S. HRG. 112–478

GAS PRICES IN THE NORTHEAST: POTENTIAL IMPACT ON THE AMERICAN CONSUMER DUE TO LOSS OF REFINING CAPACITY

HEARING

BEFORE THE

JOINT ECONOMIC COMMITTEE
CONGRESS OF THE UNITED STATES

ONE HUNDRED TWELFTH CONGRESS

SECOND SESSION

APRIL 26, 2012

Printed for the use of the Joint Economic Committee

U.S. GOVERNMENT PRINTING OFFICE

74–323 WASHINGTON : 2012

For sale by the Superintendent of Documents, U.S. Government Printing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512–1800; DC area (202) 512–1800
Fax: (202) 512–2104 Mail: Stop IDCC, Washington, DC 20402–0001

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THURSDAY, APRIL 26, 2012

CONGRESS OF THE UNITED STATES,
JOINT ECONOMIC COMMITTEE,
Washington, DC.

The committee met, pursuant to call, at 2:37 p.m. in Room G–50 of the Dirksen Senate Office Building, the Honorable Robert P. Casey, Jr., Chairman, presiding.

Senators present: Casey and Toomey.

Representatives present: Brady, Burgess, and Duffy.

Staff present: Conor Carroll, Gail Cohen, Cary Elliott, Will Hansen, Colleen Healy, Patrick Miller, Ted Boll, and Robert O'Quinn.

OPENING STATEMENT OF HON. ROBERT P. CASEY, JR., CHAIRMAN, A U.S. SENATOR FROM PENNSYLVANIA

Chairman Casey. Well thank you, everyone. The Committee hearing will come to order. I'm sorry I'm so late. I'll do an opening statement, which I'll go through with great speed, and then we'll go to our Vice Chair.

I want to thank everybody for being here. Today's hearing is focused on the impact that closures of petroleum refineries serving in the Northeast could have on prices at the pump in the Mid-Atlantic and New England regions. Since September 2011, two refineries in the Philadelphia area, and one, I should say, a major Caribbean export refinery supplying the East Coast, have in fact closed.

Additionally, a third Philadelphia area refinery is slated to shut down this summer. In addition to the immediate impact on gas prices, we will explore at this hearing the long run cost to the economy associated with higher gasoline prices, as well as the actions that can be taken to encourage the adoption of cleaner, cheaper alternatives to petroleum, such as natural gas.

When the situation remains—I should say while the situation remains fluid, with the potential sale of the three Philadelphia area refineries, I'm concerned that the Northeast is losing needed refining capacity. I'm especially concerned that this loss in refining capacity is happening at a time when consumers are already facing rising gas prices.

With limited pipeline capacity to import from the Gulf Coast, this loss of refining activity in the Northeast will increase the region's

dependence on European gasoline and diesel, and lead to higher prices for consumers. A recent Energy Information Administration report detailed the possible consequences of this reduction in refining capacity, which include greater price volatility and potential shortages in the Northeast.

I am focused, as I know so many people here are, on ensuring that changes in refining capacity in the Northeast have as little impact as possible on energy prices, on jobs in our communities, and on the economic recovery. I've urged the administration to become directly involved in this issue. I met with workers at the three Pennsylvania refineries, Philadelphia, Trainer and Marcus Hook, to discuss the impact shuttering the refineries would have on the workforce.

Together, these refineries represent half, half of the refining capacity in the northeastern United States. I'd like to recognize representatives from the United Steel Workers Local 10–1, Local 10–901, and Local 10–324, who are in the audience this afternoon. Also attending today's hearing are members of the International Brotherhood of Boilermakers, Local 13, and Steamfitters Local 420.

Closure of these facilities would likely mean that the Northeast region will experience a decrease in the supply of ultra low sulfur diesel, so-called ULSD. At the same time, there will be an increase in demand for ULSD, as both a transportation fuel and for home heating. With closure of the northeastern refineries' refining activities will be centralized in the Gulf Coast region. This will affect the price of gasoline, diesel and heating oil, and lead to potential shortages of these fuels in the Northeast.

An earlier prolonged cold spell next winter could send home heating prices skyrocketing, further hitting consumers. Today gas prices are pushing $4 at the pump, well ahead of the summer driving season. We're facing higher prices, despite the fact that U.S. production of oil is at its highest level since 2003. For the first time in a decade, the U.S. is importing less than half of the oil we use.

Yet with only two percent of the world's proven oil reserves, there's little impact the United States can have on the price of oil, which is set by the supply and demand in the global marketplace. Focusing on U.S. demand for oil offers more promise. The United States consumes more than 20 percent of the world's oil. Our dependence on oil to meet transportation needs leaves consumers with few choices, making them vulnerable to oil and gasoline price rises.

By promoting policies that reduce our dependence on foreign oil, the United States can help to reduce global demand for oil, and ultimately, ultimately prices. If oil accounted for a smaller share of our energy needs, the U.S. economy and American consumers would be less vulnerable to price spikes in the oil market.

It's clear that we need to accelerate natural gas development and use. Natural gas is produced right here at home, creating jobs. It's a clean source of energy, lower emissions than traditional gasoline. Finally, it's cheap. Converting vehicles, especially commercial vehicles to run on natural gas could play a role in the move to a cleaner energy alternative.

In the coming weeks, I'll introduce legislation that provides states with both the funding and the flexibility to develop initia-

tives that (1) encourage use of natural gas as a transportation fuel and (2), encourage public and private investment in natural gas vehicles and transportation infrastructure.

These actions will encourage the use of natural gas, while reducing our dependence on petroleum and our vulnerability to oil price spikes. We have a terrific group of witnesses today, with wide expertise on energy issues and I look forward to hearing from them. But first, we'll hear from the Vice Chair of the Joint Economic Committee, Congressman Kevin Brady.

[The prepared statement of Chairman Casey appears in the Submissions for the Record on page 32.]

OPENING STATEMENT OF HON. KEVIN BRADY, VICE CHAIRMAN, A U.S. REPRESENTATIVE FROM TEXAS

Vice Chairman Brady. Well thank you, Chairman Casey for calling today's hearing. It's most appropriate, in light of high gasoline prices and a White House energy policy that's truly coming home to roost. While the President has touted "all of the above" energy policies, the actual policies have been anything but that.

They've been decidedly unfavorable to America's energy manufacturing industry, and that's true for crude oil production as well as refining. The administration has thwarted oil and gas development on federal lands and offshore, and imposed a hasty and prolonged moratorium in the Gulf of Mexico on drilling, and then hindered resumption of exploration through slow permitting.

Most recently, it's denied increasing the assured and safe supply of crude oil from our ally, Canada, through the Keystone pipeline to American refineries. The President also risks the jobs of American energy workers, by threatening punitive tax treatment of energy manufacturing, for example, by singling this sector out, and rescinding incentives to encourage job creation and manufacturing here in America.

Why is energy manufacturing different than any other form of manufacturing? Why are these good-paying energy jobs deemed expendable by the White House, and why is the President himself pushing taxes, encouraging energy companies to send their jobs overseas? This manufacturing deduction, by the way, is an important incentive to refining, and will further make these projects less economically viable if the President has his way.

The administration is also pursuing policies that will shrink and punish petroleum refining, both by forcing it to blend in alternative fuels, even when they do not yet exist, by mandating ever more stringent emission standards, even when the costs are huge and the benefits uncertain. America is experiencing an energy revolution, with the potential to become the largest energy-producing country on the planet.

Let's be clear. The rise in energy manufacturing driven by new technology is occurring on private lands, not federal lands. In fact, at President Obama's request, his administration has launched a flurry of regulatory attacks on oil shale development in America, leaving the country to pray that Washington will not smother the technology in the crib with more layers of regulation.

Senator Lisa Murkowski, in a recent editorial entitled "America's Lost Energy Decade," pointed out that in 2002 the U.S. Senate de-

cided against opening a small section of the Arctic National Wildlife Refuge to oil and gas production. The most cited reason at the time was that it would take too long, ten years, for the oil to reach the market.

Now, ten years later, the White House is pleading with Saudi Arabia to produce more oil, when we could be controlling our own supply. Senator Murkowski correctly concluded that long lead times should be a reason to approve drilling quickly, not to continue putting it off.

Other non-OPEC countries do not lock away their resources, not even pristine Norway, which is the world's seventh largest exporter of oil, and second largest exporter of natural gas. Our regulatory tale is one of self-inflicted wounds, cutting off our nose to spite our face. This country is blessed with resources that can be developed, produced and processed safely and cleanly, to support economic growth and technological development, which in turn will position us to further advance the state of the environment.

All of this is critical to ensuring that America continues to have the strongest economy in the world throughout the 21st century. Refinery closures and job losses are painful, but even more so when our own government's policies contribute to them. Americans want to balance a healthy economy with a clean environment. They don't want their factories shut down effectively by order of the government, and products brought into the country from places that are much less environmentally committed than we are in the United States.

Regulators need to take a rational, balanced approach, that recognizes that ignoring economic consequences hurts the very citizens and workers whose welfare they are charged to protect. First, our regulatory mechanism at least needs to be functional. It makes no sense whatsoever to impose blending requirements on refiners for cellulosic ethanol that doesn't exist in requisite quantity, and then fine them for not using it. It makes no sense to push corn ethanol consumption to a level that invalidates our car engine warranties. It makes no sense to impose sulfur content limits on gasoline, that actually may increase CO_2 emissions, when the EPA is trying to reduce those emissions as well. These are unforced policy errors we can't afford to commit, especially in this struggling economy.

Second and more fundamentally, the administration, lawmakers and regulators must ask themselves if they're pursuing radical solutions that may never come to fruition, while missing opportunities to push steady and certain improvements. Are they provoking protracted lawsuits and delaying projects? Are their actions causing older, more polluting equipment to stay in place longer, and are they driving America's firms out of business and costing us jobs, while inviting more dependence on foreign countries with worse pollution records?

Regulations should facilitate the market's functioning, neither treating private enterprise as an adversary, nor pressing for preconceived outcomes in one sphere, while ignoring collateral damage in the other. Devising good regulatory policy doesn't have to be intensely adversarial. It can be more collaborative, engage in incentives to the private sector, and above all be mindful that it ought

to serve economic growth and technological development, the ultimate sources of better living standards.

Like the Chairman, I look forward to hearing our witnesses' testimony and probing their ideas for better regulation of oil refineries and in general. I yield back.

[The prepared statement of Representative Brady appears in the Submissions for the Record on page 33.]

Chairman Casey. Thank you, Vice Chairman Brady. What I'll do now is introduce each of the witnesses by way of their background and biography, and then I'll start with Dr. Moss for her testimony. Let me say two things. Number one to the witnesses, and to the audience, once again I apologize for being late. I thought the mark-up I was in would be about 12 minutes shorter than it was.

Secondly, if you can keep your testimony as close as possible to five minutes. If you go beyond that by a few seconds, nothing will happen. If you go beyond it by more, we'll probably start standing up and waving our arms, and we'll try not to do that.

But we're honored to have such a great panel. Dr. Diana Moss is Vice President, Director and Senior Research Fellow of the American Antitrust Institute. She specializes in the economics of antitrust, regulation and energy, and natural resources. Dr. Moss was a senior staff economist and coordinated campaign analysis in the Office of Market, Tariffs and Rates Division of the Corporate Applications, Federal Energy Regulatory Commission from 1995 to 2000.

She has published and spoken widely on energy regulation and antitrust issues, and is also an adjunct professor at the University of Colorado Department of Economics. Her Ph.D. in Mineral Economics was earned at the Colorado School of Mines in 1989. Dr. Moss, thank you for being here.

Second, Mr. Robert Greco is Group Director of Downstream and Industry Operations for the American Petroleum Institute or so-called API. In this capacity, he directs API's activities related to refining, pipelining, marketing and fuel issues. Over his 21 year career at API, Mr. Greco has managed exploration and production activities, policy analysis, climate change issues, marine transportation, refining, gasoline and jet fuel production issues and Clean Air Act implementation efforts.

Before API, he was an environmental engineer with the U.S. EPA, with expertise in automotive emission control technologies. He has an M.S. degree in Environmental Engineering from Cornell University, and a BA in Biology from Colgate University. Mr. Greco, thank you for being here.

Third, we have Mr. Thomas O'Malley. He currently serves as Chairman of the Board of Directors of PBF. Mr. O'Malley has more than 30 years of experience in the refining industry. He served as Chairman of the Board and chief executive officer of Petropolis, I'm sorry, Petro Plus Holdings AG from 2006 until February 2011.

Mr. O'Malley was Chairman of the Board and chief executive officer of PREMCOR, Incorporated, a domestic oil refinery, from February of 2002 until its sale to Valero in August of 2005. Prior to joining PREMCOR, Mr. O'Malley was Chairman and Chief Executive Officer of Tosco Corporation. He previously served as Vice

Chairman and Chief Executive of Salomon Brothers Oil Trading Division. Mr. O'Malley, thank you for being with us.

Dr. Michael Greenstone is the 3M Professor of Environmental Economics at the Massachusetts Institute of Technology. He's also a senior fellow in Economic Studies and Director of the Hamilton Project. Previously, Dr. Greenstone served as chief economist for the President's Council of Economic Advisers under President Obama.

Dr. Greenstone's academic work is focused on identifying government's appropriate role through regulations, taxes or spending in a market economy. Dr. Greenstone became a member of the Environmental Economics Advisory Committee of EPA's Science Advisory Board in 2003. In 2004, he received the 12th Annual Kenneth J. Arrow award for best paper in the field of health economics.

He received a Ph.D. in Economics from Princeton University in 1998, and a B.A. in Economics from Swarthmore College, Mr. Toomey and I know where that is, in 1991. So Dr. Moss, you're first. Thank you.

STATEMENT OF DR. DIANA MOSS, VICE PRESIDENT, AMERICAN ANTITRUST INSTITUTE, WASHINGTON, DC

Dr. Moss. Thank you. I would like to thank Chairman Casey and the members of the Joint Economic Committee for holding this hearing. It is an honor to appear here today. My testimony raises competitive issues relating to refinery closures in the Northeast, and their potential impact on refined petroleum product prices.

As a preliminary matter, it is important to consider the backdrop against which refinery closures are occurring. First, the Northeast is a unique area relative to other parts of the U.S., with few refineries, high refining market concentration and a significant dependency on imports of petroleum products.

Second, it is important to recognize that domestic prices are not entirely determined by OPEC. Crude oil accounts for about 70 percent of the price of gasoline at the pump, but downstream activities, such as refining, terminaling and storage, and retail marketing and distribution, make up 15 percent.

So the U.S. has little control over cartelized crude prices. Activities that we can control domestically account for a not insignificant proportion of gasoline prices. Let me briefly highlight a number of competitive issues that arise from refinery closures. The first is refining market concentration.

With the closure of the Marcus Hook, Philadelphia and Trainer refineries, there will be between a 40 and 50 percent loss in refining capacity in PADD 1, between 2011 and mid-2012. Much like mergers, refinery closures can affect the distribution of refinery ownership. For example, concentration, as measured by the Herfindahl Index, in PADD 1 was about 3,300 at the end of 2010, and will increase to around 4,000 by mid-2012.

By antitrust standards, such a market would be unconducive to competitive outcomes. Three firms controlled about 90 percent of capacity in 2011, but only two firms will control about 90 percent of capacity by mid-2012 after all of the closures are completed. This represents a major structural change in the northeast refining market.

High concentration in bottleneck industries can raise concerns over the exercise of market power. For example, firms acting alone or in coordination with rivals may have a greater ability and incentive to withhold output in the short run, or capacity additions in the long run, to drive up prices. A second consideration is the possible of vertical foreclosure, or that integrated refiners could possess the ability and incentive to exclude their downstream rivals, such as wholesalers and retailers from the market, thereby raising prices.

Higher concentration in refining and in wholesaling increases this possibility. Here, I note that in addition to increases in refining concentration, wholesale market concentration has also increased in some PADD 1 states such as Pennsylvania.

A third consideration is the impact of refining closures on the transportation network. In 2010, PADD 1 imported 72 percent of its petroleum needs, much of which came from the Gulf Coast, and some from imports from abroad. With less refining capacity available to self-supply within the Northeast, imports will likely rise and supply chains will lengthen, to bring in imports from more remote sources.

Longer supply chains are more fragile or prone to disruption or collapse, and may magnify the effects of market power that is exercised at concentrated bottlenecks along the way. The questions I raise do not imply that there is or there is sure to emerge a competitive problem associated with refinery closures. In fact, prices may rise in response to natural economic conditions, such as the need to bid supplies away from other lucrative markets, from capacity constraints on transportation networks, or from the costs of upgrading or expanding the network.

In fact, some factors may also mitigate competitive concerns. For example, vertical integration in PADD 1 has declined over the last several years, as firms spin off assets to concentrate on more profitable activities. But the fact remains, two refiners will control the market, one of which is vertically integrated, and that continues to be of concern.

Refinery utilization rates are also relatively low right now in the Northeast, making a potential withholding strategy less probable. But utilization rates jumped from 56 percent to 72 percent between the end of 2011 and the beginning of 2012, after the Marcus Hook and the Trainer closures, and they may further rise, in light of constraints on bringing in more supplies from outside PADD 1, and in light of declining investment in refining.

In sum, it would be prudent for policymakers to be prepared to address a number of developments in the Northeast. This includes tight refining capacity and strategic competitive behavior, particularly involving refiners that control large shares of capacity, marginal capacity that sets the price.

Policy responses to high gasoline prices would consider prices, output, innovation, but also economic growth, equity and national security. If competitive issues appear to be playing a role in the aftermath of closures, it will be important to scrutinize carefully for further M&A activity in the Northeast. Moreover, some potentially anti-competitive behavior such as withholding to drive up prices is beyond the reach of the antitrust laws.

[The prepared statement of Dr. Diana Moss appears in the Submissions for the Record on page 34.]

Chairman Casey. Dr. Moss, thank you. That was only 27 over. That's good. Mr. Greco, thank you for being here.

MR. ROBERT GRECO, GROUP DIRECTOR OF DOWNSTREAM AND INDUSTRY OPERATIONS, AMERICAN PETROLEUM INSTITUTE, WASHINGTON, DC

Mr. Greco. Thank you. Good afternoon, Chairman Casey, Vice Chairman Brady, members of the Committee. My name is Bob Greco and I'm Downstream Group Director for API. Thank you for the opportunity to testify today. API represents more than 500 companies engaged in all aspects of America's oil and natural gas industry. The industry supports 7.7 percent of our economy, 9.2 million jobs, and millions of Americans who hold ownership stakes through pension funds, retirement accounts and other investments.

Refineries are critically important to our nation. They make the fuels that virtually all Americans use and that drive our economy. They contribute to our energy and national security, and they provide jobs for tens of thousands of Americans and substantial revenue to local, state and federal governments.

