CARNEGIE
ENDOWMENT FOR
INTERNATIONAL PEACE

EIA Public Comments

Notice and Request for Comments
U.S. Department of Energy, Energy Information Administration
Action: Agency Information Collection Activities-Information Collection Extension
Federal Register/ Vol. 79, No. 87, May 6, 2014

Submitted to Neal Davis
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The Carnegie Endowment for International Peace (Carnegie) hereby submits the following comments pursuant to the Energy Information Administration (EIA) *Notice and Request for Comments on Form EIA-914*, ñMonthly Natural Gas Production Report.ò In response to EIAôs proposal to add the collection of crude oil and lease condensate production data at the state level to Form-914, Carnegie suggests that EIA expand reporting specifications on a broader extent of changing conditions and compositions of U.S. and global oils.

The growing heterogeneity of U.S. and global oils presents new challenges and opportunities. The market has different exploration, development, and production choices today than it did in decades past under different technical and economic conditions. New oils are also transforming midstream and downstream marketsð from oil transport practices to refining techniques. As the oil value chain adapts to the availability of new liquid hydrocarbon resources, it will be critical for more thorough, robust, up-to-date data collection to inform the public, policymakers, and a wider array of private and NGO stakeholders.

EIA can no longer rely on the oil industry to gather and report limited, non-verifiable, inconsistent data to the U.S. government. In order to forecast important oil trends, EIA (the statistical arm of the U.S. Department of Energy) will need a surfeit of knowledge from the evolving oil field. The fact that Americaôs tight oil and shale gas boom took the nation by surprise is testament to the fact that essential, timely oil data is not being adequately reported. This lack of information can lead to market failures, with unintended economic and societal consequences.

The lack of accurate, real-time data also confounds critical public discourse. For example, recent debate regarding the lifting of the U.S. crude oil ban cannot be satisfactorily resolved without expanded data collected by EIA. Especially in this case when there is a lack of industry consensus, it is clear that decision makers need more information to independently verify and balance wide-ranging interests. Moreover, the move by Pioneer Natural Resources and Enterprise Products Partners to gain approval on exporting condensate through a private ruling from the U.S. Commerce Departmentôs Bureau of Industry and Security (BIS) may have been unnecessary. Yet incomplete information about these hydrocarbons being extracted may have facilitated industryôs manipulation of the system to influence the market for their own benefits. *Government action misinformed by data omissions, inconsistencies, and gaps in knowledge can have serious consequence. A*s reported recently by the Wall Street Journal, this can ñroil oil markets.ò

Collecting whole crude API gravity and sulfur content in any manner of gravity categorization that EIA develops is necessary, but not sufficient, to adequately characterize oils, forecast resource shifts, remain abreast of changing industry techniques and norms, identify trade-offs, or duly inform policymaking. At a minimum, EIA should expand their data collection on oil production to include those areas specified below.

Recommended EIA Data Collection Specifications

Data Required for Open Source Modeling of Oil Greenhouse Gas Emissions

In order to understand the trade-offs and determine which oil resources have the greatest private and social costs and benefits, Carnegie is working with Stanford University and the University of Calgary to introduce and expand their open source models (OPGEE and Prelim, respectively) to compare different oilsô greenhouse gas emissions generated throughout various oil value chains. Those data specified in Attachment A and summarized below are critical to this endeavor. Carnegie requests these data are added to EIAôs monitoring report:

1. Field level data
    - Extraction Method
    - Level of activity per unit production
    - GIS coordinates to identify location
    - Flaring rate
    - Venting rate

2. Oil Characterization data
    - Oil assay parameters at specified cut temperatures for uniform comparability, including API gravity, density, sulfur content (wt %), nitrogen content (mass ppm),

hydrogen content, volume/mass flow (% recovery), MCR/CCR, viscosity (cST at 100°C)

3. Refining Energy Requirements with process energy data updates

Government agencies, investors, NGOs, academics, national laboratories, and others have expressed interest in the development of a Global Oil-Climate Index for future policy development. Without the standardized oil data summarized above, the development and expansion of open source models that directly serve the public interest, will be hampered.

