

# Canadian Market Dynamics

## PJVA Presentation



November 2014



CANADIAN ASSOCIATION  
OF PETROLEUM PRODUCERS

# Canadian Association of Petroleum Producers

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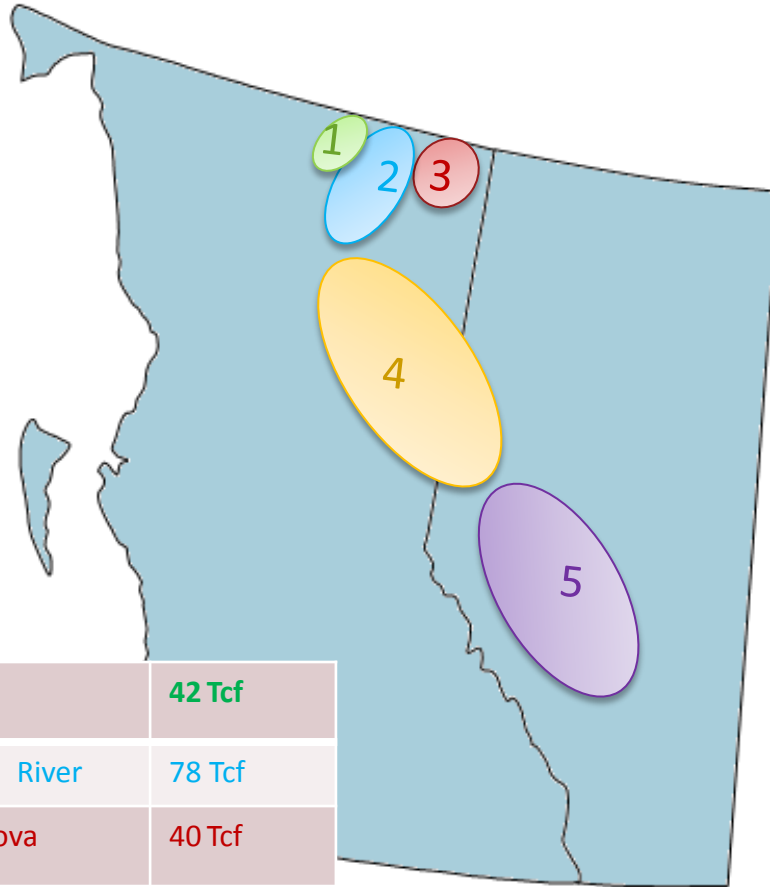
- Represents large and small producer member companies
- Members explore for, develop and produce natural gas, natural gas liquids, crude oil, and oil sands throughout Canada
- Produce about 90 per cent of Canada's natural gas and crude oil
- Part of a national industry with revenues of about \$120 billion per year
- Associate members provide a wide range of services that support the upstream crude oil and natural gas industry

# North American Natural Gas – Supply Outlook

- Shale gas supply a game-changer
- Technology success story
- Results:
  - Abundant, affordable energy
  - Significant shift in Supply-Demand dynamics
  - Changes in pipeline flows



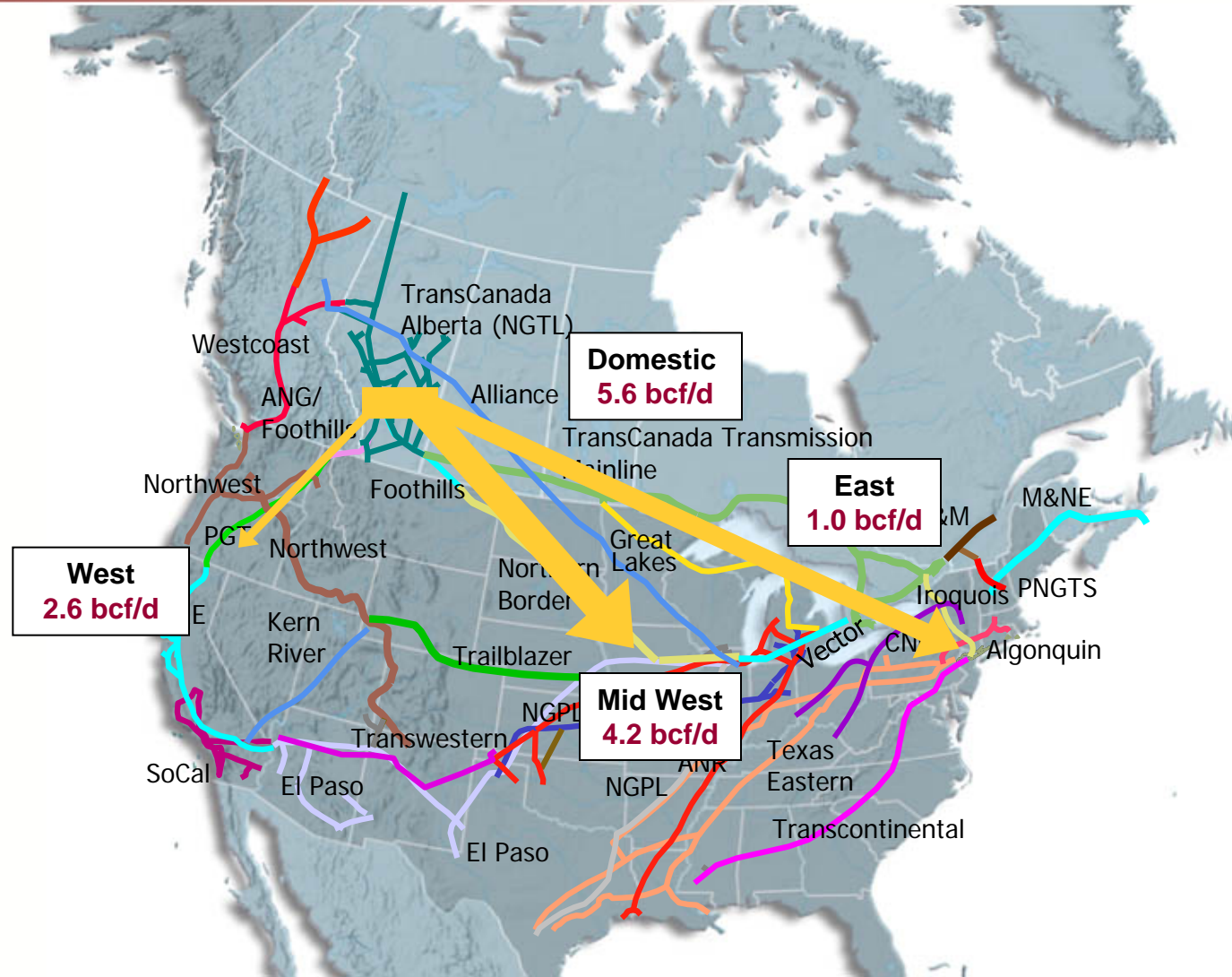
# Natural Gas – Resource Rich/Market Constrained



