



The Geography of Green Power

Green power refers to the voluntary purchase of renewable electricity by retail electricity customers. Green power is unlike compliance-based renewable energy procurement imposed by law or regulation.

In 2016, over six million customers procured about 95 million megawatt-hours (MWh) of green power in the United States, which represents about 28% of all U.S. renewable energy sales, excluding large hydropower. In this fact sheet, we use available data to illustrate the geography of green power demand (in terms of number of customers) and supply (in terms of MWh of generation) by state.

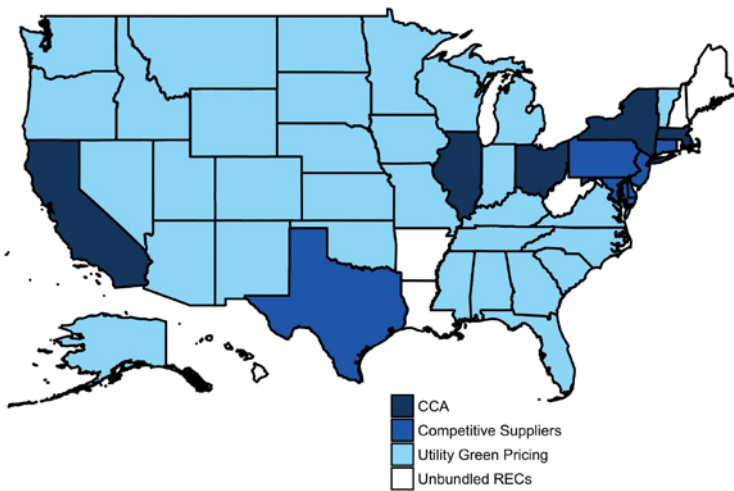


Figure 1. Primary form of green power demand (number of customers) by state

Green Power Demand

Green power demand is ubiquitous across the states, but the pathways for green power procurement vary by region. Figure 1 depicts the primary way that customers procure green power by state:

- Unbundled renewable energy certificates (RECs) refer to purchases of the clean energy attributes of renewable electricity separately from any electricity purchase.

- Green pricing refers to participation in utility green pricing programs, where customers procure green power from their utilities.
- Competitive suppliers refer to green power procured through retail electricity suppliers in restructured markets where customers may choose their electricity provider.
- Last, CCAs refer to community choice aggregations, where community groups procure green power on behalf of the community’s residents. CCAs are only allowed in certain states with enabling legislation.

Green pricing programs are the primary procurement method in most states with traditionally regulated electricity markets, while competitive suppliers and CCAs are the primary methods in restructured electricity markets.

Figure 2 depicts the geography of green power demand in terms of the estimated number of green power customers by state. The green power customer base is heavily concentrated in Illinois due to the large-scale participation of residential customers in CCAs in that state. Other states with CCAs—including California, Massachusetts, and New York—are among the other leaders in terms of green power demand. Texas is the leading state in terms of competitive supplier green power customers, while Oregon leads in terms of green pricing customers.

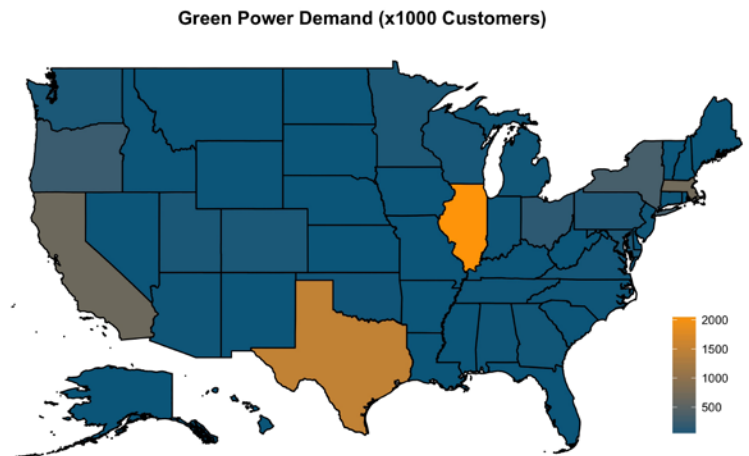


Figure 2. The geography of green power demand: Number of green power customers by state

