Tracking Carbon Intensity of Crude Oil in the NEMA LCFS

Options for Discussion with Stakeholders

September 29, 2010

This presentation presents options for consideration and discussion with LCFS stakeholders.

These are not recommendations for an LCFS program framework.

Background

- An important objective of the LCFS is to discourage increases in the carbon intensity (CI) of baseline fuels (RBOB, CBOB, and diesel).

- The CI of baseline fuels could increase with greater use of high-carbon crudes, which require more energy to extract or process than is typically required for crude oil.

- It will be critical to track the carbon intensity of fuels regardless of program framework.

Fuel Supply/Distribution

- Fuel supply/distribution in the NE/MA region is more complex compared to other areas of the country.
- Publicly available can only tell a part of the story.
- In the NE/MA region, approximately 1/3 of transportation fuel is imported from foreign refiners; 1/3 is imported via the Colonial pipeline; and 1/3 is refined within the region.

Preliminary Review: Data Sources

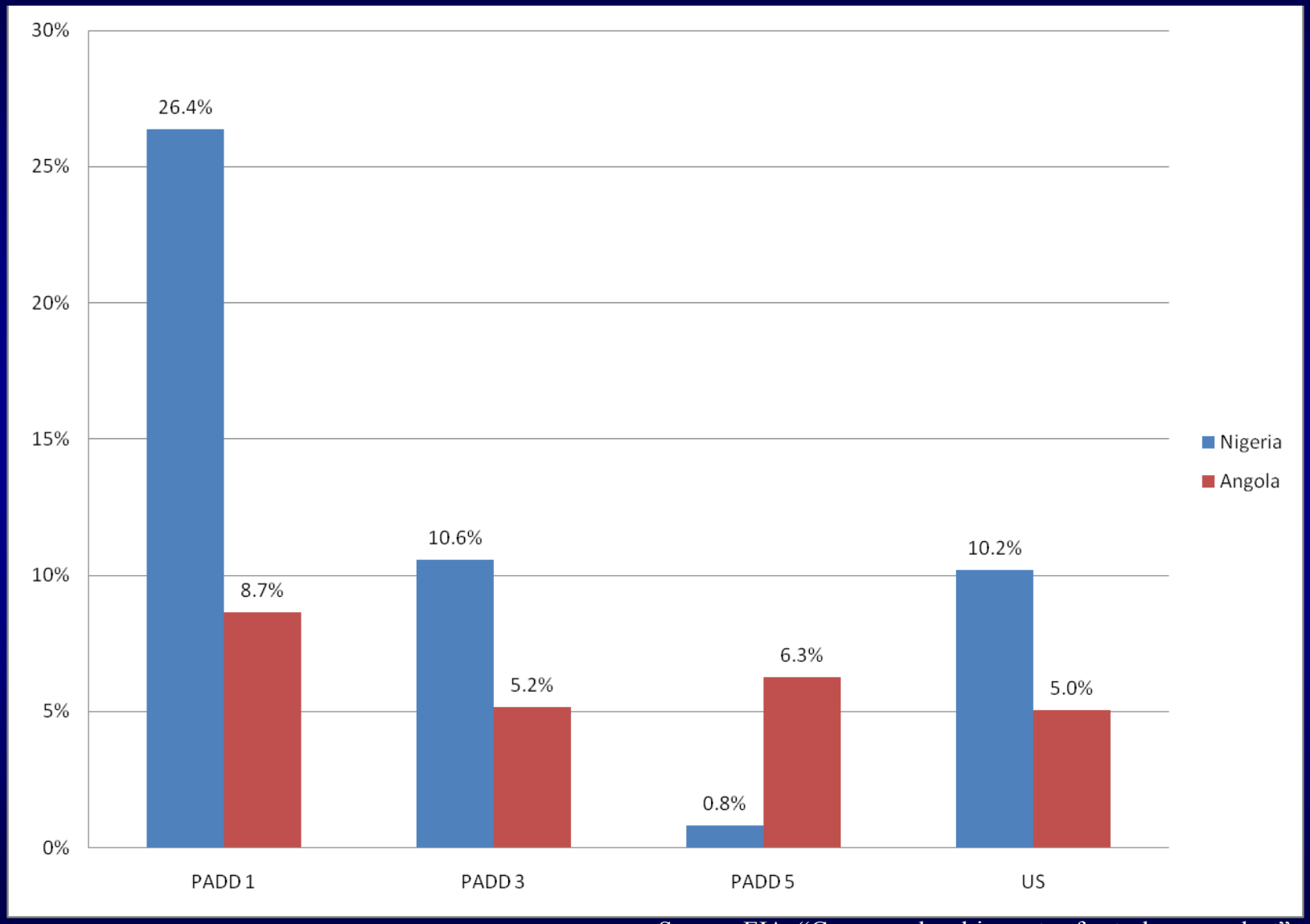
- Two crude oil data sources: EIA and United Nations COMTRADE
- EIA provides company level imports of finished products and crude oil, as well as international crude production data
- COMTRADE provides customs data of crude oil movements between foreign countries
- NETL provides carbon intensity data for select countries

