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FACT SHEET

CLEAN ELECTRICITY PENNSYLVANIA:

HOW FEDERAL POLICY CAN DELIVER CLEAN AIR AND IMPROVED HEALTH FOR THE KEYSTONE STATE

Pennsylvania has already begun the transition to a cleaner electricity system that will create new economic opportunities, lower bills for consumers, and create good jobs. Strong carbon pollution standards are now needed to ensure that Pennsylvania's future electricity system also cuts pollution and protects children's health.

With the federal incentives and the proposed pollution standards from the Environmental Protection Agency (EPA), by 2040 Pennsylvania could see:

- Renewable energy providing 60 percent of Pennsylvania's power
- Carbon emissions 74 percent below 2005 levels
- Reduced smog and particulate pollution, saving up to 900 premature deaths a year

Clean energy is poised for takeoff in Pennsylvania.

With the right policies and effective implementation, the state's wind and solar energy and battery storage is expected to grow fivefold by 2030 and then triple again by 2040 to 27 gigawatts of power, according to an NRDC analysis.[1] These solar and wind projects would produce enough electricity for over 10 million homes—or enough to power every home in Pennsylvania, New Jersey, and Maryland today.

This new, cost-effective clean energy will replace old, expensive, and dirty coal plants, as well as oil and gas plants, while driving more than $55 billion of new investments to the state over the next 12 years, according to NRDC's analysis. In fact, by 2040, the total capacity of renewable energy in Pennsylvania is projected to exceed what coal and gas capacity is today. Renewables are also projected to provide more electricity than gas in the state, accounting for almost 60 percent of the state's electricity grid by 2040 (Figure 1), compared to about 3 percent today. This happens all while Pennsylvania remains a top three exporter of power nationwide.

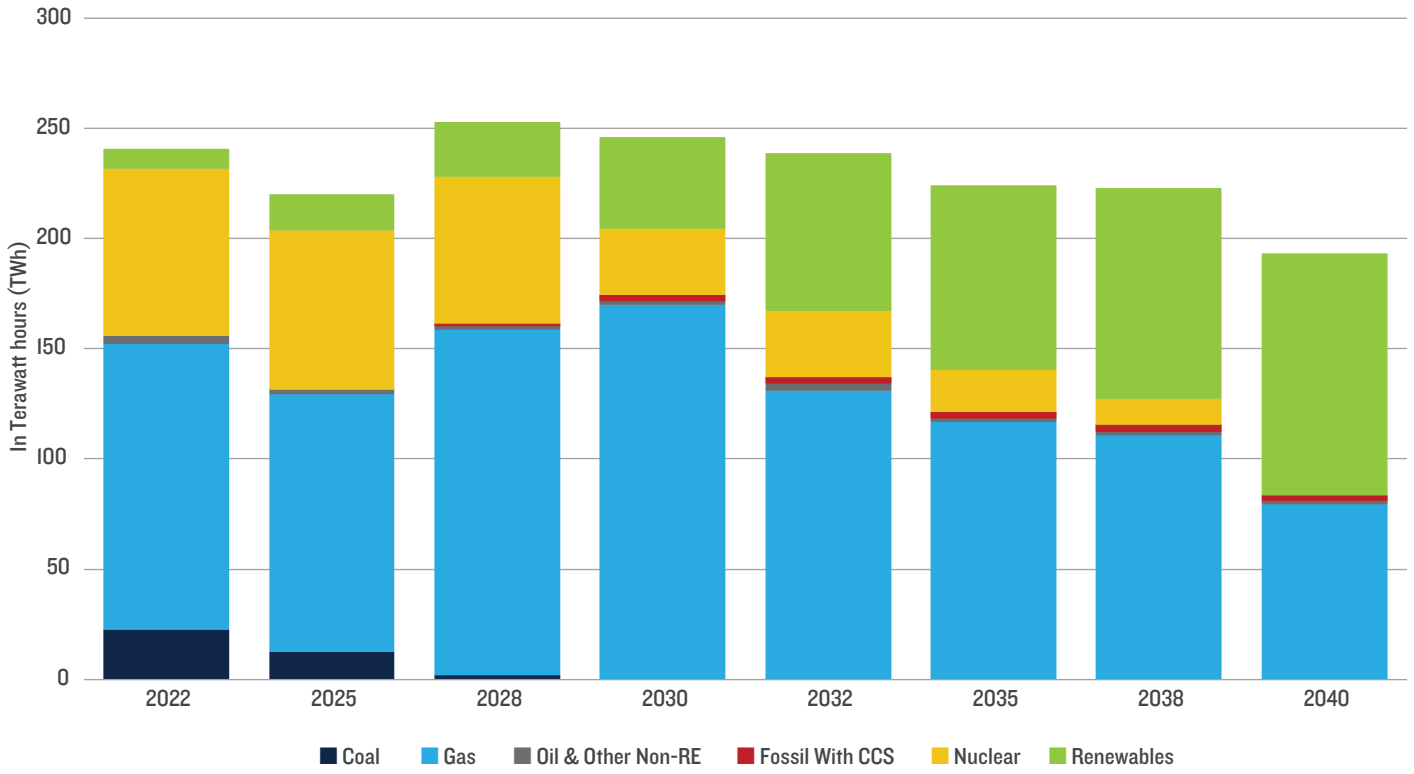
Bolstered by new federal investments in clean energy under the Inflation Reduction Act (IRA) and supported by strong carbon pollution standards from the EPA, Pennsylvania is poised to be a leader in clean electricity and clean air, which will protect health and save lives.

