



Washington State
DEPARTMENT OF
ENTERPRISE SERVICES



AUGUST 2024

Biodiesel use by Washington State Agencies

JANUARY — DECEMBER 2023

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 for a sustainable and just future.

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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For questions about this report, contact:

Rebecca Linville, C&P Assistant Director
360-688-0586 | rebecca.linville@des.wa.gov

Additional agency contacts

Tara C. Smith, Director
360-407-9201 | tara.smith@des.wa.gov

Ashlee Delaney, Legislative Director
360-485-3613 | ashlee.delaney@des.wa.gov



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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, 2023.

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. This report also includes information about renewable diesel, which is different than biodiesel though both biomass-based fuels are being used as lower carbon replacement fuels.

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

- During 2023, state agencies, including universities, purchased just under 1.7 million gallons of biodiesel, representing 9.5% of all fuel purchased to power diesel vehicles, vessels, and equipment, and fire boilers to heat and power facilities. This is a 1.2% increase from 2022, when the biodiesel use was 8.3%.
- Washington State Department of Transportation (WSDOT) buys the most biodiesel of all state agencies. WSDOT purchased 1.68 million gallons of biodiesel in 2023, representing 99.8% of state agencies’ use.
 - WSDOT’s Washington State Ferries (WSF) division accounts for 85% of all biodiesel purchases. WSF purchased 1.4 million gallons of biodiesel in 2023, an almost 21% increase from 2022. WSF averaged 9.6% biodiesel, up from 8.0% in 2022.
 - All other WSDOT divisions purchased 249,527 gallons of biodiesel during 2023, representing 14.8% of the state’s biodiesel purchases. WSDOT’s average blend level was 11.3% biodiesel, which was 0.7% lower than its 2022 level.
- The state departments of Corrections, Natural Resources, and Fish and Wildlife bought a combined 3,394 gallons of biodiesel, representing only 0.20% of total biodiesel purchases.
- Agencies purchased a total of 358,660 gallons of heating fuel and 17.4 million gallons of vehicle fuel.
- WSDOT divisions (excluding WSF) began using renewable diesel (R99) in Eastern Washington in July 2023. WSDOT replaced 224,825 gallons of petroleum diesel with renewable diesel. Combined with biodiesel (B100) the blend increased to 21.4% of total diesel purchased by WSDOT land sector.

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. It also now includes information on renewable diesel procurement by agencies. Renewable diesel is different from biodiesel, though both are biofuels made from non-petroleum renewable sources. Renewable diesel is typically made from materials including vegetable oils and animal fats and is processed to be chemically the same as conventional diesel. It can be used as a “drop-in” replacement in existing engines and infrastructure, either blended or in pure form (R99 renewable diesel).

