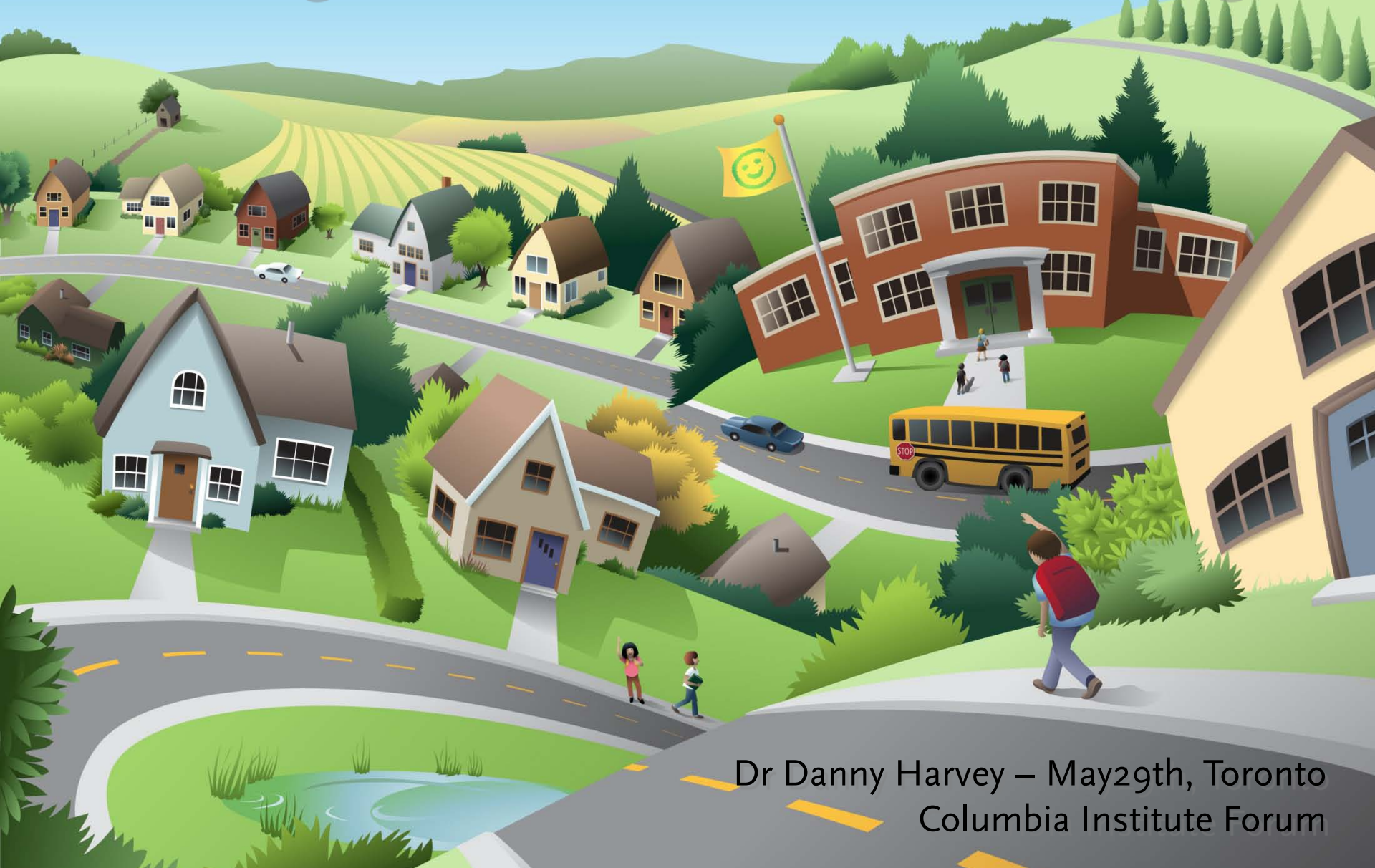


Rising to the Climate Challenge



Dr Danny Harvey – May29th, Toronto
Columbia Institute Forum

Rising to the Climate Challenge

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Columbia Institute, Toronto

Two worthwhile results from 25 years of international climate negotiations:

- Article 2 of the United Nations Framework Convention on Climate Change (UNFCCC), Rio de Janeiro, Brazil, 1992
- Article 4 of the 2010 Cancun Accord (COP16, 29 Nov – 10 Dec 2010, Cancun Mexico)

UNFCCC, Article 2:

“The ultimate objective of this Convention ... is to achieve ...stabilization of greenhouse gas concentrations in the atmosphere at a level that would *prevent dangerous anthropogenic interference with the climate system*. Such a level should be achieved within a time frame sufficient *to allow ecosystems to adapt naturally* to climate change, *to ensure that food production is not threatened*, and *to enable economic development to proceed in a sustainable manner*.”

Cancun Accord, Article 4

“The Conference of Parties ... recognizes that *deep cuts* in global greenhouse gas emissions are required according to science ... with a view to [holding] the increase in global average temperature below 2°C above preindustrial levels, and that the Parties should take *urgent action* to meet this goal ... also recognizes the need to consider ... strengthening the long-term goal to a global temperature rise of 1.5°C.”

IPCC (Intergovernmental Panel on Climate Change)

- Does a major “assessment” every 6-7 years
- Each assessment has 3 parts, by 3 “working groups”
 - WG1: climate science (past trends, projections)
 - WG2: impacts and adaptation
 - WG3: mitigation (reducing GHG emissions)
- The latest (5th assessment) is called AR5 and came out in 3 stages: WG1 in Sept 2013, WG2 in March 2014, and WG3 in April 2015
- Key results are contained in a “summary for policymakers” (SPM) produced by each WG

