NYSEG
An Avangrid company

Utility Thermal Energy Network (UTEN)

Frequently Asked Questions (FAQ)

What is a Utility Thermal Energy Network (UTEN)?

A Utility Thermal Energy Network (UTEN) is a network of equipment and distribution infrastructure owned and operated by a utility that supplies thermal energy to connected buildings. The network may use various thermal energy sources like groundwater, geothermal boreholes, surface water, etc. to provide energy for heating and cooling via geothermal heat pumps in the buildings. The geothermal heat pumps use electricity to efficiently transfer heat from the ground or other thermal sources in the winter to heat the building and efficiently cool the building by transferring heat to the ground or other thermal sources in the summer.

How does the system work?

A geothermal heat pump system is connected to a series of buried pipes called the "ground loop." The UTEN system moves a water-based energy transfer fluid through the pipes to circulate thermal energy between the ground or thermal source and geothermal heat pumps in the buildings.

What is NYSEG's pilot program?

In response to the "Utility Thermal Energy Network & Jobs Act" (2021 Senate Bill S9422) and to further our organization's commitment to sustainability, we are proposing to install a UTEN pilot project in Ithaca. This project will displace existing natural gas heating systems with high-efficiency electrified heating and cooling systems that leverage the relatively constant temperatures in the ground for both heating and cooling.

How will this impact energy bills?

NYSEG will conduct a detailed energy analysis of all buildings in the pilot area so customers can understand the energy bill impacts of participating in the pilot.

How do I participate?

If you own an occupied building within the proposed project area (see page 2), you may be eligible to participate in our pilot program. Building owners within the proposed project area will be contacted to discuss the pilot project opportunity, gauge interest, and be provided with next steps.

How would a UTEN pilot benefit you and your community?

- Provides the opportunity for the installation of new high-efficiency central HVAC (heating, ventilation, and air conditioning) equipment at no cost to the building owners or tenants.
- Accelerates decarbonization by moving to a community level approach compared to the individual building approach.
- Promotes building electrification.
- Provides a constant and reliable source of renewable energy for heating and cooling buildings.
- Reduces building energy consumption.
- Reduces on-site greenhouse gas emissions in accordance with the City of Ithaca's Green New Deal and New York State's Climate Leadership and Community Protection Act (CLCPA).
- Lessens electric demand compared to air source heat pumps or other traditional electric HVAC equipment (i.e., beneficial electrification).
- Potential for energy efficiency improvements.

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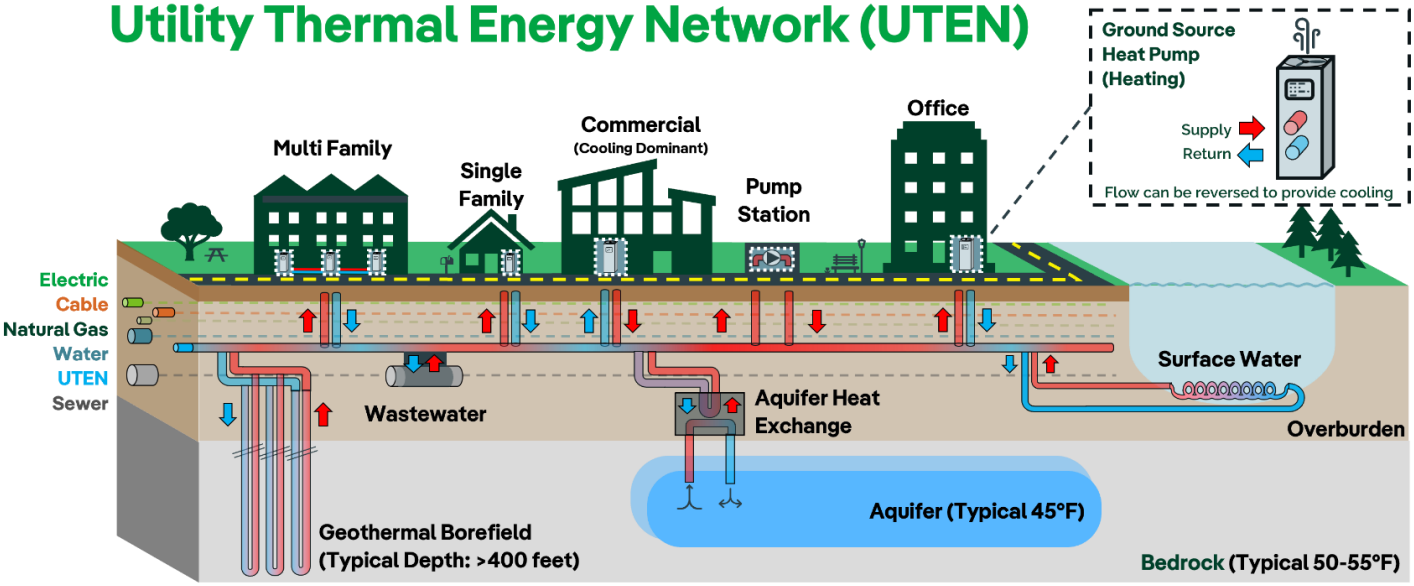

