



# Fleet Efficiency and Electrification Technical Assistance and Tools

Cabell Hodge Energy Exchange August 10-13, 2020

Photo by Dennis Schroeder, NREL 26762

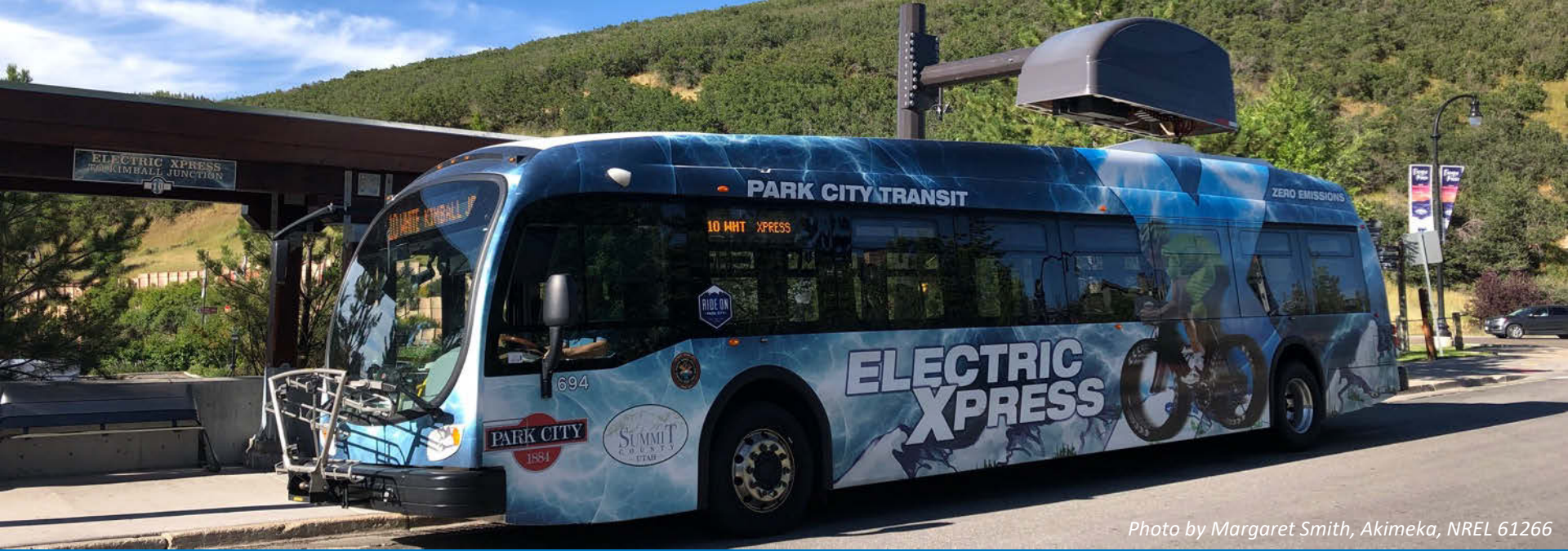


Photo by Margaret Smith, Akimeka, NREL 61266

# Fleet Evaluation Capabilities

Private enterprises, transit agencies, and governments around the world rely on NREL to evaluate their fleet electrification needs.



