



Canadian Oil and Gas Production and Costs Outlook

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Canadian Energy Research Institute

Overview

Founded in 1975, the Canadian Energy Research Institute (CERI) is an independent, registered charitable organization specializing in the analysis of energy economics and related environmental policy issues in the energy production, transportation, and consumption sectors.

Our mission is to provide relevant, independent, and objective economic research of energy and environmental issues to benefit business, government, academia and the public.

CERI publications include:

- Market specific studies
- Geopolitical analyses
- Commodity reports (crude oil, electricity and natural gas)

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Presentation Outline

- Background
- Supply Costs
- Crude Oil and Natural Gas Production Outlooks
- Conclusions

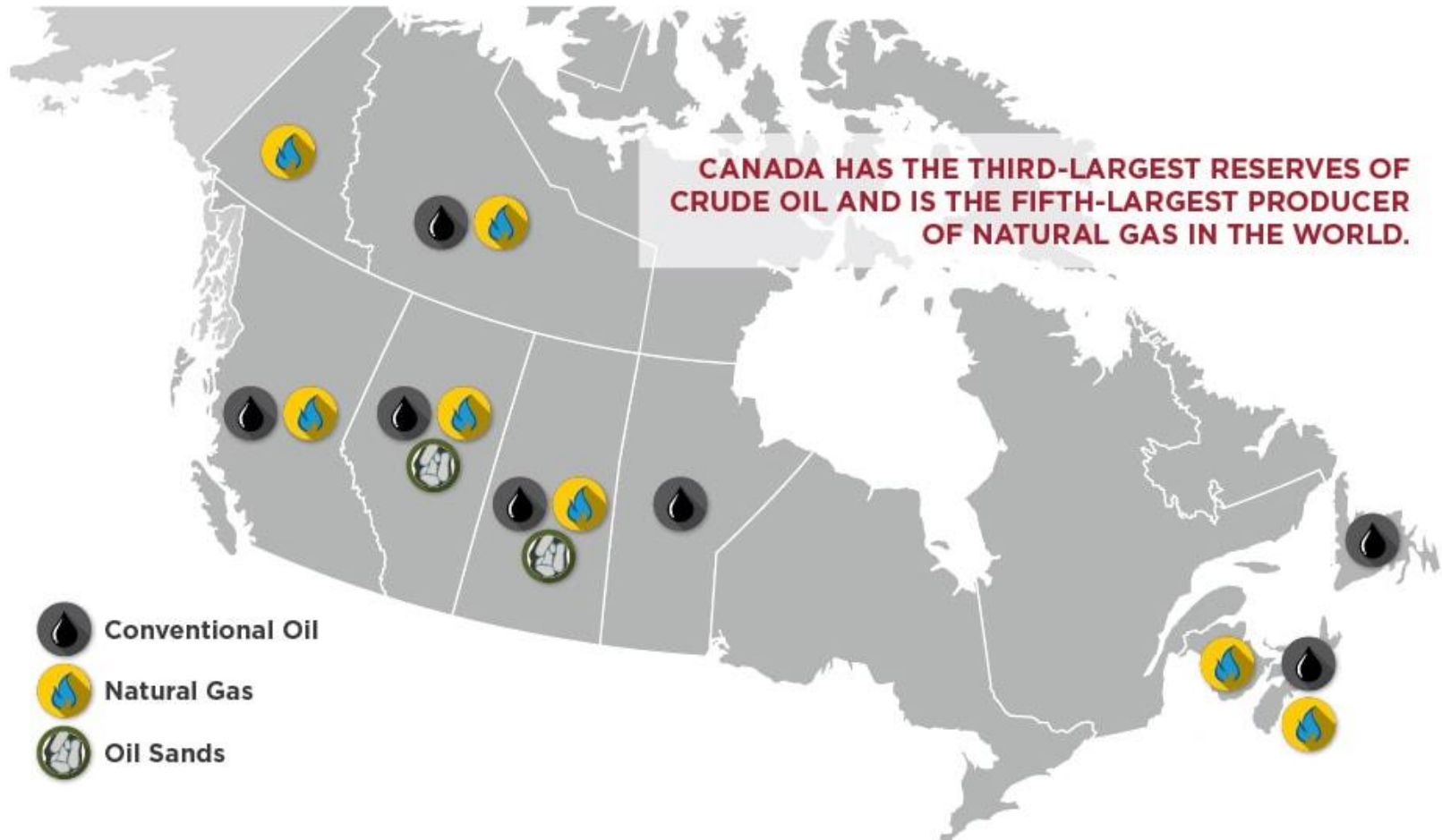
Background

Crude Oil Markets

- World demand growth was 1.3 Mmbpd in 2018, future growth is driven by rising petrochemicals, freight and aviation demand
- Global crude prices rebounded since the 2014 downturn as a result of OPEC and non-OPEC production cuts
- OPEC compliance cuts within 200,000 bbls of target January 2019. Exceeded compliance in 2018
- Geopolitical concerns over crude supply
- Economic sanctions in Venezuela
- Alberta-made curtailment was announced in December 2018 to be enforced for duration of 2019

