

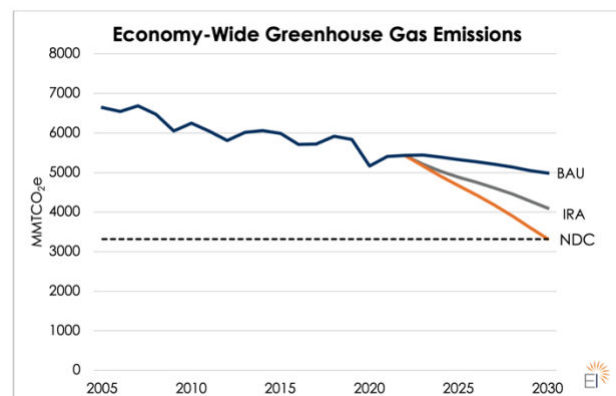
Closing the Emissions Gap Between the IRA and 2030 U.S. NDC

NEW POLICIES ARE NECESSARY TO MEET U.S. CLIMATE GOALS

The United States committed to cutting its greenhouse gas (GHG) emissions to 50 to 52 percent below 2005 levels by 2030 as part of its updated Nationally Determined Contribution (NDC) under the Paris Climate Agreement. Passing the Inflation Reduction Act (IRA) in August 2022 sets the U.S. on a path to cut GHG emissions roughly 40 percent below 2005 levels by 2030. Though the IRA will make significant progress toward the U.S.'s climate commitments, additional emissions reductions are needed to meet the NDC target.

Energy Innovation Policy and Technology LLC® used the U.S. Energy Policy Simulator (EPS) to identify policies that can achieve the U.S. NDC, grow the economy, and improve public health, building on the IRA's major climate provisions. The most impactful policies include:

- **Electricity:** New and stronger federal standards for existing and new fossil fuel power plants, alongside stronger state clean electricity standards can ensure a transition to 80 percent clean power by 2030. Federal and state transmission and permitting reforms can remove barriers to connecting new renewables to the grid.
- **Industry:** Financial incentives coupled with federal emissions and efficiency standards for industrial heating will transition this sector to cleaner technologies. Stronger standards for refrigerants and methane will further cut emissions in line with the 2030 NDC.
- **Transportation:** Stronger federal tailpipe and fuel economy standards will more rapidly cut GHGs from cars and trucks. But accelerating clean transportation also requires public sector investment in the electric vehicle supply chain and in charging infrastructure.
- **Buildings:** New and stronger federal and state appliance standards alongside state and local building code adoption and enforcement will accelerate the transition to clean, all-electric residential and commercial buildings.



MODELING IDENTIFIES NDC TECHNOLOGY AND POLICY PATHWAY

Energy Innovation® evaluated three policy scenarios using a customized version 3.4.4 of the U.S. EPS, our open-source and peer-reviewed model that estimates the emissions, economic, and public health impacts of climate and energy policies using publicly available data. Our team modeled Business-As-Usual (BAU), Inflation Reduction Act (IRA), and Nationally Determined Contribution (NDC) scenarios.

Electricity

Mature technologies (like wind and solar) that can rapidly cut GHG emissions already exist for the electricity sector, while cutting industry, transportation, and buildings emissions depends on electrification. For this reason, policies to achieve the NDC should prioritize cleaning up the electricity sector. Many IRA provisions target clean electricity deployment via tax incentives, loans, and grants, and the most optimistic scenarios indicate that the electricity sector could be more than 80 percent powered by clean energy in 2030. But these reductions are not guaranteed, and the remaining fossil fuel fleet is likely to be a mix of gas and coal power plants. Federal pollution standards and requirements that all new fossil plants be equipped with carbon capture and sequestration, alongside state clean electricity standards, can phaseout existing unabated coal and ensure the U.S. reaches 80 percent clean electricity by 2030—aligning the U.S. electricity sector with the 2030 NDC.

Industry

Industrial processes involve energy-intensive activities and commercially available industrial heat pumps can be used to decarbonize low- and some medium-temperature industrial heating. The IRA includes several provisions to target industrial emissions, but overall will only reduce sector emissions by 6 percent and is unlikely to drive much electrification. To achieve larger energy reductions and meet NDC targets, federal agencies must set strong emissions and efficiency standards and incentivize the transition to lower emissions industrial heating. Stronger standards on non-CO₂ gases like methane and F-gases are also required to cut emissions in line with the NDC.

Transportation

The IRA encourages customer adoption of zero-emission vehicles (ZEVs) with generous tax credits and new incentives to help the domestic ZEV auto industry, though uncertainty remains regarding what share of new EVs will qualify. State and federal lawmakers can further drive down vehicle emissions to meet NDC commitments with stronger tailpipe and fuel economy standards and fully leveraged financial resources for EV charging infrastructure.

Buildings

The IRA's building sector policies include tax credits for home efficiency upgrades and replacement of fossil-fueled appliances, as well as incentives for stronger building codes and electrification. But because of slow stock turnover for buildings and appliances and the limited incentive amounts, IRA provisions will only reduce building emissions 5 to 6 percent in 2030. To meet NDC targets, stronger appliance standards that push the market toward all-electric appliances, as well as stronger adoption and enforcement of local building codes, will strengthen emissions reductions in the building sector. Additional incentives will help smooth the transition.

REACHING NDC EXPANDS IRA'S PUBLIC HEALTH AND ECONOMIC BENEFITS

Investing in clean energy yields considerable public health benefits by reducing pollution from burning fossil fuels, including NO_x, SO_x, and particulate matter. Cutting harmful pollution will save lives, particularly in low-income communities and communities of color where polluting infrastructure has historically been sited.

Our modeling shows the IRA alone could prevent 2,900 premature deaths and 77,400 asthma attacks in 2030. But adopting additional policies to achieve the NDC would grow these numbers considerably, **avoiding a total of 6,800 premature deaths and 185,600 asthma attacks in 2030**. Monetized climate damages also show significant improvement under the NDC Scenario, rising to **\$383 billion in avoided climate damages** in 2030 under the NDC Scenario compared to \$203 billion under the IRA alone based on the latest social cost of carbon from the EPA.

Achieving the NDC also generates enormous economic benefits. Together, the IRA and NDC policies would create nearly **4 million jobs per year**, **grow GDP 2.6 percent per year** or an additional **\$690 billion per year**, and **save households \$110 per year on their energy bills**.