



ChargeNY

The EValuateNY Tool: Assessing New York's Electric Vehicle Market

User's Manual

Version 1.0

New York State Energy Research and Development Authority

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The EValuateNY Tool:
Assessing New York's Electric Vehicle Market
User's Manual

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Notice

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1 Introduction

This User's Manual for the EValuateNY Tool consists of three sections. The first section provides a brief introduction to the purpose and uses of the EValuateNY Tool. The second section defines the types of data included in the tool and offers a brief rationale for including the information, as well as explaining the tool's architecture. The third section provides an overview of EValuateNY's key features. Appendices offer detailed explanations of EValuateNY's relational database, definitions of unique data fields, and instructions on how to update particular data sources.

1.1 About the EValuateNY Tool

The EValuateNY Tool is a software application that was developed to help identify the most effective activities at accelerating plug-in electric vehicle (EV) adoption in New York State. The Tool relies on Microsoft Excel and Power BI (a data visualization add-in to Excel that can be downloaded online) to assemble several categories of information related to the EV market. The Tool can be used through Microsoft Excel and Power BI on Windows or Mac computers, as well as tablets and mobile devices. Both the Excel and Power BI interfaces allow users to access information stored in several individual databases through a relational database. A relational database is a method of organizing and comparing data from varying sources to connect each data type (see Section 2 for an explanation of relational databases).

Visit nysersda.ny.gov/Cleantech-and-Innovation/Electric-Vehicles/Tools to download the EValuateNY Tool as an Excel file.

Through the Tool's user-friendly interface, users may create compelling visualizations and gain insights about the EV market. Users may also access the raw data stored in the Tool's relational database to construct new visualizations and gain further insights. EValuateNY was also designed to be easily updateable, so the Tool can continue to provide timely information and may be improved by adding new types of data. Power BI is a new program that Microsoft is still introducing to the public. Access to EValuateNY data through Power BI is not available to the public at the time of launch of the tool, but is anticipated to be available at a later date.

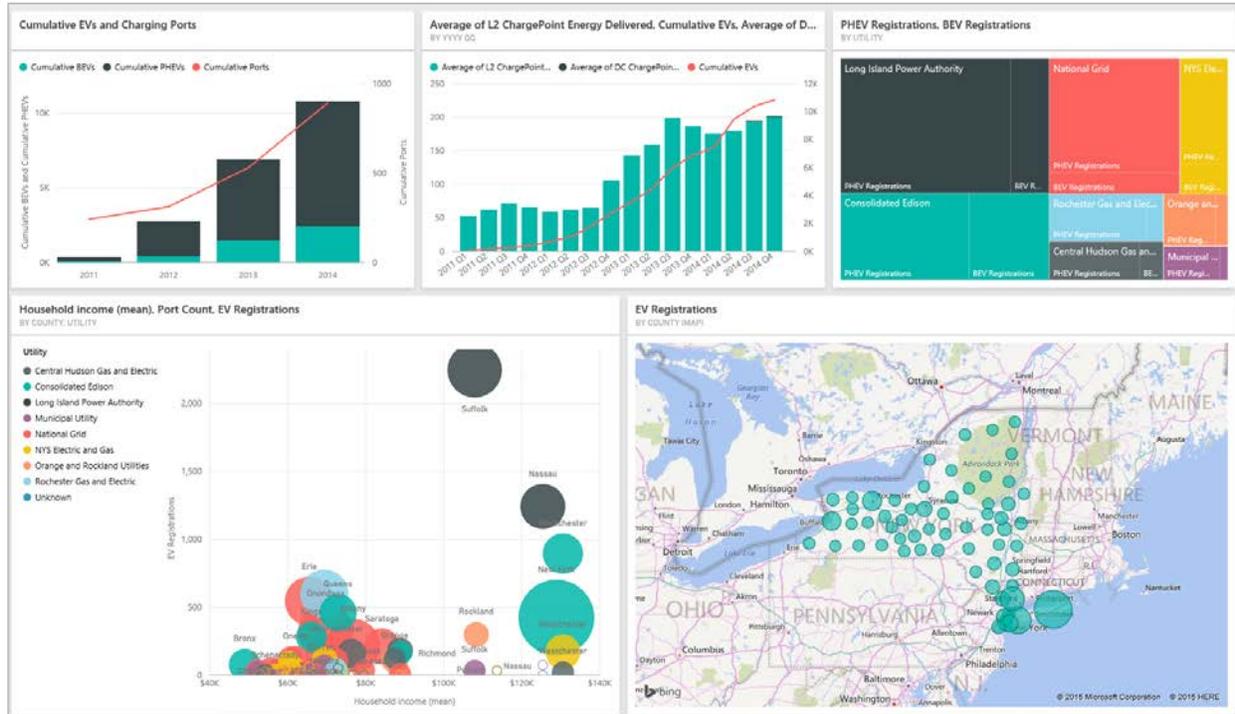
The Tool is intended for policymakers, businesses, academics, and research analysts. Both the Excel and Power BI interfaces allow novice users to interact with the data through existing charts and tables and to derive unique insights into New York State's EV market. Expert analysts may dive deeper to create and customize charts and tables that offer new and innovative insights.

1.2 How the EValuateNY Tool Got Started

Currently, EVs are promoted through various public and private initiatives, such as financial incentives for charging equipment, unrestricted access to High Occupancy Vehicle (HOV) Lanes, and city requirements to provide EV charging access in new garages and parking lots. These initiatives are intended to encourage the growth of the EV market, yet the efficacy of each approach is uncertain. Policymakers and businesses looking to grow the EV market are wondering what's working, and the EValuateNY Tool aims to provide data-based answers to that key question. For example, the Tool may offer insights into how New York City's requirement that 20 percent of new eligible parking spots at lots and garages to be ready for charging has affected EV adoption in and around the city.

The EValuateNY Tool organizes information about public and private initiatives in New York State that promote EVs with relevant market data in a single database. The information is sorted by location and over time to facilitate a user's understanding of the EV market's evolution. Specifically, the Tool contains data on EV registrations, charging infrastructure availability and usage, public policies and programs, electricity rates, gasoline prices, and demographics. Much of the information contained in the EValuateNY Tool is publicly available, and several partners contributed proprietary data. Information can be accessed directly through the inherent functions of Excel, or by using the Power BI add-in for additional data visualization capability to create sophisticated charts, maps, and tables as shown in Figure 1.

Figure 1. Screenshot of the EValuateNY Tool Using the Microsoft Power BI Interface



1.3 Contributing Partners

The New York State Energy Research and Development Authority (NYSERDA) provided a grant to develop the EValuateNY Tool and helped oversee its development. Atlas Public Policy and the Center for Climate and Energy Solutions (C2ES) created the Tool itself.

Several project partners assisted in identifying and contributing information. Members of the following organizations provided assistance: ChargePoint, General Motors, National Grid, the National Renewable Energy Laboratory (NREL), the New York City Department of Transportation, and the New York Power Authority. The New York State Department of Transportation and the New York State Department of Public Service also provided data for the Tool.

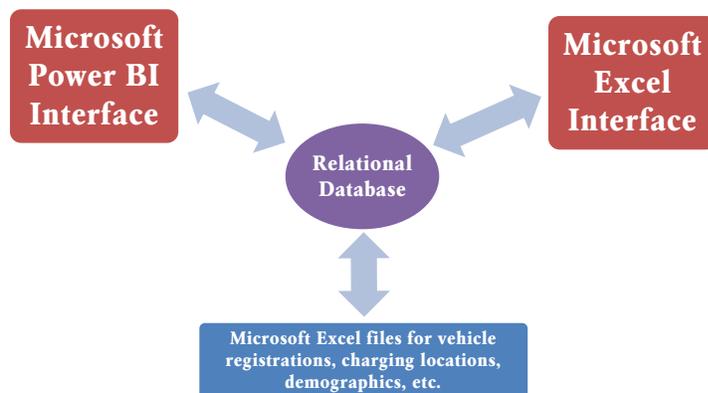
2 Design and Construction of the EValuateNY Tool

This section describes the architecture of the EValuateNY Tool, provides an overview of the data contained in the Tool, and future directions.

2.1 Architecture

The EValuateNY Tool provides two ways to interact with the information stored in its comprehensive database as illustrated in Figure 2. The Tool can be used through Microsoft Excel and Power BI on Windows or Mac computers, as well as tablets and mobile devices. Both the Excel and Power BI interfaces allow users to access information stored in several individual databases through a relational database. A relational database is a method of organizing and comparing data from varying sources to connect each data type (see Box 1 for an explanation of relational databases). Each category of data in the EValuateNY Tool is stored in a separate Microsoft Excel file, easing maintenance and use. These data files are filtered through the relational database and made available within the two main interfaces.

Figure 2. Architecture for the EValuateNY Tool



The relational database in the EValuateNY Tool is a comprehensive collection of policies, programs, demographics, and market data related to EV sales in New York State. Because the data are organized by location and time, users can explore factors specific to a city or county over time. For example, users can explore the growth of EV registrations near a charging station immediately after it was installed. The relationships that connect the data tables enable these kind of analyses.

In addition, geolocation and time series data is hierarchical, meaning data can be automatically aggregated to gain broader perspectives and insights. For example, monthly data can be aggregated to quarters or calendar years to give users quick access to larger market trends. Similarly, data at the ZIP code level can be aggregated to the city, county, utility, or State level. Of course, the opposite is not true. If the most basic data available is stored at the county level, for example, then it cannot be explored at the city or ZIP code level.

Three kinds of relationships exist in the EValuateNY Tool:

- **Geolocation relationships** map to either ZIP codes, cities, counties, or utilities, depending on the level of detail available. For example, vehicle registration data is available at the ZIP code level, while demographic data is available at the county level.
- **Date relationships** are stored in a monthly or yearly format. For data that is valid for a range, such as a public policy or program, a table was generated consisting of rows for each month and city the policy was valid.¹ For example, a statewide policy that lasted from January 2013 to January 2014 has an entry for each city over the twelve months that the policy was valid.
- **Lookups tables** allow users to easily access and navigate information by consolidating extensive information resources. For example, a lookup table for public policies provides users with detailed descriptions of each policy or program, links for further information, and more. By consolidating information, lookup tables improve the user experience by eliminating redundant, duplicated data.

