CONSERVATIVE COALITION *for* CLIMATE SOLUTIONS

A Comprehensive Analysis of Federal Greenhouse Gas Regulations and Subsidies

by Nick Loris, Philip Rossetti, and Ashley Nunes, PhD

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Conservatives, libertarians, and classical liberals have long advocated for less government intervention in energy markets. Freer markets encourage competition, which attracts more resources and innovative technologies and results in an energy supply that is more reliable and affordable. However, U.S. energy markets are far from free. Government subsidies, regulations, and mandates at the local, state, and federal levels influence private investment and consumer choice. A common justification for these policies is that fossil fuel companies do not pay for the full costs of pollution and climate damage. In the absence of a direct climate policy, government intervention is often justified as a way to account for the environmental cost of emissions—a rationale commonly used to support carbon pricing. [1]

However, the United States does have a climate policy. While less straightforward than a direct price on carbon, such as a carbon tax, a plethora of federal regulations explicitly target greenhouse gas (GHG) reduction, and subsidies support the development of emissions-free power. It is crucial that policymakers assess the effectiveness of these efforts and the financial burden they place on taxpayers and energy consumers. Rather than emphasizing the need for a carbon tax, policymakers should instead ask: How effective are existing federal regulations that target GHG reductions, and what is the fiscal impact these regulations have on taxpayers and energy consumers?

In this piece, we analyze more than two decades of federal climate regulations, estimate their compliance and abatement costs, and compare those estimates with the government's figures used to justify specific regulations.[2] We also assessed the taxpayer burden of subsidizing specific energy technologies through the Inflation Reduction Act (IRA).

Our findings point to significant variation in the cost-effectiveness of these regulations, which highlights four key takeaways:

- First, in most cases, climate benefits account for only a minority of the total benefits claimed by regulators, whereas co-benefits comprise the majority of the benefits.
- Second, direct compliance costs estimated by regulators significantly understate the total burden on consumers. When factoring in economic inefficiencies, the true cost per metric ton of CO2 abated is substantially higher (i.e., $486.72/mt vs. $121.68/mt).
- Third, had the IRA's $1.2 trillion in subsidies remained in place, Americans would have paid an estimated $208 per metric ton of CO2 abated in the electric sector and $600 per ton overall.
- Fourth, these figures likely underestimate the full cost of U.S. climate policy, as they exclude state and local subsidies, regulations, and mandates such as renewable portfolio standards.

ASSESSING THE COSTS AND BENEFITS OF FEDERAL CLIMATE REGULATION

To comply with Executive Order 12866, which requires federal agencies to assess the costs and benefits of significant regulatory actions, regulators prepare economic impact analyses of proposed rules. These analyses are published in the Federal Register, along with regulatory impact analyses (RIAs) and supporting technical documents. These documents typically include both the projected costs of compliance and the estimated benefits of the regulation, including any reduction in GHG emissions. For our analysis, we examined major federal, climate-related regulations, along with their projected costs and expected GHG reductions. We then calculated each rule's abatement cost as a function of its annualized cost relative to expected emission abatement.

We also conducted a secondary analysis to estimate how much of each regulation's stated benefit was tied to GHG reduction versus co-benefits (i.e., typically, public health improvements from reduced emissions of other pollutants). The treatment of co-benefits in regulatory analysis has long been subject to debate. To help justify regulations, regulators often rely on the estimated monetized public health benefits of the emissions and the pollutant targeted in the regulation. The most prominent example of this reliance is the Environmental Protection Agency's 2012 Mercury Air Toxics Standard (MATS) rule.[3] Promulgated to reduce mercury in power plants, more than 99.9 percent of the monetized benefits accrued from reducing particulate matter rather than from mercury and hazardous air pollutants.[4]

Our work calculates the abatement costs of enacted federal climate regulations, as well as the proportion of total benefits attributed to direct GHG reductions versus co-benefits. All of our calculations were based on government-produced official estimates of costs and benefits. We focused on three sectors where this assessment is particularly relevant: electric power, transportation, and industrial. In the power sector, we included regulations governing electric motor efficiency and the generation of electricity from various fuel sources. We also compared the abatement costs of these regulations to those associated with federal subsidies for GHG emissions reduction—specifically, those provided under the IRA.

THE SOCIAL COST OF CARBON: ASSUMPTIONS AND IMPLICATIONS

Estimating the environmental benefits of regulation can be a challenging task. For instance, regulators assign a dollar value to public health benefits expected from reducing particulate matter emissions in part by projecting reductions in morbidity and premature mortality. Doing so requires an understanding of how a pollutant affects morbidity, as well as mortality and the statistical value of a life. The monetized values produced by the EPA can vary based on changes in scientific understanding or differing interpretations of the models. The challenges of estimating monetized benefits become even more pronounced when attempting to quantify the climate benefits of GHG regulations.

To assign a dollar value to the externalities (positive and negative) that CO2 and other GHG emissions impose, the Obama administration established an Interagency Working Group to estimate the social cost of carbon (SCC) and other GHG emissions.[5] More specifically, the EPA calculates the SCC as the estimated economic harm over a 300-year period resulting from the emission of one metric ton of CO2.

Those impacts include "changes in net agricultural productivity, human health effects, property damage from increased flood risk, changes in the frequency and severity of natural disasters, disruption of energy systems, risk of conflict, environmental migration, and the value of ecosystem services."[6] The federal government has used the SCC in more than 60 finalized regulations, including those related to power plants, energy efficiency standards for appliances, and vehicle tailpipe emissions.[7] In addition, several states require utilities and regulators to incorporate SCC into resource planning and environmental reviews.[8]

The EPA estimates the value of the SCC using three statistical models, known as integrated assessment models (IAMs). How do different administrations using the same model produce widely disparate results? Subjecting the models to discount rates dramatically alters the figure for the SCC. Discount rates are a standard and important method for projecting future costs or benefits. Because a regulation may incur a present-day cost, but the benefit of reduced pollution would only be realized in the future, it becomes necessary to "discount" the future benefit to compare to a cost borne today. This enables policymakers to determine whether actions are likely to be economically beneficial or harmful in the long term. Changes in the discount rate can significantly revise the value of SCC upwards or downwards.

