



EARTHWORKS

– TRACKING TAR SANDS CRUDES –

RESEARCH NOTE 1:

CANADIAN CRUDE OIL IMPORTS TO U.S. REFINERIES

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NOTE: CANADIAN HEAVY OIL IMPORTS SOURCING METHODOLOGY BASED UPON 2008 RESEARCH
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CANADIAN HEAVY CRUDE EXPORTS TO THE U.S. - 2009

In 2009, there were 53 refineries that did not receive any Canadian crude oil imports (either tar sands or conventional crude), and 71 refineries that did receive Canadian crude oil. Almost all of the refineries in Petroleum Administration Defense District (PADD) 2 and all of the refineries in PADD 4 import some Canadian crude – both heavy and light. The majority of the refineries that did not import Canadian crude in 2009 were located in PADD 1, PADD 3, and PADD 5.

In 2009, there were 43 refineries that reported receiving heavy Canadian crude oil imports (of all refineries reporting imports of crude oil). It is assumed that these refineries did receive Canadian tar sands crude, as tar sands crude is a heavy oil, and, as of 2006, tar sands crude accounted for 43% of crude oil production in Canada. In addition, tar sands production surpassed conventional oil production in the western Canadian provinces.

REPORTING TAR SANDS IMPORTS

The U.S. Energy Information Administration (EIA) collects information on crude oil and other petroleum product imports to the United States. Monthly data are filed via form EIA-814 by each company that imports crude oil or petroleum products into the United States. This is a mandatory filing under *Public Law 93-275 (Federal Energy Administration Act of 1974)*, Sec. 13(b), 5(a), 5(b), 52.¹ Data from EIA-814 filings are available to the public, and are summarized in the EIA's "Company Level Import" reports.²

USEFUL DATA IN FORM EIA-814:

- **products** (data can be sorted to differentiate imports of crude oil from imports of finished petroleum products such as jet fuel or petrochemicals)
- **country of origin** for imported crude oils
- **processing facility**, which, for crude oil is typically a refinery receiving the imported crude oil
- **API gravity**, which tells you about the weight of the crude, **and sulfur** content of the imported crude oils are also reported (it is possible to distinguish between heavy and light, and sweet and sour crude oils)

LIMITATIONS OF THE DATA FILED IN FORM EIA-814:

- The form does not report the name of the crude oil, or the originating province of the crude oil. So it is not possible to trace a tar sands crude from Canada to a particular refinery. We have attempted to do so here based on API gravity and sulfur content, but this method has a number of challenges and limitations associated with it.
- Some crude oil shipments went to "unknown" processing facilities. It is not clear if the companies submitting the form simply did not fill out this part of the form.
- Shipments are reported on a **monthly** basis. There is no requirement to report separate "batches" or shipments of a particular type of crude (although it appears that some refineries do report this way). Therefore, if a refinery imports a number of different types of crude in a

¹ EIA web site. Forms. **See form EIA-814.** <http://www.eia.doe.gov/oss/forms.html>

² EIA web site. Company Level Imports. http://www.eia.doe.gov/oil_gas/petroleum/data_publications/company_level_imports/cli.html

month (e.g., heavy, light, synthetic) they may simply report one number for the volume of crude oil imported (and average the API and sulfur values for all of the shipments in a month). This makes it impossible to identify any one crude oil.

RESULTS

The tables below summarize 2009 EIA information on crude oil imports from Canada.³ Data are shown for each refinery reporting on EIA-814.

For the 71 refineries importing Canadian crude oil in 2009, it is possible to determine volumes of heavy versus light Canadian crudes being processed by the refinery.⁴ There are different conventions used to define heavy, medium, light, extra-heavy, etc. crude. For example, in California crude oil is considered heavy if it has an API gravity of 18° or lower. It is intermediate if it is greater than 18° and lower than 36°, and light if it is equal to or greater than 36°.⁵ The U.S. Energy Information Administration defines heavy crude as having an API gravity of 22° or lower.⁶ That is the definition that is used here.

From the information reported on EIA 814, we were able to generate a series of charts that show the following: 1) U.S. refineries that imported Canadian tar sands derived crude in 2009. These are refineries that reported imports of Canadian crude having an API gravity of 22° or lower; 2) U.S. refineries that likely imported Canadian tar sands derived crude in 2009. These are refineries that reported imports of Canadian crude with API gravities between 22° and 30°; and 3) U.S. refineries that did not import Canadian tar sands derived crude in 2009. These are refineries that reported imports of Canadian crude with an API gravity of 30° or higher, reported crude oil imports from countries other than Canada, or did not report crude oil shipments of any kind. Refineries that reported no crude oil shipments are marked with an asterisk (*).

