

REPORT

# Biodiesel Use by Washington State Agencies

Jan - Dec 2021

CONTRACTS & PROCUREMENT  
DIVISION

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## 2022 Legislative Report

# Agency Overview

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The Department of Enterprise Services' (DES) **mission** is "strengthening the business of government." DES does this through our **vision** of delivering high quality, cost effective support services, policy and governance to state government and other public entities so they can focus on their core missions. DES's **values** include respect, integrity, diversity, equity and inclusion.

DES strengthens the business of government operations in Washington state by providing expertise in:

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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, 2021.

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.

- During 2021, state agencies, including universities, purchased over 1.7 million gallons of biodiesel, representing 9.1% of the fuel purchased to power diesel vehicles, vessels and equipment, and fire boilers to heat and power facilities. This is a 0.4% decrease from 2020, when the biodiesel use was 9.5%.
- Washington State Ferries (WSF) is the largest state agency consumer of diesel, accounting for 82% of all diesel purchases. WSF purchased 1.4 million gallons of biodiesel during 2021, a 3% decrease from 2020. WSF averaged 9.1% biodiesel, down from 9.8% in 2020.
- Beyond maritime operations, the Washington State Department of Transportation (WSDOT) was the state’s second-largest purchaser of diesel, accounting for 13% of all such purchases. WSDOT purchased 307,748 gallons of biodiesel during 2021, with an average blend level of 12.9% biodiesel. This is 0.67% higher than 2020.
- Other agencies, including all six state-operated universities, accounted for the remaining 5% of 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, and Fish and Wildlife bought a combined 8,905 gallons of biodiesel, representing less than 1% of total fuel purchases.
- Agencies purchased a total of 2.2 million gallons of heating fuel and 20.6 million gallons of vehicle fuel.

# Introduction

This report covers Jan. 1 through Dec. 31, 2021, and focuses on bulk fuel purchased through statewide contracts and on the open market to operate diesel-powered vessels, vehicles and equipment.

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 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 emissions and dependence on foreign oil, and 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 practicable, 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 levels of 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](#), the Washington State 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 of the report to an annual requirement.

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.

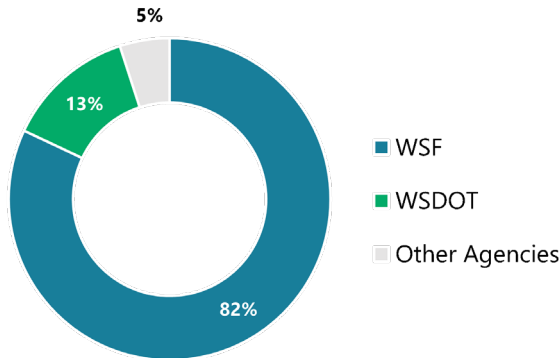
# Findings and Results

## State Biodiesel Purchases

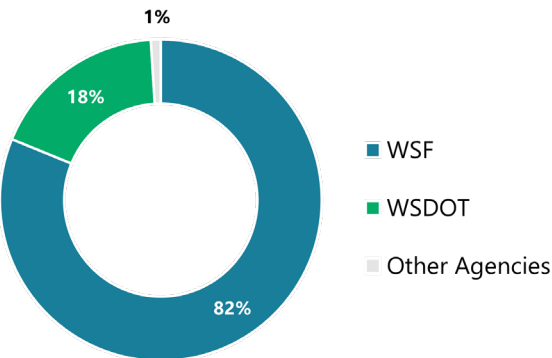
State agencies are required to purchase bulk fuel through statewide contracts that cover gasoline, heating oil, and diesel (including biodiesel). Many cities, counties, school districts, higher education institutions, and transit systems also use the contracts. In 2021, state agencies and universities purchased 17.1 million gallons of diesel fuel, including 1.7 million gallons of biodiesel.

As the largest consumer of diesel among state agencies, WSF accounted for 82% of fuel purchases and 82% of biodiesel purchases. WSDOT accounted for 13% of fuel purchases and 18% of biodiesel purchases. Other agencies and universities accounted for the remaining 5% of fuel purchases and 1% of biodiesel purchases.