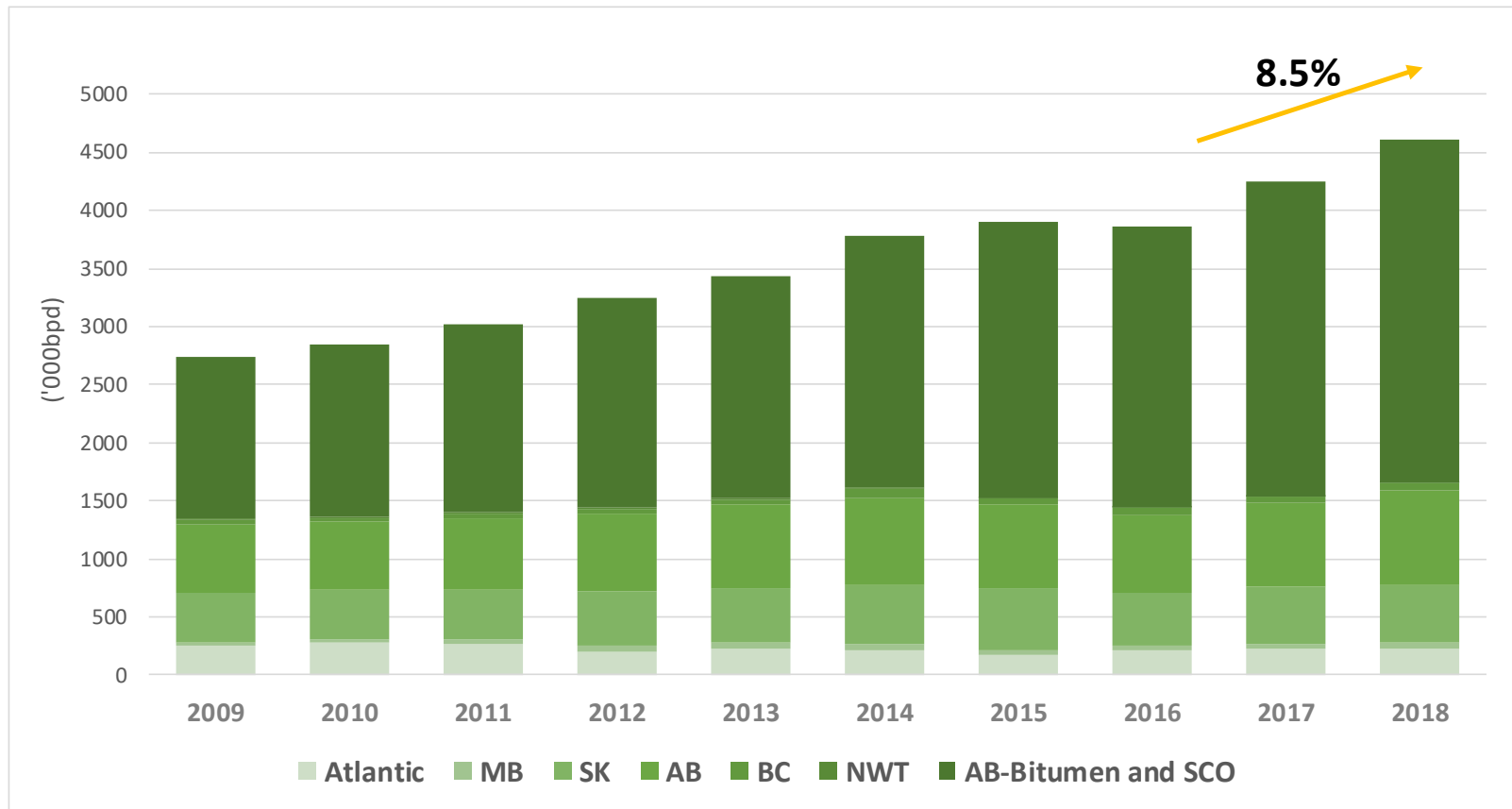
Source: Bloomberg

Canadian Oil and Gas Resources



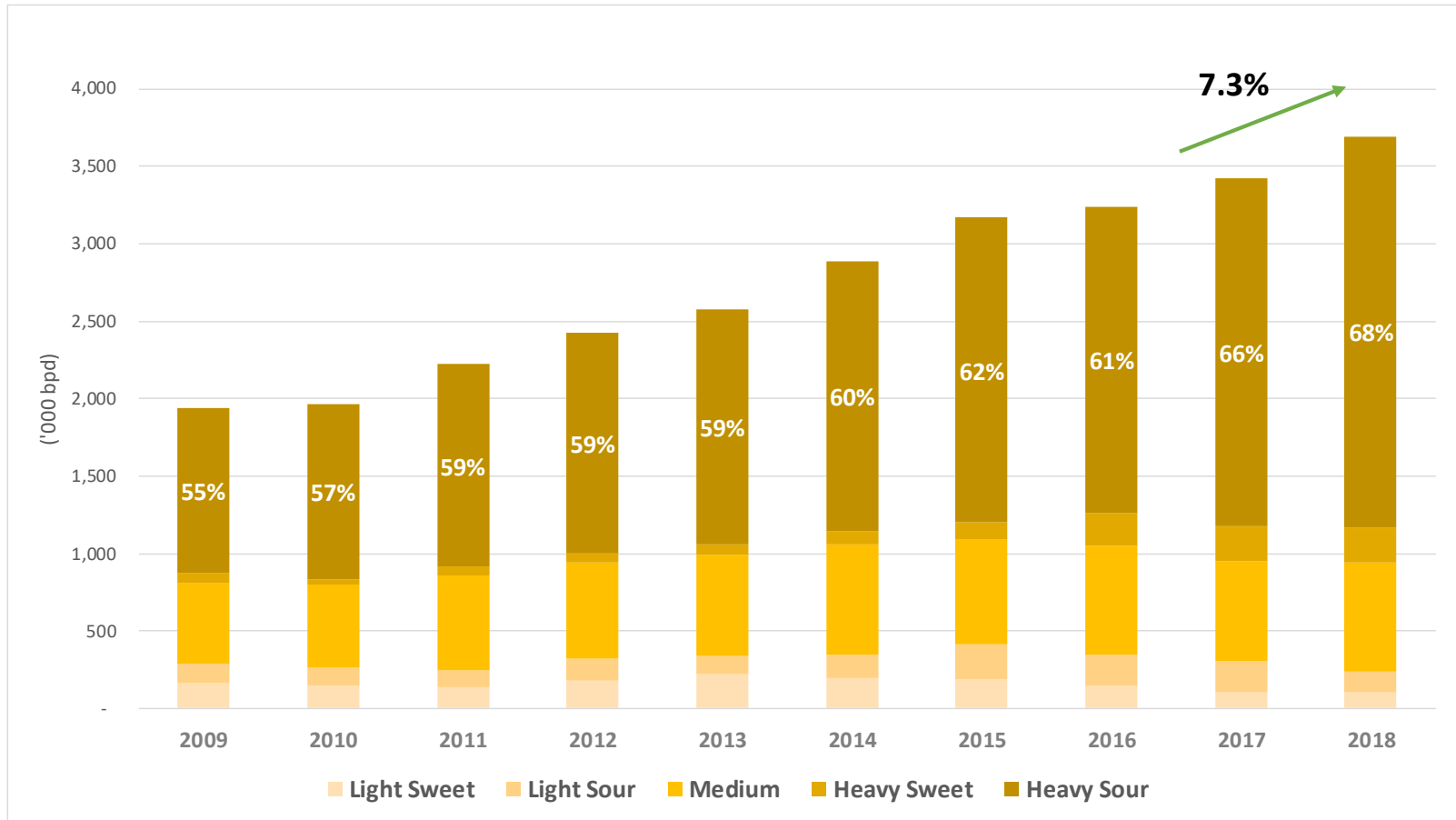
Source: CAPP

Canadian Crude Oil Production



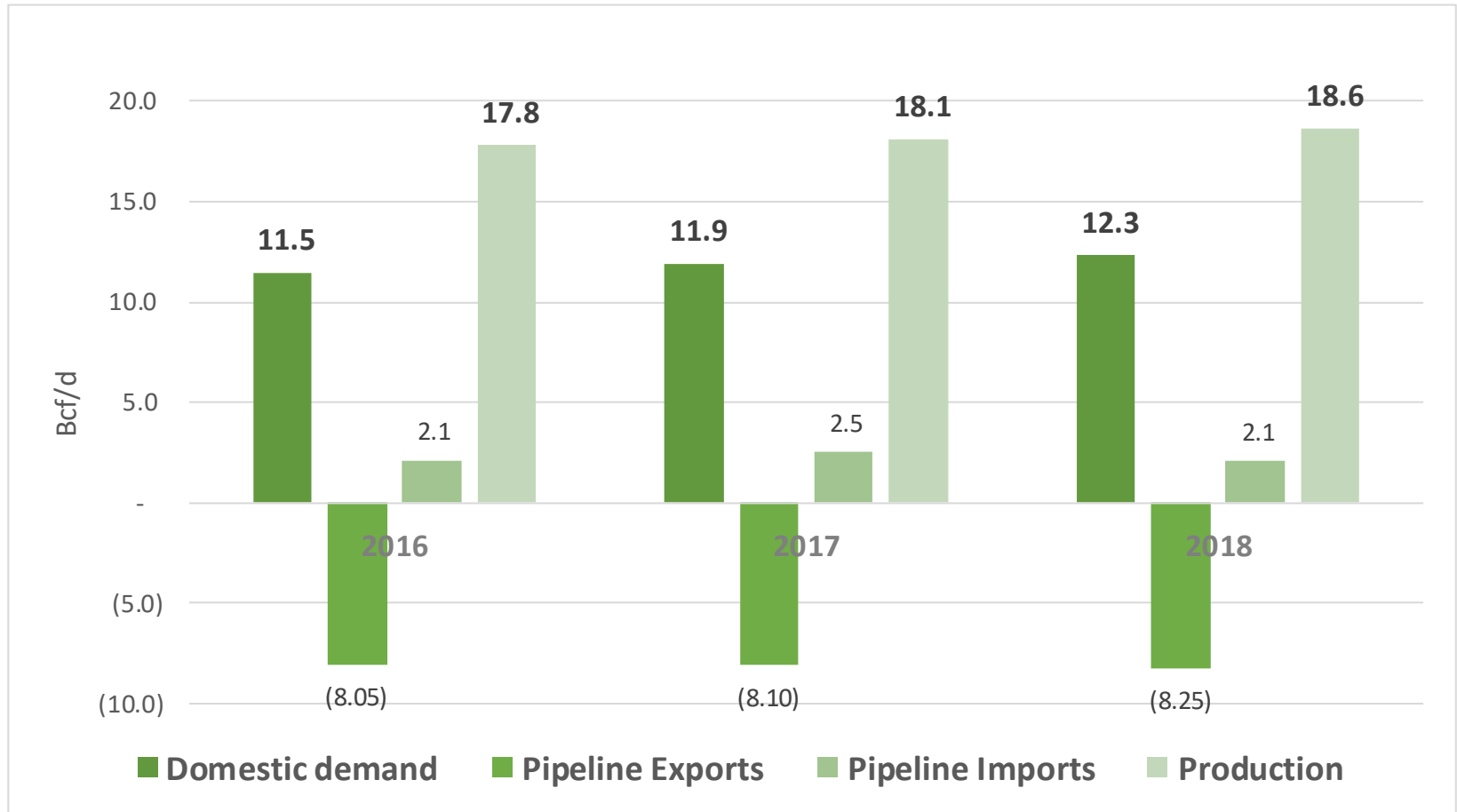
