Reducing Diesel Emissions: Projects Now Underway in Washington State

Many groups are already working to reduce diesel emissions throughout the state. Some of these include:

**Washington State Local Government’s Diesel Retrofit Grants Program**

Cities, counties, ports, and transit authorities are retrofitting their diesel fleets with $2 million funding from taxes on toxic substances, including crude oil, through the Washington State Department of Ecology. Ecology granted awards to 28 recipients to retrofit more than 900 vehicles. The retrofits, combined with the use of ultra-low sulfur diesel, reduce diesel emissions from each vehicle by 40 to 50 percent.

**Locomotive Idle Reduction**

Four switchyard and short haul locomotives will be retrofitted with idle reduction equipment using $200,000 in public and Tacoma Rail funds. This will save over 2,500,000 gallons of diesel, eliminating 20 tons of air pollution and 550 tons of carbon dioxide, per year. In 2003, the Burlington Northern Santa Fe Railway also retrofitted three switchyard locomotives with idle reduction equipment in Vancouver, Washington.

**Washington State Clean School Bus Program**

The Department of Ecology and the state’s seven local air quality agencies have retrofitted nearly 5,000 school buses with emission reducing technology. The state legislature granted $5 million per year for five years to help school buses suitable for retrofits. The retrofits, combined with readily available ultra-low sulfur diesel, reduce emissions on individual buses by 40 to 50 percent. Since 2002, a portion of the funding has also retrofitted public fleet vehicles.

**The Puget Sound Clean Air Agency’s Diesel Solutions Program**

An initiative to make diesel engines in the Central Puget Sound region significantly cleaner, has installed over 2,000 retrofits in nearly 50 school districts with funding from the State School Bus Program. They have also utilized more than $780,000 in EPA grants and other funding to retrofit 1,260 public fleet engines and provide funding for other regional diesel reduction projects.

**Washington State Ferries’ Clean Fuel Initiative**

With funding from EPA and the Puget Sound Clean Air Agency, Washington State Ferries began a year-long pilot test of ultra-low sulfur diesel (ULSD) on the MV Elwha. Completing this pilot test helps users understand whether marine diesel engines can effectively burn ULSD over the long term. It also eliminates three tons of sulfur dioxide and approximately one-half ton of particulate matter.

**Eastern Washington Farmers Diesel Emissions Reductions**

The Upper Columbia Resource Conservation & Development Council is using $500,000 in EPA funds to promote no-throttle seeding techniques for Eastern Washington farmers. The project will conserve an estimated 56,660 gallons of diesel fuel, reducing diesel emissions, and the long-term. It will also evaluate the financial and environmental benefits of no-throttle-seeding.

**WSDOT Uses Biodiesel in Maintenance Vehicles**

In 2005, WSDOT started using five percent biodiesel (B5) mixed with regular diesel in maintenance vehicles operating in the Central Puget Sound area. B5 is now being pumped at 18 WSDOT fueling stations. By 2009, WSDOT plans to use 20 percent biodiesel (B20) in all applicable applications. WSDOT Maintenance Vehicle Retrofits in Yakima

With an $84,000 grant, WSDOT is working with the Yakima regional air agency, EPA, and Ecology to reduce over 30 percent of its engine and exhaust emissions from maintenance vehicles. Vehicles include dump trucks, sweepers, and loaders that operate around the city of Yakima.

**WSDOT Maintenance Vehicle Retrofits and Idle Reduction in Puget Sound**

In 2006, the Puget Sound Regional Council approved $1.5M in federal funding for WSDOT to install idle-reduction equipment on about 150 vehicles and to replace power burning incandescent lights with light emitting diodes (LED) on about 700 vehicles. LED’s reduce ciling pollution by allowing lights to work with the engine shut off.

**For More Information**

Elizabeth Stratte
Freight Policy & Project Manager
(206) 716-1178
stratte@wsdot.wa.gov

Mia Waters
Air Quality Program Manager
(206) 440-4541
watersy@wsdot.wa.gov

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January 2007

Reducing Diesel Emissions in Washington State: Progress to Date, Future Needs and Efforts

Efforts are underway to reduce emissions from diesel exhaust in Washington. However, still more needs to be done.

