# Clean Electricity Standard Overview

## Creating a market-based solution to foster lower-carbon electricity in Alberta

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Thought Leader Forum

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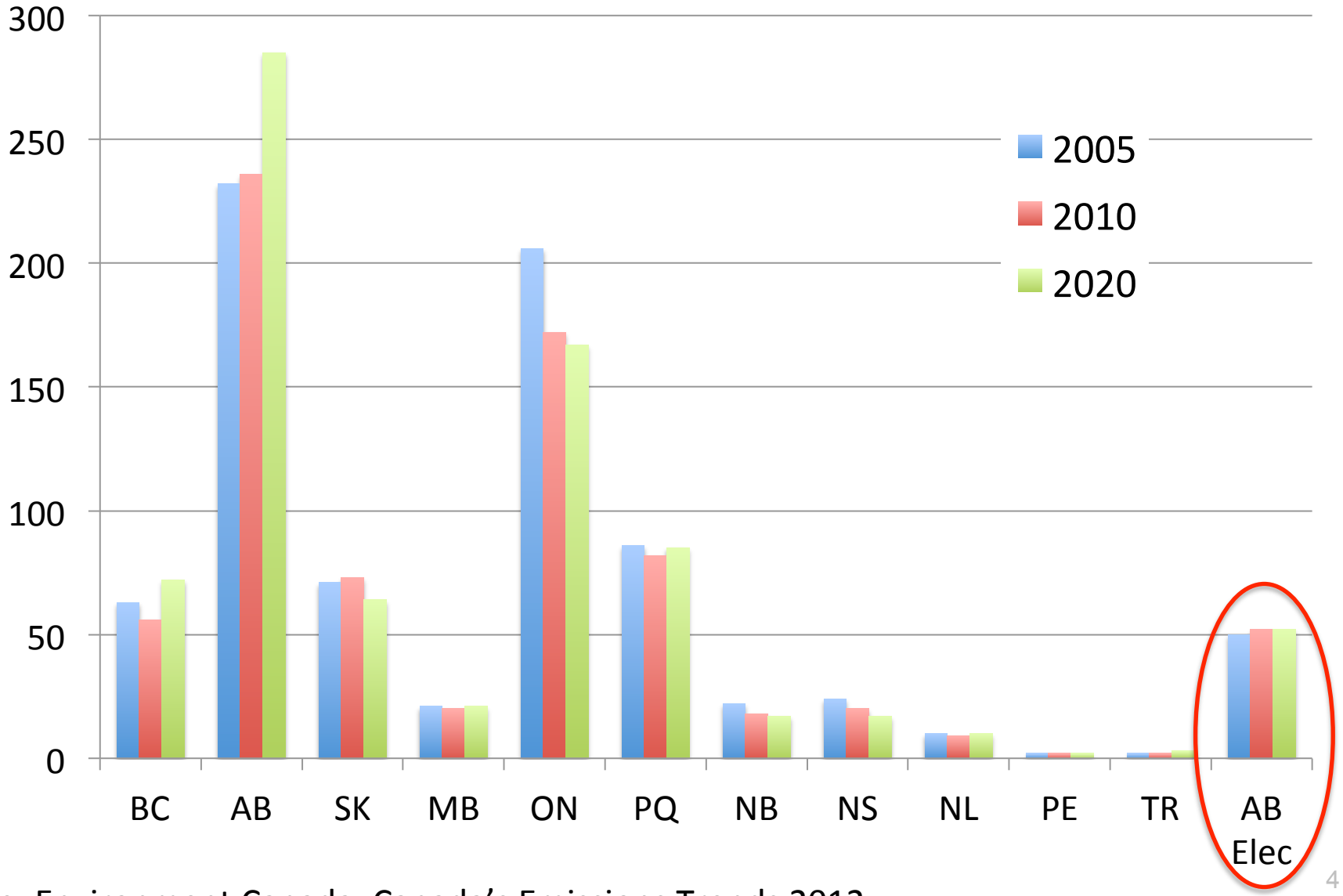
# Outline