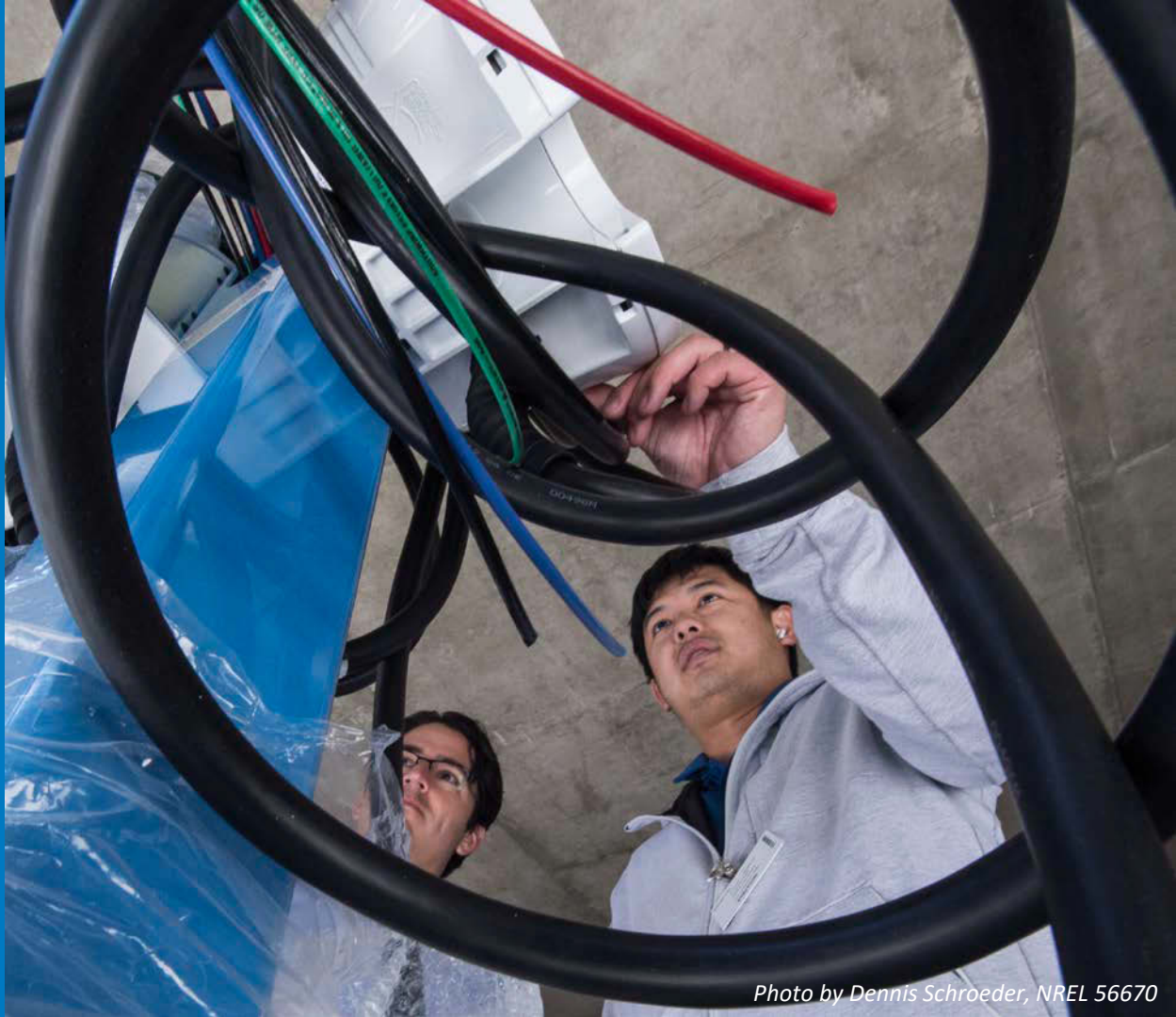
## Research Facilities for Developing and Evaluating New Technologies

*Photo by Dennis Schroeder, NREL 62134*

From testing vehicle charging equipment in the lab, to working with fleets to adopt new types of vehicles, to helping agencies develop electric vehicle (EV) plans, NREL transportation analysts address a range of electrification challenges.

# Site Evaluations for Electric Vehicle Supply Equipment

NREL applies power systems expertise to assess vehicle charging needs, power system upgrades, preferable points of connection, and charging management solutions.



# Electric Vehicle Supply Equipment Tiger Team Site Assessment Findings from Army Facilities

Report examines how the U.S. Army can cost-effectively install electric vehicle supply equipment (EVSE) to prepare for near- and long-term EV acquisitions.



*Photo by Dennis Schroeder, NREL 21661*

NREL deployed Tiger Teams of engineers and fleet experts to review charging needs at 30 Army garrisons. The Tiger Teams recommended EVSE installations that will enable a smooth transition for EV acquisitions in the next 3–5 years.

