

Equipment Guide



**Dominion
Energy®**

Strategic
Underground
Program®



Dominion Energy Virginia's Strategic Underground Program is a system-wide initiative to **shorten restoration times** following major storms by placing certain outage-prone overhead electric distribution lines and equipment **underground**.

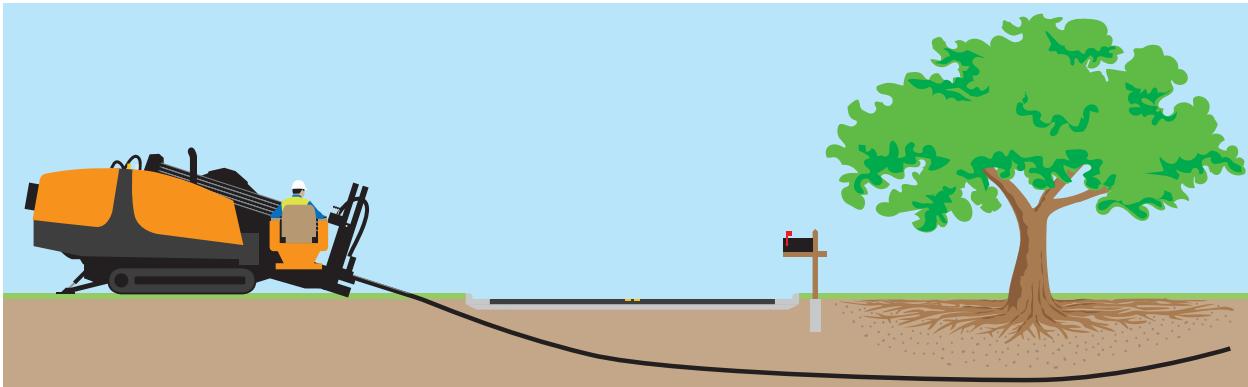
This document provides examples of the most common types of equipment used as part of the Strategic Underground Program. A Dominion Energy representative will be able to show or describe any other specific equipment needs.



Directional Boring

In most cases, Dominion Energy will use low-impact drilling equipment, rather than open trenching, to minimize disruption to property.

Underground cables will be placed in protective conduit.



A Dominion Energy authorized contractor operates the underground directional boring equipment.



Another contractor tracks the path of the underground drill. The black conduit will be routed underground.

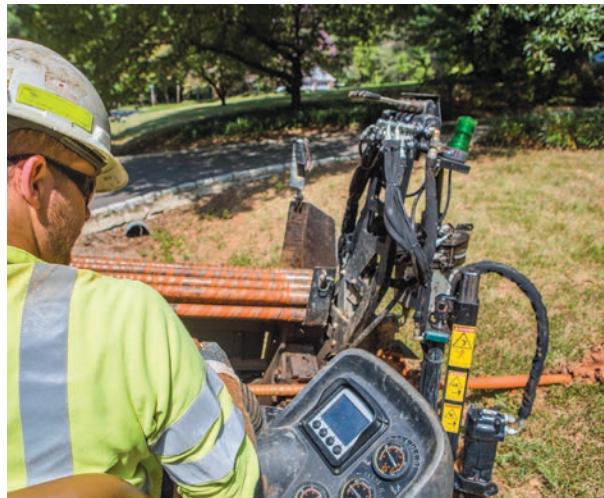


Directional Boring

Here are additional photos of the directional boring equipment.



Sometimes, a tank of water is used to aid the drilling.



The operator uses gauges to monitor the drill.



Transformers

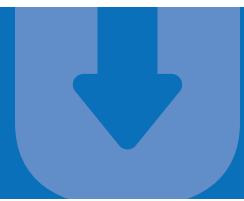
The location of each padmount transformer is ultimately determined by the electric load calculations and the route of the underground lines.