Source: Statistics Canada CANSIM Table 126-0003

US Crude Imports from Canada



Source: US EIA

Natural Gas Production and Disposition

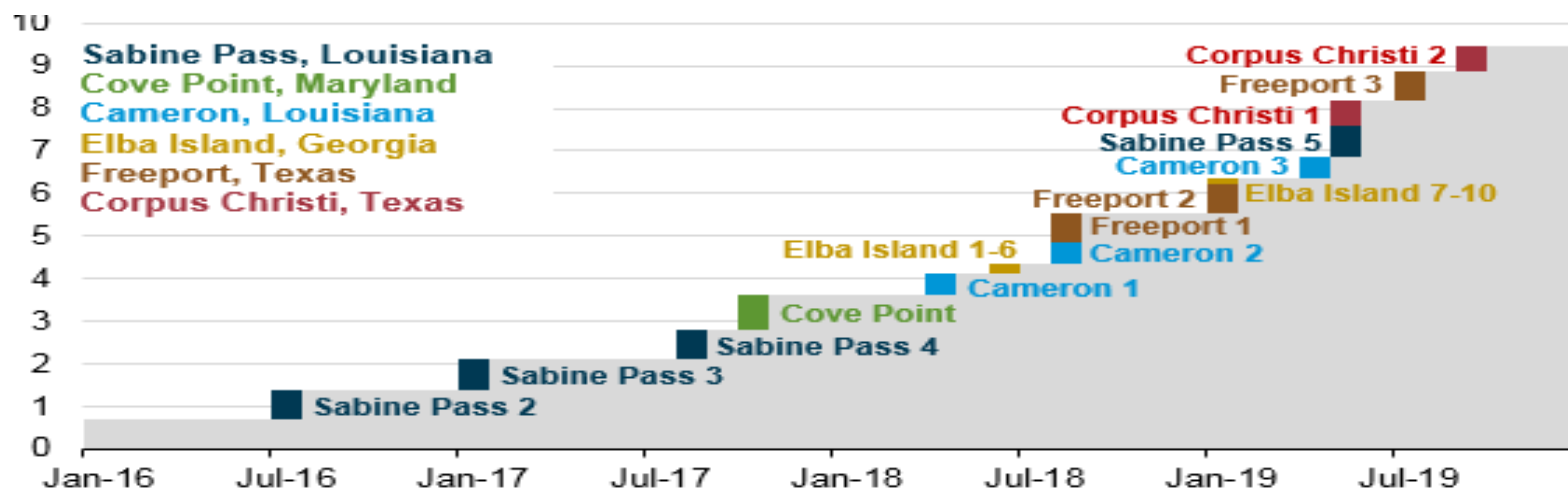
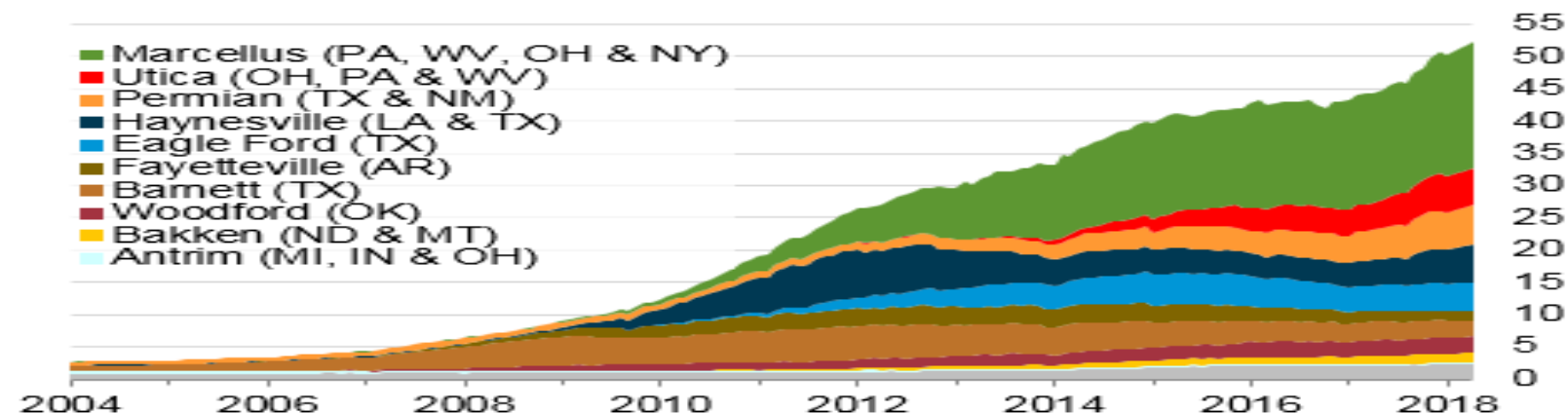