Findings

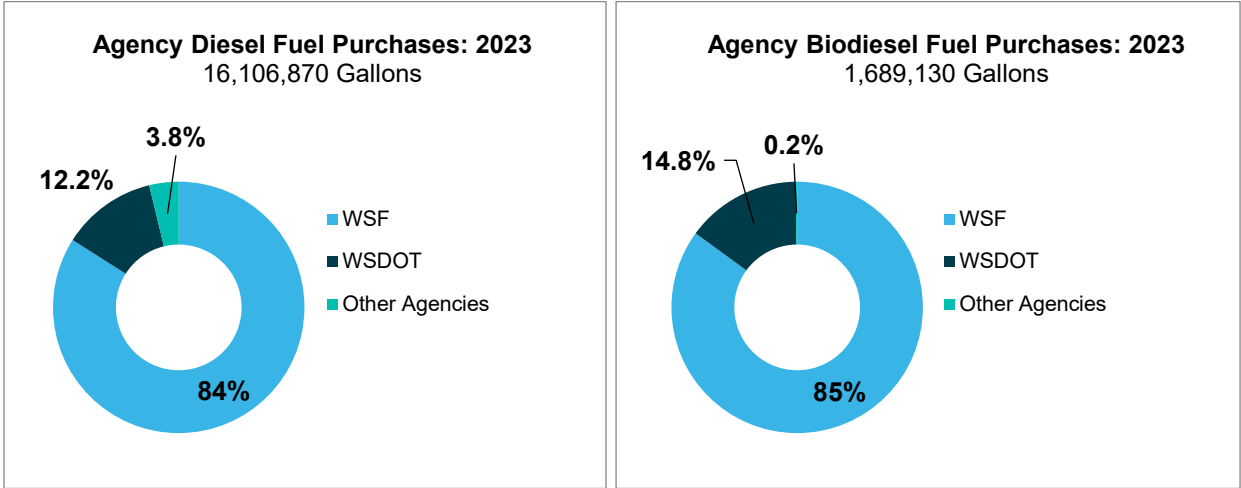
State Biodiesel Purchases

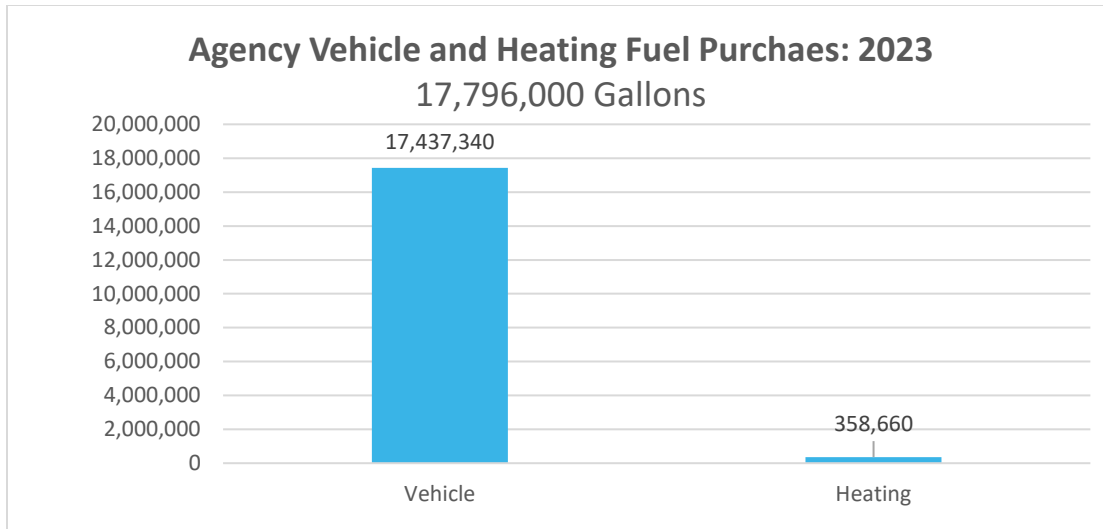
State agencies are required to purchase bulk fuel through statewide contracts that sell gasoline, heating oil and diesel, including biodiesel. Many cities, counties, school districts, higher education institutions and transit systems also use the contracts.

In 2023, state agencies and universities purchased 16.1 million gallons of diesel fuel and 1.68 million gallons of biodiesel.

WSDOT is the largest consumer of diesel among state agencies. Its Ferries division (Washington State Ferries, or WSF), accounted for 84% of diesel purchases and 85% of biodiesel purchases. WSDOT divisions excluding Ferries, accounted for 12.2% of diesel purchases and 14.8% of biodiesel purchases.

Other agencies and universities accounted for the remaining 3.8% of diesel purchases and 0.2% of biodiesel purchases.





State Ferries Use

WSF, a division of WSDOT, purchased 1.4 million gallons of biodiesel in 2023, representing 9.6% of total fuel purchases. In 2022, it purchased 1.2 million gallons of biodiesel, representing 8% of total fuel purchases. The 20.6% increase in the amount of biodiesel it purchased in 2023 is due to WSF restoring service to all but four routes (following pandemic-related service reductions in 2022) and the resolution of pandemic-related supply chain issues.

State Ferries Biodiesel Purchases: 2014 to 2023

Year	Diesel Gallons	Biodiesel Gallons	Total Gallons	Biodiesel %
2023	13,530,480	1,436,209	14,966,689	9.6%
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%