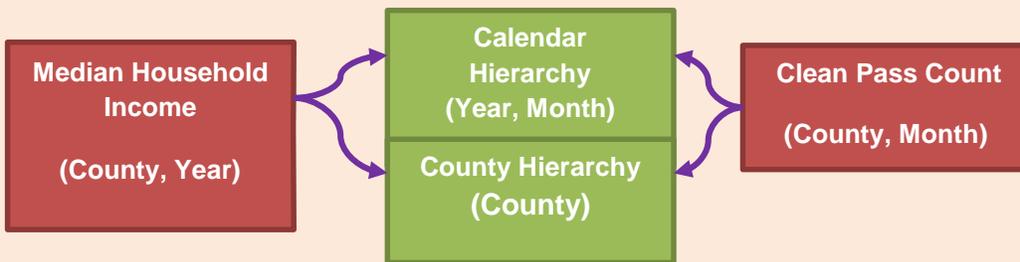
See Appendix A for a diagram of the relationships and data tables contained in the EValuateNY Tool.

¹ These tables were generated using the query language in Excel and Power BI. More information on incorporating the data in the EValuateNY Tool is available in Appendix B and Appendix C. City was chosen rather than ZIP code to reduce the size of the database.

Box 1. What is a Relational Database?

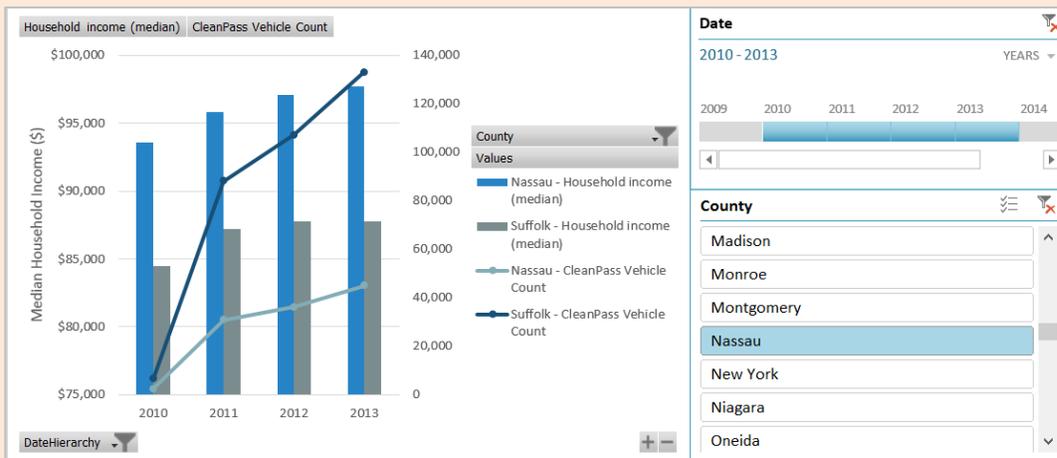
A relational database links different data tables by using unique “keys” incorporated into the tables. These keys allow users to compare similar information in multiple tables.

For example, a three-column table could describe a state’s annual median household income by county. In this example, the columns are year, county, and median household income, and a row would exist for each of New York’s counties for every year that data is available. Using a relational data model, this table could be compared to another table that tracked the number of Clean Passes issued by county on a monthly basis. To connect these tables, two additional tables must be created: one table defines all the dates in the median household and EV deployment tables and the other table defines all the counties in New York. The figure below illustrates these connections.



In this example, dates are used as the connection for the time series data and the counties are used to connect the geolocation data. The following figure illustrates the power of this concept using Microsoft Excel. Using relational databases allows for data of different types to be compared quickly and easily. In addition, data maintenance is easier because each data type is stored in its own Excel table.

Source: https://en.wikipedia.org/wiki/Relational_database



2.2 Data Contained in the EValuateNY Tool

This section summarizes the categories of data contained in the relational database, sources for these data, rationale for including them, and example insights that could be gleaned from exploring the data. Appendix B contains a complete list of the data tables and fields included in the EValuateNY tool.

Vehicle Registrations. Monthly vehicle registration data are available for battery electric vehicles (BEVs), plug-in hybrid electric vehicles (PHEVs), and all light-duty vehicles by ZIP code. Including vehicle registration data enables tool users to follow EV ownership trends. Establishing sales trends by date and location allows users to compare how interventions may have affected EV sales at a particular date and location. For example, a lack of public charging access is often cited as a critical barrier to EV deployment. The deployment of new public charging stations may coincide with new EV sales in a particular ZIP code. *(Data source: NREL)*

DC Fast Charging and Level 2 Charging Station Usage. Monthly use data is available from all public charging stations on the ChargePoint network and many stations funded by NYSERDA. Public charging station usage may vary for a number of reasons, such as proximity to registered EVs or siting by regular travel routes. These data will show how drivers use the publicly available charging infrastructure that has already been installed. EV drivers' charging patterns may differ significantly between locations and by charging type level (i.e., Level 2 or DC fast charging). The usage patterns may provide an understanding of the most effective methods of providing public EV charging in New York State, which would help charging service providers avoid stranding assets or making otherwise ineffective charging investments. *(Data source: ChargePoint and NYSERDA)*

Charging Station Locations. The Tool includes the characteristics of nearly all charging locations, as provided by the U.S. Department of Energy Alternative Fuel Data Center. As mentioned previously, access to charging is a commonly cited barrier to EV ownership or use. Nearby charging stations may increase consumer confidence in the EV market, resulting in increased vehicle sales. Also with this information, the ratio of charging stations to EVs in various locations could be explored to identify opportunities for additional infrastructure deployment. *(Data source: U.S. DOE)*

HOV (Clean Pass Participation). Total Clean Pass sticker recipients and eligible vehicle counts are included in the Tool. The data do not distinguish between EV and hybrid electric vehicles. Traffic can congest roads around high-density urban areas and extend travel and commute times. In some situations, EVs may be able to access restricted lanes, such as HOV lanes, and bypass traffic. New York’s Clean Pass program allows eligible clean vehicles, including EVs, to access HOV lanes on the Long Island Expressway without meeting the minimum number of vehicle occupants. Tracking the number of eligible EV owners that have registered for Clean Pass stickers may establish the extent to which consumers value access to HOV lanes. *(Data source: New York State Department of Transportation)*

Demographics. County-level demographic data from the U.S. Census Bureau is included in the Tool. Descriptive statistics for New York State’s population may provide valuable context for EV sales. Household income or commute time may influence EV sales just as significantly as dedicated EV promotional activities. The Tool’s demographic data offer insights into many different aspects of New York’s counties, such as population, the number and percentage of households that own their houses (and may therefore have an easier path to installing a home charging station), the number of vehicles per household, and more. *(Data source: U.S. Census Bureau)*

Policies, Activities, and Incentives. Nearly 50 policies, activities, and incentives are included in the Tool. Each entry is specific to a location (ZIP code, city, county, utility, or statewide) and valid for a set duration of time. EV promotions may come from a number of sources, such as local regulations that benefit EV owners or State incentives that promote the deployment of public charging stations. State and local policies that promote EV ownership have been categorized under the following four headings²:

- *Laws and regulations.* A legal requirement meant to affect EV deployment. Examples include local building code adjustments to require a percentage of electrified parking spaces and requirements for local and state agencies to acquire a set number or percentage of EVs.
- *State incentives.* Policies and programs by the state government of New York to entice EV purchases or charging infrastructure deployment. Examples include tax credits for the installation of charging stations, toll discounts for eligible low-emission vehicles, and access to restricted HOV lanes.
- *Local incentives.* Policies and programs by local or county governments in New York to promote EVs.

² Data source: U.S. Department of Energy, NYSEERDA, NREL, C2ES, and Atlas Public Policy

- *Utility/private incentives.* An offer made by a private business to entice EV purchases or charging infrastructure deployment. Examples include voluntary Time of Use electric rates that offer consumers lower rates to charge their EVs during off-peak hours and rebates for the purchase of a EV.

Gasoline Prices. Monthly statewide gasoline prices are included. Although these prices do not reflect local market conditions, the data may help offer insights to EV sales trends as gasoline prices fluctuate. *(Data source: U.S. Department of Energy)*

Electricity Rates. Available delivery electricity rates for residential households are included in the Tool. These rates vary by utility and are set by New York State’s Public Service Commission for nonmunicipal utilities. Fuel cost savings may be an effective driver of EV sales. Inexpensive electricity rates, such as time of use rates that allow EV owners to charge their vehicles at lower off-peak prices, may encourage consumers to purchase EVs to save on fuel costs. The Tool does not include other utility charges, including commodity charges, bill charges, or the cost of power. *(Data source: C2ES)*

2.3 Possible Future Enhancements for the EValuateNY Tool

The EValuateNY Tool demonstrates the power of relational databases to assess EV market development. Microsoft Excel and Power BI contain a number of features that could be incorporated into future versions of EValuateNY to empower users to dive deeper into the data and gain greater insights.

Possible future enhancements may include:

- **Measures.** Excel and Power BI contain a feature called “measures” that is only minimally used in EValuateNY. Measures are formulas that combine and interpret the data to enable comparisons of data using simple or complex mathematical formulas. For example, a measure could be created to calculate the ratio of EVs to charging ports or locations. These measure could then be plotted by county, city, or ZIP code to gain insights into areas where publicly available charging infrastructure may be inadequate.
- **Additional Data Sources.** EValuateNY was designed to be expanded with data from additional sources that may enhance a future version of the app. For example, auto dealer promotions (e.g., vehicle discounts or ride-and-drives) could be cataloged by date and location and added in a similar way to the public policy data. Another potential data source is the location of key stakeholder groups, including EV advocacy organizations in New York and a compilation of these groups’ activities. Finally, the existing electricity rate information could be expanded or recreated to summarize residential and commercial rates for all ratepayers.