Business-as-usual scenario: 3-6°C global mean warming by 2100

Global average surface temperature change

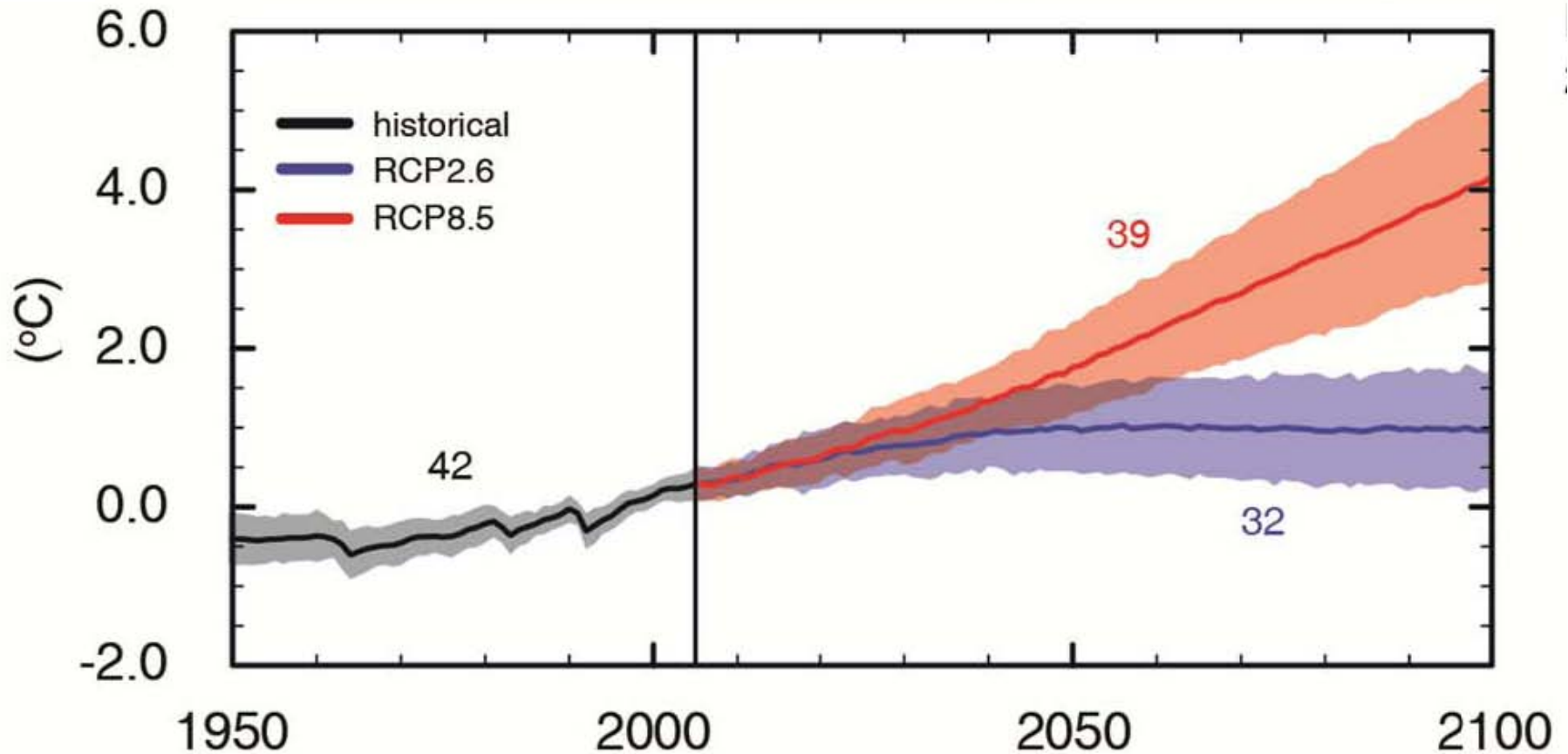


