Washington State
DEPARTMENT OF
ENTERPRISE SERVICES

AUGUST 2023

Biodiesel use by Washington State Agencies

JANUARY — DECEMBER 2022

Contracts & Procurement Division

Report to the Legislature

Agency Overview

The Department of Enterprise Services (DES) provides centralized services to state government agencies; to other public entities such as cities, counties and tribes; and to Washington residents.

DES' mission is to strengthen the business of government.

We do this by creating overall operating efficiencies so our state's government entities can focus on their core missions. Our buying power, economies of scale and years of experience help government get the best value for the products and services they need to support their missions.

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Executive Summary

This report focuses on state agency purchases of bulk diesel fuel through statewide contracts and the open market to operate diesel-powered vessels, vehicles, and equipment from Jan. 1 through Dec. 31, 2022.

In this report, the term "biodiesel" means pure biodiesel unless clearly indicated otherwise. The term "fuel" is used to indicate a combination of all forms of diesel, including biodiesel.

State law requires that agencies use biodiesel-blended fuels to operate diesel-powered vessels, vehicles, and construction equipment.

- During 2022, state agencies, including universities, purchased just under 1.5 million gallons of biodiesel, representing 8.28% of all fuel purchased to power diesel vehicles, vessels, and equipment, and fire boilers to heat and power facilities. This is a 0.85% decrease from 2021, when the biodiesel use was 9.13%.
- Washington State Department of Transportation (WSDOT) buys the most diesel of all state agencies. All told, WSDOT purchased 1.5 million gallons of diesel, representing 99% of state agencies' use.
    - Its Washington State Ferries (WSF) division accounts for 83% of all diesel purchases. WSF purchased 1.2 million gallons of biodiesel in 2022, a 15% decrease from 2021. WSF averaged 8% biodiesel, down from 9.1% in 2021.
    - All other WSDOT divisions accounted purchased 301,088 gallons of biodiesel during 2022, representing14% of the state's diesel purchases. WSDOT's average blend level was 12% biodiesel, which was 0.9% lower than its 2021 level.
- Other agencies, including all six state-operated universities, accounted for the remaining 4% of state fuel purchases. Because universities are not required to buy fuel using a statewide contract, their total diesel consumption may not be accurately reported.
- The state departments of Corrections, Natural Resources, Fish and Wildlife, and Board of Industrial Insurance Appeals bought a combined 2,247 gallons of biodiesel, representing only 0.15% of total fuel purchases.
- Agencies purchased a total of 340,000 gallons of heating fuel and 17.7 million gallons of vehicle fuel.

Introduction

The term "biodiesel" means pure biodiesel unless clearly indicated otherwise. Biodiesel blends are specified by the capital letter "B" followed by the percentage of biodiesel. For example, B5 contains 5% biodiesel and 95% diesel. In the tables and charts, biodiesel is expressed in B100 gallons. To avoid confusion, the term "fuel" is used to indicate a combination of all forms of diesel, including biodiesel.

As a part of the state's efforts to reduce greenhouse gas emissions, improve air quality and alleviate public health impacts, stimulate local production and use of biodiesel, state law has mandated since 2009 that agencies use biodiesel-blended fuels to operate diesel-powered vessels, vehicles, and construction equipment. Under current law, WSF must use a minimum blend of B5 in all vessels if the price of B5 or B10 does not exceed the price of petroleum diesel by 5%. All other state agencies are to use a minimum blend of B20 (**RCW 43.19.642**).

This policy is reinforced by procurement rules codified under **WAC 194-28**, which directs state agencies to use biofuels and electricity to the extent feasible for publicly owned vessels, vehicles and construction equipment. These rules reinforce the criteria cited in RCW 43.19.642 and highlight compliance expectations for the 16 agencies and universities with the highest gasoline and diesel consumption. In addition, **Executive Order 20-01** directs agencies to reduce emissions of greenhouse gases and other toxins by procuring lower-emission options when "cost-effective and workable solutions are available."