This transition to clean energy would have been unthinkable just a few years ago. Now, this change is underway thanks to four main drivers.

First, the economics of solar, wind, and battery technology have upended the electricity industry across the United States. The cost of installing new wind turbines has fallen by nearly 70 percent since 2009 and solar panels by a whopping 83 percent.[2] Installing new renewable energy is already typically cheaper than building a gas plant, which is why solar, wind, and batteries are set to account for 85 percent of the new power capacity installed across the country this year.[3]

Second, Pennsylvania finalized a rule to participate in the Regional Greenhouse Gas Initiative (RGGI) in April 2022.[4] Since its 2009 launch, RGGI, the nation's first multistate cap-and-invest program, has saved consumers hundreds of millions of dollars on their energy bills, with billions more in savings to come; created thousands of new jobs; and improved public health, all while helping to cut carbon pollution from the region's power plants in half.[5] Pennsylvania's participation will provide an important signal to electricity providers in the state to prioritize investments in cleaner forms of energy.

Figure 1: Projected In-State Generation in Pennsylvania with the IRA and Standards



Notes: CCS = carbon capture and sequestration. Oil & Other Non-RE (nonrenewable energy) includes oil/gas steam, biomass, and other waste fuels.

Third, the Inflation Reduction Act, which President Biden signed into law in August 2022, is providing extraordinary federal investment in clean energy. This historic climate law includes unprecedented incentives for wind, solar, battery storage, and other low-carbon energy sources, in addition to tax credits for electric vehicle manufacturing and purchase. This measure will accelerate the trends already underway, putting the nation—and Pennsylvania—on track for the fastest and most sustained build-out of renewable energy in the country's history. Figure 2 shows all of Pennsylvania's clean energy projects currently in development that will benefit from the law's clean energy tax credits.

Fourth, and finally, the Environmental Protection Agency is now in the process of setting new standards that will ensure utilities and states cut their carbon pollution from power plants. In May 2023, the EPA proposed carbon emissions limits on coal and gas plants based on efficient and reduced operations, the capabilities of carbon capture and sequestration, and clean hydrogen. Once finalized, the standards will set the emissions level that power plants must meet but will give companies and states broad flexibility to adopt strategies that achieve those results. Given the changes underway in its electricity sector, Pennsylvania is in a strong position to comply with these standards and garner additional climate, economic, and public health benefits. NRDC modeling projects that industry trends and the Inflation Reduction Act will deliver a 67 percent reduction in power sector emissions nationwide (relative to 2005 levels) by 2030; with the right EPA rules in place, emissions could be cut further, to a 73 percent reduction.