The recent refinery closures in the northeastern U.S. are of great concern. They have the potential to impact families, communities and other manufacturing industries, and to reduce tax revenues. We very much regret that. It's also important, however, to understand the reasons why refining is such a challenging business, and why closures sometimes occur, and to also know that the refining industry is resilient and will continue to supply the products that all Americans need.

Refining is highly competitive. It is also historically been a low profit margin industry, faced with a heavy slate of regulations involving many billions of dollars in environmental investments and compliance costs. Because of these and other factors, some refineries, often after sustained periods of financial losses, have had to shut down.

About 75 U.S. refineries have closed since 1985. As this has happened, however, the remaining larger, more efficient facilities have expanded capacity, so that total U.S. refining capacity has actually increased by 13 percent. The ability of our industry to add capacity and deliver larger amounts of gasoline and other products over a flexible distribution network, and also to draw on imported products when necessary, will help us continue to provide Americans the fuels they need.

The higher prices we see now have also been a challenge for our refineries. Rising global demand and Middle East tensions have pushed the cost of crude oil higher. The cost of crude oil is the single biggest factor in the price of gasoline, accounting for about three-quarters of the pump price, excluding gasoline taxes, and is the largest cost incurred by refineries.

Refiners have struggled to pay these higher raw material costs to make products for Americans, at a time when demand has been relatively weak because of (1), the recession, and (2), the federal ethanol blending mandate. This has severely pushed down margins and has negatively affected the refining sector.

Refining is a difficult business, but we can make better energy policy choices that can help the industry remain a reliable, stable supplier of affordably-priced fuels and keep its workers employed. Good policy choices means sensible regulations, fair tax policies and sufficient access to the crude oil from which all refined products are made.

Decisions made in Washington, D.C. are a big part of this equation, but so are those made by local and state governments, such as state requirements for ultra low sulfur home heating oil. Excessive rules can raise costs and make it harder for our refineries to compete and stay in business.

Policies such as those embraced by the current administration, that limit crude oil production in the United States, or prevent ready supplies from being imported from Canada, put upward pressure on crude oil prices, that eventually affected refineries and those who consume the gasoline, diesel and other products they make.

That's why we've been calling on the administration for a change of course. We've urged them to expand access to America's vast oil and natural gas resources on public lands, that could also add supplies to markets and put downward pressure on prices. We've urged them to approve the Keystone Xcel pipeline, which could deliver from Canada very large additional quantities of crude oil to U.S. refineries that serve U.S. consumers.

We've called for more sensible, cost-effective regulations, that show a practical regard for potential impacts on the industry, its employees and those who depend on the products they make. We've asked the EPA in particular to reconsider a virtual blizzard of new, poorly thought-out or unnecessary rules affecting our refining sector including, for example, a rule that forces refiners to blend into gas with advanced biofuels that do not yet exist, or pay a fee for doing so.

Another example is the fuel changes being considered by EPA in its Tier 3 rulemaking. These potential requirements have yet to be justified, but they could threaten to increase fuel manufacturing costs, increase refinery greenhouse gas emissions, and make U.S. refineries less competitive with foreign refiners.

And we've challenged billions of dollars in proposed tax increases on an industry that already pays vast sums to the government, at far higher effective tax rates than most other industries. In conclusion, America's refineries are a critical part of the nation's industrial bedrock, and part of the fabric of the communities in which they operate.

They make products that are absolutely indispensable to America, they are vital to our national security. Our policymakers must understand this, for this vital sector of our economy to continue serving America as best as it can. Thank you.

[The prepared statement of Mr. Robert Greco appears in the Submissions for the Record on page 39.]

Chairman Casey. Thanks, Mr. Greco.

Mr. O'Malley.

MR. THOMAS D. O'MALLEY, CHAIRMAN, PBF ENERGY, PARSIPPANY, NJ

Mr. O'Malley. Chairman Casey, Vice Chairman Brady and members of the Committee, thank you for giving me the opportunity to testify at today's hearing on some of the factors that led to the refinery closures in the Northeast, and hopefully I'll be able to say something about leading to the reopening of these refineries in the Northeast.

PBF Energy owns three refineries with a total capacity of about 540,000 barrels a day. Two of these refineries are located in the Northeast, one in Delaware and one in New Jersey. The Delaware refinery was taken over from Valero in 2010 in a closed-down state. We spent several hundred million dollars to fix it and reopened it. The Paulsboro refinery was also bought from Valero in 2010, and was in danger of being closed. Both of these refineries are supplying crude oil products to the U.S. East Coast.

The third refinery we own is in Toledo, Ohio, and has operated on a continuous basis since we acquired it from Sunoco in 2011. We employ, including direct employees and contractors who work at the facilities, about 2,000 people. The recent refinery closures that have occurred or are currently pending are the tip of an iceberg.

If fuel substitutions, from 2012 to 2022 mandated under the Energy Independence and Security Act of 2007 are maintained, we will lose over that time period an additional ten percent minimum of U.S. refining capacity, and thousands of high-paying jobs that this important industry provides.

The 1,400,000 barrels a day of renewable fuels, over and above the 2011 mandate will, we believe, be far more expensive than the oil products coming from refineries.

When you combine this with what can only be described as an aberrant administration of the 2007 Act, particularly on renewable identification numbers (RINS) by the Environmental Protection Agency, it's easy to come to the conclusion that the U.S. government will drive refining companies out of business.

This extra fuel substitution has no basis in economic reality, and is marginal in terms of environmental improvement. The Act of 2007 may have seemed good policy in 2007, but it sure isn't today.

If bio and renewable fuels manufacturers can produce on a superior economic basis to hydrocarbon fuels, they should do so. They should take market share, but the old fashioned way, through better quality, better price and without government mandates or subsidies.

Indeed, as the gentleman from the API said, we are on a road that may in fact get us to energy independence. But it's going to come from more production of hydrocarbons, and not taking corn out of the food chain and turning it into ethanol or some other dream process that doesn't exist on an economic basis, to make advanced biofuel at great cost to the consumer.

The other government action that will close more refineries and raise the price of fuel is the EPA plan for Tier 3 gasoline. The industry will have to spend billions of dollars to comply, money which independents, who now control 60 percent of the capacity in this country, probably don't have. Why are they doing this? To lower the sulfur content from 30 parts per million to 10 parts per million.

Under this Tier 3 plan, the total sulfur removed from PBF's gasoline production of about 4.5 billion gallons per annum, would be less than one-eighth of what one 500 megawatt coal-fired power plant emits in a year. You have several of those plants not so far from here. Is this good policy in a weak economy, where it helps to kill one of our last heavy industries, that provides high-paying jobs and meets the needs of the population?

The hearing is focused on the impact of potential closures of petroleum refineries serving the Northeast, and the effect on prices. But this is not just a problem in the Northeast. It's a problem for the nation. In the short, medium and long-term, it is my view that these closures will lead to higher prices than if those refineries were operating. In certain circumstances, we could see dangerous shortages develop, which could lead to severe economic disruption in the Northeast.

In conclusion, we need to see an adjusted government policy that seeks to maintain this important strategic manufacturing industry, and not a series of policies and laws that destroy it. Removing the 2007 renewable fuel mandate, eliminating the mandate for ten percent ethanol in gasoline, and holding EPA back from an aggressive stance on Tier 3 gasoline specifications, would in my view lead to a reopening of some of the closed refineries and long-term employment for thousands of workers in the Delaware Valley.

Fault cannot be placed on either the Democrats or the Republicans. This is just a combined policy that hasn't worked and should be changed. Thanks for taking the time for inviting me, and the courtesy of listening.

[The prepared statement of Mr. Thomas D. O'Malley appears in the Submissions for the Record on page 41.]

Chairman Casey. Thank you, Mr. O'Malley. Dr. Greenstone.

STATEMENT OF DR. MICHAEL GREENSTONE, DIRECTOR, HAMILTON PROJECT, 3M PROFESSOR OF ECONOMICS, MIT, WASHINGTON, DC, AND CAMBRIDGE, MA

Dr. Greenstone. Thank you, Chairman Casey, Vice Chairman Brady and members of the Committee for the opportunity to speak today. The potential closure of petroleum refineries on the East Coast have led to speculation that energy prices may rise, possibly dramatically in some instances.

I think this hearing provides an opportunity to consider our energy choices more broadly. Any consideration of our energy system must recognize that we're in the midst of a natural gas revolution.

This is perhaps best illustrated by the figure to my left, which reports the ratio of petroleum to natural gas prices on an equal energy content basis. What's really amazing about the chart is for the 25 years, from roughly 1980 to 2005, the ratio was two to one.

Then beginning in about 2005, our natural gas production began to increase, a lot of it in your home state of Pennsylvania, and you saw this ratio changed dramatically. Now, the petroleum price is about six times the natural gas price. This practically unprecedented change in the ratio of oil to natural gas prices presents an incredible opportunity for the United States. It's creating economic opportunities around the country and over the longer term, I be-

lieve offers an opportunity to strengthen our energy security by reducing our dependence on petroleum.

Indeed, the first signs of a transition to increased reliance on natural gas in the transportation sector are beginning to emerge. But the key point is that this transition will not proceed optimally or quickly, unless we make proactive policy choices.

Specifically, one of the most challenging features of our energy system is that many of our energy choices involve what economists call externalities. That is to say, the choices individuals make about the production or consumption of a particular energy source impose costs on others, in the form of shorter lives, higher health care expenses, a changing climate and a constrained national security or weakened foreign policy.

The current energy playing field is tilted, because our individual energy choices are based largely on the visible costs that appear in our electric bills, and appear at the gas pump. This system masks the full or social costs arising from these energy choices. The second figure to my left helps to illustrate this.

If you take an example, look at coal, the private cost of producing a kilowatt hour of coal is in blue there, and it's about 3.2 cents per kilowatt hour. But if one were to account for external costs—health problems and the changing climate, for example—and use numbers from the National Academy of Science and from the United States government, the true social cost is 8.8 cents per kilowatt hour.

In contrast, the private cost of a kilowatt hour of electricity from a new natural gas plant is about 4.1 cents, and then if you were to add in the external costs such as health costs and the projected damages from changes in the climate, the full social cost is about 5.2 cents.

So despite the relatively low social cost of natural gas, industry and consumers have little incentive to change their energy choices. This is because coal, and in the transportation sector gasoline, are comparatively inexpensive when only their private costs are considered. A better approach to energy policy would involve a fairer competition between energy sources that placed them on a level playing field.

This would involve pricing carbon and other pollutants appropriately. I want to emphasize, though, that even in the absence of a national policy to price these external costs, there are still other policy options available. As an example, some existing U.S. policies aim to correct externalities in energy use in the transportation sector, but they don't treat natural gas fairly. That's something that's going to be illustrated in the Hamilton Project paper by my colleague, Chris Knittel from MIT, that will be released in June.

Let me just give you an example of some of the findings from that paper. So for example, the federal renewable fuel standard ensures that transportation fuels sold in the U.S. contain certain volumes of renewable fuels, but does nothing to encourage the use of natural gas.

The stated rationale behind the Act is to promote energy independence and security, and to favor clean fuel sources. Use of natural gas would clearly advance the mission of the Act, and until natural gas is included in the renewable fuel standard as a Con-

ventional Biofuel, it will be at a disadvantage to fuels such as ethanol.

Another example comes from electric vehicles, where we currently have large subsidies to the income tax code to purchase these vehicles. What that is missing is the fact that vehicles that run on compressed natural gas produce similarly low amounts of greenhouse gas emissions as electric vehicles, and yet they're not as privileged through the tax code.

Finally, there are also issues in infrastructure which require further analysis, with respect to bringing natural gas to the transportation sector. Without prejudging the outcome, I think it would be appropriate to study whether some targeted subsidies for the construction of natural gas refueling stations are justified.

Let me conclude by bringing this back to the subject of today's hearing. Periodically, the energy sector shows up in the headlines. Most often this is due to price spikes, like those that some project would occur in the Northeast following the potential closure of petroleum refineries, or due to environmental damages associated with energy production or consumption.

Our current energy policies encourage these problems rather than discourage them, by failing to allow all energy sources to compete on a level playing field. I would make respectfully two recommendations that would help to level the playing field.

The first is the federal government should price the external costs—that is the health, environmental and security costs—associated with the production and consumption of various energy sources. That reform would allow all energy sources to compete on a level playing field.

Second, if it's infeasible to fully price these external costs, then the forthcoming Hamilton Project paper makes a compelling case for putting natural gas on equal footing with renewable fuels under the Federal Renewable Fuel Standard, and by providing equal subsidies to electric vehicles and vehicles that run on compressed natural gas.

I'd like to thank the entire Committee once again for inviting me to participate in discussion, and I would be happy to entertain any questions.

[The prepared statement of Dr. Michael Greenstone appears in the Submissions for the Record on page 42.]

Chairman Casey. Thank you, Doctor, very much. We'll move to questions now. Before I do that, let me recognize a distinguished member of our audience. I'd like to recognize Congresswoman Donna Christensen, the United States Virgin Islands delegate to Congress. She's there, I think, in the first row. Thank you so much for being here.

She's here this afternoon and has written testimony that will be included in the official record of the hearing. The Virgin Islands has been directly impacted by the recent refinery closures, I should say. In February 2012 Hovensa, the U.S. Virgin Islands refinery, was shut down.

This refinery, which produced, I should say, 350,000 barrels per day, employed 2,000 workers. Half of the refinery's product was exported to the Northeast. For 45 years, the refinery was the Virgin

Islands' largest private sector employer. Now, it will operate as an oil storage facility and employ just 100 people.

Clearly, this economic hit for the Virgin Islands has been substantial, and the loss of refining capacity also affects consumers in the northeastern United States. I appreciate Congresswoman Christensen being here today, and I'm grateful she's offered us a perspective by way of her testimony.

[The prepared statement of Hon. Donna Christensen appears in the Submissions for the Record on page 46.]

Chairman Casey. Dr. Moss, I wanted to start with you. In a pertinent part on page three of your testimony, where you outline in the first paragraph so-called downstream activities, refining, distribution of refined products to storage terminals, wholesale and retail marketing, all of those under the umbrella of downstream activities, and you say that "these activities make up a not insignificant 17 percent of the final retail price of gasoline."

So I guess my first question is when it comes to that part of your testimony, and you consider that, and you also consider, as you observed, that the Northeast has the fewest number of refineries and the highest level of both market concentration and increase in concentration, how does that competitive situation in the northeastern United States compare to other regions of the country?

Dr. Moss. That's a good question. I think the comparison, if you look at the EIA's breakdown in terms of what makes up the final price of gasoline at the pump, that's an interesting breakout, and I think some of my colleagues here pointed out that some of that goes to taxes. Obviously, crude oil plays a, has a huge impact, along the lines of about 75 percent in making up the final price of gasoline.

My point is that we can't ignore what goes on in a downstream sector, by way of saying well, it's all driven by crude oil prices, because it's not. In large part, crude has a large impact on retail prices, but we do have control over the downstream part of our industry, that occurs under our own domestic roof.

If there is competitive mischief or anti-competitive mischief that evolves from a very highly concentrated refining sector, and incentives that are created for firms to behave strategically, even a 15 percent portion of the final gasoline price could account for significant price spikes.

So my message, I think, is that we can't rack this entirely up to factors outside of our control, meaning OPEC. We do have control over our domestic industry, what the structure of that industry looks like, and how competitive outcomes are in that industry. Compared to other regions of the country, this is very, very unusual, in terms of high refining concentration, wholesale concentration and the like.

So PADD 1 or the Northeast in particular provide a very unique competitive scenario or landscape against which we need to evaluate the possibility of price hikes.

Chairman Casey. Let me ask one more question in this round. We've worked very hard, a broad coalition of people in Pennsylvania, to be constructive in our engagement with the companies, to try to prevent the closures and try to maintain refining capacity, and literally maintain refineries in southeastern Pennsylvania.

Mr. Toomey and I and members of Congress in both parties have been working with and meeting with the employers, the workers and the unions representing those workers, a lot of people working together. I want to commend so many people for making that effort.

But one of the concerns that we have is that right now, there's an offer, several offers, but offers from outside groups which would operate refining operations, refining locations I should say, using those facilities not as refineries, but in this one case potentially operating it as a terminal.

I wanted you to comment on that, in terms of some of the consequences to operating one of the idled or closed refineries as a terminal, instead of keeping it as a refinery. Is there anything you can say with regard to that and the consequences?

Dr. Moss. Well, I obviously can't speak to the mechanics or the engineering aspects of converting refineries into terminals and storage facilities. But from a competitive standpoint, I think even that requires a fair bit of scrutiny. For example, if refineries are taken over to serve a fundamentally different purpose, we would want to know who's purchasing those facilities, to avoid any further concentration of terminaling and storage amongst a very small set of firms or suppliers in the market, which could in turn drive up wholesale market concentration.

I mentioned both refining market concentration and wholesale market concentration are important, particularly in this area where there are so few suppliers. So I think we would want to be very careful, through antitrust enforcement and investigations, to make sure that refining assets don't turn over in a way that exacerbates concentration and refining, and that terminaling and storage markets do not also become more concentrated, because they went to firms that have a dominant presence in the market.

Chairman Casey. Thanks very much. Vice Chairman Brady.

Vice Chairman Brady. Mr. Chairman, because we're told Senate votes start very quickly, with your permission, I'd like to call on Mr. Toomey, so that both of you can have a first round of questions.

Chairman Casey. Sure, thank you.

OPENING STATEMENT OF HON. PAT TOOMEY, A U.S. SENATOR FROM PENNSYLVANIA

Senator Toomey. Vice Chairman Brady, thank you very much for your kind accommodation of our voting schedule. I appreciate it. Senator Casey, thank you for leading this hearing, and I want to thank the witnesses, as well as the guests who are here today.

This is a very, very big deal in southeastern Pennsylvania. We've got thousands of families that are out of work, that are facing the possibility of losing existing jobs, and in many cases, with pretty grim prospects of getting back to work at comparable jobs.

So I think it's important that we understand a little bit better how we got here, and the prospect going forward. I am very concerned, for instance, with Mr. O'Malley's suggestion that this might be the tip of the iceberg. We currently have the hope that a new buyer could come in and operate the Philadelphia refinery.

We have a hope that the trainer facility could continue to operate as a refinery. But if Mr. O'Malley is right, and there are circumstances in place that jeopardize the future viability of refineries generally going forward, then all of this is in question.

So I want to touch on three areas in which I think the federal government in Washington is contributing to the problem. Now I'd be the first to acknowledge, there are many macroeconomic factors that contribute to pressure on the refining sector, on this industry, contribute significantly to the causes for the closures that we've seen and that we're worried about.

