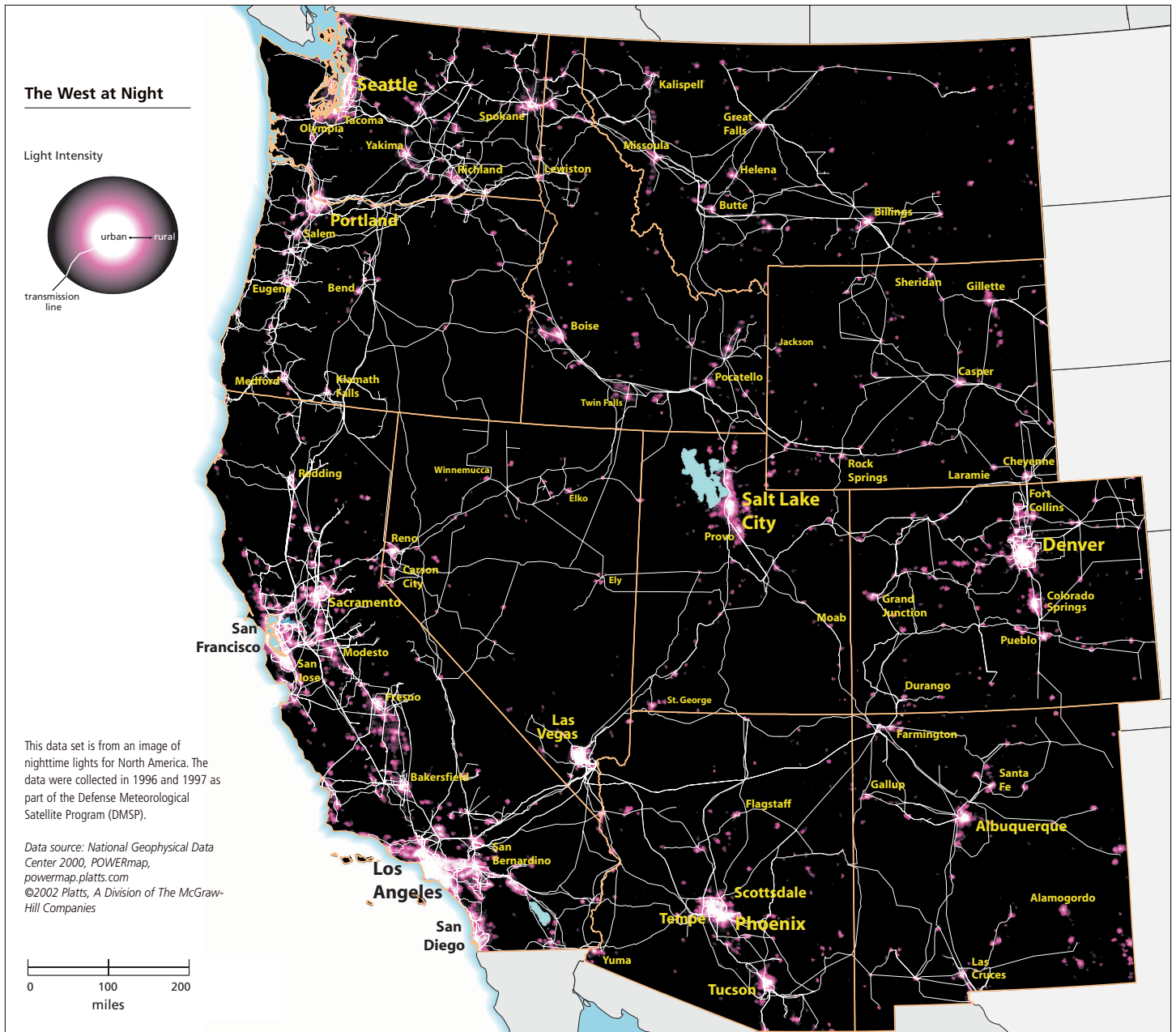


# Considerations in Developing Renewable Energy in the West

## The Western Power Grid

The electric grid may well be the most impressive engineering accomplishment of our time – reliably moving power from large, centralized generating

