

CLEAN POWER, CLEAR SAVINGS



OHIO



**The EPA Clean Power Plan Will Cut Ohio
Electricity Bills by 11.2 Percent by 2030**

Acknowledgments

This report was written by David Arkush, managing director of Public Citizen's Climate Program. Starla Yeh and Kevin Steinberger of the Natural Resources Defense Council provided helpful input and reviews of the methodology.

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Introduction

This summer, the Environmental Protection Agency (EPA) expects to finalize its first-ever rule to curb carbon pollution, known as the Clean Power Plan.¹ This report finds that the EPA rule should lower Ohio electricity bills substantially, and that the state can and should do even better. This past spring, Ohio Senator Rob Portman emerged as a key opponent in opposing the proposal. He filed an amendment to the U.S. Senate budget resolution that would have allowed state governors to opt out of the Clean Power Plan on the reasoning that they are protecting state consumers from rate hikes.² But this report finds that the Clean Power Plan can *lower* consumer bills.

Sen. Portman's amendment followed a common argument among detractors of the EPA proposal: that it will raise electricity rates. This claim focuses on the wrong question from the standpoint of electricity customers. For a consumer or business focused on costs, the key question is what effect the Clean Power Plan will have on what they actually pay, which means electricity *bills*. Although the EPA projects that the retail price of electricity will rise under the Clean Power Plan compared to a business-as-usual scenario, it also expects that the rule will spur improvements in energy efficiency so that people use less electricity. The net result is that electricity bills will fall, not rise.

The EPA estimates that, in addition to mitigating climate change and boosting public health, the proposed Clean Power Plan will lower electricity bills nationwide by 8.4 percent by 2030 compared to a business-as-usual scenario.³ The agency did not conduct a state-by-state analysis of bill impacts. For this report, Public Citizen analyzed data from the EPA and the U.S. Energy Information Administration (EIA) to project the Clean Power Plan's effect on electricity bills in Ohio. We find that by 2030, electricity bills will be 11.2 percent lower under the Clean Power Plan, saving the average Ohio household \$144 annually. Moreover, these numbers are likely underestimates. Ohio can and should do even better. The Clean Power Plan presents a great opportunity for Ohio not just to fight climate change, but to lower electricity costs for consumers.

One important caveat to this report's analysis is that actual outcomes will depend on Ohio's policy choices. State officials will decide how to comply with the Clean Power Plan, and they can adopt policies that are better or worse for Ohio's electricity customers. Energy efficiency should feature prominently in Ohio's compliance plan, as it is the lowest-cost way to reduce carbon emissions. It also happens to save consumers and businesses a great deal of money on their electricity bills. But the choice lies with Ohio's policymakers, who recently have been moving in the opposite direction. Last June, Ohio enacted a two-year freeze of its law requiring electric utilities to make substantial gains in energy efficiency and renewable energy. If Ohio wants a low-cost way to comply with the Clean Power Plan and lower electricity bills, it should restore a strong efficiency standard.

The Clean Power Plan Can Lower Electricity Bills in Ohio

The proposed Clean Power Plan aims to cut carbon pollution from power plants by 30 percent from 2005 levels by 2030. Under the plan, the EPA will set a carbon-reduction target for each state, and then states can decide how to meet their targets.⁴ They can comply individually or in regional groups, and they can use a mix of different strategies, like improving the efficiency of existing coal-

