



The Alberta Tar Sands. Photo © David Suzuki Foundation

In the US, 59 of the 134 refineries are equipped with coker units. Approximately 30% of the US's bitumen refining capacity is in the nine Gulf of Mexico refineries TransCanada seeks to supply through its controversial Keystone XL pipeline. Sea-faring oil tankers traveling from Saint John, Quebec City, or Montreal could also access these refineries.

Pet coke: the Coal Hidden in the Tar Sands

A major problem with upgrading bitumen is it has a rather nasty byproduct called petroleum coke or 'pet coke'. Pet coke contains most of the heavy metals, sulphur and other impurities removed from bitumen during the coking process. Approximately 15% of a barrel of bitumen will become pet coke.

The research and clean energy advocacy group Oil Change International describes pet coke as "the coal hiding in the tar sands" because it has emerged as an inexpensive alternative to coal since the bitumen boom in Alberta began ten years ago.

"Pet coke is providing coal-fired power plants with a cheaper and dirtier source of fuel. It is breathing new life into the industry, which is cause for concern as the world desperately

tries to reduce its carbon emissions output," says Stockman of OCI.

The majority of pet coke produced in North America is sold to Asia and Latin America where regulations on sulphur releases from coal-fire power plants are lax. Pet coke produces 5-10% more greenhouse gas (GHG) emissions than coal per unit of energy.

In Canada, pet coke is largely being stockpiled in Alberta. There are some exports of Canadian pet coke to Asia via ports near Prince Rupert, British Columbia.



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<http://desmog.ca/>

Tar Sands Oil for Export

Only Small Amounts of Bitumen Can be Refined in Eastern Canada

The misconception with 'west-to-east' pipeline proposals like Enbridge's Line 9 or TransCanada's Energy East is that shipping western Canadian oil to eastern Canada means "Canadian oil for Canadian refineries". This assumption overlooks the fact eastern Canadian refineries cannot refine a certain type of Canadian oil — tar sands bitumen.

Bitumen is the heavy unconventional oil found in the Alberta tar sands (also called oil sands). Only a specialized refinery can process bitumen and turn it into refined products such as automobile fuels. Few refineries in Canada can do it. None of the refineries in eastern Canada can refine large quantities of bitumen.

TransCanada and Enbridge claim their west-to-east pipelines will transport mainly conventional oil and only small amounts of bitumen. This is unlikely to be true in the long term as conventional sources of oil dry up in Canada and bitumen production continues to increase.



The Alberta Tar Sands. Photo © Greenpeace.

low-grade oil with the consistency of peanut butter and riddled with impurities.

Bitumen is high in carbon and low in hydrogen. Much of the carbon in bitumen needs to be stripped out in order to convert bitumen into refined products that can be used.

There are two main methods used to pre-process bitumen: 'upgrading' at the extraction site, and 'coker units' at refineries. Upgraders partially remove solids and carbon; the resulting product is usually more expensive, but is easier to ship than diluted bitumen. Refineries require a 'coker' unit to remove the carbon from bitumen. (In order to be transported, bitumen must be diluted with volatile liquids — Diluted Bitumen.)

