Leveraging the Inflation Reduction Act to Achieve 80x30 in the US Electricity Sector

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1. Motivations underlying the research

Under the Paris Agreement, the United States has committed to reducing economy-wide greenhouse gas emissions by 50–52 percent below 2005 emissions levels by 2030. The majority of these emissions reductions are expected to come from the electricity sector, where they correspond to a related sectoral target of reducing emissions to 80 percent below 2005 levels by 2030, which we describe as an "80x30" target.

To help meet these targets, Congress passed the Inflation Reduction Act (IRA)—the most significant environmental policy that the United States has passed since the Clean Air Act in 1970. The IRA aims to decarbonize the power sector by providing subsidies for clean electricity generation. Multiple modeling efforts find that the IRA achieves substantial emissions reductions but that the law is unlikely to reduce emissions enough to reach the 80x30 target. Moreover, the emissions reductions that the law does achieve are uncertain. However, the IRA can be expected to affect the incremental economic effort necessary to achieve the 80x30 target if it were implemented as a new emissions cap in the electricity sector.

2. A short account of the research performed

This paper uses a detailed electricity sector model to examine what would happen if—on top of the IRA—the United States were to adopt an emissions cap that requires the electricity sector to reach the 80x30 target. We compare these results to a scenario that would achieve the 80x30 target without the IRA subsidies. We also model an emissions cap that would achieve the level of projected emissions reductions from the IRA alone (which fall short of the climate targets) to evaluate the cost effectiveness of the IRA.

3. Main conclusions and policy implications of the work

While the IRA is the largest step that the United States has taken so far to mitigate climate change, it does not reduce US power sector emissions to a level that is consistent with the goals in the Paris Agreement, nor are emissions reductions guaranteed. Under different assumptions about gas prices and demand, we find that electricity sector emissions outcomes could vary greatly under the IRA. However, the IRA substantially reduces the incremental marginal cost of an emissions cap set to achieve and guarantee the 80x30 target.

With the IRA in place, the marginal cost associated with the incremental emissions reductions is cheaper than the cost would have been without the IRA. Without the IRA in place, under our central case representation of gas prices and electricity demand, an emissions cap that achieves 80x30 would require an emissions allowance price of $67 per metric ton, while such a cap *with* the IRA would require a cost of only $28 per metric ton.

The IRA provides important subsidies for investment in nonemitting electricity generation but it does not directly penalize emissions. In fact, while we observe under the IRA that investments in clean generation cause overall fossil-fired generation to decline, coal's share of fossil generation increases rel-

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ative to gas. The addition of a relatively low carbon price of $28 per ton under an emissions cap has a big effect in improving the cost-effectiveness of reducing emissions by providing an incentive for the power sector to switch from coal to gas, which would reduce the carbon intensity of fossil fuel–fired electricity generation on the grid, because gas–fired power plants produce less emissions than coal-fired power plants.

We also find that the IRA institutes a cost shift from electricity consumers to taxpayers, resulting in lower electricity prices on average. Achieving the same emissions reductions that are expected through the IRA with only an emissions cap would entail increased electricity prices. With the IRA already in place, adding an emissions cap to achieve the 80x30 target keeps electricity prices below a no-policy reference case. Importantly, lower electricity prices could help promote electrification throughout the economy, which is a crucial part of the US strategy to reach net zero after 2030.

The addition of an emissions cap also would increase the health benefits that are associated with the IRA. These benefits stem from reductions of secondary PM2.5 formed from NO_x and SO_2 emissions from power plants, especially coal-fired power plants. Adding the emissions cap on top of the IRA leads to a greater reduction in coal-fired electricity generation and thus offers greater health benefits.

Instituting an emissions cap alongside the IRA would lock in US emissions reductions, improve the efficiency of the IRA, have no impact on ratepayers, and increase the law's benefits for health. While the IRA does not achieve 80x30 on its own, adding an emissions cap would guarantee that the target is met. At the same time, the IRA reduces by almost 60 percent the marginal cost of achieving the 80x30 target with an emissions cap. The IRA would also prevent the cap from raising retail electricity prices—thereby protecting consumers and supporting emissions reductions in other sectors of the US economy. Adding a cap could raise revenue that partially would offset government expenditures on tax credits for clean energy, and the reductions in coal-fired electricity generation would increase the number of lives saved due to reduced air pollution. In the international context of climate negotiations, adding the emissions cap to the IRA could make the US pledge to reduce emissions more credible, potentially prompting additional effort by other nations.