



***ELECTRIC VEHICLE WIDESCALE
ANALYSIS FOR TOMORROW'S
TRANSPORTATION SOLUTIONS***

*Driving Electrification
Through the Power of Data*

www.ev watts.org

July 16, 2020



Driving Electrification Through the Power of Data



Driving Electrification Through the Power of Data

- \$4M DOE Vehicle Technologies Office Award
- Collect real-world use data from 1,600 plug-in electric vehicles (PEVs) and 10,000 charging stations nationwide
- Validate, clean, anonymize (remove all personally identifiable information), analyze, and summarize data
- Share aggregated data with DOE and national laboratories
- Share public summaries throughout project; anonymized public dataset at end of 2022



Driving Electrification Through the Power of Data

EV WATTS PROJECT TEAM

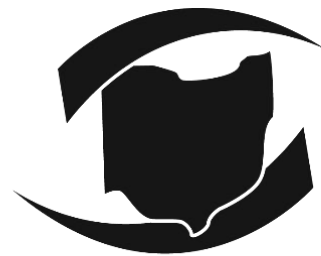
Project Lead



Implementation Partners



Project Admin. Lead



Clean Fuels Ohio



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PEV AND CHARGING STATION DATA

Vehicles

- All-electric and plug-in hybrid electric vehicles
- Light-, medium-, and heavy-duty
- Trip-level, longitudinal vehicle data (from telematics)

Charging Infrastructure

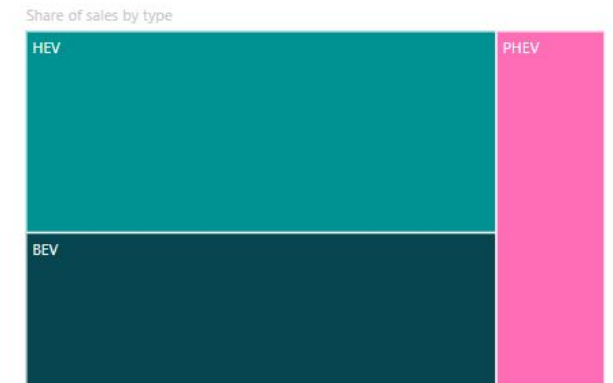
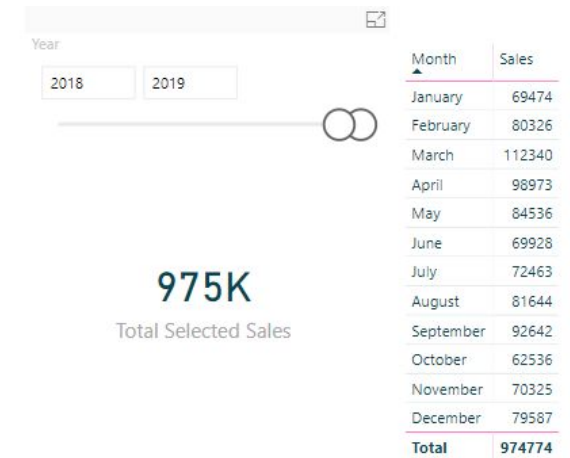
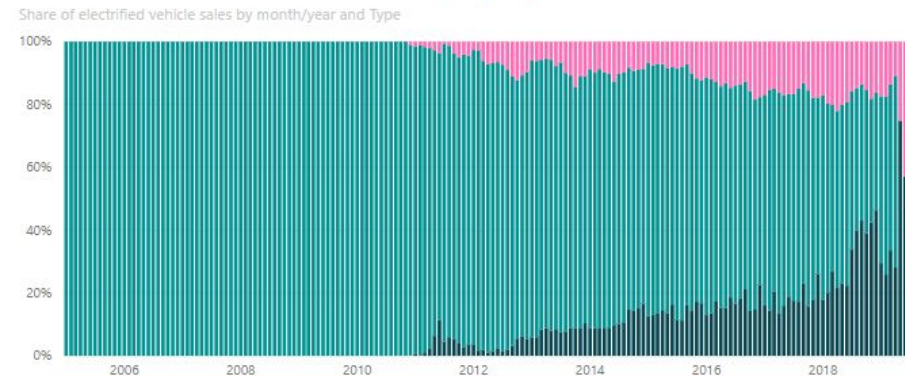
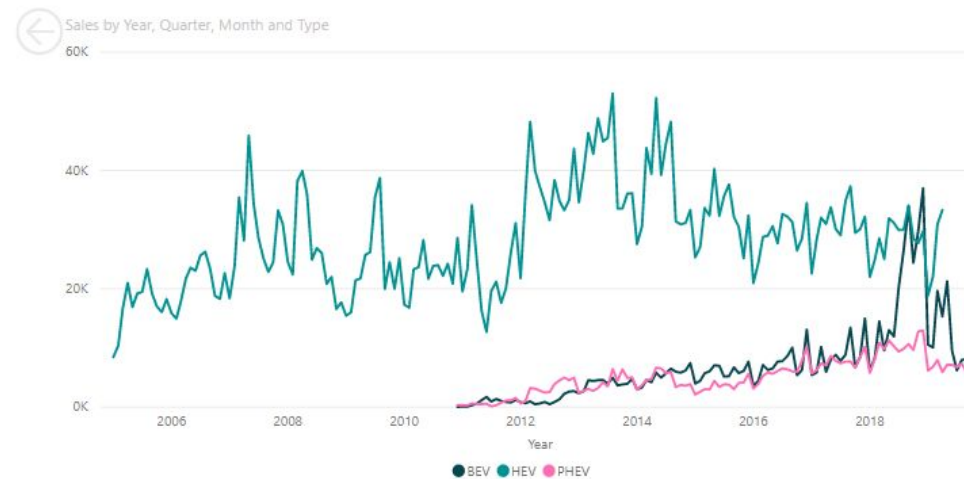
- AC Level 2 and DC fast charge
- Various sites: corridors, workplace, multi-unit dwellings, curbside, fleet, commercial, etc.
- Session-level or interval-level data

