EXHIBIT 4E

Comments Received by Department of Justice

(VW-2LCMT0000574-VW-2LCMT0000726)

NORTH AMERICAN REPOWER

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Oceanside, CA 92056

From: John Reed, MD
DATE: 07/26/16
RE: VW Consent Decree Public Comment per 28 C.F.R. § 50.7

VW Consent Decree is inappropriate, improper, and inadequate in its mitigation of excess emissions of diesel pollutants from faulty emissions control devices and must be altered to remove use of funding of known faulty diesel emissions technology in class 4-8 trucks and buses as an Eligible Mitigation Action Expenditure.

Hon. Charles R. Breyer, EPA, ARB, and Volkswagen,

Thank you for the opportunity to address what must be an oversight by the steering committee in determining appropriate methods to mitigate the excess diesel emission pollution from the VW 2.0 liter engines (as well documented by West Virginia University, the California Air Resources Board and the Environmental Protection Agency).

Eligible Mitigation Action Expenditures as detailed in Appendix D-2 include funds for purchasing new diesel vehicles or engines to replace older model (MY2007 and earlier primarily) class 4-8 diesel vehicles. However, studies by West Virginia University, the California Air Resources Board and others have well documented the failure of new diesel emissions technology from every OEM to eliminate or adequately reduce diesel pollution. In fact, in low speed operation, which comprises the majority of the duty cycle of these vehicles in *the communities most impacted by diesel pollution*, these new diesels have been shown to pollute at a HIGHER rate than vehicles or engines they would be replacing.

In these same studies, comparative natural gas fueled vehicles were shown to be the ONLY vehicles that maintained their emissions profile below the federally mandated levels during all driving cycles and modes of operation. Comparative electric vehicles were not included in the studies.

This known problem has been labeled "off cycle emissions", to highlight the fact that this in-use failure, *in the most critical drive cycle affecting human health*, is not seen in the emissions certification "testing cycle" or certifying SMOG test known as the FTP-Federal Testing Protocol. Just as the VW engines passed their SMOG and FTP tests but failed in use, so have the new heavy duty diesel manufacturer's technology passed their FTP certification tests, but failed in use.

How can the court, ARB, EPA and the committee justify spending funds on known faulty and inadequate diesel emissions technology when that is the exact issue we are trying to mitigate? Natural Gas fueled heavy duty vehicles clearly are superior in eliminating and therefore mitigating diesel pollution. Electric vehicles potentially can do the same.

It is **inappropriate and improper** to use funds generated due to the failure of one automaker's diesel emissions technology to fund the purchase and operation of another vehicle maker's known faulty and inadequate diesel emissions technology.

New diesel replacements as a mitigation solution are clearly documented as **inadequate** when compared to the other alternatives of natural gas or electric operation.

The court and the committee cannot use the emissions certification data of new diesels as the defining criteria to determine eligibility as a mitigation expenditure, when the core issue is ***the inadequacy of the certification process to protect the public from actual in use performance failures***. The studies used to determine the need for mitigation, indeed the very researchers that did this work, have also demonstrated the in use failure of new heavy duty diesel emissions technology. How can the court and the committee embrace the study findings on one automaker and reject similar findings on the others? In can be argued that VW intentionally deceived, while the other manufacturers did not, but this does not change the fact that both passed the certifying tests, but FAILED in use.

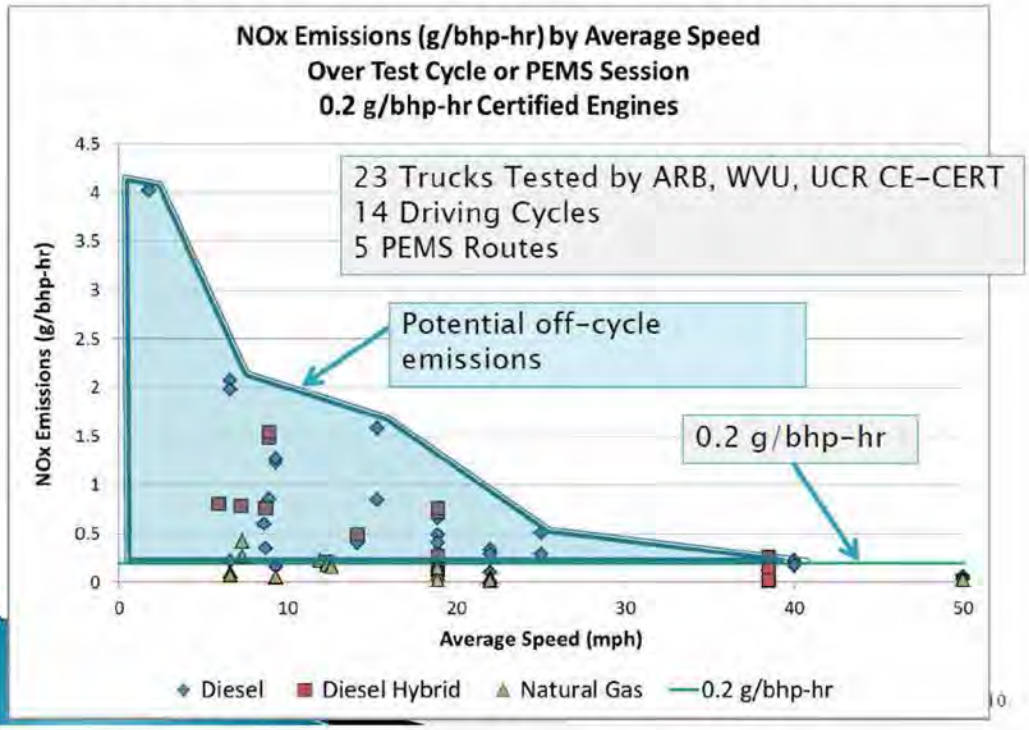
Mitigation funds are to be spent on means to actually mitigate diesel pollution, not further entrench our nation to dependence on diesel for goods and people movement. By funding replacement of older diesels with newer diesels, the settlement actually reduces the ability of cleaner alternatives to come to market. Diesel has had a 100 year head start on natural gas and electrification. Replacing older municipal fleets with newer diesels cuts into the core market for alternative fueled vehicles and will set back if not entirely kill this fledgling industry. If the goal of this settlement is to enable the public to have clean air now and in the future, it is incumbent on the court and the committee to ***remove new diesel engine and vehicle purchases as an eligible mitigation expenditure in Appendix D-2.***

Respectfully,

John Reed MD
CEO, North American Repower

ATTACHMENTS: Slides from ARB and SCAQMD Presentations on the studies documenting in use failure of diesel emissions technology.

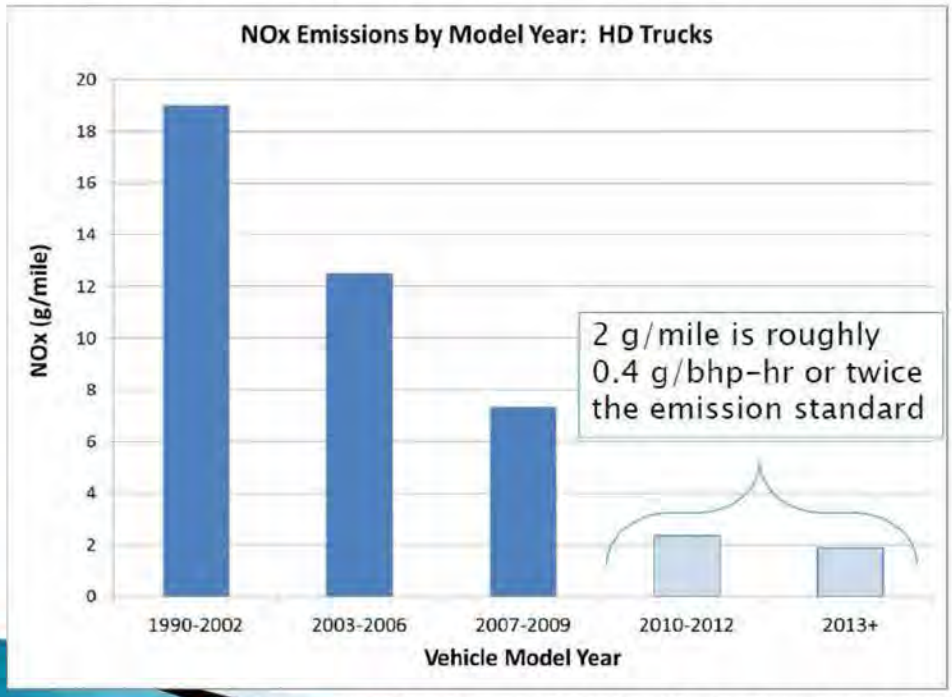
Potential Excess NOx Emissions



FROM: California Air Resources Board, Technology Assessment:
Low Emission Natural Gas and Other Alternative Fuel Heavy-Duty Engines, Sept. 2015

This study showed ALL of the diesel vehicles tested FAILED to maintain 0.2g/hp-hr NOx emissions, while the Natural Gas vehicles were always BELOW this standard. These studies are from vehicles actually in use on the road, not a simulated drive cycle.

Progress in NOx emissions, but more needs to be done



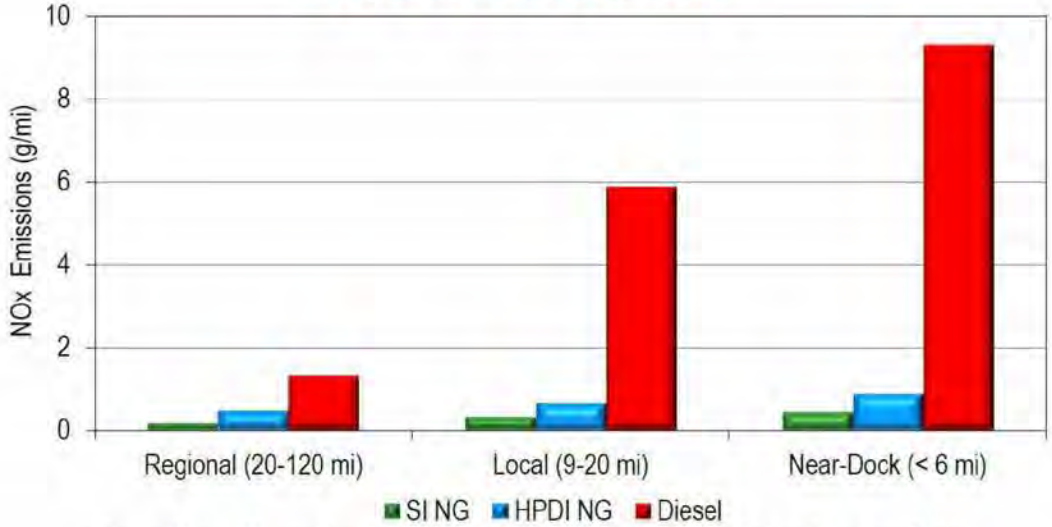
Data taken from CRC E55/59 and ARB in-house testing; UDDS cycle

alifornia Environmental Protection Agency
Air Resources Board

These studies showed that the actual in use emissions from new heavy duty diesel vehicles in a simulated Urban Driving Cycle on a dynamometer were also on average more than twice the emission standard. While better than older diesels, they clearly fail to meet the standard.

Preliminary Key Findings

Diesel NOx Emissions Highly Dependent on SCR Performance



From : Hogo, Henry, South Coast Air Quality Management District (Los Angeles)
"South Coast AQMD Update - Natural Gas Vehicle Program" Oct. 2014

In these studies, Drayage trucks, School buses and Refuse vehicle emissions were all studied in their actual use on road. Spark Ignited Natural Gas, High Pressure Direct Injection Natural Gas, and new Diesel vehicles were compared doing the same work. Class 4-8 diesel vehicles are shown to dramatically fail to maintain low emissions in low speed and short distance operation, while natural gas vehicles were consistently clean. This is attributed to the failure of the diesel emissions technology currently in use <u>in all</u> OEM class 4-8 vehicles.

PUBLIC COMMENT (28 C.F.R. §50.7) and 17 document Appendices

Filed in Response to *Notice of Lodging of Proposed Partial Consent Decree Under the Clean Air Act filed July 6, 2016*

In Re: *Volkswagen "Clean Diesel" Marketing, Sales Practices, and Products Liability Litigation,* Case No: MDL No. 2672 CRB (JSC)

Submitted by:

North American Repower

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I. INTRODUCTION

The Proposed Consent Decree is Inappropriate, Improper and Inadequate

The Proposed Consent Decree ("Consent Decree") is **inappropriate, improper and inadequate.** One of the stated goals of the Consent Decree is to mitigate the total, lifetime NOx emissions from the 2.0 Liter Subject Vehicles ("Volkswagen Lifetime NOx Emissions), generated by the in-use failure of Volkswagen's Diesel emissions technology. To meet this goal, the Consent Decree proposes massive funding of new Diesel engines and vehicles, actions that are in direct contravention of the stated goal of the Consent Decree.

The Consent Decree states that it will: "Fund Eligible Mitigation Actions that will reduce emissions of NOx where the 2.0 Liter Subject Vehicles were, are, or will be operated. The funding for the Eligible Mitigation Actions required by this Consent Decree is intended to fully mitigate the total, lifetime excess NOx emissions from the 2.0 Liter Subject Vehicles". (Paragraph 7, page 5, Consent Decree.) As set forth below, these objectives cannot be met, and indeed, would be thwarted, by including massive funding for new Diesel trucks and engines, and as such, this portion of the remedy proposed by the Consent Decree is inappropriate, improper, and inadequate.
Contrary to the stated objective of the Consent Decree, the funding of the purchase and operation of new Diesel engines and vehicles would actually result in:

1) An inappropriate, and indeed, reckless subsidy of toxic Diesel technology **known to the relevant enforcement agencies to emit NOx levels *well in excess of federal testing limitations while the vehicles are actually in-use.*** In fact, the Consent Decree cannot in

any way purport to remedy the grievous Volkswagen Lifetime NOx Emissions by releasing a huge fleet of new Diesel trucks and engines on a struggling environment, an improper and inappropriate government stimulus of the next generation of a profoundly toxic technology that will inevitably result in massive new levels of NOx emissions, ironically, ***just like the Volkswagen Lifetime NOx Emissions.***

As proposed, the Consent Decree improperly relies on the ***Federal Test Procedure emissions testing certification process*** ("FTP Certification Process') as the standard for identifying vehicles and engines as Eligible Mitigation Actions. This ignores the undisputed fact that the NOx levels measured in this process are **deemed to be unreliable because vehicles certified by this process actually emit levels of NOx in levels ranging from 2 to 20 times the federal certification standard while in actual use.** [1] Ironically and unfortunately for the American public, these conclusions were reached by the very enforcement agencies, including the Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) ***as a result of their own research, which they now ignore to achieve this Settlement.*** [2]

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(1) [1] CARB, " Truck Sector in Use Emissions: Technology Assessment", Sept 2014

(2) Hogo, Henry, "South Coast AQMD Update - Natural Gas Vehicle Program", NGV Technology Forum 2014 Meeting Wilmington, CA October 15-16, 2014 ("SCAQMD Update")

(3) Quiros et al., "Gaseous and Particulate Emissions from Heavy-Duty Diesel & Natural Gas Trucks from Real-World CA Driving" 5th Annual International PEMS Conference and Workshop, CE-CERT, UC Riverside March 26-27, 2015

(4) The studies below are a portion of the data sets used in the above presentations; other data were internal to ARB, SCAQMD.

  (i) Quiros et al." Real-World Emissions from Modern Heavy-Duty Diesel, Natural Gas, and Hybrid Diesel Trucks Operating Along Major California Freight Corridors" Emissions Control Science and Technology. (2016) 2:156–172

  (ii) Thiruvengadam, A. et al. WVU "Emission Rates of Regulated Pollutants from Current Technology Heavy-Duty Diesel and Natural Gas Goods Movement Vehicles" Environmental Science and Technology 2015,

  (iii) Misra et al. "NOX Emissions from Model Year 2010 and 2011 Heavy-Duty Diesel Engines Equipped with Aftertreatment Devices", Environmental Science and Technology, 2015. (All referred to hereinafter as: "CARB, SCAQMD, UCR Studies")

[2] The Federal Testing Protocol for class 4-8 diesel engines includes several emissions tests conducted in a lab, and the Not To Exceed in use PEMS test that sets a higher NOx

The Consent Decree inappropriately creates a massive subsidy for a toxic "solution" that directly contravenes its stated goal. There is zero evidence for the proposition that any amount of money spent for the purchase of new Diesel will "mitigate" any of the harm caused by Volkswagen. The best that can be said is that the purchase of "new diesel" to replace "old diesel" MAY mitigate the NOx emissions of "old diesel" to some extent. ***However, these numbers cannot be correctly ascertained because the data for this comparison does not exist.*** What is certain, however, is that a huge financial windfall for new Diesel trucks and engines will certainly result in per vehicle NOx emissions at levels ranging from 2 to 20 times the amounts shown to be emitted under the FTP Certification Process (and NTE Certification Process explained herein), ***causing great harm to the public in direct contravention of the purported goal of the Consent Decree;***

2) A greatly reduced opportunity, ***and thus an inadequate remedy***, for increasing the availability of ***clean energy alternatives***, **which are demonstrated to reduce NOx emissions a minimum of 90% compared to new Diesel technology[3];**

3) An ***inappropriate, improper and reckless*** massive subsidization of a toxic and dirty technology at a critical point in the development of clean energy alternatives, **thereby imposing a crushingly unfair competitive burden on the emerging clean energy alternatives of Natural Gas and Electric Engines and Vehicles.[4]**

The only means of determining whether the excess NOx emissions can be mitigated by certain of the Eligible Mitigation Actions as described in Appendix D-2, i.e., replacement or repower of existing older medium and heavy duty Diesel vehicles, is if the new vehicles and engines can demonstrate predictable, consistent and durable NOx emissions that are lower than the vehicles or engines replaced. As will be shown, herein, this threshold standard cannot be met through replacement with newer Diesel emissions technology and thus the stated goal of the Consent Decree will not be achieved by the massive and greatly harmful subsidization of new Diesel engines and trucks.

