

UNFINISHED BUSINESS



**WAYS PRESIDENT OBAMA CAN MOVE THE UNITED STATES
CLOSER TO ITS FAIR SHARE OF CLIMATE ACTION**

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INTRODUCTION

Global scientific consensus is that the world must keep the majority of its remaining fossil fuel reserves in the ground to have a good chance of avoiding the worst impacts of climate disruption.¹ As the world's largest historical emitter² and one of the world's wealthiest countries, the United States must shoulder the greatest share of the burden for making emission reductions.

According to the climate fair shares calculator prepared by Friends of the Earth England, Wales and Northern Ireland and Jubilee South Asia Pacific Movement on Debt and Development, the United States must reduce emissions by at least 55 percent below 1990 levels by 2025 and provide \$635 billion in climate finance in order to do its fair share.³ The calculator is based on the work of the Stockholm Environment Institute, Ecoequity and Institute for Governance and Sustainable Development.

President Obama has taken historic steps to reduce U.S. greenhouse gas emissions. Perhaps the most important of these steps is the Clean Power Plan, which will regulate greenhouse gas emissions from new and existing power plants in the United States for the first time. Other important actions include increasing the efficiency of vehicles and appliances and limiting the financing of coal projects abroad from two U.S. financing agencies -- the Overseas Private Investment Corporation and the Export-Import Bank. These domestic actions are the basis for President Obama's international commitments.

Unfortunately, when measured against the United States' historic responsibility, justice and the gravity of the problem, these actions are a far cry from what is needed from the United States. As part of the United Nations Framework Convention on Climate Change process, President Obama has only pledged to reduce U.S. emissions by 12 percent below 1990 levels by 2025.⁴ This commitment is nowhere close to being equitable; in fact it is just 20 percent of what justice and historic responsibility demand from the United States.⁵ While Congress has been a significant barrier to climate action, there is more that President Obama can do on his own.

This report illustrates a few of the actions that President Obama can take using existing authority to reduce U.S. greenhouse gas emissions, which could serve as the basis for a stronger U.S. commitment on climate change. President Obama has slightly over one year left in office. If he wants to cement his legacy as a true climate champion, he must make significant progress to greatly reduce the country's carbon pollution. More ambitious action will be required for President Obama to not only meet but exceed his current international emission reduction target. Averting dangerous climate disruption demands nothing less.

Policy Recommendations

While this is not a comprehensive list, this report lays out nine policies that the Obama administration has the legal authority to take. These actions provide significant mitigation potential and will be necessary for the United States to meet its fair share of emission reductions. These are all actions that President Obama can and should initiate before leaving office in 2017.

- 1. Use section 115 of the Clean Air Act to force economy-wide GHG reductions from states.**
- 2. Put forward a broad rule to reduce aviation GHG emissions by making it technology-forcing, including existing aircraft and covering the entire aircraft.**
- 3. Finalize a methane rule for the oil and gas sector that covers existing and abandoned sources and improves detection of leaks.**
- 4. Limit methane from flaring and venting on public and tribal lands by ensuring accurate accounting with meters and ending royalty-free flaring.**
- 5. Prohibit the export of liquefied natural gas, as the Department of Commerce has done with crude oil.**
- 6. Address black carbon emissions through an endangerment finding under the Clean Air Act and using the U.S. Chairmanship of the Arctic Council.**
- 7. Reduce hydrofluorocarbon emissions from air conditioners, refrigerators and other end uses by removing high-GWP HFCs from the marketplace and increasing HFC reclamation and recycling.**
- 8. Prohibit all new leases for fossil fuel exploration and development on public lands and waters.**
- 9. Incorporate the true social cost of carbon in all government decisions.**



USE THE BROAD DISCRETION OF SECTION 115 OF THE CLEAN AIR ACT TO FURTHER REGULATE GHGS

Recently, section 111 of the Clean Air Act has received a lot of attention because the EPA has used it as the basis of its Clean Power Plan, which will regulate greenhouse gas emissions from power plants in the United States for the first time, but there is an often overlooked section of the Clean Air Act that provides even broader authority for the EPA to mandate mitigation of air pollution. This overlooked section is 115, and it creates a clear duty for the EPA to take action where U.S. emissions put people in other countries at risk.⁶ This section is not limited in scope because it specifically states that it applies to “any air pollutant or pollutants,”⁷ meaning greenhouse gases would clearly qualify. To date the EPA has only taken very limited advantage of section 115, and courts have rarely ruled on the limits or the breadth of its authority.⁸ Therefore, the exact potential impact of this provision is hard to know, but despite the lack of use, Congress obviously intended for section 115 to apply to international air pollution.⁹ The provision’s language, its legal history and the couple of applicable cases all indicate that section 115’s impacts could be far reaching and require much more significant emission reductions from states.

The Prerequisites for the EPA to Take Action under Section 115 Have Been Met

Section 115 sets out a series of requirements that must be met before the EPA can mandate reductions from the states based on the harm their emissions cause in other countries. First, the EPA must have received reports or studies from a “duly constituted international agency” establishing the harm.¹⁰ The Intergovernmental Panel on Climate Change qualifies as such because the United Nations endorsed its creation and mission of coordinating the scientific analysis of the impacts of and potential responses to climate change.¹¹ Hundreds of scientists from around the world, including the United States, put together the IPCC’s Fifth Assessment Report, which found

that total anthropogenic GHG emissions have continued to increase.¹² This increase in emissions has led to negative impacts on crop yields and water resources, more extreme weather events, increased ocean acidification, among many other pejorative impacts.¹³ The United States is one of the largest contributors to these impacts as its GHG emissions remain the historically highest in the world and its annual emissions have only recently been surpassed by China’s.¹⁴ In addition, the EPA’s own reports have relied on the research and guidelines that the IPCC established in reviewing climate change data.¹⁵ These impacts and evidence of the United States’ high emissions demonstrate that U.S. GHG emissions have negatively impacted the health and welfare of people in other countries.

The EPA cannot simply act if U.S. emissions negatively impact other countries; reciprocity must also occur in order for the EPA to have the authority to act.¹⁶ The reciprocity requirement is fulfilled when another country has given the United States “essentially the same rights” with regards to pollution reduction.¹⁷ The actions of many different countries can satisfy this requirement in different ways.¹⁸ Some countries have laws that articulate almost the same rights as section 115 of the Clean Air Act by allowing the environmental agencies of those countries to take action to reduce air emissions if they hurt people in other countries; these laws include Canada’s Environmental Protection Act and South Africa’s Air Quality Act.¹⁹ International agreements, such as those made under the United Nations Framework Convention on Climate Change, could also establish this reciprocity by demonstrating that other countries have also made commitments to reduce their greenhouse gas emissions.²⁰ Over 100 countries have submitted commitments to the UNFCCC, pledging to increase their reliance on renewables, peak their emissions by a certain date, or make overall emission reductions.²¹ Many of the world’s largest emitters, including China and the European Union, have put forward commitments.²² These commitments could also satisfy the reciprocity requirement as many other countries have promised to reduce their GHG emissions.