Per **RCW 43.19.646**, Department of Enterprise Services (DES) must collaborate with key state agency stakeholders to compile and analyze the use of biodiesel fuel by state agencies as required by **RCW 43.19.642**, and report findings and recommendations to the Governor and Legislature in an electronic format. For nine years, these reports were required every six months. In 2016, the Legislature changed the frequency to an annual report.

Previous reports attempted to determine whether diesel and biodiesel procurement by agencies was intended for transportation purposes, facility energy needs, or both. Given the expanding policy framework around public sector use of fossil fuels, this report now includes all diesel-related fuel purchases.

Findings

State Biodiesel Purchases

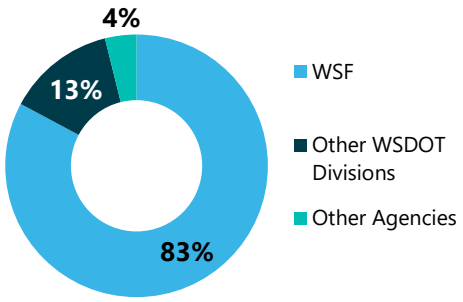
State agencies are required to purchase bulk fuel through statewide contracts that sell gasoline, heating oil and diesel, including biodiesel. Many cities, counties, school districts, higher education institutions and transit systems also use the contracts.

In 2022, state agencies and universities purchased 16.5 million gallons of diesel fuel, which includes 1.5 million gallons of biodiesel.

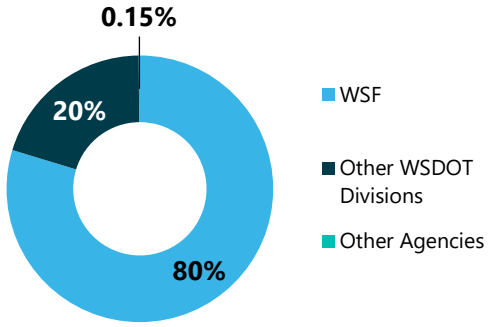
WSDOT is the largest consumer of diesel among state agencies. Its Ferries division (WSF), accounted for 83% of fuel purchases and 80% of biodiesel purchases. All other WSDOT divisions accounted for 13% of fuel purchases and 20% of biodiesel purchases.

Other agencies and universities accounted for the remaining 4% of fuel purchases and 0.15% of biodiesel purchases.

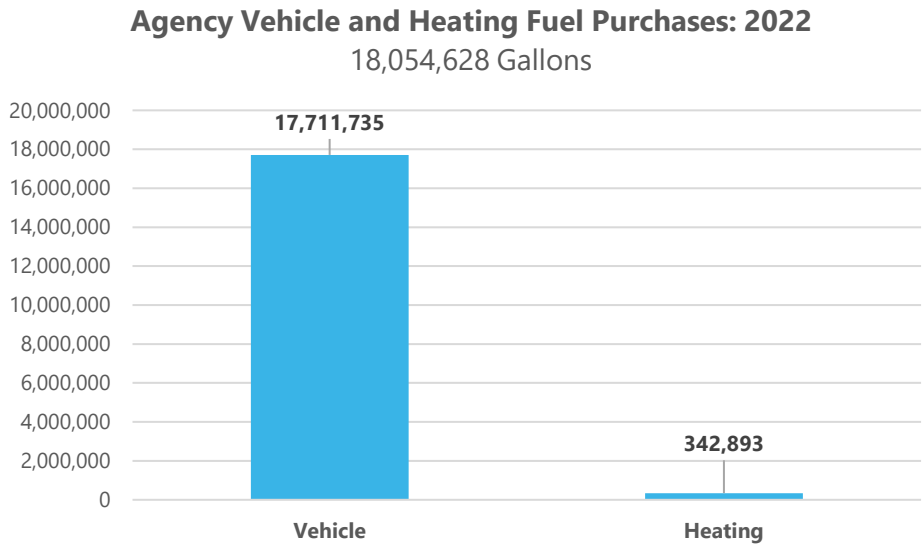
Agency Fuel Purchases: 2022
18,054,628 Gallons



Agency Biodiesel Fuel Purchases: 2022
1,494,055 Gallons



Due to rounding, percentages may equal more than 100%.