- Assumptions
  1. Alberta will try to achieve it's climate commitments
  2. There are barriers to renewable/low-carbon electricity in today's market
  3. It is possible to develop a clean electricity policy that can work in Alberta's market

# Assumption #1

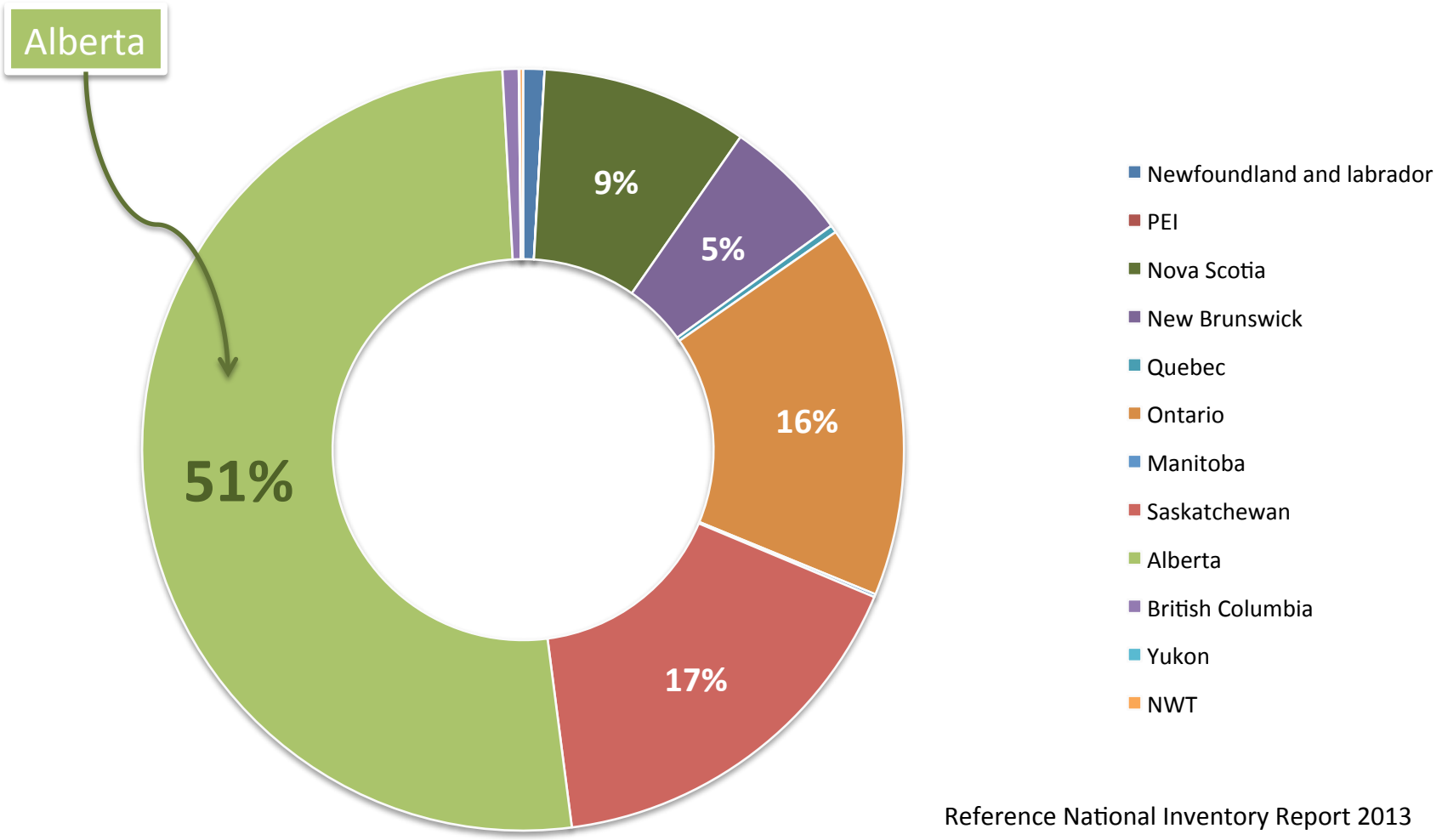
- Alberta plans to meet its climate change commitments