Single-phase transformers supply power for residential lighting, receptacles, air-conditioning and heating. Average transformer size: 40" wide x 36" deep x 34" high. A transformer pad will be placed underneath the transformer. Average pad size: 44" wide x 57" deep.

Underground lines come up from below to meet the ground-level pad mounted transformer, where connections are kept safely inside and out of view.





Completed Transformer Installations





Pedestals

Pedestals allow a single transformer to provide service to several customers. When a pedestal is used, a cable runs from the transformer to the pedestal and acts as a splitting device, converting the single incoming line into multiple outgoing service lines.



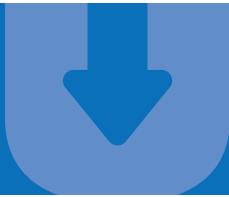
The location of each pedestal is ultimately determined by the electric load calculations and the route of the underground lines.



Average size: 23" wide x 15" deep x 18" high.



Another example of a typical pedestal installation.



Safe Installation of New Underground Lines

When Dominion Energy's underground cable crosses other existing underground utilities, we utilize a practice called "potholing." Under the *Code of Virginia's Underground Utility Damage Prevention Act*, potholing is used to expose other underground utilities and ensure there is enough clearance to safely install the new underground cable.



After the underground facilities have been installed, the pothole location will be restored to a condition similar to that before construction.



Roadway with potholes patched with asphalt.



This driveway was patched and sealed.



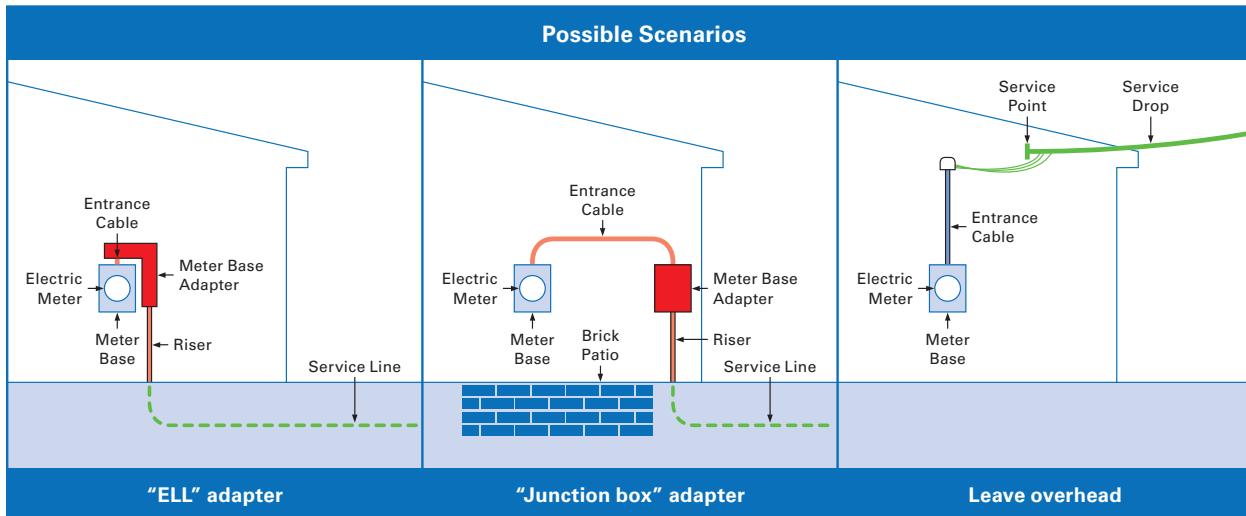
In this photo, potholing was used when crossing a water line, which is identified by the blue paint. (Photo taken before property restoration.)



Service Connections

A Dominion Energy representative or certified contractor will evaluate the existing meter base at the home and provide each customer with the preferred option for converting service to underground.

In some cases, we are able to convert the service to underground into the existing meter base. When the existing meter base is smaller than 11"x15", we will install a meter base adapter at the customer's home to accept the underground cable.