In addition to debates over the appropriate discount rate, policymakers also have questions about how to account for domestic versus global climate benefits and how far into the future to project impacts. Climate change is a worldwide phenomenon, but the costs of U.S. regulations are borne by Americans even though they may have global benefits. Furthermore, forecasting economic damages out to the year 2300 invites skepticism about the real-world accuracy of such estimates.

As a result of these factors, different administrations' handling of discount rates and related assumptions has produced dramatically disparate SCC values. In 2010, the Obama administration projected the SCC to be $26 per ton in 2020 and $33 per ton in 2030.[9] An updated estimate from the working group in 2013 pegged the costs per ton at $42 in 2020 and $53 in 2030.[10] In 2018, the Trump administration significantly revised the SCC downward, estimating the cost to be between $1 and $7 per ton in 2020.[11] The Biden administration ramped the figure back up to $51 per ton, reinstating the Obama administration's methodology for calculating the SCC and adjusting it for inflation.[12] The Biden-era EPA then nearly quadrupled the SCC, raising the 2020 value to $190 per ton and the 2030 value to $230 per ton.[13]

The figure will change under the current Trump administration, as EPA Administrator Lee Zeldin has promised to "overhaul the social cost of carbon" and called on agencies to stop using the SCC when developing policies and regulations, unless required by law.[14] The absence of the SCC in regulatory impact analysis in the repeal of the Biden administration's clean power plan rule suggests that the current administration will forego using it altogether.[15]

RESULTS FOR CLIMATE REGULATIONS AND SUBSIDIES BY SECTOR

The analysis below reviews the cost-effectiveness of major climate regulations and subsidies across the electric power, transportation, and industrial sectors. Using a consistent methodology, it estimates the average cost per metric ton of emissions abated and compares those figures to the federal SCC.

Where applicable, the discussion also examines how benefits are categorized in regulatory analyses and highlights broader economic estimates that offer additional context.

Regulatory Abatement Costs in the Electric Power Sector

We assessed the abatement costs of 10 significant federal electric power regulations that were finalized and proposed from 2007 to 2024. Table 1 summarizes our findings.

Excluding the two outliers in these estimates (The 2007 distribution transformer efficiency

Table 1.

Electric Power Sector Regulation Abatement Costs, 2007-2024

Year	Rule Description	Annualized Cost (Billions 2024 USD)	Annualized Emission Abatement (CO2e, MMmt)	Abatement Cost Per Metric Ton (2024 USD)
2007	Transformer Efficiency	$0.71	7.44	$3. 30
2010	Small Electric Motors	$0.38	3.28	$117.08
2014	External Power Supplies	$0.22	1.14	$193.20
2014	Electric Motors (2010)	$0.83	14.59	$57.03
2015	Clean Power Plan	$11.66	376.41	$30.97
2015	Coal Residuals Disposal	$0.98	0.07	$14,477.67
2019	Affordable Clean Energy Rule	$0.18	9.77	$18.65
2020	Uninterruptible Power Supplies	$0.18	1.63	$112.88
2023	Electric Motors (2023)	$0.08	3.06	$26.76
2024	Carbon Capture Mandate	$1.20	42.00	$28.49

rule [Energy Conservation Program for Commercial Equipment] and the 2015 coal combustion residuals disposal rule [Hazardous and Solid Waste Management System]), the average abatement cost of regulations in the electric power sector is $73.13 per metric ton. This value is modestly above the 2016 estimated SCC, which was $42 in 2007 dollars and adjusted to $61.51 for inflation. Figure 1 illustrates how these abatement costs compare to the SCC.

We also compared the share of benefits from these regulations that are allocated to climate change, public health, or private benefits (cost savings). Figure 2 shows the average ratio for regulations that contain private benefits, and Figure 3 shows the average for regulations that do not have private benefits.

Figure 1.

Abatement Cost of Electric Power Sector Regulations Relative to the SCC

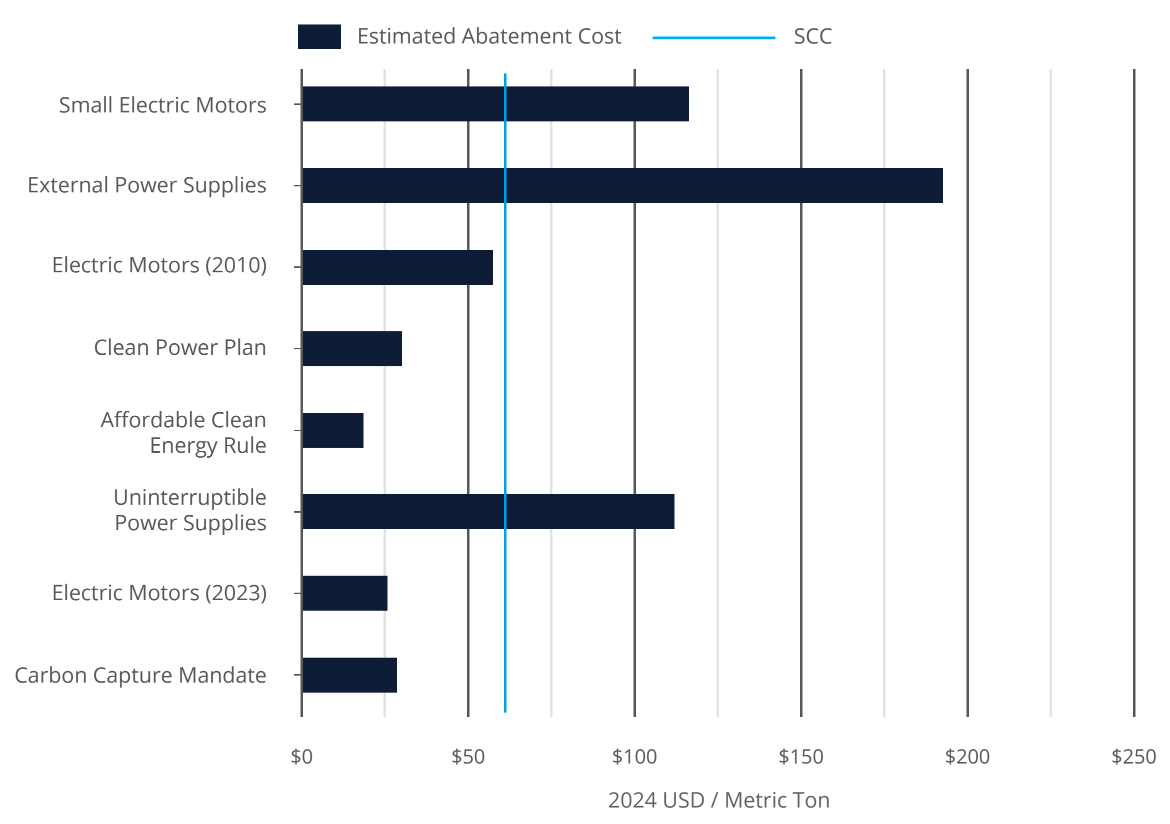


Figure 2.