But there are also some factors that we in Washington are responsible for. I want to touch on three of them. One is the CAFE standards that we have adopted, which it seems to me unambiguously have the effect of forcing people to buy smaller and lighter and less powerful cars than they would prefer. That diminishes demand for gasoline and diminished demand has an effect on the refining industry.

Second is the ethanol mandates, which I want to dwell on a bit, and then finally there are EPA regulations on the refineries themselves. But I've got a chart here that I'd like to call to your attention, and do you have a printed version that I can have? Thank you.

This depicts—the black line that's generally sloping upward is the price of gasoline, and that is on the right-hand scale, and that's really there for information purposes. What I find very interesting is the green segment at the top of this chart. The combined red and green segments together represent the total refined product that is produced in the Northeast and the Mid-Atlantic region.

The green section is the ethanol component, which you can see started to expand dramatically from a very, very minimal sliver of a green line prior to 2003, to a very, very big segment of this graph by oh, increasing really through the last decade. My understanding is that if you quantify the ethanol that is represented on this chart, that which serves just the Northeast and the Mid-Atlantic states, it is equivalent to the gasoline production of two Marcus Hook production refineries.

That's a pretty staggering amount, and I think it's an important comparison to think about. So my question, and I'll direct this first to Mr. O'Malley, but others, please feel free to weigh in on this. Given that ethanol now, by mandate of the federal government, replaces ten percent of what would otherwise be gasoline, how significant an impact do you suppose that has had on the prospects of the refining sector?

[Chart titled "Mid-Atlantic and Northeast Gasoline: Weak Demand and Ethanol Haave Displaced Gasoline Production of Up to Four Marcus Hook Size Refineries" appears in the Submissions for the Record on page 48.]

[Chart titled "U.S. Refinery Produced Gasoline: Policy Will Cause Demand to Decline—The Question is by How Much? appears in the Submissions for the Record on page 49.]

Mr. O'Malley. The reason for the closure of the refineries in Pennsylvania is that they didn't make money, and the reason they didn't make money is that you took away their market. You delivered the market to the farm industry. It is not ten percent. That

is what it should be, but through the administration of the EPA and actions, I must say, of Congress, it has to go above ten percent, because in addition to a mandate for ten percent, there was a gallonage mandate assigned to the gasoline pool.

Because the use of gasoline in the United States has fallen off, we now have a mandate that will go up to 12, 13, 14, 15 percent, and we have a motor industry that says we can't really deal with that. You're going to injure the engines on cars. Now if you put on top of it the insanity associated with cellulosic fuels, you will ultimately take away another 10 or 15 percent of this industry.

When I say the tip of the iceberg, I chair a company that has three refineries. I'm not completely sure that my three refineries can continue to operate in the future, and since two of them are in the Northeast, we may be in a more difficult situation than you might believe.

This is a total mess, and it really does need to be fixed. The fix, my colleague here on the left, I agreed with basically everything he said, except for one word that he kept putting in: subsidy. Level the playing field. If natural gas is a more efficient fuel in the United States, let's use it as much as we can. If ethanol is a more efficient fuel in the United States, let's use it. But level out the playing field, and when you do level the playing field, you're going to find that that terrible old-fashioned gasoline that we've been putting in our cars for so many years, is the most efficient fuel.

We've made enormous strides in cleaning it up. Today, gasoline looks nothing like it looked 20 years ago. I have the privilege of being 70 years of age and having worked in this industry forever, and you know, I look around at what we produce, and it's a hell of a lot better today than it was before. So yes, that chart tells the story, only it's going to get much worse.

Senator Toomey. Thank you, Mr. O'Malley, and Mr. Chairman, I see my time has expired. But if it's okay with you, if we could allow the other panelists to respond. If they have any comments they'd like to make, I would welcome that.

Chairman Casey. Thank you. Mr. Greco.

Mr. Greco. Just to echo Mr. O'Malley, you're essentially correct about when you look at future projections of demand for U.S. gasoline. It's flat or declining, and the two big drivers are the increased ethanol mandate, which under ISA 2007 is going to drive you to 20 or 30 percent of the gallon being taken up by ethanol or some of the biofuel, and increasing CAFE standards.

So we may be driving more. We may be using more cars on the road, but they're going to be using less hydrocarbons, and that's only going to continue to increase the pressure on the refining sector.

Senator Toomey. Thank you. Dr. Greenstone.

Dr. Greenstone. Sure. I would just add that Mr. O'Malley raised the important issue of leveling the playing field, which was the theme of my testimony. I think, you know, EISA and the renewable fuel standard, in some respects I think they were efforts to try and level the playing field. I'm not sure everyone would agree that they accomplished that in the fairest or most efficient way.

I want to just highlight that we got into the world of subsidies for ethanol and other potential replacements for petroleum largely because we don't price the social costs—the health costs and the carbon costs associated with the use of petroleum.

If we priced those, then we would truly have a level playing field, and it would be possible for ethanol and natural gas and whatever the other potential replacements for petroleum are, to compete on a level playing field.

Senator Toomey. Of course, if we did that, we'd also have to take into account the higher food prices that we have as a result of using 40 percent of the corn in gasoline tanks.

Dr. Greenstone. Senator, I'm not pushing for ethanol or the Renewable Fuel Standard. My only point is that currently, that's the second-best policy that I think the country has wandered into, and it's largely driven by the fact that we don't price the negative parts of petroleum currently.

Senator Toomey. Thanks. Can I just comment on the externalities? Refineries are held at very strict environmental standards, both for the products they make and for the emissions from those refineries. Those are being driven by EPA for health reasons and for other considerations. These refineries have to compete based on those emissions, and have produced and have cleaned up their facilities, so that our air is much cleaner.

We are taking into account those externalities. They're being addressed through environmental regulations, and are reflected in the fuels we produce and the operations that we run.

Chairman Casey. Thanks very much, Mr. Toomey. Vice Chairman Brady.

Vice Chairman Brady. Thank you Chairman, for hosting this hearing. I'm going to ask a tax question of Mr. Greco and Mr. O'Malley. But on the regulatory side, a story. The Gulf Coast, where I live, refines a bit of energy production in America. As a result of high vehicle travel, topography and industry, we've had to work hard to lower our ozone emissions over the past decade, successfully have.

We invest in industry about a billion dollars to do that. Ironically, some of the key technologies that EPA has mandated our refineries to use, to lower NOx and ozone emissions, the byproduct is it drives up CO_2 emissions, which we are now told we have a problem there.

It would be wonderful if the EPA's right hand knew what its left hand was doing, so that when we make these types of investments, we can actually meet the Clean Air standards we all want to meet. My question, Mr. Greco and Mr. O'Malley, relates to the manufacturing deduction. It was passed in the mid-2000s. The goal of it, we looked at the jobs going overseas, Ways and Means Committee and others, and said look: if a company manufactures, produces, invents here in the United States, creates jobs in the United States, you have a lower tax rate than if you do that overseas, you get the manufacturing deduction, which has worked.

It is, to my understanding, a key part of the refinery puzzle. The President has proposed eliminating that deduction for one industry in America, energy. One industry. One manufacturing industry in America, energy. So my question is to Mr. Greco and Mr. O'Malley,

when it comes to the Northeast, whose goal is to maintain existing capacity and restart capacity that has been lost, if the President succeeds in eliminating that manufacturing deduction, does it make it easier to bring back that capacity, harder to bring back the capacity, or have no impact? Mr. Greco.

Mr. Greco. When we talk about the industry broadly, as you mentioned, this is a broad manufacturing tax deduction. It applies to all manufacturing industries. The proposals on the table are to single out one industry, oil and gas industry, and to eliminate that.

Any time you change a tax, make a tax change like that specifically to one industry in particular, you are going to disadvantage that industry relative to its foreign competition. So if you want to look at tax policy broadly, which is a true national U.S. conversation, we ought to do that. But to single out a single industry and a single tax credit for punitive treatment relative to other industries, is poor tax policy and is not going to support our refining industry.

Vice Chairman Brady. Thank you, sir. Mr. O'Malley?

Mr. O'Malley. I have operated refineries in both England and Germany, two companies that in fact invented socialism. They have lower corporate tax rates than the United States has. Anything that would give us less of an advantage on taxes is going to make the business more difficult. This business has a very low rate of return on a historical basis, about three percent per annum over the last 20 years.

Vice Chairman Brady. Can I stop you there? Can you make that point one more time, because we get the impression up in Washington that big oil is all one monolith, making money hand over fist. Did you just say in the refining sector, the margin is how much?

Mr. O'Malley. The margins are incredibly small. Over the past 20 years, rate of return on capital employed in the refining business is about three percent. It's a marginal business. The majors are leaving this business. When I entered the business, about 15 percent was controlled by independents. Today, we're up to 60 percent.

When very, very smart and big and rich companies exit a business, there's usually a reason, and the reason is it's a low return business.

Vice Chairman Brady. Does that play into your testimony, the point you made early on, that the Northeast has lost these refineries because they can't make money?

Mr. O'Malley. The Northeast lost three refineries because they can't make money. I mean Sunoco lost a billion dollars over the past three years running these refineries. Certainly, Conoco-Phillips would never close a refinery. I speak from some base of knowledge. At one of my many career stops I was vice chairman of that company.

I move around a bit. People don't like to keep me too long. They closed that refinery because they were losing a lot of money on the refinery, plain and simply. Nobody does this to hurt people.

Vice Chairman Brady [presiding]. I would like to keep you longer, but our time's expired. So Mr. Duffy is recognized.

Representative Duffy. Thank you, Mr. Chairman. Excuse me. So when we're talking about loopholes here for oil companies, those are loopholes exclusively for big oil, right, that you're referring to?

Mr. O'Malley. I'm not aware of any loopholes. We're trying to actually carve out a negative loophole by removing a tax credit that's applicable to all manufacturing and penalizing one industry, that's correct.

Representative Duffy. So that loophole does specifically apply to your industry? You don't want to talk about loopholes for big gas and big oil?

Mr. O'Malley. Just the industry that I understood the hearing is on, is the refining industry. We are pure manufacturers. Our company produces not one barrel of crude oil. We go into the open market and we buy it. We are no different than the General Motors Corporation buying steel, aluminum, plastics, etcetera, and putting together a car. We put together something that drives a car.

Representative Duffy. Are there some tax threats right now that might impact all of you? Are there some changes in the tax code that could affect the refining industry that you're aware of?

Mr. O'Malley. Am I personally aware of particular proposals?

Representative Duffy. Yes.

Mr. O'Malley. Well certainly if the industry is singled out and we are included in the industry, and you change the depreciation, well sure, that's going to hurt us.

Representative Duffy. And you can eat that cost though, right? You won't pass that on to the end consumer as a refiner?

Mr. O'Malley. That would be nuts. Look. Just as a point, there's an indirect tax that we're going to pay in the year 2013, emanating from biofuels and cellulosic fuels. It will total $120 million. Can we absorb that? I hope we make after tax $120 million in that year. No, there is no chance.

In fact, the biofuels program that is in place will be a tax on the American consumer, that will run up in the year, well probably 2013, to three to four billion dollars. It's a hidden tax. You're producing biofuels and getting these renewable certificates, which by the way have in some cases been fraudulently issued by companies approved by the EPA, you know, a total craziness.

This whole system that has been constructed is a house of cards, and unfortunately that house of cards is collapsing on the men and women in the refineries that are being closed down or have already been closed down. In essence, if you want to know why the refineries were closed down, I would kind of say look in the mirror, and we can find the guilty parties.

Representative Duffy. I want to be clear just on one point, and I think we're going to have a second round, and this will maybe set up the second round of conversation. Is it because in the Northeast, there was overcapacity in our refining sector?

Mr. O'Malley. Absolutely not.

Representative Duffy. Okay. So with the closure of these refineries, are you now going to import refined gas from other portions of the country?

Mr. O'Malley. The largest refinery in the world is located in India. It's run by Reliance Industries. The average wage rate there is about 1/15th of what we pay. They essentially don't pay income

tax. They are classed as an export refinery. Is the East Coast taking in fuels from India? Yes, we are.

Representative Duffy. So my question is can you import refined gas at a cheaper price than you can produce it in this region?

Mr. O'Malley. I would say the following. If you have a refinery in India that doesn't pay any tax and pays 1/15th the wage, they certainly can produce it a bit cheaper than we can.

Representative Duffy. So is the point that the consumer, by way of the closure of these refineries, is now going to benefit in this region of the country? Because of these closures, they can now access cheaper refined fuel from India and maybe from the Gulf area? Is that the point you're making?

Mr. O'Malley. Well, is that my point? No. My point is that the collapse of these refineries, in essence, has been caused by the substitution of biofuels, of ethanol into the pool. So you shut down these refineries. Now what will replace the gasoline, the diesel that were produced at these refineries? Imports. Those imports will either come from the Gulf Coast, up the Colonial pipeline, or they'll come in by vessel.

At what price will they be sold? That will be determined by the market. Will it be higher or lower? Well, I don't know the answer to that.

Vice Chairman Brady. Thank you, and Dr. Burgess is recognized.

Representative Burgess. Thank you, and I want to thank all of you. This has really been an enlightening discussion. Mr. O'Malley, I will agree with you about the Energy Independence Security Act of December 2007. I have been here six years in the United States House of Representatives, and that was by far the most troubling piece of legislation that came through.

I'm on the Committee of Energy and Commerce. It came through our subcommittee, our full committee. It came through on the floor, came back from the conference committee. I was astounded at what a bad idea it was, and really disappointed when President Bush signed that legislation.

We saw the immediate effects with the rise in the price of gasoline in the summer, the rate of rise of the price of commodities, with food to fuel diversion, our automobile manufacturers almost overnight were placed into crisis because of having to retool their manufacturing, and on top of all of that, you couldn't even read all of that bad news because our light bulbs changed.

So I thought that was a very bad idea, and in fact you may be interested. There's a House bill now, a current bill, H.R. 424 called the LEVEL Act, to back out that ethanol blend wall that you described, because of just the reason that you described.

Yeah, E–10 may be a problem for some folks. I spent a lot of time down at my lawnmower repair man, because of things that happened to those small motors because of the ethanol and gasoline. No one has been able to convince me, from the Department of Energy or the Environmental Protection Agency, that they have done the studies on the engines, to assure that E–15 will not be further damaging to those engines, and furthermore, I'm not sure who bears the liability for the sale of that gasoline that goes into those engines, that then subsequently ruins them.

I suspect as a manufacturer, as a refiner, you probably have some concerns about that as well; is that correct?

Mr. O'Malley. That's very correct. We're not going to deliver E–15. We're not going to deliver E–15 because we're concerned it will be the same circus that we had with MTBE, that we destroyed motor vehicles. I own outboard motors, drive around in a little boat, and there's no way I will put gasoline combined with ethanol in it, because it will destroy the engine.

The EPA has not done an appropriate scientific study. This was rushed through the EPA. Exactly why, I don't know.

But in all fairness to the discussion, I theorize that cellulosic ethanol might have been invented by President Bush when he was down chopping wood on the ranch.

The whole idea of ethanol, again I would point out from my industry's standpoint, bring them on. Just don't mandate it and don't subsidize it, particularly when we don't have the money to subsidize anything. The country's on the road to bankruptcy, and here we are talking about more subsidies for this or that. The country doesn't have the money for subsidies.

Representative Burgess. I feel compelled to point that although that was the worse legislation I had seen to date, there's been a lot worse stuff that's happened since then. If you want to talk about subsidies, we can talk about that darn health care law, where we are well on the road to ruin from that.

But again, I'd point out to you the LEVEL Act, H.R. 424, and I'd be interested in your thoughts on that. I am trying to get some enthusiasm for that at the committee level. I just have to ask you. You brought up the issue of the renewable identification numbers.

I have had constituents in my office back home in Texas, who have purchased RINs from various outfits, only to find out that they were basically a parking lot for a church next door, and there was no manufacturing or production facility at the address. There's an enormous sense that EPA, as an agency, seems to be taking a hands-off approach.

What essentially has happened is we have created the mortgage-backed security industry over again, without all the transparency and market securitization that was present in that industry. You have people literally selling blue sky to unsuspecting parties, who then are left holding the bag, and the EPA simply says "well, buyer beware."

But it's their program. They set it up. They created this nightmare, and unfortunately now we have people who are suffering the economic hardship of having bought something that in fact did not exist.

Mr. O'Malley. I have had direct discussions with Bob Perciasepe, the number two person at the EPA on this subject, and Margo Oge, who's the head of the Fuels Section there, and I've expressed my amazement at the fact that they approved companies to issue these RINs. They approved them based on a fly-by, I suppose, of the church parking lot, and now the industry went out and bought these RINs from these approved parties, and the EPA says "well, you made the mistake. You have to pay for it."

It is one of the worst abuses of government power that I have seen in my long career of dealing with the government. It's an

amazing situation. The only way to cure it, in my view, is eliminate the program, because the program is idiotic. Every barrel of this biofuel that we buy, we make diesel at a cost of somewhere around $4 to the consumer, $4 a gallon.

When we buy these RINs, that biodiesel costs you six, seven, eight dollars a gallon. Is this an intelligent thing? And if the population, the "American people" that the Congress always talks about actually knew this, I believe they'd stand up and revolt. But somehow, we've hidden it under the covers, and it's just a dumb program.

Representative Burgess. It absolutely is, and Mr. Chairman, I hope we will have the opportunity to have further hearings on this, and have the EPA in attendance, because Mr. O'Malley's exactly right. This is a massive fraud that's being perpetrated on the American people, and it is the mid-level producer who's left holding the bag for $10 million, which they can ill afford to lose. We're going to drive people out of business, drive people into bankruptcy. Is this the type of job creation that we should be pursuing? Absolutely not. Mr. O'Malley, thank you for your testimony.

Vice Chairman Brady. Thank you, Dr. Burgess. Mr. O'Malley, please don't hold back. You know, feel free to tell us how you feel on any of these issues. Chairman Casey——

Mr. O'Malley. Just at a certain age, you get to say things.

Vice Chairman Brady. I understand. Senator Casey has requested a second round. I know he'll be back as soon as he can. So to begin, again, thank you to all the witnesses being here today. We've heard concerns about moving to E-15. We've heard concerns about new mandates on ultra low sulfur diesel. We've heard about new emission standards for industrial plants.

Since the goal clearly of this hearing, for Chairman Casey, Mr. Toomey and others, is to restore refining capacity to the Northeast, could Mr. Greco and Mr. O'Malley and any, for that matter, could you explain what major new regulations confront refineries in particular, and the impact on the likelihood of restarting or growing capacity in the Northeast?

Mr. Greco. Well certainly. Right now, we're confronting a variety of new regulations. We're obviously complying with those that are on the books, those are the law. But EPA is moving forward very aggressively in a number of areas. We're looking at fuel changes in Tier 3, which includes sulfur and RVP changes. We're looking at stationery source controls on CO_2 emissions, as well as on criteria pollutants, NOx, Sox, those types of pollutants.