Here are examples of meter bases that have been adapted to accept underground cable using a meter base adapter.





Meter Base Adapter Examples

Below are before and after examples of meter bases that have been adapted to accept underground cable using a meter base adapter.



Before



After



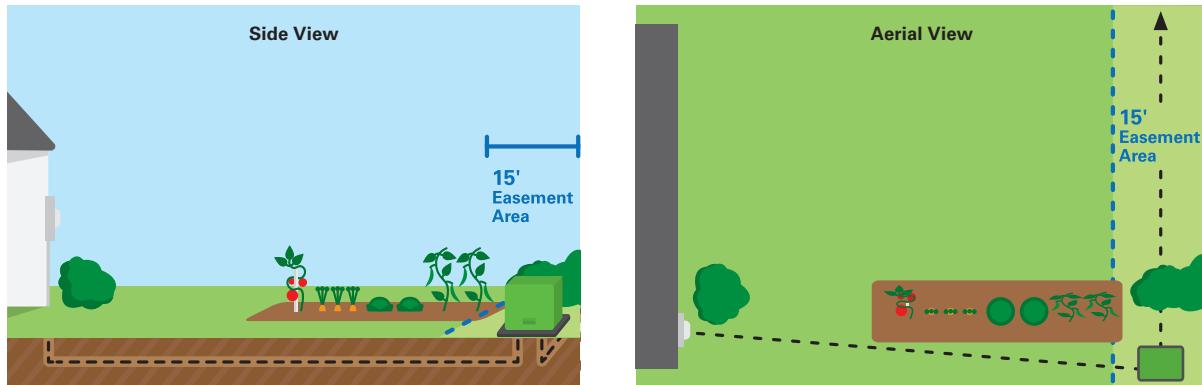
Before



After

Understanding Underground Easements

Illustration of Underground Installation



Conceptual example only—actual details of installation will be customized to your property which is dependent on terrain, the possible presence of phone or cable service lines, and other factors.

What is an easement?

An easement is a signed document that provides legal permission to install equipment and perform work on another person's land. Easements enable utility companies to access public or private land for specific purposes such as constructing, maintaining, repairing, and/or replacing lines and equipment. The property owner still owns the land subject to the rights granted to the utility company.

Why am I being asked to sign an easement form?

As part of Dominion Energy Virginia's Strategic Underground Program, we relocate existing overhead lines underground. Dominion Energy must obtain authorization from property owners before any work is performed on their property. The Underground Distribution Easement Agreement, that Dominion Energy asks property owner(s) to sign, grants permission to do this work.

Will I have to sign more than one easement?

When Dominion Energy partners with telephone and cable companies to place lines underground, there may be occasions where property owners need to sign more than one easement. Whenever possible, we will incorporate a joint electric and cable/telecommunications underground easement into a single document.

Will I be compensated for granting an easement?

We are not offering financial compensation for easements.

How much easement area is required?

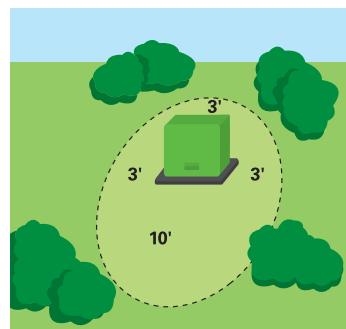
The standard underground distribution easement area is fifteen (15) feet wide. This width provides adequate space for the installation and maintenance of underground electric

equipment. A sketch depicting the proposed easement area, often referred to as a "plat," will accompany the easement agreement.

What does it mean if my property has an underground easement?

An underground easement simply gives the utility permission to perform work on your property and maintain its equipment. The property owner still retains ownership of the land. We ask you to ensure that the easement area is accessible to our equipment if repairs need to be performed.

Minimum Planting Distance



Landscaping around our equipment is permissible, within guidelines. Plantings must be at least 3' from the back and sides of the equipment and 10' from the front.