Green Power Supply

Figure 3 illustrates the geography of green power supply in terms of the estimated MWh generated by state to supply green power markets. Texas, California, and Illinois—three states with strong wind resources—account for more than one-third of the green power supply. Eighteen different states generated more than 1 million MWh of green power each in 2016, and 42 states generated more than 100,000 MWh.

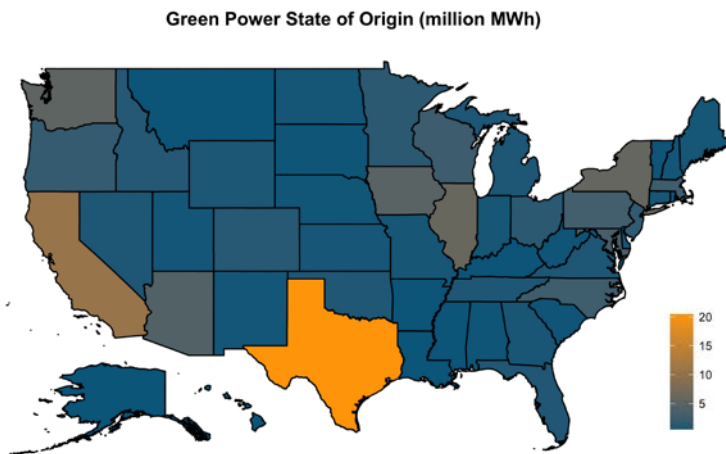


Figure 3. The geography of green power supply: Green power generation (million MWh) by state

To illustrate green power demand below the state level, Figure 4 shows zip code-level customer density based on data from Arcadia Power, an online energy services platform. The data, a representative rather than comprehensive sample, show that metropolitan areas are also hubs of green power demand. At the same time, green power customers reside in all parts of the country, including rural areas.

Summary

Demand for green power is ubiquitous in the United States, with customers in every state in both urban and rural areas. Green power supply is similarly widespread, with 42 states generating more than 100,000 MWh of green power in 2016. The geographic expansion of green power will likely continue as green power costs decline and providers continue to develop innovative green power products.

More Information

This fact sheet is a summarized version of findings presented in *Status and Trends in the U.S. Voluntary Green Power Market (2016 Data)*, which is available at <https://www.nrel.gov/docs/fy18osti/70174.pdf>. For more information on green power, visit www.nrel.gov/analysis/green-power.html. For questions, contact Eric O'Shaughnessy at eric.oshaughnessy@nrel.gov.

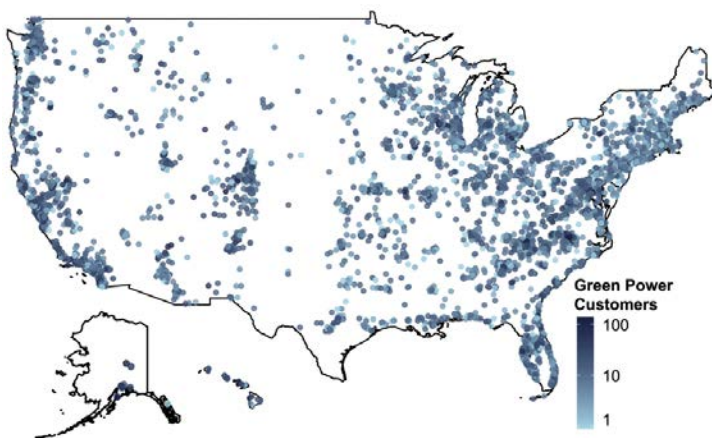


Figure 4. Geographic sample of residential and small commercial green power customers. Based on data from online energy services platform Arcadia Power.