³ EIA. 2009. EIA. 2009. Company Level Imports. http://www.eia.doe.gov/oil_gas/petroleum/data_publications/company_level_imports/cli_historical.html

⁴ There is not, however, a good source of comprehensive, up-to-date information on the refineries receiving blended bitumen and SCO from the tar sands. Up until now, we have primarily been relying on various industry and government reports to provide information on the names of the refineries processing Canadian blended bitumen. E.g., TD Securities. Jan. 2004. *Overview of Canada's Oil Sands*; National Energy Board. 2004. *Canada's Oil Sands Opportunities and Challenges to 2015*.

⁵ Government Accountability Office (GAO). 2007. *Crude Oil: California Crude Oil Price Fluctuations Are Consistent with Broader Market Trends*. GAO-07-315. p. 10. <http://www.gao.gov/new.items/d07315.pdf>

⁶ Energy Information Administration. Glossary. www.eia.doe.gov/pub/oil_gas/petroleum/data.../glossary.pdf

TABLE 1. REFINERIES IMPORTING TAR SANDS DERIVED CRUDE IN 2009

Refinery	City	State	2009 Canadian Heavy Imports-API gravity 22 and lower (thousand barrels)
PADD 1			
United Refining Co	Warren	PA	700
PADD 2			
BP HUSKY REFINING LLC	Toledo	OH	18848
BP Whiting Refinery	Whiting	IN	1942
BP Products North America Inc	Whiting	IN	7024
Coffeyville Resources Refg & Marketing	Coffeyville	KS	2701
Conoco Phillips	Ponca City	OK	4378
Exxon Refining & Supply Company	Joliet	IL	47376
Flint Hills Resources LP	Pine Bend Pine Bend	MN	52306
Flint Hills Resources LP Refining Co	Refinery El Dorado	MN KS	20802 4750
Marathon Petroleum Co LLC	Canton	OH	2168
Marathon Petroleum Co LLC	Detroit	MI	5257
Marathon Petroleum Co LLC	Robinson	IL	326
Marathon Petroleum Co LLC	St. Paul Park	MN	5212
Murphy Oil USA	Superior	WI	63
National Copper Refinery Association	NCRA	KS	368
National Copper Refinery Association	Council Bluffs	IA	62
National Copper Refinery Association	McPhearson	KS	1536
Sinclair Tulsa Refining Co	Tulsa	OK	123
WRB Refining LLC	Wood River	IL	9046
PADD 3			
Exxon Chemical Trading Inc.	Houston	TX	639
Exxon Mobil PI Co	South Houston	TX	389
Exxon Refining & Supply Company	Beaumont	TX	1547
Marathon Petroleum Co LLC	Garyville	LA	2955
Premcor Refining	Port Arthur	TX	314

Group Inc			
Shell Oil Products US	Lockport	IL	1769
Sun Terminal	Sun	TX	3431
Sunoco Inc.	Sun Marine	TX	385
Valero Energy Corp	Three Rivers	TX	174
Valero Refining Company Texas LP	Corpus Christi	TX	289
WRB Refining LLC	Borger	TX	225

PADD 4

Conoco Phillips	Billings	MT	918
Exxon Mobil	Billings	MT	295
Exxon Mobil Refining & Supply Company	Billings	MT	1090
Frontier Refining Inc.	Cheyenne	WY	3691
Montana Refining Co	Great Falls	MT	3423
Sinclair Wyoming Refining Co	Sinclair	WY	4998
Suncor Energy Inc.	Guernsey	WY	60
Suncor Energy USA Inc.	Commerce City West	CO	5030

PADD 5

Conoco Phillips	Los Angeles	CA	7528
Shell Oil Products US	Martinez	CA	349
Tesoro Refining and Marketing Co.	Golden Eagle	CA	1220
US Oil & Refining Co	Tacoma	WA	85

TABLE 2. REFINERIES LIKELY IMPORTING TAR SANDS DERIVED CRUDE IN 2009

Refinery	City	State	2009 Canadian Heavy Imports-API gravity 22 and lower (thousand barrels)	2009 DN Light/Medium Imports -API gravity >22 (thousand barrels)
PADD 1				
Conoco Phillips	Bayway	NJ		36916
Conoco Phillips	Trainer	PA		13044
Sunoco Inc.	Eagle Point	NJ		1015
PADD 2				
PDV Midwest Refining LLC	Citgo Lemont	IL		49163
Sunoco Inc.	Toledo	OH		20081
PADD 3				
PADD 4				
Chevron USA Inc	Salt Lake City	UT		2961
CHS Inc	Laurel	MT		15915
Holly Refining & Marketing	Woods Cross	UT		321
Silver Eagle Refining Inc	Woods Cross	UT		352
Tesoro West Coast	Salt Lake City	UT		1575
PADD 5				
BP Cherry Point Refinery	Cherry Point	WA		250
BP Products North America Inc.	Seattle	WA		93
BP West Coast Products LLC	Cherry Point	WA		2623
Conoco Phillips	Ferndale	WA		6080
Paramount Petroleum Corp.	Paramount	CA		401
Shell Oil Products US	Puget Sound	WA		10172
Tesoro West Coast	Anacortes	WA		22189

