide Energy Partners (NEP) was not acting as a public utility in providing property management services, to include billing customers for electric usage behind a “master meter.” AEP Ohio, the electric utility in the case, had filed the complaint and raised concerns that NEPs submetering business harmed consumers by removing their electric service from commission regulation of rates and other protection.

- The Commission states that it has “historically applied a three-part test to determine if an entity, engaged in the resale of public utility service, is operating as a public utility and falls within the scope of the Commission’s exclusive jurisdiction.” The three-part test includes:

³² “Submetering (reselling of utility services) and proposed legislation.” *Office of the Ohio Consumers’ Counsel*. Accessed March 4, 2025. <https://www.occ.ohio.gov/submetering>.

³³ Exempt certain entities from regulation as a public utility. S.B. 123. 135th General Assembly. (2023). <https://www.alverno.edu/media/alvernocollege/library/pdfs/apa7bill.pdf>.

“(a) Has the landlord manifested an intent to be a public utility by availing itself of special benefits available to public utilities such as accepting a grant of a franchised territory, a certificate of public convenience and necessity, the use of eminent domain, or use of the public right of way for utility purposes?

(b) Is the utility service available to the general public rather than just to tenants?

(c) Is the provision of utility service ancillary to the landlord's primary business?”³⁴

- While the Commission found that NEP’s activities were outside the jurisdiction of the Commission, they stated that they “[take] seriously the circumstance where a tenant loses Commission protections resulting from a landlord electing master-meter service, and we recognize the potential repercussions of the finding that NEP is not acting as a public utility. We reached our conclusion by doing so in a manner consistent with the limitations imposed upon the Commission by statute...”³⁵
 - The Commission therefore directed AEP, which remains under Commission jurisdiction, to file amended reseller tariffs that would require landlord/resellers to maintain utility bills for tenants at or below a “similarly situated customer served by the applicable utility’s standard service offer.”³⁶

Based on the Commission order, it is likely that a landlord providing thermal energy service to tenants would not meet the threshold for regulation by the Commission; however, landlords should seek specific legal counsel regarding their regulatory requirements, particularly if they meet any of the elements of the Commission's three-part test.

Section 3781.25(C), One-call utility protection service definitions, also specifically exempts broad categories of property owners from obligations regarding underground infrastructure, providing further precedent for treating building owners separately from utility regulation.

³⁴ In the Matter of the Complaint of Ohio Power Company, Complainant v. Nationwide Energy Partners, LLC, Respondent. Opinion and Order. Public Utilities Commission of Ohio. September 6, 2023. Case No. 21-990-EL-CSS. <https://dis.puc.state.oh.us/ViewImage.aspx?CMID=A1001001A23I06B40211E00200>, p. 12-13.

³⁵ Ibid, p. 113

³⁶ Ibid, p. 113.

2.3.2. Consumer Protections

Statutes and Commission regulations establish various consumer protections from utility service shutoffs during the winter – however, these protections generally are specific to electric or gas utilities and, as currently written, do not apply to heating and cooling utilities or thermal energy service.

- **Shutoff Protections:** [Section 4933.12](#) and [section 4933.121](#) prohibits utility shutoff of gas and electric service, respectively, between November 15 and April 15 of each winter and for deployed servicemembers, except in cases of safety, theft, equipment malfunction, or extended non-payment of bills. [Section 4933.122](#) further provides due process protections from utility shutoff by a “natural gas, gas, and electric light company.”
- **Bill Corrections:** [Section 4933.28](#), *Correcting residential utility billings*, limits corrections for undercharges to a one-year period; these protections only apply to “a gas, natural gas, or electric light company operated for profit or not for profit.”
- **Energy Credit Program:** [Chapter 5117](#) establishes a low-income energy bill assistance program, and prohibits utility shutoff for eligible customers from December through February. The definitions of applicable energy companies only include “every retail propane dealer that distributes propane by pipeline, and every electric light, rural electric, gas, or natural gas company.”
- **Termination of Residential Service:** [Ohio Administrative Code Chapter 4901:1-18](#), outlines the conditions under which “electric, gas, and natural gas utility companies that provide service to residential customers” may terminate service, as well as outlining reasons that are insufficient for the termination of service.

The role of the Consumers’ Counsel is defined under [section 4911.01](#) to include all energy utilities, including heating and cooling utilities, and their jurisdiction established in [4911.14](#) includes “every case... before the public utilities commission involving the fixing of any rate, joint rate, fare, charge, toll, or rental charged for commodities or services by any public utility.” The Consumers’ Counsel therefore has sufficient authority to include thermal energy network service within their scope, activities, and protections, which may mitigate some of the limitations and gaps in the above-referenced statutes.

Policymakers may wish to clarify that any utility providing thermal energy service – including heating and cooling and thermal energy utilities – are subject to the same consumer protection provisions.

2.3. Landlord-Tenant Considerations and Consumer Protections – Assessment and Policy Actions:

The Commission has generally found that landlords providing utility service to tenants are not subject to Commission regulation as a utility, but it is not clear how this would apply to a thermal energy network. Existing utility consumer protections would generally not apply to thermal energy networks as currently written.

Options for Policy Action:

- Establish clear statutory or regulatory guidance that landlords providing thermal energy service to their tenants – including of multiple buildings across a campus – are not considered a public utility.
- Update consumer protection statutory and regulatory provisions in [Chapter 4933](#) and [Chapter 5117](#) to clarify that any utility providing thermal energy service – whether electric, gas, or thermal energy utility – is subject to the consumer protection requirements.

2.4. Emissions Requirements

Section Summary: Policymakers may be interested in defining emissions requirements for thermal energy network systems to ensure low- or zero-emission thermal sources.

Many policymakers and advocates supporting thermal energy networks are interested in the potential for these systems to reduce greenhouse gas emissions. While any well-designed thermal energy network, regardless of fuel source, will operate at high efficiency and reduce emissions, systems designs can vary widely in their emissions based on the thermal energy sources used.