Source: NEB

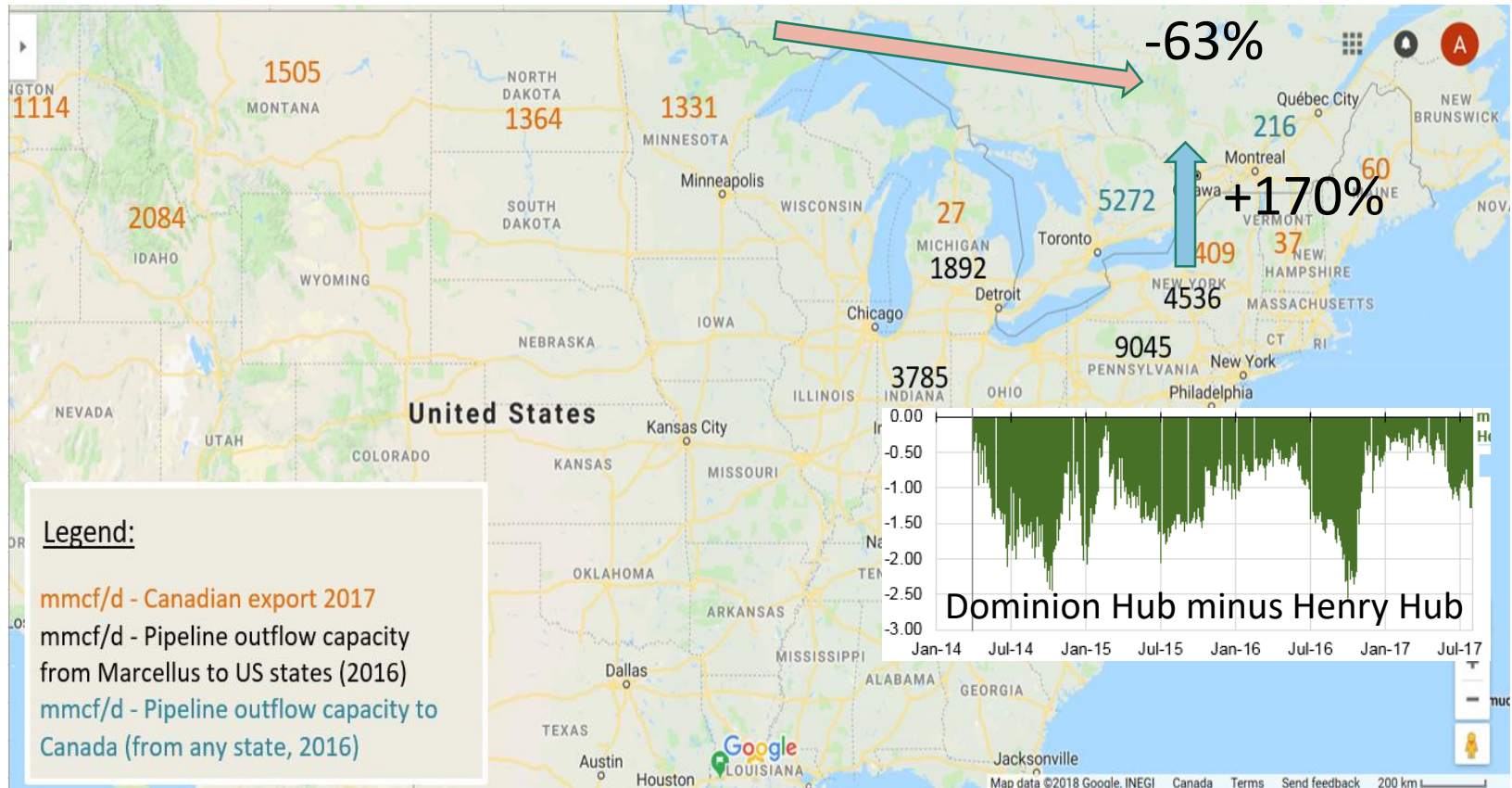
US Gas Industry Developments

Monthly dry shale gas production

billion cubic feet per day



The Battle for the Central Canada Gas Market



- Eastward throughput of TransCanada Mainline (at the Prairie point) fell from 5.97 bcf/d in 2006 to 2.17 bcf/d in 2017 (-3.8 bcf/d)
- Imports from the US increased for the same period (+1.6 bcf/d)

The Battle for the US Gas Market



Supply Costs

Supply Costs

Supply Cost - is the constant dollar price needed to recover all capital expenditures, operating costs, royalties and taxes, and earn an acceptable return on investment.