So we're looking at that whole range of controls on emissions. These are all at the point where EPA is moving forward. We have not seen proposals yet on these. We have not seen a justification for these rules yet. So our basic message to EPA is help us understand. Explain what the need is for these, justify the need before you go ahead with the proposal.

The typical process is to release the justification at the same time you release the proposal, and then they get finalized together. That doesn't strike us a good approach to policymaking.

Vice Chairman Brady. In the case of the Gulf Coast, where EPA technology mandates reduced NOx and ozone, but drove up CO_2, is there a collaborative way where industry can work with our

regulators to achieve those clean air goals, but do it in a way that doesn't shut down refineries, doesn't drive up the price of energy?

Mr. Greco. Well, we tried to work collaboratively with the government. We clearly, we're the experts. We think we know how to run our facilities, and how best to implement requirements cost-effectively. The challenge is, as Mr. O'Malley mentioned, is EPA has taken a very different view of things. I think the E–15 is a very good case in point.

You've got the auto industry, you've got the oil industry, you've got marketers. You've got small engine manufacturers. You pretty much have most everyone except the ethanol manufacturers, saying this is premature and this is a bad idea. But EPA went forward and approved those partial waivers, even while ongoing research was being conducted by the oil industry and the auto industry.

In fact, we're looking at finalizing a report next week, which will have more information come Tuesday about work that the auto industry and the oil industry has done, looking at E–15 compatibility, and it just underscores our concerns, that this was a hasty judgment and one that was politically driven.

Vice Chairman Brady. If the EPA is successful on E–15, more ethanol blending, what's the impact on refineries?

Mr. Greco. Well certainly, we're confronted with this huge ethanol mandate, biofuels mandate that we have to meet. EPA is portraying this as maybe helping you avoid this blend well, when we would saturate the market. At best, assuming E–15 was as good as EPA says it is, and assuming it could be used in all the vehicles EPA says it can be used in, it might extend the blend wall a year or two.

But we're talking about a program that we have another decade or more than we have to blend ethanol in, and it's not a solution. The true solution in our mind is right-sizing the program. You need to adjust the ethanol mandate, the biofuels mandate to what the vehicle fleet can safely use, and we're very close to exceeding that where we are right now.

Vice Chairman Brady. Thank you. Mr. O'Malley or any of the witnesses want to comment?

Mr. O'Malley. I would comment that the only reason for E–15 is to drive up the use of ethanol, to take more corn out of the food cycle and put it into the fuel cycle. There is no justification for E–15. It's a program that I don't know what price is going to be paid for it, but again, not holding back, it's nuts.

Vice Chairman Brady. Sure. Dr. Moss, in your testimony, if I understood it, you suggested maybe a future potential for higher gas prices on the East Coast based on increased market concentration, due to, obviously, these refinery closures. Can you elaborate exactly how you foresee that occurring, and if a refinery raises the price of gasoline above cost, what happens? How do other refineries react?

Dr. Moss. Well, that is essentially the thrust of my testimony. Economists and antitrust enforcers tend to worry about industries that become highly concentrated, because obviously with fewer suppliers, those industries or markets are more conducive, potentially, to the exercise of market power, because firms can indeed influence

the market price, because they control a good portion of the market, or firms can band together.

Vice Chairman Brady. Can I ask you a trend question?

Dr. Moss. Sure.

Vice Chairman Brady. I get the impression in your testimony that you foresee more integration in the industry. But I've noticed a number of companies are actually breaking up, upstream and downstream, in part, I believe, because refining is a very tough, low margin tough business to survive in. So isn't the trend going the opposite direction?

Dr. Moss. From what I read and understand, yes, there has been sort of a deintegration, from a vertical perspective, in the industry. So and I mention that that might be a mitigating factor. If firms are—if the concern is that fully integrated firms will use their market position to leverage market power into another level of the industry.

If there's deintegration, then that may become less of a concern. However, the refining market in the Northeast, as I noted, is very highly concentrated with just two firms, after all of these closures, accounting for almost 90 percent of capacity. I think that fact pattern leaves competitive concerns, even vertical concerns squarely on the table, and certainly with a high concentration, as we see in refining, with just again the two firms controlling most of the output.

We would potentially still worry about just restricting output to raise prices as well.

Vice Chairman Brady. Thank you, Dr. Moss. Mr. Duffy.

Representative Duffy. Mr. Greenstone, did you say that you were on the President's economic team; is that correct?

Dr. Greenstone. During the first year of the administration, I was the chief economist at the Council of Economic Advisers.

Representative Duffy. Okay, and listening to your commentary, you were talking about the social costs of different fuels that we use. You were talking about coal, but there's a social cost to the use of coal and also a social cost to the use of oil, and maybe a less apparent cost to maybe wind or solar or natural gas, right?

Dr. Greenstone. That's correct.

Representative Duffy. And therefore the government maybe should step in and increase the cost of coal or gas prematurely, or the government should step in and try to reduce the cost of wind, solar or natural gas, is that right? The government should come in and try to make a play on the social cost?

Dr. Greenstone. Yes. Thank you for the question, Congressman Duffy. I think the point I was trying to make is when we consume electricity that's generated from fire and coal plants right now, or various other energy sources, we pay whatever comes across our utility bill. But that's not the only cost we pay. In addition, we pay with shortened lives, higher health care bills, changing climate, weakened national security when it comes to petroleum. Just because those don't show up on the bill currently, that doesn't mean we're not paying them.

Representative Duffy. Okay, and you're a proponent of natural gas; is that right?

Dr. Greenstone. No. I'm a proponent of leveling the playing field for all energy sources. So what does that mean in practice? That means in practice that when we make our energy choices as consumers, the prices should reflect the cost of producing the kilowatt hour of coal, but also all the other costs that consuming that kilowatt hour of coal produces.

Representative Duffy. So in essence, in your version, we want to see the cost of oil go up, to take into account the cost of lives and climate change and global warming, right?

Dr. Greenstone. The idea is that we're paying those costs now, but we're not able to make choices that reflect, that recognize those costs.

Representative Duffy. I want to be clear, that you want that to be reflected in the end price of that product; correct?

Dr. Greenstone. I think we as a society would be able to make better choices if the price, the end price of that product reflected the full social cost.

Representative Duffy. So in essence, you believe that the end cost then should be higher; correct?

Dr. Greenstone. It depends on the energy source.

Representative Duffy. Let's use gas. Not natural gas, but gas for petroleum, yes.

Dr. Greenstone. So yes. So we've been talking as a panel, some of the EPA regulations are meant to help reflect that price, and my own view is that not all of those social costs are recognized.

Representative Duffy. They only gave me five minutes. So I want to be very clear on what you're telling us here. You would like to see gas, petroleum, so gas at the pump, reflect the actual social cost of the use of that energy source, which would mean it would have to go up in price, because today, per your testimony, it doesn't accurately reflect the social cost in the price; yes or no?

Dr. Greenstone. Congressman Duffy yes, and all other energy sources as well.

Representative Duffy. Right, and so if you do that, if you want to make sure that we increase the cost of our gas at the pump, and in essence you might then see more use of wind and solar and natural gas, in that calculation, have you taken into account the social cost of the men and women who are sitting in this room today, that are steelworkers and boilermakers, who will lose their jobs because you, as an advisor to the President, say that as a social policy, I want to see more Americans use a different energy source. Have you considered then the loss of these men's jobs for that policy?

Dr. Greenstone. That's an important question, and of course, when one causes changes in the economy, people lose their job and that's a real cost. In an adequately defined system, they would be recognized. Let me also make——

Representative Duffy. You're willing to bear that cost though, just to be clear?

Dr. Greenstone [continuing]. Sorry?

Representative Duffy. You're willing to bear the cost of these men's jobs for that social policy?

Dr. Greenstone. Well, I think it's very important, I think you're raising a really important part of——

Representative Duffy. I only have 30 seconds. You're willing to bear that cost of the social policy?

Dr. Greenstone [continuing]. If I could finish. In addition, I think part of that calculation has to be, and I'm glad that Senator Casey has returned to the room, the tremendous opportunities that appear for people who would produce the alternative.

Representative Duffy. And again, I guess I don't know how well our boilermakers are at making windmills or solar panels, or our steelworkers. But to be clear, as we've talked about natural gas in your testimony, I think it's clear that natural gas is coming from fracking, and I wonder if you're supportive of fracking, and if you have any issues with the EPA regulating the refining of natural gas, just the same as we've supported the EPA's regulation of refining of petroleum?

I mean there's a whole set of issues that start to spiral out here, when you start to take into account the social policy which you reference, and I think you must have advised the President on these policies, because we see more and more implementation of these policies, that have a real impact, not just on the men that I see in this room today, but also a lot of the union members in my district who are losing their jobs because of EPA regulation, even outside of oil, and I know my time is up, and I'm sorry for going over.

Dr. Greenstone. Is there time for me to answer your question?

Vice Chairman Brady [presiding]. There's a little bit of time for both, if that's all right.

Representative Duffy. If I could have—thank you.

Chairman Casey. Everyone's left here, so I think if I give you another minute or minute and a half, that would be great.

Dr. Greenstone. So I believe your question—I'm sorry. I think the question—maybe you could repeat the question?

Representative Duffy. I was moving on to fracking, and there's a cost. If you want to say natural gas is clean and as a social policy you like that over petroleum, do you also say you support then fracking, which produces natural gas?

And then when you look at EPA regulations, are you okay with minimizing those regulations on the refining of natural gas, which is needed, as opposed to the refining regulations that we see for petroleum from the EPA?

Dr. Greenstone. Yeah, okay. So let me just clearly state. I stopped working in the White House in February 2010. I would be—I think it would be slightly delusional to think that my thoughts stuck around so clearly, that the President is still searching the hallways looking for them all the time.

Representative Duffy. I think he's embraced them, but go ahead.

Dr. Greenstone. But let me just say whatever the social costs are, be they from environmental damage associated from fracking, be they from greater air pollution, be they from greater CO_2 emissions, they should be reflected in the energy prices. You know, candidly, until we have a system where those prices are reflected, we'll continue to make choices that cause, you know, cause shortened lives, cause climactic changes, and constrain our foreign policy in ways that are adverse.

Representative Duffy. And if I could just have one more point. My concern is what bureaucrat makes that decision? What bureaucrat makes that policy, that social decision? Or does the bureaucrat want to give that decision to the boilermakers, because I bet that the boilermakers and the steelworkers have a different social philosophy than a bureaucrat that works in the administration, or any other one of these agencies in Washington, D.C., and there's a differential in social policy and social view.

Dr. Greenstone. Congressman, I think you're raising a very important question, who makes the decision, and I think it's important to underscore that that decision's being made all the time today. With respect to greenhouse gases, it's largely being made that that has no damages.

So it's not that this would be a change in someone making the decision. The decision is made today; it's just made in a very particular way that doesn't reflect the full cost.

Representative Duffy. But a bureaucrat isn't then making the decision to increase the cost because of their social analysis today. My time is up. I'm sorry. I yield back to Senator Casey.

Dr. Greenstone. Thank you for your interest in my testimony.

Chairman Casey. Congressman thank you, and Doctor, thank you. I guess when I left, I missed some engagement here. But I think we have some agreement here, number one, that we don't want refineries in Pennsylvania or anywhere else to close. I hope we agree on that, and we're trying to push hard on that.

Another area where we might have consensus, I just want to raise this; others can comment on this or respond to it. Dr. Moss, I just wanted to ask you about a piece of legislation which is one, I don't consider this some kind of magic wand, but one tool we can use to have an impact on oil prices.

Legislation in the Senate, the so-called NOPEC Act, that would allow, give the Justice Department the authority, which it does not have now, to bring price fixing or antitrust cases against OPEC. I wanted to get your sense of that legislation, and the impact, and if you can make any assessment as even, you know, a numerical analysis in terms of what that would mean potentially for lower crude oil prices.

Dr. Moss. That's a good question, Senator, and I think it's been posed numerous times in the last several years. I think the honest answer is that the NOPEC legislation raises a rather snarly group of issues. If you talk to antitrust experts, those who are steeped in knowledge and practice involving application of the U.S. antitrust laws, reaching our laws to OPEC would be very, very difficult, as they stand today.

OPEC obviously does not operate within the United States borders. There has been concern about the marketing arm of the Venezuelan oil company operating within the U.S. I believe that's CITGO. There have been efforts to get to OPEC indirectly through the operation of CITGO in the United States.

But there are hurdles, applying laws against sovereign entities outside the United States, I think, would be largely, that would be difficult to do. Giving the U.S. DOJ the authority to apply antitrust laws against OPEC, I think, it also poses some concerns and hurdles, not the least of which is to consider what the political implica-

tions of that would be, in terms of reaching out to OPEC and potentially setting up an antitrust enforcement action.

So I can't come out one way or the other. I think it's very clear that if OPEC did not control world crude oil prices, prices would be lower, and there is some disagreement or some disagreement about whether OPEC has actually been as effective in setting and maintaining prices over the last several years.

The structure of OPEC has changed, and whether the agreement is as tight as it used to be, I think, is in question at this point.

Chairman Casey. I know we may have others that might have a comment. If you could briefly comment, only because we're coming to the end, and I know because of my voting schedule here, it's been one of those days here. I've had to interrupt the hearing, so I'm sorry about that. But I know we have to wrap up. Vice Chairman Brady has no more questions, and I don't either. But I know we're again limited on time, and I'm sorry about that.

Mr. Greco. Just one quick comment. API opposes NOPEC. It raises very serious constitutional questions going forward. What we really should be focusing on is how do we develop our own resources? If we're concerned about a resource-constrained world, we just had a recent reevaluation of U.S. resources that raise it tremendously.

We can be an energy powerhouse. We ought to be competing and developing our own domestic resources, rather than assessing punitive damages or trying to against other countries.

Mr. O'Malley. I would second that, and support that. The biggest thing we can do on oil prices is produce more oil in the United States, and we're on a road where we can have tremendous production in the future, if we would just let the industry do it.

Chairman Casey. We're thankful some of those numbers are up. Doctor?

Mr. O'Malley. Excuse me?

Chairman Casey. No. I said I'm thankful that some of those numbers are up now, as opposed to a few years ago.

Mr. O'Malley. They're going up fast.

Chairman Casey. Doctor?

Dr. Greenstone. I don't have much to add, just to note that there's been this incredible increase in domestic production, and I think we're, you know, for what was unimaginable even, you know, five years ago, could be imaginable, which is we could well be energy independent when it comes to petroleum in the foreseeable future.

Chairman Casey. Well thanks everyone. I know what we'll do is leave the record open for how many days? Five days, for other submissions to the record. I know that I mentioned earlier that we had representation from individual unions, and I know some of their leaders, if they are not here now, were here. Dave Miller, the president of Steelworkers Local 10–901, Dennis Stefano, president of 10–234, and John Clark, the business manager of the Boilermakers 13.

I think Jim Savage from Local 10–01 of Steelworkers was not here, but I wanted to commend the work of those unions and their leaders who are here with us, and of course the work that they've done with us on refineries. We're grateful for the witnesses who are

here today, and apologize for some of the problems we had with scheduling.

But this hearing was scheduled weeks ago. Votes get scheduled sometimes within hours, and we're sorry about that. I want to thank our Vice Chair for being here, coming all the way across the Capitol again to sit with us, and I think I owe him a visit across the way. We're adjourned.

[Whereupon, at 4:13 p.m., the hearing was adjourned.]

SUBMISSIONS FOR THE RECORD

PREPARED STATEMENT OF SENATOR ROBERT P. CASEY, JR., CHAIRMAN,
JOINT ECONOMIC COMMITTEE

Good afternoon. Today's hearing is focused on the impact that closures of petroleum refineries serving the Northeast could have on prices at the pump in the Mid-Atlantic and New England regions.

Since September 2011, two refineries in the Philadelphia area and one major Caribbean export refinery supplying the East Coast have closed. Additionally, a third Philadelphia-area refinery is slated to shut down this summer.

In addition to the immediate impact on gas prices, we will explore the long-run costs to the economy associated with higher gasoline prices, as well as actions that can be taken to encourage the adoption of cleaner, cheaper alternatives to petroleum, such as natural gas.

While the situation remains fluid with the potential sale of the three Philadelphia-area refineries, I am concerned that the Northeast is losing needed refining capacity.

I am especially concerned that this loss in refining capacity is happening at a time when consumers are already facing rising gas prices.

With limited pipeline capacity to import from the Gulf Coast, this loss of refining activity in the Northeast will increase the region's dependence on European gasoline and diesel and lead to higher prices for consumers.

A recent Energy Information Administration report detailed the possible consequences of this reduction in refining capacity, which include greater price volatility and potential shortages in the Northeast.

I am focused on ensuring that changes in refining capacity in the Northeast have as little impact as possible on energy prices, on jobs in our communities, and on the economic recovery.

I have urged the Administration to become directly involved in this issue.

I met with workers at the three Pennsylvania refineries—Philadelphia, Trainer and Marcus Hook—to discuss the impact that shuttering the refineries would have on the workforce. Together, these refineries represent half the refining capacity in the northeastern United States.

I would like to recognize representatives from the United Steelworkers Local 10-1, Local 10-901 and Local 10-234 who are in the audience this afternoon. Also attending today's hearing are members from the International Brotherhood of Boilermakers Local 13 and Steamfitters Local 420.

Closure of these facilities would likely mean that the Northeast region will experience a decrease in the supply of Ultra-Low Sulfur Diesel (ULSD), at the same time there will be an increase in demand for ULSD as both a transportation fuel and for home heating.

With closure of the Northeastern refineries, refining activities will be centralized in the Gulf Coast region. This will affect the price of gasoline, diesel and heating oil and lead to potential shortages of those fuels in the Northeast.

An early or prolonged cold spell next winter could send home heating prices skyrocketing—hitting consumers hard.

Today, gas prices are again pushing $4 a gallon—well ahead of the summer driving season. We are facing higher prices despite the fact that U.S. production of oil is at its highest level since 2003. For the first time in a decade, the United States is importing less than half the oil we use.

Yet, with only 2 percent of the world's proven oil reserves, there's little impact the United States can have on the price of oil—which is set by supply and demand in a global market—by addressing only the supply side of the equation.

Focusing on U.S. demand for oil offers more promise. The United States consumes more than 20 percent of the world's oil. U.S. dependence on oil to meet its transportation needs leaves consumers with few choices, making them vulnerable when oil and gasoline prices rise.

By promoting policies that reduce our dependence on foreign oil, the United States can help to reduce global demand for oil and, ultimately, prices.

If oil accounted for a smaller share of our energy needs, the U.S. economy and American consumers would be less vulnerable to spikes in oil prices.

It's clear that we need to accelerate natural gas development and use. Natural gas is produced right here at home—creating jobs. It's clean, with lower emissions than traditional gasoline. And it's cheap.

