

ISSUE BRIEF

# POWERING AHEAD: HOW BIDEN ADMINISTRATION POLICIES ARE DELIVERING CLEANER ELECTRICITY AND CLIMATE PROGRESS

The climate and infrastructure legislation and pollution standards adopted during the Biden administration have put the U.S. power sector on track to make unprecedented progress in cutting carbon dioxide emissions. According to a new analysis by NRDC (Natural Resources Defense Council), these federal policies will, if maintained, lead to a 65 percent cut by 2030 in carbon emissions from 2005 levels and an 80 percent cut by 2040.<sup>1</sup> Clean energy is now forecast to make up more than half of all electricity generation within just the next five years.<sup>2</sup>

NRDC's new projections reflect updated numbers in three important areas: forecasts for growing electricity demand from new manufacturing facilities, electric vehicles, and data centers; cost estimates for wind, solar, and battery technologies; and real-world data from the first two years of the incentives in the Inflation Reduction Act.

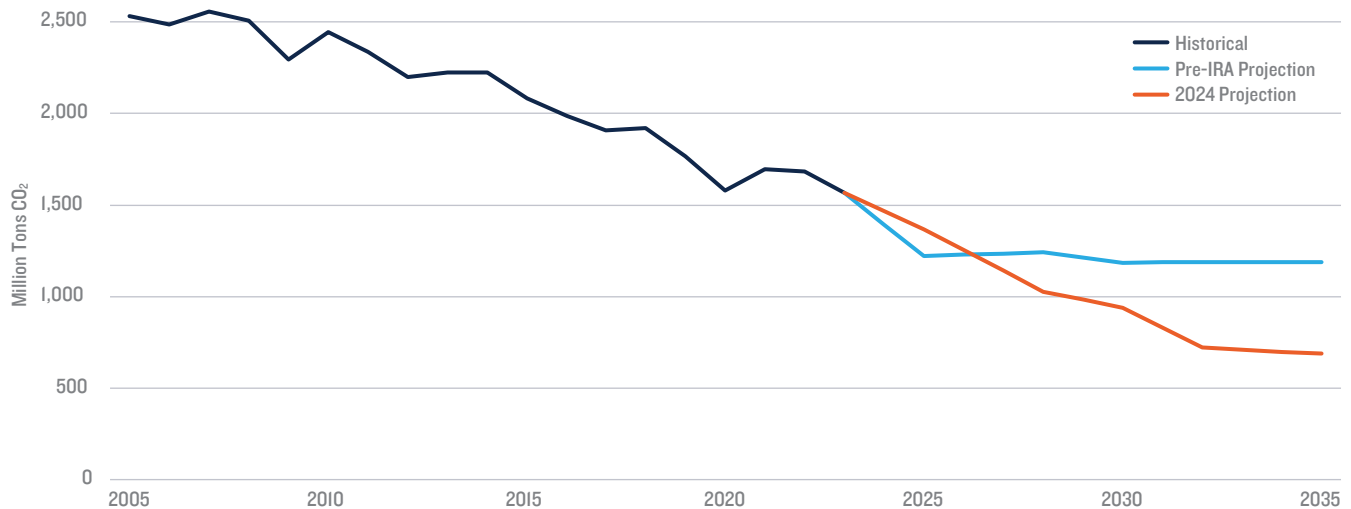
Across the entire economy, the measures taken by the Biden administration and Congress are forecast to result in an additional one-billion-ton reduction in greenhouse gas emissions in 2030, equivalent to the annual emissions from all the gasoline-powered cars and trucks on the road today.<sup>3</sup>

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An aerial view of large solar panel arrays on a farm in Gillespie, Maricopa County, Arizona.

Figure 1: Power Sector Carbon Emissions: NRDC Projections Before Passage of Inflation Reduction Act and After



Comparing this forecast to one from NRDC before the climate law passed shows that carbon emissions reductions from power plants are set to be nearly two-thirds greater by 2030. And those reductions continue to increase.

These findings are in line with other third-party analyses indicating that—driven by the power sector—the United States is on track to reduce economy-wide emissions by 38 to 56 percent over the three decades from 2005 to 2035. And the pace of emissions reductions is accelerating: It's set to be two to four times faster over the next decade than it has been over the previous two decades.<sup>4</sup>

These new analyses show that despite some twists and turns along the way, clean energy economics and the policies to cut carbon emissions are delivering as promised. While more action from the government and the private sector is needed to reach the U.S. climate goals of a 50 percent reduction from 2005 levels by 2030, these forecasts would have been inconceivable just a few years ago.