- Policymakers can establish requirements for zero- or low-emission thermal energy sources for utilities, or require thermal energy network systems to reduce emissions below the lifecycle greenhouse gas intensity of natural gas. If policymakers enact enabling legislation for pilot projects, it should define specific emissions reduction targets or acceptable sources of thermal energy. Emissions requirements could also be included in the certificate of necessity process under [Section 4906.04](#) (if expanded to include thermal energy projects) or elsewhere in Title 49 as a stand-alone requirement.
- As examples, legislation in Massachusetts sets a requirement of “non-emitting” thermal energy sources in the definitions for utility-owned thermal energy networks.³⁷ Legislation in Colorado requires the Public Utilities Commission to ensure that thermal energy networks do not cause increased greenhouse gas emissions and that they reduce co-pollutant emissions.³⁸

2.4. Emissions Requirements – Assessment and Policy Actions:

Policymakers may choose to set higher standards for thermal energy networks to achieve even higher levels of emission savings.

Options for Policy Action:

- Include low-emissions requirements as part of pilot project authorizing legislation.
- Establish requirements for zero- or low-emissions from thermal energy networks as part of the requirements for Commission approval of utility infrastructure under [Section 4906.04](#) (if expanded to include thermal energy projects) or as a stand-alone requirement under Title 49.

³⁷ “An Act promoting a clean energy grid, advancing equity and protecting ratepayers,” Massachusetts S2967, section 47, enacted November 20, 2024, <https://malegislature.gov/Bills/193/S2967>

³⁸ A Bill for an Act Concerning the Implementation of Measures to Advance Thermal Energy Service, H.B. 23-1252, 74th General Assembly (2023), https://leg.colorado.gov/sites/default/files/documents/2023A/bills/2023a_1252_rev.pdf.

2.5. Labor Standards

Section Summary: Labor and workforce provisions requiring prevailing wage and registered apprenticeships on thermal energy projects can help support the development of a robust, good-paying workforce and ensure protections for workers transitioning away from gas infrastructure work. Existing requirements regarding wage and labor standards for other public improvement projects may provide a model for similar requirements for thermal energy network projects.

Policymakers in some states have included prevailing wage, registered apprenticeship, or training requirements for workers employed in thermal energy network construction or maintenance. These standards often differ based upon the ownership of the system, with different requirements for state-owned projects (including state buildings, colleges, and universities) and for utility-owned projects.³⁹

- [Section 4115.04](#) requires that public improvement projects over a certain budgetary threshold funded in whole or in part by public dollars must meet local prevailing wage requirements and meet certain apprenticeship ratios for all contracted laborers. This section would apply to publicly-funded thermal energy network projects and would not apply to utility thermal energy network projects.
 - The minimum threshold requirements are \$250,000 for new building construction and \$75,000 for retrofit building construction. Additionally, for construction involving “roads, streets, alleys, sewers, ditches, and other works connected to road or bridge construction,” the minimum threshold is \$91,150 for new projects and \$27,309 for reconstruction projects.⁴⁰
 - [Paragraph 4115.04\(B\)\(3\)](#) specifically exempt projects “undertaken by, or under contract for,” the board of education for any school district or the governing board of any educational service center from the prevailing wage requirement, and [paragraph 4115.04\(C\)](#) prohibits prevailing wage requirements for school projects. This may prevent public schools, colleges, or universities from including prevailing wage requirements in a thermal energy network project (though projects contracted by a municipality that also include a school may still be eligible).
- The federal investment tax credit under Internal Revenue Code section 48 also includes prevailing wage and registered apprenticeship requirements for systems over 1 MW in thermal energy capacity in order to receive the full credit amounts.

³⁹ For example, Colorado’s HB23-1252, *Concerning the implementation of measures to advance thermal energy service*, establishes apprenticeship, prevailing wage, and licensing requirements for all thermal energy network projects funded by a government agency or state institution of higher education. For more, see https://leg.colorado.gov/sites/default/files/2023a_1252_signed.pdf.

⁴⁰ See the definition of “construction” found in [Section 4115.03](#).

These requirements of the federal tax credit will also provide strong incentive for utilities and thermal energy network providers to meet the required labor standards for the full credit. While these regulations are currently under consideration for revision by the U.S. Congress, they remain active as of the date of publication.

Policymakers wanting to support workforce transition to participation in thermal energy network projects should establish similar wage or labor standards for thermal energy network projects constructed by utilities, including consideration of applying those standards only to systems over a certain cost threshold. These requirements could be included in the definition of what constitutes a thermal energy network, or could be established as a separate provision under utility, municipal, or cooperative authorities to establish specific requirements.

Thermal energy networks also provide a good-paying pathway for gas workers to transition into clean energy projects as well. Gas workers bring many required skills and require very little retraining for work on thermal energy networks, and some states have sought to establish formal training programs to support gas work transition into clean energy projects.

- For example, in 2024, Massachusetts launched their Clean Energy and Environment Legacy Transition (CELT) Initiative. Under the initiative, the State of Massachusetts partnered with UMass Lowell and Boston University to establish curriculums that provide students with training in the renewable energy field and to offer support to municipalities interested in pursuing geothermal projects. The CELT Initiative will leverage the knowledge developed by graduate student fellows, who will go on to assist municipalities with their clean energy planning and project implementation.⁴¹
- Additionally, New York's Utility Thermal Energy Networks and Jobs Act establishes requirements for gas and electric utilities pursuing TEN deployment to engage in a labor peace agreement with existing labor organizations representing gas and electric workers. The labor peace agreement is to ensure that jobs to work on a TEN project are first offered to transitioning utility workers who are at risk of losing their utility employment as a result of utility downsizing their gas transmission and distribution system.⁴²

⁴¹ "Healey-Driscoll Administration, UMass Lowell and Boston University Launch New Initiative to Advance Clean Energy and Build Geothermal Workforce," *Mass Gov*, November 11, 2024, <https://www.mass.gov/news/healey-driscoll-administration-umass-lowell-and-boston-university-launch-new-initiative-to-advance-clean-energy-and-build-geothermal-workforce>.