Average Share of Benefits Claimed in Electric Power Sector Regulations by Benefit Category

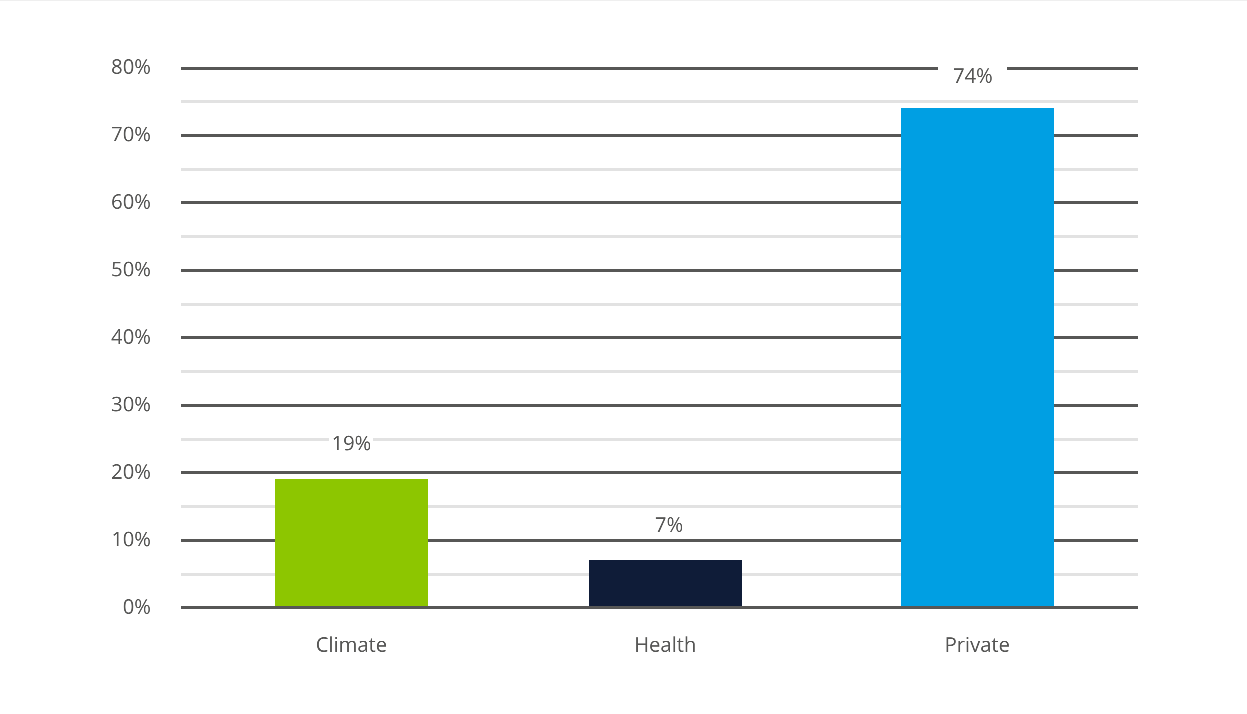
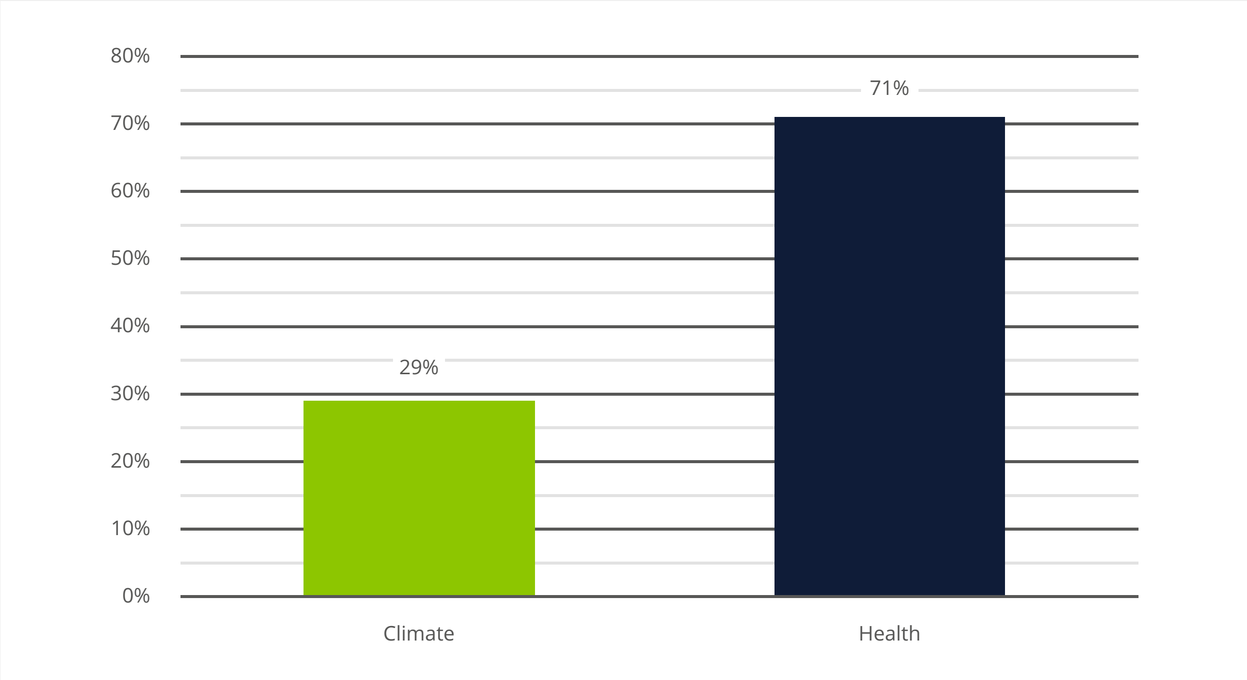


Figure 3.