Global Oil Data

Change in the oil marketplace can happen quickly. Price hikes spurred by any number of factorsð from Russiaôs annexation of Crimea or the Islamic State conflict in Iraq to a Class 5 hurricane in the Gulf of Mexico or a serious oil accidentð can instigate oil price hikes that turn on an array of hydrocarbon resources. Given the fluid nature of global oil markets, it will be necessary to broaden reporting so that EIA does not miss the next major trend. In order to meet evolving data needs, EIA must not only collect oil production data (as is currently proposed), but the Administration should also collect and report data on those oils imported into the U.S. and an increasingly broader array of global oils that can be readily imported as feedstock into U.S. markets over time.

Produced Water Data

EIAôs oil production data collection and reporting system should be expanded to cover produced water and water injection volumes. Hydraulic fracturing (fracking) raises new concerns, and states will need guidance to consistently monitor and report data to manage the oil-water nexus.

In order to approach oil-water risks systematically, data on oil production, water production, and water used should be comparable across states, companies, and wells. Water consumption should be specified for initial fracking, subsequent maintenance, and additional frack jobs on the same well. EIA should collect well-specific water source data (e.g., fresh surface water, fresh groundwater, brine groundwater, recycled/reused produced water, or other water source). This information is necessary to analyze water stress caused by fracking, evaluate opportunities to decrease freshwater consumption, and provide comparative data for freshwater and non-freshwater use within the oil extraction industry.

Reporting the total amount of produced water disposed through injection is important to determine if injection is connected to increased seismic activity or contamination events. The destination of produced water is another relevant data point. Reporting how much produced

water is injected for disposal immediately after production, how much is sent to be purified for recycling/reuse, and how much is used for EOR could help determine and track overall consumptive use of water in oil extraction. Policymakers need these data to develop water recycling guidelines.

EIA collect of these oil-water data are essential to establish effective monitoring and needed transparency. These data are necessary to set reduction targets, test recycling incentives, track oil fields over time, find locations that optimize the use of freshwater, identify locations that waste freshwater, and calculate upstream costs (both fiscal and environmental).

Oil Data Gathering on the Horizon

Increasing globalization of crude will require greater tracking capabilities to structure and safeguard markets. As operational, environmental, and geopolitical risks increase, forensics is expected to play an increasingly important role distinguishing oils from one another throughout the oil value chain. There are existing methods established in the 1970s to fingerprint oils. New methods for monitoring global oils will no doubt be discussed within the oil industry to affordably track oil in the future. It may be equally important for EIA to provide a leadership role monitoring oils both within the U.S. and those headed to or from the United States.

Growing complexity in the oil value chain could require identifying the origin of any given oil. As part of oil data monitoring and reporting, EIA should begin to investigate new applications for biomarkers, bacterial DNA, and other novel tracers to tag and differentiate individual liquid hydrocarbons. Ultimately, EIA could require reporting of data that fingerprints individual oils, which could lead to more effective lifecycle oil monitoring.

Conclusion

In sum, the history of the U.S. Department of Energy (DOE) offers help to guide EIA in determining how far to reach in expanding the nationôs oil data collection system. Just as the energy crisis of the mid-1970s hastened a series of government reorganizations as both the executive and legislative branches sought to better coordinate Federal energy policy and programs, the abundance of new hydrocarbons surfacing in the twenty-first century calls for heightened attention to robust oil data management. DOE and EIA will be called on to advise the Administration and Congress in the years ahead as oils become increasingly unconventional, far flung, contested, expensive, and risky. As such, *expanding oil data collection is a critical new mission for the Administration.*

The responsibility of EIA to collect data that more completely characterizes changing oils and their lifecycle conditions is paramount. Recent mergers and acquisitions in the oil industryð especially with larger producers acquiring smaller producersð underscore the importance of EIA playing the key role as independent data reporter. Between 1990 and 2006, GAO reported that there were 2,600 mergers in the oil industry mostly within exploration and production firms and this led to reduced competition. Activity continued at a rapid pace through 2013.

Today, even the oil consulting and service sector is rapidly consolidating. IHS, for example, acquired 17 oil-related firms in 2012-2013. And while IHS professes a desire to ñgrow and adapt to the constantly changing global business environment through forming synergies that allow us to improve *customer experience*,ò it is important to acknowledge that IHSôcustomer is *not* the American public. In fact, oil data today is far less accessible due to the creation of new meta-data firms.