States Must Revise Their SIPs to Account for This Foreign Endangerment

Since the authority provided under section 115 has rarely been used, it will be essential for EPA to fully explain and justify its reasoning for choosing to more comprehensively implement this provision. The EPA cannot simply mandate that states make further reductions because of their pollution’s effect on foreign countries. Rather, the EPA must formerly notify all states that their emissions are negatively impacting other countries, and, therefore, they will be required to submit a new emission reduction plan.²³ In this notification, the EPA must explain that the GHG emissions from every state have endangered other countries as

The provision’s language, its legal history and the couple of applicable cases all indicate that section 115’s impacts could be far reaching and require much more significant emission reductions from states.

evidenced by the IPCC reports and other scientific studies.²⁴ In addition, the notification should find that the reciprocity requirement has been satisfied in multiple ways -- from countries’ specific laws that offer the same rights and through emission reduction commitments made as part of international agreements.²⁵

Once the EPA has made these findings of endangerment and reciprocity, it must then establish the reductions that will actually be required under this provision. States will need to update their state implementation plans (SIPs) in order to “prevent or eliminate the endangerment.”²⁶ Section 115 does not mandate a specific regulatory structure, so the EPA has wide discretion in determining what those plans should look like.²⁷ The EPA will need to advise states on the most efficient and effective mitigation strategies that will lead to significant emissions reductions.²⁸ Economy-wide reductions will be necessary as well as an immediate shift to clean renewables such as wind and solar.



Coal Fired Power Station



REQUIRE EMISSION REDUCTIONS FROM NEW AND EXISTING AIRCRAFT

Globally, airline operations produced 705 million metric tons of carbon dioxide in 2013.²⁹ To put that in perspective, the global aviation emissions industry would rank seventh if included in country emission rankings, just after Germany's total country emissions.³⁰ The EPA and the Department of Transportation have worked to increase the fuel efficiency of passenger vehicles,³¹ but have so far failed to regulate aviation emissions. This sector is too big to allow it to pollute without any limitations or regulation. Similar to its regulation of passenger vehicles, the EPA must take immediate and broad action to reduce carbon pollution from aviation.

The United States Must Take the Lead on Reducing Aviation Pollution

Transportation is a significant source of emissions, contributing 27 percent of the total U.S. emissions in 2013.³² Aircraft are responsible for 11 percent of that, or more than three percent of total U.S. emissions.³³ While this may not seem significant, emissions from the aviation sector are one of the fastest-growing sources of greenhouse gases in the world.³⁴ They are also the largest emission source in the U.S. transportation sector that is unregulated. Without regulation to limit these emissions, carbon pollution from the global aviation industry is expected to increase by up to 450 percent by 2050.³⁵ Regulation is especially important because of the potentially disproportionate climate impact of high-altitude aircraft emissions; when emissions are higher in the atmosphere, they can have a greater warming impact than at ground level.³⁶

The United States must take the lead in reducing emissions from the country's aircraft since the United States accounts for a large proportion of the world's aviation emissions. The United States'

domestic flights account for 24 percent of the world's commercial aircraft carbon dioxide emissions and 35 percent of carbon dioxide emissions from international commercial flights.³⁷ When the EPA first began analyzing measures to reduce carbon emissions from aviation in 2008, it estimated greenhouse gas reductions available from engine and airframe changes alone at 13.3 percent.³⁸ Despite this, research shows that from 2013 to 2014, U.S. airlines overall barely made any net fuel efficiency gains.³⁹ Yet there are plenty of improvements that could be made. The fact that there is a gap of 25 percent from the most to least fuel efficient domestic airline demonstrates that some airlines are already implementing retrofits that are effectively reducing carbon dioxide emissions.⁴⁰ EPA regulations would force all airlines to adopt similar measures.⁴¹

The EPA Should Put Forward Broad Rules on New and Existing Aircraft⁴²

Section 231 of the Clean Air Act mandates that the EPA address emissions from aircraft, and its authority concerning how to do so is extremely broad -- the Clean Air Act requires that the EPA

put forward emission standards for pollution from “any class or classes of aircraft engines” that it determines may endanger public health.⁴³ The only restrictions the law places on this authority concern noise and safety.⁴⁴ The EPA first set pollution standards for future and existing engines in 1973, but these standards did not address carbon pollution.⁴⁵ At the time that these standards were introduced, the understanding of the impacts and urgency of climate change was minimal. Since then, the scientific evidence for the need to address this pollution has become irrefutable. The EPA has already put forward a proposed endangerment finding for greenhouse gas emissions from aviation,⁴⁶ but it now must finalize new rules that reflect the need to take fast and meaningful action to reduce our global warming-inducing emissions.

The United States cannot wait for the International Civil Aviation Organization to take action. Since ICAO was tasked with addressing aviation’s greenhouse gas emissions in 1998,⁴⁷ it has only succeeded in delaying action and has failed to set any climate policies. ICAO is finally expected to put forward some standards in early 2016, but they are likely to accomplish almost nothing to affect the industry’s explosive emissions growth under business-as-usual conditions in part because they will not apply to already in-use aircraft.⁴⁸ This means that the rules will only apply to a very small fraction -- less than 10 percent -- of the aircraft fleet by 2030. Moreover, ICAO is expected to set the standard based on a 2016 technology level, which will be eight to 12 years behind the date when the new aircraft would come into use.⁴⁹ Establishing standards in this way could actually exacerbate the problem by encouraging companies to delay upgrades to their fleet, thereby leading to more emissions than if the standard was not in place.⁵⁰ The EPA has the legal authority under the Clean Air Act and the potential exists to make far greater reductions than ICAO is expected to mandate. Finally, the Convention on International Civil Aviation allows governments to regulate aircraft registered in their countries and any aircraft operating within their airspace.⁵¹ This Convention specifically articulates the expectation that nations will put forward standards that are more stringent than those promulgated by ICAO.

Without regulation to limit these emissions, carbon pollution from the global aviation industry is expected to increase by up to 450 percent by 2050.

The EPA should immediately adopt its proposed finding that aircraft emissions endanger public health and adopt regulations that are broad in scope. Similar to increased fuel efficiency for medium- and heavy-duty vehicles, improvements to public health, substantial climate benefits and fuel savings mean that the benefits of broad regulation of aviation emissions far outweigh the costs to the airline industry.⁵² Rather than focusing only on new aircraft engines, any rules that the EPA puts forward should include existing aircraft and not limit coverage to just engines but apply to the entire aircraft and its operations.⁵³ The EPA should use its authority to set emissions standards for all classes of aircraft in a way that is technology forcing to ensure the greatest reductions possible.⁵⁴ The EPA should follow the example that it has set for passenger and medium- and heavy-duty vehicles and establish fleet-wide averages for aircraft.⁵⁵ The EPA should set these averages for both new and existing aircraft, including those in service.⁵⁶ These standards must be sufficiently stringent to reduce emissions significantly for the entire U.S. aviation sector over time.





IMPLEMENT STRONG METHANE STANDARDS FOR THE OIL AND GAS INDUSTRY

Methane is a greenhouse gas that is one of the most prevalent after carbon dioxide, accounting for 9.5 percent of the country's greenhouse gas emissions.⁵⁷ While that number is far behind carbon dioxide, each ton of methane has a much greater warming potential than each ton of carbon dioxide. Methane has become a rising problem with the increase in production of oil and gas in the United States. A review of scientific research found that even conventional natural gas emits more greenhouse gases than coal largely because of fugitive methane leakage.⁵⁸ In order to properly address this potent greenhouse gas from the oil and gas industry, the Obama administration must require companies to better monitor and reduce methane emissions.