Average Share of Benefits Claimed in Electric Power Sector Regulations by Category for Regulations That Had No Private Benefits



For all but one regulation claiming a climate benefit, including the Clean Power Plan (CPP), climate benefits account for a minority of total benefits. The sole exception is the proposed 2024 carbon capture mandate for new power plants, with 69 percent of benefits attributed to climate and 31 percent to public health. However, it should be noted that this regulation uses the updated SCC ($190/mt instead of $51/mt) to estimate benefits. Had the regulation used the previous SCC of $51/mt, only 37 percent of its benefits would have been climate-related. This suggests that methodological changes, rather than the efficiency of the regulation, increased the climate share of benefits.

Regulatory Abatement Costs in the Transportation Sector

We assessed the abatement costs of 11 significant federal transportation regulations that were finalized or proposed from 2006 to 2024. Table 2 presents our estimates, which use the same methodology as our electric power sector analysis.

Energy Information Administration's Clean Power Plan Analysis Shows Much Larger Economic Impacts of Climate Regulations

While our sector-based analysis focuses on regulatory abatement costs, the CPP offers a rare case in which broader economic modeling was used to estimate total societal costs. This type of broader analysis is informative because it can more accurately reflect the overall economic impact of the rules.

In 2016, following the U.S. Supreme Court's stay of the CPP, the U.S. EIA modeled two scenarios in its 2016 Annual Energy Outlook report using its National Energy Modeling System (NEMS): one that included the CPP and one that did not.

We compared the reference and No-CPP cases in the EIA's results to estimate the rule's economic impact over the 2016-2035, 20-year period. The total economic cost of the CPP would be $861 billion in 2024 dollars. Discounted at a 3 percent rate, the net present value in 2016 would be $598 billion. Over the same period, the EIA projected an emissions abatement of the regulation in the electric power sector of 4.7 billion metric tons, resulting in an implied abatement cost of $127.77 per ton at a 3 percent discount rate, which is more than four times the estimated abatement cost of $30.97 per ton using the EPA's figures.

In comparing regulator's estimated abatement costs to the EIA's, our analysis illustrates how econometric modeling of a regulation's full economic impact can yield substantially higher estimates of regulatory cost than agency-produced projections.

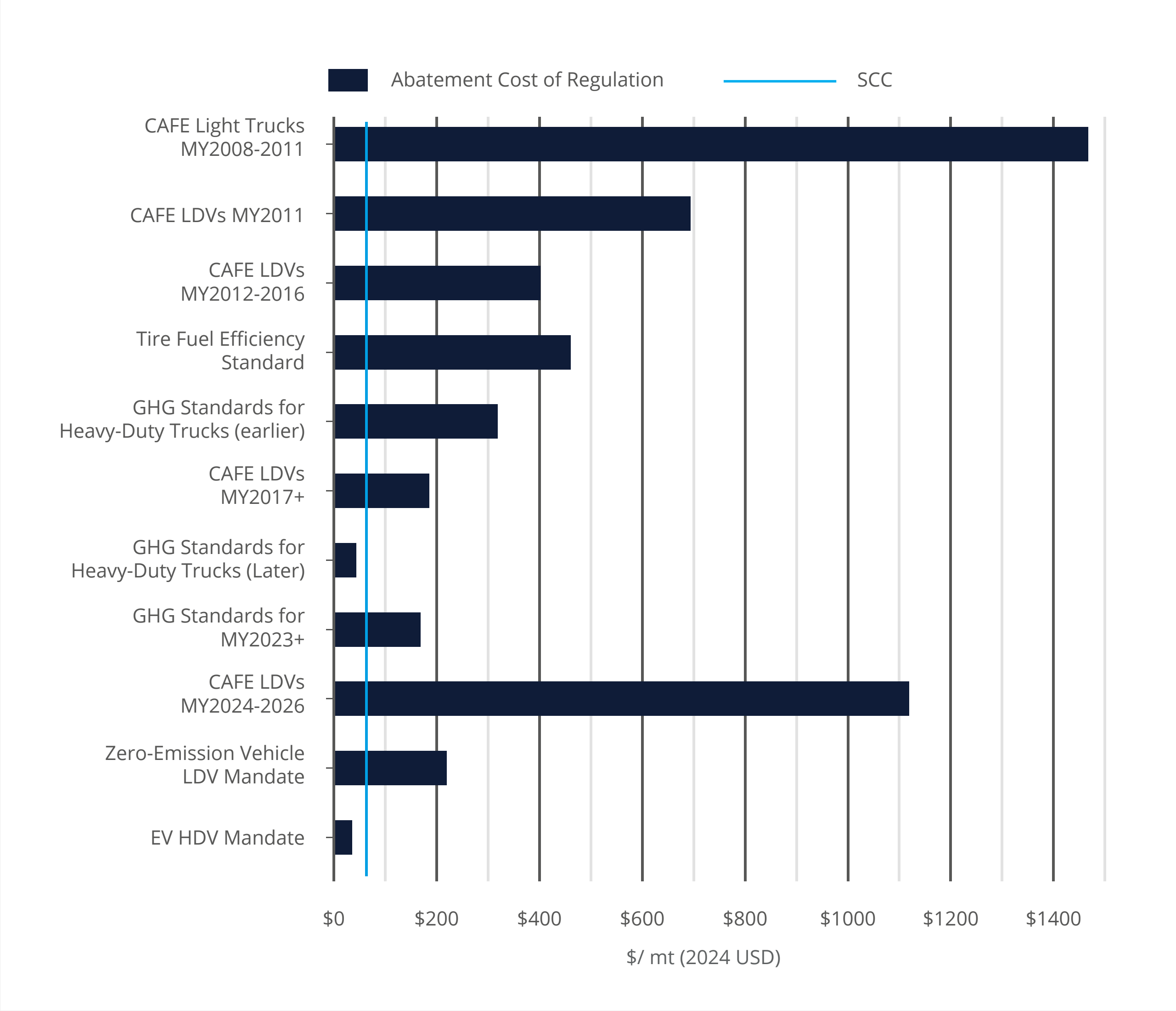
Table 2.

