STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

Proceeding on Motion of the Commission to Implement the Requirements of the Utility Thermal Energy Network and Jobs Act	))))	Case 22-M-0429

New York State Electric & Gas Corporation's Final Ithaca Utility Thermal Energy Network Pilot Project Proposal

I. INTRODUCTION

On September 15, 2022, the New York Public Service Commission ("Commission") issued its *Order on Developing Thermal Energy Networks Pursuant to the Utility Thermal Energy Network and Jobs Act* ("UTENJA Order")[1], which describes the requirements for each of New York State's ("NYS" or "State") seven largest electric, gas or combination electric and gas corporations ("Utilities") to submit pilot utility thermal energy network ("UTEN") project proposals for Commission review, and to comply with the requirements of the Utility Thermal Energy Network and Jobs Act ("Act" or "UTENJA"), which was enacted into law on July 5, 2022[2]. The requirements in the UTENJA Order are intended to advance broader and more scalable approaches to building electrification including active engagement of regulated utilities,

[1] Case 22-M-0429, *Proceeding on Motion of the Commission to Implement the Requirements of the Utility Thermal Energy Network and Jobs Act* ("UTENJA Proceeding"), Order on Developing Thermal Energy Networks Pursuant to the Utility Thermal Energy Network and Jobs Act (issued and effective September 15, 2022).

[2] Laws of 2022, Chapter 375 (enacted July 5, 2022).

and to ultimately inform the Commission's rulemaking decisions with respect to utility-owned thermal energy networks.

As a preliminary matter, New York State Electric & Gas Corporation ("NYSEG" or "the Company") supports the State's clean energy policy objectives aimed at the reduction of greenhouse gas ("GHG") emissions[3]. The Company recognizes the importance of achieving GHG emissions reductions through the strategic optimization of energy usage generally via well-designed and implemented initiatives that promote building electrification including, but not limited to, energy efficiency programs (e.g., NYS Clean Heat) and Non-Pipes Alternative ("NPA") programs. Furthermore, the Company agrees it is important to identify new business and regulatory structures as the State moves toward electrification of buildings to facilitate compliance with the Climate Leadership and Community Protection Act ("CLCPA"). The pilot project the Company is presenting within this filing, pursuant to the UTENJA Order ("UTEN pilot project"), offers a unique opportunity to assess the economic and technical feasibility of shifting electrification efforts from a building-by-building approach to a district or community level. This type of scaling is necessary to achieve the GHG emissions reductions targets set forth in the CLCPA. NYSEG looks forward to continued engagement with the Commission, Department of Public Service ("DPS") Staff, and stakeholders as these important objectives of the UTENJA Proceeding are pursued.

On October 7, 2022, pursuant to the UTENJA Order, NYSEG and Rochester Gas and Electric ("RG&E," and together with NYSEG, "the Companies") submitted a compliance filing[4]

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[3] CLCPA, Chapter 106 of the Laws of 2019. The CLCPA established rigorous clean energy requirements on the New York electric system and a statewide GHG emissions reduction to 85 percent below 1990 levels by 2050.

[4] Case 22-M-0429, *Proceeding on Motion of the Commission to Implement the Requirements of the Utility Thermal Energy Network and Jobs Act*, New York State Electric & Gas Corporation's and Rochester Gas and Electric Corporation's Proposals for Thermal Energy Network Pilots (filed October 7, 2022).

with the Commission describing their proposal to advance three UTEN pilot projects to be sited in Ithaca, Norwich, and Rochester. The filing detailed a preliminary implementation plan that included high level cost estimates, a proposed cost recovery mechanism, and a preliminary evaluation outlining how the UTEN pilot projects comply with the four factors identified in Public Service Law §66-t(2).

On January 9, 2023, the Companies made a subsequent filing[5] ("Initial UTEN Pilot Project Filing") with the Commission intended to expand upon the Companies' compliance filing made on October 7, 2022. The January 9, 2023, filing provided the Commission with detail regarding the Companies' plans to develop and implement the three proposed UTEN pilot projects and support the Commission's review and decision-making. In that filing, in addition to reviewing information included in the compliance filing made on October 7, 2022, the Companies provided schematic-level engineering plans for the three UTEN pilot project sites, descriptions of the target end-use customers, key elements of a customer protection plan, a project development schedule, information regarding system safety and reliability, and refined capital and ongoing cost estimates related to the construction and operation of the UTEN systems. The Companies requested that the Commission authorize the Companies to move forward with the UTEN pilot projects as proposed and approve the proposed cost recovery mechanism.

On September 14, 2023, the Commission issued its *Order Providing Guidance on Development of Utility Thermal Energy Network Pilot Projects* ("Guidance Order")[6] which

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[5] Case 22-M-0429, *Proceeding on Motion of the Commission to Implement the Requirements of the Utility Thermal Energy Network and Jobs Act*, New York State Electric & Gas Corporation's and Rochester Gas and Electric Corporation's Proposals for Thermal Energy Network Pilots (filed January 9, 2023).

[6] Case 22-M-0429, *Proceeding on Motion of the Commission to Implement the Requirements of the Utility Thermal Energy Network and Jobs Act* ("UTENJA Proceeding"), Order Providing Guidance on Development of Utility Thermal Energy Network Pilot Projects (issued and effective September 14, 2023).

established a staged implementation framework to support advancement of the proposed UTEN pilot projects. As discussed in the Guidance Order[7], the Commission requires additional detail to justify approval of the proposed UTEN pilot projects and, therefore, will use a stage-gating process with five phases to advance such projects. All UTEN pilot projects are currently in Stage 1: Pilot Project Scope, Feasibility, and Stakeholder Engagement and require the establishment of additional detail to advance to Stage 2: Pilot Project Engineering Design and Customer Protection Plan. In accordance with the Guidance Order, the Company presents, within this filing, its Final Ithaca UTEN Pilot Project Proposal for consideration by the Commission and respectfully requests authorization to advance this UTEN pilot project to Stage 2: Pilot Project Engineering Design and Customer Protection Plan.

The Company underscores its dedication to continuous evaluation of initiatives and investments aimed at reducing GHG emissions and progressing towards carbon neutrality. In line with this commitment, the Company will actively seek opportunities for additional UTEN pilot projects within its service territory to the extent such opportunities will deliver a high level of unique benefits and value to the Company's customers and the State. This proactive approach aims to maximize insights, contributing to the Commission's knowledge and fostering the overall advancement of the CLCPA and clean energy initiatives in the region[8].

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7 Guidance Order, p. 51.

8 In addition, the Company has included scaling thermal energy networks as part of its Gas Long-Term Plan, filed on October 2, 2023, in Case 23-G-0437, as one of six decarbonization actions that can be implemented to reduce GHG emissions associated with the Companies' natural gas businesses.

II. UTEN PILOT PROJECT OVERVIEW

NYSEG is proposing a UTEN pilot project located in the City of Ithaca in Tompkins County, New York. Located in a disadvantaged community[9], the proposed Ithaca site consists of eight potential non-residential and 31 potential residential buildings on a city block located in Ithaca within the NYSEG service territory (see Appendix A for a list of proposed buildings). As shown in Figure 1 below, the proposed site has a combination of residential and non-residential buildings. Investigation into innovative open-loop groundwater systems is ongoing and may prove to be the most cost-effective and reliable approach, given the geological conditions in the lowland area that represents most of the footprint of the City of Ithaca. The proposed design in this filing includes eight supply wells and eight discharge wells for the open-loop system.

[9] The Company used the Climate Justice Working Group final 'disadvantaged communities' criteria approved and adopted on March 27, 2023, to make a determination with respect to disadvantaged community designation of the UTEN pilot project site. The criteria are available at: https://climate.ny.gov/resources/disadvantaged-communities-criteria/.

Figure 1. Ithaca Pilot Project Site Map

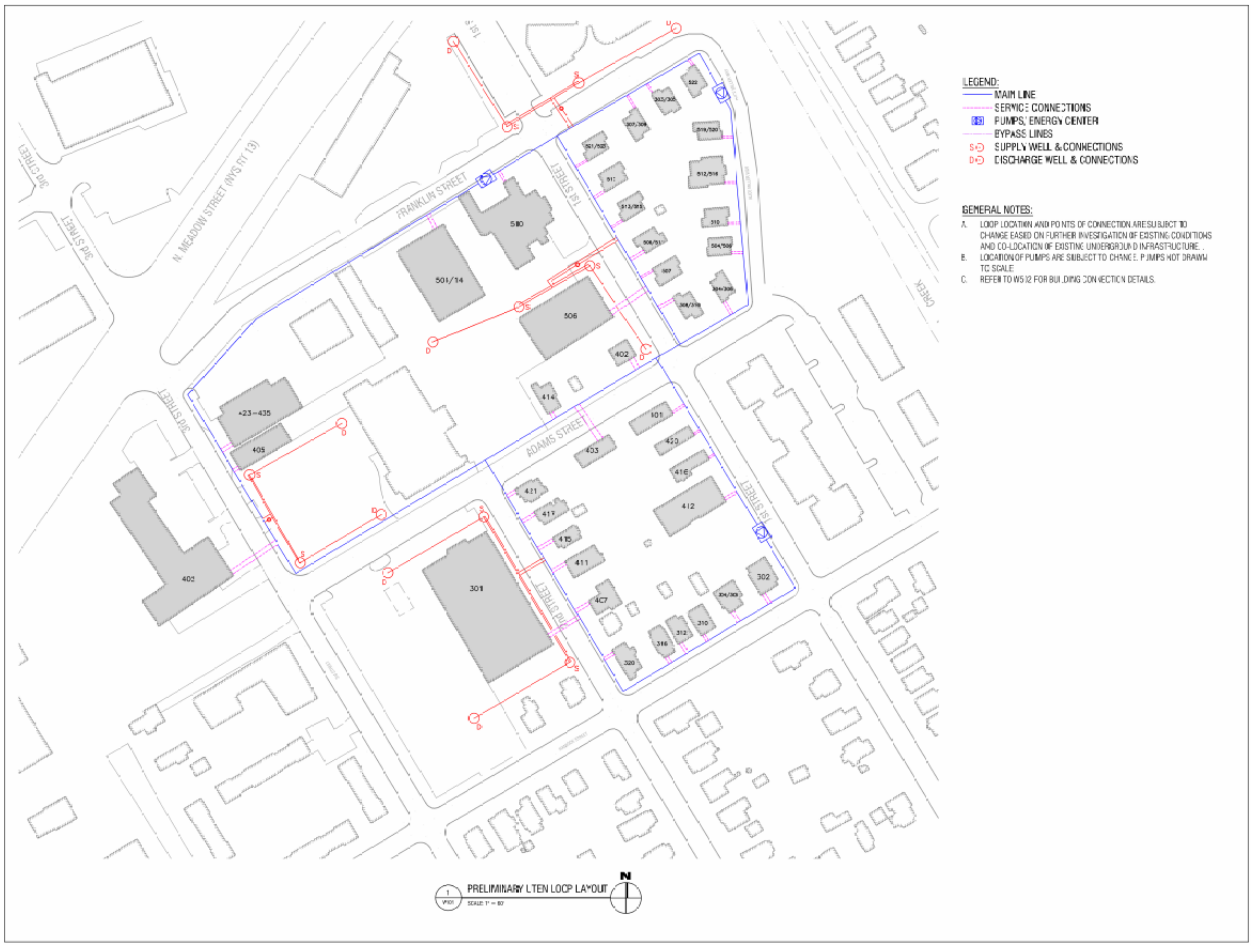
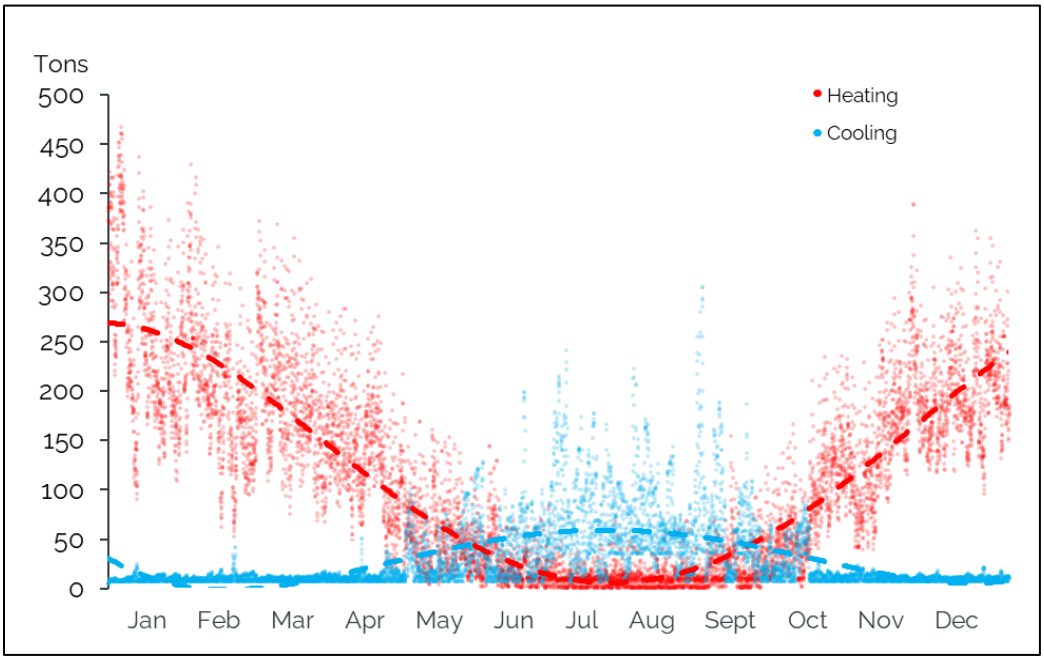


Figure 2. Thermal Load Profile for Ithaca Pilot Project Site



As depicted in Figure 2 above, the thermal energy network is primarily heating dominant with low-rise residential buildings representing the predominant building type. Since the proposed design is an open-loop system leveraging the underground aquifer, the thermal imbalance has little effect on the long-term performance of the system.

The two open-loop approaches being considered involve either utilizing supply wells to distribute groundwater to heat exchangers located at the Company's energy center[10] or using innovative downhole heat exchangers, enabling groundwater to stay below ground and distributing it through a comparable closed-loop network to buildings. The preferred approach will be determined during the detailed engineering design phase of project development. The principal advantages of an open-loop/groundwater heat exchanger include reduced dependence

[10] "Energy Center" is defined in Matter 23-02117, *In the Matter of Utility Thermal Energy Network Terms and Definitions*, Draft Utility Thermal Energy Networks Terms & Definitions List (filed November 22, 2023) ("Draft UTEN Terms & Definitions List") as: "Infrastructure that performs functions for the thermal energy network such as pumping the heat transfer medium, controlling fluid chemistry and temperature, and providing makeup fluid."

on balancing the annual thermal loads of connected buildings and increased efficiency of customer building heat pumps during both summer and winter. Additionally, the footprint and number of boreholes/wells required to meet the thermal demand of the system is significantly reduced compared to a traditional vertical closed-loop system.

A local well driller with specific experience in downtown Ithaca was consulted to provide technical expertise advancing the conceptual plans for the Ithaca UTEN pilot project. The lowland areas in downtown Ithaca are characterized as an "old lake bottom," consisting of sand, gravel, and clay. When installing closed-loop vertical heat exchangers, drillers will generally encounter a gravel aquifer between 125 feet and 170 feet with a standard six-inch borehole yielding in excess of 100 gallons per minute ("GPM"). These conditions present an especially large challenge in a dense urban environment as water management becomes time intensive and costly. With sufficient preparation, the water can be managed but will likely result in closed-loop boreholes that are considerably shallower than achievable in most areas of the State, between 125 feet and 225 feet in depth relative to the more common depths near 500 feet practiced broadly today.

Engineers on a recent geothermal installation located within the general vicinity of the proposed UTEN pilot project underscored the difficulties encountered by the geothermal drillers, who installed (30) 220-foot boreholes with well casing extending the full length (i.e., no bedrock was encountered). The formation thermal conductivity test showed a 1.0 British thermal unit ("BTU")/(hr*ft*°F) thermal conductivity, which is considerably below the average found in most geologic formations across the State. The nearby system ultimately demonstrated success in its operation, serving as a foundation for understanding the means, methods, and projected costs

of installing a closed-loop system in this area of Ithaca. This information becomes particularly valuable if an open-loop system is later deemed unviable for implementation.

As previously described, while less common, a groundwater system may be a more viable option for this lowland section of the City of Ithaca. A groundwater or "open" system might use larger, re-purposed "gas rigs" to drill into the aquifer which could manage the backpressure from the water and install a series of central supply wells. Water in the system would be isolated from any building mechanical equipment and then discharged back into the ground, ideally in a low-pressure strategy (e.g., an infiltration gallery). An open-loop system would replace the same volume of water that is extracted – minimizing the volume and pressure of the aquifer that may impact nearby potable water wells. An open-loop system requires close collaboration with the City of Ithaca and the NYS Department of Environmental Conservation ("DEC"). The Company intends on testing and monitoring groundwater to ensure the protection of the groundwater resources as applicable. NYSEG is actively pursuing a flow test for one of the two existing wells that are located directly across the street from the proposed UTEN pilot project. This information will serve to verify the flow rates and diffusivity of the underground aquifer prior to the detailed engineering design stages of the project.

