

**Prepared Testimony of  
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Submitted to the  
Committee on Energy and Commerce  
Subcommittee on Energy and Power  
United States House of Representatives  
H.R.702: Legislation to Prohibit Restrictions on the Export of Crude Oil  
July 7, 2015**

Mr. Chairman and Members of the Subcommittee:

I am honored by your invitation to testify on the economic costs of restricting exports of crude oil. I am an economist and recently retired as Senior Vice President of NERA Economic Consulting. While at NERA, I had the privilege of leading the study of the “Economic Benefits of Lifting the Crude Oil Export Ban” that was commissioned by the Brookings Institution and released simultaneously with a Brookings Report titled “Changing Markets Economic Opportunities from Lifting the U.S. Ban on Crude Oil Exports”<sup>1</sup> last September. I remain affiliated with NERA as an independent economic consultant, and work with my former team on interesting projects. I appear today speaking only for myself, and all statements in this testimony represent my own opinions and conclusions and do not necessarily represent opinions of anyone at NERA or any of its clients. Nevertheless, I believe that my conclusions about the costs of oil export restrictions are supported by every other independent analysis done on the subject.

### **Summary**

The NERA study found that across all the scenarios we examined, restrictions on oil exports

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<sup>1</sup> Available at: <http://www.nera.com/publications/archive/2014/economic-benefits-of-lifting-the-crude-oil-export-ban-.html> and <http://www.brookings.edu/~media/research/files/reports/2014/09/09-8-facts-about-crude-oil-production/crude-oil-exports-web.pdf>

reduce U.S. GDP, slow down job growth and recovery from the recession, and cause higher gasoline prices. Despite the very beneficial drop in world oil prices that we have experienced since that study was completed, I still conclude that restrictions on crude oil exports impose those costs on the U.S. economy, lead to less crude oil production in the U.S. and cause higher gasoline prices for consumers than there would be if these restrictions were lifted.

The clearest evidence that restrictions on exports are still limiting oil production is the fact that the price of light oil produced from the Bakken and other tight formations continues to be depressed below comparable crudes on the world market. This type of oil needs to be exported, because refineries in the U.S. were not designed to use the quantities of light crude that we now produce without costly changes in operation or equipment. The export ban prevents this kind of crude oil from reaching the world market where it has higher value. The resulting excess supply in the U.S. depresses prices of these light tight crudes, so that their production is limited to quantities that are profitable to produce at those lower prices.

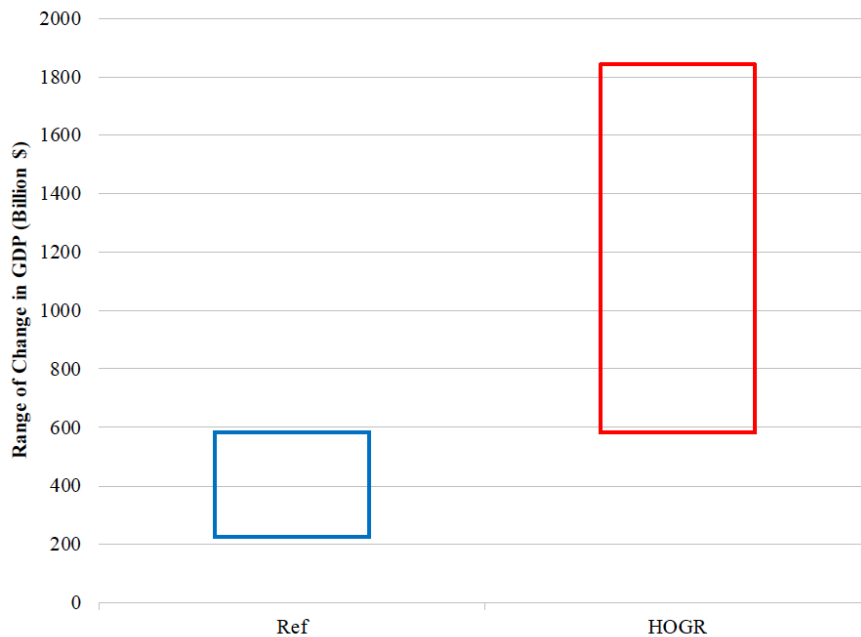
This loss in production imposes a loss on the U.S. economy that is directly attributable to continuing export restrictions. This loss takes the form of even lower investment in crude oil production than the drop in world prices would have caused, which in turn slows recovery from the recession because oil and gas investment has been the strongest driver of economic growth for the past several years. At the same time, consumers lose because the effect of putting more crude oil into world markets is to drive down world crude oil prices. Gasoline and heating oil prices in the United States are determined by world prices, because we import and export gasoline and other refined products like heating oil freely. Thus restrictions on crude oil exports also impose a cost on consumers in the form of higher gasoline prices.

