



Community Rail Explorer

User Guide

January 2025



U.S. Department of Transportation
Federal Railroad Administration

Table of Contents: Community Rail Explorer User Guide

- Introduction 1**
 - Uses of the Tool 1
 - Data Sources and Methodology 2
- Navigating 4**
 - Buttons and Widgets 4
 - Zooming and Searching 5
- Viewing Data 7**
 - Available Data Layers 7
 - Pop-Up Data Tables 9
 - Attribute Tables 11
- Filtering Data 14**
 - Pollution Level Filters 15
 - Rail Yard Filters 17
 - Rail Grade Crossing Filters 18

Release Version	Date	Release Notes
2.0	10/16/2023	Update to reference new US DOT tool

INTRODUCTION

The Community Rail Explorer tool is an interactive web application that combines data from the US DOT Transportation Community (TC) Explorer, the North American Rail Network (NARN), the FRA Grade Crossing Inventory, and the 2020 Census. The tool allows users to understand rail infrastructure and potential improvement projects across the rail network in the context of the surrounding communities.

The highlighted Census tracts in the Community Rail Explorer represent historically underserved areas which have experienced a lack of transportation investment. These highlighted communities would benefit from rail investments for economic development. The tool allows project sponsors and partners to better identify transportation investments that can benefit communities, including rural and tribal communities.

The Community Rail Explorer also assists project sponsors with responding to notice of funding opportunity (NOFO) information requirements by providing multiple required data layers in one tool.

For a more in-depth understanding of how communities are experiencing burden that transportation investments can mitigate or reverse, go to the [TC Explorer](#).

The Community Rail Explorer empowers stakeholders to identify rail investments that enhance safety, support economic growth, and benefit historically underserved communities.

Uses of the Tool

The purpose of the Community Rail Explorer is to facilitate an understanding of how rail infrastructure intersects with communities and to foster communication of the benefits to those communities of potential rail investments.

The tool enables users to explore the location of existing and future rail infrastructure (grade crossings, rail yards, and rail corridors) in the context of how communities are experiencing burdens and to consider how transportation investments may benefit those areas. Users can search for existing rail lines, rail yards, and/or grade crossings and overlay information at the Census tract level.

Pollution measures related to diesel emissions and particulate matter (PM) 2.5 emissions are also visible in the tool to help users understand how improvements to rail could contribute to improving areas with high levels of localized pollution.

Applicants to FRA's discretionary grant programs, including the Rail Crossing Elimination, Federal-State Partnership for Intercity Passenger Rail, and Consolidated Rail Infrastructure and Safety Improvements Programs, are strongly encouraged to use the TC Explorer and Community Rail Explorer to understand how their community or

project area could benefit from transportation investments or opportunities. Through understanding how a community or project area is experiencing transportation-related disadvantages, applicants can address how the benefits of a project will foster economic development and community revitalization.

Data Sources and Methodology

All data used in the Community Rail Explorer is publicly available and accessible via online portals. The primary sources of data are the U.S. DOT TC Explorer, the 2020 Census, the Bureau of Transportation Statistics (BTS) National Transportation Atlas Database (NTDA), and the FRA Grade Crossing Inventory database. More details regarding data sources are provided in Table 1.

Table 1. Data Sources for Community Rail ExplorerV1.0 Layers

Data Layer	Source	Link
Passenger Stations	NARN nodes, BTS 2024	North American Rail Network Nodes (bts.gov)
Grade Crossings	Railroad Grade Crossings, BTS 2024	Railroad Grade Crossings (bts.gov)
North American Rail Network (NARN)	NARN lines and nodes, BTS 2023	North American Rail Network Lines (bts.gov) North American Rail Network Nodes (bts.gov)
Rail Yards	NARN lines, BTS 2023	North American Rail Network Lines (bts.gov)
Transportation Disadvantaged Census Tracts – National Results	TC Explorer, U.S. DOT 2023	TC Explorer (transportation.gov)
Particulate Matter Emissions (above 75 th percentile)	EPA's EJScreen 2022	EJScreen Data (epa.gov)
Diesel PM Emissions (above 75 th percentile)	EPA's EJScreen 2022	EJScreen Data (epa.gov)
USA 118 th Congressional Districts (all territories)	U.S. Census Bureau	USA 118th Congressional Districts (All Territories) - Overview (arcgis.com)
2020 Census Data Population by Nation	U.S. Census Bureau	USA 2020 Census Population Characteristics - Overview (arcgis.com)
2020 Census Data by State	U.S. Census Bureau	USA 2020 Census Population Characteristics - Overview (arcgis.com)
2020 Census Data by County	U.S. Census Bureau	USA 2020 Census Population Characteristics - Overview (arcgis.com)
2020 Census Data by Tract	U.S. Census Bureau	USA 2020 Census Population Characteristics - Overview (arcgis.com)

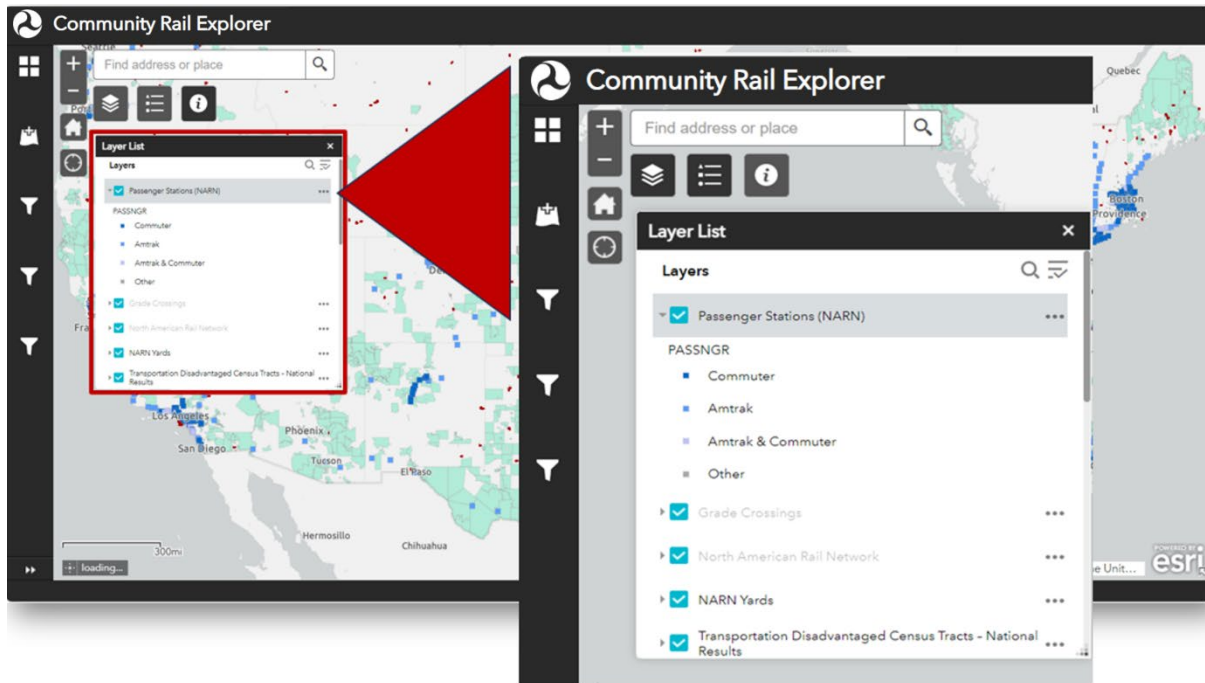
Data Layer	Source	Link
2020 Census Data by Block Group	U.S. Census Bureau	USA 2020 Census Population Characteristics - Overview (arcgis.com)
American Indian and Alaska Native (AIAN) Tribal Statistical Areas	Bureau of Indian Affairs (BIA)	BOGS Data (geoplatform.gov)
AIAN National Land Area Representation (LAR)	BIA	BOGS Data (geoplatform.gov)

The methodology for calculating “Transportation Disadvantaged Census Tracts – National Results” is in the process of being updated in the US DOT TC Explorer. When technical documentation is finalized, the updated metrics will be described here.