The Company would like to acknowledge recent revisions in the project scope. The Company is proposing a new location for two of the supply wells and two of the return wells. Two of the originally proposed supply and return wells were located within Conley Park. Upon further evaluation by the Company, it was determined that installing these wells in this location could involve additional regulatory considerations such as, Parkland Alienation. These additional regulations and considerations may pose a significant risk to the establishment of thermal energy resources within municipal parkland for the UTEN pilot project. The Company is subsequently

proposing new locations for the two supply wells and two return wells that were previously proposed to be located in Conley Park in the Initial UTEN Pilot Project Filing[11]. The proposed re-located wells are located on the north side of Franklin Street next to the Ithaca Sciencenter.

Additionally, two buildings included in the original project scope were removed. The building located at 423 Franklin Street was withdrawn from the project scope due to occupancy status as the building is currently vacant. The garage adjacent to 504-14 1st Street was withdrawn from the scope due to anticipated lack of space conditioning needs.

III. ENVIRONMENTAL PERMITTING

The Company has conducted a preliminary review of the potential cultural, environmental, and wildlife conditions that are present within the currently defined Ithaca UTEN pilot project scope and adjacent areas. Findings are summarized in Table 1.

The Company plans to seek relevant permits as soon as the detailed engineering design reaches the required level. It is essential to have detailed engineering design completed to pursue the necessary permits, and this process cannot be conducted concurrently with the detailed engineering phase.

The Company expects a permitting timeline of six to 12 months for the various applicable permits. This projection is contingent on the Company having the necessary level of design detail to submit the permit application, and accounts for the expected review timelines by the relevant stakeholder agencies. It is important to highlight that this permitting timeline, combined with the required timeframe for completing detailed engineering, does not align with the Stage 2

[11] Case 22-M-0429, *Proceeding on Motion of the Commission to Implement the Requirements of the Utility Thermal Energy Network and Jobs Act*, New York State Electric & Gas Corporation's and Rochester Gas and Electric Corporation's Proposals for Thermal Energy Network Pilots (filed January 9, 2023).

Guidance Order requirement. The Company would like to collaborate with DPS Staff on potential changes to work scope and staging, and to reach agreement on feasible timelines.

Changes to the project scope that occur subsequent to permitting application and stakeholder approval may necessitate adjustments or the submission of new permits as applicable. Depending on customer enrollment, which is required as a Stage 3 activity as per the Guidance Order, UTEN pilot project scope changes may be required.

Table 1. Ithaca UTEN Pilot Project Permitting Constraints Matrix

	Considerations Present	**Considerations Absent**	**Considerations Adjacent**	**Notes**
NYS DEC Environmental Resources			x	Cascadilla Creek is adjacent to the eastern side of the project.
NYS DEC Stormwater	x			The City of Ithaca[12] regulates as a municipal storm sewer system ("MS4"). A Stormwater Pollution Prevention Plan ("SWPPP") will be required for the project.
NYS DEC Stormwater	x			A Class AA/AAS watershed[13] is present within the general area.
NYS Office of Parks, Recreation and Historic Preservation[14] ("OPRHP") – Archeology	x			The project area is located within an Archaeological Sensitive Area. Coordination with the NYS OPRHP

[12] City of Ithaca- New York – Stormwater Management, available at: www.cityofithaca.org; https://www.cityofithaca.org/316/Stormwater-Management

[13] Stormwater Interactive Map, available at: https://gisservices.dec.ny.gov/gis/stormwater

[14] OPRHP, Historic Business Preservation Registry, available at: https://parks.ny.gov/historic-preservation/business-registry/default.aspx

	Considerations Present	Considerations Absent	Considerations Adjacent	Notes
				may be required as part of municipal site plan review.
Parkland Regulatory & Other Considerations			x	Conley Park is located adjacent to the east of the project. Coordination with the City of Ithaca could be required if the parkland is considered as part of a future project expansion.
US Fish & Wildlife Services ("USFWS")	x			If trees will be cut, coordinate with USFWS. Northern Long Eared Bat[15] and Monarch Butterfly[16,17] may be present.
Open-Loop Geothermal Well Permitting	x			Open-loop geothermal systems with well depths of less than 500 ft. are regulated by the NYS DEC Division of Water[18] ("DOW"). Supply wells will require coordination with DOW and follow all contractor requirements for well drilling

[15] USFWS, Range-wide Indiana Bat and Northern Long-eared Bat Survey Guidelines, available at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines

[16] USFWS, Monarchs, available at: https://www.fws.gov/initiative/pollinators/monarchs

[17] USFWS, Nationwide Candidate Conservation Agreement for Monarch Butterfly on Energy and Transportation Lands. 2022, available at: https://www.fws.gov/sites/default/files/documents/Monarch-CCAA-Landowner-Guide-2022.pdf

[18] Division of Water – NYSDEC, available at: https://www.dec.ny.gov/environmental-protection/water

	Considerations Present	Considerations Absent	Considerations Adjacent	Notes
				activities. Discharge permits as part of the State Pollutant Discharge Elimination System[19] ("SPEDES") program will be required through the NYS DEC DOW for all discharge wells in the system.
State Pollutant Discharge Elimination System ("SPDES")	x			A SPDES permit may be required for discharges to the below ground aquifer pending designed flow rates from the system.
Municipal Permitting	x			Site plan review and building permit will be required.
NYS Department of Transportation[20] ("NYS DOT")			x	Project is adjacent to a NYS DOT roadway. Further coordination is needed if changes to the project design require work in the right of way.
State Superfund/ Remedial Site			x	First Street (NY Route 13), Ithaca, NY was a former Manufactured Gas Plant site and is

[19] Ferguson, John. NYS DEC SPDES General Construction Permit for Stormwater Discharge from Construction Activities. 29 Jan. 2020.

[20] NYS DOT Contact Information, available at: https://www.dot.ny.gov/about-nysdot/contact

	Considerations Present	Considerations Absent	Considerations Adjacent	Notes
				under remediation[21]. Further review is required from existing groundwater and well monitoring reports to ensure potential contaminants have not migrated to the proposed well areas. Water monitoring to be included with the project.
Tailings Disposal	x			Offsite disposal may be required dependent on the waste characterization.

IV. EASEMENTS AND LAND PURCHASE

The Company recognizes the anticipated need to progress components of the UTEN pilot project concurrently with efforts to expedite the project's completion in a timely manner given the anticipated pilot duration. In light of this potential requirement, the Company will continue to assess applicability of exercising easement option agreements ("Option Agreements") to negotiate and secure land rights necessary for the development and installation of UTEN assets. These Option Agreements would grant the Company the right to execute the easement for a specified period of time, but not the obligation, to purchase the land rights. The full payment of the land rights would occur at a future date as the project design and needs are progressed.

[21] NYS DEC Info Locator, available at: https://gisservices.dec.ny.gov/gis/dil

In the event that the Company fails to secure the requisite customer enrollment or for other reasons is no longer able to proceed with the proposed UTEN pilot project, the Company can choose not to exercise the Option Agreement. This procedural flexibility associated with an Option Agreement enables the Company to secure the necessary property for supporting the installation of a new thermal energy resource while mitigating a substantial financial risk that would typically arise from securing easements prior to having customer enrollment numbers necessary to substantiate a viable project. The Company will continue developing easement and/or Option Agreements that are specific to Company-owned UTEN assets.

The Company will evaluate applicable land purchase opportunities to determine logistical and economic viability as the UTEN pilot project advances.

V. UTEN PILOT PROJECT COST AND SCHEDULE

The Company initially submitted its UTEN pilot project cost estimate in the Initial UTEN Pilot Project Filing made on January 9, 2023, utilizing the best information available at that time. This estimate was submitted acknowledging the Company's limited experience in developing thermal energy networks and the need to compile estimates within a tight timeframe. These initial estimates were also based on a less sophisticated approval process, and not the more complex five-stage process contemplated in the Commission's Guidance Order. The Company has since engaged in subsequent investigations, gathered additional information, and collaborated with entities, including other utilities advancing thermal energy networks in neighboring states and private developments utilizing geothermal energy. As a result, the Company has updated the cost estimate to more accurately reflect the investment required for the successful development, construction, and operation of the UTEN pilot project. This revision

aligns with the Company's commitment to transparency and precision in financial planning, and desire to provide a more informed and accurate representation of the UTEN pilot project's costs. Notwithstanding, as noted above, the new staged-approval process creates significant challenges for the scope and staging of work necessary to achieve subsequent stages.

Table 2 outlines the current cost estimate for the Company's updated UTEN pilot project. This cost estimate includes capital costs (e.g., preliminary feasibility analysis, detailed engineering design, materials, UTEN infrastructure installation, HVAC conversions, contingency, environmental permitting, easements, overheads, sales tax), customer engagement costs, and on-going operation and maintenance ("O&M") costs.

Furthermore, Table 3 provides a breakdown of potential incentives, considering the current understanding of market opportunities.

Table 2. Ithaca UTEN Pilot Project Cost Estimate

NYSEG Ithaca UTEN Pilot Project	
Capital Costs ($ in Millions)	
Estimated Gross Capital Costs	$ 40.95
Customer Engagement Costs ($ in Millions)	
Estimated Customer Engagement Costs	$ 0.15
Total Estimated Initial Pilot Development Costs	**$ 41.10**
Annual Recurring Costs ($ in Millions)	
Estimated Annual Energy Costs	$ 0.04
Estimated O&M Personnel Costs[22]	$ 0.24
Total Estimated Annual O&M Cost	**$ 0.28**

[22] While the Company may utilize internal union gas workers for O&M of the shared components of the thermal energy network, these estimated costs assume the full-time equivalents ("FTEs") are non-union. If the FTEs are union-represented employees, salary would be a subject of bargaining with the applicable union and is subject to change.

Table 3. Ithaca UTEN Pilot Project Potential Estimated Incentives

NYSEG Ithaca UTEN Potential Incentives	
Potential Financial Incentives* ($ in Millions)	
Estimated Incentives and Rebates	$ 12.29
Total Estimated Incentives & Rebates	**$ 12.29**

**Estimates are based on the current UTEN pilot project proposal. All financial incentives and rebates are subject to UTEN pilot project eligibility and are not guaranteed funding sources.*

In accordance with the guidelines set forth in the Guidance Order, the project will be structured into five distinct stages. The following outlines an estimated implementation timeline including the primary tasks, deliverables on behalf of the Company, and project milestones associated with each phase of the project.

Table 4. Ithaca UTEN Pilot Project Implementation Timeline

Stage	**Major Activities**	**Milestones & Deliverables**	**Estimated Budget ($M)**
Stage 1: Pilot Scope, Feasibility, and Stakeholder Agreement	1. Develop conceptual technical design 2. Raise awareness among stakeholders, including broader community, and customers in the planned network area 3. Develop anticipated lifecycle costs 4. Develop framework for customer agreements 5. Develop plan for cost recovery	• File final pilot Proposal with the commission (12/15/2023) • DPS Staff to review and issue confirmation of compliance letter to advance to Stage 2	$0.17
Stage 2: Engineering Design & Customer Protection Plan	1. Procure engineering design consultant 2. Develop detailed construction documents in preparation for bidding 3. Engage with stakeholders and all building owners, pursue customer commitments for pilot participation 4. Application of all necessary permits	• Submit final Customer Protection Plan • Submit final design documents and specifications	$3.18

Stage	Major Activities	Milestones & Deliverables	Estimated Budget ($M)
	5. Pursuit of applicable easements and land purchase 6. Finalize expected project costs 7. Develop a robust measurement and verification ("M&V") plan for pilot operation, including metrics to be tracked 8. Finalize Customer Protection Plan 9. Integrate workforce plan into planned project	• Commission decision on cost recovery and UTEN pilot project advancement to Stage 3	
Stage 3: Customer Enrollment and Pilot Construction	1. Procure contractors for construction 2. Finalize customer enrollment 3. Continue to promote benefits and engage with key stakeholders 4. Construct the pilot system per design documents 5. Integrate building efficiency improvements & aide with planned funding avenues 6. Commission the system to verify operation as intended	• Submit final customer enrollment • Construct system	$37.77
Stage 4: Pilot Operation and Maintenance	1. Provide maintenance on system to ensure intended operation 2. Monitor system performance and submit M&V reporting on periodic basis with required performance data 3. Engage with customers to ensure customer satisfaction with system 4. Bill customers for operation	• Periodic M&V reporting, as required • Operate system for five-year pilot period	$1.36*
Stage 5: Pilot Review, Recommendations, and Conclusion	1. Analyze the entirety of performance data, draw conclusions on key performance metrics 2. Develop an internal evaluation of the pilot project success 3. Propose recommendations to the Commission on future projects and their associated regulatory structure	• File Close Out Report • Transfer customer-owned equipment to customers, if necessary	$0.02**

**Assumes five years of O&M costs.*

***Cost estimate currently reflects customer engagement plan costs and will be revised at a future stage in UTEN pilot project implementation upon further establishment of required metrics.*

The estimated duration of the UTEN pilot project stages along with key activities comprising each stage is detailed within Appendix E.

The UTENJA Proceeding has far-reaching implications for nearly every facet of the Company's operations. Notably, the current cost estimates for the UTEN pilot project do not fully reflect internal labor and administration costs associated with its development and subsequent implementation of the thermal energy service. The Company has conducted a preliminary analysis to determine incremental resources necessary to fully support the UTEN pilot project and ongoing provision of thermal energy services. A summary of the initial analysis can be found in Section XIV. Incremental Resources.

The Company takes this opportunity to bring attention to a concern regarding the 10 percent spending authorization stipulated through Stage 2: Pilot Project Engineering Design and Customer Protection Plan in the Guidance Order[23]. The 10 percent spending cap was evaluated against the cost estimate for the UTEN pilot project after accounting for estimated external incentives, such as the Federal Inflation Reduction Act ("IRA") and New York State Energy Research and Development Authority ("NYSERDA") incentives. However, the Company emphasizes that there is no guarantee it will have access to these incentive funding sources, including in the event the Commission decides at some point during the next four stages of review that the projects should not be fully funded/completed, in which case the incentives might be entirely unavailable. For these reasons, the amount of the incentive funding should not be factored into the true investment required by the Company to develop the UTEN pilot project. The Company expresses its commitment to spend prudently and actively seek all potential external funding sources to mitigate its required investment in the UTEN pilot project, enhancing

[23] Guidance Order, p. 55.

cost-effectiveness. Nonetheless, this clarification is necessary to accurately represent the Company's initial required financial commitment necessary to provide for the project's successful development without reliance on uncertain external funding. Table 5 below details the discrepancy between the required and authorized spending cap for costs incurred from project inception through finalizing pilot project engineering design and Customer Protection Plans.

Table 5. Required & Authorized Stage 2 Funding Discrepancy for Ithaca UTEN Pilot Project

	1/9/23 Pilot Proposal Filing		**9/14/23 Guidance Order**		
Pilot Project	Original Estimated Cost of Proposed Pilot Project	Original Estimated Costs to be Incurred through Stage 2 (10% of total estimated costs)	Estimated Cost of Proposed Pilot Project with Potential Incentives	Authorized Maximum Costs to be Incurred through Stage 2 (10% of total estimated costs)	Delta between Original Required and Authorized Funding through Stage 2
NYSEG Ithaca Pilot	$22.3M	$2.2M	$15.4M	$1.5M	$0.7M

Note: this table reflects the original cost estimates included by the Company in the Initial UTEN Pilot Project Filing made on January 9, 2023. It does not account for internal labor or administrative costs, and it also does not incorporate the revised cost estimates included in this filing. Collectively, these revisions further increase the delta between the required and authorized funding amount needed to advance the UTEN pilot project through Stage 2.

VI. UTEN PILOT PROJECT BENEFITS

The Company anticipates the UTEN pilot project to deliver a broad range of environmental, social, and technical benefits. Although the Company has initiated the identification of these benefits, the UTEN pilot project will serve as a catalyst to further quantify the benefits. Additionally, it will provide insights into the scalability and sustainability of thermal energy networks. This section outlines the primary benefits identified by the Company as of the date of this filing.

i. Benefits Associated with Emissions Reduction Through Beneficial Electrification

The emissions reduction targets set forth in the CLCPA require a decarbonization effort across all major economic GHG emitting sectors statewide. According to the NYS DEC 2021 Statewide GHG Emissions Report[24], the buildings sector ranks as the highest contributor, representing 32 percent of the State's total emissions. One of the largest uses of fossil fuels is associated with space heating of buildings, resulting in a significant carbon footprint rivaled only by the transportation sector which represents 28 percent of total emissions. As utility-scale electric generation sources begin to transition towards carbon neutral generation, electrification of fossil fuel systems is an important strategy for reducing the carbon footprint of buildings.

