



# Canada: A Global Energy Leader And Canada-U.S. Energy Relations

*Arkansas Legislature  
Joint Committee on Energy*

**The Hon. Paula Caldwell St-Onge  
Consul General of Canada**

**May 17, 2012  
Little Rock, Arkansas**



# CANADA–UNITED STATES

## World's Largest Bilateral Trading Relationship

- Canada's exports to the U.S. in 2011:
  - CDN \$370.3 billion
- U.S. exports to Canada in 2011:
  - CDN \$337.8 billion
- \$1.9 billion two-way trade every day
- A truck carrying goods crosses the border every 2-3 seconds (24/7)
- 400,000 people cross the border each day
- Canada is number one export market for 35 of 50 U.S. states



## Arkansas/Canada Trade

- Arkansas exports \$1.1 billion  
in goods to Canada
- Arkansas imports \$1.3 billion  
in goods from Canada
- Canada is the top export destination for  
Arkansas (and 34 additional states)
- 26 Canadian-owned companies employ 2,811  
in Arkansas



## **Canada-U.S. Energy Partnership**

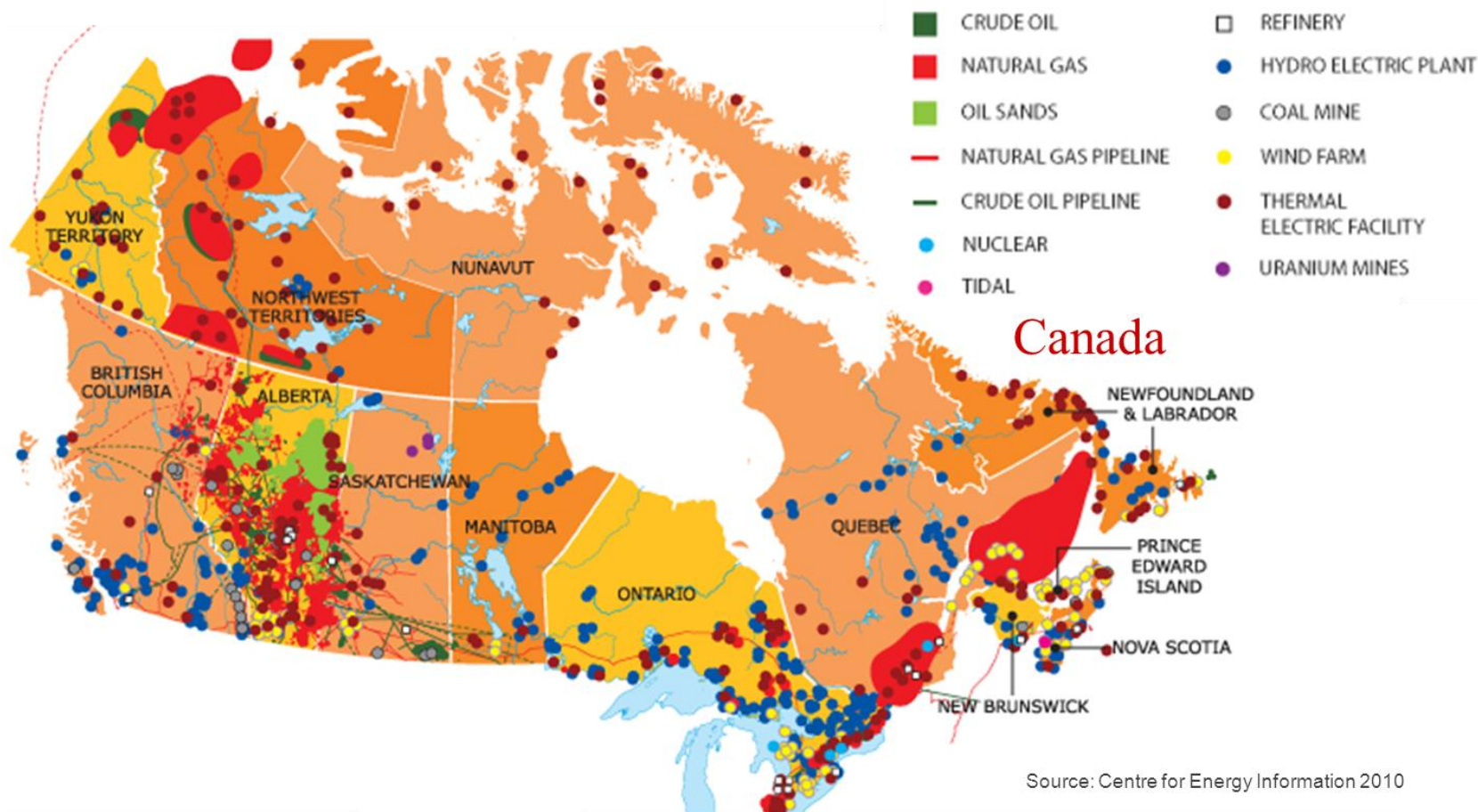


## Energy Trade and Investment

- Canadian energy sector constitutes **6.7% of GDP** and **25% of exports**
- Canada's **oil sands** represent 55% of the world's oil reserves that are open to **free market participants** (80% of reserves are state-controlled, 20% free market).
- Major **energy infrastructure projects** are planned, to increase Canada's **export capacity** for oil and natural gas to US and Asia.
- Canada is a global leader in **new oil and gas extraction and processing technologies**.
- Canadian companies are global leaders in **long-distance energy transmission infrastructure**.
- Canada is a global leader in **clean energy technologies** (e.g. nuclear, CCS, efficiency) and **renewable energy** (e.g. hydro, wind).
- Canada's energy sector companies **export expertise and technical skills** to markets around the world.



## Vast Endowments Across the Country

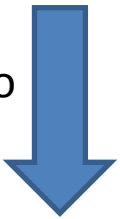




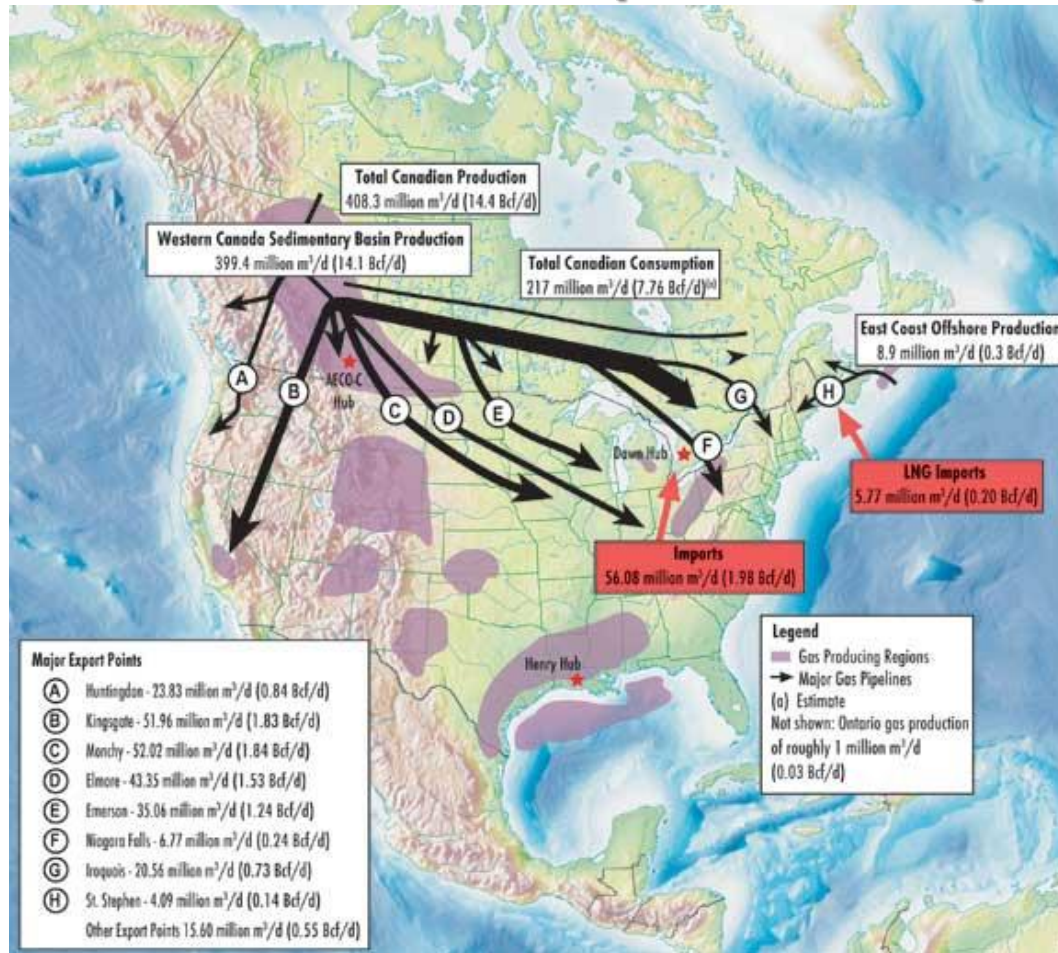
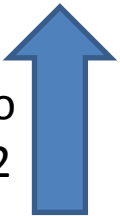