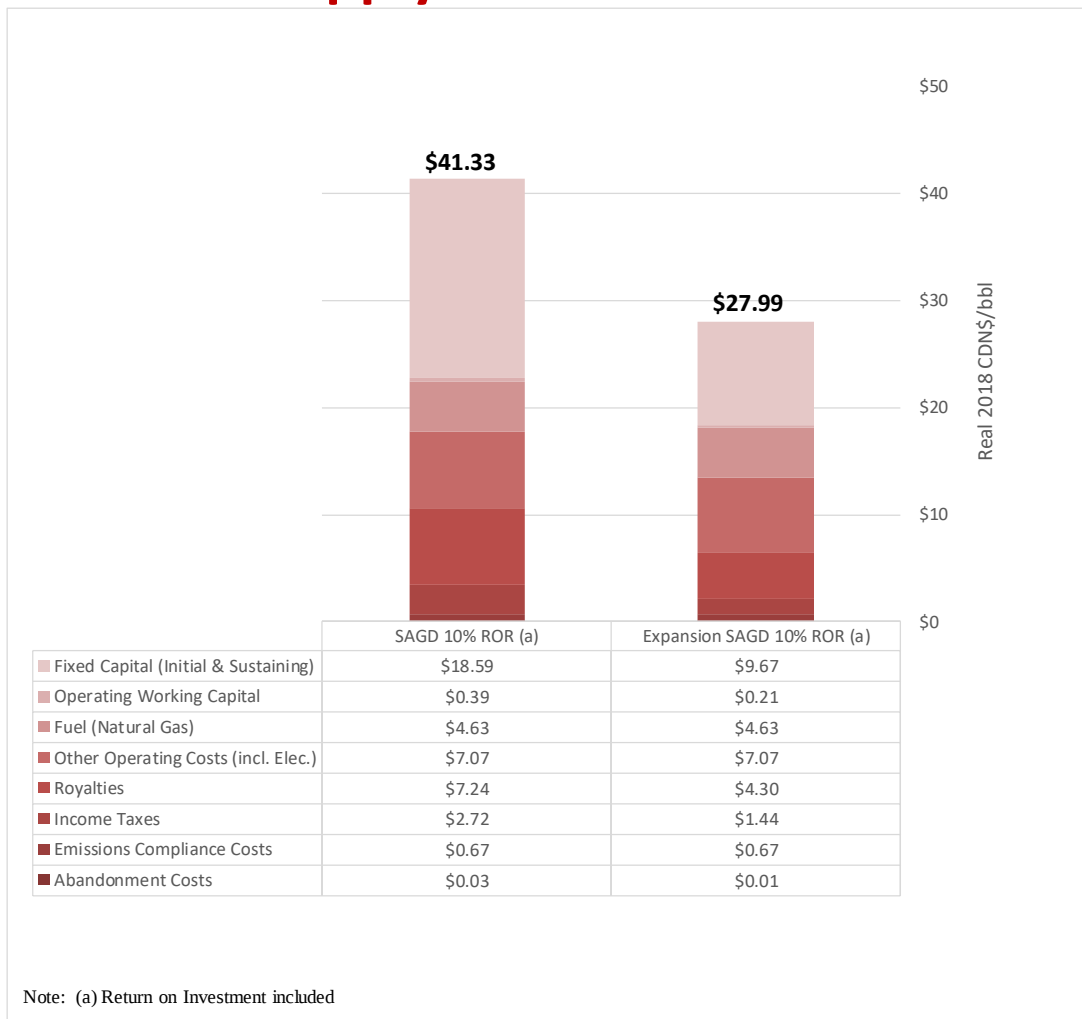
- Assumptions:
 - 10% real rate of return
 - 2018 constant dollars
 - Oil and gas price forecasts – EIA AEO 2019
 - \$0.80 US/CAD\$ exchange rate

Bitumen Supply Costs

WTleq. Costs:

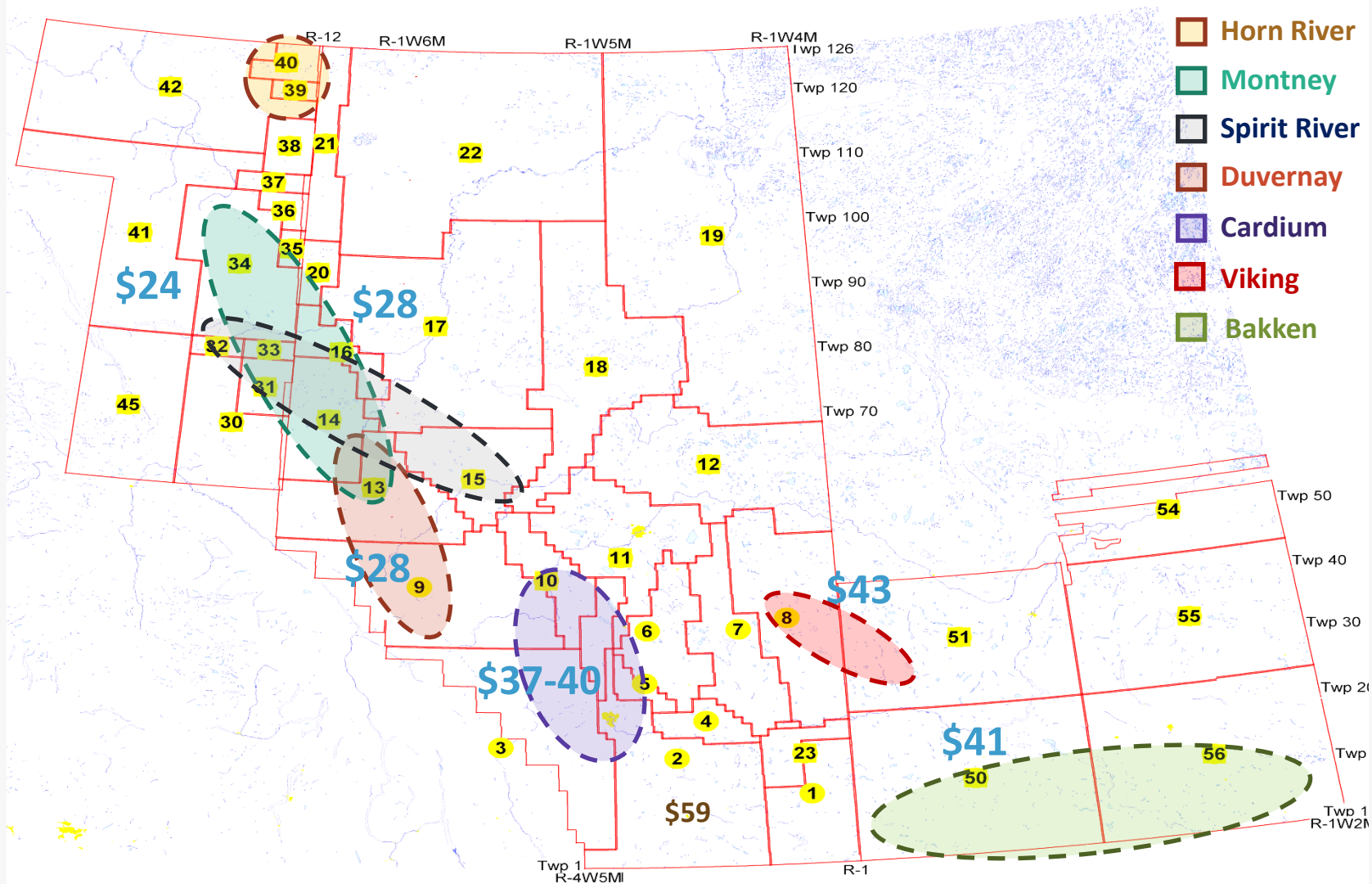
SAGD –
US\$**52.31**

Expansion –
US\$**46.69**

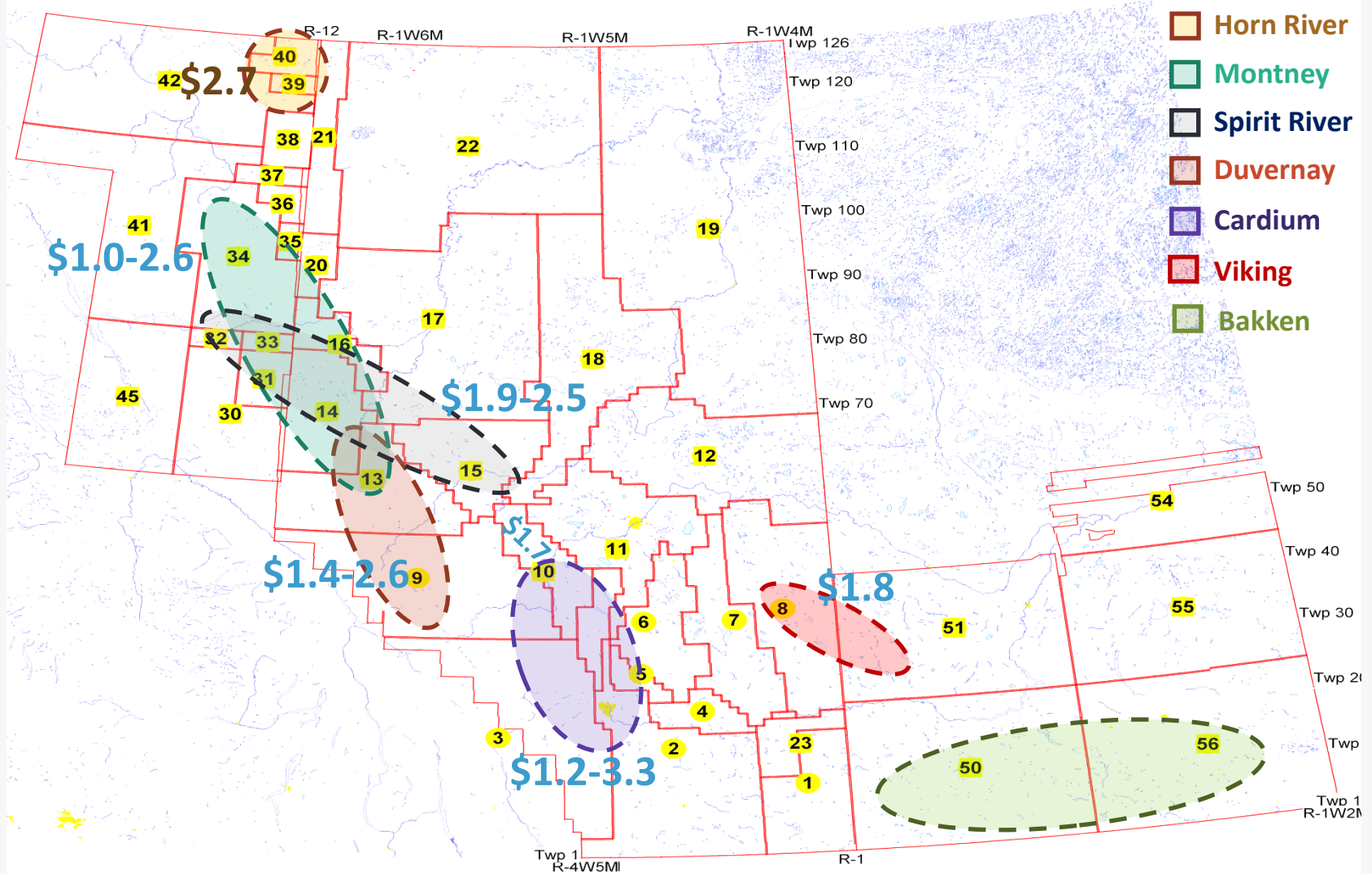


Source: CERI, Canoils

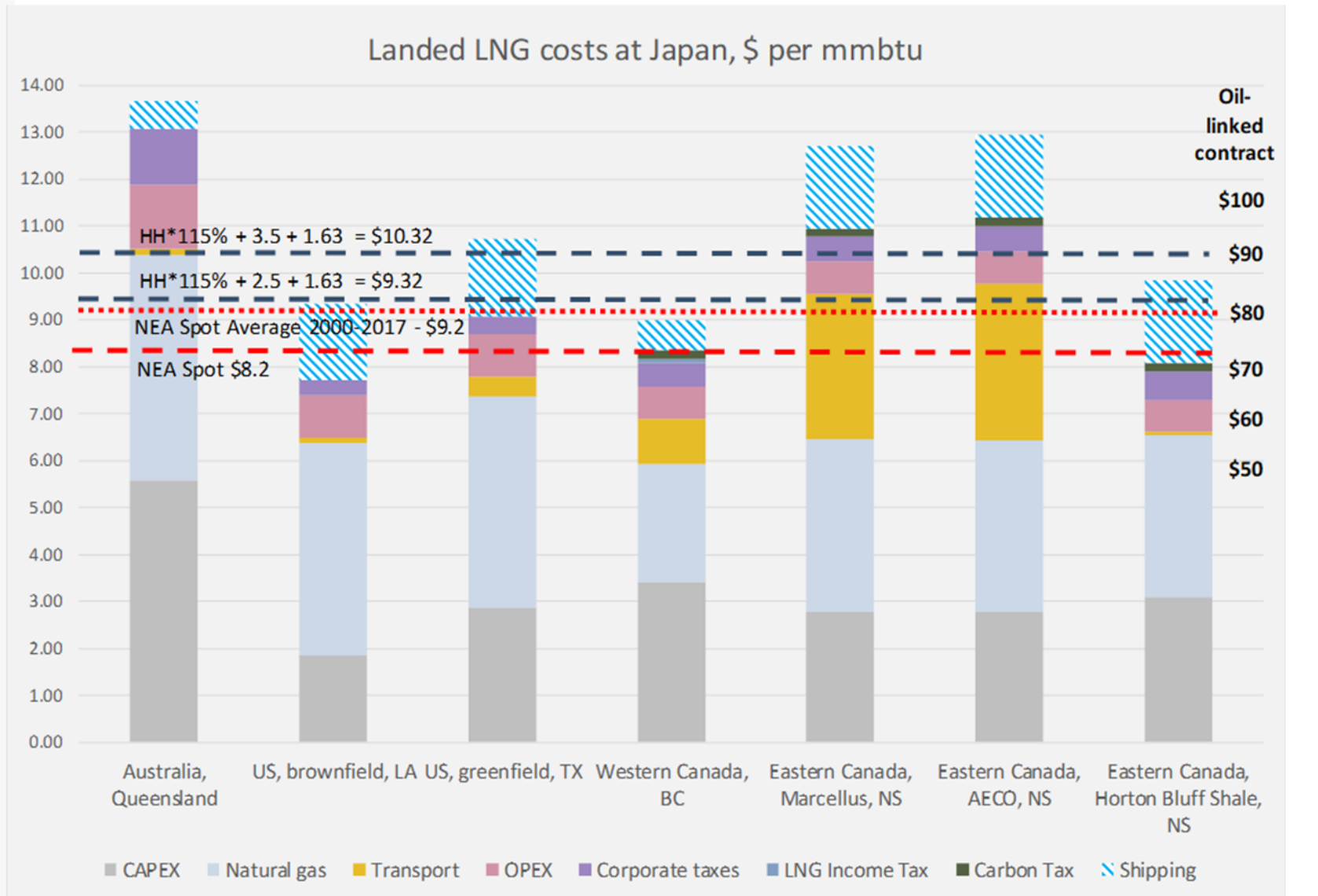
Conventional Oil Supply Costs (\$/bbl)