Converting vehicles, especially commercial vehicles, to run on natural gas could play a role in the move to cleaner energy alternatives.

In the coming weeks, I will introduce legislation that provides states with funding and flexibility to develop initiatives that:

- Encourage the use of natural gas as a transportation fuel; and

- Encourage public and private investments in natural gas vehicles and transportation infrastructure.

These actions will encourage the use of natural gas—an energy source which the United States has in abundance—while reducing our dependence on petroleum and vulnerability to oil price spikes.

We have a terrific group of witnesses this afternoon, with wide expertise on energy issues. I look forward to each of your testimony.

PREPARED STATEMENT OF REPRESENTATIVE KEVIN BRADY, VICE CHAIRMAN, JOINT ECONOMIC COMMITTEE

Today's hearing is most appropriate in light of high gasoline prices and a White House energy policy that is coming home to roost, so to speak. While the President has touted an "all of the above" energy policy, his actual policies have been anything but that. They have been decidedly unfavorable to America's energy manufacturing industry—and that is true for crude oil production as well as refining.

The Administration has thwarted oil and gas development on federal lands and offshore. It imposed a hasty and prolonged moratorium on Gulf of Mexico drilling and then hindered resumption of exploration through slow permitting. And most recently, it has denied increasing the assured and safe supply of crude oil from our ally Canada through the Keystone pipeline to U.S. refineries.

The President also risks the jobs of American energy workers by threatening punitive tax treatment of energy manufacturing, for example, by singling this sector out and rescinding incentives to encourage job creation and manufacturing here in America. Why is energy manufacturing different than any other form of manufacturing? Why are these good-paying energy jobs deemed expendable by the White House, and why is the President himself pushing taxes that encourage energy companies to send these jobs overseas?

This manufacturing deduction, by the way, is an important incentive to refining and will further make these projects less economically viable if the President has his way.

The Administration is also pursuing policies that will shrink and punish petroleum refining both by forcing it to blend in alternative fuels even when they do not yet exist and by mandating ever more stringent emission standards even when the costs are huge and the benefits are uncertain.

America is experiencing an energy revolution with the potential to become the largest energy-producing country on the planet. But let's be clear, the rise in energy manufacturing driven by new technology is occurring on private lands, not federal lands. In fact, at President Obama's request, his Administration has launched a flurry of regulatory attacks on oil shale development in America, leaving the country to pray that Washington will not smother the technology in the crib with more layers of regulation.

Senator Lisa Murkowski in a recent editorial entitled "America's Lost Energy Decade," pointed out that in 2002 the U.S. Senate decided against opening a small section of the Arctic National Wildlife Refuge to oil and gas production. The most cited reason at the time was that it would take too long—ten years—for the oil to reach the market. Now, ten years later, the White House is pleading with Saudi Arabia to produce more oil when we could be controlling our own supply.

Senator Murkowski correctly concluded that long lead times should be a reason to approve drilling quickly, not to continue putting it off.

Other non-OPEC countries do not lock away their resources, not even pristine Norway, which is the world's seventh largest exporter of oil and second largest exporter of natural gas.

Our regulatory tale is one of self-inflicted wounds—cutting off our nose to spite our face. This country is blessed with resources that can be developed, produced, and processed safely and cleanly to support economic growth and technological development, which in turn will position us to further advance the state of the environment. All of this is critical to ensuring that America continues to have the strongest economy in the world throughout the 21st century.

Refinery closures and job losses are painful but even more so when our own government's policies contribute to them. Americans want to balance a healthy economy with a clean environment. They don't want their factories shut down effectively by order of the government and products brought into the country from places that are much less environmentally committed than the United States.

Regulators need to take a rational, balanced approach that recognizes that ignoring economic consequences hurts the very citizens whose welfare they are charged to protect.

First, our regulatory mechanisms at least should be functional. It makes no sense whatsoever to impose blending requirements on refiners for cellulosic ethanol that does not exist in requisite quantity and then fine them for not using it. It makes no sense to push corn ethanol consumption to a level that invalidates car engine warrantees. And it makes no sense to impose sulfur content limits on gasoline that may increase CO_2 emissions when the EPA is trying to reduce those emissions as well. These are unforced policy errors we cannot afford to commit, especially in this struggling economy.

Second and more fundamentally, the Administration, lawmakers, and regulators must ask themselves if they are pursuing radical solutions that may never come to fruition while missing opportunities for steady and certain improvements. Are they provoking protracted lawsuits and delaying projects? Are their actions causing older, more polluting equipment to stay in place longer? Are they driving America's firms out of business and costing us jobs while inviting more dependence on foreign countries with worse pollution records?

Regulation must facilitate the market's functioning, neither treating private enterprise as an adversary nor pressing for preconceived outcomes in one sphere while ignoring collateral damage in others. Devising good regulatory policy doesn't have to be intensely adversarial. It can be more collaborative, engage the incentives of the private sector, and above all be mindful that it ought to serve economic growth and technological development, the ultimate sources of better living standards.

I now look forward to hearing our witnesses' testimony and probing their ideas for better regulation of oil refineries and in general.

Prepared Statement of Diana L. Moss, Vice President and Director, American Antitrust Institute

I. INTRODUCTION

I would like to thank Chairman Robert Casey and the members of the Joint Economic Committee for holding this hearing on the loss of refining capacity in the Northeast and its potential impact on the prices of refined petroleum products (RPPs). I appreciate the opportunity to appear here today.[1] The American Antitrust Institute is a non-profit education, research, and advocacy organization. Our mission is to increase the role of competition in the economy, assure that competition works in the interests of consumers, and sustain the vitality of the antitrust laws. The AAI has long been involved in analyzing the competitive implications of issues in the energy industries, including electricity, natural gas, petroleum, and renewables.

Much of the analysis available to date on refinery closures in the Northeastern U.S. focuses on the relatively straightforward economics of their potential impact on RPP prices such as gasoline, heating oil, and ultra low sulfur diesel (ULSD). Perhaps the most pressing question for policymakers is whether the current downturn in the refining sector in the Northeast is part of a cyclical trend—and will rebound at some point in the future—or if it represents a structural shift that could reflect a permanent change in refining fundamentals. The answer is that it is too soon to tell. Nevertheless, the industry may be at a critical juncture where policy responses are particularly important.

My testimony today acknowledges the importance of underlying economics as integral to the larger picture surrounding refinery closures. However, I will focus primarily on perhaps a less obvious aspect of the problem, namely the importance of the competitive landscape in downstream petroleum markets in analyzing the implications of refinery closures and crafting appropriate policy responses. This is not to say that there is a competitive problem, only that refinery closures fundamentally alter the structure of markets in ways that potentially change competitive incentives facing suppliers.

II. BACKGROUND

Refined petroleum product price dynamics in the U.S. and the Northeast, in particular, are affected by a complicated and changing landscape. This backdrop is influenced, as always, by the world crude oil market, changes in petroleum resource exploitation in the U.S. and Canada, and shifts in how the U.S. utilizes its complex networks of downstream assets, including refineries, product pipelines, and terminaling and storage facilities. Price dynamics are also affected by changes in domestic consumption driven by economic recession beginning in 2008, the effects of

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[1] Diana Moss is Vice President and Senior Fellow, American Antitrust Institute (AAI) (*www.antitrustinstitute.org*). This testimony has been approved by the AAI Board of Directors.

which are still lingering but may reverse in time. A host of other factors, however, may signal a more permanent downturn in oil consumption, including: increases in fuel economy standards, the ethanol content of fuels, and the use of pure bio-fuels. Finally, fundamental changes in the U.S. refining industry, particularly in the Northeast, are an integral part of the picture.

The pattern of crude oil consumption has changed in ways that are important for an analysis of refining in the Northeast. For example, between 2004 and 2010, oil consumption in the U.S. and Europe fell by almost six percent. Consumption in China, the Middle East, Latin America, and other Asian countries, however, increased by about eight percent.[2] In the early 2000s, Saudi Arabia was the largest exporter of crude oil to the U.S. Between 2004 and 2010, however, those export levels fell by 27 percent. Exports to the U.S. from Venezuela and Mexico also fell off and Canada, which is now the leading exporter to the U.S., increased exports by 18 percent.[3]

In approaching the problem of refinery closures in the Northeast U.S. it is, as a preliminary matter, important to point out that U.S. gasoline prices are heavily influenced by the dynamics of cartelized world crude oil markets. The U.S. has little control over OPEC. Currently, crude prices make up about 72 percent of retail gasoline prices in the U.S.[4] While membership in OPEC has changed somewhat, and there is some ongoing debate as to how effective the cartel is in setting and maintaining crude prices, it is widely held that higher prices contribute in substantial part to higher prices of gasoline than what would emerge without the cartel.

When the spotlight falls on actual or projected increases in RPP prices in the U.S., there is sometimes a tendency to overplay the role of OPEC in price determination. To be sure, crude oil prices factor significantly into downstream prices. However, domestic downstream activities—including refining, distribution of refined products to storage terminals, and wholesale and retail marketing—also play an important role. These activities make up a not insignificant 17 percent of the final retail price of gasoline.[5]

The impact of downstream activities on RPP prices is amplified by what we see happening in the Northeastern U.S. refining markets. Relative to other PADDs, PADD 1 has special features are that are potentially relevant to competition. For example, PADD 1 has the: (1) fewest number of refineries; (2) largest number of refinery idlings and closures; (3) highest levels of market concentration and increases in concentration over time; (4) highest levels of wholesale market concentration; (5) lowest refining capacity utilization rates; and (6) greatest dependency on imports of petroleum products from other PADDs and abroad. My testimony touches on each of these factors, which collectively draw attention to the competitive landscape.

III. REFINERY CLOSURES IN PADD 1

A. Market Concentration

Refining market developments in PADD 1 stand in stark contrast to those in other PADDs, where concentration has remained relatively stable over the last several years. Refinery idlings and closures in PADD 1 are attributed to poor economics such as low refining margins. Many refiners are devoting resources to more profitable upstream activities such as exploration and production. Sunoco has publically stated that it is leaving the refining business and has (or plans to) idled or closed three refineries in the last three years totaling 658,000 barrels per day of crude distillation capacity.[6]

The number of refineries in the U.S. continues to decline. Between 1985 and 2011, there was a 31 percent decrease in the number of refineries in the U.S. and a 52 percent decrease in PADD 1.[7] While there are fewer refineries in the U.S., their average capacity has increased over time, due to the development of higher capacity, technologically advanced facilities, and the networking of refineries. These fewer, larger refineries account in large part for the fact that of 45 total refiners, the top

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[2] Federal Trade Commission, *Gasoline Prices and the Petroleum Industry: An Update* Figure 3, 7 (September 2011), *available at http://www.ftc.gov/os/2011/09/110901gasolinepricereport.pdf*.

[3] FTC, *supra* note 2 at Table 10 (p. 59).

[4] Energy Information Administration, *Gasoline and Diesel Fuel Update* (April 16, 2012), *available at http://www.eia.gov/petroleum/gasdiesel/*.

[5] EIA, *supra* note 4.

[6] *Sunoco is Leaving the Refining Business,* energyandcapital.com, September 6, 2011, *http://www.energyandcapital.com/articles/sunoco-is-leaving-the-refining-business/1750*.

[7] Energy Information Administration, "Number of Capacity of Petroleum Refineries," (number of operating refineries), *available at http://www.eia.gov/dnav/pet/pet_pnp_cap1_a_(na)_8OO_Count_a.htm*.

10 account for 75 percent of total U.S. refining capacity.[8] In PADD 1, there were 14 operating refineries in 2004.

By the beginning of 2011, that number had fallen to 10.[9] By mid-2012, after the closure of Sunoco's Marcus Hook and Philadelphia refineries and ConocoPhillips' Trainer refinery, and assuming no idled facilities come back on line, there will be 7 operating refineries. These closures represent a 43 percent loss in capacity from 2011 through 2012.[10]

The PADD system, developed during World War II to allocate fuels from petroleum products, does not accurately capture the concept of a market, either from an economic or antitrust perspective. PADD boundaries are encompass far broader areas than what consumers would consider in searching out lower-priced supplies, or suppliers that could undercut prices increases elsewhere in the market. Such markets—determined by transportation constraints and production cost differentials—are likely to be much smaller and more concentrated than PADD-based markets.[11] Nonetheless, PADD-based statistics do give us some sense of changes in market structure that are relevant to today's inquiry into refinery closures.

Refinery idlings and closures are reflected directly in changes in market concentration in PADD 1. In 2004, for example, concentration in PADD 1 was about 2,700. But by the end of 2010, concentration reached 3,300 HHI.[12] The Federal Trade Commission (FTC) notes that these changes are due largely to the Valero-Premcor merger. However, increases in concentration also reflect changes in the distribution of ownership associated with refinery closures. For example, the year-end 2010 statistics reflect the idling of Chevron's Perth Amboy refinery, PBF's Delaware City refinery, Nustar's Savannah refinery, and Western's Yorktown refinery. These closures drove up the market shares of Sunoco and ConocoPhillips significantly, increasing market concentration.

Closure of ConocoPhillips' Trainer refinery and Sunoco's Marcus Hook refinery in late 2011, coupled with the restart of PBF Energy's Delaware City refinery slightly lowered market concentration. However, three major players (ConocoPhillips, Sunoco, and PBF Energy) continued to account for about 93 percent of refinery capacity. With the planned closure of Sunoco's Philadelphia refinery in mid-2012 (if a buyer cannot be found), market concentration will increase to almost 4,000 HHI. This will leave only *two* firms (PBF Energy and ConocoPhillips) that account for 86 percent of refinery capacity.[13] This will cause a significant change in the structure of the PADD 1 market.

B. COMPETITIVE ISSUES

The refining industry is a "bottleneck," or a segment through which all inputs must pass to ultimately reach the consumer. Bottlenecks are a common feature of most networked industries and often involve highly concentrated markets and high sunk and environmental compliance costs that discourage new entry. Control of bottleneck facilities potentially raises concerns over the exercise of market power. For example, in the majority of merger enforcement actions involving downstream petroleum markets, the FTC's concern centered on the increased likelihood that the merged firm could unilaterally—or in coordination with other rivals—withhold capacity to drive up price.

Much like in electricity markets where firms are differentiated by capacity, as opposed to by product, strategic withholding of refining capacity could result in anticompetitive increases in RPP prices. It is therefore important to consider scenarios involving refiners that control large shares of capacity, marginal capacity that sets the market price, or facilities located strategically near transportation and terminal networks. In highly concentrated markets that are less conducive to competitive outcomes, such as PADD 1, the possibility of refiners coordinating short-term outages and longer-term idlings or closures are also greater.

It is clear from the analysis above that market shares and concentration are directly affected by refinery idlings and closings. However, PADD 1 is currently in the grip of two potentially opposing forces—high concentration and low capacity utiliza-

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[8] Anthony Andrews, Robert Pirog, and Molly F. Sherlock, Congressional Research Service, *The U.S. Oil Refining Industry: Background in Changing Markets and Fuel Policies* 17 (November 22, 2010), *available at http://digital.library.unt.edu/ark:/67531/metadc29627/*.

[9] EIA, *supra* note 7.

[10] PBF Energy's Delaware City Refinery came back on line in October of 2011.

[11] The FTC's analysis of relevant markets in petroleum merger cases is a good illustration of this concept, whereby concentration is significantly higher than on a PADD-basis.

[12] FTC, *supra* note 2 at Table 13 (p. 62).

[13] Energy Information Administration, *Refinery Capacity Data by Individual Refinery as of January 1, 2011, available at http://www.eia.gov/petroleum/refinerycapacity/*.

tion rates. The likelihood of price increases is generally higher when capacity is tight relative to demand, as opposed to at low utilization rates. In other words, incentives to exercise market power by withholding output can be defeated by the presence of excess capacity in the market, as currently exists in PADD 1. Capacity utilization rates in other PADDs are currently above 90 percent, whereas in PADD 1, they are at about 68 percent, down from 93 percent in 2005.[14]

However, one effect of refinery closures in PADD 1 might be to increase utilization rates. Indeed, between December 2011 and January 2012, capacity utilization in PADD 1 jumped from 56 to 72 percent—about a 30 percent increase.15 It is too early to determine whether the uptick signals a longer-term trend. However, it is possible that with the closures of Sunoco's Marcus Hook and Conoco-Phillips Trainer refineries in late 2011, other refineries have taken up the slack. Regardless of the cause, if utilization continues to increase, it will be important for policymakers to monitor for price spikes and their potential causes, including strategic competitive behavior.

While the foregoing competitive concerns focus largely on short-run output restrictions, it is also possible that long-term, high levels of market concentration increase the risk that suppliers can coordinate on capacity investment decisions.[16] Slower investment keeps capacity tight and increases the probability that anticompetitive withholding will produce significant and sustained price increases. Indeed, capital expenditures in refining capacity declined, on average, by 3 percent annually over the period 2005 to 2010. While this is likely to reflect a reticence by U.S. refiners to expand their presence in markets with unfavorable economics, ongoing decreases in investment, particularly in concentrated markets, should be monitored.[17]

IV. WHOLESALE MARKETS AND GASOLINE PRICES IN PADD 1

National gasoline prices have continued their steady march upward since the mid-2000s, marked by periodic exogenous shocks. The hurricanes in 2005 caused spikes associated with temporary refinery disruptions, as did the phase out of MTBE in the summers of 2006 and 2007. Likewise, the impact of the global recession beginning in 2008 caused gasoline prices to plunge as demand fell off. But since the beginning of 2009, prices have resumed their upward trend.

A number of factors can influence gasoline price behavior. For example, if upstream (e.g., wholesale RPP) prices continue to increase, accompanying downstream (e.g., retail RPP) price increases can be reinforced by what economists term "asymmetry" or the "rockets and feathers" effect. This is the tendency for downstream petroleum prices to increase faster than upstream prices when upstream prices are on the rise, but to fall more slowly when upstream prices are on the decline.[18] There are various theories that could explain asymmetry, including oligopolistic coordination, consumer search costs, and inventory adjustment costs.[19]

Gasoline prices are also potentially influenced by the effects of increased market concentration resulting from the last wave of mergers in the late 1990s and early 2000s. When upstream and downstream markets are concentrated in vertically integrated industries, competitive concerns can arise. For example, vertical integrated firms may possess the ability and incentive to foreclose rivals from the market by

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[14] Energy Information Administration, *Refinery Utilization Rates React to Economics in 2011* (March 20, 2012), *available at http://www.eia.gov/todayinenergy/detail.cfm?id=5470*.

[15] Energy Information Administration, *East Coast Refining District Percent Utilization of Refinery Operable Capacity, available at http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=MOPUEEC2&f=M*.

