



Washington State Department of
Enterprise Services

Biodiesel Use by Washington State Agencies

January through June 2013

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REPORT HIGHLIGHTS

- During the first six months of 2013, total biodiesel purchases by state agencies under state fuel contracts was just under 490,000 gallons, an increase of 15 percent over the previous six months.
- Washington State Ferries (WSF) is the state's largest consumer of diesel fuel. WSF purchased 320,207 gallons of biodiesel, the most ever purchased for a six-month period. Fuel containing five percent biodiesel (B5) became the standard fuel for the entire fleet in March, after the in-line blending infrastructure at the Seattle fuel dock was completed. Overall, WSF reached an average of 3.8 percent biodiesel for the period.
- Biodiesel purchased by state agencies other than WSF totaled 167,166 gallons during this six-month period. Biodiesel made up 12 percent of the diesel fuel purchased, up from 10 percent for 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 more than 15 percent of total diesel fuel purchased in western Washington, consistent with the previous period. Eastern Washington biodiesel purchases were up significantly, with biodiesel making up almost 10 percent of total diesel fuel purchased during this reporting 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, 2009 state law mandates state agencies to use biodiesel fuels to operate diesel-powered vessels, vehicles and construction equipment.

State law (RCW 43.19.646) requires the Department of Enterprise Services 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. Enterprise Services collaborates with key state agency stakeholders to prepare the report.

This report covers January 1 through June 30, 2013, 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 the value representing the volume percentage of biodiesel, such as B5 and B20. Therefore B5 would

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contain 5 percent biodiesel fuel. In tables and charts, the amount of biodiesel is expressed in B100 gallons.

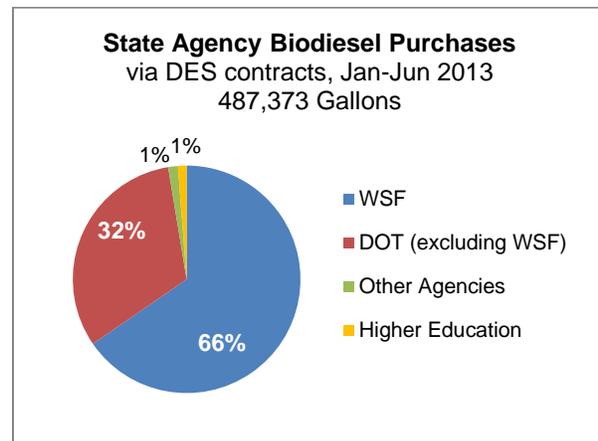
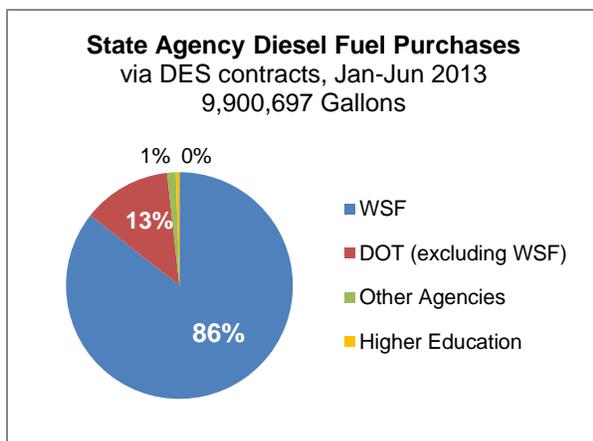
WSF is to use a minimum of 5 percent biodiesel in all vessels as long as the price of a B5 biodiesel blend does not exceed the price of diesel by 5 percent or more. All other state agencies are directed to use a minimum of 20 percent biodiesel by total volume to operate diesel vessels, vehicles and construction equipment.

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 January 1 through June 30, 2013, state agencies and higher education institutions purchased 9.9 million gallons of diesel fuel through state fuel contracts – including about 490,000 gallons of biodiesel, a 60,000 increase from the previous six-month period. Purchases by WSF made up 86 percent of all diesel fuel and 66 percent of the biodiesel purchased during the period. Total biodiesel use by state ferries increased as a B5 biodiesel blend emerged as the standard fuel for all vessels. Purchases made by state agencies other than WSF for diesel-powered vehicles and equipment made up 14 percent of total fuel purchased and 34 percent of the biodiesel purchased on state contracts.