⁴² See New York Senate Bill 9422, Section 1, § 11, subdivision 4.

2.5. Labor Standards – Assessment and Policy Actions:

Thermal energy networks funded by state and local funding (including university systems) for public buildings must meet prevailing wage requirements consistent with Section 4115, but these requirements would not currently apply to investor-owned utility projects. Policymakers in some states have included prevailing wage, registered apprenticeship, or training requirements for workers employed in thermal energy network construction or maintenance.

Options for Policy Action:

- Include prevailing wage, apprenticeship, and fringe benefits requirements in the definitions for thermal energy networks over a certain size (e.g. using the federal tax credit threshold of 1MW thermal energy).
- Establish programs, or requirements for gas utilities to do so, to train gas workers on thermal energy network job skills and other relevant clean energy technologies.

2.6. Public Utilities Commission Proceedings

Policymakers may wish to open regulatory proceedings at the PUC to support the adoption and deployment of thermal energy networks. Key areas of regulatory rulemaking are described below – legislators may wish to provide specific guidance to the PUC on some topics and defer to PUC expertise on others.

2.6.1. Rates and Cost Recovery

Section Summary: Rates and cost recovery for thermal energy networks will differ significantly from existing rate structures, even rate structures for heating and cooling utilities, due to the two-way flow of thermal energy. As utilities begin to deploy thermal energy networks beyond initial pilot projects, regulators will need to consider maintaining a combined rate base of gas and thermal energy customers.

Rate structures for thermal energy networks are likely to vary significantly from existing gas or electric rate structures, as customers may withdraw heat from the system or add heat to the system (for cooling the customer building) – and the effect of this on the network will change depending on the season and the ability of the system to store any excess heat for future use. Utilities will need to develop new rate structures to measure and charge for this thermal energy transfer – also accounting for the electric demand to run the heat pump.³³

Pilot project rate recovery

Policymakers have frequently expressed a desire that initial participants in thermal energy networks pay overall heating and cooling bills at or below their prior levels to ensure that early adopters are not penalized due to potentially higher costs during pilot phases of development. This may include explicitly allowing utilities to recover costs for consumer-owned equipment or electric panel/service upgrades to participate in the pilot, as well as establishing rate structures tied to prior utility bills (with adjustments for year-to-year weather variations).

Long-term rate recovery

As utilities begin to deploy thermal energy networks beyond initial pilot projects, regulators will need to consider whether to maintain a combined rate base of gas and thermal energy customer or establish a separate rate base for thermal energy network customers (where the full costs of the system would be amortized and recovered through thermal energy rate structures over the life of the system).

- A separate rate base could create significantly higher costs for thermal energy network participants in the short term, as initial deployments will likely experience higher costs. As thermal energy networks become more common, costs are

expected to decrease, but policymakers should be aware that a dedicated rate base could create unintended impediments in the short term.

- Additionally, any eventual widespread decommissioning of the gas system could leave the remaining gas customers with significantly higher rates as utilities have fewer customers from which to recover gas distribution system costs. Maintaining a combined thermal energy network and gas rate base could allow utilities to avoid significant rate increases if the number of gas customers decreases significantly.⁴³

Financing Options

While utility infrastructure costs are generally financed through rate recovery, there are additional financing options that may be available for renewable energy projects that can help lower the overall cost to ratepayers. Utilities generally earn a rate of return on their investments in infrastructure projects, and this utility “cost of capital” rate is often higher than what is available for renewable projects through green banks or other green financing sources.

- The Columbus Region Green Fund⁴⁴ provides financing to reduce the cost of deploying clean energy projects in the Columbus region; the Go Green Energy Fund⁴⁵ from Growth Opportunity Partners similarly provides Green Bank support, but currently is focused on solar projects. These loans could help reduce the costs of financing thermal energy networks for private owners and municipal, cooperative, and even investor-owned utilities, reducing overall costs for ratepayers.
- For an example from other Midwest states of the types of possible loans, the first loan approved by the Minnesota Climate Innovation Finance Authority was a \$4.7 million loan to the Saint Paul Port Authority to support the development of a thermal energy network at a development known as “The Heights.” The loan will provide a bridge loan for the value of the anticipated federal tax credit, and will be repaid once the federal credit is claimed when the system is put into service.⁴⁶
- The U.S. Environmental Protection Agency’s Greenhouse Gas Reduction Fund (GGRF), created by the Inflation Reduction Act, will deploy up to \$20 billion in federal

⁴³ For more on the impact of decreased customer base on gas rates, see <https://buildingdecarb.org/resource/the-future-of-gas-in-nys>

⁴⁴ “This is the Columbus Region Green Fund.” *Columbus Region Green Fund*. Accessed march 4, 2025. <https://www.crgreenfund.org/>.

⁴⁵ “Go Green Energy Fund.” *Growth Opps*. Accessed March 4, 2025, <https://www.growthopps.org/go-green/>.

⁴⁶ “The Heights Community Energy Incorporated - \$4,700,000 Financing Request,” Minnesota Climate Innovation Finance Authority Special Board Meeting Agenda, March 26, 2024, <https://mn.gov/commerce-stat/pdfs/MnCIFA-march-26-board-meeting-info%20Packet.pdf>

funding, alongside additional private capital, for loans and financial products through the National Clean Investment Fund and the Clean Communities Investment Accelerator programs to support renewable energy projects. “Net-zero emissions buildings” is one of the priority project types within the GGRF, which can include deployment of thermal energy network projects.⁴⁷

By leveraging preferential “green” financing to reduce the overall cost of capital for thermal energy network projects, municipalities, cooperatives, utilities, and other network operators can reduce the overall costs to ratepayers for these projects.