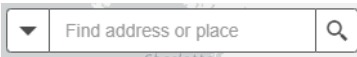



NAVIGATING

Buttons and Widgets

When you open the Community Rail Explorer, you will see a map of the United States with a few default layers of data visible and multiple buttons and widgets on the left side of the screen represented by the following icons:



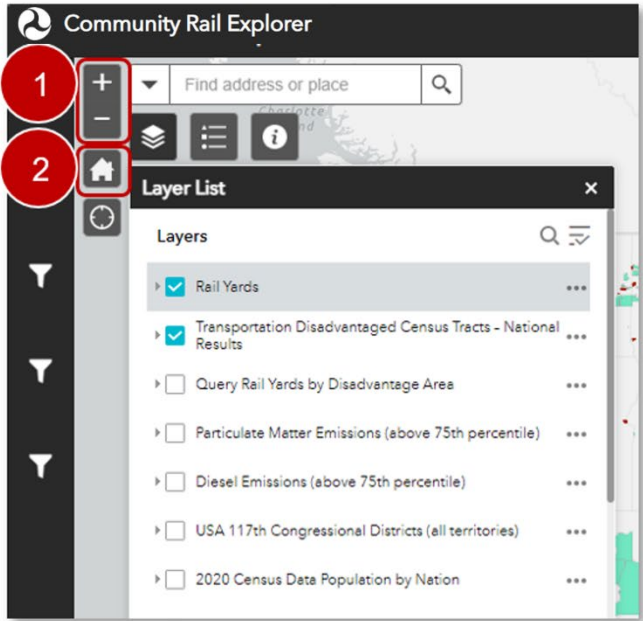
Button/Widget Icon	Functionality
	Base map gallery allows the user to change the underlying map imagery to a variety of pre-set options.
	Add Data allows users to pull in additional, publicly available datasets and visualize them within the tool.
	Filter tools allow the user to filter the map, and zoom into, specific subsets of data. There are three filter options in the Community Rail Explorer: (i) pollution levels [PM 2.5 and Diesel PM], (ii) rail yards by railroad owner and yard name, and (iii) railroad crossings by U.S. DOT identification number, state, and county.
	Plus-and-minus buttons allow users to zoom in (+) and out (-) of the map.
	Home button resets the map extent to the original/default level of zoom, which shows the lower 48 states.

Button/Widget Icon	Functionality
	My Location button will zoom to your current location on the map if your device is location enabled.
	Search bar allows users to enter addresses or common place names and zoom to a specific location on the map.
	Layer List shows the layers of data available to view on the map and allows the user to turn layers off and on.
	Legend will show what layers are currently visible on the map and how the data is represented (the meaning of color scales, etc.).
	Information introduces the map and version dates along with links to this User Guide and other sources of relevant information.

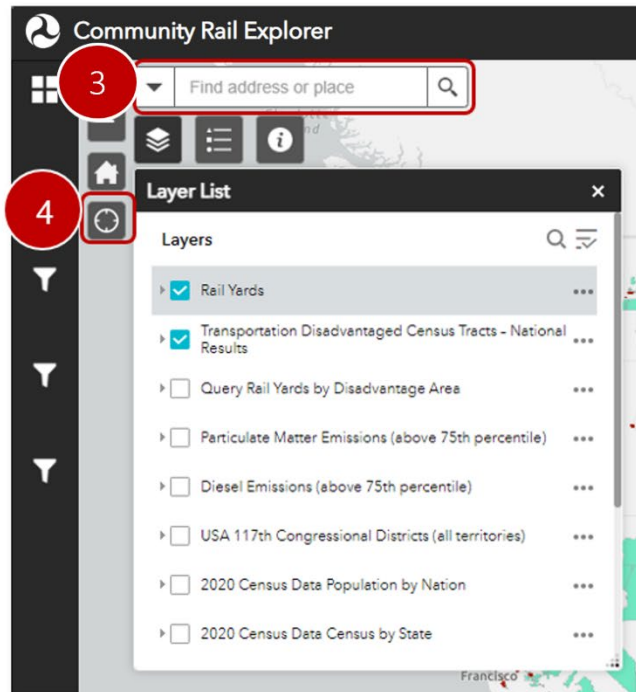
Zooming and Searching

To zoom into or out of the map:

- Click the plus/minus arrow at the upper left-hand corner of the map screen (1) or
- Scroll the mouse wheel up to zoom in and down to zoom out.
- Hold SHIFT and then click & drag on the map to zoom to the drawn extent.
- If you have a touch screen, you can also pinch to zoom in and out with your fingers (as you would on a smartphone).
- If you want to revert to the “home” screen view of the U.S. lower 48 states, just click the house button at the top left-hand corner of the map screen (2).



The map has a Search bar at the top left corner of the screen (3). Click into this area and enter either an address or a common place name (example: Wrigley Field) to zoom to that location. Current location is also a selection option using the My Location button (4). If location services are enabled on your device, this will zoom to your current location.