Variety of geographic areas, climates, and topography



PUBLIC SUMMARIES AND DASHBOARD

- High-level data summaries
- Interactive dashboard
- Insights on PEVs and charging stations



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PEV ANALYSIS REPORT

Examples of EV Project Reports

How much are Chevrolet Volts in The EV Project driven in EV Mode?

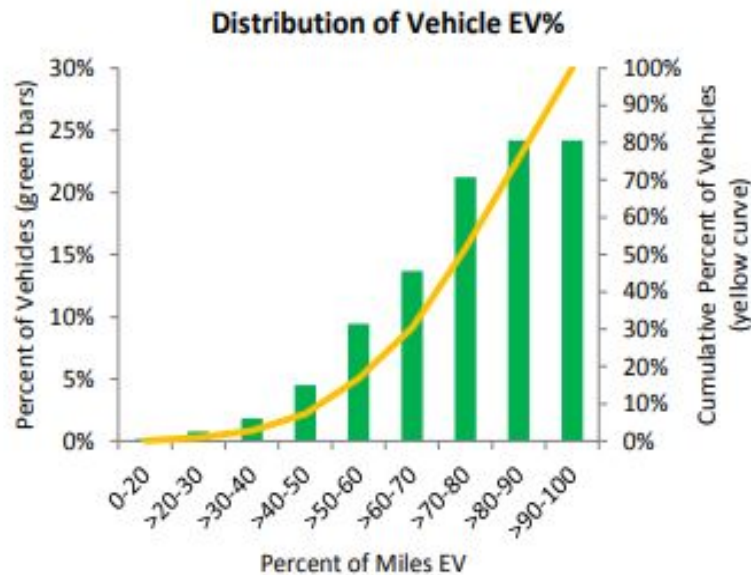


Figure 1: Histogram of EV% on a per-vehicle basis with cumulative distribution curve

What Kind of Charging Infrastructure Did Nissan Leaf Drivers in The EV Project Use and When Did They Use It?

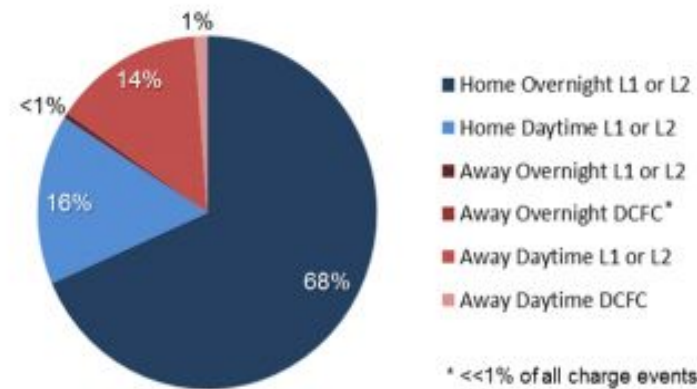


Figure 1. Percent of charging events performed by location, power level, and time of day.