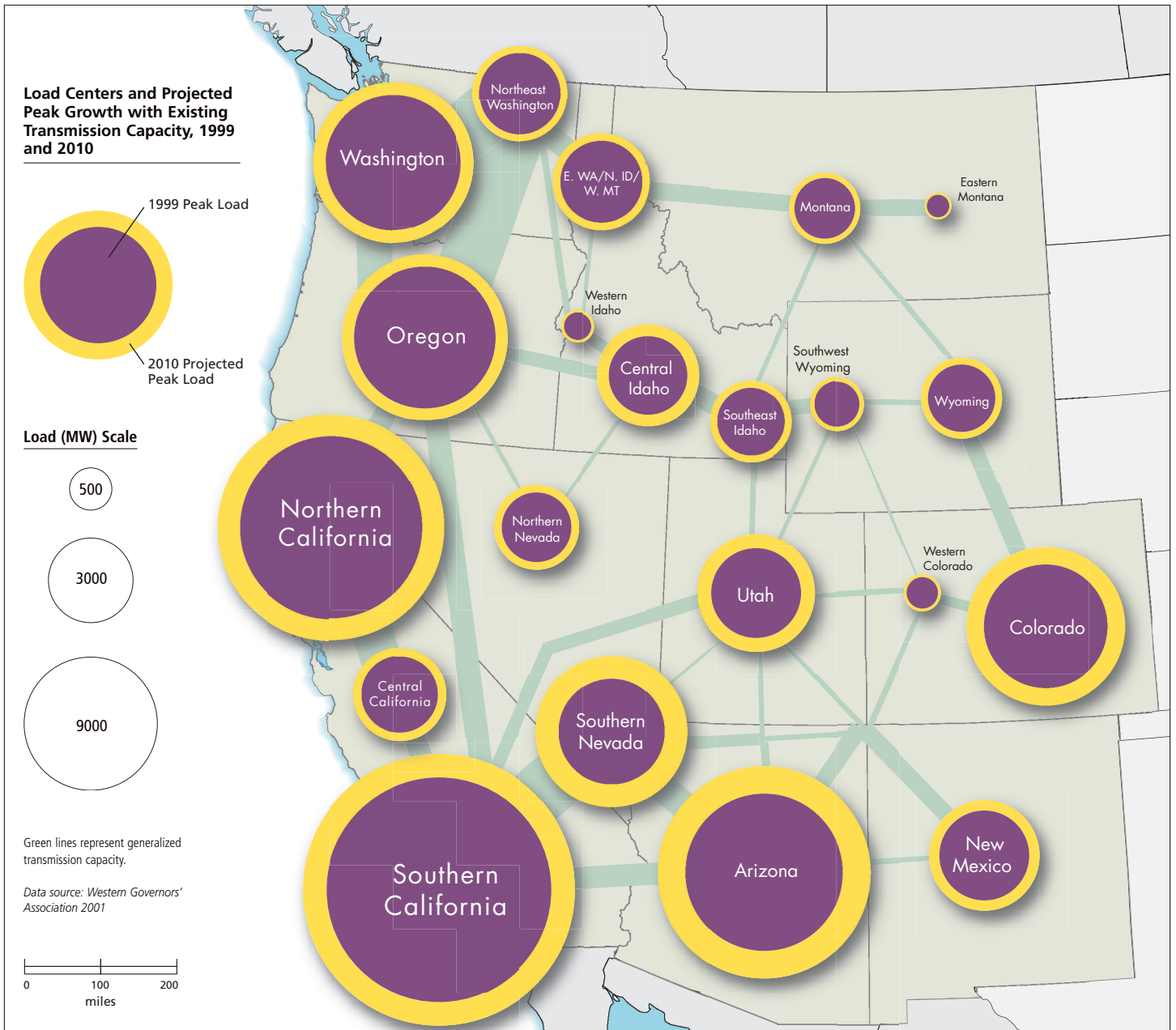
stations to businesses, factories and homes. As the West's population and economy grow, more demands are placed on this system.



## Load Growth

The West is the country's fastest growing region. By 2010 it is expected that the region will need somewhere between 30,000 and 50,000 MW of new electric resources to meet growing demands for electricity. Meeting this new resource need