## 2010: Natural Gas Imports and Exports

Canadian  
exports to  
the US: 9  
bcf/d



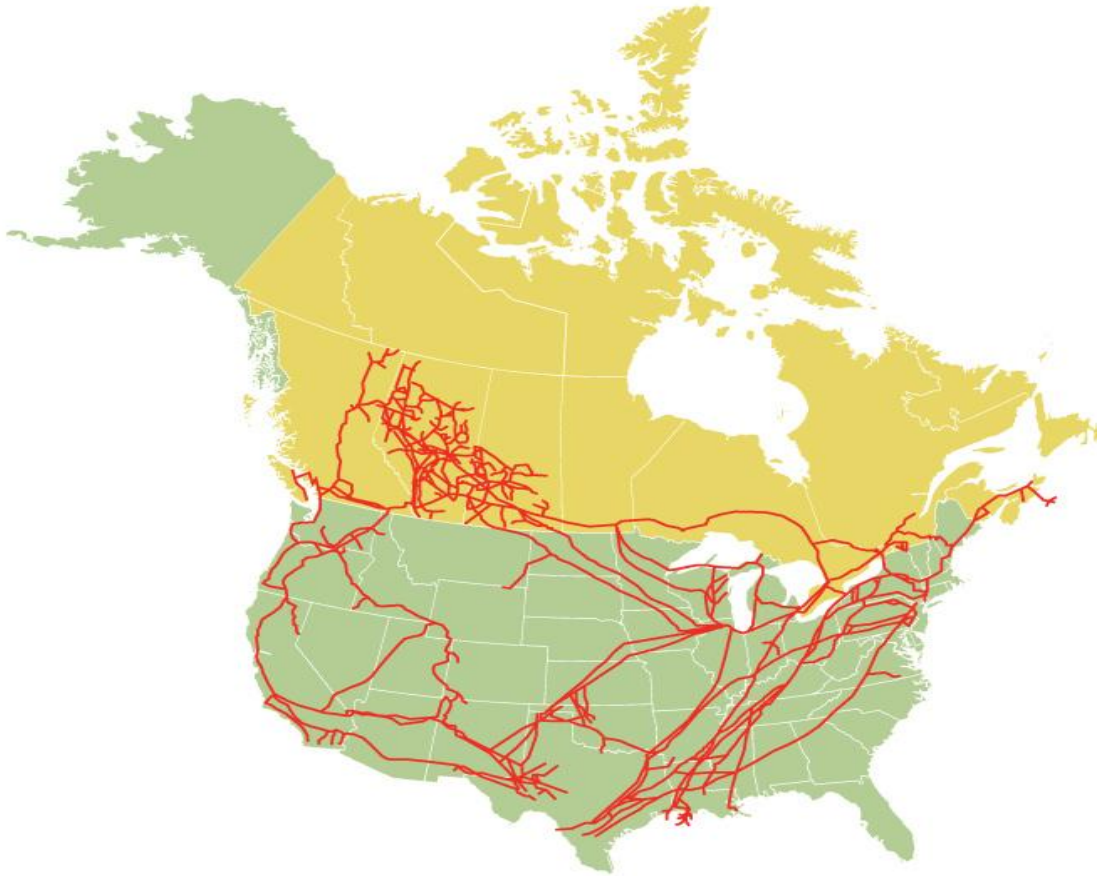
US  
exports to  
Canada: 2  
bcf/d



Source: NEB



## Natural Gas pipelines



Source: Canadian Energy Pipeline Association





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## West Coast LNG Export Projects



- 3 proposed projects at Kitimat:
- KM LNG (1.4 bcf/d)
- BC LNG Export Coop (0.25 bcf/d)
- Shell LNG (1.6 bcf/d)

- **Market Diversification**
  - Large emerging shale plays in WCSB
  - Lower U.S. import requirements with emergence of shale gas
- **Potential price uplift**
  - Asian LNG price linked to oil
- **Regulatory approvals for facilities largely in hand**
- **Export Licences needed from NEB**

