# New model for pricing carbon will help meet net-zero climate change goals

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An article released today by researchers at Columbia University's Center on Global Energy Policy in the journal *Nature Climate Change* introduces a new approach for pricing carbon—Near-term to Net Zero.

As policymakers and advocates increasingly focus on net-zero emissions by midcentury, the Near-term to Net Zero approach is a method of setting carbon prices that could ensure net-zero emissions goals are met as one piece of comprehensive climate policies.

A carbon price is a fee on carbon dioxide released into the atmosphere that is unique in encouraging emissions reductions wherever and however they can be achieved at a low cost. How much to charge for each ton of emissions is perhaps the most crucial element of a carbon pricing policy. Economists have long focused on the social cost of carbon to calculate "correct" carbon prices because, in theory, it balances the benefits and costs of emissions reductions. The article highlights how the social cost of carbon, however, cannot be estimated with sufficient precision to provide any practical value to policymakers setting carbon prices.

The Near-term to Net Zero approach estimates the carbon prices needed for consistency with a pathway to a net-zero emissions target, or the point where the overall balance between emissions produced and emissions taken out of the atmosphere equals zero. It uses the reliable information we have now and avoids the uncertainties of long-term changes we can't predict.

"The social cost of carbon is a useful concept, but the risks of climate change are far too complex for credible comprehensive damage estimates," said lead author Noah Kaufman, a research scholar at the Center on Global Energy Policy. "Near-term to Net Zero enables policymakers to use both climate science and economics to chart an effective and efficient pathway to net-zero emissions."

By pairing a net-zero emissions target with policies that can rapidly reduce emissions right away, the Near-term to Net Zero approach aligns with current climate policy discussions in the United States and the

world. Carbon pricing developed using the Near-term to Net Zero approach complements the investments and other policy tools needed to constrain global warming from rising beyond dangerous levels, said Kaufman.

The article provides illustrative estimates for Near-term to Net Zero carbon prices for the United States assuming three possible net-zero targets: 2040, 2050, and 2060. The energy model GCAM-U.S. is used to estimate carbon prices over the next 10 years needed to follow a straight line pathway to those goals, assuming that the carbon price is combined with complementary policies that address separate market failures: energy-efficiency policies, air-pollution regulations, and early-stage support for the deployment of low-carbon technologies.

Near-term to Net Zero carbon prices in 2025, are $32, $52 and $93 per metric ton (in 2018 dollars) for net-zero targets in 2060, 2050, and 2040, respectively.

"There's no debate about the fact that climate change is happening now, and reducing our contribution to a warming planet is critical to our efforts to avoid the worst impacts of climate change," said Jason Bordoff, professor of practice in Columbia's School of International and Public Affairs, and founding director of the Center on Global Energy Policy. "This important research gives us another tool in the toolbox to figure out how we can get to net-zero as quickly as possible, and no later than 2050, by setting a price on carbon that, along with complementary policies, discourages continued pollution and creates incentives for innovation to deliver the clean energy the world needs."

**More information:** A near-term to net zero alternative to the social cost of carbon for setting carbon prices, *Nature Climate Change* (2020). DOI: 10.1038/s41558-020-0880-3 , www.nature.com/articles/s41558-020-0880-3