Google Fusion Tables and the National Emissions Inventory September 2013

Google Fusion Tables are one way to access data from the National Emissions Inventory (NEI). The data provided in the tables are consistent with the NEI data provided in other ways, but the Fusion Tables provide more mapping, aggregation, filtering, and other features not available elsewhere.

In these instructions, the term "main menu" refers to the row appearing just below the title and attribution lines of the page. The main menu includes buttons for **File, Edit**, **Tools**, and **Help**.

Accessing the data from the "Table" links on the NEI web page:

In addition to the main menu, there are tabs that have the labels **Table**, **Cards 1**, and **Map**.

1. **Filtering:** Available from all tabs (Table, Cards, and Map)
   The filtering feature finds and shows certain rows of data, based on filter criteria you provide.

   a. To start the filter feature, click the **blue Filter button** at the left hand side. A pull-down menu will appear with the field names for the table
   b. Select a data column from the pull-down menu. A filter frame will show on the left side of your browser. You can select more than one filter column from the blue Filter button and it will be added to the filter frame.
   c. In the box provided, enter the filter criteria OR use the check-boxes provided to filter for just certain values (check boxes are available for non-numeric fields)
   d. Click the "X" next to the filter criteria field name to clear a filter criteria.

2. **Summarize :** Available *only* from the Table tab.
   The summarize feature sums data across many rows.

   a. To start the summarize feature, select the **Tools** menu and the **Summarize…** menu item. A pop-up will appear
   b. Using the pull-down provided in the pop-up box (next to the words "Summarize by"), select a column of data by which to summarize values. For example, if you select "State", then the values you specify (in step2.d.) will be summarized by State.
   c. To add additional fields by which to summarize values, click on "Add another" below the pull-down menu referenced in the previous step
   d. Using the pull-down menu provided (next to the word "Show"), select the values that are to be summarized.
   e. Add additional fields to be summarized using the "Add another" link below the pull-down menu referenced in the previous step
   f. For each value selected to "Show":
      a. To count the number of records for each of the values, keep the check-box checked next to "Summary count".

b. To perform different (or additional) operations on the data, select the check-box for Minimum, Maximum, Average, and/or Sum.

c. Click Save to complete the operation.

3. **Downloading tabular data:** Save the data onto your computer in Comma Separated Variable (CSV) format.

To download the data in CSV format, click **File** from the main menu and select **Download**.

A dialog box will appear asking you to select the format that you want to. Using the buttons provided, select the format. "CSV" stands for comma-separated-variable and can be opened in Microsoft® Excel® or Access®.

If you have applied a filter to the data, you can elect to download the filtered data only or the entire dataset, using the button in the dialog box.

4. **Mapping:** Showing a map with the facility locations identified.

Use the **Map** tab to access the map of the data, mapped based on the latitude and longitude fields in the database.

The map shows the data included in the table at a given time. If you have applied a filter to the data, the map will show only those facilities that are included after the filter has been applied. If you have aggregated the data such that the dataset no longer includes latitude and longitude, the data will not show on a map. *If you have accessed the map directly from the main NEI page, the filter feature will not be active. To get to the map filter, use the Table link from the NEI page and then click on the Map tab.*

To zoom into a particular area, use the +/- bar at the left of the map.

By clicking on each a dot representing a facility, you can see more information about the facility, including the emissions.

5. **Creating a KML file:**

KML files can be loaded into Google Earth on your desktop computer or other web-based tools that are based on Google Earth.

To create a KML file, first use map tab to access the map.

Then, click **File** from the main menu and select **Download.** Use the dialog box provided to select **KML** or **KML network link** to generate the KML file.

6. **Using other graphical features:**

In addition to maps, Google Fusion Tables can create many other graphics, including charts and graphs. To access these tools, click the **Red Plus** tab on the tab row and select the type of chart or graph to create.

For the National Emissions Inventory facility total data, you will most likely need to aggregate and/or filter the full dataset to create a dataset appropriate for charts and graphs. For example, you could select data from 5 states and sum the emissions for those states, and then create a bar chart of NOx emissions. This would show in a charted form the relative magnitude of emissions from these states, with the larger bars showing for states with larger NOx emissions.

7. **Sending comments on the table and graphical features:**
   To send comments to Google on the table and graphical features, click **Help** from the main menu and select the **Report an issue** menu item.