Finally, restrictions on crude oil exports will lead to economic waste, if refiners incur higher operating costs and make additional investments in order to use light tight oil, even though refined products could be imported at lower cost. If instead of making these wasteful expenditures, we export light tight oil and import refined products, at least as much gasoline and heating oil would be supplied to consumers. The savings from avoiding unnecessary refinery costs and investment would be used for productive investments that produce additional goods and services for consumers.

**Economic costs of import restrictions**

In the NERA study, we estimated restrictions on crude oil exports will cost the economy from \$200 to \$600 billion in the EIA Reference Case for shale oil resources and \$600 billion to \$1.8 trillion in its high case.<sup>2</sup> I have reproduced Figure 7 from that report below:

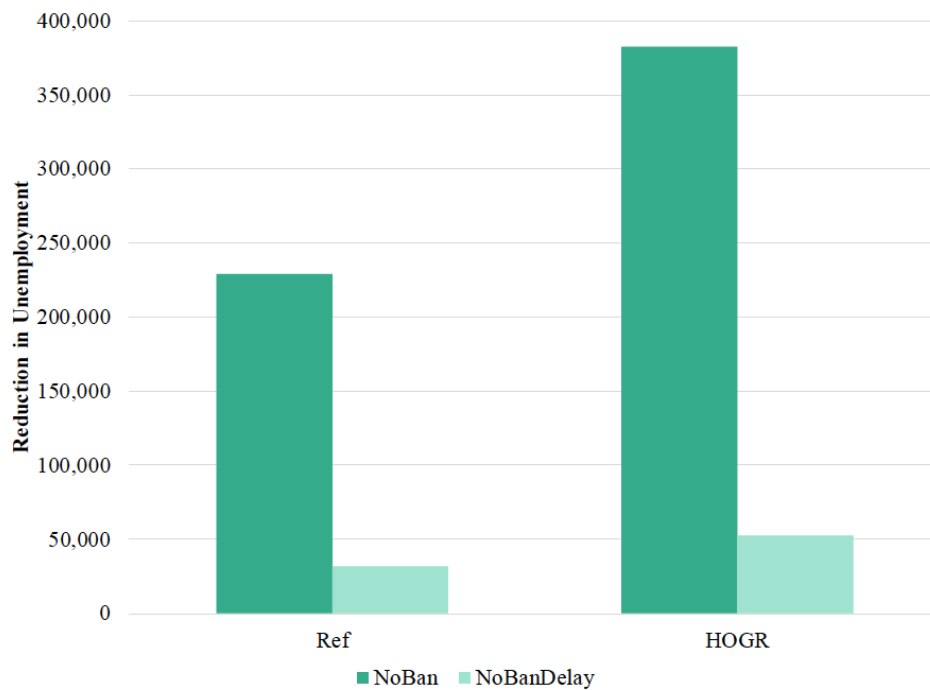
**Figure 7: Range of Change in Net Present Value of GDP Resulting from the Partial or Complete Lifting of the Crude Oil Export Ban (Ref and HOGGR Baselines: Billion \$)<sup>5</sup>**



<sup>2</sup> Expressed as present value of GDP loss to 2030 in 2013 dollars

Along with this loss in GDP, we estimated that failure to remove restrictions on oil exports will prevent creation of between 200,000 and 350,000 new jobs this year and next year by lowering investment in drilling and raising gasoline and fuel prices. I have reproduced this figure from the report below as well.

**Figure 10: Average Annual Reduction in Unemployment (2015 – 2020) Resulting from the Lifting of the Crude Oil Export Ban in 2015 versus 2020 (Ref and HOGGR Baselines)**



For reasons I discuss later in my testimony, the drop in world oil prices since the NERA study was released has reduced some of the costs of oil export restrictions. Nevertheless, export restrictions are still artificially depressing the price of light tight oil, and therefore export restrictions are making the drop in drilling, production and employment down even larger than would it would have been without those restrictions. As a result, export restrictions still impose a cost in lost GDP, investment, and new jobs.