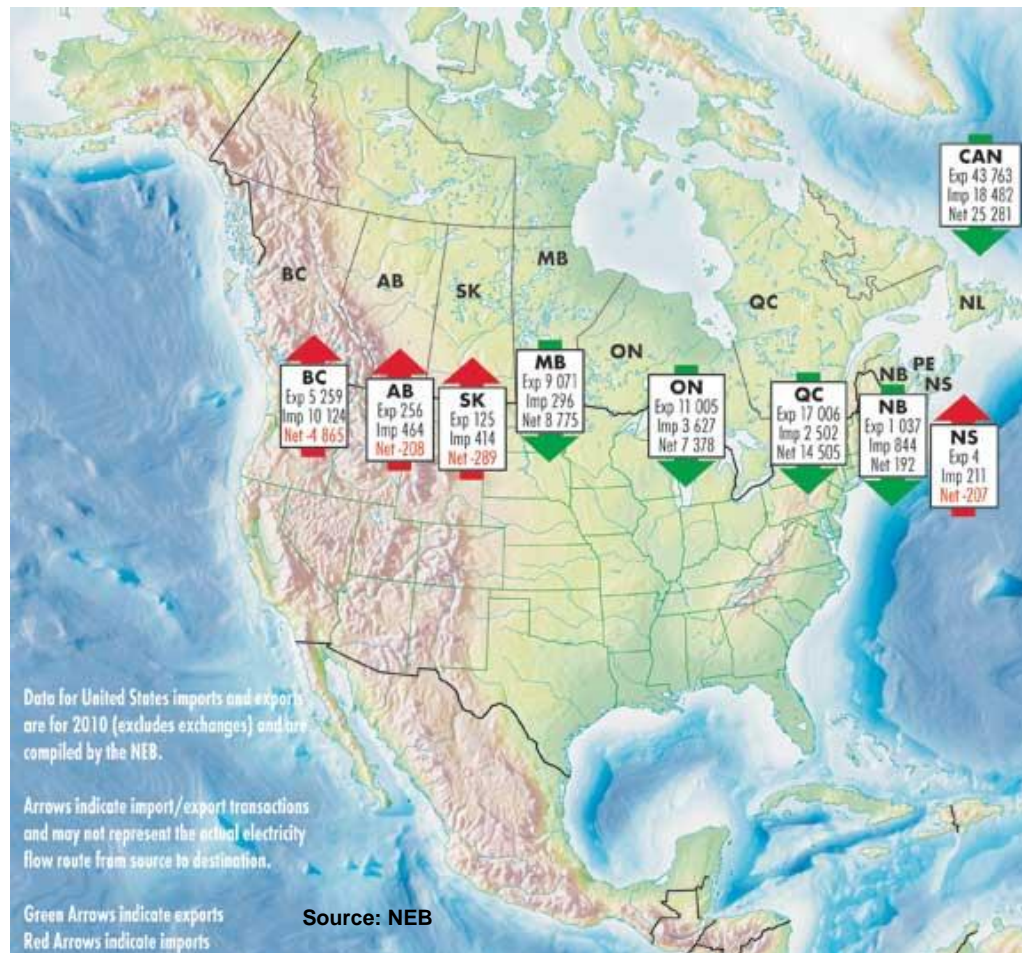
## Electricity grids



Source: Canadian Electricity Association

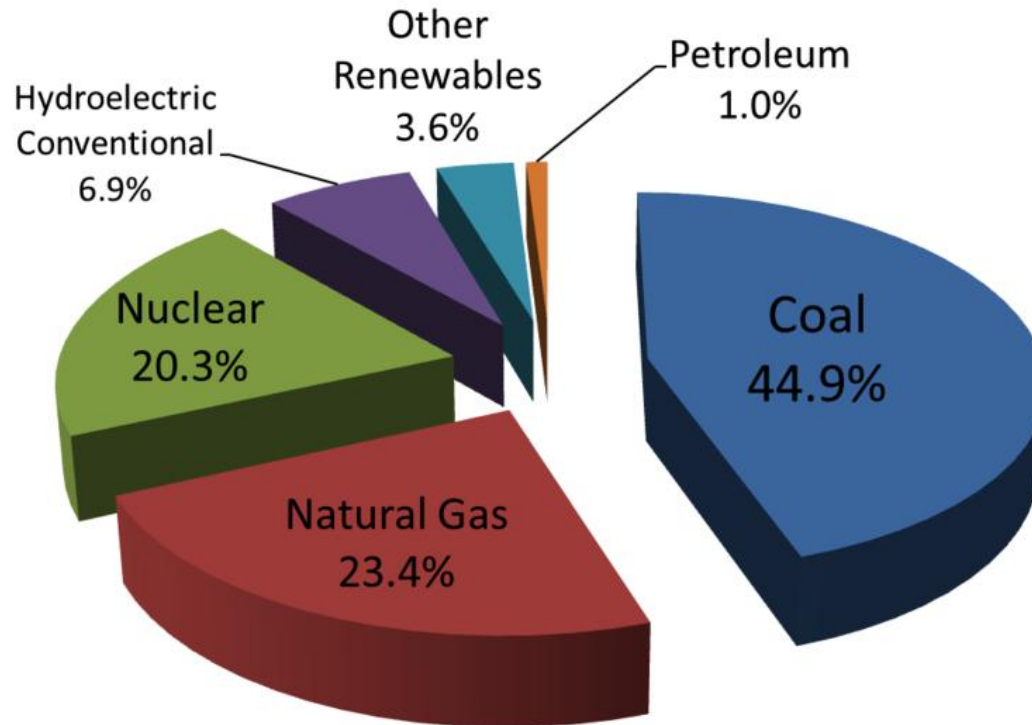


## Electricity Trade



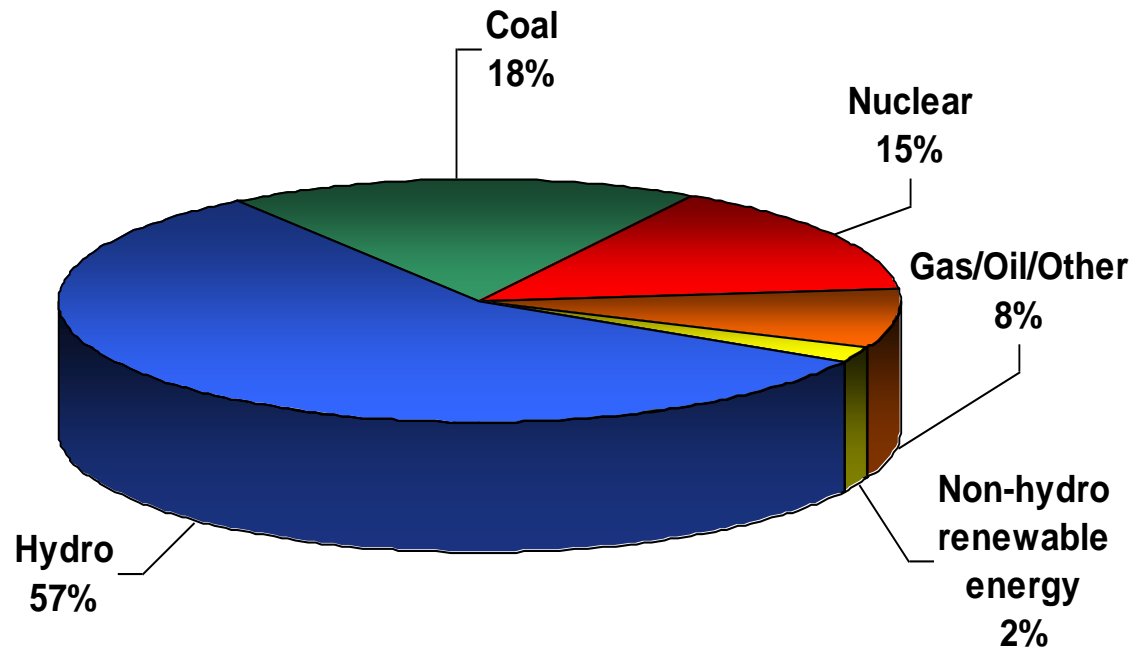


## 2009 U.S. Electricity Generation by Source





## Canada's Electricity Mix - One of the Cleanest in the World



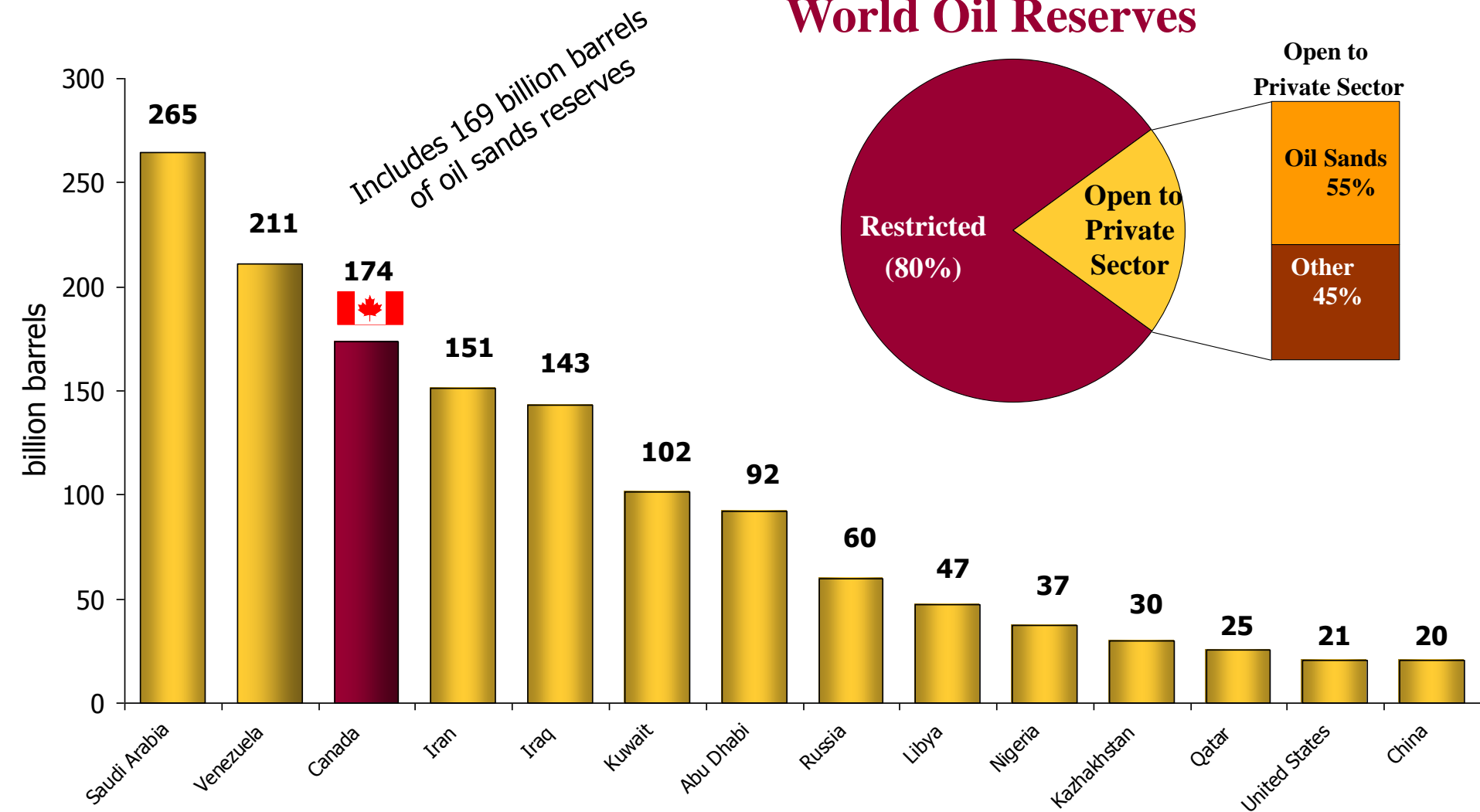




