



Washington State Department of  
**Enterprise Services**

# **Biodiesel Use by Washington State Agencies**

July through December 2015

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### **REPORT HIGHLIGHTS**

- During the last six months of 2015, biodiesel purchased by state agencies under state fuel contracts totaled more than 560,000 gallons. On a calendar-year basis, state agencies topped 1 million gallons in biodiesel purchases for the third year in a row.
- Washington State Ferries (WSF) is the largest state agency consumer of diesel fuel. WSF purchased 365,389 gallons of biodiesel during the last six months of 2015, which is about 39,000 gallons more than the 326,191 purchased in the previous six-month period. Overall, WSF averaged 4.1 percent biodiesel for the period, with fuel containing five percent biodiesel (B5) the standard fuel for the fleet.
- Biodiesel purchased by state agencies other than WSF totaled 198,345 gallons during the first six months of 2015. Biodiesel made up 13 percent of the diesel fuel purchased, down 1 percent from the previous six-month period.
- The Washington State Department of Transportation (WSDOT) is the state's second largest purchaser of diesel fuel. Biodiesel made up 18 percent of total diesel fuel purchased in Western Washington and 11 percent in Eastern Washington. Statewide, WSDOT averaged 14 percent biodiesel, down 1 percent from the previous period.
- Testing continued to show no significant fuel quality issues related to biodiesel use by state agencies.

### **BACKGROUND**

As a part of the state's efforts to reduce its dependence on foreign oil, reduce emissions, and stimulate local production and use of biodiesel, state law has mandated state agencies to use biodiesel fuels to operate diesel-powered vessels, vehicles, and construction equipment since 2009. Under current law, WSF is to use a minimum of 5 percent biodiesel in all vessels as long as the price of B5 does not exceed the price of diesel by 5 percent or more. All other state agencies are to use a minimum of 20 percent biodiesel by total volume to operate diesel vessels, vehicles, and construction equipment.

State law ([RCW 43.19.646](#)) requires the Department of Enterprise Services (DES) to compile and analyze the use of biodiesel fuel by state agencies and report its findings and recommendations to the Governor and Legislature in an electronic format every six months. DES collaborates with key state agency stakeholders to prepare the report.

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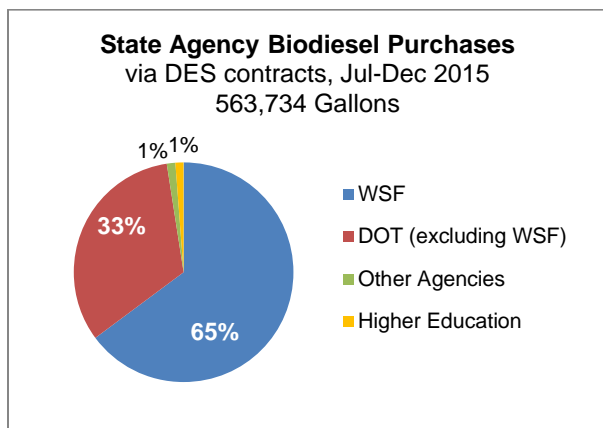
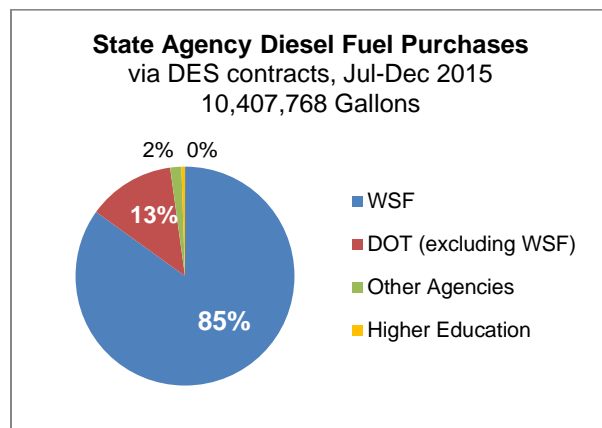
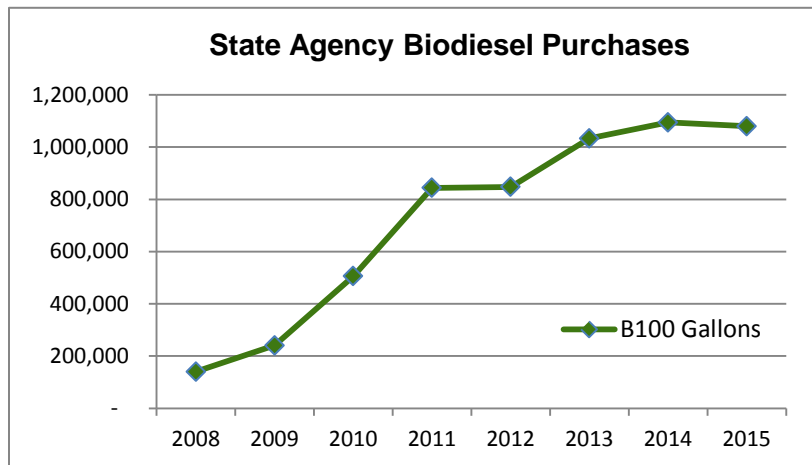
This report covers July 1 through December 31, 2015, and focuses on bulk fuel purchased through state fuel delivery contracts. The term “biodiesel” means pure biodiesel (B100) unless clearly indicated otherwise. Biodiesel blends are specified by the capital letter “B” followed by a value representing the volume percentage of biodiesel, such as B5 and B20. Therefore, B5 contains 5 percent biodiesel and 95 percent diesel. In tables and charts, biodiesel is expressed in B100 gallons.