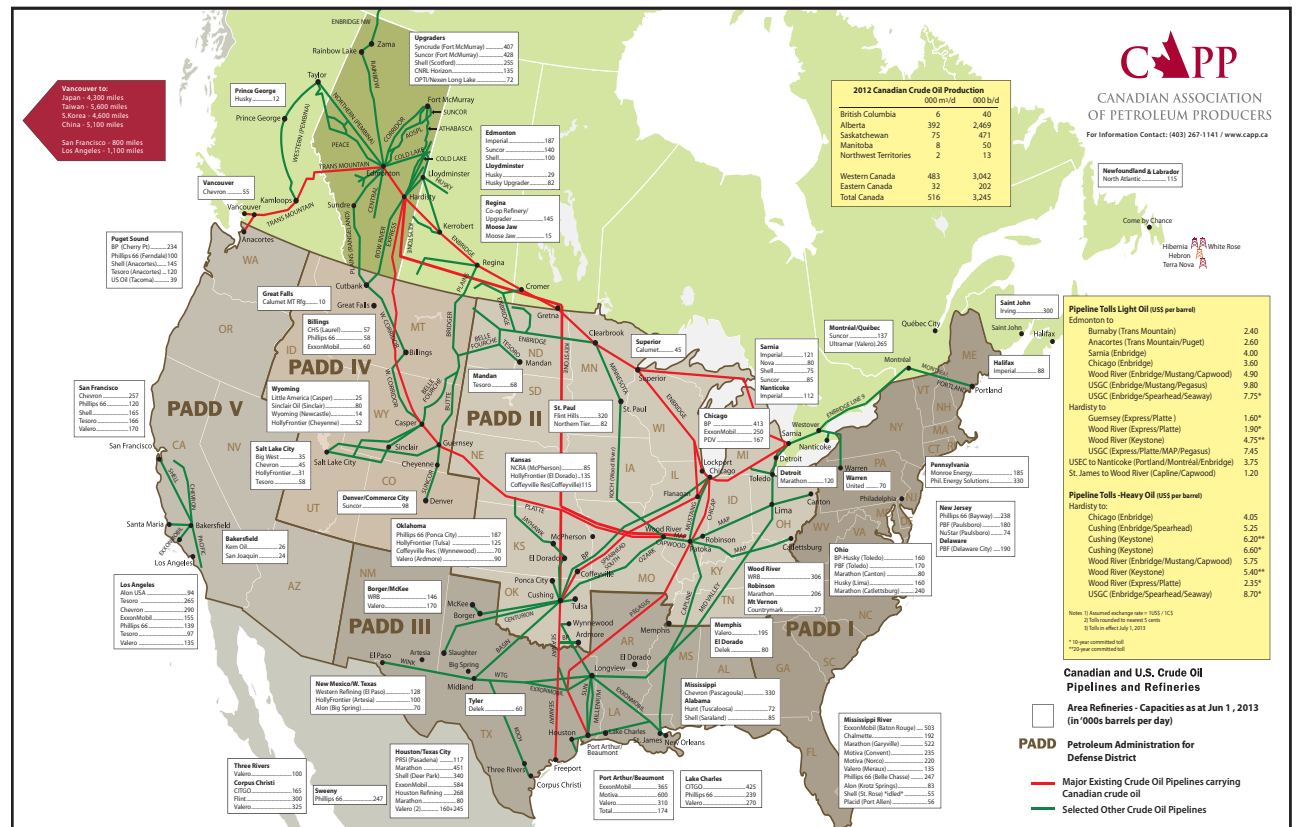
Suncor's Montreal Refinery May Refine Bitumen if Line 9 is Approved

A few refineries in Alberta and one in Ontario have coker units. A massive investment \$2 billion is required to install a coker. None of the three eastern Canadian refineries — Suncor, Valero, or Irving — have publicly announced their intentions to make this investment.

“Suncor is the most likely to install a coker because the company has tar sands projects in Alberta. Irving and Valero do not,” says



Energy East Pipeline.



Lorne Stockman, research director at Oil Change International (OCI) in the US.

Neither Valero nor Irving appears interested in buying a coker at the moment. Irving, which has equipment to process small amounts of bitumen, is investing in a \$300 million marine terminal in Saint John, New Brunswick to export oil and bitumen from the proposed Energy East pipeline.

There is speculation Suncor will announce its plans to construct a coker unit at its Montreal refinery after the National Energy Board (NEB) — Canada’s independent energy regulator — makes its decision on Line 9. The NEB decision on Line 9 could come as early as January 2014.

The US Has the Most Capacity to Refine Bitumen in the World

The probable destination of Energy East’s or Line 9’s bitumen is a refinery somewhere in the US, although some bitumen refining capacity does exist in Europe as well as China.