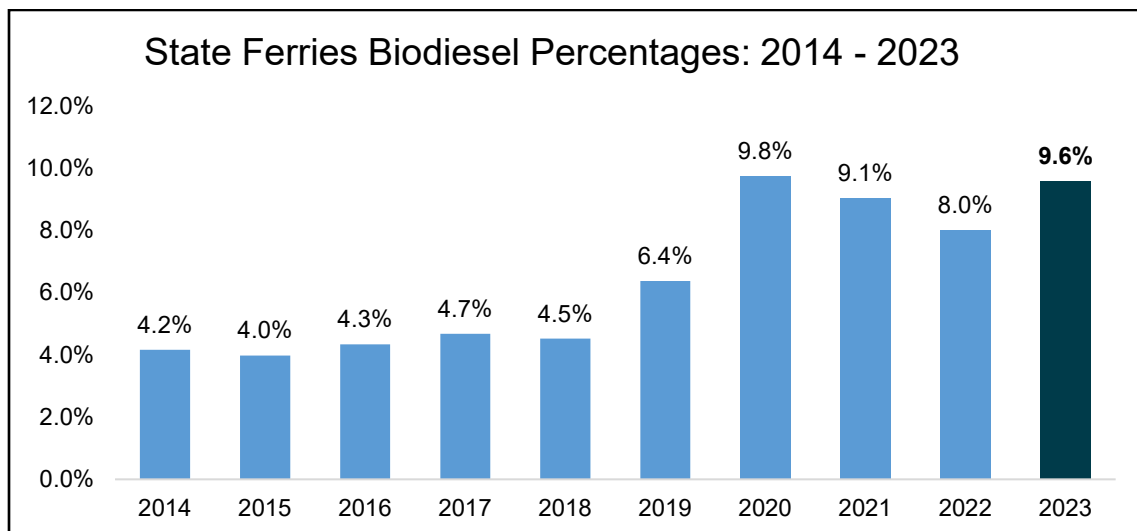
WSF's progress using biodiesel has occurred in stages. WSF began using B5 for vessels fueled by truck from the Harbor Island truck facility in Seattle in 2009. Vessels fueled by truck from Anacortes began using B5 in 2011. Installation of infrastructure for in-line biodiesel blending at the Seattle Harbor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

DES Statewide Contract [05718](#) – Marine Refueling Services and Fuels was finalized at the end of 2018. The contract 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.

All WSF's 13 delivery locations received biodiesel in 2023, with all but one of those locations averaging at least 9.4% biodiesel. Two terminals, Bainbridge and Fauntleroy, received exclusively B10. Anacortes Terminal, which accounted for nearly 24% of all fuel delivered in 2023 averaged 9.4% biodiesel. Fuel at Pier 15 in Seattle, which also accounted for almost 24% of all fuel delivered, averaged 9.9% biodiesel. The four northern locations -- Clinton, Port Townsend, Anacortes, and Friday Harbor -- averaged 9.4% biodiesel, an almost 4% increase from 2022. Friday Harbor Terminal averaged 8.9% biodiesel, the lowest biodiesel percentage of any delivery location.

WSF reported no biodiesel-related quality or performance concerns in 2023.



