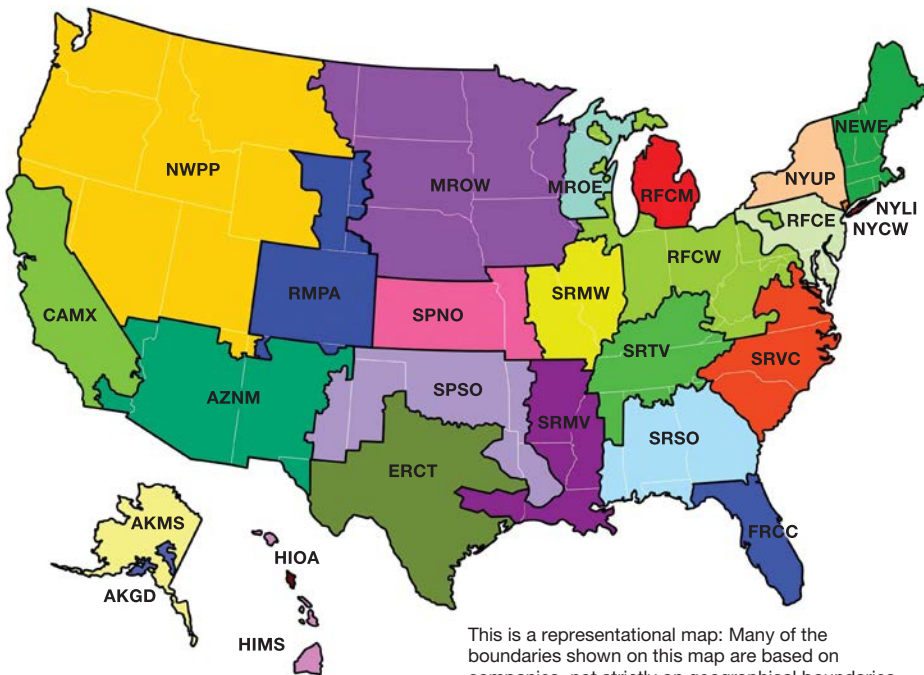


How Clean Is Your Electricity?

On-gridders have plenty of reason to be concerned about where their electricity comes from these days. But exactly how much of it comes from miner-killing and mountaintop-removing coal; aquifer-polluting and fracked “natural” gas; radiation-producing nuclear; war-causing oil; or fish-killing dams? How much comes from carbon-free renewables—and just how “green” are they?

U.S. Subregional Grids



This is a representational map: Many of the boundaries shown on this map are based on companies, not strictly on geographical boundaries. USEPA eGRID2010 Version 1.0, December 2010

Twenty-six subgrids provide energy to various regions throughout the United States, though energy is often bought and/or sold between subgrids at different times of the day or year.

Power Profiler
How Clean Is the Electricity I Use?

What Air Emissions Are Caused by the Electricity I Use?

The table below presents the estimated pounds of pollutants attributable to the electricity you use in your home or business during one year, along with a description of what these numbers mean in everyday terms. It also repeats the earlier chart that compares your region's air emissions rates to the national average.

ZIP code: 01907 Distribution Utility: Massachusetts Electric Co

YOUR ANNUAL EMISSIONS

1 What Are My Annual Emissions? <small>This is an estimate of the pounds of air pollutants caused by the electricity you use in your home or business during one year.</small>	9 pounds of nitrogen oxides
	23 pounds of sulfur dioxide
	5,574 pounds of carbon dioxide

Note: Your annual emissions include an adjustment for [line losses](#) of 0 percent.

WHAT DOES THIS MEAN?

2 What Do these Numbers Mean in Real Terms?
Adding one car to the road results in 11,960 pounds of carbon dioxide emissions per year. Adding one SUV to the road results in 16,035 pounds of carbon dioxide emissions per year. For example, if your annual carbon dioxide emissions are 19,000 pounds, that equals adding approximately 1 SUV or 1.4 cars to the road for one year.

You would need to plant 1.35 acres of trees to absorb 19,000 pounds of carbon dioxide in one year. For example, if your annual emissions of carbon dioxide are 20,000 pounds, you would need to plant 2.7 acres of trees to absorb that amount.

EMISSIONS RATE COMPARISON

3 What Are the Emissions in My Area?
This chart compares the average emissions rate (lb/MWh) in your subregional grid to the national average emissions rate (lb/MWh) for nitrogen oxide, sulfur dioxide, and carbon dioxide.

Region	Nitrogen Oxide (lb/MWh)	Sulfur Dioxide (lb/MWh)	Carbon Dioxide (lb/MWh)
Your Region's Emissions Rate (lb/MWh)	3.0	3.5	1,007
National Average Emissions Rate (lb/MWh)	1.5	2.0	1,000

WHAT CAN I DO TO MAKE A DIFFERENCE?