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allowable standard, but is only applicable under a narrow set of in use operating parameters.

[3] Cummins-Westport Press Release "ISL G Near Zero Natural Gas Engine Certified to Near Zero - First Mid-Range engine in North America to reduce NOx emissions by 90% from EPA 2010" http://www.cumminswestport.com/press-releases/2015/isl-g-near-zero-natural-gas-engine-certified-to-near-zero; CARB Executive Orders A-021-0646-1, A-021-0650-2

[4] Dr. John Reed, personal communications with Municipal Fleet Owners in San Diego, Riverside, San Joaquin Valley and San Francisco Bay Areas, who explained that they are holding off on purchases until the Mitigation funds are available and buying Diesels over Natural Gas due to the need to buy so many trucks and the extra cost of Natural Gas Infrastructure, particularly fueling stations ("Personal Communications with Fleet Owners").

II. REMEDY PROPOSED BY THIS COMMENT

This Public Comment respectfully requests that the Department of Justice exercise its full authority and refuse to authorize the Decree to the extent that it calls for a monetary subsidy for new Diesel engines and trucks, pursuant to the powers granted to it by law, enabling it: **to withdraw or withhold its consent to the proposed judgment if the comments, views and allegations concerning the judgment disclose facts or considerations which indicate that the proposed judgment is inappropriate, improper or inadequate. (28 C.F.R. §50.7)**

This Public Comment addresses only one specific type remedy proposed in the Consent Decree: the inclusion of subsidies for purchase of new Diesel engines and vehicles, as set forth in Appendix D-2, pages 1-3 and 5-7, to wit: Sections 1, 2 and 6, which provide for funding for new Diesel engines and vehicles for class 8 Drayage trucks, class 4-8 buses, and class 4-7 local freight trucks for both government owned and non-government owned entities, and page 9, section 10, which provides for use of trust funds "for actions not specifically enumerated in this Appendix D-2, but otherwise eligible under DERA pursuant to all DERA guidance documents available through the EPA".

The Consent Decree should be devoid of all subsidies for purchase of replacement new Diesel engines and trucks as detailed in Appendix D-2, including funding for new Diesel vehicles and engines through the Diesel Emissions Reduction ACT ("DERA") option as described in section 10.

Instead of apportioning the remedy to include the purchase of new Diesel, on the one hand, and Natural Gas and electric engines and vehicles on the other, **the entire funds should be spent only on replacements or repowers with Natural Gas or Electric motors, either as detailed in Appendix D-2 or through the DERA option, or other technologies proven to have reliable, predictable and durable NOx emissions at or below the certified levels during actual vehicle use.** This is the only means in which accurate, predictable, reliable and consistent NOx emission reductions can be obtained, ***in accordance with the stated goal of the mitigation trust fund and the Consent Decree to mitigate the toxic effects of the total, lifetime excessNOx emissions of the Volkswagen 2.0 liter subject vehicles.***

III. STATEMENT OF FACTS

A) Medium and Heavy Duty Diesel Trucks are a Major Source of Air Pollution and Human Disease

Diesel engines emit a complex mixture of air pollutants, including both gaseous and solid material. The solid material in Diesel exhaust is known as **Diesel Particulate Matter ("DPM").** More than 90% of DPM is less than 1 µm in diameter (about 1/70th the diameter of a human hair), and thus is a subset of particulate matter less than 2.5 microns in diameter **("PM2.5")**. Most PM2.5 derives from combustion, such as use of gasoline

and Diesel fuels by motor vehicles. PM2.5 is the size of ambient particulate matter air pollution most associated with adverse health effects of the air pollutants that have ambient air quality standards. These health effects include cardiovascular and respiratory hospitalizations and premature death. As a California statewide average, DPM comprises about 8% of PM2.5 in outdoor air, although DPM levels vary regionally due to the non-uniform distribution of sources throughout the state. [5]

DPM is typically composed of carbon particles (soot, also called black carbon or BC) and numerous organic compounds, including over 40 known cancer-causing organic substances. Examples of these chemicals include polycyclic aromatic hydrocarbons, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene. In 2012, the World Heath Organization classified Diesel exhaust as a Group I carcinogen associated with an increased risk of lung cancer. [6]

Diesel exhaust also contains gaseous pollutants, including volatile organic compounds and oxides of nitrogen (NO_x). NO_x emissions from Diesel engines are highly significant and threatening because they can undergo chemical reactions in the atmosphere leading to formation of PM2.5 and ozone." [7]

Diesel Truck Engines also emit a hugely disproportionate share of toxic pollution compared to other vehicles. According to CARB estimates regarding California, the state most heavily impacted by the Volkswagen Lifetime NOx Emissions, **Medium and Heavy Duty class 4-8 Vehicles [defined as Vehicles with a Gross Vehicle Weight Rating (GVWR) of 14,001 lbs. or higher] emit over 60% of the total on-road mobile NOx emissions, yet only comprise 5% of registered vehicles.** [8]

The EPA is also well aware of the disproportionate impacts of Diesel truck engines. According to the EPA:

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[5] CARB "Overview: Diesel Exhaust and Health", http://www.arb.ca.gov/research/diesel/diesel-health.htm;; CARB "Overview: Diesel Exhaust and Health", http://www.arb.ca.gov/research/diesel/diesel-health.htm; CalEPA, CARB, "Almanac Emission Projection Data (published in 2013)" accessed at http://www.arb.ca.gov/app/emsinv/2013/emssumcat_query.php?F_YR=2012&F_DIV=-4&F_SEASON=A&SP=2013&F_AREA=CA - 7 ; CARB "Overview: Diesel Exhaust and Health", http://www.arb.ca.gov/research/diesel/diesel-health.htm hereinafter "CARB HEALTH")

[6] World Health Organization, International Agency for Research on Cancer, Press Release, 11 June 2012), http://www.iarc.fr/en/media-centre/pr/2012/pdfs/pr213_E.pdf

[7] Ibid., CARB HEALTH

[8] Ibid., CARB HEALTH

1) **Heavy Duty Vehicles** are the **second-largest** and **fastest-growing** segment of the U.S. Transportation sector in terms of emissions and energy use;

2) **The Trucking Industry** hauls about **70 percent** of all freight in the U.S.;

3) **Medium and Heavy-duty Vehicles** currently account for about **20 percent** of **Greenhouse Gas Emissions ("GHG Emissions")** and oil use in the U.S. transportation sector, but are only about **5 percent** of the vehicles on the road; and

4) **GHG Emissions** from Heavy Duty Vehicles are growing rapidly globally and are expected to surpass emissions from passenger vehicles by **2030**.[9]

It is indisputable that the elimination of all Diesel engines would simultaneously eliminate the major sources of NOx and Particulate Matter pollution from the transportation sector and would clearly make an enormous improvement benefit to air quality and human health. ***And, as discussed further herein, replacement of dirty Diesel technology with Natural Gas or Electric technology would result in a predictable 90% or greater reduction of NOx emissions, making this choice the only possible solution for actual mitigation of the Volkswagen Lifetime NOx Emissions.***

B. The Federal Testing Procedure Certification Process for New Diesel is Inadequate and Faulty Because it Does Not Test Actual "In-Use" Diesel Emissions *Which Uniformly and Without Exception* Consistently Exceed Federal Standards

The extensive research and data performed by the EPA and CARB conclusively and consistently show that in-use emissions of all types of Diesel engines exceed the standards set by the Federal Testing Procedure Certification Process.

Both EPA and CARB have created extensive predictive models of actual in-use emissions from class 4-8 Diesel vehicles. One of the main uses of these models is as a means of generating emissions inventories to predict and claim emissions reductions by states through various actions as part of the EPA-mandated State Implementation Plan ("SIP"). Under the SIP, each state must show how they plan to reduce air pollution to comply with federal air quality standards, especially in non-attainment areas[10]. These models were created because actual in-use emissions data for these vehicles was very

[9] EPA, "EPA and NHTSA Proposed Greenhouse Gas and Fuel Efficiency Standards for Medium- and Heavy-Duty Trucks: by the Numbers," Regulatory Announcement, June 2015, http://www3.epa.gov/otaq/climate/documents/420f15903.pdf

[10] EPA, "Adequacy Review of State Implementation Plan (SIP) Submissions for Conformity" https://www.epa.gov/state-and-local-transportation/adequacy-review-state-implementation-plan-sip-submissions-conformity

limited. According to the EPA, these models were updated when in-use data from medium and heavy duty diesels became available, the first of which came from an earlier Diesel Engine Emissions Consent Decree Testing. [11]

In-use data was generated and analyzed by West Virginia University using the Mobile Emissions Measurement System ("MEMS)". The MEMS program was initiated as a result of the 1999 Diesel consent decree between several heavy-duty Diesel engine manufacturers and the US government over the use of an emissions control defeat device, requiring the manufacturers to test their engines in-use in trucks over the road. Data was collected from 2001 through 2006. The data they used represented approximately 1,100 hours of operation by 188 trucks in model years 1994 through 2003. [12] Additionally this model was updated with in-use data in 2014 with data from these two in-use studies:

1) Heavy-Duty Diesel In-Use Testing (HDIU). The in-use testing program for heavy-duty Diesel vehicles was promulgated in June 2005 as the formal extension of the 1999 Consent Decree mandate to monitor the in-use emissions performance of Diesel engines operated under a wide range of real world driving conditions, within the engine's useful life. HDIU requires each manufacturer of heavy-duty highway Diesel engines to assess the in-use exhaust emissions from their engines using **onboard, portable emissions measurement systems ("PEMS")** while on the road. The maximum allowable emission is called the **Not To Exceed (NTE) limit**, and it is measured during a narrowly defined set of operating parameters called the **NTE zone.** The PEMS unit must meet the requirements of 40 C.F.R 106, 5, subpart J. The in-use testing program began with a mandatory two-year pilot program for gaseous emissions in calendar years 2005 and 2006. The fully enforceable program began in calendar year 2007 and is ongoing. The vehicles selected for participation in the program are within the engine's useful life, and generally, five unique vehicles are selected for a given engine family. The data available for use in MOVES2014 (the EPA in-use model) were collected during calendar years 2005 through 2010 and represent trucks manufactured in model years 2003 to 2009. [13]

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[11] EPA, "Exhaust Emission Rates for Heavy-Duty On-road Vehicles", MOVES 2014, Nov. 2015, p. 15.

[12] EPA, "Exhaust Emission Rates for Heavy-Duty On-road Vehicles", MOVES 2014, Nov. 2015, p. 39-42.

[13] EPA, "Exhaust Emission Rates for Heavy-Duty On-road Vehicles", MOVES 2014, Nov. 2015, p. 39-42.

The entire basis for the Volkswagen litigation is the harm inflicted on the public by excess toxic Diesel emissions from in-use vehicles. Since the 1999 Diesel Consent Decree, CARB and EPA have worked with the Diesel engine manufacturers to create an

2) Houston Drayage Data. In coordination with the Texas Commission on Environmental Quality (TCEQ), the Houston-Galveston Area Council (H-GAC), and the Port of Houston Authority (PHA), EPA conducted a study collecting emissions data from trucks in drayage service using **PEMS** from December 2009 to March 2010. The trucks studied were Diesel heavy duty trucks used to transport containers, bulk and break-bulk goods to and from ports and intermodal rail yards to other locations (commonly referred to as "Drayage"). These trucks conduct the majority of their travel on short-haul runs, repeatedly moving containers across fixed urban routes. Note that only small fractions of trucks involved in drayage service are dedicated solely to this function, with most trucks spending large fractions of their time performing other types of short-haul service. No specific drive cycles were used and all **PEMS** testing was based on actual in-use loads and speeds."

In all of the above studies, the actual in-use NOx emissions of these vehicles were substantially higher than the federal standard, and so the models used by CARB and EPA were adjusted to include these excess emissions as part of the accepted model for predicting pollution from these types of vehicles.[14] Studies by CARB, the South Coast Air Quality Management District (SCAQMD) and West Virginia University of in-use Diesel and Natural Gas powered vehicles that meet the current FTP Certification Process emissions standards and are of the type named eligible for mitigation funding as a solution, show that ***under low speed or low load conditions (areas outside the NTE zone), the Diesel vehicles produce NOx pollution up to 20 times the current NOx FTP standard***. **In sharp contrast, the Natural Gas powered vehicles in these studies displayed current NOx emissions compliance under all driving conditions.** [15]

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in-use emissions test, the ***Not To Exceed ("NTE") test*** by which to certify new engines and vehicles. ***During nearly two decades of this work, Diesel emissions technologies have consistently failed to provide a reliable means to detoxify vehicles operating on Diesel under all driving conditions. CARB, EPA and the Diesel engine manufacturers have agreed on the narrowly defined NTE Zone for in-use test for certification, because it selectively avoids measuring of emissions in the known areas of failure of Diesel emissions technology.*** (London Off Cycle Working Group, "EPA Answers to Questions from March 22nd, 2004 NTE Presentation", OCE Informal Document No. 14, June 2004

[14] EPA, "Exhaust Emission Rates for Heavy-Duty On-road Vehicles", MOVES 2014, Nov. 2015, p. 39-42.

[15] Ibid. CARB, SQAQMD, UCR Studies

The in-use data collected by the enforcing agencies, specifically the EPA and CARB (as well as West Virginia University), demonstrates conclusively that the FTP and NTE Certification Processes do not measure *actual in-use pollution and emissions control device performance* for Medium Duty and Heavy Duty Diesel Trucks and Engines. Therefore, it is inappropriate and improper to use the FTP Certification Process and NTE test results as the key criteria used to determine eligibility as a mitigation action.

C. International In-Use Testing of New Diesel Reveals the Same Pattern of Excessive Emissions Across All Types of Diesel Vehicles Tested

The overwhelming conclusion that all types of new Diesel consistently fail to meet certification standards while actually in-use have been and are being duplicated all over the world, to the consternation of foreign regulatory agencies and their governments.[16] For example, **the Technische Universität Graz in Austria, and others, in 2006 published in-use Medium and Heavy Duty Diesel emissions results that showed no improvement in actual in-use emissions over a 13-year period *despite a reduction of the NOx legal emissions testing standard for European certification.*[17]**

Similarly, in 2012 the International Council on Clean Transportation published its White Paper on NOx emissions from European Diesel trucks and also concluded that actual in-use Diesel emissions were far worse than previously thought, and many times higher than the testing limits.[18]

Recent data from Emissions Analytics, a United Kingdom testing lab, ***shows that 97% of all new light duty Diesel vehicles emit 4-6 times more NOx than the testing certification limits for both Europe and the United States.*** [19] Additional testing conducted by the United Kingdom Department of Transportation showed 20 different new Diesel light

[16] European Commission, "Emission Control Technology for Heavy Duty Vehicles, Final Report "Vol.5, May 2002

[17] European Federation for Transport and Environment, "Transportation & Environment Bulletin, No 146, March 2006

[18] International Council on Clean Transportation, URBAN OFF-CYCLE NOX EMISSIONS FROM EURO IV/V TRUCKS AND BUSES, White Paper Number 18: March 2012 ("ICC White Paper")

[19] The Guardian (UK), "Revealed: nearly all new diesel cars exceed official pollution limits", April 2016, https://www.theguardian.com/business/2016/apr/23/diesel-cars-pollution-limits-nox-emissions

duty models all also failed during in-use testing to meet the emission standards. [20] (Ironically, the Volkswagen Golf 2.0 liter model tested as one of the cleanest offenders at only twice the legal limit.) In response to this data, a Mitsubishi official (one of the world's largest manufacturers of Diesel engines) argued that the certification test "was never intended to represent real-world driving."[21]

These consistent, duplicated results are overwhelmingly clear: new Diesel emissions technology does not protect the public from harmful Diesel emissions and has not done so at any time in its use. Historically and significantly, the Diesel manufacturers are aware of this fact, and have attempted many subterfuges to evade detection of levels of toxic pollution. Diesel emissions in the U.S. became regulated as a result of amendments to the Clean Air Act of 1963. Since that time, Diesel engine manufacturers have incurred multiple fines amounting to multi-millions of dollars as punishment for: 1) creating devices intended to defeat the emissions equipment (mirroring the Volkswagen method), 2) illegally using emissions credits to sell dirtier Diesel, and 3) failing to use emissions technology capable of passing the FTP Certification Process.[22]

The Consent Decree proposes to reward Diesel engine manufacturers for Volkswagen's misdeeds by granting millions in monetary penalties imposed for willful deception by one diesel manufacturer *right back to the toxic industry that continues to harm the public's health.* The failure of the remedy to actually protect the public from toxic Diesel emissions or to even meet the stated goal of the Consent Decree sends a powerful message to the Diesel industry and the public. Does this Court, the Department of Justice or the enforcing agencies entrusted as the guardians of the environment and the public, i.e., EPA and CARB, really care whether the public continues to suffer the enormous and long-lasting toxic consequences of Diesel technology?

