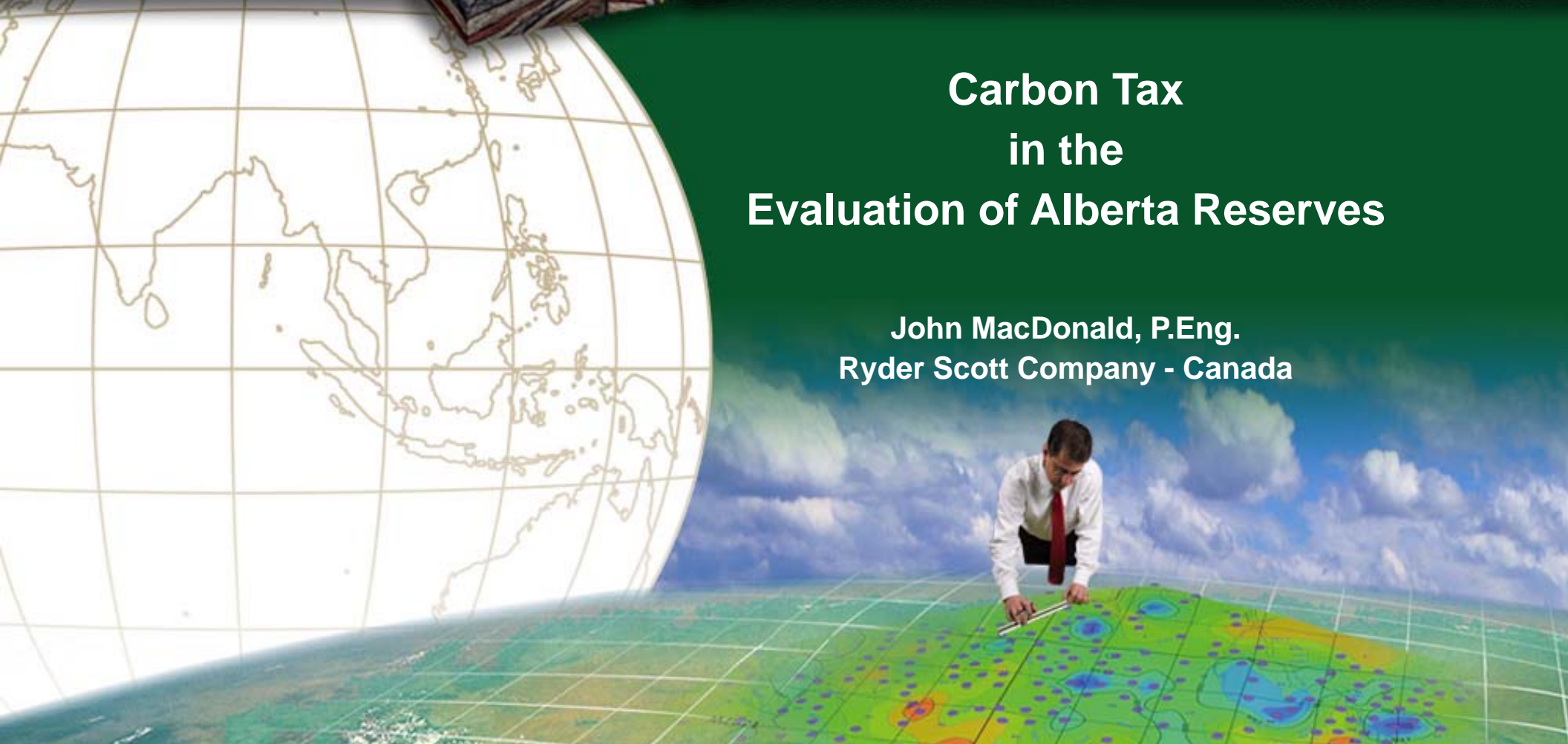


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## Carbon Tax in the Evaluation of Alberta Reserves

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This presentation does not comment on the effectiveness of a carbon tax nor on the validity of global warming being accelerated by the activities of mankind.

This presentation focuses on the nature of carbon tax and how it will likely affect the value of oil and gas reserves in Alberta.

This presentation has 4 sequential carbon tax learnings:

1. An understanding of what sort of beast it is.
2. An understanding of how it impacts the oil field.
3. An understanding of the impact on reserve evaluations for Alberta assets.
4. An appreciation of where it may be going.

# Canadian Precedents

# B.C. Carbon Tax

# B.C. Carbon Tax Outline



- Tax is applied to all fossil fuels purchased or used in the province.
- Tax rate is based on GHG emitted when fuel is burned.
- Greenhouse Gases are CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs and SF<sub>6</sub>.
- Each GHG is assigned a CO<sub>2</sub> equivalent value.
- Revenue neutral carbon tax implemented on July 2, 2008.  
(\$10 per tonne of CO<sub>2</sub> equivalent)  
(actually credits were exceeding revenue)
- Final rate increase effective July 2, 2012.  
(\$30 CDN per tonne of CO<sub>2</sub> equivalent, which is 6.67¢ CDN/L or 18.2¢ US/U.S. gallon for gasoline at \$0.75 US/\$1 CDN)

# Revenue Neutral



Revenue neutral as all tax revenue is returned to tax payers by reduction in other taxes.