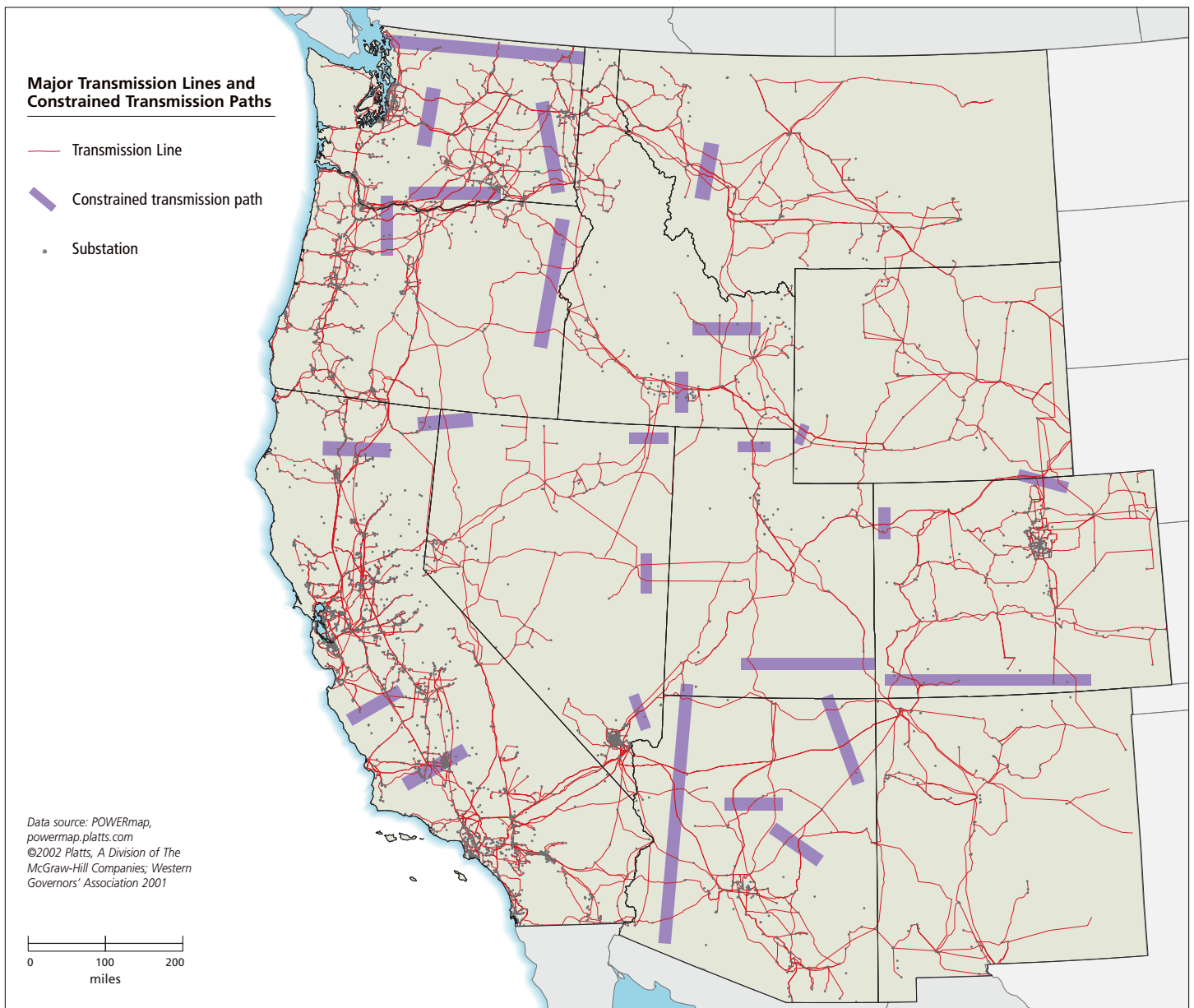
provides an opportunity to increase the amount of renewable energy resources in the Western power mix. Increased energy efficiency is another important resource that can help meet the region's growing electricity needs.



## Transmission Constraints

The existing transmission system presents both barriers and opportunities to renewable energy development in the West. On one hand, access to transmission is an important component of developing large-scale wind, solar, geothermal, or biomass facilities, which are often sited far from load centers. As wholesale electric markets have developed over the last decade and electric demand has grown, many major transmission paths across

