

Rude, Brett (ECY)

From: Julie Brooks <julieb@orangeev.com>
Sent: Friday, December 15, 2017 4:14 AM
To: Rude, Brett (ECY)
Cc: Mike Saxton
Subject: Comments on Washington's Draft VW Mitigation Plan

Hi Brett,

You've already received quite a bit of information from Orange EV, so I'll keep this brief!

Emission reductions are greater than estimated in Washington's draft plan: On page 16 of the draft plan, you estimate reductions of 0.3 tons NOx per heavy-duty truck (referring to Category 1 projects), and 0.4 tons NOx per forklift/CHE (referring to Category 8 projects). Orange EV trucks are eligible in both of these categories, and in our experience, the reductions will be far higher when replacing a diesel yard truck with an all-electric Orange EV T-Series truck. For example:

A busy break-bulk site operates four Orange EV yard trucks 24x7 in three shifts. In a fleet of 20 yard trucks, our four electric trucks average 5,000 key-on hours annually. Note that the diesel hours displaced are higher than the 5,000 hours due to some degree of additional idle reduction. In our experience this is hard to predict but can easily be 5% to 40%, thereby increasing the impact of replacing a diesel truck with electric. Using the EPA's Diesel Emissions Quantifier (DEQ), if each electric truck replaced a 2008 Tier 3 diesel using an average of 1.8 gallons of diesel per hour for 5,000 hours, annual emissions reductions would be **1.54 tons NOx per truck**.

Latest diesel emissions control equipment doesn't work (further increasing effective emission reduction): As significant as reductions are in the example above, real world emissions may be far higher according to a 2017 Wells to Wheels analysis ("Environmental implications of natural gas as a transportation fuel", Hao Cai et al). In the Wells to Wheels analysis, multiple studies found that performance of a diesel's selective catalytic reduction (SCR) system is highly dependent on the duty cycle. In high-speed duty cycles, the SCR system performs well and diesel trucks have relatively low NOx emissions. In duty cycles with significant idling, low speeds, or low loads, however, diesel engine temperatures do not reach levels that support sustained SCR performance. This results in very high NOx emissions, up to 10x higher than the 2010 EPA NOx emission standard. **Since diesel yard trucks typically operate 5 to 15 mph, they likely emit far more NOx than currently estimated**, along with other criteria pollutants, even when equipped with the latest emission control equipment.

Of course emissions reductions are variable by site and highly dependent on operating hours, but calculated emissions reductions for pure-electric yard truck replacements should average at least double your cited numbers.

Electric yard truck projects achieve state VW Mitigation Plan goals in that they:

- Remove some of the heaviest-polluting diesel trucks
- Adopt the cleanest technology (i.e. zero emission electric)
- Permanently remove 100% of the previous diesel emissions
- Significantly improve air quality in impacted areas

In addition, when fleets deploy and share their success with Orange EV electric terminal trucks, other fleets will know significant vetting has occurred. Successful deployments generate interest in a way that overcomes preconceived notions, encouraging fleets to deploy faster than they otherwise might have. This ripple effect further improves each project's cost effectiveness.

Please contact us if you have questions or if we can be of assistance. Thank you for your consideration and partnership in the mission to deploy emission-free technologies.

-Julie

Julie Brooks

Orange EV, Pure Electric Terminal Trucks

"Spend 90% Less in Fuel to Haul the Same Load with No Diesel and No Emissions"

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July 20, 2016

Assistant Attorney General, Environment and Natural Resources Division
United States Department of Justice

SUBJ: Volkswagen "Clean Diesel" Marketing, Sales Practices, and Product Liability Litigation,
Case No: MDL No. 2672 CRB (JSC), and D.J. Ref. No. 90-5-2-1-11386.

Please consider these comments submitted by Orange EV in reference to the above consent decree in order to ensure that Orange EV's new and repowered vehicles in all their forms and U.S. sites are eligible to receive funding outlined in the consent decree. Orange EV manufactures electric yard trucks (aka hostlers, spotters), class 8 trucks that are known by many other names also shared below.

Please affirm and clarify all of the following.