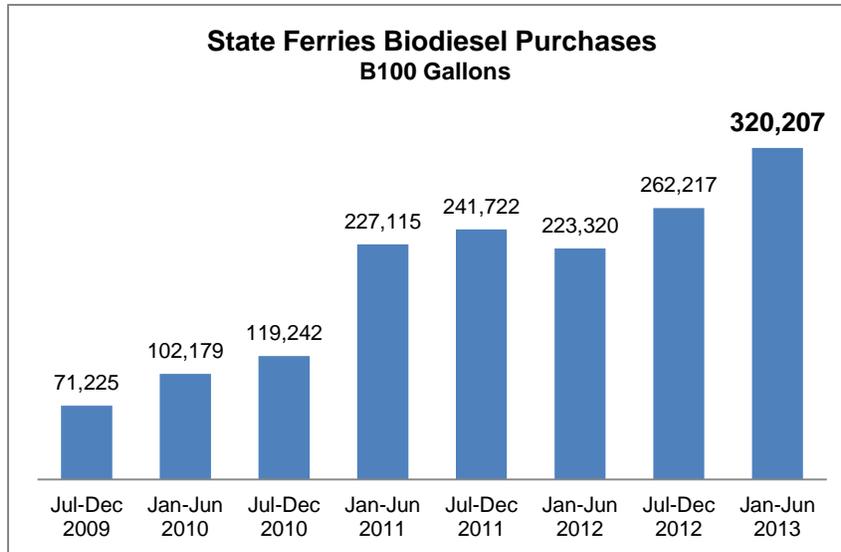
Biodiesel purchases by institutions of higher education are included in the data if purchased using the state’s fuel contract. However, educational institutions are not required to use the state fuel contract so this report does not capture all the fuel purchased by higher education institutions during the period.



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WASHINGTON STATE FERRIES (WSF) BIODIESEL USE

- WSF purchased 320,207 gallons of biodiesel during this six-month period. This is a 22 percent increase over the 262,217 gallons purchased from July through December 2012 and a 43 percent increase from January through June 2012. This increase is due to the completion of the in-line blending infrastructure at the Harbor Island dock facility in Seattle, which in March 2013 allowed fuel containing 5 percent biodiesel (B5) to become the standard fuel for the entire fleet.



- WSF's progress using biodiesel has occurred in stages, corresponding with the availability of in-line blended B5 fuel.
 - WSF began using in-line blended B5 for all vessels fueled by truck from the Harbor Island truck facility in Seattle in August 2009. This facility accounts for about 25 percent of the total fuel used by the state ferry system.
 - WSF has used in-line blended B5 for all vessels fueled by truck from Anacortes since January 2011. This facility accounts for about 40 percent of the total fuel used.
 - The capital improvement project to build the infrastructure for in-line blending of biodiesel at the Seattle Harbor Island dock facility was completed in late February 2013. Ferries fueling at the dock facility began using B5 on March 1, 2013, accounting for about 35 percent of the total fuel used.
- Overall, WSF reached an average of 3.8 percent biodiesel for the period, up from 3.0 percent for the previous period.
- The average price paid for diesel during the period was \$3.49 per gallon; the average price paid for B5 was \$3.54 per gallon, a differential of less than 1.5 percent.
- WSF had no biodiesel-related quality or performance issues during the period.

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Washington State Ferries Biodiesel Use: January 2009 to June 2013

Time Period	Diesel Gallons	Biodiesel Gallons	Total Gallons	Biodiesel %
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%

LAND SECTOR USE

State agency purchases of biodiesel for use in vehicles and equipment totaled 167,166 gallons in the first six months of 2013, slightly more than the 165,257 gallons in the last six months of 2012. Overall state agency biodiesel purchases increased from 10.2 to 11.7 percent of total diesel fuel purchased under the state fuel contract. This increase was due to a 14 percent decrease in total fuel purchased during the period.

WSDOT is the largest single purchaser of diesel fuel in the land sector. During this reporting period, WSDOT purchased 1.25 million gallons of diesel fuel, accounting for 88 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 10,000 gallons of bulk diesel fuel during the period:

- Department of Corrections
- Department of Natural Resources
- Department of Fish and Wildlife
- Department of Social and Health Services

Among the nine higher education institutions purchasing diesel fuel off the state contract, only the University of Washington purchased more than 10,000 gallons of bulk diesel fuel during the period.