Where do Nissan Leaf drivers in The EV Project charge when they have the opportunity to charge at work?

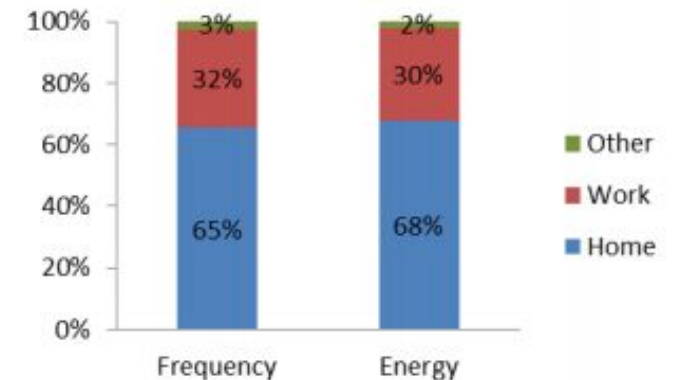
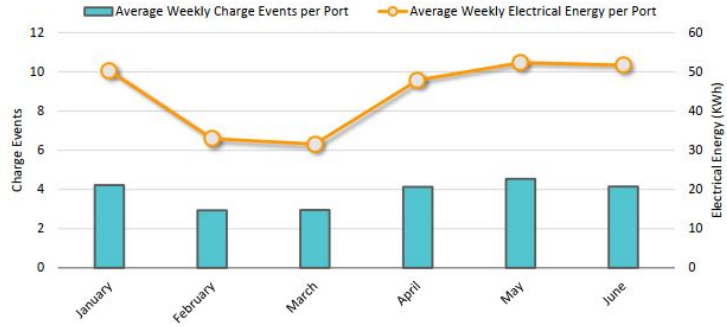


Figure 3: Charging frequency and energy consumption by location for workplace vehicles in 2012 and 2013.



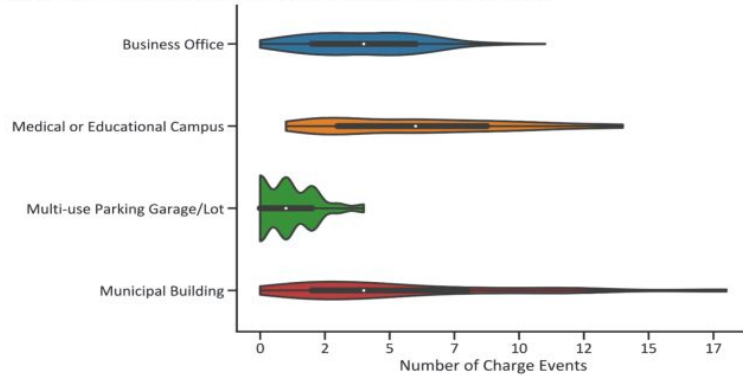
CHARGING STATION ANALYSIS REPORTS

Level 2 Port Utilization



Level 2 Weekly Charging Events by Venue Type

Stations at municipal building experience the broadest range of utilization levels, but stations at Medical or Educational Campus locations have the highest median of charging events per week.