3 How to Use the EValuateNY Tool

The EValuateNY Tool is a flexible application that can offer insights into the many factors that affect New York State’s EV market. The sections below provide a high-level overview of the Excel and Power BI interfaces, explain the apps’ basic functions, and offer examples of insights that are possible using the EValuateNY Tool.

3.1 System Requirements

The Excel interface requires Microsoft Excel 2013 or later, available for purchase on PC, Mac, tablet, or mobile device.

The Power BI interface of EValuateNY can be accessed through a web browser on any device, or downloaded as a desktop application (PC only) for free. Users can customize the EValuateNY dashboard and reports from within a Web browser or desktop application. The desktop application is required to customize the relational database and use the full feature set of Power BI.

The source data for EValuateNY is stored in Microsoft Excel files, also requiring Excel version 2013 or later. Because the EValuateNY Tool uses standard versions of Excel and Power BI, users can leverage the available literature and communities for both applications to operate, maintain, and expand the Tool (see Box 2). Visit nysesda.ny.gov/Cleantech-and-Innovation/Electric-Vehicles/Tools to download the Excel file.

3.2 Choosing an Interface

The user interface for the EValuateNY Tool relies on features native to Microsoft Excel and Power BI. With Excel, users can engage with familiar pivot tables and pivot charts to create custom visualizations in addition to several tables and charts that come with the EValuateNY Tool. The Excel interface provides users with a familiar way to interact and export the data contained in the EValuateNY Tool. Through Power BI, users are able to create compelling, interactive visualizations. Users looking to engage with the data through a web browser should select the Power BI interface.

Box 2: Microsoft Excel and Power BI Community Resources

Microsoft Excel and the company's new data visualization application, Power BI, are accessible and popular programs for gaining insights from various sources of information. This manual limits its focus to explaining the features that are unique to the EValuateNY Tool and does not reproduce instructions on how to use either software application. The following online resources are available to learn more about how the EValuateNY Tool uses the features of Excel and Power BI:

- [PowerPivotPro.com website](http://www.powerpivotpro.com): a large and vibrant community of data analysts that use Microsoft Excel to complete complex data analyses (www.powerpivotpro.com)
- [PowerBI.com website](http://www.powerbi.com): Microsoft's official site dedicated to supporting the Power BI application (www.powerbi.com)

The existing interfaces demonstrate the EValuateNY Tool's utility and familiarize users with its functions. The Excel interface consists of a number of worksheets containing tables and charts that are all responsive to user input. Users familiar with pivot tables and charts can quickly customize these worksheets to suit their needs. Though Power BI is a new application that may not be familiar to most users, the interface is intuitive. Many users may also choose to expand the existing functionality by making new connections through the relational database.

3.3 Excel Interface

The EValuateNY Tool's Excel interface consists of eight worksheets designed to demonstrate its capabilities. The worksheet contents are defined in Table 1. Users may add new pivot tables or charts in new worksheets or by altering existing worksheets.

Table 1. Worksheets in the Excel Version of the EValuateNY Tool

| Worksheet | Description |
|------------------|--|
| EValuateNY | Introductory text about EValuateNY, including diagrams of the app's architecture and relational database. |
| Policy Explorer | Demonstration of comparing policies, programs, and promotional activities with EV registrations. |
| County | Data fields from various tables showing time series data, organized by county. |
| ZIP Code | Data fields from various tables showing time series data organized by utility, county, city, and ZIP code. |
| Charging & EVs | Several charts comparing EV registrations and charging deployment and use over time. |
| Demographics | Several charts comparing various demographic factors with EV registrations, organized by county. |
| Policies | A reference table summarizing the policies, programs, and promotional activities contained in EValuateNY. |
| Version | EValuateNY version history. |

3.3.1 Features

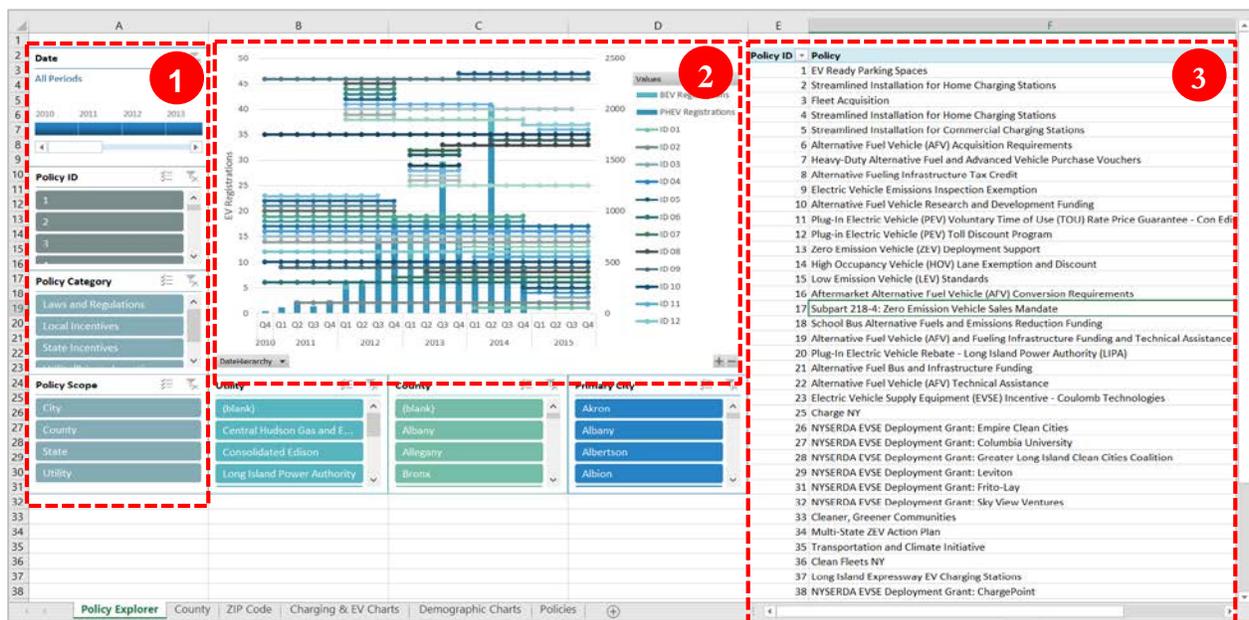
The EValuateNY Tool's Excel interface contains several noteworthy features designed to enable the easy filtering and comparison of information. The screenshot in Figure 3 highlights three of these distinctive features contained in each worksheet. Figure 4, Figure 5, and the remainder of this section further explain the features.

Figure 3. Excel Interface for EValuateNY Tool

Feature 1. “Slicers” and “timelines” are features that allow the user to filter information on the page. Slicers can filter all the worksheet’s information by individual variables, such as date, location, or other unique variables. Timelines are a type of slicer that exclusively filter information by date. The dotted box labeled (1) highlights a timeline and three slicers.

Feature 2. Pivot charts can graph data from multiple sources, incorporating user input from the slicers and timeline. The pivot charts included in each worksheet have been designed to address specific research questions. Users may use and adjust existing pivot charts or may create their own pivot charts to address new research questions. The dotted box labeled (2) highlights a pivot chart.

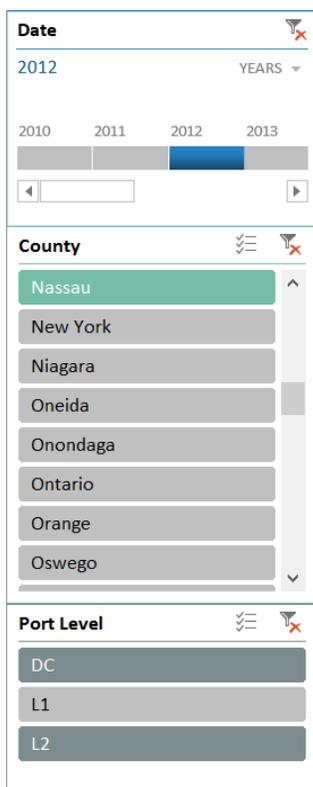
Feature 3. Similar to pivot charts, pivot tables can assemble and compare data from multiple sources. The information in pivot tables can also be filtered through slicers and timelines. The pivot table highlighted by the dotted box labeled (3) is a summary of the policies currently applicable to the user’s selection.



Filtering information with slicers and timelines alters all of the inputs for each pivot table and chart in a worksheet. Multiple filters can be applied to tables and charts to produce a detailed data analysis. Users can select single or multiple data filters within each slicer, so a table might display EV registrations from a single county or multiple counties, for example. Once filters have been applied, a red X will appear in the slicer at the upper right corner of the data type. Clicking on the red X will remove the filter and return the affected data inputs to their default state (see Figure 4).

Figure 4. Slicers and Timeline in Excel Interface

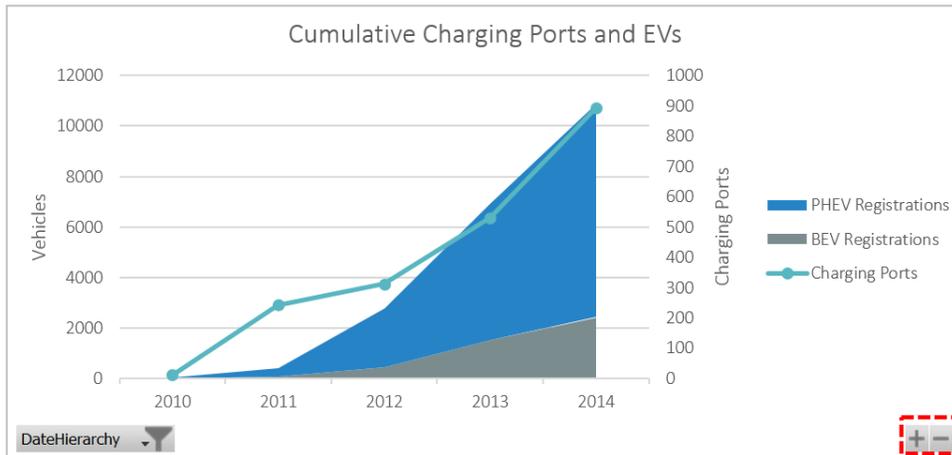
The timeline (top) and slicers (bottom two) features, which make it easy for users to fine-tune an analysis.