Current Attempts at Regulation Have Fallen Short

The Bureau of Land Management under the U.S. Department of the Interior (Interior) has the responsibility of regulating oil and gas wells on public lands, but has not provided proper oversight. This responsibility is quite expansive, involving overseeing operations in 32 states.⁵⁹ These operations include approximately 100,000 onshore oil and gas wells.⁶⁰ In all, about 34.6 million acres of land -- roughly the size of Florida -- are under lease for oil and gas development.⁶¹ This exploration and drilling have only been increasing in recent years. As the BLM itself has admitted, the oil and gas sector "leased more new acres, drilled more wells, and produced from more acres" in 2014 than in 2013.⁶² Each year, Interior receives about 5,000 applications for drilling permits.⁶³ With this large expanse of land and so many permits, the BLM has not been able to keep up with the inspection of these operations. One study found that the BLM had failed to inspect 40 percent of high risk wells.⁶⁴

A major source of methane has been the hydraulic fracturing, also known as fracking, boom. About 90 percent of the drilling that occurs on federal and Indian lands uses fracking.⁶⁵ Studies have estimated that from 2005 to mid-2013, the fracking industry produced 450,000 tons of air pollution each year and 100 million metric tons of carbon dioxide equivalent.⁶⁶ In March 2015, the BLM finalized rules to regulate the fracking industry, but these rules fell far short of making substantial progress toward reducing toxic air emissions.⁶⁷ States have not picked up the slack as they often provide little, if any, complementary regulation -- only 13 of those states have any standards for fracking.⁶⁸ In addition, only three of the 36 states with active oil and gas wells offer public access to data on spills and legal violations.⁶⁹

Covering Existing Sources Will Lead to Significant Methane Reductions

The EPA's proposed rule to reduce methane from the oil and gas industry is part of the Obama administration's broader strategy to reduce methane emissions across various sectors.⁷⁰ The rule

as currently proposed will have little impact on methane emissions. The rule would put in place standards for new and modified sources without mandating changes for existing sources. By doing so, the rule fails to address the approximately 1.1 million currently in use wells and three million abandoned wells, some of which are significant sources of methane, that the United States has.⁷¹ The final rule must require reductions from existing, as well as new and modified oil and gas wells. Section 111(d) of the Clean Air Act provides the authority for President Obama to take action with regards to existing sources of air pollution.⁷² The EPA has already used this authority in implementing the Clean Power Plan, which mandates emission reductions from the power sector under section 111(d).⁷³ Once the EPA finalizes rules for methane under 111(b), which pertains to new sources, the EPA will be required to put forward rules under 111(d) for existing sources within a “reasonable” amount of time.⁷⁴

In addition, the rule should use the global warming potential of 87 times as potent as carbon dioxide over a 20-year period. The proposed rule calculates the methane emissions using a global warming potential of 25 times.⁷⁵ This figure is based on a 100-year warming potential, rather than a 20-year warming potential; the latter is much more relevant when determining climate mitigation methods because the former fails to account for the

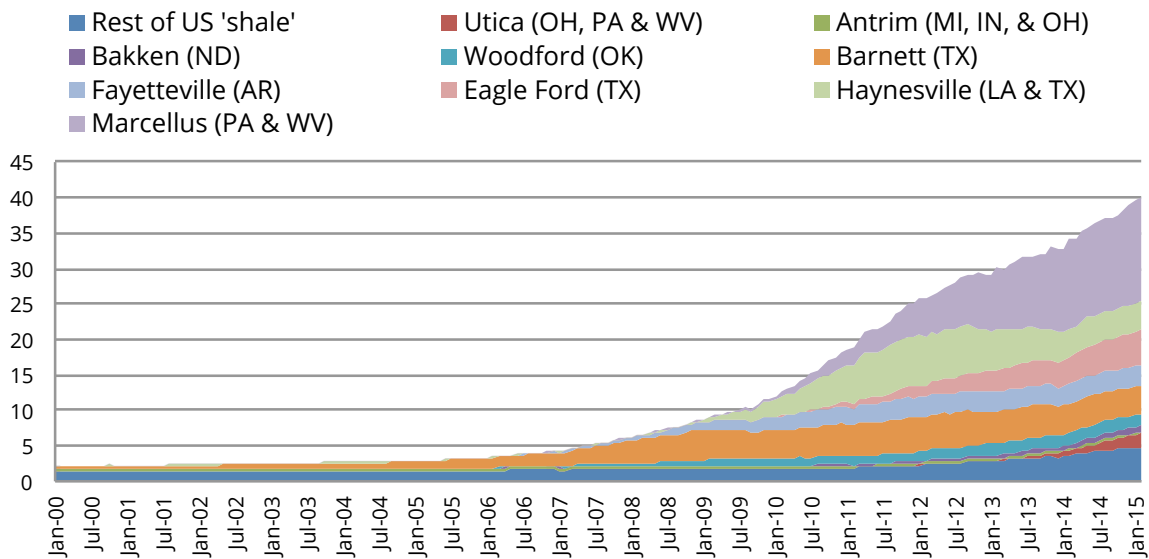
severe short-term warming impacts of methane. Scientists agree that the next 10 to 20 years will be critical if we are to avert the worst effects of climate disruption,⁷⁶ so the impacts of reducing methane emissions in the short-term are the more appropriate metric. Moreover, the figure that EPA uses in its calculations is out-of-date according to the Intergovernmental Panel on Climate Change.⁷⁷

Some estimates put methane leakage from oil and gas production at as high as 17 percent.

Lastly, the final rule must require better methane detection technology. Studies have found that the EPA is grossly underestimating the amount of methane released from gas wells. The mistake could stem from a device that the EPA has approved for monitoring, which, if not recalibrated often, will not be able to measure the methane from the source, thereby underrecording.⁷⁸ Actual estimates could be 100 to 1,000 times higher than the EPA is currently estimating. Some estimates put methane leakage from oil and gas production at as high as 17 percent.⁷⁹ This better detection and the updated global warming potential would more accurately demonstrate the real impact that different wells are having on climate disruption, thereby putting pressure on the oil and gas industry to better address the methane leakage from these sources.

Monthly Dry Shale Gas Production

billions cubic feet per day



SOURCE: Energy Information Agency -- http://www.eia.gov/naturalgas/weekly/archive/2015/04_16/index.cfm



REQUIRE METERING, REPORTING AND ROYALTIES PAID FOR VENTING AND FLARING OF GAS

Another impact of the shale oil boom has been the increased use of venting and flaring. Venting is the intentional release of natural gas directly into the atmosphere, while flaring is when gas is released and then intentionally burned. Venting and flaring have become growing problems as areas such as the Bakken shale region of North Dakota have increased their oil production and have failed to capture the corresponding gas.⁸⁰ Many places have seen huge spikes in venting and flaring, such as New Mexico where venting and flaring increased 13 fold from 2010 to 2013.⁸¹ According to the Government Accountability Office, approximately five percent of all federal onshore natural gas production was lost through either venting or flaring in 2006.⁸² Even these numbers are incredibly out-of-date and are probably grossly underestimating the volumes lost because data are often lacking and unreliable.⁸³ This release of natural gas results in the emission of massive amounts of methane. Unfortunately, Interior is miscalculating the methane released during venting and flaring; the actual amount is probably 30 times higher than Interior's estimates.⁸⁴ This underreporting will make it difficult for the BLM to properly account for and reduce these emissions.