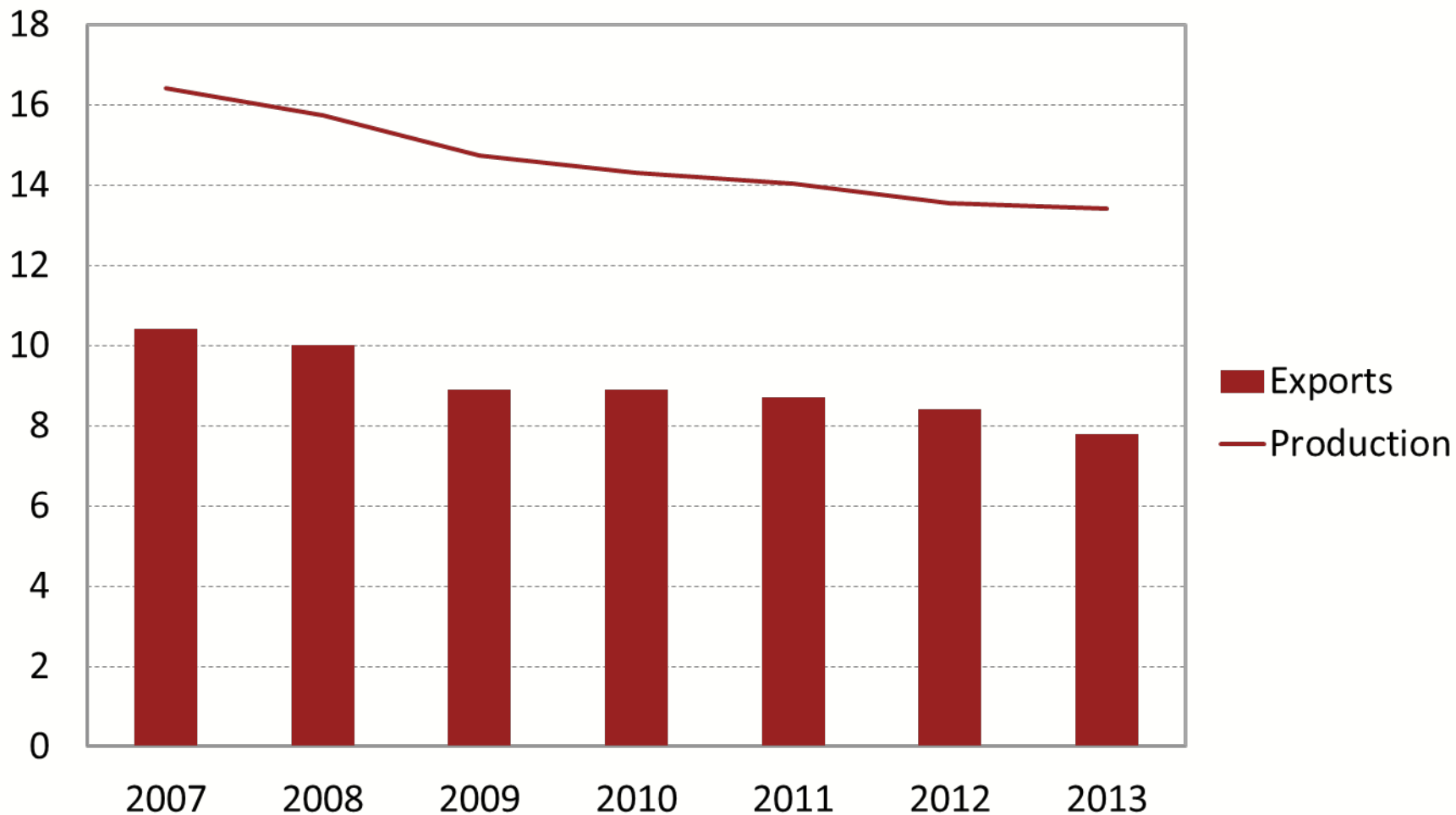
1.	Liard	42 Tcf
2.	Horn River	78 Tcf
3.	Cordova	40 Tcf
4.	Montney	449 Tcf
5.	Duvernay	89 Tcf
	Total	698 Tcf

- **Opportunities for market diversification/growth driven by:**
  - Large Resource Potential and Strong Technology Foundation
  - Oversupplied North American Market
  - Geographical proximity to growing Asian Markets
- **Challenges**
  - Greenfield/remote projects mean tight economics
  - International competitors at more advanced stage of development
  - Fiscal Uncertainty barrier to investment