- Policymakers and the PUC should consider directing or otherwise encouraging utilities to seek lower-cost green financing for thermal energy network projects to help lower costs to ratepayers.
 - For example, Maryland recently passed and enacted House Bill 1393⁴⁸, which “strongly encourages” the electric companies to pursue federal funding opportunities and requires the Public Service Commission to adopt regulations to “ensure that least-cost debt is used.” The Maryland PSC subsequently issued Order No. 91399 which establishes quarterly reporting requirements regarding utility applications for federal funding, including both grants and loans, to lower the cost of utility infrastructure for ratepayers.⁴⁹

2.6.1. Rates and Cost Recovery – Assessment and Policy Actions:

Rate structures for thermal energy networks will vary significantly from existing rate structures. Regulators will need to consider possible rate structures and cost recovery over both short-term and long-term time horizons.

Options for Policy Action:

- Establish a combined rate base for thermal energy network and gas and/or electric customers to enable shared funding for utility investment in thermal energy networks.
- Direct utilities to seek lower-cost financing through green banks to help reduce overall project costs.

⁴⁷ U.S. Environmental Protection Agency, Greenhouse Gas Reduction Fund, <https://www.epa.gov/greenhouse-gas-reduction-fund>, accessed August 26, 2024.

⁴⁸ Codified as Public Utilities Article §7–803, <https://mgaleg.maryland.gov/mgawebsite/Laws/StatuteText?article=gpu§ion=7-803&enactments=false>

⁴⁹ Maryland Public Service Commission Order No. 91399, November 4, 2024, <https://webpscxb.psc.state.md.us/DMS/pc/pc56>

2.6.2. Ownership Models for Thermal Energy Sources

Section Summary: Different ownership models for thermal energy sources will present a new opportunity for many different organizations and businesses to participate in thermal energy development. Municipal and investor-owned utilities and other private organizations may seek to own and operate thermal energy generation, transmission, or other portions of a network, without owning and operating the full system. Regulators will need to consider these various business models and issue regulatory guidance for ownership of specific components of a thermal energy network.

Municipal, cooperative, and investor-owned utilities, and other private organizations, may seek to own and operate thermal energy generation, transmission, or other portions of a network, without owning and operating the full system. This may be particularly true of facilities which produce significant amounts of surplus heat and are interested in selling thermal energy to a thermal energy network operator. Regulators will likely need to consider these various business models and issue regulatory guidance for ownership of specific components of a thermal energy network.

- Utilities operating a thermal energy network may be able to purchase and contract for thermal energy from thermal energy sources – similar to how utilities purchase gas or electric power from power plants or regional markets – and these sources could be other utilities, private companies, or even municipalities⁵⁰ or non-profit organizations.
- Without further clarification, uncertainty over regulatory guidance may hamper the development of those markets. By expressing support for such markets and/or issuing specific rules regarding how utilities and thermal energy network operators may purchase and sell thermal energy, regulators can help to clarify market rules and expectations.
- Legislators in some states have specifically expressed support for such regulatory guidance in their enabling legislation and directed the public utilities commissions to include such issues in their regulatory proceedings.

⁵⁰ Cariaga, Carlo, "The city of Troy in NY is seeking state approval for a project that will use geothermal energy for heating and cooling of private buildings and a public plaza," *Think GeoEnergy*, June 1, 2022, <https://www.thinkgeoenergy.com/geothermal-heating-and-cooling-system-planned-for-troy-ny/>.

Investor-owned utilities and private corporations/organizations

Generally, Ohio statutes do not specify how an investor-owned *thermal energy vendor* would be regulated, though there is significant precedent that other energy supply and generation providers are not subject to PUC regulation as a regulated public utility.

- Electric generation providers are certified by the PUC, but are not fully regulated.⁵¹ Similarly, natural gas production and pipeline transportation is not regulated by the PUC.⁵² This provides a precedent for treating energy suppliers as distinctly separate from the regulated transmission and distribution utilities, and could similarly apply to thermal energy network thermal energy generation.
- A heating or cooling utility under [4905.03\(H\)](#) is defined as supplying “water, steam, or air through pipes or tubing to consumers within this state for heating or cooling purposes;” a building owner who does not own the piping network and only supplies thermal energy to a thermal energy network owner likely would not meet such a definition to be treated as a public utility.
- Regulators can issue clarifying guidance to remove any further uncertainty, as regulatory risk is likely to discourage small thermal energy providers – such as data centers, supermarkets, or hockey rinks – from connecting to thermal energy networks for fear of subjecting their operation to uncertain regulatory oversight. Policymakers should consider including exemptions for surplus heat providers and small-scale systems in statute and regulation to encourage thermal energy provider participation.

Competitive Retail Supply of Thermal Energy

Ohio has robust market-based utility supply services for electric ([Chapter 4928](#)) and gas ([Chapter 4929](#)) which could provide an example of flexible approaches for regulatory treatment of thermal energy generation. While these statutes would not currently apply to thermal energy service, they may provide a model for how Ohio policymakers could treat thermal energy suppliers to promote growth of the industry:

- [Section 4928.02](#) establishes state policy in support of competitive electric supply and promotes flexible regulatory treatment to help support the industry, including the following subsections:

⁵¹ “Electric Overview.” Public Utilities Commission of Ohio. Accessed March 4, 2025.
<https://puco.ohio.gov/utilities/electricity/resources/electric-overview>.

⁵² “Natural Gas Overview.” Public Utilities Commission of Ohio. Accessed March 4, 2025.
<https://puco.ohio.gov/utilities/gas/resources/natural-gas-overview>.

