APPENDIX A

NYSEG ITHACA UTEN PILOT UPDATED PROJECT COST ESTIMATES

I. UTEN PILOT PROJECT COST AND SCHEDULE

The Company submitted its UTEN pilot project cost estimate in the Final Ithaca Utility Thermal Energy Network Pilot Project Proposal[1] on December 15, 2023, utilizing the best information available at that time. Of note, that total cost estimate did not fully reflect costs associated with internal labor and engineering-related costs later identified for the project.

Table 1 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, internal labor, allowance for funds used during construction ("AFUDC"), sales tax), customer engagement costs, and on-going operation and maintenance ("O&M") costs.

Table 1. Ithaca UTEN Pilot Project Cost Estimate

NYSEG Ithaca UTEN Pilot Project	
Capital Costs ($ in Millions)	
Estimated Gross Capital Costs	$ 50.10
Customer Engagement Costs ($ in Millions)	
Estimated Customer Engagement Costs	$ 0.15
Total Estimated Initial Pilot Development Costs	**$ 50.25**
Annual Recurring Costs ($ in Millions)	
Estimated Annual Energy Costs	$ 0.04
Estimated O&M Personnel Costs[2]	$ 0.24
Total Estimated Annual O&M Cost	**$ 0.28**
5 Year Total Estimated Annual O&M Cost	**$ 1.40**

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

[1] Case 22-M-0429, *New York State Electric & Gas Corporation's Final Ithaca Utility Thermal Energy Network Pilot Project* Proposal (filed December 15, 2023)

[2] 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.

primary tasks, deliverables on behalf of the Company, and project milestones associated with each phase of the project. As the pilot proceeded to Stage 2, there is now a better understanding of the internal labor and engineering-related funding needed to complete the project. Accordingly, below is an updated estimate of the Stage 2 and 3 costs.

Table 2. 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 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	• Submit final Customer Protection Plan • Submit final design documents and specifications • Commission decision on cost recovery and UTEN pilot project advancement to Stage 3	PREVIOUS: $3.18 UPDATED: $6.95*

Stage	Major Activities	Milestones & Deliverables	Estimated Budget ($M)
	10. UPDATED: Well Testing for Engineering Design (described in Section II) 11. UPDATED: Development of operational requirements, emergency plan, and damage prevention program		
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	PERVIOUS: $37.77 UPDATED: $43.11*
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	$1.40[3]**
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***
Stages 1-5: Total Project Cost Estimate			$51.65

**Labor costs represented in the total cost estimate include the additional four FTEs requested in the Petition as well as existing labor funded through the Company's rate plan.[4]*

[3] See FN 2.

[4] Case 22-E-0317 et. al. *Order Adopting Joint Proposal* (issued and effective October 12, 2023).

Additionally, the initial estimate reflected in the Company's January 9, 2023 filing,[5] upon which the Guidance Order's 10% funding authorization was based, had a 30% contingency, but since then all estimates, including this funding request, have reflected a contingency of up to 40%.
***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.*

II. UTEN WELL TESTING FOR ENGINEERING DESIGN

As mentioned in the Petition, the requested engineering-related costs for the Ithaca pilot include drilling test wells to understand the geology and hydrology of the proposed pilot area, and ultimately to understand whether the area's groundwater thermal resources are sufficient to support the pilot's thermal loads. The test wells are positioned throughout the proposed project area for an open-loop/ groundwater geothermal system since it is designed as a distributed resource. Uniquely, the Ithaca pilot is the only open-loop/ groundwater geothermal system proposed among all the UTENs pilots across New York State. So, while this type of system involves these test wells, it will also provide valuable and unique learning among the pilots.

Additionally, like the stage-gating approach, test wells will be drilled in two phases to mitigate project expenditures and includes geologic testing and hydrologic testing. If during the first phase, the geology testing does not indicate project viability, the Company will either conduct additional testing or evaluate different thermal resource opportunities that may combine to provide sufficient thermal resources for the pilot. If during the first phase, the geology testing does appear to support continued evaluation of project viability, phase 2, hydrologic testing, will be needed. If the results of the hydrologic testing produce the necessary results to support the

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

UTEN system needs, it may be possible to convert some of the test wells into production wells, which may reduce future construction project costs.

Without this phased testing, the Company would be advancing a UTEN project to the construction phase that does not have assurance of the necessary thermal resources to support the project's thermal loads.