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[20] The Guardian (UK)," Diesel cars' emissions far higher on road than in lab, tests show", April 2016, https://www.theguardian.com/business/2016/apr/21/all-top-selling-cars-break-emissions-limits-in-real-world-tests

[21] Extremetech, "More Manufacturers Found to Violate Diesel Emissions Standards — but Blame the Test, not the Vehicles", Oct. 2015, http://www.extremetech.com/extreme/216039-more-manufacturers-found-to-violate-diesel-emissions-standards-but-blame-the-test-not-the-vehicles

[22] United States of America vs. Caterpillar, Case CA 98-02544 Filed July 01, 1999; United States of America vs. Cummins Engine, Case 1:98-cv-02546-HHK, filed Nov. 06, 2006; Daimler Trucks North America vs. EPA (Navistar Intervenor), Case No. 12-1433, filed Dec. 11, 2013

D. New Diesel is Potentially Worse than Old Diesel in Terms of Disadvantaged Communities Emissions Exposures Because of Known "Off Cycle" Emissions Not Detected by the FTP and NTE Certification Process

The proposed Eligible Mitigation Action of funding of new Diesel increases environmental injustices on communities at risk, and is therefore an **inappropriate and improper action**.

As the stated goal of the Consent Decree is "the funding for the Eligible Mitigation Actions provided for herein is intended to fully mitigate the total, lifetime excess NOx emissions from the 2.0 Liter Subject Vehicles **where the 2.0 Liter Subject Vehicles were, are or will be operated**", attention must be given to those particular areas most impacted by vehicle emissions which would be affected disproportionately by the excess Volkswagen NOx Lifetime Emissions. Both CARB and the EPA define these highly impacted communities as Disadvantaged Communities ("DACs"). In California, funding for air pollution control measures in DACs are by law given priority over programs in other areas of the state as a means of addressing environmental injustices imposed on these communities due to excess vehicle emissions.[23]

According to CARB, low speed operation, generally considered as an average speed of under 35MPH, is the majority of the type of driving done by the vehicles named in Appendix D-2 as eligible for mitigation funding, namely Drayage, School and Transit buses, and regional class 4-7 parcel delivery vehicles. The majority of this low speed driving is done in communities highly impacted by air pollution, namely in areas near ports and congested urban roadways and interstates, exactly the areas designated as DACs by EPA and CARB.[24]

As the recent in-use studies using current FTP Certification Process and NTE emissions compliant Diesels and Natural Gas powered vehicles showed, under these low speed or low load conditions, new Diesel vehicles can emit NOx pollution up to ***20 times the current NOx standard***. **In sharp contrast, the Natural Gas powered vehicles in these studies displayed current NOx emissions compliance under all driving conditions.**[25]

The excess NOx emissions from Diesel vehicles noted in these low speed and low load conditions are called "Off Cycle Emissions" to denote the fact that these excess emissions are not detected in the FTP and NTE testing used for certification by

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[23] CalEPA "Greenhouse Gas-Reduction Investments to Benefit Disadvantaged Communities", http://www.calepa.ca.gov/EnvJustice/GHGInvest/
[24] CARB, Draft Supporting Information for Technology Assessments: April 2016
[25] Ibid. CARB, SQAQMD, UCR Studies

CARB and EPA. Off Cycle Emissions are well-documented sources of excess NOx emissions by current Diesel class 4-8 vehicles, and are attributed to the failure of current Diesel emissions exhaust treatment technology to perform under low speed or low load conditions.[26]

The FTP and NTE Testing and Certification Process do not measure known excessive discharges called Off Cycle Emissions. Current Diesel NOx emissions technology for class 4-8 vehicles has been documented to consistently fail to meet federal NOx emissions standards in actual on road use, and these excess NOx emissions are primarily imposed on the disadvantaged communities already most impacted by air pollution.

CARB and EPA are only empowered to block dirty Diesel engines from going to market if they fail the FTP or NTE, or remove them from market if an Emissions Defeat device is found to exist --they are not empowered to remove them from the market for having excess emissions in-use outside the NTE Zone. The Court and the DOJ, in this litigation, are not confined by the limitations of the Clean Air Act and the completely inadequate FTP Certification process, and must instead rely upon the best evidence presented to protect the public from toxic Diesel emissions. ***Further, as a matter of science and logic, the Court and the DOJ should not rubber-stamp a settlement that actually thwarts its stated goal and causes further harm.*** As this matter is being settled without arguments being heard, the DOJ must make its best efforts to ensure that the Settlement provides the best and most reliable means to protect the public from toxic Diesel emissions. The universally accepted evidence presented here in this brief Public Comment clearly shows that purchase of new Diesel engines and vehicles is not the best and most reliable means of protecting the public. In fact, ***further investment in Diesel as a strategy to mitigate the harm to the public's health from the Volkswagen NOx Lifetime Emissions is not merely inappropriate or inadequate, it is utterly self-defeating, if not ludicrous.***

E. Comparative Natural Gas Heavy Duty Trucks are the Only Vehicles that Maintain their Emission Profiles below Federally Mandated Levels during All Driving Cycles and Modes of Operations

Natural Gas Engines (and electric engines) are far cleaner than any form of diesel, ***rendering new Diesel replacements as a mitigation solution completely and utterly inadequate*** when compared to the other alternatives of Natural Gas engines or Electric engines. It is incontrovertible that gas and electric alternatives would result in a minimum of a 90% reduction of NOx emissions compared to new Diesel engines.[27]

As discussed below, it is well known to the EPA, CARB and other relevant enforcement agencies that Natural Gas engines are shown to clearly comply in all phases with current federal NOx emissions standards.

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[26] Ibid SCAQMD Update; Ibid. ICC White Paper

[27] CARB Executive Orders; Ibid. SCAQMD Update (Note: Electric Engines were not part of these comparative studies.)

As demonstrated in the studies by the South Coast Air Quality Management District ("SCAQMD"), CARB, and West Virginia University, the highest and best standard for reducing medium and heavy truck emissions is promoting the use of Natural Gas new or repowered trucks and buses. Natural Gas powered medium and heavy duty vehicles reliably reduce NOx emissions under all driving cycles to at or below the current federal NOx emissions standard.[28] Natural Gas powered medium and heavy duty vehicles are the only currently CARB and EPA certified vehicles in this class capable of operation on a 100% renewable fuel, ***renewable Natural Gas* ("RNG").** According to CARB, **RNG** is the lowest carbon content vehicle fuel. Compared to Diesel operation, vehicles operating on Natural Gas achieve a 28% reduction in CO2 production and if run on RNG, can achieve an 88% reduction in CO2 production. [29]

Therefore, a remedy that genuinely subsidizes Natural Gas powered medium and heavy duty vehicles would provide a unique opportunity to consistently and predictably reduce NOx emissions, DPM emissions, and reduce CO2 emissions significantly, ***thereby actually meeting the stated goal of the Consent Decree.***

IV. THE DEPARTMENT OF JUSTICE SHOULD EXERCISE ITS AUTHORITY TO ENSURE THAT THE STATED GOAL OF THE CONSENT DECREE TO MITIGATE THE TOXIC EMISSIONS OF THE VOLKSWAGEN VEHICLES IS *ACTUALLY ACHIEVABLE*

A) The Department of Justice Should Refuse to Approve the Consent Decree as Proposed in Order to *Actually Meet* the Stated Goal of Mitigation of the Volkswagen NOx Lifetime Emissions

This Public Comment respectfully requests that the Department of Justice exercise its full authority and refuse to authorize the Decree to the extent that it calls for a monetary subsidy for new Diesel engines and trucks, pursuant to the powers granted to it by law, enabling it: **(1) to withdraw or withhold its consent to the proposed judgment if the comments, views and allegations concerning the judgment disclose facts or considerations which indicate that the proposed judgment is inappropriate, improper or inadequate. (28 C.F.R. §50.7)**

As stated in the Consent Decree, "the funding for the Eligible Mitigation Actions provided for herein is intended to fully mitigate the total, lifetime excess NOx emissions from the 2.0 Liter Subject Vehicles where the 2.0 Liter Subject Vehicles were, are or will be operated." This objective set forth in the Consent Decree is intended to redress the deceptive emission control technology practices of Volkswagen (VW), which have led to

[28] Ibid. CARB, SQAQMD, UCR Studies
[29] CARB Low Carbon Fuel Standard Lookup tables, http://www.arb.ca.gov/fuels/lcfs/121409lcfs_lutables.pdf

huge unseen and unanticipated amounts of toxic discharges in the United States and elsewhere, by the VW 2.0 liter engines.

As a matter of scientific truth, the only means of determining if the Volkswagen Lifetime NOx Emissions will actually be mitigated by the proposed Eligible Mitigation Actions as described in Appendix D-2, namely replacement or repower of existing older medium and heavy duty Diesel vehicles, is if the new vehicles and engines can be demonstrated to have predictable, consistent and durable NOx emissions that are lower than the vehicles or engines replaced.

Unfortunately, this standard can never be met because of the well-documented toxic nature of Diesel emissions, new or old; the failure of the current FTP and NTE Certification Process to measure and control in-use "Off-Cycle" emissions; and the well-documented failure of current Diesel emissions technology to maintain predictable and low NOx emissions while in-use.

B. The Proposed Subsidization of New Diesel Engines and Vehicles Is Improper Because New Diesel Emissions Fail Actual Standards While "In-Use"

The Consent Decree fails to recognize the toxic consequences of the profound limitations of the Federal Test Procedure and Not to Exceed Emissions Testing Certification ("FTP Certification Process" and "NTE Certification Process"), which are used to certify and permit new Diesel engines. The Court and the committee should not rely upon the FTP Certification Process or NTE Certification Process of new Diesels as the defining criteria to determine eligibility as a mitigation expenditure, **because the accepted scientific view is that both the FTP Certification Process and the NTE Certification Process fail to protect the public from the actual in-use NOx emissions which far exceed the levels set by CARB and EPA.**

The fact that the FTP and NTE Certification Process fails to protect the public from actual "in-use" emissions is well known to the enforcing agencies because these very agencies performed the research reaching this conclusion.[30] As discussed in detail herein, the scientists at EPA, CARB, and West Virginia University and others have concluded in their own independently conducted research that new medium and heavy duty Diesel emissions technology, while passing the FTP and NTE Certification Process, fail to maintain federally mandated emissions levels while "in-use". [31]

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[30] Ibid. CARB, SQAQMD, UCR Studies

[31] Not coincidentally, it is precisely this type of "in-use" failure that revealed the deceptive testing practices adopted by Volkswagen triggering the underlying lawsuit. In fact, the researchers that demonstrated that the VW 2.0 liter Diesel engines failed to maintain federal NOx emissions levels in-use are the same researchers that have demonstrated new medium and heavy duty diesels also fail to maintain federal NOx emissions levels in-use, as discussed herein. National Public Radio, "How A Little Lab In

The Consent Decree provides for a mitigation trust to fund the purchase of new Diesel engines and trucks, and replacement of older engines and trucks, apparently as a means to reduce the amount of toxic Diesel emissions nationwide. This NOx reduction assumption is based on the emissions of NOx as determined by the FTP Certification Process required for EPA and CARB certification of heavy duty Diesel engines.

The NOx emission standards set by these agencies during certification for new heavy duty diesels as compared to the standard required for certification of the model year 2006 and older vehicles is indeed a lower value. **However, as exhaustive studies by CARB, EPA, and the West Virginia University, among others has shown, the FTP Certification Process does not in any way demonstrate the *actual emissions* of NOx from new medium and heavy duty Diesel engines while on the road in-use.** In fact these emissions have been shown to be up to ***20 times the current mandated federal certification levels***.

To explicate further, on a per vehicle basis, because the expected useful lives of medium and heavy duty Diesel engines are 185,000 miles and 290,000 miles respectively, and the expected useful life of the 2.0 liter VW engine is only 120,000 miles, and because NOx emissions are measured on a grams of NOx per horsepower basis, with the 2.0 liter VW being 140 horse power and the medium and heavy duty diesels ranging in horsepower from 175 to 500, the excess lifetime NOx emissions from these new medium and heavy duty vehicles would be many times greater than the Volkswagen Lifetime NOx Emissions.

Although class 4-8 Diesel engine manufacturers were the first to introduce a Diesel emissions defeat device, which also generated a consent decree, there is no suggestion that manufacturers of new class 4-8 Diesel vehicle and engines are intentionally deceiving the public, EPA or CARB. But this does not change the fact that ***the VW 2.0 liter engines, as well as new Diesel engines and vehicles, can pass the FTP and NTE Certification Process, but fail to maintain clean NOx emissions in actual real world use.*** The in-use studies have consistently documented the failure of new medium and heavy duty Diesel engines to maintain predictable, consistent and long lasting NOx emissions at or below the federally mandated levels.[32]

C. The Consent Decree Should Not Be Approved Because of the Inadequate Support it Provides to the only Documented Reliable Technology for Reducing NOx: Clean Energy Alternatives Including New and Repowered Natural Gas Engines and Vehicles.

West Virginia Caught Volkswagen's Big Cheat" Sept 2015, https://www.npr/2015/09/24/443053672/how-a-little-lab-in-west-virginia-caught-volkswagens-big-cheat

[32] Ibid. CARB, SQAQMD, UCR Studies

The Consent Decree inadequately supports the only genuine opportunity to increase the availability of clean energy alternatives, which are demonstrated to predictably and reliably reduce NOx emissions by upwards of 95% compared to new Diesel technology, and 99% compared to older Diesel. In sharp contrast to the obvious and massive NOx emissions generated by Diesel, Natural Gas medium and heavy duty engines predictably and consistently maintain exhaust emission levels of NOx at or below the federal standard during all drive cycles.[33] The Consent Decree proposal to "split the baby" between new Diesel funding, on the one hand, and alternative Natural Gas and Electric funding, on the other, completely defeats the stated goal of mitigating the Volkswagen Lifetime NOx Emissions.

D. The Consent Decree Provides Improper and Inappropriate Subsidies of Toxic Diesel Technology and Effectively Destroys Incentives for Moving to Cleaner Alternatives

1) The Massive Subsidy for New Diesel would Greatly Depress the Emerging Clean Fuel industry

In the current economic environment, Natural Gas struggles to compete with Diesel, in part, because the government has failed to create and enforce emissions standards consistent with its own research conclusions, and failed to consistently provide infrastructure for distribution of Natural Gas.

This situation could be dramatically improved by adjusting the proposed remedy of the Consent Decree to subsidize ***only Natural Gas and Electric Engines, and Natural Gas infrastructure,*** thereby actually making it possible to achieve the stated goal of reducing the Volkswagen Lifetime NOx Emissions. Current low oil prices have most recently eliminated any economic advantage to choosing Natural Gas over Diesel operation, so the only potential driving forces for fleets to move to Natural Gas operation ***1) enforcement of actual in-use emissions standards and compliance; and 2) Effective government subsidy of Natural Gas trucks and engines.***

The Consent Decree places toxic Diesel technology on even par with fully compliant Natural Gas technology. ***This actuality lands a potentially lethal blow to the struggling National Gas Industry.*** The "compromise remedy" sends a deceptive message to the public because when it comes to public safety and health, as there is no comparison between the two technologies: only Natural Gas, Electric or similar clean technologies will make the environment much cleaner and much healthier.

This misleading message, and most importantly, the reckless subsidy for Diesel engine purchases, would strongly inhibit the purchase of Natural Gas engines by the public and government entities, and would reinforce the decisions made by Diesel engine and vehicle manufacturers to eliminate investment into Natural Gas or other alternate technologies. Further, the subsidy creates a path of least resistance (i.e. purchase of new

[33] Ibid. CARB, SQAQMD, UCR Studies

Diesel) for municipalities obligated to convert existing dirty Diesel fleets. This is because although municipalities are offered a choice between Diesel or Natural Gas under the proposed Remedy, they are far more likely to choose Diesel because of: 1) lower costs for Diesel fleets, 2) ready access to Diesel fuel stations versus the current limited Natural Gas infrastructure, and 3) depressed Diesel fuel prices.

The Natural Gas Industry is in a huge uphill battle for market share of medium and heavy duty truck and engines which would be decided quickly in favor of Diesel if the Consent Decree is approved. Diesel has been the predominant fuel for goods and people movement in America for nearly 100 years. Cleaner alternatives to this highly polluting fuel have found little inroads into the market due to economic factors and the dominance of existing Diesel infrastructure and technology for all aspects of the truck and bus industry. The state of California and the federal government have funded efforts to reduce air pollution over the past three decades that have led to several boom and bust cycles for Natural Gas as a cleaner alternative. The fluctuating price of oil, and the inconsistency of federal and state subsidies have also played a significant part in creating these cycles.