The BLM Has Been Unable to Properly Regulate Venting and Flaring

The massive increase in permit requests from oil and gas companies also provides evidence of the recent surge in venting and flaring.⁸⁵ The applications from companies wishing to vent or flare gas, instead of capture it, has increased nearly threefold in the past few years and almost 2,400 percent in the past 10 years.⁸⁶ Between 2006 and 2013, the amount of gas that was flared or vented more than doubled to 260 billion cubic feet.⁸⁷ In 2013 alone, as much as 65 billion cubic feet of natural gas was flared, vented or otherwise lost on federal and tribal lands.⁸⁸ This increase in permits

has not happened in a vacuum -- as companies have requested more permits to vent and flare, methane emissions on public lands have also risen. Some estimates of emissions from federal lands and waters put this increase at 119 percent from 2008 to 2013.⁸⁹ This means that the total of methane emissions from venting and flaring on public lands and waters amounts to more than 192,000 metric tons.⁹⁰ During this time period, methane emissions from onshore federal leases increased by 51 percent.⁹¹ Actual increases are probably even higher since these emissions are often underreported.⁹²

The BLM's failure to properly regulate these practices has led not only to rampant methane

emissions, but also lost revenue. GAO estimates that the BLM allowed oil and gas companies to get out of paying \$58 million in 2008 for gas lost by venting or flaring even though technology existed to capture about 40 percent of that gas.⁹³ Over the next 10 years, oil and gas companies could skip out on at least \$800 million in tax revenue from their venting and flaring on public lands if no policy changes are put into place.⁹⁴ This estimate is conservative considering the problems with detection and reporting.

The BLM Should Require Metering, Royalties and Greater Transparency

In addition to the EPA's rule to reduce methane from the oil and gas industry discussed above, another part of President Obama's methane strategy is to limit venting and flaring on public lands.⁹⁵ The BLM is aiming to finalize a rule by the time President Obama leaves office.⁹⁶ This new rule would update the BLM's current venting and flaring rule that has been on the books for 34 years -- way before drilling for natural gas surged.⁹⁷ With the rule, the Obama administration hopes to use available cost-effective technologies that might require companies to replace equipment and best management practices to increase the amount of methane that companies are able to economically capture.⁹⁸

The BLM's final rule must increase transparency by requiring metering. Before the BLM can be sure that companies are reducing their methane emissions, better monitoring methods that

Mandatory metering at wells on public lands will result in more accurate data that demonstrate the higher amount of venting and flaring.

result in specific data, rather than estimates, will be necessary to determine how much methane is being released and precisely from which sources.⁹⁹ The new rule should require that fossil fuel companies accurately collect and report their methane emissions and then make that data publically available.¹⁰⁰ Mandatory metering at wells on public lands will result in more accurate data that demonstrate the higher amount of venting and flaring.¹⁰¹ This will allow the BLM to better account for and, therefore, more effectively reduce fugitive methane emissions.¹⁰²

In addition, the BLM should end the allowance of royalty-free flaring and venting. Under the regulations currently in place, companies can vent and flare if the BLM determines that capturing the gas would be too expensive and, hence, "unavoidably lost."¹⁰³ When the BLM approves these permits, companies do not have to pay royalties on the vented or flared gas. This allows oil and gas companies to burn off a valuable federal resource without compensating taxpayers for their losses, subsidizing the production of fossil fuels. The BLM must end royalty-free flaring and venting. Companies should then be required to pay royalties on all gas that is vented or flared at a rate that fully internalizes natural gas' climate impacts.¹⁰⁴ Once the BLM updates these rules, it then must make sure to enforce them properly to ensure a reduction in methane emissions from venting and flaring and increased revenue.



Arnegard North Dakota
Photo: Tim Evanson



PROHIBIT LIQUEFIED NATURAL GAS EXPORTS

Liquefied natural gas is natural gas that has been turned into a liquid so it can be more easily stored or transported. Often, natural gas is liquefied so that it can be shipped to foreign markets. In order to turn natural gas into a liquid, it must be cooled at extremely low temperatures at which point it is ready to be shipped. Once the fuel reaches its destination, it is then turned back into a gas, so that it can be used by the receiving countries. With the hydraulic fracturing boom of the past decade, fossil fuel companies have been increasingly turning to LNG to increase their profits from the gas that they extract in the United States.

LNG Is Increasingly Being Exported Despite Its Carbon Footprint

The process of turning natural gas into a liquid and then back into a gas massively increases the fuel's carbon footprint. Liquefaction and regasification are highly energy intensive, and, thus, produce a large amount of greenhouse gas emissions. The Department of Energy estimates that the liquefaction, transport and regasification process increases the total lifecycle of GHG emissions of exported natural gas by 15 percent.¹⁰⁵ For this reason, LNG poses a potentially greater threat to our climate than even coal.

Despite LNG's strong negative impact on the climate, the DOE and the Federal Energy Regulatory Commission have continued to approve terminals that would export LNG. As of August 2015, five terminals -- one in Maryland, two in Louisiana and two in Texas -- had been approved and were under construction.¹⁰⁶ An additional facility in Louisiana had received approval, but was not yet under construction.¹⁰⁷ These five facilities are expected to commence operations in late 2015 and be fully functional by 2018, exporting up to a total of nine billion cubic feet per day.¹⁰⁸ This number is only expected to grow with two of these facilities already requesting expansions

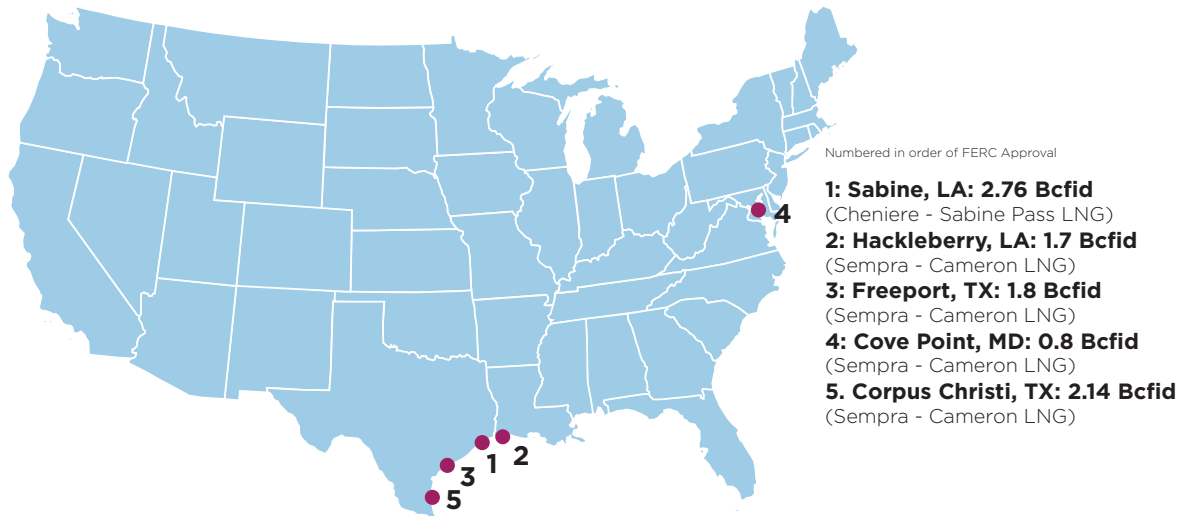
and at least another 15 proposals being made to FERC for LNG export facilities.¹⁰⁹ This expansion is expected to allow the United States to become a net exporter of natural gas by 2017.¹¹⁰

