

## Reducing Locomotive Idling at Switchyards

Even when switchyard locomotives are not moving trains, their diesel engines are usually kept running. This is done to charge batteries, warm engine fluids and meet other operational needs. This can amount to several thousand hours of idling per locomotive each year. It also results in higher fuel costs and significant emissions of air pollution and greenhouse gases.

### Why is it important to reduce locomotive engine idling?

Diesel exhaust from locomotive engine idling contains substances that are harmful to human health. These include tiny particles known as “fine particulate matter.” These particles are so small that they can be inhaled deep into the lungs, where they can cause serious health problems. Diesel exhaust also contributes to the formation of ozone air pollution, which can cause numerous respiratory health problems. Health studies have shown that diesel exhaust contributes to chronic respiratory problems such as asthma, and may cause cancer.

In addition to its health effects, diesel exhaust contributes to global warming and haze.

### How will reducing locomotive engine idling help?

Over a five year period, the average switchyard locomotive burns more than 80,000 gallons of diesel fuel from idling alone. This idling emits:

- More than 15 tons of nitrogen oxides, a smog forming pollutant
- 1,000 pounds of diesel fine particulate matter, which is known to cause cancer
- More than 900 tons of carbon dioxide, a greenhouse gas

Reducing this idling will save the railroads money in fuel and maintenance costs, reduce our dependence on foreign oil, and improve the health of railroad workers and communities near switchyards.

### How can locomotives meet their operational needs without idling?

Commercial idle control retrofit devices enable locomotive engines to meet operational needs without idling for long periods. A small auxiliary diesel engine known as a Diesel Driven Heating System (DDHS) can be installed on the locomotive. These engines are certified by the US Environmental

#### WHY IT MATTERS

The diesel exhaust from idling locomotives contains fine particles that can harm your health. Diesel exhaust also forms smog, which can cause many breathing problems; and contributes to global warming and haze.

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For more information about diesel emissions in Washington, visit our website at:

<http://www.ecy.wa.gov/programs/air/cars/DieselEmissionPage.htm>

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# Focus on Locomotive Idling

Protection Agency as low emission engines. A computer system monitors main engine operation. When the locomotive is not performing work, the main engine shuts down and the auxiliary engine starts up. These retrofit devices keep the locomotive engine coolant and lube oil at operating temperature while ensuring the batteries are charged. The auxiliary engine burns about a half gallon of diesel per hour, compared to five gallons per hour that the main locomotive engine burns.

In warm seasons or in warmer climates, a simple Automatic Engine Start/Stop System (AESS) may suffice. The auxiliary diesel engine of a DDHS would not be needed to warm engine coolant and lube oil. The AESS monitors engine and operational parameters, and simply starts or stops the engine when preset programmed conditions are met.

## Tacoma Rail's Idling Reduction Project

Tacoma Rail is a short line railroad company that performs switching, car interchanging and short freight line service in the southern Puget Sound area (Tacoma, Olympia, Chehalis and Morton). In response to public concern about air pollution from idling locomotives, Tacoma Rail decided to retrofit four of their switchyard locomotives with DDHS systems. Two of the locomotives are stationed in Olympia and two are in Tacoma. The Washington State Department of Ecology, the Olympic Region Clean Air Agency and the Puget Sound Clean Air Agency helped Tacoma Rail by providing matching funds to purchase and install the DDHS. The DDHS is manufactured by Kim HotStart Company of Spokane and is being installed by Coast Engine and Equipment Company of Tacoma. All four idle reduction systems should be installed and operating by June of 2007. Over five years, the four locomotives with the DDHS will:

- Save 400,000 gallons of diesel fuel
- Reduce fine particulate matter by two and a half tons
- Reduce nitrogen oxides by 75 tons
- Reduce carbon dioxide by 4,500 tons

The investment in the technology pays for itself in less than two years through fuel savings alone.



Ken Ward, of Coast Engine & Equipment Co, works on installing the Kim HotStart idle reduction technology on one of four Tacoma Rail locomotives. Photos: Steven Herppich/The Olympian (left) and Dan Nelson/ORCAA (right)