If there are underground lines on the property, remember to call 811 before you dig.



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Understanding Meter Base Adapter Equipment

As part of the Strategic Underground Program, Dominion Energy Virginia will be converting overhead electric services to underground. In some cases, a meter base adapter will need to be installed so that the meter base can accept cables from underground.

What is a meter base?

A meter base is the customer-owned enclosure that is attached to the home where the electric meter is placed. The meter base safely and securely provides the separation between Dominion Energy's wiring and the customer's wiring that goes into the panel box. A meter base should only be opened by a Dominion Energy representative, certified contractor, or a qualified professional electrician using proper personal protective equipment.

Why is a meter base adapter needed?

In some cases, the meter base used with overhead services cannot accommodate a change to an underground cable. In those cases, the meter base must be retrofitted with an adapter so that the existing overhead service can be converted to underground.

How do I know a meter base adapter is needed?

A Dominion Energy representative or certified contractor will evaluate the existing meter base and provide each customer with the preferred option for converting service to underground.

What are the meter base adapter options?

If there are no obstructions underneath the meter base, an **"ELL"** adapter can be installed near the current meter base.

If there are obstructions beneath the meter base (such as a patio or deck) a **"junction box"** adapter can be installed utilizing the entrance cable to connect the meter base to the adapter.

In some cases, customers may be asked to provide access to the meter base.

When is the meter base adapter installed?

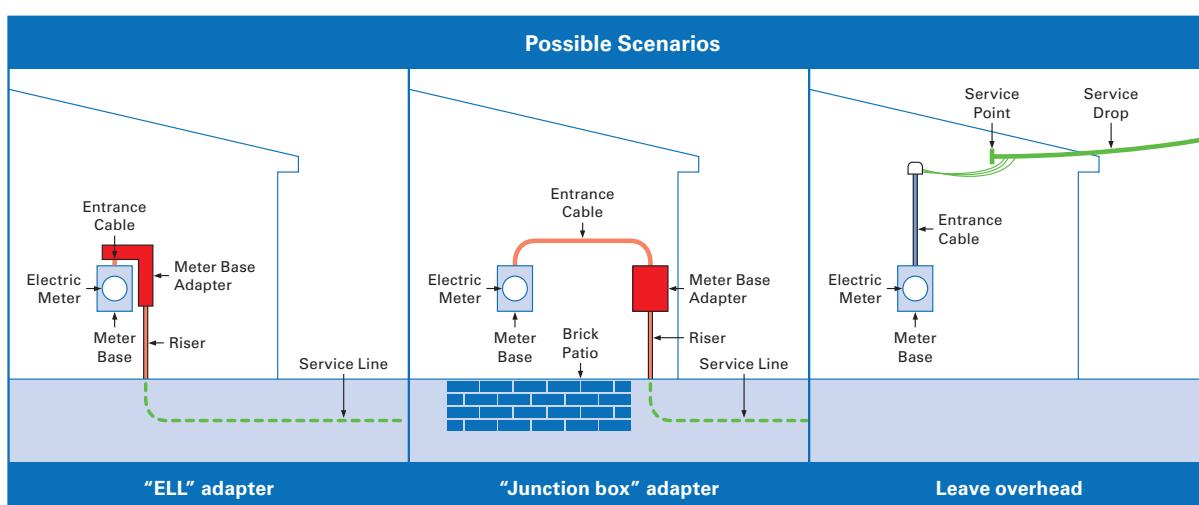
Typically, the meter base adapter will be installed during the planned outage for the underground conversion. Dominion Energy will communicate the timing for this work and associated outage closer to the installation date.

What if I don't want the meter base adapter installed?

Our customers always have the option of replacing the existing meter base with a meter base that will accept the new underground cable. If this option is preferred, the customer would need to have this work completed prior to the start of the underground conversion and the work would be at the customer's expense.