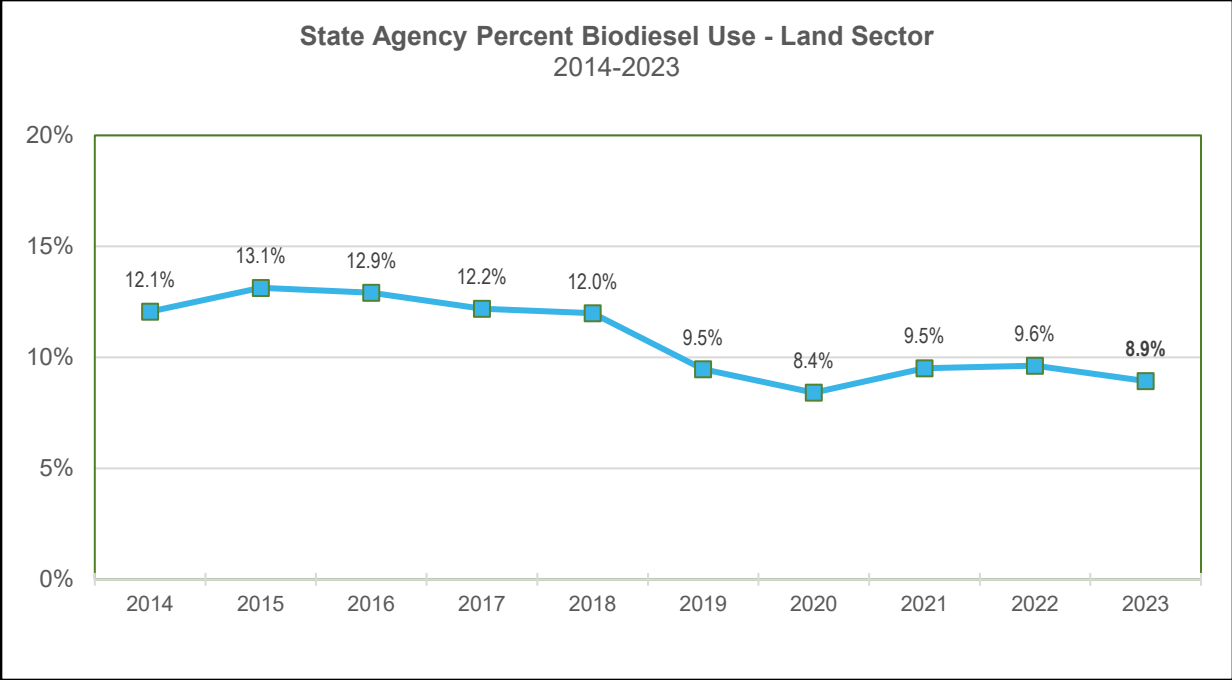
Land Sector Use

Excluding WSF, WSDOT purchases of biodiesel (B100) totaled 249,527 gallons in 2023, about 8.9% of total diesel purchases, down from 9.6% in 2022. WSDOT’s other divisions combine to be the state’s second-largest fuel user, purchasing 2.2 million gallons of fuel in 2023. Biodiesel comprised 11.3% of WSDOT total diesel purchases, which is lower than in 2022.

Land Sector Biodiesel Purchases: 2023

Agency	Diesel Gallons	Biodiesel Gallons	Total Gallons	Biodiesel %
WSDOT	1,966,708	249,527	2,216,235	11.3%
Other Agencies	609,682	3,394	613,076	0.6%
TOTAL	2,576,390	252,921	2,829,311	8.9%

Only the departments of Transportation, Corrections, Natural Resources, and Fish and Wildlife 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 15 sites since 2015. WSDOT is working on replacing eight fuel sites during the 2023-25 biennium, which focuses on the highest priority of single-walled underground tanks. Most fuel sites will be due for replacement in 2025 with an estimated replacement cost of \$87 million.

WSDOT Fueling Site Purchases by Region: 2023 (diesel-only tanks omitted as of 2016)							
WSDOT Region	Diesel Gallons	Biodiesel Gallons	Renewable Diesel Gallons	Total Gallons	Biodiesel %	Renewable Diesel %	Total Biofuel %
Westside	753,146	180,605	1,200	934,951	19.3%	0.0%	19.3%
<i>Olympic</i>	260,832	63,448	1,200	325,480	19.5%	0.4%	19.9%
<i>Southwest</i>	203,563	48,110	0	251,673	19.1%	0.0%	19.1%
<i>Northwest</i>	288,751	69,047	0	357,798	19.3%	0.0%	19.3%
Eastside	829,519	68,922	223,625	1,122,066	6.1%	19.9%	26.1%
<i>North Central</i>	235,399	22,846	31,004	289,248	7.9%	10.7%	18.6%
<i>Eastern</i>	298,061	21,051	51,508	370,621	5.7%	13.9%	19.6%
<i>South Central</i>	296,059	25,025	141,113	462,197	5.4%	30.5%	35.9%
TOTAL	1,582,665	249,527	224,825	2,057,017	12.1%	10.9%	23.1%

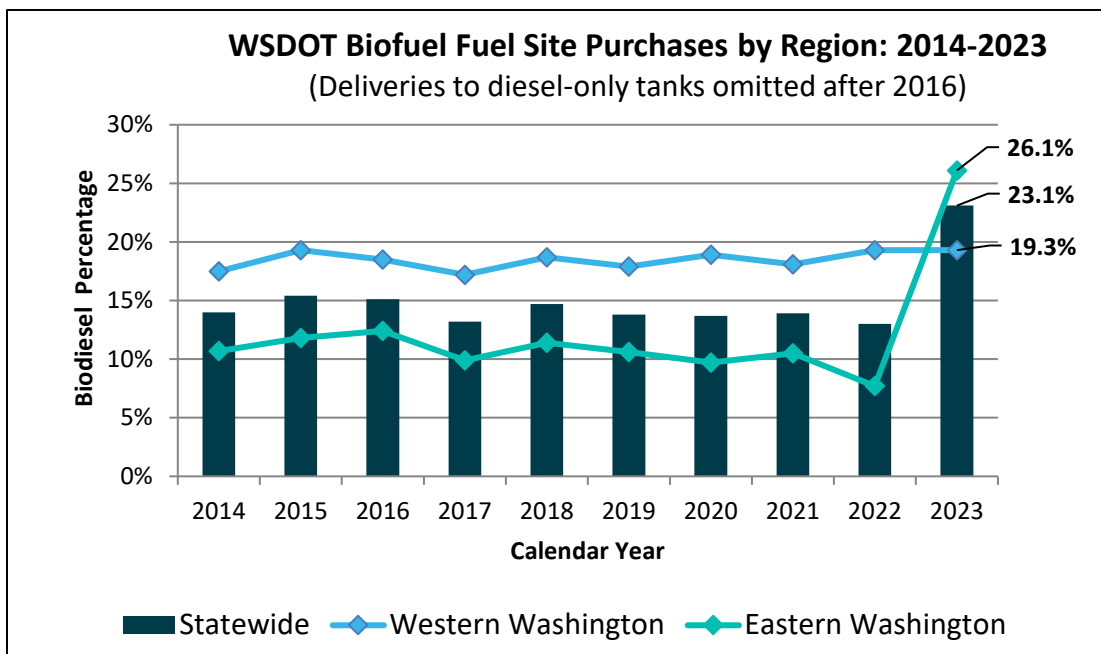
WSDOT started using renewable diesel in July 2023 in Eastern Washington and is prioritizing purchasing renewable diesel depending on availability. Renewable diesel can be used interchangeably with conventional diesel and does not have issues such as gelling in cold weather and microbial growth found with biodiesel. Renewable diesel is a fuel made from fats and oils, such as soybean oil or canola oil, and is processed to be chemically the same as conventional diesel. Renewable diesel is at least 99% biofuel.

