

EPRI Study Finds Electric System Emissions Dropping, Bolsters Environmental Benefits of EVs

Electric vehicles (EVs) just keep getting cleaner, because the electric system just keeps getting cleaner.

That's the headline from EPRI's latest study on the environmental footprint of electric transportation, said Dan Bowermaster, EPRI manager of electric transportation. "The grid is getting cleaner across the country," he said. "It's all good news."

The study, undertaken jointly with the Natural Resources Defense Council (NRDC), updates a 2009 joint study that examined grid operations and the resulting environmental footprint for EVs. The update is coming in at 400 pages of text, charts, and graphs, Bowermaster said, but the upshot is simple: "Electric vehicles are great for the environment."

Other studies have made headlines by claiming that emissions from the electric system mean EVs are no better for the environment than petroleum-fueled vehicles. Those studies are generally using data about electric system emissions that are several years old, Bowermaster said. "Grid emissions peaked in 2007, and in the last eight years or so, they've declined, largely due to lower cost, cleaner alternative power sources." He cited increased use of natural gas for electricity generation, technology advances allowing better integration of renewable energy sources such as wind and solar, and more stringent air quality regulations.

EPRI wanted an authoritative study that policymakers could use as a base for decisions, he said. "We spent a lot of time with the NRDC experts, making sure the work was academically rigorous and 100% sound on the science."

Sources of electricity vary significantly around the country, from systems using significant amounts of coal in the Southeast to those in the Northwest powered largely by federal hydroelectric dams. Though EVs have no emissions on the road, their environmental footprint depends on how their charging power supply is generated. Bowermaster said that the study's model accounts for regional differences, but shows that overall emissions from the electricity system are declining. "Nothing is emissions-free," he said, "But this study shows the direction the grid is going."

Key variables for electric system emissions going forward include the relative share produced by today's largest sources of emissions-free generation: nuclear and hydro. Another open question is whether and where drought may reduce the potential of hydroelectric stations, as well as thermal plants that depend on water for cooling. Hydropower is used in some areas to balance variable wind generation, so a drought could mean that the grid can support fewer renewables as well.

The study teams stated clearly what they knew, what they didn't, and the basis for the study's assumptions, Bowermaster said. The study has been peer-reviewed, and the overall conclusion is clear. The 2009 study "has been held up as a gold standard," he said. "Our goal was to make this the updated gold standard, a study stakeholders can depend on."

