

Canadian Energy Research Institute

Canadian Oil, Gas and LNG Market Review

Allan Fogwill

Strait of Canso – Superport Days'16

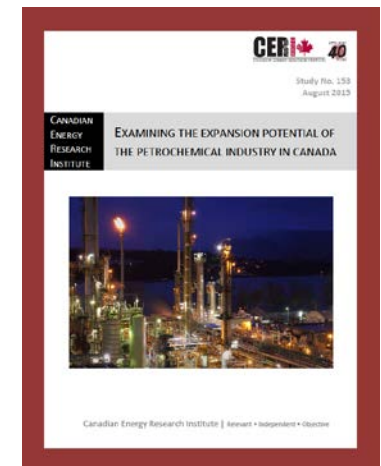
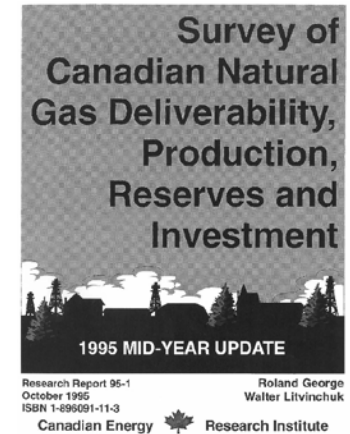
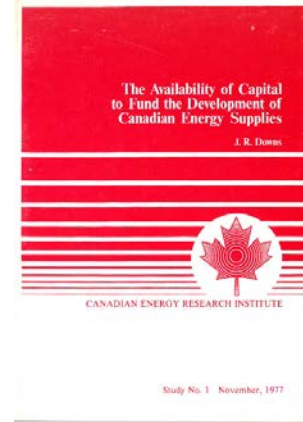
Dundee, Nova Scotia

July 2016

Mission Statement

Founded in 1975, the Canadian Energy Research Institute (CERI) is an independent, non-profit research Institute 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.

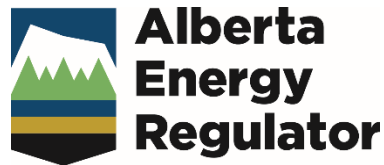


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Agenda

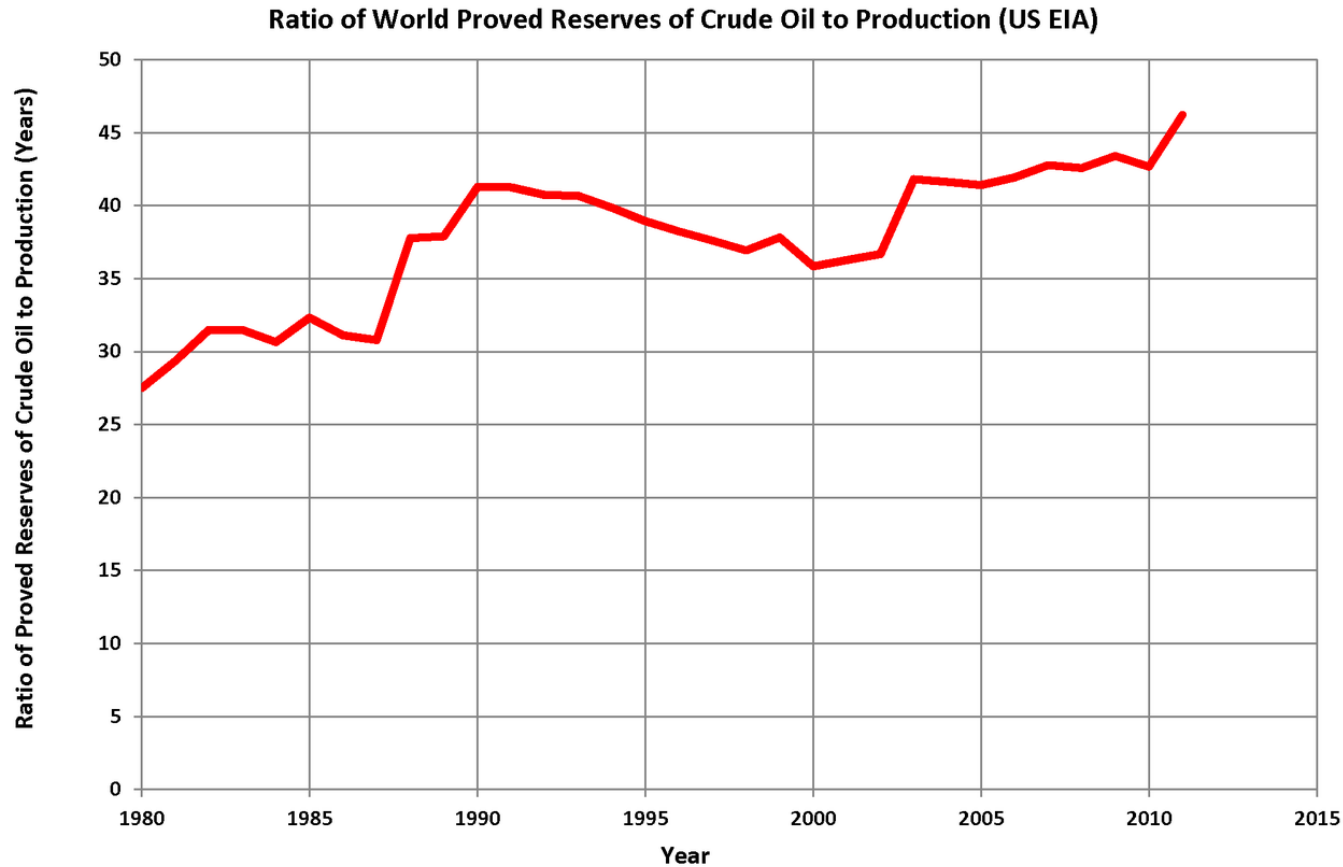
- Oil Market
- Natural Gas Market
- LNG
- Conclusion