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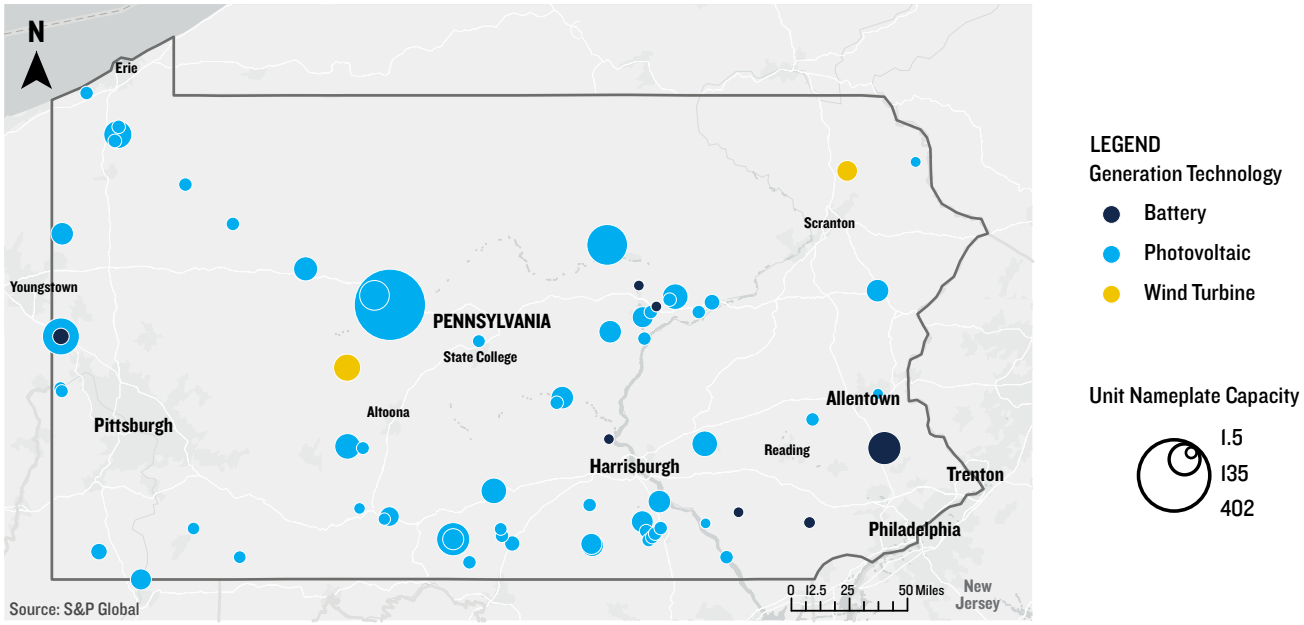
Figure 2: Announced Clean Energy Projects in Pennsylvania