- 1) yard trucks are eligible as both on-road (i.e. on-hwy) and off-road (off hwy, non-plated) vehicles.
- 2) diesel yard trucks may have the option to either be repowered with an electric motor and drive system or replaced by an all-electric yard truck.
- 3) the yard trucks be deployed anywhere, not just to seaports as the word "ports" could suggest and instead anywhere in the supply chain such trucks exist.
- 4) replacement vehicles may be any model year as long as it meets the emission standards of the year that the mitigation action takes place. Since Orange EV vehicles are all electric and have no emissions, the model year should not matter.
- 5) when repowering trucks, it is NOT required to destroy the entire truck, rather if necessary, just to destroy the diesel engine being removed from the repowered truck. This enables reuse / recycling of other portions of existing trucks e.g. cab, frame, other non-emitting durable elements. Orange EV carefully inspect such donor trucks to ensure those durable elements can be made new again when repowering vehicles. Trucks produced anytime after 2000 can make very good donors.
- 6) if possible also confirm that purchase of new electric yard trucks may be funded without having to repower or replace an existing yard truck. Yard trucks are often operated for large manufacturers and distributors by contract 3rd party logistics firms. Allowing the growth of the fleet without requiring an existing truck to be scrapped, enables more aggressive, often younger green-minded fleets to more quickly adopt clean technologies in competition with incumbent fleets. These more aggressive green fleets thereby put pressure on incumbent fleets to adopt as well. The incumbents must similarly upgrade or face loss end consumers (who reward green) and businesses contracts (especially with consumer brands) which are now with other things being equal more quickly awarding service contracts to greener fleets.

What is a yard truck? Yard trucks are heavy duty, class 8 vehicles used to move cargo trailers around container handling facilities like warehouses, distribution centers, manufacturing plants, rail intermodal yards, ports and more. These trucks move the container which semi tractors and other dray trucks deliver to and from the facilities. Yard trucks are lesser known than the semi tractors because yard trucks operate behind the gates in enclosed yards and away from public eyes. That said, many of the facilities which operate these trucks are located in and surrounded by disadvantaged communities. *Yard trucks are known by many names: terminal truck, hostler, spotter, shifter, yard horse, yard dog, tug, buggy, goat, mule, yard tractor, pony, shunter, yard jockey, hustler, shag, Ottawa tractor, switcher, spotting tractor, stevedoring tractor, trailer mover, shunt truck, yard pig, yard tug...and more.*



Why yard trucks? Diesel yard trucks are significant polluters that work more hours than semis, often around the clock in 24x7 operations. No CDL is required so anyone can drive them. Drivers operate the trucks in shifts to keep the truck working. VW Settlement funds would be used to deploy new electric, or repower existing diesel trucks to become 100% electric T-Series terminal trucks.

Emission Reduction. Using Orange EV's electric yard truck results in a 100% reduction of mobile source emissions. The estimated emission reduction per truck is up to 166 tons of CO2 / year and 2.8 tons of NOx / year from tier 2 engines.

Precedent for yard trucks: New and Repowered electric yard trucks are already eligible for funding by the Federal DERA program, California's Carl Moyer program and others. Orange EV's electric yard trucks were reviewed by the California Air Resources Board and approved for sale in the state of California.

Availability of Orange EV's electric yard truck: Orange EV's T-Series electric yard trucks have been commercial available since 2014 and commercially deployed since 2015. Orange EV yard trucks are

Other notes, based on definitions in Appendix D2 of the Consent Decree

- **Yard Trucks meets definition of Class 8:** "Class 8 Local Freight, and Port Drayage Trucks (Eligible Large Trucks)" shall mean truck tractors with a Gross Vehicle Weight Rating (GVWR) greater than 33,000 lbs used for port drayage and/or freight/cargo delivery (including waste haulers, dump trucks, concrete mixers)." *Orange EV's yard truck is a class 8 truck. If using dump trucks as an example, it follows that terminal trucks are also included. Also GVWR for Orange EV trucks is 40,800 LB, well over the prescribed 33,000 LB.*
- **Meets definition of GVWR:** "Gross Vehicle Weight Rating (GVWR)" shall mean the maximum weight of the vehicle, as specified by the manufacturer. GVWR includes total vehicle weight plus fluids, passengers, and cargo." *Terminal trucks more commonly use GCWR which for Orange EV yard trucks is 81,000 LB. And as above, GVWR for Orange EV is 40,800 LB. Gross Combined Weight Rating (GCWR) represents the rated combined weight of yard truck, trailer and cargo being pulled.*
- **Meets definition of Freight/Drayage Trucks:** "Drayage Trucks" shall mean trucks hauling cargo to and from ports and intermodal rail yards." *Yard trucks are generally intended but sometimes previously not clearly made eligible in such funding program language. Orange EV's trucks can be built for both on and off-road use. Even if made on-road they often operate principally within a terminal yard.*
- **Meets definition of Electric / Zero-Emissions:** Orange EV's trucks are 100% battery powered with no fossil fuel burning equipment. There is no tailpipe or emission.