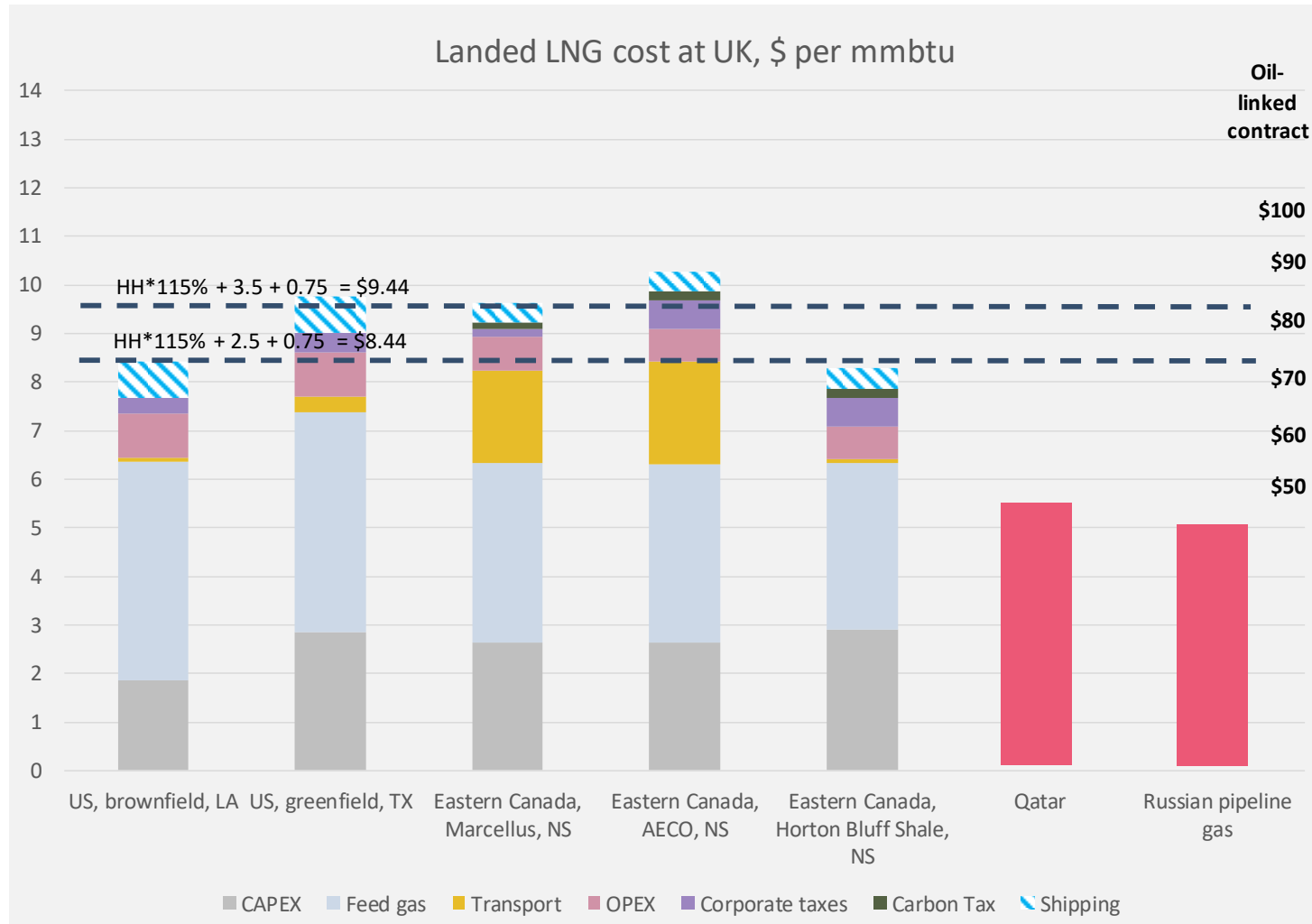
Natural Gas Supply Costs (\$/mmscf)



