

LOW CARBON FUELS IN BRITISH COLUMBIA

BioCleantech Forum
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Renewable and Low Carbon Fuel Requirements Regulation

Part 2 - Renewable Fuel Requirement

- 5% renewable content in gasoline
- 4% renewable content in diesel

Part 3 – Low Carbon Fuel Requirement

- Reduce carbon intensity 10% by 2020

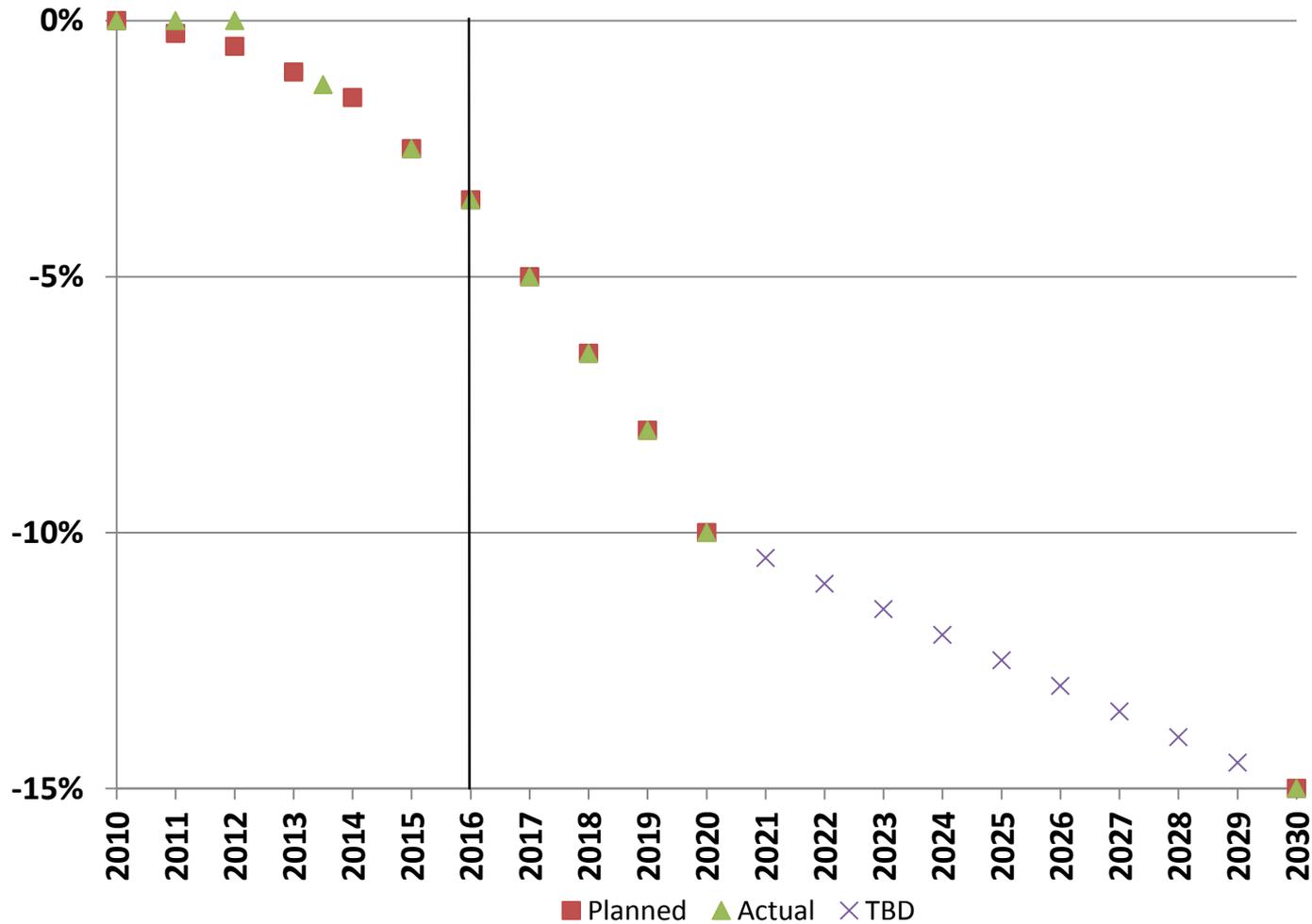


Impact of the Regulation 2010-2015

- The proportion of B.C.'s transportation energy provided by renewable and low carbon fuels increased from 1% to **6%**
- Carbon intensity of transportation energy
 - Part 3 requirement in Regulation: 2.5% reduction
 - Part 3 fuels actually supplied: **3.4% reduction**



Carbon Intensity Limits





The Regulation implements a market-based mechanism so that suppliers may determine the most cost-effective means of complying.