Evolution of Energy Markets

- The supply availability of oil and natural gas has fundamentally changed over the last 5 years.
- Horizontal drilling and hydraulic fracturing have opened up vast additional reserves creating a downward pressure on prices.

OIL

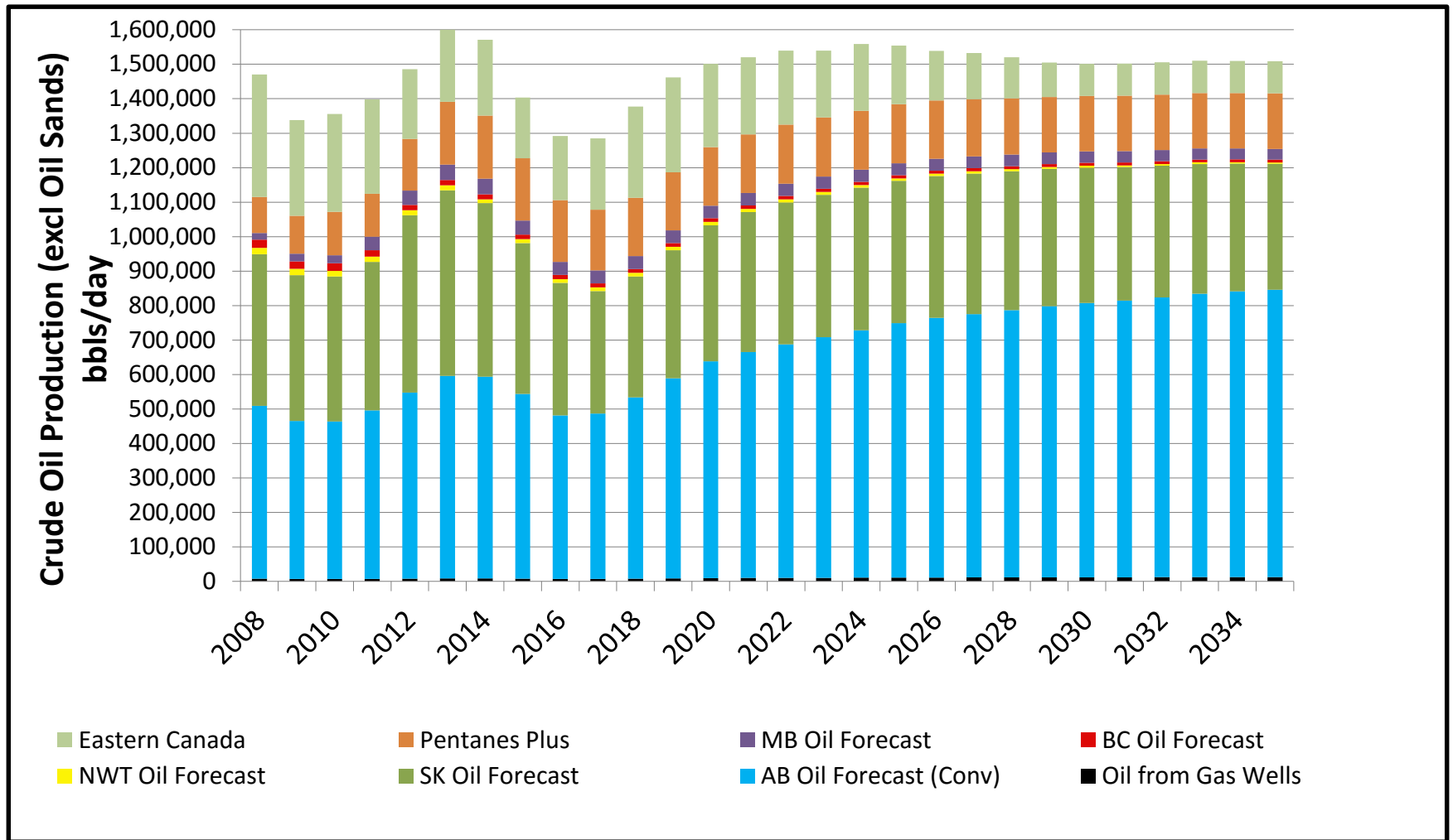
World Oil Reserves



Source: EIA

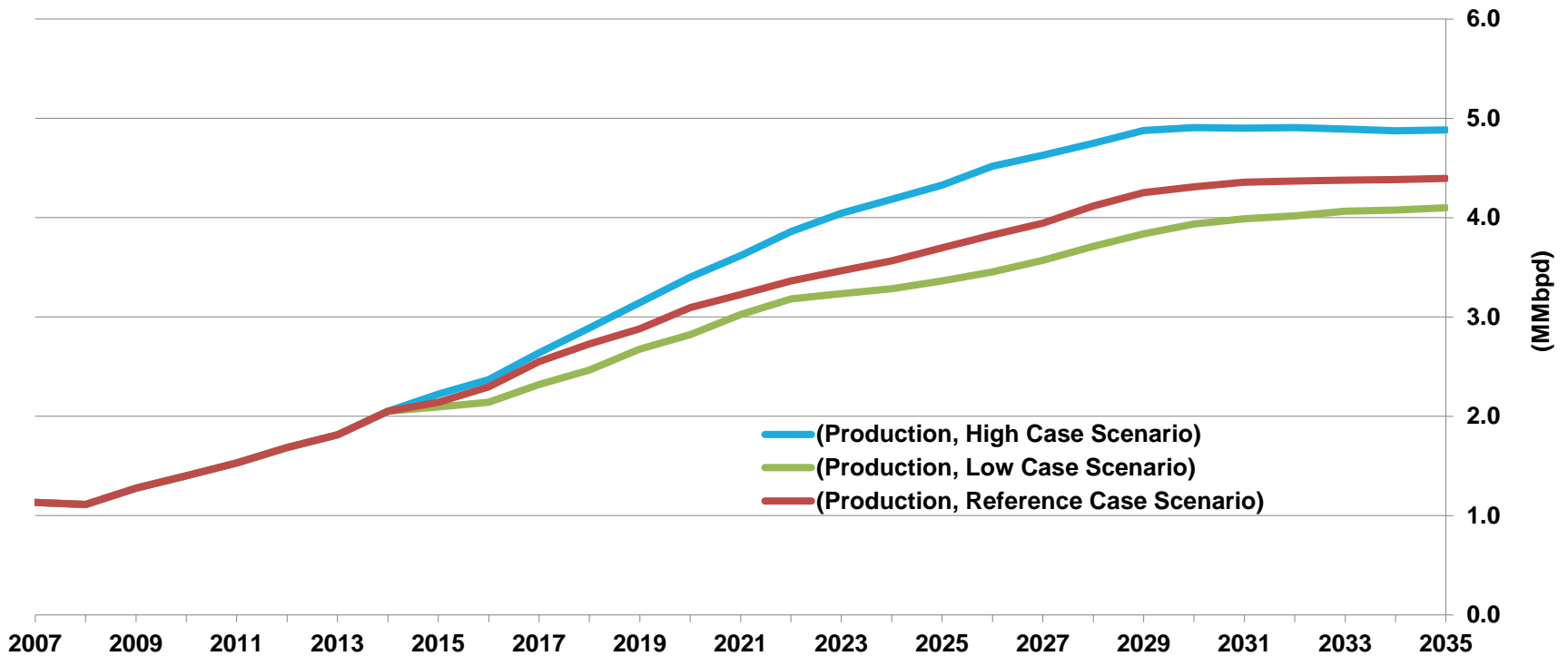
- Reserves have increased over 27% in the last 10 years with the 2013 reserves to production ratio of 53 years

Canadian Conventional Oil Production (Aug 2015)



Source: CER, CAPP

Oil Sands Growth (Aug 2015)