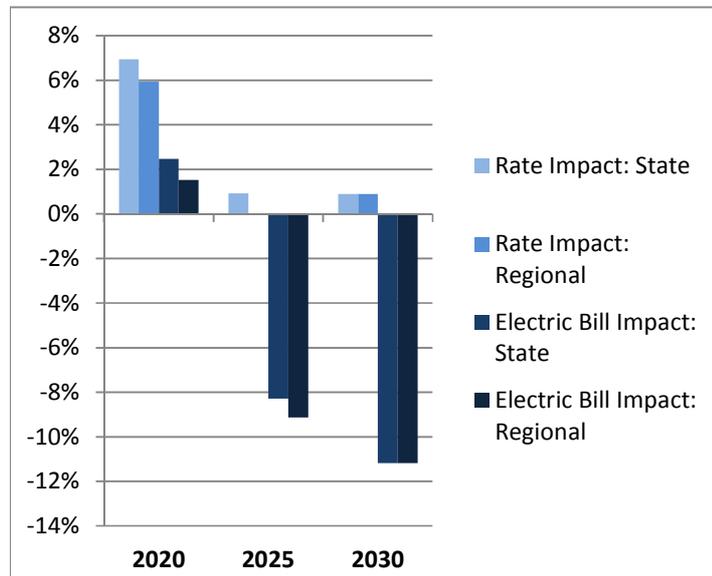
fired power plants, shifting some electricity generation from coal to natural gas plants, shifting to renewables or nuclear generation and using energy efficiency to reduce electricity consumption. Energy efficiency should play a major role in state plans, as it is the lowest-cost and most effective strategy for reducing carbon pollution by a wide margin.

Improving energy efficiency means using less electricity to do the same or more work. For example, better insulated homes require less power to heat and cool. There are many other ways to improve efficiency, ranging from switching to more efficient appliances and light bulbs to using combined heat and power (CHP) systems in industrial processes to generate electricity and usable heat in a combined system rather than independently.⁵

Efficiency gains are usually so inexpensive that they pay for themselves quickly in reduced electricity costs. A 2014 study by the American Council for an Energy-Efficient Economy (ACEEE) found that energy efficiency programs run by utilities return \$1.41 to \$4 for every dollar spent.⁶ For this reason, even if the retail price of electricity increases modestly under the Clean Power Plan, households and businesses will use substantially less electricity due to efficiency measures, and their bills will still decline.

Figure 1 illustrates the projected retail electricity rates and total electricity bills in Ohio under the Clean Power Plan, expressed as percentage changes from a business-as-usual baseline. The EPA's data suggests that the price of electricity will rise initially under the Clean Power Plan but soon fall back roughly to business-as-usual levels. If Ohio complies individually, then retail rates will be 6.9 percent higher than business-as-usual in 2020, then drop to just 0.9 percent higher in 2025 and 2030.⁷ If Ohio complies in a regional group, then the EPA's data suggests that the retail price of electricity will be 5.9 percent higher than business-as-usual in 2020, not higher at all in 2025 and, like the individual compliance scenario, 0.9 percent higher in 2030.⁸ In either case, our analysis of EPA data suggests that electricity *consumption* in Ohio will decline by 1.4 percent in 2020, 7.3 percent in 2025, and 10.2 percent in 2030.⁹ The net effect, also shown in Figure 1, is that electricity bills will rise modestly in 2020 before declining much more steeply in 2025 and 2030. By 2030, electricity bills will be 11.2 percent lower than they would be without the Clean Power Plan, regardless of whether the state complies individually or regionally.¹⁰

Figure 1: Estimated CPP Impacts on Retail Rates and Total Electricity Bills in Ohio



Figures 2(a) and 2(b) illustrate the effects of these changes on annual household expenditures, expressed in dollars. We estimate that the average household will see annual electricity bills rise by \$17 to \$27 in 2020, then decline by \$102 to \$112 in 2025 and \$144 in 2030 compared to business-as-usual.¹¹ In other words, the typical household would pay \$1,284 for electricity in 2030 without the Clean Power Plan, but would pay \$1,140 under the rule.¹²

Costs Will Likely Decline More Than This Analysis Indicates

The estimated cost reductions in this report are likely understated. This analysis is based on the compliance option that the EPA proposed for Ohio in the Clean Power Plan, but Ohio has the flexibility and capability to use substantially more efficiency than the EPA envisions. The agency’s plan omits entire categories of efficiency measures that states can use, such as building codes and appliance standards.¹³ The plan also anticipates that states will improve efficiency by only 1.5 percent annually even though eleven states—including Ohio—have already set higher targets.¹⁴ In 2009, Ohio enacted an Energy Efficiency Resource Standard (EERS) that required utilities to ramp up to 2 percent annual progress by 2019.¹⁵ The EPA’s analysis assumes that in 2017, Ohio will be saving energy at only its 2012 rate, which was 0.87 percent,¹⁶ then will increase by 0.2 percent each year until stabilizing at 1.5 percent.¹⁷ In other words, despite the recent freeze on its clean energy and energy efficiency standards, Ohio can still catch up and even exceed the EPA’s efficiency projections—and therefore this report’s projections of electricity bill savings—if it reinstates a strong standard.