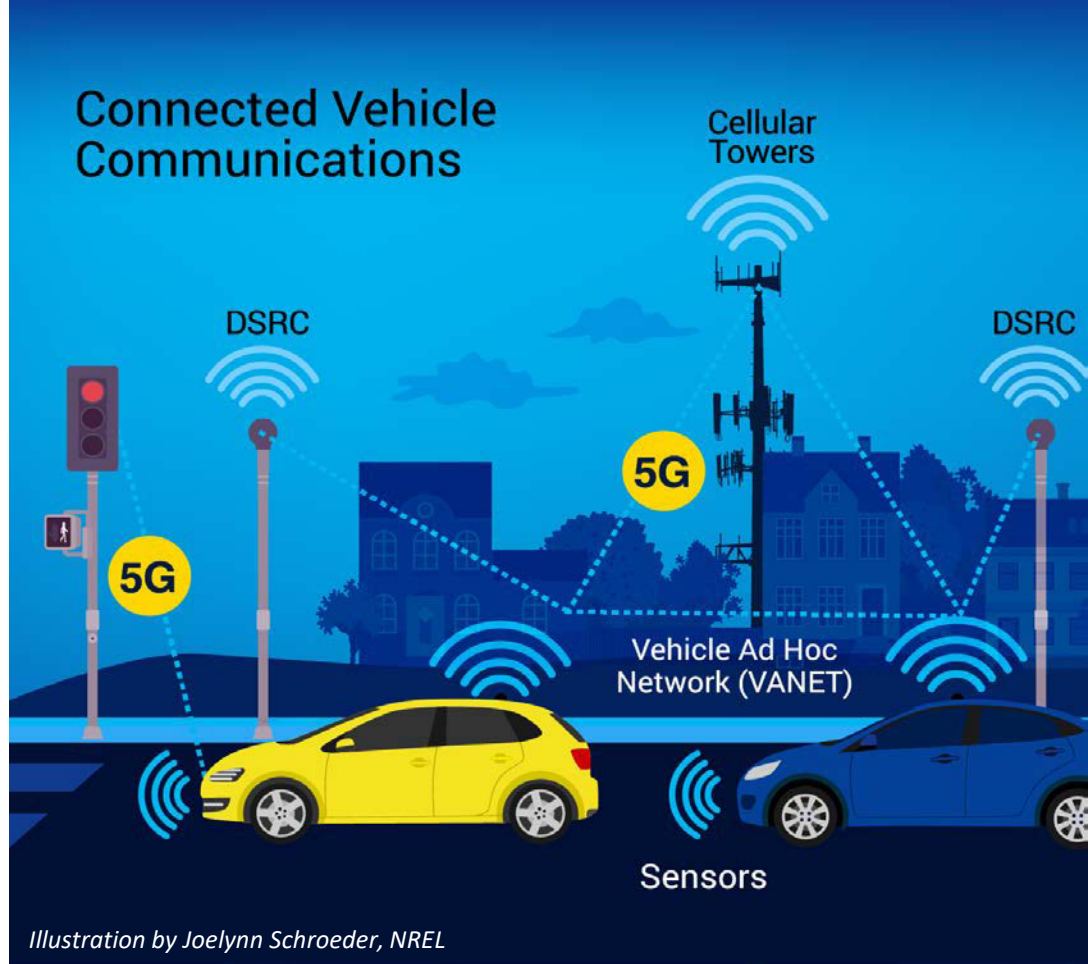
In addition to supporting near-term plans, NREL's site assessments will **inform a longer-term, large-scale transition to EVs**, improving fleet efficiency and helping to reduce petroleum consumption, fueling costs, and vehicle maintenance.

Download the report: [www.nrel.gov/docs/fy20osti/74538.pdf](http://www.nrel.gov/docs/fy20osti/74538.pdf)

# NREL's Federal Fleet Cybersecurity Research

Vehicle manufacturers are introducing new features to improve safety, convenience, and efficiency. But as modern vehicles become safer overall, the dangers shift from distracted drivers to privacy intrusion and compromised operation.