As world oil prices recover, export restrictions will become more and more onerous, so that the

longer term benefits remain as estimated. As an important plus, getting rid of export restrictions now will enable oil production to respond quicker and gain those benefits more rapidly.

### *Gasoline prices*

Most important, restrictions on crude oil exports impose a cost on all consumers by making prices of gasoline and heating oil higher than they need to be. Despite what is frequently claimed by opponents of crude oil exports, restrictions on oil exports do not lower gasoline prices. Every study of crude oil exports has reached the same conclusion. The NERA study found that restrictions on exports would increase gasoline prices by 8 to 12 cents per gallon. For reasons I detail later in my testimony, I estimate that under current market conditions restrictions on exports impose a cost of 2 to 3 cents per gallon on consumers.

The reason why restrictions on exports cause higher gasoline prices is very clear. By reducing production of crude oil in the U.S., export restrictions shift the balance of global oil supply and demand and prop up the world oil price. There are no restrictions on refined product trade, so that gasoline and heating oil prices in the U.S. are determined by the global market. As the price of crude on the world market falls, so do gasoline and heating oil prices. Therefore, by holding up the world price of crude oil, export restrictions also raise the price of gasoline and heating oil.

Some refiners in the U.S. do, indeed, benefit from lower crude oil prices due to the export ban. These are refiners with access to crude from Bakken and other light tight oil basins that are also among the few U.S. refineries designed to process light oil. They do indeed achieve larger profits on refining because they can sell gasoline and other products at prices determined on world markets while benefiting from the artificially depressed price of light oil in the U.S.

These refiners actually make two arguments: that they depend on the effective subsidy that they receive from export restrictions to operate profitably and that consumers will suffer from higher gasoline prices if the subsidy is removed. They cannot have it both ways. If they could sell gasoline at higher prices after export restrictions were removed, these refiners would suffer no harm. So when some refiners complain, correctly, that their margins would be reduced if they lost the subsidy from export restrictions, they are admitting that their customers will benefit.