Transportation Sector Regulation Abatement Costs, 2006-2024

Year	Rule Description	Annualized Cost (Billions 2024 USD)	Annualized Emission Abatement (CO_2e, MMmt)	Abatement Cost Per Metric Ton (2024 USD)
2006	CAFE Light Trucks MY2008-2011	$2.97	2.03	$1,466.05
2009	CAFE LDVs MY2011	$14.55	20.84	$698.41
2010	CAFE LDVs MY2012-2016	$15.51	38.48	$402.97
2010	Tire Fuel Efficiency	$0.01	0.03	$464.00
2011	GHG Standards for Heavy Engines	$2.36	7.38	$319.45
2012	CAFE LDVs MY2017+	$9.29	50.00	$185.81
2016	GHG Standards for Heavy Engines P2	$10.05	199.30	$50.42
2021	GHG Standards for MY2023+	$18.65	107.76	$173.04
2022	CAFE LDVs MY2024-2026	$23.26	20.84	$1,115.80
2024	ZEV LDV Mandate	$54.46	248.28	$219.35
2024	ZEV HDV Mandate	$1.39	33.10	$41.89

Figure 4.

Abatement Cost of Transportation Sector Regulations Relative to the SCC



The average abatement cost of these regulations is $467.02 per metric ton. This is considerably greater than the average abatement cost of $73.13 per metric ton for power sector regulations and, in nearly all cases, exceeds the SCC that was used for most of this period, as detailed in Figure 4.

Notably, our methodology compares the annualized regulatory burden (i.e., the average regulatory burden in any given year) to the annualized emission abatement (i.e., the average emissions abated in any given year). For transportation regulations, if an alternative methodology were used, such as comparing the lifetime costs to the lifetime avoided emissions, a lower abatement cost estimate would be produced. However, we eschew this method because it fails to capture the real-world consumer impact (i.e., how much a consumer pays annually relative to the emissions avoided that year). Lifetime comparisons assume that consumers bearing the regulatory costs will continue to use their vehicles in a standard manner for 25 years or longer, but, in practice, consumers incur additional regulatory burdens as they replace aging vehicles.

Because these regulations are primarily focused on fuel efficiency, all of the regulations we assessed that had benefits listed included private benefits. Figure 5 shows the average share of benefits of a rule for each category.

Of note, both 2024 rules received a substantially larger share of their benefits from climate change than the other assessed regulations, largely due to the revised, higher SCC.

Figure 5.

Average Share of Benefits Claimed in Transportation Sector Regulations by Benefit Category