# National GHG Trends



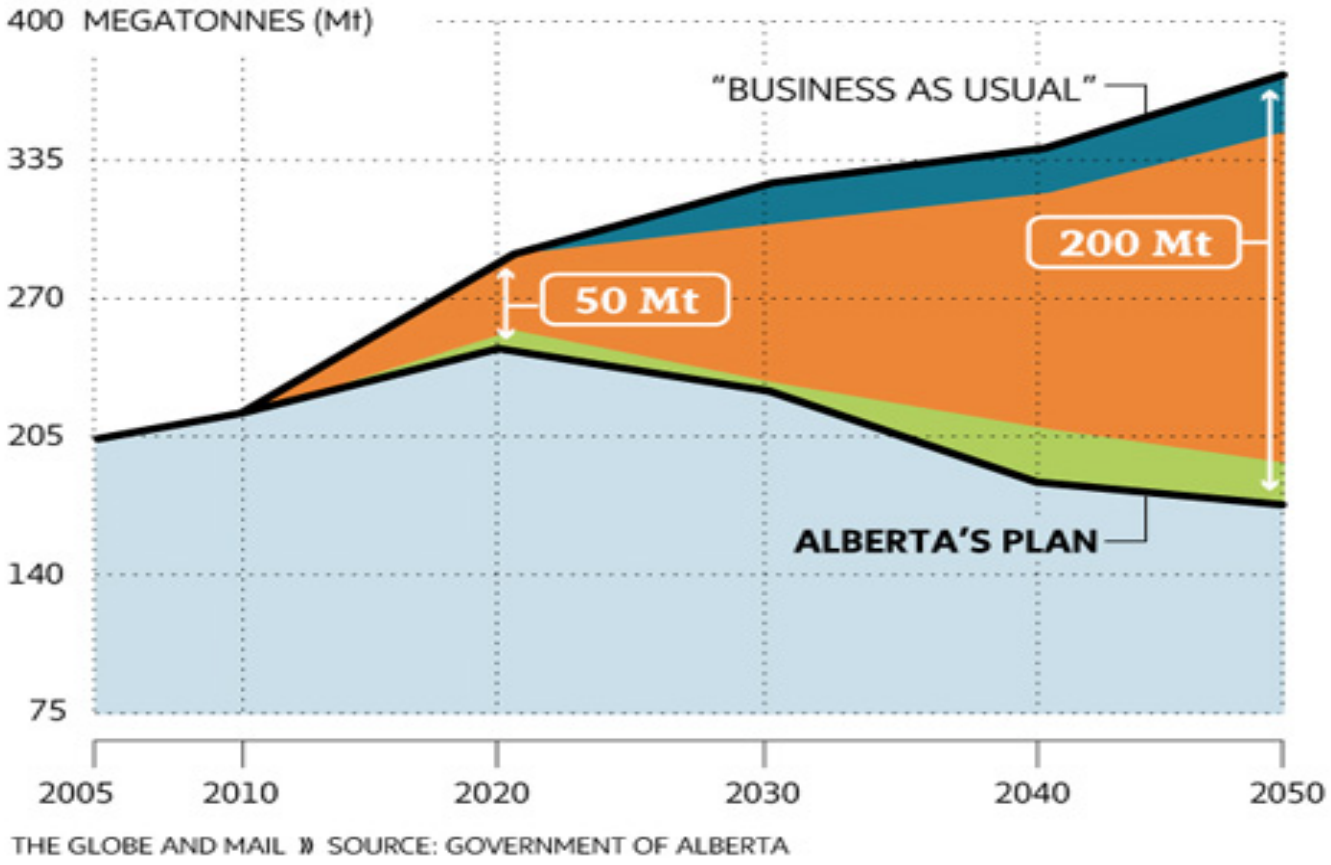

Source: Environment Canada. Canada's Emissions Trends 2012

# Alberta's Electricity grid resulted in 51% of