What is the proposed pilot project area?

Proposed Ithaca UTEN Pilot territory as outlined:
301-435 Franklin Street
304-414 Adams Street
302-320 Hancock Street
301-405 Third Street
407-421 Second Street
412-521 First Street
504-522 Alice Miller Way

Is participation in the program optional?

Yes, though we believe most of the building owners at the selected sites will want to participate. There are many benefits to participating including the potential for lower energy bills and new state-of-the-art geothermal heat pumps that will provide the most efficient heating and central air conditioning available.

Participating customers will enter into an agreement for the duration of the pilot, and provide feedback before, during, and after the pilot to ensure the best experience possible.

Once interested in the project, what are the next steps?

1) Sign the Letter of Interest in the Pilot
2) NYSEG's engineering project team will conduct an equipment pre-assessment to pre-qualify the building.
3) Home energy assessment will be performed for pre-qualified residential properties. Energy assessment is not applicable for non-residential properties.
4) New York Public Service Commission (PSC) will rule on the proposed NYSEG UTEN project scope.
5) Customer Agreement is signed after New York PSC approval of the proposed project.
6) NYSEG constructs the UTEN system and retrofits the HVAC systems within connected buildings.
7) NYSEG energizes the UTEN system for connected customers.

How will we determine a successful pilot?

The pilot will be evaluated based on many characteristics, including but not limited to:

- Cost to install and operate
- Benefits to customers
- Customer feedback
- Emissions reductions
- Impacts on utility infrastructure
- Expandability

What happens if the power goes out?

As is the case currently with power outages, most heating and cooling equipment in buildings will not operate unless there is an on-site generator that provides uninterrupted power.

Homes and businesses with existing onsite backup generators or electric battery storage will be evaluated to see if the current equipment can provide sufficient power to operate the new geothermal heat pump system.

How reliable will the network be?

The thermal energy network is expected to provide the same level of reliability as traditional natural gas utility systems. The distribution system for the network is being designed to incorporate system redundancy.

The introduction of backup pumps and backup power systems should ensure that the thermal energy will continue to flow through the distribution system during an outage event.

How can customers best manage electric costs?

Customers heating with natural gas will see a reduction in natural gas consumption and an accompanying increase in electric consumption. The best way to manage this is to understand that the bills are directly tied to how much heating or cooling is used and to set the thermostat appropriately.

Geothermal heat pump systems also operate most efficiently when the temperature is set and left alone rather than frequently changed up and down. If a homeowner or tenant is currently cooling their home with window units, the geothermal heat pump system will enhance their cooling from individual rooms to the entire house.

We offer a budget billing option that helps keep monthly bills more consistent throughout the year, which avoids large spikes in the coldest or hottest months. Seasonal energy saving tips are also available. Visit nysegsmartsolutions.com for more information.

How does the network integrate into existing systems?

The UTEN will supply a water-based energy transfer fluid to the building that will serve geothermal heat pumps used to supply conditioned air (heating or cooling) to the building. These new geothermal heat pumps will replace the buildings' existing heating and any central air conditioning units.

Will participating customers be able to regulate the temperature in their homes and businesses?

Yes. Customers will have a thermostat that they can set to the temperature most comfortable for them. It is important to keep in mind that the temperature setting, like with other heating and cooling systems, will likely impact your monthly electricity bill.

Will customers have to change out their appliances for this pilot?