### STATE BIODIESEL PURCHASES

State agencies are required to purchase bulk fuel through the state fuel contracts which cover gasoline, heating oil, and diesel fuel (including biodiesel). The contracts are also used by many higher education institutions, cities, counties, school districts, and transit systems.

From July 1 through December 31, 2015, state agencies and higher education institutions purchased 10.4 million gallons of diesel fuel through state fuel contracts, including about 560,000 gallons of biodiesel. Since the biodiesel use mandate was enacted, state agency purchases have increased significantly and topped 1 million gallons for the third year in a row in 2015.

As the largest consumer of diesel fuel among state agencies, WSF purchased 85 percent of the diesel fuel and 65 percent of the biodiesel purchased during this six-month period. Purchases made by state agencies other than WSF for diesel-powered vehicles and equipment made up 15 percent of total diesel fuel purchased and 35 percent of the biodiesel purchased on state contracts.



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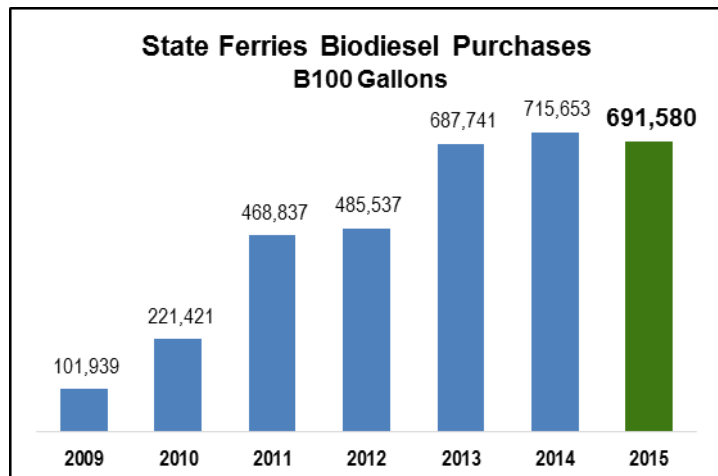
**WASHINGTON STATE FERRIES (WSF) BIODIESEL USE**

- WSF purchased 365,389 gallons of biodiesel during this six-month period. This is a 12 percent increase from the 326,191 gallons purchased during the first six months of 2015. Total fuel purchased during the period increased four percent. Overall, WSF purchases averaged 4.1 percent biodiesel for the period, up from 3.8 percent for the previous period.