Source: CanOils, CERl

* Growth dependent on market access – TMX, Gateway or Energy East

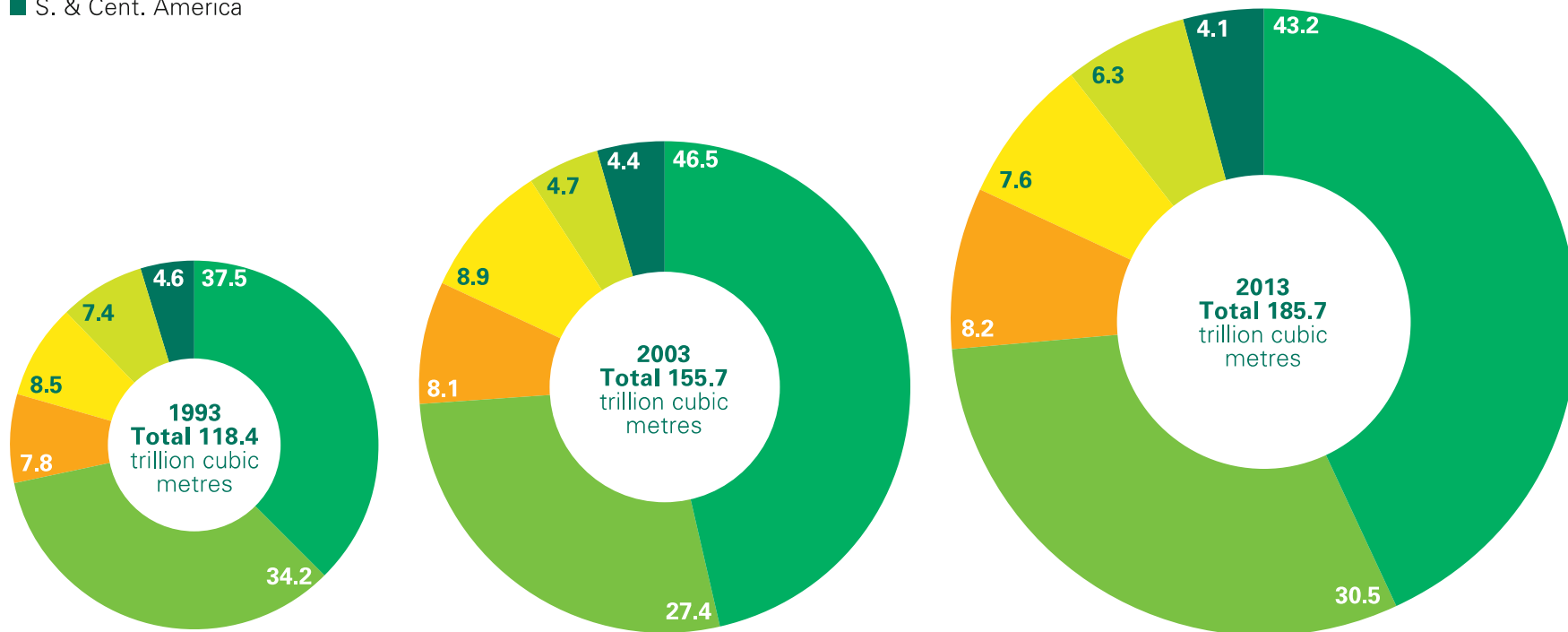
Factors Affecting Oil Market

- Demand
 - Economic Growth
 - Europe
 - US
 - China
 - Strategic Oil Reserves (short term)
- Supply
 - High levels of inventories (short term)
 - Delayed investments
 - Geopolitical Issues
 - Iran
 - Venezuela
 - Iraq
 - Yemen
 - Nigeria
 - Russia

Natural Gas

Natural Gas Reserves

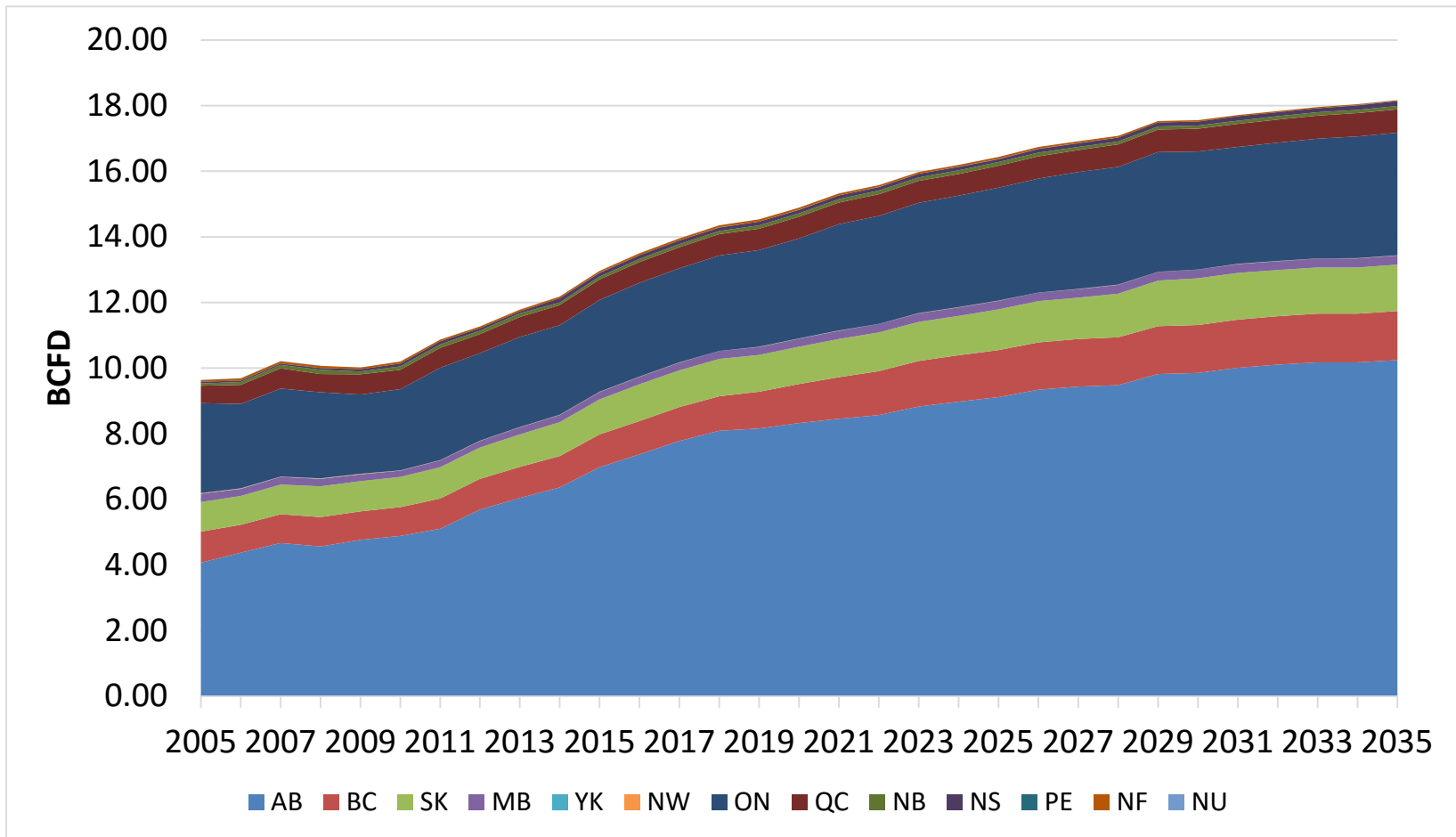
- Middle East
- Europe & Eurasia
- Asia Pacific
- Africa
- North America
- S. & Cent. America



