

May 30, 2023

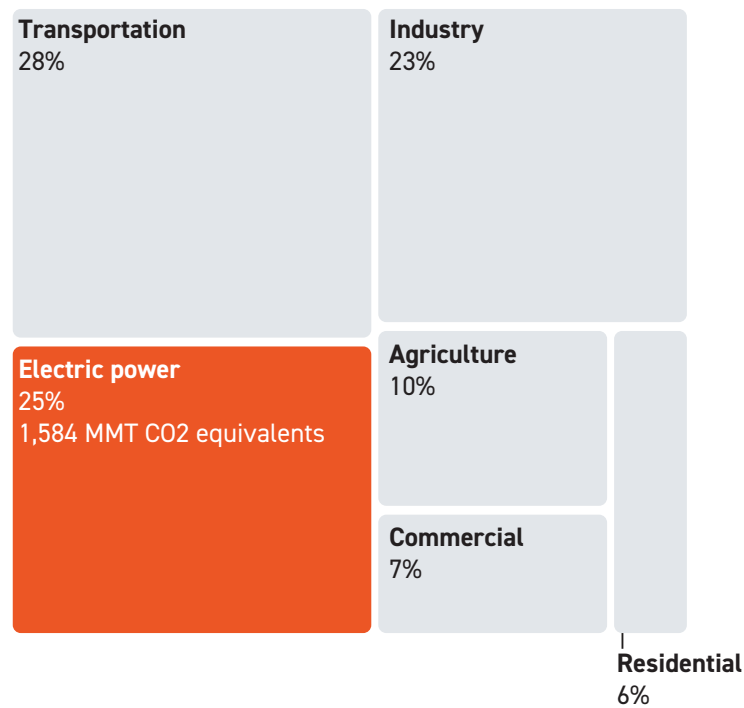
EPA power plant rule could contribute to drastic reduction in carbon emissions and toxic pollutants

The Environmental Protection Agency proposed in May a new standard that would drastically reduce emissions and toxic pollutants coming from power plants across the country. Fossil fuel-fired power plants, which were responsible for 25 percent of the country's emissions in 2021, will need to make major changes to meet the EPA's guidelines: lowering emissions by nearly 90 percent by 2040.

The EPA estimates that the changes would prevent roughly 1,300 premature deaths and over 800 hospital and emergency room visits in 2030. The proposed standards for existing coal and new natural gas plants alone would reduce carbon emissions by 617 million metric tons between 2028 and 2042, or the equivalent emissions from over 137 million cars driven for one year.