**Washington State Ferries Biodiesel Use: January 2009 to December 2015**

Time Period	Diesel Gallons	Biodiesel Gallons	Total Gallons	Biodiesel %
<b>July – Dec. 2015</b>	<b>8,475,130</b>	<b>365,389</b>	<b>8,840,519</b>	<b>4.1%</b>
Jan. - June 2015	8,212,352	326,191	8,538,543	3.8%
July - Dec. 2014	8,365,368	342,350	8,707,718	3.9%
Jan. - June 2014	8,114,966	373,303	8,488,269	4.4%
July - Dec. 2013	8,545,061	367,534	8,912,595	4.1%
Jan. - June 2013	8,156,700	320,207	8,476,907	3.8%
July - Dec. 2012	8,466,258	262,217	8,728,475	3.0%
Jan. - June 2012	8,283,480	223,320	8,506,800	2.6%
July - Dec. 2011	8,672,324	241,722	8,914,046	2.7%
Jan. - June 2011	8,435,352	227,115	8,662,467	2.6%
July - Dec. 2010	8,455,444	119,242	8,574,686	1.4%
Jan. - June 2010	8,459,772	102,179	8,561,951	1.2%
July - Dec. 2009	8,463,791	71,225	8,535,016	0.8%
Jan. - June 2009	8,269,302	30,714	8,300,016	0.4%

- WSF’s progress using biodiesel has occurred in stages, corresponding with the availability of in-line blended B5 fuel. 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 blending at the Seattle Harbor Island dock facility was completed in early 2013.



- During this six-month period, most delivery locations received B5 fuel, with 6 of the 10 locations averaging 4.5 to 4.9 percent biodiesel. Notably, fuel at the Seattle Dock Facility, which accounted for about 34 percent of all fuel delivered this period, averaged 4.8 percent biodiesel while fuel deliveries from Anacortes averaged 2.7 percent biodiesel, as about half of the deliveries were diesel rather than B5.
- WSF did not report any biodiesel-related quality or performance issues during the period.

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**LAND SECTOR USE**

State agency purchases of biodiesel for use in vehicles and equipment totaled 198,345 gallons in the last six months of 2015, an increase of 8,000 gallons over the previous six-month period. Overall state agency biodiesel purchases averaged 13 percent of total diesel fuel purchased under the state fuel contract, down 1 percent from the previous six-month period.

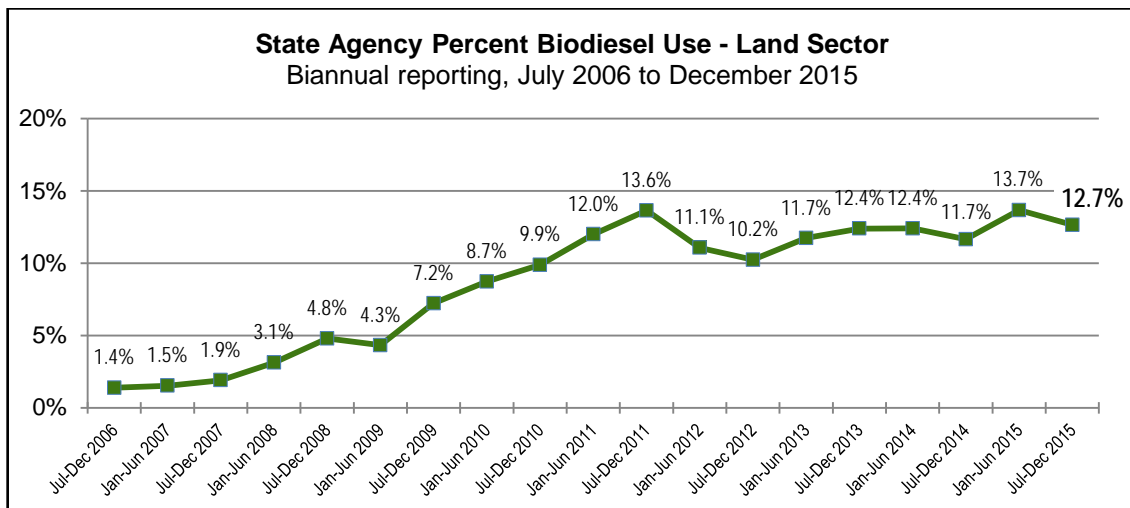
In the land sector, WSDOT is the largest single purchaser of diesel fuel. During this reporting period, WSDOT purchased 1.3 million gallons of diesel fuel, accounting for 86 percent of all diesel fuel and 93 percent of all biodiesel purchased by state agencies under the state fuel contract. WSDOT maintains a comprehensive statewide network of fueling stations that serves the majority of the state’s diesel-powered equipment and vehicles. Of the 11 other agencies purchasing diesel fuel under the state contract, only three purchased more than 20,000 gallons of bulk diesel fuel during the period – the departments of Corrections, Natural Resources, and Fish and Wildlife.