A recent ACEEE analysis shows how Ohio could do better still on efficiency. It finds that the state could enact a set of energy efficiency policies that by 2030 would save electricity customers \$3.3 billion in 2030 alone,¹⁸ as they would use 29,317 fewer gigawatt hours of electricity.¹⁹ This scenario involves a 1.5 percent savings target, like EPA’s, but it adds building codes, combined heat and power, and energy efficiency standards for five products.²⁰ With its 2 percent target, Ohioans would see even greater savings.

Figure 2(a): Projected Change in Annual Household Electric Bills in Ohio Under the CPP

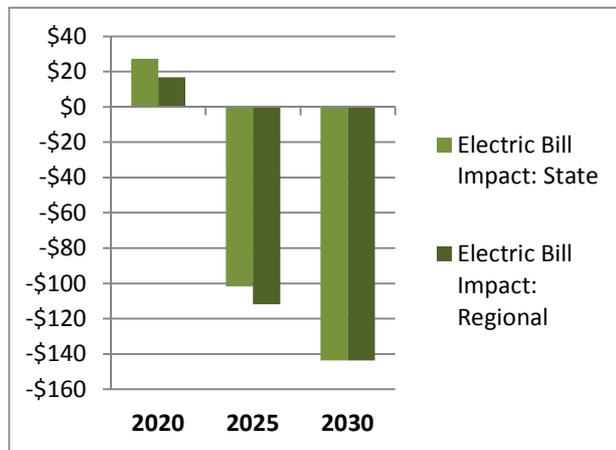
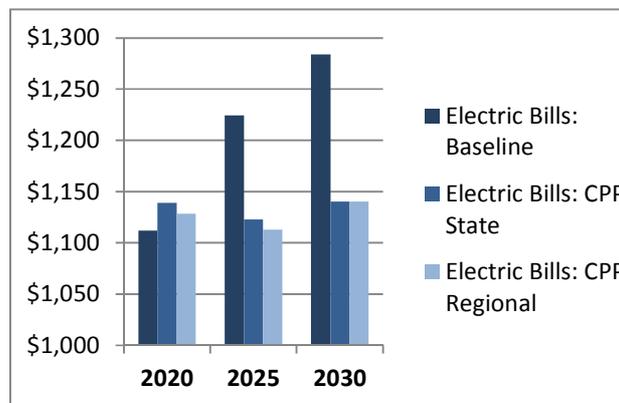


Figure 2(b): Projected Annual Household Electric Bills in Ohio Under the CPP and Business-as-Usual



A second reason why this report likely underestimates the potential savings under the Clean Power Plan is that it relies on EPA's excessively high estimates of the cost of efficiency programs. The agency starts its analysis by treating efficiency measures as 60 to 100 percent more expensive than the evidence indicates, using in the EPA's own words, a "conservative" cost estimate for efficiency programs that is higher than the costs indicated by the "up-to-date, more comprehensive results" from "newer" studies.²¹ Then the agency boosts the costs further by assuming that they escalate dramatically as the rate of energy efficiency savings increases.²² This assumption is no more obvious than the opposite one, that efficiency becomes cheaper due to economies of scale, increased experience with efficiency measures or other factors. To support its assumption, the EPA relies on a single study that actually rejects the EPA's interpretation, stating, "These findings *cast doubt* on the hypothesis that programs with higher electricity savings levels are associated with higher CSE [cost of saved energy] values."²³ In short, EPA's cost estimates for efficiency are—as the EPA stated multiple times in its proposal—"notably conservative."²⁴ Ohio will likely make efficiency gains at much lower cost than the EPA projects, which means even greater savings for electricity customers.