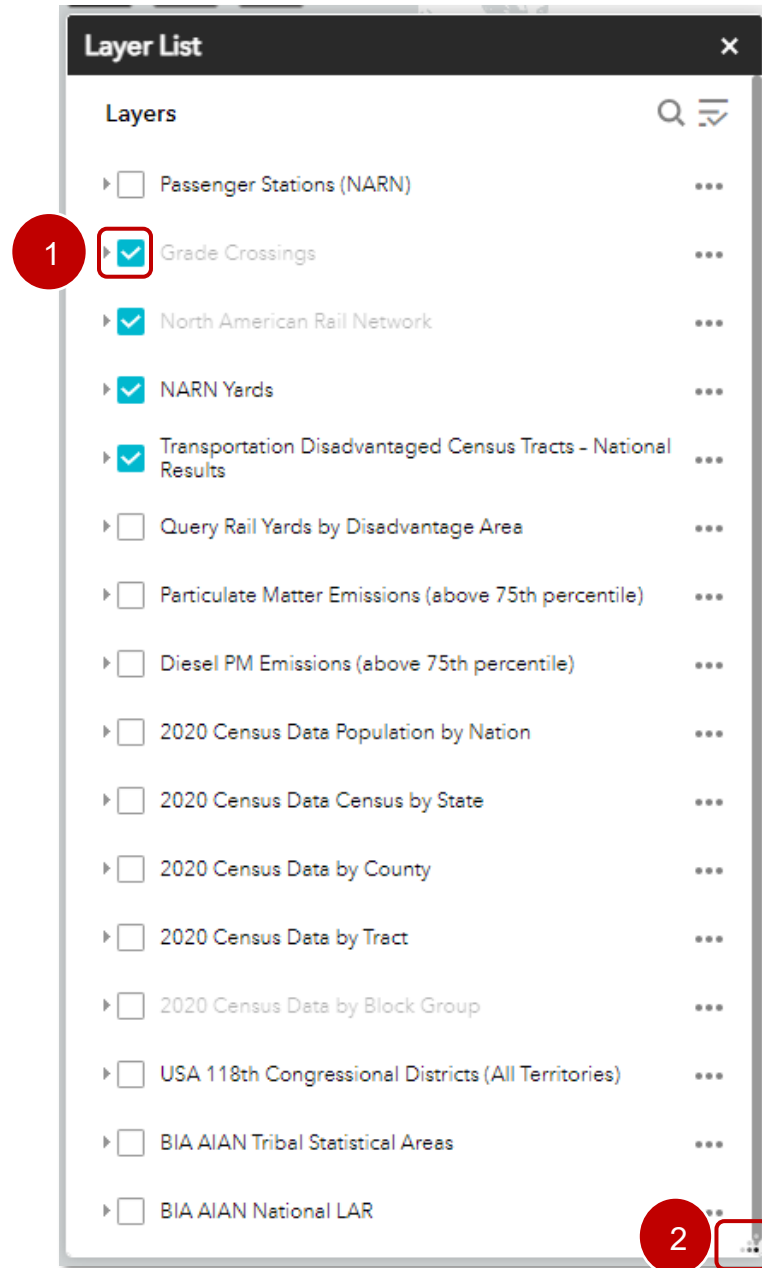
Please note that some layers, including the NARN, Grade Crossings, and some levels of Census data, are not visible when the map is zoomed all the way out because there is too much data to render nationwide. You must zoom into an area to see those features on the map.



VIEWING DATA

Available Data Layers

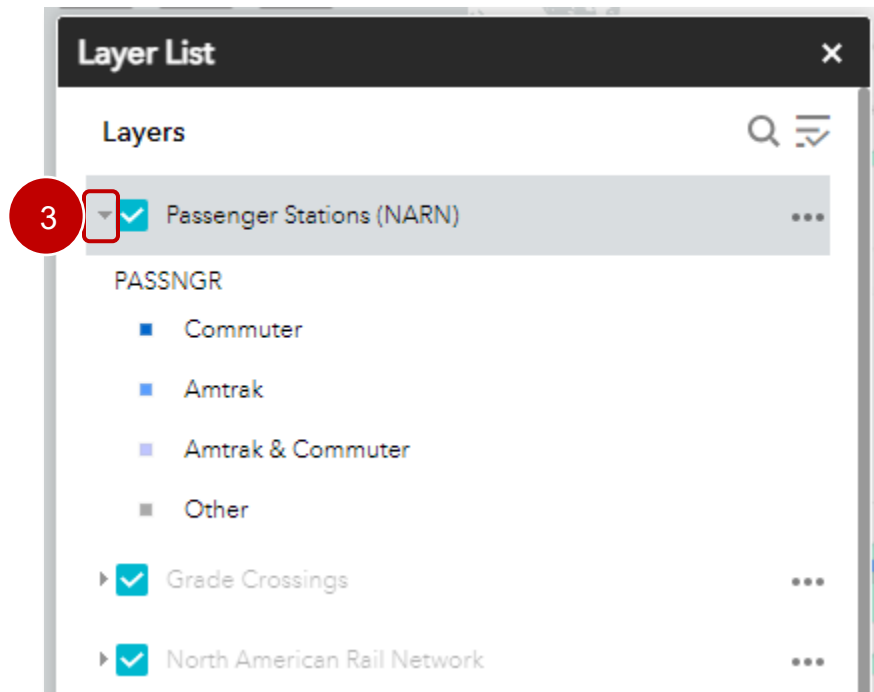
The following layers of data are available to view in the Community Rail Explorer:



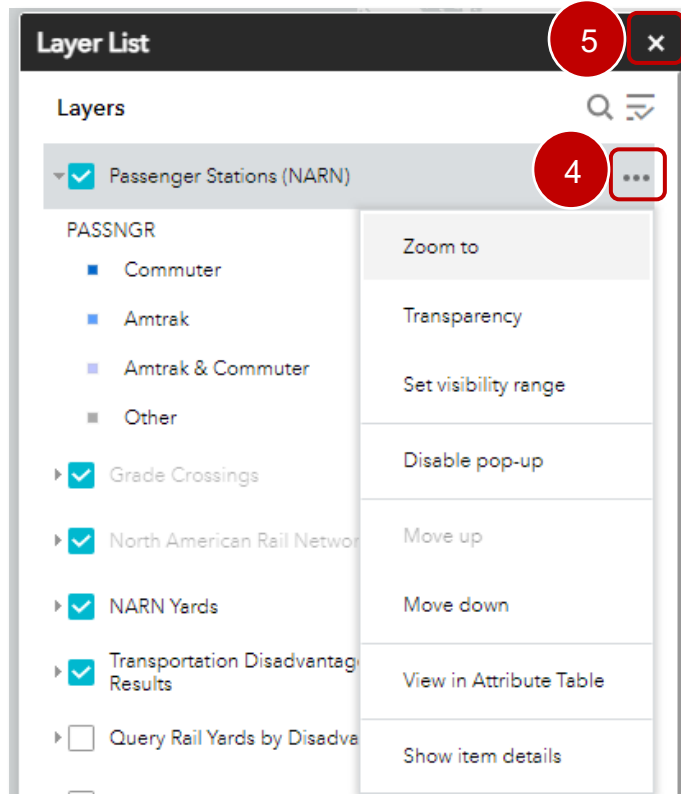
Data layers that are turned on for viewing are checked (1). Users can turn off and turn on layers by deselecting the check box next to the layer name. Layer names that appear gray are not visible at the current zoom level on the map.

As the user zooms into the map, these layers will become visible and the data layer name in the Layer List will turn black. Users can scroll down the list of layers using the scrollbar on the right side of the pop-up table or expand the list by dragging down the bottom right corner of the pop-up (2). The two rail yard layers, NARN Yards and Query Rail Yards by Disadvantaged Area, overlap each other. The user must turn off the NARN Yards layer (all yards in red) to see the results of the query that show where rail yards overlap with disadvantaged areas (subset of yards in blue).

To view the symbology used for a layer, click the down arrow to the left of the checkbox (3). The symbol associated with that layer will appear below the layer name. Click the arrow again to hide the symbols.



Click the three dots on the right side of the layer field to view additional features related to that layer (4) – see next page.