Among the 10 higher education institutions purchasing diesel fuel off the state contract, the University of Washington was the largest purchaser, accounting for 62 percent of the fuel purchased for diesel-powered vehicles and equipment, including all of the biodiesel.

**State Agency Biodiesel Purchases (Land Sector): July to December 2015**

<b>Agency</b>	<b>Diesel Gallons</b>	<b>Biodiesel Gallons</b>	<b>Total Gallons</b>	<b>Biodiesel %</b>
WSDOT	1,157,023	184,514	1,341,537	13.8%
Other Agencies	163,364	7,068	170,432	4.1%
Higher Education	48,517	6,763	55,280	12.2%
<b>Total</b>	<b>1,368,904</b>	<b>198,345</b>	<b>1,567,249</b>	<b>12.7%</b>

On a percentage basis, the biodiesel content of diesel fuel purchased by state agencies for use in vehicles and equipment has averaged above 10 percent for the last ten reporting periods. Prior to 2011, a lack of availability in Eastern Washington limited efforts to use biodiesel fuels.



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**DETAILS ON WSDOT PURCHASES AND USE**

- Overall, WSDOT’s total biodiesel purchases were up 3 percent, while total fuel purchased was up 15 percent from the previous six months. As a result, biodiesel compared to the total diesel volume was down, dropping from 15 percent to 14 percent.
- WSDOT had 45 fuel sites with biodiesel fuel available in Western Washington. From July through December, 88 percent of all deliveries were B20, 11 percent were B10 and 1 percent were B5, with one delivery of B40 in August due to a vendor miscalculation. The B5 deliveries were all in December. Biodiesel made up 18 percent of total diesel fuel purchased in Western Washington, similar to the previous period.
- WSDOT had 53 fuel sites with biodiesel fuel available in Eastern Washington. From July through December, 40 percent of deliveries were B20, 42 percent were B10, and 18 percent were B5. Two deliveries were B25. Overall, biodiesel made up 11 percent of total diesel fuel purchased in Eastern Washington during the period, down from 13 percent from the previous six months.

**WSDOT Biodiesel Purchases by Region: July 1 to December 31, 2015**

<b>Region</b>	<b>Diesel Gallons</b>	<b>Biodiesel Gallons</b>	<b>Total Gallons</b>	<b>Biodiesel %</b>
Westside	496,463	106,821	603,284	17.7%
Eastside	660,560	77,693	738,253	10.5%
<b>Statewide Total</b>	<b>1,157,023</b>	<b>184,514</b>	<b>1,341,537</b>	<b>13.8%</b>