- “(D) Encourage innovation and market access for cost-effective supply- and demand-side retail electric service;”
 - “(F) Ensure that an electric utility's transmission and distribution systems are available to a customer-generator or owner of distributed generation;” and
 - “(G) Recognize the continuing emergence of competitive electricity markets through the development and implementation of flexible regulatory treatment.”
- [Section 4929.02](#) similarly establishes state policy in support of competitive natural gas supply and promotes flexible regulatory treatment to help support the industry, including the following subsections:
 - “(4) Encourage innovation and market access for cost-effective supply- and demand-side natural gas services and goods;” and
 - “(6) Recognize the continuing emergence of competitive natural gas markets through the development and implementation of flexible regulatory treatment.”

[Section 4928.06](#) and [section 4929.04](#) each require that the Commission consider the extent to which competitive service and reasonable alternatives exist before approving applications for services to be treated as competitive supply. In early phases of thermal energy network deployment, such competitive markets may not fully exist, and thermal energy supply is likely to be bundled with the overall thermal energy distribution service. As thermal energy networks grow, however, the opportunity presented by a competitive marketplace for thermal energy suppliers could result in additional participants in the thermal energy network and marketplace:

- **Fair-market access for thermal energy suppliers:** Policymakers can establish requirements and regulations to ensure that all thermal energy providers are treated and considered fairly by utilities in their thermal energy source decisions.
- **Direct-to-consumer thermal energy:** As thermal energy networks develop and include many different thermal sources, thermal providers may be able to offer competitive thermal energy service directly to consumers, giving consumer the choice of their thermal energy supplier similar to existing structures for competitive electric and natural gas service.

Collectively, the provisions and regulatory structures under [Chapter 4928](#) and [Chapter 4929](#) provide an example of the statutes that could govern a competitive thermal energy supply market. While not necessary in the short term to enable thermal energy network development, a policy framework to extend competitive energy supply policy to thermal

energy networks could provide additional opportunities for market growth over the long-term.

Municipal utilities

While Ohio statutes do not specifically address the ability of a municipality to generate and sell thermal energy, provisions authorizing a municipality to sell energy outside of its boundaries likely imply authority to generate and sell thermal energy more generally. Such authority would be important for municipal facilities generating thermal energy and wishing to sell it to an investor-owned utility serving their locality, such as a municipal wastewater facility or a municipally-owned network of geothermal boreholes.

- [Article XVIII, Section 6](#) of the Ohio Constitution, *Sale of surplus product of municipal utility*, allows that “any municipality, owning or operating a public utility for the purpose of supplying the service or product thereof to the municipality or its inhabitants, may also sell and deliver to others... the surplus product of any other utility in an amount not exceeding in either case fifty per cent of the total service or product supplied by such utility within the municipality.”
- [Revised Code Section 743.12](#), *Extension of public utility service beyond municipal corporation limits*, further allows that a “municipal corporation may extend, construct, lay down, and maintain aqueduct and water pipes, and electric light and power lines outside the municipal corporation.”
- A municipality selling thermal energy to a utility thermal energy network serving municipal residents would appear consistent with the authorities under [Article XVIII](#) and [section 743.12](#), but policymakers may wish to clarify that such sale is consistent with these existing municipal authorities.

2.6.2. Ownership Models for Thermal Energy Sources – Assessment and Policy Actions:

Regulators will need to consider various business models and issue regulatory guidance for ownership of specific components of a thermal energy network. Statutes generally do not currently address thermal energy suppliers, though such service is likely allowed and not considered a regulated utility service.

Investor-owned utilities, private corporations, and cooperatives

Ohio statutes do not specify how an investor-owned *thermal energy vendor* would be regulated, though there is significant precedent that other energy supply and generation are not subject to PUCO regulation as a regulated public utility.

Policymakers wishing to advance thermal energy network deployment may seek to establish exceptions within the statutory definitions of public utilities for surplus heat or small thermal energy providers under a certain threshold.

Competitive Retail Supply of Thermal Energy

Ohio has robust market-based utility supply services for electric ([Chapter 4928](#)) and gas ([Chapter 4929](#)) which could provide an example of flexible approaches for regulatory treatment of thermal energy generation. The Commission must consider the extent to which competitive service and reasonable alternatives exist before approving applications for services to be treated as competitive supply. Competitive markets may not fully exist in early phases of deployment, but as thermal energy networks grow a competitive marketplace for thermal energy suppliers could develop.

Municipal utilities

While Ohio statutes do not specifically address the ability of a municipality to generate and sell thermal energy, provisions authorizing a municipality to sell energy outside of its boundaries likely imply authority to generate and sell thermal energy more generally.

Options for Policy Action:

- Issue clarifying legislative or regulatory guidance regarding the sale of thermal energy between public utilities, municipal utilities, cooperatives, and other private organizations or persons.
- Establish exceptions within the statutory definitions of heating and cooling and other public utilities for surplus heat or small thermal energy providers under a certain threshold.

2.6.3. Infrastructure Planning and Analysis of Alternatives

Section Summary: Infrastructure planning and analysis of alternatives for gas system expansion provide important opportunities to consider thermal energy network investments. Current statutes and rules from the PUC establish a process for requesting a certificate of need and conducting long-term demand and infrastructure reporting, but do not explicitly require an analysis of alternatives. Rate cases, filings of planned major facility construction, and other regulatory planning requirements provide opportunities for policymakers to ensure that utilities, particularly gas utilities, have considered thermal energy networks as an alternative to gas system expansion before approving the requested rates or projects.

Policymakers aiming to expand thermal energy network deployment beyond pilot projects should update both statute and regulatory rules regarding planning and approvals for future utility infrastructure. Rate cases, filings of planned major facility construction, and other regulatory planning requirements provide opportunities for policymakers to ensure that utilities, particularly gas utilities, have considered thermal energy networks as an alternative to gas system expansion before approving the requested rates or projects.

Current statutes and rules from the PUC establish processes for assessing long-term demand and infrastructure for electric generation, transmission, and natural gas, but do not require a full Integrated Resource Plan or analysis of alternatives prior to approving gas utility infrastructure.

