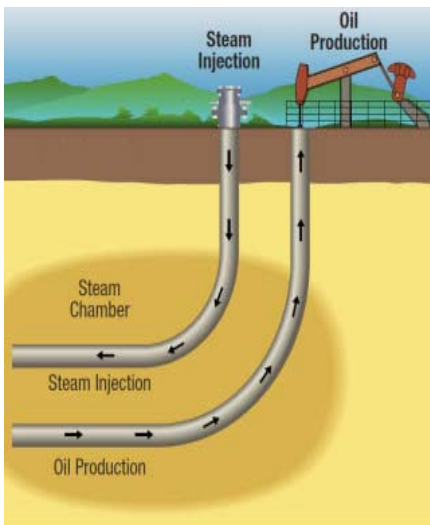


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## Go Your Own Way: Moving Western Canadian Bitumen to Market



- Bitumen production from western Canada’s oil sands region is rising, and producers face challenges in cost-effectively delivering bitumen-sourced heavy crude to key markets, especially the US Gulf Coast.
  - Some oil sands production is upgraded to synthetic crude oil, but increasing amounts are being moved as bitumen/diluent blends, mostly as dilbit crude but also as railbit or even purebit.
  - Pipeline capacity from western Canada to refineries has been inadequate, and questions remain about whether major projects like Keystone XL and Trans Mountain will proceed, but some recent projects are helping to eliminate bottlenecks.
  - Rail has emerged as an alternative to pipeline delivery of western Canadian heavy crude, but pipeline vs. railroad economics are complicated by the various forms in which bitumen can be moved.
- Decisions about how to ship are based on several factors, including whether bitumen is moved from well sites to the Edmonton and Hardisty, AB hubs via feeder pipelines as dilbit or by truck as railbit.
  - Larger rail loading and offloading facilities are being built to handle heavy crudes, and rail shipments from western Canada are increasing, but lingering questions remain about pipeline vs. rail economics.

The Western Canadian Sedimentary Basin (WCSB) holds some of the world’s greatest hydrocarbon reserves, but the basin’s primary oil product—bitumen from oil sands, mostly mined at the surface or extracted “in situ” by heating an underground well with injected steam—has proved challenging to transport to market. Most of the complex refineries best suited to process this heavy crude are located in the US. Those closest to the WCSB - in the Midwest - are already adequately supplied by existing pipelines, leaving only refineries 2,000 or more miles away on the Gulf Coast ready to absorb incremental bitumen production. But new pipeline capacity from the oil sands region to the Gulf Coast has been inadequate and slow to develop, leading producers and midstream operators to explore alternatives, rail chief among them.

This report will review the continuing growth in crude production in the WCSB, the existing and planned pipelines that serve the region, the physical characteristics of the hydrocarbon products of the WCSB, the challenges in moving those products to market, the development of rail-based transportation alternatives and how the economics of moving heavy crude by rail compare to those of pipelines. It also provides a listing and description of existing and planned rail loading facilities in western Canada and rail offloading facilities in the Gulf Coast region designed to send or receive heavy crude.

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