

New U.S. power plant regulations will help secure U.S. climate goals

The EPA's new power plant proposal takes critical steps towards 2030 and 2050 targets

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SUMMARY

- ▶ The EPA's new proposal to limit greenhouse gas emissions from power plants will take the United States one major step closer to meeting our goals to cut U.S. emissions in half by 2030 and to reach net zero emissions by 2050.
- ▶ Regulatory actions to drive accelerated adoption of CCS and the phaseout of unabated fossil fuel generation can deliver substantial new emissions reductions in 2030. Any rule eliminating unabated fossil generation by 2040 would exceed previous estimates for ambitious strategies. Preliminary analysis by the Center for Global Sustainability at the University of Maryland indicates that new regulations of this type—when combined with other actions from the federal government, states, cities, and other actors—can help reduce emissions in the power sector by over 70% by 2030 from 2005 levels. Preliminary analysis* estimates that this type of rule can support power sector reductions of up to 82% by 2040 from 2005 levels.
- ▶ Our preliminary analysis* indicates that such action in the power sector accelerates reductions by complementing other actions to drive down emissions, such as tax credits for renewables and deployment of carbon capture and storage (CCS), state-level standards, and many others.

- ▶ In conjunction with the Inflation Reduction Act's 45Q tax credits, such rules can extend action beyond the IRA tax credit's lifespan to sustain and rapidly extend reductions on the path to net zero by mid-century. **Together, a suite of actions that reduces and eliminates unabated fossil-fueled electricity generation through 2040 could achieve up to 72 MtCO₂e in annual emissions reductions by 2030. The maximum technical potential for reductions over this period is 317 MtCO₂e annually.** The specific trajectory over time will depend on the details in the final rule.
- ▶ Power sector regulations such as the one being announced by EPA form part of a broader U.S. strategy across all sectors and greenhouse gases—drawing on momentum from the federal government and subnational actors—to clean up pollution and achieve rapid emissions reductions in support of our U.S. goals of 50-52% reductions by 2030 and net zero emissions by 2050.
- ▶ This type of rule is a critical and complementary step towards cementing the U.S. transition to a clean economy. At the same time, it is only one part of a larger suite of actions needed in the power sector and others. The rule will also underscore the need for continued investments to enable a just, clean, rapid, and affordable energy transition for our most vulnerable communities, ensuring breathable, safe air for all.

The proposal is a critical step toward achieving healthier communities, building a vibrant, clean energy economy, and attaining U.S. climate goals. The U.S. Environmental Protection Agency has announced a new proposed regulation governing emissions from fossil-fueled power plants. This rule could accelerate current trends in the U.S. power sector toward a cleaner and lower-emissions electricity generation mix, primarily if the rule requires carbon capture technology for new and existing gas power plants and existing coal plants. In doing this, in line with recent analyses¹ we have done for U.S. decarbonization pathways, it could also add another critical policy driver for achieving the overall U.S. climate targets of a 50-52% economy-wide emissions reduction by 2030 and a net zero emissions economy by 2050.

**This preliminary analysis conducted by the Center for Global Sustainability at the University of Maryland based on America Is All In "Beyond 50" analysis and basic assumptions about the levels of unabated fossil generation driven by a power sector rule between 2030 and 2040. After the proposed rule has been made public, additional and updated analysis will be undertaken to give a more detailed picture of the impact of EPA's potential actions on power sector decarbonization in the United States.*

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Cleaning up the power sector is of critical importance and is a key near-term opportunity. Thanks to recent advancements that have dramatically lowered the costs of clean electricity, the power sector can deliver large amounts of low-cost emissions reductions in the near term. A rapid transition to a clean electricity system can deliver cleaner air and clean energy jobs and help achieve U.S. climate goals. Moreover, moving to a cleaner electricity generation system is helpful not only for the direct benefits alone but also as a central pillar of achieving a net-zero emissions economy by 2050. A core strategy to achieve net zero is to switch as many energy uses as possible to clean electricity—for example, moving from fossil-fueled cars and trucks to electric vehicles. A diverse and complementary set of policy tools that includes technology incentives, regulations, state and city laws, and other subnational actions provides an effective way to support a rapid transition to clean electricity that can take advantage of these near-term opportunities. Our recent “Beyond 50” analysis,² for example, provides a detailed roadmap of achievable, economy-wide actions, including those in the power sector, that will enable the U.S. to meet its 2030 climate goals and build a stable and secure clean energy future.