Source: BP

- Reserves have increased over 19% in the last 10 years with the 2013 reserves to production ratio of 55 years

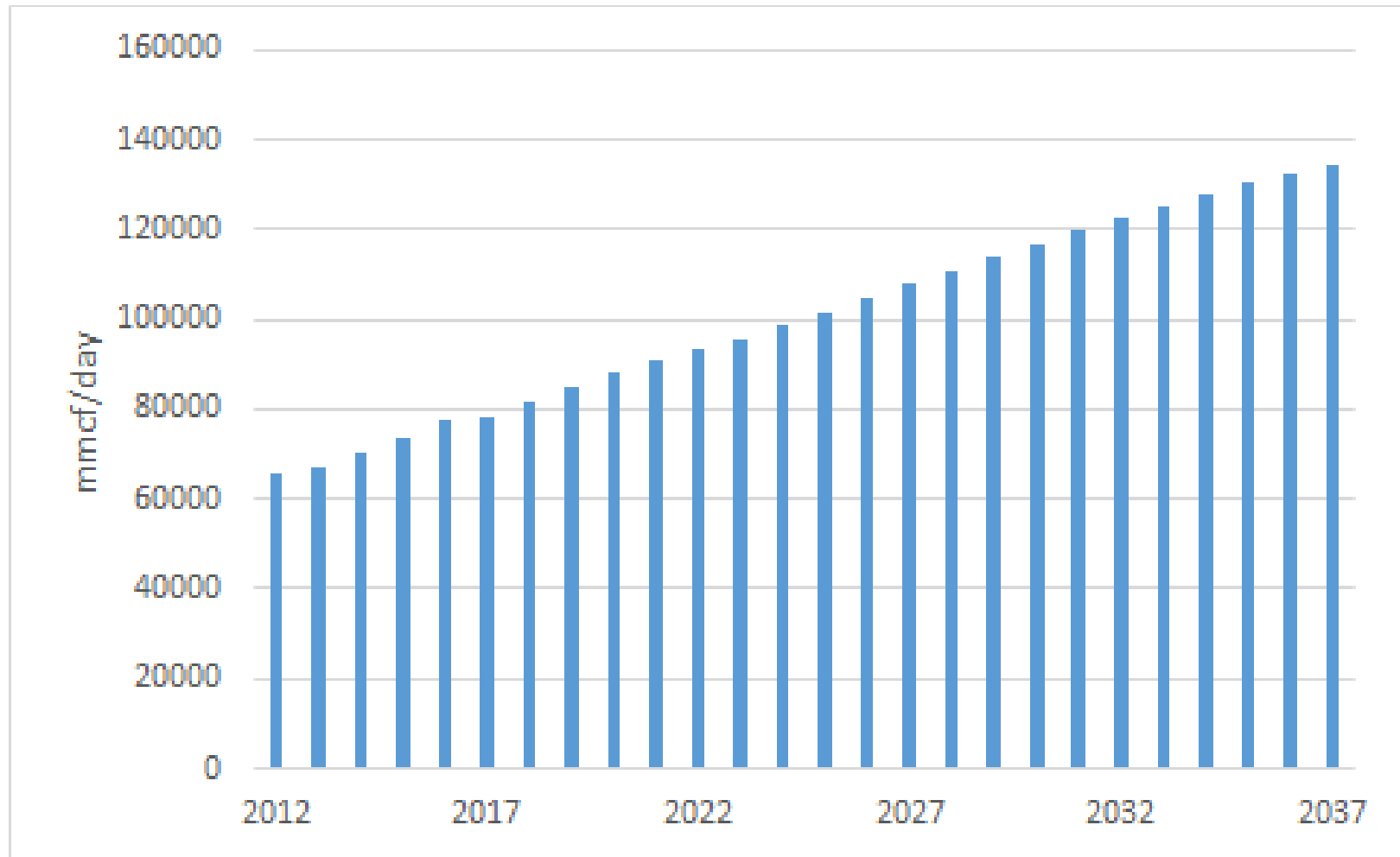