According to the Geothermal District Energy Study the Companies filed with the Commission on May 11, 2022[25], geothermal energy systems as part of a thermal energy network provide an efficient means of heating and cooling buildings by using electricity to leverage thermal energy resources in the ground. By utilizing energy in the ground to increase system efficiency, geothermal systems not only reduce energy consumption and operating costs relative to traditional electric heating and cooling systems, but also help reduce the increase in peak electric load on the building and surrounding power grid in comparison to other electric heating technologies in the marketplace. The increase in efficiency is expected to lead to a reduction in energy costs to customers and a significant reduction in emissions at their buildings, serving to benefit the welfare of customers and society at large.

The Companies' Geothermal District Energy Study states:

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[24] NYS DEC, 2021 Statewide Greenhouse Gas Emissions Report (2021).

[25] Cases 19-E-0378, *Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of New York State Electric & Gas Corporation for Electric Service*. New York State Electric & Gas Corporation's and Rochester Gas and Electric Corporation's Special Studies Geothermal Energy System Study Report (filed May 11, 2022).

The reduction in energy consumption using geothermal energy resources can further be reduced by configuring multiple buildings in a district application whereas the loop can share in aggregate the diversity of heating and cooling loads and operate at an economy of scale that improves the total cost effectiveness of the system. Buildings with different cooling and heating load profiles are able to generally peak at a different time over the course of a day, reducing the need for an additional number of boreholes and therefore total system installation cost[26].

The UTEN pilot project supports achievement of the GHG emissions reduction targets set forth by the CLCPA. Preliminary calculations regarding the project site have led to the estimated emissions savings detailed in Table 6 below[27].

Table 6. Ithaca Pilot Project Estimated Annual Emissions Savings Summary

Sum of Estimated Annual Emissions Savings			
	CO_2	CH_4	N_2O
lbs	1,218,276	26,579	2,657
kg	552,506	12,054	1,205
Tons (U.S.)	609	13	1
Metric Tons	553	12	1

Given the inherent efficiencies achieved by implementing thermal energy networks on a district or community scale, the UTEN pilot project the Company is presenting within this filing offers a unique opportunity to assess the economic and technical feasibility of thermal energy

[26] Cases 19-E-0378, *Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of New York State Electric & Gas Corporation for Electric Service*. New York State Electric & Gas Corporation's and Rochester Gas and Electric Corporation's Special Studies Geothermal Energy System Study Report (filed May 11, 2022).

[27] United States Energy Information Administration ("U.S. EIA") Emissions Factors, 2020.

networks as a means to reducing GHG emissions, achieving equitable and affordable building electrification, and advancing the clean energy goals set forth in the CLCPA.

ii. Business Model Benefits

The Company is seeking to better understand the process and scalability of thermal energy network implementation including cost, scope, timing, required resources, potential barriers, etc. The Company will collect lessons learned to assess the potential for scaling up adoption of thermal energy networks more broadly across its service territory with the objective of gaining process and cost efficiencies as implementation efforts expand. Experience gained through the deployment of UTEN pilot projects will be used to inform future efforts as the Company looks to protect current and remaining gas ratepayers through alternative business models.

Avangrid, Inc., ("Avangrid"), the Companies' corporate parent, has GHG emission reduction goals that align with the CLCPA. More specifically, Avangrid has established a goal of achieving carbon neutrality in Scopes 1 and 2 emissions by 2030. This aggressive goal is consistent with Avangrid's network platform to connect renewable energy to over 3 million customers in the Northeast, as well as Avangrid's position as the third largest wind operator in the United States. Achieving Avangrid's carbon neutrality goal will require significant actions by every Avangrid business unit including its utility subsidiaries. Recognizing this need, the Avangrid Board of Directors adopted a Climate Action Policy and a Sustainability Development Policy in February 2023.

The Climate Action Policy sets forth the following corporate commitment:

> Avangrid seeks to contribute actively and decisively to a low-carbon and sustainable future, delivering clean, low emission energy, minimizing the

environmental impact of our activities and supporting and promoting actions that address climate change. Such efforts must be compatible with social and economic growth[28].

The UTEN pilot project will be used to understand the degree to which thermal energy networks and service can support the Companies' commitment to reducing GHG emissions as described in Avangrid's Climate Action Policy. On October 2, 2023, the Companies filed the first draft of their Initial Gas Long-Term Plan ("Gas LTP")[29] which provides a roadmap for the Companies' commitment to provide safe, reliable, and affordable energy service that delivers sustainable reductions in GHG emissions while preserving customer choice. In accordance with the Commission's *Order Adopting Gas System Planning Process*, the Gas LTP will be updated on a three-year cycle[30]. Learning from the UTEN pilot project will be used to understand if and how thermal energy networks and service can play a role in the Companies' Gas LTP and serve as a future business model as the State transitions towards a clean energy future.

iii. Disadvantaged Community Benefits

It is widely recognized that disadvantaged communities[31] face a disproportionately higher energy burden. Targeting resources to support investment in disadvantage communities can help address the challenges facing disadvantaged communities. The CLCPA requires State agencies to take actions to ensure that: (1) at least 35 percent of benefits from energy program spending,

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28 Avangrid Climate Action Policy, February 16, 2023, p. 1.

29 Case 23-G-0437, *In the Matter of a Review of the Long-Term Gas System Plan of New York State Electric & Gas Corporation and Rochester Gas and Electric Corporation*, New York State Electric & Gas Corporation's and Rochester Gas and Electric Corporation's Initial Gas Long-Term Plan (filed October 2, 2023).

30 Case 20-G-0131, *Proceeding on Motion of the Commission in Regard to Gas Planning Procedures*, Order Adopting Gas System Planning Process ("Gas Planning Order") (issued May 12, 2022).

31 The Company used the Climate Justice Working Group final 'disadvantaged communities' criteria approved and adopted on March 27, 2023, to make a determination with respect to disadvantaged community designation of the UTEN pilot project sites. The criteria are available at: https://climate.ny.gov/resources/disadvantaged-communities-criteria/.

which may include energy efficiency and electrification, be directed to disadvantaged communities with a goal of 40 percent and (2) their decisions will not "disproportionately burden disadvantaged communities"[32].

The Company is in the process of developing an enterprise-wide "Just Transition" framework for addressing disadvantaged communities and low-to-moderate ("LMI") customers as it steers toward a clean energy future. The Just Transition will feature elements of the CLCPA requirements as core pillars that will guide design of utility programs. Avangrid's purpose in developing the Just Transition is to deliver a more accessible clean energy model that promotes health sustainability through respectful engagement with communities (including disadvantaged communities) and constituencies (including LMI customers). The goal is to achieve positive impacts that include economic development, community investments, employment opportunities, and creation of a clean energy future. This also includes avoiding investments that disproportionately burden disadvantaged communities.

Development of UTEN pilot projects in disadvantaged communities directly supports Avangrid's Just Transition and represents a strategic and transformative approach to delivering substantial investment in transitioning customers from fossil fuel to clean energy systems. The overarching goal of these UTEN pilot projects is to generate positive impacts that extend beyond the environmental realm. By creating economic development opportunities, these projects stimulate local economies in disadvantaged communities. The infusion of investment in clean energy systems leads to job creation, providing employment opportunities for local workforce including community members. Simultaneously, the initiative fosters community investments, promoting a cycle of economic growth and resilience.

[32] CLCPA, Chapter 106 of the Laws of 2019.

The UTEN pilot project presents a unique opportunity to convert customers in disadvantaged communities from natural gas to energy-efficient electric HVAC[33] systems that utilize thermal energy to provide heating and cooling as part of a beneficial electrification strategy, yielding numerous compelling benefits. By implementing low-emission technology in these communities, the UTEN pilot project plays a pivotal role in addressing environmental justice concerns. This approach not only supports the reduction of GHG emissions but also ensures that the transition to cleaner energy is accessible and equitable, benefiting communities that may have historically faced environmental disparities. Additionally, the adoption of UTEN systems would introduce one of the most energy-efficient electric HVAC solutions available, setting connected customers up for a lower energy consumption relative to other electrification solutions. The bill impacts of this conversion to UTEN connected water-source heat pumps depend on a number of factors, including the existing fuel source pricing, efficiency of existing HVAC equipment, plus present and projected energy pricing for electricity relative to appropriate counterfactuals.

The development of UTEN pilot projects is designed to avoid investments that disproportionately burden disadvantaged communities. This ensures that the benefits of the clean energy transition are equitably distributed, addressing historical inequities in environmental justice. The focus on creating a clean energy future in these communities reflects a commitment to inclusivity, sustainability, and social responsibility, ultimately fostering a more resilient and equitable society. Through these efforts, the UTEN pilot project strives to serve as a model for holistic, community-driven initiatives that not only mitigate climate change but also promote economic empowerment, safety, and overall well-being in disadvantaged communities.

[33] Heating, ventilation, and air conditioning ("HVAC").

iv. Gas Workforce Transition Benefits

The Company views the development and implementation of the UTEN pilot project as an important opportunity to establish relevance and explore a sustainable long-term business trajectory for its gas operations. Preserving the skills and expertise of its workforce is central to the Company's strategy, and many of the skills cultivated in the construction, maintenance, and operation of natural gas systems are inherently transferable to the realm of thermal energy networks. Proficiencies such as pipefitting, a core skill in gas infrastructure, have the potential to transition into the construction and maintenance of thermal energy networks. Additionally, the emergency protocols ingrained in the gas workforce, essential for ensuring safety in gas systems, may be generally applicable to thermal energy networks. The Company recognizes that the extensive knowledge and experience of its employees can be leveraged to navigate the complexities of transitioning to cleaner energy sources, ensuring a smooth integration of skills into the emerging landscape of sustainable energy.

As described in the Initial UTEN Pilot Project Filing submitted on January 9, 2023, the Company intends to utilize internal union gas workers for O&M of the shared components of the thermal energy network. Accordingly, the Company will work to enter into a labor peace agreement[34] with local union leadership who currently represent union members at the Company in the jurisdiction that is actively engaged in representing gas corporation employees. The Company will leverage the UTEN pilot project to collect learnings about the transferability of existing gas workforce skills to thermal energy networks, and to ultimately inform future workforce and labor engagement strategies employed to support the transition.

[34] UTENJA Order, p. 7.

In addition to helping to preserve gas union workforce, the Company is viewing the UTEN pilot project as an opportunity to invest in local skilled labor. As discussed below in Section XI. Energy Efficiency Upgrades, the Company will issue a solicitation to local contractors to install and maintain the HVAC components inside buildings and serve as a primary contact to the customers for general service and 24-hour emergency response. Responding parties will have an opportunity to submit proposals for additional scopes of work including electrical upgrades and energy efficiency improvements. To provide for appropriate maintenance practices of relevant equipment, the Companies will fund a service and maintenance contract covering the HVAC equipment in the buildings for the duration of the pilot. This will provide local HVAC contractors with an opportunity to participate in the development and maintenance of the UTEN pilot project.

The UTENJA Order and the IRA incentives for larger projects have a requirement for prevailing wage with registered apprenticeship program. This will apply to the Company's labor workforce and trade-specific subcontractors involved in the construction and maintenance of these systems. The Company has an ongoing dialog with its internal workforce and with external organized labor groups who will play a role in both the development and ongoing operations and maintenance of the UTEN pilot project.

The Company envisions leveraging the UTEN pilot project to not only meet the immediate needs of the evolving energy sector but also position itself as a leader in fostering a sustainable and resilient energy future. The transferability of skills from natural gas systems to thermal energy networks not only works to secure the Company's workforce and provide an opportunity to invest in local trade allies, but also showcases its adaptability and commitment to being at the forefront of the clean energy transition in the State.

v. Technical Benefits

The Companies are collectively proposing a technically diverse portfolio of UTEN pilot projects, encompassing a mix of urban communities with a blend of building types. The construction of the proposed UTEN pilot project will provide valuable information regarding the development, operational and environmental reliability, and economic benefits of these types of systems as a potential future utility service and progressing towards the State's climate policy objectives. Implementing the UTEN pilot project as part of a diverse portfolio of pilot projects will enable the Companies and Commission to assess the technical viability of these projects, provide a real-world test of customer acceptance, and collect system performance data that can be used to compare business models and further the promulgation of relevant guidelines for utility-scale thermal energy networks.

Utilizing sensors and other M&V technologies, the Company aims to establish comprehensive capabilities for data monitoring and collection within the UTEN pilot project. This initiative is designed to validate the technical approach and proof of concept of the system, encompassing various financial models, and assessing measured billing metrics for thermal energy service. The UTEN pilot project involves the utilization of diverse systems, such as traditional geothermal closed-loop borefields, open-loop systems utilizing groundwater directly or indirectly, waste energy transfer systems ("WETS"), and locations with geological constraints on drilling depth. The overarching goal of the proposed UTEN pilot project is to evaluate the technical and economic viability and scalability of implementing these types of projects across the entire State.

VII. UTEN PILOT PROJECT RISKS

Due to the innovative nature of thermal energy network design, ownership, and implementation in the State, the Company anticipates the possibility of encountering challenges. The Company is committed to identifying, tracking, and formulating mitigation plans to address risks that potentially jeopardize the successful implementation of the UTEN pilot project. This section details the potential risks identified as of the date of this filing along with the corresponding mitigation strategies the Company may implement to tackle the identified challenges.

i. Project Advancement within the Guidance Order Stage-Gating Approach

To ensure the successful advancement of the UTEN pilot project within the established timeline, the Company seeks to emphasize the importance of flexibility in the Guidance Order. In order to complete detailed engineering design, apply for requisite permits, and secure anticipated Option Agreements during Stage 2, the Company anticipates surpassing the authorized maximum costs designated in the Guidance Order for this stage. In approving movement from Stage 1 to Stage 2, the Companies believe further clarification from the Commission is necessary. Otherwise, the Company is concerned it may not be feasible for the Companies to proceed with the work necessary to move through Stage 2, without the need for further regulatory approvals, such as a separate petition seeking relief from the current limit. Such a petition could result in significant delays for implementation of the UTEN pilot project, and preclude the Company from meeting the initial timeline. Section V. UTEN Pilot Project Cost and Schedule further details these concerns.

Furthermore, as highlighted in Section III. Environmental Permitting, the simultaneous requirement for both the development of the final project engineering design and the acquisition

of all necessary permits may prove unattainable within the outlined nine-month timeframe. This challenge arises because permitting is contingent upon the existence of a detailed engineering design and involves potentially prolonged review times by external agency stakeholders. Given current authorized funding levels may not be sufficient to provide detailed engineering designs necessary to file for and obtain certain permits, the funding limits in the Guidance Order could be a further impediment to timely completion of the permitting process.

In addition, the Company acknowledges that adhering to the Stage 2 requirement of producing a final detailed engineering design and acquiring all necessary permits before the Stage 3 customer enrollment requirement creates a detailed project scope without a guaranteed commitment from customers to connect to the UTEN. Should the anticipated customer enrollment not materialize during Stage 3, the project may necessitate scope changes, potentially leading to a redesign of the detailed engineering scope and requiring the submission of new permits. These adjustments would not only further extend the in-service timeframe but also escalate the overall costs of the project. The Company will collaborate with DPS Staff to effectively communicate concerns and potential mitigation strategies to enable advancement of the UTEN pilot project within the established framework.

ii. Customer Enrollment Risks

The successful implementation of the UTEN pilot project hinges on the enrollment of customers within the outlined project scope who consent to connecting thermal energy service to their premises. In the event that the number of customers within the proposed project area who decline to connect to the UTEN exceeds the minimum technical requirements to sustain the system, adjustments to the project scope may become necessary. If lack of customer interest persists during project scope refinement, it may pose challenges to the feasibility of advancing

the project in the proposed area. Alternatively, low customer enrollment could result in connected loads lower than intended in the UTEN pilot project system design, potentially leading to difficulties in system balancing.