It will be argued that not enough sizes and makes of medium and heavy duty Natural Gas engines are currently available to satisfy the market demand that would be created by a Consent Decree and Settlement ***actually*** **consistent with its stated goal.** While it is true that currently only one Diesel engine manufacturer sells certified medium and heavy duty Natural Gas engines for use in new vehicles, other U.S. companies like Power Systems International (PSI), and North American Repower (NAR) have invested millions to develop certified medium and heavy duty Natural Gas engine technology for repowering dirty Diesel engines, to fill the gap left by the exit of Diesel engine manufacturers from the Natural Gas market.[34] Prior to 2006, several Diesel engine manufacturers made Natural Gas versions of their engines, primarily for use in urban and school bus applications. This represented less than one percent of all medium and heavy duty vehicle engine sales. In 2007, tougher heavy duty emissions were enacted and nearly all Diesel engine manufacturers focused on their core market concern of meeting these emissions standards with their Diesel engines, eliminating funding of their Natural Gas engine development arms. Only Cummins continued to sell medium and heavy duty Natural Gas vehicle engines and furthered development of even cleaner Natural Gas engines.[35] A remedy that only subsidizes the much cleaner, much safer alternatives of Natural Gas and

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[34] California Energy Commission, "Comparison of Advanced Ignition Systems for Near-Zero-Emission Heavy-Duty NG Trucks", April 2015;
Power Systems International press release, "Power Solutions International Launches Gas Engine Joint Venture With Doosan Infracore", Dec. 2014

[35] Argonne National Lab, "Natural Gas Vehicles: Status, Barriers, and Opportunities" August 2010; Wilkes Institute for Public Policy & Economic Development, "Natural Gas: A Summary of the History, Uses, and Consumption" April 2012; Random History "The History of Natural gas Vehicles" Sept. 2008, http://www.randomhistory.com/2008/09/08_ngv.html

Electric would provide a genuine opportunity for multiple entrants into the market and achieve the stated goal of the Consent Decree.

2) The Consent Decree Would Improperly Destroy the Incentives for Municipal Fleets to Convert to Natural Gas

One of the few sectors where Natural Gas engines have captured market share are municipal fleets that have received federal and state funding to help comply with emission reduction mandates. In California, municipalities are encouraged to generate a Climate Action Plan that details what actions they will take to meet emission reduction targets for Greenhouse Gases ("GHG") as mandated by Assembly Bill 32.[36] These same municipalities are also mandated by CARB to remove from service older medium and heavy duty Diesel vehicles by 2020.[37] With these mandates in mind, municipalities that are not currently using Natural Gas, or only use Natural Gas in limited applications for vehicles, were considering Natural Gas medium and heavy duty vehicles as a means to reduce GHG emissions and satisfy the CARB mandate to remove older diesels.

In a move that would have disastrous consequences for the emerging municipal fleet market for Natural Gas vehicles, The Consent Decree specifically awards 100% of the cost to replace municipal medium and heavy duty vehicles with newer Diesel or Natural Gas powered vehicles and engines. With the proposed settlement announcement in mind, municipal fleet managers in California are now holding off on purchases and have already stated they will purchase new diesels over Natural Gas with these funds if given the choice as an "economic" choice. Due to the higher cost of Natural Gas engines and vehicles, and the need to replace a large number of vehicles in municipal fleets, plus the additional requirement to build or expand Natural Gas fueling infrastructure, these municipal fleet managers will bypass the only proven low NOx solutions of Natural Gas or electric vehicles in favor of known faulty and polluting Diesel vehicles. In this manner the Consent Decree will eliminate opportunities for the class 4-8 Natural Gas engine and vehicle industry in their only core market.[38]

Thus, at a critical point in the development of clean energy alternatives, the purported remedy to mitigate the NOx Volkswagen emissions would actually work to squelch one of the best proven alternatives for reducing municipal emissions, i.e., New and Repowered Natural Gas Trucks and Engines.

V. CONCLUSION

A) The Department of Justice Must Exercise its Authority to Safeguard the Public Interest and Promote the Stated Goal of the Consent Decree

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[36] State of California Governor's Office, "California Jurisdictions Addressing Climate Change" Updated June 2014

[37] CARB, http://arb.ca.gov/msprog/publicfleets/publicfleetsfactsheet.pdf

[38] Ibid. Personal Communications with Fleet Owners

The proposed Consent Decree is **inappropriate and improper** in its use of Settlement funds resulting from the ***real world, in-use failure*** of one automaker's Diesel emissions technology, to fund the purchase and operation of other Diesel engine manufacturer's ***known faulty and inadequate Diesel emissions technologies***. It is an accepted and well-studied fact that prior and current Diesel emissions technologies fail to reduce toxic emissions to federally mandated levels and produce excess NOx emissions in actual use. This fact is accepted to the point that the Environmental Protection Agency and the California Air Resources Board have for years incorporated these excess emissions into their emissions inventory estimates when documenting compliance with federal clean air standards. Just as clear is the fact that in matched comparison studies, in-use emissions from Natural Gas fueled engines have been documented to remain below the federal limit while Diesel fueled engines do not.

The Consent Decree places replacement or repowers of older Diesels with newer Diesels with documented failed emissions technology on par with replacement or repower with proven consistently clean Natural Gas engine technology. It is clearly **inappropriate, improper and inadequate** to grant current failed Diesel technology status as an allowable mitigation action, and it is especially **improper** in the face of the existence of proven clean alternatives that would be far more effective

New Diesel replacements as a mitigation solution are clearly documented **as inadequate** when compared to the other alternatives of Natural Gas or Electric operation. The court and the committee cannot use the emissions certification data of new Diesels as the defining criteria to determine eligibility as a mitigation action, when the **core issue is the inadequacy of the FTP Certification Process and NTE Certification Processes to protect the public from actual in-use emissions performance failures**. The in-use studies used to determine the need for mitigation, indeed the very researchers that did this work, have also demonstrated **the in-use failure of new heavy duty Diesel emissions technology to maintain federally mandated emissions levels, while the Natural Gas equivalents are shown to clearly comply at all times, including while in-use, with current NOx emissions standards.**

Calculation of the amount of NOx mitigated cannot be measured by simply looking at the difference in the FTP Certification Process and NTE Certification Process standards met by the older Diesel engine and that of the replacement Diesel engine. ***For both types of engines, the actual amounts of excess NOx emissions are unknown, and there is evidence to show in the majority of the drive cycle of the subject vehicles allowed funding, there could well be no difference at all.***

In stark contrast, the emissions from Natural Gas fueled medium and heavy duty engines are documented to be at or below the FTP Certification Process standard to which they were certified under all driving cycles. Clearly, use of Diesel replacements is an inadequate method of obtaining tangible and reproducible emissions reductions and mitigation the Volkswagen Lifetime NOx Emissions.

B. The Court and the DOJ Are Obligated to Protect the Public and Must Exert its Authority in this Matter to Protect the Public from Toxic Diesel Exhaust

The DOJ must exercise its authority under Section 28 C.F.R. §50.7 to withhold its consent until the remedies proposed in this comment are addressed and incorporated into the final Consent Decree, namely the removal of the inclusion of subsidies, as an allowable mitigation action, for purchase of new Diesel engines and vehicles, as set forth in Appendix D-2, pages 1-3 and 5-7, to wit: Sections 1, 2 and 6, which provide for funding for new Diesel engines and vehicles for class 8 Drayage trucks, class 4-8 buses, and class 4-7 local freight trucks for both government owned and non-government owned entities, and page 9 section 10, which provides for use of trust funds "for actions not specifically enumerated in this Appendix D-2, but otherwise eligible under DERA pursuant to all DERA guidance documents available through the EPA". The DOJ should inform the Court that the Public objects to this hasty settlement, which under scrutiny, clearly defeats the stated goal of the Consent Decree and withhold its consent to the proposed Consent Decree and underlying Proposed Settlement.

New language should be included in the Consent Decree to remove all subsidies for purchase of replacement new Diesel engines and trucks as detailed in Appendix D-2, and should be extended to exclude funding for new Diesel vehicles and engines through the Diesel Emissions Reduction ACT ("DERA") option as described in section 10.

C. The Stated Goal of the Consent Decree is a Valuable Remedy, and Should Be Maintained

The goal of the Consent Decree to establish Eligible Mitigation Actions to "fully mitigate the Volkswagen Lifetime NOx Emissions" is a valuable and rational remedy for the harm caused by the intentional deceit and consequent damage committed by Volkswagen. However, as is painfully obvious from the overwhelming weight of international scientific research, this stated goal would never be met by yet another massive subsidy of existing Diesel technology that would dominate our highways for decades, unrestrained by effective emissions standards. The parties to the Volkswagen litigation, in their apparent rush to achieve this Settlement, should not be allowed to perpetrate a grossly inappropriate, improper and inadequate "remedy" on the public. Too much is at stake, including our public health, including the health of our children and future generations, and indeed, the very health of our planet.

Respectfully submitted,

John G. Reed MD

North American Repower

North Central Texas Council Of Governments

August 5, 2016

Mr. John C. Cruden
Assistant Attorney General
US Department of Justice
Environment and Natural Resources Division
PO Box 7611
Washington, DC 20044-7611

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

Dear Assistant Attorney General Cruden:

On behalf of the North Central Texas Council of Governments (NCTCOG) and the Regional Transportation Council (RTC), which serves as the Metropolitan Planning Organization (MPO) for the Dallas-Fort Worth area, the opportunity to provide comments on the Partial Consent Decree for the above-identified lawsuit is appreciated. A roster of RTC members is included as Attachment 1. As staff to an MPO in an ozone nonattainment area, NCTCOG works to implement initiatives that reduce ozone-forming emissions from the transportation sector and has successfully administered eight grants awarded under the Environmental Protection Agency (EPA) Diesel Emissions Reduction Act (DERA) funding programs, with another two DERA projects currently underway. The enclosed comments focus on details of the Environmental Mitigation Trust (the Trust), specifically the Eligible Mitigation Actions and Mitigation Action Expenditures outlined in Appendix D-2. In general, these comments reflect the principle that the Trust should be administered in a way that ensures the funding facilitates implementation of as many eligible activities as possible, thus optimizing nitrogen oxides (NO_X) emissions reductions achieved.

Administration

NCTCOG encourages the Department of Justice to clarify that the Lead Agency identified through the form in Appendix D-3 is authorized to administer the Beneficiary Mitigation Plan through formal partnerships with other agencies as it deems appropriate. For example, a Lead Agency may wish to partner with another State or local government to administer Eligible Mitigation Actions in a more targeted area. NCTCOG recommends adding language that clearly allows this discretion to section IV.4.2.1 of Appendix D, or to the Certification for Beneficiary Status Under Environmental Mitigation Trust Agreement form in Appendix D-3.

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Funding Levels

NCTCOG supports the higher funding levels outlined for zero-emissions technology and government-owned vehicles and equipment in various Eligible Mitigation Action categories. NCTCOG recommends that these same higher funding levels also be offered for all new vehicles and equipment powered by an engine that meets the strictest California Air Resources Board (CARB) Optional Low-NO_X Standard of 0.02 grams NO_X per brake horsepower-hour, which will incentivize the use of the cleanest available near-zero emissions technology options in certain applications where purely electric technology is not yet fully mature.

NCTCOG also requests that no eligible activity be allowed 100% funding, and notes that the extent of 100% funding options proposed in the Consent Decree is much more generous than the DERA funding thresholds on which the Consent Decree funding levels are modeled. NCTCOG suggests that 80% funding from the Trust fund is adequate for Eligible Mitigation Actions involving government-owned vehicles or equipment. This funding threshold is consistent with the maximum typically allowed under the Congestion Mitigation and Air Quality Improvement (CMAQ) program.

Expenditure Options

Since the intent of the Trust is to offset unexpected emissions from violating light-duty diesel vehicles that prompted this lawsuit, it is imperative that the Trust facilitate implementation of emission-reducing activities that would not occur without the use of Trust funds. To that end, NCTCOG recommends against the DERA Option. According to the EPA, request to competitive DERA funding programs have exceeded availability of funds by as much as seven to one.[1] In fiscal year 2013, the agency received $48 million in requests compared to only $9 million available. This demonstrates that no additional subsidy is needed to implement projects already funded by DERA. Allowing Trust funds to be used for DERA-funded projects will open the door for Trust funds to be exhausted on projects that would have been completed without the extra assistance, thus failing to achieve any additional emissions reductions. Elimination of the DERA Option will ensure that all Mitigation Actions will be above and beyond "existing" projects, thus achieving the additional emissions reductions intended to be gained through this Trust.

In lieu of the DERA Option, NCTCOG recommends adding an option for Beneficiaries to administer funds for Eligible Mitigation Actions through a low-interest revolving loan program. Under a loan, a greater share of expenses could be paid through the Trust up-front, then as the loan is repaid the funds become available for future additional projects. This could accomplish the goal of providing a large Trust percentage of eligible costs while maintaining the sustainability of the Trust long-term to maximize the number of Eligible Mitigation Actions implemented. It also has the potential to increase the fund over time through collection of interest.

[1] Third Report to Congress: Highlights from the Diesel Emission Reduction Program. Environmental Protection Agency. EPA-420-R-16-004. February 2016. http://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100OHMK.pdf.

Eligible Activities

NCTCOG recommends that the Consent Decree use fuel and technology-neutral language when discussing eligible technologies, rather than calling out specific fuel types, to ensure consistent focus on NO_X emissions reductions versus other goals. This can be done by referencing new engines that meet either:

- The most current EPA emissions standards in effect during the year the Eligible Mitigation Action occurs, or
- CARB Optional Low-NO_X Standards, or
- Zero-emission technology.

NCTCOG appreciates inclusion of Ocean Going Vessels Shorepower as a highly cost-effective strategy. However, idle reduction technologies for heavy-duty trucks, school buses, and locomotives are also highly cost-effective methods to reduce emissions. These technologies include auxiliary power units, truck stop electrification or electrified parking spaces, and shore connection systems for locomotives, among others. In fact, the Federal Highway Administration found that idle reduction projects for heavy-duty trucks are the most cost-effective for NO_X emissions among all emissions reduction strategies evaluated within the CMAQ program.[2] Therefore, NCTCOG recommends adding another Eligible Mitigation Action category for all EPA-verified idle reduction technologies to capture the full spectrum of cost-effective idle reduction activities.

NCTCOG notes that eligibility within these categories appears to be limited to short-haul trucks. NCTCOG recommends consulting with EPA to consider options for encompassing long-haul Class 8 trucks, which also have the potential to be high emitters due to their high mileage and age. Expanding eligibility to all EPA-verified idle reduction technologies as requested above will also support this sector. Moreover, these trucks can rarely benefit from State and local incentive programs because of their national operations. Geographic eligibility could be based upon documentation of the state in which the largest proportion of fuel taxes is paid.

NCTCOG recommends technical revisions to certain Eligible Mitigation Action categories:

- Categories 1, 2, 3, 4, 6, 7, and 8:

  NCTCOG recommends clarifying the scrappage requirement to refer only to the engine in the case of a Repower, and the entire vehicle or equipment only in the case of replacement. Also, NCTCOG encourages the Department of Justice to coordinate with EPA to evaluate whether scrapping the engine and emissions system, rather than the entire vehicle or equipment, would be possible for replacements as well. This would retain the air quality benefits while minimizing lost revenue associated with chassis resale, which is often a deterrent to

[2] Figure 3. Median Cost-Effectiveness Estimates (Cost per Ton Reduced) of NO_X Emissions Reductions. FHWA – Cost Effectiveness Tables Summary.
http://www.fhwa.dot.gov/environment/air_quality/cmaq/reference/cost_effectiveness_tables/index.cfm

participation. It also minimizes unintended consequences of unnecessarily increasing the solid waste stream.

- NCTCOG recommends changing all references to "all-electric engine" to simply "all-electric" or "electric motor", as electric vehicles and equipment are powered by motors, rather than engines. Use of the word "engine" when referencing all-electric power sources could create unnecessary confusion.

- Categories 1, 2, and 6:

  - The Trust allows eligible trucks and buses in these categories to include model years 2007-2012 in the event Beneficiaries already have State regulations requiring upgrades to older model years. NCTCOG suggests this eligible age range be limited to trucks and buses powered by 2007-2010 model year engines, reflecting the phase-in years for current heavy-duty engine emissions standards since 2011 and 2012 trucks are already powered by engines that meet the most current emissions standards.

Definitions

Finally, NCTCOG suggests revising definitions for consistency with other federal programs:

- Change "Alternate Fueled" to "Alternative Fuel" and define by reference to the Energy Policy Act of 1992. This definition would encompass all-electric vehicles and equipment.
- Add a definition for "Hybrid Vehicle" for purposes of adding hybrid vehicles to desired Eligible Mitigation Activity categories, as hybrid technology is not defined as Alternative Fuel by the Energy Policy Act.

Again, the NCTCOG appreciates the opportunity to comment. We look forward to implementation of the Partial Consent Decree as we work with partner agencies toward the common goal of cleaner air.

Should you have any questions, please contact me at (817) 695-9286 or cklaus@nctcog.org.

Sincerely,

Chris Klaus
Senior Program Manager

LPC:mg
Attachment

cc: David Brymer, Air Quality Division Director, Texas Commission on Environmental Quality
Michael Morris, P.E., Director of Transportation, NCTCOG

ATTACHMENT 1

REGIONAL TRANSPORTATION COUNCIL

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Mayor
City of Grand Prairie

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W. Jeff Williams
Mayor
City of Arlington

Erik Wilson
Deputy Mayor Pro Tem
City of Dallas

W. B. "Zim" Zimmerman
Councilmember
City of Fort Worth

North Florida TPO
Transportation Planning Organization
PLAN · FUND · MOBILIZE

August 4, 2016

RE: Volkswagen Partial Settlement Comments

The North Florida Clean Fuels Coalition is a designated DOE Clean Cities Coalition and is hosted by the North Florida Transportation Planning Organization (North Florida TPO). The Coalition is committed to reducing petroleum consumption by increasing alternative fuels, vehicles and infrastructure diversity in North Florida while enhancing the region's quality of life and economic competitiveness.

The Coalition and the North Florida TPO support the partial settlement and strongly encourage Florida Governor Rick Scott to apply for the approximately $152 million in initial funding from the Environmental Mitigation Trust to assist in reducing NOx emissions in Florida.

