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MEMORANDUM July 25, 2014

To: Representative Chris Van Hollen
Attention: Bill Parsons

From: Jonathan L. Ramseur
Specialist in Environmental Policy
202/707-7919

Subject: **Number of entities/companies potentially subject to a carbon price proposal**

Prepared at your request, this memorandum provides an estimate of the number of entities and companies that could be subject to a specific carbon price regime (provided in draft legislation to CRS). The draft legislation would attach a carbon price to fossil fuels at the following entities:

1. Petroleum refineries and importers of petroleum products (e.g., gasoline);
2. Coal mines and power plants that use imported coal;[1] and
3. Entities that deliver natural gas to end-users (e.g., electricity generators, industry, commercial and residential consumers)[2] and entities that extract natural gas liquids (e.g., propane and ethane) from natural gas. These entities include: interstate/intrastate pipelines; natural gas distributors; and field, well, or processing plants that deliver natural gas directly to end-users.

Within the above framework, the carbon price would apply to the fossil fuels based on the fuel's carbon intensity: carbon dioxide (CO_2) emissions per unit of energy or unit of fuel measurement. There is a direct correlation between a fuel's carbon content and the CO_2 emissions that would ultimately be emitted upon the fuel's combustion.[3]

Table 1 identifies the number of entities in the above framework that would be subject to the carbon price and the approximate percentage of total U.S. greenhouse gas (GHG) emissions that would be addressed by attaching a carbon price to fossil fuels at each group of sources. For example, applying a carbon price to petroleum refineries and petroleum importers would attach a price to the CO_2 emissions associated

[1] CRS was unable to determine the number of coal importers, but data for power plants using imported coal are available from data collected on Form EIA-923, at http://www.eia.gov/electricity/data/eia923/.

[2] The Energy Information Administration (EIA) collects this information from entities such as interstate/intrastate pipelines; natural gas distributors; and field, well, or processing plants that deliver natural gas directly to end-users. These entities submit annual reports on EIA Form 176.

[3] For more information, see CRS Report R42731, *Carbon Tax: Deficit Reduction and Other Considerations*, by Jonathan L. Ramseur, Jane A. Leggett, and Molly F. Sherlock.

with U.S. petroleum combustion, which accounted for approximately 33% of all GHG emissions in the United States in 2012.[4]

You specifically asked CRS to determine the number of different company owners associated with the above entities. For example, CRS research has identified 115 petroleum refineries that would likely be subject to this carbon price proposal. These refineries appear to be owned by 52 different companies. Ownership information, when readily available, is also included in **Table 1**. Note that in some instances, entities may be owned by the same company, but the entities may be located in multiple states and may differ in terms of their operational details.

If you have any questions about the information in this memorandum, please contact me at your convenience.

Table 1. Potential Entities and Companies Subject to a Proposed Carbon Price System

Fossil Fuel	Entities Subject to the Carbon Tax	Number of Entities	Number of Companies that Own the Entities	Estimated Percentage of Total U.S. GHG Emissions Subject to Carbon Price
Petroleum	Petroleum refineries	115	52	33%
	Companies that import petroleum products (excluding crude oil)	not readily available	139	
Coal	Coal mines	1,229	679	24%
	Power plants that use imported coal	11	not readily available	<1%
Natural Gas	Entities that deliver natural gas to end-users (reported on EIA Form 176)	1,668	1,412	20%
	Natural gas processors	516	261	1%
Total		**3,678**	**2,554**	**78%**

Source: Prepared by CRS.

Notes:

Petroleum: Petroleum refinery data prepared by internal CRS research. An additional 13 refineries produce lubricating oils and asphalt. For more information, see CRS Report R41478, *The U.S. Oil Refining Industry: Background in Changing Markets and Fuel Policies*, by Anthony Andrews et al.

Petroleum importing company information from EIA, "Petroleum and Other Liquids, Company Level Imports.” The most recent data are from April 2014. This group of companies does not include those that import crude oil, because a carbon price on crude oil would be applied at refineries. In addition, this group does not include companies that import “asphalt road oil,” “lubricants,” or “petrochemical feedstocks,” which would not be subject to the above tax framework. Because entity data were not readily available, the number of companies (139) was included in the entity and company totals.

Coal: Mine data from EIA, "Historical detailed coal production data." Data are from 2012. Coal mines include only those that had some level of production in 2012.

[4] Based on data from EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2012*, 2014, at http://epa.gov/climatechange/ghgemissions/usinventoryreport.html.

CRS was unable to determine the number of coal importers. However, the number of power plants that use imported coal is found in the EIA-923 data. These plants imported approximately 5.5 million tons of coal in 2012. In 2012, the United States consumed approximately 889 million tons of coal (EIA, coal consumption by end-use sector). Therefore, the imported coal contributed less than 1% of total coal consumed. The number of companies that own these plants was not readily available, so the number of plants (11) was added to both the entity and company total.

Natural gas: EIA requires certain entities to submit specific natural gas data on Form EIA-176. The reporting entities include: interstate/intrastate pipelines; natural gas distributors; and field, well, or processing plants that deliver natural gas directly to end-users. In 2012, 1,668 entities reported natural gas deliveries, accounting for, in aggregate, 23.8 trillion cubic feet (tcf) to end-users: electricity generators, industry, and commercial and residential consumers (CRS calculation based on data from Form EIA-176, available at EIA's Natural Gas Annual Respondent Query System).

Natural gas processor entity and company data are from EIA, "Natural Gas Annual Respondent Query System." The inclusion of natural gas processors would attach a price to the natural gas used to produce natural gas liquids (e.g., propane). In 2012, the gaseous equivalent of natural gas liquid production was approximately 1.3 tcf (EIA, Natural Gas Gross Withdrawals and Production).

The EIA Form 176 entities and the natural gas processors combined to account for approximately 99% of natural gas consumption. In 2012, approximately 25.5 tcf of natural gas (domestic and imported) was consumed in the United States (EIA, Natural Gas Consumption by End Use).