- **Certificate of Need:** [Section 4906.04](#), *Certificate required for construction of major utility facility*, requires that “no person shall commence to construct a major utility facility in this state without first having obtained certificate for the facility.” A “major utility facility” is defined only to include electric power generation, electric transmission, and gas pipelines over a certain size, and therefore would not include thermal energy network infrastructure.
- **Long-term Demand and Infrastructure Reports:** [Section 4935.04](#), *Energy information and reports*, requires the filing of long-term demand forecasts and a description of planned infrastructure and facilities to meet those forecasts by electric and gas utilities. The definition of “major utility facility” does not include distribution lines or electric power generation. While the reports do not specifically require an analysis of alternatives, the Commission may hold hearings on these reports, which could include consideration of alternatives.
 - Ohio Administrative Rules similarly implement this requirement for electric ([Rule 4901:5-5-06](#)) and gas utilities ([Rule 4901:5-7-05](#)).

- **Rate Case Filings:** [Section 4909.1](#), *Application to establish or change rate*, establishes the general requirements for utilities to file rate case proceedings. While there is no specific requirement for an analysis of alternatives in the statutes, the Commission has broad authority to examine whether the proposed infrastructure is considered just and reasonable, and the application must include “such additional information as the commission may require in its discretion.”

Gas utilities are therefore not currently subject to any specific requirement to assess alternatives to gas infrastructure spending, though there are various vehicles where regulators may request them to do so to demonstrate prudence. Policymakers may consider adding requirements for gas utilities to conduct certain analysis of alternative studies before seeking approval for gas system infrastructure investments.

- As examples, legislation in Massachusetts requires gas utilities to submit annual reports regarding the replacement or repair of aging gas infrastructure, which can include replacing the gas system with “non-emitting renewable thermal infrastructure.”⁵³ In Colorado, the Public Utilities Commission adopted rules which require gas utilities to submit Gas Infrastructure Plans, including analysis of non-pipe alternatives to gas expansion projects, to improve the considerations of lower-emission alternatives to gas system expansion.⁵⁴

Including thermal energy networks in an analysis of alternatives can provide strong justification for utility planning that all reasonable and prudent alternatives have been considered. Policymakers seeking to accelerate deployment of thermal energy networks should establish more rigorous analysis of alternatives requirements under an integrated resource plan or other analytical process to explicitly include thermal energy networks.

2.6.3. Infrastructure Planning and Analysis of Alternatives – Assessment and Policy Actions:

Policymakers aiming to expand thermal energy network deployment beyond pilot projects should consider updates to both statute and regulatory rules to require consideration of thermal energy networks during the planning and approval process for future utility infrastructure investments.

⁵³ “An Act promoting a clean energy grid, advancing equity and protecting ratepayers,” Massachusetts S2967, section 81, enacted November 20, 2024, <https://malegislature.gov/Bills/193/S2967>

⁵⁴ Colorado Public Utilities Commission, Order No. C22-0760, Proceeding 21R-0449G, Amendments to Gas Rules Implementing SB 21-264 & HB 21-1238, December 1, 2022, https://www.dora.state.co.us/pls/efi/EFI_Search_UI.Show_Decision?p_dec=29605

Options for Policy Action:

- Add a specific requirement to assess thermal energy networks or other alternatives to gas infrastructure to the certificate of need requirements in [Section 4906.04](#), the energy and infrastructure forecasts under [Section 4935.04](#), and in rate case filings.

2.6.4. Timing of Proceedings

Section Summary: Timing of regulatory proceedings can help accelerate momentum behind thermal energy networks.

Legislators in some states have established specific deadlines for public utilities commissions to establish a regulatory docket to address thermal energy networks. These deadlines have ranged from requirements of opening a proceeding within three months and issuing regulations within two years (New York) to allowing more than 18 months for the PUC to initiate a proceeding (Colorado).

2.6.4. Timing of Proceedings – Assessment and Policy Actions:

Setting a time requirement for the PSC to issue regulations regarding thermal energy networks could accelerate progress and help remove regulatory uncertainty regarding thermal energy networks.

Options for Policy Action:

- Direct the PUC or Commission staff to establish and complete regulatory proceedings to advance thermal energy networks within a certain timeframe.

3. Conclusions

Thermal energy networks provide a critical opportunity for Ohio to reduce household energy bills, support energy workers, and maximize use of renewable and local energy sources. To achieve these benefits, Ohio will need to leverage existing authorities wherever possible, update current statutes to remove barriers, and accelerate regulatory support for thermal energy network deployments.

Utilities in other states are already demonstrating the potential opportunities offered by thermal energy networks, and Ohio's investor-owned, municipal, and cooperative utilities are well positioned to explore pilot projects to provide thermal energy heating and cooling to their customers. Pilot projects can help develop new business and ownership models, new rate structures, and new technical and engineering solutions, all while leveraging the existing workforce and expertise already present within the utilities. Most importantly, pilot projects can help households and businesses save money on their energy bills – particularly within low-income or disadvantaged communities where the energy burden is the highest.

To make thermal energy networks a success for Ohio, policymakers, utilities, municipalities, non-profits, stakeholders, workers, and households will all need to collaborate and support the deployment of thermal energy networks in communities across the state. While there are statutory and regulatory barriers based upon legacy utility models and support for natural gas service, the biggest single hurdle is uncertainty. Policymakers and regulators therefore have an important opportunity to accelerate the adoption of thermal energy networks by simply expressing support and clarifying authorities to help deploy thermal energy systems.

Thermal energy networks offer nearly unlimited potential to transform the way that Ohio heats and cools its buildings. This report identifies numerous areas for policy action which can help start that journey towards a cleaner, healthier, and more renewable future.