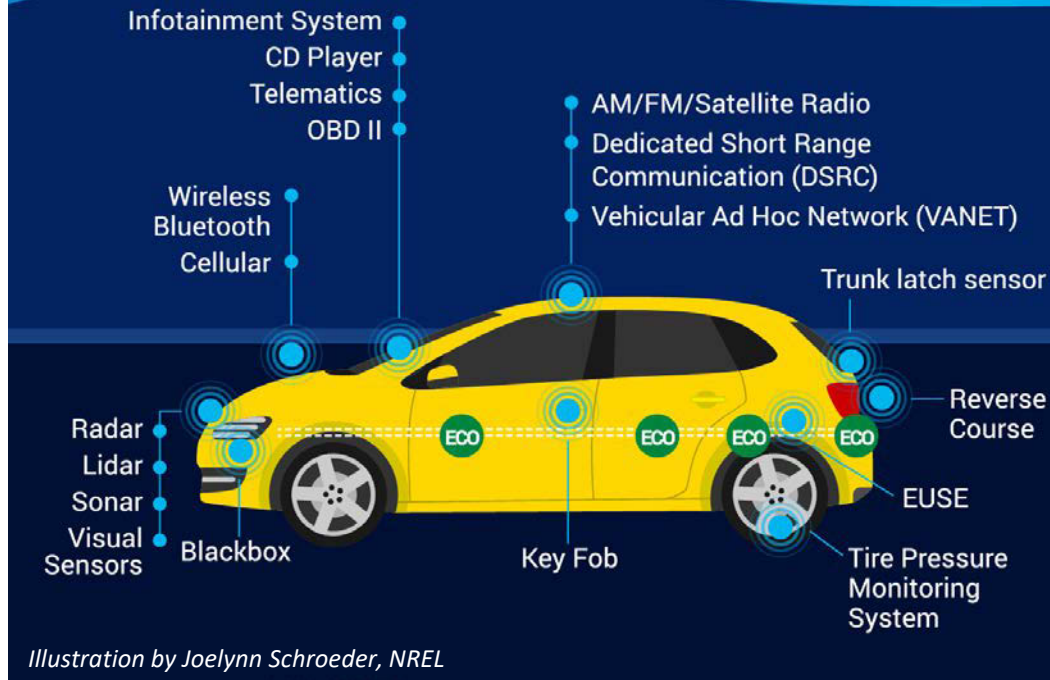
NREL research works to **address cybersecurity challenges** for modern vehicles.



# Vehicle Cybersecurity Threats and Mitigation Approaches

Report identifies security concerns, mitigation techniques, and procurement language to **help protect driver safety and data privacy** for connected and automated vehicles, telematics, and EVSE.

## Vehicle Attack Vectors



Download the report: [www.nrel.gov/docs/fy19osti/74247.pdf](http://www.nrel.gov/docs/fy19osti/74247.pdf)



## Fleet Case Studies

### [EVSE Upgrades in NREL's Parking Garage Generate Financial Benefits](#)

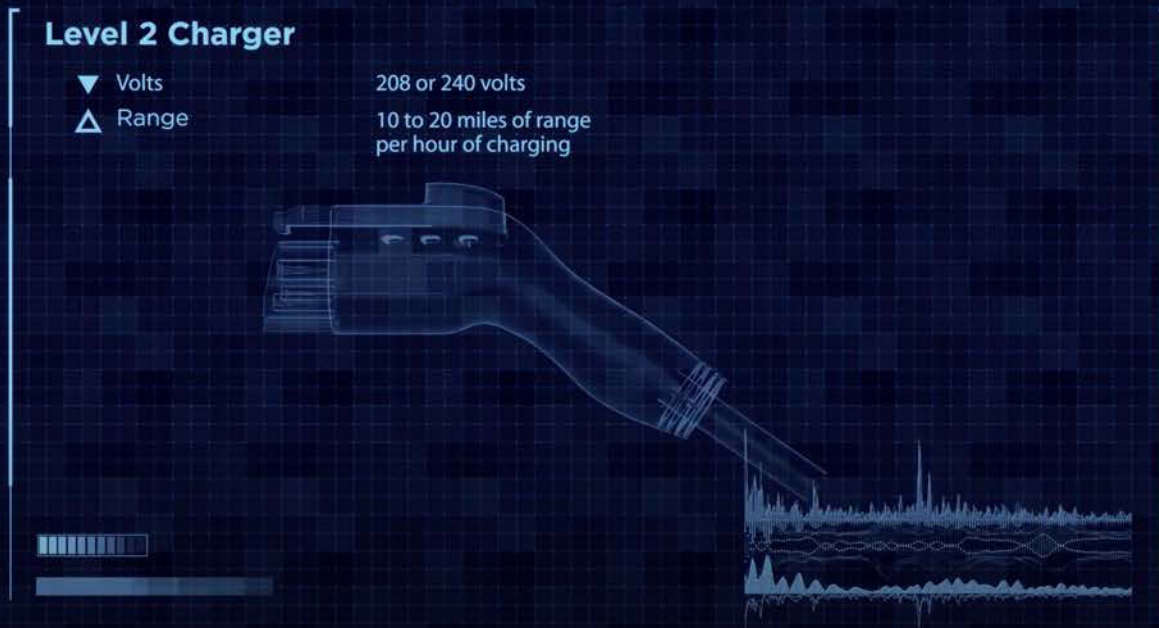
Managed charging limits EVSE output or shifts the time a vehicle charges to mitigate demand charges and take advantage of time-of-use pricing.

