

Livewire Data Platform: A Catalog of Transportation and Mobility Data

The Livewire Data Platform is a growing catalog of transportation and mobility-related data that empowers researchers, as well as industry and academic partners, to easily and securely share and preserve data that support projects and decision making. Livewire is designed to accommodate a range of datasets, including behavioral, experimental, model, analytical, and raw data at the vehicle, traveler, and system level, making it a key platform for studying the impact of energy consumption in transportation.

Maintained by a team of data experts at the Idaho National Laboratory, National Renewable Energy Laboratory, and Pacific Northwest National Laboratory, Livewire provides a host of capabilities, such as data preservation, data discovery, documentation, standard citations, metrics, security, and access permissions. Funded by the U.S. Department of Energy's Vehicle Technologies Office (VTO), these capabilities are provided at no cost to users.



Livewire is maintained by a team of data experts at U.S. Department of Energy National Laboratories, who are available to support researchers interested in sharing or discovering mobility data on the platform. *Photo by Dennis Schroeder, NREL 59886*

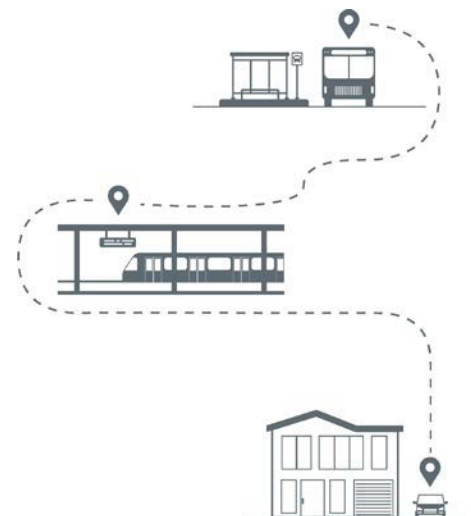
Core Services

Flexibility is at the core of Livewire's design, featuring services that make it easy to share, maintain, discover, and gain access to mobility data on a single platform. Livewire provides data owners:

- **Free data storage.** Livewire can host up to 10 terabytes of data per project at no cost, but also supports other methods for sharing data.
- **A secure platform.** Livewire adheres to the Federal Information Security Management Act, direction from the Office of Management and Budget, guidance by the National Institute of Standards and Technology, and U.S. Department of Energy regulations.
- **Control over who may access or see their data.** Although most datasets are open to other users, Livewire enables data owners to restrict access at a project or dataset level. Users may request access to restricted datasets through the platform, which data owners can then approve, deny, or follow up on for more information.
- **Increased visibility of projects and data.** With search features and metadata integrated into Livewire, users can easily search and discover data that intersects with their research

interests in transportation and mobility. To support such sharing, Livewire can also display digital object identifiers and provide citation guidance to users.

- **Detailed metrics on downloads and application programming interface (API) usage.** Livewire includes metrics that help data owners quantify the value their data provide to the greater research community.



Livewire creates a collaborative community among researchers studying energy efficient mobility systems, eliminating barriers for effectively sharing and discovering transportation data.

Sharing Data on Livewire

Livewire supports three formats for sharing data:

- Direct downloads for data stored on Livewire
- APIs¹
- Links to existing data stores outside of Livewire.

Data owners can host their project's APIs outside of Livewire. With a few simple integration steps, that data is made available to Livewire users. Access to API data on the platform is through a single API key, assigned when new user accounts are created.

Some data formats require more time to integrate into Livewire, such as

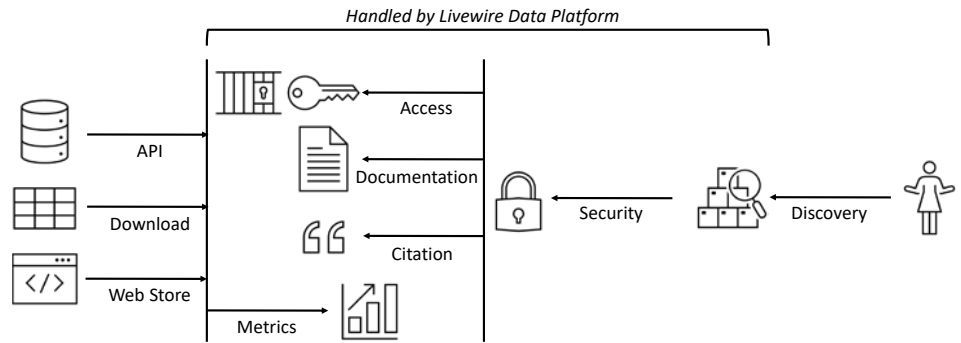


Livewire Project Spotlight: Mobility Energy Productivity Metric

How it shares data: Via API and through direct download

Supported by VTO, the mobility energy productivity (MEP) metric quantifies the efficiency of transportation systems, providing a robust assessment of the quality of mobility provided to travelers in a given location. By using Livewire to host data, National Renewable Energy Laboratory researchers can share MEP scores for over 100 major metropolitan areas across the country. Livewire's functionality lets the team share data two ways—through direct download and via API that can be queried to return an area's MEP.

Learn more at:
livewire.energy.gov/project/mep



Livewire handles a range of storage, security, and documentation features to make it easier to share and preserve mobility data.

geospatial web services, databases, streaming data and others. Users can request new storage technologies if needed for a project.

Storing and Downloading Data

Livewire uses Amazon Web Services to store up to 10 terabytes of data per project at no cost.

- Stored data is downloaded through Livewire's web interface.
- A command line tool is available to upload large datasets (greater than 3 gigabytes or 3000 files).
- Data shared on the platform is preserved per Livewire's data management plan.
- Users can download data as a zipped file or a script, available for Windows, MacOS, or Linux.

Note that Livewire preserves data per its data management plan even when a researcher leaves or a project is over. A new data owner can be assigned or re-assigned to a project by the Livewire team under VTO guidance.

Getting Started

- 1. Assess the project's data needs.** Consider certain aspects, such as the number, size, and complexity of datasets, as well as format and metadata attributes.
- 2. Consider factors that can increase complexity,** such as survey collection, licensing and privacy concerns, and the willingness of researchers to share data.

- 3. Consider both data inputs and data outputs for a project.** Both can be provided to Livewire.

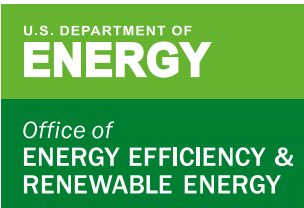
Learn More About Livewire

[Livewire.energy.gov](https://livewire.energy.gov)

Whatever the project, the Livewire Data Platform team is ready to help with mobility data needs from planning to project wrap-up. Send questions to livewirecontact@lyris.pnnl.gov. ■



¹ An API, or application programming interface, allows one application to provide data from its database to another in a standardized, machine-readable format. Accessing data via API automatically updates a user's content as database content changes.



For more information, visit:
livewire.energy.gov