We suggest that Clean Cities Coalitions nationwide should play a significant role in this process given the DOE mission and success in alternative fuels. We further propose that the Clean Cities Coalitions in Florida, and specifically the North Florida Clean Fuels Coalition, play a key role in planning, managing and implementing alternative fuel emission reduction projects.

The North Florida Clean Fuels Coalition/North Florida TPO have been successful in deploying electric vehicle charging stations within our region. We also have assisted with the conversion to CNG vehicles in Duval and St. Johns Counties and are responsible for the publicly accessible CNG station at the Jacksonville Transportation Authority and the conversion of one FEC Railroad locomotive to LNG.

The North Florida Clean Fuels Coalition and the North Florida TPO appreciate the opportunity to comment and respectfully submit these comments for the benefit of the people of Florida.

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NESCAUM
www.nescaum.org

Northeast States for Coordinated Air Use Management
89 South Street, Suite 602 Boston, MA 02111
Phone 617-259-2000 Fax 617-742-9162
Arthur N. Marin, Executive Director

August 5, 2016

John C. Cruden
Assistant Attorney General
Environment and Natural Resources Division
U.S. Department of Justice
P.O. Box 7611
Washington, D.C. 20044-7611

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

Dear Assistant Attorney General Cruden:

The Northeast States for Coordinated Air Use Management (NESCAUM) thanks the Department of Justice (DOJ) for the opportunity to comment on the proposed Partial Consent Decree filed with the US District Court for the Northern District of California regarding the above-referenced lawsuit. NESCAUM is the regional association of air pollution control agencies representing Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont.

In particular, we applaud the Department for emphasizing transportation electrification as a key strategy to ensure continued and lasting NOx reductions from the light-duty vehicle fleet. NESCAUM is a strong supporter of zero-emission vehicles (ZEVs), and has been working with our member states for many years to promote ZEV market growth. These efforts have included actions to improve access to electric vehicle charging infrastructure, provide incentives to both consumers and dealerships, and encourage automakers to make ZEVs available for sale in our region.

Seven of our eight member states are implementing the California Advanced Clean Cars rules, including the ZEV rule, as authorized under section 177 of the Clean Air Act. These states have had the ZEV rule in place for many years (in some cases since the 1990s), but because of various complexities of that rule, there has not yet been a binding ZEV sales requirement in the northeast states. This, combined with a lack of marketing effort by the automakers, has meant that despite the substantial investments the states have made in ZEV readiness, despite clear demand from consumers, and despite the impressive capabilities of the vehicles themselves, our member states still await a meaningful effort by the automakers to promote ZEV sales in the Northeast.

NESCAUM also facilitates the multi-state ZEV Task Force in which five of our eight member states participate along with California, Maryland, and Oregon. Through this effort, these states

NESCAUM Members:
Connecticut Bureau of Air Management, Anne Gobin
Maine Bureau of Air Quality Control, Mark Cone
Massachusetts Bureau of Waste Prevention, Christine Kirby
New Hampshire Air Resources Division, Craig Wright
New Jersey Division of Air Quality, Francis Steitz
New York Division of Air Resources, Steve Flint
Rhode Island Office of Air Resources, Douglas McVay
Vermont Air Quality & Climate Division, Heidi Hales

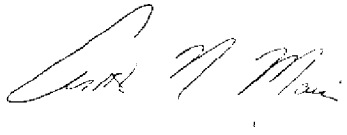
have developed a Multi-State ZEV Action Plan,[1] and are working aggressively to implement the many actions identified to support a growing ZEV market, individually and through coordinated efforts. Implementation steps to date include allocation of funds for infrastructure expansion and purchase incentive programs in all five northeast Task Force states. To date, our states have invested millions of dollars in ZEV deployment and planning. The ZEV investments required by Appendix C of the proposed consent decree will enhance the ongoing efforts in the Northeast and elsewhere to build robust markets for ZEVs.

With respect to the establishment of the Environmental Mitigation Trust, we applaud DOJ for its focus on mitigating the environmental harm caused in this case. Our states have a long history of working successfully to reduce NOx and other pollutants from diesel engines in highway, nonroad, and marine applications. For example, NESCAUM and our states piloted some of the first nonroad diesel retrofit projects and implement a wide range of diesel engine retrofits and repowers under the ongoing DERA program. While our states remain committed to reducing emissions, we observe that the opportunities for NOx reductions from diesel engines can vary widely; for example, states without large ports may have fewer opportunities to reduce emissions from cargo-handling equipment. We appreciate that the proposed settlement allows for a small percentage of the Mitigation Trust Fund to be allocated toward ZEV projects; and we note that to the degree states are allowed flexibility in identifying the optimal use of mitigation funds, they are able to achieve the desired emission reductions that much more effectively.

The potential ZEV investment level contained in the Proposed Consent Decree could represent a significant contribution to ZEV market growth. Having worked with our member states for many years to prepare for and support the transition of our region's light-duty vehicle fleet to zero-emission technologies, we commend DOJ for its diligence and its commitment to preserving the integrity of the Clean Air Act, mitigating environmental harm, and providing long-lasting public health protection to citizens in the Northeast and across the nation.

Thank you again for this opportunity to comment.

Sincerely,



Arthur N. Marin
Executive Director

[1] ZEV Program Implementation Task Force, *Multi-State ZEV Action Plan* (May 2014), available at http://www.nescaum.org/topics/zero-emission-vehicles/multi-state-zev-action-plan.

NORTHWEST ENVIRONMENTAL DEFENSE CENTER
10015 SW Terwilliger Blvd, Portland, OR 97219
PHONE: 503.768.6673 WEB: nedc.org

August 1, 2016

John C. Cruden
Assistant Attorney General
U.S. Department of Justice
Environmental and Natural Resource Division
P.O. Box 7611
Washington, DC 20044-7611

By email: pubcomment-ees.enrd@usdoj.gov

RE: Partial Consent Decree for Volkswagen "Clean Diesel" Litigation

Dear Mr. Cruden,

The Northwest Environmental Defense Center (NEDC) and our partners (collectively "the Commenters") are pleased to provide comments on the partial consent decree issued for the United States Department of Justice's Volkswagen "clean diesel" marketing, sales practices, and products liability litigation.

Commenters represent the interests of thousands of Oregonians concerned about clean air generally, as well as the adverse environmental and public health effects of diesel particulate more specifically. Through the submission of these comments, Commenters seek to ensure the prioritization of use of settlement funds by a Beneficiary is appropriately directed by and towards the communities most impacted by diesel emissions pollution and NO_x concentrations. In order for the consent decree ("the Decree") to effectively remedy the impact caused by Volkswagen, it is vital that the Decree outlines procedures for community input. Without such input, it is unlikely that the Beneficiary will allocate settlement funds in ways that will truly help the communities most impacted. We have reviewed the Decree to determine whether it accomplishes three main goals;

(1) Sets forth procedures to protect and ensure community participation in the allocation of mitigation funds.

(2) Prioritizes funding in communities that experienced the greatest impacts and in turn have greater needs for assistance, including communities of color and low-income communities, and populations that are more vulnerable, like children and elders. These communities are known to have higher burdens of exposure and higher incidence of

health related diseases associated with diesel pollution and poor environmental quality. Children and elders are more vulnerable to the health impacts of diesel pollution.

(3) The use of Trust funds not only remedies the immediate impacts of Volkswagen's actions, but also emphasizes a forward thinking approach to reducing environmental impacts of the diesel industry as a whole and promotes environmentally sound and health protective alternatives.

The commenters have reviewed the Decree to determine if it ensures that the allocation of funds from the Volkswagen settlement ("the Settlement") will be in alignment with the community's vision and need for these funds, with regard to both the Environmental Mitigation Trust ("the Trust") and the ZEV Investment Agreement ("the ZEV Agreement"). The Commenters find that while the Decree contains provisions that support these goals, the Decree does not adequately accomplish these goals. We offer the following comments to help address specific inadequacies in the Settlement.

Comments

(1) The Decree should adopt further provisions that emphasize and ensure that community input is accepted and considered in decisions regarding the allocation of funds from the Settlement.

The Decree does a fair job of implementing procedures that require the public to have access to a Beneficiary's intended and actual allocation of funds. However, the Decree falls short of ensuring that community input is considered when determining the allocation of funds. The Decree's procedures for both the Trust and the ZEV agreement have the potential to better advocate for the input of those community members who are most affected by the relevant diesel impacts.

The procedures for the Trust, located in Appendix D, offers limited insight as to how community input is taken into consideration in the distribution of the funds from the Trust. In several instances, the Decree implements requirements that offer the community an opportunity to review plans for allocating funds. Partial Consent Decree at 193, (Appendix D, paragraph 4.1 states that the purpose of the "Beneficiary Mitigation Plan" is to "provide the public with insight into" the intended and expected uses of funds),[1] but these requirements do not enable further community participation. This lapse would be easily resolved by including provisions that require a public comment period after a Beneficiary makes a proposal public. Additionally, a Beneficiary would be required to include, in their final proposal, a brief statement summarizing the input they received during the comment period and the means by which they considered the

[1] *See also,* Partial Consent Decree at 199 (Appendix C, Paragraph 5.2 requires that Beneficiaries make requests for funding, and the documents supporting those requests, available to the public).

input when determining the use of funds. These simple safeguards are effective in the development of administrative rules, and are applicable to Beneficiaries' proposals for allocations of funds from the Trust. In fact, the Decree already employs provisions that are almost identical to the proposed additions in its procedure for the ZEV Agreement. Partial Consent Decree at 151-153, (Appendix C, paragraphs 2.3-2.4). Adopting the comment procedures set forth in the ZEV Agreement in the procedures for the Trust is a simple solution that would cure the lack of public input that the Trust procedures currently lack.

The Decree's procedures for the ZEV Agreement are more adequate with regard to ensuring that communities are able to offer input on decisions regarding the use of funds from the Settlement in the National ZEV Investment Plan ("the Investment Plan"). The ZEV agreement provides for a "National ZEV Outreach Plan" ("the Outreach Plan"). Partial Consent Decree at 151, 152, (Appendix C, paragraph 2.3 states that the purpose of the plan is to allow Eligible Parties to "offer meaningful input" on the development of the Investment plan, including identifying opportunities where investment is most needed). The Decree sets minimum requirements for what the Outreach Plan must accomplish. Partial Consent Decree at 151, 152, (Appendix C, paragraph 2.3). Included in these requirements is the acceptance of comments from States, municipal governments, Tribes, and federal agencies ("Eligible Parties") regarding development of the Investment Plan. Partial Consent Decree at 152, (Appendix C, paragraph 2.3.1 requires the Settling Defendants to provide Eligible parties with notice of how and when they may offer input and to accept any comments for consideration). In addition, the Decree requires that when the Settling Defendants submit a draft of the Investment Plan they must include a summary of the comments received and describe how they considered the comments in the draft. Partial Consent Decree at 152, (Appendix C, paragraph 2.4). These procedural requirements ensure that the national community is given the opportunity to offer input on the Investment plan. The requirements also highlight the importance of involving communities in a decision intended to remedy impacts that the communities have suffered.

(2) The Decree should further emphasize the importance allocating funding to communities of higher need.

The Decree discusses to some extent the importance of funding communities that experienced greater impacts and have greater need for assistance, but should address the topic more thoroughly and more frequently throughout the document. The Decree mentions targeting ZEV Investments "where most needed," Partial Consent Decree at 151, 152,[2] "increasing access [to ZEV Investments] in underserved areas," *id.* at 154,[3] "taking into account relevant literature"

[2] Appendix C, paragraph 2.3, stating that Eligible Parties can offer input identifying opportunities where ZEV Investments are most needed.

[3] Appendix C, paragraph 2.5.5, stating that programs to increase exposure can be targeted towards reaching "underserved areas".

to anticipate areas where more ZEV Investments are necessary, *id.* at 155,[4] considering "areas that bear a disproportionate share of air pollution burden," *id.* at 193,[5] and discussing how actions will help "communities that have historically born a disproportionate share of the adverse impacts" of diesel and NO_x emissions. Partial Consent Decree at 199.[6] These provisions all emphasize the importance of targeting communities that have experienced greater impacts. However, these few provisions should be further bolstered by more frequent and substantial provisions intended to target the allocation of funds to communities in need. The Commenters recommend that similar targeting language (e.g. considering "areas that bear a disproportionate share of air pollution burden") be strengthened an incorporated into relevant sections of the Environmental Mitigation Trust Agreement, including, but no limited to, the section describing Environmental Mitigation Actions.[7] Additionally, Commenters request that the Decree more expressly advantages communities of color by encouraging the purchase of ZEVs and electrified buses in low-income and rural areas, and also incentivizes non-polluting investments including parks, pedestrian and bike infrastructure in communities of color.

(3) The Decree should strengthen its conditions regarding ZEV access, education, and exposure in order to promote a forward looking approach regarding environmentally sound and health protective alternatives to diesel vehicles.

The requirements set for the National ZEV Investment Plan ("the Investment Plan") highlight the importance of increasing the availability and awareness of ZEVs, but could further emphasize the importance of these factors. The Decree appropriately emphasizes most of the categories of ZEV Investments in the requirements for the Investment Plan, Partial Consent Decree At 153 (Appendix C, paragraph 2.5.1 requires that the ZEV Investments described in paragraphs 1.10.1 and 1.10.2 be included in the Investment Plan), the exception being programs or actions intended to increase public exposure and access to ZEVs. Partial Consent Decree At 154 (Appendix C, paragraph 2.5.5 exempts the first 30-month Investment Plan from including the ZEV Investment described in paragraph 1.10.3). The Decree requires the inclusion of programs and actions intended to "increase public exposure or access to ZEVs," but not for the first 30-month Investment Plan. Partial Consent Decree at 154 (Appendix C, paragraph 2.5.5). Failing to hold this category of ZEV Investment to the same inclusion standard as other categories of ZEV Investments does not appropriately emphasize its importance. The Decree should hold this ZEV Investment to the same standard of inclusion as the other ZEV Investments in order genuinely promote a forward thinking approach to increasing the availability of ZEVs, as well as crucial awareness of the availability of ZEVs.

---

[4] Appendix C, paragraph 2.5.7 stating that the ZEV Investment Plan should include a discussion of the research used to determine the distribution of ZEV Investments.

[5] Appendix D, paragraph 4.1 describes what a Beneficiary Mitigation Plan should address.

[6] Appendix D, paragraph 5.2.10 requires a funding request to include a description of the impacts of an Eligible Mitigation Action.

[7] Appendix D, paragraph 5.1.

Conclusion

Commenters appreciate the opportunity to submit comments on the terms of the consent decree obtained by the United States Department of Justice against Volkswagen. As a whole, the Decree sets forth thorough and forward-thinking procedures for remedying the impacts caused by Volkswagen. The Decree would benefit from adopting further provisions to (1) protect and ensure community participation in the allocation of mitigation funds, (2) further emphasize the importance of allocating funding to communities that experience the greatest impacts and in turn have greater need for assistance, and (3) strengthen conditions regarding access, education, and exposure to ZEVs in order to promote a forward looking approach regarding the impacts of the diesel industry by raising awareness of environmentally sound and health-protective alternatives.

Sincerely,

Dr. T. Allen Bethel
Executive Co-Chair
Portland African American Leadership Forum

Kelly Campbell
Executive Director
Oregon Physicians for Social Responsibility

Alan Hipolito
Executive Director
Verde

Huy Ong
Executive Director
OPAL Environmental Justice Oregon

Mary Peveto
President
Neighbors for Clean Air

Colin Price
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Maggie Tallmadge
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Coalition of Communities of Color

Chris Winter
Co-Executive Director
Crag Law Center

NUVERA
FUEL CELLS

July 26, 2016

John C. Cruden
Assistant Attorney General
U.S. Dept. of Justice – ENRD
P.O. Box 7611
Washington, D.C. 20044-7611

IN RE: VOLKSWAGEN "CLEAN DIESEL" MARKETING, SALES PRACTICES, AND PRODUCTS LIABILITY LITIGATION

Dear Mr. Cruden,

Nuvera Fuel Cells, LLC would like to comment on an issue regarding the eligibility of certain zero emissions vehicles identified in Appendix D-2, "Eligible Mitigation Actions and Mitigation Action Expenditures," of the proposed Volkswagen partial consent decree. Airport Ground Support Equipment and Forklifts may be repowered with "an All-Electric engine, or may be replaced with the same [Airport Ground Support Equipment or Forklift] in an All-Electric form."

There is ambiguity regarding whether hydrogen fuel cell systems qualify as "All-Electric engines" because the Definitions/Glossary of Terms section contains the following statement:

> *Zero Emission Vehicle (ZEV)" shall mean a vehicle that produces no emissions from the onboard source of power (e.g., All-Electric or hydrogen fuel cell vehicles).*

Since hydrogen fuel cell vehicles are distinguished from All-Electric vehicles as a ZEV type, there is a significant chance that an "All-Electric engine" will be interpreted to mean that hydrogen fuel cells are not eligible expenditures.

This is not the likely intention of the proposed settlement. Nuvera suggests that hydrogen fuel cell vehicles be explicitly identified as eligible mitigation action expenditures for these vehicles, or that the term "Zero Emissions Vehicle" replace "All-Electric" as appropriate.

Please feel free to contact me if you have any questions regarding this comment.

Best regards,

Gus Block
Director, Marketing and Corporate Development

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Ohio Environmental Protection Agency

John R. Kasich, Governor
Mary Taylor, Lt. Governor
Craig W. Butler, Director

August 3, 2016

Assistant Attorney General,
Environment and Natural
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pubcomment-ees.enrd@usdoj.gov.