State Agency Biodiesel Purchases (Land Sector): January to June 2013

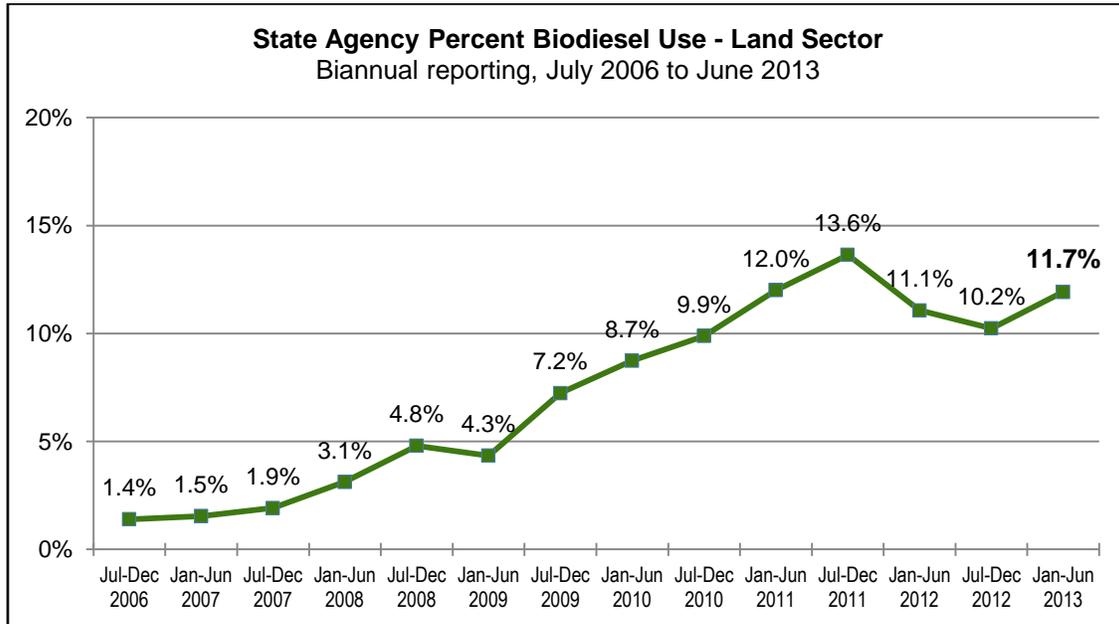
Agency	Diesel Gallons	Biodiesel Gallons	Total Gallons	Biodiesel %
WSDOT	1,097,221	154,415	1,251,636	12.3
Other Agencies	115,929	6,711	122,640	5.5%
Higher Education	43,474	6,040	49,514	12.2%

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Total	1,254,356	167,166	1,423,790	11.7%
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On a percentage basis, biodiesel purchases by state agencies for use in vehicles and equipment have significantly increased since 2006 and averaged above 10 percent for the last five reporting periods. The lack of available biodiesel in Eastern Washington limited efforts to use biodiesel fuels prior to 2011.



DETAILS ON WSDOT PURCHASES AND USE

- Overall, WSDOT’s total biodiesel purchased was up 5 percent from the previous six months while the total gallons of fuel purchased decreased by 10 percent. As a result, biodiesel compared to the total diesel volume increased from 10.6 to 12.3 percent. The increase in biodiesel gallons and in biodiesel percentage was due to increased biodiesel purchases in Eastern Washington.
 - WSDOT had 45 fuel sites with biodiesel fuel available in Western Washington. During this reporting period, 85 percent of fuel deliveries were B20, 10 percent were B10, and the remaining were B5. Deliveries were reduced to B5 at two sites due to cold weather. Biodiesel made up more than 15 percent of total diesel fuel purchased in Western Washington, consistent with the previous period.
 - WSDOT had 53 fuel sites with biodiesel fuel available in Eastern Washington. B5 was the standard fuel delivered during the winter months. In April, the biodiesel blend percentages of deliveries were increased to B10 or B20. From April through June, 74 percent of deliveries were B20, 25 percent were B10, and 1 percent was B5. Overall, biodiesel made up almost 10 percent of total diesel fuel purchased in Eastern Washington during the period, up from the 5.4 percent of the previous six months.

