



Biodiesel Use by Washington State Agencies

July through December 2011

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REPORT HIGHLIGHTS

State agencies continued to increase their biodiesel use during the last six months of 2011.

- Total biodiesel purchases by state agencies for this period approached the 450,000-gallon mark, as gallons purchased under state fuel contracts increased 12 percent over the previous six months.
- Washington State Ferries (WSF), by far the state's largest consumer of diesel fuel, increased its biodiesel purchases slightly. Purchases increased to 241,722 gallons, up from 226,250 gallons purchased in the previous six-month period. Fuel containing five percent biodiesel (B5) continued to be the standard fuel for most vessels, as in-line blended fuel was available at two of WSF's three fueling sites.
- Biodiesel purchased by state agencies other than WSF increased from 12 percent to 13.6 percent of total diesel fuel purchased and totaled 203,113 gallons, up from 172,149 gallons purchased in the previous six-month period.
- For the Washington State Department of Transportation (WSDOT), the second-largest buyer of diesel fuel, biodiesel made up more than 23 percent of total diesel fuel purchased in western Washington. Biodiesel purchases in eastern Washington continued to increase, averaging almost six percent for the period, thanks to the implementation of a new state bulk fuel contract in late May 2011.
- Testing continued to show no significant fuel quality issues related to biodiesel use by state agencies. WSDOT reported a few incidents where biodiesel affected equipment and vehicle performance.

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 agencies are required to use a minimum of 20 percent biodiesel by total volume for operating diesel-powered vessels, vehicles and construction equipment. Legislation establishing this mandate, effective June 1, 2009, was enacted in 2006 and is codified in RCW 43.19.642.

Due to serious infrastructure and budgetary constraints, the biodiesel use requirement for the state ferry system was reduced. For the 2009-11 biennium, all fuel purchased at the Harbor Island truck terminal in Seattle, one of WSF's three fueling sites, was to be a minimum of 5 percent biodiesel so long as the price did not exceed the price of diesel by more than 5 percent. For the 2011-13 biennium, the Legislature removed the biodiesel use requirement for WSF; however, the Governor vetoed that section of the Transportation Budget and directed WSF to use as much biodiesel as possible within its authorized budget.

The Department of Enterprise Services (DES) is charged with compiling agency biodiesel usage data and reporting findings and recommendations to the Governor and the Legislature on a biannual basis. To more effectively fulfill this requirement, DES collaborates with key state agency stakeholders in preparing this report, incorporating their broader input, especially with respect to their areas of expertise and involvement.

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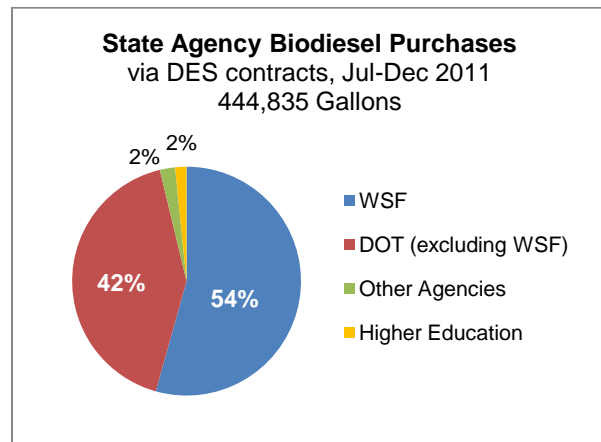
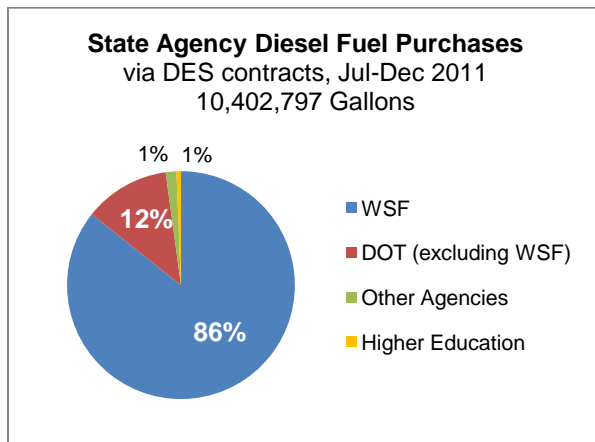
This report covers the period of July 1 through December 31, 2011 and focuses on bulk fuel purchased through state fuel delivery contracts. The use of the term “biodiesel” in this report means pure biodiesel (B100) unless otherwise designated. Biodiesel blends are specified by the capital letter “B” followed by the value representing the volume percentage of biodiesel, such as B5 and B20.

