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Subject: Comments on Washington's Draft VW Environmental Mitigation Plan

CleanFuture, Inc. (CleanFuture) appreciates an opportunity to submit comments on Washington's Draft VW Environmental Mitigation Plan. CleanFuture encourages Washington to maximize funding to the Diesel Emission Reduction Act (DERA) Option for cost-effective emission reduction actions not recognized in Appendix D-2. The settlement and the eligible mitigation categories are narrow and prescriptive, failing to recognize other cost-effective mitigation actions.

CleanFuture urges the Washington's Mitigation Plan allow **idle reduction technologies**, the cleanest, most cost-effective clean diesel mitigation action. Idle reduction can save between 900 to 1,400 gallons of fuel each year per truck [1]. Idling diesel engines are epidemic, particularly affecting environmental justice communities that can be near freight, goods movement, and port facilities with excessive diesel idling of heavy duty trucks and other equipment.

The cleanest diesel engine does not run. Idle Reduction Technology (IRT) reduces long-duration idling of the diesel engine by using an alternative technology. [2] According to U.S. EPA each year, long-duration truck idling results in an estimated or approximated 1 billion gallons of fuel consumption producing 180,000 tons of nitrogen oxides (NOx), 11 million tons of carbon dioxide (CO2) and 5,000 tons of particulate matter (PM). [2]

Omitting a SmartWay-verified idle reduction technology known as **Electrified Parking Spaces (EPS) / Truck Stop Electrification (TSE)** [2] overlooks a localized NOx mitigation strategy. Electrified parking spaces are complementary to other electrified transportation measures and are well-suited for medium- and heavy-duty vehicles as allowed in Appendix D-2 of the partial



consent decree. EPS / TSE is a cost-effective measure to reduce emissions and could be used as heavy-duty zero emission supply equipment as more electrified heavy-duty freight vehicles come to market. Therefore, Washington is urged to maximize funding of DERA Option so that electrified parking spaces (EPS), equipment replacement (including transport refrigeration units or TRUs) and other related equipment be eligible for funding in Washington's Mitigation Plan.

The EPA definition of Electrified Parking Spaces (EPS) / Truck Stop Electrification (TSE) is [2]:

Electrification refers to a technology that uses electricity-powered components to provide the operator with climate control and auxiliary power without having to idle the main engine. This can be on-board equipment (e.g., power inverters, plugs), off-board equipment (e.g., electrified parking spaces or systems that directly provide heating, cooling or other needs), or a combination of the two.

An EPS system (also known as Truck Stop Electrification) operates independently of the truck's engine and allows the truck engine to be turned off as the EPS system supplies heating, cooling, and electrical power.

The EPS system provides off-board electrical power to operate the following:

- Independent heating, cooling, and electrical power system;
- Truck-integrated heating and cooling system; and/or
- Plug-in refrigeration system that would otherwise be powered by an engine.

Mobile transport refrigeration systems powered by diesel engines are subject to long-duration diesel engine idling at distribution centers and other goods movement facilities. Transport refrigeration units (TRUs) powered by diesel engines are used to refrigerate temperature-sensitive products transported in insulated semi-trailer vans, truck vans, shipping containers, and rail cars. Transport refrigeration units use small diesel engines that emit more diesel particulate matter (PM) and nitrogen oxides (NOx) on a grams per horsepower basis than larger engine categories used in motor vehicles.

Substantial diesel fuel is burned by these idling diesel engines in TRUs to keep temperature-controlled cargo at proper temperature. Electrification of these refrigeration units when parked offers the promise of substantially lower operating costs, engine wear, and reduced toxic air pollution, and lower greenhouse gas emissions. Hybrid electric TRUs and all-electric TRUs can be plugged-in while parked to grid-supplied electricity provided by electrified parking spaces. [3]

Moving perishable products requires TRUs to provide necessary cooling. In the normal course of goods movement, transport refrigeration units accumulate significant stationary engine run hours (engine idling hours) to pre-cool trucks and trailers, for controlling cargo temperatures during loading and unloading, and for temperature control while staging loaded trucks and trailers for dispatch.

