



Caterpillar Inc.
P.O. Box 600
Mossville, Illinois 61552

March 31, 2017

Planning Supervisor
DNREC - Division of Air Quality
State Street Commons
100 W. Water Street, Suite 6A
Dover, DE 19904

RE: Comments on the Delaware Mitigation Trust Plan

Planning Supervisor,

This letter is to provide you with information and Caterpillar's comments on Delaware's Mitigation Trust Plan to spend the \$9 Mil in VW Settlement Funds. Caterpillar appreciates the opportunity to comment and to share information on our products.

The \$2.7 Bil Mitigation Trust Fund was established under the Volkswagen Consent Decree, with its primary goal of reducing NOx. Caterpillar is capable of assisting States in obtaining those emissions reductions. **NOx emissions can be offset immediately, by applying diesel repowers, replacements, and upgrades to the legacy diesel nonroad fleet.** US EPA and CARB both state that repowers of existing diesel engines are the "low hanging fruit". Clean diesel is a more cost effective approach than some of the alternative options in the Mitigation Trust Fund.

Within the Mitigation Trust Fund's list of funding opportunities, Caterpillar is able to offer Repowers for Marine, Switcher Locomotives, and Nonroad Machines (construction equipment). Find attached to this cover letter marketing materials that provide details on Caterpillar products.

NOx emissions reductions that are produced through repowering from unregulated to Tier 4:

Locomotive - 10 to 50 tons NOx/year/engine
Cost effectivity Locomotive of approx. \$50/lb of NOx

Marine – 15 to 50 tons NOx/year/engine
Cost effectivity Marine of approx. \$30/lb of NOx

Nonroad Machines – 3 to 50 tons NOx/year/engine (Tier 3)
Cost effectivity of approx. \$15/lb of NOx

For large engines, as used in locomotive, marine, and construction equipment, nothing can lower NOx more than repowering to a higher Tier engine. Competing technologies; batteries, hydrogen, CNG/LP, and hybrids cannot produce the needed power, over the work period, while lowering emissions. Additionally, cost effectivity is much lower or the technology does not exist for large engines.

The Caterpillar Marine Group has US EPA certified upgrade kits, for both Caterpillar and EMD engines, which reduce NOx emissions, as well as verified Emissions Upgrade Groups. They can also repower tugs, crew boats, and service vessels with Tier 4 engines. Caterpillar, through its Dealer network has been accomplishing these upgrades and repowers since 2010.

Progress Rail is Caterpillar's Rail services and equipment provider. Progress Rail recently purchased Electro-Motive Diesel (EMD), and offers switcher locomotives with both Caterpillar and EMD Tier 4 engines. Progress Rail has installed hundreds of US EPA certified engine upgrade kits, as well as repowered switcher locomotives to Tier 4.

The Caterpillar Emissions Solutions Group has been accomplishing retrofits since 2004. They have created engineered solutions that upgrade nonroad machines from unregulated to Tiers 1, 2, 3, and 4. The Mitigation Trust Fund provides for the use of Diesel Emissions Reduction Act (DERA) funding under option 10. By replacing only the engine, as opposed to the entire machine, cost effectivity is lowered. This action will extend the life of the machine another 20 to 30 years.

Caterpillar appreciates the opportunity to offer our suggestions and products. If you have any questions or would like to have further discussions, please contact me.

Sincerely,



Glenn M. Luksik
Verification Manager
Emissions, Regulations, and Conformance
Caterpillar Inc.
Telephone: (309) 494-6937
Fax: (309) 992-7709
E-mail: Luksik_Glenn_M@cat.com

Enclosures:

Caterpillar/Progress Rail/EMD Locomotive
Caterpillar Marine Emissions Upgrade Kits
Caterpillar Nonroad Machine Repowers