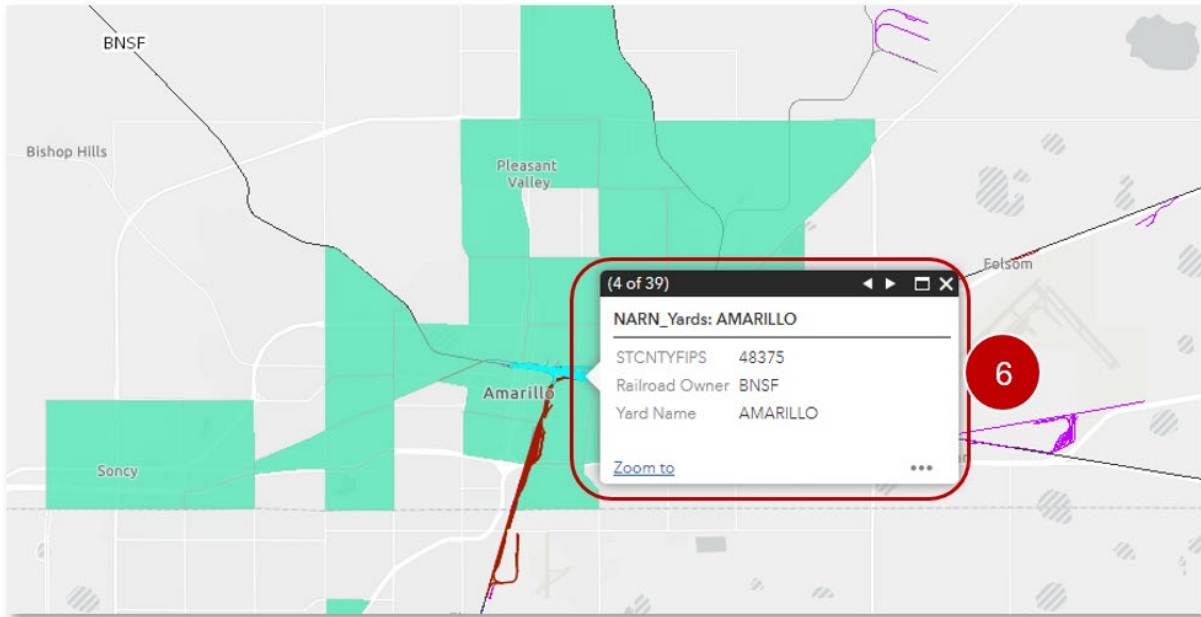


Options include changing the transparency of the layer symbol on the map, disabling the pop-up tables of data visible when the symbol is selected, and viewing the related data in an attribute table at the bottom of the map.

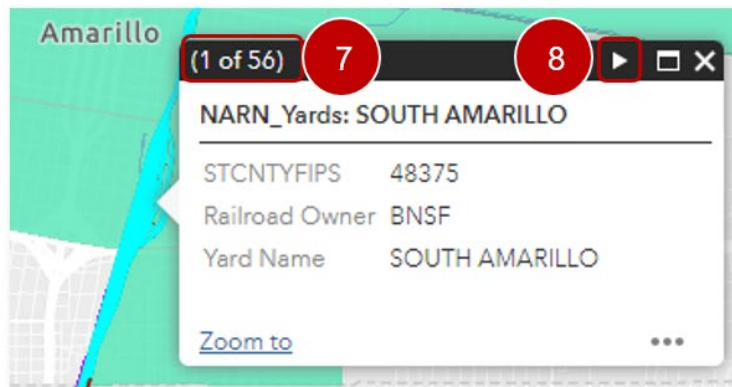
To close the Layer List, click the X in the upper right corner **(5)**. To open the Layer List again, click the Layer List button.

Pop-Up Data Tables

When you click on the Community Rail Explorer map, pop-up data tables **(6)** will appear to provide available data for review (see next page). If there is no data turned on where a user has clicked, a table will appear to indicate that there is no information available at that location.

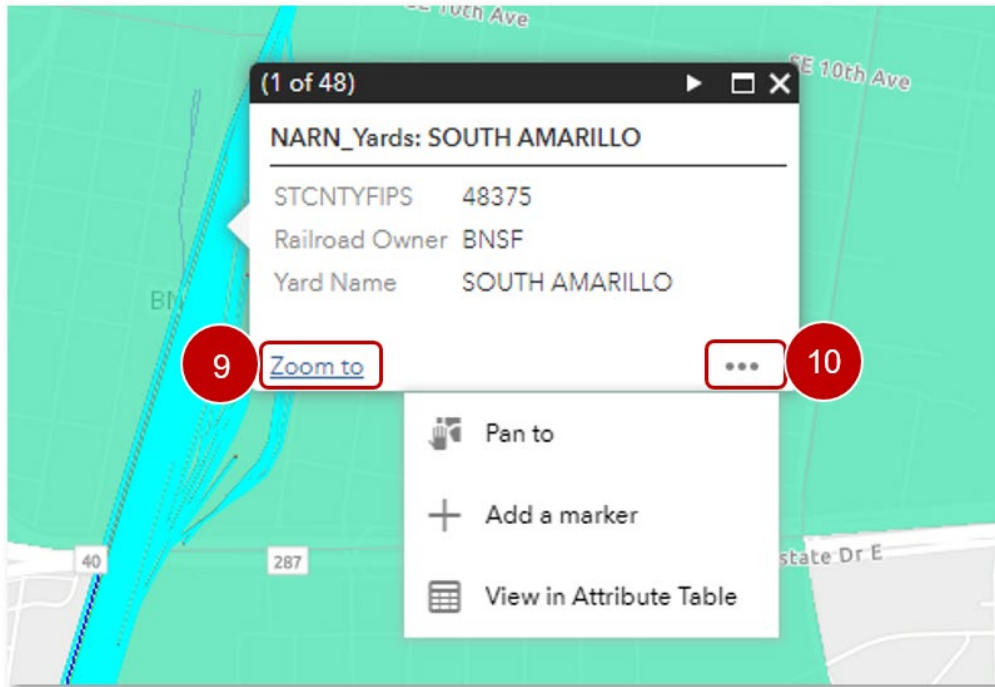


Many data points can be layered on top of each other on the map, such that one click might reveal multiple data tables. The top banner of the table will show “# of #” text (7) to indicate how many tables are available in that location.



To view the other data tables available in that location, click the right-facing arrow in the upper right corner (8). To maximize the table, click the window icon, and to close the table click the X.

Clicking the Zoom To link at the bottom left corner of a pop-up table (9) will zoom the map into the associated location. Clicking the three dots in the bottom right corner of the table (10) allows the user to pan to the location (which zooms and centers the map), add a marker at that location, or view the data in an attribute table.