- Part 3 fuel suppliers receive credits when they supply low carbon fuels and debits when they supply high carbon fuels
- Credits are used to offset debits
- Credits can be traded with other Part 3 fuel suppliers



B.C. Low Carbon Fuel Credit Market

Reported to the Ministry as of September 28, 2016:

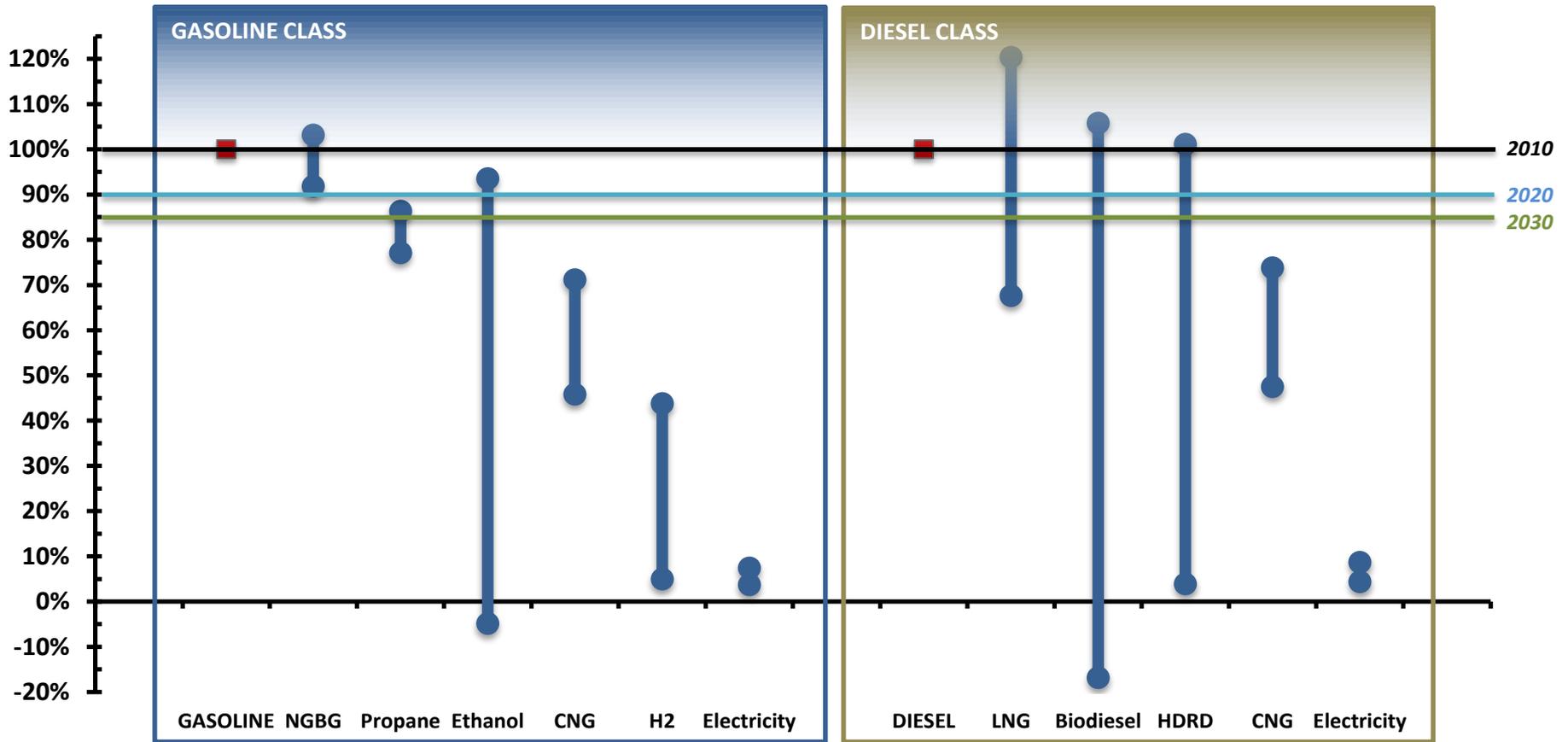
- Number of transfers: 16
- Number of credits transferred: 210,000
- Average price per credit (CAD): \$172

- Total value: \$36,120,000

- Penalty is \$200 per debit



Relative CO₂e emissions of renewable and low carbon fuels in B.C.



Biofuels

- Ethanol
- Biodiesel (fatty acid methyl ester)

Natural gas products

- Compressed natural gas (CNG)
- Liquefied natural gas (LNG)

Electric/fuel cell

- Electricity
- Hydrogen (H2)

Oil refinery products

- Petroleum-based gasoline
- Petroleum-based diesel



Precision vs. Accuracy

If a soccer player always hits the left goal post when they are trying to score a goal, they are precise but not accurate.

- Selecting a single model to assess carbon intensity gives an appearance of precision, but it does not give any guarantee of accuracy.
- Comparing models (e.g. GREET vs. GHGenius) may help to understand both precision and accuracy. This is a form of peer review, which is necessary to improve the model results, but it introduces uncertainty for suppliers.



How do we create effective regulations in light of these significant uncertainties?

- If the regulations are structured so that the suppliers must depend exclusively on the results of a changeable model, there is significant potential for disagreement and successful challenge.
- By setting specific values in law, precision, accuracy and changes in the model become irrelevant. Persons subject to the regulation must act in accordance with the values set in the regulation.



In B.C.'s LCFS, carbon intensities are set within a hierarchy of authority.

The first two options sever the connection between the model results and the values to be used for compliance:

1. The Regulation sets high default values as a backstop that all suppliers may use, regardless of the actual value.
2. *Producers* may apply to the director for approval of a specific value that reflects the actual carbon intensity of their fuel. If approved, all *suppliers* **must** use that value.



The other options result in uncertainty for the supplier. The director must accept their compliance reports – after the compliance period has ended.

3. Suppliers may use general (usually regional-specific) information about the production process of a fuel to determine a value using a specified version of GHGenius. The director determines whether to accept the assumptions before accepting the compliance report.
4. Suppliers may request the director's approval of an alternative method for determining the value. This method may then be used to request approval (option 2, above) or simply report (option 3)



Thank you

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