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## Global Crude Oil Reserves by Country

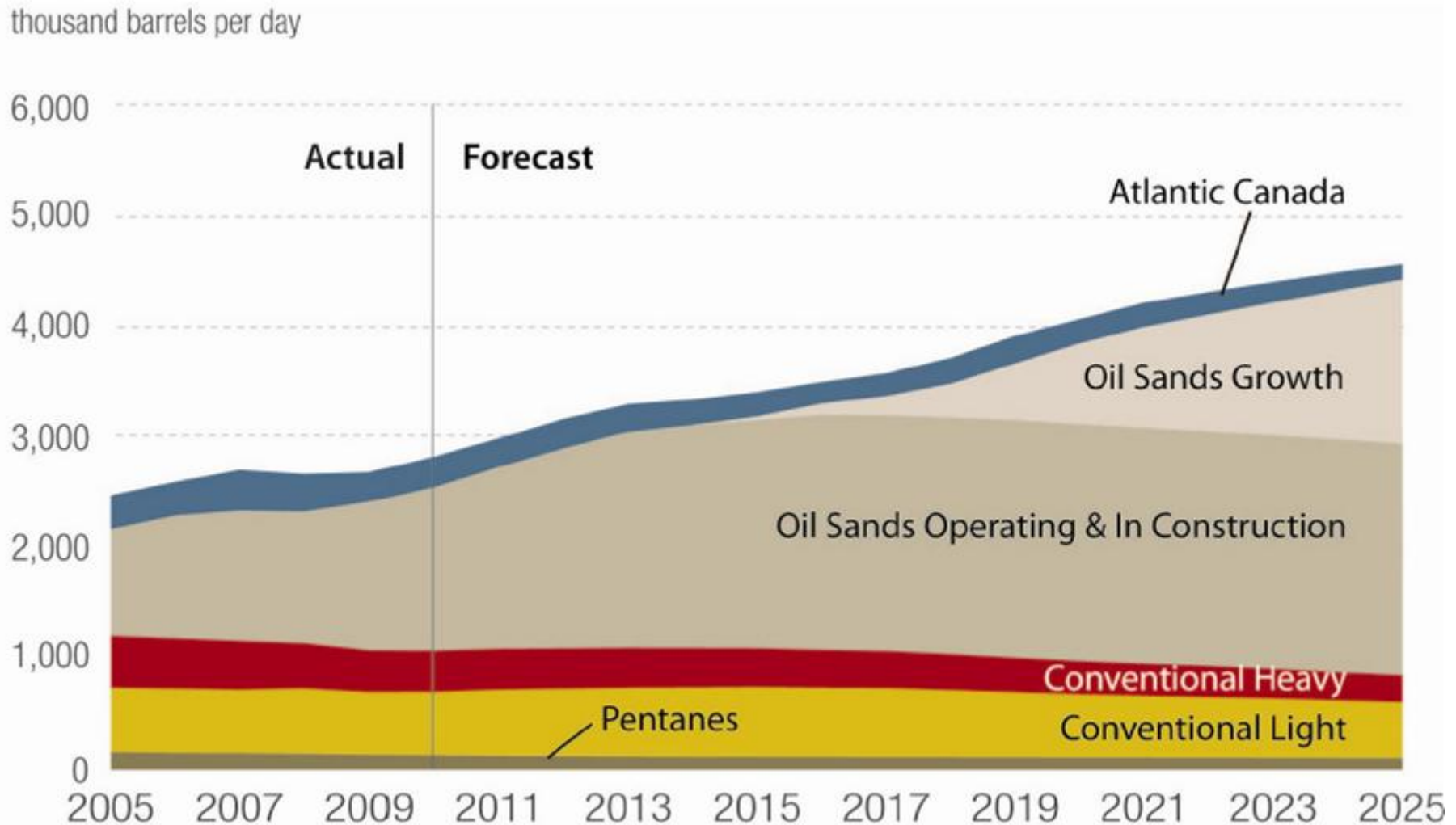
### World Oil Reserves





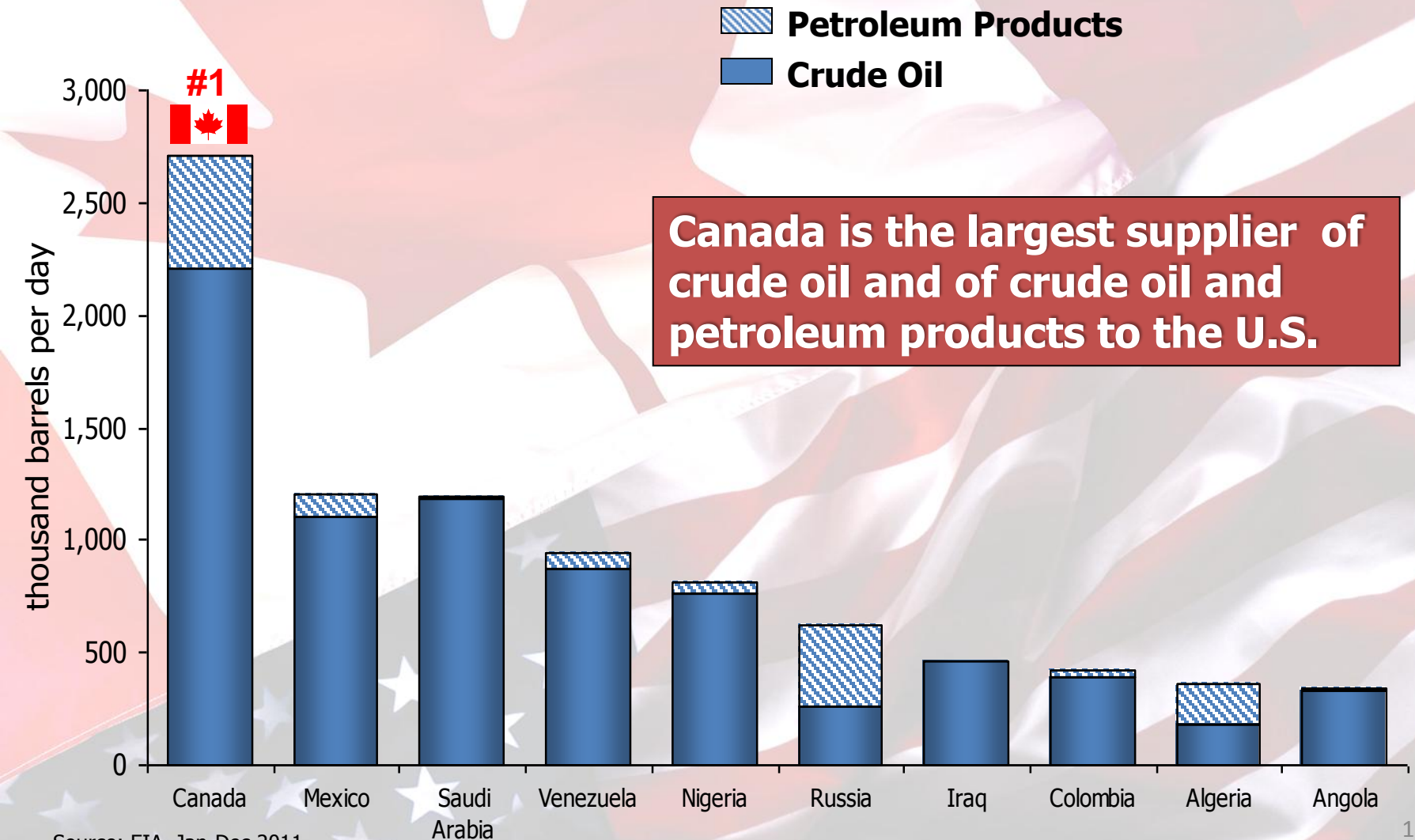
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## Canadian Oil Sands & Conventional Oil