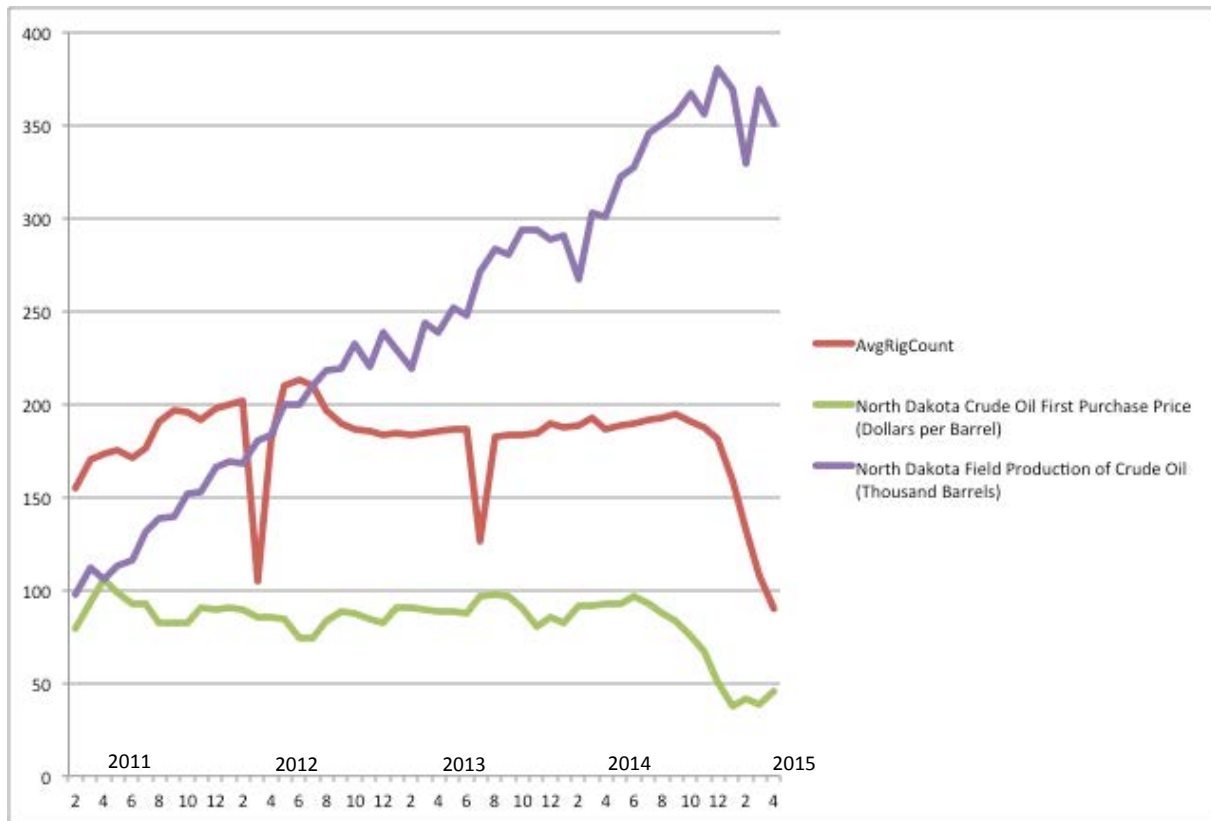
### **Lost Production**

Restrictions on exports continue to artificially depress prices received by producers of light, tight oil and cause production to be lost. The drop in production in the Bakken and other basins that we have observed since the drop in world oil prices is made worse by export restrictions.

Prior to July 2014, the world price of oil hovered around \$100 per barrel. Between August and December 2014 the price of oil was roughly cut in half. This price drop has clearly affected U.S. crude oil production. The costs of restricting oil exports arise because of the effect those restrictions have on production of the kind of oil for which the U.S. has a huge technical and geological advantage over the rest of the world – light oil produced from tight rock formations from which it was impossible to extract oil economically just a few years ago. This kind of oil is produced in several basins – Bakken in North Dakota, Eagle Ford in Texas, Permian in Texas and New Mexico, and Niobrara in Colorado and Wyoming.

I will use data on prices and production in North Dakota to illustrate what has been happening. Figure 1 shows clearly that lower oil prices are having an effect. In North Dakota, prices started to drop in July 2014, and have leveled off at less than half their July 2014 level since the first of

the year. As a result, the number of active rigs drilling for oil in North Dakota started a precipitous decline in September 2104, which has not halted. Production lags behind drilling, because existing wells will continue to produce for some time. In the case of tight oil, the decline rate is rapid, necessitating continued drilling to maintain production. We can see this in the drop in production from its peak in December 2014 reported by the State of North Dakota.



Source: North Dakota Industrial Commission, Department of Mineral Resources, Oil and Gas Division <https://www.dmr.nd.gov/oilgas/stats/statisticsvw.asp>

The EIA analyzed tight oil production and stated in its Short Term Energy Outlook issued June 7 that “Projected 2015 oil prices remain high enough to support continued development drilling in the core areas of the Bakken, Eagle Ford, Niobrara, and Permian basins. Forecast WTI crude oil prices create conditions in which continued increases in rig and well productivity and falling

drilling and completion costs make resumption of onshore production growth possible in 2016. The forecast remains particularly sensitive to actual prices available at the wellhead and rapidly changing drilling economics that vary across regions and operators.”

The “actual prices available at the wellhead” that concern EIA are still being depressed by export restrictions, which as a result continue to hold down U.S. production.

The differential between prices of Bakken oil in North Dakota and prices that are indicative of international oil prices gives an indication of how much oil export restrictions are depressing prices and production. That differential would be reduced if restrictions were lifted, providing the needed incentive for production to increase.

We estimated in the NERA study released in September of 2014 that restrictions on oil exports were causing production of between 1.5 and 2 million barrels per day to be lost. This finding was based, in part, on the amount by which the price of light tight oil was depressed at the time.

During the 21 months prior to completion of the NERA study on crude oil exports, the average differential between WTI and Brent spot prices was \$9.32 – that is the price of Brent exceeded that price at Cushing, OK for West Texas Intermediate crude oil by \$9.32 per barrel.<sup>3</sup> Since the beginning of 2015, that differential has averaged \$5.96 and the EIA predicts in its June Short Term Energy Outlook that a differential of about \$5.00 will continue through 2016.