**Agency Fuel Purchases: 2021**  
18,844,363 Gallons



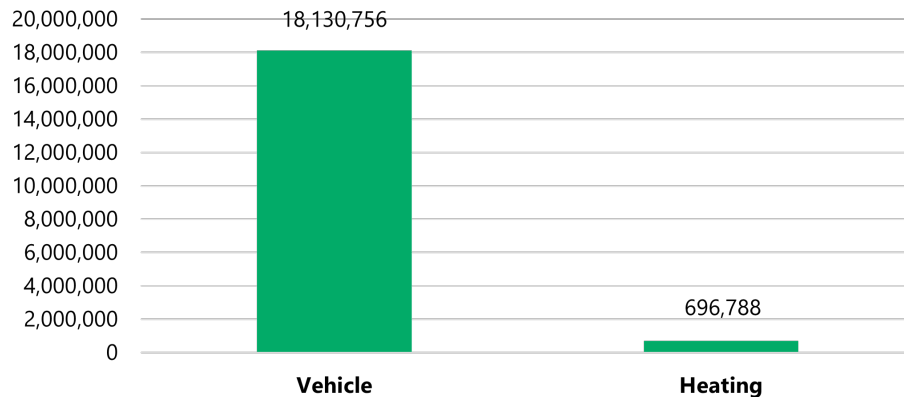
**Agency Biodiesel Fuel Purchases: 2021**  
1,719,612 Gallons



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

## Agency Vehicle and Heating Fuel Purchases: 2021

18,827,544 Gallons



## State Ferries Use

WSF purchased 1,402,959 gallons of biodiesel during 2021. This is a 3.1% decrease from the 1,448,102 gallons purchased in 2020. Overall, WSF purchases averaged 9.1% biodiesel for 2021, down from 9.8% for 2020. Pandemic-related service reductions contributed, in part, to the decreased amount of biodiesel gallons purchased from 2020 to 2021.

## State Ferries Biodiesel Purchases: 2009 to 2021

Year	Diesel Gallons	Biodiesel Gallons	Total Gallons	Biodiesel %
<b>2021</b>	14,097,488	1,402,959	15,500,447	9.1%
<b>2020</b>	13,403,109	1,448,102	14,851,211	9.8%
<b>2019</b>	17,633,816	1,200,837	18,834,653	6.4%
<b>2018</b>	17,806,078	843,467	18,649,545	4.5%
<b>2017</b>	17,976,949	882,214	18,859,163	4.7%
<b>2016</b>	17,799,290	807,807	18,607,097	4.3%
<b>2015</b>	16,687,482	691,580	17,379,062	4.0%
<b>2014</b>	16,480,334	715,653	17,195,987	4.2%
<b>2013</b>	16,701,761	687,741	17,389,502	4.0%
<b>2012</b>	16,749,738	485,537	17,235,275	2.8%

<b>2011</b>	17,107,676	468,837	17,576,513	2.7%
<b>2010</b>	16,915,217	221,421	17,136,638	1.3%
<b>2009</b>	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 early 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 fleet-wide.

After completing a pilot test 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. Use of a self-propelled bunkering vessel to deliver B10 via vessel-to-vessel delivery was piloted 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 the Bremerton, Bainbridge Island, and Vashon Island terminals in January 2020, June 2020, and April 2021, respectively.