Users can also take advantage of the hierarchical data structures of geolocation and time data in pivot charts and tables. Clickable buttons that expand to offer plus/minus symbols are embedded along the x-axis in several of the EValuateNY Tool’s pivot charts. These buttons allow users to easily “drill down” and select data at the yearly, quarterly, and monthly level. Similarly, users may “drill down” with geolocation data from high-level data aggregations (e.g., cumulative charging use in New York State) to very small units (e.g., charging use in a ZIP code over a particular month). The button that allows users to “drill down” to more specific data is highlighted in a red box in Figure 5.

Figure 5. Drilling Down within a Pivot Chart

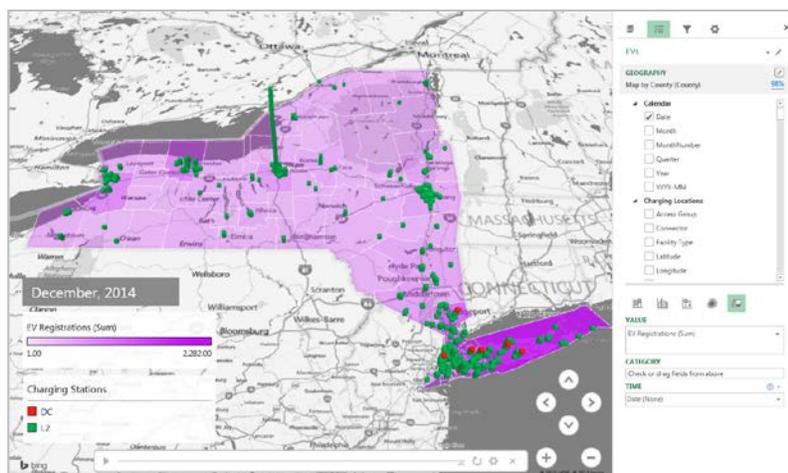
The two buttons highlighted in a red box allow users to “drill down” to more specific data.



3.3.2 Maps

Finally, Excel’s 3D Maps feature allows users to conduct a spatial analysis of New York State’s EV market. Similar to pivot charts and tables, 3D Maps can compare data from multiple sources within the EValuateNY Tool, drawing from geolocation and time series data to show changes in market conditions through an interactive map. The EValuateNY Tool contains two demonstration 3D maps. The first map plots the changes in EV registrations and charging station locations over time. The second map shows the growth of EV charging stations being measured and their energy delivered over time. Users can click on individual locations or graphics for detailed information and adjust the time series data with a slider at the bottom of the map (see Figure 6). Users may also export 3D Map visualizations as timeline videos, which can be exported to common video file formats for sharing outside of Excel.

Figure 6. 3D Map of EV Registrations and Charging Station Deployment



3.3.3 Exporting Work from Excel

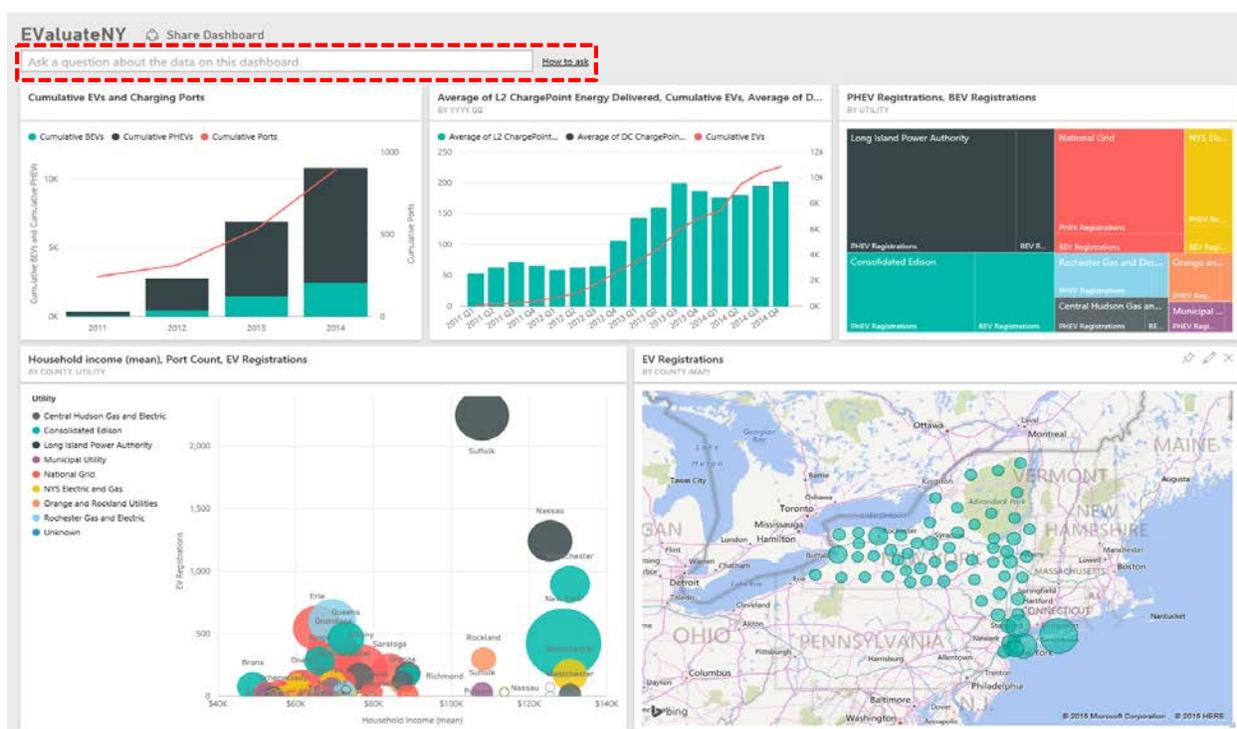
Users can export pivot charts and tables through the typical means familiar to Excel users, including using the device’s “clipboard” or taking a screenshot. Exported objects can be imported into existing Microsoft Office documents or saved separately as an image file, for example. The 3D Maps interface includes a button called “Capture Screen” under the Home menu, which takes a screenshot of the map.

3.4 Power BI Interface

The EValuateNY Tool’s Power BI interface has two main components: a dashboard and a report, which are both accessible and customizable in a Web browser. The dashboard is a mostly static look at the EV market highlights in New York State. The report provides a fully immersive look at the data including interactive visualizations, tables, and maps. Because Power BI is a newer program that typical users will be less familiar with than Microsoft Excel, the following instructions below will provide more detail than the previous section on Excel.

The Power BI dashboard is intended to provide users with a high-level overview of the EV market at a glance (see Figure 7). The dashboard consists of several visualizations, including charts and maps that provide a snapshot of key characteristics of the EV market in New York. Clicking any visualization will automatically take the user to the detailed report interface. Users can also click the In-Focus Mode button in the top right corner of a visualization to explore the data specific to that visualization.

Figure 7. EValuateNY Power BI Dashboard



3.4.1 Accessing Microsoft Power BI

Microsoft’s Power BI application draws from EValuateNY’s extensive database and complements the app’s Excel interface. The online application offers full functionality, allowing users to revise existing charts and create new visualizations that can offer insights into New York’s EV market. Microsoft has also developed a standalone desktop application that can be downloaded for free at www.powerbi.com. The desktop version of Power BI allows users to edit EValuateNY’s relational database. As noted previously, access to EValuateNY data through Power BI is not available to the public at the time of launch of the tool, but is anticipated to be available at a later date.

3.4.2 The Q&A Search Box

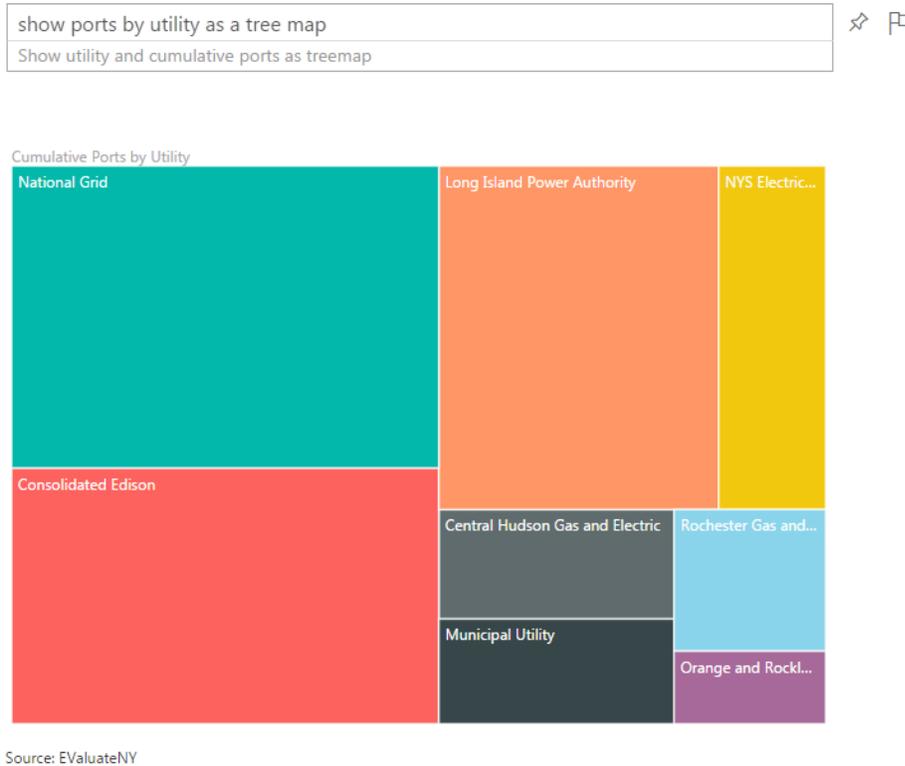
When viewing the dashboard, users can quickly retrieve custom data and create new visualizations using Power BI’s Q&A box, which is highlighted in a red box in Figure 7. The box to enter a question appears directly below the title of the dashboard, and help is available via a link to the right of the box (denoted as “How to ask”). This search engine leverages natural language processing that allows users to easily answer specific information queries. For example, if a user enters, “How many EVs were in the county of Albany in 2012?” into the Q&A bar, the interface would respond with the simple numeric answer, 135 (see Figure 8).