Allowing these LNG export facilities to be built creates a market for more natural gas, which will increase extraction and exacerbate the climate and health impacts. Greater desire for LNG requires the oil and gas industry to remove more natural gas from the ground, which will increase the amount of fracking that is occurring across the country. An increase in fracking means more methane and other greenhouse gas emissions. In addition, the extraction of more natural gas will divert resources that should be going to renewables like wind and solar towards natural gas.¹¹¹

Commerce Should Prohibit the Export of LNG under the EPCA

The Department of Commerce should promulgate a rule prohibiting the export of natural gas under section 103 of the Energy Policy and Conservation Act of 1975.¹¹² The EPCA requires that the president ban the export of both crude oil and natural gas.¹¹³ In Executive Order 11912, President Gerald Ford delegated the responsibility of conducting a rulemaking with regards to

U.S. LNG Export Terminals Approved for Construction



SOURCE: U.S. Energy Information Administration, with data from FERC

prohibiting crude oil and natural gas exports to the Secretary of Commerce.¹¹⁴ While the Department of Commerce proposed and finalized a ban on crude oil exports, they began, but then never finalized a similar ban on natural gas exports.¹¹⁵ While the EPCA allowed for exemptions to the bans, it still required that the President put forward the ban and then articulate any exemptions.¹¹⁶ By not having accomplished this for natural gas exports, Commerce is in clear violation of the law.

Commerce has attempted to explain its failure to ban natural gas exports, but its reasoning is unjustified. Commerce has tried to place the full responsibility of regulating natural gas exports on the DOE.¹¹⁷ Commerce relied on the Natural Gas Act of 1938, which requires an export license for natural gas, finding it sufficient to exempt exporters from having to procure another export license.¹¹⁸ Simply because the DOE also has authority for natural gas exports under a different law, does not absolve Commerce of its statutorily mandated duty to conduct a rulemaking on natural gas exports under a distinct law with different requirements. Additionally, this contradicts Commerce's earlier acknowledgement that while the DOE must sign off on natural gas exports, Commerce was responsible for promulgating the natural export ban in

accordance with the law.¹¹⁹ Commerce further justified its inaction by the fact that no one has ever sought a license to export gas from Commerce.¹²⁰ This fact is misleading and irrelevant because the EPCA does not require Commerce to issue export licenses, but, rather, it requires Commerce to prohibit the issuance of natural gas export licenses that are inconsistent with "the national interest."¹²¹ Commerce's reasoning for its failure to ban natural gas exports is unfounded; President Obama should rectify this failure immediately with a new rulemaking.



Commerce's reasoning for its failure to ban natural gas exports is unfounded; President Obama should rectify this failure immediately with a new rulemaking.



Icebergs breaking off glaciers, Cape York, Greenland

Photo: Brocken Inaglory

ADDRESS BLACK CARBON EMISSIONS THROUGH THE CLEAN AIR ACT AND ARCTIC COUNCIL

While carbon dioxide and, to a lesser extent, methane receive the majority of the attention as targets for mitigating climate change, black carbon is another pollutant worthy of executive action.¹²² Black carbon is not a greenhouse gas, but a type of fine particle, also known as an aerosol, which is released into the air during the incomplete combustion of fossil fuels, biofuels and biomass. There are a variety of sources of black carbon, including residential cook stoves, diesel engines and industry. While the United States has made strides in reducing its black carbon emissions, the Obama administration should make even greater reductions, which would have large and almost immediate beneficial impacts.

Black Carbon Is a Harmful Pollutant with Strong Warming Potential

Black carbon contributes to climate disruption in multiple ways. Black carbon directly impacts climate disruption by absorbing radiation from the sun because of its dark color, which heats the air.¹²³ Black carbon also indirectly impacts the climate. Black carbon particles attract cloud droplets, which cause clouds to become darker, thereby reflecting less sunlight and warming the surface of the earth. Additionally, when incomplete combustion occurs or biomass is burned, black carbon is emitted, often traveling long distances before being deposited onto light surfaces, such as ice and glaciers. This inhibits the ability of ice and glaciers to reflect sunlight, which in turn increases warming and melting of those surfaces.

While the United States emits considerably less black carbon than carbon dioxide, the benefits of addressing it are twofold. First, reducing black carbon has an almost immediate impact on climate change because it only lasts in the atmosphere for a matter of days or weeks.¹²⁴ Moreover, the

majority of the impact on temperature is accomplished within 10 years.¹²⁵ Second, despite its short lifespan, black carbon is the second strongest contributor, after carbon dioxide, to climate disruption, adding more warming than even methane.¹²⁶

The EPA Should Regulate Black Carbon as an Air Pollutant

Black carbon falls under the Clean Air Act's definition of an air pollutant. The Clean Air Act defines an air pollutant as "any physical, chemical, biological, radioactive . . . substance or matter which is emitted into or otherwise enters the ambient air."¹²⁷ In *Massachusetts v. EPA*, the U.S. Supreme Court found that the Clean Air Act's definition of an air pollutant was broad enough to cover carbon dioxide.¹²⁸ This Supreme Court decision means that black carbon should also be included in that definition and should, therefore, be regulated under the Clean Air Act. Once a pollutant is identified as such for purposes of the Clean Air Act, the EPA is required to put forward "air quality criteria" if it finds that the pollutant would endanger public health or welfare.¹²⁹ The Court held that this requirement applied to carbon

dioxide; if the EPA found it endangered public health, the EPA would have to regulate it.¹³⁰

Sufficient information exists to make an endangerment finding under the Clean Air Act for black carbon. Research has shown that black carbon pollution has resulted in serious health effects. In a study on the health impacts of particulate matter, the EPA found that black carbon was associated with negative health impacts, including heart issues, reduced blood supply and breathing difficulty.¹³¹ The EPA later reiterated these findings in a report to Congress on the impacts of and mitigation strategies for black carbon.¹³² Numerous other studies have found associations between increased traffic-related diesel exhaust, which has high concentrations of black carbon, and serious health maladies, such as heart attacks and stiffness of the arteries.¹³³ Shortened life-spans, reduced cognitive function in children and lung diseases are other health outcomes associated with elevated black carbon levels.¹³⁴ Based on this scientific evidence, as well as its own assessments, the EPA has enough information to issue an endangerment finding and air quality standards for black carbon.