State Ferries Use

WSF, a division of WSDOT, purchased 1.2 million gallons of biodiesel in 2022, representing 8% of total fuel purchases. In 2021, it purchased 1.4 million gallons of biodiesel, representing 9.1% of total fuel purchases. The 15.1% decrease in the amount of biodiesel it purchased in 2022 is due to pandemic-related service reductions and ongoing supply chain issues.

State Ferries Biodiesel Purchases: 2009 to 2022

Year	Diesel Gallons	Biodiesel Gallons	Total Gallons	Biodiesel %
2022	13,713,078	1,190,720	14,903,798	8.0%
2021	14,097,488	1,402,959	15,500,447	9.1%
2020	13,403,109	1,448,102	14,851,211	9.8%
2019	17,633,816	1,200,837	18,834,653	6.4%
2018	17,806,078	843,467	18,649,545	4.5%
2017	17,976,949	882,214	18,859,163	4.7%
2016	17,799,290	807,807	18,607,097	4.3%
2015	16,687,482	691,580	17,379,062	4.0%
2014	16,480,334	715,653	17,195,987	4.2%

2013	16,701,761	687,741	17,389,502	4.0%
2012	16,749,738	485,537	17,235,275	2.8%
2011	17,107,676	468,837	17,576,513	2.7%
2010	16,915,217	221,421	17,136,638	1.3%
2009	16,733,093	101,939	16,835,032	0.6%

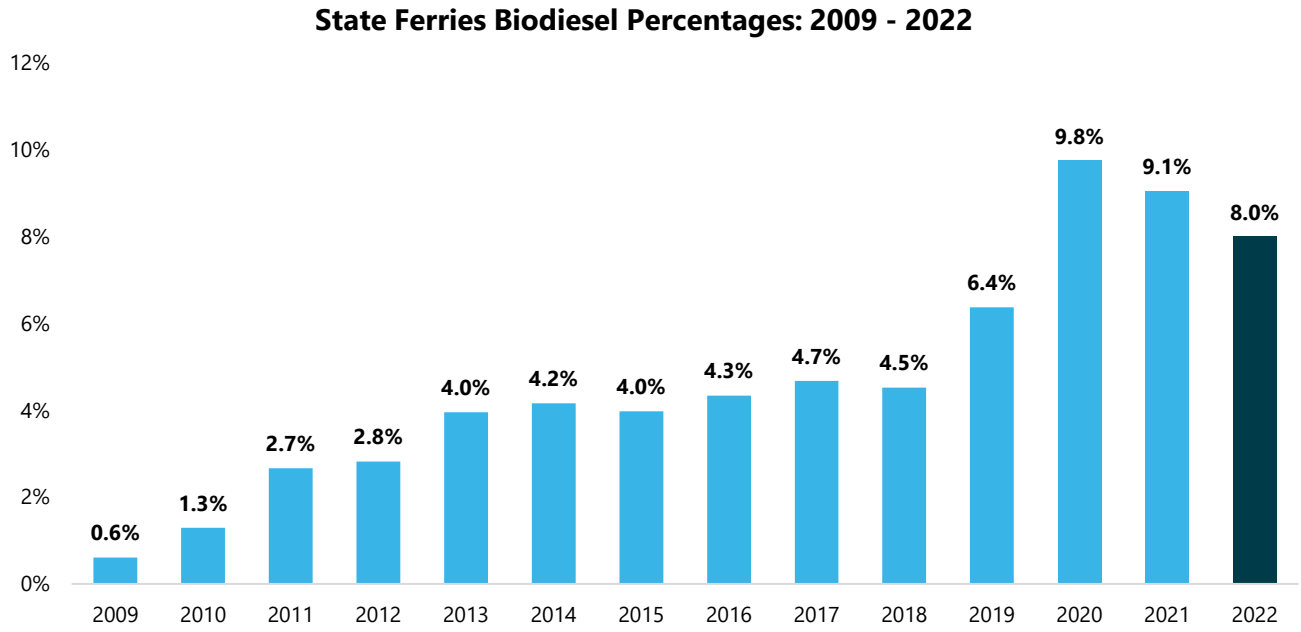
WSF's progress using biodiesel has occurred in stages. WSF began using B5 for vessels fueled by truck from the Harbor Island truck facility in Seattle in 2009. Vessels fueled by truck from Anacortes began using B5 in 2011. Installation of infrastructure for in-line biodiesel blending at the Seattle Harbor Island dock facility was completed in 2013.