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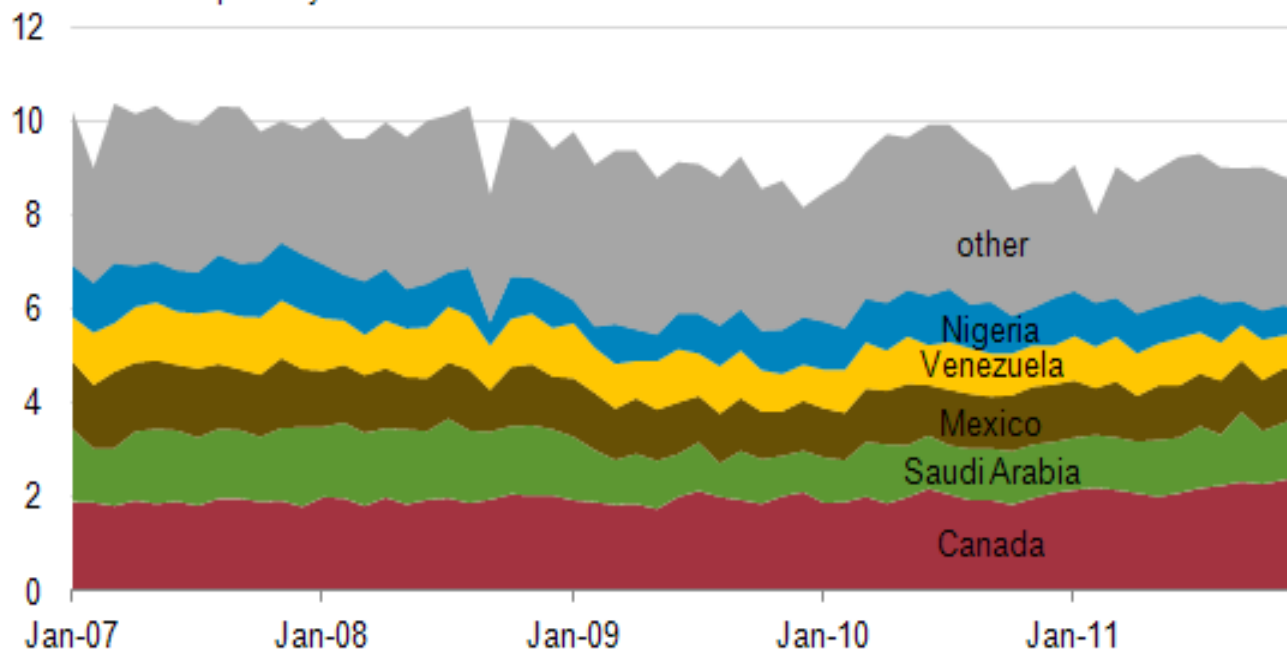
## U.S. Imports of Crude Oil and Petroleum Products by Country of Origin





## Canada's Growing Share of U.S. Imports – Crude Oil and Petroleum Products

Monthly U.S. crude oil imports, January 2007 - December 2011  
million barrels per day



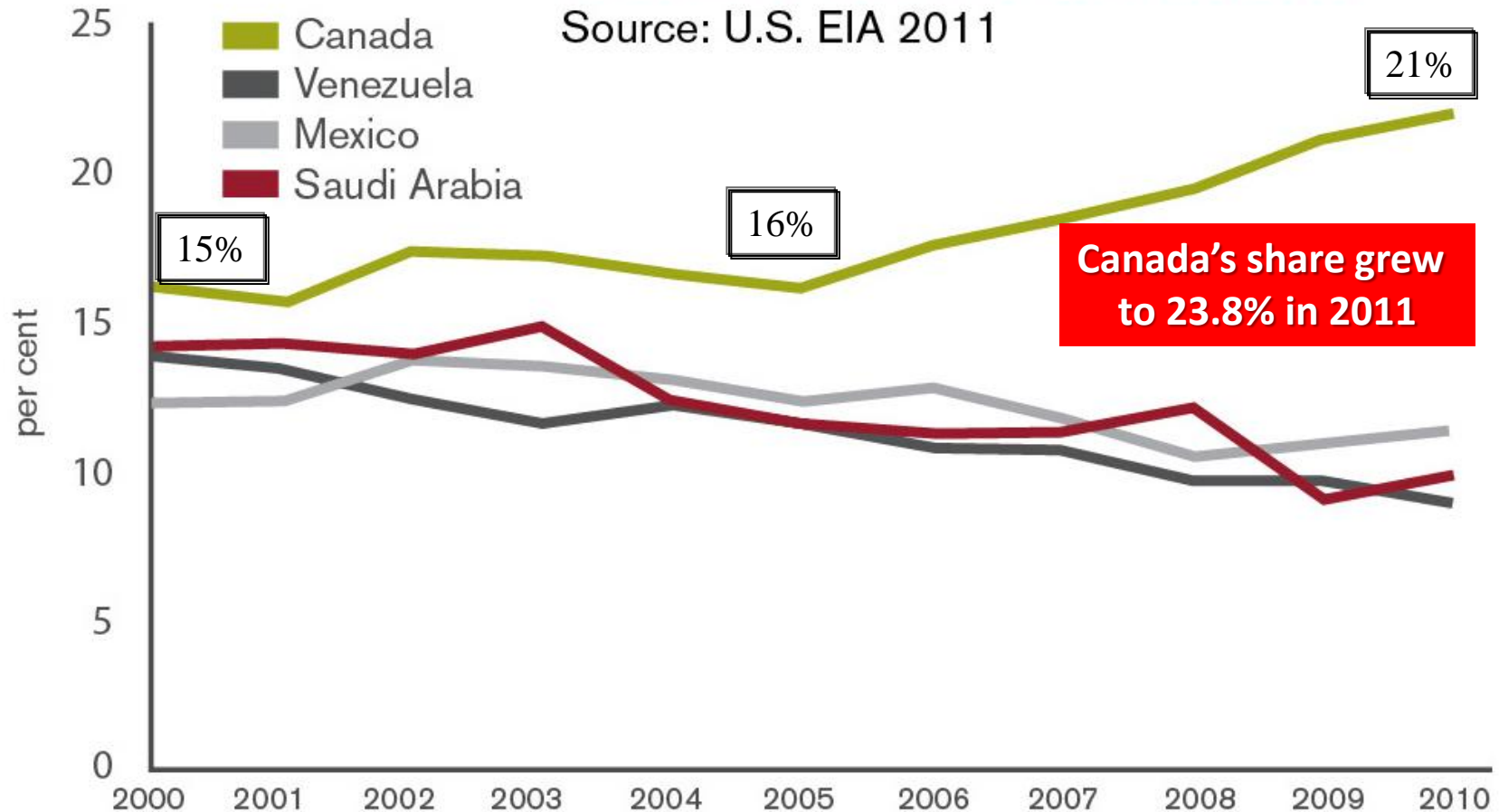


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## Canada's Oil & Products Export to U.S.