To address these considerations, the Company aims to enroll a diverse group of customers capable of supporting the technical needs of the UTEN pilot project. The Company will leverage the Customer Engagement Plan outlined in Appendix B.1 to inform and educate potential customers about the benefits of the UTEN pilot project, which may result in increased opt-in rates.

iii. Stakeholder Opposition

Given the diverse array of external stakeholders with potential vested interests in the UTEN pilot project, varying opinions about the project or its components may arise. The Company is committed to actively engaging with stakeholders to enhance their understanding of UTEN pilot project and address any concerns related to specific project elements. The Company aims to integrate stakeholder feedback whenever possible, thereby ensuring the progression of a UTEN pilot project designed to meet the needs of the Company, customers, and the broader community.

iv. Risks Concerning Access to Thermal Sources and Sinks

Access to thermal sources and sinks at the proposed UTEN pilot project locations, and for future expansion of networks, presents unique challenges and cost implications for pilots and the ongoing development of a scalable business model. While the large variety of thermal sources/sinks can be seen as an advantage, it introduces a new set of variables when compared to a traditional electric and gas distribution business model. For example, gaining access to parking lots for boreholes, additional expenses related to gaining easements, environmental remediation,

restoring parking surfaces, etc. Experimenting with boreholes in the current utility right of way may reduce some of these risks but introduces other risks in terms of traffic disruptions and potential of boreholes drifting under adjacent properties. Sewer waste heat recovery may also reduce risks, but tends to be intermittent, and may be combined with stormwater, which introduces complexity that is not well characterized due to the small number of comparable installations worldwide.

v. Execution Risks

Even though ground source heat pump ("GSHP") technology is not new and there are many examples of campus systems which have substantially the same components as a UTEN pilot project, the execution of a UTEN pilot project will have considerable differences. Many of these differences stem from having a traditionally gas or electric regulated utility bring together separately owned buildings with a unique combination of small residential, multifamily, and commercial and industrial ("C&I") customers under a single project scope. These UTEN pilot projects will bring together groups within Utilities that have not traditionally worked together and require both a revamp of existing business processes and creation of new ones. For example, utility procurement departments will be tasked with issuing UTEN pilot project request for proposals ("RFPs") that will require a broad and unique combination of work scopes. The RFP process will need to be managed in real-time, with customer groups who will be significantly impacted by the installation, commissioning, and operation of the UTEN pilot project. Additionally, numerous NYS agencies will also be engaged with and impacted by the UTEN pilot projects.

vi. Building Electrification Risks

The UTEN pilot projects require the Company to design and install a new utility service with non-combustible thermal sources and sinks, a new utility distribution system[35] with mains[36] and service lines[37], and pumps and controls equipped with contingencies for reliability and resilience. A risk of the UTEN pilot project is the conversion of all the connected buildings to be compatible with the electric heat pump systems, i.e., building electrification. There is currently no turnkey, comprehensive model for funding and implementing building electrification on the scale required by the CLCPA, and the incentive programs currently in place for building electrification (e.g., NYS Clean Heat) may not be available to the UTEN pilot projects and future resources. To execute a UTEN pilot project, individual beneficial electrification elements will need to be brought together into one comprehensive program to be used on a scalable model for widespread building electrification.

vii. Financial Risks

Gaining access to external funding is important for reducing the Company's necessary investment in the UTEN pilot project, thereby improving cost-effectiveness and lessening the impact on ratepayers. The IRA offers substantial incentives, such as a 30 percent investment tax credit ("ITC") and depreciation allowances for commercial geothermal heat pump systems. However, nuances related to the IRA and its implementation create uncertainty about the Company's and UTEN pilot project participants' eligibility to access tax credits available

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35 As defined in the Draft UTEN Terms & Definitions List, a Utility Distribution System is a closed-loop system of pipes that contains a fluid that transports thermal energy connecting the energy center(s), thermal energy resource(s), service line(s), and energy transfer station(s).

36 As defined in the Draft UTEN Terms & Definitions List, a Utility Distribution System with Mains is a closed-loop system of horizontal pipe(s) which contains a non-combustible heat transfer medium that transports thermal energy among the energy center(s) and service line(s).

37 As defined in the Draft UTEN Terms & Definitions List, Service Line(s) are piping containing a heat transfer medium between the utility distribution system main(s) and the customer energy transfer station.

through the IRA. Section XV. Treatment and Recovery of UTEN Pilot Project Costs of this filing further elaborates on the risks associated with this concern.

viii. Billing Risks

The Company has identified technical considerations and external variables that pose risks to billing a thermal energy charge and, consequently, representing energy costs throughout the duration of the UTEN pilot project.

- Limited degree of detail of historical energy usage information
- Changing building tenants
- Changes in use of building
- Occupancy schedule changes
- Lack of awareness of a customer implementing energy efficiency improvements
- Introduction of air conditioning into a building that historically has not had air conditioning
- Weather fluctuations
- HVAC and/or DHW setpoint changes
- Varying energy supply costs across energy service companies ("ESCOs")

Within the UTEN pilot projects, various scenarios may arise concerning landlord/tenant dynamics and identifying who is the existing electric and/or natural gas customer of the Company. If a customer is not both an electric and natural gas customer of the Company, the associated energy use and costs related to converting the HVAC system and, if applicable, the DHW system may involve parties beyond just the customer and Company. The Company will

collaborate with other Utilities involved in advancing UTEN pilot projects to address issues related to thermal energy service billing and energy costs.

ix. Market Risks

Supply Chain: The Company may procure new materials to support the UTEN pilot projects, including materials with long lead times based on market conditions. The Company will work to understand material requirements in advance of project construction and make efforts to secure long lead time materials accordingly.

Qualified Contractor Availability: Due to the simultaneous advancement of numerous large UTEN pilot projects within similar timeframes in the State, there is a concern about potential insufficient availability of qualified contractors capable of concurrently supporting the projects. For example, the uncertainty surrounding the availability of drillers in the State during the construction phase of the UTEN pilot project is a notable concern and may potentially impact project construction schedules. The Company is actively working to understand project requirements and details that will guide the development of RFPs for the required services. RFPs may be issued as soon as there is a sufficient level of information available to effectively solicit the market.

x. Regulation Risks

Rules and other considerations related to parklands may not offer timely avenues for the installation of thermal energy borefields in municipally owned parkland. The Company aims to explore opportunities to support initiatives that facilitate the use of municipally owned parkland for the installation of thermal energy borefields.

xi. Technical Risks

Permitting: There are no existing examples of the true permitting timeline associated with the necessary approvals for an open-loop groundwater system that supports a UTEN. The Company will continue to engage the respective parties in advance to ensure project transparency and adherence to permitting requirements.

System Reliability: The utility distribution system requires uninterrupted electric service to continually power the pumps that circulate the heat transfer medium[38]. The Company is proposing to introduce natural gas backup generators at the pumping stations to ensure continuance of electric service to the pumps during electric outages. Pumps, a type of mechanical equipment, can be subject to operational failure. The Company is proposing to install N+1 redundancy for the utility distribution system pumps. The Company will evaluate N+1 redundancy needs for service line pumps on a case-by-case basis. The Company may look to propose other technical solutions as applicable for systems that do not have N+1 redundancy for the pumps.

Open-loop Groundwater System: The specific flow and diffusivity rates of the underground aquifer are unknown. The Company is working to actively pursue flow testing at an established open-loop well adjacent to the UTEN pilot project site.

VIII. PLAN FOR USE OF CONNECTED FOSSIL FUEL RESOURCES

To provide reliable thermal service to HVAC systems and, if appliable, DHW systems that are connected to a UTEN for customers who have backup power systems, the Company will

[38] As defined in the Draft UTEN Terms & Definitions List, the Heat Transfer Medium is non-combustible fluid or fluid solution that is used to transfer the thermal energy in a thermal energy network.

work to ensure continuous power to the pumps that circulate the heat transfer medium[39]. The Company is proposing natural gas backup generators to provide uninterrupted electric service to the pumps during a Company electric outage event. Natural gas backup generators are commonly adopted as a cost-effective backup power system. The backup generators will be designed to serve system purposes during electric outages or emergency events which will limit annual utilization. The Company will continue to evaluate backup power system alternatives and will take into account both the cost-effectiveness and the duration of available backup power from various backup power equipment types during the detailed engineering design phase.

The proposed UTEN pilot project will include the conversion of the existing HVAC system to a GSHP that can be connected to the thermal energy network. For customers using a single boiler for both heating and DHW loads, the Company will propose a heat pump water heater ("HPWH") to address DHW needs. For other customers with standalone DHW systems, the Company will evaluate suitability for a HPWH and proposed system conversions on a case-by-case basis.

Other natural gas appliances, such as ranges and dryers, are not included in the scope of the UTEN pilot projects. While electrification of all end-use equipment will not be required under the UTEN pilot project, the Company will connect end-use customers with resources and incentives available to support full-building electrification should they express an interest in pursuing it as an option.

The capacity of the thermal energy network will be sized to meet the anticipated full thermal loads of heating, cooling, and DHW for all buildings in the network area, regardless of whether they choose to participate in the UTEN pilot project or if a participant maintains gas

[39] As defined in the Draft UTEN Terms & Definitions List, a Heat Transfer Medium is a non-combustible fluid or fluid solution that is used to transfer the thermal energy in a thermal energy network.

DHW. A projection of future development of a site (e.g., vacant buildings and vacant lots) based on available information is also being considered to ensure service mains are sized for efficient, reliable service for many years without significant additional infrastructure investment.

The Company is committed to maximizing the implementation success and learning associated with this effort. Requiring whole-building electrification poses a potential barrier to pilot success, particularly if customers are required to replace natural gas cooking appliances with electric ranges or stoves. It is important to maintain customer connections to the natural gas system to ensure customers' natural gas appliances not covered by the UTEN pilot project scope (e.g., ranges, dryers, etc.) remain operable. The Company needs to fulfill its responsibility to provide adequate service to customers. Gas service needs to remain intact if the UTEN pilot project may fail due to technical, economic, logistical, or other reasons. In the event of pilot failure, customers will have the option of reconnecting to the natural gas system.

For these reasons, the Company will maintain natural gas service connections to the buildings throughout the duration of the pilot to serve any existing natural gas appliances that are not included in the HVAC conversion. At the end of the designated UTEN pilot project period, participating customers may be presented with the following options:

1. Remain connected to the thermal energy network (if available);
2. Replace pilot heat pump with air source heat pump ("ASHP");
3. Connect heat pump to individual geothermal borehole(s) on customer property, disconnected from the thermal energy network; or
4. Replace heat pump with conventional natural gas system. Customers will be encouraged to install high-efficiency natural gas equipment and appliances if they select this option.

These options will be presented as part of the Customer Agreement and reviewed with customers prior to enrollment.

IX. SAFETY, RELIABILITY, AND RESILIENCY MEASURES

The Company will continue developing UTEN pilot project design and O&M procedures that will allow for connected customers to receive a level of service for safety, reliability, and resiliency commensurate with their existing electric and natural gas utility services. Appendix D details the proposed strategies to achieve the desired levels of safety, reliability, and resiliency.

To control the unintended use of legacy systems, the proposed UTEN pilot project scope includes provisions for removal of the existing fossil fuel space heating equipment systems. Removal of the existing systems would eliminate concerns with building owners operating legacy systems in an unintended manner.

In addition to the proposed strategies to achieve the desired levels of UTEN safety, reliability, and resiliency noted in Appendix D, the Company has identified below the additional considerations the Company will continue to evaluate. The Company will continue to refer to existing security standards and emergency operating procedures as the Company looks to continue defining UTEN practices to improve system safety, reliability, and resiliency. Below are additional safety, reliability, and resiliency considerations with respect to the UTEN pilot project:

- Harmonizing introduced make-up fluid to achieve desired fluid composition
- Heat transfer medium handling and containment
- Introduction of air in the utility distribution system or service lines during restoration of damaged piping

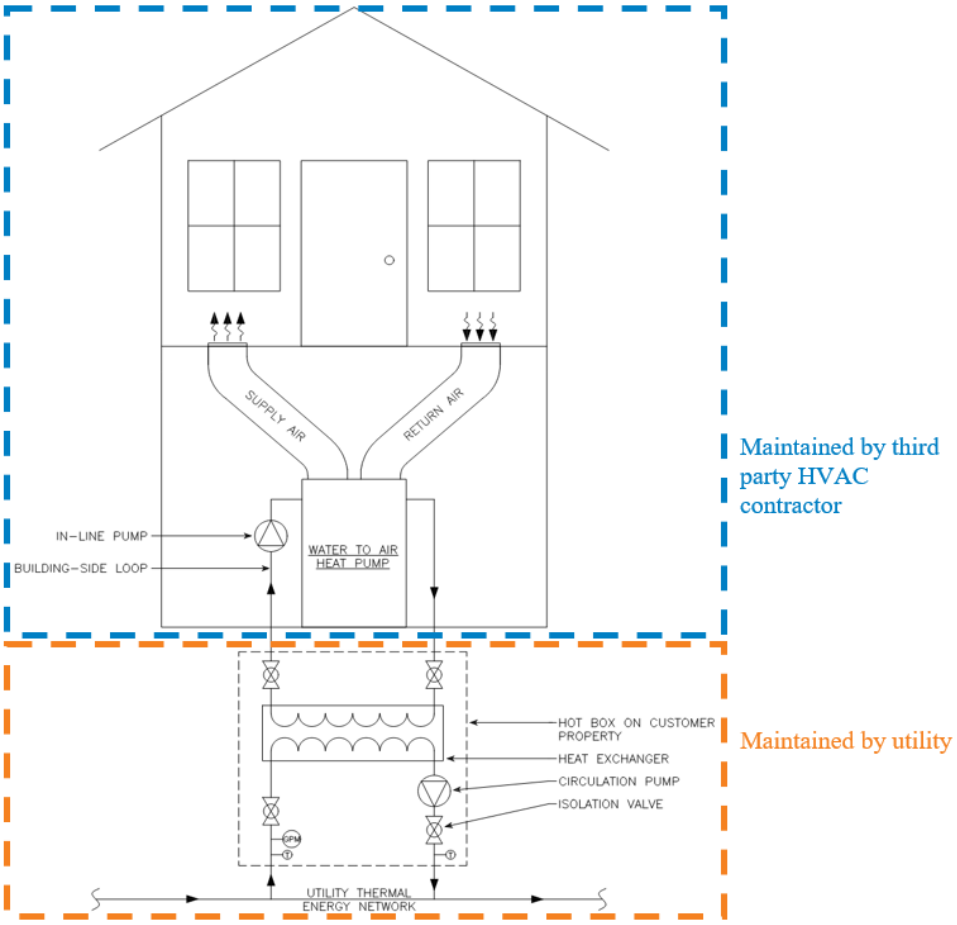
- Introduction of debris in the utility distribution system or service lines during restoration of damaged piping
- Substantial loss of fluid in the utility distribution system
- Track and trace utility mapping to enable precise tracking of the location, material, joints, and other below grade UTEN system elements and points of interest

X. POINT OF DEMARCATION

The Company will own and operate the UTEN pilot project and intends to utilize internal union gas workers for O&M of the shared components of the thermal energy network. The Company will issue a request for information ("RFI") and/or RFP to solicit input from third-parties specializing in HVAC conversions. The primary objective of the RFI and/or RFP is to identify local contractors with the ability to install and maintain the HVAC components inside buildings and serve as a primary contact to the customers for general service and 24-hour emergency response. To ensure proper maintenance practices of all relevant equipment, the Companies will fund a service and maintenance contract covering the HVAC equipment in the buildings for the duration of the pilot.

The service and maintenance contract will also cover warranty service on in-building components installed as part of the pilot for the duration of the pilot. At the conclusion of the pilot, any remaining warranty coverage will transfer to the building owner. This will mitigate risk from the customers' perspective and allow the Companies to focus on the operations and performance of the utility distribution system. Figure 3 shows a visual representation of the line of demarcation between equipment to be maintained by the Companies and equipment to be maintained by the HVAC contractor.

Figure 3: System Maintenance Line of Demarcation



XI. ENERGY EFFICIENCY UPGRADES

The Company places a strong emphasis on energy efficiency as a critical component for the technical success of the UTEN pilot project. Acknowledging the pivotal role of building envelope improvements in ensuring efficient and effective UTEN system operation, the Company has devised a strategic approach that prioritizes these enhancements within the UTEN pilot project implementation. To assess the most effective means of integrating energy efficiency upgrades, the Company will leverage the procurement process whereby the Company will solicit input from third-party entities specializing in HVAC conversions.

In addition to submitting a proposal covering the HVAC conversion scope of work, responding parties will have the opportunity to submit add-on proposals for implementing energy efficiency measures, such as building weatherization (e.g., insulation, air sealing, etc.). To lower the overall project cost and improve cost-effectiveness of the respective energy efficiency measures, the Company will include within the RFP a requirement that incentive/rebate opportunities that are available for the respective energy efficiency measures must be pursued by the responding party. The Companies have had discussions with the Building Performance Contractors Association ("BPCA") to inform their member companies that our projects are under development and to look for RFIs and/or RFPs related to the UTEN pilot projects.

Proposals from third parties must include a detailed scope of work for HVAC conversions, general service, and 24-hour emergency response. If desired, the responding party may submit additional scopes of work for weatherization measures and/or electrical upgrades. Based on the proposals received, the Company will conduct a comprehensive analysis to determine whether weatherization should be incorporated into the UTEN project implementation or if it is more cost-effective for customers to independently undertake weatherization measures. In the event the Company decides not to provide weatherization services based on the RFP results, UTEN pilot project participants will be informed about the benefits of pursuing energy efficiency. Information will be disseminated on various resources, including:

- Free home energy audits available through the NYSERDA Residential Energy Audit Program, the EmPower New York program, and the Assisted Home Performance with ENERGY STAR® program.
    - The Company is following NYSERDA's rollout of the IRA-funded HER and HEAR Programs. These are income-eligible programs covering heat pumps,

electrical service upgrades, air sealing and insulation, and other electric appliance conversions for small residential buildings.