# Current Disposition of W. Canada's Natural Gas Production (2013)

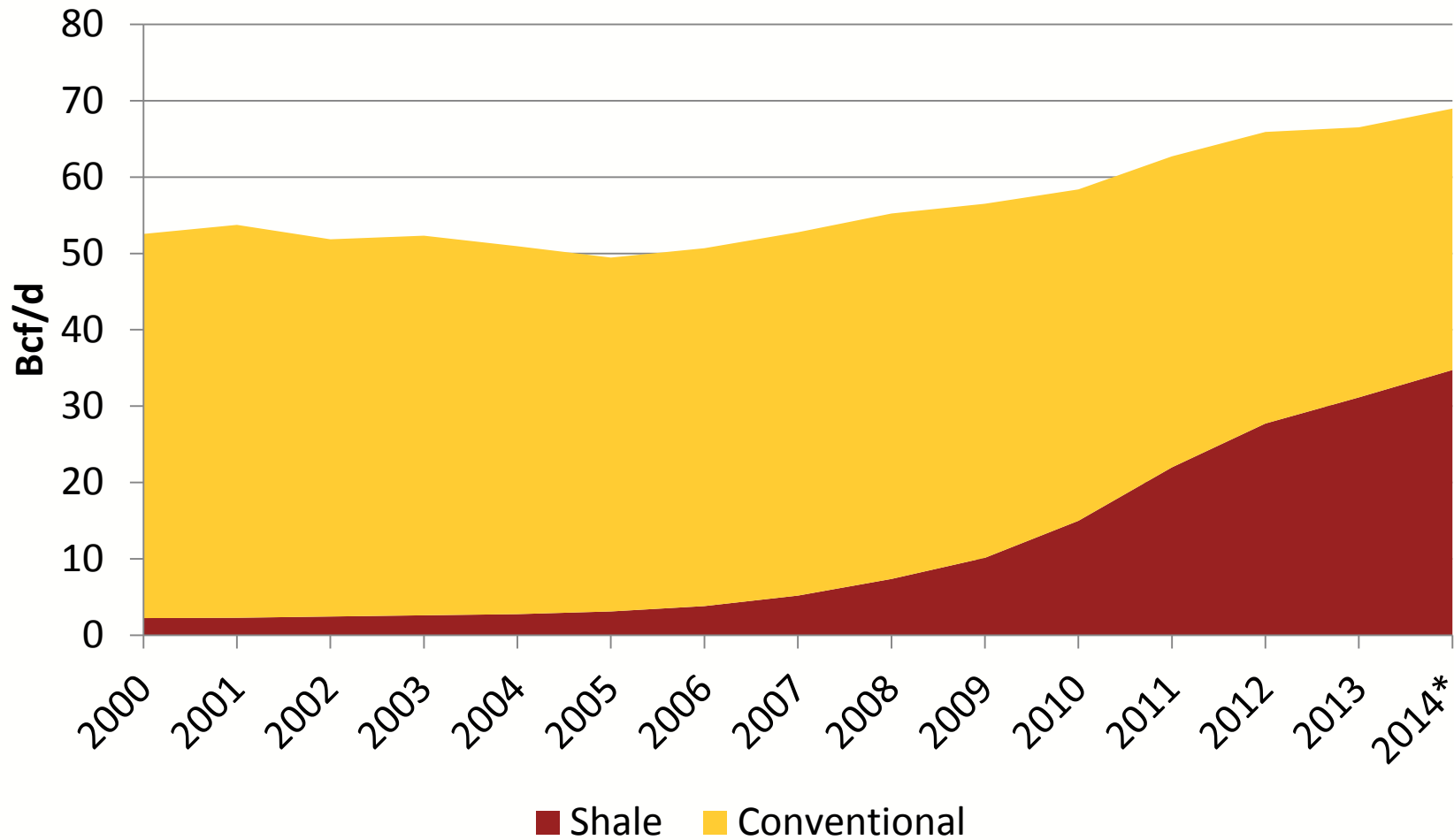


# Canadian Natural Gas Production & Exports to the U.S. (Bcf/d)



Source: NEB

# US Dry Marketable Natural Gas Production



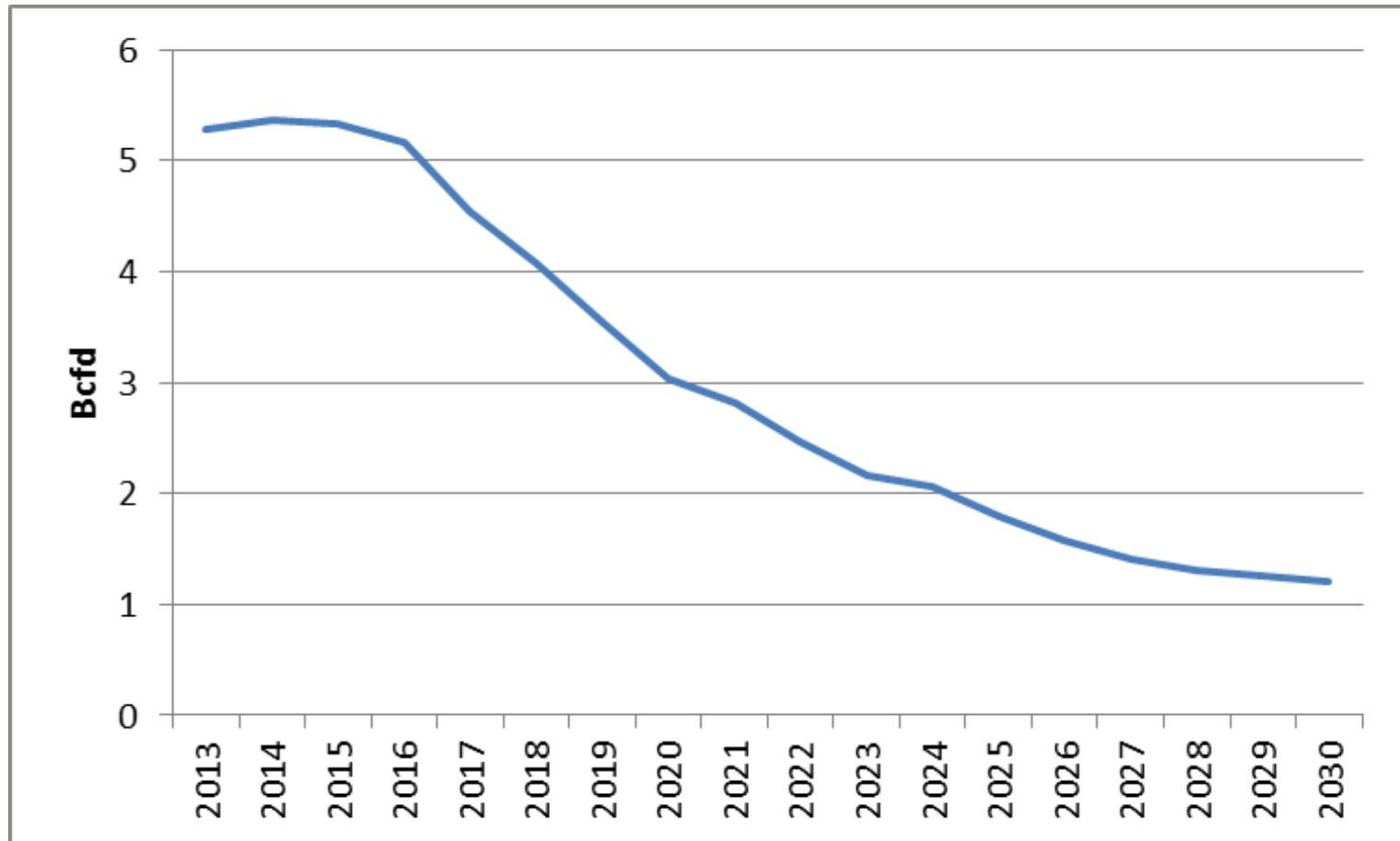
\*Data through June 2014

# Canadian Natural Gas Outlook 2013 to 2030

- **Canada's natural gas production less constrained by resource base more constrained by market**
- **Growing US gas production means more competition for traditional markets (less US Exports & Greater US Imports)**
- **Canadian gas production projected under two scenarios**
- **Scenario 1: Market Constrained**
  - No LNG Export Development
  - Little New Gas-Fired Power Generation added in Ontario post 2012
  - Limited Growth in NGV market
- **Scenario 2: New Market Opportunities**
  - LNG Exports – 1 train of 5 mtpa in 2018, 5 such trains by 2023
  - Natural Gas replaces some Nuclear Power Refurbishment in Ontario Power Generation
  - Higher Growth in NGV Market

