

The Road Ahead For EPA's Greenhouse Gas Reduction Efforts

By **Andrew Shaw** (June 26, 2023)

During the 2020 presidential campaign, then-candidate Joe Biden pledged to employ a whole-of-government approach to addressing climate change.

During the first two years of his presidency, Biden has been focused on legislative action, exemplified by the Bipartisan Infrastructure Law and the Inflation Reduction Act, which provided historic investments in clean energy.

This legislation, while significant, is insufficient to meet the resident's medium- and long-term climate change commitments, including the U.S.' nationally determined contribution under the Paris Agreement of reducing economy-wide greenhouse gas emissions 50%-52% below 2005 levels by 2030.



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In response, we see federal agencies, such as the U.S. Environmental Protection Agency, ramping up regulatory activity targeting greenhouse gas emissions particularly from the electricity sector.

The EPA recently released proposed Clean Air Act CO₂ standards and guidelines for existing and new electric generating units. In addition, the EPA has promulgated other regulations targeting non-CO₂ emissions from the electricity sector that could have the additional benefit of further reducing CO₂ emissions.

These regulations could aid the Biden administration's goals of decarbonizing the electricity sector, but they face various challenges.

On the technical front, there are questions about how the rules could affect grid reliability. On the legal front, the rules could meet a skeptical reception from the U.S. Supreme Court's conservative majority. And on the political front, a shift in the balance of power in Washington could result in the rules being overturned in the next few years.

Greenhouse Gas Projections Related to IRA Investments

The IRA provided nearly \$370 billion for climate change, an amount that constitutes the largest investment Congress has ever made in reducing greenhouse gas emissions.

In particular, the IRA created a clean electricity production tax credit and a clean electricity investment tax credit, which will remain in effect until 2032. The IRA also established an PTC for existing nuclear reactors that could help ensure that a key source of baseload non-emitting power remains on-line.

Carbon capture and hydrogen — two key technologies to EPA's CO₂ rule — also received boosts through long-term tax incentives. The IRA extends the Section 45Q tax credit for carbon capture for facilities that start construction before 2033, while easing the thresholds for companies to qualify for the credit.

So-called clean hydrogen projects can receive a credit of 60 cents per kilogram times the applicable percentage, which ranges from 20% to 100%, depending on how clean the

hydrogen is. If applicable wage and registered apprentice requirements are met, the credit goes up to \$3 per kilogram times the applicable percentage.

For-profit entities can also receive direct payment in lieu of the tax incentives for carbon capture and hydrogen projects.

These tax incentives, along with other IRA investments, are projected to reduce U.S. greenhouse gas emissions. According to the Rhodium Group, the IRA will result in a 31%-44% reduction of greenhouse gas emission below 2005 levels by 2030 in contrast to 24%-35% under a business-as-usual scenario.[1]

The U.S. Department of Energy also estimated that the IRA, coupled with other enacted policies and past actions, will reduce U.S. economywide greenhouse gas emissions 40% by 2030.[2]

These projected reductions will not — if of themselves — put the U.S. on track to meet their 2030 nationally determined contribution commitment or their 2050 net-zero goal.

In April, the U.S. Clean Air Task Force released a study that found, notwithstanding the investments in the BIL and the IRA, that the U.S. will be 810 million tons of CO₂e short in meeting their 2030 nationally determined contribution.

To close the gap, the report recommended that the U.S. government "act with urgency over the next two years and take advanced of existing Clean Air Act regulatory authority to control climate pollution," such as limiting emissions from new and existing power plants.[3]

EPA Clean Air Act Regulations

In this context, the EPA is moving forward with various Clean Air Act rulemakings that could, if implemented, have a significant effect on reducing CO₂ emissions and altering the U.S.' electricity portfolio.

Some of these regulations, as described below, address conventional and toxic air emissions, but they could result in CO₂ reductions from the power sector with the closure of older, inefficient fossil generation.

EPA's CO₂ Electric Generating Unit Rule

On May 11, the EPA released proposed CO₂ standards and emissions guidelines, pursuant to Section 111 of the Clean Air Act, for various fossil fuel electric generating units.

The proposed rule came 11 months after the U.S. Supreme Court's decision in *West Virginia v. EPA*, where a 6-3 conservative majority found that the EPA exceeded its statutory authority under the Clean Air Act in promulgating the Obama-era Clean Power Plan.

While West Virginia prohibits the EPA, under Section 111, from mandating generation shifting, as proposed in the Clean Power Plan, the decision does not prohibit the agency from requiring more traditional command and control measures at electric generating units to reduce CO₂ emissions.

Consequently, the EPA's recent draft rule relies on command-and-control measures, directing affected electric generating units to deploy carbon capture technology or cofire with low greenhouse gas hydrogen to meet CO₂ standards.

For example, existing large and frequently used natural gas, electric generating units will need to capture 90% of their CO₂ emissions by 2035 or co-fire 30% by 2032 and 96% by 2038 with low greenhouse gas hydrogen.

For existing coal electric generating units that will operate in the long-term, e.g., after 2039, the proposed rule would require these units capture 90% of their emissions by 2035.

Existing coal electric generating units that plan on closing prior to 2035 or 2040 must, in the interim, meet various requirements involving natural gas.

The EPA also proposed new CO₂ standards for new natural gas electric generating units that will require, for larger units with higher capacities, the installation of carbon capture technology or cofiring with low greenhouse gas hydrogen.

EPA projects that the proposed rule will avoid up to 617 million metric tons of CO₂ emissions through 2042. CO₂ emissions from existing natural gas electric generating units would be reduced by 407 million metric tons.