## POWER SECTOR EMISSIONS REDUCTIONS WILL HAVE IMPORTANT HEALTH AND CLIMATE BENEFITS

Policies that reduce climate-harming emissions will also cut air pollutants like nitrogen oxide (NO<sub>x</sub>) and sulfur dioxide (SO<sub>2</sub>). These pollutants contribute to asthma, heart disease, and even premature death.<sup>5</sup>

NRDC's new modeling finds that the climate and health benefits of the projected power sector emissions reductions will total as much as \$112 billion annually in 2030 and \$228 billion annually in 2035. Reductions in air pollution from coal and gas power plants is projected to cumulatively save up to 62,000 lives by 2040.<sup>6</sup>

## FEDERAL CLIMATE MEASURES

The Biden administration and Congress have put in place a number of measures to cut carbon emissions, boost clean energy, and address the climate crisis, including:

- The Inflation Reduction Act, which Congress passed and Biden signed into law in August 2022, providing unprecedented federal investment in clean energy. This historic climate law includes incentives for wind, solar, battery storage, and other low-carbon energy sources, in addition to tax credits for electric vehicle manufacturing and purchase. Since the law was enacted, at least 325 new clean energy projects in 41 states have been announced, totaling \$125 billion in investments. These projects will create tens of thousands of jobs.<sup>7</sup>
- The Infrastructure Investment and Jobs Act of 2021, which dedicated new funding to areas such as public transportation, vehicle charging, and electricity system upgrades.
- New pollution standards for cars, SUVs, and pickup trucks from the EPA, which require new vehicles produced for model years 2027 to 2032 to be cleaner than ever before, with lower tailpipe emissions for each subsequent year. These standards will work with the incentives in the Inflation Reduction Act to put more zero-emitting vehicles on the road.<sup>8</sup>
- EPA standards to finally tackle carbon emissions from new gas and existing coal power plants, the second-largest source of carbon pollution after transportation.
- Rules from 2023 that require oil and gas producers to monitor and curb methane leaks from drilling, producing, and shipping their oil or gas.
- The Department of Energy's (DOE) updated efficiency standards for appliances from washers to furnaces, lightbulbs to dishwashers. The DOE projects that the standards put in place during the Biden administration will together save consumers \$1 trillion over 30 years.<sup>9</sup>

## THE TRANSPORTATION SECTOR DRIVES CARBON REDUCTIONS TOO

While the power sector is the main driver of projected emissions reductions from recent climate laws and regulations, transportation, the nation's largest source of carbon emissions, is also poised for significant emissions reductions.<sup>10</sup> That's notable because while power sector emissions have been falling steadily for two decades, transportation emissions have not; in fact, they have increased each year since 2020.<sup>11</sup>

However, NRDC finds that with federal incentives and clean car standards from the Environmental Protection Agency (EPA), sales of both battery electric and plug-in hybrid electric vehicles could reach 10 million by 2032, two and a half times what they would be without these policies. The impact of these measures will grow over time, leading to cuts of nearly eight billion tons of carbon emissions over the next three decades, more than the entire U.S. economy now emits in a year.<sup>12</sup>

Additional third-party analysis finds that by 2035, transportation sector greenhouse gas emissions could fall as much as 34 percent from current levels with these federal incentives and standards in place.<sup>13</sup>

## CONCLUSION

The economics of clean energy have changed radically over the past decade. As the costs of wind, solar, batteries, and electric vehicles have fallen, the economic case for clean energy is now clearer than ever. Clean energy makes economic sense, and that's prompting companies and consumers to vote with their dollars.

Federal policy plays a crucial role in ensuring that these technologies are adopted quickly and that they result in real reductions in carbon pollution. The Inflation Reduction Act and the infrastructure law both lower the costs for clean energy and electric vehicles for U.S. consumers. EPA standards ensure that companies deliver lower emissions. Without these incentives and the EPA pollution standards, the transition to a lower-carbon economy would be progressing much more slowly.

Actions by Congress and the Biden administration have laid the groundwork to help the United States cut carbon emissions and address the climate crisis. The progress has been significant, and more will be needed in the coming years.

## NRDC'S MODELING APPROACH

NRDC used the Integrated Planning Model (IPM) to assess the impact of power sector policies adopted since the start of the Biden administration. IPM is a detailed model of the U.S. electric power system and is used by the EPA, states, and industry to assess the effects of environmental regulations and policies.<sup>14</sup>

NRDC modeled an updated business-as-usual scenario that includes all relevant on-the-books policies at the federal and state levels as of May 2024, including the finalized carbon pollution standards for power plants, the Mercury and Air Toxics Standard, and the NO<sub>x</sub> National Ambient Air Quality Standard. The demand forecast has also been updated to account for greater predicted electricity growth due to the new vehicle standards and other electrification, as well as increased load from data centers and new industrial facilities.