### Canada's share of U.S. imports

Source: U.S. EIA 2011

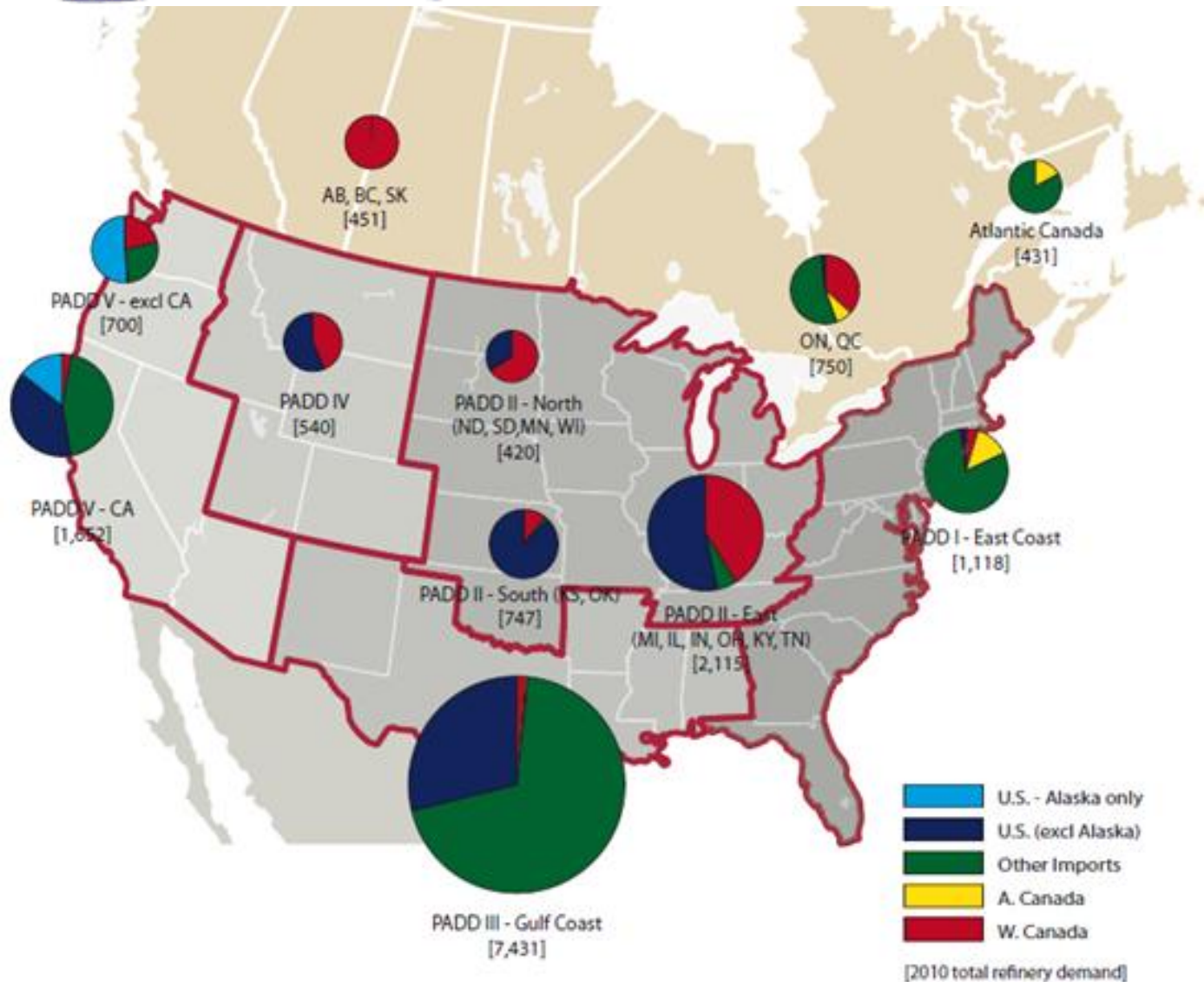






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## US Demand for Canadian Crude Oil (2010)





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## Canadian and US Crude Oil Pipelines and Proposals

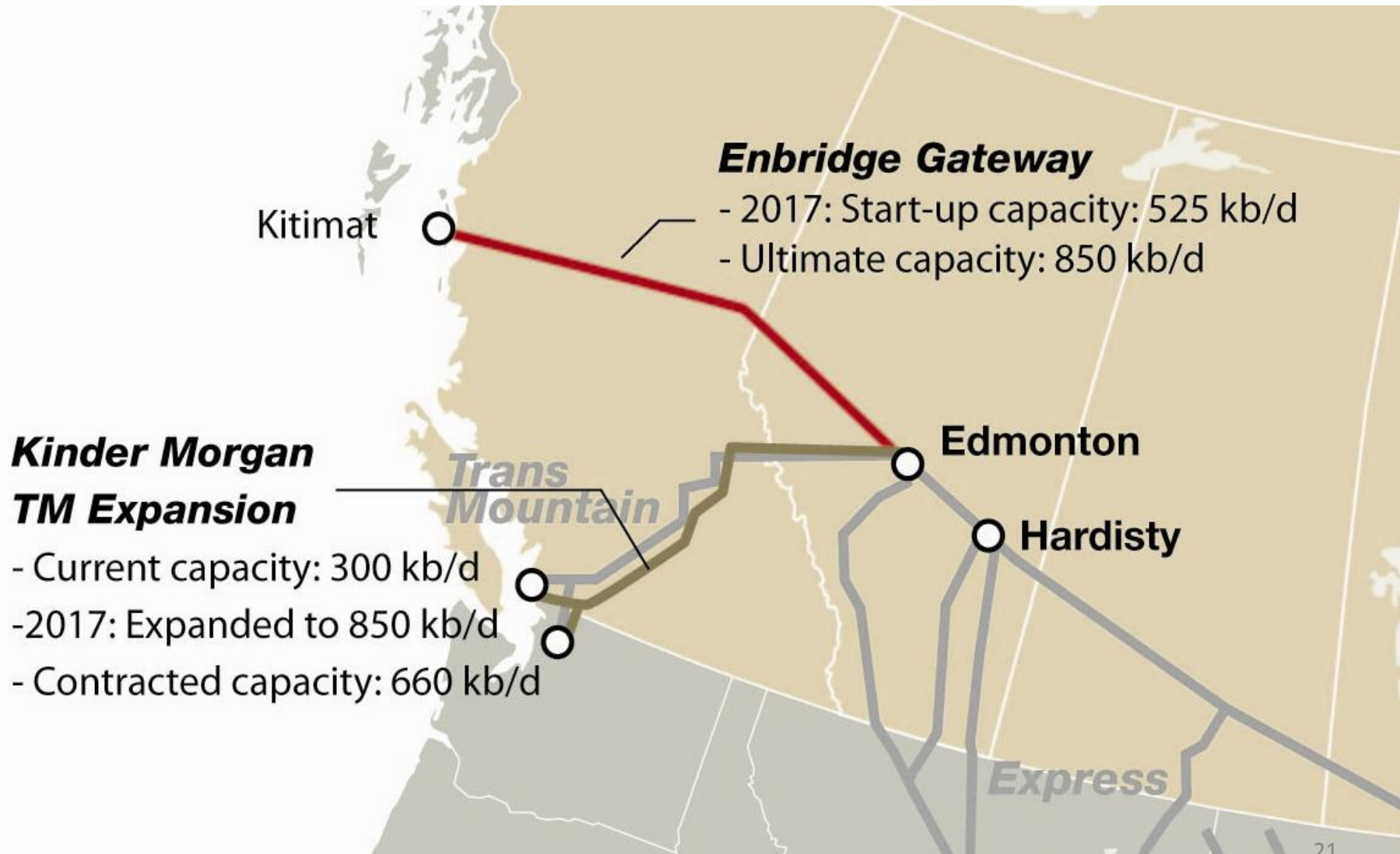


Source: CAPP 2011



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## West Coast Oil Market Access