Canadian NG Demand Outlook By Province



Source: NEB, CERi

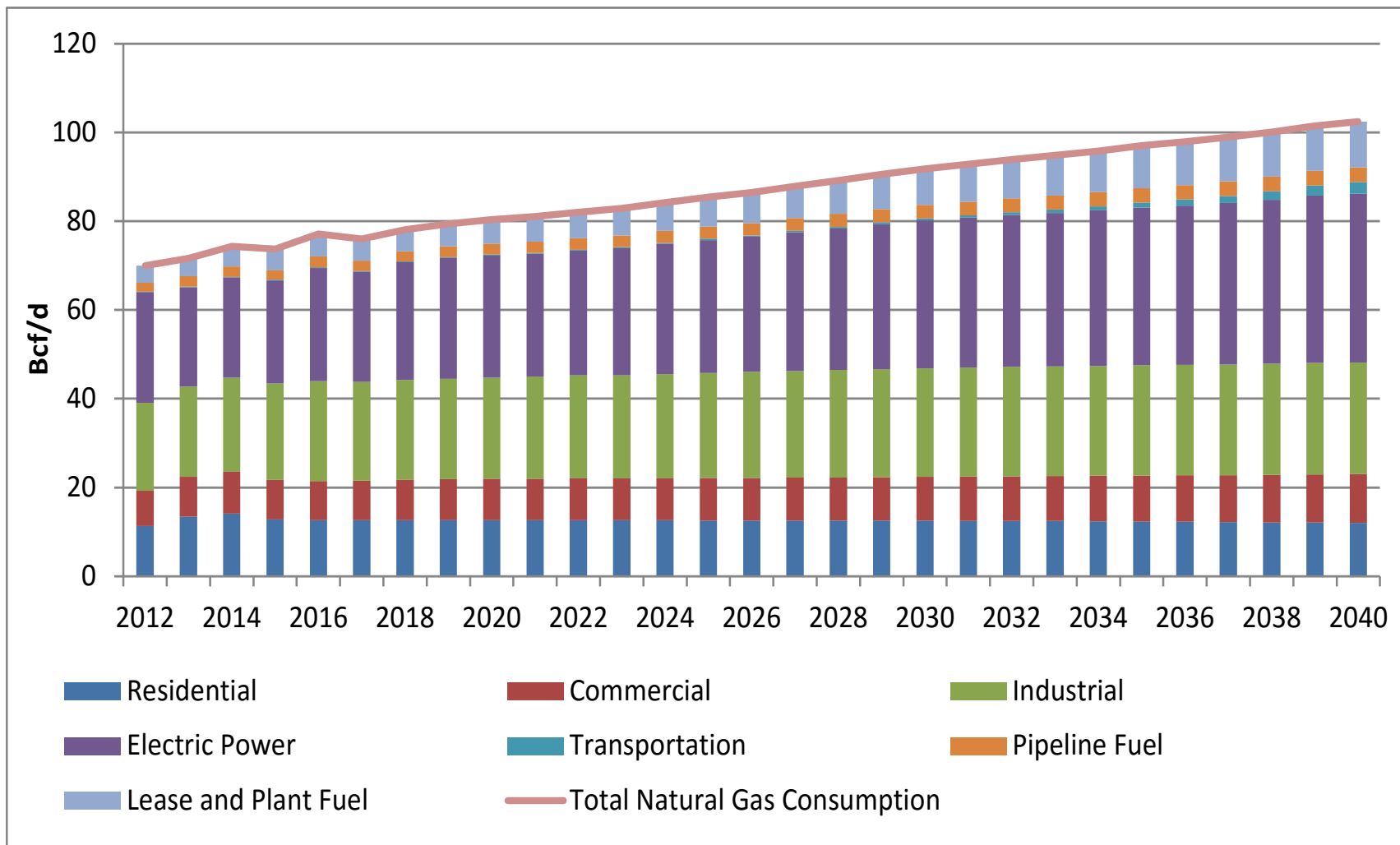
* Primary demand – includes steam and electricity generation demand