Health and climate benefits were derived by comparing the updated results with previous NRDC modeling completed before the Inflation Reduction Act passed in August 2022. That base case included the best-available data sources for future technology performance and costs, fuel prices, load growth, and on-the-books policies as of May 2022. NRDC used the EPA's most recent "benefit-per-ton" estimates for projected air pollution (NO<sub>x</sub> and SO<sub>2</sub>) emissions reductions to estimate annual and cumulative public health savings, including lives saved. Climate benefits were estimated using the EPA's Social Cost of Greenhouse Gas figures released in December 2023, assuming a 2.5 percent discount rate.<sup>15</sup>

## Endnotes

- 1 Based on modeling by NRDC using the Integrated Planning Model. Health benefits derived using the U.S. Environmental Protection Agency's (hereinafter EPA) "Sector-Based PM2.5 Benefit Per Ton Estimates," last updated July 3, 2024, <https://www.epa.gov/benmap/sector-based-pm25-benefit-ton-estimates>. Climate benefits derived using the EPA's *Report on the Social Cost of Greenhouse Gases: Estimates Incorporating Recent Scientific Advances*, November 2023, [https://www.epa.gov/system/files/documents/2023-12/epa\\_scghg\\_2023\\_report\\_final.pdf](https://www.epa.gov/system/files/documents/2023-12/epa_scghg_2023_report_final.pdf).
- 2 NRDC analysis, based on modeling using the Integrated Planning Model; estimate includes wind, solar, battery, hydro, and nuclear generation.
- 3 Based on NRDC analysis of EPA regulatory impact analyses for all finalized standards and modeling of the Inflation Reduction Act. EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2022*, EPA 430R-24004, April 2024, [https://www.epa.gov/system/files/documents/2024-04/us-ghg-inventory-2024-main-text\\_04-18-2024.pdf](https://www.epa.gov/system/files/documents/2024-04/us-ghg-inventory-2024-main-text_04-18-2024.pdf).
- 4 Ben King et al., *Taking Stock 2024: US Energy and Emissions Outlook*, Rhodium Group, July 23, 2024, [https://rhg.com/wp-content/uploads/2024/07/Taking-Stock-2024\\_US-Energy-and-Emissions-Outlook.pdf](https://rhg.com/wp-content/uploads/2024/07/Taking-Stock-2024_US-Energy-and-Emissions-Outlook.pdf).
- 5 EPA, "Particulate Matter (PM) Basics," last updated June 20, 2024, <https://www.epa.gov/pm-pollution/particulate-matter-pm-basics#effects>.
- 6 NRDC, based on modeling using the Integrated Planning Model.
- 7 Environmental Entrepreneurs, "Clean Economy Works," accessed July 16, 2024, <https://e2.org/announcements/>.
- 8 EPA, "Multi-Pollutant Emissions Standards for Model Years 2027 and Later Light Duty and Medium-Duty Vehicles: Final Rule," EPA-420-F-24-016, March 2024, <https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P1019VP5.pdf>.
- 9 U.S. Department of Energy, "DOE Finalizes Cost-Saving Efficiency Standards for New Cooking Products, Based on Recommendations from Manufacturers and Consumer Advocates," press release, January 29, 2024, <https://www.energy.gov/articles/doe-finalizes-cost-saving-efficiency-standards-new-cooking-products-based-recommendations>.
- 10 John Bistline et al., "Emissions and Energy Impacts of the Inflation Reduction Act," *Science* 380, no. 6652 (2023): 1324-27, <https://www.science.org/doi/10.1126/science.adg3781>.
- 11 U.S. Energy Information Administration, "Table 11.5. Carbon Dioxide Emissions from Energy Consumption: Transportation Sector," *Monthly Energy Review*, July 29, 2024, [https://www.eia.gov/totalenergy/data/monthly/pdf/sec11\\_8.pdf](https://www.eia.gov/totalenergy/data/monthly/pdf/sec11_8.pdf).
- 12 NRDC, "Cleaner Cars and Fatter Wallets," June 2024, <https://www.nrdc.org/sites/default/files/2024-06/cleaner-cars-fatter-wallets-ib.pdf>; U.S. EPA, "Optimization Model for Reducing Emissions of Greenhouse Gases from Automobiles (OMEGA): OMEGA v2.5.0," accessed April 12, 2024, <https://www.epa.gov/regulations-emissions-vehicles-and-engines/optimization-model-reducing-emissions-greenhouse-gases>. NRDC calculated the difference in EV sales by running EPA's OMEGA under two scenarios and finding the difference between them. One scenario, which NRDC refers to as "With Policies" included the IRA and EPA's final multi-pollutant emissions standards for model years 2027-2032 light-duty and medium-duty vehicles. It was compared to a "Without Policies" scenario that included only the prior standards through model year 2026 and excluded the IRA. NRDC calculated cumulative reductions from 2027 to 2055 of 7.9 billion metric tons by running the EPA's OMEGA under the "With Policies" and "Without Policies" scenarios and finding the difference in emissions.
- 13 King et al., *Taking Stock 2024*.
- 14 Documentation for the Integrated Planning Model can be found at EPA, "Documentation for 2023 Reference Case," April 25, 2024, <https://www.epa.gov/power-sector-modeling/documentation-2023-reference-case>.
- 15 EPA, *Final Report on the Social Cost of Greenhouse Gases*, accessed August 5, 2024, <https://www.epa.gov/environmental-economics/scghg>.