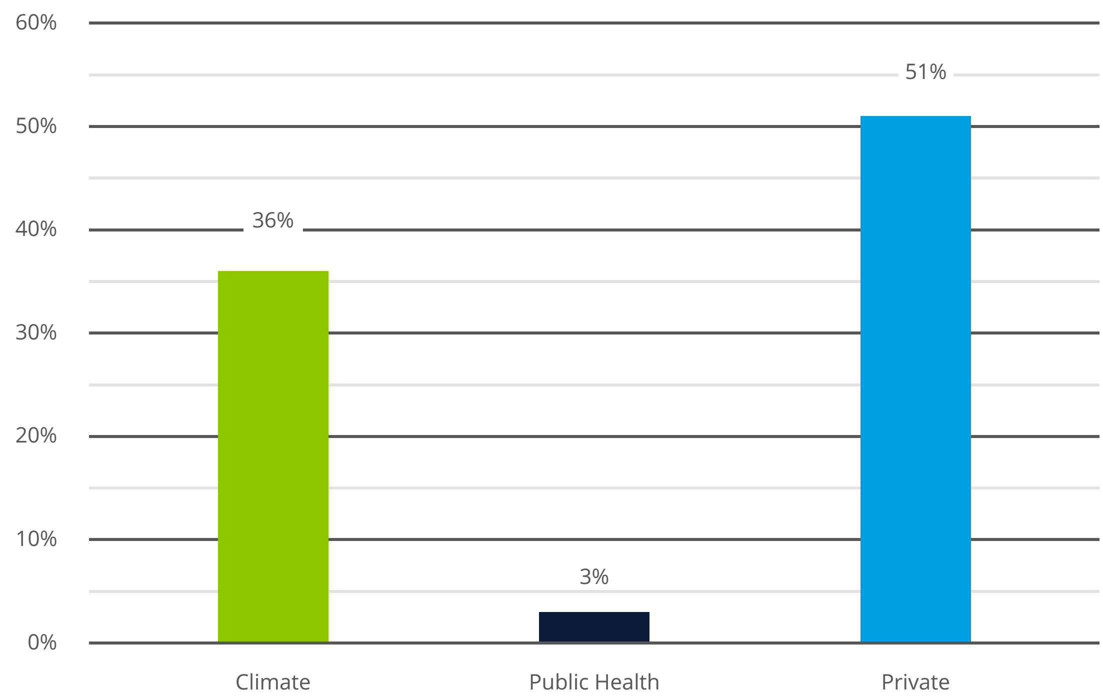


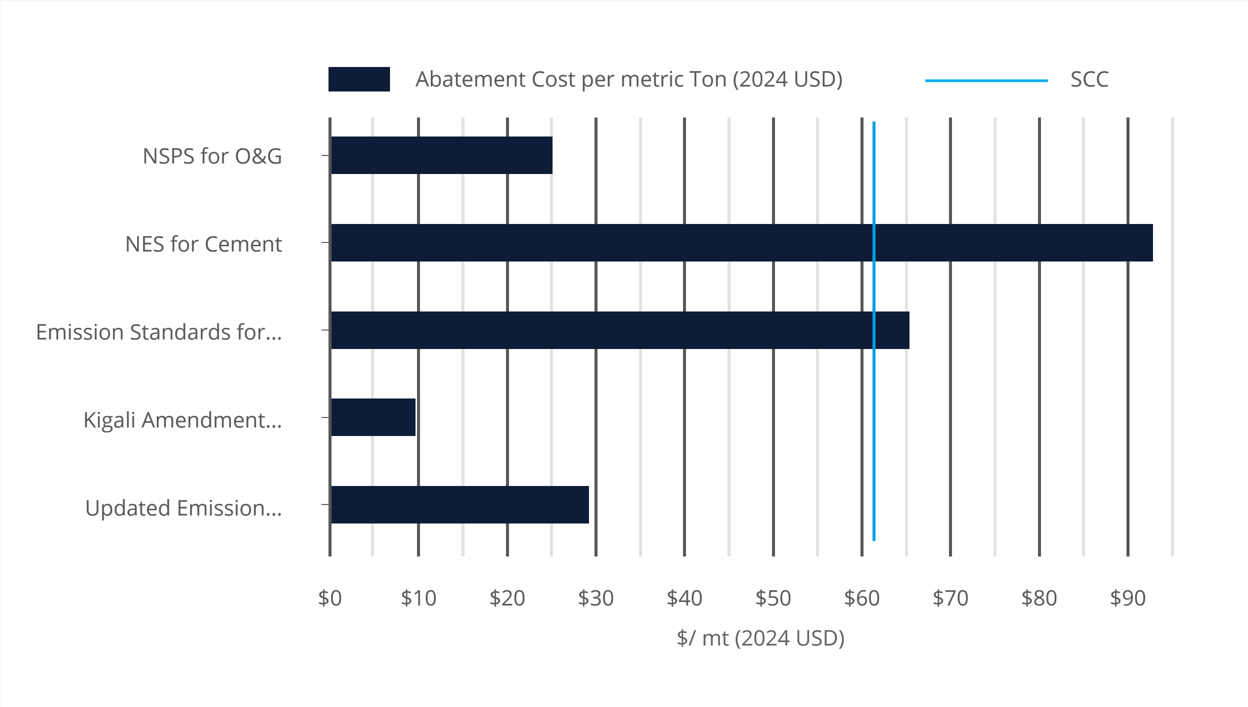
Table 3.

Industrial Sector Regulation Abatement Costs, 2012-2023

Year	Rule Description	Annualized Cost (Billions 2024 USD)	Annualized Emission Abatement (CO_2e, MMmt)	Abatement Cost Per Metric Ton (2024 USD)
2012	NSPS for O&G	$0.46	19.00	$25.18
2013	NES for Cement	$0.00	0.02	$92.74
2016	Emission Standards for O&G	$0.64	11.00	$65.51
2021	Kigali Amendment Implementation	$1.15	113.00	$10.03
2023	Updated Emission Standards for O&G	$2.93	100.00	$29.30

Figure 6.

Abatement Cost of Industrial Sector Regulations Relative to the SCC



Industrial Sector

We assessed the abatement costs of five significant regulations that included GHG emission abatement in the industrial sector, using the same methodology we used for our power and transportation sector analyses. Our estimates are presented in Table 3.

The average abatement cost of these regulations is $44.55 per metric ton. Figure 6 illustrates this comparison with the SCC, where three out of five regulations fall below the SCC.

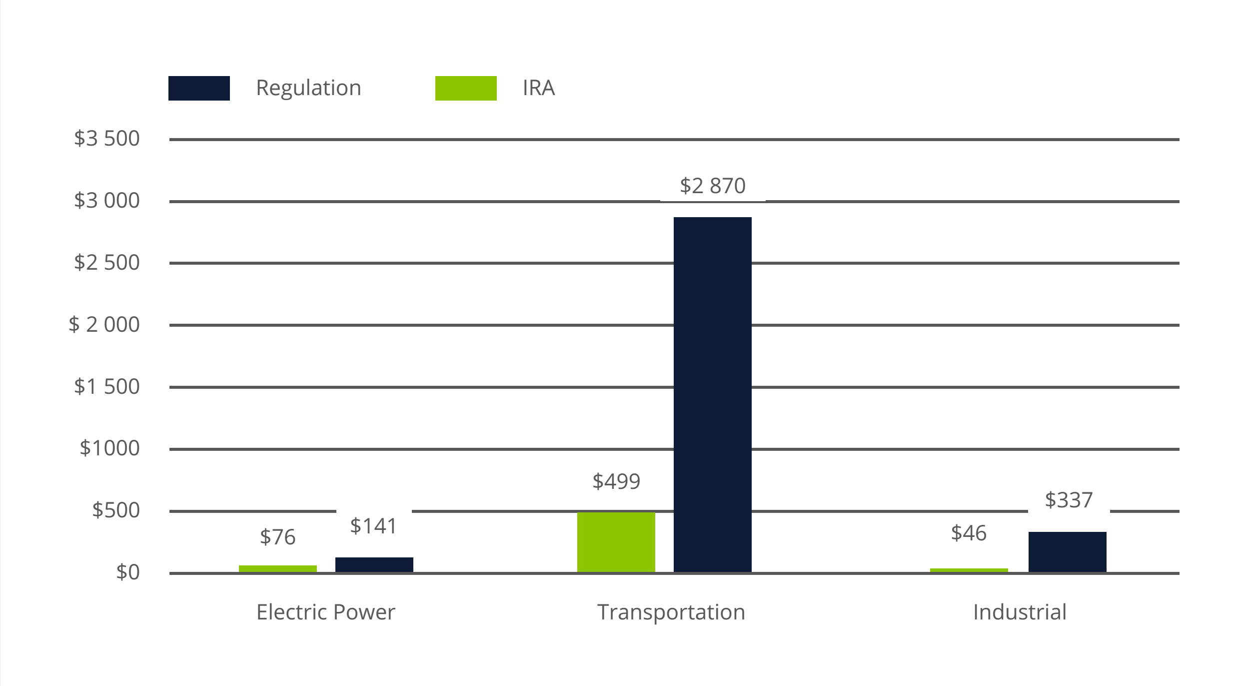
Of the five regulations in this sector, only one included monetized estimates of multiple categories of benefits: the 2023 updated emission standards for new, reconstructed, and modified sources in the oil and natural gas sector. For this rule, 94 percent of the benefits were climate-related, and 6 percent were public health benefits.

IRA SUBSIDY COMPARISON

We also estimated the abatement cost of the IRA's climate-focused tax credits using the Treasury Department's FY2026 tax expenditures as well as emissions projections from the 2023 EIA Annual Energy Outlook's (AEO) reference case and No-IRA side case.[16] Figure 7 compares the abatement

Figure 7.

