

2023 Clean Fuels Forecast Review

Introduction

In Fall 2022, the Office of Economic Analysis released its Clean Fuels Forecast for the 2023 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.

Reported Volumes

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

2023 Clean Fuels Forecast Review			
(Mil. gallons, percent)	Actual Reported	Forecast	Difference
Conventional Gasoline	1,336.8	1,287.8	49.1
Ethanol	154.7	146.3	8.4
<i>Ethanol Blend Rate</i>	<i>10.37%</i>	<i>10.20%</i>	
Blendstock	1,491.5	1,434.1	57.5
Fossil Diesel	577.6	657.9	-80.2
Biodiesel	78.8	84.6	-5.9
<i>Biodiesel Blend Rate</i>	<i>10.0%</i>	<i>11.0%</i>	
Renewable Diesel	133.3	26.9	106.4
<i>Renew diesel Blend Rate</i>	<i>16.9%</i>	<i>3.5%</i>	
Total Diesel	789.7	769.4	20.3
Electricity (on-road)	9.1	7.8	1.3
Electricity (off-road)	4.4	11.2	-6.8
Fossil Natural Gas	0.0	0.2	-0.2
Biogas	3.9	4.1	-0.2
<i>Biogas Blend Rate</i>	<i>99.1%</i>	<i>95.0%</i>	
Total Natural Gas	4.0	4.4	-0.4
Liquified Petroleum Gas	3.3	5.2	-2.0

The amount of gasoline blendstock, including ethanol, reported to the program was somewhat more than expected.

Total diesel, including the blending of biofuel alternatives, exceeded the forecast slightly. This was due to renewable diesel coming in above expectations as fossil and biodiesel both fell short of projections.

The forecast for the volume of reported on-road electricity equaled the forecast, while expected off-road electricity failed to materialize in full.

While the forecast for blending of biogas exceeded expectations, reporting for natural gas overall fell slightly short of projections. Finally, the forecast for liquid petroleum gas (propane) was substantially below the forecast.

Credits and Deficits

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

2023 Credits and Deficits Forecast Review			
	Actual	Forecast	Difference
Gasoline	-1,423,246	-1,334,380	-88,866
Diesel	-681,476	-744,913	63,437
Fossil Deficit Total	-2,104,722	-2,079,293	-25,429
Ethanol	539,295	496,943	42,352
Biodiesel	474,755	569,208	-94,453
Renewable Diesel	1,014,727	203,623	811,104
Electricity, on-road	237,025	296,236	-59,211
Electricity, off-road	117,557	259,441	-141,884
Natural Gas	141,444	46,419	95,025
Propane	5,979	26,553	-20,574
Alternative Credit Total	2,530,782	1,898,423	632,360
Net Credits	426,060	-180,871	606,931

The majority of the deviation in net credits resulted from significant departures from the assumptions regarding the volume of renewable diesel, as well as the modest forecast errors for fossil diesel and natural gas. Off-road electricity, biodiesel, and propane were the only alternative fuel types that significantly fell short of projections.

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, but biodiesel in particular was higher than expected.

Table 3

2023 Carbon Intensity Review			
	Actual	Forecast	Difference
Ethanol	50.6	50.0	0.6
Biodiesel	45.1	39.0	6.1
Renewable Diesel	34.3	34.0	0.3