



2024 Annual Cost of the Clean Fuel Standard

Summary

[The Clean Fuel Standard](#)¹ (CFS) is a market-based system that reduces greenhouse gas emissions by gradually requiring fuel producers and suppliers to lower the carbon intensity, or lifecycle greenhouse gas emissions per unit of energy, of transportation fuels. In 2024, the Clean Fuel Standard reduced an estimated 2,878,984 metric tons of carbon dioxide equivalent (CO₂e).

The CFS works by setting a carbon intensity standard for transportation fuels that declines each year. Producers and suppliers of fuels with a carbon intensity above the standard generate deficits, while those below the standard generate credits. At the end of each compliance period, producers and suppliers with deficits must purchase enough credits from low-carbon fuel producers and suppliers to make up their deficits. This incentivizes the production and use of low-carbon fuels and aims to make them more available and affordable.

[WAC 173-424-710](#)(5)² requires the Department of Ecology to estimate the total greenhouse gas emissions and the average cost or cost savings per gallon of gasoline or diesel attributable to the CFS each year. This analysis estimates possible impacts from Jan. 1, 2024 through Dec. 31, 2024, and indicates that the CFS may have raised the price of the average gallon of gasoline by less than a penny in 2024 – \$0.0059 – and reduced more than an estimated 2.8 million metric tons of CO₂e.

Estimated total greenhouse gases reduced

Each fuel is given a carbon intensity score based on how it is produced. Credits are generated in proportion to how far below the carbon intensity standard each fuel is in terms of grams of CO₂e per megajoule of fuel energy. The total greenhouse gas reduction due to the CFS in 2024, expressed in metric tons of CO₂e, is estimated to be equal to the total number of credits generated.

In 2024, 2,878,984 credits were generated, which is assumed to equal 2,878,984 metric tons of CO₂e reduced. That is equivalent to the annual emissions of 671,538 gasoline-powered cars.³

This is an increase of approximately 48% from 2023, when an estimated 1,947,235 metric tons of CO₂e were reduced. This is due to an increase in low-carbon fuels produced in or imported to Washington, and demonstrates that the Clean Fuel Standard is successfully incentivizing the adoption of low carbon fuels.

¹ <https://ecology.wa.gov/air-climate/reducing-greenhouse-gas-emissions/clean-fuel-standard>

² <https://app.leg.wa.gov/wac/default.aspx?cite=173-424&full=true#173-424-710>

³ <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>

Estimated per-gallon cost of the CFS program

The cost of gasoline and diesel, like most globally traded commodities, is primarily driven by global market forces. Factors such as seasonal fluctuations, refinery or pipeline disruptions, and geopolitical events dictate supply and demand, and fuel producers and suppliers use complex, competitive pricing strategies reflecting these varying conditions. Government policies, like the CFS, typically have a minor influence on retail fuel prices compared to global market forces.

The estimated cost impacts of the CFS are the cost of purchasing credits (the cost of compliance) and the cost of the annual fee charged to administer the program, distributed across the total volume of fuel sold in Washington. Our methods for calculating these values use standardized carbon intensity values and an average credit price. To reflect the reality that consumers face when they fill their gas tanks, we estimated average cost impacts on a gallon of gasoline blended with 10% ethanol (E10) and a gallon of diesel blended with 2.5% biodiesel (B2.5). Nationally, gasoline is blended with 10% ethanol on average,⁴ and Washington law requires all diesel to be blended with at least 2% biodiesel.⁵

The cost impacts shown below are based on assumptions that may not perfectly reflect actual business decisions in a competitive market. While these estimates account for the cost savings generated when revenue from CFS credits is used to lower the cost of low-carbon fuels that are blended into gasoline and diesel, they also assume that producers and suppliers pass on the full cost of the program fee to consumers. In reality, a company’s ability to pass on its full compliance cost to consumers may be limited by market competition.

Our analysis determined the following estimated cost impacts for 2024:

Estimated cost impact	E10 gasoline	B2.5 diesel
Cost of compliance per gallon	\$0.0052	\$0.0062
Cost of CFS fee per gallon	\$0.0006	\$0.0006
Total	\$0.0059	\$0.0068

The values in this table were calculated using the formulas described in this publication.

Cost per gallon: Average estimated per-gallon cost of CFS compliance

The average estimated cost of the CFS is associated with the difference in the carbon intensity of the fuel when compared to the carbon intensity standard for the year and the cost of credits in the program. The formula below is also used by the Oregon Clean Fuels Program to estimate the average cost per gallon of gasoline or diesel fuel.⁶

Average estimated cost of compliance per gallon

$$= [(Carbon\ Intensity - Standard) \times (Energy\ Density)] \times \left(\frac{1\ tonne}{1,000,000\ g}\right) \times (Credit\ Price)$$

⁴ <https://afdc.energy.gov/fuels/ethanol-fuel-basics>
⁵ <https://app.leg.wa.gov/rcw/default.aspx?cite=43.19.642>
⁶ <https://www.oregon.gov/deq/ghgp/cfp/pages/annual-cost.aspx>

Where:

Carbon Intensity means the amount of lifecycle greenhouse gas emissions per unit of fuel energy expressed in grams of carbon dioxide equivalent per megajoule (gCO₂e/MJ)