The electric power industry represents roughly a quarter of U.S. emissions

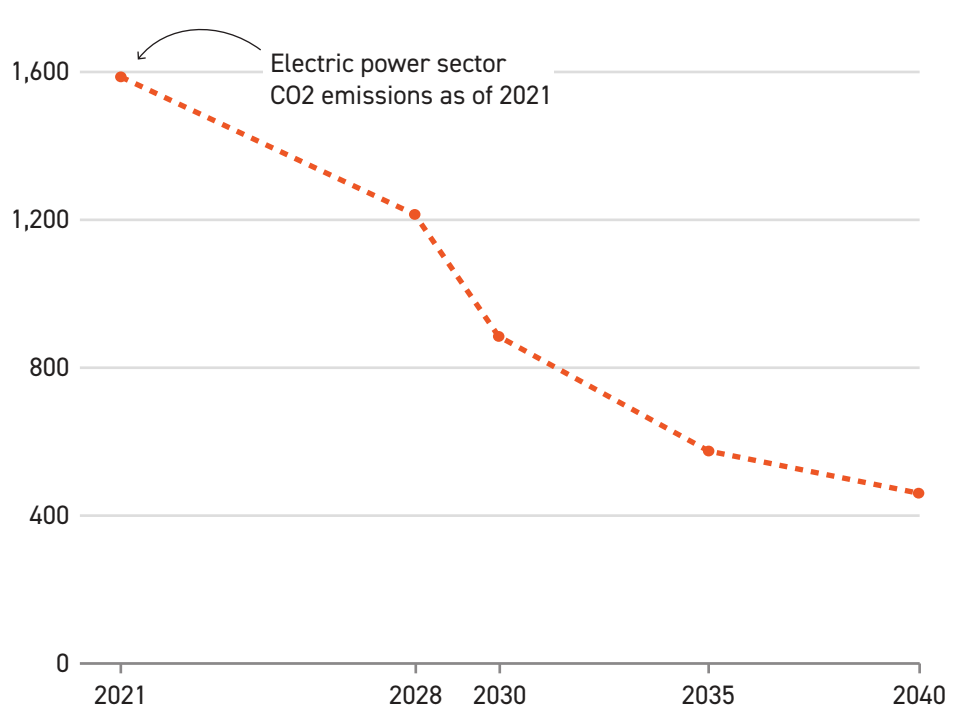
U.S. EMISSIONS BY ECONOMIC SECTOR, 2021



Note: Represents 6,340.23 MMT CO2 eq. gross total emissions in 2021. Percentages may not total to 100% due to rounding.

Proposed rule expected to contribute to a 71 percent reduction in power sector carbon emissions relative to 2021 levels

PROJECTED ANNUAL CO2 EMISSIONS UNDER PROPOSAL, MILLION METRIC TONS



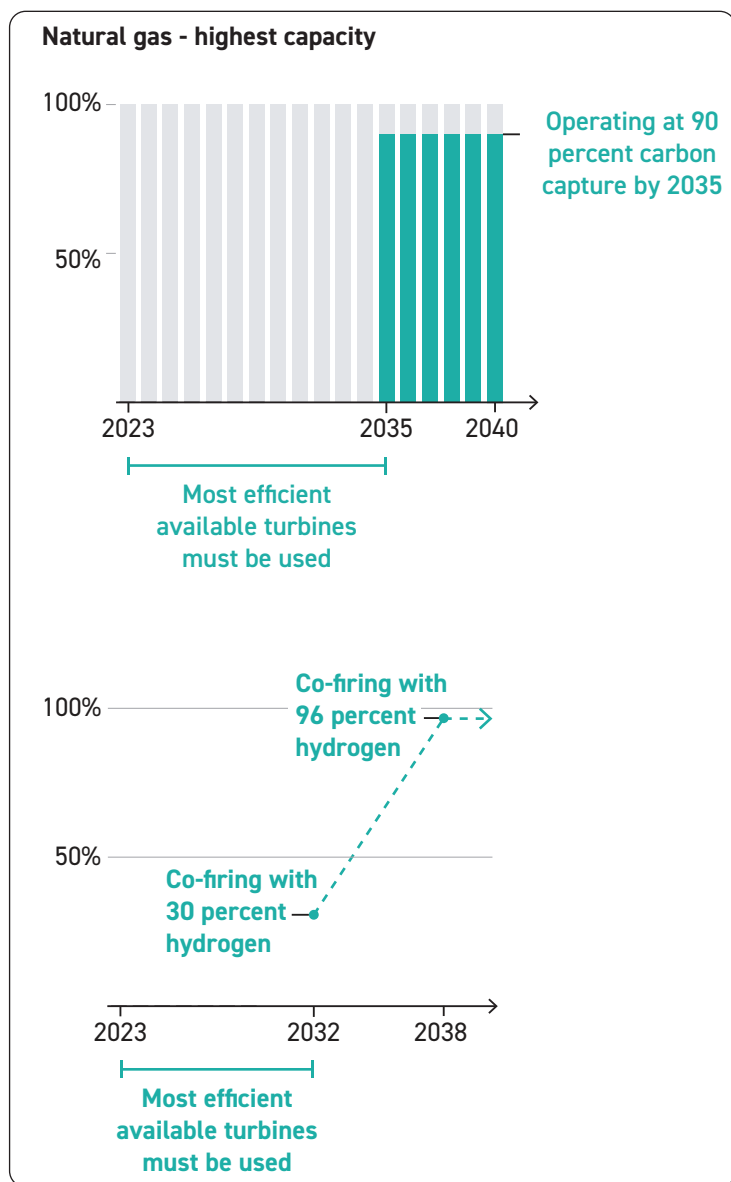
Note: Emissions levels for 2028 through 2040 represent IPM run years for the contiguous U.S.