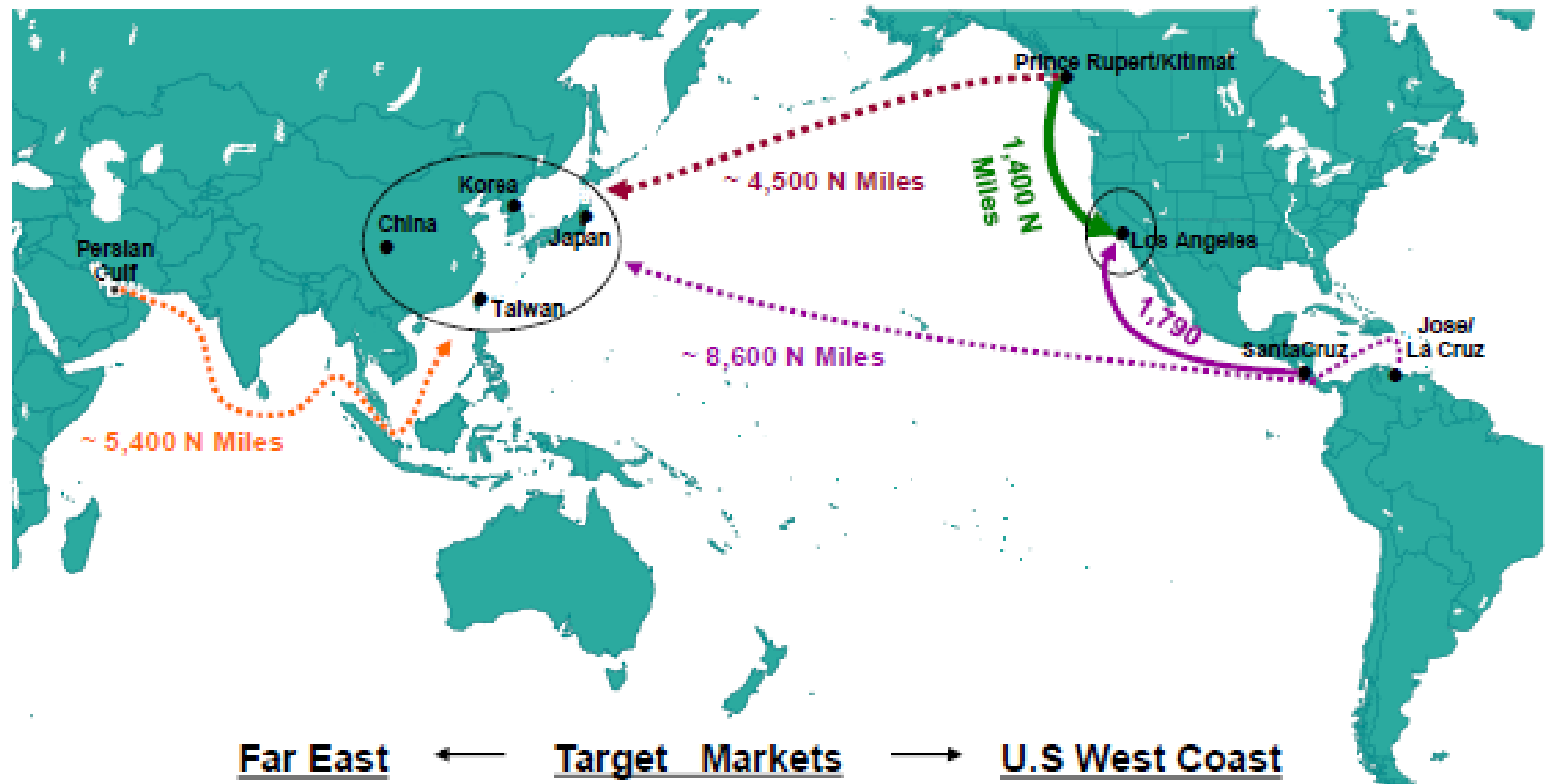






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## Potential Tanker Markets for Canadian Oil Sands Production



Competitive travel distances for Canadian supply to both markets



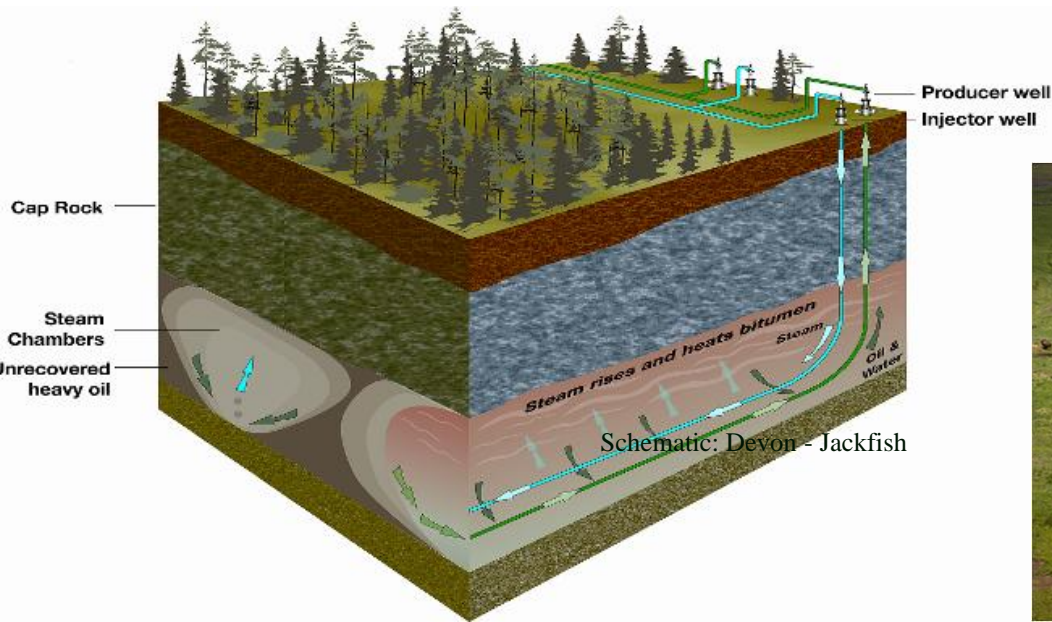
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## Two Methods of Oil Sands Recovery

Drilling: 80% of reserves



Mining: 20% of reserves







## Oil Sands: Improving Environmental Performance

- Federal and Alberta governments are collaborating on a new, science-based environmental monitoring plan
  - Will bring comprehensive and transparent monitoring of water, air and biodiversity
- Canadian Oil Sands Innovation Alliance puts in place an information sharing agreement
  - Group of 12 oil sands companies will share information in areas including intellectual property rights, research and technology development, air emissions, and management of tailings

### **Water**

- Most of the water used in oil sands development is recycled – up to 90% for *in situ* projects
- Federal and provincial regulations limit withdrawals of water – less than 1% of the Athabasca River's annual flow is used by the oil sands

### **Tailings**

- Regulations require tailings ponds to be ready for reclamation within 5 years after they cease to be in service
- NRCAN has helped to develop new techniques that significantly reduce tailings and accelerate reclamation

### **Air**

- Oil sands GHG emissions per barrel decreased by 29% between 1990 and 2009
- Oil sands have a long history of innovation – this has led to improved energy efficiency and reduced emissions
- For example, oil sands cogeneration operations produce ~15,000 GW of power per year as a by-product of oil sands production