Conclusion

The Clean Power Plan offers Ohio a great opportunity not just to curb climate change, but to lower electricity bills. We project that if the state follows the possible course envisioned by the EPA, then annual electricity bills will fall by 11.2 percent by 2030, which amounts to \$144 in annual savings for the average household. These numbers are likely too low, as they incorporate the EPA's admittedly conservative take on energy efficiency. Ohio has already shown that it can improve energy efficiency at a greater rate than the EPA projects. The state can and should continue to exceed the EPA's expectations. Stronger improvements in energy efficiency will lead to even lower electricity costs for Ohio consumers and businesses.

Methodology

This study relies principally on the EPA’s analysis of its proposed Clean Power Plan. The EPA has proposed two possible sets of state targets, which it calls Option 1 and Option 2, and it envisions that states might comply individually or in regional groups. Therefore, it analyzed four potential scenarios, in which states meet Option 1 or Option 2, individually or regionally. This study considers only Option 1, the stronger of the two sets of targets, but it analyzes both the individual state compliance scenario (termed “State” in charts) and the regional cooperation scenario (termed “Regional” in charts).

Household consumption. EPA provides business-as-usual (“BAU”) sales data for the years 2012 through 2040, using 2012 historical data and making projections forward.²⁵ We use EPA’s BAU sales estimates for the years 2020, 2025 and 2030 as the baseline figures for electricity consumption in Ohio. To calculate average household electricity consumption, we begin with EIA data on household electricity consumption in 2013.²⁶ EIA’s household data does not include projections of future consumption. We develop household BAU values for 2020, 2025 and 2030 by adjusting the 2013 household consumption figure proportionately to the growth in EPA’s aggregate BAU sales data for those periods. In other words, we assume that household electricity consumption will rise or fall at the same rate as general consumption.

To calculate household consumption under the Clean Power Plan, we use the EPA’s projections of Ohio’s cumulative energy efficiency savings for each year to modify the estimates for household consumption.²⁷

Household costs. For each North American Reliability Corporation (NERC) region, the EPA’s Regulatory Impact Analysis provides an estimate of electricity rates in the base case and under each compliance scenario for the years 2020, 2025 and 2030.²⁸ Ohio is part of a region called the Reliability First Corporation West, or RFCW, which also contains Indiana, West Virginia, and parts of Illinois, Michigan, Pennsylvania, Virginia, and Wisconsin.²⁹ The EPA’s analysis treats electricity rates as the same across the region, and this report follows the EPA in that regard. To calculate household costs for each scenario, we multiply our estimate of household consumption by the electricity price that EPA projects.

The following table contains the numbers discussed in the text of this report and represented in the illustrations:

	Rate Impact: State	Rate Impact: Regional	Electric Bill Impact: State	Electric Bill Impact: Regional	Electric Bill Impact: State	Electric Bill Impact: Regional	Electric Bills: Baseline	Electric Bills: CPP State	Electric Bills: CPP Regional
2020	6.9%	5.9%	2.5%	1.5%	\$27.48	\$16.93	\$1,111.69	\$1,139.17	\$1,128.62
2025	0.9%	0.0%	-8.3%	-9.1%	-\$101.58	-\$111.78	\$1,224.36	\$1,122.78	\$1,112.58
2030	0.9%	0.9%	-11.2%	-11.2%	-\$143.59	-\$143.59	\$1,283.87	\$1,140.28	\$1,140.28

ENDNOTES

¹ EPA, *Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, Proposed Rule*, 79 Fed. Reg. 34,830 (June 18, 2014).

² See PORTMAN OFFERS AMENDMENT RETURNING POWER TO THE STATES REGARDING EPA REGULATIONS, Mar. 24, 2015, at <http://www.portman.senate.gov/public/index.cfm/2015/3/portman-offers-amendment-returning-power-to-the-states-regarding-epa-regulations>.

³ EPA, REGULATORY IMPACT ANALYSIS FOR THE PROPOSED CARBON POLLUTION GUIDELINES FOR EXISTING POWER PLANTS AND EMISSION STANDARDS FOR MODIFIED AND RECONSTRUCTED POWER PLANTS 3-43 (2014) (hereinafter RIA).