Customers will also have the option of leaving the existing service drop overhead. Please note that in these cases, the primary electric line would be placed underground, but the service drop coming to the house would remain above ground.

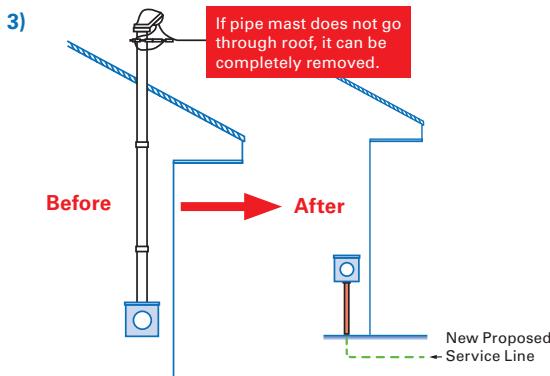
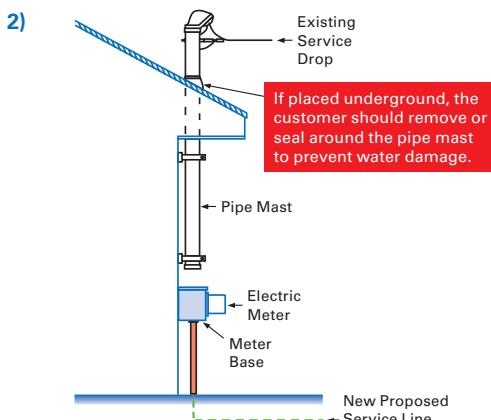
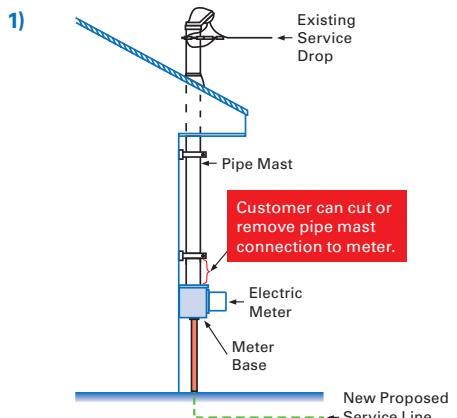
A Dominion Energy representative will be able to discuss the available options and work with each customer to determine the best possible solution.



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Understanding The Service Connection to Your Home

Possible Scenarios



In order to ensure electrical clearances and heights, a pipe mast may be used to provide suitable support of sufficient height.

As part of a Dominion Energy Virginia Strategic Underground project, there is the option to leave the existing line that connects to the home overhead. Please note that in these cases, the electric line that serves the neighborhood would be placed underground, but the service line providing power to the house would remain above ground.

Possible Scenarios:

Should the customer decide to have their overhead service to a pipe mast relocated to underground, the removal of the pipe mast may require additional work that is the responsibility of the customer.

- 1) If the pipe mast goes through the roof and is connected to the meter base, it would be the customer's responsibility to cut the pipe mast (or have it cut) and fasten the pipe mast to prevent slippage. This work should be performed at the time of the conversion from overhead to underground. This will enable Dominion Energy crews to cap the top of the meter base and install underground cable to an adapter or into the meter base.
 - 2) If the pipe mast goes through the roof but is not attached to the meter base, Dominion Energy should be able to install underground cable to an adapter or into the meter base.
- In both of these scenarios, by removing the overhead service drop, it becomes the customer's responsibility to either remove or perform service to the pipe mast. If the pipe mast remains in place after converting the service to underground, the customer should fasten the pipe mast to prevent slippage. Additionally, the customer should consider sealing around the pipe mast to prevent water damage to the roof and/or installing a cap on the top of the pipe mast.
- 3) If the pipe mast is not going through the roof or eave, Dominion Energy will (in most cases) be able to remove it in its entirety and install an adapter or use the existing meter base to convert the service to underground. Any repainting or surface restoration will be the customer's responsibility.

