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U.S. HOUSE COMMITTEE ON SMALL BUSINESS,
SUBCOMMITTEE ON AGRICULTURE, ENERGY, AND TRADE

**“IF YOU BUILD IT: THE KEYSTONE XL PIPELINE AND SMALL
BUSINESS JOB GROWTH”**

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Thank you Chairman Tipton, Ranking Member Murphy, and members of the Committee for inviting me here today. My name is Christopher Knittel. I am the William Barton Rogers Professor of Energy Economics in the Sloan School of Management at the Massachusetts Institute of Technology, I am the Co-Director of the Center for Energy and Environmental Policy Research also at the Massachusetts Institute of Technology, and Co-Founder of the E2e Project, a joint project between the Center for Energy and Environmental Policy Research and the University of California Energy Institute to study the economics behind energy efficiency.

I. Introduction

Inevitably, discussions related to oil and greenhouse gas emissions tend to get overblown. Discussions surrounding many of the issues behind the Keystone XL pipeline are no different. In my testimony, I will discuss the likely consequences of the Keystone XL pipeline along four dimensions: (1) oil prices, (2) greenhouse gas emissions, (3) jobs, and (4) national security.

II. The effect of the Keystone XL pipeline on oil prices

Here the economics are pretty straightforward.

Energy economists and energy analysts tend to agree that, with a few exceptions, the oil market is a **world** oil market. That is, when a barrel of oil is pumped out of the ground, it competes with supplies of oil across the entire globe. The world market is an artifact of the low cost of shipping oil. A consequence of this is that it is very difficult for increases in production in any one country to have a long-term impact on the price of oil.

The situation in the Midwest and Canadian tar sands is, however, one exception. Due to pipeline capacity constraints connecting the Midwest and Canada with the Gulf Coast, the price of a barrel of oil selling in Cushing, Oklahoma---known as Western Texas Intermediate, or WTI---is currently selling at a discount compared to a barrel of oil in just about every other benchmark location in the world, most notably the Brent crude price reflecting the price of oil in Europe. The discount has recently fallen below \$10 per barrel, but last year averaged more than \$17 per barrel, and has been over \$30 per barrel during the last two years.

Because of limitations on pipeline capacity, oil produced in both Canada and North Dakota cannot make it out to the Gulf Coast and must therefore be refined in Canada or the Midwest. Refiners are able to get a discount on this oil because of the limited options available to oil producers. Recent work by Severin Borenstein of UC Berkeley and Ryan Kellogg of the University of Michigan shows that because pipeline capacity for **refined** products is not similarly constrained, the lower price

paid by refineries is not passed on to consumers. The benefits accrue, instead, to refineries.¹

Building the Keystone and Keystone XL pipelines will push the price North Dakotan and Canadian oil producers can capture closer, if not fully, to the world price. Therefore, these pipelines will tend to increase oil prices paid by refiners in the **Midwest**, but the work by Borenstein and Kellogg implies that this will **not** increase the price paid by consumers at the pump.

There will be no appreciable change in the **world** price of oil, certainly not enough to base policy decisions on. While more supply always puts downward pressure on prices, when gauging the size of the supply increase it is important to understand the size of the market. To put things in perspective, the 800,000 barrels per day that will flow over the Keystone XL pipeline represent less than 1 percent of world oil supplies. The **increase** in oil production that results from the Keystone XL pipeline will be even smaller.

III. The effect of the Keystone XL pipeline on greenhouse gas emissions

Here the economics are also pretty straightforward.

While some have called the Keystone XL pipeline “game over” for the climate, I believe it is simply not true. This is not because I doubt the seriousness of climate change. Much of my academic research promotes policies to reduce greenhouse gas emissions. It might seem surprising that the Keystone XL pipeline would have little impact on greenhouse gas emissions given how energy intensive Canadian bitumen, or tar sands, is to produce. Tar sands are certainly more energy intensive than the average oil refined in the US---requiring more energy at the extraction phase, as the bitumen must be separated from the sand and water it is found with. More energy must also be used to upgrade the bitumen for refining.

No one can deny this added energy and the greenhouse gas emissions associated with the oil. Two numbers are often discussed when it comes to these added greenhouse gas emissions. First, the increase in emissions during the production and refining stage of Canadian bitumen compared to the **average** oil sold in the US is roughly 80 percent, according to the State Department and many other sources.² This number, however, ignores the fact that the majority of the greenhouse gas emissions associated with oil use come when you **burn** the refined product. These emissions are the same regardless of the source oil. The policy debate should focus on the emissions over the oil’s entire life cycle. Here the State Department estimates

¹ Severin Borenstein and Ryan Kellogg, “The Incidence of an Oil Glut: Who Benefits from Cheap Crude Oil in the Midwest?” forthcoming in *The Energy Journal*. Available at http://ei.haas.berkeley.edu/pdf/working_papers/WP231.pdf.

² The Congressional Research Service estimates this to be between 70 to 110 percent higher. <http://www.fas.org/sgp/crs/misc/R42537.pdf>.

that these “lifecycle emissions” of tar sands are roughly 17 percent higher than the **average** oil sold in the US.³

The problem with both of these metrics, however, is that the **average** oil sold in the US is not the relevant comparison, on both accounts. Trying to assess whether the Keystone XL pipeline will increase the greenhouse gas emissions worldwide from their current levels, the relevant comparison is that between the emissions of the oil from the Canadian tar sands and the oil that it will replace, which is not necessarily the average oil refined or sold in the US.