Figure 8. Power BI's Q&A Box Enables Fast, Custom Queries of Data



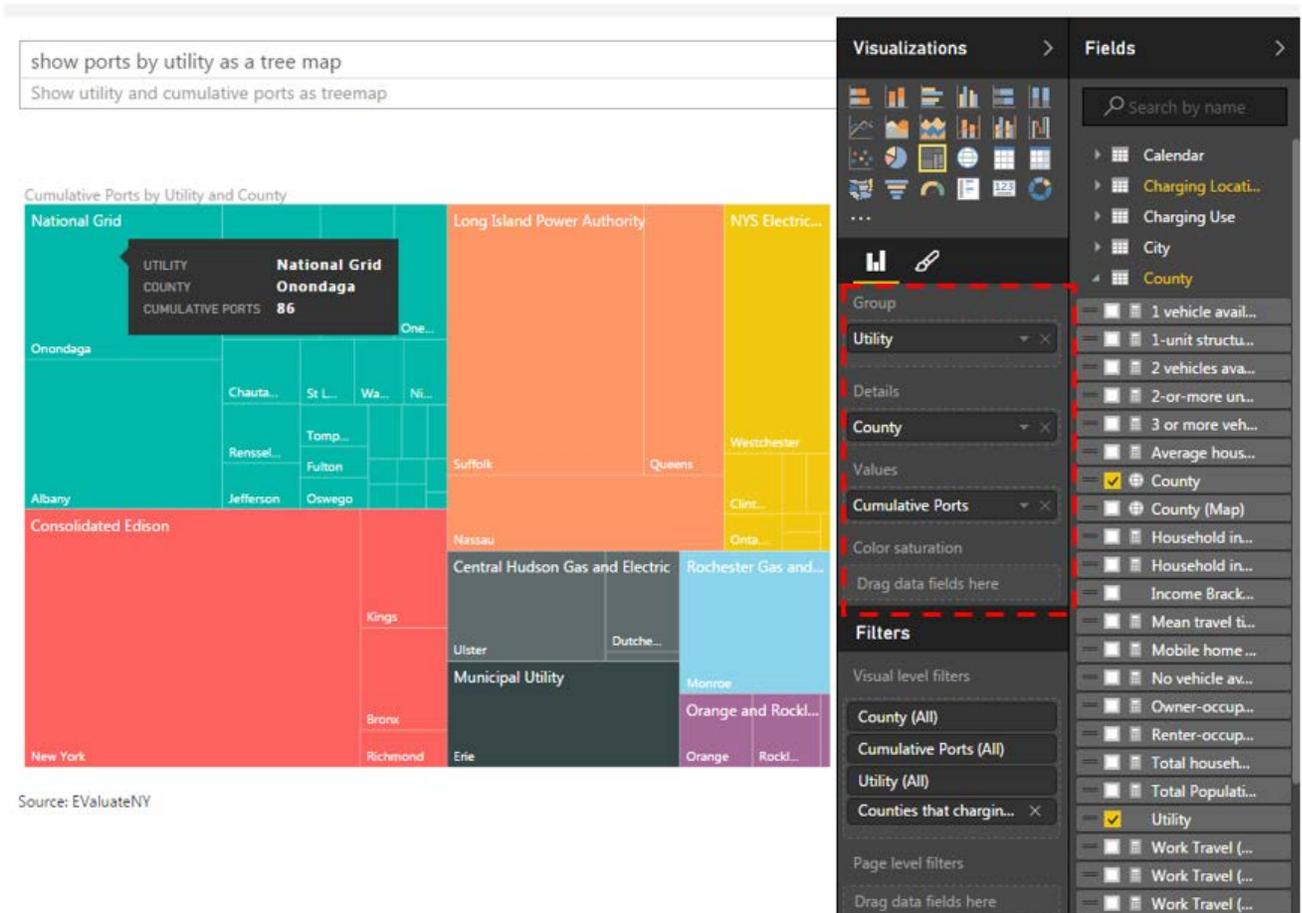
The Q&A box also allows users to create custom visualizations instantly. For example, users can ask the engine to “show ports by utility as a tree map” and Power BI will respond accordingly. Figure 9 shows one block represents the total number of charging ports operated by each of New York State’s electric utilities.

Figure 9. A Custom Visualization Using Power BI's Q&A Box



Users can revise new visualizations through the “Visualizations” and “Fields” tabs located at the right-hand side of a report page. The type of visualization can be selected by clicking on an icon that represents the bar charts, stacked bar charts, pie charts, maps, or other visualization. After a user has selected a visualization type, Power BI presents several customizable settings and options that give users greater flexibility to filter and adjust chosen data selections. The visualization in Figure 10 shows a revised Figure 9, with the counties within each utility’s service area included as an additional detail. A red box indicates the active fields that were placed into the “Visualizations” tab from the “Fields” tab.

Figure 10. Customizing the Fields Used in a Visualization

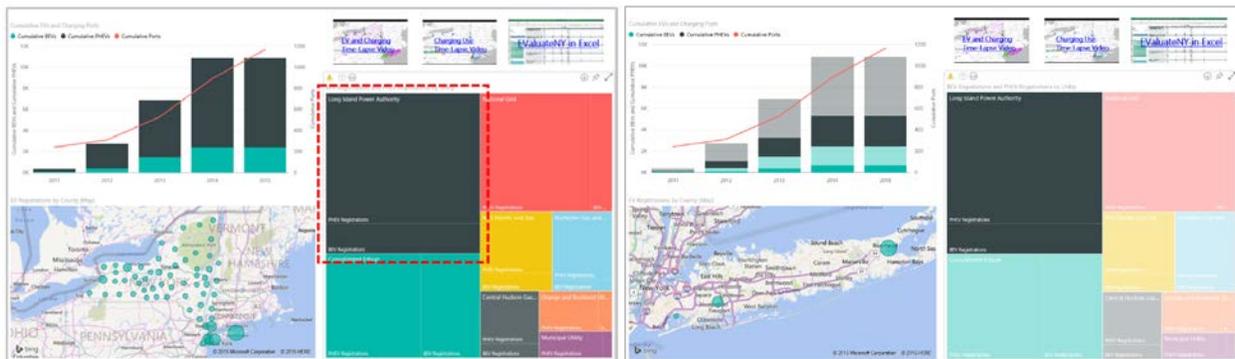


3.4.3 Reports Interface

Users can access the full potential of Power BI through its “report interface” by clicking on any of the dashboard tiles. Similar to the Excel interface, the Power BI report interface consists of a number of pages that present different visualizations focused on vehicles, charging, demographics, and public policies. Because Power BI contains more types of visualizations than Excel, such as tree maps and interactive state maps, users may be able to derive more varied insights using Power BI.

Users can click on any information in a Power BI report and instantly filter by that selection. For example, a user can drill down from information about all electric utility service territories to explore data specific to one utility’s territory as Figure 11 demonstrates. The left side of Figure 11 is a screenshot of the vehicles report page and the right side is the same page after the user has filtered information specific to the Long Island Power Authority. The tree map groups EV registrations by utility, which can be filtered by clicking on information specific to one utility—EV registrations in the Long Island Power Authority’s service territories are represented by the black box, highlighted below in a dotted red box. Three actions take place automatically once a user filters information. First, the tree map shades other utility territories, bringing focus to the Long Island Power Authority. Second, the cumulative vehicles and charging ports graph only shows data relevant to the utility’s territory. Third, the map automatically zooms to the two counties included in the territory (Suffolk and Nassau).

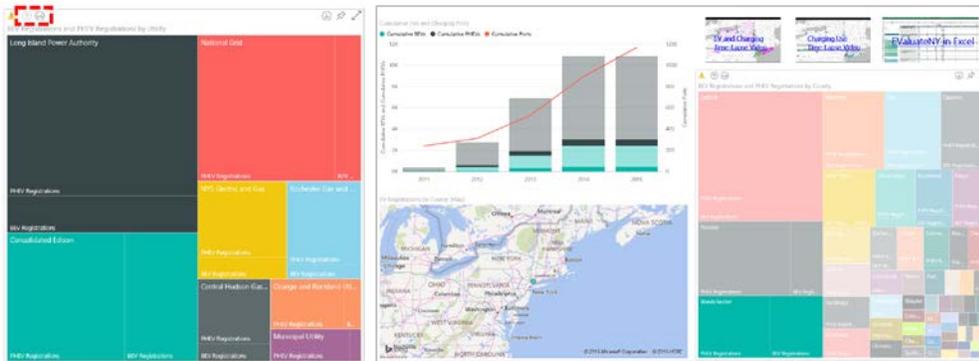
Figure 11. Interface for Vehicles Report Page Before and After a Filter is Applied



3.4.4 Hierarchies

Similar to Excel, the data in Power BI is hierarchical so users can view data in finer detail, as needed. Using the same vehicle report as an example, users can look at data specific to a county instead of an electric utility. For instance, clicking on the two arrows pointing down at the top-left of the tree map changes the view to county from electric utility. Next, clicking on a specific county filters the data in a similar way to the electric utility example above, as illustrated in Figure 12. Users can complete similar analyses using time series data, exploring data at the yearly, quarterly, or monthly level. The up arrow at the top of the tree map allows users to cycle back and view larger aggregations of data.