Natural gas- and coal-fired plants must rely on new technology

In order to make these kinds of reductions in carbon emissions possible, EPA recommends the use of two alternate options: carbon capture or sequestration and co-firing with lower-greenhouse gas fuels. Carbon capture or sequestration comes in multiple forms, but generally involves isolating and extracting carbon emissions from smokestacks and eventually storing them deep underground. "Low greenhouse gas" co-firing uses an alternate fuel source that emits less carbon dioxide. While the Inflation Reduction Act and the bipartisan infrastructure bill provide some tax incentives for each form of technology, both pathways have yet to see widespread adoption across the power sector.

EPA suggests carbon capture and hydrogen co-firing for natural gas plants

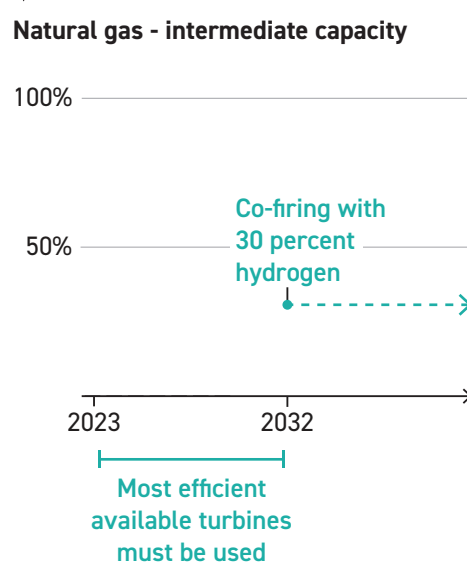
EPA PROPOSALS FOR NEW NATURAL GAS PLANTS



The recommended path ahead for new natural gas plants depends on the generating capacity of their turbines, or maximum amount of electricity generated in a typical hour. The EPA's new proposal outlines emissions reductions systems based on each unit's individual capacity and how frequently it runs.

"Base load" turbines operate at the highest capacity. For these, the EPA proposes two possible paths forward: one involving carbon capture or sequestration, and the other ramping up hydrogen co-firing over time.

Turbines operating at a lower capacity would only be expected to co-fire with 30 percent hydrogen.



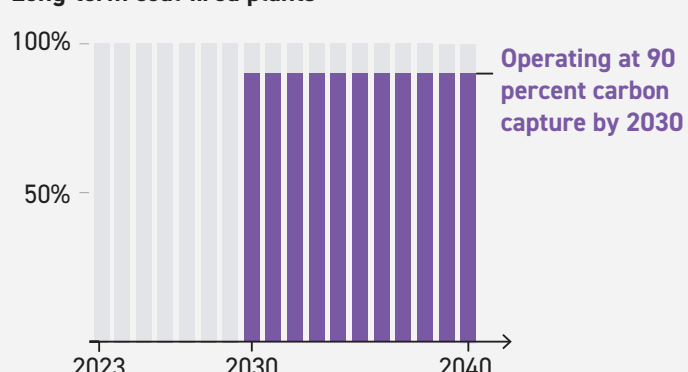
Note: EPA proposal for existing natural gas plants also incorporates carbon capture or sequestration or hydrogen co-firing.

EPA suggests carbon capture and natural gas co-firing for coal plants

EPA PROPOSALS FOR EXISTING COAL PLANTS

To meet the proposed requirements, coal-fired plants would have different pathways depending on their planned retirement dates. Plants with no planned retirement would need to sequester nearly all of their carbon emissions beginning in 2030, while plants retiring before 2040 would be expected to co-fire with 40 percent natural gas by then.

Long-term coal-fired plants



Medium-term coal-fired plants