GHG Emissions Consistent with Extraction of Crude Oil in Countries Exporting to U.S. Petroleum Refineries in 2005

Crude Oil Source	(kg CO2E/bbl of crude oil)
Saudi Arabia	13.6
Kuwait	16.5
Iraq	19.6
Venezuela	24.2
U.S.	24.5
Ecuador	31.3
Algeria	35.1
Mexico	38.4
Angola	81.8
Nigeria	128.6

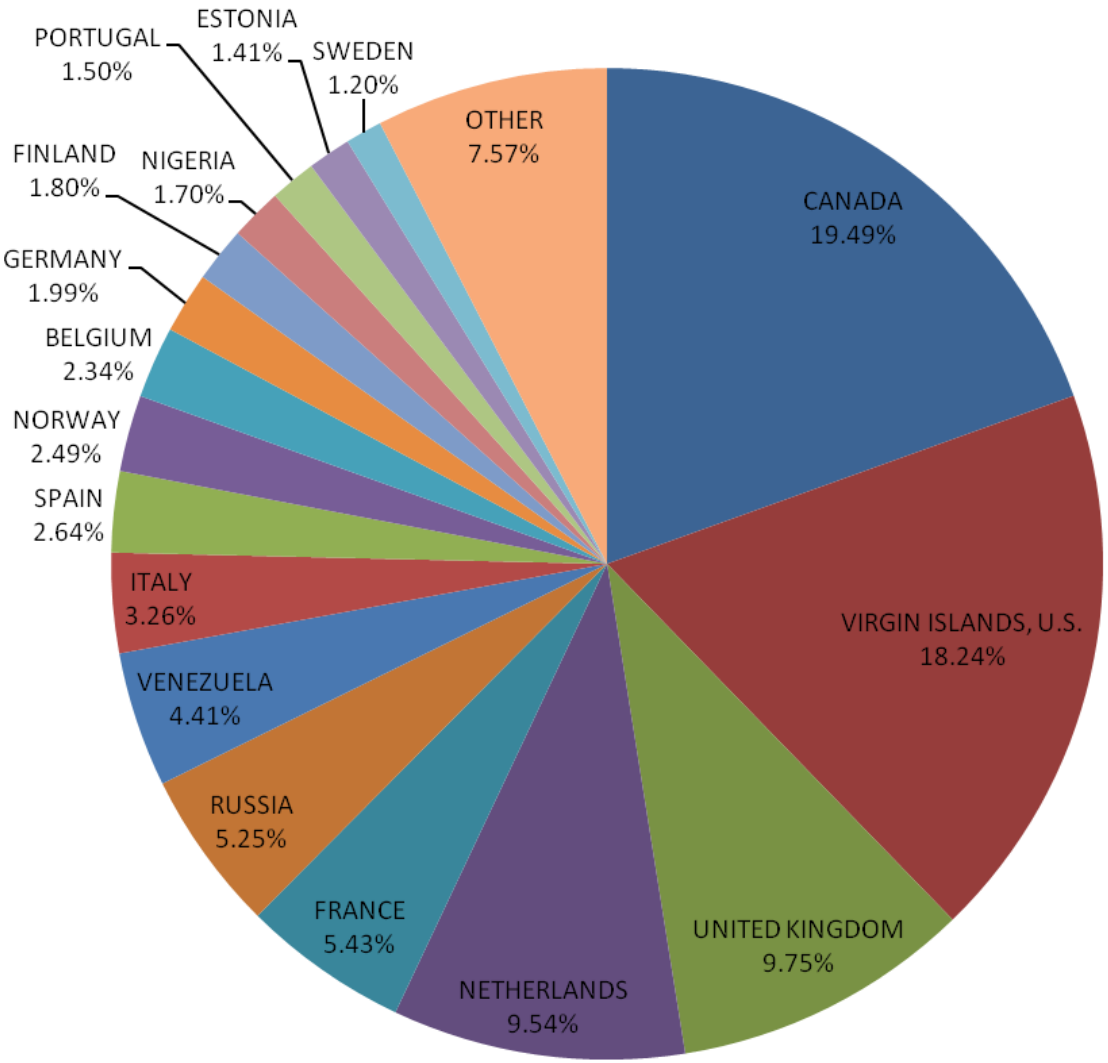
Source: NETL, *Development of Baseline Data and Analysis of Life Cycle Greenhouse Gas Emissions of Petroleum-Based Fuels,* November 26, 2008. DOE/NETL-2009/1346