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WSDOT Biodiesel Purchases by Region: January 1 to June 30, 2013

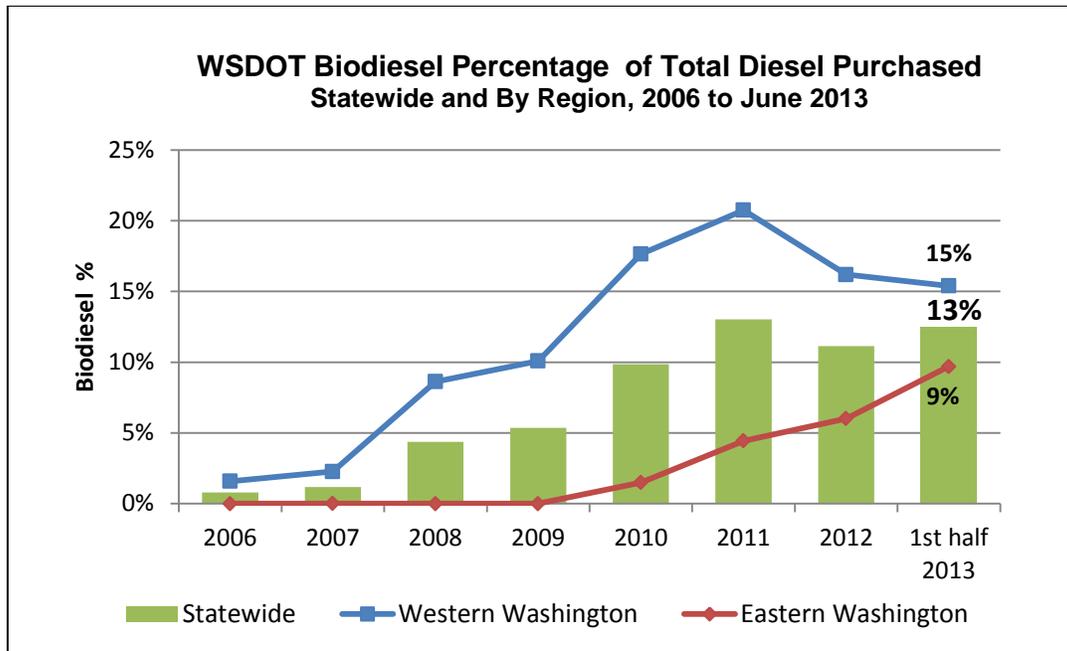
Region	Diesel Gallons	Biodiesel Gallons	Total Gallons	Biodiesel %
Westside	532,104	95,741	627,845	15.2%
Eastside	565,117	58,674	623,791	9.4%
Statewide Total	1,097,221	154,415	1,251,636	12.3%

- WSDOT continued suspending purchases of biodiesel blends higher than B20. The suspension began in May 2012 after a review of EPA regulations (40 CFR 280.32), recently published guidance, and biodiesel handling guidelines on materials compatibility. WSDOT worked with industry experts to assess its fuel tanks and determined that WSDOT diesel fuel tanks must be replaced to meet certification requirements to store biodiesel blends above B20. Replacing these tanks and resuming purchases of higher biodiesel blends is dependent on funding.
- 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. WSDOT has 11 sites that are not currently 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). 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 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 a percentage basis, WSDOT biodiesel purchases have significantly increased since 2006. Biodiesel use declined in Western Washington due to the suspension of using biodiesel blends higher than B20. Prior to the suspension, some sites in Western Washington provided biodiesel blends of up to B40. The lack of biodiesel availability from contractors serving Eastern Washington limited WSDOT's efforts to use biodiesel fuels in that region before 2011.

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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 tested 174 diesel and biodiesel fuel samples and submitted 89 to a contract laboratory to test compliance with American Society for Testing and Materials (ASTM) quality standards. Samples were obtained from fuel distributors, biodiesel producers, retail outlets, and WSDOT sites.

The program collected seven samples for laboratory testing at WSDOT fueling locations: six were B20 and one was B3. Two of the B20 samples and the B3 sample did not meet ASTM Flash Point specifications.