[16] For almost 60 years, economists have probed into competitive issues in the domestic petroleum industry, include concerns over potentially exclusionary conduct in gasoline marketing beginning in the 1950s, the concept of "conscious parallelism," or that anticompetitive coordination does not necessarily take the form of a conspiracy, refusals to deal and the potential incentives to foreclose rivals associated with integrated refining-marketing, and entry barriers at the refining level. See, e.g., for discussion of various competitive issues: J. B. Dirlam and A. E. Kahn, *Leadership and Conflict in the Pricing of Gasoline*, 61 YALE L. J. 818 (1952); B. Turner, *Conscious Parallelism in the Pricing of Gasoline*, 32 ROCKY MNTN. L. REV. 206 (1959–1960); W. Adams, *Vertical Divestiture of the Petroleum Majors: An Affirmative Case*, 30 VAND. L. REV. 1115 (1977); J. W. Markham and A. Hourihan, *Horizontal Divestiture in the Petroleum Industry*, 31 VAND. L. REV. 237 (1978); W. L. Novotny, *The Gasoline Marketing Structure and Refusals to Deal with Independent Dealers: A Sherman Act Approach*, 16 ARIZ. L. REV. 465 (1974); and E. V. Rostow and A. S. Sachs, *Entry into the Oil Refining Business: Vertical Integration Re-examined*, 61 YALE L. J. 756 (1952).

[17] CRS, *supra* note 8 at 19.

[18] Asymmetry is observed between a number of upstream-downstream price combinations. The most common is wholesale gasoline-retail gasoline prices, followed by crude oil-retail gasoline prices.

limiting their access to customers or inputs, or raising rivals' costs by forcing them to operate at inefficient scale.[20] Successful foreclosure of rival gasoline retailers by vertically integrated refiner-marketers could increase prices in retail markets.

Refining concentration in PADD 1 is already high and, as noted, might be driven higher by additional refinery closures. But it is also clear that between 2004 and 2010, wholesale concentration increased by between about 300 and 700 HHI points in some PADD 1 states—particularly Pennsylvania where there is a geographic concentration of refining capacity—but also Maine and Rhode Island.[21] Similar to refining markets, however, state-level measures of wholesale concentration are likely understate market concentration since terminal networks are typically defined around smaller, metropolitan areas.[22]

Higher levels of refining and wholesale market concentration should be considered in light of the mitigating fact that refiner integration into gasoline marketing has declined since the early 2000s. For example, rack sales of gasoline in PADD 1 increased from 68 percent to 75 percent in 2010, while sales to co-ops and dealer-tankwagon declined from 17 percent to 14 percent.[23] Indeed, there is evidence that integrated petroleum companies and refiners are spinning off downstream assets to concentrate on more profitable upstream activities. Moreover, large independent gasoline retailers can play a role in disciplining retail gasoline prices.

At first blush, these observations might support the notion that integrated refiners potentially have less ability to affect gasoline prices through vertical foreclosure than in the past. However, this must be viewed against the looming prospect of two firms in PADD 1 accounting for almost 90 percent of refinery capacity. Under those circumstances, jobbers and other distributors that purchase at the rack and independent gasoline retailers potentially face the prospect of dealing with fewer firms, one of which (ConocoPhillips) is vertically integrated into wholesale and retail marketing. Much like concentration in refining markets, this situation should be carefully monitored.

V. CHANGING USE OF THE TRANSPORTATION NETWORK

Changes in the pattern of imports into PADD 1 and network usage also have competitive implications. Pipeline networks in the U.S. were largely designed and constructed to accommodate long-established trading patterns between supply and demand centers, within the U.S. and abroad. When those patterns change—as they are in light of the Northeast refinery closures—new constraints can emerge. For example, increased product flows and capacity constraints, reversals of product flows, shifting shares of pipeline versus ocean-borne (i.e., tanker and barge) transportation, and new pipeline transportation all affect usage of downstream networks, with associated effects on costs, prices, and disposition of supplies. A good analogy is the changed use of the U.S. high voltage transmission grid following regulatory reforms in the mid-1990s. Expansion of wholesale power markets, accompanied by higher volume, longer distance transfers of electricity and new trading patterns exposed limitations on the grid. Today, the industry faces similar issues, as renewables such as wind generators are located on remote parts of the grid.

PADD 1 is unusual in that it is a net importer of petroleum products. In 2010, 72 percent of total product supply in PADD 1 was met by "imports." Just over one half of supply came from other PADDs (primarily PADD 3) and 20 percent from foreign imports. PADD 1 therefore supplied only about 21 percent of its own needs in 2011.[24] The economics of this situation are straightforward. Additional supplies must be procured from non-PADD 1 sources to make up for refining capacity shortfalls, particularly for ULSD and gasoline. Those supplies can come from a variety of sources—PADD 3, PADD 2, Canada, and foreign sources.[25]

Regardless of how shortfalls resulting from refinery closures are met, RPP prices in PADD 1 will likely increase relative to other PADDs, for a number reasons. First, scarce supplies must be bid away from other, more lucrative markets, potentially

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[20] Some economic research appears to support the notion that merger involving refiner-marketer combinations activity in the U.S. since the mid-1990s increased wholesale and, sometimes, retail prices. Moss, *supra* note 19.

[21] FTC, *supra* note 2 at Table 14, at 63.

[22] Data from FTC merger investigations shows that terminaling and marketing markets are much smaller and more concentrated than state-based markets.

[23] FTC, *supra* note 2 at Table 15 (p. 65).

[24] FTC, *supra* note 2, Table 11 (p. 60).

[25] Energy Information Administration, *Potential Impacts of Reductions in Refinery Activity on Northeast Petroleum Product Markets,* (February 27, 2012), *available at http://www.eia.gov/analysis/petroleum/nerefining/update/*.

raising prices.[26] Second, capacity constraints on the Colonial pipeline that moves product from the Gulf Coast and up the eastern seaboard will potentially drive up transportation costs and therefore prices. Constraints on existing terminal and storage capacity and configurations might likewise adversely affect prices. Third, the costs of altering or building new infrastructure to accommodate the PADD 1 refining situation (should it become permanent) are potentially high and could increase prices.

Finally, if products are imported to PADD 1 from atypical or more remote sources, supply chains will probably become longer and more complex, potentially driving up costs and prices.[27] Under these circumstances, supply chains become more "fragile" and prone to disruption from events such as input market shocks, weather, or political events. This fragility could be exacerbated by the presence of concentrated markets at critical, constrained junctures in the supply chain. Such circumstances can create incentives for firms to exercise market power through unilateral or coordinated conduct, and are therefore important to monitor.

VI. CONCLUSION

It is as yet unclear how refinery closures in the Northeast will affect RPP prices, particularly gasoline. Should prices rise, proposals for addressing them will highlight the tension between competition policy and broader-based public policy. Competition policy views domestic petroleum refining and marketing much like any other commodity market, using methodologies and economic tools to evaluate whether mergers or strategic firm conduct are likely to harm competition and/or consumers. Public policy, on the other hand, is apt to treat high gasoline prices as a societal problem. In addition to traditional consumer welfare and economic efficiency concerns, public policy would potentially consider equity, economic growth, and national security as key factors in crafting approaches.

Given these concerns, public policy could view petroleum markets as candidates for special rules or treatment that would not be considered in the realm of competition policy. It is thus important that approaches separate the underlying market dynamics (e.g., scarcity) associated with refinery closures in the Northeast from outcomes that are related to strategic competitive behavior. If the latter appears to be a factor in the evolving Northeast refinery situation, then it would be prudent for policymakers, including antitrust enforcers, to consider several important questions.

One question is whether past mergers have had an effect in creating the market structures and incentives that facilitate anticompetitive outcomes. In making budgetary decisions, Congress might also consider that the FTC will need resources to monitor for and investigate potential competitive concerns. Finally, antitrust may not be able to address some competitive issues. Much like the California electricity crisis of the early 2000s when generators engaged in unilateral withholding strategies to drive up wholesale electricity prices, withholding of refinery output or restraining growth in capacity likewise does not constitute a violation of U.S. antitrust laws.[28] In such circumstances, public policy would play a larger role in ensure that competition and consumers are not harmed.

PREPARED STATEMENT OF ROBERT GRECO, THE AMERICAN PETROLEUM INSTITUTE

Good afternoon. My name is Bob Greco and I am Group Director of Downstream and Industry Operations for the American Petroleum Institute (API). Thank you for the opportunity to speak at this hearing today.

API represents all aspects of America's oil and natural gas industry. The industry supports 7.7 percent of our economy, 9.2 million jobs, and millions of Americans who hold ownership stakes through pension funds, retirement accounts, and investments.

Refineries are critically important to our nation. They make the fuels that virtually all Americans use and that help drive our economy. They contribute to our energy and national security. And they provide jobs for tens of thousands of Americans and substantial revenue to local, state, and federal governments.

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[26] Supplies that come from abroad should, in any robust economic analysis, account for the indirect costs associated with dependency on foreign fuel sources.

[27] EIA, *supra* note 25, at 23.

[28] Withholding output or capacity as part of a collusive strategy would be reachable under Section 1 of the Sherman Act. Likewise, exclusionary conduct by a single firm could be a violation of Section 2 of the Sherman Act. If a withholding strategy was likely in a post-merger context, it could be a cognizable anticompetitive effect under Section 7 of the Clayton Act.

The recent refinery closures in the Northeastern U.S. are a matter of great concern. They have the potential to impact families, communities, and other manufacturing industries, and to reduce tax revenues. We very much regret that.

It's also important, however, to understand the reasons why refining is such a challenging business and why closures sometimes occur—and to also know that the refining industry is resilient and will continue to supply the products that all Americans need.

Refining is highly competitive. It has also traditionally been a low-profit margin industry faced with a heavy slate of regulations over the decades involving many billions of dollars in environmental investment and compliance costs. Because of these and other factors, some refineries—often after sustained periods of financial losses—have had to shut down. About 75 U.S. refineries have closed since 1985.

As this has happened, however, the remaining larger, more efficient facilities have expanded capacity so that total U.S. refining capacity has actually increased by 13 percent. This has allowed the sector to continue to reliably provide Americans with the fuels they need.

The ability of our industry to add capacity and to produce and deliver larger amounts of gasoline and other products over a flexible distribution network—and also to draw on imported products when necessary—will help us continue to supply markets here.

The higher prices we see now also have been a challenge to our refineries. Rising global demand and Middle East tensions have pushed the cost of crude oil higher. The cost of crude oil is the single biggest factor in the price of gasoline—accounting for about three-fourths of the pump price excluding gasoline taxes—and is the largest cost incurred by refineries.

Refiners have struggled to pay higher crude prices to make products for American markets at a time when U.S. demand has been relatively weak because of (1) the recession and its aftermath, and (2) the federal ethanol blending mandates. This has severely pushed down margins and has negatively affected the refining sector.

Refining is a difficult business. But we can make better energy policy choices that can help the industry remain a reliable, stable supplier of affordably priced fuels and keep its workers employed.

Good policy choices mean sensible regulations, fair tax policies, and sufficient access to the crude oil from which all refined products are made. Decisions made in Washington, D.C., are a big part of this equation, but so are those made by local and state governments, such as state requirements for ultra-low sulfur home heating oil.

Excessive rules can raise costs and make it harder for our refineries to compete and stay in business. Policies—such as those embraced by the current administration over the past three years—that limit crude oil production in the United States or prevent ready supplies from being imported from Canada put upward pressure on crude oil prices that eventually affect refineries and those who consume the gasoline, diesel fuel, and other products they make.

That's why we have been calling on the Administration for a change of course.

We've urged them to expand access to America's vast oil and natural gas resources on public lands that could also add supplies to markets and put downward pressure on prices.

We've urged them to approve the Keystone XL pipeline, which could deliver from Canada very large additional supplies of crude oil to U.S. refineries that serve U.S. consumers.

We've called for more sensible, cost-effective regulations that show a practical regard for potential impacts on industry facilities and to the people who work there or who depend on the products they make.

We've asked the EPA in particular to reconsider a virtual blizzard of new poorly thought-out, unnecessary, and even counterproductive rules that could threaten our refining sector. For example, refiners are facing an impending "blend wall" where the mandates to blend ethanol into gasoline will soon exceed our ability to safely use these fuels in existing vehicles. Moreover, refiners are also required to blend into the gasoline supply advanced biofuels that do not yet exist, or pay a fee when they cannot meet the mandates. This policy is regulatory absurdity, and effectively amounts to a hidden tax on gasoline manufacturers.

Another example is the so-called Tier 3 rules for further sulfur reduction in gasoline. EPA has yet to demonstrate any air quality benefits from reducing sulfur by the amount being considered, and an analysis by the respected energy consulting firm Baker & O'Brien shows that implementing the new requirements could increase refinery greenhouse gas emissions because of the use of energy-intensive hydro treating equipment to remove sulfur from the gasoline.

The Baker & O'Brien study also found that U.S. refiners could face $10-17 billion of up-front capital costs and $5-13 billion of recurring annual operating expenses under several Tier 3 scenarios. That could translate to increases between 6 cents and 9 cents per gallon in the cost of manufacturing gasoline. If a vapor pressure reduction requirement is included, the cost increase could be as much as 25 cents per gallon, and four to seven U.S. refineries might close because their owners could not make the required investments to meet the new requirements. While the sulfur reduction requirement alone, with an upfront cost of nearly $10 billion and an annual operating cost of $2.4 billion, probably would not lead to refinery closures, these additional, unjustified costs would only further weaken the competitiveness of domestic refiners.

Of course, diminished domestic fuel manufacturing capacity would lead to increased reliance on imported petroleum products from foreign refineries that may be operating under substantially less stringent environmental standards than exist in the United States—all for what would be at best modest incremental environmental benefits here at home.

Decisions made in Washington, D.C., can have a big impact on refiners and the fuel market, but so can those made by state and local governments. For example, the current New York state requirement for ultra-low sulfur home heating oil is unjustified and may impact the reliable supply of home heating oil this winter. Fortunately the state legislature is reconsidering this draconian reduction, and we urge New York to do so quickly before the requirements go into effect this summer.

U.S. refineries are under pressure for a combination of reasons, and increased regulatory costs are certainly a factor. The discourse on environmental protection in this country should not be cast as being either for it or against it, which is really a straw man debate, but instead should focus on making regulation more efficient so it materially benefits the environment without impeding economic growth unnecessarily, and avoids hindering other environmental improvements inadvertently.

Existing refinery regulations and fuel requirements clearly contribute to a cleaner environment and safer workplace, but, unnecessary, inefficient, and excessively costly requirements hamper our ability to provide and distribute fuels to America, while also employing hundreds of thousands of people and enhancing our national security. We have already seen some refineries close, at least in part due to the cumulative impact of environmental controls.

The U.S. oil and natural gas industry has invested over $209 billion since 1990 toward improving the environmental performance of its products, facilities and operations. In the year 2009 alone, $12.4 billion was spent implementing new technologies, creating cleaner fuels, and funding ongoing environmental initiatives. 52% of the industry's environmental expenditures in 2009 targeted air pollution abatement, meeting or surpassing the requirements of the 1990 Clean Air Act.

In light of the environmental progress the nation has experienced, we therefore urge the Administration to take a step back on Tier 3 and its other proposed rules. We must be sure that new regulatory proposals are necessary, properly crafted, practical, and fair, to allow U.S. refiners to remain competitive, preserve good paying refinery jobs, and ensure our energy security.

America's refineries are a critical part of the nation's industrial bedrock and a part of the fabric of the communities in which they operate. They make products that are absolutely indispensable to America. They are vital to our national security.

Our policy makers must understand this for this vital sector of our economy to continue serving America the best it can.

Thank you.

PREPARED STATEMENT OF THOMAS D. O'MALLEY, CHAIRMAN, PBF ENERGY

Chairman Casey, Vice Chairman Brady and Members of the Committee, thank you for giving me the opportunity to testify at today's hearing on some of the factors that led to refinery closures in the Northeast. I'm Tom O'Malley and I serve as chairman of PBF Energy.

PBF Energy owns three refineries with a total capacity of 540 MBD. Two of the refineries are located in the Northeast, one in Delaware City, Delaware and the other in Paulsboro, New Jersey. Both of these refineries were acquired from Valero in 2010, one in a closed down condition and the other in danger of being closed. Both refineries are in operation today supplying fuel to the East Coast. Our third refinery is in Toledo, Ohio and has operated on a continuous basis since acquisition in March of 2011. We employ at the three refineries, directly and with contractors, about 2,000 people.

The recent refinery closures that have occurred or are currently pending are the tip of an iceberg. If the fuel substitutions from 2012 to 2022 mandated under the Energy Independence Act of 2007 are maintained, we will lose over that time period an additional 10% minimum of U.S. capacity and the thousands of jobs that this important industry provides.

The 1,400,000 BBLs per day of renewable fuels over and above the 2011 mandate which includes 10% Ethanol in gasoline will, we believe, be more expensive than the product coming from refineries. When you combine this with what can only be described as an aberrant administration of the 2007 Act, particularly on RINs (Renewable Identification Numbers), by the EPA, it's easy to come to the conclusion that the government will drive refining companies out of business. This extra fuel substitution has no basis in economic reality and is marginal in terms of environmental improvement. The Act of 2007 may have seemed good policy in 2007. It is not today. If bio/renewable fuels manufacturers can produce on a superior economic basis to hydrocarbon fuels, they should do so and take market share the old fashioned way, better quality and better price without government mandates or subsidies.

We are on a road that may in fact get us close to independence on the Energy front. But, it will come from more production of hydrocarbons and not from taking corn out of the food chain and turning it into Ethanol or from some dream process that doesn't exist on an economic basis to make advanced bio-fuel at great cost to the consumer.

The other government action that will close more refineries and raise the price of fuels is the EPA Plan for Tier 3 Gasoline. The industry will have to spend billions of dollars to comply; money which the independents, who now control 60% of our capacity, don't have. Why? To lower sulfur content from 30 parts per million to ten parts per million. Under this Tier 3 Plan, the total sulfur removed from the PBF gasoline production of about 4.5 billion gallons would be less than 1/8 of what one 500 MW coal-fired power plant emits in a year. You have plants of this size not farfrom here.

Is this good policy in a weak economy, where it helps kill one of our last heavy industries that provides high paying jobs and meets the needs of our population?

This hearing is focused on the impact of potential closures of petroleum refineries serving the Northeast and the effect on prices. This is not just an issue for the Northeast, but for the entire nation.

In the short, medium and long term, it is my view that these closures will lead to higher prices. In certain circumstances, we could see dangerous shortages develop which could lead to severe economic disruption.

Current Government policy will drive refineries in other areas of the country out of business and this will further complicate the East coast situation.

We need to see an adjusted government policy that seeks to maintain this important strategic manufacturing industry and not a series of policies and laws that destroy it.