Fraction of Crude Imports, 2006-2008



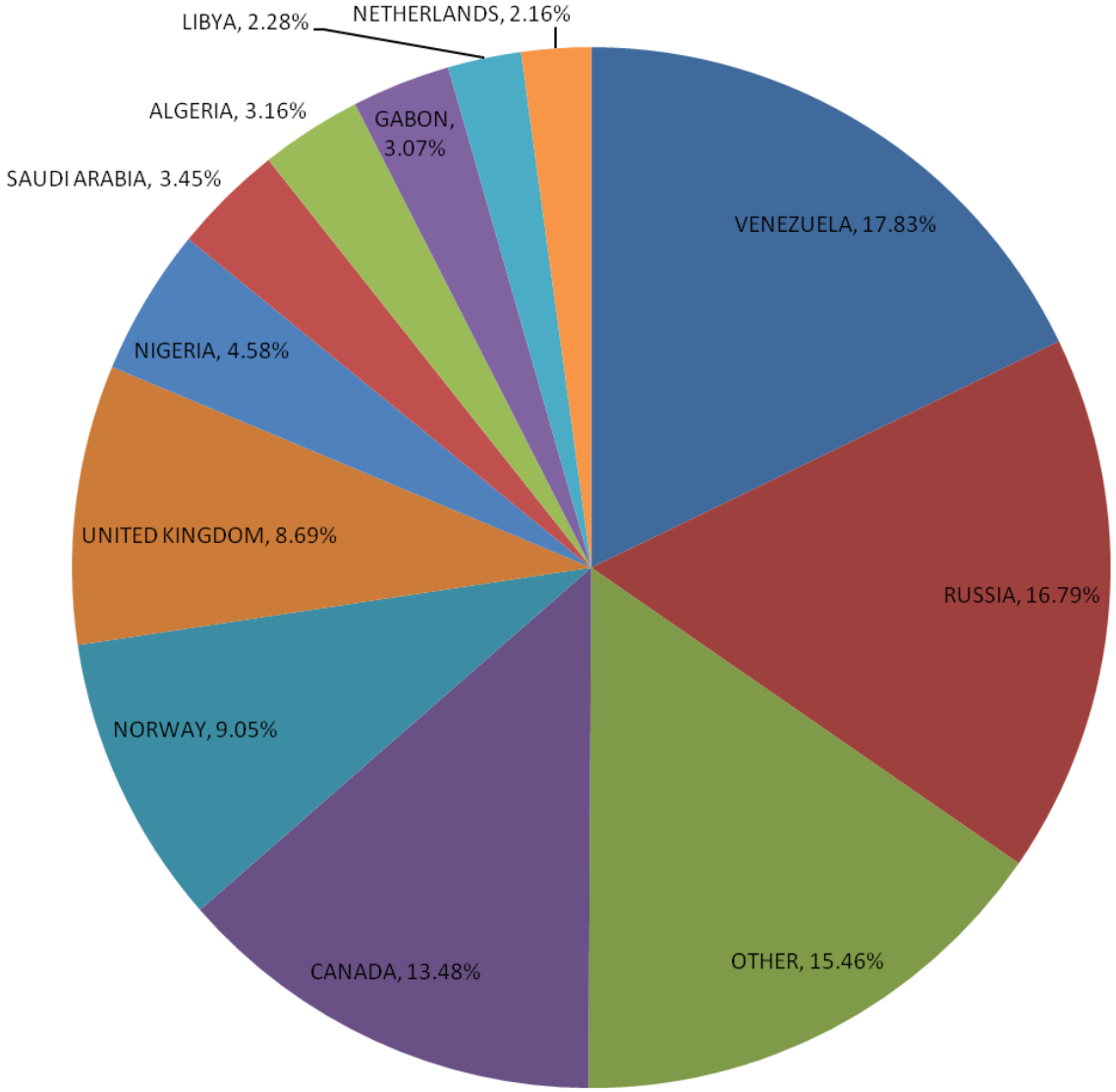
Source: EIA, "Company-level imports of petroleum product"

Foriegn Suppliers of Gasoline and Diesel to PADD 1, 2006-2008



Source: EIA

Crude Feedstock for Finished Product Imports to PADD 1, 2006- 2008



Source: EIA, UN-COMTRADE

Source-Specific CI Database

- CARB is working with California Energy Commission and researchers from Stanford University to develop a “library” of CI values for specific crude types.
- Data for selected major sources of imported crude have also been published by US DOE and Jacobs Consultancy.
- In addition, pertinent data are likely available for purchase from industry analysts.

