

# U.S. can get close to deep decarbonization by 2050, study finds

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The United States will get only partially toward deep reductions in greenhouse gasses with the policy tools currently available even in the scenario most favorable politically to decarbonization. That's the finding of a recent study published in *Energy Policy* by an interdisciplinary team of researchers at The University of Texas at Austin that looked at the

political feasibility of deep decarbonization in the United States. The results suggest that new policies and tools will be needed to reduce greenhouse gasses from sectors such as heavy industry.

The researchers, using the TIMES energy system optimization model, analyzed midcentury emissions of [greenhouse gasses](#) based on three scenarios of political feasibility—all with a Democrat in the White House and a Democratically controlled U.S. House of Representatives. In what the researchers call the low alignment scenario, Republicans control the Senate. In the medium alignment scenario, Democrats control the Senate with the filibuster intact. And in the high alignment scenario, Democrats control the Senate and the filibuster is abolished.

The team found that even in the most optimistic of scenarios, the U.S. only partially meets an 80% decarbonization goal by 2050. If Republicans control the Senate, the suite of politically feasible policies would permit greenhouse gas emissions to fall only by one-fourth by 2050. In the scenario where Democrats control the Senate with the filibuster intact, emissions are reduced by about one-third given politically possible policies. If Democrats control the Senate and the filibuster is eliminated, policies currently available enable greenhouse gas emissions to decline by about 45%.

"This interdisciplinary project brings needed [policy](#) realism to energy system modeling and reminds us that achieving deep decarbonization will require further policy innovation," said Benjamin Leibowicz, an assistant professor in the Cockrell School of Engineering and a lead author of the study. "While the [electricity sector](#) is already decarbonizing at a fast pace, new technologies and policies will be needed to address greenhouse gas sources such as heavy-duty vehicles, aviation, natural gas use in buildings, and industrial production."

The researchers also found that in scenarios where politics align with

more comprehensive climate policy, achieving greater [emission](#) reductions is actually less costly. Average costs are lower under greater political alignment because technology-neutral policies, such as a comprehensive carbon price via a tax or cap-and-trade, allow businesses and households to reduce emissions in whatever manner is cheapest. Despite having the upper hand in economic terms, however, carbon pricing does not have broad political support.

Much of the decarbonization in the models comes from deploying renewables in the electricity sector, particularly wind and solar. There are also signs of bipartisan support in the buildings sector, especially with regard to building energy performance standards, investments in the Weatherization Assistance Program, and tax credits for solar-powered systems. Electrification in the transportation sector is one of the most important drivers of emissions reductions. Even though transportation is a more difficult sector to decarbonize given residual emissions from [heavy trucks](#), incentivizing the swifter transition to electric vehicles will have an important impact on broader climate goals.

In each of the three scenarios, different policies were identified as being politically available and then modeled for their impact on [greenhouse gas emissions](#).

Low alignment assumes a Republican-controlled Senate where policies that enjoy bipartisan support can pass such as tax credits, research and development funding, standards for federal procurement and regulations, and fossil-industry-backed strategies such as carbon capture, utilization and storage. The medium alignment portfolio, which assumes a Democratic-controlled Senate retaining the filibuster, includes more regulatory instruments such as sectoral carbon taxes, which are seen as market-friendly and could attract Republican support. The High Alignment portfolio assumes Democratic control of the Senate with no filibuster and includes more mandates and standards such as a clean

electricity standard.

**More information:** Qianru Zhu et al, Enhancing policy realism in energy system optimization models: Politically feasible decarbonization pathways for the United States, *Energy Policy* (2021). [DOI: 10.1016/j.enpol.2021.112754](https://doi.org/10.1016/j.enpol.2021.112754)

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