US Natural Gas Production Forecast



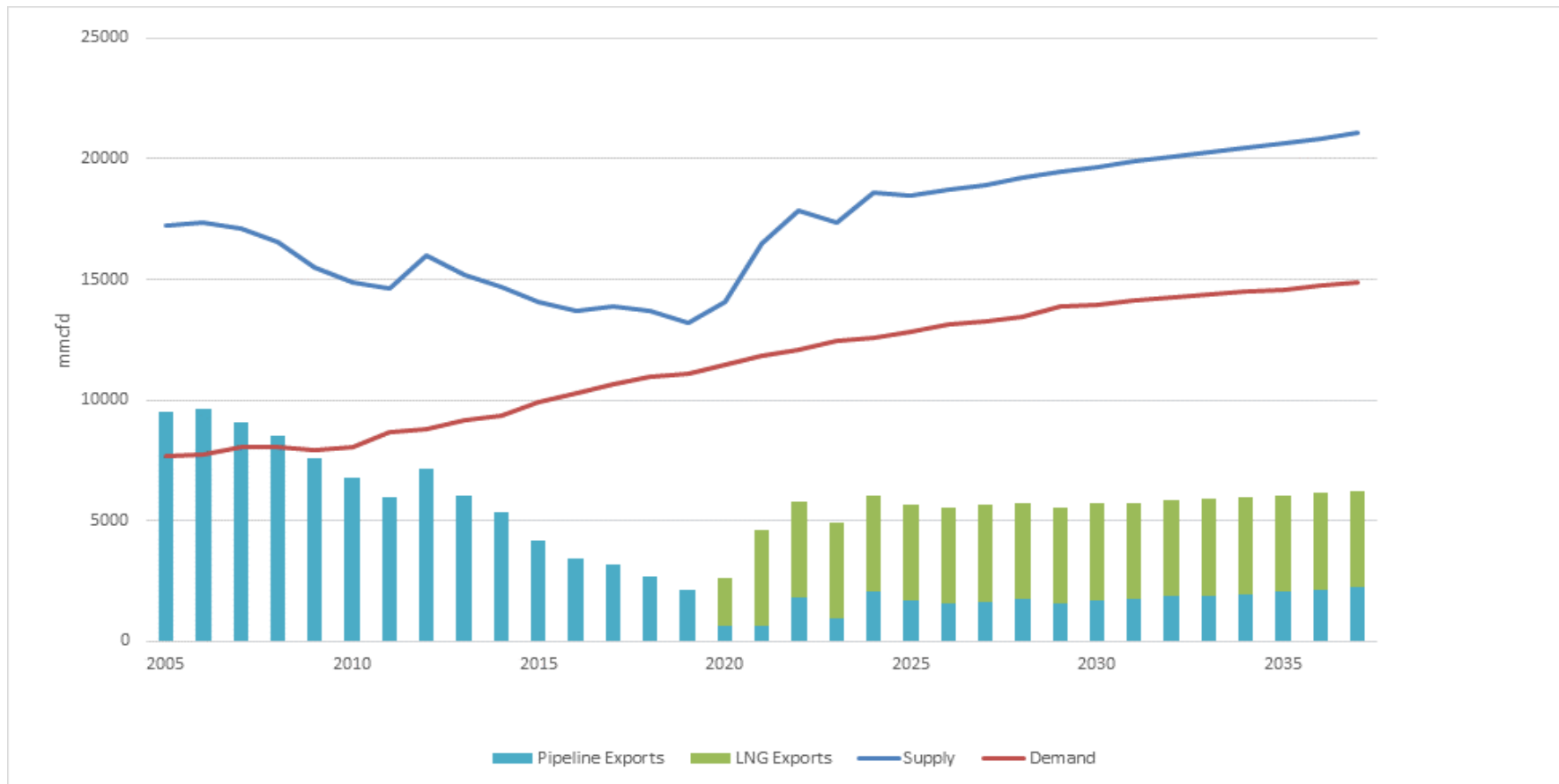
Source: EIA

US Natural Gas Demand Outlook by Sector



Source: EIA