Comparison of Abatement Costs From Regulation and IRA Subsidies by Sector



costs of the IRA subsidies to those of the sector-specific regulations. Notably, the latest AEO no longer includes a No-IRA case but projects considerably higher emissions. This means that data updates will increase the abatement cost of IRA subsidies, and the R Street Institute estimates the overall abatement cost of the IRA at approximately $600 per metric ton.[17]

Electric power sector subsidies have the lowest abatement cost, driven by the relatively low cost of clean electricity. However, low abatement costs do not always indicate efficient policy, because alternative policies may provide the same benefit at an even lower cost. For example, retail choice in electricity markets has yielded environmental benefits by enabling consumers to purchase low-carbon electricity without additional subsidies.[18] Similarly, high abatement cost subsidies are not inherently inefficient, since if those subsidies address genuine market failure, they may be more effective in the long term than alternative policies (e.g., innovation subsidies).

However, there are many cases where subsidies are expected to be inefficient because they fail to capture a climate benefit at a cost below the subsidy. Transportation sector subsidies—such as those designed to move consumers from internal-combustion engine vehicles to zero-emission vehicles—tend to fall into this category, as the lifetime emissions savings of zero-emission vehicles relative to internal-combustion engine vehicles are too small relative to the subsidy offered to achieve low-abatement costs.[19]

Overall, IRA-related subsidies have exceptionally high abatement costs because they are both increasing in cost and have a diminishing effect on motivating additional emission abatement. For example, considerable volumes of subsidies are being allocated towards replacing existing renewable energy sources with newer ones, which yields less emission benefit than replacing fossil fuels with renewable energy sources.[20]

ANALYSIS AND FINDINGS

When we evaluated climate regulations using the regulators' own estimates, we found that their efficiency varied widely, with some rules achieving abatement costs below the expected social benefits of CO2 reductions and others with costs well above these benefits. We also observe that regulators' methodologies in estimating their costs and benefits may be prone to error.

Generally, we found that regulators were extraordinarily conservative in estimating the costs of their regulations. Not only did they focus almost exclusively on narrow direct costs from regulations, but their methodology was suspect in some cases.

As an example, the 2024 Multi-Pollutant Emissions Standards for Model Years 2027 and Later Light-Duty and Medium-Duty Vehicles (i.e., the zero-emission vehicle [ZEV], light-duty vehicle [LDV] mandate) estimates three categories of costs for the regulation: technology costs (i.e., the increased cost of the vehicle), operating costs, and electric vehicle supply equipment costs. Conventional wisdom suggests that consumers will purchase the least-cost vehicle that satisfies their needs; therefore, a regulation that forces consumers to purchase a different vehicle would increase the vehicle costs borne by the public. However, regulators assumed that the rule would reduce technology costs, estimating an annualized value of savings of $170 million per year (in 2022 dollars, using a 3 percent discount rate).

Similarly, they estimated operating “costs” as annual savings of $3.3 billion (in 2022 dollars, 3 percent discount rate).

In this example, the regulators’ assumptions are not consistent with conventional economic theory. Specifically, if it were more cost-effective for consumers to buy and own ZEVs, they would do so without regulation. This would minimize both the costs and the benefits of the regulation, eliminating an economic justification for the rule. Instead, the regulators are claiming that consumers lack the knowledge to make cost-effective vehicle purchase decisions and that the regulation benefits consumers by addressing an unproven informational deficiency.

This is also a key issue with the 2024 power plant rule, which mandates the use of carbon capture technology. There, regulators are assuming that the regulation will decrease electricity costs. This contradicts the conventional economic understanding that a regulation forcing increased capital costs on the industry will increase overall electricity costs.

This is further challenged when we recognize that regulators are making assumptions about long-term product costs that are unlikely to hold over the regulatory period. For example, in the 2010 Corporate Average Fuel Economy (CAFE) rules, regulators assumed an average retail gasoline price of $3.66/gallon (in 2007 dollars) from 2012 to 2050, or the equivalent of $5.67/gallon in 2024 dollars. In reality, the inflation-adjusted average gasoline price since 2012 has been $3.74/gallon. Projections through 2050 now estimate an average of $2.82/gallon (in 2024 dollars).[21] Taken together, the revised full-period average is $3.13/gallon— 45 percent lower than regulators’ original 2010 estimates. This reduces the overall estimated benefits of the regulation by 17 percent.

The clearest evidence that regulators may be substantially off in their estimates, though, comes from the difference between the estimated abatement cost of the CPP using regulators' estimates and the results given from the NEMS model used by the EIA in their estimates.

In this case, regulators' estimates primarily focus on the direct cost impacts for new capital required for compliance with their regulations. But increased capital costs can produce a downstream economic effect that amplifies the overall impact of a regulation. For example, if a regulation results in higher electricity costs for consumers, households may have less money to spend on other items, resulting in a lower overall economic output. NEMS accounts for these downstream economic impacts in a way that conventional regulators' estimates do not.

As noted in Table 1, for the CPP the EPA estimated $8.4 billion in annual compliance costs, or $11.7 billion in 2024 dollars. This was weighed against an annualized emission abatement of 376 million metric tons, resulting in an abatement cost of $30.97 per metric ton.

By contrast, using NEMS, the EIA estimated a cumulative economic output loss of $861.3 billion (in 2024 dollars) from 2016 to 2035, which—when discounted at 3 percent—yields a net present value of $598.2 billion. Over the same period, cumulative energy-related CO2 emissions would be 4.7 billion metric tons lower, resulting in an abatement cost of $127.77 per metric ton, which is more than four times higher than the EPA's estimate.

The EIA methodology, however, is a more accurate measure of the overall economic cost of regulations, as it includes costs beyond the direct ones. The large gap between the EIA and EPA estimates of the same regulation suggests that other regulations have similarly underestimated costs. This would be consistent with economic understanding that since regulations increase capital costs in the economy, they are functionally similar to taxes on investments and thus create "deadweight losses" that incur an economic cost that exceeds their direct cost.[22]

If all regulations analyzed had the same deadweight loss relative to regulators' estimates as the CPP, the total annual economic burden from the regulations we assessed would increase from $174.1B to $696.4B.

