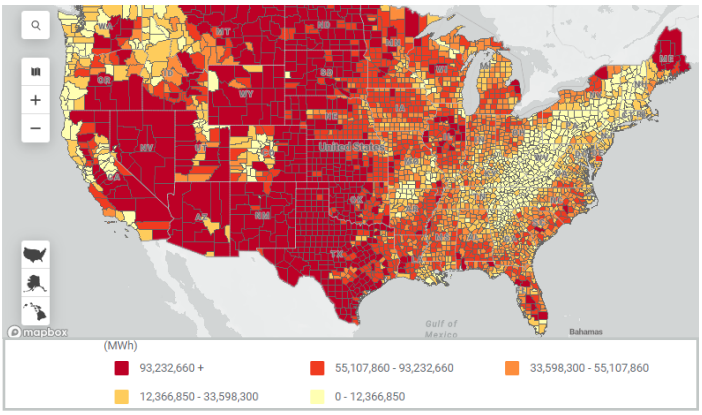
State and Local Planning for Energy (SLOPE) Platform



Modeled annual technical generation potential for utility-scale photovoltaics at the county-level as visualized by SLOPE.

The State and Local Planning for Energy (SLOPE) Platform integrates and delivers data on energy efficiency, renewable energy, and sustainable transportation into an easy-to-access online platform to enable data-driven state and local energy planning.

As more state and local governments develop comprehensive energy plans, the adoption of energy efficiency, renewable energy, and sustainable transportation technologies has become a focal point of many planning processes. Although extensive resources and data exist to help states, counties, and cities identify opportunities to deploy these technologies, the dispersed, unintegrated, and sometimes inaccessible nature of this data makes it difficult for state and local governments to easily consider, compare, or fully capture the value of this information.

SLOPE, a collaboration between nine U.S. Department of Energy (DOE) offices and the National Renewable Energy Laboratory (NREL), is designed to help address this challenge and support state and local governments and other key energy planning stakeholders in building a 100% clean energy economy.

Goals

- Assist decision makers in understanding the various cost-effective options to meet their clean energy and climate goals.
- Capture the value of the numerous but dispersed energy data and tools available by increasing awareness of and access to these resources.
- Provide an integrated, easy-to-use platform with compelling data visualizations for users to explore and better understand the impacts of energy actions.

How to Use SLOPE

Utilizing SLOPE's Data Viewer, users can explore energy potential and projection data available at the state, county, and city-levels to better understand energy planning opportunities in the following areas:

ENERGY EFFICIENCY

RENEWABLE ENERGY

SUSTAINABLE TRANSPORTATION

SLOPE can help state and local governments answer questions such as:

- "How much of my community's energy consumption can be met by locally generated renewable energy?"
- "What portion of my state's electricity might be generated by renewable energy in the future under different scenarios?"
- "How much can my jurisdiction reduce energy consumption in the residential sector, and which efficiency measures have the greatest impact?"
- "How many commercial buildings over 20,000 ft^2 are in my city, and what is the total square footage broken down by property type?"
- "How do energy costs and generation potential compare across technologies, jurisdictions, and regions?"
- "How might electric vehicle adoption change my community's electricity demand over time?"

SLOPE's Data Viewer contains a description detailing the assumptions, methodology, and models used to generate the data with links where users can explore related resources.

SLOPE Background

To ensure SLOPE meets stakeholder needs and fills gaps in existing tools and resources, DOE and NREL gathered input on energy planning priorities and data needs from a geographically diverse group of more than 50 state and local governments and other key stakeholders. In addition, NREL reviewed the landscape of existing energy planning tools and resources. This research demonstrated that a wide array of data, reports, and tools are available to support state and local energy planning; however, data collection at the sub-state level remains particularly burdensome. Stakeholders struggle to choose between available tools and face obstacles in the level of training and investment required to obtain useful data and outputs.

SLOPE is designed to provide these stakeholders with an accessible platform with outputs that are easily conveyed to decision makers. The platform addresses stakeholder needs such as access to localized data, interoperability between tools, and integration of data across sectors and technologies to illustrate opportunities for achieving goals and understanding the impacts of energy actions. To clearly convey this information, SLOPE presents data in multiple formats, including maps, time series charts, and scenario models.

SLOPE's functionality will expand with the addition of scenario planning capabilities that can model and visualize the energy and emissions impacts of various energy scenarios based on user-selected inputs. DOE and NREL are also exploring opportunities to integrate data that supports energy and environmental justice considerations in state and local energy planning.

For More Information

To access SLOPE, visit: maps.nrel.gov/slope.
For questions, please contact slope@nrel.gov.

For additional resources related to energy data and hundreds of other resources to support the energy priorities of states, local governments, and K-12 school districts, visit the State and Local Solution Center: energy.gov/eere/slsc.

To receive monthly updates on the newest resources, news, and funding opportunities, please subscribe to our newsletter, the State and Local Spotlight: energy.gov/eere/slsc/subscribe.

SLOPE Data at a Glance

Data Category	Data Type[1]	Data Resolution
Energy Consumption	**I. Electricity and Natural Gas Consumption and Expenditures:** projected in a business-as-usual case for the residential, commercial, and industrial sectors through 2050.	State, county, and city
	II. Transportation: on-road vehicle fuel consumption, vehicle miles traveled, and vehicle stock by fuel type projected under different scenarios through 2050.	State and county
Energy Efficiency	**III. Energy Efficiency Potential:** electricity savings potential for residential, commercial, and industrial sectors through 2035.	State
	IV. Single-Family Home Energy Efficiency Potential: electricity and fuel savings potential from cost-effective single-family home energy improvements.	State
Energy Generation	**V. Generation Potential for Renewable Technologies** (at the state, county, and location-specific level outlined below):	
	• **Photovoltaics:** utility-scale, floating, residential rooftop, commercial rooftop. • **Concentrating Solar Power:** utility-scale. • **Wind:** land-based, offshore, distributed. • **Bioenergy:** biopower. • **Geothermal:** utility-scale, district heating, heat pump. • **Hydropower:** utility-scale.	State
	• **Photovoltaics:** utility-scale, residential rooftop, commercial rooftop. • **Concentrating Solar Power:** utility-scale. • **Wind:** land-based and distributed. • **Geothermal:** district heating and heat pump.	County
	• **Hydropower:** new stream reach development and non-powered dams.	Hydrologic Watershed Boundaries and Point Location
	VI. Generation Scenarios: projected electricity generation from various technologies through 2050 under 12 scenarios.	State
Cost of Energy	**VII. Levelized Cost of Energy (LCOE):** projected electricity costs for 16 generation technologies plus battery storage through 2050.	State and county
	VIII. Levelized Cost of Saved Energy: levelized program administrator costs for electricity efficiency programs implemented from 2009-2015.	State
Demographics	**IX. Population:** past and projected population from 2015-2050.	State, county, and city
Commercial Buildings	**X. Building Count and Area:** commercial building count and area by size and property type for 2020.	State, county, and city

[1] For a list of SLOPE's data sources, please see SLOPE FAQs – "What Are SLOPE's Data Sources?" (maps.nrel.gov/slope/about)

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