## – Individuals

- Individuals realize a 5% reduction in first two personal income tax rates.
- Low income individuals also receive a Climate Action Tax Credit.
- 4 other tax credit programs.

## – Business

- General corporate income tax rate reduced in stages totaling 2%.
- Small business corporate income tax rate reduced in stages from 4.5% to 2.5%.
- A number of other tax credit programs.



In B.C.

the rate of carbon tax is the same  
no matter the business sector or application  
that it is applied to!



Carbon Tax is applied from the well head to the sales point every time a fossil fuel is used (combusted or not):

- Compressors (well head, gathering systems, within plants or sales).
- Flared volumes.
- Purchased fuels (e.g. gasoline, diesel, propane, natural gas, and methanol).
- Injection systems fuel.
- Heating systems fuel.

## Fuel that isn't combusted but is used:

- In pipeline pigging.
- As antifreeze in a natural gas pipeline.
- In down-hole operations at a well site.
- To remove natural gas liquids or impurities in the processing of natural gas.
- As a refrigerant in a closed system in the processing of natural gas.

## Applies to:

- Natural gas used in stationary engines used to move natural gas to market or into/out of storage facilities.
- Pumping any form of liquid hydrocarbons between locations.

Fuel sold and  
exported outside B.C.  
is exempt from Carbon Tax.

## Fuel sold and consumed in B.C.:

- Locomotive fuel purchased by an interjurisdictional rail service or cruise ship.
- Jet fuel purchased by an international air service.
- Fuel purchased by a ship prohibited from coastal service.
- Purchased on a First Nation by a First Nation individual or band.
- Coloured fuel purchased by a farmer and delivered to their land.
- Purchased by a visiting force, diplomatic or consular corps.

# Alberta Large Industrial Emitters

- Alberta was the first province to publish an Act regulating GHG emissions from large industrial emitters (2003).  
(GHG are CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs and SF<sub>6</sub>. Each has a CO<sub>2</sub>e factor.)
- Three regulations have been passed under the Act:
  - Specified Gas Reporting Regulation (2004)
    - Requires facilities that emit 50,000 tonnes or more of greenhouse gases to submit annual reports on their emissions.
    - Supported by the **Specified Gas Reporting Standard**, which details who is required to report and how the information is collected.
  - Specified Gas Emitters Regulation (2007)
    - Requires facilities that emit 100,000 tonnes or more of greenhouse gases a year to reduce their emissions intensity by certain percentages of their baseline intensity, depending on how long the facility has been in operation and the calendar year through 2017.
    - Significant penalties for exceeding emissions limit and related matters.
  - Administrative Penalty Regulation (2007)
    - Establishes financial penalty for not following the rules correctly or failing to provide assistance when required.



## The Penalties

- For breaking the net emissions intensity limit for the facility in a given year – a fine of not more than \$200 per tonne CO<sub>2</sub>e per unit of production by which net emissions intensity exceeded the net emissions intensity limit times the production. (person responsible is liable)
- For not playing nice – if a person doesn't follow the various rules or a compliance order or hires a third party auditor who does not meet the requirements of that position or performs the third party auditor function and does not meet the requirements:
  - If the person is an individual, a fine of up to \$50,000
  - If the person is a corporation, a fine of up to \$500,000.

- For each contravention \$1,500 (but that amount can be varied up or down).
- Maximum penalty is \$7,500 per contravention or for each day or part of a day for which the contravention occurs or continues.
- Note – The Administrative Penalty applies to some of the same sections of the Specified Gas Emitters Regulation that emission penalties apply to, which is a double penalty!

# How to Meet Reduction Targets



Large emitters have 4 options to meet their reduction targets:

- Physically reduce their on-site emissions.
- Purchase Alberta-based offset credits.  
(Facilities and sectors not subject to the Act, that reduce their GHG emissions, generate the credit.)
- Contribute to the Climate Change and Emissions Management Fund, or  
(Fund established by the Act. Fund supports reduction of GHG or adaption to climate change. Funds spent at Minister's discretion. Payments into Fund by Large Emitter generates credits at rate determined by Regulation.)
- Purchase or use Emission Performance Credits.  
(Regulated facility, creates surplus to the emission requirement, generates a credit which can be sold.)

## British Columbia (pay cash as you go):

- Regulation applies to everyone.
- Carbon tax on all emissions.