Export Potential from Western Canada



Source: CERl

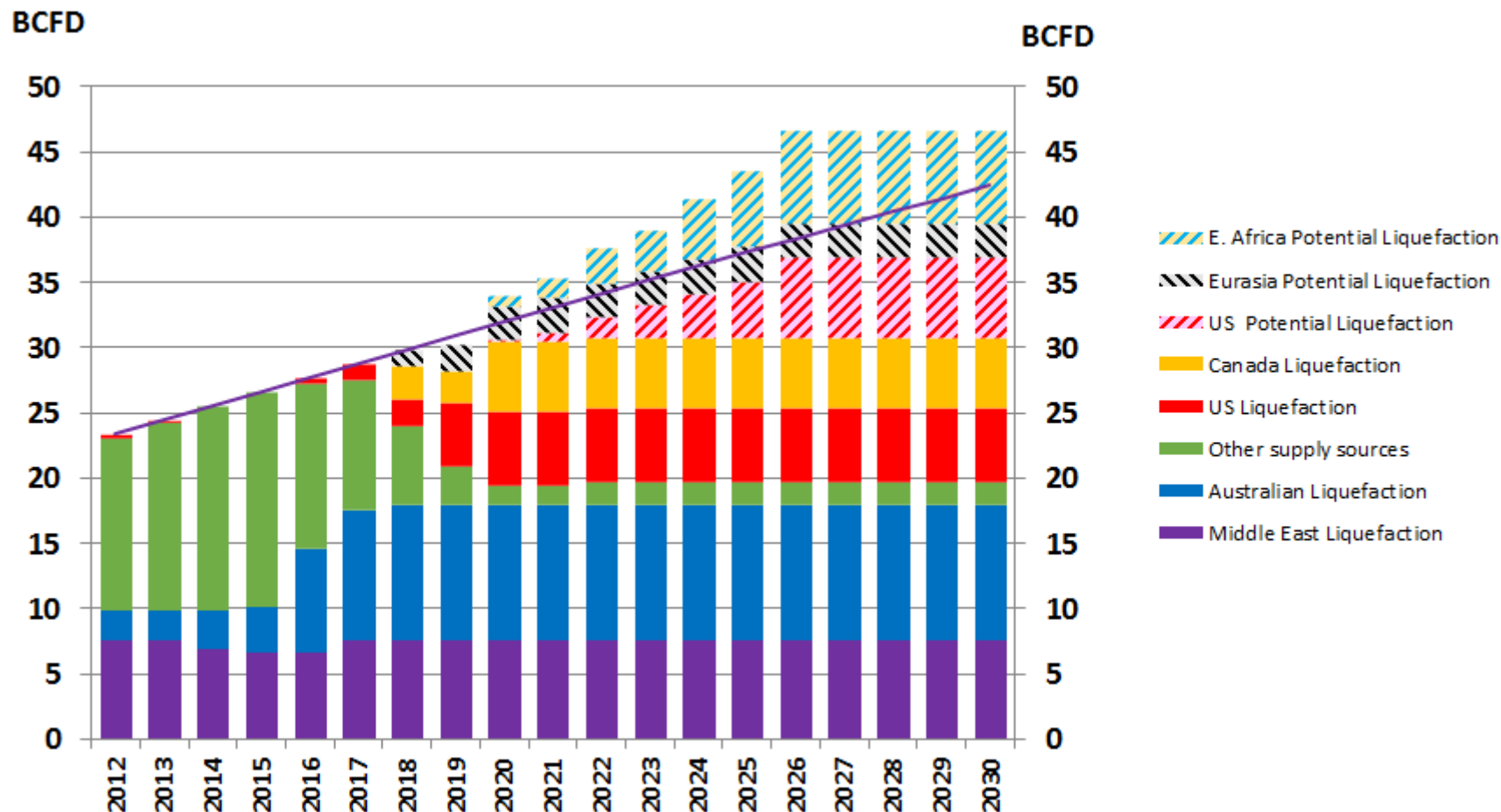
* Demand excludes steam and electricity requirements (approx. 3 bcf/d)