Removing the 2007 law's renewal fuel mandate eliminating the mandate for 10% ethanol in gasoline and holding the EPA back from an aggressive stance on Tier 3 fuel specifications would, in my view, lead to a healthy Delaware Valley refining industry and jobs for the workers in lhis valuable industry.

This situation is not the fault of either the Democrats or the Republicans. But, it can only be solved by a Congress that works together in the interest of all the American people.

Thank you for inviting me and the courtesy of listening to my views.

PREPARED STATEMENT OF MICHAEL GREENSTONE, 3M PROFESSOR OF ENVIRONMENTAL ECONOMICS, MASSACHUSETTS INSTITUTE OF TECHNOLOGY; DIRECTOR, THE HAMILTON PROJECT; AND SENIOR FELLOW, THE BROOKINGS INSTITUTION

Thank you Chairman Casey, Vice Chairman Brady, and members of the Committee for inviting me here today.

My name is Michael Greenstone, and I am the Director of The Hamilton Project, the 3M Professor of Environmental Economics at the Massachusetts Institute of Technology, and a Senior Fellow at the Brookings Institution. I am honored to have the opportunity to speak with you today about America's energy choices, as prompted by the repercussions of potential refinery closures on the East Coast.

I. INTRODUCTION

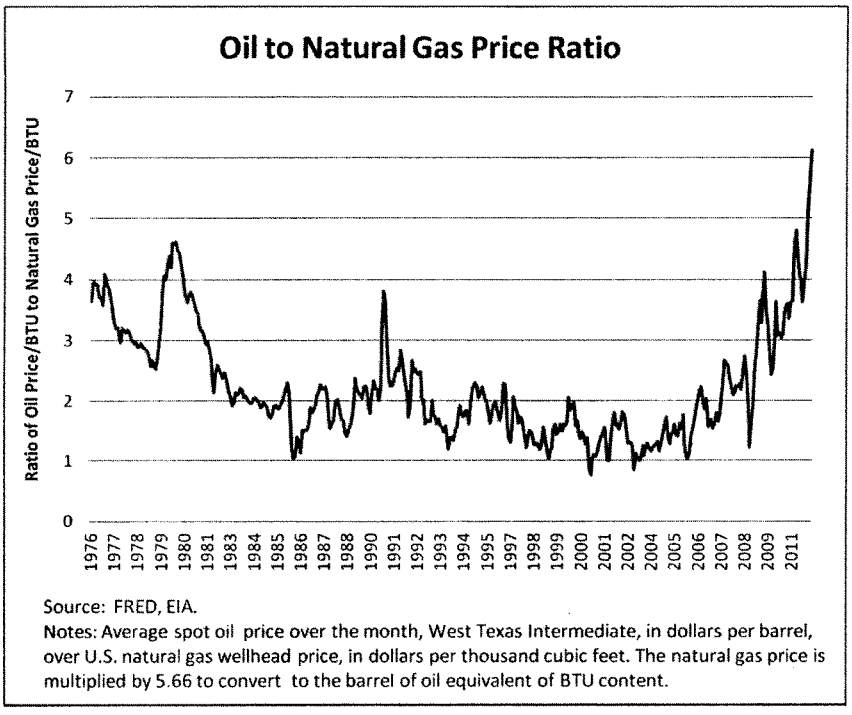
Thanks in part to an economic infrastructure heavily dependent on energy use—roads and highways, ports and railways, broadband and computer networks, manu-

facturing plants and shipping facilities—American workers and businesses are among the most productive in the world and the most globally integrated. One innovation after another over the centuries, fueled by cheap and plentiful energy from coal, oil, and natural gas, has allowed the nation's economy to transition from one based on agriculture to one based on high-value-added manufacturing and services aided by computerization. Our standard of living—among the highest on earth—would simply not be possible without energy and the systems that have been developed to harness it.

The potential closures of petroleum refineries on the East Coast have led to speculation that energy prices may rise, possibly dramatically in some instances. This hearing provides an important opportunity to consider our energy choices more broadly. Specifically, it provides a moment to remember that our energy sources often come bundled with costs that go beyond what we pay at the pump or in our electricity bills and that sound choices involve recognizing all costs.

II. THE NATURAL GAS REVOLUTION

The discovery of vast amounts of natural gas shale resources in the United States and the advancement of drilling technologies that allow us to develop these resources have dramatically changed our country's energy situation. Over the course of the last decade, U.S. natural gas prices have plummeted while petroleum prices have increased significantly. As you can see from the figure below, on an equal energy content basis, the price of oil traded at roughly twice the price of natural gas for roughly twenty-five years. Their prices were roughly linked because of the opportunities for substitution of one for the other. This dramatically changed in 2005 when our natural gas production began to increase, and petroleum now trades at over 6 times the price of natural gas at the beginning of 2012.



Source: FRED, EIA.

Notes: Average spot oil price over the month, West Texas Intermediate, in dollars per barrel, over U.S. natural gas wellhead price, in dollars per thousand cubic feet. The natural gas price is multiplied by 5.66 to convert to the barrel of oil equivalent of BTU content.

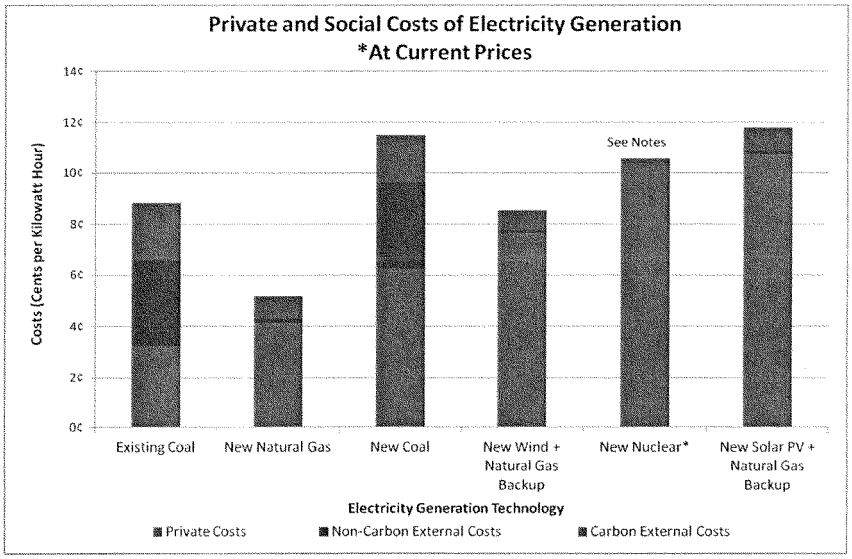
The practically unprecedented change in the ratio of oil to natural gas prices presents an incredible opportunity for the United States. It is creating economic opportunities around the country during what remain tough economic times, reducing the price of energy for many Americans, changing the mix of electricity sources on the grid in a way that reduces carbon emissions, and over the longer term offers an opportunity to strengthen our energy security. Reducing our dependence on petroleum-based energy sources in favor of natural gas could have many benefits—including the development of a more diverse set of options that does not constrain our foreign policy choices and provides great protection against oil price shocks in the future.[1] The first signs of a transition to increased reliance on natural gas in the transportation sector are beginning to emerge, but this transition will not proceed optimally or quickly unless we make proactive policy choices.

III. THE SOCIAL COSTS OF ENERGY

One of the challenging features of our energy system is that many of our energy choices involve what economists call "externalities." That is to say, the choices that individuals make about the production or consumption of a particular energy source impose costs on others in the form of shorter lives, higher health care expenses, a changing climate, and weakened national security. The current energy playing field is tilted because our individual energy choices are based solely on the visible costs that appear on electric bills and at the gas pump. This system masks the full or social costs arising from those energy choices.

The social cost of energy includes the price we pay at the gas pump—known as the "private costs"—*plus* the less obvious impact of energy use on health, the environment, and national security. Economists refer to these additional damages as negative externalities, or "external costs."

The dramatic differences in the private and social costs of different energy sources—seen in the figure below, which adds on the external costs associated with each electricity source—illustrate how the low-private-cost energy sources on which we rely often come with high external costs.



[1] Gail Cohen, Frederick Joutz, and Prakash Loungani, 2011, "Measuring energy security: Trends in the diversification of oil and natural gas supplies," Energy Policy 39 (2011) 4860–4869, Elsevier.

For example before accounting for external costs, a coal plant is a competitively priced way to produce electricity. But the costs of coal increase dramatically when the full costs of production are included. Specifically, the social cost per kilowatt hour of energy for existing coal plants is more than double the private cost—8.8 cents compared to 3.2 cents. In contrast, the private cost of a kwh of electricity from a new natural gas plant is 4.1 cents and the full or social cost is 5.2 cents. These calculations are from a recent Hamilton Project paper and are based on the National Academy of Science's estimates of the non-carbon (primarily health) costs from producing a kwh of the various energy sources and the United States Government's estimates of the damages from climate change due to the release of greenhouse gases.[2]

Once the social costs of all energy sources are accounted for, natural gas power plants stand out as the least expensive electricity source today. This outcome reflects the low prices of natural gas due to the recent dramatic increase in reserves and the fact that the health and environmental costs associated with natural gas are lower than for other fossil fuels.[3]

Despite the relatively low social costs of natural gas, industry and consumers have little incentive to change their energy choices based on comparing social costs. This is because coal and gasoline are comparatively inexpensive when only their private costs are considered—their costs to health, the climate, and national security are obscured or indirect, and so consumers behave as if they were less costly than they truly are.

Current energy policy tilts the balance in favor of energy sources that only appear cheap because their prices do not account for their full costs, although society nevertheless bears the external costs. A better approach to energy policy would involve a fairer competition between energy sources that placed them on a level playing field. The best approach is to price carbon and other pollutants appropriately. But in the absence of a national policy to price these external costs, there are still other policy options available. The Hamilton Project is exploring some of these policy options in research to be released this June.

IV. AN UNEVEN PLAYING FIELD

Increasing our natural gas consumption—or altering our energy consumption in any manner—is easier said than done, since different forms of energy are not necessarily competing with one another on an even playing field. For example, several barriers prevent us from fully utilizing natural gas in the transportation sector, as an upcoming Hamilton Project paper by Chris Knittel will discuss.

Some existing U.S. policies aim to correct externalities in energy use in the transportation sector, but they do not treat natural gas fairly. For example, the Federal Renewable Fuel Standard as outlined in the Energy Independence and Security Act of 2007 ensures that transportation fuels sold in the U.S. contain certain volumes of renewable fuels, but does nothing to encourage the use of natural gas. Of course, natural gas is not a renewable fuel, but the stated rationale behind the Act is to promote energy independence and security, and to favor clean fuel sources. Use of natural gas would clearly advance the mission of the Act. Until natural gas is included in the Renewable Fuel Standard as a Conventional Biofuel, it will be at a disadvantage to fuels such as ethanol.

Electric vehicles provide another example of natural gas's comparative disadvantage. Electric vehicles receive much larger subsidies through income tax credits than do vehicles that run on compressed natural gas. These two forms of vehicles produce comparable amounts of greenhouse gas emissions, and fairness would dictate that both should receive equal subsidies.

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[2] Michael Greenstone and Adam Looney, "A Strategy for America's Energy Future: Illuminating Energy's Full Costs," The Hamilton Project strategy paper, Brookings Institution, May 2011, *http://www.hamiltonproject.org/files/downloads_and_links/05_energy_greenstone_looney.pdf*; Michael Greenstone and Adam Looney, "Paying Too Much for Energy? The True Costs of Our Energy Choices," Daedalus, Spring 2012, Vol. 141, No. 2: 10–30; National Academy of Sciences (NAS). 2010. Hidden Costs of Energy. National Academies Press. Washington, DC. 154; Interagency Working Group on Social Cost of Carbon, United States Government. 2010 (February). "Technical Support Document: Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866." *http://www.epa.gov/oms/climate/regulations/scc-tsd.pdf*

[3] It is critical to underscore that there are important unresolved questions about the external costs of natural gas drilling, including its effect on water and air quality and the degree of fugitive greenhouse gas releases. There are also unquantified external costs from nuclear and other energy sources. The numbers in this testimony and the figure should naturally be updated as new information emerges.

There are also issues in infrastructure which require further analysis. Decades of reliance on gasoline as our main fuel for transportation have led to the build-out of petroleum-focused infrastructure. For example, 120,000 gas stations exist in the United States for vehicle refueling, while there are fewer than 400 public refueling stations for natural gas. As a result, natural gas vehicles are prohibitively impractical for most consumers. We find ourselves in a situation in which the status quo is inherently favored, even if our energy needs in the short-run may be better served by natural gas and in the long-run by innovation. Without prejudging the outcome, it would be appropriate to study whether some targeted subsidies for the construction of natural gas refueling stations are justified.

V. CONCLUSIONS

I will conclude by bringing this back to the subject of today's hearing. Periodically, the energy sector shows up in the headlines—most often this is due to price spikes, like those that some project would follow the potential closure of petroleum refineries in the Northeast or due to environmental damages associated with energy production or consumption. Our current energy policies encourage these problems, rather than discourage them, by failing to allow all energy sources to compete on a level playing field.

I respectfully make the following recommendations that aim to correct this core problem with our energy system:

- First, the federal government should price the external costs, that is the health, environmental, and security costs, associated with the production and consumption of energy. This reform would allow all energy sources to compete on a level playing field.
- Second if it is infeasible to fully price these external costs, then a forthcoming Hamilton Project paper makes a compelling case for putting natural gas on equal footing with renewable fuels under the Federal Renewable Fuel Standard and by providing equal subsidies to electric vehicles and vehicles that run on compressed natural gas.

I would like to thank the entire committee once again for inviting me to participate in this discussion. I will gladly respond to any questions.

PREPARED STATEMENT OF CONGRESSWOMAN DONNA CHRISTENSEN

Good afternoon Chairman Casey and Members of the Joint Committee:

Thank you for the opportunity to submit remarks to be included in the official record of this very important hearing. As we all are acutely aware every time we stop at a gas station, or receive our electric bills in the mail, the ongoing energy crisis has been and will be regarded as one of the most defining issues of our time.

With the domino like closing and idling of refineries that supply fuel to the Northeast happening far too frequently, it is very fitting that we come together to discuss gas prices in the region and the resulting potential impact on the American consumer due to the loss of refining capacity.

Being the Congressional Representative of the U.S. Virgin Islands, which served as home to what was the western hemisphere's third largest oil refinery—it is imperative that I lend my voice, and the voice of my constituents to the discussion being had today. They are also represented in the audience today by, Ira Hobson and Oswin Newton, two members of the Steelworkers who are among the recently laid-off workers.

Prior to its shut down of operations in February of 2012, the HOVENSA oil refinery exported more than half of its output to the East Coast and produced approximately 350,000 barrels per day of refined product. At its height, HOVENSA produced more than 500,000 barrels per day with ⅔ of it going to the east coast, which included jet fuel and other refined products.

Before it closed its doors, it had begun to export to other markets, cutting its exports to the Northeast to 55% percent. Though the impact of HOVENSA's closing is only beginning to be seen, we can be assured that American consumers from New Jersey to St. Croix, St. Thomas or St. John will have an adverse lasting impact for years to come.

It has been suggested that environmental and health protections are to blame for recent refinery closures in the United States and its territories. Speaker John Boehner also has repeated claims that [quote] "extremely challenging regulations" for U.S. refineries are causing gasoline prices to rise.

The truth is that the recent refinery closures were not driven by environmental protections. And they certainly were not caused by regulations that haven't even

been proposed. The truth is that recent decisions to close or sell refineries along the East Coast are based on market factors such as oil prices, consumer demand, and competition.

When it announced the refinery closure, the company stated very clearly that the closure was due to $1.3 billion in economic losses [quote] "caused primarily by weakness in demand for refined petroleum products due to the global economic slowdown and the addition of new refining capacity in emerging markets."

The company also noted that as an oil-fired refiner, it was at a competitive disadvantage with other mainland refiners that use cheap natural gas to power their facilities.

The company's CEO testified before the 29th Legislature of the Virgin Islands and reiterated that poor market conditions, including a drop in demand for the refinery's petroleum products, had put it on a path to bankruptcy. He also dismissed suggestions that an EPA order to install modern pollution controls was a factor in the company's decision to close the refinery.

The Pennsylvania refineries also have faced challenging market conditions. They process the most expensive type of crude oil. Demand for their products has fallen, and excess capacity has squeezed their profit margins.

Elsewhere in the United States, refineries are thriving. In 2011, U.S. refining capacity reached 17.7 million barrels per day, the highest level in at least 25 years. In particular, Gulf Coast refineries have been able to process cheaper sources of crude compared to the rest of the country and maximize production. As a result, several refineries in the Gulf Coast are actually expanding their capacity.

Given that the U.S. Virgin Islands being such a small community, the impact of HOVENSA's recent closing has already begun to reverberate throughout the entire community—and regionally as well. With over 2,000 jobs lost due to the shut down, businesses that rely on HOVENSA, their suppliers, hotels and restaurants and even some of our private schools are wondering how they are going to keep their doors open. This coupled with the ongoing recession, couldn't have come at a worse time with the local government having had to cut salaries, announce layoffs and deal with the impact of cutbacks in federal spending.

In addition to that other concerns remain. Our neighbors in Puerto Rico remain concerned about where they will be able to secure jet fuel that was once originally supplied by HOVENSA. While we have worked it out to some degree, at one point, there was a threat that a local business was in jeopardy of losing a contract with the Department of Defense due to uncertainty regarding the ability for Hurricane Hunters and other DOD assets to be able to refuel on St. Croix. Those two examples alone reflect the anxiety and concern regarding who will be supplying the Virgin Islands in place of HOVENSA and at what price, but of course it extends to our gas stations and the consumers.