A new fuel contract, finalized at the end of 2018, enabled WSF to purchase B10 at B5 prices. This removed a financial hurdle for using B10 fleetwide.

After completing a pilot in 2018 that found no negative impacts of B10 on vessel equipment, performance, and maintenance, WSF implemented fleet-wide use of B10 in July 2019. WSF piloted the use of a self-propelled bunkering vessel to deliver B10 via vessel-to-vessel delivery in October 2019 at Pier 15 in Seattle. After successful testing, vessel-to-vessel fuel delivery started at the Kingston Terminal in November 2019 and expanded to terminals in Bremerton in January 2020, Bainbridge Island in June 2020, and Vashon Island in April 2021.

Of WSF's 12 delivery locations, 11 received biodiesel in 2022. Five of those locations averaged at least 9% biodiesel. The remaining six locations averaged 6% biodiesel. The four northern locations--Clinton, Port Townsend, Anacortes, and Friday Harbor--averaged 5.5% biodiesel. Two terminals--Vashon and Fauntleroy--received exclusively B10. Fuel at Pier 15 in Seattle, which accounted for 27% of all fuel delivered in 2022 (the highest percentage of any delivery location), averaged 9.6% biodiesel. Anacortes Terminal, which accounted for 23% of fuel delivered in 2022, averaged 5.1% biodiesel. Southworth Terminal did not receive any biodiesel.

WSF reported no biodiesel-related quality or performance concerns in 2022.