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<sup>3</sup> Brent and WTI spot from [http://www.eia.gov/dnav/pet/pet\\_pri\\_spt\\_s1\\_d.htm](http://www.eia.gov/dnav/pet/pet_pri_spt_s1_d.htm)



During the period January 1, 2013 through September 30, 2014, North Dakota first purchase prices averaged \$4.78 lower than Texas prices, which added to the differential between WTI and Brent spot puts North Dakota about \$14 below Brent. During 2015, North Dakota prices have averaged \$4.28 below Texas,<sup>4</sup> and adding to that the more recent differential between WTI and Brent, North Dakota comes out \$9.25 below Brent. If we use first purchase prices for Wyoming Sweet as an indicator of Bakken prices, we find the same thing. The differential for Wyoming Sweet below WTI is virtually the same in 2015 as in the 21 months prior to our study, and Wyoming Sweet remains \$8.75 below Brent.<sup>5</sup>

In the NERA study, we estimated that removing restrictions on exports would reduce the differential between the price of light tight oil in the U.S. and international oil prices to under \$5 per barrel. Even if that differential remained after restrictions on exports were removed, the current differential of about \$9 imposes an unnecessary penalty of \$4 - \$5 per barrel on U.S. light tight oil. That penalty adds about 10% to the price drop experienced by producers from what prices were at the peak of North Dakota production and rig count. Looked at another way, the NERA study estimated that export restrictions depressed prices for light tight oil producers by about \$15 per barrel, and that eliminating restrictions would increase production by 1.5 to 2.0 million barrels per day.<sup>6</sup> My current estimate is that the price distortion caused by export restrictions is about 25% as large as it was at the time of the NERA study. Still, if the production loss is proportional to the price distortion, removing export restrictions would give 25% of the benefit estimated in the NERA study. This would amount to about 400,000 to 500,000 barrels

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<sup>4</sup> First purchase prices by state from [http://www.eia.gov/dnav/pet/pet\\_pri\\_dfp1\\_k\\_m.htm](http://www.eia.gov/dnav/pet/pet_pri_dfp1_k_m.htm)

<sup>5</sup> Spot prices from [http://www.eia.gov/dnav/pet/pet\\_pri\\_dfp2\\_k\\_m.htm](http://www.eia.gov/dnav/pet/pet_pri_dfp2_k_m.htm)

<sup>6</sup> See pages 39 - 44 of the NERA report.

per day of additional oil production. It is inconceivable to me that removing restrictions on oil exports would not cause a significant increase in production of light tight oil in basins like Bakken, Eagle Ford, Permian and Niobrara.

### **Trade and Import Dependence**

Removing restrictions on oil exports would improve our balance of trade and reduce import dependence. Statements by some opponents that increased crude oil exports would somehow “dampen the decline in imports” seems to be based on failure to understand that it is net imports that matter for effects on oil markets. Our balance of trade and import dependence are functions of net imports, that is the difference between the amount exported and the amount imported.

Net imports can be defined mathematically in two equivalent ways:

$$\begin{aligned}\text{Net imports} &= \text{refined product consumption} + \text{refinery loss} - \text{crude production} \\ &= \text{crude imports} + \text{product imports} - \text{crude exports} - \text{product exports}.\end{aligned}$$

Thus unless refined product consumption increases, any increase in crude production reduces net imports. Refined product consumption will increase if the price of refined products (i.e. gasoline and heating oil) increases, but by less than the increase in crude oil production that causes the price drop.

The quantity of oil imports, that is the amount of crude oil and refined products entering the U.S. from other countries, is by itself irrelevant to either oil prices or energy security. Only net imports matter. There is a single, global oil market and shipments of crude oil move to wherever there is demand. Whether the U.S. increases its exports or reduces its imports, the reduction in

net exports is all that matters for the balance between supply by non-U.S. producers and demand for their oil. An increase in exports or an equal decrease in imports will have exactly the same effect on the world oil price.

Likewise, an increase in exports or an equal decrease in imports will have exactly the same effect on energy security, defined as the vulnerability of world oil markets to disruptions of supply. Oil producers are not tied to particular customers, so those from whom the U.S. purchases oil are not necessarily the countries whose sales will drop because of lower U.S. net imports. A key factor in this market response is how OPEC will react. If OPEC countries maintain production rates despite the addition of U.S. exports to the global market, the world oil price will fall by the largest amount. If OPEC instead cuts back production to make room for U.S. exports, the world oil price will fall less but energy security will be improved more.

This is because OPEC includes the Middle Eastern producers most at risk for military or political events that will reduce their oil production, and other producers -- Iran and Venezuela to name two -- are overtly hostile to the United States. To the extent that additional U.S. oil production causes these countries to cut back their production in an effort to maintain prices, or because they cannot afford to produce at lower prices, the risk and potential size of global oil supply disruptions will be reduced. Both the drop in the world oil price and reductions in their exports will deprive hostile countries like Iran and Venezuela of revenues that they could use to the detriment of the United States.

This concludes my prepared testimony.