

Substation Impact Tool: Noise

User Guide

The Dominion Energy Substation Impact Tool Noise Module helps users better understand the impacts of substations within their communities.

This guide contains detailed instructions to navigate the tool.

Context View

Upon loading the tool, this default view demonstrates how substation noise interacts with various environmental features. The customizable options allow you to compare the sounds of various substation scenarios.

- **Setting options:** Toggle between these at any time.
 - Select a 230 kilovolt (kV) or a 500 kV substation to view.
 - Select an Urban, Suburban, or Rural environment to view.
 - Select between two different viewpoints: Perspective or Top.

Substation Size

<input checked="" type="radio"/> 230kV	<input type="radio"/> 500kV
--	-----------------------------

Setting Options



<input type="radio"/> Urban	<input type="radio"/> Suburban	<input checked="" type="radio"/> Rural
-----------------------------	--------------------------------	--

View

<input checked="" type="radio"/> Perspective	<input type="radio"/> Top
--	---------------------------

- **Noise types:** Toggle between continuous and intermittent noise-emitting substation equipment (Note: only one option may be selected at a time).
 - The display rings on the overview image will change according to the selected noise type.

Noise Types:

Continuous Noise	
<input checked="" type="checkbox"/> Transformers <i>Low, humming noise</i>	
Intermittent Noise	
<input type="checkbox"/> Breakers <i>Short, louder noise</i>	
<i>Note: Sample volume is determined by your device's audio settings.</i>	

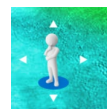


To hear a sample for each type of noise, select “Transformers” or “Breakers” and then click the speaker icon next to the selected noise type. (Note: audio sample will not work unless that noise type is toggled on.) The volume of each sample will be determined by your device’s audio settings. To increase or decrease sample volume, adjust the settings on your device.

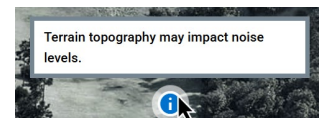
- **Other Elements:**

- **Movable Person:** Click the toggle to enable the Movable Person (Note: This feature is only available when a noise type is selected.) When the Movable Person appears on screen, click to drag around the substation environment scene. In Top View, a distance measurement displays as you move the icon throughout the scene. This may be helpful as you compare the generic scene to your area.
- **Information Hotspots:** Toggle this feature on and hover over the blue icons throughout the scene to learn more about environmental features and noise mitigation around substations.

<input checked="" type="checkbox"/> Movable Person
--



<input checked="" type="checkbox"/> Information Hotspots
--

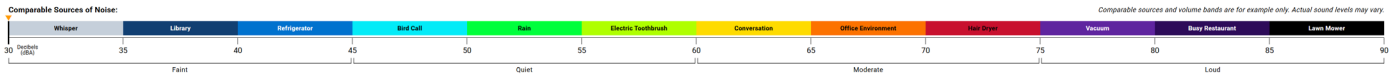


Substation Impact Tool: Noise User Guide



- **Context View - Other Elements (cont.):**

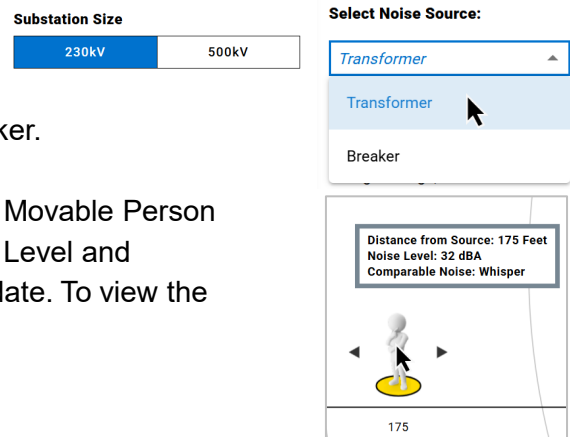
- **Comparable Sources of Noise Bar:** While the Movable Person is active, a slider will adjust along the multi-colored bar at the bottom of the screen. This displays the approximate volume expected at the location of the Movable Person in decibels and offers a more familiar noise with a similar volume. The colors of the bar correlate with the concentric rings emanating from the substation, depicting the dissipation of noise.



Isolated View

To experience the noise levels of specific substation equipment, toggle from Context View to Isolated View on the Noise Emission View selection in the upper right corner.

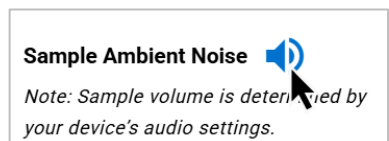
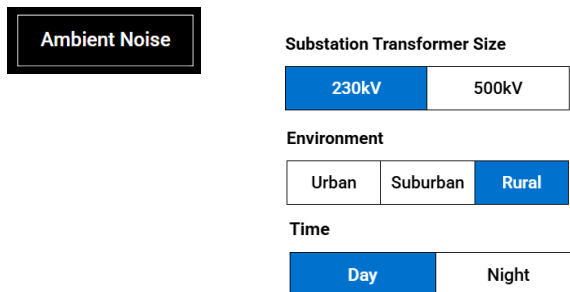
- Substation Size: Select 230 kV or 500 kV equipment to view.
- Noise Source Selection: Choose to view a transformer or breaker.
- Moveable Person: Automatically displayed in this tab, drag the Movable Person along the “Distance from Source” axis and note how the Noise Level and Comparable Noise Source in the pop-up box automatically update. To view the pop-up box, hover over the Movable Person.