The United States Should Use its Chairmanship of the Arctic Council to Reduce Black Carbon

In addition to the impacts listed above, black carbon has a disproportionate impact in the Arctic.¹³⁵ Recent studies have found that black carbon from the incomplete combustion of fossil fuels and biomass has likely had severe regional impacts on the Arctic climate.¹³⁶ Black carbon is deposited onto the surface of ice and snow, which increases the region's temperature and promotes polar melting by making them darker and, therefore, less able to reflect sunlight. These black carbon deposits in the Arctic have caused 0.5 to 1.4 degrees Celsius of warming regionally over the last century and have had a significant contribution to the rapid warming of the past 30 years.¹³⁷

The United States is chairing the Arctic Council from 2015 until 2017;¹³⁸ the United States must

Black carbon deposits in the Arctic have caused 0.5 to 1.4 degrees Celsius of warming regionally over the last century and have had a significant contribution to the rapid warming of the past 30 years.

take advantage of this opportunity by increasing the understanding and monitoring of black carbon, as well as requiring its reduction. Two of the United States' stated goals for this position are to "[m]itigate public health risks and reduce black carbon output in Arctic communities" and "[t]arget short-lived climate pollutants through reductions in black carbon and methane emissions."¹³⁹ In order to accomplish this as chair, the United States should encourage exchanging lessons and best practices for limiting agricultural fires and support funding for improving monitoring and reduction of black carbon from open burning.¹⁴⁰ In addition, the United States should lead the adoption of a resolution that would ban ships from using heavy fuel oil, which creates black carbon emissions, in the Arctic.¹⁴¹ This ban would follow a similar ban that already exists for ships traveling in Antarctica and would have the added benefit of reducing oil spills in this sensitive region. Taking action to reduce black carbon emissions from shipping is essential because of the rapidly increasing traffic in the Arctic; the Northern Sea Route experienced a 10 fold increase in traffic from 2010 to 2012.¹⁴² Moreover, by 2025, shipping transits in the U.S. Arctic are projected to increase between 100 and 500 percent.¹⁴³ Finally, the United States must push for an end to flaring or, at the very least, the use of efficient, steam-aspirated flares to reduce almost all black carbon emissions from flaring.¹⁴⁴





REDUCE HFCs FROM REFRIGERATORS, AIR CONDITIONERS AND OTHER SOURCES

Hydrofluorocarbons (HFCs) became prevalent as an alternative to chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs), which deplete the ozone layer. HFCs are refrigerants used in air conditioners, refrigerators, foams, solvents, aerosols and fire suppressants to replace CFCs and HCFCs. While HFCs do not destroy the ozone layer like CFCs and HCFCs do, HFCs have another problem in that they contribute to climate change. In 2013, HFCs were responsible for over 150 million metric tons of carbon dioxide equivalent, up from almost nothing in 1990.¹⁴⁵ Refrigeration and air conditioning make up the majority of HFC emissions with aerosols and foams also being major sources.¹⁴⁶ As the Clean Air Act and Montreal Protocol worked to protect the ozone layer by encouraging the phase out of these substances, they also inadvertently encouraged the use of HFCs. For this reason, HFC emissions are increasing rapidly -- they are expected to nearly double within the next five years and triple within the next 15 years.¹⁴⁷ While alternatives to HFCs exist,¹⁴⁸ federal requirements are necessary to force companies to switch.

The EPA Has Used Its Authority to Initiate Reductions in HFC Emissions

Two sections of the Clean Air Act provide the authority for the EPA to address HFC emissions. First, section 608 regulates the use and disposal of ozone-depleting substances or their substitutes, which would include HFCs that are used in appliances or industrial process refrigeration as refrigerants.¹⁴⁹ The law prohibits anyone from knowingly releasing these substances when they service or dispose of an appliance or industrial process refrigeration unless the EPA determines that doing so would not pose a threat to the environment.¹⁵⁰ In addition, section 612 of the Clean Air Act requires that the EPA assess alternatives to

HFCs currently being used on a continual basis.¹⁵¹ The goal is to replace HFCs with other substances that are less harmful to the climate and provide a lower risk to the public.

The EPA has already used this authority to approve alternatives to high-global warming potential HFCs under its Significant New Alternatives Policy Program. The SNAP Program implements section 612 by evaluating alternatives to products that produce harmful warming pollutants and then approving ones for use that present a lower risk with the goal being to encourage a smooth transition to these safer alternatives. On an ongoing basis, the EPA reviews the list of acceptable alternatives and issues updates based on new information. The SNAP rule issued in July

2015 removed certain HFCs that contribute to global warming from the list of acceptable ones based on the fact that alternatives were available that present a lower risk to public health and the environment.¹⁵² The rule impacts HFCs used in aerosols, foam blowing, motor vehicle air condition, vending machines and retail food refrigeration.¹⁵³ The EPA estimates that these changes will avoid about 26 to 31 million metric tons of carbon dioxide equivalent (MMTCO₂eq) in 2020, about 54 to 64 MMTCO₂eq in 2025, and then up to 101 MMTCO₂eq in 2030.¹⁵⁴ The EPA's listings under the SNAP program have been a good start, but the EPA must continue to expand the program to have a much more significant impact on HFC emissions.

Mandating Greater Mitigation of HFCs is Technically and Legally Possible

The EPA could extend and expand its existing programs and rulemakings to further reduce HFC emissions. First, as statutorily mandated, the EPA should continue to update the SNAP program by delisting HFCs when alternatives that are safer for the climate become available.¹⁵⁵ New chemicals are continually coming onto the market that do not have as much of a warming impact, so the EPA will need to ensure that the SNAP program stays current to force all companies to adopt

The EPA could extend and expand its existing programs and rulemakings to further reduce HFC emissions.

these technologies.¹⁵⁶ When the EPA issues these updates, it should make sure the delisting dates are as soon as possible. Some low-GWP alternatives for some end uses are already available, so some delisting dates should be immediate.¹⁵⁷ The SNAP program should also cover additional sources of HFCs, including industrial refrigeration, air conditioning and fire suppression, which are not currently included even though low-GWP alternatives exist.¹⁵⁸ The EPA should begin an additional rulemaking to change the status of certain HFCs with high warming potential used in these products.¹⁵⁹

Second, the EPA can improve the impact of its HFC regulations by extending the requirements for the servicing and disposal of air conditioning and refrigeration equipment as authorized under section 608 of the Clean Air Act. This extension would result in the release of fewer HFCs into the atmosphere.¹⁶⁰ The EPA should increase initiatives for the reclamation and recycling of HFCs, which would also reduce the amount of HFCs released into the atmosphere.¹⁶¹ The result would be the use of fewer virgin HFC compounds until they are able to be phased down.¹⁶²



Photo: Kate DeAngelis

Photo: U.S. National Parks Service



KEEP PUBLIC FOSSIL FUELS IN THE GROUND

The Obama administration's climate policies have neglected the primary source of greenhouse gas emissions: fossil fuel extraction. The Department of the Interior is responsible for leasing public fossil fuels located on 960 million onshore acres and more than 1.7 billion offshore acres of federal lands and waters.¹⁶³ Approximately one quarter of fossil fuel production in the United States occurs on lands and waters managed by the federal government on an annual basis.¹⁶⁴ Leasing publicly-owned coal, oil and natural gas to private corporations has resulted in billions of tons of carbon pollution and degraded millions of acres of public land and ocean. By keeping these fossil fuels in the ground, the Obama administration could set an important precedent in the global fight to combat climate disruption while also safeguarding the nation's natural heritage.