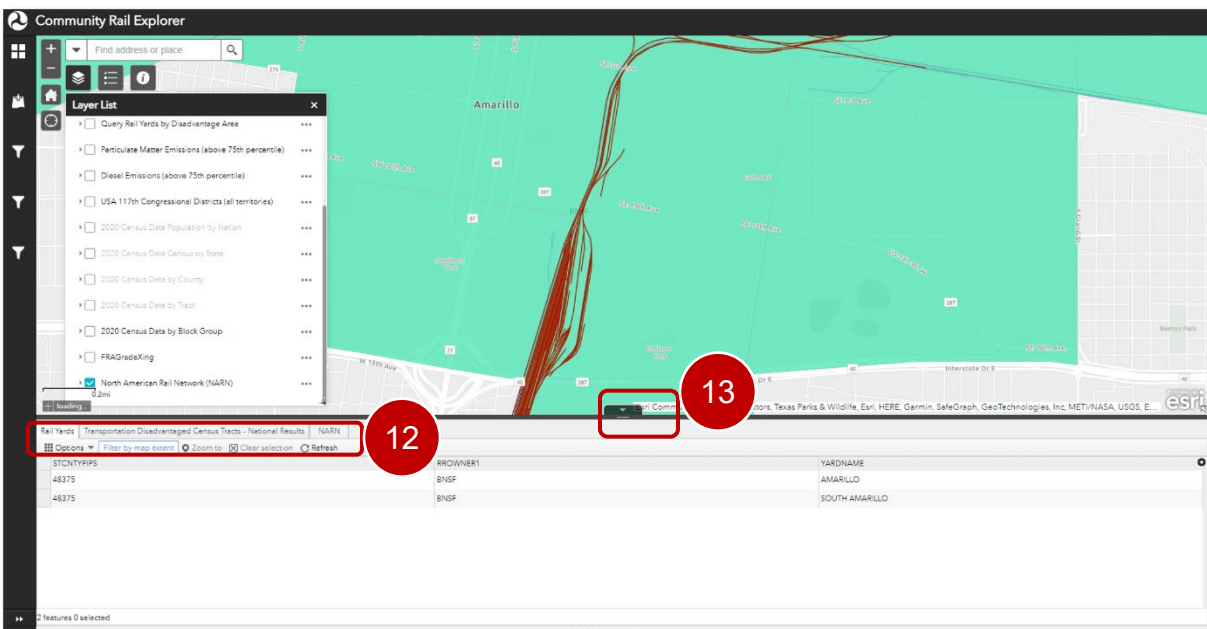
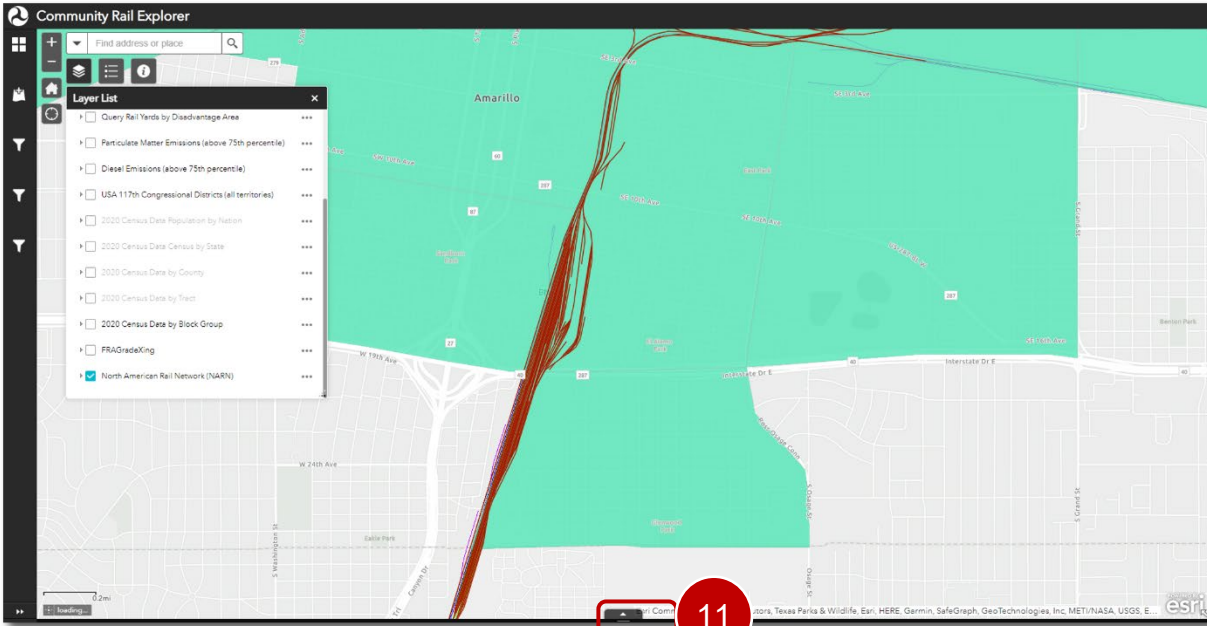
If the data available for a selected location is a longer list of attributes, the user can scroll down the pop-up table using the scrollbar at the right side of the table.

Attribute Tables

Attribute tables are available for all data layers and will appear at the bottom of the map screen if the “View in Attribute Table” option is selected from a pop-up table or from the Layer List (both options shown in the section above).

The other method for viewing data in an attribute table is to click the up arrow visible at the center bottom of the map screen - see label (11). Once the attribute table is open, tabs will be visible across the top of the table indicating which data layers are currently visible and providing the available data for each in the corresponding tab. Click the tabs to switch to viewing the data from a different layer (12).

The attribute tables will show all data visible within the extent of the user’s screen as the attribute tables are filtered by the map extent. To close the attribute table, click the down arrow that appears above the table (13).



Within the attribute table, the user can select rows to highlight the location on the map by clicking on the left side of the row (14) (next page). With a row of data selected, the user can select the buttons on top of the table to zoom to that location (if the relevant layer of data is turned on), which will zoom and center the map on the selected location, clear the selection, or refresh the table (15).

If many columns of attributes appear in the table, there will be a scrollbar visible at the bottom of the table to scroll across and view the columns. To view all available

attributes or columns of data, click the small + sign in the upper right corner of the table (16).

The screenshot shows the Community Rail Explorer interface. A map of Amarillo, Texas, is displayed with various rail lines and yard locations. A Layer List panel is open on the left, showing several layers, with 'North American Rail Network (NARN)' checked. Below the map, a table of rail yards is visible. The table has columns for TCNTYRIPS, RROWNER1, and YARDNAME. Two rows are highlighted in blue: one for 'AMARILLO' and one for 'SOUTH AMARILLO'. Red callouts are placed over the interface: callout 14 points to a small square icon in the table's left margin; callout 15 points to the 'Zoom to' button in the 'Options' panel; callout 16 points to a small square icon in the table's right margin.