Standard is shown in Table 1 or Table 2 of the CFS rule ([WAC 173-424-900](#))⁷

Energy Density is shown in Table 3 of the CFS rule ([WAC 173-424-900](#))⁸

Credit Price for 2024 is a volume weighted average of all credit transactions for the year as shown in the [Monthly Credit Transaction Report](#)⁹

Average estimated per-gallon cost of CFS compliance on gasoline (E10)

Average estimated cost per gallon of E10

$$= \left[\left(98.93 \frac{\text{gCO}_2\text{e}}{\text{MJ}} - 97.97 \frac{\text{gCO}_2\text{e}}{\text{MJ}} \right) \times \left(118.38 \frac{\text{MJ}}{\text{gallon}} \right) \right] \times \left(\frac{1 \text{ tonne}}{1,000,000 \text{ g}} \right) \times \left(\frac{\$45.92}{\text{tonne}} \right)$$

Average estimated per-gallon cost of CFS compliance on diesel (B2.5):

Average estimated cost per gallon of B2.5

$$= \left[\left(100.11 \frac{\text{gCO}_2\text{e}}{\text{MJ}} - 99.11 \frac{\text{gCO}_2\text{e}}{\text{MJ}} \right) \times \left(134.27 \frac{\text{MJ}}{\text{gallon}} \right) \right] \times \left(\frac{1 \text{ tonne}}{1,000,000 \text{ g}} \right) \times \left(\frac{\$45.92}{\text{tonne}} \right)$$

Cost of participation: Average estimated per-gallon cost of the CFS program fee

Producers and suppliers of gasoline and diesel fuel are subject to an annual participation fee to cover the cost of implementing the CFS. The formula below represents the impact of the CFS fee per gallon of gasoline. This assumes that the full cost of the program fee is passed through to consumers.

The calculation accounts for the distribution of the fee across the total volume of each fuel sold. For example, of total gasoline and diesel deficits, 79% were generated by gasoline, so 79% of the fee charged to suppliers of gasoline or diesel is assumed to be associated with the cost of gasoline.

This method assumes full passthrough of the deficit generator fee but does not assume passthrough of the fee charged to participants who are only generating credits and are only charged a credit generator fee.

Average Cost of CFS fee per gallon of fuel

$$= (\text{blend rate of gasoline or diesel}) \times \frac{(\text{deficit fee generated by gasoline or diesel})}{(\text{gallons of gasoline or diesel reported})}$$

Where:

blend rate of gasoline or diesel is the percentage of gasoline or diesel per gallon of E10 or B2.5

deficit fee generated by gasoline or diesel is calculated as shown below:

$$\left[\frac{(\text{total 2024 gasoline or diesel deficits})}{(\text{total 2024 gasoline deficits} + \text{total 2024 diesel deficits})} \right] \times \text{total fee generated by gasoline and diesel}$$

⁷ <https://app.leg.wa.gov/WAC/default.aspx?cite=173-424-900>

⁸ <https://app.leg.wa.gov/WAC/default.aspx?cite=173-424-900>

⁹ https://www.ezview.wa.gov/site/alias__1962/37916/clean_fuel_standard_data_reports.aspx

gallons of gasoline or diesel reported is based on volume of fuel reported in the Washington Fuel Reporting System (WFRS) during 2024 and is available in the [CFS Quarter 4 Data Summary](#)¹⁰

Average estimated per-gallon cost of CFS fee on gasoline

$$\text{Average estimated cost of CFS fee per gallon of E10} = .9 \times \frac{\$1,570,041.69}{2,190,588,458 \text{ gallons gasoline}}$$

Where

.9 is the blend rate for gasoline in a gallon of E10

\$1,570,041.69 is the deficit fee generated by gasoline as show below:

$$\left[\frac{668,520 \text{ gasoline deficits}}{(668,520 \text{ gasoline deficits} + 181,355 \text{ diesel deficits})} \right] \times \$1,995,960 = \$1,570,041.69$$

2,190,588,458 is the number gallons of gasoline reported in WFRS during 2024 as seen in the [CFS Quarter 4 Data Summary](#)¹¹

Average estimated per-gallon cost of CFS fee on diesel:

$$\text{Average estimated cost of CFS fee per gallon of B2.5} = .975 \times \frac{\$425,918.31}{646,550,076 \text{ gallons diesel}}$$

Where

.975 is the blend rate for diesel in a gallon of B2.5

\$425,918.31 is the deficit fee generated by diesel as show below:

$$\left[\frac{181,355 \text{ diesel deficits}}{(668,520 \text{ gasoline deficits} + 181,355 \text{ diesel deficits})} \right] \times \$1,995,960 = \$425,918.31$$

646,550,076 is the number of gallons of diesel reported in WFRS during 2024 as seen in the [CFS Quarter 4 Data Summary](#)¹²

Contact

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ADA Accessibility

To request an ADA accommodation, contact Ecology by phone at 360-407-6831 or email at ecyADAcordinator@ecy.wa.gov, or visit <https://ecology.wa.gov/accessibility>. For Relay Service or TTY call 711 or 877-833-6341

¹⁰ https://www.ezview.wa.gov/site/alias__1962/37916/clean_fuel_standard_data_reports.aspx

¹¹ https://www.ezview.wa.gov/site/alias__1962/37916/clean_fuel_standard_data_reports.aspx

¹² https://www.ezview.wa.gov/site/alias__1962/37916/clean_fuel_standard_data_reports.aspx