- Other load-reduction packages currently used in the NYSERDA Comfort Home Program for single family homes.
- Median ENERGY STAR score, or greater, as defined by the ENERGY STAR Portfolio Manager®, an industry standard for benchmarking commercial buildings.
- The State's appliance and equipment efficiency standards outlined in Title 21 New York Codes, Rules, and Regulations Part 509 for residential and commercial retrofits for DHW upgrades.
- Incentives available through the Company's established energy efficiency programs. At the time of this filing, DPS Staff advised that under current guidelines, customers participating in the UTEN pilot project are not eligible for existing incentives available through the NYS Clean Heat Program although incentives from other Company-sponsored energy efficiency programs may be available.
- Financing options available for building envelope improvements for qualified homes under the EmPower New York program.

The Company will look to coordinate energy efficiency improvements with HVAC and electrical upgrades to avoid conflicts with newly installed systems. The process and resources utilized to educate customers about energy efficiency upgrades will be detailed in the Final Customer Engagement Strategy, ensuring a well-informed and empowered customer base as the UTEN pilot projects unfold.

XII. ECONOMIC LIFECYCLE ANALYSIS

The Company conducted an initial comparative economic lifecycle analysis comparing the proposed UTEN system to individual building systems utilizing either business as usual ("BAU") equipment, ASHP, or GSHP. For each scenario, an assessment on the capital cost and annual O&M costs of all major equipment was conducted. Table 7 below outlines all major equipment for each system alternative and whether the asset will be owned by the Company or by the customer.

Table 7. UTEN Pilot Project Lifecycle Analysis Equipment

Equipment	System	Ownership
UTEN Supply/Discharge Wells	UTEN	Utility
UTEN GSHP	UTEN	Utility
UTEN GSHP DHW	UTEN	Utility
GSHP After Pilot Period	UTEN	Customer
GSHP DHW After Pilot Period	UTEN	Customer
UTEN Electrical Work (circuit breakers, switches, controls, etc.)	UTEN	Utility
UTEN Pumps	UTEN	Utility
Utility Distribution System Piping	UTEN	Utility
GSHP Supply/Discharge Wells	GSHP	Customer
GSHP	GSHP	Customer
GSHP DHW	GSHP	Customer
GSHP Electrical Work (circuit breakers, switches, etc.)	GSHP	Customer
ASHP	ASHP	Customer
ASHP DHW	ASHP	Customer
ASHP Electrical Work (circuit breakers, switches, etc.)	ASHP	Customer
Natural Gas Cast Iron Boiler	BAU	Customer
Natural Gas DHW	BAU	Customer
Rooftop Air Conditioning	BAU	Customer
Natural Gas Utility Distribution Piping	BAU	Utility
UTEN Utility Electric Infrastructure Costs	UTEN	Utility
GSHP Utility Electric Infrastructure Costs	GSHP	Utility
ASHP Utility Electric Infrastructure Costs	ASHP	Utility

For the installation year and every effective useful lifecycle beyond the installation year, the capital cost for each piece of equipment was estimated in the lifecycle analysis model. In addition to these recurring capital costs every effective useful lifecycle, estimated annual O&M costs for each line item were identified. These annual costs were then included within the lifecycle cost analysis model. An estimated annual inflation rate of six percent and O&M cost increase of three percent were assumed for the entirety of the lifecycle cost analysis.

Note that the upfront costs for all major equipment were identified in year zero. As an example, in year 15, the UTEN pumps would need to be replaced according to their anticipated lifespan per the New York State Technical Resource Manual[40]. The cost associated with this replacement reflects the upfront cost with pricing from 2023 marked up to include annual inflation of six percent for 15 years. Within the analysis, the UTEN pump replacement cost would then repeat every 15 years through the duration of the lifecycle analysis model. This process was repeated for all identified major equipment for both the Company and customer for a period of 75 years. 75 years was chosen as the timeframe for the model as this is an anticipated effective useful life of the vertical boreholes.

Additionally, in an effort to represent the associated impacts on the electric infrastructure of the different technologies, the Companies' Gas LTP[41] and Benefit Cost Analysis ("BCA") Handbook[42] were utilized data sources for the lifecycle cost analysis. The Gas LTP data utilized is premised on winter peak loading. Information and methodologies included in the BCA

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40 The New York Standard Approach for Estimating Energy Savings from Energy Efficiency Programs - Residential, Multi-Family, and Commercial/Industrial, known as the Technical Resource Manual ("TRM"), available at: https://dps.ny.gov/technical-resource-manual-trm.

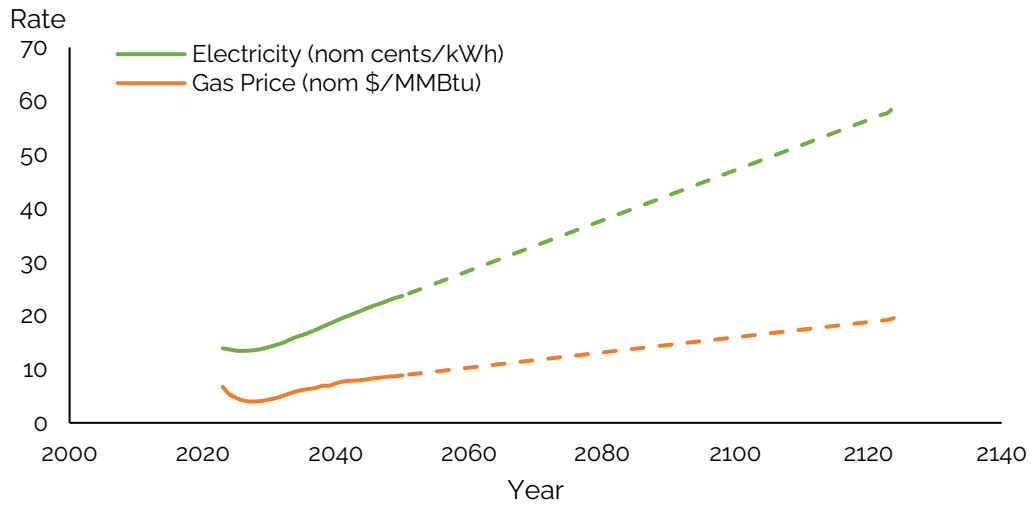
41 Case 23-G-0437, *In the Matter of a Review of the Long-Term Gas System Plan of New York State Electric & Gas Corporation and Rochester Gas and Electric Corporation*, New York State Electric & Gas Corporation's and Rochester Gas and Electric Corporation's Initial Gas Long-Term Plan (filed October 2, 2023).

42 New York State Electric & Gas Corporation's and Rochester Gas and Electric Corporation's Benefit Cost Analysis Handbook, Version 4.0, filed contemporaneously with the Distributed System Implementation Plan ("DSIP") in Case 16-M-0411 (filed June 30, 2023).

Handbook were leveraged to represent elements related to generation capacity, transmission and distribution infrastructure, and associated O&M. The Company believes this is the best available information but acknowledges the actual cost impact on electric infrastructure can vary widely depending on local electric infrastructure conditions.

While the lifecycle cost analysis for the Company focused on capital expenditures ("CAPEX") and O&M, the lifecycle cost analysis for the customer included an assessment on electric and natural gas charges. The electric and natural gas usage for each of the scenarios was included in the model and assumed not to change for the duration of the lifecycle cost analysis. In order to assess the charges that the customers would pay based on their electric and natural gas consumption, electric and natural gas rate projections published by the U.S. EIA were used in conjunction with published rates from the Company to estimate rates through 2050. Beyond 2050, electric and natural gas rates were estimated to increase following a linear pattern based on trends from 2040 to 2050. Shown below in Figure 4 are the estimated electric and natural gas rates for the next 100 years.

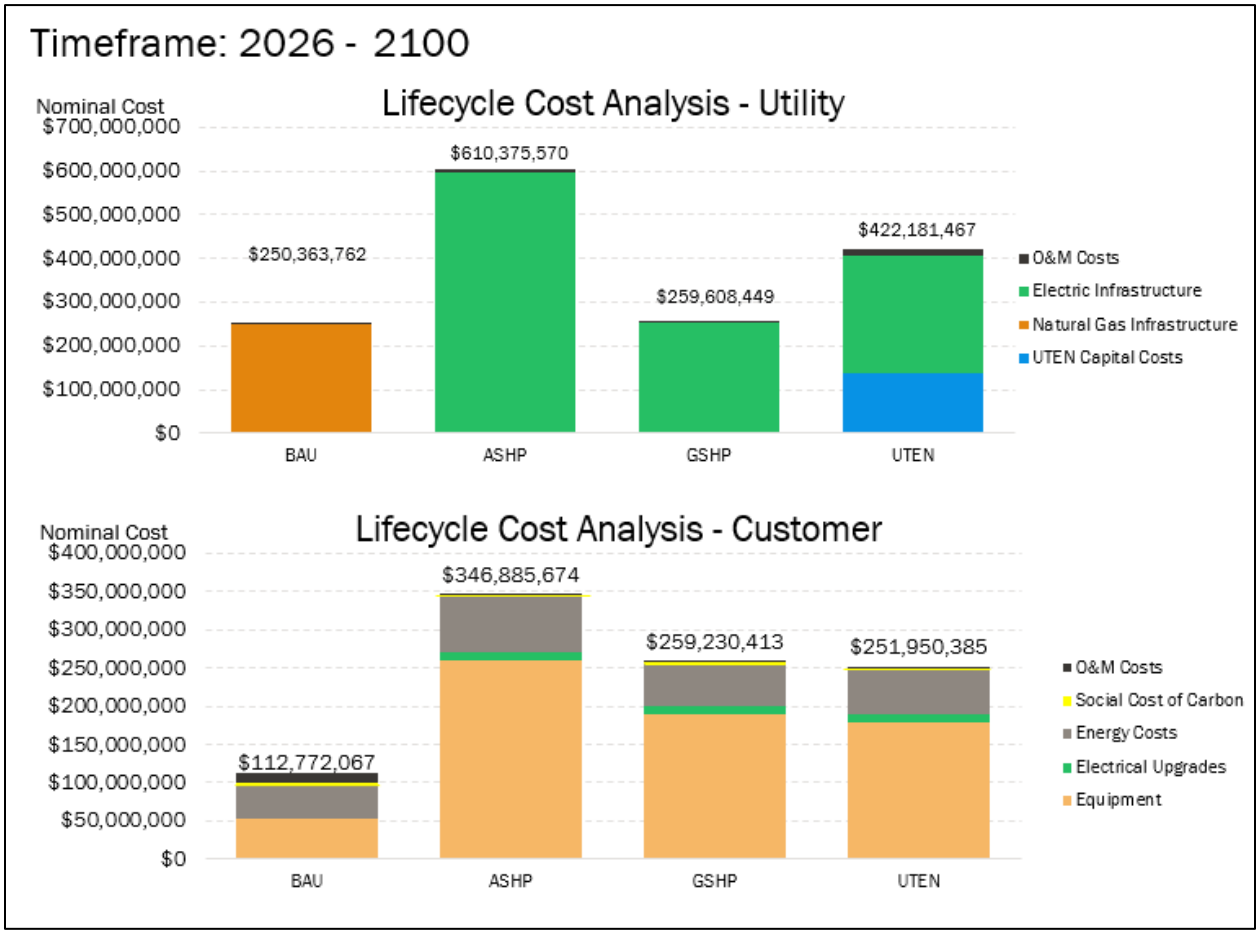
Figure 4. Estimated Utility Rates



With these projected rates alongside projected customer consumption, estimated energy costs for the duration of the lifecycle cost analysis were determined. These energy costs were then included within the lifecycle analysis model.

The customer lifecycle cost analysis model includes the social cost of carbon in its analysis. The NYS DEC published guidance on quantifying the social cost of carbon. The estimations posted by this entity were included in this analysis. By assessing all costs (capital and energy) a cumulative net present value ("NPV") was determined for each of the potential scenarios. Shown below in Figure 5 are associated equipment costs and an overall NPV for a 75-year lifecycle analysis for each scenario. Figure 5 reflects an analysis duration of 74 years as at year 75, the system is anticipated to require equipment replacements for a potential continued system operation.

Figure 5. UTEN Pilot Project 75 Year Lifecycle Cost Analysis



The costs as presented above are determined from the detailed bill of materials, which lists out the number of effective useful lifecycles occurring within the specified timeframe

The Company wishes to highlight the challenges associated with formulating an economic lifecycle analysis for a UTEN. These challenges encompass, but are not limited to, the absence of forecasted data that accurately spans a 75-year timeframe, the necessity to make assumptions about inputs and forecasts, and considerations related to localized system impacts, particularly in the context of electric infrastructure. The Company will continue to refine its approach to improve the accuracy and dependability of such an analysis.

XIII. PRELIMINARY CUSTOMER PROTECTION PLAN

Please refer to Appendix B for the Preliminary Customer Protection Plan which includes the UTEN Pilot Project Customer Engagement Plan and Preliminary Customer Agreement.

XIV. INCREMENTAL RESOURCES

The UTEN pilot project budgets presented within this filing do not fully reflect costs associated with internal labor and administration; however, successful execution of the UTEN pilot project will require extensive investment of resources across a broad range of business areas including, but not limited to:

- Billing
- Conservation & Load Management
- Customer Service
- Energy Land Management
- Environmental, Health, and Safety
- Environmental Permitting
- Finance
- Human Resources
- Integrated System Planning
- Investment Planning
- Gas Operations
- Gas Engineering (System Planning and Technical Services)
- Legal

- Marketing
- Metering
- Non-Wires & Non-Pipes Alternatives
- Procurement
- Project Management Office
- Project Outreach
- Projects (Gas Engineering Design)
- Rate Design
- Regulatory
- Regulatory Accounting

Accordingly, incremental Fulltime Employees ("FTEs") will be required. The Companies have conducted a preliminary analysis to determine the incremental resources necessary to fully support the UTEN pilot project and ongoing provision of thermal energy services. Based on the Companies' initial analysis and proposals put forth by peer utilities, the Companies anticipate requiring a minimum of four FTEs per UTEN pilot project. This totals to 12 FTEs to effectively support the implementation of the three UTEN pilot projects proposed by the Companies.

The Companies will continue to evaluate and analyze which businesses areas are impacted, potentially requiring additional FTEs to facilitate the development, implementation, and oversight of both the UTEN pilot project and thermal energy service. The Companies will develop a comprehensive staffing plan outlining the number of FTEs needed, their roles, and the duration of their involvement which will be included in a subsequent filing made with the Commission.

XV. TREATMENT AND RECOVERY OF UTEN PILOT PROJECT COSTS

In the Initial UTEN Pilot Project Filing made on January 9, 2023, the Companies proposed and requested Commission approval of a cost recovery mechanism for treatment of UTEN pilot project costs incremental to those allowed for recovery in their respective rate plans. The Companies are committed to spending prudently while developing high-quality UTEN pilot projects that demonstrate potential for success, while yielding substantial benefits for both the Companies' customers and for achieving the State's clean energy objectives. Accordingly, it is essential for the Companies to have the ability to recover costs necessary for implementing the UTEN pilot projects.

The Companies propose to recover all costs incurred in advancing the UTEN pilot projects. The Companies current rate plan acknowledges in Section XX.E that costs associated with the UTEN pilots would be addressed in accordance with cost recovery mechanisms in Case 22-M-0429 (e.g., the UTENJA Order and the Guidance Order) the current rate plan[43]. As with other such pilot projects, the Companies will treat costs associated with Company-owned assets as CAPEX recovered over the useful lifetime of the assets[44]. The Companies propose treating all other incremental costs required to advance the UTEN pilot projects as regulatory assets (i.e., deferred operational expenditures) to be amortized over a period of 20 years. The Companies propose to recover costs exclusively through gas rates. During the term of the current rate plan and until base rates are reset, the Companies proposed to recover the amortized portion of such

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[43] Cases 22-G-0318, *Proceeding on the Motion of the Commission as to the Rates, Charges, Rules and Regulations of New York State Electric & Gas Corporation for Gas Service* and 22-G-0320 *Proceeding on the Motion of the Commission as to the Rates, Charges, Rules and Regulations of Rochester Gas and Electric Corporation for Gas Service* do not include specific costs associated with the UTEN pilot projects.

[44] Given the recent enablement of utility ownership of UTEN assets, the Company will continue to monitor emerging Generally Accepted Accounting Principles ("GAAP") standards and assign appropriate useful lives to assets as necessary.

costs through a new separate surcharge. Any unamortized costs plus carrying charges shall be deferred for future recovery and incorporated into base rates when gas base rates are next reset.

Affordability is an important consideration, and it is in the best interest of ratepayers to leverage available external funding sources and incentives to reduce the overall capital investment required to implement the UTEN pilot project. Doing so will improve cost-effectiveness of the UTEN pilot project and deliver financial benefit to the Company's customers. The Company is currently investigating opportunities presented by the IRA including eligibility to obtain ITCs relative to the UTEN pilot project.

On November 22, 2023, the IRS published a proposed rule updating the types of energy property eligible for an energy credit in connection with the IRA. The guidance accompanying the proposed rule seems to state if different parties own separate components of a geothermal system (e.g., coils in ground and end use heat pump equipment), neither party is eligible for ITCs because each owns a separate component of energy property that does not constitute a unit of energy property.[45] Accordingly, the Company is currently proposing to own the entire UTEN pilot project including the thermal energy network and end use equipment (i.e., HVAC and, if applicable, DHW systems).

