ISSUE ALERT

OIL SANDS FACT CHECK

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Apples, Oranges, and the Oil Sands

The Congressional Research Service (CRS) added to the pile of conflicting well-to-wheels analyses with its report released this week, "The Life Cycle Assessment of Canadian Oil Sands," written in the context of the Keystone XL project. Just like its predecessors, CRS wades into the world of assessment comparisons, choosing previously-published reports with seemingly common variables to come up with an emissions calculation slightly different from the rest. The problem, however, is that more often than not, apples are compared to oranges and policymakers are misled.

The report concludes that the Canadian oil sands emit 14 to 20 percent more greenhouse gases (GHGs) in a well-to-wheels (WTW) comparison with other crude oils imported into the United States "despite differences and input assumptions" of the various studies considered. This wouldn't be the first time that a life-cycle assessment (LCA) of the oil sands reached a similar conclusion, but a closer look at the findings – and consideration of other analyses that CRS omits – suggests that a comparison of a few cherry-picked reports does not make a sound policy reference for our representatives on Capitol Hill.

Here's some insight and analysis into the report's six major flaws:

1. CRS engages in analysis that is the equivalent of comparing "apples to oranges." In Figure 2, CRS compares a wide variety of studies as if they are comparable despite the State Dept's own supplemental analysis states that those particular data sets should not be compared across the board:

> *"Although the comparisons within each study are internally consistent, the variation in the properties of the reference crudes results in an **"apples to oranges" comparison** across the different studies…[Synthetic crude oil, diluted bitumen], and a full range conventional crude oil may have nearly the same API gravity, but very different energy or GHG intensities to produce a barrel of premium fuel products."(Supplemental Draft EIS, ICF Report, Appendix B)*

A meta-analysis, like IHS CERA's 2011 report "Oil Sands, Greenhouse Gases, and US Oil Supply", would have allowed CRS to better compare results across reports. A meta-analysis combines and analyzes the results of multiple studies with the goal of providing more accurate data than any single study. Unfortunately, CRS chose to exclude those findings from critical parts of its report.

2. CRS' Well-to-Tank conclusion discounts the most energy-intensive part of a fuel's life-cycle – combustion. CRS finds that:

> *"[D]iscounting the final consumption phase of the life-cycle assessment (which can contribute up to 70-80% of Well-to-Wheel emissions), Well-to-Tank emissions…have a range of increase from 72%-111% over the average …" (p. xi)*

That's a difference of as much as **91 percent(!)** as compared to the well-to-wheels (WTW) figure. A similar oil sands analysis from IHS CERA, which was noted but omitted in the CRS report, found that life-cycle GHG emissions are **only 5 to 15 percent higher** than the average. A significant reason for the difference in figures is that combustion emissions "do not vary for a given fuel among sources of crude

oil." That means at least 70 percent of the WTW emissions rate is the same across comparative crude oils – leaving a relatively small percentage of the total life-cycle to determine a differential between oil sources.

3. CRS overlooks the fact that GHG emissions from the Canadian oil sands vary and can be less than some conventional crudes. CRS incorrectly lumps all Canadian oil sands crudes together and omits other important sources of oil, leading to the incorrect conclusion that they are definitively the most GHG-intensive crude oils (see Figure 3). IHS CERA's analysis shows that the GHG emissions from the oil sands vary widely, depending on production and processing methods, and that emissions from crude oil cover a wide spectrum – with Canadian oil sands crudes interspersed along the continuum. The difference in conclusions between the two reports is notable – and a point of which policymakers should be made aware.

4. CRS fails to mention significant improvements in GHG emissions as a result of stringent environmental regulations already in place in Canada. In 2007, the Government of Alberta implemented GHG regulations requiring a mandatory 12 percent reduction in emissions for all large industrial sectors, including existing oil sands facilities. As a result of these and other regulations, GHG emissions have reduced by 23 million tons – an equivalent **of taking 4.8 million cars off the road**. That is more than or equal to CRS' (questionable) estimate that Keystone XL will increase emissions equal to approximately 588,000-4,061,000 passenger vehicles. Following this logic, environmental regulations will essentially cancel out emissions increases brought on by additional oil sands infrastructure projects.

A few other facts to consider:

- The average amount of steam used in today's in situ projects per unit of output is about **15 percent lower** than a decade ago. (IHS CERA, 2010)

- GHG emissions per barrel of oil produced being **reduced by an average of 29 percent** between 1990 and 2009. (Gov't of Alberta, 2011)

- GHG emissions from the oil sands industry are equivalent to .5 percent of emissions in the U.S. and **only .001 percent** globally. (CAPP, 2011)

5. The report is not clear enough about a crucial fact: Keystone XL will not change projected emissions as a result of development of the oil sands. Development of the Canadian oil sands is projected to increase regardless of the delay in the Keystone XL project due to other pipeline options and other transportation options (e.g. rail). The Canadian Association of Petroleum Producers (CAPP) predicts that the oil sands will experience significant growth over the next decade and beyond, from 1.5 million barrels per day (bpd) in 2010 to 3.7 million bpd in 2025. Notably, CRS figures that Keystone would only amount to an increase of 0.06 to 0.3 percent in annual GHG emissions for the United States. IHS CERA (The Role of the Canadian Oil Sands in the US Market) comes to the conclusion that KXL would increase U.S. emissions about half of what CRS says.

6. Even CRS itself concludes that LCAs can be misleading and should not be the sole consideration when developing energy policy. As the research arm of Congress, members of Congress lean on CRS to develop unbiased reports on topics of interest as they consider important policy decisions. Despite headlines that grabbed onto the WTW figures CRS reports in its findings, it's important to note that CRS, in addition to several other similar analyses, conclude that there is considerable disagreement among LCA experts over what variables should be included when calculating WTW emission rates, which leads to a high degree of variance between different models:

- "…LCAs retain many variables and uncertainties. These uncertainties often make comparing results across resources or production methods problematic. Hence, the usefulness of LCA as an analytical tool for policymakers may lie less in its capacity to generate comparative rankings, or

> "scores," between one source and another, and more in its ability to highlight "areas of concern," or "hot spots," in the production of a given hydrocarbon fuel. (p. 24)

Policymakers should consider these assessments as one among several factors when evaluating the cost of using a particular fuel. Here are a few excerpts from studies omitted by CRS:

- "Some variation between studies is expected due to differences in methods, technologies studied, and operating choices. However, the magnitude of the differences presented suggests that a consensus on the characterization of life cycle emissions of the oil sands industry has yet to be reached in the public literature." (Charpentier et al., 2009)

- "Field-level data on life-cycle GHG emissions are very spotty and require a great deal of estimation, resulting in considerable uncertainty in the life-cycle emissions of all crude oil sources. Additionally, crude oils of similar quality are mixed in the pipeline distribution system, although their life-cycle GHG emissions could be quite different depending on how and where the crudes were produced." (IHS CERA, 2010)

- "None of the existing studies were designed to answer the types of questions they are being used to answer. As a result, no existing study, or the combination of studies, is accurate, complete for transparent enough to use for major infrastructure and public policy decisions." (Pembina Institute, 2011)

- "As shown, the GHG emissions from some steps can be readily determined. However, the carbon intensity of crude oil production is more difficult to determine from some locations because the data are either unavailable or of low quality. In other locations, especially Alberta Canada, data on energy used and GHG emissions from crude oil production are routinely reported to the government and the reports are audited." (Jacobs, 2012)