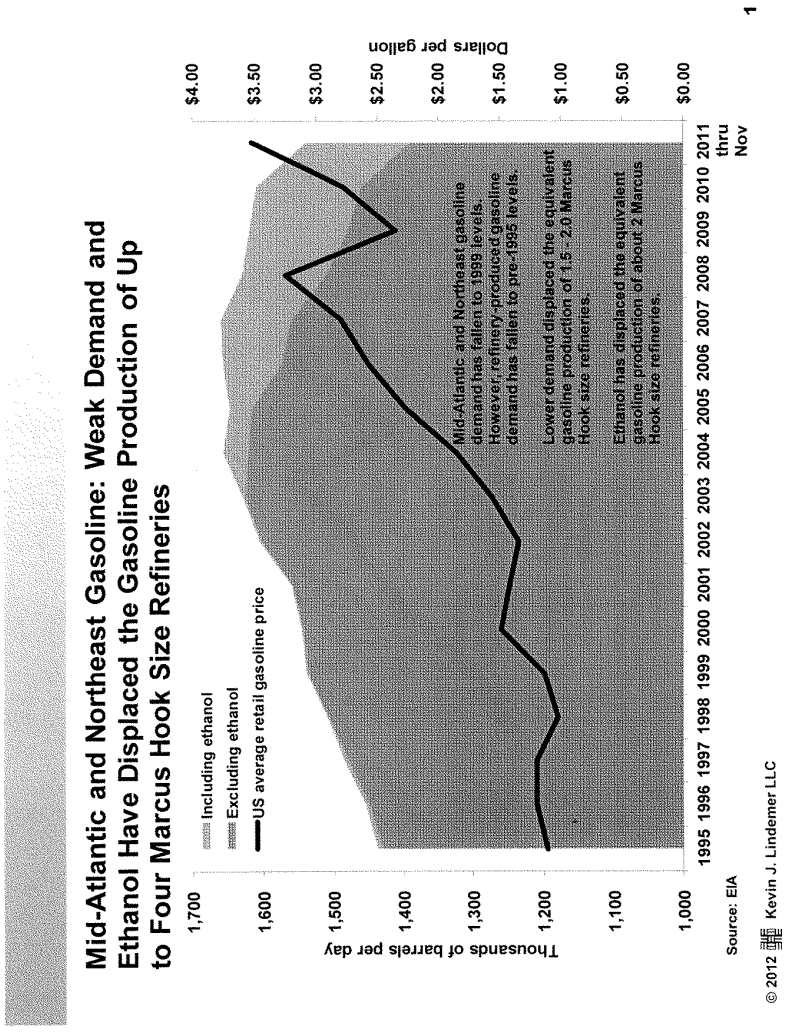
With 25% of our population below the national poverty level, and our cost of living 17% higher than the national average and with energy cost rates 4 times the national average, the price of fuel in the future dominates conversations every single day in my district. HOVENSA has recently agreed to continue to supply fuel until the end of the calendar year (they were originally going to stop supplying at the end of June 2012), but before that time the Virgin Islands Water and Power Authority (VIWAPA) will again have to tender to buy more than 2 million barrels of petroleum for its power generating facilities. The response to their recent request for proposals to supply was poor, but before the end of the year a supplier will have to be in place.

The majority of the community remains doubtful that there stands a chance that our already burdensome cost of energy per kilowatt hour at .43 for residential and .45 for commercial has a chance of being reduced, once transportations costs of getting the fuel to the Virgin Islands is factored into the price that consumers pay.

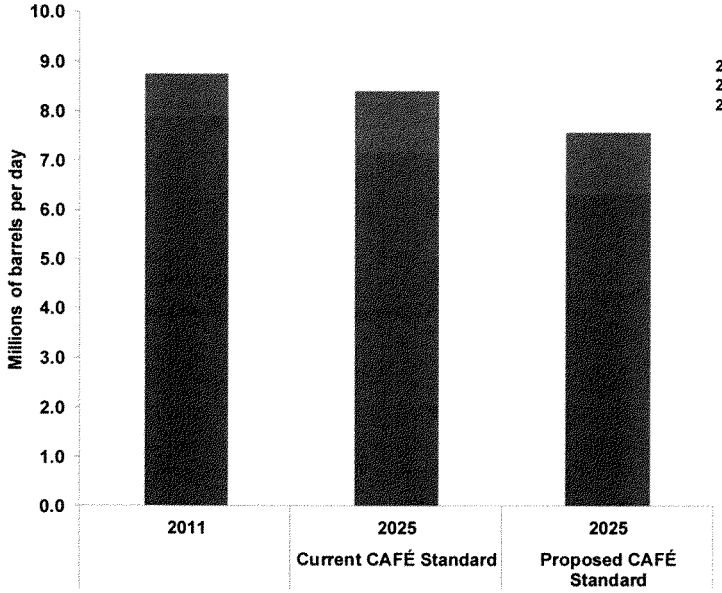
And so while the focus of this hearing is on the impact of the closures on the Northeast, it is important to bring to the joint committee's attention and concern that in addition to the direct economic impact of the loss of jobs, scholarships for the children of their managerial employees, and the purchasing of supplies from the local companies, as well as the loss of value to those and other businesses, the closure of HOVENSA not only affects consumer prices for gasoline and other petroleum products in the Northeastern states, but has a severe impact in the U.S. Virgin Islands as well.

The Committee is also considering natural gas as an alternative fuel. It is clear to me that not having it available was a major factor in HOVENSA's closing, but our utility (VIWAPA) is also compelled to find a way to replace diesel with natural gas to lower the costs to consumers and to burn a clean fuel. Barriers include transportation and storage of LNG and our small economy of scale.

As the Committee and the Congress go on to determine what the response will be, and what remedies will be applied please ensure that they will include the entire area of impact which includes the U.S. Virgin Islands.



US Refinery Produced Gasoline: Policy will Cause Demand to Decline -- the Question is by How Much?



New Car Efficiency (miles per gallon)	
2011	31.4
2025 current standard	39.9
2025 proposed standard	54.5

- Ethanol from RFS2
- Refinery Produced Gasoline

Source: EIA, various

PREPARED STATEMENT OF THE HONORABLE JOHN P. DE JONGH, JR., GOVERNOR OF THE U.S. VIRGIN ISLANDS

Chairman Casey and distinguished Members of the Joint Economic Committee, thank you for the opportunity to participate in this important hearing and to provide the views of the Government of the U.S. Virgin Islands on the macro economic impact of recent refinery closures on the Northeast. As you know, the U.S. Virgin Islands has been adapting to the sudden closure of one of the largest refineries in the Atlantic Basin, and it is encouraging to the people of the U.S. Virgin Islands to know that this Committee is concerned with the broader economic implications of the loss of refining capacity in the region.

HOVENSA, which is a joint venture between Hess Corporation and Petróleos de Venezuela, is one of the 10 largest refineries in the world, located on the island of St. Croix in the U.S. Virgin Islands ("USVI"). On January 18, 2012, after more than 45 years of operations, HOVENSA announced plans to shut down the St. Croix refinery by mid-February. By February 16, 2012, HOVENSA had ceased refining operations and completed closure of the refinery. Discussions between HOVENSA and the USVI concerning future plans for the refinery are ongoing.

Prior to closure, HOVENSA had a refining capacity of over 500,000 barrels per day (bbl/d) and it produced 350,000 bbl/d in 2011. HOVENSA provided refined oil to meet the needs of the USVI and was an important source of gasoline, home heating oil and other distillate fuels for the eastern part of the United States. HOVENSA was also a major supplier of jet fuel to the United States military.

HOVENSA has traditionally sent most of its product to the East Coast and has for many years "play[ed] a significant role in supplying the Northeast."[1] In 2007, the East Coast imported 307,000 bbl/d from HOVENSA, which was two-thirds of the refinery's output that year. While total imports had declined somewhat by 2011, when the East Coast imported 158,000 bbl/d from HOVENSA, imports of gasoline and distillate were steady and HOVENSA continued to be an important supplier of gasoline and distillate to the East Coast. In 2011 (through November), HOVENSA accounted for almost thirty percent of total East Coast distillate imports (which includes ultra-low sulfur diesel or ULSD) and thirteen percent of the gasoline imports.[2]

While retail gasoline prices are often linked to rises in crude oil prices, refinery closures are further impacting gas prices.[3] Indeed, "[w]hen supply is tight with product inventories diminishing relative to normal levels, product prices can rise, sometimes sharply."[4] There is little doubt that HOVENSA's closure has resulted in an increase in gas prices on the East Coast, as well as in the Virgin Islands. Immediately following HOVENSA's January 18, 2012 announcement, gasoline futures rose 2 percent on the New York Mercantile Exchange.[5]

As was noted in a recent study by the U.S. Energy Information Administration, "[r]efinery closures in the U.S. Virgin Islands and the Philadelphia area are likely to affect product distribution arrangements along the entire East Coast. With the HOVENSA shutdown, both the Lower Atlantic and New York Harbor lose a major source of supply."[6] As a result, there are additional supply needs throughout the Northeast. But the lost volumes not only disrupt the supply chain, they also create logistical problems as those volumes need to be replenished from alternate sources, which face problems bringing supply to the East Coast. Specifically, there is difficulty in moving product from the Gulf Coast to the Northeast because the pipeline that delivers product is at or near capacity and shipments from the Gulf Coast to the Northeast are subject to the Jones Act. By contrast, shipments to U.S. ports from the USVI are exempt from Jones Act requirements and thus such obstacles have not been a concern for imports from the USVI.

The U.S. Energy Information Administration predicts that as a result of the combined closures of HOVENSA and the Philadelphia refineries, "[t]he industry may

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[1] *Potential Impacts of Reductions in Refinery Activity on Northeast Petroleum Product Markets*, U.S. Energy Information Administration, at 8 (Feb. 2012).

[2] *The HOVENSA refinery closure removes an important source of East Coast Gasoline and distillate supply*, U.S. Energy Information Administration, at 1 (Feb. 23, 2012).

[3] *Rising Gasoline Prices 2012*, Congressional Research Service (March 1, 2012); Short-Term Energy and Summer Fuels Outlook, U.S. Energy Information Administration (Apr. 10, 2012).

[4] *Potential Impacts of Reductions in Refinery Activity on Northeast Petroleum Product Markets*, U.S. Energy Information Administration, at 21 (Feb. 2012).

[5] *Refinery Closing Threatens Virgin Islands' Debt, Employment*, Bloomberg (Feb. 9, 2012).

[6] *Potential Impacts of Reductions in Refinery Activity on Northeast Petroleum Product Markets*, U.S. Energy Information Administration, at 24 (Feb. 2012).

face significant logistical challenges in the Northeast for a year or more, as infrastructure changes will be necessary to accommodate replacement product flows."[7]

It should come as no surprise, then, that the East Coast has been particularly affected by rising gas prices experienced throughout the United States. "The U.S. average retail price of regular gasoline increased almost 7 cents to $3.59 per gallon as of February 20, 2012, about 40 cents per gallon higher than last year at this time. Prices were up across all regions …. The East Coast price rose 4.2 cents to $3.65 per gallon, and had the largest increase compared to a year ago, at 48 cents."

Furthermore, it is not only gasoline prices that have been affected by refinery closures. Prices for distillate fuel, primarily ULSD, are expected to rise as well. "Looking ahead ULSD demand in the Northeast is expected to increase considerably."[8] Use of ULSD for transportation is increasing. And rising ULSD prices are particularly problematic in the northeastern United States, where State regulations in New York, soon to be followed by Massachusetts, New Jersey, Vermont and Maine, are beginning to require heating oil to meet the low sulfur levels found only in ULSD. As with gasoline, providing sufficient ULSD "volume to the Northeast will be hampered by logistical constraints. With the [Gulf Coast] pipeline running near capacity, moving the needed product to the Northeast with require Jones Act tankers, which may be in short supply."[9]

As noted above, the USVI supplied thirty percent of the East Coast's distillate imports in 2011. With the closure of HOVENSA the East Coast has lost an important source of ULSD at a time when industry analysts warn that demand is on the rise and there are limited possibilities for replacing the lost volume.

All of this is to say nothing of the catastrophic impact of the HOVENSA closure on the USVI itself, which has lost not only its largest employer and taxpayer but also its sole existing source of gasoline and the fuel oil that powers its electricity and water supplies. The economic problems triggered by the loss of the Pennsylvania refineries are magnified many times over in the USVI, which now faces not only higher fuel prices but also substantial increases in utility prices and a dramatic loss of public revenue.

I hope this brief letter helps the Committee to understand the important role the USVI has played in supplying the East Coast with gasoline and distillate imports and the significant impact the closure of HOVENSA has had on East Coast supplies.

Please let me know if you have any questions or if my administration can provide any further information.

PREPARED STATEMENT OF DENIS STEPHANO, PRESIDENT, UNITED STEELWORKERS (USW) LOCAL 10–234, REPRESENTING OIL REFINERY WORKERS AT THE FORMER CONOCOPHILLIPS CO., TRAINER, PA

My name is Denis Stephano and I am president of United Steelworkers (USW) Local 10–234 at the former ConocoPhillips refinery in Trainer, Pa. Before ConocoPhillips shut down the refinery at the end of January, my local represented 234 operations and maintenance workers. We worked alongside an average of 150 contractors and 200 salaried personnel.

On May 1, Delta Air Lines' wholly-owned subsidiary, Monroe Energy LLC, reached agreement with Phillips 66 to purchase the Trainer, Pa., facility. The acquisition is supposed to close in the first half of 2012. Re-opening this refinery will provide jobs for hundreds of former ConocoPhillips and Sunoco Marcus Hook workers.

Even though the former ConocoPhillips refinery has been sold, its purpose mainly will be to produce jet fuel. Sunoco's Philadelphia refinery is still for sale and if it is not bought by the end of August it will shut down. This is the East Coast's largest refinery with 335,000 barrels-per-day and analysts say that if this capacity is shuttered oil prices in the Northeast will soar.

The Philadelphia refinery alone accounts for nearly a quarter of refinery capacity on the East Coast, and the U.S. Energy Information Administration (EIA) predicts that if it shuts down, "petroleum product markets in the Northeast could be significantly impacted."

East Coast refineries mainly serve the Northeast, supplying about 40 percent of Northeast gasoline sales and 60 percent of distillate (diesel fuel and heating oil) sales in 2010, according to the EIA. About half of the supply came from the three Philadelphia-area refineries. Another supply source for the Northeast was eliminated when HOVENSA (a joint venture between Hess Corp. and Petróleos de Ven-

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[7] *Id.* at 3.
[8] *Id.* at 9.
[9] *Id.* at 12.

ezuela) in February closed its St. Croix refinery (550,000 b/d) in the U.S. Virgin Islands. This refinery mainly supplied the Northeast with gasoline and Ultra-Low-Sulfur Diesel (ULSD).

East Coast refining capacity has been steadily declining since 2000. The attached Northeast refinery crude capacity chart shows regional capacity at 1,780,700 b/d in 2000 and it plunges to 773,200 b/d in July 2012 if a buyer is not found for the Sunoco Philadelphia refinery. Western Refining has already shut down and sold the Yorktown, Va., refinery and it is being demolished and turned into a terminal. Sunoco's Eagle Point refinery in Westville, N.J., met the same fate.

This situation will result in higher prices at the pump and for home heating oil and other petroleum products. With the three Philadelphia-area refineries operating the Northeast can be assured of a steady supply of gasoline, home heating oil and ultra-low-sulfur diesel. Take out the Marcus Hook and Philadelphia refineries and the Northeast becomes subject to fuel supply shortfalls and price spikes while new infrastructure is being put into place during the next several years. The EIA says that "in the longer run, higher prices and possibly higher price volatility can result from longer supply chains."

The EIA says that adequate refining capacity is available outside of the East Coast to replace the lost capacity, but this makes the Northeast far more dependent on Gulf Coast refineries and fuel imports for its gasoline needs. This presents a major logistical problem. The Colonial Pipeline, which carries most Gulf Coast products to the Northeast, is running near capacity. It is being expanded but the EIA says it still will not be able to make up for the entire lost production from the shutdown of the Philadelphia-area refineries.

The second major logistical problem in getting product from the Gulf is the small number of Jones Act tankers. The Jones Act requires that commercial shipments between two U.S. ports must be on U.S.-flag ships that are constructed in the U.S., wholly owned by U.S. citizens and staffed with U.S. citizens and U.S. permanent residents. Only 56 such tankers exist and they are usually chartered months in advance, limiting their short-term availability.

We view the Jones Act as a critical domestic jobs policy enabler that supports both economic and national security of our shoreline shipping. The USW is a strong advocate of the Jones Act and is a member of the AFL-CIO Maritime Trades.

The third major logistical problem is receiving products at ports and connecting into the product pipelines that originate in the Philadelphia-area refining complex to serve inland Pennsylvania and western New York markets. The existing equipment at the ports is designed to unload crude oil and needs substantial modification to handle oil products. Plus, there are few pipelines at the ports that are connected to existing crude oil terminals.

Shutting down the Philadelphia-area and HOVENSA refineries also makes it difficult for the Northeast to get ULSD fuel. Demand for this fuel is increasing as states mandate use of it in place of high sulfur heating oil. New York will be the first Northeast state to require ULSD in July 2012. By 2018 the states of Maine, Massachusetts, New Jersey and Vermont will have implemented the ULSD requirement. As the economy improves more ULSD will be needed because it is a required transportation fuel. Obtaining ULSD fuel will be a challenge because the Gulf Coast is the only place to obtain it and the logistical problems mentioned earlier are likely to cause supply shortfalls and price spikes. It is not unconceivable that some people in the Northeast may find themselves having to choose between heating their home and eating. Others literally could freeze to death in their homes.

Being dependent on the Gulf Coast for petroleum product supplies also makes the Northeast vulnerable to supply problems arising out of hurricanes that hit the Gulf region. Refineries in the storm's path are shut down in anticipation of the hurricane and afterward it can take several weeks or months to restart the refineries, depending on whether or not the facilities sustained damage.

For example, Hurricane Katrina made landfall on Aug. 29, 2005 and a month later 900,000 million b/d of refining capacity remained shut down. Hurricane Rita made landfall several weeks later in September and in early October 2.2 million b/d of refining capacity that had been shuttered by Hurricane Rita remained shut. This meant that, at one time, roughly one-third of U.S. refining capacity was shut down. The Colonial Pipeline was also shut down in anticipation of Hurricane Rita. Afterward, it did not operate at full capacity because of lack of product from the shutdown refineries and problems with electrical supply.

Gasoline shortages arose and prices spiked because of these problems. The Philadelphia-area refineries were operating and could churn out gasoline, ULSD and jet fuel to make up for some of the loss from the Gulf Coast. These refineries helped spare the Northeast from some of the pain at the pump. With these refineries gone

the Northeast is left vulnerable to the whims of Mother Nature—not exactly a situation that bolsters the region's energy security.

Gas prices in the Northeast would have to be high enough to attract Gulf Coast oil products, and the Northeast would also be competing for these products with other countries. These two factors would cause the price of gasoline in the Northeast to remain high.

Besides obtaining oil products from the Gulf Coast refineries, the Northeast would increasingly have to depend upon oil product imports from other countries if the Philadelphia-area refineries are shuttered. This also would cause gas prices to rise. This is a particular problem with global tensions running high. Iran has been threatening to shut the Strait of Hormuz and block oil shipments. One-fifth of the world's oil trade passes through there. Since a number of European refineries have been shut down, India and the Far East have been cited as likely sources of gasoline and other fuel imports. These areas are subject to terrorist attack and are in less stable parts of the world.

My testimony and the accompanying chart show a disturbing trend by the oil industry to cease refining, while holding onto these viable assets as mere storage. While we understand the oil industry and price fluctuations are global, US energy security and regional economies should not be held hostage to shareholder profits. Our citizens deserve better and Congress should investigate these practices.

Thank you for providing me this opportunity to present testimony.