STATE BIODIESEL PURCHASES

From July 1 through December 31, 2011, state agencies and institutions of higher education purchased 10.4 million gallons of diesel fuel through state fuel contracts. This included a total of 444,835 gallons of biodiesel, an increase of 12 percent from the 398,399 gallons purchased in the first six months of 2011.

Purchases by the state ferry system made up 86 percent of all diesel fuel and 54 percent of the biodiesel purchased during the period. Total biodiesel use by state ferries increased slightly, as a B5 biodiesel blend continued to be the standard fuel for vessels using fuel from the two locations with in-line blended biodiesel fuel. Purchases made by state agencies other than WSF for use in diesel-powered vehicles and equipment made up 14 percent of total fuel purchased but 46 percent of the biodiesel purchased. Total biodiesel use by state agencies other than WSF increased over the previous six months, due in large part to biodiesel blends becoming available from vendors serving eastern Washington starting in late May.

Biodiesel purchases by institutions of higher education are included in the data. However, since the institutions are not required to use the state fuel contract, this report does not capture all fuel they may have purchased during the period.

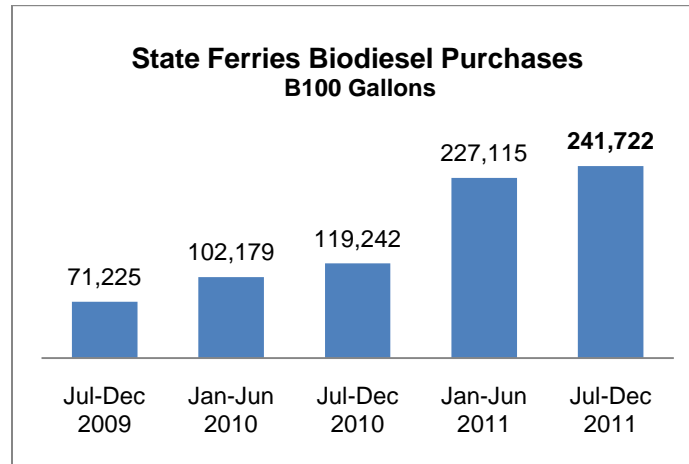


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WASHINGTON STATE FERRIES (WSF) BIODIESEL USE

- WSF purchased 241,722 gallons of biodiesel during this six-month period. This is a seven percent increase over the 226,250 gallons purchased in the first six months of 2011. This increase is a reflection of the busy summer schedule for state ferries when vessels are added to the San Juan Islands service. Two additional vessels using B5 were sailing during this period compared to the previous six months.



- WSF continued to use in-line blended B5 biodiesel for all vessels fueling by truck from the Harbor Island truck facility in Seattle. This facility accounts for about 25 percent of the total fuel used. WSF began using B5 for ferries fueling out of the Harbor Island truck terminal in August 2009.
- WSF also continued to use in-line blended B5 biodiesel for all vessels fueling by truck at Anacortes. This facility accounts for about 40 percent of the total fuel used. WSF began using B5 for ferries fueling out of Anacortes in January 2011.
- The capital improvement project to make in-line blended biodiesel available at the Seattle fuel pier is underway and expected to be operational in May of 2012. Once it is completed, WSF will have access to biodiesel at all three of its fueling locations.
- The average price paid for diesel during the period was \$3.55 per gallon; the average price paid for B5 was \$3.57 per gallon.
- WSF had no biodiesel-related quality or performance issues during the period.

Washington State Ferries Biodiesel Use: July 2009 to December 2011

Time Period	Diesel Gallons	Biodiesel Gallons	Total Gallons	Biodiesel %
Jul-Dec 2011	8,672,324	241,722	8,914,046	2.7%
Jan-Jun 2011	8,435,352	227,115	8,662,467	2.6%
Jul-Dec 2010	8,455,444	119,242	8,574,686	1.4%
Jan-Jun 2010	8,459,772	102,179	8,561,951	1.2%
Jul-Dec 2009	8,463,791	71,225	8,535,016	0.8%

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LAND SECTOR USE

State agency purchases of biodiesel for use in vehicles and equipment increased from 172,149 gallons in the first six months of 2011 to 203,113 gallons in the last six months of 2011. On a percentage basis, overall state agency biodiesel purchases increased from 12.0 percent to 13.6 percent of total diesel fuel purchased under the state fuel contract. Much of the increase was due to increased purchases in eastern Washington as biodiesel became readily available in the region with the implementation of the new fuel contract in late May.