*Note: Includes 11 sites where no biodiesel is delivered.*

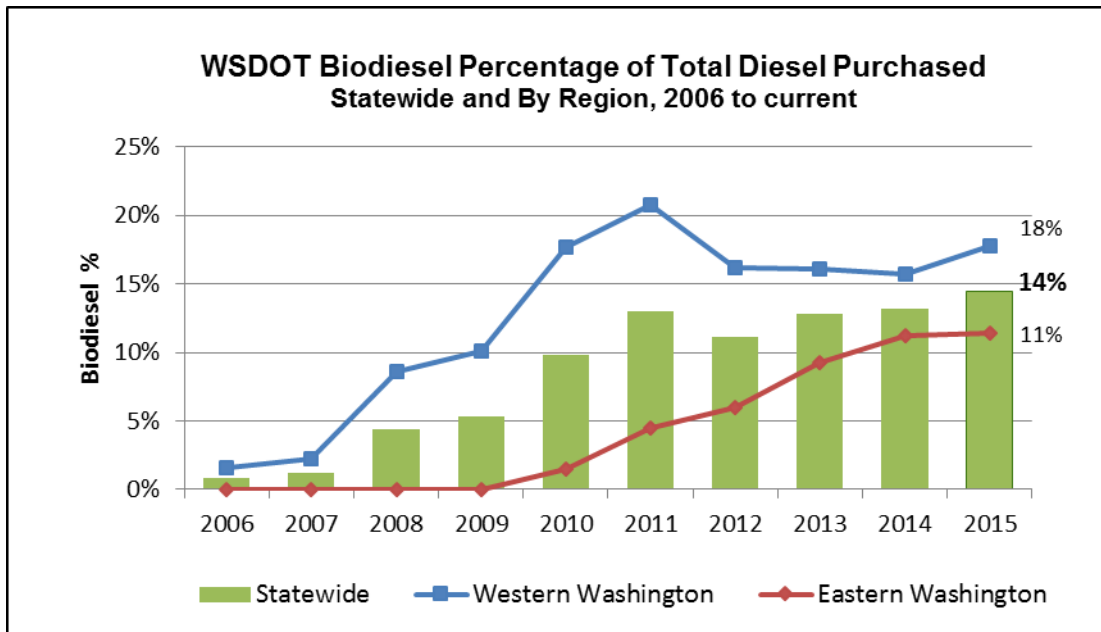
- WSDOT continued its suspension of purchases of biodiesel blends higher than B20. The suspension began in May 2012 after a review of EPA regulations, newly published guidance, and biodiesel handling guidelines on materials compatibility. The department determined that its diesel fuel tanks must be replaced to meet certification requirements to store biodiesel blends above B20. WSDOT has initiated planning to upgrade tanks as they are replaced.
- WSDOT’s experience with biodiesel fuels and testing biodiesel blends up to B90 has demonstrated the importance of: (1) managing biodiesel concentration based on climate and conditions; and (2) limiting biodiesel at sites with low fuel turn-over. Currently, WSDOT has 11 sites that are not feasible for biodiesel use because they are in areas that experience cold winter temperatures and have low fuel turn-over (no fuel use for periods of four to six months or longer). These 11 sites accounted for 84,111 gallons of the fuel delivered during this six-month period. If these fuel deliveries are excluded from the data, biodiesel made up 19.4 percent of total fuel purchased in Western Washington and 11.0 percent in Eastern Washington. WSDOT is working with fuel additive manufacturers to address fuel storage longevity and cold weather operability issues.
- WSDOT continued to employ best practices for using biodiesel. Operational issues included: (1) Replacing fuel dispenser filters at twice the previous rate; (2) Using a more

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porous filter to minimize filter failure; and (3) Cleaning tanks at a higher frequency. WSDOT continues to experience higher rates of fuel injector and filter failure which may be attributable to biodiesel use.

On an annual percentage basis, WSDOT biodiesel purchases have averaged above 15 percent for six years in Western Washington and topped 10 percent for the past two years in Eastern Washington. Prior to May 2012, some sites in Western Washington provided biodiesel blends of up to B40. Before 2011, the lack of biodiesel availability from contractors serving Eastern Washington limited WSDOT's efforts to use biodiesel fuels in that region.



## FUEL QUALITY

The Washington State Department of Agriculture (WSDA) monitors the quality of diesel and biodiesel used by state agencies as part of the state's Motor Fuel Quality Program. During this reporting period, WSDA submitted 76 diesel and biodiesel blend fuel samples to a contract 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 meeting flash point specifications. Of the 32 samples that did not meet ASTM specifications, 16 samples (50 percent) failed to meet 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 the tank management of transport trucks or design flaws with underground storage tank systems.

WSDA issued 3 notices of correction and 3 civil penalties to businesses for selling diesel fuels



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that did not meet specifications. In addition, WSDA issued 2 notices of correction for labeling violations. In both cases, the business was selling B5 from a dispenser that was labeled diesel.

Overall, WSDA did not identify any significant quality issues with biodiesel fuels during this reporting period.

### **STATE CONTRACTING**

DES's four fuel contracts serve a wide array of functions and customers.