Federal Fossil Fuel Leasing Has a Significant Carbon Footprint

Any further development of public fossil fuels locks the nation into a carbon-intensive future. To date, the Obama administration has leased nearly 15 million acres of public land and 21 million acres of ocean for fossil fuel development.¹⁶⁵ In total, more than 67 millions acres of public lands and oceans -- an area 55 times larger than Grand Canyon National Park -- are already leased to the fossil fuel industry and contain up to 43 billion tons of potential carbon pollution.¹⁶⁶ Unleased federal fossil fuels comprise as much as 450 billion tons, or nearly 50 percent, of the potential greenhouse gas emissions of all U.S. fossil fuels. According to the latest climate science, the world can only emit approximately 1,000 billion tons of carbon dioxide to avoid global warming, half of which was already emitted by 2011.¹⁶⁷ Altogether, the potential greenhouse gas emissions from federal fossil fuels, leased and unleased, add up to approximately equal the remaining half. Thus, each new federal fossil fuel lease opens new deposits for development that should be deemed

unburnable. By placing those deposits off limits, stopping new leasing would help align domestic energy policy with a safer climate future and global carbon limits.

The President Has Executive Authority to Stop New Federal Fossil Fuel Leases

Under existing federal laws, including the Mineral Leasing Act, Outer Continental Shelf Lands Act, Federal Land Policy and Management Act, and Surface Mining Control and Reclamation Act, the president has clear authority to stop new federal fossil fuel leases. The Mineral Leasing Act of 1920 governs leasing of federal onshore oil, gas, coal, oil shale and tar sands.¹⁶⁸ The Federal Lands Policy and Management Act of 1976 allows the president, acting through the Secretary of the Interior, to withdraw certain areas of federal onshore lands from fossil fuel leasing, provided that certain reporting and analysis requirements are met.¹⁶⁹ Under the Mineral Leasing Act, there is no legal requirement to offer particular leases for onshore fossil fuel development.¹⁷⁰ The Secretary of the Interior may withdraw federal lands from leasing activities under

the Federal Land Policy and Management Act in order to protect the quality and value of the land or if the benefits of withdrawal outweigh those of fossil fuel or mineral development. The president has authority to direct the Secretary of the Interior to temporarily defer leasing of any or all publicly owned fossil fuels under the Mineral Leasing Act or to withdraw particular areas of federal onshore lands from availability for leasing under the Federal Land Policy Management Act. For federal lands subject to surface coal mining, the Secretary of the Interior could declare the climate impacts of subsequent and foreseeable coal combustion as a criterion for unsuitability under the Surface Mining Control and Reclamation Act.

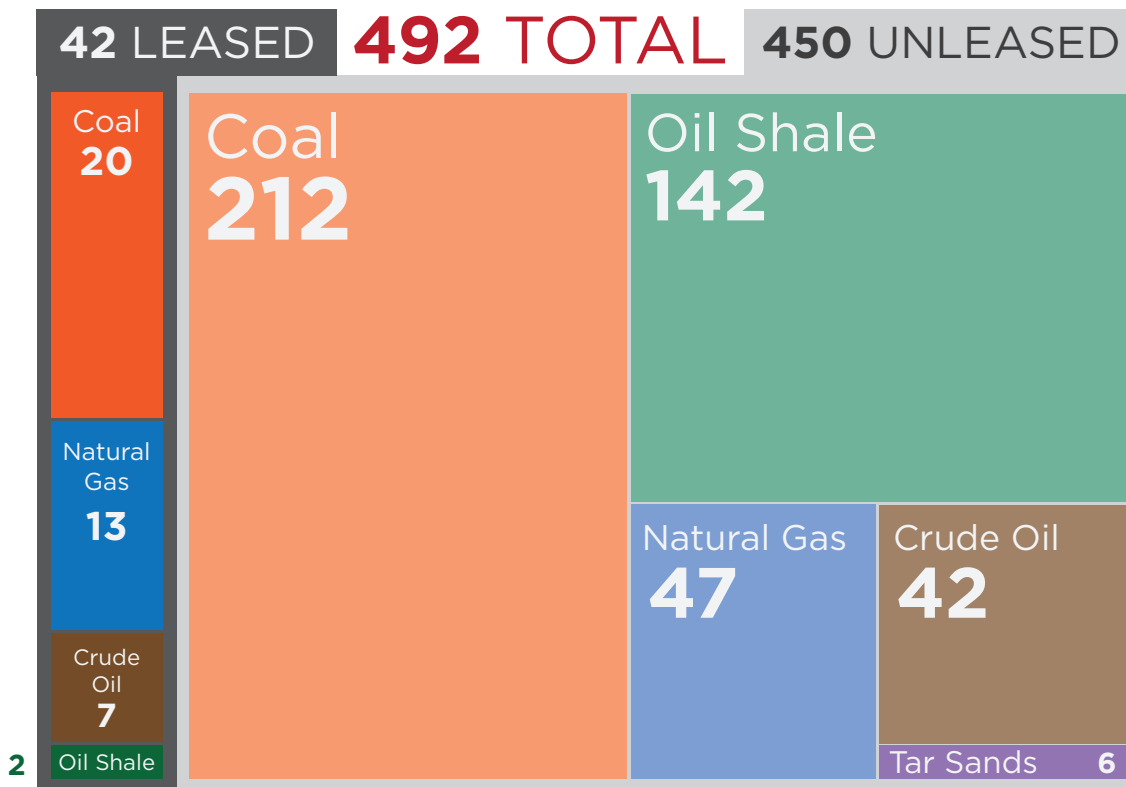
The Outer Continental Shelf Lands Act of 1953 governs leasing of the submerged lands of the Outer Continental Shelf and grants the president broad unilateral authority to withdraw them from federal leasing.¹⁷¹ The Act also authorizes the Secretary of the Interior to not issue leases if environmental concerns outweigh the potential for discovery of oil and gas,¹⁷² and under specified

circumstances may suspend, temporarily prohibit and eventually cancel development or production on a specific existing lease.¹⁷³

There are two other possible avenues of protection for federal lands and waters from leasing activities. The Antiquities Act grants the president authority to “declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments, and may reserve as part thereof parcels of land, the limits of which in all cases shall be confined to the smallest area compatible with proper care and management of the objects to be protected.”¹⁷⁴ Thus, President Obama may withdraw certain landmarks, structures and other objects of historic or scientific interest from availability for potential leasing by declaring them national monuments. Second, President Obama may direct the Secretary of the Interior to amend or revise land use management plans, or issue rulemakings that curtail federal fossil fuel leasing.