The Company will actively monitor statutory changes, new proposed, temporary or final regulations, notices, rulings, frequently asked questions and answers, and other guidance relating to the IRA to seek eligibility for accessing ITCs, thereby reducing the overall necessary capital investment. However, it is crucial for the Company to maintain flexibility to address anticipated challenges and opportunities during UTEN pilot project implementation to maximize its ability to spend in an appropriate manner. The Company is seeking budget flexibility in the allocation

[45] §1.48-14(e)(4)(ii) Definition of Energy Property and Rules Applicable to the Energy Credit proposed by the IRS on November 22, 2023.

between capital and deferred operational expenses largely depending on the UTEN pilot project ownership structure. For instance, in the event of IRA guideline revisions or interpretations that allow shared ownership of system components, the Company may opt to own the network while customers assume ownership of the end-use equipment. Such a decision would lead to a reallocation of planned expenditures from CAPEX to a regulatory asset, aligning with the proposed cost treatment outlined in this section.

XVI. CONCLUSION

The Company is committed to advancing thermal energy networks within its service territory, viewing such networks as a significant opportunity to establish an alternative business model beyond traditional natural gas service provision. The Company appreciates the opportunity to pursue the UTEN pilot project outlined in preceding sections and looks forward to contributing to the progress of this clean energy initiative. Emphasizing collaboration with Utilities, DPS Staff, customers, and other stakeholders, the Company aims to ensure the success of its efforts and further the development of sustainable energy solutions in the region.

The Company underscores the public interest in moving forward with the UTEN pilot project, highlighting the diverse set of benefits it offers. This initiative is poised to provide customers with a clean energy heating and cooling solution, addressing both environmental concerns and the demand for sustainable alternatives. Additionally, the UTEN pilot project is positioned to yield valuable insights into the development, operational reliability, environmental impact, and economic benefits of thermal energy systems and inform viability of expansion of thermal energy networks as a tool for the Company's decarbonization efforts of its natural gas

business. In alignment with New York's clean energy and climate goals, the project aims to achieve a cost-effective reduction in GHG emissions.

In light of these considerations, the Company respectfully requests the Commission's authorization to advance the Ithaca UTEN pilot project from Stage 1: Pilot Project Scope, Feasibility, and Stakeholder Engagement to Stage 2: Pilot Project Engineering Design and Customer Protection Plan, as discussed herein. This progression is deemed crucial for the successful implementation of the project and aligns with the broader objectives of promoting sustainable, clean energy solutions in the State.

APPENDIX A – UTEN PILOT PROJECT CUSTOMER LIST

Table A.1 Proposed Ithaca UTEN Pilot Project Customer List

ADDRESS	SQUARE FEET	CLASSIFICATION
421 2ND ST	1,380	RESIDENTIAL
417 2ND ST	1,138	RESIDENTIAL
415 2ND ST	1,068	RESIDENTIAL
411 2ND ST	1,791	RESIDENTIAL
407 2ND ST	1,774	RESIDENTIAL
320 HANCOCK ST	1,968	RESIDENTIAL
316 HANCOCK ST	1,232	RESIDENTIAL
312 HANCOCK ST	1,784	RESIDENTIAL
310 HANCOCK ST	1,208	RESIDENTIAL
304-06 HANCOCK ST	1,920	RESIDENTIAL
302 HANCOCK ST	2,110	RESIDENTIAL
412 1ST ST	5,096	LODGING/CHURCH
416 1ST ST	1,552	RESIDENTIAL
420 1ST ST	1,480	RESIDENTIAL
401 ADAMS ST	2,520	RESIDENTIAL
403 ADAMS ST	2,520	RESIDENTIAL
414 1/2 ADAMS ST	1,480	RESIDENTIAL
402 ADAMS ST	1,152	RESIDENTIAL
308/310 ADAMS ST	2,268	RESIDENTIAL
304/306 ADAMS ST	2,268	RESIDENTIAL
504/506 ALICE MILLER WAY	2,268	RESIDENTIAL
510 ALICE MILLER WAY	2,268	RESIDENTIAL
512/514/516 ALICE MILLER WAY	2,268	RESIDENTIAL
519/520 ALICE MILLER WAY	2,268	RESIDENTIAL
301 FRANKLIN ST/ 522 ALICE MILLER WAY	2,268	RESIDENTIAL
303/305 FRANKLIN ST	2,268	RESIDENTIAL
307/309 FRANKLIN ST	2,268	RESIDENTIAL
521/523 1ST ST	2,268	RESIDENTIAL
517 1ST ST	2,268	RESIDENTIAL
513/515 1ST ST	2,268	RESIDENTIAL
508/509/511 1ST ST	2,268	RESIDENTIAL
507 1ST ST	2,268	RESIDENTIAL
301 3RD ST	4,705	OFFICE
301 3RD ST	3,300	OFFICE
301 3RD ST	3,427	RESTAURANT
301 3RD ST	2,580	OFFICE

301 3RD ST	2,150	RESTAURANT
301 3RD ST	2,820	RETAIL
405 3RD ST	2,494	OFFICE
402 3RD ST	12,821	OFFICE
506 1ST ST	8,866	OFFICE
510 1ST ST	8,392	OFFICE
504-14 1ST ST	10,298	WAREHOUSE
423/425 FRANKLIN ST	4,448	WAREHOUSE

APPENDIX B – PRELIMINARY CUSTOMER PROTECTION PLAN

I. Preliminary Customer Protection Plan Overview

The Guidance Order requires that a Final UTEN Pilot Project Proposal be filed by December 15, 2023[46], which shall include a Preliminary Customer Protection Plan that addresses: (1) the basic conceptional structure of the Final Customer Protection Plan, (2) customer engagement activities, and (3) a customer agreement template that documents the customers' rights and responsibilities associated with the pilot project"[47]. Accordingly, below is the Preliminary Customer Protection Plan. This Preliminary Customer Protection Plan is subject to change and may not be the same as the Final Customer Protection Plan. For example, as the Guidance Order notes, the Commission recognizes that the Utilities will need to continue to develop their Customer Protection Plans in conjunction with Utilities' developments of their pilot projects before a pilot project advances to Stage 3[48].

First, the basic conceptual structure of the Final Customer Protection Plan is based on three elements. Customer engagement activities is the first element. As outlined in the Preliminary Customer Protection Plan described below and in the attached Appendix B.1 and Appendix B.2, customer engagement activities are intended to occur throughout every step of the customer journey in the UTEN pilot project, including raising awareness and securing interest prior to agreeing to participate; building knowledge and securing participation as the UTEN pilot project progresses towards construction; and supporting participants in adopting and sustaining change through pilot construction, operation, and exit. The second element of the Final Customer

[46] Guidance Order, p. 25.
[47] Guidance Order, p. 40.
[48] Guidance Order, p 40-41.

Protection Plan is expected to be the implementation of a Customer Agreement that documents the customers' rights and responsibilities. The Customer Agreement will help guide customer rights and responsibilities throughout enrollment, customer participation in the UTEN pilot project's operation, and the exit from/end of the UTEN pilot project. A preliminary example of such an agreement is described below. As a third element of the Final Customer Protection Plan, the Company would like to acknowledge the other core components of the UTEN pilot project designed to help protect Customers. Such components include, for example, the Company's commitment to provide safe and reliable utility service as well as the Company's plans to track and report information throughout the UTEN pilot project in accordance with Commission requirements. Overall, the Final Customer Protection Plan will be pilot project-specific and should serve to plan how Customers can be aware of and educated on the details of the UTEN pilot project throughout every step of the customer journey.

Second, customer engagement activities are outlined as part of the Customer Engagement Plan and are included in Appendix B.2. It includes the customer engagement activities established by the Guidance Order:

> "Customer engagement activities will be described, including a description of the UTEN pilot project; proposed customer engagement budget; recruitment plan, including methods to recruit participants; customer outreach and education plan including, but not limited to, communication methods, messaging (pre- and post-project operational start date); a detailed list of the outreach materials to be dispensed to customers including the languages in which they will be made available; a schedule for the planned outreach; and the planned approach for

ensuring customer understanding and acknowledgement of all elements of the Customer Protection Plan"[49].

Third, a customer agreement template that documents the customers' rights and responsibilities associated with the UTEN pilot project is included as the Preliminary Customer Agreement Template, Appendix B.1. It includes the components of the customer agreement template set forth in the Guidance Order[50]:

1) Customer protections patterned after the Home Energy Fair Practices Act, including, but not limited to, language regarding service terminations and the complaint process;
2) customers' participation/withdrawal options;
3) pricing options to minimize the risk of higher energy bills;
4) metering, billing process, fees, and payment options;
5) installation and maintenance responsibilities; customer exit options during the UTEN pilot project operation and at the conclusion of the pilot phase; and
6) customer consent and customer privacy.

Overall, this Preliminary Customer Protection Plan, as the name suggests, is preliminary. Therefore, this plan and any of its constituent parts, including the Preliminary Customer Protection Plan's Preliminary Customer Agreement Template, are subject to change and development in conjunction with the UTEN pilot project development.

[49] Guidance Order, p. 41.
[50] Guidance Order, p. 41-42.

APPENDIX B.1 – PRELIMINARY CUSTOMER AGREEMENT TEMPLATE

The customer agreement template is a component of the Preliminary Customer Protection Plan and details the customer's rights and responsibilities. The customer agreement template is a sample of a customer agreement and is subject to future changes and developments in conjunction with the UTEN pilot project development.

THIS UTILITY THERMAL ENERGY NETWORK PRELIMINARY CUSTOMER PROTECTION PLAN CUSTOMER AGREEMENT ("Preliminary Customer Agreement") is entered into as of the ____ day of , 202_("Effective Date"), by and between New York Electric & Gas Corporation, a corporation organized under the laws of the State of New York with offices located at [180 South Clinton Avenue Rochester, New York 14604 or 18 Link Drive, Binghamton, New York 13904] ("Company") and [INSERT CUSTOMER NAME] with an address at, [INSERT CUSTOMER ADDRESS] ("Customer"). The Company and Customer are each referred to herein singularly as a "Party" and collectively as "Parties".

RECITALS

WHEREAS, the Company has received approval of the New York Public Service Commission ("Commission") for a UTEN pilot project for the installation and operation of a thermal energy network in Case No. 22-M-0429 (the "Pilot"). Pursuant to the Pilot, the Company is to install, own and operate certain thermal energy network equipment (defined below as the "Thermal Energy Network"), which would provide the primary heating service at a location selected by the Company during the Pilot demonstration period.

WHEREAS the Customer is a thermal energy customer of the Company seeking to participate in the Pilot.

NOW, THEREFORE, in consideration of the mutual covenants contained herein and intended to be legally bound hereby, the Parties agree as follows:

TERMS AND CONDITIONS

1.0 **Customer Status** - Customer is the owner or has a long-term lease (i.e., a lease term for at least the duration of the Service Period defined below) for that entire property located at _____[INSERT SITE ADDRESS] _____ ("Site"), and hereby agrees to participate in the Pilot.

2.0 **Thermal Energy Service** - The Company agrees to provide, and the Customer agrees to utilize, a thermal-based service (referred to herein as the "Thermal

Energy Service") for the Site using the facilities and equipment to be installed by the Company described in **Exhibit A** attached hereto (the "Thermal Energy Network"), for a [##] month period commencing on the In-Service Date (the "Service Period"). Some of the Thermal Energy Network equipment may be installed to replace equipment that preexisted the UTEN pilot project. Such equipment that preexisted the UTEN pilot project and such that may be installed as a replacement as part of the UTEN pilot project is listed in **Exhibit B** attached hereto (the "Equipment Replacement Schedule").

3.0 **Service Period** - [In Service Date and Service Period are to be further defined by the Company: The criteria for establishing the conditions that start of the 5-year pilot period are being evaluated since the number of separately owned buildings with unique conversion issues could delay 100 percent completion.] Upon the expiration of the Service Period the Company may, but is not obligated to, continue to provide Thermal Energy Service on terms acceptable to the Company and Customer. In the event the Company is unable to or elects not to continue to offer the Thermal Energy Service, the Company may explore opportunities to find a third party to assume responsibility for the offering the Thermal Energy Service or otherwise ensure the Site has heating service in accordance with the Customer Options at Termination set forth in the Additional Terms and Conditions of **Exhibit C**.

4.0 **Agreement Terms -** The terms and conditions applicable to the Thermal Energy Service shall include the provisions of this Preliminary Customer Agreement and the provisions of the Additional Terms and Conditions attached as **Exhibit C** hereto and incorporated herein.

5.0 **Location -** The specific location of the Thermal Energy Network and the schedule for installation of the Thermal Energy Network shall be determined by the Company in coordination with the Customer.

6.0 **Installation** - The Company agrees, at the Company's expense, to install the Thermal Energy Network and to operate and maintain the Thermal Energy Network for the duration of the Service Period. The Company shall, with reasonable cooperation of Customer, obtain all permits and approvals required for the installation of the Thermal Energy Network. The Company may use contractors to perform installation, maintenance and repair work, assessment services, or any other work conducted under this Preliminary Customer Agreement, and all personnel shall carry a valid identification badge issued by the Company, which can be shown to the Customer.

7.0 **Site Suitability** - The Customer warrants and represents that to the best of the Customer's knowledge there are no obstructions or conditions that would impair the installation or operation of the Thermal Energy Network at the Site, and that there are no hazardous substances or materials, as defined under State or Federal law, located in the area where the Thermal Energy Network are to be installed. In the event such conditions are found, the Company shall have the right to suspend work and to terminate this Preliminary Customer Agreement, without any further liability to Customer. (Restoration practices are to be defined in the Final Customer Agreement)

8.0 **Mark Outs** - The Company shall, prior to the date set for the installation of Thermal Energy Network, coordinate to mark out any private utilities (including, but not limited to, underground electric, sewer, water and septic lines and systems) which are located on the premises where Thermal Energy Network are to be installed in compliance with the "UDig NY" requirements.

9.0 **Payment -** The Customer agrees to pay the monthly thermal energy fee specified in the Fees subsection of the Additional Terms and Conditions **Exhibit C** , attached hereto. The foregoing rate is for the Service Period only and shall not apply to any Thermal Energy Service offered following the Service Period. The Company may change any fees and charges listed in **Exhibit C** only after providing notice to Customer and receiving approval from the Commission. Additional related terms regarding Metering, Billing Process, Fees, and Payment are also included in **Exhibit C**.

10.0 **Access -** Customer grants to the Company and its contractors the right and access to install, repair, replace, maintain, and remove the Thermal Energy Network if the Company finds it appropriate; and communication lines for control and metering purposes at the Site, and to monitor, evaluate and enhance the performance of the Thermal Energy Network. The Company shall provide advance notice of work at the Site. The Customer agrees to execute any agreements necessary to document the Company's right to access the Site, to locate the Thermal Energy Network at the Site, or to own, operate and maintain the Thermal Energy Network at the Site as provided in this Preliminary Customer Agreement.

11.0 **Signatory -** This Preliminary Customer Agreement must be signed by the Customer or an authorized representative of the Customer, and the Customer agrees to provide documentation of that authority if requested by the

Company. [Additional signature and authorization details will likely be defined in the Final Customer Agreement]. Any assignment by the Customer of its rights or obligations under this Plan Agreement shall, at a minimum, require the advance written consent of the Company.

12.0 **Rebates and Incentives** - If the Company installs and pays for energy efficiency upgrades on the Site, it shall be entitled to any and all energy efficiency program rebates and incentives. If the Customer installs and pays for energy efficiency upgrades on the Site, they shall be entitled to any and all energy efficiency program rebates and incentives, and it is the Customer's responsibility to pursue any such programs.

13.0 **Information Sharing -** The Customer agrees to provide information and documentation that the Company may request (a) regarding the Thermal Energy Network and any part thereof and (b) regarding the Customer's other utility and fuel usage. The Customer further agrees to complete customer satisfaction surveys regarding the Thermal Energy Service. The Customer also consents to the Company sharing any of this information with other entities involved in or related to the UTEN pilot project, including but not limited to the Company's UTEN pilot project contractors and the Customer's electric distribution provider as needed.

14.0 **Entire Agreement** - This Preliminary Customer Agreement embodies the entire agreement between the Parties with respect to the subject matter hereof. There are no third-party beneficiaries to this Preliminary Customer Agreement. All exhibits to this Preliminary Customer Agreement are hereby incorporated by this reference into this Preliminary Customer Agreement. This Preliminary Customer Agreement may be executed in counterparts, each of which shall be deemed an original.

15.0 **Notice -** Any notice to Company shall be directed to:

[INSERT COMPANY CONTACT INFORMATION: Mailing Address, Attention of, Email]

Any notice to the Customer shall be directed to:

[INSERT CUSTOMER CONTACT INFORMATION: Mailing Address, Attention of, Email]

or such other address as either party may designate by formal written notice.

16.0 **Regulated Entity** - The Company is a public utility subject to regulation by the Commission. Compliance by the Company with any order, regulation, or rule of the Commission or any other regulatory or legislative authority with jurisdiction shall not constitute a breach hereof.