Appendix: Full Legislative and Regulatory Citations

Section	Ohio Statutes and Areas for Policy Updates
Renewable Energy Programs	4920.01 [Competitive retail electric service definitions] Includes geothermal energy under the definition of “renewable energy resources.” 4928.64 [Electric distribution utility to provide electricity from qualifying renewable energy sources] Reduces the renewable portfolio standard to 8.5% of overall sales by 2026, and eliminates all renewable portfolio requirements post 2026. 4928.66 [Implementing energy efficiency programs] Terminates Ohio’s electric utility energy efficiency programs once the programs reach a cumulative savings of 17.5%
Pilot Project Authorities and Requirements	4905.04 [Power to regulate public utilities and railroads] Grants the Commission broad authority to regulate public utilities. 4905.70 [Energy conservation programs] Requires the Commission to initiate programs to promote energy conservation and reduce energy consumption, taking long-term costs into account.
Reporting and Evaluation	No applicable statutes or regulations.
Priority Locations	No applicable statutes or regulations.
Statewide Emissions Reduction Targets	No applicable statutes or regulations.
Thermal Energy Network Authorities for Investor-Owned Utilities	3781.25-.38 [One-call utility protection service definitions – Member immunity] Establish requirements for the protection of underground utility facilities. Section 3781.34 further establishes an Underground Technical Committee that includes representatives from electric, gas, and water utilities.

Includes definitions of gas or electric utilities, Public Utility Commission authorities, and associated technologies	4905.03 [Public utility company definitions] Includes “heating or cooling company” under the definition of public utility. Chapter 4913 [Public Utilities Commission – Enforcement of Underground-utility-damage-prevention Law] Establishes requirements for the protection of underground utility facilities. 4929.62 [Energy efficiency revolving loan program] Creates a revolving loan fund to support projects involving advances energy resources and renewable energy resources, where geothermal energy is included in the definition of renewable. 4929.111 [Implementation of capital expenditure program] Allows a natural gas company to apply for a capital expenditure program for infrastructure expansions, improvements, or replacements. 4929.16-167 [Definitions – Audit of natural gas company] Allow economic development projects to support line extension costs or natural gas service to projects supported by JobsOhio, their regional partners, or the Ohio Department of Development. 4933.02 [Gas or electric companies may manufacture and supply both electricity and gas] Authorizes gas companies to sell electricity and authorizes electricity companies to sell gas. 4933.18 [Tampering with utility equipment] Offers protections against utility service tampering, including for heating and cooling companies. 4933.23 [Interfering with pipes and meters] Prohibits the destruction or interference with utility equipment used to furnish hot water or steam. 4935.03 [Rules for energy emergencies] In the event of a declared emergency, allows the governor to mandate specific utilities to sell their services or to produce emergency supplies to meet needs. Thermal energy and heating and cooling utilities are not currently included.
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Thermal Energy Network Authorities for Cooperative Utilities	Chapter 1729 [Ohio Cooperative Law] Establishes the governing authorities for cooperatives. Section 1729.02 allows for an association to be organized for any lawful purpose permitted to corporations. Section 1729.07 mandates that cooperatives have articles of incorporation that establish the association’s purpose. 4905.02 [Public utility defined] Exempts cooperative utilities from Commission regulation. 4928.01 [Competitive retail electric service] Defines an “electric cooperative” as a not-for-profit electric company that owns facilities to generate, transmit, or distribute electricity.
Thermal Energy Network Authorities for Municipal Utilities	Ohio Constitution, Article XVIII, Section 4 [Acquisition of public utility; contract for service; condemnation] Authorizes municipalities to operate a public utility to service its inhabitants. Ohio Constitution, Article XVIII, Section 5 [Referendum on acquiring or operating municipal utility] Requires a municipality to pass an ordinance to authorize the operation of a utility, which may also be subject to a referendum upon request by 10% of electors. 703.31 [Village dissolution definitions] States that “utility services” applies to electric, water, sewer, and “other similar utilities.” 715.34 [Hot water and steam heating] Authorizes municipal corporations to use public rights of way to provide steam and hot water to municipal buildings and residents. 735.02 [General duties – records] Includes the management of municipal heating, and other services, to the Director of Public Service. 735.28 [Village board of trustees of public affairs – appointment – election – organization] Requires that a board of trustees of public affairs be established in each village where a public utility is situated.