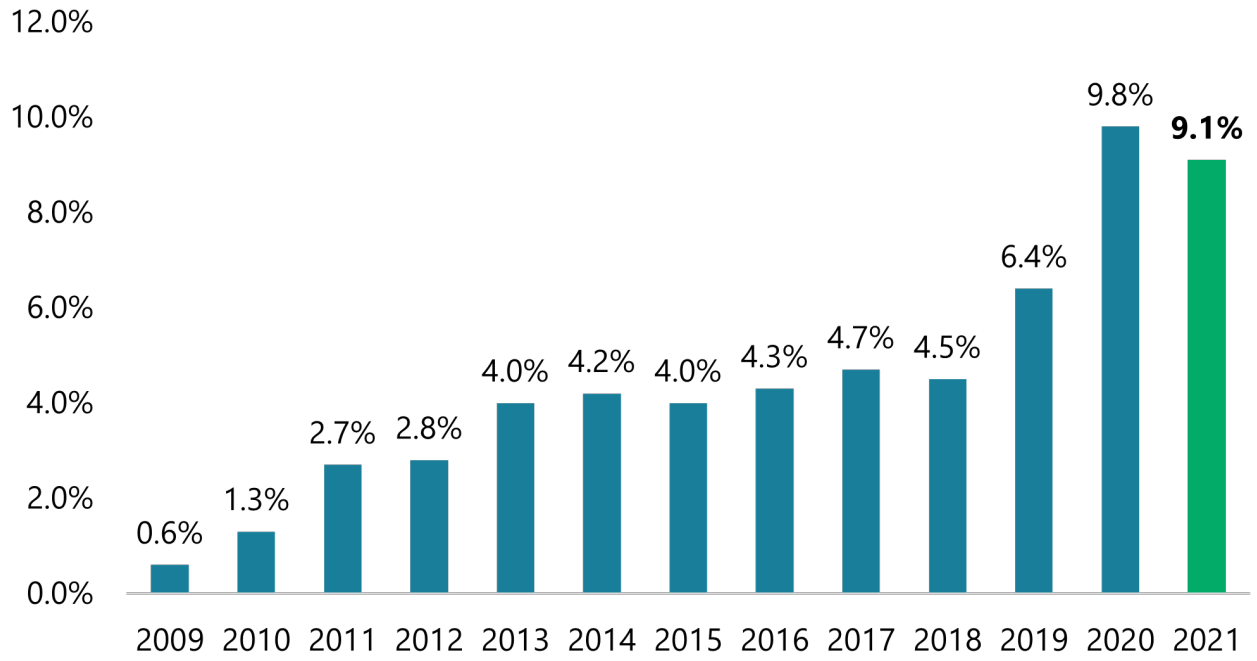
All delivery locations received biodiesel fuel during 2021, with 10 of the 12 locations averaging at least 9% biodiesel. Two terminals (Bainbridge and Southworth) received exclusively B10. Fuel at Pier 15, which accounted for over 22% of all fuel delivered during 2021 (the highest percentage of any delivery location), averaged 9.5% biodiesel. Anacortes Terminal, which also accounted for over 22% of fuel delivered during 2021, averaged 8.4% biodiesel. Vashon Island Terminal averaged 8.1%, the lowest biodiesel percentage of any delivery location.

WSF uses Portland, Ore., as a reference city for biodiesel prices. For 2021, the price of Portland B5 was, on average, 0.7% lower than diesel and the price of Portland B10 was, on average, 2.3% lower than diesel.

WSF reported no biodiesel-related quality or performance concerns in 2021.



## State Ferries Biodiesel Percentages: 2009 - 2021



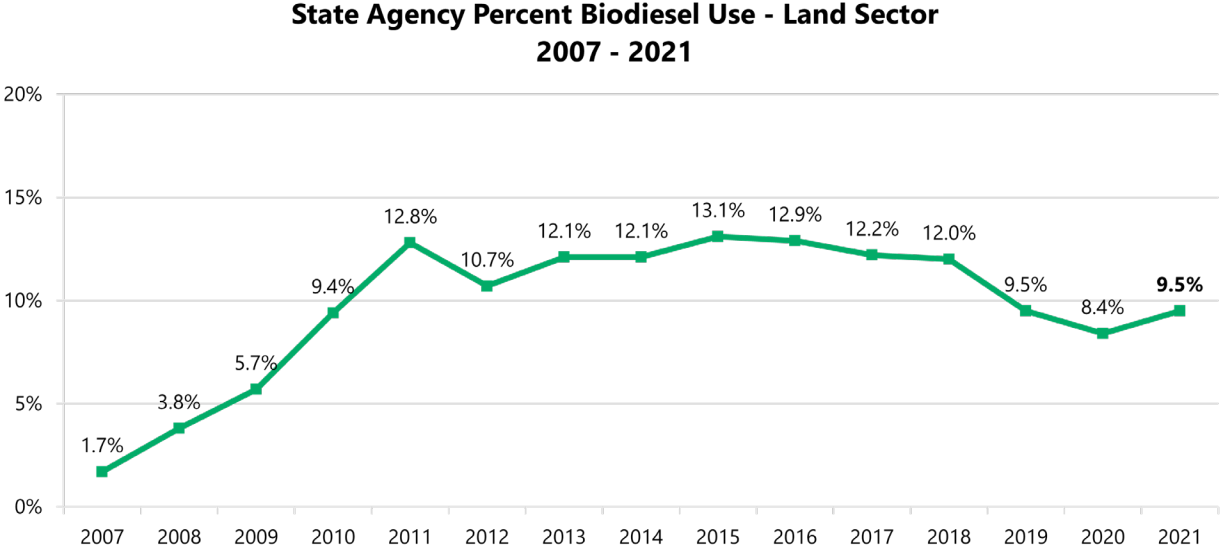
# Land Sector Use

Agency purchases of biodiesel for non-marine uses totaled 316,653 gallons in 2021, about 9.5% of total diesel purchases, up from 8.4 % in 2020. WSDOT is the largest single user other than WSF, purchasing 2.3 million gallons of fuel in 2021. Biodiesel comprised 12.9% of WSDOT total diesel purchases, which was about the same in 2020.