Ambient Noise

Substation noise does not exist in isolation. Open the Ambient Noise Tab in the middle of the tool header to view how substation noise layers in the existing environment.

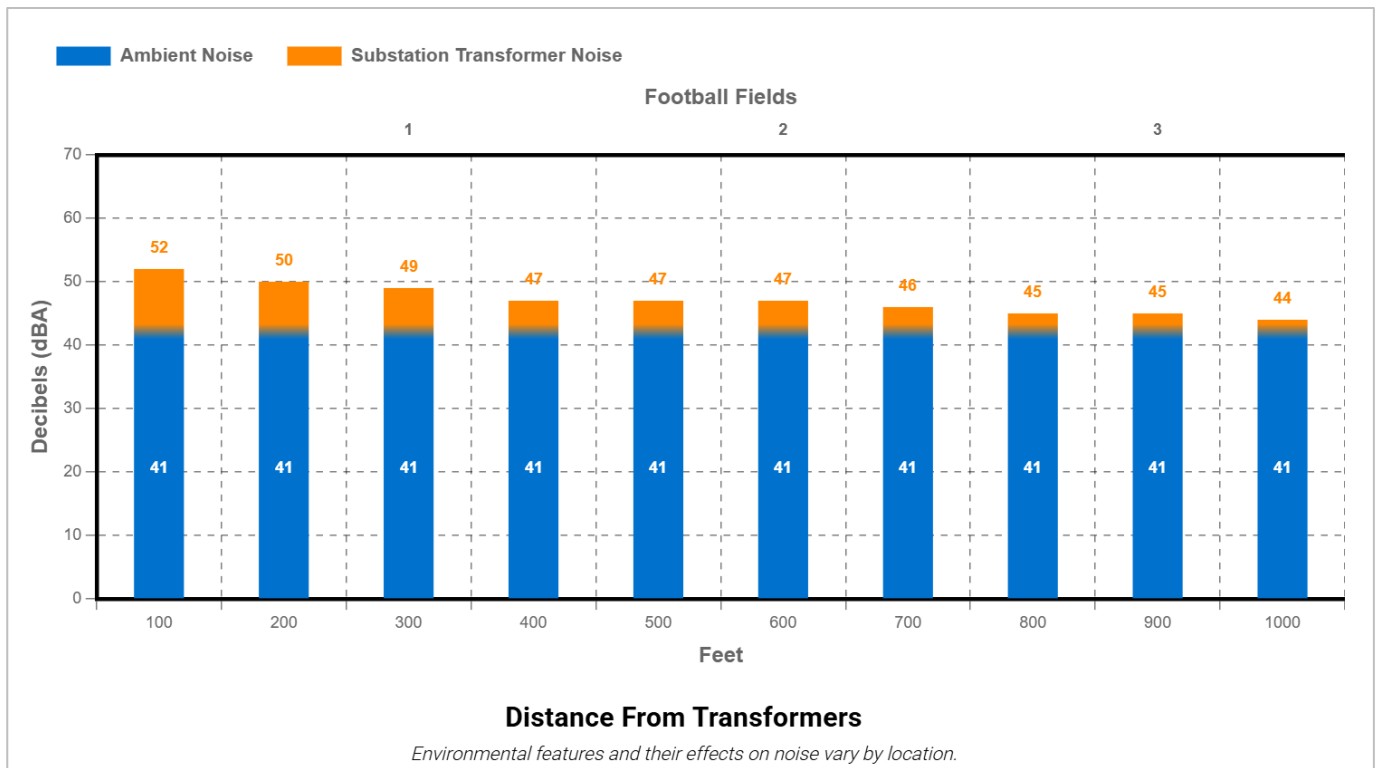
- Select 230 kV or 500 kV transformer to view.
- Select an Urban, Suburban, or Rural environment.
- Select day or night ambient noise levels.
- To hear an ambient sound sample for each environment, click the speaker icon on the right side while each environment is selected. The volume of each sample will be determined by your device’s audio settings. To increase or decrease sample volume, adjust the settings on your device.



Substation Impact Tool: Noise User Guide

Ambient View (cont.):

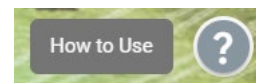
- Based on your selections, view the ambient noise graph.
 - The blue bar and labels display typical ambient noise for the selected environment and time.
 - The orange bar and labels display typical substation transformer volume for the selected voltage level.
 - The labels on the bottom of the chart show the distance from the transformers in feet. The labels at the top of the chart show the modelled distance from the transformers in football fields as an alternative reference.
 - The difference between the orange bar and blue bar indicates the volume that substation equipment is adding above the normal sound level which already exists in the selected environment.



Substation Impact Tool: Noise User Guide

Additional Features

- **Introduction video:** This welcomes you to the tool and provides an orientation of the features. It is displayed automatically upon opening the tool and accessible anytime via the “How to Use” button located on the upper right side.



- **Export tool:** Located on the upper right side, click this button to download and save a screenshot of your current view.



- **Definition of Terms:** Located on the upper right side, click this button to review the definitions of technical terms used in this tool. .