Re: Comments on the Proposed Partial Consent Decree—Appendix D, Form of Environmental Mitigation Trust Agreement filed in the Volkswagen "Clean Diesel" Marketing, Sales Practices, and Products Liability Litigation, Case No: MDL No. 2672 CRB (JSC), and D.J. Ref. No. 90–5–2–1–11386.

Dear Assistant Attorney General,

The Ohio Environmental Protection Agency (Ohio EPA) thanks the U.S. Department of Justice for the opportunity to submit the following comments on Appendix D, Form of Environmental Mitigation Trust Agreement, of the DOJ Partial Consent Decree in the above-referenced Volkswagen "Clean Diesel" case. Ohio EPA requests that you revise Appendix D and Appendix D-2 as provided below.

Authorize the Trustee to Approve Alternative Projects

Ohio EPA is committed to implementing the mitigation projects authorized in the Trust, but we foresee two circumstances that may demand additional flexibility in order to achieve the goals of the Trust. First, the State Beneficiaries may find that they are not able to use 80% of their allocation within ten years for the projects currently identified in the Trust Agreement. Second, this ten-year period offers ample time for future technologies or practices to develop. The Beneficiaries and U.S. EPA may both agree that these future technologies provide significant emission reductions. To address these contingencies, we request the Trust be amended to give the Trustee the flexibility to authorize additional projects that are consistent with its purpose. We propose the following language be added to a new Paragraph (No. 11) of Appendix D-2.

- Appendix D-2, Paragraph 11. Alternative Projects Approved by the Trustee. Five years after the effective date of the Trust and continuing thereafter until the Trust is terminated, Beneficiaries may submit to the Trustee proposals for alternative mitigation projects that are not specifically enumerated in Appendix D-2. In consultation with U.S. EPA, the Trustee may approve alternative mitigation projects that are consistent with the intent of the Trust.

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Define and Establish Payment Rates for Eligible Great Lakes Freighters

Reliable evidence demonstrates that ocean going vessels are not the only marine air pollution source affecting Ohio's air quality. Great Lakes Freighters have significant air pollution impacts on nearby lake communities. These large vessels traverse the Great Lakes handling bulk commodities such as coal, iron ore, and limestone. They may be too large to use the St. Lawrence Seaway and thus have been designed and built to operate exclusively in the Great Lakes.

The Lake Michigan Air Director's Consortium (LADCO) undertook a study to provide quantifiable emissions and air quality impacts from these freighters. Attached is a copy of the LADCO emissions report. LADCO calculated air quality impacts on a select city, Sheboygan, Wisconsin, which borders Lake Michigan. Attached are a series of graphs and charts that illustrate the impact of marine traffic on Sheboygan. LADCO selected Sheboygan because the city historically registers some of the highest ozone readings in the State of Wisconsin. Of the myriad sources of air pollution from Illinois and Wisconsin that impact Sheboygan, marine traffic ranks third overall. The strongest indicator of marine traffic volume may be found from actually tracking marine vessels on the Great Lakes, which substantiates the need to more closely examine this source sector. Having the ability to mitigate the potential air quality impacts from this sector would assist the Great Lakes states in meeting U.S. EPA air quality standards.

Also, these vessels or freighters operate exclusively in fresh water; and as a consequence, they have a longer operational life span, typically fifty or sixty years. Therefore, if U.S. EPA permitted upgrades to these units, the reduction in emissions would be realized for many years. In order to take advantage of this unique opportunity to achieve emission reductions in this sector, Ohio EPA requests Appendix D-2 be amended to include a new Paragraph that addresses Great Lakes Freighters as follows:

- Using the format found in Appendix D-2, Paragraph 4. "Ferries/Tugs" we are requesting a new section be added to define and establish payment rates for eligible Great Lakes Freighters.

Clarify Shorepower for Great Lakes Freighters in Addition to Ocean Going Vessels

As noted immediately above, the Great Lakes states experience significant pollution from both ocean going vessels and Great Lakes Freighters in freshwater ports. To clarify that shorepower projects may include shorepower that serves Great Lakes Freighters we request Appendix D-2, Paragraph 5 be amended as follows:

- Appendix D-2, Paragraph 5. Great Lakes and Ocean Going Vessels (GLOGV) Shorepower

Add Off-road Vehicles and Equipment

Because of restrictions in the Diesel Emissions Reduction Program (DERA) and the Federal Highway Administration's Congestion Mitigation and Air Quality Program funding (CMAQ), Ohio has been unable to address emissions from off-road diesel vehicles and equipment. In order to take advantage of this unique opportunity to achieve emission reductions in this sector, Ohio EPA requests Appendix D-2 be amended to add a Paragraph dedicated to off-road vehicles as follows:

- Using the format found in Appendix D-2, Paragraph 1. "Class 8 Local Freight Trucks and Port Drayage Trucks (Eligible Large Trucks)," we request a new section be added to define and establish payment rates for eligible, off-road vehicles and equipment.

Expand the Definition of Government

Ohio has a number of governmental units that may be excluded from the current definition of "Government" including solid waste management districts and regional transportation authorities. These governmental organizations accomplish their purposes of transportation and infrastructure by operating diesel buses and trucks. In order to clarify that these governmental organizations qualify for project costs at the government rate, Ohio EPA requests the following amendment to the definition of "Government" in Appendix D-2:

- Appendix D-2, Definitions/Glossary of Terms: "Government" shall mean a State agency, school district, municipality, city, county, tribal government or native village, public entities established by law to provide services to the community, public transportation authority, or port authority that has jurisdiction over transportation, cargo handling, or air quality. The term 'State' means the several States, the District of Columbia, the Commonwealth of Puerto Rico, Guam, the United States Virgin Islands, American Samoa, and the Commonwealth of the Northern Mariana Islands.

Ohio EPA is dedicated to making continued improvements to Ohio's air. With that in mind, we provide these comments regarding the proposed Environmental Trust Agreement. Again, Ohio EPA thanks you for this opportunity to comment.

Sincerely,

Craig W. Butler
Director

c: Aaron Farmer, Assistant Attorney General
Ohio Attorney General

Valoria Hoover, Assistant Attorney General
Ohio Attorney General

Jennifer Townley, Deputy Director
Ohio Department of Transportation

Dave Moore, Statewide Planning Manager
Ohio Department of Transportation

Scott Phinney, Administrator
Ohio Department of Transportation

Julianne Kaercher, Public Information Officer
Ohio Rail Development Commission

Sam Spofforth, Executive Director
Clean Fuels Ohio

September 2015

LAKE MICHIGAN AIR DIRECTORS CONSORTIUM (LADCO)

Emission Inventory Assistance for Commercial Marine Vessels on the Great Lakes and [illegible]

FINAL REPORT

Prepared By:
ENERCON SERVICES, INC.
15770 NORTH DALLAS PARKWAY,
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ENERCON

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1 INTRODUCTION

1 INTRODUCTION

1.1 Introduction

Shipping is an important mode of transportation, however, unlike a few decades ago, ships now carry goods rather than people. The movement of vessel traffic has generally increased on the Great Lakes and generally decreased on the major Midwest rivers. Ships are an important source of air pollutants such as carbon dioxide (CO_2), sulfur dioxide (SO_2), nitrogen oxides (NO_x) and particulate matter (PM). Ships are also a source of emission of pollutants such as black carbon (BC), organic acids such as formic acid and elements such as iron (Fe), nickel (Ni), vanadium (V) and zinc (Zn).

The primary source of emissions from Marine Vessels are the diesel engines. Diesel engines in marine vessels such as container ships, tankers, bulk carriers, and cruise ships utilize two types of engines — (1) main propulsion engines and (2) auxiliary engines. Auxiliary engines are operated during hotelling, while main engines are operated during cruising and maneuvering modes.

The primary goal of this project was to estimate the emissions of Marine Vessels on the Great Lakes and major Midwest rivers for base year 2014 and project emissions for years 2020 and 2030. Data for the major Midwest rivers primarily included the gross tonnages on the National Waterway Networks (NWN) provided by US Army Corps of Engineers (USACE). The emissions due to vessel movements on the Great Lakes were estimated using vessel positional data and vessel characteristics obtained from `www.MarineTraffic.Com` (MarineTraffic).

Emissions from Marine Vessel traffic can be estimated using a combination of the vessel's gross tonnage, engine rating, fuel consumption and pollutant specific emission factors.

Marine vessels primarily operate in three modes: cruising/underway, hotelling and maneuvering. During maneuvering, ships move into or out of the port zone, and hotelling covers the operational activities of the vessel during the period it is docked at a port. Cruising operations occur outside of the port zone and are typically associated with an engine load of 80%.

In this work, emissions from Marine Vessels in the Great Lakes region and Major Midwest rivers are estimated for the following modes and categories:

- Underway/Cruising Emissions
- Hotelling (operations while stationary) at Ports/Docks
- Emissions during Maneuvering at Ports
- Itemized Emissions by Ship/Vessel Category

This report is organized into four sections. Section 1 covers the Introduction (this section),

Section 2 covers the details of the calculation methods. Section 3 summarizes the results and provides brief discussions on the results derived in this work and finally Section 4 provides the conclusions and recommendations for future work.

2 CALCULATION METHODS

2 CALCULATION METHODS

Emissions in this project were estimated using data from two distinct sources. Therefore, the calculation methodologies have been discussed separately for the major Midwest Rivers (Rivers Data) and for the Great Lakes region (Great Lakes Data).

2.1 Emissions Calculations for Vessels in the Major Midwest Rivers

The U.S. Waterway Data is a collection of data related to the navigable waters in the United States including the inland waterways, off-shore waters, the Great Lakes, and the Saint Lawrence Seaway[1]. As of September 24, 2015, the most current year link level data available from USACE was for the year 2013[2]. Therefore, for the Rivers Data, the 2013 data was assumed to be the same for the year 2014 (base year for this work). The Rivers Data, published by USACE, was compiled from several agencies, including the U.S. Army Corps of Engineers Navigation Data Center, the U.S. Bureau of the Census, the U.S. Coast Guard, Oak Ridge National Laboratory and Vanderbilt University by USACE.

2.1.1 National Waterway Network Link Commodity Data

The National Waterway Network (NWN) link commodity data consists of link databases with the total gross tonnage of all vessels in each link. Links are linear paths created from a beginning and an end point that approximate vessel's track in each section of the waterway. The key task was to assign each of these links to the National Emission Inventory (NEI) Shape files and the Counties that are adjacent to the links in the waterway networks. This was accomplished by intersecting the USACE NWN shape files with counties and the NEI shipping lanes shape files using ArcGIS version 10.3.1. In equation 1 below, 'i' refers to the county or NEI Shape ID and 'pol' refers to the pollutant for which the emissions are being calculated. In this work, for the Rivers Data emissions calcualtions, 'FuelEff' is the fuel efficiency value for vessels in the major Midwest rivers and inland waterways. This parameter was set at 514 ton-miles per gallon. In the above equation, 'D' refers to the link distance, 'M' is the gross tonnage of the vessel (in tons), 'EF' is the pollutant emission factor. The calculated emissions, $M_{pol,i}$, is the emissions of pollutant in ShapeID 'i' in Metric Tons (MT).

$$M_{pol,i}\,(\mathrm{MT}) = \frac{D_i}{\sum_{i=1}^{n} D_i} \cdot \sum_{i=1}^{n} D_i\,(\mathrm{miles}) \cdot M_i\,(\mathrm{tons}) \cdot \frac{1}{FuelEff}\left(\frac{\mathrm{gallon}}{\mathrm{ton\text{-}miles}}\right) \cdot EF_{pol}\left(\frac{\mathrm{g}}{\mathrm{gallon}}\right) \cdot 10^{-6}\left(\frac{\mathrm{MT}}{\mathrm{g}}\right) \tag{1}$$

[1] http://www.navigationdatacenter.us/data/data1.htm
[2] http://www.navigationdatacenter.us/gis/gis1.htm

2.1.2 Emission Distribution Between Counties

In order to distribute emissions to the counties bordering the network, a buffer distance of 1000 meters (m) was created using the Proximity Analysis Tool in ArcGIS. The NWN movement links were intersected with the resulting buffered county shape. The concept of buffer distance is being illustrated by Figure 2.1. In this figure, the distance between the NWN segment (highlighted) and the Livingston-Pope County boundary is greater than 1000 meters. Therefore, emissions from that segment are allocated completely to Livingston county. Conversely, the segment in McCracken county (highlighted) is less than 1000 meters to the nearest McCracken-Massac county boundary. Therefore, emissions in that segment are equally distributed between Massac county and McCracken county. The calculation of emissions distribution is based on the distance of a network link and the number of counties surrounding the link and weighted according to the first term in Equation 1.

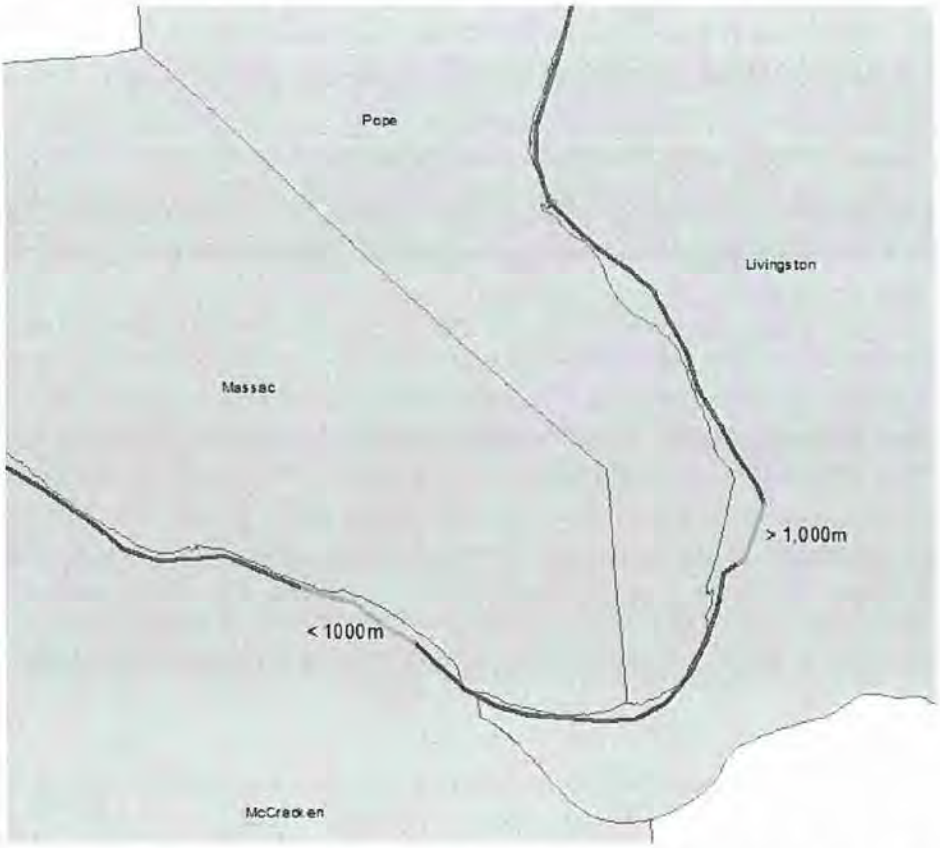

Figure 2.1: Distribution of Marine Vessel Emissions Between Counties in the Major Midwest Rivers.

2.1.3 Emission Distribution in NEI Shipping Lane Shape Files

NEI Shipping Lanes shape files (obtained from EPA[3]) was first intersected with the NWN links and with the County Boundaries. This, as a result, provided shape files that linked

[3] http://www.epa.gov/ttn/chief/eis/2011nei/shippinglanes_072914.zip

the ShapeIDs in the NEI shape file and the County Federal Information Processing Standard (FIPS) ID codes. The emissions, thus calculated and allocated to the counties, were referenced with the ShapeIDs in the NEI shipping lane shape files.

2.2 Emissions Calculations for Vessels in the Great Lakes Region

Vessel position data for the Great Lakes Region was obtained from MarineTraffic. MarineTraffic project is a community based effort dedicated in collecting and presenting data used in marine vessel traffic research, among other applications in the marine traffic related work. Data from MarineTraffic is primarily collected using an Automatic Identification System (AIS) transponder that provides the Global Positioning System (GPS) coordinates of the vessel including a latitude and a longitude. As of December 2004, the International Maritime Organization (IMO) requires all vessels over 299 GT (Gross Tonnage) to carry an AIS transponder on board, which transmits their position, speed and course, among other static information, such as vessel name, dimensions and voyage details. Therefore, this data from MarineTraffic has wide coverage of marine vessel traffic in the Great Lakes region to provide a very comprehensive air emissions inventory. In addition to the vessel position, data on vessel characteristics was also obtained from MarineTraffic.

2.2.1 Cruising Emissions from Vessels in the Great Lakes Region

Vessel position data from MarineTraffic was first imported into ArcGIS as Points shape file. Data points that fell on land were first removed by intersecting the water bodies shape files obtained from the National Hydrography Dataset (NHD)[4] in Minnesota, Iowa, Wisconsin, Illinois, Indiana, Michigan, Ohio, Pennsylvania and New York. Additionally, data points on land in Canada were removed by analyzing shape ficles from Statistics Canada - 2011 Census Boundary Files [5].

