

## 2021 Clean Fuels Forecast Review

### Introduction

In early October 2020, the Office of Economic Analysis released its Clean Fuels Forecast for the 2021 compliance period. The forecast projected the volumes of fossil and alternative fuels reported to the Clean Fuels program at the Department of Environmental Quality, as well as the associated deficits and credits. This briefing paper assesses the performance of that forecast. It should be noted that the forecast was developed coincident with the onset of the Covid-19 pandemic and entailed unprecedented uncertainty.

### Reported Volumes

Table 1 presents both the projected and actual volumes of fuels reported to the Clean Fuels program.

<b>2021 Clean Fuels Forecast Review</b>			
(Mil. gallons, percent)	Actual Reported	Forecast	Difference
Conventional Gasoline	1,340.7	1538.6	-197.9
Ethanol	155.6	172.9	-17.3
<i>Ethanol Blend Rate</i>	10.4%	10.1%	
Blendstock	1,496.3	1,711.4	-215.2
Fossil Diesel	723.3	678.2	45.2
Biodiesel	75.5	78.3	-2.9
<i>Biodiesel Blend Rate</i>	9.3%	9.6%	
Renewable Diesel	9.7	59.6	-49.8
<i>Renew diesel Blend Rate</i>	1.2%	7.3%	
Total Diesel	808.6	816.1	-7.5
Electricity (on-road)	4.7	4.5	0.2
Electricity (off-road)	5.0	5.8	-0.8
Fossil Natural Gas	0.3	1.1	-0.7
Biogas	3.2	3.2	0.0
<i>Biogas Blend Rate</i>	90.8%	75.0%	
Total Natural Gas	3.5	4.3	-0.7
Propane	2.4	7.0	-4.5

The amount of gasoline blendstock, including ethanol, reported to the program was substantially less than expected. This can certainly be attributed to the effects of the pandemic. The deviation for ethanol was less pronounced, however, as the blend rate exceeded expectations.

Interestingly, reported diesel was quite close to the projected value. Biodiesel was also near the forecast. The volume of renewable diesel fell quite short of the forecast.

The forecast for the volume of reported on-road electricity was slightly below the actual, while reported off-road electricity fell somewhat short of the final value.

While total natural gas fell a little short of the projected value, the forecast for biogas was on target. This resulted in a blend rate significantly higher than the expected value. Finally, the forecast for liquid petroleum gas (propane) was substantially above forecast.

### Credits and Deficits

Table 2 presents a comparison of the forecast for credits and deficits to the actual values.

<b>2021 Credit/Deficit Forecast Review</b>				
		Actual	Forecast	Difference
Deficits	Gasoline	-954,232	-1,038,341	84,109
	Diesel	-547,519	-497,042	-50,477
<b>Deficit Total</b>		<b>-1,501,751</b>	<b>-1,535,383</b>	<b>33,632</b>
Credits	Ethanol	541,912	664,038	-122,127
	Biodiesel	517,105	679,756	-162,650
	Renewable Diesel	74,517	525,916	-451,400
	Electricity, on-road	160,274	118,466	41,808
	Electricity, off-road	115,307	27,344	87,963
	Natural Gas	28,894	16,609	12,285
	Propane	5,111	8,613	-3,502
<b>Credit Total</b>		<b>1,443,120</b>	<b>2,040,742</b>	<b>-597,623</b>
<b>2021 Net Credits/Deficits</b>		<b>-58,631</b>	<b>505,360</b>	<b>-563,991</b>

The majority of the deviation in net credits resulted from significant departures from the assumptions regarding carbon intensities (see table 3) for ethanol, biodiesel and renewable

diesel, as well as the forecast error for the volume of renewable diesel. The credit projections for electricity, both on- and off-road, as well as natural gas were all above target.

**Carbon Intensities**

Table 3 presents the forecast assumptions, as well as the actual weight-average values, for the carbon intensities for the three major biofuels. In all cases, the actual values exceeded the assumed values by a significant margin.

**Table 3**

<b>2021 Carbon Intensity Review</b>			
	<b>Actual</b>	<b>Forecast</b>	<b>Difference</b>
Ethanol	53.7	47.50	6.2
Biodiesel	41.8	26.50	15.3
Renewable Diesel	37.0	27.20	9.8