A Dominion Energy representative will meet with each customer to determine a solution and discuss the options when converting services with pipe masts.



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Understanding Safe Installation of the New Underground System

Daily work practices and methods ensure that the underground lines are safely and professionally installed. Dominion Energy is committed to restoring each customer's property following construction.

Site Preparation

- VA811, formerly known as Miss Utility, is called to identify any underground public utilities such as water, sewer and gas. Colored markings and flags will be placed on the property to ensure a safe installation.
- The project team will work with property owners to identify any private underground facilities such as irrigation, invisible fences, and septic or oil tanks.

Color Codes for Underground Utility Marking

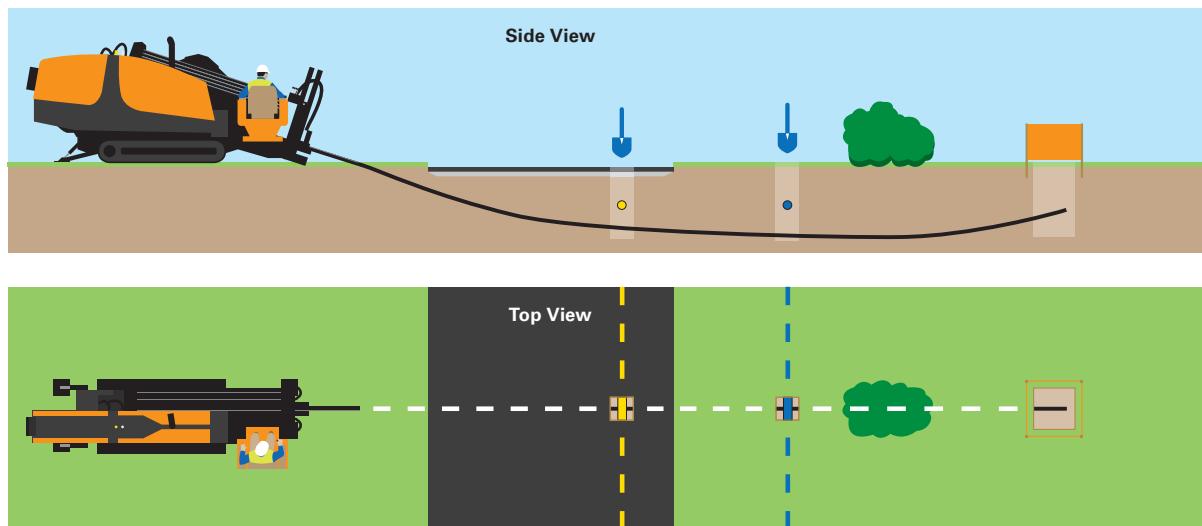
Red	ELECTRIC
Yellow	GAS, OIL, STEAM
Orange	COMMUNICATIONS, TV, ALARM
Blue	WATER, IRRIGATION, SLURRY
Purple	RECLAIMED WATER
Green	SEWERS, DRAINS
Pink	TEMPORARY, SURVEY MARKINGS
White	PROPOSED CABLE ROUTE

Safety and Inspection Holes

- When Dominion Energy's underground cable crosses other existing underground utilities, we utilize a practice called potholing.
- Under the Code of Virginia's *Underground Utility Damage Prevention Act*, potholing is used to expose other underground utilities and ensure there is enough clearance to safely install the new underground cable.
- After the underground facilities have been installed, the pothole location will be restored to a condition similar to that before construction.

Construction Holes

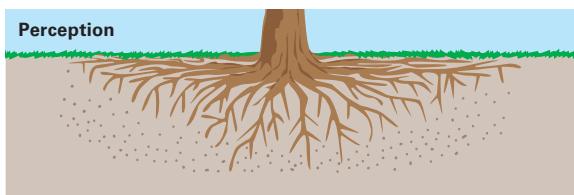
- A construction hole, or pit, is used as an entrance and exit point for the drill.
- Pits are strategically dug in order to install equipment and make connections.
- The pits are barricaded with orange fencing for safety and backfilled once construction is complete.



