



# New Opportunities for Smart Cities Through Improved Access and Analysis of Data

## City Energy Planning: NREL Helps Accelerate Decision-Making and Inject Data-Driven Solutions

### Challenge

Making smart, informed, data-driven energy decisions for cities requires large amounts of high-value data and analysis. Cities' energy data has traditionally been difficult to access and costly to store and manage for city administrators. When data is available, many cities lack the expertise to properly analyze and model large data sets.

### Solution

City decision makers can benefit from NREL's independence and knowledge about data availability, integration, and interpretation. The Open Energy Data Initiative (OEDI) aims to improve and automate access to data of high value to cities. OEDI makes data discoverable and actionable to researchers and city leaders to accelerate analysis and advance energy innovation for cities.

### Key Capabilities

#### Data, Applications, Tools, and Analytics (DATA)

NREL provides cities vital capabilities to:

- Perform critical data identification and deep data analytics to enable research, analysis, and decision-making
- Support data-driven decisions using data engineering, machine learning, artificial intelligence, and uncertainty analysis

- Assemble highly informative data visualizations and complex storytelling
- Facilitate innovation and creativity through prizes and competitions.

#### Data Management, Data Repositories, and Data Standards

NREL uses cutting-edge approaches to data collection, storage, and management through a data lake framework. We are tightly connected with the federal metadata standards and strategies to share data among federal networks. We also have the means to collect data from external sources, secure data, curate data, and provide data access.

Cities can use the data lake as a repository to store large data sets that can be combined with other data sets for advanced computation and informed decision-making. NREL has important data sets, such as renewable energy resource data, utility data, and modeled cities data, that can add exceptional value to other data sets when combined.

For example, cities can compile and analyze reported data resulting from building energy disclosure ordinances. In addition, cities can use the data lake to store and analyze five-minute interval electricity load data for their municipality to enable detailed planning for energy efficiency, demand response, load shifting, storage, and matching load with renewable generation.



## OEDI Data Lake

Sourced from DOE and 17 National Laboratories

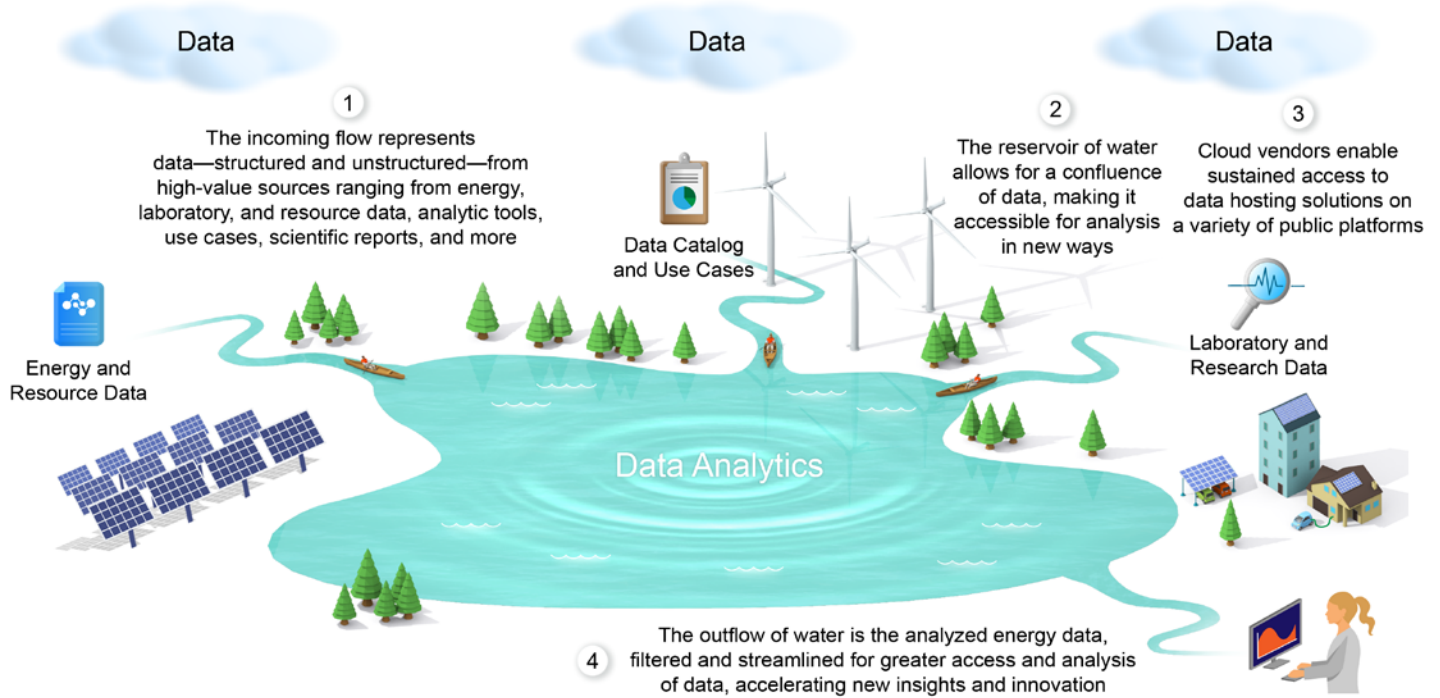


Illustration by Besiki Kazaishvili, NREL

### State and Local Planning for Energy (SLOPE) Platform

The data lake approach can integrate city energy data, such as that delivered on NREL's SLOPE. SLOPE is an NREL-developed platform that delivers a wealth of energy consumption, efficiency, and renewable energy generation data for state and local governments.

For example, a state with a clean energy goal may use SLOPE to find high-level data on efficiency and generation potential for various clean energy technologies; the relative projected costs of these technologies; and modeled electricity consumption in the state through 2050. SLOPE will also have links to additional data, tools, and resources to inform clean energy planning. Learn more at [gds.nrel.gov/slope](https://gds.nrel.gov/slope).

### Why NREL?

NREL's world-class researchers and facilities enable us to catalyze innovation, provide multidimensional perspective, and lower risk for transitions to new energy technologies.

- Leading energy systems innovation and integration for 40+ years
- First-of-a-kind unique capabilities unavailable anywhere else in the world
- Nearly 900 active partnerships with public- and private-sector organizations
- NREL's living laboratory campus is an example of applying energy innovation in the real world.



### Partner With Us

Contact NREL and discover how we can apply NREL's capabilities to your most difficult, smart, and connected community challenges while building capabilities that can inform work with cities around the globe.

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