TABLE 3. REFINERIES NOT IMPORTING TAR SANDS DERIVED CRUDE IN 2009

Refinery	City	State	2009 DN Light/Medium Imports -
			API gravity >22 (thousand barrels)
PADD 1			
Apex Oil *	Wilmington	NC	
BP Products North America *	Carteret	NJ	
BP Products North America *	Jacksonville	FL	
BP Products North America *	Port Everglades	FL	
Center Point Terminal Newark LLC *	Newark	NJ	
Chevron USA Inc *	Fort Lauderdale	FL	
Chevron USA Inc *	Jacksonville	FL	
Chevron USA Inc *	Panama City	FL	
Chevron USA Inc *	Perth Amboy-Section 890		
Chevron USA Inc *	Tampa	FL	
Citgo Petroleum Corp *	Albany	NY	
Citgo Petroleum Corp *	Des Plaines	IL	
Citgo Petroleum Corp *	East Braintree	MA	
Citgo Petroleum Corp *	Linden	NJ	
Citgo Petroleum Corp *	Port Everglades	FL	
Citgo Petroleum Corp *	Rocky Hill	CT	
Citgo Petroleum Corp *	South Portland	ME	
Colonial Oil Industries Inc. *	Savannah	GA	
Conoco Phillips *	East Boston	MA	
Conoco Phillips *	Linden	NJ	
Conoco Phillips *	Riverhead	NY	
Conoco Phillips *	Tremley Point	NJ	
Exxon Mobil Refg & Sply Company *	South Portland	ME	
Exxon Mobil PI Co *	East Providence	RI	
Exxon Mobil PI Co *	Everett	MA	
Exxon Mobil PI Co *	Port Everglades	FL	
Exxon Mobil PI Co *	Springfield	MA	
Global Co LLC *	Bridgeport	CT	
Global Co LLC *	Chelsea	MA	
Global Co LLC *	Revere	MA	
Gulf Oil LP *	Chelsea	MA	
Gulf Oil LP *	New Haven	CT	
Gulf Oil LP *	South Portland	ME	
Hess Corp *	Baltimore	MD	
Hess Corp *	Bayonne	NJ	
Hess Corp *	Charleston	SC	

Hess Corp *	Fort Lauderdale	FL	
Hess Corp *	Jacksonville	FL	
Hess Corp *	Pennsauken	NJ	
Hess Corp *	Sewaren	NJ	
Hess Corp *	Wilmington	NC	
IMTT *	Bayonne	NJ	
Irving Oil *	Revere	MA	
Irving Oil Terminals *	Portsmouth	NH	
Kinder Morgan *	Carteret	NJ	
	North		
Kinder Morgan *	Charleston	SC	
Kinder Morgan *	Perth Amboy	NJ	
Kinder Morgan Liquid Terminals LLC *	Perth Amboy	NJ	
Kinder Morgan Liquid Terminals LLC *	Staten Island	NY	
Kinder Morgan Liquid Terminals LLC *	Charleston	SC	
Magellan Pipeline Co LP *	New Haven	CT	
Magellan Pipeline Co LP *	Wilmington	DE	
Magellan Terminals Holdings LP *	New Haven	CT	
Motiva Enterprises LLC *	New Haven	CT	
Motiva Enterprises LLC *	Providence	RI	
Motiva Enterprises LLC *	Sewaren	NJ	
Nustar Asphalt Refining LLC	Paulsboro	NJ	
Nustar Asphalt Refining LLC	Savannah	GA	
Nustar Energy LP *	Jacksonville	FL	
Nustar Energy LP *	Linden	NJ	
	Northville		
Nustar Energy LP *	Linden	NJ	
Nustar Energy LP *	Paulsboro	NJ	
Nustar Energy LP *	Piney Point	MD	
Pacific Atlantic Terminals *	Paulsboro	NJ	
Petroleum Products Corp. *	Lancaster	PA	
Premcor Refining Group Inc	Memphis	TN	
Sunoco Inc *	Belmont	PA	
Sunoco Inc.	Eagle Point	NJ	1015
Transmontaigne Inc	Port Everglades	FL	
Western Refining			
Yorktown Inc	Yorktown	VA	