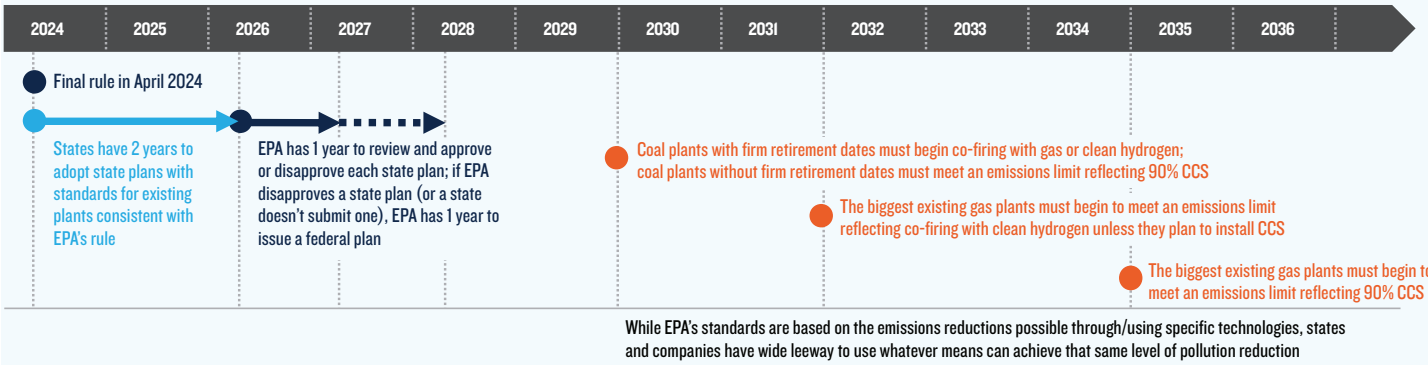
HOW THE EPA STANDARDS WILL WORK IN PENNSYLVANIA

In May 2023, EPA proposed national carbon reduction standards for fossil fuel power plants. The standards would cover existing coal plants and new and existing gas plants (new coal plants are already covered by earlier standards). The standards are legally sound: EPA is following the Supreme Court's decision in *West Virginia v. EPA* by proposing standards that will "cause regulated sources to operate more cleanly" and will "improve the pollution performance of individual sources."[6]

Under the Clean Air Act, EPA sets the emissions performance levels that sources must meet based on the "best system of emission reduction." EPA's proposed emissions limits are based on the capabilities of efficient generation, carbon capture and sequestration, and clean hydrogen technologies. Depending on the type of plant, including the size and how often it runs, plants have different dates and rules for compliance. In most cases, the emissions standards start to kick in by 2032, and all are fully in place by 2040. States and plant owners have broad flexibility to adopt any strategies that achieve the required emissions reductions.[7]

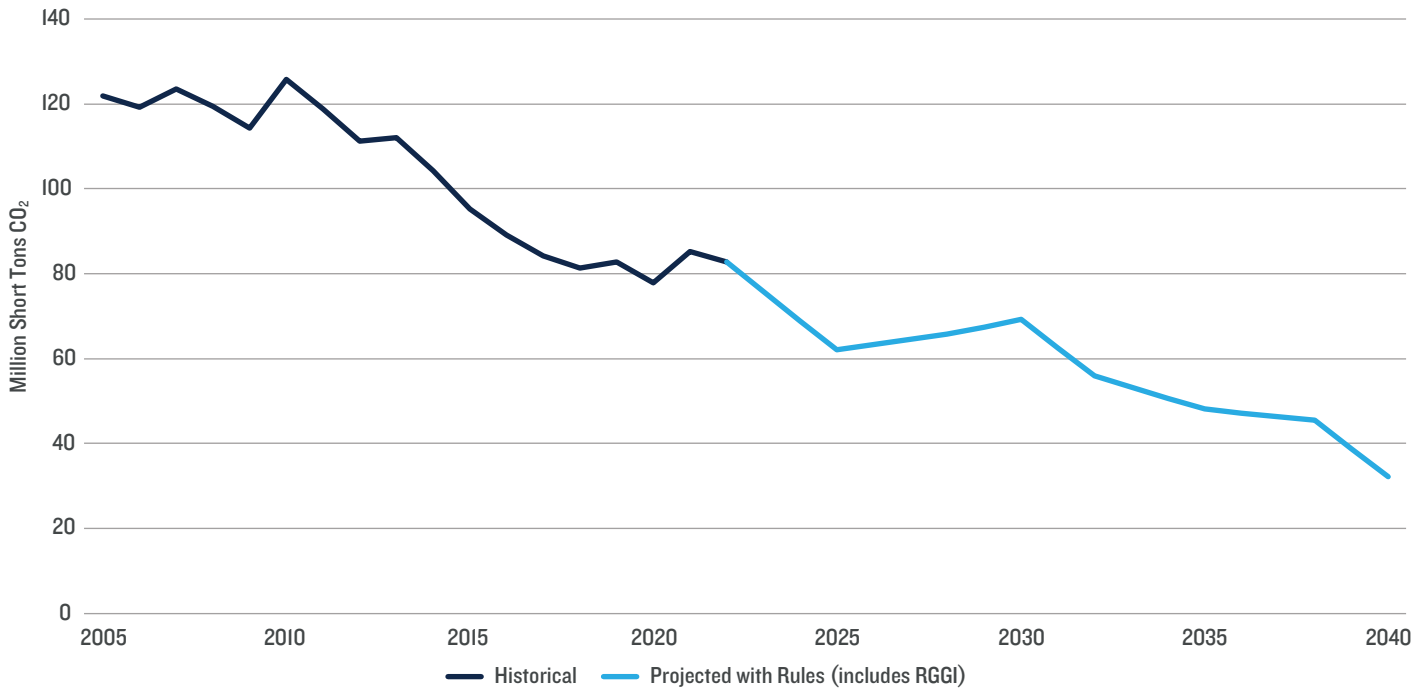
EPA is planning to finalize these standards by April 2024, and that will start the next process for states to develop plans to achieve the emissions reductions the agency has laid out. Under the proposed rules, states will have two more years to develop their plans, and then EPA has a year to consider, review, and approve or reject each plan (Figure 3).