Freight and goods movement facilities are commonly in urban areas for local food distribution. Environmental Justice communities are often located nearby heavily traveled freeways, food distribution centers and warehouses, freight terminals, railyards, and ports; it is common for such goods movement facilities to be in disadvantaged communities. [4]

Diesel idling in TRUs at freight and goods movement facilities is a common occurrence in the normal course of goods movement with TRUs commonly accumulating half of the TRU diesel

engine's run hours at distribution centers in local distribution fleets. Furthermore TRUs produce more NOx and other pollutants than many other diesel engines. The auxiliary engines typically installed on TRUs can emit over twice as much the NOx and particulate matter of a truck's main propulsion engine.<sup>1</sup> These TRU engines can run while parked (idling) at distribution centers for 700 to 1,200 hours per year. [5]

Idle reduction is one of the most cost-effective emission reduction measures yet the Eligible Mitigation Actions in the partial consent decree per Appendix D-2 favors technologies substantially less impactful per dollar. According to a US DOT report, truck stop electrification is the lowest cost mitigation strategy in cost/ton of NOx/HC reduced. [6] Another report affirms idle reduction strategies such as Electrified Parking Spaces to be the most cost effective in NOx reduction with cost-effectiveness greater than diesel retrofits or heavy vehicle diesel engine replacements. [7]

Truck stop electrification can include high voltage electrified parking spaces to plug-in TRUs, however there are distinctions between TSE and EPS for TRUs. TSE is mainly used for mandatory rest periods for long haul carriers and owner-operators to avoid idling the truck diesel engine during rest periods. Selected TSE sites include high voltage power for electrified parking spaces for TRUs, however truck stop electrification is scarce, so mitigation funds should build out more electrified truck stops. Electrified parking spaces for TRUs serve local/regional distribution at food distribution centers, food manufacturers, cold storage warehouses and terminals where refrigerated goods are loaded, unloaded and staged for local deliveries. Stationary operation of TRUs to keep goods at proper temperature is necessary for food quality, integrity and food safety, yet idle reduction with electrified parking spaces is a cleaner, cheaper and quieter alternative than running diesel engines in parked refrigerated trucks and trailers. [8]

We urge Washington to recognize the benefits of localized idle reduction technology with flexibility in Washington's Mitigation Plan to fund such mitigation actions.

**Recommendation:**

1. Include eligibility of Electrified Parking Spaces (EPS) / Truck Stop Electrification (TSE) with the DERA Option which allows greater flexibility for other cost-effective mitigation actions allowed under DERA which are otherwise not allowed in Appendix D-2 under the partial consent decree.
2. Include eligibility of equipment replacement using hybrid electric or all-electric TRUs to replace diesel TRUs when combined with electrified parking spaces (EPS) with the use of DERA Option.

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<sup>1</sup> For heavy duty truck engines the current standard level for PM and NOx+NMHC is .01 PM / 2.4 NMHC+NOx g/bhp-hr standards, while most trailer TRU engine are either in the <25 hp category (0.22 PM / 5.6 NMHC+NOx per g/hp-hr) or the 25-50- hp category (0.22 PM / 3.5 NMHC+NOx per g/hp-hr) so the <25 hp trailer TRU engines produce 2.33 times the NOx.



In conclusion, CleanFuture appreciates the opportunity to comment on Washington's Draft Mitigation Plan. We share your desire to maximize the air quality mitigation and urge the most cost-effective use of Mitigation Funding to do the greatest good. Thank you for considering our perspective, we urge Washington to maximize funding for DERA Option for flexibility and cost-effectiveness.

We invite an opportunity for follow-up discussion. If you have questions, please contact me at [john@CleanFuture.us](mailto:john@CleanFuture.us), or 503-427-1968.

Sincerely,  
CleanFuture, Inc.

A handwritten signature in black ink that reads "John A. Thornton".

John A. Thornton



## References

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