U.S. power sector emissions are already falling. The U.S. power sector, until recently the largest emitting sector in the United States, has fallen to the second largest after more than a decade of sustained reductions of emissions due to U.S. regulatory actions, state-level policies to deploy renewables, rapidly falling costs of renewable energy such as wind and solar, and dramatic decreases in coal-fired power generation. Recent actions from the Inflation Reduction Act, such as tax credits and incentives for renewables and the expansion of the Section 45Q tax credits for CCS, are poised to inject additional support for the deployment of clean technologies by providing investment incentives and layering onto other regulatory and policy actions that are already in place.

Regulatory actions such as those in the proposal can accelerate new technology deployment for power sector decarbonization. The proposed rule provides a new, substantial, and complementary boost to further accelerate power sector decarbonization. Regulatory actions encouraging or requiring CCS will reduce the amount of electricity generation that simply vents greenhouse gas emissions into the atmosphere—so-called “unabated fossil generation.” An EPA rule could require new fossil generators to capture and then store those carbon emissions without venting them, using existing technology called carbon capture and sequestration (CCS). If the final rule targets existing fossil generation, the reduction benefits can dramatically reduce annual power sector emissions. Eliminating unabated fossil generation through 2040 could lead to annual reductions of up to 72 MtCO₂e in 2030. The maximum technical potential for reductions over this period is 317 MtCO₂e annually. By targeting this specific technology, such rules can provide an important complement to the existing suite of federal, state, and other policies, many of which are focused on supporting the deployment of renewables, providing investment incentives, and financing for the transition away from fossil fuels.

Is it enough? A strategy to achieve the ambitious U.S. 2030 target and get on a path to the 2050 net zero goal was always expected to require extensive and sustained efforts, across all sectors and greenhouse gases, for the full decade of the 2020s. This rule should be viewed in that context. The rule itself will provide a substantial and material contribution to deliver the power sector reductions that are in line with what will be needed to achieve the U.S. goals. Complementary and feasible new actions at the federal, state, and local levels—along with the full implementation of IRA—will also be necessary for success. Our analysis and others’ show that such actions could include, for example:

- Expanding, through IRA, existing federal tax credits for renewable energy, including the Section 45 production tax credit (PTC) and Section 48 investment tax credit (ITC), which transition into technology-neutral credits in 2025.
- Utilizing the Energy Infrastructure Reinvestment (EIR) program to help accelerate coal retirement through loans and grants for retiring coal plants and replacing them with clean energy; accelerated clean energy standards in states, cities, and other subnational actors targeting 80% of electricity demand by 2030; implementing city clean electricity goals targeting 100% of demand by 2030. Small businesses taking advantage of the new Greenhouse Gas Reduction Fund, which allocates up to \$27 billion for clean energy technology development.
- Eliminating unabated coal plants by 2030; and prohibiting new unabated fossil-fueled power plants after 2024.

As these new technologies are developed and deployed, it will be important to assess how the carbon transport and storage infrastructure could impact vulnerable communities and to minimize any potential damages. Importantly, CCS does not address the range of health concerns as pollutants continue to impact health on an increasing basis. Additional actions will be needed to ensure breathable air for all.

¹ Horowitz, R., Binsted, M., Browning, M., Fawcett, A., Henly, C., Hultman, N., ... & McJeon, H. (2022). The energy system transformation needed to achieve the US long-term strategy. *Joule*, 6(7), 1357-1362. [https://www.cell.com/joule/fulltext/S2542-4351\(22\)00251-3](https://www.cell.com/joule/fulltext/S2542-4351(22)00251-3)

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² Zhao, A., S. Kennedy, K. O’Keefe, M. Borrero, K. Clark-Sutton, R. Cui, C. Dahl, G. Deye, J. Feldmann, K. Kennedy, H. McJeon, M. Moravec, D. Nilov, S. Rajpurohit, J. Rosas, C. Squire, and N. Hultman (2022). “An All-In Pathway To 2030: The Beyond 50 Scenario.” Center for Global Sustainability, University of Maryland and America Is All In. 16 pp. Available at https://cgs.umd.edu/sites/default/files/2022-11/CGS_UMD_Beyond50report_Nov2022.pdf