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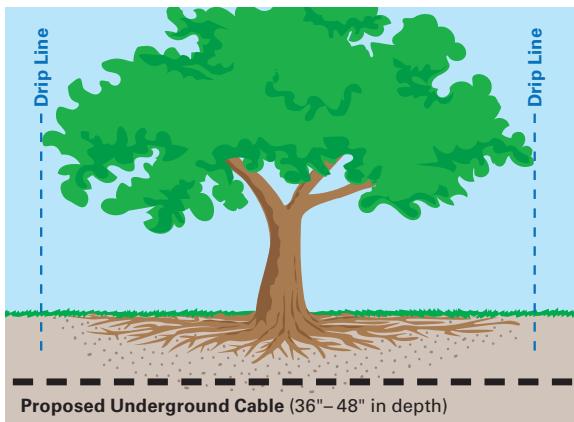
Understanding Trees and Underground Lines

Dominion Energy Virginia's Strategic Underground Program is committed to ensuring the health and beauty of natural landscapes. As part of this commitment, we normally use low-impact drilling technology to install new underground cable which helps minimize disruption to property.



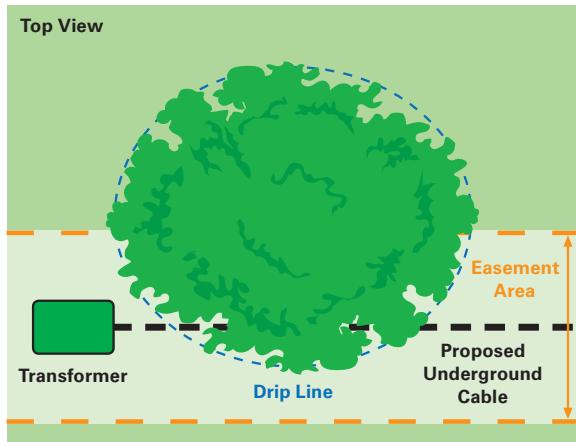
Tree Roots

- Tree roots lie within the top 6"- 18" of the soil.
- Tree vitality largely depends on the health of a tree's root structure and the soil condition. Weather (drought or frost), age, insects, nutrient deficiencies, poor drainage, etc. can effect a tree's vitality.



Drip Lines

- The drip line of a tree is determined by the outer circumference of the branches, where water drips to the ground.
- While some roots extend beyond the drip line, the vast majority of roots are within it.