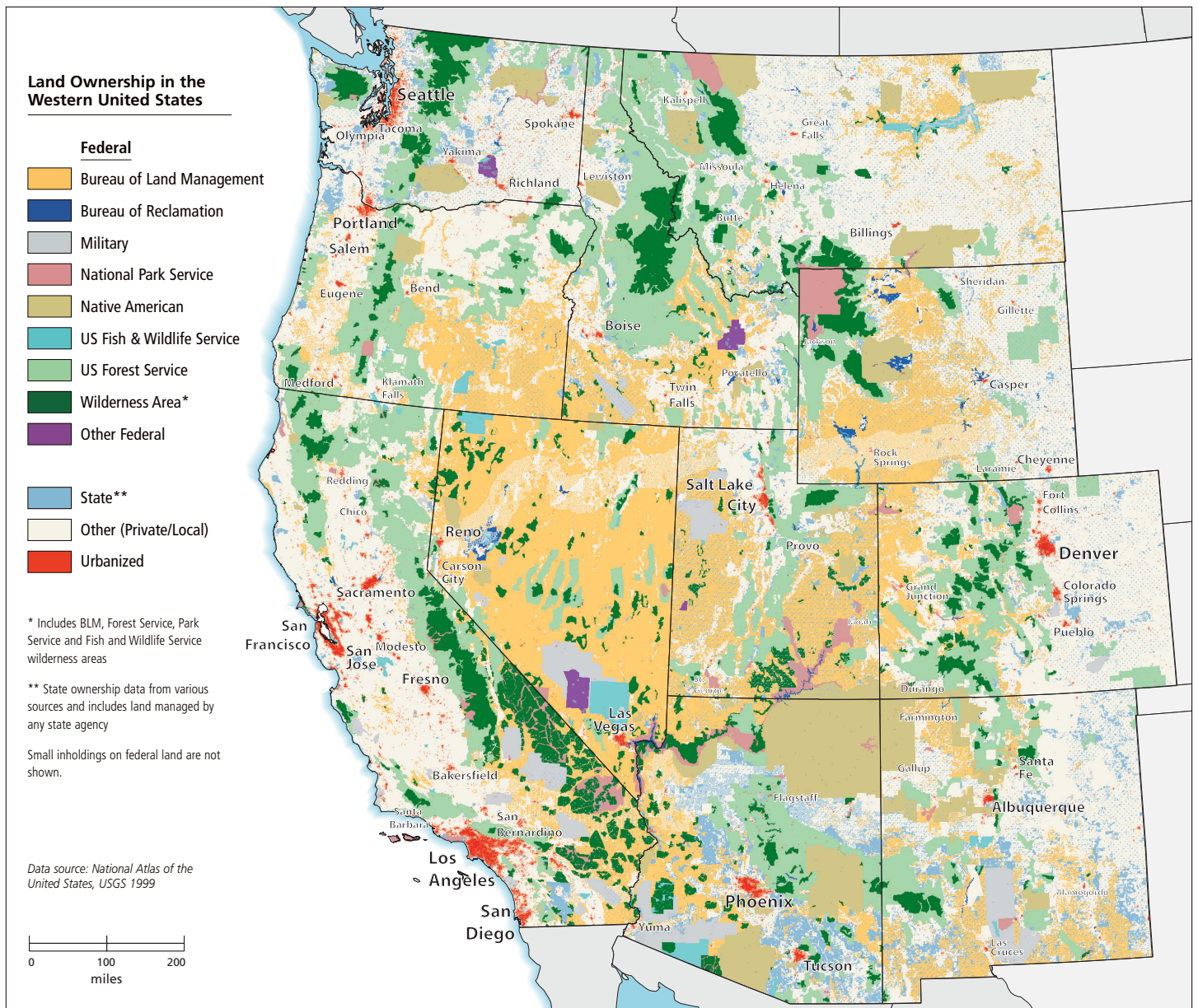
the West have become increasingly constrained, at least during some hours of the year. Absent new transmission system investments or changes in how existing transmission capacity is allocated, transmission constraints may limit large-scale renewable energy development in the region. On the other hand, some renewable resources can be installed near load centers and may gain an economic edge due to their ability to ease congestion.



## Land Use Considerations

The West is blessed with an abundance of renewable energy resources. It is also blessed with wildlands, habitat critical for wildlife, sensitive watersheds, recreation areas, and cultural and historical sites. Renewables development must be done in an environmentally and culturally

sensitive manner to ensure that the West's tremendous natural heritage is not diminished. Extensive land ownership data can help guide decisions regarding appropriate areas for development of renewables.



