

✖ How far can we go in converting our power supply to renewable sources? On June 15th, the National Renewable Energy Laboratory provided a partial answer when it released a “[Renewable Energy Futures Study](#).” The team undertaking this analysis was comprised of experts from the Massachusetts Institute of Technology, as well as from various national labs, including the Lawrence Berkeley National Laboratory.

The report finds that we have the ability today to operate the grid reliably even if 80% of the power in the year 2050 came from a mix of renewable sources. And we could achieve the 80% level with renewable energy technology that is already on the shelf. The report further concludes:

The flexibility, needed to keep supply and demand in balance with high levels of renewable generation, can come from relying on “flexible conventional generation, grid storage, new transmission, more responsive loads, and changes in power system operations,” and

“The abundance and diversity of U.S. renewable energy resources can support multiple combinations of renewable technologies that result in deep reductions in electric sector greenhouse gas emissions and water use.”

Although the report is full of detail and nuance, and there are more questions to answer, this study complements other recent analyses by concluding that we already have the technical capability to rely almost exclusively on renewable energy to produce the electric power we need. We can do it, but will we?

The reports emphasizes that each region of the country (even the up-until-now reticent Southeast and Central states) would have to contribute generously to the overall renewable energy mix, “(with a large fraction of wind generation coming from offshore resources in the Northeast and Mid-Atlantic regions). Solar energy was found to deploy most substantially in the Southwest (dominated by CSP), followed by California and Texas (CSP and PV), and then by Florida and the Southeast regions (dominated by PV). Biomass supply was most significant in the Great Plains, Great Lakes, Central, and Southeast regions. The significant biomass supply required a large quantity of feedstock from diverse sources, including 14% from urban waste, 18% from mill waste, 11% from forest residue, 30% from agricultural residue, and 27% from dedicated crops... Hydropower supply was most significant in the Northwest, but hydropower was also a sizable contributor in California, the Northeast, and the Southeast. Geothermal was found to deploy primarily in California and the Southwest.”

In addition, “the analysis showed that achieving [a] high renewable electricity future...would require a sustained increase in renewable capacity additions.” To reach the 80%, the study’s

authors say we would need “average annual renewable capacity additions of 19–22 GW/yr from 2011–2020..., increasing to a maximum rate of 32–46 GW/yr from 2041–2050. Given recent historical experience with U.S. renewable electricity capacity additions (11 GW in 2009 and 7 GW in 2010), achieving these rates of deployment may pose challenges as production ramps up, including those related to materials availability.”

The study offers assurance that all parts of the country have something to bring to the party. But to accelerate the deployment of renewables to a level capable of getting us to 80%, we will have to get beyond debates about stimulus versus austerity, and about extending federal tax credits. We need to create a stable, reliable policy environment to encourage steady progress in the marketplace. And if Congress remains incapable of setting an ambitious national renewable energy standard, then it must start offering meaningful financial carrots to individual states and regions to motivate the reticent ones to put their best renewable feet forward.