We are proposing to disconnect each customer's existing heating system(s) for the pilot and to install a new geothermal heat pump system to heat and cool the building. We are also proposing to maintain the existing natural gas service to the buildings so customers have the choice to continue to use other existing natural gas appliances such as cooking. equipment and clothing dryers.

How do participating customers switch from summer cooling to winter heating?

For most customers, it will be as easy as changing a setting on the thermostat to go from cooling to heating or vice versa.

What should I expect during Installation?

A geothermal heat pump and associated equipment will be installed with as little disruption as possible. Whenever possible, components of the existing heating and cooling systems (such as ductwork) will be reused.

What is the sequence of construction?

Construction involves three overlapping stages:

1) Drill geothermal wells.
2) Install thermal distribution main in the right-of-way and install service lines for individual homes and buildings.
3) Work in customers' homes and businesses to install geothermal heat pumps and associated equipment.

Each is not dependent on the other, but all three must be completed prior to starting up the network.

The customers' heating systems will remain operational until the geothermal system has been commissioned.

What should customers expect during construction and installation?

The installation of the geothermal ground loops, thermal distribution mains and service lines are like other utility installations or replacements. We will dig a trench in the utility right-of-way for the piping to be installed. Once the pipes are in place and tested, we will restore any roads, sidewalks or lawns impacted by the new utility service.

The biggest difference with this pilot will be the installation of the geothermal boreholes (vertically-drilled wells), which involve a drill rig and support vehicles that may be working nearby. There will be some construction vehicle noise during approved working hours, but it will be managed as reasonably as possible.

Who will be responsible for restoring any damages to customer property?

For construction, we will have to dig on private property to install the service lines and may have to dig under fences or other equipment on customers' property. Following installation of the geothermal system, we will restore customers' property to the same or better condition it was in prior to construction.

Will trees be removed or disturbed during installation?

The routing of the service pipe connections from the mains in the street to customers' heating equipment in their homes and businesses will be adjusted wherever possible to avoid damaging or the need to remove trees, or other features on customers' properties.

It is possible that some trees will be affected by the installation of this system, including cutting down trees that are in the direct pathway of the distribution piping. However, there will be no widespread cutting of trees in a neighborhood.

What does regular maintenance look like? What is the expected cost?

The regular maintenance on customer equipment will consist of air filter changes and performance checks to ensure it's all meeting manufacturer's specifications. For the duration of the pilot, the cost of this maintenance and any repairs needed will be covered by NYSEG.

Will installation have any long-term visual impacts within the community?

The geothermal loop is underground, just like water, sewer and natural gas utilities. The few access points for pumps, valves and heat exchangers will be predominantly located in the roadways or sidewalks and resemble the same covers used for other underground utilities.

There will also be small utility pump houses and well access points located within the pilot area that will be designed to blend with other nearby structures.

What type of equipment will be installed in participating homes and businesses?

It varies depending on the building type (home or business). We will evaluate each building to determine what type of system works best in terms of available space and required capacity. We will also determine if the building needs an electrical upgrade (for smaller or outdated electrical panels) and modifications for central ductwork or the addition of ductless air distribution systems.

Overall, the customer equipment will often look like and be similarly sized to their current heating and cooling unit. (continued on page 5)

(continued from page 4)

There will be a geothermal heat pump unit that will look like and be about the size of a furnace or boiler, an air handler, and ducting or ductless head units throughout the building to distribute the hot or cold air produced.

The size of the ductwork or number of ductless units will depend on the size and layout of the building.

Outside of the home or business there will be buried pipes, called thermal distribution mains, installed under the streets or sidewalks and additional pipes, called service lines extending to each individual home or business.

Can customers choose who maintains their equipment?

NYSEG is proposing to perform the maintenance of the geothermal equipment for the duration of the pilot project (5 years).

Who is responsible for the cost when the system needs to be replaced?

The UTEN and geothermal heat pump equipment are proposed to be owned and operated by NYSEG for the duration of the pilot. We are continuing to review and discuss options for the end of the pilot period that include but are not limited to, transfer of applicable geothermal heat pump and other equipment ownership to the building owners, reverting to non-UTEN geothermal systems supported by individual boreholes, and installation of air source heat pumps.

The New York PSC will have jurisdiction on the final ruling of the proposed Customer Agreement that specifies the course of action at the conclusion of the pilot.