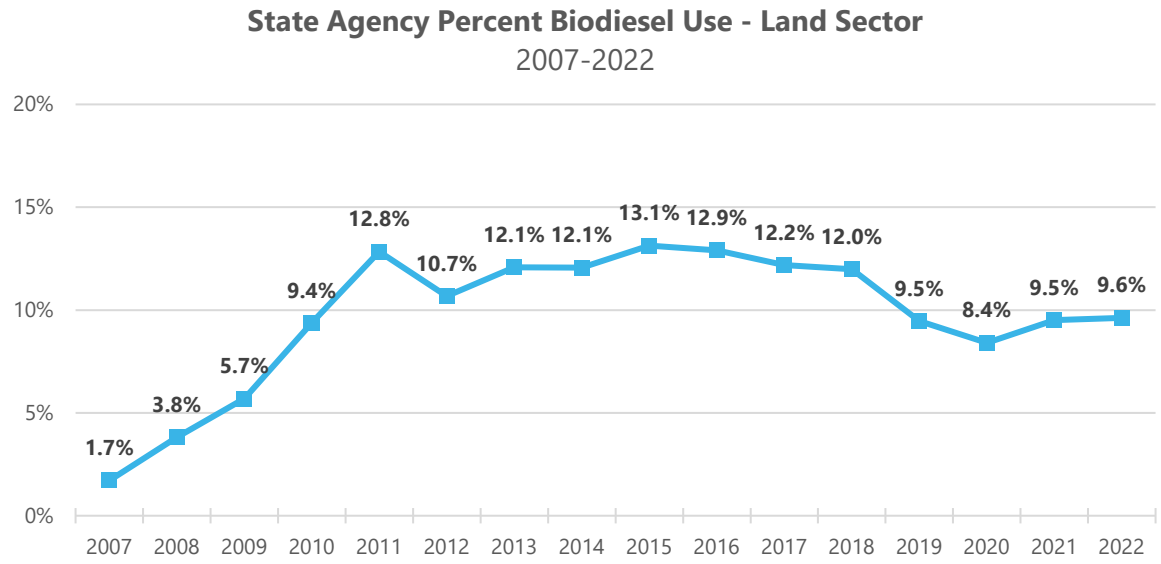
Land Sector Use

Excluding WSF, WSDOT purchases of biodiesel totaled 303,335 gallons in 2022, about 9.6% of total diesel purchases, up from 9.5% in 2021. WSDOT's other divisions combine to be the state's second-largest fuel user, purchasing 2.5 million gallons of fuel in 2022. Biodiesel comprised 12% of WSDOT total diesel purchases, which is lower than in 2021.

Land Sector Biodiesel Purchases: 2022

Agency	Diesel Gallons	Biodiesel Gallons	Total Gallons	Biodiesel %
WSDOT	2,206,510	301,088	2,507,598	12%
Other Agencies	640,985	2,247	643,232	0.3%
TOTAL	**2,847,495**	**303,335**	**3,150,830**	**9.6%**

Only the departments of Transportation, Corrections, Natural Resources, Fish and Wildlife, and Board of Industrial Insurance Appeals purchased biodiesel during the year.



WSDOT Regional Purchases: Vehicle and Equipment Fleet

WSDOT maintains a statewide network of 105 diesel fueling sites that serve most of the state's diesel-powered vehicles and equipment. Of those sites, 11 do not receive biodiesel due to cold winter temperatures and low fuel turnover (meaning they use no fuel for four to six months or longer). Mount St. Helens (Western Washington Region) has moved from exempt status and is now receiving biodiesel since WSDOT has opened a maintenance shop in the area. In July 2021, Wilcox & Flegel, a fuel vendor, notified WSDOT that they cannot deliver biodiesel to White Pass (Eastern Washington Region) due to its remote location. All remaining sites received some amount of biodiesel during the year.

Since 2012, WSDOT's efforts to achieve a B20 blend level have been hampered by older tanks that fail to meet EPA guidance regarding materials compatibility. These tanks are limited to B20, so lower-level winter blends cannot be balanced by blends above B20 in the summer months. WSDOT has replaced tanks at 14 sites since 2015. WSDOT is working on replacing eight fuel sites during the 2021-23 biennium, which focuses on the highest priority of single-walled tanks. Most fuel sites will be due for replacement in 2025 with an estimated replacement cost of $90 million.

WSDOT Fueling Site Purchases by Region: 2022 (diesel-only tanks omitted as of 2016)

WSDOT Region	Diesel Gallons	Biodiesel Gallons	Total Gallons	Biodiesel %
Westside	**842,028**	**202,002**	**1,044,030**	**19.3%**
Olympic	291,155	69,931	361,086	19.4%
Southwest	213,128	52,200	265,328	19.7%
Northwest	337,744	79,871	417,616	19.1%
Eastside	**1,179,705**	**99,086**	**1,278,791**	**7.7%**
North Central	319,245	36,119	355,365	10.2%
Eastern	404,899	18,102	423,001	4.3%
South Central	455,561	44,864	500,425	9.0%
TOTAL	**2,021,733**	**301,088**	**2,322,820**	**13.0%**