Canada's Electricity GHG Emissions in 2011




Reference National Inventory Report 2013

# Alberta's commitments



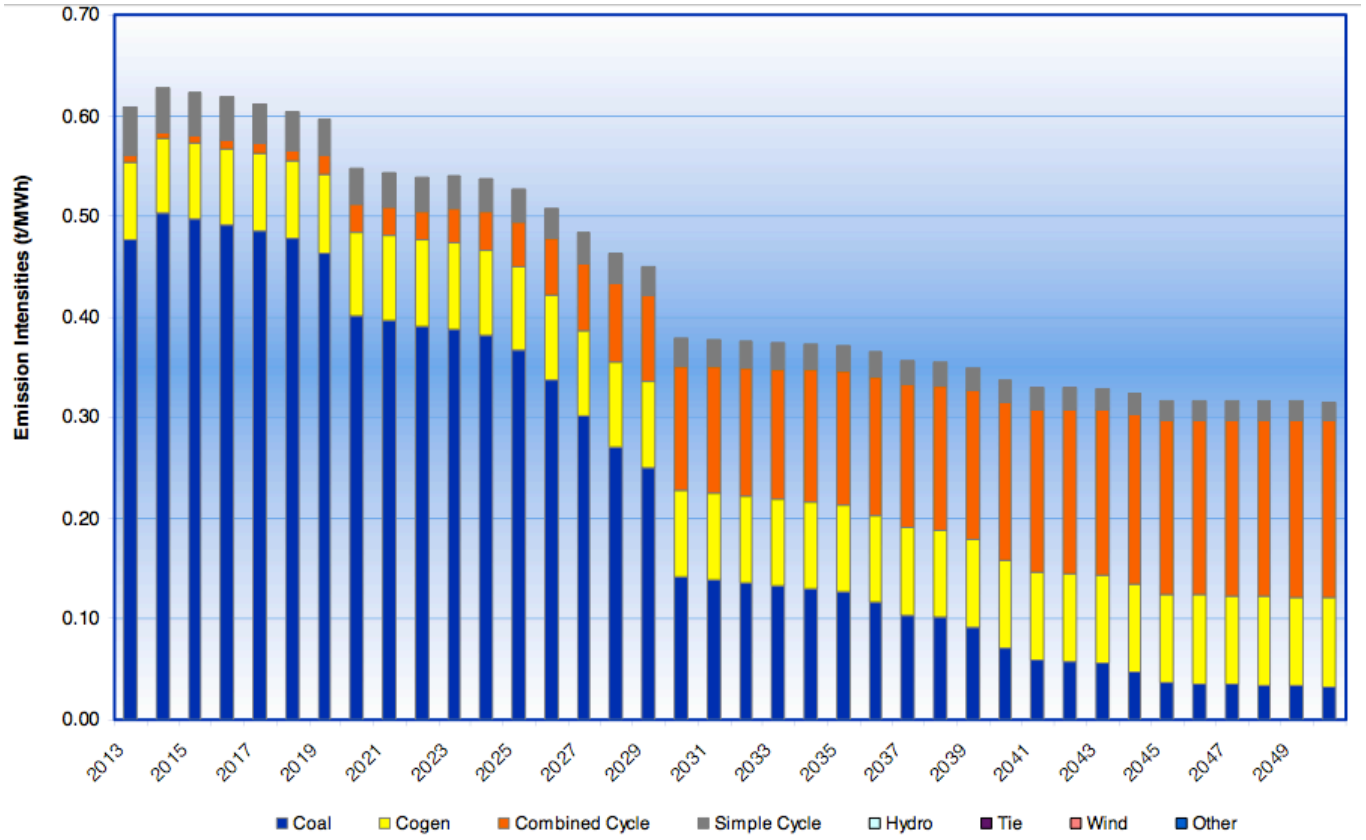

24 Mt = CCS

139 Mt = CCS