8. **Sending comments on what data are available using Fusion Tables:**
   To send comments to EPA about the data or requesting other data to be provided using Fusion Tables, send email to info.chief@epa.gov.

   In addition, more data and documentation of the National Emissions Inventory is available at http://www.epa.gov/ttn/chief/eiinformation.html.

   Please note that EPA does not intend to use the **Discussions** feature under the **View** main menu item to collect comments.

9. **Why are some features not available?**
   When you are not the creator of a dataset that you are viewing, you cannot use some features of the Fusion Tables. For example, the Map tab has **Tools** menu items for Change info window layout and Change map styles that allow for further customization of the graphics. These features are only available when you are the owner of the dataset and you have logged in to Google as a Google Docs user. Another example of unavailable features is the **Edit** main menu item.

   The Configure styles option allows users to use different icons for facilities based on some attribute. For example, it can be used to choose different color icons for different emissions levels. EPA experimented with this feature and found that for this large dataset, it greatly slowed the mapping results from displaying.

10. **Definitions of data columns for Facility Total data**
    - **State:** State postal code
    - **County:** County name
    - **Site Name:** The name of the facility as provided to EPA
    - **CO (tons):** Carbon monoxide emissions in short tons/year
    - **VOC (tons):** Volatile Organic Compound emissions in short tons/year
    - **NOX (tons):** Oxides of Nitrogen emissions in short tons/year
    - **NH3 (tons):** Ammonia emissions in short tons/year

- **SO2 (tons):** Sulfur dioxide emissions in short tons/year
- **PM10 (tons):** Primary particulate matter less than 10 microns in diameter in short tons/year
- **PM2.5 (tons):** Primary particular matter less than 2.5 microns in diameter in short tons/year
- **EC (tons):** Elemental carbon matter, computed as a fraction of PM2.5 and often used to estimate emissions of black carbon, in short tons/year
- **OC (tons):** Organic carbon matter, computed as a fraction of PM2.5 in short tons/year
- **Lead (tons):** Lead emissions in short tons/year
- **Mercury (lbs):** Mercury emissions in lbs/year
- **Chromium (VI) (lbs):** Hexavalent Chromium emissions in lbs/year
- **Arsenic (lbs):** Arsenic emissions in lbs/year
- **Acetaldehyde (lbs):** Acetaldehyde emissions in lbs/year
- **Formaldehyde (lbs):** Formaldehyde emissions in lbs/year
- **Ethyl Benzene (lbs):** Ethyl Benzene emissions in lbs/year
- **Acrolein (lbs):** Acrolein emissions in lbs/year
- **1,3-Butadiene (lbs):** 1,3-Butadiene emissions in lbs/year
- **1,4-Dichlorobenzene (lbs):** 1,4-Dichlorobenzene emissions in lbs/year
- **Tetrachloroethylene (lbs):** Tetrachloroethylene(also known as Perchloroethylene) emissions in lbs/year
- **Facility Type:** A label indicating the type of source. This label is not filled in for all sources because it is still in development. When the label is filled in, it is generally accurate. Values include Airport, Electric Generation via Combustion, Pulp and Paper, Military Base, Landfill, Petroleum Refinery, and Rail Yard.
- **Tribal Name:** the name of the tribe responsible for the facility (filled in only for data submitted by tribes)
- **City:** The city used in the mailing address for the street address of the facility.
- **Zip Code:** The zip code used in the mailing address for the street address of the facility.
- **NAICS Code:** Industry code (developed by the US Census Bureau)
- **NAICS Description:** The description of the industry code
- **FIPS:** Federal Information Processing Standard (FIPS) code for the state and county of the facility
- **Street Address:** Street address of the facility, if known. In some rare cases, the address may have been incorrectly set to the mailing address of the corporate office.
- **EIS_Identifier:** Code number used to uniquely identify the facility in the Emissions Inventory System (EIS) used to build the National Emissions Inventory. This code number is helpful in providing feedback to EPA about these data or when needing to find out other information about the facility.
- **Latitude:** The latitude of the facility location. Intended to intersect with some portion of the facility, but can be off.
- **Longitude:** The longitude of the facility location. Intended to intersect with some portion of the facility, but can be off.