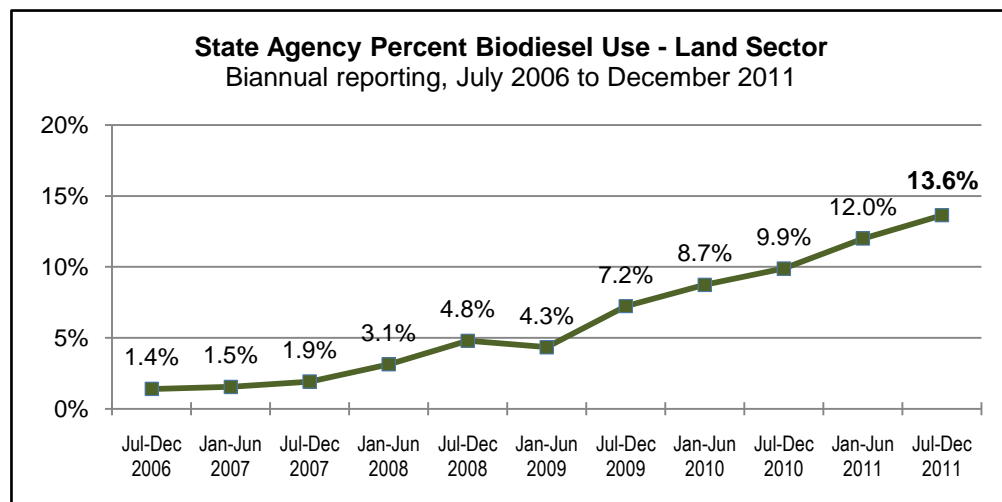
WSDOT is the largest single purchaser of diesel fuel in the land sector. During this reporting period, WSDOT accounted for 85 percent of all diesel fuel and 92 percent of all biodiesel purchased by state agencies under the state fuel contract. WSDOT maintains a comprehensive, statewide network of fueling stations that serves the majority of the state's diesel-powered equipment and vehicles. Of the eight other agencies purchasing diesel fuel under the state contract, only four purchased more than 6,000 gallons of bulk diesel fuel during the period. These included the departments of Corrections, Fish & Wildlife, Natural Resources and Social & Health Services.

Among the 12 higher education institutions purchasing off the state contract, the University of Washington led the way, with biodiesel making up 19.8 percent of its diesel fuel purchases.

State Agency Biodiesel Purchases (Land Sector): July to December 2011

Agency	Diesel Gallons	Biodiesel Gallons	Total Gallons	Biodiesel %
WSDOT	1,078,305	186,406	1,264,711	14.7%
Other Agencies	147,676	9,605	157,281	6.1%
Higher Education	59,657	7,102	66,759	10.6%
Total	1,285,638	203,113	1,488,751	13.6%

On a percentage basis, overall state agency biodiesel purchases have steadily increased over the last several six-month periods.



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DETAILS ON WSDOT PURCHASES AND USE

- WSDOT's overall use of biodiesel increased as it continued to introduce biodiesel fuel at eastern Washington fueling sites and to use higher blends at fueling sites in western Washington.
- In western Washington, 47 of WSDOT's 53 fueling sites continued to provide biodiesel blends. B40 was the standard fuel delivered to 14 sites during most of the period, and B20 the standard fuel delivered to the other 33 sites. To reduce the biodiesel percentage for the colder weather months, fuel purchases in November and December were adjusted with B10 delivered to seven sites while the rest received deliveries of B20. For the period, biodiesel averaged 23 percent in western Washington, with seven sites averaging 30 to 35 percent biodiesel, as compared to total diesel volume purchased.
- In eastern Washington, the number of fueling sites providing a biodiesel blend increased to 53, as seven sites received their first biofuel deliveries early in the period. During the summer months, 39 sites received deliveries of B20 and 14 sites received deliveries of B10. To reduce the biodiesel percentage in fuel storage tanks for the colder weather months, fuel purchases in the fall were mostly diesel. For the period, biodiesel averaged six percent in eastern Washington, with 31 sites averaging between 5 percent and 10 percent biodiesel purchased, as compared to total diesel volume purchased.