37 Mt = "Greening Energy Production"

Net: 14% below 2005

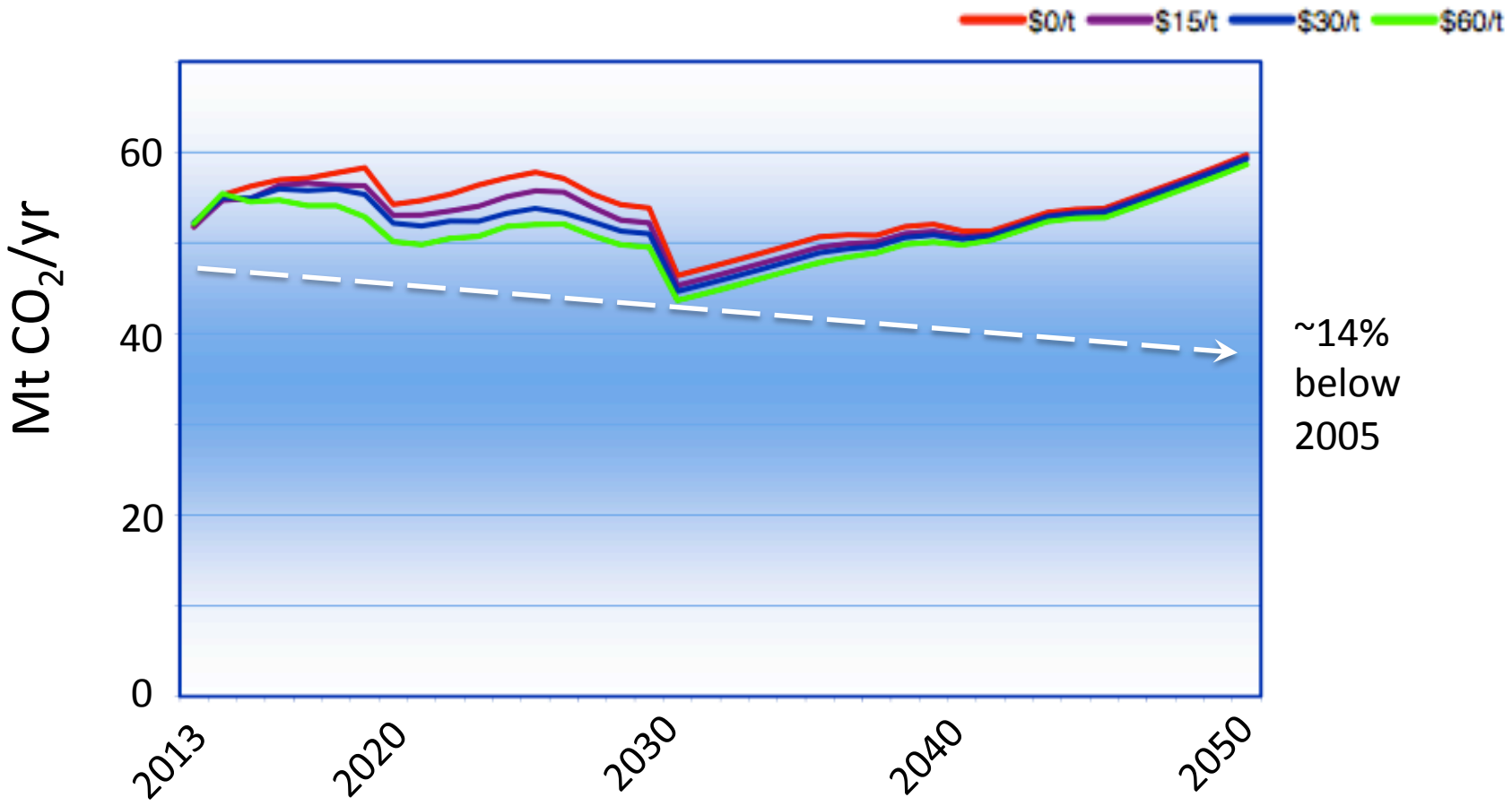
# Good news: Regulations are resulting in an intensity reduction forecast