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## Oil Sands Environmental Monitoring

- Joint federal/provincial governments
- Enhancements:
  - Increase sites: from current 80 to 172
  - More substances monitored
  - Higher frequency of sampling
  - Greater level of sensitivity
  - Broader geographic coverage
- Using standardized methodology
- Data publicly available on a common website
- In addition to project compliance monitoring

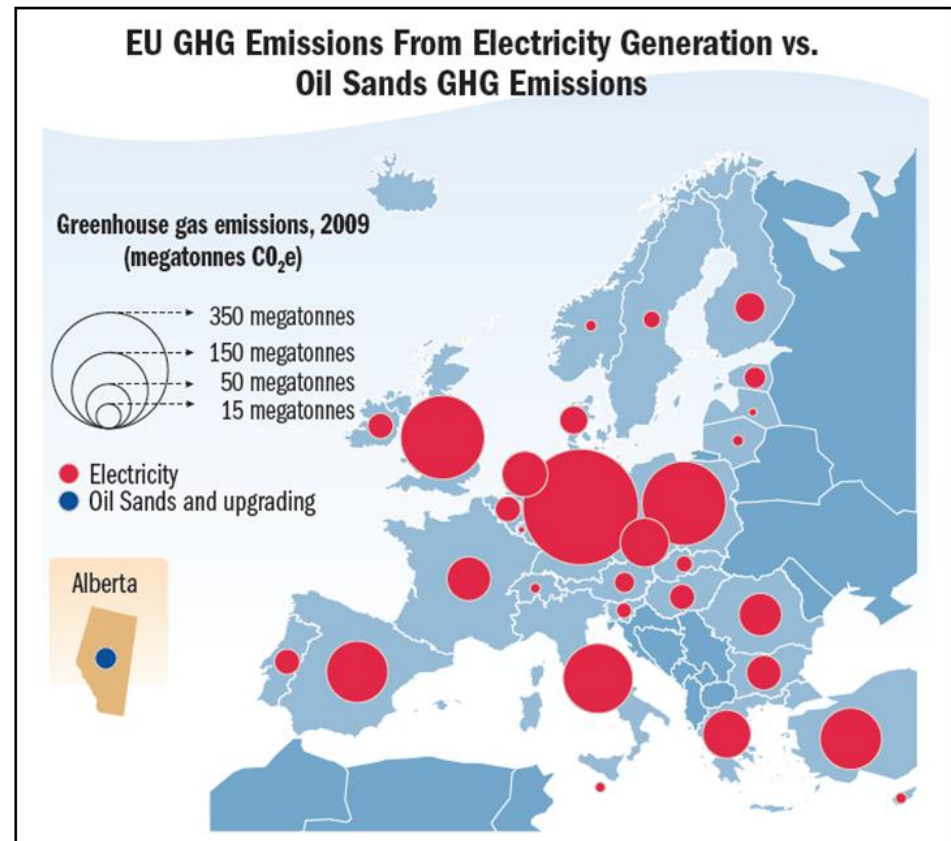


*“... that will be one of the most progressive and comprehensive environmental monitoring programs of any industrially-developed region in the world. ”*



## Oil Sands: GHG Emissions Context

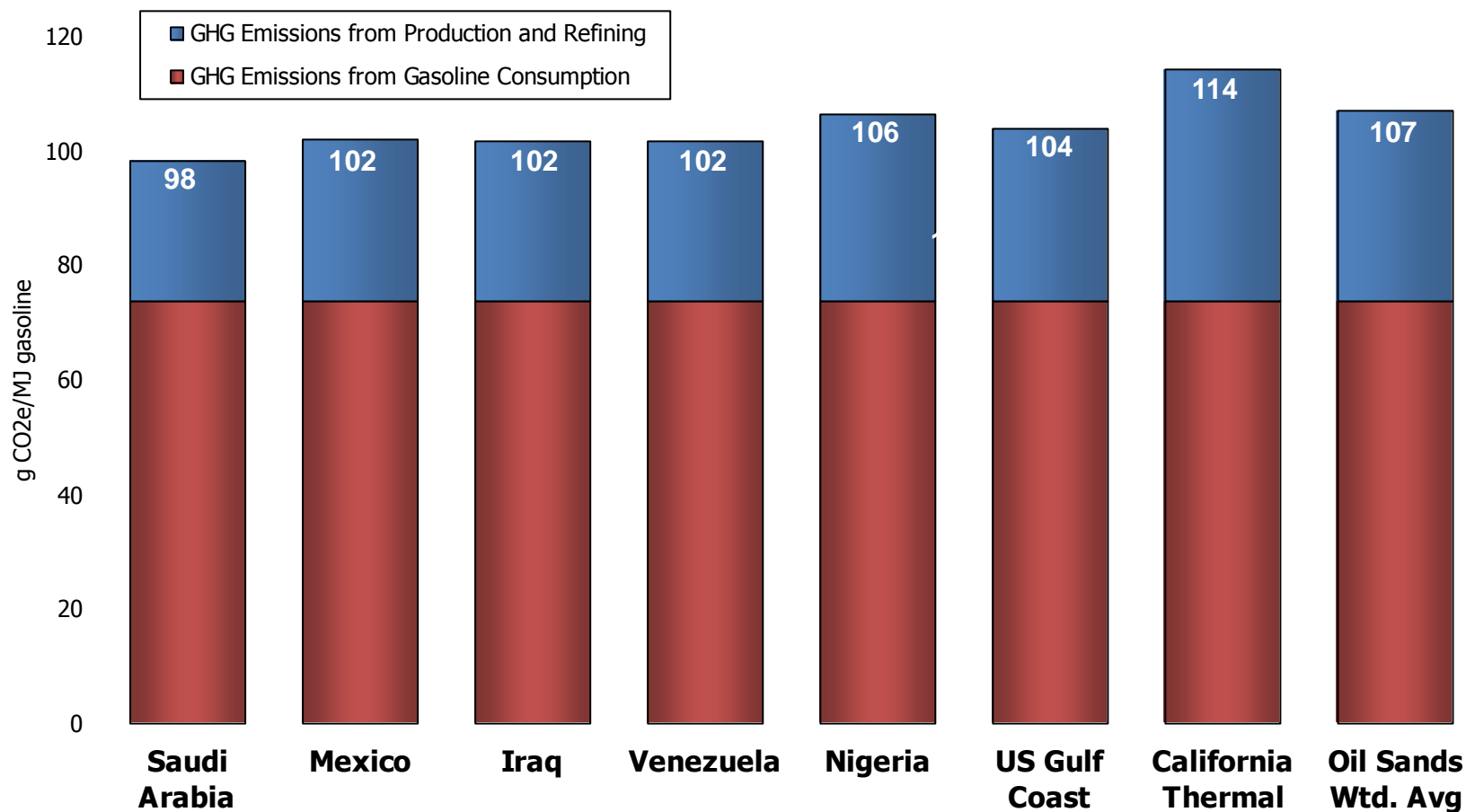
- Oil sands contributed about 6.5% of Canada's total GHG emissions in 2009 – this is equal to 0.1% of global emissions
- By comparison, GHG emissions from European electricity generation were nearly 30 times greater
- A recent *Nature* article shows that coal is a much worse threat than the oil sands – burning all commercially viable oil sands could increase global temperatures by 0.03°C compared with 15°C for coal
- An Environment Canada researcher, using a NASA satellite, recently found that air pollution from the entire oil sands area was comparable to a large power plant or a medium-sized city





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## Full Cycle GHG Emissions



Source: Jacobs Consultancy, *Life Cycle Assessment Comparison for North America and Imported Crudes*, June 2009

## Conclusion

- A unique and growing relationship
- Alignment on climate change
- North American energy security and prosperity





***THANK YOU, MERCI!***



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