## Alberta (pay cash to comply or fail to comply):

- Regulation only on large emitters.
- Buy your way out of physical compliance.
- Big cash penalty for failing to comply.

# Alberta Carbon Tax

# Genesis of Carbon Tax in Alberta



- The platform of the NDP government of Alberta, elected in May 2015, included taking leadership on climate change.
- In the summer of 2015, the Climate Change Advisory Panel was created. The panel of 5 was focused on people with sustainable development backgrounds – including the energy industry.
- The panel heard the responses of about 26,000 people, in about a month.

# Genesis of Carbon Tax in Alberta



- The Panel reported to the Minister in late November 2015.
- The report included a recommendation to broaden and improve its carbon pricing regime.
- The Alberta Climate Leadership Act received Royal Assent on June 13, 2016 and became effective January 1, 2017.

**Note: Alberta has a Carbon Levy, not a Carbon Tax!**



# Alberta Carbon Tax Outline



- Tax is applied to all fossil fuels purchased or used in the province.
- Tax rate is based on GHG emitted, when fuel is burned.
- Greenhouse Gases are CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs and SF<sub>6</sub>.
- Each GHG is assigned a CO<sub>2</sub> equivalent value.
- Initial rate effective January 1, 2017.  
(\$20 per tonne of CO<sub>2</sub> equivalent, which is 4.49¢ CDN/L or 12.8¢ US/U.S. gallon for gasoline at \$0.75 US/\$1 CDN.) (Raw Gas - \$1.15/GJ or \$1.21/MMBtu, Natural Gas - \$1.011/GJ or \$1.07/MMBtu.)
- Second rate increase effective January 1, 2018.  
(\$30 per tonne of CO<sub>2</sub> equivalent, which is 6.73¢ CDN/L or 19.1¢ US/U.S. gallon for gasoline at \$0.75 US/\$1 CDN.) (Raw Gas - \$1.72/GJ or \$1.81/MMBtu, Natural Gas - \$1.517/GJ or \$1.60/MMBtu.)
- Suggested subsequent annual rate increases of inflation plus 2%.  
(no evidence that this is yet government policy)

# Revenue Neutral?



No. The documents around the Carbon Levy do not refer to it as revenue neutral. The revenue will support:

- Credits offsets for low and middle income households.  
(24.3% of revenue from Carbon Levy and SGER over 5 years.)
- A reduction in the Small Business Income Tax from 3% to 2%.  
(9.0% of revenue from Carbon Levy and SGER over 5 years.)
- Fund new green programs to further reduce GHG emissions.  
(64.7% of revenue from Carbon Levy and SGER over 5 years.)
- Coal community transition support, First Nations support.  
(2.0% of revenue from Carbon Levy and SGER over 5 years.)

In Alberta

the rate of carbon tax is the same  
no matter the business sector or application  
that it is applied to!

# Carbon Tax in the Alberta Oilfield



Carbon Tax is applied from the well head to the sales point every time a fossil fuel is used (combusted or not):

- Compressors (well head, gathering systems, within plants or sales).
- Flared volumes.
- Purchased fuels (e.g. gasoline, diesel, propane, natural gas, and methanol).
- Injection systems fuel.
- Heating systems fuel.

- No Levy is due on fuel moved between oil field facilities (i.e. on production volumes moving around the oil field).
- Levy is due on fuel used in the oilfield, BUT only starting in 2023.

# Fuel Used in the Oilfield (1)



The Alberta Climate Leadership Regulation, definitions section, defines “Production Process” as:

- An activity integral to the drilling, completion, workover or abandonment of a gas or oil well, or
- An activity integral to the operation of: a gas or oil well, a gas battery, a gas gathering system, a compressor station or facility, a gas processing facility, a gas fractionation plant, a straddle plant, an oil battery, or an oil production site other than an oil production site that includes one or more thermal oil wells but does not include an activity in the operation of a specified gas emitter.

# Fuel Used in the Oilfield (2)



Section 11(2) and 11(3) are where this definition of production process applies:

(2) Subject to subsection (4), a consumer is exempt from paying the carbon levy on fuel that is used in a production process before 2023 if the fuel is not flared or vented.

(3) A consumer is exempt from paying the carbon levy on fuel that is flared or vented in a production process before 2023.

So, based on this section of the Regulation, the industry has 6 years to physically minimize the use of fuel in operations before the carbon levy will apply. A sweeter deal than in B.C., but B.C. did start their program years ago and at lower rates; therefore, not as big a shock to the oilfield.