The following graphs and charts show how the US Environmental Protection Agency’s (EPA) national engine and fuel rules reduce harmful emissions from diesel engines over time. However, some engines continue to produce higher levels of pollution. There are opportunities to reduce these emissions for better public health and air quality. State and local agencies in Washington State are working on many fronts to promote emission reductions as soon as possible.

### Trends Show We are on the Right Track

#### Fine Particulate Matter (PM$_{2.5}$) Concentrations Have Been Declining Since the 1990s

Throughout the United States, the concentration of fine particulate matter (PM$_{2.5}$) in the air has been generally declining. The EPA estimates that concentrations decreased 10 percent from 1999 to 2003, and limited information suggests as much as a 30 percent decrease from 1979 to 2003. In the eastern United States, results have been achieved mostly from cleaner processes at large power plants. In the western United States, results have been achieved through reduced wood burning in homes and cleaner engines for vehicles.

#### Diesel Emissions are Projected to Decrease Even More by 2020

New engines standards and requirements for cleaner fuels will continue to decrease emissions from diesel engines in the future. At the national level, diesel emissions (measured as Diesel Particulate Matter and Diesel Organic Gases) are projected to decrease 87 percent from 2000 to 2020. Meanwhile, transportation will be growing with a projected 64 percent increase in vehicle miles traveled over the same period. However, even small quantities can be harmful so having even less of them is better.

#### National Trends in Mobile Source Air Toxics Emissions, 2000-2020

<table>
<thead>
<tr>
<th>Year</th>
<th>Diesel Particulate Matter (DPM)</th>
<th>Diesel Organic Gases (DEOG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>2010</td>
<td>95%</td>
<td>95%</td>
</tr>
<tr>
<td>2020</td>
<td>90%</td>
<td>90%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Benzene</th>
<th>Formaldehyde</th>
<th>Acetaldehyde</th>
<th>1,3-butadiene</th>
<th>Acrylonitrile</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
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<td>100%</td>
<td>100%</td>
<td>100%</td>
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<td>2020</td>
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</tr>
</tbody>
</table>

* Percent Change From 2002 Emissions

**National Emissions (tons per year)**

<table>
<thead>
<tr>
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<tr>
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* Federal Highway Administration (2005)
Some Diesel Engines are releasing lower amounts of Toxic Pollutants - Thanks to Nationwide Standards

Trucks and buses on the highway today are much cleaner than the vehicles of 20 years ago. By comparison, engines manufactured to today’s standards emit only one-sixth as much particulate matter and less than four-fifths as much NOx.

Requirements for cleaner fuels are also reducing emissions. In 2006, EPA required ultra low-sulfur diesel across the country for highway vehicles. This enables the implementation of new engine standards for heavy-duty vehicles with model years 2007 and later (EPA’s 2007 Heavy-Duty Highway Engine Rule). EPA estimates that these new standards, combined, will reduce diesel pollutants from each vehicle by 90 percent.

Future diesel engines used off the highways will also be getting cleaner. EPA’s 2008 Clean Air Nonroad Diesel Rule will make new engines in construction, agriculture, and industrial equipment 90 percent cleaner than they were just over a decade ago. EPA is also developing new emission requirements for trains and marine vessels.

What Does This Mean for Washington State?

In Washington State, annual particulate matter emissions from diesel engines are projected to decrease 84 percent from 2002 to 2018. Particulate matter emissions from marine vessels are not currently projected.

Like national trends, the full benefits of new diesel fuel and engine standards will be realized over time in the state. New, cleaner vehicles will replace older models, but diesel engines last a long time and may last for another 20 to 30 years before being retired. In addition, new regulations for commercial marine emissions may have little affect on actual emissions because most ships calling in the US are foreign flag vessels (about 90 percent) and are not subject to US standards.

What Strategies Can Help Reduce Diesel Emissions Sooner?

While national standards will help reduce emissions from future diesel engines, more can and should be done to reduce emissions today. There are more immediate things that the public, government, and private entities can do. These can range from turning off vehicles when not in use to replacing a whole vehicle. These “voluntary” programs and strategies often rely on public funds to offset the high cost of implementation. They also require strong cooperation between the public and private sectors. Up to 90 percent of diesel engines in the state are privately owned and operated.

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