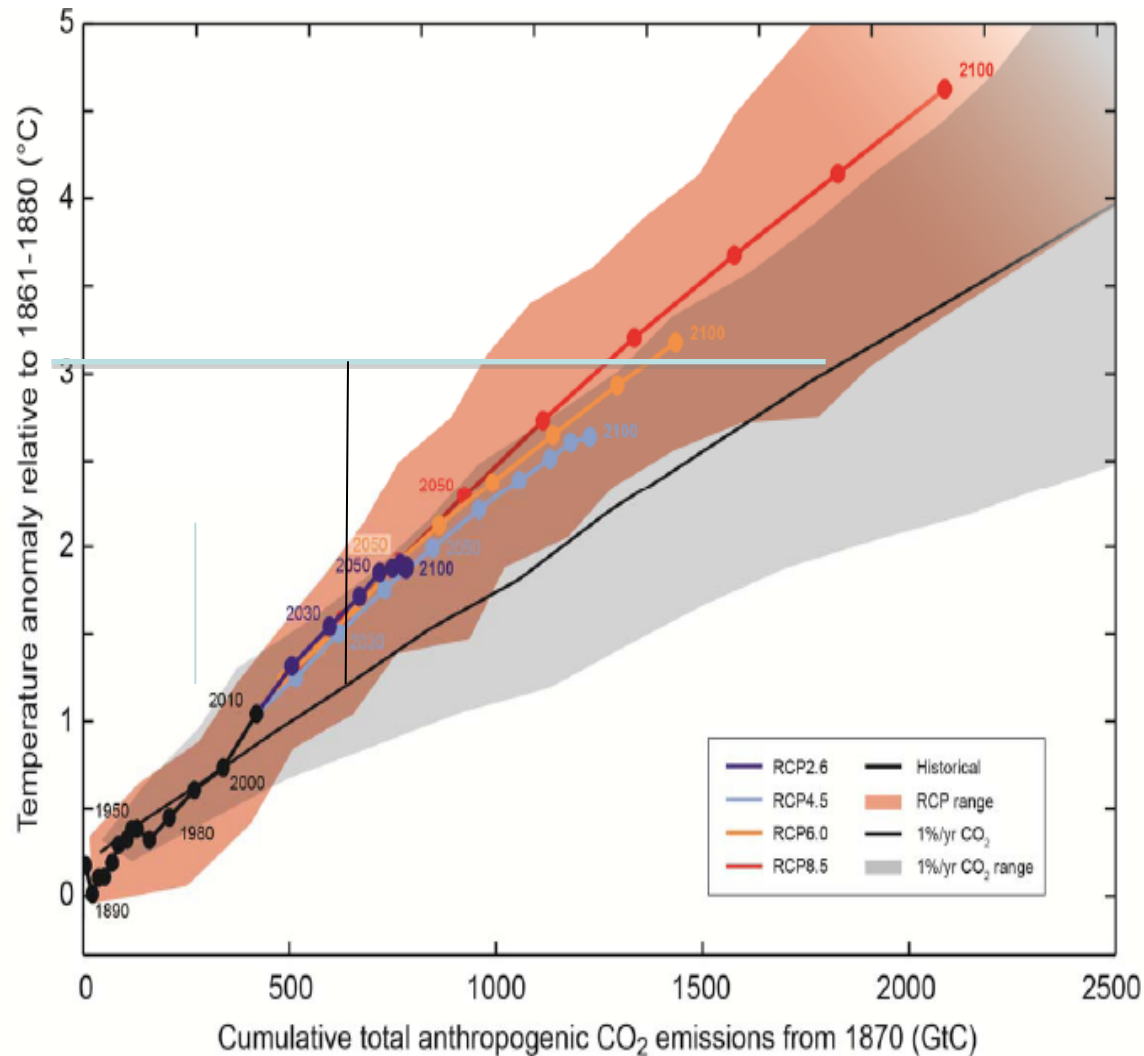
Table 1 of WG2 SPM summarizes the risks of 2°C and 4°C global mean warming in such areas as:

- Wildfires
- Drought
- Food production
- Forest health
- Human health and mortality
- Sea level rise
- Ocean acidification (caused by the CO₂ increase associated with various amounts of warming)

AR5 WG2 finds that

- “Very High” risks are expected in almost all impact areas with 4°C warming and current levels of adaptation. These risks can be reduced to “medium” in some sectors with high levels of adaptation
- “Medium” to “Very High” risks are expected even for a 2°C warming with current levels of adaptation. These risks can be reduced to “Medium” for all sectors with strong adaptation.

Total allowed cumulative emissions vs allowed global mean warming



Source: IPCC AR5, WG1, SPM Fig 10

Implication of the Cancun Accord in light of the preceding chart:

- We already have used up *about half* (33-62%) of our total permitted cumulative emission allowance (400 GtC out of an allowed cumulative emission of 650-1200) if the warming limit is 2°C, and we have used up 50-90% of our allowance (400 out of 450-800 GtC) if the warming limit is 1.5°C

Required Canadian actions

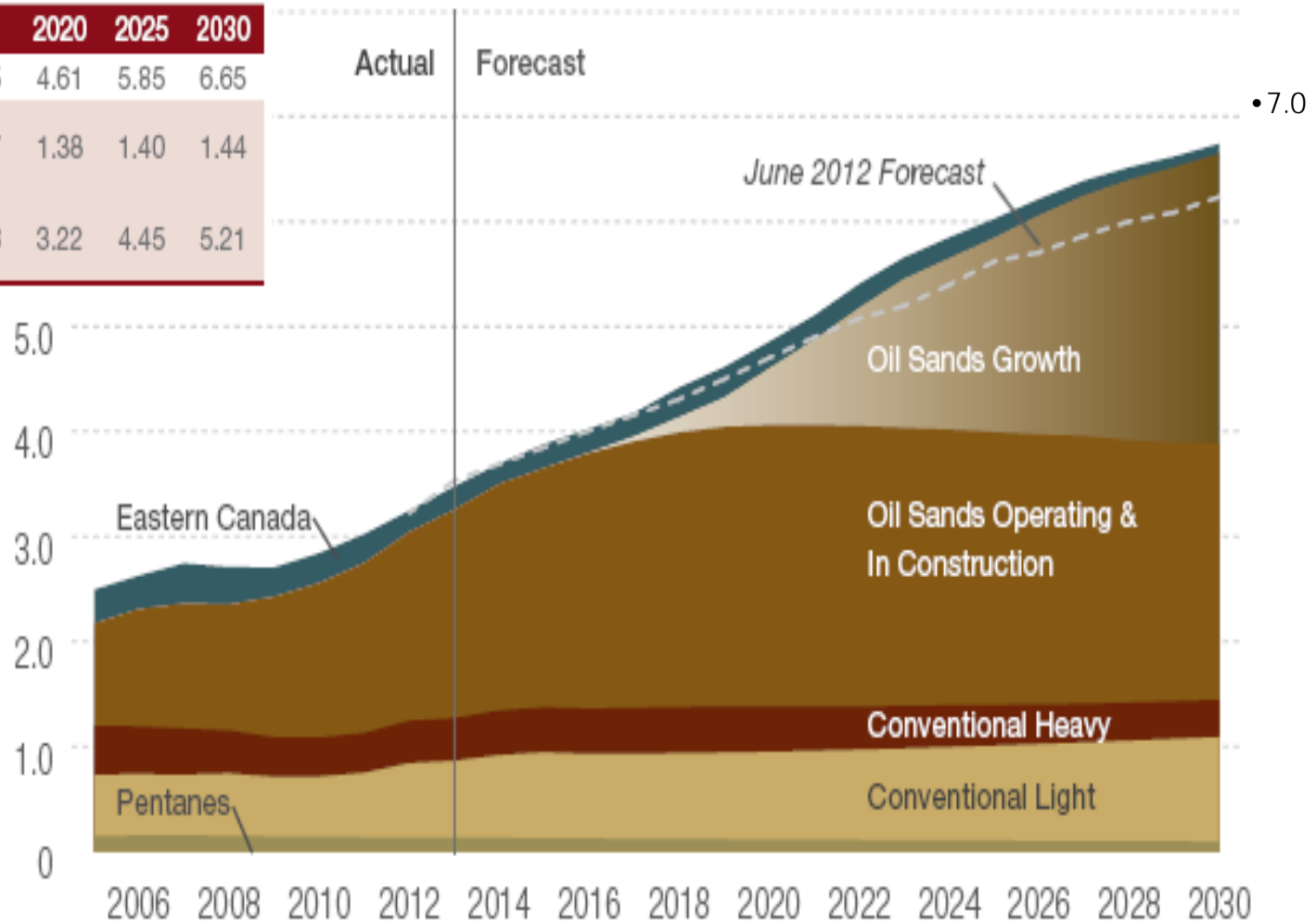
- Build on recent improvements in the building code to require (in steps, by 2020 or so) another 50% reduction in energy use in relation to floor area for new buildings
- Undertake a 40-year energy efficiency retrofit of the entire building stock
- Continue to push for further improvements in the fuel economy of transportation vehicles Invest strongly in quality public transit and good urban form
- Devise a national plan to get completely off of fossil (coal first) for electricity generation

Where is Canada heading?