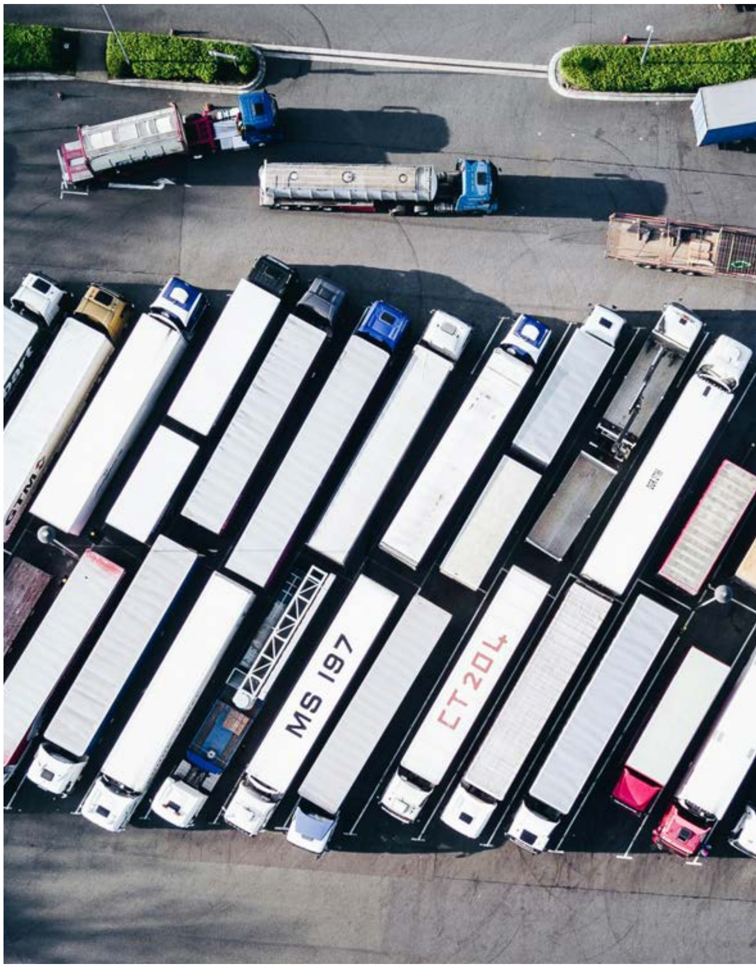
To illustrate the potential scale of underestimation: If all regulations analyzed had the same deadweight loss relative to regulators' estimates as the CPP, the total annual economic burden from the regulations we assessed would increase from $174.1 billion to $696.4 billion. If we express the total costs assessed by regulators on abated emissions, the abatement cost of regulations would increase from $121.68 per metric ton to $486.72 per metric ton.

This is strong evidence to suggest that regulators are too conservative in their cost estimates and too optimistic in their assumptions of benefits, which makes climate rules appear to be more cost-effective tools for emission abatement than comprehensive, economy-wide analyses would suggest. This is a product of regulatory cost estimates being treated as confined to the industry where the regulation occurs, when the effects should be modeled similarly to taxes, which also raise capital costs.

POLICY IMPLICATIONS

The guidance for regulators in estimating costs and benefits directs them to examine specific direct effects of their regulations. Still, it does not require them to comprehensively evaluate the economy-wide impacts of their regulations. Although regulators may econometrically model the impact of regulations, such as when utilizing EPA's SAGE model, their reported regulatory costs are typically confined to direct industry costs.

From a policy perspective, regulators can adjust their calculations to achieve a more favorable cost-benefit analysis, such as using favorable discount rates. In the case of the Biden administration's updated SCC, only extraordinarily low discount rates were used in estimating benefits, in contrast to other air pollutants that have benefits estimated under multiple discount rates. Regulators can also include speculative global benefits or cost savings, assuming no market dynamism that would capture such benefits in the absence of the regulation. They can also focus exclusively on narrow, direct costs from their regulations, rather than considering the total impact.



In the case of the Mercury and Air Toxics Standards (MATS) regulation, the Supreme Court of the United States issued a ruling against the EPA for failing to adequately consider the costs of their regulation, the defense of the EPA was not obligated to consider costs—a position the court rejected because federal agencies are required to engage in "reasoned decision-making" after the 1998 ruling of Allentown Mack Sales & Service, Inc. v. NLRB.[23] While in the case of MATS the EPA was not found to have acted reasonably, it would seem that regulators' only requirement is to appear reasonable in their estimation of costs and benefits, not necessarily to produce high-quality analyses.

To the extent that politically appointed regulators seek to adopt regulations involving policies that Congress would otherwise not adopt (e.g., policies that force purchases of ZEVs), it is relatively easy to produce "reasonable" analyses that demonstrate such action can carry more benefit than cost.

The better standard, though, would be to ensure that regulators accurately account for the totality of their costs and assess whether their regulation is suitably focused on the targeted, capturable benefits of the regulation. With NEMS, the government already has the means to produce such analysis, and the EIA regularly publishes econometric analyses that can readily be adapted to estimate the overall effects of regulation. Still, regulators are not required to engage in such practices.

Given our finding that many regulations rely heavily on co-benefits that may be overestimated and that regulators may be underestimating costs by ignoring the downstream effects of their rulemaking, it would be prudent for new guidance to be issued to regulators either through legislation or executive orders that require them to consider the totality of their regulation's effects. Such a practice would yield higher-quality regulations and prevent the adoption of regulations less likely to be net beneficial.

CONCLUSION

Using official estimates issued by regulators on the costs and emission abatement produced by their rules, we find that electric power sector regulations carry costs comparable to the previously used SCC and well below the current one. We also see similar results for industrial sector regulations. By contrast, we find transportation sector regulations to be highly inefficient, with abatement costs far exceeding the SCC. We come to similar conclusions when evaluating the effectiveness of IRA subsidies and find that regulations carry comparable or lower abatement costs.

However, we further find that when regulatory cost estimates are modeled econometrically, their total costs are significantly higher than those reported by regulators. This is likely because regulators typically fail to consider the downstream impacts on economy-wide consumption, instead focusing narrowly on direct compliance costs. Given that econometric modeling of energy scenarios is a standard practice in the U.S. government, the expanded utilization of such practices would produce better information on the costs of regulation that are borne by the public and help regulators identify more efficient practices in crafting regulations.

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Nick Loris *is the Vice President of Policy at C3 Solutions.*

Philip Rossetti *is a Senior Fellow for Energy and Environment at R Street Institute.*

Dr. Ashley Nunes *is a Senior Research Associate at Harvard Law School and an associate in the Department of Economics, Harvard College.*

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