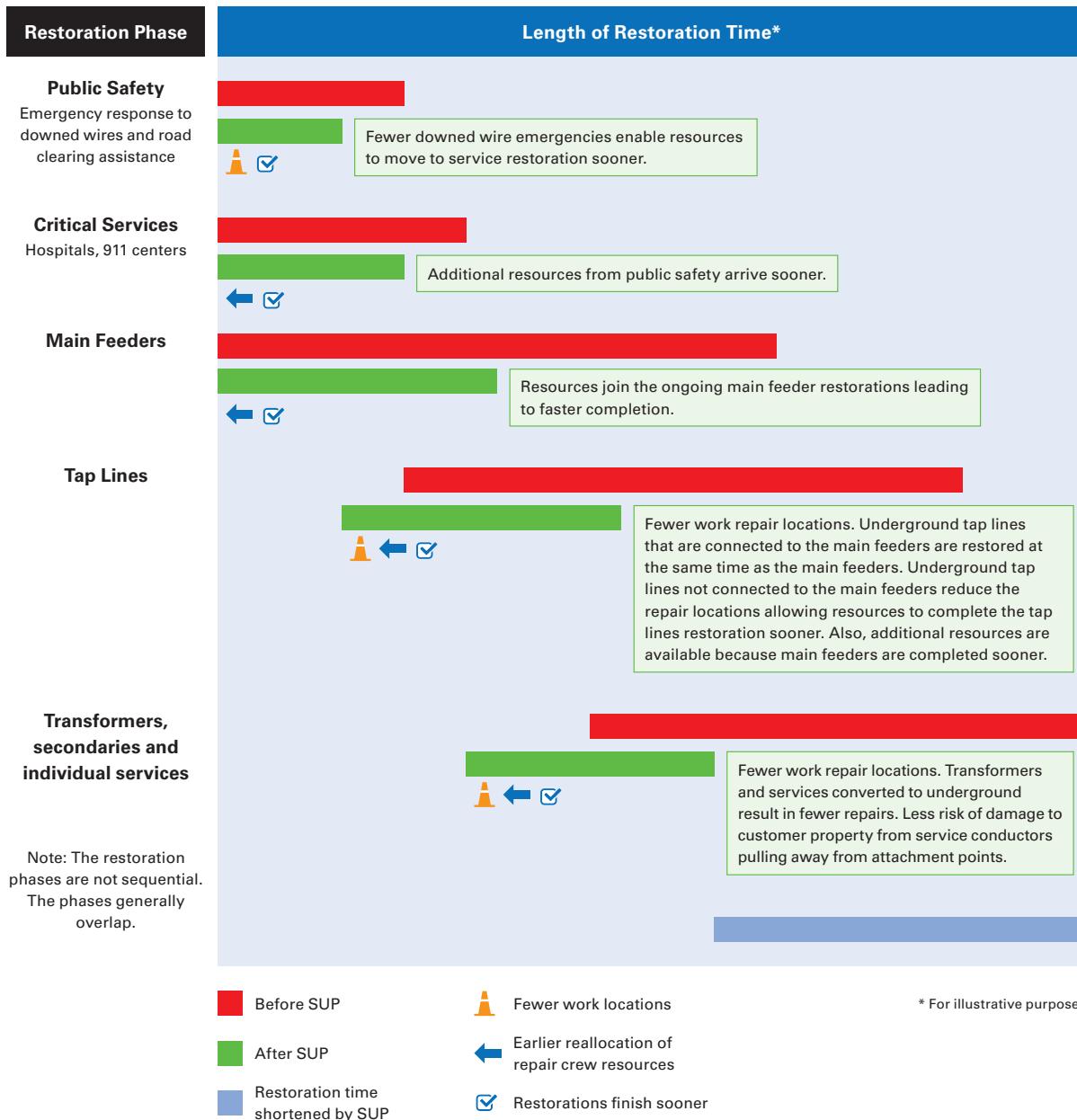
Construction Considerations

- Primary underground cable is installed in conduit 36"- 48" below the current grade.
- Homeowner partnership determines the location of the equipment within the easement area.
- Underground equipment can be installed within a tree's drip line. However, homeowners should consider the possible impact on the tree during installation and over the long-term.
- A Dominion Energy representative will review the preliminary layout and location of proposed new underground equipment. Representatives will help ensure customer understanding of the underground plan and explore all placement options.
- It's rare for trees to show symptoms of damage as a result of construction using directional drilling. Construction holes (pits) are dug for the entrance and exit points for the drill, installing equipment, and making underground connections.



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Understanding SUP Impact to Typical Restoration Times



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Stages of Construction



1. Scheduling and Site Preparation

Stakes and flags mark the proposed route and equipment placement. VA811/Miss Utility and survey crews will place markings showing existing public and private underground utilities.



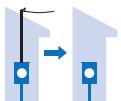
2. Construction

Cable is installed using directional drill; Equipment (transformer/pedestal) installed.



3. Conversion

Energizing the new underground cable; Scheduled outage; Installation of meter base adapter if needed.



4. Overhead Removal

Removal of overhead electric lines.



5. Property Restoration

Once all other phases are complete, we will return to restore your property.

Please visit DominionEnergy.com/Underground for more information regarding Dominion Energy Virginia's Strategic Underground Program.