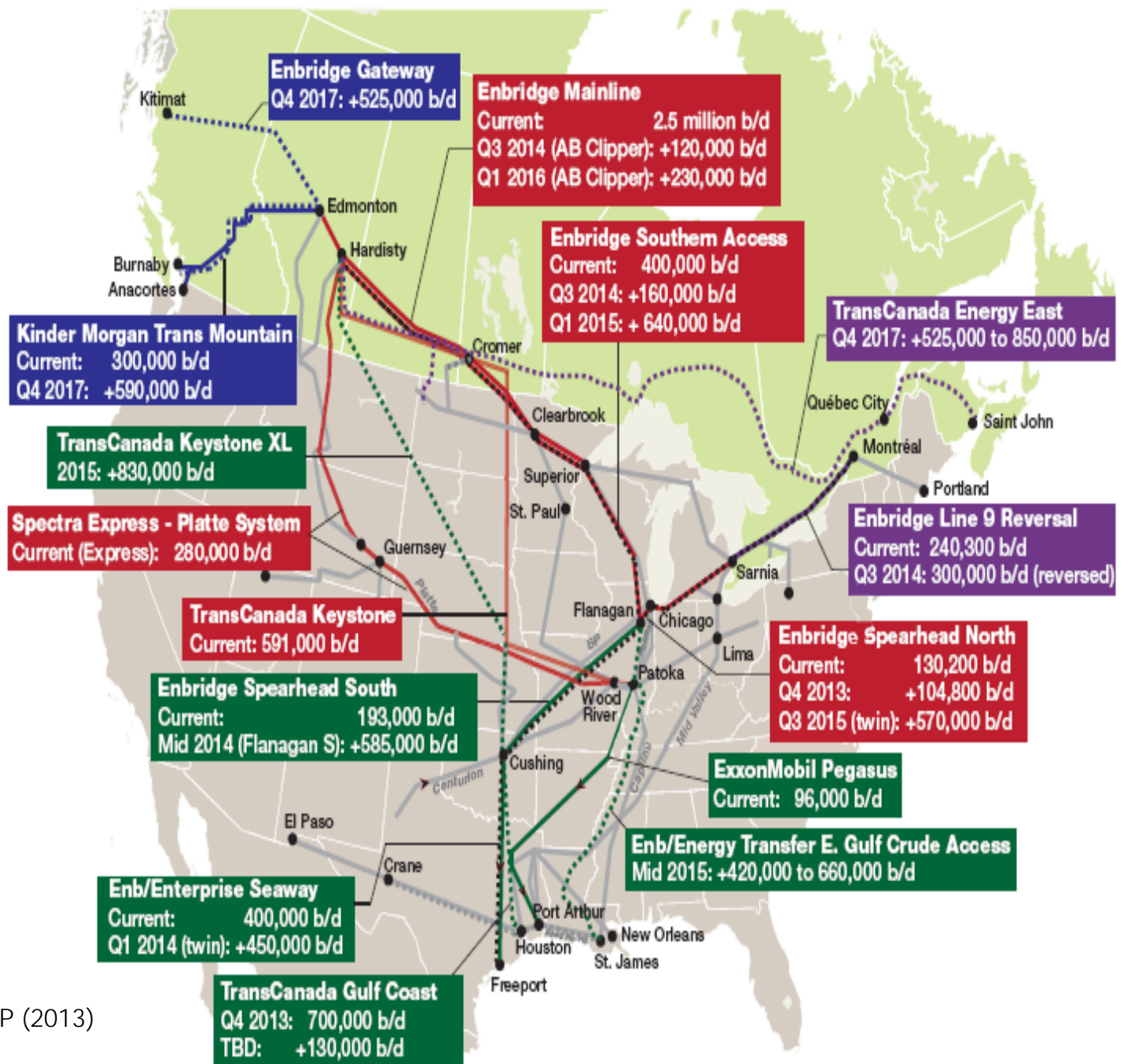
Canadian conventional and tar sands oil production, historical and industry hoped-for

Table 2.2 Western Canadian Crude Oil Production

million b/d	2012	2015	2020	2025	2030
Total*	3.04	3.65	4.61	5.85	6.65
Conventional (including condensate)	1.25	1.37	1.38	1.40	1.44
Oil sands (bitumen & upgraded)	1.80	2.28	3.22	4.45	5.21