⁴ 79 Fed. Reg. at 34,832.

⁵ CHP systems, used most commonly in the steel, chemical, paper, and petroleum-refining industries, are vastly more efficient than generating electric power and heat separately. See ACEEE, COMBINED HEAT AND POWER AND CLEAN DISTRIBUTED ENERGY POLICIES 1 (2009).

⁶ ACEEE, THE BEST VALUE FOR AMERICA'S ENERGY DOLLAR: A NATIONAL REVIEW OF THE COST OF UTILITY ENERGY EFFICIENCY PROGRAMS 24 (2014) (hereinafter BEST VALUE).

⁷ RIA at 3-40-3-42.

⁸ Public Citizen analysis of EPA data. For the methodology, see the final section of this report.

⁹ Public Citizen analysis of EPA data.

¹⁰ Public Citizen analysis of EPA data.

¹¹ Public Citizen analysis of EPA and EIA data.

¹² Public Citizen analysis of EPA and EIA data.

¹³ See ACEEE, CHANGE IS IN THE AIR: HOW STATES CAN HARNESS ENERGY EFFICIENCY TO STRENGTHEN THE ECONOMY AND REDUCE POLLUTION 7 (2014) (hereinafter CHANGE IS IN THE AIR).

¹⁴ *Id.* at 8.

¹⁵ See LEGISLATIVE SERVICE COMMISSION, AM. SUB. S.B. 221, FINAL ANALYSIS 41 (2009), at <http://www.lsc.ohio.gov/analyses127/08-sb221-127.pdf>.

¹⁶ See EPA, GHG ABATEMENT MEASURES, TECHNICAL SUPPORT DOCUMENT FOR CARBON POLLUTION GUIDELINES FOR EXISTING POWER PLANTS: EMISSION GUIDELINES FOR GREENHOUSE GAS EMISSIONS FROM EXISTING STATIONARY SOURCES: ELECTRIC UTILITY GENERATING UNITS 5-18 (2014) (hereinafter GHG ABATEMENT).

¹⁷ RIA at 3-14-3-15.

¹⁸ ACEEE, CHANGE IS IN THE AIR, at 75.

¹⁹ *Id.* at 63. ACEEE also calculates that these policies would create 23,000 jobs by 2030. *Id.* at 77.

²⁰ ACEEE, CHANGE IS IN THE AIR, at 4, .

²¹ See PUBLIC CITIZEN ET AL. COMMENT ON THE CLEAN POWER PLAN 10 (2014) (discussing GHG ABATEMENT at 5-51)).

²² The EPA's analysis assumes that costs increase by 20 percent as the rate of efficiency savings increases from 0.5 percent to 1 percent, and increase by another 20 percent when one boosts the savings rate to 1.5 percent. See *id.* At 9; GHG ABATEMENT at 5-53.

²³ ACEEE, BEST VALUE at 30 (emphasis added).

²⁴ 79 Fed. Reg. at 34,874:1, 34,874:3.

²⁵ These numbers are in the tab labeled "Intermediate Data" in the spreadsheet entitled, *Scenario 1: 1.5% savings target, 0.20%/year ramp rate, and 3% real discount rate*, at <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OAR-2013-0602-0153>. For the EPA's methodology, see EPA, BACKGROUND AND DRAFT METHODOLOGY FOR ESTIMATING ENERGY IMPACTS OF EE/RE POLICIES (2014) http://epa.gov/statelocalclimate/documents/pdf/EPA%20background%20and%20methodology%20EE_RE_02122014.pdf.

²⁶ See EIA, ELECTRIC SALES, REVENUE, AND AVERAGE PRICE, Table 5A, at http://www.eia.gov/electricity/sales_revenue_price/.

²⁷ These estimates are on the tab labeled "Opt 1 - Cum Savings %" on the spreadsheet entitled *Data File: GHG Abatement Measures Appendix 5-4 (XLS)*, at <http://www2.epa.gov/carbon-pollution-standards/clean-power-plan-proposed-rule-technical-documents>.

²⁸ RIA at 3-40-3-42.

²⁹ RIA at 3-43.