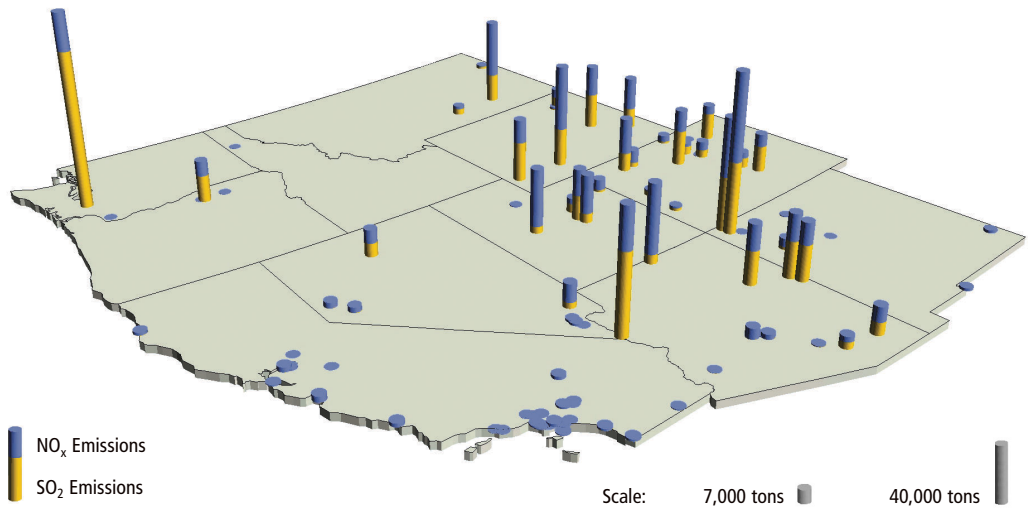
## Environmental Impacts of Fossil Fuels

Much of the West's electricity is generated by burning fossil fuels in power plants. The effects are broad in scope, from the land-use impacts of coal and gas extraction to the public health consequences of poor air quality. A major advantage of renewable resources is their lack of harmful air emissions. Burning fossil fuels in power plants

accounts for 63% of US SO<sub>2</sub> emissions and 20% of US NO<sub>x</sub> emissions, contributing to regional haze, urban brown clouds, and acid rain. Electricity generation also produces 40% of US CO<sub>2</sub> emissions, the greenhouse gas considered the primary contributor to global warming.

### Power Plant Emissions, 2000

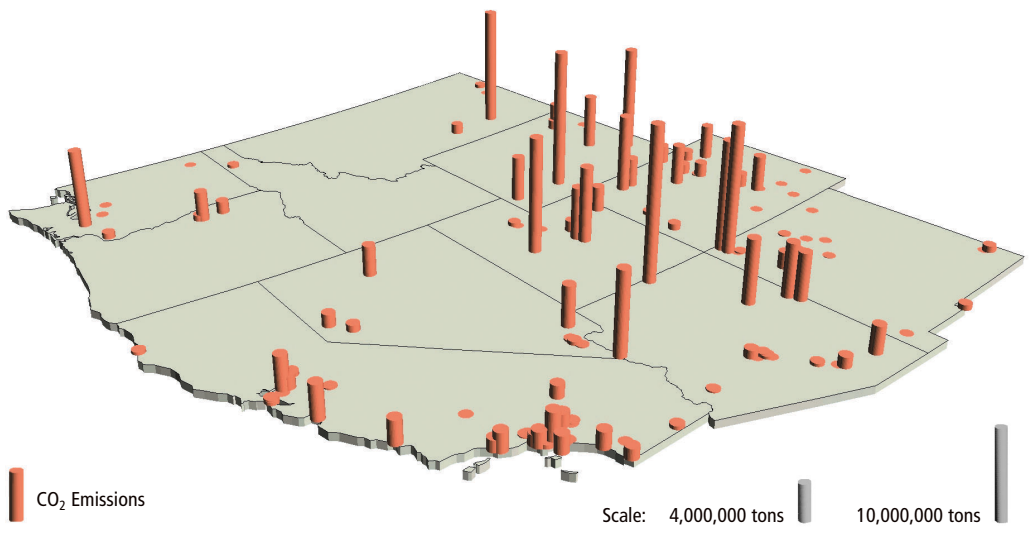
Each bar represents the location of a power plant regulated under the EPA's Acid Rain Program (Title IV). The height of the bars is scaled to reflect the emissions levels for each plant. Because CO<sub>2</sub> emissions are so much higher than either SO<sub>2</sub> or NO<sub>x</sub>, different scaling factors were used to determine the height of the bars.



### Total Emissions in Region from Title IV Plants, 2000

	tons
Sulfur Dioxide (SO <sub>2</sub> )	506,662
Nitrogen Oxide (NO <sub>x</sub> )	547,754
Carbon Dioxide (CO <sub>2</sub> )	316,774,136

Data source: EPA Acid Rain Program (Title IV) Emissions Scorecard, 2000



# State Summaries