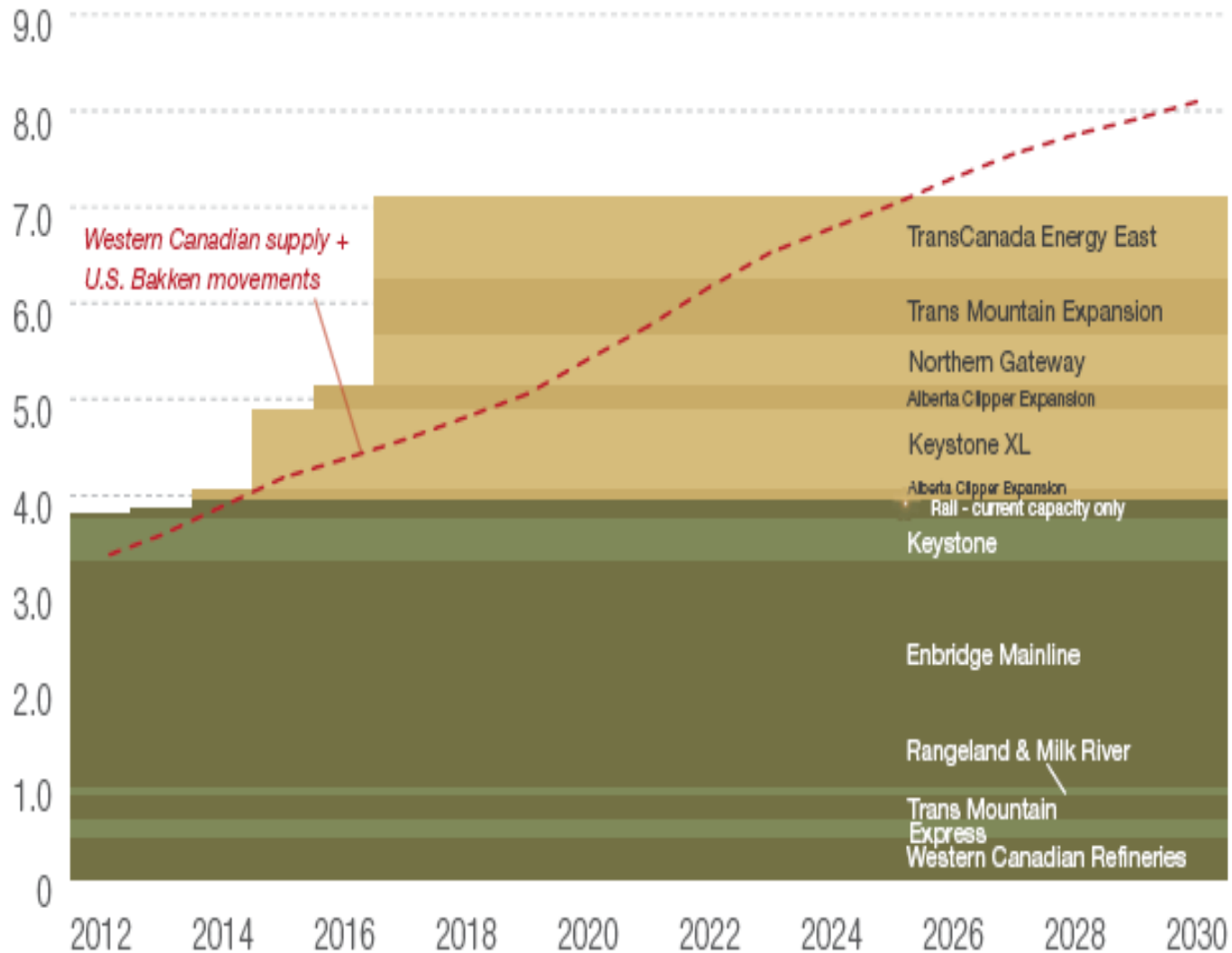


•Source: CAPP (2013)



•Source: CAPP (2013)

All proposed pipelines and more are needed to meet tar sands expansion plans



- Source:
- CAPP (2013)