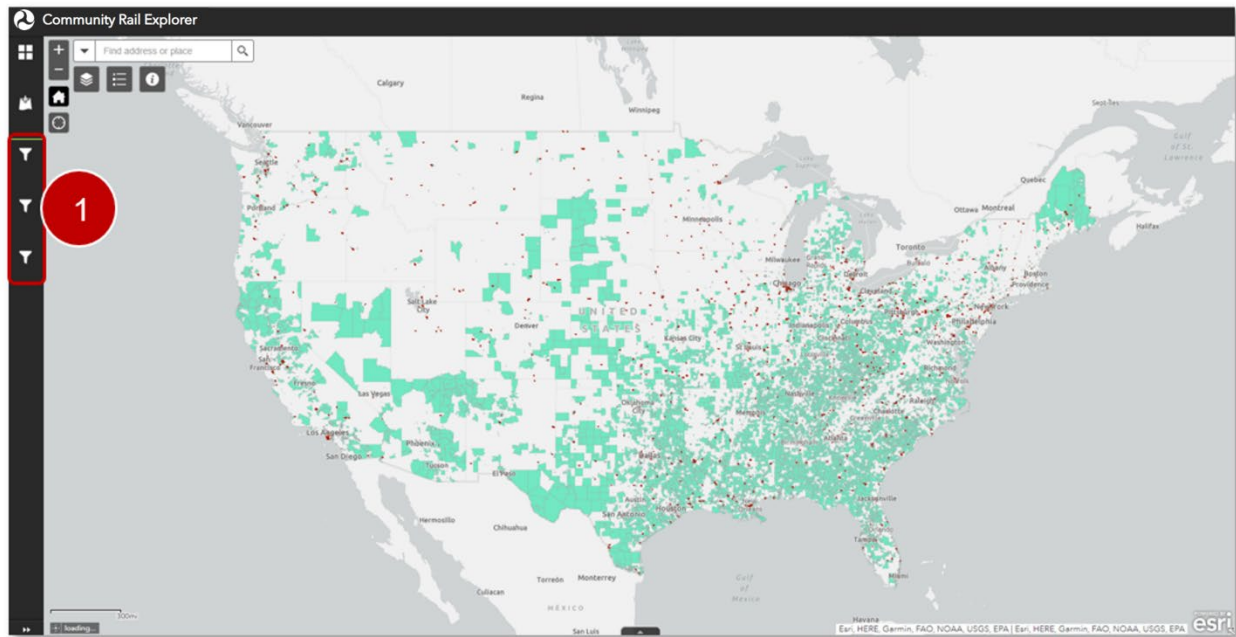
TCNTYRIPS	RROWNER1	YARDNAME
6375	BNSF	AMARILLO
6375	BNSF	SOUTH AMARILLO

FILTERING DATA

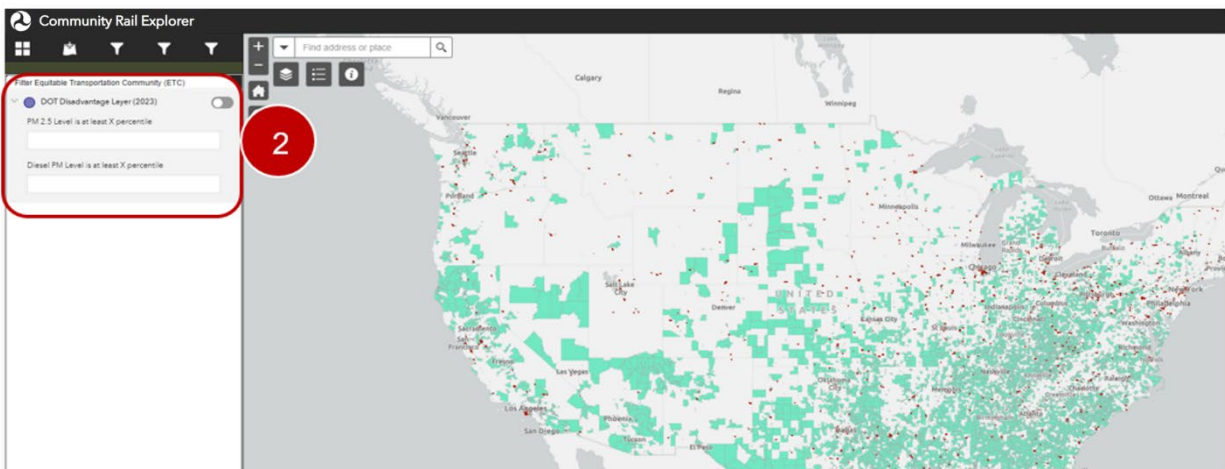
The data available in the Community Rail Explorer tool can be filtered to show only a subset of the data available. There are three filter options in the tool:

1. Filtering based on PM 2.5 or diesel PM emissions levels.
2. Filtering based on rail yard owner and name.
3. Filtering based on grade crossing U.S. DOT identification number or state or county location.

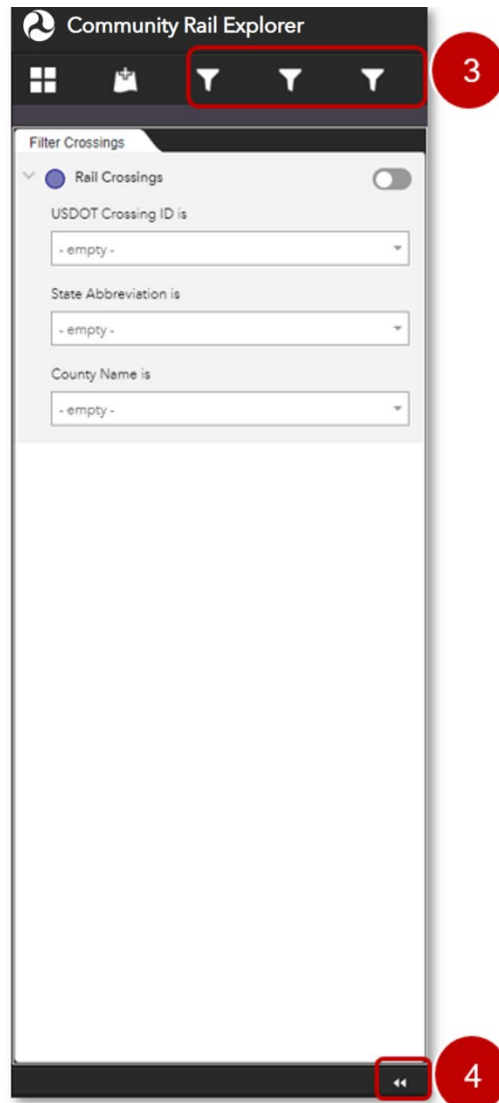
To access the filters, click the Filter buttons on the left side of the map **(1)**. They are laid out in the order listed above.



When you click a Filter button, the side panel will expand to show the options for filtering data **(2)**.



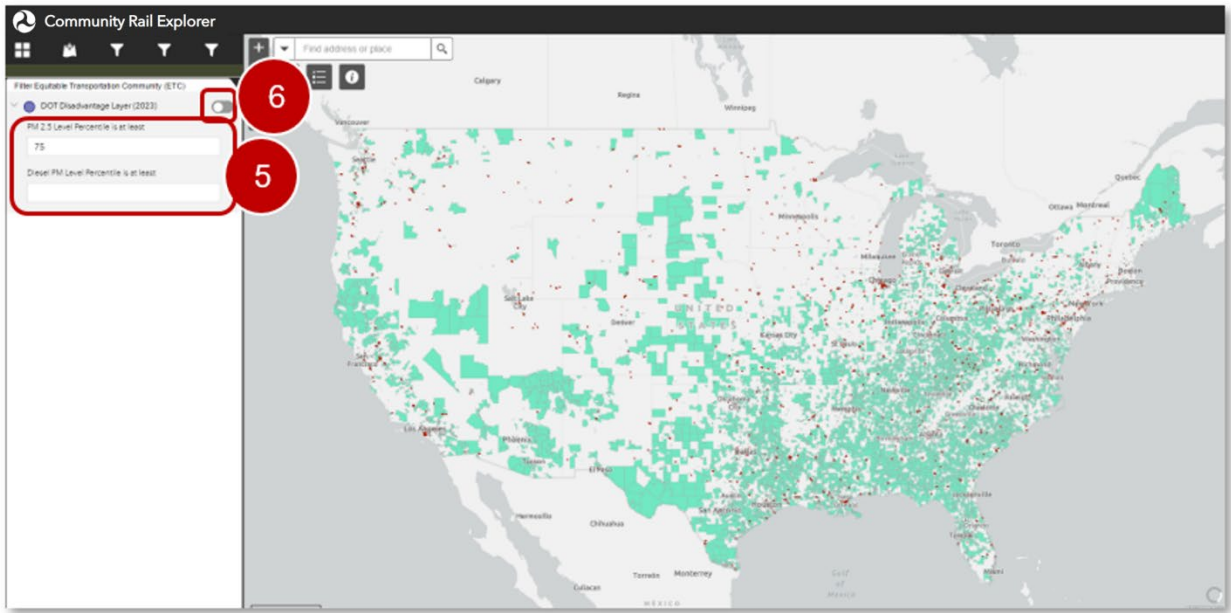
Once the panel is open, users can click the Filter icons across the top of the panel to switch to a different filter **(3)**. To close the panel at any point, just click the double arrow at the bottom **(4)**.