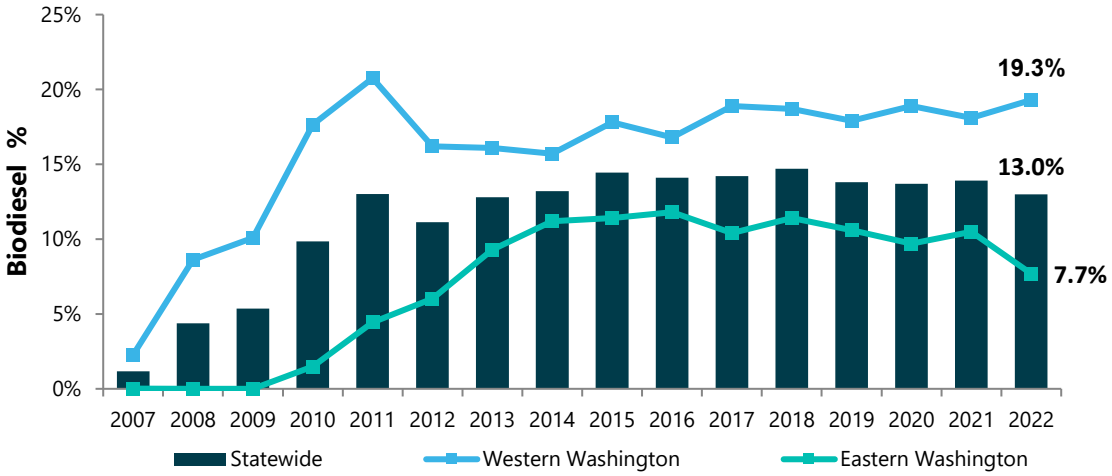
In Western Washington, WSDOT has 48 sites in three regions. Six of these sites did not receive biodiesel. Overall biodiesel use at eligible Western Washington sites increased to 19.3% in 2022 from 18.1% in 2021. Of the 765 diesel fuel deliveries to Western Washington sites, 22 deliveries did not have biodiesel due to vendor delivery issues.

Western Washington regions purchased almost 60,000 more gallons in 2022 compared to 2021. The three Western Washington regions' biodiesel percentage were each between 19% and 20%. The Olympic region's biodiesel percentage remained about the same; the Northwest region's increased by 1.1%, and the Southwest by 2.2%.

In Eastern Washington, WSDOT has 57 sites in three regions. Five of these sites did not receive biodiesel. Overall biodiesel use at eligible Eastern Washington sites dropped to 7.7% in 2022 from 10.5% in 2021. Vendor delivery issues resulted in 41% of the deliveries not including biodiesel.

Eastern Washington regions' total volume purchased remained the same. Due to vendor delivery issues, biodiesel received dropped by 30,000 gallons compared to 2021. North Central region's biodiesel percentage increased to 10.2% in 2022 from 9% in 2021. South Central region's biodiesel percentage dropped to 9% in 2022 to from 10.1% in 2021. Eastern Region's biodiesel percentage dropped almost 8%. The drop in biodiesel received by Eastern and South Central regions was due to vendors unable to provide biodiesel.

WSDOT Biodiesel Percentage of Total Diesel Purchased
Statewide and By Region, 2007 to current



Fuel Quality

The Washington State Department of Agriculture (WSDA) monitors the quality of diesel and biodiesel fuels as part of the state's Motor Fuel Quality Program. During 2022, WSDA submitted monthly diesel and biodiesel blend fuel samples to a contracted laboratory to test compliance with American Society for Testing and Materials (ASTM) quality standards. Samples were obtained from fuel terminals, retail outlets, and state and local government fueling sites.

Test results continued to show problems with diesel meeting flash point specifications. Flash point failures do not affect engine performance but can be an indicator of contamination. These failures are often caused by contamination with small amounts of gasoline usually attributed to tank management in transport trucks or design flaws with underground storage tank systems.