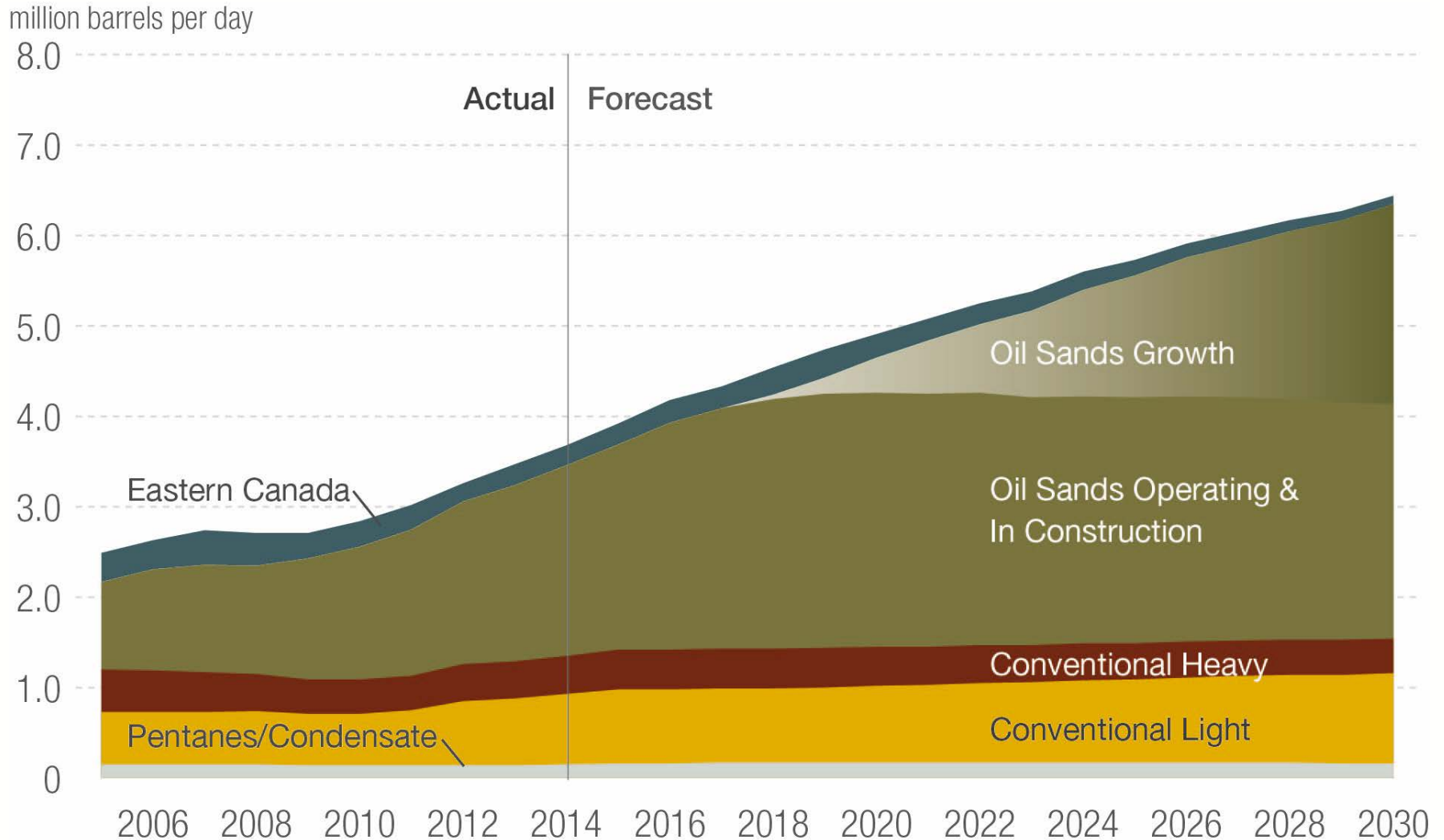


# Canadian Natural Gas Net Exports to US

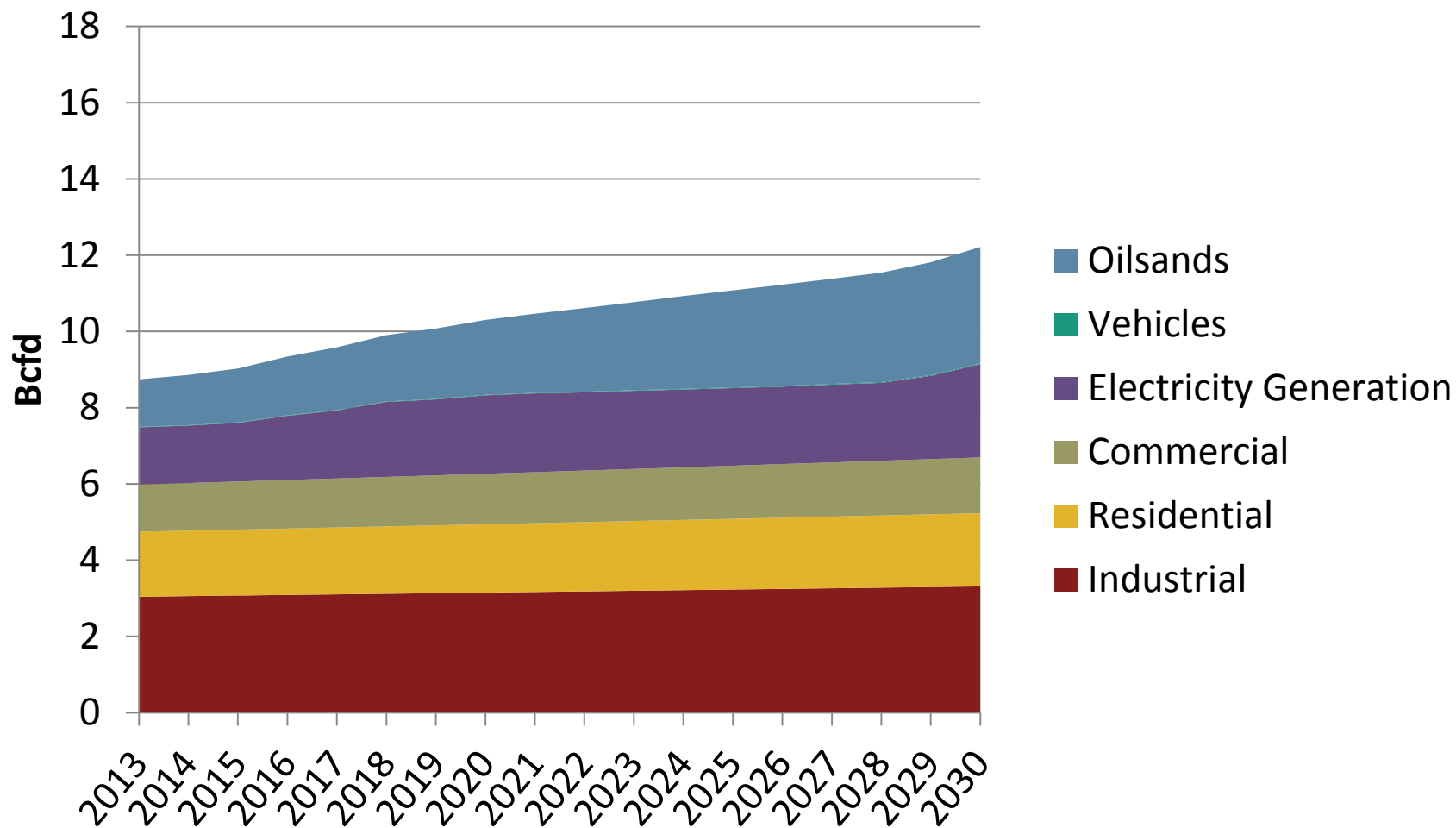


Source: EIA

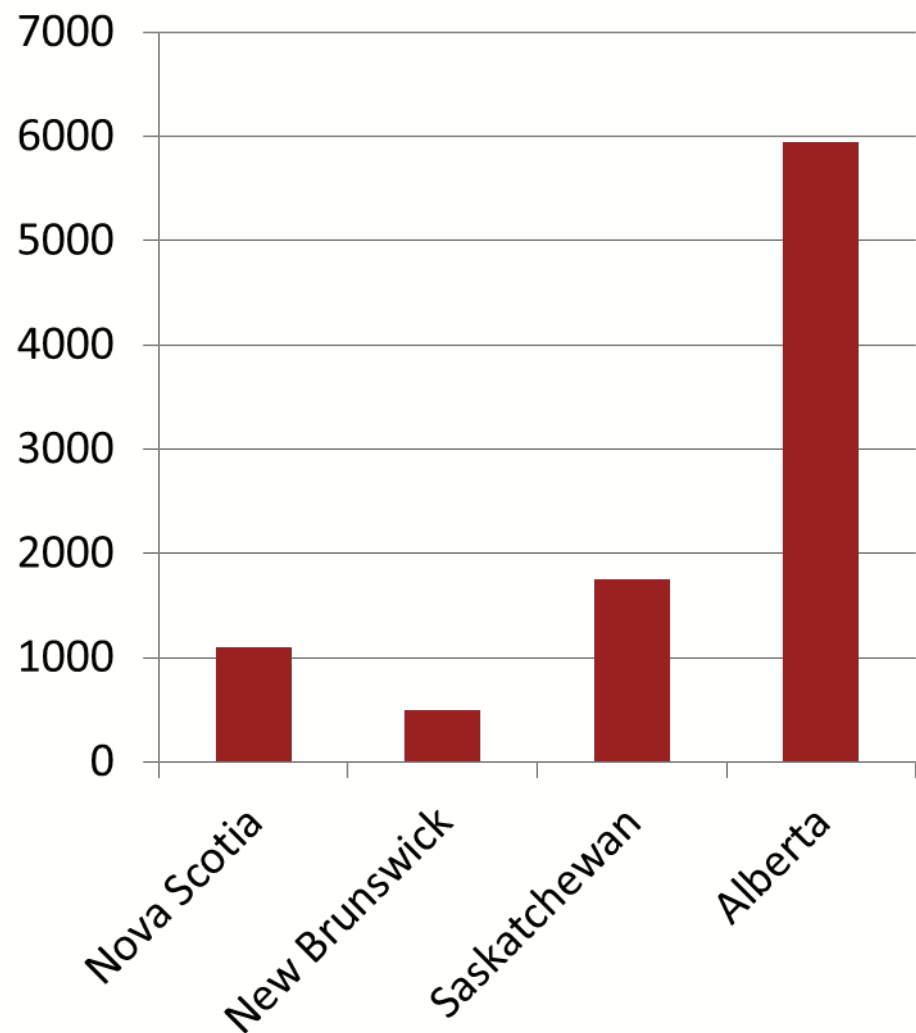
# Canadian Crude Oil Production



# Canadian Natural Gas Demand Market Constrained Case



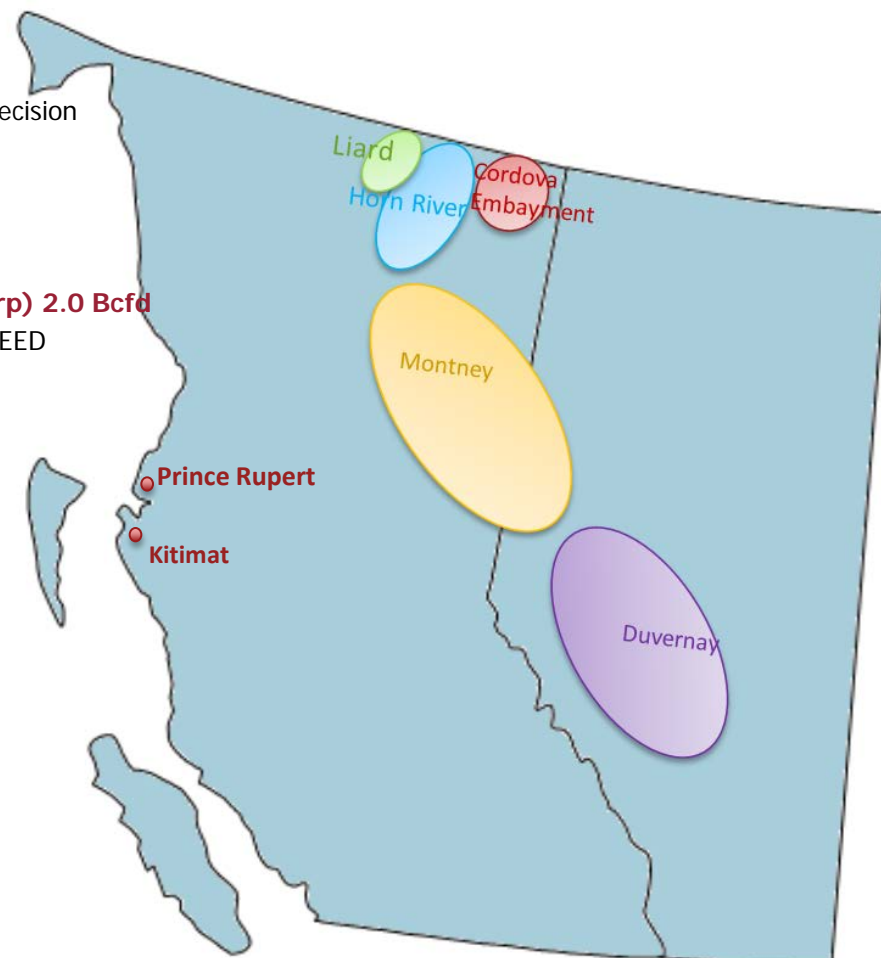
# Canadian Coal Electricity Generation Capacity by Province (Megawatts)



- Federal Government regulations requiring emissions intensity of 420 t/GWh will result in majority of coal fired power plants retired by 2030.
- If all Canadian coal fired capacity replaced by natural gas, will increase demand by 1.6 bcfd.
- Natural gas is well positioned to replace base load coal-fired power generation affected by this legislation