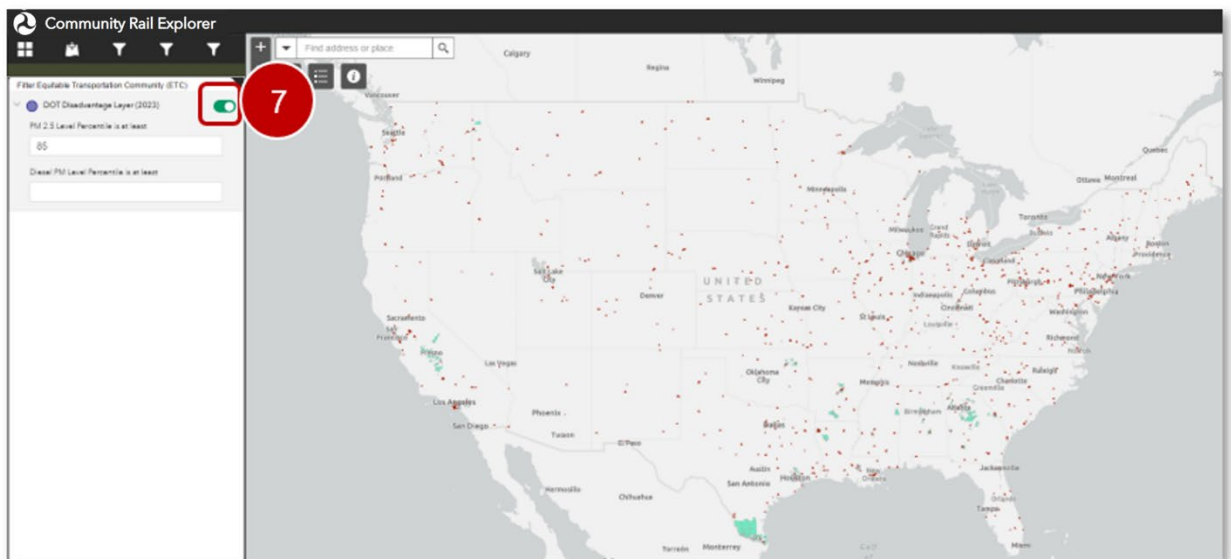
Pollution Level Filters

The two pollution level filters available will filter to the U.S. DOT Disadvantaged Census Tracts by the percentile levels of PM 2.5 and/or Diesel PM emissions. The text boxes in the filter **(5)** allow the user to type in the minimum percentile (0 to 100) for each pollution measure. To filter the map, set the toggle button in the upper right corner of the panel to the “on” position **(6)** (next page).

The two filters are linked by an AND statement. Entering two values will result in filtering to only those Census tracts that meet both minimum requirements. Users can enter just one threshold or thresholds for both measures to use the filter.



When the toggle is turned on it will appear green, and the map will recenter and zoom to the extent of the Census tracts that meet the “at least” requirement in the filter. Turning the toggle back off, will reset the map **7**.



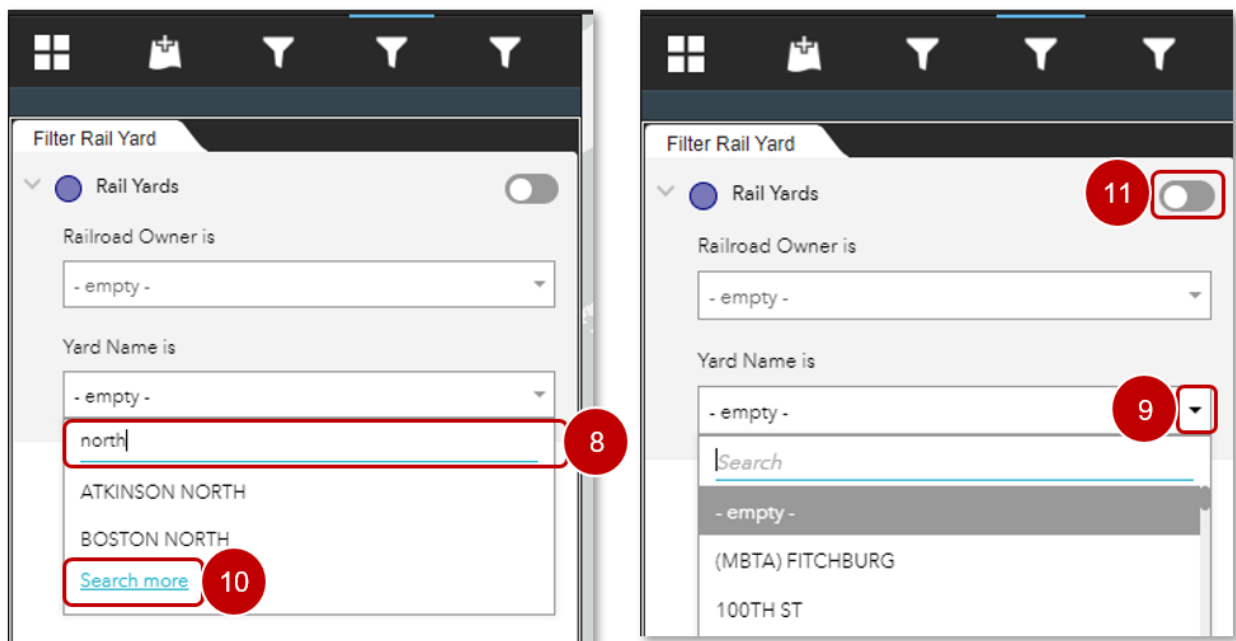
It is important to note that Census tracts that meet the filter requirement may be spread across the country and may be hard to see if the map does not zoom in. In this case, users can open the Attribute Table to see which U.S. DOT Disadvantaged Census Tracts remain visible—or zoom to the area of interest on the map to see if any Census tracts remain highlighted.

Rail Yard Filters

The rail yard filters allow a user to select a Railroad Owner and/or a Rail Yard name to zoom to the chosen location. The Railroad Owner and Rail Yard names are from the NARN data, meaning that they may not match abbreviated or colloquial names. Both filters default to empty and can be reset to empty by the user.

The list of Rail Yard names is linked to the Railroad Owner list. Selecting a Railroad Owner first will filter the Rail Yard list to only those yards in the NARN owned by that railroad.

To set the filter, users can either click one of the search textboxes and start typing in a name (8) that will filter the available list of data to matching names or click the down arrow at the right side of the textbox (9) and scroll through the list of options.



To view more options that match the search text entered in the textbox, click the “Search more” link (10) to view the drop-down list of all matching options.