- Be More Energy Efficient:** Find out how you can make a difference by making your home or business more energy efficient.
- Buy Green Power:** Learn how you can buy green power (power generated from renewable energy sources) for your home or business.

Note: The information reported above is derived from EPA's eGRID database for calendar year 2009.

The Environmental Protection Agency's Power Profiler (1.usa.gov/EPAPowerProfiler) is an online database that shows the fuel mix of the electricity you buy from the grid. By plugging in your ZIP code and electric utility's name, you can find the fuel mix and pollution emissions of the electricity in your subregional grid (one of 26 generally independently functioning electrical grids in the United States) and compare it to the national average.

The 2009 data comes from the EPA's Emissions & Generation Resource Integrated Database (eGRID, bit.ly/EPAeGrid). The eGRID summary tables are a great way to see how your subregional grid stacks up against the others.

You can also get EPA data on generation sources by state, but since electric energy is consumed on grids—which can be a subset or a superset of states (or parts thereof)—it's most accurate to assess your electricity sources by including the entire subregional grid.

And, when it comes to being green, there are several important, but different, metrics—climate-friendly, earth-friendly, and human-friendly. By any measure, fossil fuel (coal, oil, natural gas, etc.) is not “green.”

Courtesy EPA (2)

Best & Worst U.S. Subregional Grids

Pollutant, Problem, or Solution	Greenest U.S. Subregional Grid	Worst U.S. Subregional Grid
Carbon dioxide equivalency (CO ₂ e): aggregate effect of methane & other greenhouse gas as if other pollutants were effectively CO ₂ .	NYUP	RMPA
Smog-producing oxides of nitrogen (NO _x)	NYCW	HIMS
Acid rain-producing sulfur dioxide (SO ₂)	NYCW	RFCM
Nuclear power as a percentage of sources	AKGD, AKMS, HIMS, HIOA, NYLI, RMPA, SPSO	RFCE
Solar power as a percentage of sources	CAMX	19 subregional grids report none
Wind power as a percentage of sources	MROW	7 subregional grids report none

Source: Environmental Protection Agency Emissions & Generation Resource Integrated Database Summary Tables

Biomass, typically burned to produce electricity, produces emissions and causes air-quality issues. And carbon emissions from biomass-produced electricity is not much of a short-term winner for the climate.

Hydropower is renewable as long as the rain falls, but large dams have large environmental impacts, including decimating or eliminating wild runs of salmon and other fish, and destroy entire canyons and river runs.

Nuclear power generation doesn't emit carbon dioxide into the atmosphere, but uranium mining, plant construction and decommissioning, and the manufacturing of their highly specialized equipment releases a lot of CO₂. Plus there are the matters of catastrophic failures and storing radioactive waste.

Geothermal steam that is tapped to turn turbines to make electricity is fairly climate-friendly, but depending upon the rates of extraction, it may not be sustainable. Depending upon where it is located and the size of the facility, it may or may not have significant environmental impact.

Only a few generation sources come out tops in all categories. **Photovoltaic (solar) electricity** is tops for the climate and for earthlings, but it's even more planet-friendly if distributed over thousands of roofs rather than having tens of thousands of PV modules clustered in one spot. **Wind power**, although also pollution-free, can be bad for birds if poorly sited.

In 2009, the most solar electricity as a percentage of a subregional grid (0.30%) was generated in California, with Hawaii following at 0.046%. (The Paradise State produces more than two-thirds of its electricity from burning oil.) Due to a boom in PV installations, however, the percentage of solar-generated electricity has increased dramatically.

—Andy Kerr

GREENING YOUR OPTIONS

You can take steps to optimize the climate-, earthling-, and earth-friendliness of the electricity you purchase from your grid.

Reduce your energy consumption. Insulate and seal your conditioned spaces to reduce heating and cooling needs. Install energy-efficient lights and appliances. The less electricity—of any kind—you have to buy or make, the better.

Purchase “greener” electricity. Most electric utilities offer their customers “clean” or “green” electricity. In many jurisdictions, regulators separate the costs of generation (the electricity itself), transmission (the bigger power lines), and distribution (the smaller power lines) on your electric bill. You may be able to buy your electricity (generation) from a greener electric company. You would still pay your existing utility for transmission, distribution, and connection costs. Study the options carefully as such electricity can be green-washed. What sources are used to generate the electricity? Do your dollars go to support building new green sources, or is everyone else's energy turning browner?

Mitigate your pollution. Consider buying renewable energy credits (RECs), which, according to the EPA, are “the property rights to the environmental, social, and other nonpower qualities of renewable electricity generation. A REC can be sold separately from the underlying physical electricity associated with a renewable-based generation source.” You pay for them in dollars, but they are denominated in megawatt-hours (MWh—1,000 kWh) of the electricity they are associated with. Legitimate RECs are independently certified by organizations such as Green-e, which is the largest independent RECs certifier.