

British Columbia Low Carbon Fuel Standard Qualitative Ten-Year Outlook

SAMPLE

By

Stillwater Associates LLC

Irvine, California, USA



Table of Contents

Executive Summary	1
1 Overview	2
1.1 Brief Program History	2
1.2 BC-LCFS Program vs. Other LCFS Programs	6
2 Market Fundamentals	8
2.1 Comparison of the Three Credit Markets	10
2.2 Valuation of Low-Carbon Fuels in the Three West Coast LCFS Programs	11
3 Analysis Approach	13
4 Credit Price Outlook Through 2031	14

List of Tables

Table ES-1. BC-LCFS Credit Price Outlook Through 2031	1
Table 1. BC Annual Fuel Volumes (million liters) and percentages	3
Table 2. Annual Part 3 Fuel Quantities Reported (millions)	4
Table 3. Annual Energy (in Petajoules)	5
Table 4. Annual Weighted Average Carbon Intensity of Fuels Reported (g/MJ)	5
Table 5. CI Reduction Schedule for BC-LCFS	6
Table 6. Comparison of Oregon CFP, California LCFS, and BC-LCFS	6
Table 7. BC-LCFS Annual Credit and Debit Volumes	9
Table 8. BC LCFS Credits Traded and Prices Reported to MEMLCI	9
Table 9. Four-Year Comparison of West Coast LCFS Market Trade Data	11
Table 10. Total Calculated Value of BD in BC and California	12
Table 11. BC-LCFS Credit Price Outlook Through 2031	14

Table of Figures

Figure 1. BC-LCFS Credit Trading Activity	8
Figure 2. Credit Price Trends in Three Markets (USD)	10
Figure 3. Candidate Swing Fuels' Projected BC-LCFS Credit Prices (USD)	13
Figure 4. BC-LCFS Credit Price Outlook (USD)	15
Figure 5. BC-LCFS Credit Price Outlook (CAD)	16

Abbreviated Executive Summary

Presented in this report is Stillwater's qualitative assessment of British Columbia's Low Carbon Fuel Standard (BC-LCFS), explaining the differences between the BC-LCFS and California's LCFS program and the value BC-LCFS credit prices will have to meet to compete with the California market.

Section One includes an overview of the BC-LCFS including the similarities and differences between the BC and California LCFS regulations and regulator behavior. Section Two offers a description of the market fundamentals driving BC-LCFS credit prices and their comparison to the "stacked" incentives in the U.S., including the LCFS, the federal Renewable Fuel Standard (RFS), and federal biomass-based diesel blender's tax credit (BTC).

In Section Three, we provide a description of Stillwater's analysis approach to forecasting BC-LCFS credit prices, including basic assumptions and methodology. In short, our approach is to project the BC-LCFS credit price that would result in the value of the environmental attributes of the swing low-carbon intensity (low-CI) fuels in BC to equal the value of the environmental attributes of the respective fuel in California. California's LCFS program represents about 75% of the credits generated in total of the three West Coast LCFS type programs and has the most liquid and transparent market for their credits. Accordingly, our BC-LCFS credit price outlook utilizes the credit price projections from the Stillwater's "LCFS Credit Price Outlook" to establish the projection for the low-carbon credit marketplace. Additionally, Stillwater's price forecast for U.S. Renewable Fuel Standard credits (called renewable identification numbers or RINs) is used – D6 RINs prices for ethanol and D4 RINs prices for biomass-based diesel in the U.S. market that would apply to the environmental attributes in California but not in BC.¹ Other factors that are used for valuing the environmental attributes are: the U.S. biomass-based diesel blender's tax credit (BTC), the respective fuel CI standard in each program for each year, the CI of the marginal (or "swing") fuel in each program, and the historical and projected exchange rates between the Canadian dollar and the U.S. dollar.

Finally, in Section Four we present our BC-LCFS Credit Price Outlook. Using the methodology described above, we projected future BC-LCFS credit prices required to match the environmental attributes of ethanol in California for Stillwater's three LCFS credit price scenarios.

¹ Proprietary outlook; available from Stillwater Associates.