	735.29 [General powers and duties] Authorizes rent charges to fund the operation of public utility service. 743.01 [General powers of legislative authority] Provides authority for the establishment of municipal water works utilities. 743.12 [Extension of public utility service beyond municipal corporation limits] Authorizes municipal electric and water service to extend to inhabitants beyond municipal boundaries. 4933.16 [Municipal control of electricity] Requires municipal consent before a company or person may install any appliance that conducts electricity for lighting, heating, or power in a public right of way. 743.18 [Authority to supply other municipal corporations] Authorizes municipal water and electric utilities to provide service to another municipality. 743.19 [Construction of water works when municipal corporations are annexed] Authorizes joint construction of water works by multiple municipalities. 743.23 [Laying pipes in highways] Authorizes municipalities allow for the laying of water pipes in all highways about to undergo construction. 743.26 [Regulation of price of electric light, gas, sewage disposal, and water] Provides municipal legislative authorities the power to set rates for electric light, gas, sewage disposal, and water services. 743.33 [Exclusive monopoly shall not be allowed to gas companies] Prohibits a municipality from providing a gas company with exclusive access to public grounds to provide service. 743.34 [Legislative authority may erect or purchase gas or electric works]
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	Provides authority for the establishment of municipal gas or electric utilities. 743.35 [Sale of natural gas to village] Authorizes municipal gas utilities to provide service outside of municipal boundaries. 743.36 [Delivery of gas outside of municipal corporation – sales for manufacturing purposes] Authorizes municipal gas utilities to provide service outside of municipal boundaries. 743.39 [Right of eminent domain in municipal corporations for public service enterprises] Provides municipal utilities with the right of eminent domain to perform their services. 3781.25-.34 [One-call utility protection service definitions – Underground technical committee] Establish requirements for the protection of underground utility facilities. Section 3781.34 further establishes an Underground Technical Committee that includes representatives from electric, gas, and water utilities. 4905.02 [Public utility defined] Exempts municipal utilities from Commission regulation. 4905.39 [Power to require additions and extensions] Allows a municipality to require a public utility to extend its distributing plant within a municipal corporation if found to be within the public interest. 4909.34-39 [Power of municipal corporation or group of corporations to fix rate, price, and charge – Findings as to rate – valuation of property] Authorize municipal corporations to set rates for the public utilities in their territory. Chapter 4913 [Public Utilities Commission – Enforcement of Underground-utility-damage-prevention Law] Establishes requirements for the protection of underground utility facilities.
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Obligation to Serve	4905.22 [Service and facilities required – unreasonable charge prohibited] Requires that public utilities shall furnish “necessary and adequate service and facilities.” 4905.26 [Complaints as to service] Authorizes the Commission to hold hearings regarding unjust, discriminatory, or preferential service from any public utility. 4905.37 [Commission may change rules and regulations of public utilities] Authorizes the Commission to determine “the service to be installed” by way of a public hearing. 4905.38 [Repairs and improvements may be ordered by commission] Authorizes the Commission to order repairs, improvements, and additions to the equipment of public utilities. 4933.41 [Access to natural gas service, propane; political subdivision restriction] Outlines service requirements for natural gas utilities, including that every person seeking natural gas service has the right to obtain said service. Regulatory Authorities: Rule 4901:1-15-08 [Abandonment, cancellation, and substitution of service] Allows waterworks and sewage disposal companies to apply for the authority to abandon, cancel, or substitute portions of their service.
Thermal Energy Network Size Requirements	4909.051 [Definitions for sections 4909.052 to 4909.055] Outlines appraisal requirements, which only apply to large waterworks and sewage disposal companies that have annual operating revenues of over \$250,000. 4929.04 [Exempting commodity sales service or ancillary service of natural gas company from other rate provisions] Allows the Commission to waive hearings for gas utilities with fewer than 15,000 customers providing ancillary or commodity service. 4935.04 [Energy information and reports] Exempts utilities with fewer than 15,000 customers from submitting annual energy reports.

Landlord and Utility Service Distinctions	3781.25 [One-call utility protection service definitions] Exempts broad categories of property owners from obligations related to underground infrastructure.
Consumer, Tenants, and Landlord Protections	4911.01 [Consumers’ counsel definitions] Defines the role of the Consumers’ Counsel to include all energy utilities, including heating and cooling utilities. 4911.14 [Jurisdiction] Establishes the jurisdiction of the Consumers’ Counsel to be all cases before the Commission involving rates, fares, charges, tolls, or rentals charged for utility services. 4933.12 [Company may shut off gas – exceptions] Prohibits gas service shutoffs between November 15 and April 15 and for deployed servicemembers. 4933.121 [Company may shut off electricity – exceptions] Prohibits gas service shutoffs between November 15 and April 15 and for deployed servicemembers. 4933.122 [Procedure for terminating residential service] Provides due process protection from natural gas, gas, and electric light utility shutoffs. 4933.28 [Correcting residential utility billings] Limits corrections for utility service undercharges to a one-year period for gas, natural gas, and electric light utilities. Chapter 5117 [Energy Credit Program] Establishes a low-income energy bill assistance program and prohibits utility shutoffs for eligible customers from December through February. Regulatory Authorities: Rule 4901:1-18 [Termination of Residential Service] Outlines the conditions under which electric, gas, and natural gas utilities may terminate service to their customers.

Emissions Requirements	No applicable statutes or regulations.
Labor Standards	4115.04 [Determination of prevailing wage – exceptions] Establishes prevailing wage and apprenticeship requirements for public improvement projects over certain budgetary threshold.
Rates and cost recovery	No applicable statutes or regulations.
Ownership Models for Thermal Energy Sources	743.12 [Extension of public utility service beyond municipal corporation limits] Allows a municipal corporation to construct utility infrastructure beyond municipal limits. 4905.03 [Public utility company definitions] Defines a heating or cooling utility as one that supplies water, steam or air through pipes or tubing to consumers ... for heating or cooling purposes.” 4928.02 [State policy] Establishes state policy in support of competitive electric supply. 4928.06 [Commission to ensure competitive retail electric service] Requires the Commission to consider the extent to which competitive service and reasonable alternatives exist before approving applications for electric services to be treated as competitive supply. 4929.02 [Policy of state as to natural gas services and goods] Establishes state policy in support of competitive natural gas supply. 4929.04 [Exempting commodity sales service or ancillary service of natural gas company from other rate provisions] Requires the Commission to consider the extent to which competitive service and reasonable alternatives exist before approving applications for natural gas services to be treated as competitive supply. Ohio Constitution, Article XVIII, Section 6 [Sale of surplus product of municipal utility] Authorizes a municipal utility to sell their surplus product to other utilities while limiting potential profits.

Infrastructure Planning and Analysis of Alternatives	4906.04 [Certificate required for construction of major utility facility] Requires a certificate to be obtained prior to the construction of a major utility facility. Current definitions of “major utility facility” do not include thermal energy network infrastructure. 4909.1 [Public utilities commission – fixation of rates definition] Requires utilities to file rate case proceedings. 4935.04 [Energy information and reports] Requires electric and gas utilities to file long-term demand forecasts and descriptions of planned infrastructure to meet said forecasts. Regulatory Authorities: R 4901:5-5-06 [Integrated resource plans] Establishes integrated long-term resource demand forecast filing requirements for electric utilities pursuant to Section 4935.04 (see above). R 4901:5-7-05 [Resource forecasts and site inventories of transmission facilities for gas distribution companies serving more than fifteen thousand customers] Establishes integrated long-term resource demand forecast filing requirements for gas utilities pursuant to Section 4935.04 (see above).
Timing of Proceedings	No applicable statutes or regulations.