17.0 **Governing Law, Jurisdiction -** This Preliminary Customer Agreement is subject to the laws of the State of New York, without regard to principles of conflicts of law, and shall be subject to the jurisdiction of the Commission and any other governmental entity having jurisdiction over a Party or the subject matter of this Preliminary Customer Agreement. The sole venue and jurisdiction for any action related to this Preliminary Customer Agreement shall be in Monroe County, New York.

ACCEPTANCE OF THE ABOVE TERMS BY THE AUTHORIZED REPRESENTATIVES OF THE PARTIES:

Company:
[COMPANY NAME]
By:

Name:

Title:

Date:

Customer or Customer's Authorized Representative:
[CUSTOMER NAME]
By:

Name:

Title:

Date:

EXHIBIT A
THERMAL ENERGY NETWORK
TO BE INSTALLED BY THE COMPANY

[Insert Description and sketch if available]

EXHIBIT B
EQUIPMENT REPLACEMENT SCHEDULE

1. Equipment that preexisted the UTEN pilot project
   Heating, Ventilation, and Cooling ("HVAC") System(s):
   Domestic Hot Water System (as applicable):

2. Equipment to be installed as part of the UTEN pilot project
   Heating, Ventilation, and Cooling ("HVAC") System:
   Domestic Hot Water System (as applicable):

EXHIBIT C
ADDITIONAL TERMS AND CONDITIONS

I. Consumer Protections

For the purposes of the UTEN pilot project, the Company plans to extend protections patterned after the provisions of Title 16 of the New York Code of Rules and Regulations ("NYCRR"), Part 11, Home Energy Fair Practices Act ("HEFPA") and Part 13 Rules Governing the Provision of Service by Gas, Electric and Steam Corporations to Non-Residential Customers terms that are applied to the Company's gas customers to the Customer in this UTEN pilot project. These terms, including but not limited to terms regarding service terminations and the complaint process, are set forth in:

a. Part 11- HEFPA – Rules;
b. Part 12 Consumer Complaint Procedures; and
c. Part 13 Rules Governing the Provision of Service by Gas, Electric and Steam Corporations to Non-Residential Customers.

Accordingly, protections patterned after Parts 11 and 12 are anticipated to apply to residential UTEN pilot project customers, and protections patterned after Part 13 are anticipated to apply to non-residential UTEN pilot project customers.

II. Customers' Participation and Withdrawal Options

Customers will be required to opt-in to participate in the UTEN pilot project. If a customer opts to withdraw from the UTEN pilot project prior to the conclusion of the UTEN pilot project period, the Company will coordinate with the customer to remove any applicable HVAC and/or Domestic Hot Water Equipment that was provided by the Company for purposes of the UTEN pilot project. Any costs associated with disconnecting from the Thermal Energy Network will be the responsibility of the customer.

III. Pricing Options

The Company will look to educate customers on the opportunity to enroll in budget billing as applicable. Budget billing will allow for customers to spread energy costs evenly over 12 months and provide opportunities for the customers to anticipate the monthly payment.

When designing the thermal energy fees for the UTEN pilot project, the Company will look to perform bill impact analysis for customers within the project scope. The bill impact analysis will be performed based on the best available information at the time. The Company will look to also take into consideration existing billing programs customers may be eligible to enroll in as part of the bill impact analysis.

The Company intends to take into consideration the relevant Energy Affordability Practices established within the State that may impact the design of a thermal energy fee.

IV. Metering, Billing Process, Fees, and Payment Options

For enrolled customers, the Company, to the extent practicable, will seek to require Company-provided AMI meters be installed for any existing Company electric and/or gas services at the Customer premise(s). The Company will look to install additional meters as deemed necessary to help collect data for learning and reporting purposes.

The Company is considering establishing a monthly thermal energy fee for UTEN pilot project customers based on the customer types outlined in the below table.

Proposed Thermal Energy Fee Rate Type

Customer Type	Thermal Energy Fee*
Residential	
Residential Low Income**	
Commercial/Industrial	

*Billing rates will be charged on a monthly basis and will be effective for the duration of the UTEN pilot project. Rate schedules at the end of the UTEN pilot project may change subject to Commission approval.
**Residential low-income rates are intended to be provided for customers enrolled in the Energy Assistance Program ("EAP")

The Company may implement a manual billing process to issue thermal energy fees on customer electric and/or gas bill(s) for purposes of the UTEN pilot project. An automated billing process may not be warranted given the anticipated number of enrolled customers in the UTEN pilot project.

Learnings and data from the pilot are intended to be utilized for establishment of any future Thermal billing charges outside of the UTEN pilot project. If Thermal Energy Service is to be an offering made available to a larger customer audience at a future date, the Company will reevaluate implementing an automated billing process.

The Company intends to provide similar bill payment options as offered to the Company's gas customers.

V. Installation and Maintenance Responsibilities and Customer Options at Termination

The Company will coordinate Thermal Energy Network equipment installation with the Customer. To ensure proper maintenance practices of all relevant equipment, the Company is considering funding a service and maintenance contract covering the HVAC equipment in the buildings for the duration of the UTEN pilot project. The service and maintenance contract may also cover warranty service on in-building components installed as part of the UTEN pilot project for the duration of the UTEN pilot project.

The Company generally plans to maintain existing natural gas service connections to customers throughout the duration of the UTEN pilot project to serve any existing natural gas appliances not included in the HVAC conversion. At the end of the UTEN pilot project period, participating customers may be presented with the following options:

1. Remain connected to the Thermal Energy Network (if available) (Details relating to a potential ownership transfer of the heat pump equipment to the customer at the end of the UTEN pilot project period is being considered by the Company for inclusion in the Final Customer Agreement.)
2. Replace the pilot heat pump with an air source heat pump ("ASHP").
3. Connect the heat pump to individual geothermal borehole(s) on the customer's property, where practicable, and disconnected from the Thermal Energy Network (if technically and economically feasible) or
4. Replace heat pump with a conventional natural gas system. Customers will be encouraged to install high-efficiency natural gas equipment and appliances if they select this option.

VI. Customer Consent and Customer Privacy

1. Customer Consent

   Through this Agreement, the Customer provides consent for the Company to gather and use usage data and other customer information to monitor the performance of systems and evaluate the UTEN pilot project. Because this UTEN pilot project is subject to reporting requirements established by

the PSC, the Customer can expect that their information may be used to inform those public reports.

2. Customer Privacy

   Consistent with the Company's customer privacy practices and applicable regulations, the Company plans to gather and use aggregated or statistical information, and other customer provided information, for the purposes of monitoring and evaluating the performance of the Thermal Energy Network. The scope of the data is described in the "Information Sharing" provision above in the body of the Preliminary Customer Agreement as including information regarding the Thermal Energy Network and any part thereof; information regarding the Customer's other utility and fuel usage; and responses to customer satisfaction surveys regarding the Thermal Energy Service. Also, as stated in the "Information Sharing" provision above in the body of the Preliminary Customer Agreement, the Company discloses to the Customer that this information and data may be shared with the Company's UTEN pilot project contractors, the Customer's electric distribution provider, or others on an as-needed basis. As the Company continues to develop the Customer Protection plan in conjunction with the UTEN pilot project developments, the Company will consider whether the purpose, type of data, or scope may be further updated or defined, and appropriately communicated for transparency, customer consent, and customer privacy protection.

   Additionally, the Company will consider whether any of the information that may be disclosed could identify a specific customer. If such a situation is foreseeable, appropriate identification or acronymization provisions will be added to ensure that, unless the Customer otherwise agrees, information will be presented in a manner that precludes the identification of a specific customer.

3. Customer Consent to Contact

   By accepting thermal electric service from the Company pursuant to the terms of this Preliminary Customer Agreement, the customer hereby expressly consents to receive autodialed and prerecorded/automated calls and texts (collectively, "calls") related to the service. Such calls may include calls that warn/inform the customer about planned or unplanned service outages; provide updates about service outages or service restoration; ask for confirmation of service restoration or information about lack of service; provide notification of meter work, or other field

work that affects the customer's service; notify customer of possible eligibility for subsidized or lower cost services due to certain qualifiers such as, e.g., age, low income or disability; or relate to handling, servicing, and billing for the customer's account. Calls may include contact from companies working on the Company's behalf to service the customer's account or equipment.

VII. Other Terms and Conditions

[As the Commission recognized in its Guidance Order, the Company will need to continue to develop its Customer Protection Plan, of which the customer agreement template is a part, in conjunction with the Company's development of the UTEN pilot project. Accordingly, the Company will continue to develop the terms of this customer agreement template to further detail the Customer's rights and responsibilities in light of further UTEN pilot project developments. If additional considerations arise the course of further developing the UTEN pilot project, the Company may use this section to more fully articulate the Customer's rights and responsibilities relative to the UTEN pilot project.]

APPENDIX B.2 – CUSTOMER ENGAGEMENT PLAN

I. Customer Engagement Plan Overview

The Companies' UTEN Customer Engagement Plan ("Customer Engagement Plan") is designed with the primary objective of empowering customers to take an active role in managing their energy costs while contributing to the expansion of a clean energy economy and aligning with the goals established by the Climate Leadership and Community Protection Act ("CLCPA"). The UTEN pilot projects, as a pioneering initiative in the State of New York, provide customers with a unique opportunity to participate in sustainable energy practices with the potential to improve the comfort of their homes. A cornerstone of this strategy is the implementation of a robust Customer Engagement Plan, which plays a pivotal role in increasing awareness, providing education, and recruiting participants for the UTEN pilot projects.
By cultivating a strong connection with customers, the engagement strategy not only aims to improve their understanding of the benefits associated with thermal energy networks but also strives to inspire active involvement in shaping a more sustainable energy future. Through this customer-centric approach, the UTEN pilot projects aspire to establish a mutually beneficial relationship and trust between the Companies and customers, fostering a community of well-informed and engaged participants in the transition towards clean energy.

II. Guiding Principles

The success of the Customer Engagement Plan is anchored in the following principles, which serve as a compass for designing, implementing, and evaluating the effectiveness of the strategy. These principles underscore the commitment to customer-focus, collaboration, and fostering trust within the community.

1. **Customer Focus**
    - Objective: Understand and meet customer needs for participation.
    - Implementation: Tailor engagement strategies to the preferences, concerns, and interests of the community and target customers.
2. **Collaboration**
    - Objective: Engage local community partners and work collaboratively to achieve shared goals.
    - Implementation: Actively seek partnerships with community organizations, leaders, and influencers. Foster a collaborative approach that integrates local perspectives, ensuring that the engagement plan aligns with the community's values and aspirations.
3. **Trust**
    - Objective: Be present, responsive, and committed to customers and the community.
    - Implementation: Establish and maintain an open line of communication with customers. Address concerns transparently and promptly. Demonstrate commitment to the community's well-being and the success of the UTEN pilot projects.
4. **Education**
    - Objective: Identify and explain the benefits of the UTEN pilot project while overcoming perceived obstacles.
    - Implementation: Develop comprehensive educational materials that communicate the advantages of participating in the UTEN pilot project. Proactively address

potential barriers through clear and accessible information. Provide forums for open dialogue and learning.

5. **Inclusivity**
    - Objective: Ensure that the engagement plan is inclusive and accessible to the entire community.
    - Implementation: Regularly assess the need for translation services and other accessibility measures. Strive to represent the diversity of the community in all engagement activities, ensuring that all interested customers within the project scope have an opportunity to participate.
6. **Flexibility and Adaptability**
    - Objective: Adapt to emerging issues and opportunities throughout the projects.
    - Implementation: Monitor the evolving landscape of community and customer needs and perceptions. Be prepared to adjust engagement strategies, messages, and channels to remain responsive and relevant.
7. **Continuous Improvement**
    - Objective: Regularly evaluate and enhance the effectiveness of the engagement plan.
    - Implementation: Establish feedback mechanisms for continuous improvement. Solicit input from participants, community leaders, and stakeholders. Use data and insights to refine strategies and ensure ongoing relevance. Communicate with political stakeholders to address legislative barriers to implementation.

These guiding principles collectively form the foundation of the Customer Engagement Plan that not only meets the immediate goals of the UTEN pilot projects but also contributes to the development of a sustainable, engaged, and resilient community aligned with the broader objectives of the CLCPA.

III. Potential Benefits of UTEN vs. Perceived Barriers to Participation

As outlined below in Table A2., the Customer Engagement Plan will seek to educate customers by identifying and explaining the benefits of UTEN while overcoming the perceived obstacles.

Table A2. UTEN Pilot Project Benefits and Perceived Barriers

Potential Benefits of the UTEN Pilot Projects	Perceived Barriers to Participation in the UTEN Pilot Projects
• FREE equipment. Opportunity for new heating system and domestic hot water system (as applicable).	• Electric rates "too high," concerned about heating costs.
• Environmental impact: reduce reliance on fossil fuels. Protect the environment for future generations, cleaner air.	• Reliability concerns based on past outages.
• Avoided cost: old HVAC and/or domestic hot water system needs to be replaced soon.	• Sunk costs: recently purchased new heating system.
• Cooling: introduction of new efficient central AC.	• Resistant to change. Prefers the current system and wants to continue heating with gas.
• Build on investment: already have solar, and this is a good fit.	• Concerns about heat pumps performing in cold climates.
• Adds value: investment adds value to home/property.	• Skepticism: offer is too good to be true – must be a scam.

IV. Adaptability of Customer Engagement Plan

The Customer Engagement Plan is designed to be adaptable, recognizing the dynamic nature of community engagement. Each phase includes specific campaigns with well-defined targets, audiences, messages, and communication channels. The Customer Engagement Plan's

flexibility ensures it can respond to emerging issues and leverage opportunities throughout the UTEN pilot project's duration.

i. Evaluation of Translation Services:

Understanding the diverse community in the target UTEN pilot project areas the Company acknowledges the importance of providing information in languages other than English. Most commonly, the Company has identified needs in the Rochester area to provide Spanish language translation of printed materials and for events. The Customer Engagement Plan includes a commitment to regularly evaluate the need for translation services. The Companies will undertake research to identify the required language translations for printed materials and potentially for some events, based on the recognized needs within the specified UTEN pilot project areas.

ii. Translation Approach:

1. **Materials in English and Other Languages (as applicable):**
    - Printed materials, including brochures, fact sheets, and door hangers, will be created in both English and other languages as determined necessary through the Companies' research.
2. **Multilingual Communication Channels:**
    - Our websites will include instructions on how to have the browser translate content.
3. **Event Support:**
    - Events, such as informational sessions and local community gatherings, will potentially have multilingual representatives and translated materials available.

4. **Translation Services Evaluation:**

- Regular assessments will be conducted to identify additional language needs within the community.
- Feedback from participants and community partners will inform the ongoing use of translation services.

iii. Commitment to Inclusivity:

The Company is committed to fostering inclusivity and accessibility. Translation services will not only meet identified needs but will also be expanded or adjusted based on feedback, ensuring that language barriers do not hinder community engagement.

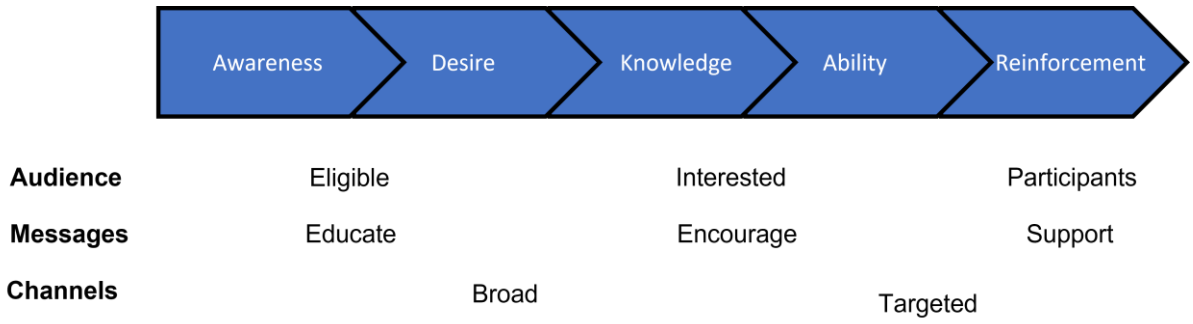
iv. Continuous Improvement:

The Customer Engagement Plan includes a feedback loop to continuously improve language services. Regular reviews, participant feedback, and consultations with community leaders will guide adjustments to the translation approach, guaranteeing effective communication with all residents. This commitment aligns with the broader goal of creating a well-informed and engaged community throughout the UTEN pilot projects.

V. ADKAR® Model for Change Management

The Customer Engagement Plan is developed based on the ADKAR® model for change management, encompassing five phases: Awareness, Desire, Knowledge, Ability, and Reinforcement. As depicted below in Figure A1., the Customer Engagement Plan will address outreach, education, and recruitment through these five stages.