Source: IPPSA (2013) Trends in GHG Emissions in the Alberta Electricity Market

Note – this includes all behind the fence electricity, not AESO market

# Bad news: Emissions to grow & BAU misses target




Source: IPPSA (2013) Trends in GHG Emissions in the Alberta Electricity Market

# Assumption #2

- Developing renewable energy technologies is challenging in Alberta's market

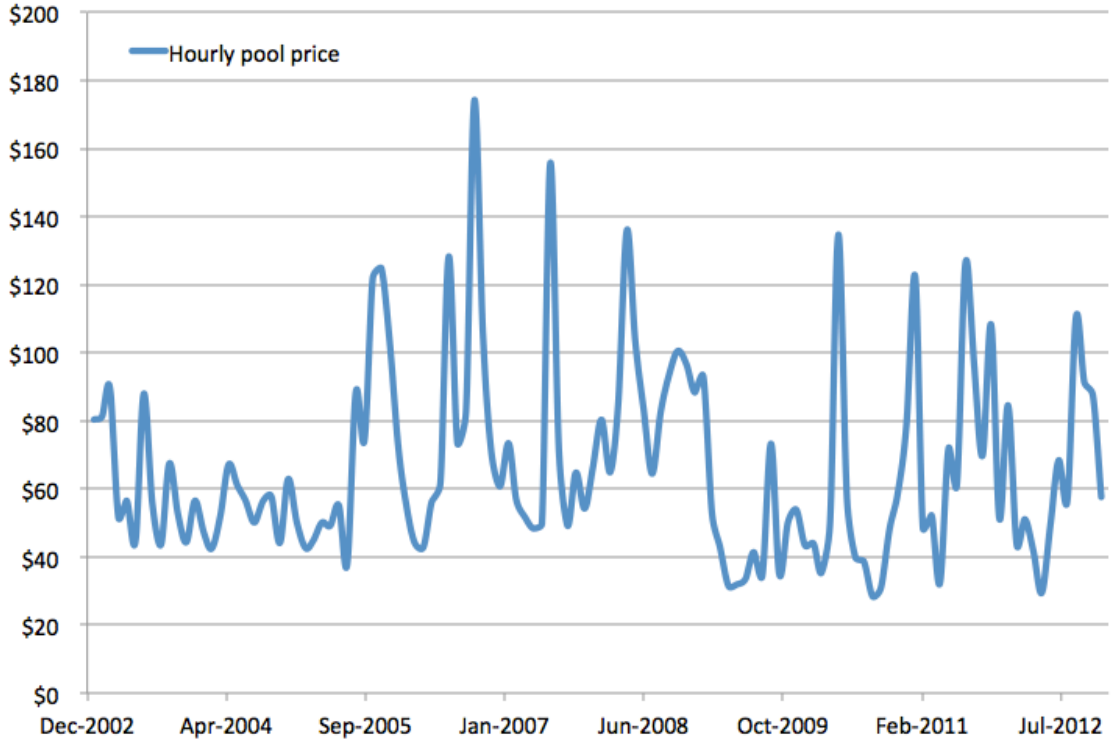
# Policy Development History

- The Pembina Institute organized a “Thought Leaders Forum” was hosted at U of C in 2010* to understand barriers and look for solutions to low-carbon electricity

* www.pembina.org/re/powerwedges

# Barriers Identified in Alberta

- Environmental impacts are not fully priced into market
- Merchant market pricing uncertainty makes financing challenging
- Price volatility
- Competition for capital into other markets



# Assumption #3

- It is possible to develop a clean electricity policy that can work in Alberta's market