The current consolidated and integrated structure of the oil industry makes it increasingly difficult to sunlight data, acquire knowledge, and predict trends. While such restructuring and reduced competition serves short-term industry goals, information asymmetry hampers the long-term viability of the industry as public and policymaking backlash mounts with the appearance of cover-ups and development of unintended consequences.

As a global policy think tank dedicated to international peace, Carnegie views one of its missions to bring greater transparency and reduced market failures on energy matters. The oil sector presents a major opportunity in this regard. EIA has a unique opportunity to collect and offer greater information as the oil sector transforms, witnessing economic transformations and technological breakthroughs that are establishing new norms. Carnegie is encouraged by EIAôs notice for comment and hopes that this can lead to greatly expanded public oil data collection and dissemination.

Thank you for the opportunity to submit comments on this important matter for the U.S. government to close growing information gaps on U.S. and global oils. This data will be increasingly important in the years ahead. They will be of use for public and private stakeholders, including Congress, the Administration, industry, academia, NGOs, communities, and individual citizens.

If EIA needs any clarification or would like to follow up on any portion of these comments please contact:

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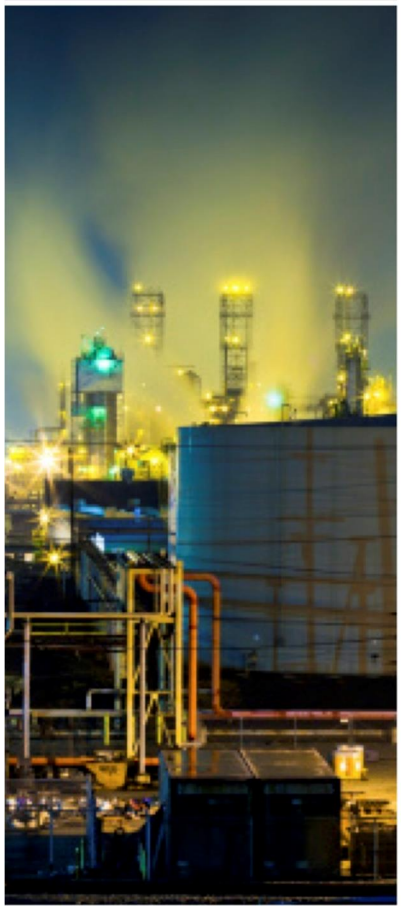
Attachment A

CARNEGIE ENDOWMENT FOR INTERNATIONAL PEACE

Open Source Oil Modeling
Oil Data Gaps

OPGEE Upstream Production Data

1. **Extraction method** *(primary, secondary, EOR, other)*
2. **Level of activity per unit production**
   - **Water-oil ratio** *(for primary and secondary production)*
   - **Steam-to-oil ratio** *(for tertiary production)*
3. **Location** *(onshore, offshore, with GIS coordinates)*
4. **Flaring rate**
5. **Venting rate** *(level of fugitive emissions)*



PRELIM Downstream Refining Data

1. Reporting on updated refinery process energy requirement data.
2. Oil assay parameters (specified below) and reported consistently for each global oil.

   Each parameter (except MCR/CCR) must be specified at each cut temperature* and cut temperature ranges must be standardized, as specified below or in another consistent format. *Note: Cut temperatures are currently reported out using a variety of inconsistent formats.*

   - API Gravity
   - Density
   - Sulphur content (wt %)
   - Nitrogen content (mass ppm)
   - Hydrogen content
   - Volume/Mass Flow (% recovery)
   - Micro-carbon residue (MCR) or Conradson carbon residue (CCR)
   - Viscosity (cST at 100 ºC) for Vacuum Residuum

**The cut temperatures and products currently used in the PRELIM refining model are:*

Temperature (ºC)	Product Cut Name
80	LSR
180	Naphtha
290	Kerosene
343	Diesel
399	Atmospheric Gas Oil (AGO)
454	Light Vacuum Gas Oil (LVGO)
525	Heavy Vacuum Gas Oil (HVGO)
525+	Vacuum Residue (VR)
399+	Atmospheric Residue (AR)