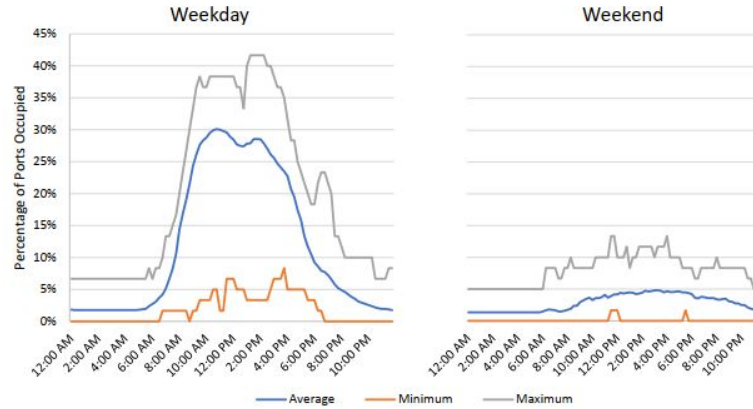


About Violin Charts

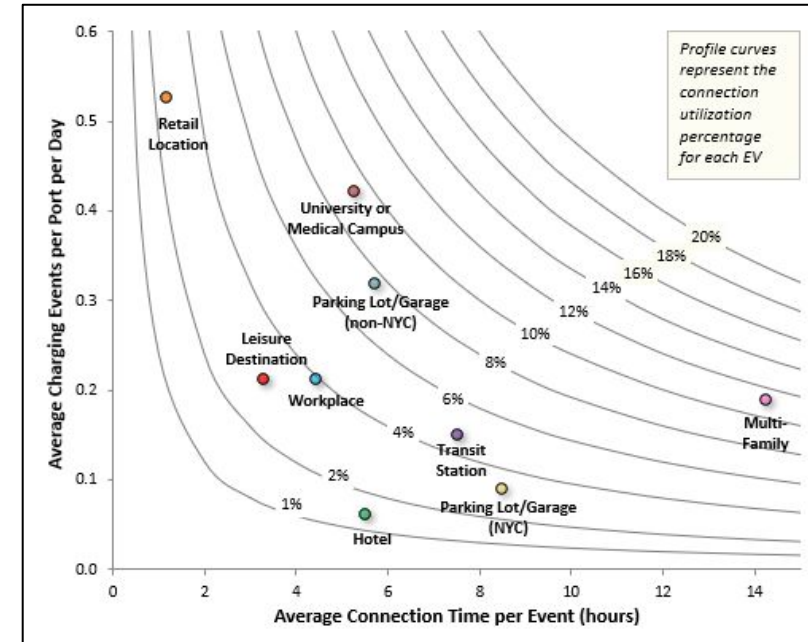
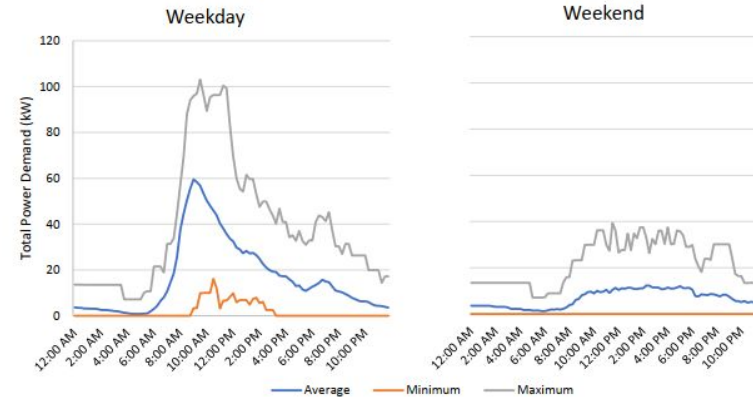
25th percentile, median (50th percentile), 75th percentile, min, max, frequently occurring data values are peaks, The relative height represents the frequency of data at that value, Few data points have these values, more even distribution, skewed distribution.

Grid Impacts due to Level 2 Charging Use

Port Availability: Percentage of active charging ports in use across the time of day for weekdays and weekends. Utilization is considerably higher during weekdays.



Estimated Total Charging Demand: Total power draw (calculated using average power per charging event for the charging duration) from all stations in the Program across the time of day for weekdays and weekends.



Driving Electrification Through the Power of Data

PEV DATA COLLECTION USING TELEMATICS

GOAL: To gather new and missing PEV data (18-24 months) using project-installed telematics/dataloggers.

- Secure specific quantity of PEV commitments to use telematics devices and share data for 18-24 months.
- Review and sign a data sharing agreement.
- Provide vehicle specifications and operational information.



EV WATTS DATA SHARING AGREEMENT

EVs powered by electricity

AKIMEKA
A Division of E&E Corporation

Plug-in Electric Vehicle and Charging Station Data Sharing Agreement

This Data Sharing Agreement ("Agreement") effective as of this **XX** day of **XX, XXXX** (the "Effective Date"), is entered into by and between Akimeka, LLC, a Hawaii Limited Liability Company, (herein "AKIMEKA") having an office at 7073 Samuel Morse Drive Suite 100 Columbia, MD 21046 and **XXXXX**, a **XXXXX** corporation (herein "DATA OWNER"), having an office at **XXXXX**.