# Canadian West Coast LNG – Many Proposals but no FID

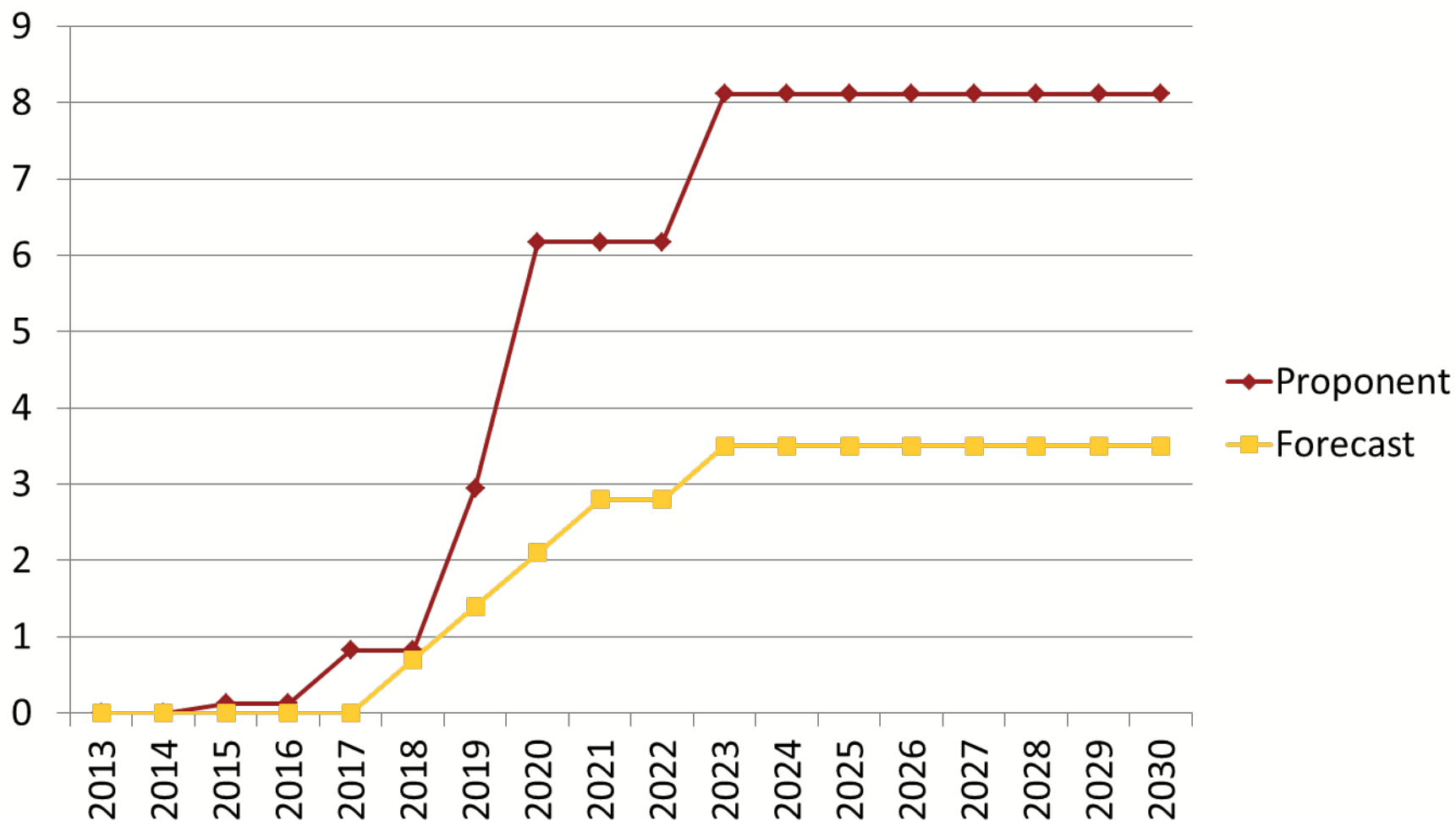
- **Kitimat LNG (Chevron, Apache) 1.4 Bcfd**
  - Permits received (including Export License); awaiting investment decision
- **BC LNG Export Co-operative 0.125 Bcfd**
  - Permits received (including Export License)
- **LNG Canada (Shell, KOGAS, Mitsubishi, PetroChina) 3.2 Bcfd**
  - Feasibility stage; applied for some permits; Export License granted
- **Pacific Northwest LNG (Petronas, Japex, Sinopec, India Gas Corp) 2.0 Bcfd**
  - Completed feasibility, Export License granted, progressing to pre-FEED
- **Aurora LNG (Nexen/Inpex)**
  - Conducting feasibility
- **Prince Rupert LNG (BG Group) 3.0 Bcfd**
  - Export License granted, applying for environmental permits
- **Triton LNG (AltaGas/Idemitsu Kosan) 0.3 Bcfd**
  - Conducting feasibility; applied for export license
- **ExxonMobil/Imperial Oil (WCC LNG Ltd) 4.0 Bcfd**
  - Granted Export license
- **Woodfibre LNG 0.3 Bcf**
  - Granted Export license
- **Woodside (Grassy Point LNG) 1.8 Bcfd**
  - Applied for Export License
- **WesPac LNG Marine Terminal/Tilbury LNG 0.4 Bcfd**
  - Expand existing LNG plant owned by Fortis
  - Applied for Export License
- **Steelhead LNG 4.0 Bcfd**
  - Applied for Export License
- **Discovery LNG (Quicksilver) 2.6 Bcfd**
  - Applied for Export License



Total potential new demand ~ 30.0 Bcf/d

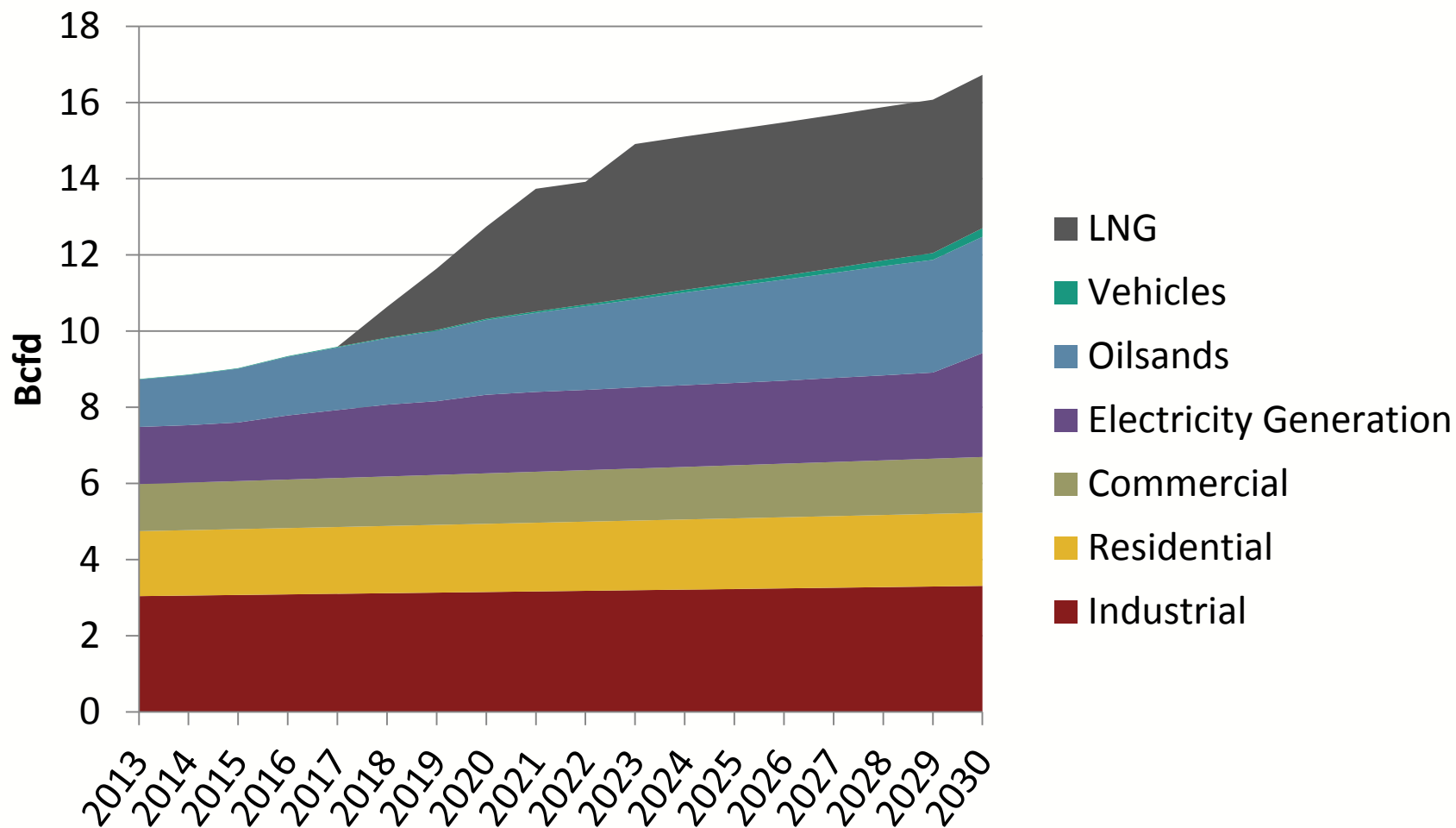
Note: Other announced projects include Kitsault LNG, Stewart LNG,