WSDOT Biodiesel Purchases by Region: July 1 to December 31, 2011

Region	Diesel Gallons	Biodiesel Gallons	Total Gallons	Biodiesel %
Westside	497,151	150,375	647,526	23.2%
Eastside	581,154	36,031	617,185	5.8%
Statewide Total	1,078,305	186,406	1,264,711	14.7%

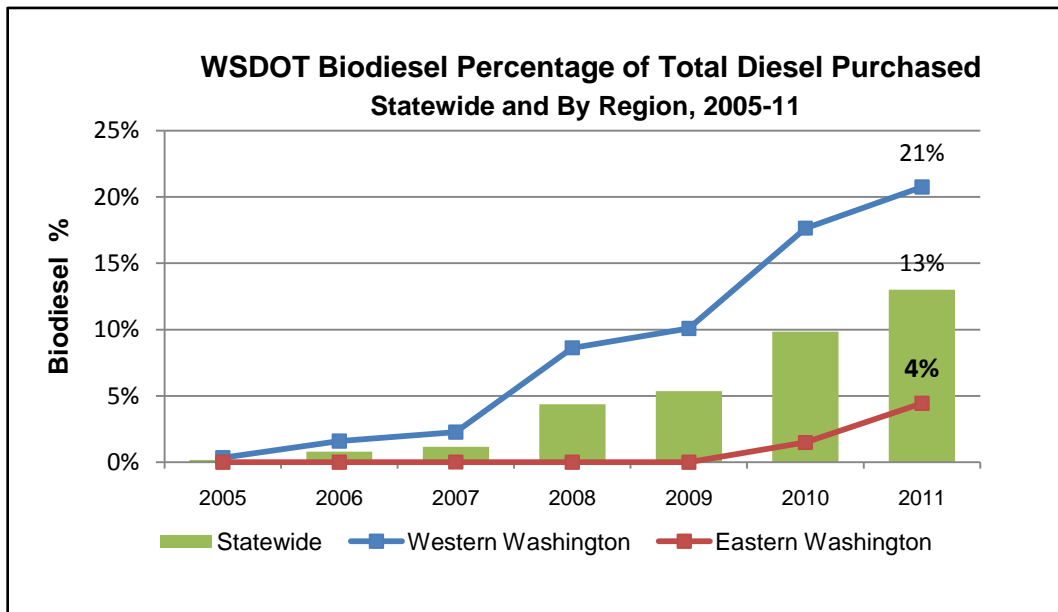
- WSDOT's experience with biodiesel fuels continues to demonstrate the need for site-specific planning to implement the state's biodiesel use mandate. For example, in remote, cold, low-utilization sites, use of biodiesel is not advised due to possible gelling and fuel degradation associated with low turn-over. WSDOT currently has nine sites that meet this criteria. WSDOT's strategy to reach a statewide average of using at least 20 percent biodiesel in its diesel fleet and equipment is to use higher blends at sites where climate, storage conditions and use patterns do not present significant storage and performance concerns.
- WSDOT testing of biodiesel blends up to B90 has demonstrated the importance of 1) managing biodiesel concentration based on climate and conditions; 2) greater frequency of tank cleaning and filter replacement; and 3) limiting biodiesel at sites with low fuel turn-over.
- WSDOT employed best practices for introducing and increasing biodiesel use during the period. Fuel dispenser filters are being replaced at twice the previous rate, with a more porous filter now being used to minimize filter failure. WSDOT is also experiencing higher rates of fuel injector failure. WSDOT had three loaders go down with clogged

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filters during a winter weather event in early December; the equipment that had not yet used its on-board summer fuel.

On an annual percentage basis, biodiesel purchases by WSDOT have steadily increased. The lack of biodiesel availability from contractors serving eastern Washington limited WSDOT's efforts to purchase biodiesel until the new state contract was implemented in May of 2011.



FUEL QUALITY

Washington State Department of Agriculture (WSDA) continues to monitor the quality of diesel and biodiesel used by state agencies as part of the state's Motor Fuel Quality Program.

WSDA implemented a redesigned fuel testing program in July 2011, taking into account the program's reduced budget. The new scheme provides for surveillance sampling across the state, increased monitoring during seasonal change periods, and modifications to the laboratory test panels.

During this reporting period, a total of 91 diesel and biodiesel fuel samples were submitted to the contract laboratory for analysis for compliance with ASTM quality standards. Samples were obtained from fuel distributors, biodiesel producers, retail outlets and WSDOT sites.

Of the 19 samples collected at WSDOT fueling locations, three samples did not meet the specification on one quality factor. All three were low-level biodiesel blends (5 to 7 percent biodiesel) that did meet the flash point standard. Overall, 12 of the 91 samples were out of compliance on flash point, including nine diesel samples from retail outlets.

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WSDOT reported a few instances of filter clogging and gelling in early December. No other performance-related issues were reported to WSDA by state agencies.

Overall, WSDA did not identify any significant fuel quality issues during the period.