PADD 2

Marathon Petroleum Co LLC	Cattlesburg	KY	1131
Valero Refining Company Oklahoma	Ardmore	OK	

PADD 3

ALON REFINING KROTZ SPGS INC	Krotz Springs	LA	
BP Texas City Refinery	Texas City	TX	
BTB Refining LLC	Corpus Christi	TX	
Center Point *	Baton Rouge	LA	
Chalmetter Refining Co LLC	Chalmette Pascagoula-	LA	
Chevron USA Inc	Section 890	MS	
Citgo Petroleum Corp.	Lake Charles Port Ave Truck	LA	
Citgo Petroleum Corp.	Rack	TX	
Citgo Refining & Chemical Inc.	Corpus Christi	TX	
Conoco Phillips	Alliance	LA	
Conoco Phillips	Lake Charles	LA	
Conoco Phillips	Sweeney	TX	
Conoco Phillips	West lake	LA	
Deer Park Refining LTD Partnership	Deer Park	TX	
Enterprise Products Operating LP	HO NGL-Alameda 2	TX	
Ergon Refining Inc	Vicksburg	MS	
Exxon Refining & Supply Company	Baton Rouge	TX	
Exxon Refining & Supply Company	Baytown	TX	
Flint Hills Resources LP	West	TX	
Houston Refining LP	Houston	TX	
Hunt Refining Co	Tuscaloosa	AL	
IMTT	St. Rose	LA	
Intercontinental Terminals *	Deer Park	TX	
Kinder Morgan Liquid Terminals LLC *	Galena Park	TX	
Kinder Morgan Liquid Terminals LLC *	Pasadena	TX	
L & L Oil & Gas Inc.	Fourchon 15	LA	
LBC Baton Rouge *	Baton Rouge	LA	
LBC Houston *	Searbrook	TX	
Lion Oil Co	El Dorado	AR	
Loop LLC	Metairie	LA	544
Magellan Pipeline Co *	East Houston	TX	
Magellan Terminals	Galena Park	TX	

Holdings LP *			
Marathon Petroleum Co LLC	Texas City	TX	
Motiva Enterprises LLC	Convent	LA	
Motiva Enterprises LLC	Norco	LA	
Motiva Enterprises LLC	Port Arthur	TX	527
Murphy Oil USA	Meraux	LA	
Oil Tanking Beaumont *	Beaumont	TX	
Oil Tanking Pl Inc.	Houston	TX	
Oil Tanking Houston LP	Houston	TX	
Shell Chemical LP	Mobile	AL	
Shell Oil Co	Deer Park	TX	
Shell Oil Products US *	Houston	TX	
Strategic Petroleum Reserve	Freeport	TX	
Strategic Petroleum Reserve	Sugarland	LA	315
Strategic Petroleum Reserve	Sun	TX	
Teppco Terminal & Marketing Co LLC	Houston	TX	
Tesoro Petrochemicals USA Inc.	Port Arthur	TX	
Valero Marketing and Supply *	Corpus Christi	TX	
Valero Marketing and Supply	St. James	LA	
Valero Refining Company Texas LP	Houston	TX	1300
Valero Refining Company Texas LP	Texas City	TX	85
Vopak Terminals North America Inc. *	Deer Park	TX	
Vopak Terminals North America Inc. *	Galena Park	TX	

PADD 4

Tesoro West Coast	Salt Lake City	UT	1575
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PADD 5

BP Carson Refinery	Carson	CA	
BP Products North America Inc. *	East Hynes	CA	
BP Products North America Inc.	Seattle	WA	93
BP West Coast Products LLC	Carsond	CA	
BP West Coast Products LLC *	Hathaway El Segundo	CA	
Chevron USA Inc	Section 890	CA	

Chevron USA Inc *	Ferndale	WA
Chevron USA Inc *	Richmond	CA
Chevron USA Inc	Richmond-	
Conoco Phillips	Section 890	CA
Exxon Mobil Oil Corp. *	San Francisco	CA
Kinder Morgan Liquid	Vernon	CA
Terminals LLC *	Carson	CA
Nustar Energy LP *	Tacoma	WA
Pasadena Refining		
Systems Inc	Pasadena	TX
Shell Oil Products US *	Carson	CA
Shell Oil Products US *	Los Angeles	CA
Tesoro Alaska Co	Kenai	AK
Tesoro Hawaii Corp.	Ewa Beach	HI
Valero Refining Co.		
California	Benicia	CA
Valero Refining Co.	Wilmington	
California	Asphalt Plant	CA