# LNG Exports – Forecast vs Proponent Announcements (Bcf/d)

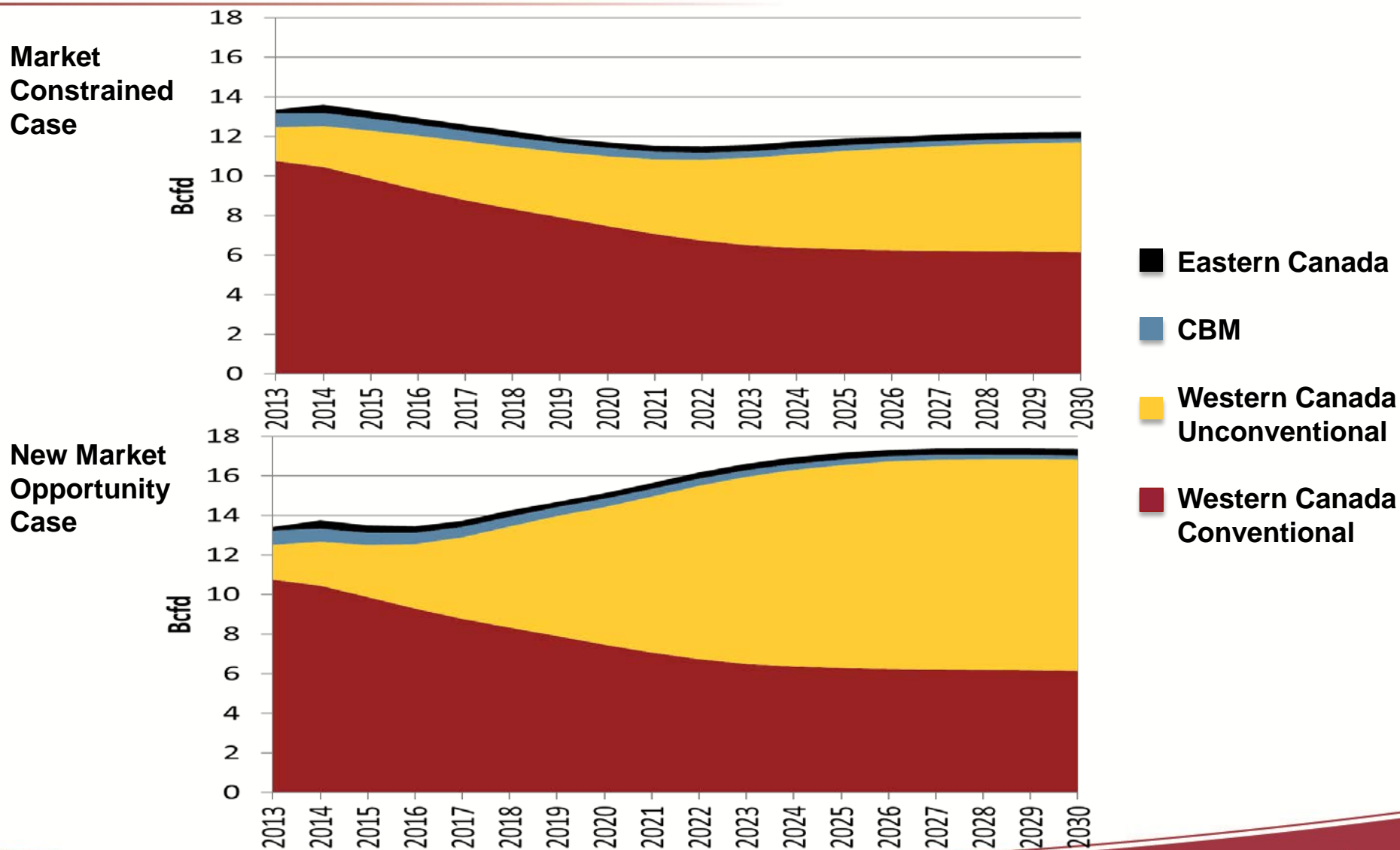


Note: Proponent only includes the five projects that filed for Environmental Assessments