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 remained at 19.3% in 2023, the same percentage as 2022. Of the 616 diesel fuel deliveries to Western Washington sites, nine deliveries did not have biodiesel due to vendor delivery issues, 13 deliveries fewer than 2022.

Western Washington regions purchased 124,600 fewer gallons in 2023 compared to 2022. The three Western Washington regions' biodiesel percentage each remained between 19% and 20%. One delivery of renewable diesel was received in the Olympic Region.

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 1.6% to 6.1% in 2023 as compared to 7.7% in 2022.

Eastern Washington regions' total volume purchased was 156,725 gallons less than in 2022. Due to the purchase of renewable diesel the overall percentage of biofuel increased to 26.1% in 2023. Of the 527 deliveries in Eastern Washington, 23% were renewable diesel, 53% were biodiesel and 23% did not include biodiesel or renewal diesel. Three exempt sites in South Central Region received renewable diesel as test to compare conventional diesel to renewable diesel at sites with **low** turnover.



Note: Renewable diesel included as biofuel in 2023.

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 2023, 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.

While we continue to find some issues with flashpoint failures, overall the flashpoint failures decreased in 2023. 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 and higher fuel continues to decrease in the retail market.

WSDA continued to test WSDOT sites for biofuel. In November and December, WSDA tested 36 WSDOT locations throughout Washington state. It found all locations had biodiesel available and didn't identify any issues with the fuel. WSDOT continues to be the largest user of biodiesel within the state. WSDA inspectors will continue to monitor the marketplace for available retail sales of biodiesel blends.

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. Five 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, and Wilson Oil. Fuel prices are based on Oil Price Information System rates listed from the day before delivery. Renewable Diesel (R99) is expected to see increased use in coming years as SEEP works with WSDOT and ECY to promote its use. The current contract ends Dec. 31, 2024, with extensions available until 2025. DES plans to rebid 08721 before the contract's expiration in 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 Rainier Petroleum Corp. The contract ends Dec. 15, 2024, 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 expired on Jan. 13, 2024. DES is not renewing this contract and will allow Keller Ferry to solicit its own contract.

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 and renewable diesel, 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 may benefit from the program by working with a biodiesel producer or supplier that is participating in the Clean Fuel Standard to negotiate a purchase agreement that reflects the value of Clean Fuel Standard credits.

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.

Revenue generated by agencies participating in the Clean Fuel Standard is subject to appropriation under the Clean Fuels Transportation Investment Account or the Clean Fuels Credit Account.

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 use of biodiesel, renewable diesel, other sustainable fuels, 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.
- Continue to prioritize purchasing renewable diesel.
- 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 and renewable diesel 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. There might be opportunities to replace stored diesel for backup power with renewable diesel or other sustainable fuels.
- 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

DES thanks the following contributors for their assistance in providing this annual report:

Elena McGrew, (360) 407-7957
Washington Department of Enterprise Services

Timothy Elliott, (360) 902-1984
Washington Department of Agriculture

Stephanie Celt, (360) 819-3521
Washington Department of Commerce

Georgina Willner, (360) 705-7883
Washington Department of Transportation

Seth Steinoff, (206) 389-8540
Washington State Ferries



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