[www.energy.gov/eere/femp/federal-energy-management-program-case-studies](http://www.energy.gov/eere/femp/federal-energy-management-program-case-studies)

### [Propane-Powered Buses Benefit School District Fleet](#)

"Getting the kids into cleaner buses is a big priority for me and the district," said Ryan Texer, fleet manager at Adams County School District 12.

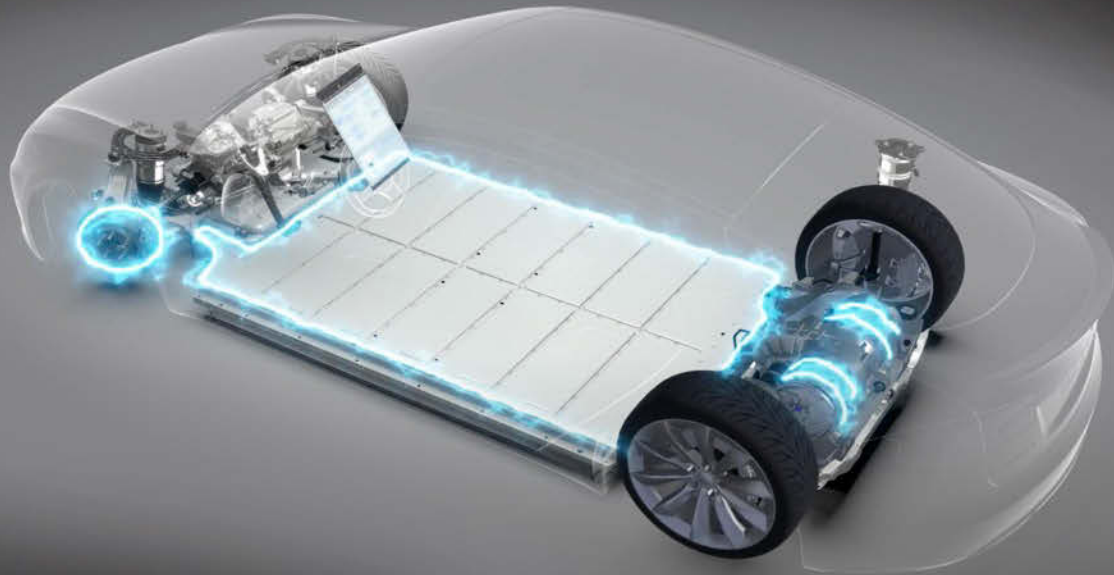




# EV Training Development

NREL's fleet electrification experts develop training content and regional workshops that help federal fleets evaluate EV potential for sites, campuses, and more.