# Canadian Natural Gas Demand New Market Opportunity Case

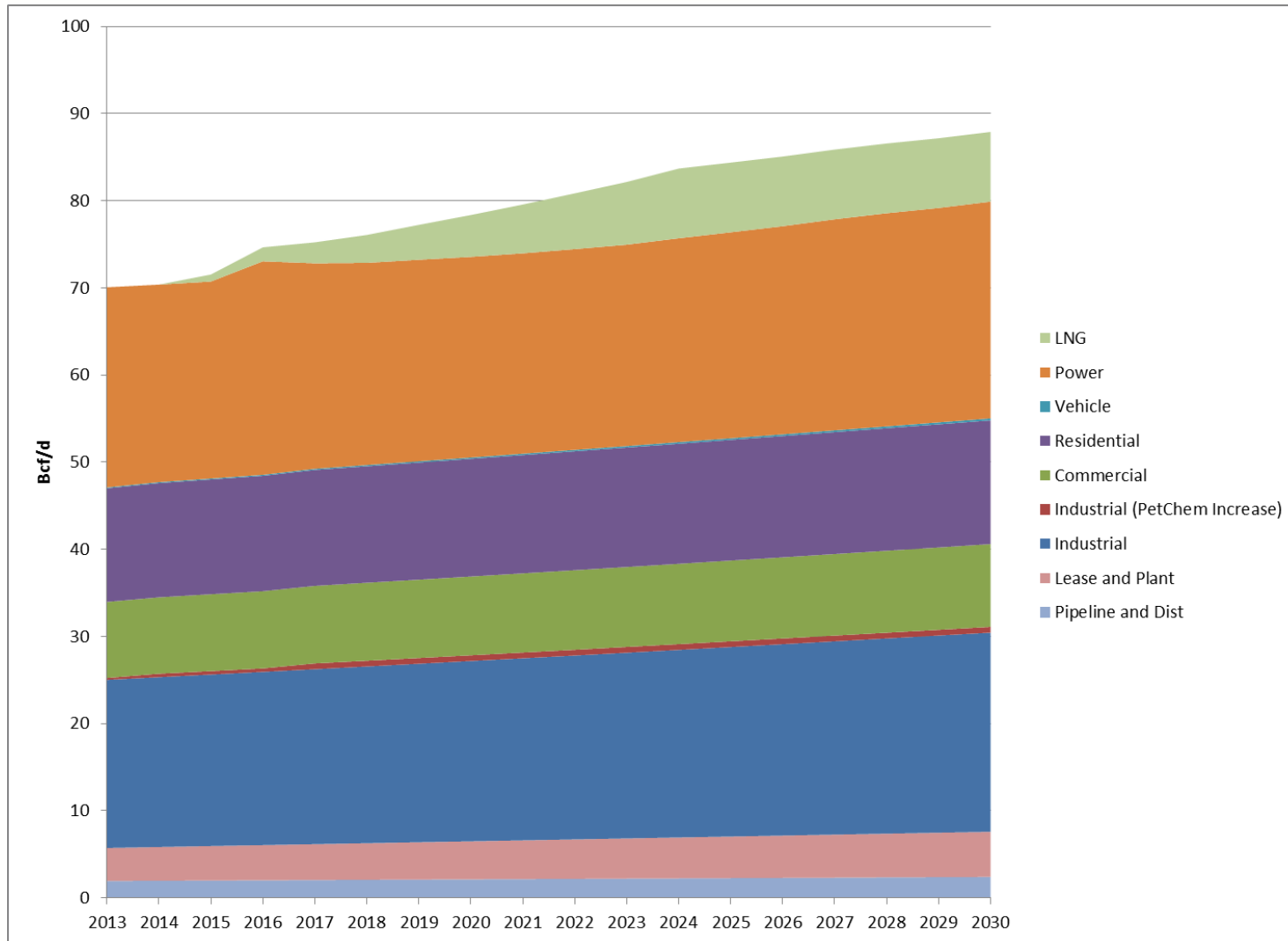


# Canadian Production – Market Constrained Case and New Market Opportunity Case



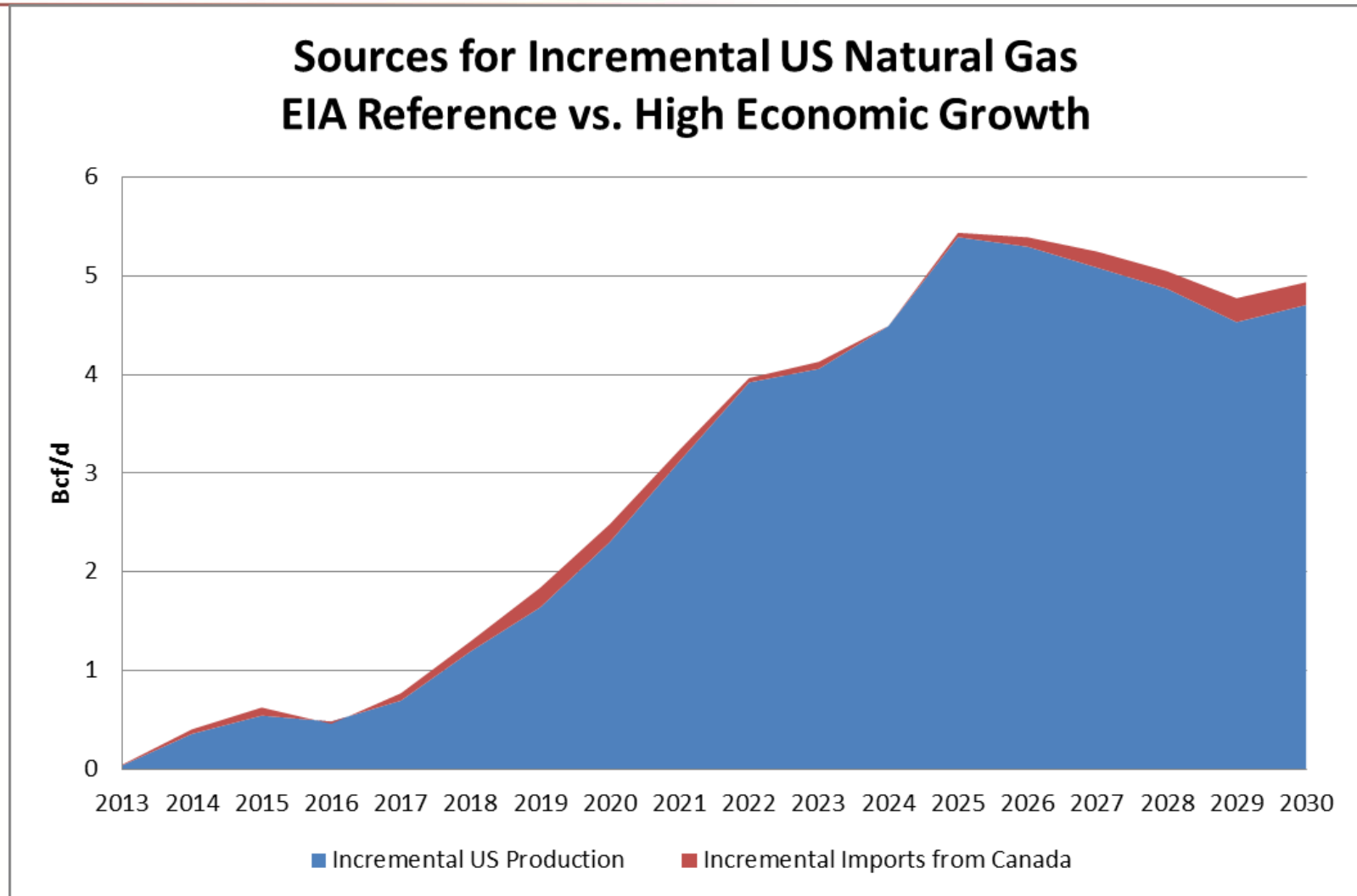


# US Dry Marketable Natural Gas Production



Source: EIA

# US Dry Marketable Natural Gas Production



Source: EIA

# Conclusion

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- **The North American shale gas revolution has dramatically affected Canada's traditional natural gas markets**
- **The location of Canada's unconventional reserves presents both challenges and opportunities**
  - Greenfield/remote location
  - Strategically located to serve Asian market
- **Development of domestic unconventional resources is dependent upon:**
  - Incremental domestic demand
  - Access to overseas markets