Of the other 167 samples evaluated, 82 were submitted to the contract laboratory for analysis. Of these, 29 of the 53 diesel samples and 8 of the 29 biodiesel blend fuel samples did not meet one or more ASTM quality specifications, including specifications for Flash Point and Appearance. Of the eight biodiesel fuel samples not meeting specifications, seven were B5 and one was B20. While these fuel quality failures do not cause immediate engine problems, WSDA is concerned about the continued problems with flash point and other failures and is working to determine causes and corrective actions. WSDA issued Notices of Correction to all of the businesses with fuel that did not meet specifications and issued five notices of intent to issue a civil penalty for repeat violators. In addition, fuel at four retail locations was removed from sale for excessive water in the storage tanks. Two were ultra low sulfur diesel, one was B2 and another was B5.

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Overall, WSDA did not identify any significant quality issues with biodiesel fuels during this reporting period. No performance-related issues were reported to WSDA by state agencies.

STATE CONTRACTING

- The state bulk fuel contract which started May 21, 2011, is now in its third year. The contract covers all regions of the state and encompasses 16 contracts with five contractors. 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 made from at least 51 percent in-state feedstock and/or biodiesel produced in-state.
- As of June 2013, Coleman Oil and Powell Christiansen have agreed to add a new biodiesel fuel product (B5 Rack) to their bulk fuel contracts which cover Eastern Washington. B5 has become a standard product available from fuel suppliers in Washington with its own pricing. This change provides a competitively-priced product to contract customers and is expected to provide cost savings to state contract customers. The new product is expected to be available in July 2013. A B5 Rack product has been available from PetroCard since August 2012. Enterprise Services plans to work with the two remaining contractors to make this product available statewide.
- The amendment to the contract to provide fuel at Seattle Harbor Island dock facility was completed to coincide with the completion of in-line biodiesel blending infrastructure at the facility. The amendment added B5 to the contract's core fuel types, includes fuel quality standards and specifications, and covers the 51 percent in-state sourced biodiesel requirement consistent with the bulk fuel contract. There was no activity to report regarding the Marine Refueling Services contract this period.
- Two of the three fuel contracts require contractors to provide biodiesel that is at least 51 percent in-state sourced. To determine compliance with this contract provision, Enterprise Services reviews invoices or bills of lading documenting the date, quantity, and source of biodiesel purchases. The data shows compliance well above the 51 percent threshold for this reporting period.

OTHER ACTIVITIES RELATED TO BIODIESEL USE BY STATE AGENCIES

- **Extent Practicable Rulemaking:** The Washington State Department of Commerce adopted final rules on agency use of biofuels and vehicle electrification in April 2013 (WAC 194-28). The rules went into effect May 23, 2013. The rules define practicability and clarify how state agencies will be evaluated to determine whether they have met mandated goals which include 40 percent biofuel/electricity use by June 1, 2013, and 100 percent biofuel/electricity use by June 1, 2015. Unless otherwise limited by law, it is considered practicable for state agencies to use a minimum of 20 percent biodiesel on an annualized basis when purchasing fuel through the state procurement system. Agencies are encouraged to make good faith

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efforts to identify sources and buy a minimum of B20 when purchasing fuel from retail outlets.

An interagency Alternative Fuels and Vehicles Technical Advisory Group (comprised of the 12 agencies and four educational institutions that collectively represent more than 98 percent of state fuel use) has been established to guide implementation and future rule development. The advisory group met for the first time on May 30, 2013, and will meet quarterly.

RECOMMENDATIONS/ACTION ITEMS

- Determine necessary actions to increase the percentage of biodiesel used by WSF at one or more fueling locations within the cost limitation set by the Legislature.
- Explore adding the 51 percent in-state sourced biodiesel requirement to the Marine Refueling Services contract.
- Consider replacing selected fuel storage tanks in Western Washington to allow WSDOT to resume purchasing higher biodiesel blends at major fuel sites.
- Work with agencies, biodiesel producers, fuel contractors and fuel additive manufacturers regarding managing biodiesel at higher blends, especially in cold weather.
- Use the Alternative Fuels and Vehicles Technical Advisory Group to integrate efforts to increase the percentage of biodiesel used by state agencies with the larger effort related to agency use of alternative fuels and vehicles.
- Continue to add new B5 Rack product to fuel contracts to provide a competitively-priced product to contract customers. Promote and monitor purchase of the new B5 product as it becomes available.
- Monitor and work to ensure state fuel contracts keep current with changes in the biodiesel and fuel markets and agency needs.
- Continue fuel quality monitoring to ensure standards are met.
- Reduce the frequency of this report to once a year.

CONTRIBUTORS

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