The data points were then converted to vessel tracks using Tracking Analyst Toolbox[6] in ArcGIS. Vessel tracks are created by joining two points to form a straight line. During this process, the vessel track speed and track distance is computed using the Date Time Stamp of the two GPS coordinates in ArcGIS. These tracks included three vessel operation modes, (1) ships traveling at relatively constant speed - termed as Cruising Mode, (2) ships maneuvering at ports - termed as Maneuvering Mode, and (3) ships docked at the ports - termed as Hotelling Mode.

2.2.2 Validation of Vessel GPS Coordinates and Vessel Tracks

The vessel tracks, thus generated, linked bad GPS coordinates and missing data points that were present in the "validated" GPS coordinates that were exclusively present on a water surface. "bad" or "missing" GPS coordinates exist because of the following reasons:

[4] ftp://nhdftp.usgs.gov/DataSets/Staged/States/FileGDB/HighResolution/

[5] https://www12.statcan.gc.ca/census-recensement/2011/geo/bound-limit/bound-limit-2011-eng.cfm

[6] http://help.arcgis.com/en/arcgisdesktop/10.0/pdf/tracking-analyst-tutorial.pdf

- Bad GPS Coordinates - coordinates that placed points farther away spatially but were closer or sequential temporally
- Missing GPS Coordinates - coordinates that are not relayed at their normal frequency (generally one GPS coordinate every 2 or 3 minutes)
- Vessels travelling on narrow waterways relay GPS coordinates typically every 3 minutes, sometimes longer, but not fast enough to create vessel tracks such that they fall completely on narrow waterway surface.

Due to the foregoing reasons, vessel tracks thus created, generated a number of tracks that partially traversed land surfaces. Therefore, in order to remove these "bad" vessel tracks, a simple query was run in ArcGIS to identify vessel tracks that were above 200 miles in distance and above 50 knots in speed. This query helped remove bad GPS coordinates that placed coordinates farther away spatially while being closer temporally. In addition to this, this query also removed GPS coordinates from Helicopters and Non-Marine vessels, traveling at high speeds, that carried an AIS transponder. Based on this query and identification, these vessel tracks were removed from further processing. A summary table of the vessel GPS data points and tracks processed is provided in the table below. This data validation and processing still produced vessel tracks on land surface.

Data Description	Data Magnitude
Total Number of GPS Points	12,317,103
Total Number of Wet Points	10,485,280
Total Number of Dry Points	1,831,823
Perecentage of Wet Points	85.1%
Query on Track Speed and Distance	Knots $<$ 50 AND Miles $<$ 200
Number of Tracks after Above Query	10,480,752
Total Number of Tracks Before Query	10,483,843
Number of Tracks Removed	3,091

Table 2.1: Summary Statistics of Vessel Data GPS Coordinates and Vessel Tracks Processing.

The remaining vessel tracks (about 10,480,752 vessel tracks), thus obtained and processed, were were intersected with the Natioinal Emissions Inventory (NEI) Shipping Lane shapefiles[7] (modified to include the Canadian portion of the Great Lakes) and NEI Port Shapefiles[8] in ArcGIS. Intersection of vessel tracks with Shipping Lanes and Port shapefiles (that are water surfaces) removed vessel tracks that traversed land surfaces. These losses (because of tracks on land surface) were small but were quantified. However, they were not corrected because such an operation may place a positive bias on the calculated emissions when the travel routes for each vessel are not known.

[7] `http://www.epa.gov/ttn/chief/eis/2011nei/shippinglanes_072914.zip`
[8] `http://www.epa.gov/ttn/chief/eis/2011nei/ports_20140729.zip`

Twenty-one Marine Vessels in the Great Lakes region did not complete the "Intersection" operation with the NEI shapefiles in ArcGIS discussed above. This was primarily due to multiple overlapping lines in a small geographic area mostly seen in recreational tour vessels. Therefore, these vessels were subjected to a "Spatial Join" in ArcGIS. The only difference in the "Spatial Join" process as opposed a the "Intersection" process is that the vessel tracks are not split if they traverse multiple polygons in a "Spatial Join" function. Therefore, if a vessel track traversed more than one polygon, emissions for that track were equally distributed between the intersected polygons. Based on the results of the Spatial Join analysis, less than 5% of the vessel tracks (for these 21 Marine Vessels) traversed more than one polygon (i.e., ShapeID).

2.2.3 Loss of Vessel Tracks Traversing Land Surfaces

The intersection of vessel tracks with NEI Shipping Lane shapefiles and Port shapefiles (both a polygon feature) splits the tracks (a polyline feature) into a number of pieces of tracks (or lines) depending on the number of ShapeIDs (polygons) a single vessel track travels through. In the same manner, if the vessel track traverses a land surface they are removed from further processing because NEI Shipping lane shapefiles only include water surfaces and land surfaces are treated by ArcGIS as being outside the processing domain. This loss was computed using geometry calculations in ArcGIS. The total distance of all tracks prior to intersection with Shipping Lanes was 5,356,482 miles. The total distance retrieved after the intersection with NEI Shipping Lanes was 5,017,650 miles. This difference in the distances that were accounted for and those that were lost was approximately 6.3%. However, this loss ratio does not include distances that were included in the intersection with the port shape files. The distance of vessel tracks that were inside the Ports was computed to be 13,125 miles. Including the distances of vessel tracks inside the Port shapefiles, the net loss ratio was computed to be approximately 6.1%.

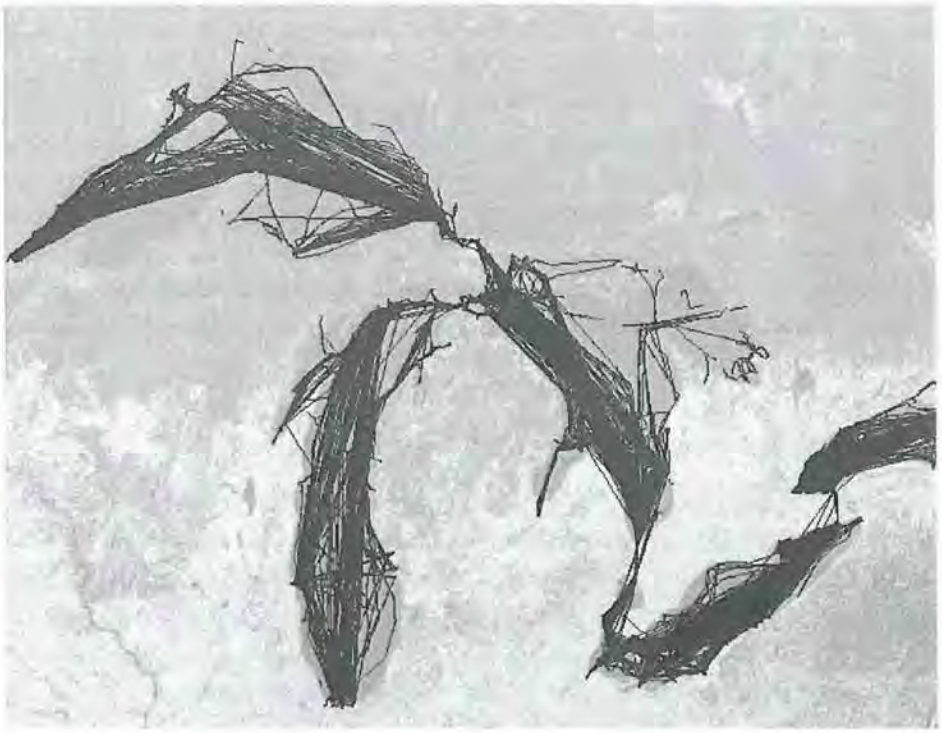

Figure 2.2: Vessel Tracks in the Great Lakes.

2.2.4 Maneuvering and Hotelling Emissions from Vessels in the Great Lakes Region

In the maneuvering mode, ships spend time approaching, docking and departing the harbor, while hotelling takes place when ships are berthed along piers. The vessel tracks created as discussed in the previous section (Section 2.2.1) was intersected with the ports shape files (obtained from USEPA). This intersection operation provided a set of tracks that were present inside the ports. These tracks include a multitude of tracks that had slower speeds to speeds that were closer to zero. Therefore, speeds greater than 0.1 knots were considered as maneuvering in the tracks inside the port boundaries, while speeds lesser than 0.1 knots were considered as hotelling.

2.2.5 Emissions Calculation for Great Lakes Data

Emissions for vessels in the Great Lakes region was computed using Equation 2 & 4. In Equation 2, $\text{Track}_{Time,i,j,k}$ refers to a vessel track in vessel type grouping 'k', in a county or a NEI ShapeID reference 'i', moving in a vessel operation mode 'j' for a total duration (Time) given in units of days. Equation 3 was used when emissions factors are available in units of grams/kilowatt-hour (g/kw-hr).

Fuel consumption rate is calculated in units of MT-Fuel/day for each vessel type - 'k'. Emission along each track is then summed up by each time-step 'Time', on a vessel-by-vessel basis within each vessel group 'k' that are present inside a geographical County/NEI ShapeID 'i'

and operating in mode 'j', to provide emissions on an hourly, monthly or quarterly basis.

$$M^{T}_{pol,i,j,k}\,(\mathrm{MT}) = Track_{Time,i,j,k}\,(\mathrm{days}) \cdot FuelUse_k \left(\frac{\mathrm{MT\text{-}Fuel}}{\mathrm{day}}\right) \cdot ModeFrac_j \cdot EF_{pol,j,k} \left(\frac{\mathrm{MT}}{\mathrm{MT\text{-}fuel}}\right) \tag{2}$$

$$M^{T}_{pol,i,j,k}\,(\mathrm{MT}) = Track_{Time,i,j,k}\,(\mathrm{days}) \cdot FuelUse_k \left(\frac{\mathrm{MT\text{-}Fuel}}{\mathrm{day}}\right) \cdot ModeFrac_j \cdot EF_{pol,j,k} \left(\frac{\mathrm{MT}}{\mathrm{kw\text{-}hr}}\right) \cdot E_{fuel} \left(\frac{\mathrm{kW\text{-}hr}}{\mathrm{MT\text{-}Fuel}}\right) \tag{3}$$

$$M^{Annual}_{pol,i,j,k}\,(\mathrm{MT}) = \sum_{T=1}^{n} M^{T}_{pol,i,j,k} \tag{4}$$

2.3 Emission Factors and Fuel Consumption

2.3.1 Emission Factors for Rivers Data

Table 2.4 provides the emission factors used in the present work for Rivers Data and is compared with the emission factors used in the previous, 2010 base year emission inventory work. These emission factors were used to calculate emissions for Rivers Data. Table 2.4 also provides the sources of emission factors used in this work. A comprehensive search for emission factors was conducted in this work and the data from this search was compiled in an Excel file. Based on this data search, emission factors used in this work primarily came from work in the United States. Although, emission for PM and HC came from [5] because data in this work was more recent data than other available sources. CO_2 emissions although obtained from [1], this value is similar to several other sources available from work in the United States.

2.3.2 Emission Factors for Great Lakes Data

Emission factors used in this work for the Great Lakes Data is provided in Appendix A. The emission factors for each pollutant varies by engine load, vessel type, and operational mode. The operational modes include cruising (80% engine load), maneuvering (40% engine load), and hotelling (20% engine load). The emission factors which varied by engine load were not available at the specific operational mode values. The emission factor for the engine load closest to the value of the operational mode was used without interpolation. The fuel consumption fractions for each operational mode were analogous to percent engine load.

2.3.3 Fuel Consumption Fractions

Fuel consumption during each of the three modes, cruising maneuvering and hotelling are different. In this work data on fuel consumption fraction during these three modes was obtained from Rashidi and Koto, (2014)[1]. This fuel consumption fractions by vessel operation mode was specifically applied to Great Lakes data obtained from MarineTraffic.

Mode	Fraction
Cruising	0.8
Maneuvering	0.4
Hotelling - Default	0.2
Hotelling - Passenger	0.32
Hotelling - Liquid Bulk	0.2
Hotelling - Other	0.12
Tug - Moderate Activity	0.5

Table 2.2: Fuel Consumption Fraction in Different Modes of Operation.

Pollutant	Emission Factor (grams/gallon of fuel)	
	Current Work	Previous Work
BC	1.25[3]	0.32
CO	35.44[2]	35.3
CO2	10,078[1]	10,505
Fe	0.06[4]	-
HC	8.08[5]	4.14
HCOOH	0.07[6]	-
Ni	0.19[4]	-
NOx	213.07[2]	-
PM	7.17[5]	4.6
SO2	19.84[2]	16.70
V	0.85[4]	-
Zn	0.002[4]	-

[1] - Data obtained from Rashidi and Koto, (2014)
[2] - Data obtained from Williams et al., (2009)
[3] - Data obtained from Buffaloe et al., (2014)
[4] - Data obtained from Agrawal et al., (2008)
[5] - Data obtained from Kristensen, (2012)
[6] - Data obtained from Crisp et al., (2014)

Table 2.4: Comparison of Emission Factors Used in the Present Work and Previous Work.[9]

2.3.4 Fuel Consumption Rates

Maximum fuel consumption rates for each vessel type was calculated using the equations below in Table 2.3 and was obtained from Rashidi and Koto, (2014)[1]. These fuel consumption equations were specifically applied to the MarineTraffic data available for the Great Lakes region. For vessels with missing Gross Tonnages (GT), a class specific average gross tonnage was used.

[9] `http://www.ladco.org/reports/technical_support_document/references/commercial_marine_emissions_LADCO_final_report.pdf`

Fuel consumption computed using the gross tonnages in the NWN data from USACE (referenced in Section 2.1.1) for the Great Lakes was estimated to be 234,643,345 gallons. Fuel consumption computed using the MarineTraffic data for vessels in the Great Lakes was estimated to be 204,112,052 gallons. Based on this, we expect the fuel consumption rates using data in Table 2.3 to provide similar consumption rates from data in other sources such as USACE.

Ship Type	**Consumption (MT/day**
Solid Bulk	20.1860 + 0.00049 x GT
Liquid Bulk (Tanker)	14.6850 + 0.00079 x GT
General Cargo	9.8197 + 0.00143 x GT
Container	8.0552 + 0.00235 x GT
Ro-Ro Cargo	12.8340 + 0.00156 x GT
Passenger	16.9040 + 0.00198 x GT
High Speed Ferry	39.4830 + 0.00972 x GT
Inland Cargo	9.8197 + 0.00143 x GT
Sail Ship	0.4268 + 0.00100 x GT
Tugs	5.6511 + 0.01048 x GT
Fishing	1.9387 + 0.00448 x GT
Other Ships	9.7126 + 0.00091 x GT

Table 2.3: Average Fuel Consumption at Full Power as Function of Gross Tonnage.

3 RESULTS AND DISCUSSIONS

3 RESULTS AND DISCUSSIONS

3.1 Emissions in the Major Midwest Rivers

A summary of the 2014 emissions for the major Midwest rivers by each river system is provided in 3.1. From Figure 3.1, we note that the activity in the Mississippi is much higher than in the rivers located in the upper Mid-West. Among the rivers in the upper Midwest, Ohio river has the highest emissions, followed by Illinois river and then by the Chicago river.

Pollutant	Ohio River	Mississippi River	Illinois River	Chicago River
BC	175	544	22	1
CO	4,944	15,358	616	30
CO_2	1,405,735	4,366,595	175,133	8,484
Fe	8	24	1	0
HC	1,126	3,499	140	7
HCOOH	10	31	1	0
Ni	26	81	3	0
NO_x	29,722	92,323	3,703	179
PM	1,000	3,107	125	6
SO_2	2,768	8,597	345	17
V	118	368	15	1
Zn	0	1	0	0

Table 3.1: Summary of 2014 Emissions in the Major Midwest Rivers. Emissions reported in Metric Tons (MT).

Since the Rivers Data was simply based on the link level tonnages data provided by USACE, additional data analysis are not presented for this data.