[www.youtube.com/playlist?list=PLmIn8Hncs7bEa\\_NOG5Y8EZyONoxJtT0EF](https://www.youtube.com/playlist?list=PLmIn8Hncs7bEa_NOG5Y8EZyONoxJtT0EF)



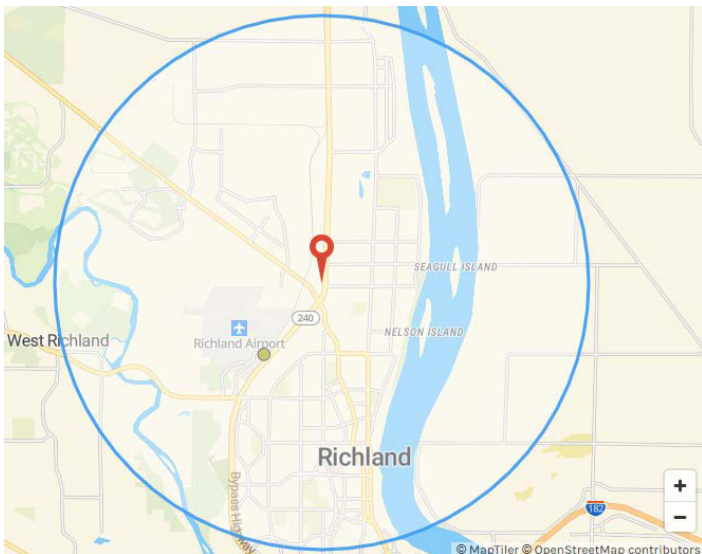
# Transportation Data and Tools

NREL's integrated modeling and analysis tools are designed to overcome technical barriers and accelerate the development of advanced transportation technologies.

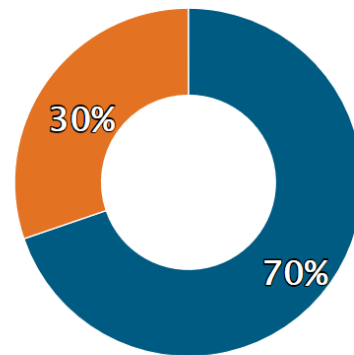
[www.nrel.gov/transportation/data-tools.html](http://www.nrel.gov/transportation/data-tools.html)

# Fleet Sustainability Dashboard

**FleetDASH** compares agency fuel transactions to the Alternative Fueling Station Locator to identify alternative fuel stations within 3 miles.



FleetDASH 701 Attainment



● FleetDASH 701 Attainment ● Covered Missed Opportunities

Starting with Fiscal Year 2021, statutory compliance with the **EPAct 2005 Section 701 requirement** for federal dual-fueled vehicles to use alternative fuel will be based primarily on FleetDASH.

# FASTSim

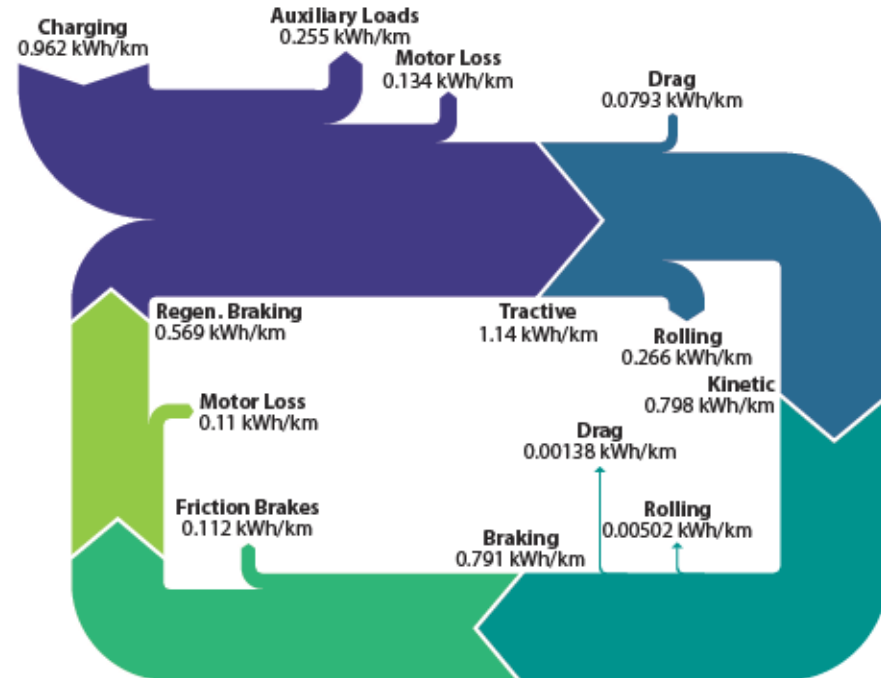
FASTSim uses operational data to determine battery and motor requirements for light-, medium-, and heavy-duty vehicles.