# Key Criteria to Satisfy

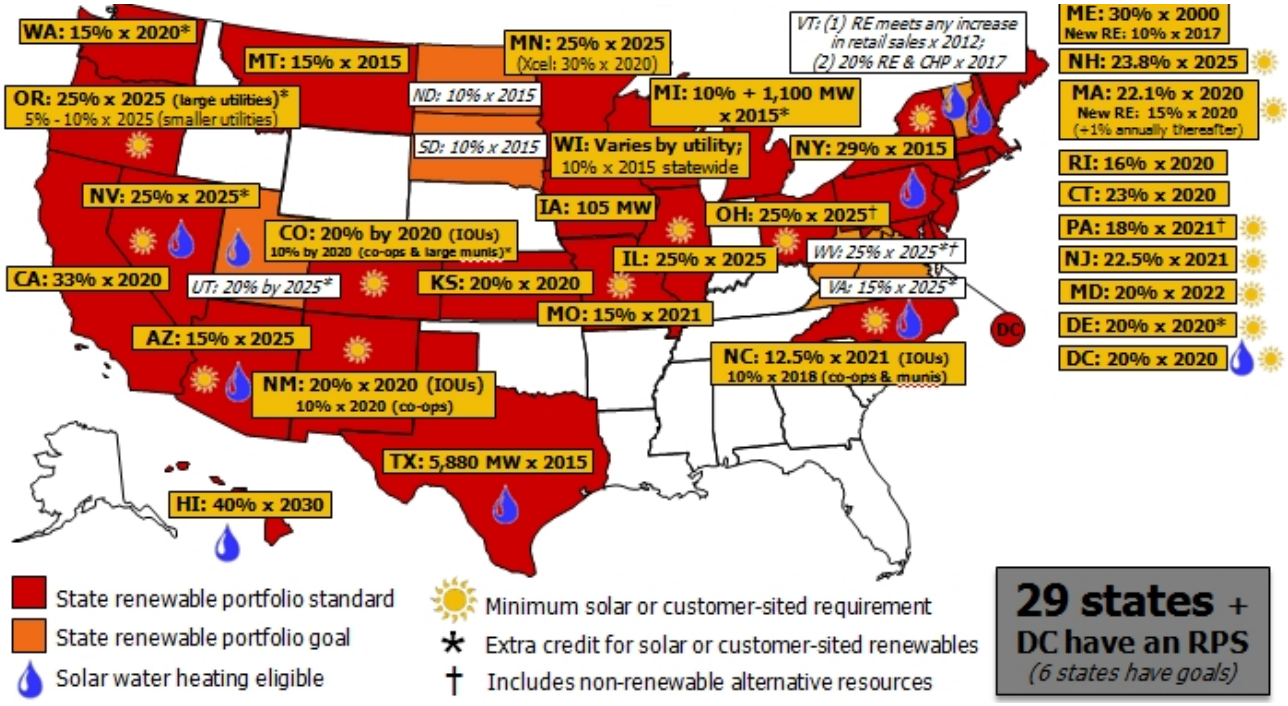
- Competitive
- Performance based
- Can work within existing AB market
- Can work with existing GHG regulations
- Overcomes the barriers to further growth in low and zero emission technologies

# Options considered

- Feed-in Tariff (FIT)
- Government issued PPA
- Provincial production incentive (tax based)
- Renewable Portfolio Standard (RPS)

# Renewable Portfolio Standards

- Allows market to choose technologies to meet minimum requirements
- RPS policy in more than 30 states in the US