## Land Sector Biodiesel Purchases: 2021

Agency	Diesel Gallons	Biodiesel Gallons	Total Gallons	Biodiesel %
<b>WSDOT</b>	2,081,350	307,748	2,389,098	12.9%
<b>Other Agencies</b>	929,093	8,905	937,998	1.0%
<b>TOTAL</b>	<b>3,010,443</b>	<b>316,653</b>	<b>3,327,096</b>	<b>9.5%</b>

Only Transportation, Corrections, Natural Resources, and Fish and Wildlife, purchased biodiesel during the year.



# WSDOT Regional Purchases

WSDOT maintains a statewide network of 105 diesel fueling sites that serve most 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 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, fuel vendor, notified WSDOT that they cannot deliver biodiesel to White Pass 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 \$105,300,000.

## WSDOT Fueling Site Purchases by Region: 2021 (diesel-only tanks omitted as of 2016)

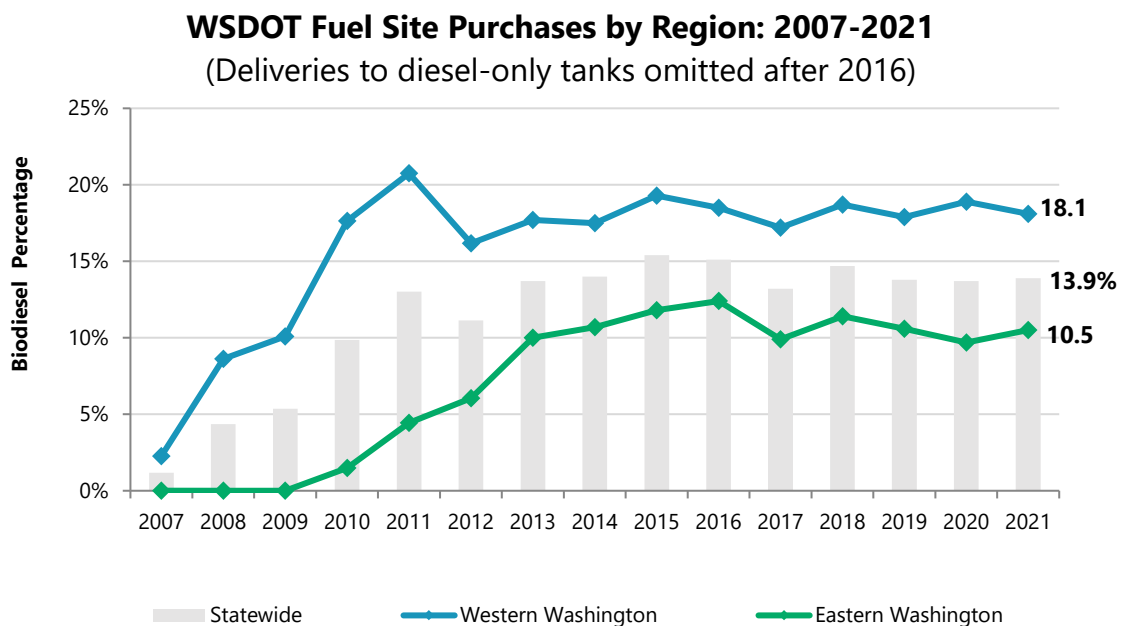
WSDOT Region	Diesel Gallons	Biodiesel Gallons	Total Gallons	Biodiesel %
<b>Westside</b>	<b>805,858</b>	<b>178,636</b>	<b>984,494</b>	<b>18.1%</b>
<i>Olympic</i>	264,355	63,260	327,615	19.3%
<i>Southwest</i>	200,185	45,776	245,961	18.6%
<i>Northwest</i>	341,318	69,600	410,918	16.9%
<b>Eastside</b>	<b>1,098,427</b>	<b>129,112</b>	<b>1,227,539</b>	<b>10.5%</b>
<i>North Central</i>	269,215	26,732	295,947	9%
<i>Eastern</i>	336,989	46,952	383,941	12.2%
<i>South Central</i>	492,223	55,428	547,651	10.1%
<b>TOTAL</b>	<b>1,904,285</b>	<b>307,748</b>	<b>2,212,033</b>	<b>13.9%</b>