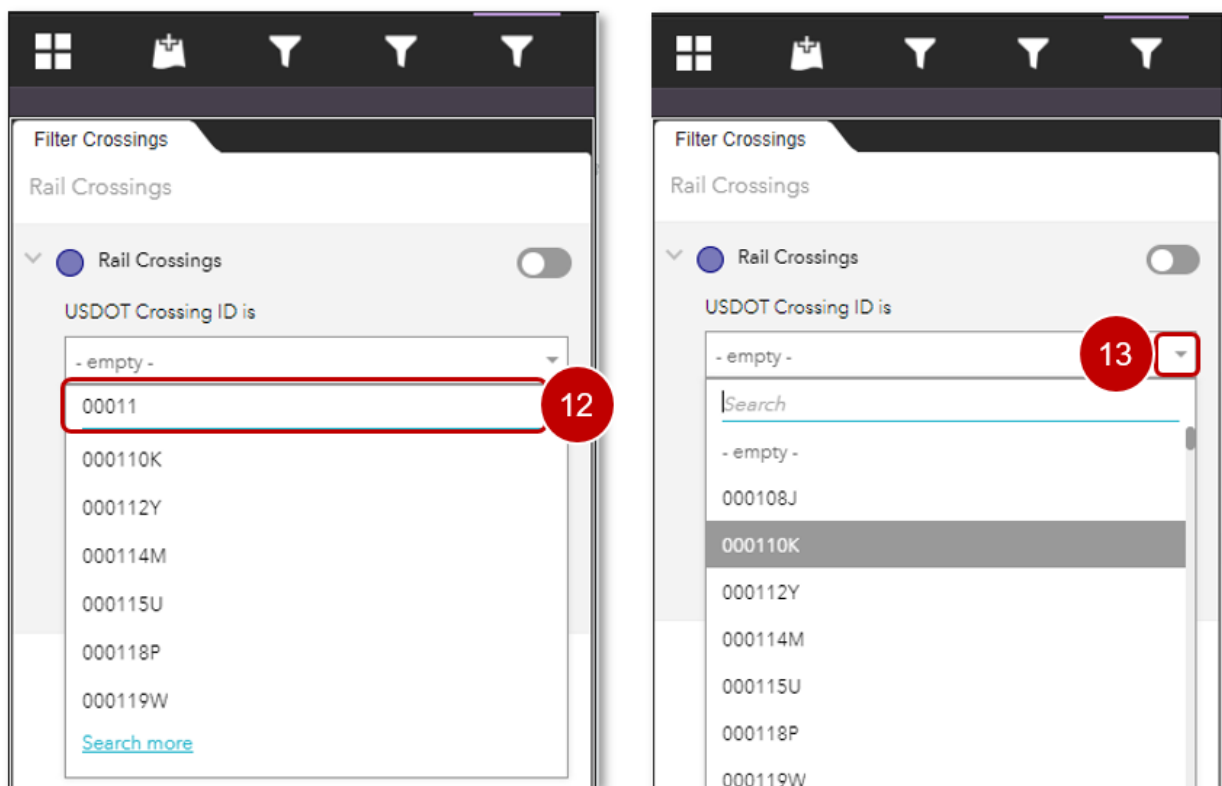
To turn the filter on and zoom to the selected location, set the toggle button in the upper right corner of the panel to the “on” position (11). The button will turn green when the filter is on.

It is important to note that larger railroad companies will own rail yards in multiple locations across the country, so selecting only a Railroad Owner may not zoom into the map enough to make individual Rail Yards visible. In this case, use the Attribute Table to view the list of visible Rail Yards and select the yard name from that list to narrow the search or zoom into the area of interest after setting the filter (see Attribute Table section for how to zoom to a selected record).

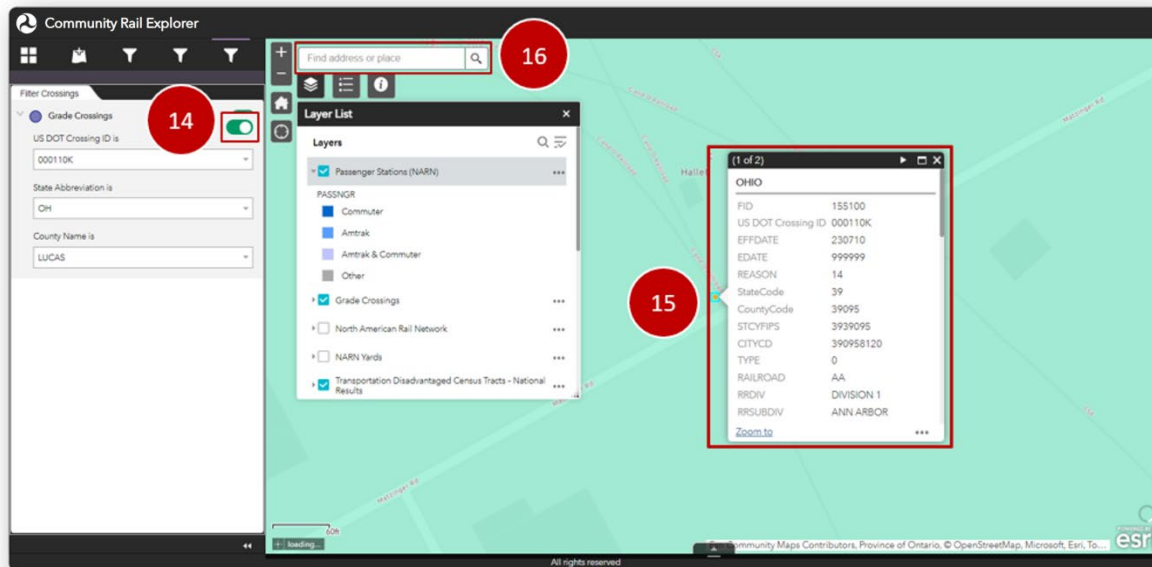
Rail Grade Crossing Filters

The grade crossing filters allow a user to filter to a specific U.S. DOT grade crossing ID location or an entire State and/or county. Each highway-railroad crossing is assigned a unique identifier—a U.S. DOT crossing inventory number—sometimes referred to as an FRA number. The number consists of six digits followed by a letter and is posted on a metal plate at each crossing. The grade crossing location data in the Community Rail Explorer is based on the FRA Grade Crossing Inventory System (GCIS), which collects the data reported by State DOTs and railroads regarding grade crossings. If the location of a crossing is incorrect in this application, the State DOT is responsible for updating the coordinates for public crossings and the Primary Operating Railroad is responsible for updating the coordinates for private crossings.

If the user knows the U.S. DOT crossing ID(s) of interest, they can either begin typing the ID number into the search text box under USDOT Crossing ID **(12)** or use the down arrow to select the number from the list of available IDs **(13)**.



Once an ID number is selected, the remaining options in the filter tool will be limited to the State Abbreviation and County Name associated with that ID in the GCIS. Click the toggle button in the upper right corner **(14)** to zoom to the selected crossing. Click the crossing point **(15)** to view the GCIS data associated with that crossing.



Please note that the State Abbreviation and County Name may not match the geospatial coordinates in the GCIS, such that the map may zoom to a location not in the noted State or county. In that case, the location evaluation of that crossing in relation to the other measures in the Community Rail Explorer should be done by searching for the nearest address to that crossing in the search bar (16).

If the user does not know the U.S. DOT Crossing ID(s) of interest, they can select a State Abbreviation and/or a County Name to zoom to that area of the map. Selecting a State Abbreviation first will filter the County Name list to only those counties within the selected state. If a user selects a County Name first and then selects a State Abbreviation that does not match the County Name, the filter will not work when the toggle is turned on because there is no corresponding location on the map.

Similarly, if the County Name entered in the GCIS does not match a known county name due to naming conventions (i.e., ST. BERNARD vs ST BERNARD or with punctuation omitted after the abbreviation for Saint) the map may zoom to the wrong location. In that case, the search bar can be used to zoom to an area and view the grade crossings located there.