Figure 3: Expected Timeline for State Planning and Compliance with EPA Carbon Rules



Pennsylvania is on the cusp of participating in a potential compliance pathway to meet these new standards by utilizing RGGI. Since its launch in 2009, the regional cap-and-invest program has successfully reduced carbon dioxide emissions from the Northeast and Mid-Atlantic power plant fleet by half and dramatically improved air quality, all while generating billions of dollars for reinvestment in the region's clean energy economy.[8]

Figure 4: Pennsylvania's Power Sector CO_2 Emissions



THE IRA AND EPA STANDARDS WILL REDUCE CARBON POLLUTION IN PENNSYLVANIA

The retirement of coal plants and growth in new renewable energy will lead to cleaner air, dramatically less carbon emissions, and better health for the people of Pennsylvania. The combined impacts of the IRA, EPA carbon pollution standards, and state compliance actions are expected to be dramatic:

- The state has already cut carbon emissions from the power sector by more than 30 percent since 2005, driven largely by market forces, but achieving deeper cuts requires policy support such as the EPA standards and adoption of RGGI.[9] By 2030, emissions are projected to be 43 percent below 2005 levels, falling to 61 percent below 2005 levels by 2035, and to 74 percent below 2005 levels by 2040 (Figure 4).
- In total, the IRA climate law and new EPA standards are projected to cut in-state power sector carbon pollution by 529 million tons compared to today's levels between now and 2042. This is more than *six times* the annual pollution for the state's current power fleet.

THE IRA AND EPA POLLUTION STANDARDS WILL IMPROVE HEALTH FOR ALL PENNSYLVANIANS

The transition to cleaner energy will also save lives, prevent illness, and reduce health spending across the state. Nitrogen oxide and sulfur dioxide are two major health-harming pollutants produced by fossil power plants; they contribute to local smog, particulate pollution, and ground-level ozone, which can lead to serious respiratory illness, stroke, lung cancer, and death. These pollutants also contribute to acid rain that damages ecosystems, agricultural lands, buildings, and wildlife by acidifying surface water and soil.