Please let us know if we might be of assistance. Thank you for your consideration.

Respectfully,
Mike Saxton
Orange EV, Chief Commercial Officer



Traditional competitive grant application processes can be labor and resource intensive with uncertain outcomes. In direct contrast, voucher incentive programs (VIPs) simplify administration and eliminate uncertainty by pre-approving eligible solutions and amounts. This enables companies to plan and budget with confidence, removing barriers and speeding deployment. First-come, first-served VIPs will direct and invest VW funds quickly, efficiently and effectively.

Thank you for your consideration. Please contact us if we can be of assistance.

A handwritten signature in cursive script that reads "Michael R. Saxton".

Respectfully,
Mike Saxton
Orange EV, Chief Commercial Officer
MikeS@OrangeEV.com
816-210-9669



December 28, 2016

Subject: Volkswagen Settlement – Appendix D Mitigation Trust Funds

To whom it may concern,

Regarding each state's mitigation plan for Appendix D funds from the VW settlement, we respectfully request that language be further clarified to include yard trucks (aka drayage trucks, terminal trucks, hostlers, spotters) in any cargo handling operation.

As written, Appendix D-2 of the VW Partial Consent Decree could preclude many impactful applications. Item one of the ten eligible mitigation actions refers to "Class 8 Local Freight Trucks and Port Drayage Trucks" where:

- "Class 8 Local Freight, and Port Drayage Trucks (Eligible Large Trucks)" shall mean truck tractors with a Gross Vehicle Weight Rating (GVWR) greater than 33,000 lbs used for port drayage and/or freight/cargo delivery (including waste haulers, dump trucks, concrete mixers).
- "Drayage Trucks" shall mean trucks hauling cargo to and from ports and intermodal rail yards.

This language is both limiting and open to interpretation inviting further clarification. A broader definition would better serve state interests, reducing harmful emissions in non-attainment areas and disadvantaged communities. Looking to California's Goods Movement Program which has a similar goal to reduce air pollution from freight activities, eligible Cargo Handling Equipment includes any "existing diesel yard truck" operating "at a seaport (port), intermodal railyard, or freight facility." This general language allows for broad inclusion resulting in greater emissions reductions.

Yard trucks operate predominantly in industrial areas with poorer air quality, moving goods in ports, railroad inter-modal, LTL freight, manufacturing, retail distribution, waste management, warehouse, and other container and trailer handling operations. Replacing existing diesel trucks with all-electric models provides emissions reductions that are immediate and dramatic. As a specific example, when upgrading to an Orange EV all-electric terminal truck compared to a Tier 3 diesel engine operated 6,000 hours at 2.5 gallons/hour, there is an estimated per vehicle annual reduction of 1.7 tons NOx, 1.6 tons CO, 81.5 kg PM, and 166 tons CO2.

Broader language also ensures that both on-road and off-road heavy-duty yard trucks are eligible. Yard trucks are one example of off-road heavy-duty vehicles that in spirit seem eligible for incentive funding, but in practice are often precluded. While yard trucks can be built DOT-compliant and operate on-road/on-highway, the dominant use is off-road and un-plated (non DOT) within the yards of container handling facilities.

We further request that states adopt streamlined, first-come first-served funding mechanisms:

- For vehicles and charging stations: A point-of-sale discount program similar to Chicago's user-friendly "Drive Clean Truck" program.
- For infrastructure projects: A rolling approval process with pre-approved funding amounts/percentages.