Factors Affecting Natural Gas Market

- Supply
 - Pipeline access from US into Canada
 - Storage inventories
- Demand
 - Weather
 - Liquefied Natural Gas Facilities
 - Power Generation
 - Industrial Demand (Petrochemical Feedstock, oil sands)

LNG

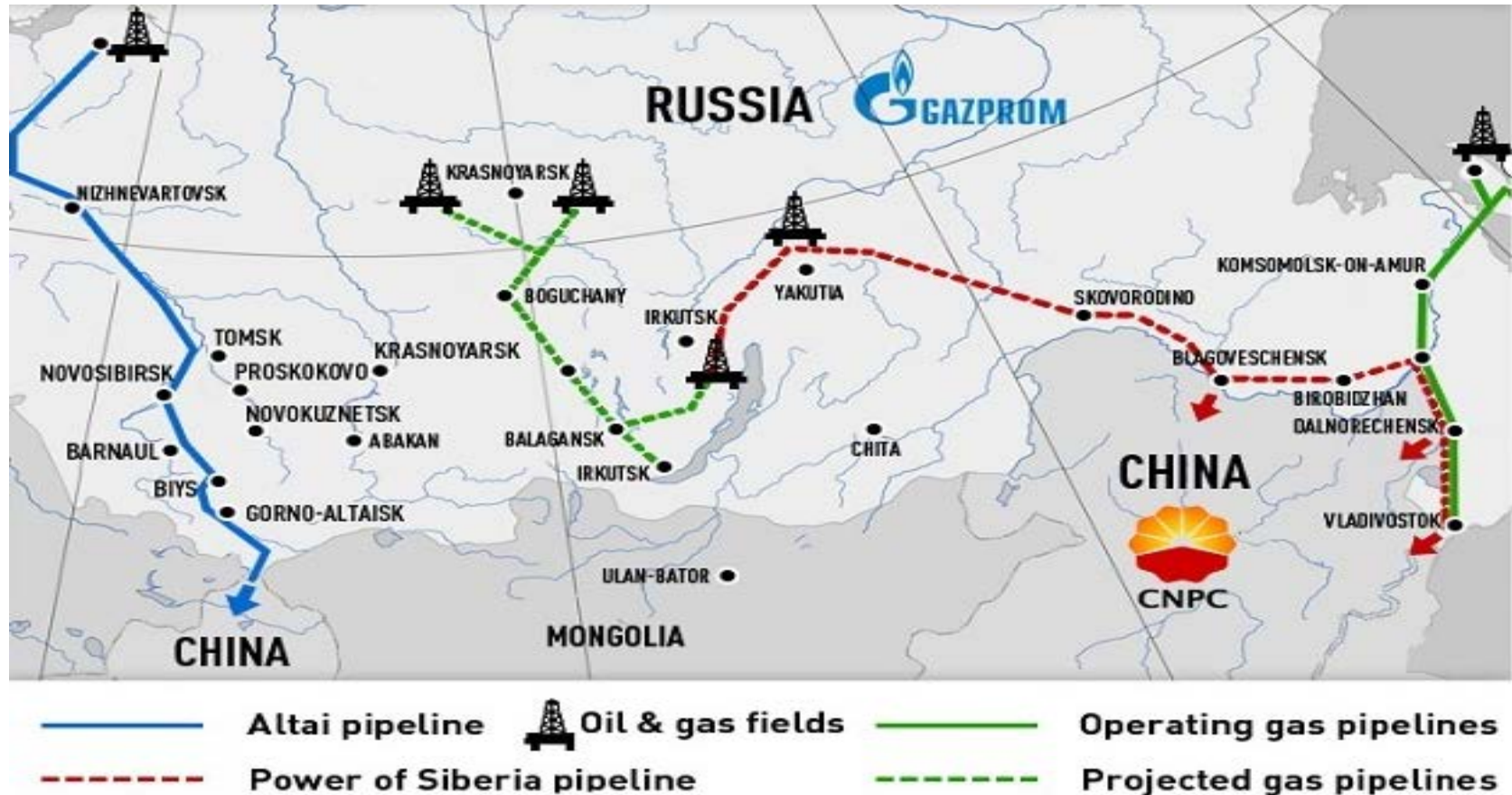
LNG Supply and Demand – Asian Markets



Two Russian pipelines, Altai and Power of Siberia can supply China with natural gas volumes in excess of 6 bcf/d

Source: CER, IEA

The Pipeline Challenge to LNG - Asia



Source: Singapore Straits Times

The Pipeline Challenge to LNG - Europe



Source: Rethink Institute

Factors Affecting LNG Market

- Supply
 - Pipeline access (china and Europe)
 - Russia
 - Caspian Sea States
 - Geopolitics Europe/Russia
 - Oil Price
 - Merchant Plants
- Demand
 - European Carbon Management Policies
 - Industrial Demand

Conclusions

- Markets for conventional oil and oil sands will grow, albeit slowly.
- Eastern Canada access to Western Canadian Oil dependent on pipeline access.
- Western Canadian sourced gas evolving into a regional market.
- Eastern Canadian markets likely to be sourced almost completely by US shale gas.
- LNG markets highly uncertain due to risk valuation of supply availability

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