NREL uses the tool to compare the efficiency of vehicle fuel types for different use cases and identify vehicle options to meet fleet needs.



FASTSim

[www.nrel.gov/transportation/fastsim.html](http://www.nrel.gov/transportation/fastsim.html)



# Fleet DNA

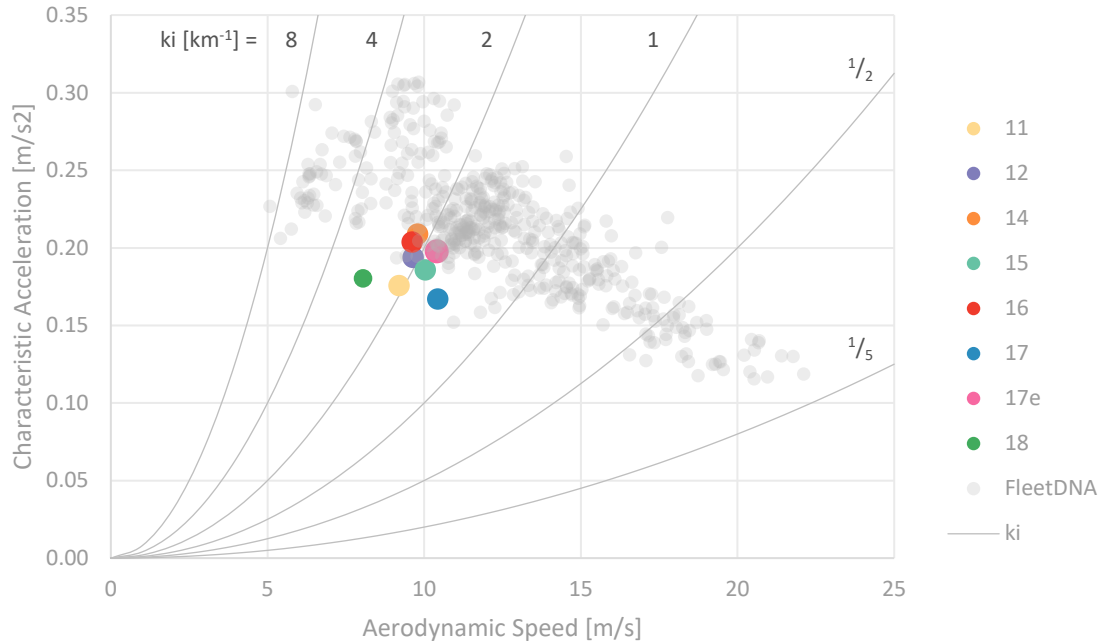


Fleet DNA

[www.nrel.gov/transportation/fleettest-fleet-dna.html](http://www.nrel.gov/transportation/fleettest-fleet-dna.html)

Fleet DNA provides data summaries and visualizations similar to real-world “genetics” for medium- and heavy-duty fleet vehicles.

The tool helps users understand the broad operational range of commercial vehicles across vocations and weight classes.



# Work with NREL to plan and implement EVs and EVSE at your facility.

Leverage our **technical expertise, training capabilities, and modeling and analysis tools** to optimize fuel and energy savings and meet reporting and compliance requirements.



NREL researchers help fleets improve efficiency, reduce petroleum consumption, and integrate emerging vehicle technologies. NREL offers:

- Fleet site assessments and analysis
- Project implementation assistance and training
- Fuel cell and hydrogen technology validation
- Leadership for industry and government partners
- Advanced transportation tools and data.

**For more information about fleet research and technical assistance, contact Cabell Hodge at [cabell.hodge@nrel.gov](mailto:cabell.hodge@nrel.gov).**



# Work with Us

[www.nrel.gov/workingwithus/](http://www.nrel.gov/workingwithus/)

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*Photo by Dennis Schroeder, NREL 59386*

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