WHEREAS, DATA OWNER has rights to certain data from electric vehicle charging station(s) and/or plug-in electric vehicle(s); AND

WHEREAS, DATA OWNER desires to provide plug-in electric vehicle and electric vehicle charging station characteristics and usage data (herein "DATA") as part of AKIMEKA's "EV-WATTS: Electric Vehicle Widescale Analysis for Tomorrow's Transportation Solutions" Prime Contract (herein "PROJECT") funded in part by the U.S. Department of Energy's ("DOE") Agreement Number DE-EE0008990; AND

WHEREAS, AKIMEKA, performing as a prime contractor on the PROJECT will be performing analysis of DATA to determine the current state of practice, operating characteristics, business case, and to identify opportunities for improvement resulting in a summary report/presentation to be provided to the DOE and other related PROJECT stakeholders;

NOW, THEREFORE, in consideration of the mutual covenants and agreements contained herein, the parties agree as follows:

- DATA**, may include but is not limited to, electric vehicle charging station characteristics, electric vehicle charging station usage data, plug-in electric vehicle characteristics, and plug-in electric vehicle operational data. This DATA may include data that DATA OWNER has determined to be confidential ("Confidential Information") and/or Personally Identifiable Information ("PII").

For the purpose of this Agreement "Confidential Information" is defined as information or material which is considered confidential and proprietary to the DATA OWNER, generally not known to the public, and which AKIMEKA may obtain through any direct or indirect contact with the DATA OWNER including, but not limited to, business records and plans, trade secrets, technical data, product ideas, contracts, financial information, source code, intellectual property, sales data, strategic information, customer lists, etc.;

For the purpose of this Agreement "PII" is defined as all information that identifies, or can be used to identify, locate, contact, or impersonate a particular individual. Examples may include, but are not limited to, a specific individual's: first name (or initial) and last name

DATA SHARING AGREEMENT for EV-WATTS
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(current or former); geographical address; electronic address (including an e-mail address); personal cellular phone number; telephone number or fax number dedicated to contacting the individual at his or her physical place of residence. When connected with one or more of the items of information specified above, PII includes any other information concerning an individual that, if disclosed, identifies or can be used to identify a specific individual physically or electronically.

- Licenses:** DATA OWNER hereby grants to AKIMEKA a limited, non-exclusive, non-transferable, and irrevocable license to access, copy and use the DATA and DATA OWNER hereby grants to AKIMEKA, the DOE, and other applicable PROJECT stakeholders unlimited rights to (a) take, use and publish photographs of the plug-in electric vehicle(s) or electric vehicle charging station(s) and (b) anonymized summary data obtained from DATA (the "Licenses").
- Use of DATA:**
 - AKIMEKA will use or disclose the DATA only in furtherance of the PROJECT or as required by law.
 - AKIMEKA shall exercise at least the same degree of care as it uses with its own data, but in no event less than reasonable care, to protect DATA from misuse and unauthorized access or disclosure.
- DATA OWNER Responsibilities:**
 - DATA OWNER represents and warrants that it has the right to grant AKIMEKA and the DOE the Licenses as described above in Article 2.
 - DATA OWNER will provide adequate access to view the plug-in electric vehicle(s) or electric vehicle charging station(s) to AKIMEKA staff. Such access must be consistent with the purpose of the PROJECT.
 - DATA OWNER will provide AKIMEKA with DATA as defined above. DATA OWNER acknowledges that AKIMEKA will utilize the retrieved data for the purpose of data analyses and determining summary results and development of reports/presentations to DOE and other PROJECT stakeholders. AKIMEKA will be the only organization to have access to the retrieved DATA, however summary data will be disclosed to the DOE and other PROJECT stakeholders.
 - DATA OWNER will notify AKIMEKA if any plug-in electric vehicle(s) or electric vehicle charging station(s) anticipated to be included in the data collection will be decommissioned or turned off prior to the conclusion of this Agreement.
- AKIMEKA Responsibilities:**
 - AKIMEKA will provide DATA OWNER with a minimum of 48 hours' notice, when possible, prior to completing any visit to view the plug-in electric vehicle(s) or electric vehicle charging station(s).