Overall, WSDA did not identify any significant quality issues with biodiesel fuels during this reporting period. WSDA reported that it is increasingly hard for its inspectors to find retail stations offering fuels with more than 5% biodiesel. The number of stations offering B5 blended diesel fuel continues to decrease in the retail market.

WSDA continued to test WSDOT sites for biofuel. In November 2022, WSDA tested 23 WSDOT locations throughout Washington state. It found all locations had biodiesel available and didn't identify any issues with the fuel.

State Contracts

DES has three statewide contracts that provide multiple types of fuel products and are used by numerous purchasers across the state.

Fuel: Gasoline, Diesel, and Renewables (#08721) provides bulk fuel and will-call fuel deliveries for gasoline, diesel, biodiesel, renewable gasoline, and renewable diesel. This contract was developed based on recommendations in previous editions of this report. Six vendors serve seven regions across the state in four categories: will call, bulk fuel, renewable gasoline, and renewable diesel. The vendors are Associated Petroleum Products (APP), Coleman Oil, KTB (small business), PetroCard, ScooterJ Logistics (small, minority, veteran business), and Wilson Oil. Fuel prices are based on Oil Price Information System rates listed from the day before delivery. The current contract ends Dec. 31, 2023, with extensions available until 2025.

Marine Refueling Services (#05718) provides diesel and biodiesel blends to WSF via pier-to-vessel, truck-to-vessel, and vessel-to-vessel transfers at multiple locations. This contract only includes mobile marine refueling services and complies with enacted environmental rule designed to reduce the risk of spills in marine environments. The sole vendor is Maxum Petroleum. The contract ends Dec. 15, 2023, with automatic one-year extensions available through 2028.

Over the Water Marine Refueling (Keller Ferry) (#07613) provides diesel and biodiesel blends to WSDOT for the Keller Ferry on the Columbia River between Ferry and Clark counties. The vendor is Connell Oil, and the contract ends on Jan. 13, 2024. DES is currently in preliminary discussions with WSDOT to determine if 08721 can meet their needs after 07613 expires.

Recommendations

Statewide

In 2021, the Washington State Legislature passed the Clean Fuel Standard (E3SHB 1091) to curb carbon pollution from transportation, which accounts for almost 45% of statewide greenhouse gas emissions in Washington. The Department of Ecology completed the Clean Fuels Program Rule (Chapter 173-424 WAC) on Nov. 28, 2022, and the program came into effect in December 2022 and launched in January 2023. The Clean Fuel Standard requires fuel suppliers to reduce the carbon intensity of transportation fuels. It will provide an increasing range of low-carbon and renewable alternatives that are more affordable and will reduce dependency on petroleum and improve air quality. The program will have numerous impacts on biodiesel production and use in the state, including an expectation that biodiesel availability will increase and prices will decrease.

Under the Clean Fuel Standard, participants may generate credits for the low-carbon fuels they supply to transportation uses. For liquid fuels, such as biodiesel, the party generating the credits is typically the producer or importer. However, for gaseous and electric fuels – for example, electric vehicle chargers owned by agencies – the owner of the fueling equipment is often the party that generates the credits. Agencies that buy fuel for uses that are not covered by the law – including marine, aviation, and rail fuel – will also have an opportunity to opt into the law and may be able to generate revenue through producing and/or blending low-carbon biofuels into any fuel they may sell.

The Clean Fuel Standard statute (RCW 70A.535.025(6)) also contains several provisions to support development of an in-state biofuel industry. First, that 60 million gallons per year of in-state biofuel facilities be permitted, with at least one new 10 million gallon per year facility. Second, an overall 15% increase in biofuel production using Washington feedstocks. There has been significant involvement during rulemaking and implementation from the biofuels industry.

Further analysis of the opportunities provided by the Clean Fuel Standard should be tracked and evaluated by agencies to identify opportunities for the law to support increased biodiesel use, cost savings, and other potential benefits for the State of Washington.