The retirement of coal plants will result in the near total elimination of sulfur dioxide emissions from the state's power fleet by 2040. Nitrogen oxide emissions will fall by nearly three-quarters from current levels in the same time frame. These reductions in health-harming pollution will result in significant economic and public health benefits by reducing asthma, stroke, lung cancer, and premature death. In fact, it is estimated that the reduction in pollution from power plants could prevent up to 900 premature deaths in Pennsylvania *annually* by 2040.[10]

CONCLUSION

The clean energy transition is already underway in Pennsylvania. The closure of old, dirty fossil fuel plants and construction of new wind and solar projects is now set to usher in an age of energy abundance and economic growth for the state. Strong EPA standards on power plants (with RGGI as a potential compliance pathway) will help ensure Pennsylvania—and the entire nation—can benefit as we address the climate crisis and cut air pollution.

Endnotes

1 Analysis was completed using the Integrated Planning Model (IPM). This is the same model used by the U.S. EPA for its own analysis of the proposed carbon pollution standards for power plants. More details on our analysis of the IRA and power plant standards can be found in NRDC and Clean Air Task Force, *New Source Performance Standards for Greenhouse Gas Emissions From New, Modified, and Reconstructed Fossil Fuel–Fired Electric Generating Units; Emission Guidelines for Greenhouse Gas Emissions From Existing Fossil Fuel–Fired Electric Generating Units; and Repeal of the Affordable Clean Energy Rule*, August 8, 2023 (comments to the EPA, docket no. EPA-HQ-OAR-2023-0072), https://www.nrdc.org/sites/default/files/2023-08/comments-epa-power-plant-rule-nrdc-catf-20230808.pdf.

2 Lazard, *Levelized Cost of Energy+*, April 12, 2023, https://www.lazard.com/research-insights/2023-levelized-cost-of-energyplus/.

3 Elesia Fasching and Suparna Ray, "More Than Half of New U.S. Electric-Generating Capacity in 2023 Will Be Solar," *Today in Energy*, U.S. Energy Information Administration, February 6, 2023, https://www.eia.gov/todayinenergy/detail.php?id=55419.

4 The state's regulation is subject to ongoing litigation. An appeal was filed with the Supreme Court of Pennsylvania in November 2023. CO_2 Budget Trading Program, 25 PA. Code Ch. 145, 52 Pa.B. 2471, *Pennsylvania Bulletin*, April 23, 2022, https://www.pacodeandbulletin.gov/Display/pabull?file=/secure/pabulletin/data/vol52/52-17/625.html.

5 Regional Greenhouse Gas Initiative, *The Investment of RGGI Proceeds in 2020*, May 2022, https://www.rggi.org/sites/default/files/Uploads/Proceeds/RGGI_Proceeds_Report_2020.pdf.

6 EPA, "New Source Performance Standards for Greenhouse Gas Emissions From New, Modified, and Reconstructed Fossil Fuel–Fired Electric Generating Units; Emission Guidelines for Greenhouse Gas Emissions From Existing Fossil Fuel–Fired Electric Generating Units; and Repeal of the Affordable Clean Energy Rule," *Federal Register* 88, no. 99 (May 23, 2023): 33240, 33269–33270 (quoting West Virginia, 142 S.Ct. at 2610, 2614), https://www.govinfo.gov/content/pkg/FR-2023-05-23/pdf/2023-10141.pdf.

7 Ibid., 33243.

8 Bruce Ho, "The Regional Greenhouse Gas Initiative Is a Model for the Nation," NRDC, July 14, 2021, https://www.nrdc.org/resources/regional-greenhouse-gas-initiative-model-nation. For more, see RGGI, "The Regional Greenhouse Gas Initiative," accessed December 2023, https://www.rggi.org/.

9 EPA, "Clean Air Markets Program Data," accessed April 2023, https://campd.epa.gov/data/custom-data-download.

10 Calculated using EPA's benefit-per-ton values. EPA, "Estimating the Benefit per Ton of Reducing Directly-Emitted PM2.5, PM2.5 Precursors and Ozone Precursors From 21 Sectors," January 17, 2023, https://www.epa.gov/benmap/estimating-benefit-ton-reducing-directly-emitted-pm25-pm25-precursors-and-ozone-precursors.