# Fuel Used in the Oilfield (3)



Starting in 2023, it would appear that fuel used in oil field operations that does not produce heat or energy or that does not result in flaring or venting are exempt from the levy. From the Act on Exemptions:

## **Purchases exempt from carbon levy**

**15(1)** Subject to the regulations, a consumer is exempt from paying a carbon levy on fuel if

- (f) the fuel is not put into a fuel system that produces heat or energy, and is not flared or vented, when used
  - (i) as a raw material in an industrial process that produces another fuel,
  - (ii) as a raw material in an industrial process that produces another substance that is not a fuel,
  - (iii) as a solvent or diluent in the production or transport of crude bitumen or other substances, or
  - (iv) for any other prescribed purpose.

This appears to cover the B.C. Exemptions list but in a more general manner.

Fuel sold and  
exported outside Alberta  
is exempt from Carbon Tax.

- Large Industrial Emitters will be subject to the SGER framework until the end of 2017.
- At that time, they will transition to an output-based allocation approach.
- Currently under discussion with stakeholders when this presentation was prepared.

## Lease Operating Expense Statement Impact

## – Cost Side

- Buried Cost Impact – Primarily vehicle fuel charges and municipal taxes, but will include any charges from vendors where they are passing on carbon tax. Started January 1, 2017.
- Stated Cost Impact – This won't appear in Alberta operations until 2023. As an evaluator, I would then expect to see a line charge for carbon tax.

## – Revenue Side

- Price Differentials Impact – I can't identify a situation where this is happening yet. It would only happen if the seller had to pay carbon tax, but was selling into a market where other sellers did not have carbon tax.

- The existence of a buried carbon tax could be tested for by looking for a step jump in a cost category. The obvious ones are vehicle fuel and municipal taxes (not exempt).
- The buried carbon tax will primarily drive up the fixed cost estimate, starting with the YE2017 evaluations of Alberta assets.
- The increase in fixed cost will raise the value of the economic limit, thereby decreasing the extent and value of the remaining reserves.

# Stated Cost Impact (1)



- In Alberta, starting in 2023, fuel used in oil field operations or that is vented or flared will be subject to the carbon levy.
- In that it is a government charge, the extent of which is dependent on the operating characteristic of the relevant facility, it is no different than municipal taxes and should be treated as such (i.e. tax on existence not on profit.)
- This should be a straight-up charge to the particular facility and should appear as a line item “Carbon Levy” on the LOE statement.
- As most of the carbon levy would be for fuel use, and fuel use is proportionate to volume, evaluators should be adding the carbon levy entirely into the estimation of the variable operating cost.
- The impact is likely to materially affect the variable operating cost and thus reduce the value and extent of remaining reserves.

## So I don't have to worry about carbon levy on fuel use until 2023? It won't affect my reserves this year.

- Yes you do. While it isn't going to be charged until 2023 giving you 6 years to improve fuel use efficiency, it is going to impact your YE2017 reserves.
- As evaluators, we know it is the law that this tax starts in 2023; therefore, in our YE2017 evaluation, starting with year 2023 in the cash flow, we need to include the impact of this tax.
- The extent of the tax can be estimated by calculating the surface loss, adjusting for liquids yield and then applying the raw gas carbon tax levy to the balance.



# Price Differentials Impact

- So far, Alberta and B.C. have exempted sales volumes of oil and gas that leave the province from carbon tax.
- If the Canadian Federal Government imposes a carbon tax, as is expected, and if it does not exempt oil and gas exported from Canada, then there will be an expansion in differentials as production companies will have to absorb the carbon tax to compete in markets where other suppliers do not have carbon tax.
- Such an impact will both lower the value of reserves and the extent of reserves.

- With carbon tax.....



# Capital Costs



- The definition of “production process” would seem to apply to activities on site.
- It does not seem to include mobilization of equipment and materials to a drilling site or oil field construction site.
- Capital costs for these activities should go up for carbon tax on fuel.
- Higher capital costs will translate into higher costs for development of PUDs, which in turn means a slight increase in the economic reserve threshold for a PUD in YE economics. Likely not material.

## What's Down the Road?

## Canadian Intentions

- Government of Canada has proposed that carbon tax rise by \$10/tonne starting in 2018, to a maximum of \$50/tonne in 2022.
- Alberta Climate Leadership Report to Minister recommends that the Carbon Levy increase by inflation plus 2% after 2018.

## EU Implications

- Examining putting a carbon tax on imports to the EU. Designed to ensure a level playing field with EU producers. Focus now is on cement and steel – both used in the oilfield.

## Conclusions

Carbon Tax is now here in Alberta. It's impact will be included in all year-end evaluations of Alberta assets, starting in 2017.

In reserve evaluations:

- Fixed costs will increase starting with cash flow year 2017, because of buried carbon tax – primarily on vehicle fuel and municipal taxes.
- Variable costs will increase starting in cash flow year 2023, as a result of direct carbon tax on lease fuel use and flaring/venting.

Overall, the advent of carbon tax will lower the value of remaining reserves and drop the extent of remaining reserves. It is logical to assume that we are going to face even greater carbon tax burdens in the future.