Department of Enterprise Services

The Department of Enterprise Services ensured the following recommendations were included in the new fuel contract 08721 that took effect on Jan. 1, 2022.

- Revise and/or rebid contracts as needed to provide competitively priced biodiesel and other alternative fuel products, such as renewable diesel.
    - Contract includes competitively priced biodiesel and renewable diesel.
- Establish and require contractors to use standardized nomenclature to reduce confusion and errors in reporting, including types and uses of fuels (e.g., vehicles, facilities), customer names, and delivery locations.
    - Contract has updated reporting for consistency.
- Ensure fuel purchasers and contractors understand the distinction between co-refined diesel and renewable diesel, as agencies are required to monitor their greenhouse gas emissions and need accurate carbon accounting.
    - Contract addresses renewable diesel requirements in the fuel specification section.

Washington State Ferries (WSDOT)

- Continue to address any gaps in delivery of biodiesel blends by ensuring fuel contractors fulfill the terms of their contracts.

Department of Transportation

- Continue to address any gaps in delivery of biodiesel blends by ensuring fuel contractors fulfill the terms of their contracts.
- Increase biodiesel blend levels in certain WSDOT tanks that received less biodiesel in 2020 than similar tanks in the vicinity, especially those in areas with moderate temperatures that handle relatively high volumes of fuel. These include Bellingham, Mount Vernon, Monroe, Arlington and Oakesdale. Note: these sites are not getting B20 due to vendor delivery issues. Seek legislative appropriations to replace key older WSDOT fuel tanks so those locations can store higher levels of biodiesel blends.
- Use biodiesel blends to meet facility heating needs at locations with consistent fuel turnover, including Port Angeles and Issaquah. Blends up to B40 are safe for use in diesel-fueled boilers.

Other agencies

- Work through the Alternative Fuels & Vehicles Technical Advisory Group jointly administered by Commerce and WSU's Energy Program to substantially increase biodiesel use by universities and agencies other than WSDOT and WSF. This should include increasing awareness of the Clean Fuel Standard program and opportunities to generate credits related to biodiesel use, developed in coordination with Ecology. Specific opportunities are listed below.
- University of Washington and Washington State University purchased substantial amounts of diesel for campus power plant operations in Seattle and Pullman. Both universities could easily increase their use of biodiesel blends.
- Corrections purchased diesel for 10 facilities but purchased biodiesel blends at only two: Cedar Creek (25%) and the Washington Corrections Center in Shelton (5%). The department could substantially increase the biodiesel blend level at Shelton and add biodiesel blends to its facilities in Larch, Airway Heights, Monroe, and the Washington State Penitentiary in Walla Walla.
- Fish & Wildlife's diesel purchases were primarily for its Lacey headquarters. The agency could consider biodiesel for its Aberdeen facility.
- Natural Resources procured biodiesel blends for its sites in Forks (16%) and Loomis (11%). DNR purchased diesel for two other sites, but the only one well-suited for biodiesel based on consistent fuel use and volumes is Yacolt.
- Social & Health Services purchased diesel for seven facilities, but no biodiesel. The best opportunities to increase agency biodiesel use based on consistent fuel consumption and volumes are the Fircrest Residential Habilitation Center in Shoreline and the Consolidated Support Services building in Medical Lake.
- Parks & Recreation purchased diesel for 13 facilities, but no biodiesel. Most locations used very modest levels of fuel, but three others that are candidates for biodiesel use based on consistent fuel consumption and volumes: Fort Flagler, Deception Pass and Spanaway Lake.
- Prior biodiesel reports attempted to quantify diesel use by the Pierce County ferry that services the McNeil Island Corrections Center. Given that this ferry also stops at other locations and a relatively low volume of fuel was being consumed to meet Corrections' needs, an estimate is no longer included in this report.

Conclusions

These recommendations have been shared with each agency for consideration and implementation.

Acknowledgements

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