Potential GHG Emissions from U.S. Federal Fossil Fuels

Units in Gt CO₂e





INCORPORATE THE TRUE SOCIAL COST OF CARBON IN ALL FEDERAL DECISIONS

The U.S. government assesses the costs and benefits of major federal regulations affecting greenhouse gas emissions using the social cost of carbon, the estimated climate damage caused by one ton of carbon dioxide.¹⁷⁵ While this is a step in the right direction, a number of factors point to the government's social cost of carbon being significantly undervalued. Further, the government is not using the figure for a number of federal activities that have major climate impacts, such as procurement, leasing and extraction. Thus, despite its potential to influence government rulemakings, the social cost of carbon currently has only had a modest impact on federal policies.¹⁷⁶ A more accurate social cost of carbon used across a broader set of decisions -- beyond just rulemakings -- would capture the benefits of abandoning destructive extraction policies and taking stronger proactive mitigation measures.

The True Social Cost of Carbon Is Much Higher Than the Official Figure

The current social cost of carbon that the federal government uses in its rulemakings does not properly reflect the impact carbon pollution has on the country's public health and the environment. In 2013, President Obama's Interagency Working Group on Social Cost of Carbon, which has developed social cost of carbon values from integrated assessment models, revised their previous 2010 estimate of \$22 to \$37.¹⁷⁷ Although a significant increase, there is still a lot of room for improvement. Unfortunately, the government has been moving recently in the wrong direction. In July 2015, the Office of Management and Budget lowered the social cost of carbon from \$37 to \$36.¹⁷⁸

If the government wants to estimate the true impacts of carbon pollution regulations, it should use a more accurate social cost of carbon. A number of factors bias its estimate downward,

including incomplete estimates of included impacts (e.g., sea level rise, coastal storms), numerous omitted ones (e.g., ocean acidification, socio-economic conflict, wildfires, inland flooding, extreme drought, biodiversity loss, food and water price increases), and questionable ethical assumptions that artificially deflate its magnitude (e.g., high discount rates, a lack of equity weighting).¹⁷⁹ One study showed that the government either poorly quantified or completely failed to consider 29 different climate impacts.¹⁸⁰ Another study found that using discount rates more appropriate for long term intergenerational time horizons, rather than the higher rates used by the government, increased its social cost of carbon to as much as \$266 per ton, with similar effects on the social cost of carbon when damages to poor countries were weighted to reflect their income and consequent adaptation capacities.¹⁸¹ Yet even these figures could be too low because they fail to account for the costs of carbon pollution if the worst-case scientific predictions occur.¹⁸² If the

government were to take into account high climate sensitivity, high damages and a low discount rate, the social cost of carbon could be nearly \$900 per ton of carbon dioxide in 2010 and a staggering \$1,500 per ton in 2050.¹⁸³ By ignoring these factors the government is making imprudent decisions that will force the public and the country's economy to pay an even greater price in the future when the impacts of climate disruption become worse.

All Government Decisions Should Consider the Social Cost of Carbon

In addition to increasing the social cost of carbon, the price should be extended to the leasing of federal lands and waters and government spending. One estimate put the true social cost of federal coal leasing at 4.5 times the current market price for coal, meaning coal companies are placing the health and environmental costs of their extraction onto the American people.¹⁸⁴ Government agencies have the legal authority to add a carbon charge to internalize the lifecycle social costs of fossil fuel extraction on public lands and waters.¹⁸⁵ The Federal Land Policy and Management Act gives the federal government the authority to charge fees; while it has yet to exercise this authority, the law provides no prohibition on charges for environmental impact, and indeed encourages the government to manage public lands in a way that protects the environment.¹⁸⁶ Incorporating the social cost of carbon into leasing decisions, would demonstrate the economic unviability of fossil fuel extraction, forcing government agencies to choose not to lease these lands and waters and instead keep fossil fuels in the ground.

President Obama should expand the use of the social cost of carbon so it is a factor not just in major rulemakings, but also all federal decision making.

Further, the government should shadow price its own emissions by placing a hypothetical additional cost to the charged price of goods and services that emit carbon pollution in their supply chain.¹⁸⁷ If this surcharge were placed at the true social cost of carbon, it means that the government would consider climate impacts in its important decisions. This change could have a major impact on government procurement, which accounted for 15 percent of federal spending in 2012, up from 11 percent in 2000.¹⁸⁸ This spending adds up to a significant amount of money -- in 2012, all government agencies spent a total of \$500 billion on contracted products and services.¹⁸⁹ Such a move would help fulfill President Obama's executive order to reduce the government's carbon footprint by helping to rationalize green purchasing.¹⁹⁰ In addition, this shadow price would reflect the fact that energy efficiency retrofits and renewable power decisions make economic sense.¹⁹¹

President Obama should expand the use of the social cost of carbon so it is a factor not just in major rulemakings, but also all federal decision making. Currently, when the government spends money, it does not evaluate the impacts of those purchasing decisions on the environment. Considering the social cost of carbon for all federal decisions would force all agencies to account for the environmental and public health costs associated with climate change induced by burning fossil fuels.



Five years ago, a dike at TVA's Kingston power plant ruptured, spilling enough sludge to fill a football field nearly a half-mile high.

Photo: The Tennessean

CONCLUSION

This report lays out nine actions that President Obama could take with existing authority established by current law in order to reduce greenhouse gas emissions from the United States. These actions are just a few of the options available to President Obama to combat climate disruption, but they illustrate that possibilities for further action exist.

Domestic action in the United States serves as a basis for our climate commitments abroad. As world leaders prepare to head to Paris for international climate negotiations, the United States' international commitment is not in keeping with its fair share of climate action. As the world's largest historical emitter, the action that the United States takes will significantly impact the success of the negotiations. That is why it is particularly important that President Obama looks at the options available to him and uses them to strengthen his international commitment on climate change.

President Obama has taken important first steps with the finalization of rules to reduce carbon pollution from new and existing power plants, efficiency standards for vehicles and appliances, among other achievements. His climate legacy, however, will be measured not against the actions of his predecessors but against the scale of the problem. Unfortunately, his accomplishments so far pale in comparison to the severity of the problem and the emission reductions required.

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- 44 Clean Air Act, 42 U.S.C. § 7571(a)(2)(B)(ii). The Clean Air Act also preempts states from promulgating their own aircraft emissions standards unless they are identical to or more stringent than the federal standard. *Id.* § 7573. In setting environmental standards for aircraft, the EPA must consult the Federal Aviation Administration. *Id.* § 7571(a)(2)(B)(i).
- 45 Control of Pollution from Aircraft and Aircraft Engines, 38 Fed. Reg. 19,088 (July 17, 1973).
- 46 Proposed Finding that Greenhouse Gas Emissions from Aircraft Cause or Contribute to Air Pollution that May Reasonably Be Anticipated to Endanger Public

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- 53 RICHARDSON, *supra* note 42, at 15–16.
- 54 The EPA should establish a minimum standard for new aircraft that improves their fuel efficiency by 2-3 percent annually. Hausker, *supra* note 40, at 12.
- 55 See Greenhouse Gas Emissions and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles -- Phase 2, 80 Fed. Reg. 40,138 (July 13, 2015), available at <http://www.gpo.gov/fdsys/pkg/FR-2015-07-13/pdf/2015-15500.pdf>.
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