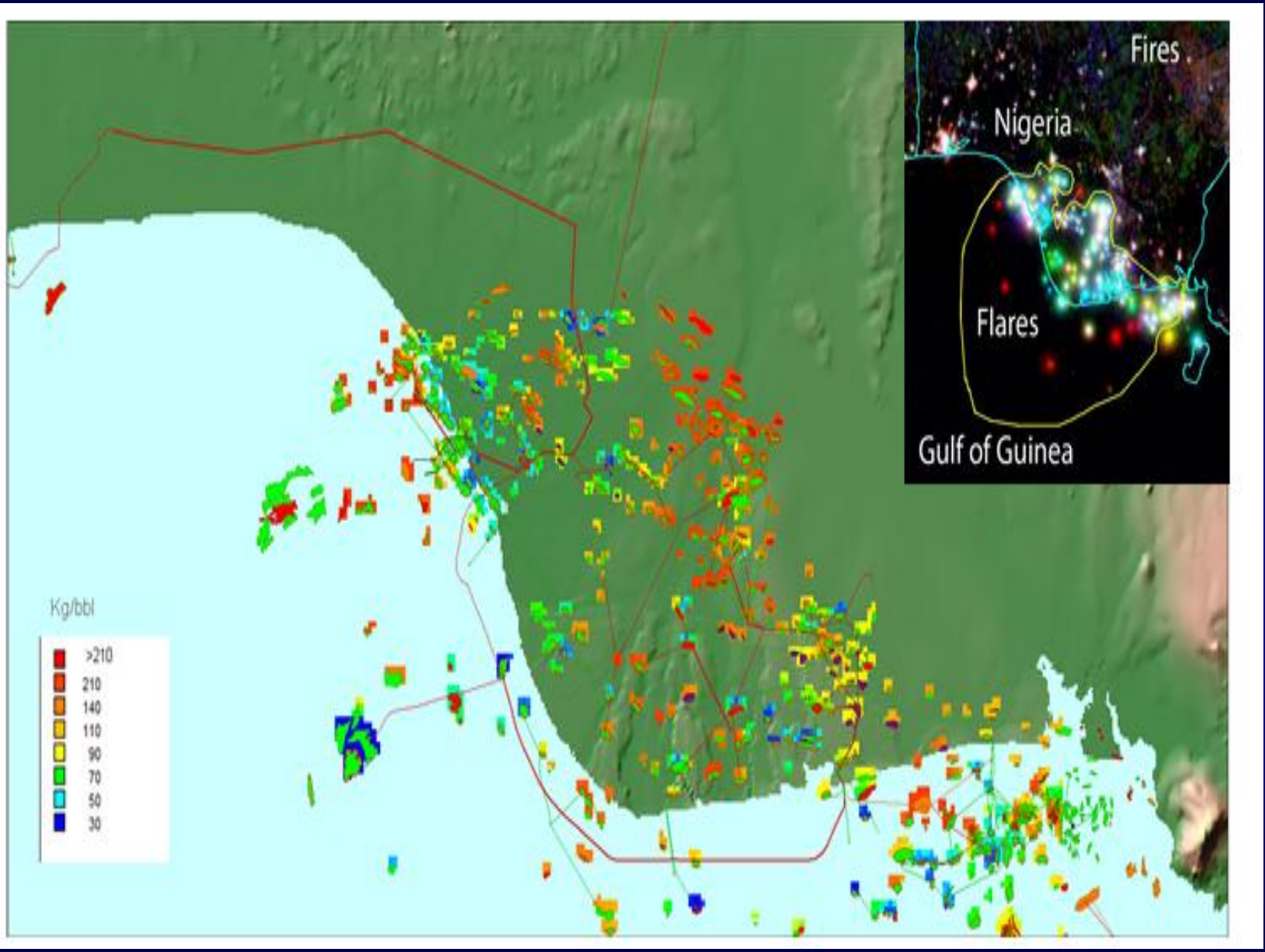


Figure 1. Emissions intensity by field, Nigeria. (Source: Gary Howorth, Energy-Redefined)

Next Steps

- Comments and a follow-up call
- Report to Commissioners on the meeting
- Industry-specific meetings with other stakeholders
- Joint stakeholder meeting planned for late fall