On the west side of the state, WSDOT has 48 sites in three regions. Six of these sites did not receive biodiesel. Overall biodiesel use in west side sites eligible for biodiesel dropped almost a

percentage to 18.1% from 18.9% in 2020. Of the 563 diesel fuel deliveries to Western Washington sites, 36 deliveries did not have biodiesel due to vendor delivery issues.

All three Western Washington regions saw lower levels of total volume purchased than in 2020 by 20,000 to 30,000 gallons. The Northwest and Southwest regions' biodiesel percentage remained about the same. The Olympic region's biodiesel use dropped almost 2%.

On the east side of the state, WSDOT has 57 sites in three regions. Four of these sites did not receive biodiesel. Overall biodiesel use in east side sites eligible for biodiesel rose to 10.5% from 9.7% in 2020. North Central region received about the same amount of biodiesel. Compared to 2020, South Central Region received a higher level of biodiesel and its overall diesel purchases were higher than the other two regions. Biodiesel blends were similar for all three regions.



## 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 2021, WSDA submitted 122 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. They included 112 diesel samples, and 10 B20 samples. The diesel samples included 17 samples from pumps with the added label "may contain up to 5% biodiesel." Only six of these samples contained biodiesel.

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 has also decreased to the lowest it's been in recent years.

## State Contracts

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

**[Bulk Fuel \(#00311\)](#)** provides bulk fuel and will-call fuel deliveries for products such as gasoline, diesel and biodiesel. There are five contractors servicing eight regions across the state: Associated Petroleum Products (APP), Christensen (dba RE Powell), PetroCard, Wilcox & Flagel, and Coleman Oil. This contract has been replaced by Fuel: Gasoline, Diesel, and Renewables (#08721).

**[Fuel: Gasoline, Diesel, and Renewables \(#08721\)](#)** provides bulk fuel and will-call fuel deliveries for products such as gasoline, diesel, biodiesel, renewable gasoline, and renewable diesel. This contract was developed based on recommendations in previous iterations of this report. There are six contractors serving seven regions across the state in four categories (will call, bulk fuel, renewable gasoline, and renewable diesel). The Contractors are Associated Petroleum Products (APP), Coleman Oil, KTB (small business), PetroCard, ScooterJ Logistics (small, minority, veteran business), and Wilson Oil. The current term ends December 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. The contractor is Maxum Petroleum. The current term ends December 15, 2022, 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 contractor is Connell Oil. The current term ends on January 13, 2024.

# Recommendations

## Statewide context

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 clean fuel standard takes effect in January 2023 and will require fuel suppliers to reduce the carbon intensity of transportation fuels. While the Department of Ecology is in the process of rulemaking at the time of writing this report, it is expected that the law will have numerous impacts on biodiesel production and use in the state, including an expectation that biodiesel prices will decrease.

Agencies that buy biofuels may be able to receive carbon credits by registering as a fuel supplier and registering networked electric vehicle charging stations. 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. Further analysis of the Clean Fuel Standard will be provided once the law and rules are finalized, and it will be helpful for agencies to track this process and 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 are included in the new fuel contract that took effect on January 1, 2022.

- Revise and/or rebid contracts as needed to provide competitively priced biodiesel and other alternative fuel products, such as renewable diesel.
  - Contract 08721 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 08721 has updated required reporting for consistency.

- Ensure there is no price differential between Diesel, B5, and B10 to incentivize purchasers to purchase B10 as their default.
  - Contract 08721 leverages pricing to incentivize B10 as the default purchase. Purchases of diesel, B5, and B10 are listed at the same price.
- 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 08721 addresses renewable diesel requirements in the fuel specification section.

## **State Ferries**

- 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 are able to 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 program and opportunities to generate credits related to biodiesel use, developed in coordination with Ecology once the program has been established. Specific opportunities are listed below.
- UW and WSU purchased substantial volumes 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 would be 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 there are three others that would be 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' specific 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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Washington State Ferries