Figure A1. Application of the ADKAR Model for UTEN Pilot Project Customer Engagement



Phase I: Awareness of the UTEN Pilot Project

- **Objective:** Raise awareness among stakeholders and customers in the planned network area.
- **Audience:** Customers and key stakeholders in geographic area of planned network.
- **Messages:**
    - Introducing the UTEN pilot project, including geothermal technology
    - Linking UTEN to overall energy affordability and clean energy
    - Highlighting benefits of UTEN (value proposition)
    - Announcing plans for this community and a UTEN
    - Offering methods for obtaining more information
- **Communication Channels:**
    - Web content for UTEN pilot project
    - Earned media
    - Community information sessions
    - Key account visits
    - Introductory emails/direct mail
    - Doorhangers
    - Local media ads

    - Project infographic/process timeline (images to depict sequence of process)
    - Speakers available for events, meetings
- **Key Metrics:** Impressions made, information requests, event/meeting attendance.
- **Outcome:** Initiate awareness messaging well in advance of project operation, ensuring a proactive understanding of the UTEN pilot project. Sustain ongoing awareness by continually updating web content to align with evolving customer information needs throughout the project lifecycle. Additionally, actively accommodate requests for speakers, fostering continuous engagement during all phases of the project.

Phase II: Desire to Participate

- **Objective:** Secure interest among targeted customers.
- **Audience:** Customers in geographic area of planned network.
- **Messages:**
    - Educating on UTEN systems and potential benefits
    - Linking UTEN pilot project to overall energy affordability and clean energy including CLCPA
    - Answering questions and addressing perceived barriers about the project
    - Highlighting community support in place
    - Providing testimonials from customers who have participated in similar projects in other jurisdictions
    - Reviewing Letter of Intent ("LOI") with interested customers located within the UTEN pilot project scope and requiring sign-off
- **Communication Channels:**
    - Emails/mail/phone calls

    - Booths at local events
    - Speakers available for events, meetings
    - Fact sheets, infographics (print and on Web)
    - Invitations to informational sessions (direct mail, email)
    - In-home/business consultations (offer through direct mail, email)
        - Customers must sign a Letter of Intent ("LOI") to indicate their interest in participating in the UTEN pilot project. Company representatives will be available to review the LOI (virtually or in-person) with customers upon request.
    - Recruit local municipal officials to support the effort/technology among their constituents (establish a partnership)
    - Lawn signs showing support for the project
- **Key Metrics:** Event attendance, information requests, number of customers expressing interest.
- **Outcome:** The outcome of this phase will be to identify customers who are interested in participating in the UTEN pilot project. The Company will actively seek to recruit interested customers, collect signed LOIs, and establish their preferences for continued communication and engagement. The Company will advance to the Knowledge phase while maintaining a strong local presence in the community through events and partnerships.

Phase III: Knowledge on How to Participate

- **Objective:** Provide customers with information and support to make informed decisions.
- **Audience:**

    - Customers who have expressed desire to participate; and
    - Customers still undecided about participation
- **Messages:**
    - Customers who have expressed desire to participate:
        - Confirming interest and establishing next steps in process
        - Reinforcing benefits
        - Providing contact information for project support
    - Customers who have not yet expressed desire to participate:
        - Answering questions and addressing perceived barriers about the project
        - Highlighting community support in place
        - Providing testimonials from customers who have participated in similar projects
        - Offering tools/calculators to understand costs and benefits
- **Communication Channels:**
    - Virtual discussion group for customers who have expressed desire
        - Project schedule
        - Next steps for the customers
    - Web: Links to relevant supporting third-party sources
        - References (environmental groups)
        - Subject Matter Experts (leaders in the field/environmentalists)
        - Examples of existing use
    - Booths at local events
    - Speakers available for events, meetings

    - Fact sheets, infographics (print and on Web)
    - Email/mail invitations to informational sessions
    - In-home/business consultations (offered through direct mail, email)
    - Recruit local municipal officials to support the effort/technology among their constituents (establish a partnership)
    - Lawn signs showing support for the project
- **Key Metrics:** Attendance at events, information requests, number of customers indicating interest.
- **Outcome:** The outcome of this phase will be a critical mass of customers, including key customers, expressing interest in pilot participation. As customers express a desire to participate, the communications will become more personalized to their unique needs (e.g., installation questions or integration with their solar system). They will be provided contact information to direct their questions and concerns. Several activities and communications described in the Desire phase will continue until the Company reaches its desired number of interested participants for the respective pilot.

Phase IV: Make it Easy and Convenient to Participate

- **Objective:** Secure participation in UTEN pilot projects.
- **Audience:** Customers located within the scope of the UTEN pilot project who have expressed a desire to participate
- **Messages:**
    - Providing clear project steps and updates for individual customers
    - Scheduling appointments as necessary for installation, implementation
    - Answering questions from participants

    - Reviewing Customer Protection Plan with interested customers located within the UTEN pilot project scope and requiring sign-off on the Customer Agreement
- **Communication Channels:**
    - Virtual discussion group for customers who have decided to participate
        - Project schedule
        - Next steps for the customers
    - Web: Links to relevant supporting third-party sources
        - References (environmental groups)
        - Subject Matter Experts (leaders in the field/environmentalists)
        - Examples of existing use
    - E-newsletter to participants
    - Fact sheets, infographics (print and on Web)
    - In-home/business consultations (offered through direct mail, email)
        - Company representatives will conduct in-person discussions (i.e., "kitchen table" talks) with customers in their home or facility to review the Customer Protection Plan and obtain customer sign-off on the Customer Agreement certifying understanding and acknowledgement of all elements of the Customer Protection Plan
    - Lawn signs to indicate participation
- **Key Metrics:** Information requests, participants' indications, e-newsletter open rate, click-throughs.
- **Outcome:** The primary objective of this phase is to achieve a high level of participation in UTEN pilot projects by ensuring the participation process is clear, convenient, and

well-supported for customers who have expressed a desire to participate. Success in this phase is measured through increased information requests, participants' indications, signed Customer Agreements and favorable engagement metrics such as e-newsletter open rate and click-throughs.

Phase V: Reinforcement for Participants

- **Objective:** Support participants in adopting and sustaining change.
- **Audience:** Pilot participants
- **Messages:**
    - Answering questions from participants
    - Providing tips and tools for optimizing new experience
    - Reiterate the benefits to both the customer and the environment
    - Customer satisfaction survey
    - Communication of customer exit options at conclusion of the pilot
- **Communication Channels:**
    - Virtual discussion group for customers
    - Email newsletters
- **Key Metrics:** Information requests, e-newsletter open rate, click-throughs, customer satisfaction.
- **Outcome:** This phase of the Customer Engagement Plan focuses on UTEN pilot project participants and aims to facilitate a seamless transition to the UTEN system by providing comprehensive support and resources tailored to their specific needs during and through the exit of the pilot.

VI. Proposed Customer Engagement Budget

The budget outlined below in Table A3 has been compiled using broad estimates to cover the implementation of the existing Customer Engagement Plan. It is important to acknowledge that the budget is subject to adjustments as the UTEN pilot projects progress.

Table A3. UTEN Pilot Project Customer Engagement Plan Budget

Initiative	Assumption	Cost per	Quantity	Frequency	Total
Ad Agency Support	Design, writing (hours per # years)	$150	200	3	$90,000
Phase 1-3 Direct mail	Broad, larger lists	$0.70	200	24	$3,360
Phase 1-3 Doorhangers	Different messages	$0.50	200	2	$200
Phase 1-3 Newspaper ads	Large publication, 1/8 page	$1,250	1	12	$15,000
Phase 1-5 Fact sheets	Printed collateral for events, meetings	$1	200	5	$1,000
Phase 2-3 Event fees	Reserving space for table/booth	$1,000	1	18	$18,000
Phase 2-5 Lawn signs	Sign and stake	$30	100	1	$3,000
Phase 4-5 Direct mail	Targeted, smaller lists	$0.70	100	25	$1,750
Translation Services	Cost per year	$250	1	3	$750
Contingency	10%				$13,306
Total					**$146,366**

VII. Conclusion

The Customer Engagement Plan is flexible, adapting to emerging issues and opportunities, with a commitment to evaluating and providing translation and other customized services as required. The ultimate goal is to foster a community of well-informed and engaged

participants in the transition towards clean energy. Emphasizing a personalized and community-focused approach, the plan ensures successful customer engagement in the UTEN pilot projects.

APPENDIX C – UTEN PILOT PROJECT DRAWING SET

Due to the size of Appendix C – UTEN Pilot Project Drawing Set, the Company has provided it as a separate attachment to this filing.

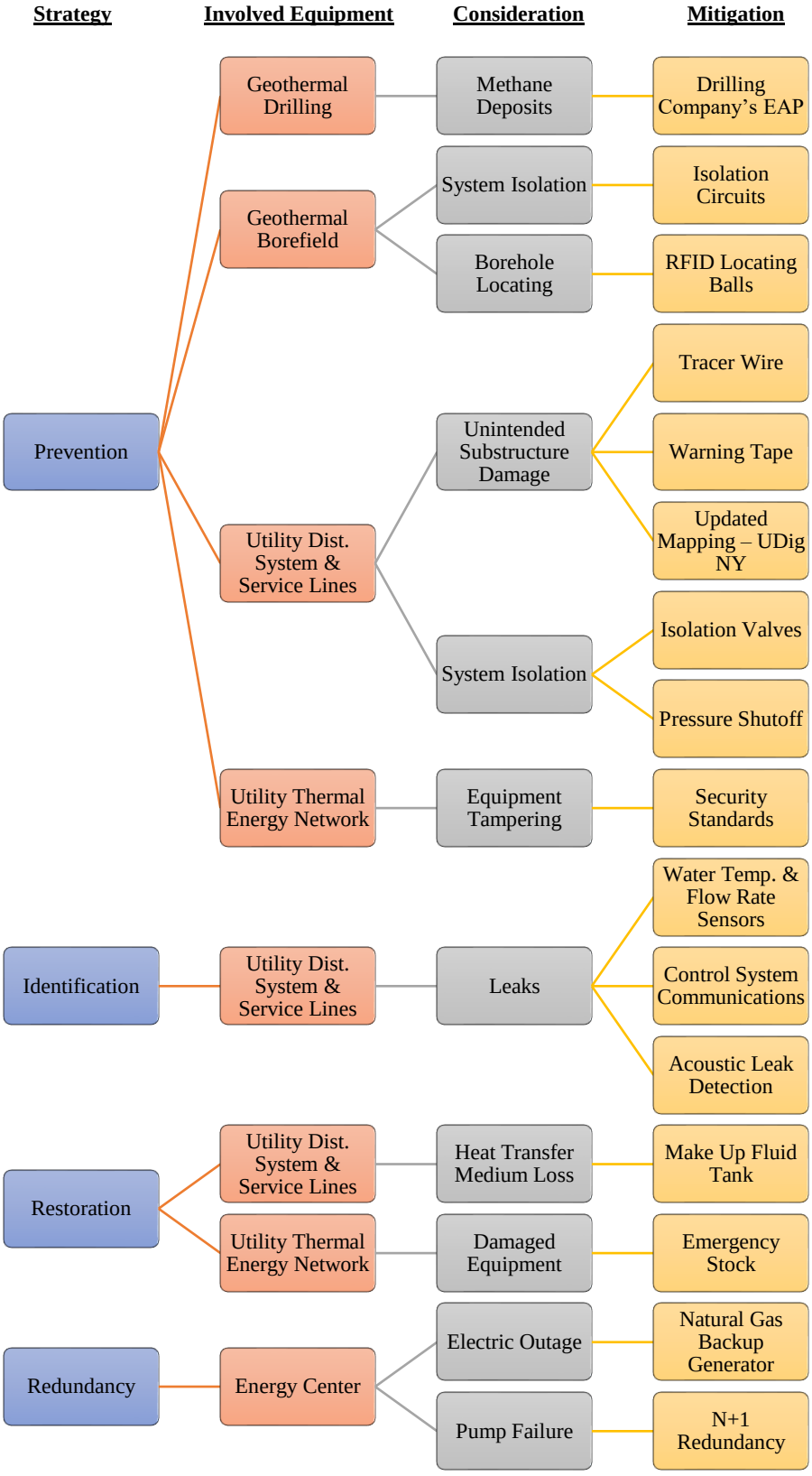
APPENDIX D – SAFETY, RELIABILITY, RESILIENCY STRATEGIES

Table A4 provides a list of definitions to accompany Figure A2. Proposed UTEN Safety, Reliability, Resiliency Strategies provided within this Appendix.

Table A4. UTEN Safety, Reliability, Resiliency Strategies Terms List

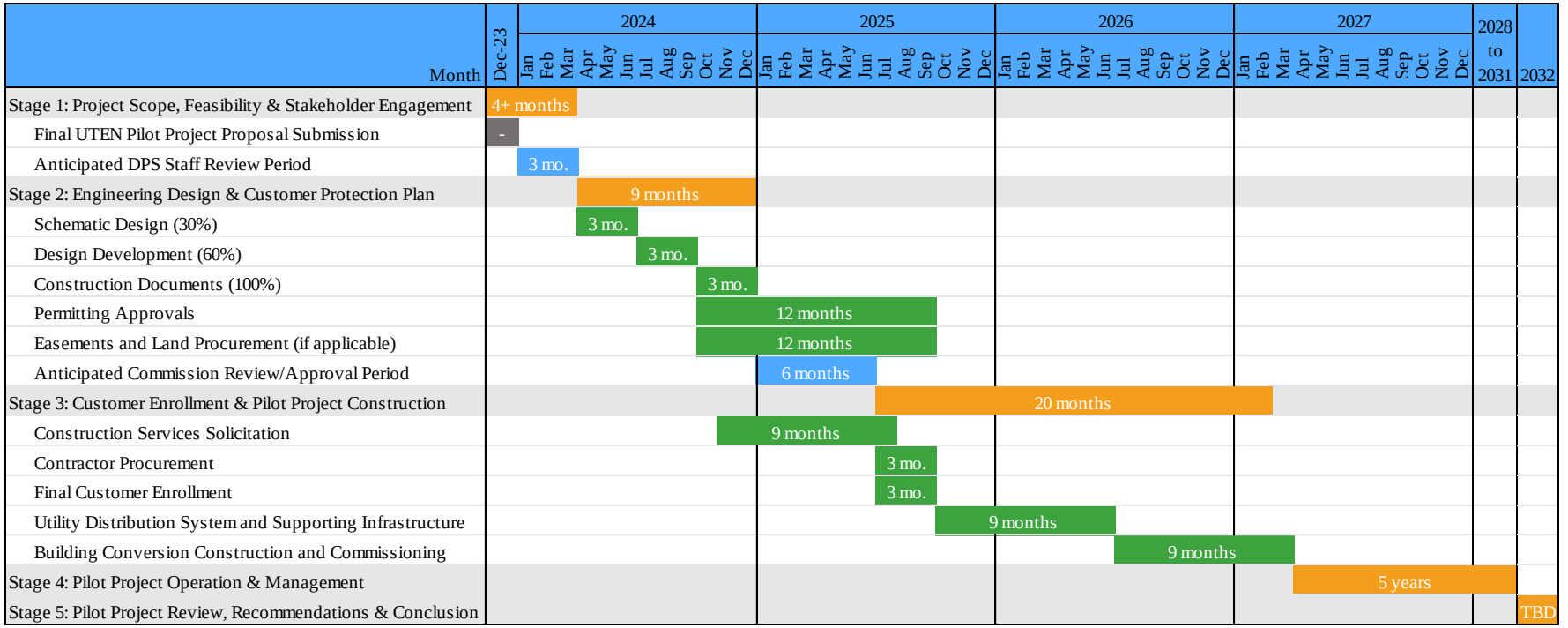
Term / Acronym	Definition
EAP	Emergency Action Plan
Energy Center	Infrastructure that performs functions for the thermal energy network such as pumping the heat transfer medium, controlling fluid chemistry and temperature, and providing makeup fluid.
Heat Transfer Medium	Non-combustible fluid or fluid solution that is used to transfer the thermal energy in a thermal energy network.
Makeup Fluid	Stored heat transfer medium used to maintain thermal energy network operation and system volume.
Utility Distribution ("Dist.") System	A closed loop system of pipes that contains a fluid that transports thermal energy connecting the energy center(s), thermal energy resource(s), service line(s), and energy transfer station(s).
Utility Thermal Energy Network	All real estate, fixtures and personal property owned and operated by a utility, used or to be used for or in connection with or to facilitate thermal energy network distribution infrastructure projects that supply thermal energy. It may also include thermal energy resource(s) owned by the utility.
RFID	Radio Frequency Identification
Service Line(s)	Piping containing a heat transfer medium between the utility distribution system main(s) and the customer energy transfer station.

Figure A2. Proposed UTEN Safety, Reliability, Resiliency Strategies



APPENDIX E – IMPLEMENTATION TIMELINE BY STAGE

Figure A3. Estimated Implementation Timeline by Stage



Note: durations are estimated based on current projected timelines and are subject to change based on the actual duration of future implementation activities, regulatory approvals and decisions, long lead time materials, among other factors.

Legend	
	Completed milestone
	Estimated duration of stage
	Estimated duration of regulatory review period
	Estimated duration of UTEN pilot implementation step