Landed Costs in Japan



Landed Costs in Europe

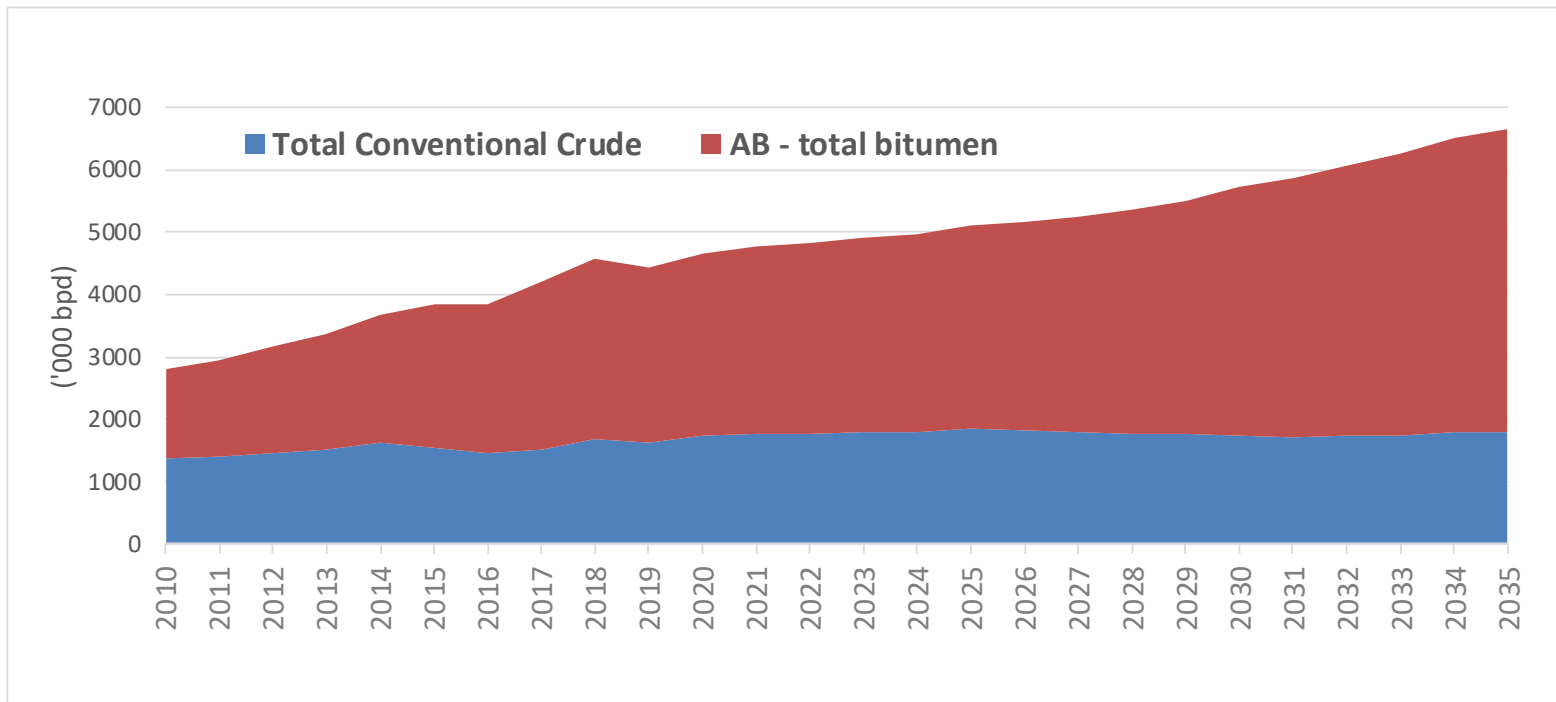


Source: CERI, Rystad Energy, LNG Journal

Crude Oil and Natural Gas Production Outlooks

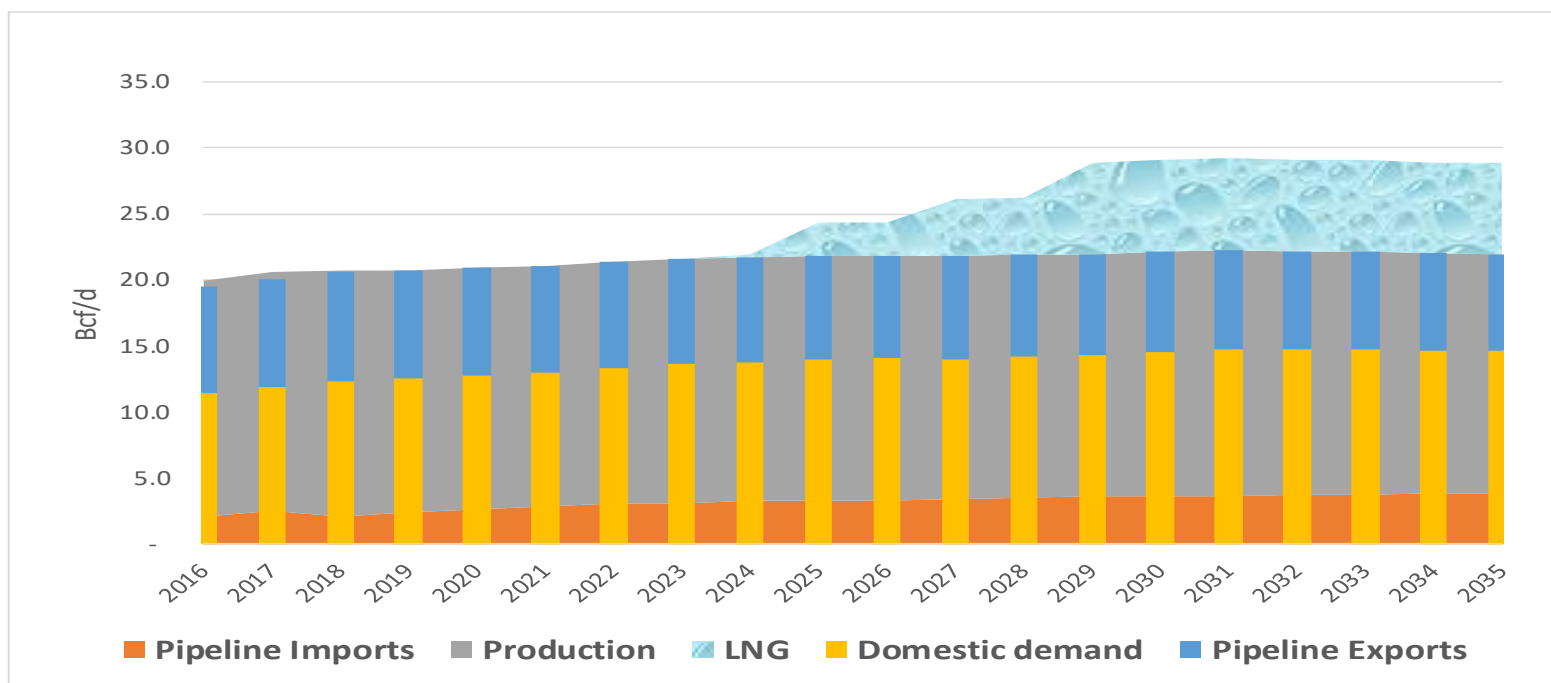
Canadian Oil Production Outlook – Ref Case

- Curtailment in 2019 – projected 3% decline (1.9% conv./4.1% oil sands)
- Future growth is dominated by oil sands in-situ projects
- Oil sands production growth – 3.5%/yr post-2019
- Conventional production supported by condensate and pentanes plus – 0.6% post-2019



Source: CERI, BCOGC, AER, Government of SK, Government of MB, CNLOPB, PSAC, CAPP, CanOils

Canadian Gas Production and Disposition Outlook – Ref Case



- Gas production growth – 2%/yr from 18.6 Bcf/d in 2019 to 25 Bcf/d in 2035
- Drilling predominantly in liquids-rich reservoirs
- Incremental growth is dependent on future LNG projects. Growth of 2.5 Bcf/d in 2025 to 6.9 Bcf/d in 2035.

Source: CERI, BCOGC, AER, Government of SK, Government of MB, CNLOPB, PSAC, CAPP

Conclusions

- Crude and oil sands producers continue to be challenged by market access
- Natural gas producers need to secure new markets
- Natural gas market will affect NGLs production and petrochemical investment
- Concerns of lower competitiveness compared to the US
- Concerns of regulatory processes

Conclusions

- Growth in oil and gas production is predicated on growth in exports that could support global demand growth
- Crude oil production growth will be driven by condensates and in-situ oil sands projects
- Natural gas production growth is greatly dependent on the LNG projects
- Costs of producing crude oil, bitumen, natural gas and LNG remain competitive

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