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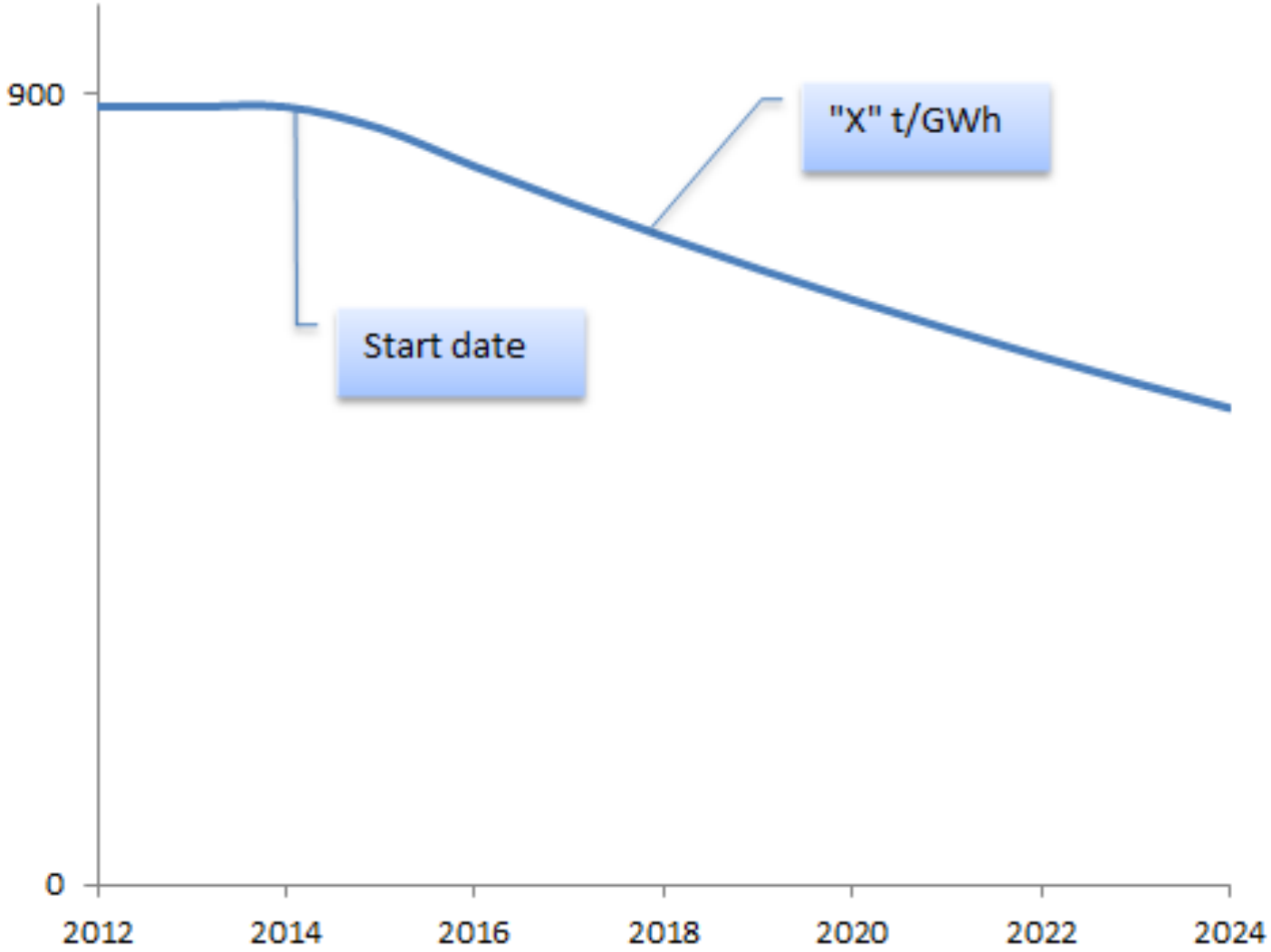
# Renewable Portfolio Standard

- Requires government mandated % of renewables by given date(s)
- This approach, picks renewables as “winners”
  - Can CCS, cogen, nuclear, other low-carbon alternatives fit?
- Goal (in Alberta) is to achieve GHG reductions, not necessarily renewable options
- Challenge: Develop a similar framework that is technology neutral…

# Clean Electricity Standard Concept



# Why this approach could work for Alberta

- Is market based, retailers have choices on how to build their portfolio – spot market, long-term contracts, etc.
- Is performance based
- Fleet-wide approach allows for flexibility
- Compliments the existing Specified Gas Emitters Regulation and Offsets program
- Recognizes early action

# Still a work in progress

- Stakeholder discussions
- Looking for feedback
- Incorporate feedback
- Refine and improve

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# Summary

- A Clean Electricity Standard could work within Alberta's existing electricity market, while creating predictability for low-emissions energy investment
  - Market-based
  - Avoids picking winners
  - Allows for renewables, CCS, cogen, natural gas, nuclear, etc.
- Open to discussion, improvement and refinement

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# Appendix

# CASA recommendations (2008)

- Foster market demand
- Recognize and incorporate environmental costs and benefits into the marketplace
- Create an investment environment that is stable
- Complement other policies
- Identify and resolve regulatory barriers
- Help achieve clean air objectives