These regulations will also affect the U.S.' electricity generating portfolio. According to the EPA's regulatory impact analysis, the proposed rules will result in 126 gigawatts of coal retirements by 2035, an increase from 104 gigawatts under a baseline scenario. Generation from natural gas electric generating units would also decrease by 2040 while renewable generation increasing under the proposed rules.[4]

Cross-State Air Pollution Rule

In March, EPA finalized an expansion of the Cross-State Air Pollution Rule, a regulation intended to mitigate interstate nitrogen oxide emissions that contribute to ozone pollution for downwind states.

Under the rule, power plants will face decreasing emissions budgets over time based on the level of reductions achievable through phased installation of state-of-the-art emissions controls at power plants starting in 2024.

While focused on nitrogen oxide emissions, the CSAPR will have a substantial impact on reducing CO₂ emission from the power sector. The CSAPR's regulatory impact analysis projects that the rule will avert 49 million metric tons of CO₂ emissions from the power sector by 2030.[5]

The EPA forecasts that the CSAPR will cause 63 coal electric generating units, constituting 14 gigawatts, to retire, a figure representing a reduction of 13% of the source's total domestic capacity.[6] The rule is also projected to incentivize an incremental 3 gigawatts of renewable capacity additions by 2025.[7]

Mercury and Air Toxics Standards

On April 5, the EPA proposed tighter Clean Air Act Section 112 controls on mercury and other toxic air emissions from coal- and oil-fired electric generating units.

The recent updated rule from the EPA follows a statutorily required review under the Mercury and Air Toxics Standards, which determine if pollution cuts are feasible based on technological advances. In February, the EPA determined that the legal basis for the

standard was appropriate and necessary to regulate air pollution.

In particular, the draft MATS rule proposes tightening standards for mercury emissions from lignite coal-fired electric generating units.

The 2012 MATS rule established a less stringent standard for lignite coal-fired electric generating units, but the EPA has now concluded that the technology exists for such electric generating units to meet the same standards for other types of coal. The EPA is also proposing a tougher standard on filterable particulate matter to control non-mercury air toxins.

The initial 2012 MATS rule was one of the most impactful, albeit costly and controversial, Clean Air Act regulations in history.

According to the U.S. Energy Information Administration, nearly 20 gigawatts of coal capacity retired following the initial 2015 compliance date for the 2012 MATS rule.[8] This new rule is likely to have less dramatic impact; the EPA is stating that the MATS rule will only cause about 500 megawatts of coal capacity to retire.

The EPA also projects that the MATS rule will reduce CO₂ emission five million tons by 2035.[9] While the impacts of this specific rule may be limited, they must be viewed in the broader context of other Clean Air Act rulemakings.

EPA is projecting to finalize this rule by March 2024.

These are just several of the more high-profile EPA Clean Air Act rulemakings, and other efforts, such as reconsiderations of National Ambient Air Quality Standards for ozone, could also affect CO₂ emissions from the sector and the electricity generating portfolio in the U.S.

Outlook

The EPA's various Clean Air Act rulemakings face a variety of challenges that infuse uncertainty as to their ability to contribute to U.S. greenhouse gas reduction.

First, some stakeholders are questioning whether the EPA's Clean Air Act rules will adversely affect grid reliability.

Over the coming years, the projected electrification of the transportation and industrial sectors will result in increased load, thereby requiring increased electric capacity. At the same, extreme weather is placing additional strain on the grid as exemplified by the 2021 Winter Storm Uri and the West Coast wildfires. In this context, there is concern that additional early retirements of fossil capacity could further impair grid reliability.

The Biden administration is attempting to address such concerns exemplified, by a recent memorandum of understanding between the EPA and DOE to coordinate on ensuring grid reliability as the agency issues new Clean Air Act regulations. The EPA also argues that the long lead times for their CO₂ standards will allow the industry to adjust and meet any reliability concern.

Second, there is legal uncertainty for any high-profile Clean Air Act rules with the prospect that they could end up before the conservative 6-3 Supreme Court.

For the CO₂ rule, one of the issues likely to be raised in litigation is whether clean hydrogen

and carbon capture are adequately demonstrated as set forth in Section 111 of the Clean Air Act. States and industry groups have already filed multiple lawsuits challenging the EPA's CSAPR.

Lastly, these rules face political headwinds. If a Republican wins the presidency in 2024, any recently finalized Clean Air Act rule could be overturned, as was the case with the Clean Power Plan under the Trump administration. An overturned rule could yield more litigation and a cycle of uncertainty for power plants trying to operate within the law.

Notwithstanding these challenges, the EPA's recent activity sends a clear signal that the agency is going to use all of its regulatory authority to support the Biden administration's climate change goals.

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[1] <https://rhg.com/research/inflation-reduction-act/>.

[2] https://www.energy.gov/sites/default/files/2022-08/8.18%20InflationReductionAct_Factsheet_Final.pdf.

[3] <https://cdn.catf.us/wp-content/uploads/2023/04/21112755/ndc-gap-analysis.pdf>.

[4] https://www.epa.gov/system/files/documents/2023-05/utilities_ria_proposal_2023-05.pdf.

[5] https://www.epa.gov/system/files/documents/2023-03/SAN%208670%20Federal%20Good%20Neighbor%20Plan%2020230315%20RIA_Final.pdf.

[6] https://www.epa.gov/system/files/documents/2023-03/SAN%208670%20Federal%20Good%20Neighbor%20Plan%2020230315%20RIA_Final.pdf.

[7] https://www.epa.gov/system/files/documents/2023-03/SAN%208670%20Federal%20Good%20Neighbor%20Plan%2020230315%20RIA_Final.pdf.

[8] <https://www.eia.gov/todayinenergy/detail.php?id=32952>.

[9] https://www.epa.gov/system/files/documents/2023-04/Fact%20Sheet_MATS%20RTR%20Proposed%20Rule.pdf.