

Headline: New report sheds light on how close the U.S. can get to deep decarbonization

An interdisciplinary research team of engineers, economists, lawyers, and political scientists from the University of Texas at Austin has conducted pathbreaking research on the political feasibility of deep decarbonization in the United States. They show the U.S. will only get partially towards deep reductions in greenhouse gases, with policy tools currently available in the most favorable political scenario.

Their results suggest that new policies and tools will be needed to reduce greenhouse gases from challenging sectors like heavy industry. The researchers, using the TIMES energy system optimization model, analyzed midcentury emissions of greenhouse gases based on three different scenarios of political feasibility — all with a Democrat in the White House and a Democratically controlled House. In what the researchers call the Low Alignment scenario, Republicans gain control of the Senate. In the Medium Alignment scenario, Democrats control the Senate with the filibuster intact. In the High Alignment scenario, Democrats gain control of the Senate and the filibuster is abolished.

In their new [peer-reviewed study](#) published in *Energy Policy*, UT researchers 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 only permit greenhouse gas (GHG) emissions to fall by one-quarter by midcentury relative to 2010. In the scenario where Democrats control the Senate with the filibuster intact, GHG 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 GHG emissions to decline by about 45%.

Benjamin Leibowicz, an Assistant Professor in the Cockrell School of Engineering and one of the research leads, noted, “This interdisciplinary project brings needed policy realism to energy system modeling and reminds us that achieving deep decarbonization will require further policy innovation.”

The researchers also found that in scenarios where politics align with more comprehensive climate policy, achieving greater GHG reductions is actually less costly. Average costs are lower under greater political alignment because technology-neutral policies, like a comprehensive carbon price via a tax or cap-and-trade, allow firms 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 also 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.

Those who set U.S. decarbonization goals need to appreciate the social and political factors that can shape or constrain what policies are available to reduce GHGs. In a [video](#) accompanying the report's release, Professor David Adelman of the UT School of Law, one of the study's co-authors, argues that decarbonizing by sector may be more politically viable than economy-wide policies for three reasons: 1) lawmakers are averse to raising taxes; 2) the public is less sensitive to sectoral changes than economy-wide changes; and 3) some states will view these climate action policies as forms of economic development.

"There is a dramatic difference between what is achievable politically and what we really have to do to address climate change," said Professor Adelman. "Our research suggests that we not only need to pass the policies that are available, but also develop new tools and instruments in the hard to abate sectors like industry."

In each of the three scenarios, different policies were identified as being politically available and then modeled for their midcentury impact on greenhouse gas emissions. Low Alignment assumes a Republican-controlled Senate where traditionally Republican-supported measures are politically available such as tax credits, research and development (R&D), 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 possibly able to 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.

The interdisciplinary research team includes Joshua Busby, Sheila Olmstead and Sarang Shidore from the LBJ School of Public Affairs; Qianru Zhu and Benjamin D. Leibowicz from the Cockrell School of Engineering; and David E. Adelman from Texas Law.

The research is supported by the [Energy Institute](#) at The University of Texas at Austin.