DATA SHARING AGREEMENT for EV-WATTS
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- AKIMEKA** will only disclose summary data obtained from DATA to the DOE and other PROJECT stakeholders.
- AKIMEKA** will not attempt to identify or contact any person whose information is contained within the DATA.
- AKIMEKA** will use appropriate safeguards to protect the DATA from misuse and unauthorized access or disclosure. Should unauthorized disclosure occur, AKIMEKA will work to mitigate such disclosure and ensure proper safeguards, preventing further disclosure, are in place to prevent further unauthorized dissemination of DATA.
- On expiration of this Agreement or earlier as PROJECT allows, AKIMEKA will destroy all DATA, not to include content within the resultant data analyses and summary reports/presentations.
- Publication:** AKIMEKA may publish or present any resulting summary report or presentation to DOE and other related PROJECT stakeholders including summary data obtained from DATA.
- Modifications:** No amendments or modifications to this Agreement shall be effective unless in writing and signed by both Parties.
- Term:** This agreement will commence on the Effective Date and continue until December 31, 2022.
- Waiver:** Either Party's failure at any time to require the other Party's performance of any obligation under this Agreement will in no way affect the full right to require such performance at any time thereafter. Either Party's waiver of a breach of any provision of this Agreement will not constitute a waiver of the provision itself. Either Party's failure to exercise any of its rights provided in this Agreement will not constitute a waiver of such rights.
- Applicable Law:** This Agreement will be construed, and performance will be determined, according to the laws of the State of Maryland without reference to such state's principles of conflicts of law.
- Assignment:** DATA OWNER may not assign any of its rights or obligations under this Agreement, whether by operation of law or otherwise, without the prior written consent of AKIMEKA.
- Termination:** Either Party may terminate this Agreement for any reason so long as the other Party is provided with thirty (30) days written notice of such termination. Each party may terminate this Agreement with immediate effect by delivering notice of the termination to the other Party if other party fails to perform, or otherwise materially breaches any of its

DATA SHARING AGREEMENT for EV-WATTS
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obligations, covenants, or representations after being provided a five (5) day period to cure any such breach.

- Entire Agreement:** The Parties intend that this Agreement represents the final expression of the Parties' intent relating to the subject of this Agreement, contains all applicable terms and conditions and replaces all previous discussions, understandings and Agreements related to the subject of this Agreement.

NOW, THEREFORE, the Parties above named have caused this Agreement to be executed by their duly authorized representatives as of the day and year first set forth above.

Akimeka, LLC ("AKIMEKA") **XXXXXX** ("DATA OWNER")

(Signature) _____
(Print) _____
(Title) _____

(Signature) _____
(Print) _____
(Title) _____

DATA SHARING AGREEMENT for EV-WATTS
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Data sharing agreement available at www.ewwatts.org



Driving Electrification Through the Power of Data

EV WATTS WEBSITE: www.ewatts.org

energetics.com/evwatts



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DATA

The data collection effort is comprehensive, covering:

- All-electric and plug-in hybrid electric vehicles telematics data
- A variety of vehicle applications: cars, trucks, buses, etc.
- Multiple geographic areas and climates
- AC Level 2 and DC fast charging infrastructure
- Various EVSE sites: corridors, workplace, multi-unit dwellings, curbside, fleets, transit, ports, airports, etc.

Results will be posted to this website in the form of quarterly summary reports throughout 2021 and 2022. At project completion, Energetics will create an anonymized dataset for public use.

RESOURCES

FAQS

How can stakeholders access the data?

Once the data has been collected and analyzed, the results—both data sets and analyses—will be made publicly available on this website—summary analyses updated quarterly starting in 2021 and the comprehensive data sets at the end of the project in December 2022.

How is EV WATTS obtaining the data?

Energetics is working with its partners—including Clean Cities Coalitions, fleets, state and local government agencies, vehicle manufacturers, utilities, and charging station providers—to collect the data and remove all personally identifiable information.

Will sensitive information be included in the publicly available data?

No. Energetics will anonymize all data sets and summary



Be the first of your friends to like this



Celebrate your freedom from oil this Independence Day! Plug In America is organizing the second annual Independence Day EV Count. Inspired by the National Audubon Society's Christmas Bird Count, Plug In America invites EV drivers and supporters to get out into your neighborhood and count how many EVs you see - share your results in the comments below!

#EVWATTS



CONTACT INFORMATION



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BECOME AN EV WATTS DATA PARTNER by:

- ✓ Tell Us if you want to receive datalogger & provide data
- ✓ Review, sign, and return the Data Sharing Agreement
- ✓ Schedule a time to have the datalogger installed
- ✓ That's it – vehicle data will be automatically collected
- ✓ Get access to personalized reports on your EV use

www.ewwatts.org

EV WATTS DATA SHARING AGREEMENT