A recent Cambridge Energy Research Associates analysis finds that the average Canadian tar sands oil is cleaner than heavy Californian and heavy Venezuelan oil.⁴ These two sources are the likely oil sources that Canadian tar sands would replace. Given this, it is possible that the Keystone XL pipeline might actually **reduce** greenhouse gas emissions.

The main point, however, is that the policy debate has focused on the wrong metrics when it comes to greenhouse gas emissions. Focusing on the average oil sold in the US is like convincing my four-year-old son, Caiden, to not eat a bag of potato chips because potato chips are less healthy than the typical food he eats, only to see him put the chips away and grab an ice cream sandwich.

Finally, in the absence of the Keystone XL pipeline, some of the oil will leave North Dakota and Canada in some other---less efficient---way. This may be through rail or using inefficient local refineries and shipping the refined products through refined-product dedicated pipelines. These inefficiencies have their own greenhouse gas consequences.

IV. The effect of the Keystone XL pipeline on profits

Here the economics are also pretty straightforward.

One of the most compelling arguments for building the Keystone XL pipeline is that it will increase the profits of oil producers, not only in Canada, but also along the entire pipeline route---most notably North Dakota, the second leading oil producing state in the country. As I mentioned, currently, oil selling as far south as Cushing, Oklahoma sells at a discount price relative to the world price for oil. The farther north you go, the greater the likely discount, as these resources get further away from pipeline capacity.

³ The Congressional Research Service estimates this to be between 14 to 20 percent higher. <http://www.fas.org/sgp/crs/misc/R42537.pdf>.

⁴ IHS CERA, “Oil Sands, Greenhouse Gases, and U.S. Oil Supply: Getting the Numbers Right,” IHS Cambridge Energy Research Associates, Inc., 2010. Similar conclusions, although not as stark, are reached in the Congressional Research Service study.

Currently, Canada exports about 3 million barrels per day to the US⁵ and North Dakota produces about 800 thousand barrels a day.⁶ Therefore, even today's roughly \$8 price difference reduces producer revenues by \$30 million a day. Building the Keystone XL pipeline would increase the revenues of not only the oil companies using the pipeline, but also those of companies getting their oil out through alternative methods. This is because once the pipeline is built (and even before), the price gap between oil sold in this region and the world price will decline, if not be eliminated completely. Even production not using the pipeline will be able to command the world price. This is a very good reason for building the pipeline.

At the same time, the profits of refineries that are currently getting the discount will fall. However, even though some benefit from this artificial reduction in the price, it is not economically efficient. As I mentioned, recent research by Borenstein and Kellogg shows that these discounts are not being passed onto the consumers. Therefore, concerns about consumer pocketbooks should not enter the policy debate.

The lower price that North Dakotan oil commands may also have implications on how quickly the shale oil resources in this region are developed, which obviously affects domestic production.

IV. The effect of the Keystone XL pipeline on jobs

Here the economics are very complex.

There is both a short-term and long-term issue when it comes to jobs. The short-term benefits are a bit, but not entirely, clear. We can measure how many jobs will directly go to building the pipeline, and get fairly accurate measures of the jobs indirectly tied to building the pipeline.

The more difficult, and probably more relevant, calculation is how many jobs the pipeline will create in the long term. I have great respect for the economists who attempt to measure these long-term benefits, but I am also glad that I am not one of them.

The most important factor to realize, however, is that when the economy is below full employment, as it is today, short-term increases in employment are likely to have longstanding effects. Indeed, this is the argument for why economic stimulus should be used by governments in times of recession; when the economy is below full employment the long-term benefits of deficit spending outweigh the cost of financing this debt. Here, the US will get the benefits of this short-term stimulus without adding to the debt.

V. The effect of the Keystone XL pipeline on national security

⁵ <http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=MTTIMUSCA2&f=M>.

⁶ http://www.eia.gov/dnav/pet/pet_crd_crpdn_adc_mbbldpd_m.htm.

Finally, any discussion of policy related to oil production should include some discussion of its impact on national security. There is the potential for a small benefit from a national security perspective. Increasing the amount of oil we import from Canada can reduce military conflict that is, partially at least, dependent on oil production.

However, in a global oil market where the price of North Dakota and Canadian oil will depend directly on world supply, and also realizing that the Keystone XL pipeline is likely to have no impact on how much oil our allies import from other countries, the national security benefits are likely to be small.

VI. Summary

To summarize, the Keystone XL pipeline relates to many issues concerning oil markets. Understanding the effects of the pipeline on energy prices, greenhouse gas emissions, and energy security is straightforward. The pipeline will push the prices for oil in the Midwest and Canada closer to the world price, but these price increases will not be felt by consumers.

The pipeline will have little impact on greenhouse gas emissions. While this seems inconsistent with the fact that Canadian tar sands are more energy intensive than the average oil refined in the US, the focus on the average oil is misplaced. There is good reason to believe that additional supplies of Canadian tar sands will displace even dirtier oil from Venezuela. This is where the policy discussion should focus.

Finally, I circle back to one of the main topics of the hearing: jobs. The pipeline's effect on jobs is amplified by the fact that the economy is still recovering from the Great Recession. When an economy is at less than full employment, short-term stimulus measures, such as governmental stimulus or capital-intensive projects like the Keystone XL pipeline, can have longstanding effects beyond the short-term employment effects tied to the actual project. While these are complex and difficult to measure, from a timing perspective, there is no better time.

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.