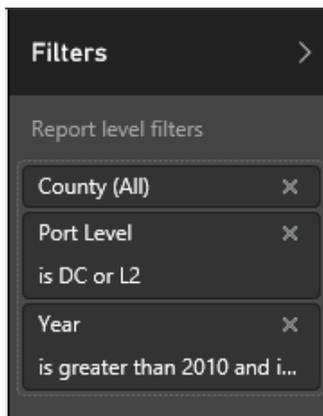
Figure 12. Example of Drilling Down to a Single County



3.4.5 Filters

Power BI also includes filters at the visualization, page, and report level similar to the slicers and timelines found in the Excel interface. These filters, located on the far right of a report page, allow users to more precisely filter selections, such as focusing on individual counties or selecting information within a particular year. Users can filter visualizations in three ways: by clicking on individual visualizations and selecting the visualization level filters, or by filtering at the page or report level (see Figure 13).

Figure 13. Filters for Vehicles Report Page



3.4.6 Exporting Work from Power BI

The EValuateNY Tool’s dashboard and reports can be shared with other users within an organization that is hosting the tool on www.powerbi.com. Currently, Power BI does not offer a method to save visualizations as image files. Users interested in sharing visualizations will need to take screenshots. Power BI’s feature set expands monthly, so a more convenient method to share visualizations could be implemented in the future.

Appendix A: The Relational Database

Figure A-1. Relational Database in the EValuateNY Tool

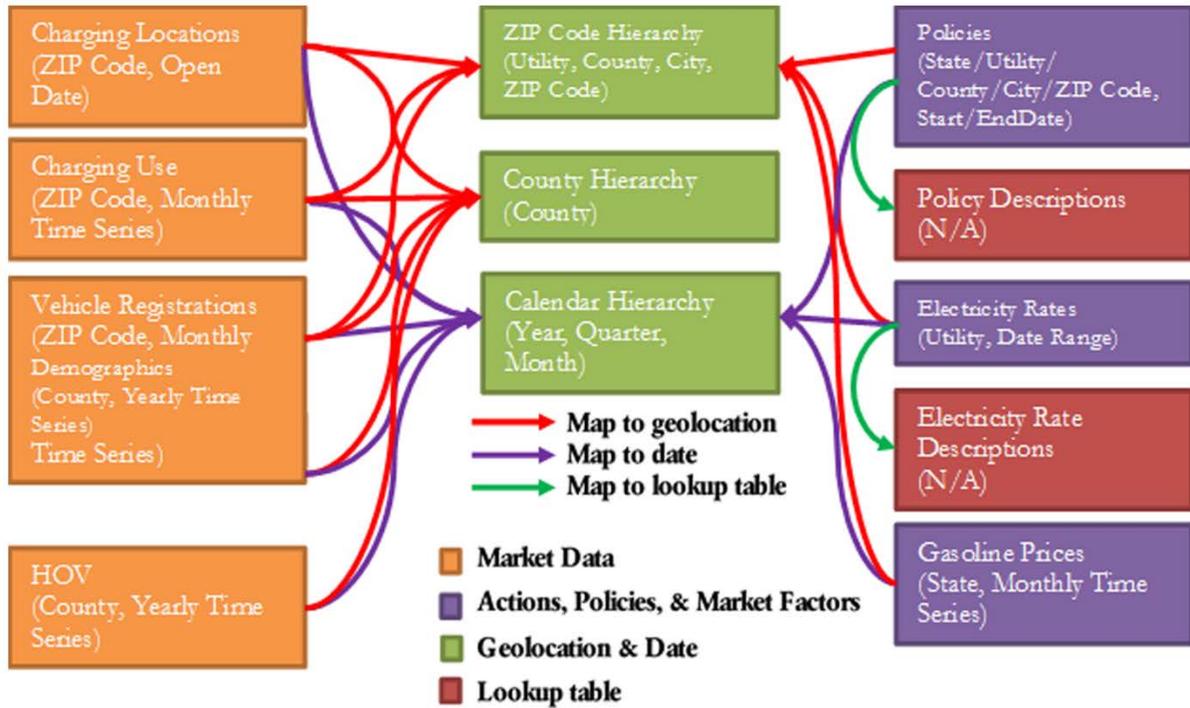


Figure A-1 depicts the layout of relational database in the EValuateNY Tool. Each box is a data table. Data tables can provide geolocation information in a time series format (e.g., monthly or yearly) or a date range format (e.g., a public policy is valid from January 2010 to January 2015). In addition to data tables, lookup tables can help avoid data duplication and provide rich information about the data, such as a detailed description of each public policy. Finally, hierarchies exist for geolocation data and time series data allowing users to “drill down” from high-level to granular data.

Appendix B: Data Tables and Fields

Table B-1. Summary of each data table and field included in the EValuateNY Tool

| | Data Field | Description |
|---|--------------------------|---|
| Vehicle Registrations, ZIP Code, Monthly | All Registrations | Total number of light-duty vehicle registrations, including gasoline vehicles and EVs. |
| | BEV Registrations | Number of BEVs registered. |
| | PHEV Registrations | Number of PHEVs registered. |
| Charging Use (ChargePoint DC Fast Charging, ChargePoint Level2, and Other Level 2), ZIP Code, Monthly | Energy Delivered | Total electricity delivered to the EV in kilowatt-hours. |
| | Locations | Number of unique locations that host at least one EV charging station. |
| | Ports | Number of unique points that connect EVs to charging stations. Stations may have multiple ports. Valid for DC fast charging and Level 2. |
| | Unique Drivers | Total number of unique, non-repeating drivers within a network that used public charging services. |
| | Sessions | Total number of public charging sessions. |
| Charging Locations, ZIP Code, Open Date | Access Group | Public or private access to the station(s). |
| | Connector | Type of DC fast charging connector (CHAdeMO, SAE Combo, Tesla) or Level 2 (J1772, NEMA515, NEMA520) charging available at the charging location. |
| | Facility Type | Locations that host charging stations are placed in one of 35 categories, such as shopping centers, parking garages, car dealerships, or municipal buildings. |
| | Latitude | Latitude of charging station(s) location. |
| | Longitude | Longitude of charging station(s) location. |
| | Network ID | Charging network that operates the charging station(s). |
| | Port Count | Number of charging ports available at the charging location. |
| | Port Level | Level 2 or DC fast charging connection at listed ports. |
| HOV, County, Monthly | Clean Pass Vehicle Count | Number of vehicles that have received the Clean Pass sticker (includes hybrids and EVs). |
| | Eligible Vehicle Count | Number of vehicles eligible to receive the Clean Pass sticker. |

Table B-1 continued

| | | |
|--|---|--|
| Demographics, County, Monthly | 1 Vehicle Available | Share of households with 1 vehicle available. |
| | 1-unit Structures | Share of single family homes. |
| | 2 Vehicles Available | Share of households with 2 vehicles available. |
| | 2-or-more-unit Structures | Share of multi-family homes. |
| | 3 or More Vehicles Available | Share of households with 3 or more vehicles available. |
| | Average Household Size | Average number of people in a household. |
| | Household Income (Mean) | Average household income. |
| | Household Income (Median) | Median household income. |
| | Mean Travel Time to Work (minutes) | Average trip time to work in minutes. |
| | No Vehicle Available | Share of households with no vehicle available. |
| | Owner-Occupied Housing Units | Share of households that are owner-occupied. |
| | Renter Occupied Housing Units | Share of households that are renter-occupied. |
| | Total Households | Total number of households. |
| | Work Travel Time (< 10 min, >60 min, 10-14 min, 15-19 min, 20-24 min, 25-29 min, 30-34 min, 35-44 min, 45-59 min) | Travel time to work in varying increments. |
| Gasoline Prices, State, Monthly | Gasoline Price | Average price of gasoline statewide in dollars per gallon. |
| Electricity Price, Utility, Start/End Date | Standard Rate (\$/kWh) | Standard electricity rate for residential customers. |
| | Off-Peak Rate (\$/kWh) | Off-peak electricity rate for time-of-use rates for residential customers. |
| | Peak Rate (\$/kWh) | Peak electricity rate for time-of-use rates for residential customers. |
| | Monthly Service Charge (\$) | Monthly service charge for residential customers. |

Appendix C: Data Sources for the Relational Database

This appendix identifies the sources of information and summarizes the procedures for collecting and organizing data in the EValuateNY Tool. Table C-1 summarizes the Excel tables used to build the relational database in the EValuateNY Tool. This section provides descriptions of the data source for each table.

Table C-1. Summary of Excel tables used to build the relational database in EvaluateNY

| Data Table(s) | Excel File | External Source |
|---|------------------------|---|
| Charging Locations, Charging Use | charging_stations.xlsx | ChargePoint, NREL, NYSERDA |
| Demographics | demographics.xlsx | U.S. Census Bureau |
| HOV | hov.xlsx | New York State Department of Transportation |
| Electricity Rates (via Electricity Rate Timeline), Gasoline Prices, Policy Descriptions (via Policy Geomap and Policy Timeline) | policies.xlsx | Atlas Public Policy, C2ES, NYSERDA, U.S. Department of Energy |
| ZIP Code, Primary City, County, Utility, Monthly, Daily, Zip-Utility Lookup | resources.xlsx | Atlas Public Policy |
| Vehicles | vehicles.xlsx | NREL |

Generally, each row of a data table used by the EValuateNY Tool consists of the following components:

1. **Geolocation:** Columns define the geographic scope of the data: ZIP Code, City, or County.
2. **Data:** Can be any piece of data, such as median household income, BEV registrations, etc.
3. **Start Date:** Time series data is monthly, yearly, or a range (e.g., a policy enactment and ending date). The start date is the beginning of the period for the data in the row.
4. **End Date:** The end date is the end of the period for the data in the row.