- The state's Bulk Fuel contract (#00311) is in its fifth year. The contract covers all regions of the state and encompasses 16 contracts with five contractors. Those vendors are APP, Maxum, Powell, PetroCard, Wilcox & Flegel and Coleman. Provisions of the state bulk fuel contract related to biodiesel include:
  - Biodiesel can be made from any feedstock so long as it meets ASTM specifications.
  - Contractors must provide biodiesel fuel in any percentage from B1 to B100.
  - Contractors must provide state agencies with biodiesel that is at least 51 percent in-state sourced.
- During this period, DES completed its review and determined it was not in the state's best interest to rebid the Bulk Fuel contract at this time. DES plans to update the contract by amending, rather than rebidding, the contract, with work to begin early in 2016.
- There are three state fuel delivery contracts that serve Washington State Ferries (WSF):
  - Seattle Dock Facility (#00414): The new sole source contract with Maxum Petroleum Co., which began in September 2014, provides B5 and diesel fuel, and describes how B6 to B20 blends might be added. In July, the contract's initial one-year term was extended for an additional three-year term.
  - Marine Refueling Services-Truck Delivery (#02207): In September, this contract, also with Maxum, was extended to its maximum term date of April 27, 2017. Conversations have begun regarding rebidding this contract. In addition, earlier work to amend the current contract to provide for pricing and delivery of B10 for a pilot project and to add the 51 percent in-state sourced requirement was reinitiated.
  - Keller Ferry (#07613): This contract, first awarded in January 2014, is with Connell Oil. In December, the contract was extended for a two-year term ending January 2018. The contract provides both diesel and biodiesel fuel.
- Two contracts – the Bulk Fuel and the Seattle Dock Facility – require contractors to provide state agencies with biodiesel of which at least 51% was produced in-state or of which at least 51% of the feedstock was sourced in-state. To determine compliance with this contract provision, DES reviews invoices or bills of lading provided by fuel contractors to document the date, quantity, and source of biodiesel purchases. For this report, DES determined that the biodiesel provided under the Seattle Dock Facility contract for calendar year 2015 was 100 percent in-state sourced. No compliance determination was conducted on the Bulk Fuel contract this period.

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### **OTHER ACTIVITIES RELATED TO BIODIESEL USE BY STATE AGENCIES**

- The interagency **Alternative Fuels and Vehicles Technical Advisory Group** (AFV-TAG) met three times this period, with much of the group's focus on vehicles. The group includes the 12 agencies and four universities that collectively represent more than 98 percent of state fuel use. The group's objective is to facilitate implementation of the "Extent Practicable" rule, adopted in May 2013 ([WAC 194-28](#)), that guides procurement of alternative fuels and vehicles. With respect to biodiesel, the rule restates existing law calling for agencies to use a minimum of 20 percent biodiesel on an annualized basis.
- Public comment on the "Extent Practicable" rule regarding **local government procurement and use of alternative fuels and vehicles** was a focus this period. The Department of Commerce held a public hearing on the proposed rule on July 7. Due to the scope of comments received, Commerce decided to revise the proposed rule. A second public hearing and adoption is anticipated in early 2016. Membership in the AFV-TAG expanded to include representatives from 65 local governments that meet the reporting threshold under the proposed rule, plus five jurisdictions that are near the threshold.
- State fuel contract prices dropped to their lowest levels in recent history during this period. For example, on July 2, the B5 price on the Seattle Dock Facility contract was \$2.35 per gallon; on December 31, the price was \$1.34.

### ***RECOMMENDATIONS/ACTION ITEMS***

- Continue to explore the possibility of testing higher biodiesel blends on vessels, subsequent to initiatives in progress which will substantially reduce emissions through lower diesel consumption.
- Add the 51 percent in-state sourced biodiesel requirement to the Marine Refueling Services contract when it is rebid. Resolve issues regarding the delivery of B5 from Anacortes under this contract.
- Amend the Bulk Fuel Contract to specify that all diesel purchases are, at a minimum, B5, where feasible.
- Address changes in the biodiesel market and work to provide competitively-priced biodiesel fuel products that keep current with agency needs and the marketplace.
- Use the Alternative Fuels and Vehicles Technical Advisory Group to integrate efforts to increase the use of biodiesel by state agencies with the larger effort related to agency and local government use of alternative fuels and vehicles.
- Continue fuel quality monitoring to ensure standards are met.
- Reduce the frequency of this report from twice to just once a year.

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