STATE FUEL CONTRACTING

- The new state bulk fuel contract (Contract #00311) took effect May 21, 2011. The contract covers all regions of the state and encompasses 16 contracts with five contractors. The transition to the new contract occurred with no significant problems. State agencies are required to purchase bulk fuel through the state fuel contract, which covers gasoline, heating oil, and diesel (including biodiesel). The contract is also used by many higher education institutions, cities, counties, school districts, and transit systems.
- The contract made several significant changes related to biodiesel, including:
 - Eliminated feedstock restrictions. Biodiesel can be made from any feedstock so long as it meets ASTM specifications.
 - Removed or reduced specifications on production and blending processes.
 - Changed the biodiesel pricing reference.
 - Requires all contractors to provide biodiesel in any percentage from B1 to B100.
 - Requires contractors to provide state agencies with biodiesel made from at least 51 percent in-state feedstock and/or biodiesel produced in-state.
- Contractors were allowed six months to meet the 51 percent in-state sourced biodiesel requirement. Contractor reporting for the last quarter of 2011 will reveal any challenges in the reporting for this requirement. DES will work with contractors, as necessary, to make any necessary adjustments in reporting.
- The contract had an initial term of one year, with the option to be extended by mutual agreement for up to ten years. DES is in the process of extending the contract through May 20, 2014.
- DES is also pursuing contract extensions on the marine refueling services contract (Contract #02207) and the Seattle Harbor fuel dock contract (Contract #01108), which expire on April 25, 2012 and June 30, 2012, respectively.
- The state vehicle contract was amended in the fall to require diesel-powered vehicles, including $\frac{3}{4}$ to 1-ton trucks and cab and chassis trucks, to be approved for use of up to B20.

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COMING UP

- **Biodiesel Cold Weather Management:** Agency partners finalized plans for a workshop scheduled for January 19, 2012 that focuses on managing biodiesel at higher blends, especially in cold weather. This topic is an area of concern for WSDOT and other public fleet managers as they work to meet current and future biodiesel use requirements. The event has been organized by WSDA and is co-sponsored by the departments of Transportation and Enterprise Services. Participants include state fuel contract vendors, petroleum refiners, biodiesel producers, fuel testing laboratories and state agency fleet managers. The workshop will cover best practices and current developments in sourcing, handling, blending and storing biodiesel, and fleet management. Presenters include nationally recognized subject-matter experts, courtesy of the National Biodiesel Board.
- **Extent Practicable Rulemaking:** In December, the Department of Commerce convened a multi-agency steering committee for rulemaking to define “extent practicable” for agency biofuels use and vehicle electrification. Commerce plans to file a Pre-Proposal Statement of Inquiry (CR-101) in early January. Agencies face a 40 percent biofuels/electricity use requirement in 2013 and a 100 percent requirement in 2015, “to the extent practicable.” The rulemaking is expected to lay the groundwork for future rulemaking applicable to local governments, which are to meet the 100 percent requirement in 2018.

OTHER FACTORS AFFECTING BIODIESEL USE

Previous reports on state agency use of biodiesel have included information on other factors affecting biodiesel use and availability. With the advent of the new fuel contract, the influence of these factors on biodiesel availability for state agencies has diminished.

On the national level, biodiesel production is at record levels with the extension of the federal biodiesel tax credit in 2011 and minimum volumes required under the federal renewable fuels program (known as RFS2). Regionally, biodiesel production and use is increasing. Effective April 1, 2011, all diesel fuel sold in Oregon must contain a minimum of 5 percent (up from 2 percent) biodiesel by volume, except fuel sold for railroad locomotives, marine engines, and home heating applications.

The lack of a fully functional state renewable fuel standard (RFS) in Washington is affecting biodiesel availability in the state generally but has less of an impact on availability for state agencies due to the state fuel contracts.

RECOMMENDATIONS/ACTION ITEMS

- Continue efforts to increase biodiesel use by state agencies.
 - Monitor timely completion of the biodiesel blending infrastructure upgrade at the Seattle fuel pier that will allow WSF to fuel with biodiesel throughout its fleet.
 - Monitor and promote use of the new statewide bulk fuel delivery contract.

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- Work with agencies, biodiesel producers and fuel contractors on managing biodiesel at higher blends, especially in cold weather.
- Continue to encourage vehicle manufacturers to approve use of higher blends of biodiesel.
- Continue fuel quality monitoring to ensure standards are met.
- Monitor and ensure state fuel contracts are allowing state agencies to benefit from the sourcing of lower-cost in-state biodiesel.
- Explore opportunities to streamline state agency reporting of biodiesel use by integrating with reporting requirements related to alternative fuels use and greenhouse gas reductions.

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