For all data in the EValuateNY Tool, columns for equivalent data should have the same name for all data tables. For Geolocation, the column should say ZIP Code, City, or County. See Table C-1 for an example. The County column must only the name of the county (i.e., the word “county” may need to be stripped from the data).

Table C-1. Example data table showing all data with equivalent values

| County | Median Household income (dollars) | Mean Household Income (dollars) | Start Date | End Date |
|---------------|--|--|-------------------|-----------------|
| Albany | 54,801 | 73,557 | 1/1/2013 | 12/31/2013 |
| Allegany | 42,445 | 53,800 | 1/1/2013 | 12/31/2013 |
| Albany | 54,801 | 73,557 | 1/1/2012 | 12/31/2012 |
| Allegany | 42,095 | 52,876 | 1/1/2012 | 12/31/2012 |

C.1 Summary of the Data Sources in the EValuateNY Tool

The following section provides the source and formatting of each type of data in the EValuateNY Tool.

C.1.1 Charging Locations

NREL provided charging location data for all stations on the U.S. Department of Energy Alternative Fuel Data Center. A custom worksheet was created to assemble all the data for the EValuateNY Tool. The worksheet includes columns directly from the NREL data as well as two custom columns to fill out additional details, Access Group and Network ID. New data from NREL or a similar source to update these data.

- Project Partner Source: EValuateNY/Project Partner Source/charging_station_locations.xlsx
- EValuateNY Source: EValuateNY/charging_stations.xlsx

C.1.2 Charging Use

ChargePoint and NYSERDA provided monthly charging use data for all public ChargePoint stations and most NYSERDA-funded stations. A pivot table was created to summarize the data from both providers. In addition, three custom columns were added to the project partner tables to enable inclusion in the EValuateNY Tool. The columns are Date, Charging Level, and Charging Network. New data from NYSERDA, ChargePoint, or a similar source to update these data.

- Project Partner Source: EValuateNY/Project Partner Source/charging_station_locations.xlsx
- EValuateNY Source: EValuateNY/charging_station_use.xlsx

C.1.3 Clean Pass Program

The New York State Department of Transportation provided data on monthly Clean Pass stickers and vehicles eligible for the Clean Pass program. A custom worksheet was created to summarize these data for inclusion in the EValuateNY Tool. The worksheet includes three columns: Start Date, End Date, and County for monthly data from December 2010 to December 2019. In addition, two columns were created to format the Date column to the format used for the relevant worksheets containing the Clean Pass sticker and eligible vehicle data. Finally, the Excel functions VLOOKUP() and MATCH() were used to match the county and month to the appropriate vehicle data (Clean Pass sticker count and eligible vehicle count). New data from the New York State Department of Transportation or a similar source to update these data.

- Project Partner Source: EValuateNY/Project Partner Source/hov.xlsx
- EValuateNY Source: EValuateNY/hov.xlsx

C.1.4 Demographics

Atlas Public Policy collected demographic data from the U.S. Census using the site's American FactFinder. Each data set can be time consuming to organize, so the site allows users to save a search as a local file on a computer and load previous searches to the site for use later. The saved searches are .aff files and permit users to access the appropriate datasets organized in a convenient way for importing to EValuateNY. See Appendix D for the procedure to assemble these data.

- Project Partner Source: EValuateNY/Project Partner Source/Demographic Data/*.xlsx
- EValuateNY Source: EValuateNY/demographics.xlsx

C.1.5 Electricity Rates

C2ES compiled electricity rate data from various websites. The rates only include the cost of electricity distribution to residential households and do not reflect the true cost of electricity. The data can be updated by editing the table directly in the EValuateNY Tool source file. See Appendix D for the procedure to update policies, programs, and promotional activities, which is similar to updating the electricity rates data.

- Project Partner Source: N/A
- EValuateNY Source: EValuateNY/policies.xlsx

C.1.6 Gasoline Prices

Atlas Public Policy compiled monthly, statewide gasoline price data from the U.S. Department of Energy website. The data can be updated by editing the table directly in EValuateNY source file.

- Project Partner Source: N/A
- EValuateNY Source: EValuateNY/policies.xlsx

C.1.7 Geolocation and Time Resources

Atlas Public Policy created several tables for geolocation and time data for use by EValuateNY. These data include tables to match ZIP codes to cities, counties, and utilities; and daily and monthly calendars for time series analysis. These data can be updated by modifying the EValuateNY source directly.

- Project Partner Source: N/A
- EValuateNY Source: EValuateNY/resources.xlsx

C.1.8 Policies, Programs, and Promotional Activities

NYSERDA, C2ES, and Atlas Public Policy compiled public policies, program, and promotional activities from several websites. Policies and programs can be added or removed by editing the data directly in the EValuateNY source file. See Appendix D for the procedure followed to assemble these data.

- Project Partner Source: N/A
- EValuateNY Source: EValuateNY/policies.xlsx

C.1.9 Vehicle Registrations

NREL provided monthly vehicle registration data for BEVs, PHEVs, and all light-duty vehicles by ZIP code. A custom Excel worksheet was created to convert the data format provided by NREL into a format that is compatible with EValuateNY. The worksheet includes three columns: ZIP Code, Start Date, and End Date for all possible ZIP codes in New York from December 2010 to December 2019. The worksheet uses the Excel functions VLOOKUP() and MATCH() to match the ZIP code and month to the appropriate vehicle data (BEV Registrations, PHEV Registrations, or All Registrations). New data from NREL or a similar source to update these data.

- Project Partner Source: EValuateNY/Project Partner Source/vehicles.xlsx
- EValuateNY Source: EValuateNY/vehicles.xlsx

Appendix D: Examples of Updating the Relational Database

Updating data in a consistent and easy manner is a vital step to continuing to create value through the EValueNY app. This section consists of example procedures to update the demographic data and the policies, programs, and promotional activities.

D.1 Demographic Data

The first procedure documents how to download a dataset from the U.S. Census Bureau website using a saved search file. The second procedure documents the process of incorporating the data set into EValueNY. The third procedure documents how to create the saved search files used for each category of demographic data. Table 2 summarizes the demographic data contained in the EValueNY Tool.

D.1.1 Procedure to Download Data Set

The saved search files make it very easy to download any of the demographic data sets.

1. Go to <http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>
2. Select Advanced Search on the main page
3. Select Show Me All under Advanced Search.
4. Select load search and browse to the appropriate *.aff to load the saved search file, see below:

Search - Use the options on the left (topics, geographies, ...) to narrow your search results

Your Selections
'Your Selections' is empty
load search save search

Search using the options below:

- Topics** (age, income, year, dataset, ...)
- Geographies** (states, counties, places, ...)
- Race and Ethnic Groups** (race, ancestry, tribe)
- Industry Codes** (NAICS industry, ...)
- EEO Occupation Codes** (executives, analysts, ...)

To search for tables and other files in American FactFinder:

- 1** Enter search terms and an optional geography and click GO

 topics race/ancestry industries occupations
- 2** Next, select **Geographies** (states, counties, cities, towns, etc.)
 - these are added to 'Your Selections'
 - the Search Results are updated
- 3** Select one or more Search Results and click **View**

5. Select Download
6. Select Microsoft Excel (.xls) format and Select OK

D.1.2 Procedure to Incorporate Data Set into EValuateNY Source File

1. Incorporating demographic data sets into EValuateNY Tool requires some light editing for each table, which can be done directly in Excel. Because the data is sorted by county name or ZIP code, it is easiest to copy the key columns of data directly into EValuateNY source file; the key data columns are equivalent to the columns identified in Table 2. In some cases, the column names were changed for use in EValuateNY and are also noted in Table 2.
2. Open the Microsoft Excel file containing the data set
3. Select all rows containing County or ZIP code data (not the column name header) for the appropriate column. See Table 2 for a guide to match up columns from the source dataset to the columns in the EValuateNY source file
4. Open the EValuateNY demographics workbook (demographics.xlsx)
5. Navigate to the appropriate worksheet tab: County or ZIP Code
6. Filter the Start Date column by the appropriate year from the dataset (2009, 2010, etc.)
7. Sort the County or ZIP Code column alphabetically (A to Z)
8. Paste the in the data in the appropriate column. See Table 2 for a guide to match up columns from the source dataset to the columns in EValuateNY

D.1.3 Procedure to Create a Saved Search File

Although the saved search files already exist for each of the demographic data sets, this procedure documents how the data sets were created to make it easy to add or modify data sets in the future.

1. Go to <http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>
2. Select Advanced Search on the main page
3. Select Show Me All under Advanced Search
4. Filter the data sets using Geographies and Topics on the left side of the screen
 - o Select Geographies
 - o Select County - 050 or 5-Digit ZIP Code Tabulation Area - 860
 - o Select New York
 - o Select All Counties within New York or All 5-Digit ZIP Code Tabulation Areas fully within/partially within New York
 - o Select ADD TO YOUR SELECTIONS
 - o Close the Geographies window
5. Select the data set to download via *Topics*. For each dataset, you can filter the selection by category and close the *Topics* window. Table 2 summarizes the data sets that were collected.
6. Open the Table Viewer by clicking the link with the name of the table, such as *INCOME IN THE PAST 12 MONTHS (IN 2013 INFLATION-ADJUSTED DOLLARS)* as shown below:

Search - Use the options on the left (topics, geographies, ...) to narrow your search results

Your Selections

Search using...
 People Income & Earnings
 Income/Earnings (Households)

Geography
 All Counties within New York

Search using the options below:
 Topics (age, income, year, dataset, ...)
 Geographies (states, counties, places, ...)
 Race and Ethnic Groups (race, ancestry, tribe)
 Industry Codes (NAICS industry, ...)
 EEO Occupation Codes (executives, analysts, ...)

Search Results: 1-25 of 3,977 tables and other products match 'Your Selections'

Refine your search results: [topic or table name] [state, county or place (optional)] GO

Selected: [View] [Download] [Compare] [Clear All] [Reset Sort]

Suggested search results for Income/Earnings (Household)

| ID | Table, File or Document Title | Dataset | About |
|--------|---|---------------------------|-------|
| S1901 | INCOME IN THE PAST 12 MONTHS (IN 2013 INFLATION-ADJUSTED DOLLARS) | 2013 ACS 5-year estimates | ? |
| DP93 | SELECTED ECONOMIC CHARACTERISTICS | 2013 ACS 5-year estimates | ? |
| S2001 | EARNINGS IN THE PAST 12 MONTHS (IN 2013 INFLATION-ADJUSTED DOLLARS) | 2013 ACS 5-year estimates | ? |
| U19001 | HOUSEHOLD INCOME IN THE PAST 12 MONTHS (IN 2013 INFLATION-ADJUSTED DOLLARS) | 2013 ACS 5-year estimates | ? |
| S1901 | INCOME IN THE PAST 12 MONTHS (IN 2013 INFLATION-ADJUSTED DOLLARS) | 2013 ACS 3-year estimates | ? |
| S1901 | INCOME IN THE PAST 12 MONTHS (IN 2013 INFLATION-ADJUSTED DOLLARS) | 2013 ACS 1-year estimates | ? |
| S1902 | MEAN INCOME IN THE PAST 12 MONTHS (IN 2013 INFLATION-ADJUSTED DOLLARS) | 2013 ACS 5-year estimates | ? |
| S1902 | MEAN INCOME IN THE PAST 12 MONTHS (IN 2013 INFLATION-ADJUSTED DOLLARS) | 2013 ACS 3-year estimates | ? |
| S1902 | MEAN INCOME IN THE PAST 12 MONTHS (IN 2013 INFLATION-ADJUSTED DOLLARS) | 2013 ACS 1-year estimates | ? |
| S1903 | MEDIAN INCOME IN THE PAST 12 MONTHS (IN 2013 INFLATION-ADJUSTED DOLLARS) | 2013 ACS 5-year estimates | ? |
| S1903 | MEDIAN INCOME IN THE PAST 12 MONTHS (IN 2013 INFLATION-ADJUSTED DOLLARS) | 2013 ACS 3-year estimates | ? |
| S1903 | MEDIAN INCOME IN THE PAST 12 MONTHS (IN 2013 INFLATION-ADJUSTED DOLLARS) | 2013 ACS 1-year estimates | ? |
| S2001 | EARNINGS IN THE PAST 12 MONTHS (IN 2013 INFLATION-ADJUSTED DOLLARS) | 2013 ACS 5-year estimates | ? |
| S2001 | EARNINGS IN THE PAST 12 MONTHS (IN 2013 INFLATION-ADJUSTED DOLLARS) | 2013 ACS 3-year estimates | ? |
| S2001 | EARNINGS IN THE PAST 12 MONTHS (IN 2013 INFLATION-ADJUSTED DOLLARS) | 2013 ACS 1-year estimates | ? |

9. Select Modify Table

10. Select Transpose Rows/Columns

11. For each county or ZIP code row, uncheck Margin of Error as shown below:

S1901 INCOME IN THE PAST 12 MONTHS (IN 2013 INFLATION-ADJUSTED DOLLARS)
 2013 American Community Survey 1-Year Estimates

Table View [Table Icon]

Actions: [Hide Table Tools] [Add/Remove Geographies] [Bookmark/Save] [Print] [Download] [Create a Map]

Table Tools: [Reset Table] [Show Hidden Rows/Columns] [Transpose Rows/Columns]

Legend: show/hide rows and columns collapse/expand data categories rearrange columns rearrange rows sort ascending/descending filter rows

Note: This is a modified view of the original table. [View Geography Notes] [View Table Notes]

Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the official estimates of the population for the nation, states, counties, cities and towns and estimates of housing units for states and counties.

| Subject | Total | Less than \$10,000 | \$10,000 to \$14,999 | \$15,000 to \$24,999 | \$25,000 to \$34,999 | \$35,000 to \$49,999 | \$50,000 to \$74,999 | \$75,000 to \$99,999 | \$100,000 to \$149,999 | \$150,000 to \$199,999 | \$200,000 or more | Median income (dollars) | Mean income (dollars) | PERCENT IMPUTED | | | |
|-------------------------|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--|-------------------------------------|--|-------------------------------------|
| | | | | | | | | | | | | | | Household income in the past 12 months | Family income in the past 12 months | Nonfamily income in the past 12 months | |
| Albany County, New York | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Households | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Estimate | 123,251 | 6.1% | 5.4% | 10.3% | 9.8% | 12.8% | 17.3% | 12.9% | 14.8% | 5.9% | 4.7% | 55,778 | 77,695 | 34.4% | (X) | (X) | (X) |
| Margin of Error | +/-2,036 | +/-1.1 | +/-1.1 | +/-1.3 | +/-1.3 | +/-1.5 | +/-1.7 | +/-1.5 | +/-1.6 | +/-1.0 | +/-0.8 | +/-2,267 | +/-3,135 | (X) | (X) | (X) | (X) |
| Families | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Estimate | 66,647 | 3.8% | 3.0% | 6.5% | 6.9% | 8.7% | 15.9% | 15.5% | 22.6% | 9.2% | 7.9% | 84,632 | 101,667 | (X) | 32.4% | (X) | (X) |
| Margin of Error | +/-2,627 | +/-1.2 | +/-0.9 | +/-1.5 | +/-1.6 | +/-1.5 | +/-1.9 | +/-1.9 | +/-2.4 | +/-1.5 | +/-1.4 | +/-3,386 | +/-5,028 | (X) | (X) | (X) | (X) |
| Married-couple families | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

12. Now, you can filter the columns. Table D-1 summarizes the columns that should be visible for each data set.

13. Select *Bookmark/Save* to export the query for future use

Table D-1. Demographic Dataset Summary from the U.S. Census Bureau Website

This table shows the names of the columns from each dataset that are incorporated in the EValuateNY Tool.

| Data set | Dataset ID | Category | Column(s) | Column Name(s) in the EValuateNY Tool |
|--|-------------------|---|---|--|
| 2005-2009 American Community Survey 5-Year Estimates 2006-2010 American Community Survey 5-Year Estimates | S1901 | People > Income & Earnings > Income/Earnings (Households) | Median income (dollars), Mean income (dollars) | Median household income (dollars), Mean household income (dollars) |
| 2007-2011 American Community Survey 5-Year Estimates 2008-2012 American Community Survey 5-Year Estimates 2009-2013 American Community Survey 5-Year Estimates | S1101 | Housing > Occupancy Characteristic > Household Type | Average household size, Total households, 1-unit structures, 2-or-more-unit structures, Mobile homes and all other types of units, Owner-occupied housing units, Renter-occupied housing units | Average household size, Total households, 1-unit structures (%), 2-or-more-unit structures (%), Mobile homes and all other types of units (%), Owner-occupied housing units (%), Renter-occupied housing units (%) |
| | B01003 | People > Basic Count/Estimate > Population Total | Total | Total Population |
| | S0802 | People > Employment > Commuting (Journey to Work) | Workers 16 years and over who did not work at home, Less than 10 minutes, 10 to 14 minutes, 15 to 19 minutes, 20 to 24 minutes, 25 to 29 minutes, 30 to 34 minutes, 35 to 44 minutes, 45 to 59 minutes, 60 or more minutes, Mean travel time to work (minutes), Workers 16 years and over in households, Owner-occupied housing units, Renter-occupied housing units, No vehicle available, 1 vehicle available, 2 vehicles available, 3 or more vehicles available | Workers 16 years and over who did not work at home, Work Travel (<10 min), Work Travel (10-14 min), Work Travel (15-19 min), Work Travel (20-24 min), Work Travel (25-29 min), Work Travel (30-34 min), Work Travel (35-44 min), Work Travel (45-59 min), Work Travel (>60 min), Mean travel time to work (minutes), Workers 16 years and over in households, Owner-occupied housing units, Renter-occupied housing units, No vehicle available, 1 vehicle available, 2 vehicles available, 3 or more vehicles available |

D.2 Adding a New Policy, Program, or Promotional Activity to the EValuateNY Tool

A user can follow a similar procedure to add data related to Electricity Rates with the exception of the final step, which is unnecessary.

1. **Describe the New Policy:** In policies.xlsx, add a new row to the PolicyDescriptions table found in the “Policy Descriptions” worksheet. Make sure the Policy ID column is unique. If the policy is still valid currently, enter the Excel formula TODAY() in the “End Date” column.
2. **Define the Geographic Scope of the Policy:** Add the necessary rows to the PolicyGeoMap table found in the “Policy GeoMap” worksheet that correspond to the geolocation of the policy. For example, if the policy is statewide, add one row and populate the “State” column with “New York”. If the policy is for multiple cities/counties/ utilities, enter a row for each city/county/utility.
3. **Update the Timeline for All Policies:** Go to the “Policy Timeline” worksheet and select a cell in the PolicyTimeline table. In the Excel ribbon, click the Design tab, which will appear when you select the table. Click Refresh. This step will create a number of new entries in the table, one for each month policies are valid, enabling visualizations to be created of when a policy is valid compared to other data (e.g., vehicle registrations).
4. **Share the New Policy with the EValuateNY Tool:** Open EValuateNY (Excel or Power BI) and refresh the data.
5. **Add the New Policy to Visualizations:** To create visualizations for the Policy Explorer, you must create a measure for each additional Policy ID. For Excel, go to the Power Pivot tab in the Excel ribbon and click Manage Measures under Measures. Similar to the other policy measures (i.e., ID XX) create a new measure for each Policy ID and add it to the Policy table. Follow a similar process for Power BI.

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