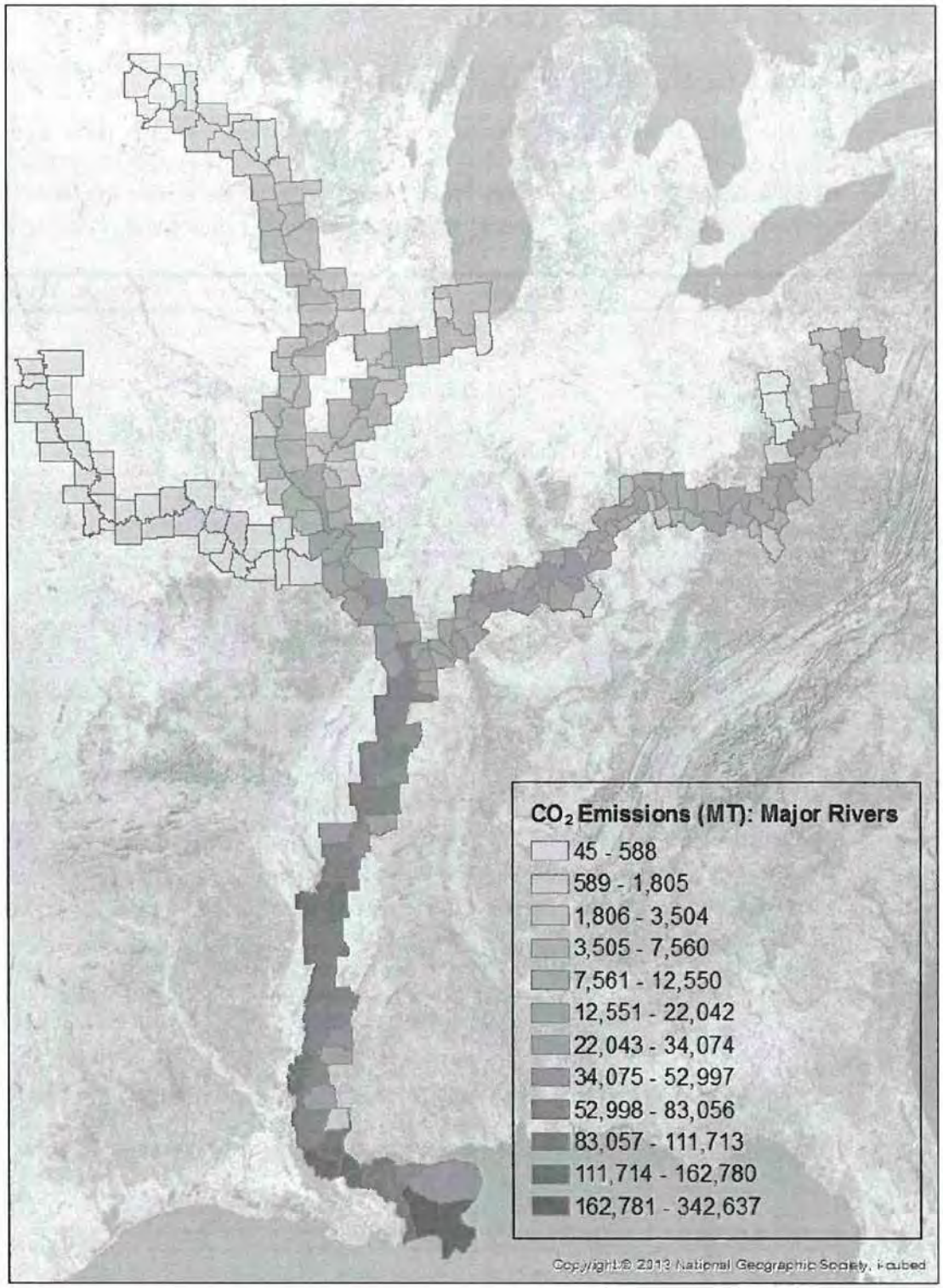

Figure 3.1: Estimated CO_2 Emissions from Marine Vessels in Major Rivers of the United States for the Base Year 2014 (Referenced to Counties).

3.2 Emissions in the Great Lakes

In this work, emissions from Marine Vessels were computed for Great Lakes in both the United States (US) and Canada. Figure 3.2 shows the CO_2 emissions per square mile in the Great Lakes for all types of vessels. From this plot, we note that the emissions per square mile of Marine Vessels in the Canadian side is higher than the vessels on American side of the Great Lakes. However, the net emissions are higher on the US side of the Great Lakes in comparison to the emissions computed in the Canadian side of the Great Lakes.

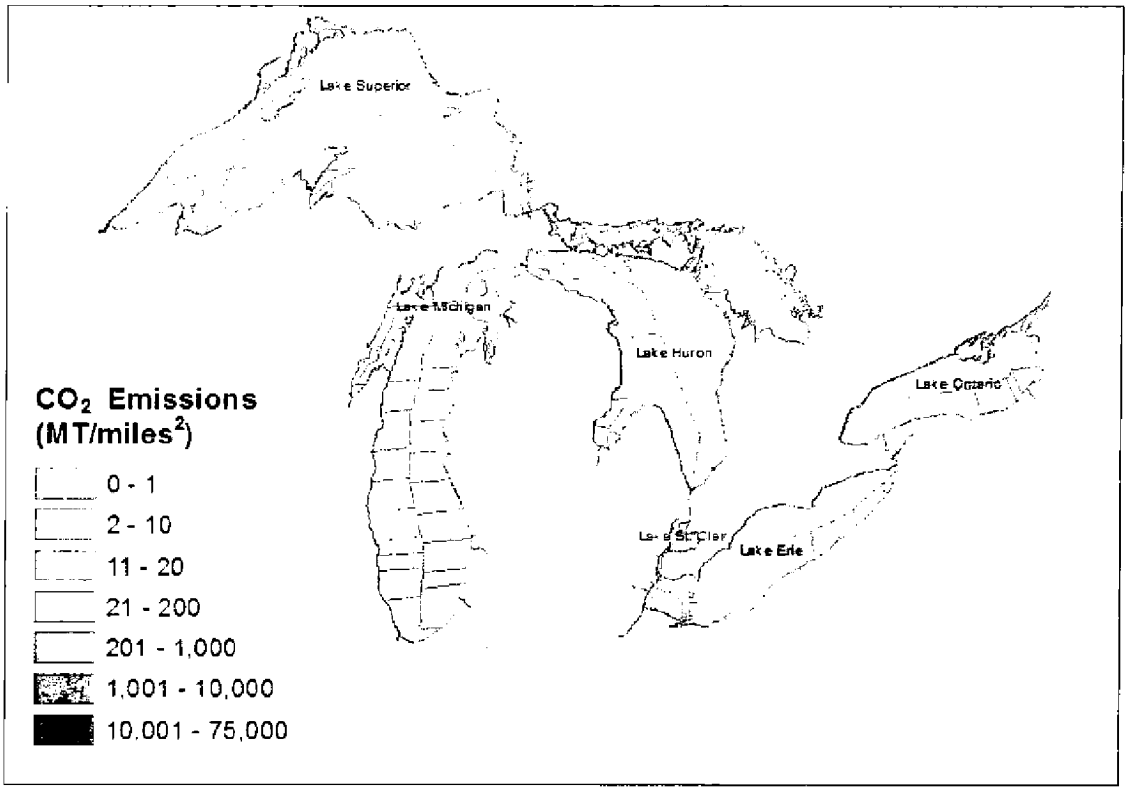

Figure 3.2: Estimated CO_2 Emissions per Square Mile from Marine Vessels in the Great Lakes for the Base Year 2014 (Referenced to NEI Shipping Lanes ShapeID).

3.3 Marine Vessel Emissions in the Great Lakes by Vessel Type

Tables 3.2 and 3.3 show the emissions by vessel type on the US and Canadian Great Lakes, respectively. The pollutants shown in this table include carbon dioxide (CO_2), carbon monoxide (CO), hydrocarbon (HC), nitrogen oxides (NO_x), particulate matter (PM) and sulfur dioxide (SO_2). From these two tables, we note that vessel categorized as "Cargo" had the highest emissions in comparison to other types of vessel. 3/4th of the total Marine Vessel emissions on the Great Lakes were estimated to be from the US side of the Great Lakes (2,063,413 MT of CO_2), while the emissions on the Canadian side accounted for 1/4th of the total emissions on the Great Lakes (683,931 MT of CO_2). Table 3.4 shows the emissions by registered Country of Origin. Note that these emissions are only emissions on the U.S. side

of the Great Lakes. As expected the largest category is for US vessels, followed by Canadian vessels. Figure 3.3 shows the emissions from both the Major Rivers and the Great Lakes with emissions referenced to the counties. This plot is referenced to the counties because the polygons in shipping lanes (particularly along the Major Rivers) are very narrow and are difficult to visualize.

Vessel Type	CO_2	CO	HC	NO_X	PM	SO_2
Cargo	1,859,542	5,530	617	33,260	549	16,880
Fishing	1,073	4	1	25	0	2
High Speed Craft	7	0	0	0	0	0
Other	3,558	13	3	76	3	8
Passenger	53,388	211	43	953	38	111
Pleasure Craft	13,086	52	11	232	9	28
Sailing Vessel	447	2	0	11	0	1
Special Craft	4,447	16	3	95	3	10
Tanker	21,828	48	17	567	15	139
Tug	72,717	268	80	1,424	71	134
Unspecified	33,321	113	24	763	22	291
Total	**2,063,413**	**6,256**	**800**	**37,404**	**712**	**17,605**

Table 3.2: Emissions by Marine Vessel Type During Cruising in the Great Lakes. Emissions shown in Metric Tons (MT).

Vessel Type	CO_2	CO	HC	NO_X	PM	SO_2
Cargo	529,182	1,585	334	9,306	297	4,593
Fishing	261	1	0	6	0	1
High Speed Craft	9	0	0	0	0	0
Other	284	1	0	6	0	1
Passenger	18,956	75	6	332	5	39
Pleasure Craft	20,454	82	18	369	16	43
Sailing Vessel	495	2	1	14	1	1
Search and Rescue	0	0	0	0	0	0
Special Craft	17,197	59	17	352	15	37
Tanker	56,788	124	38	1,409	34	359
Tug	15,768	57	31	304	28	29
Unspecified	24,534	83	21	537	19	213
Hovercraft	5	0	0	0	0	0
Total	**683,931**	**2,070**	**467**	**12,636**	**415**	**5,316**

Table 3.3: Emissions by Marine Vessel Type During Cruising in the Canadian Great Lakes. Emissions shown in Metric Tons (MT).

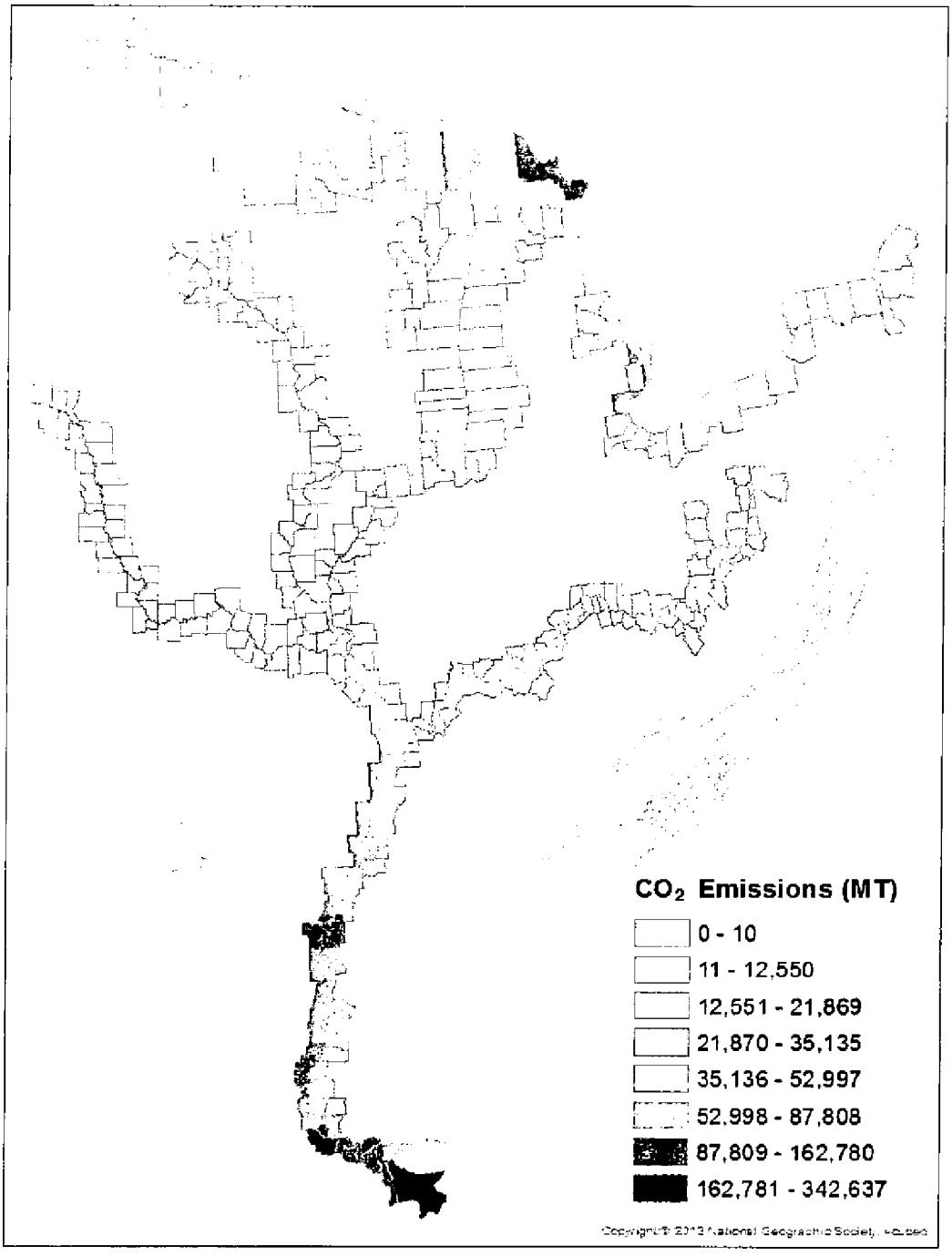

Figure 3.3: Estimated CO_2 Emissions from Marine Vessels in the Great Lakes and Major Rivers (Referenced to Counties).

Flag State	CO_2	CO	HC	NO_X	PM	SO_2
Not Specified	18,444	63	17	424	15	160
Antigua Barbuda	22,819	68	20	392	18	182
Bahamas	23,336	71	19	411	17	187
Barbados	11,423	34	8	207	7	98
Canada	592,017	1,770	432	10,895	385	5,239
Cayman Is	1,926	8	0	35	0	4
Cyprus	37,052	110	20	650	17	317
Denmark	263	1	0	7	0	2
Germany	37	0	0	1	0	0
Gibraltar	1,526	4	1	29	1	13
Greece	4,886	15	3	82	3	35
Italy	43	0	0	1	0	0
Lithuania	1,658	5	1	28	1	14
Malta	14,856	44	13	257	12	119
Netherlands	30,398	92	23	511	21	283
Norway	45	0	0	1	0	0
Portugal	1,121	2	0	28	0	7
Spain	2	0	0	0	0	0
Switzerland	2,595	6	2	65	2	17
Turkey	117	0	0	3	0	1
United Kingdom	1,155	3	0	25	0	8
USA	1,297,693	3,958	240	23,354	213	10,918
Total	**2,063,413**	**6,256**	**800**	**37,404**	**712**	**17,605**

Table 3.4: Marine Vessel Emissions by Country of Origin During Cruising in the U.S. Great Lakes. Emissions shown in Metric Tons (MT).

3.4 Marine Vessel Emissions During Hotelling and Maneuvering in Ports

Table 3.5 shows the emissions estimated during hotelling at the ports in the Great Lakes. Table 3.6 shows the emissions estimated during maneuvering at the ports in the Great Lakes. Both these tables are arranged alphabetically by the Port Name. From this table, we note that emissions were highest in Duluth-Superior during both maneuvering and hotelling. Table 3.7 shows the emissions estimated by vessel type for hotelling at the ports and Table 3.8 shows the emissions estimated by vessel type for maneuvering at the ports. From these two tables (Table 3.7 & Table 3.8), Cargo vessels and Tug Boats contributed the highest emissions during maneuvering and hotelling at ports.

Port Name	CO_2	CO	HC	NO_X	PM	SO_2
Alpena	0.17	0	0	0	0	0
Ashland	114.2	0.46	0.1	2.06	0.09	0.24
Ashtabula	1,460.5	2.39	2.9	19.94	2.57	12.33
Buffalo	146.7	0.24	0.06	2.03	0.05	1.22
Burns Harbor	651.3	1.2	0.84	10.16	0.74	1.82
Calcite	35.43	0.06	0.01	0.47	0.01	0.3
Cheboygan	204.23	0.64	0.24	3.44	0.21	1.23
Chicago	4,044.01	9.4	3.68	79.34	3.27	21.09
Cleveland	1,294.85	2.07	0.5	17.71	0.45	10.87
Conneaut	18.31	0.03	0.01	0.25	0.01	0.15
Copper Harbor	0.09	0	0	0	0	0
Detroit	1,775.16	3.3	0.8	28.13	0.71	12.85
Drummond Island, MI	13.05	0.02	0.01	0.17	0.01	0.11
Duluth-Superior	8,839.83	14.76	8.01	125.77	7.11	71.55
Erie	0.63	0	0	0.01	0	0.01
Escanaba	5.15	0.01	0	0.12	0	0.02
Fairport Harbor	0.4	0	0	0.01	0	0
Gary	251.14	0.39	0.44	3.36	0.39	2.15
Grand Haven, MI	5.51	0.01	0.01	0.07	0.01	0.05
Grand Marais	0.12	0	0	0	0	0
Huron, OH	3.38	0.01	0	0.08	0	0.01
Indiana Harbor	178.6	0.32	0.08	2.67	0.07	1.39
Lorain	0.11	0	0	0	0	0
Ludington	36.68	0.14	0.03	0.67	0.03	0.08
Mackinaw City	0.81	0	0	0.02	0	0
Manitowoc	62.18	0.18	0.03	1.34	0.02	0.25
Milwaukee	4,551.58	8.06	4.19	66.78	3.72	35.33
Oswego	0.22	0	0	0	0	0
Port Dolomite	12.72	0.02	0.02	0.19	0.02	0.1
Sandusky	0.01	0	0	0	0	0
Toledo	526.42	1.18	0.4	8.74	0.36	3.3
Two Harbors	745.69	1.16	0.24	9.97	0.22	6.39
Total	**24,979.17**	**46.07**	**22.61**	**383.50**	**20.07**	**185.84**

Table 3.5: Emissions from Marine Vessels During Hotelling at Ports in the Great Lakes. Emissions shown in Metric Tons (MT).

Port Name	CO_2	CO	HC	NO_X	PM	SO_2
Alpena	0.12	0	0	0	0	0
Ashland	0.32	0	0	0.01	0	0
Ashtabula	43.73	0.14	0.04	0.82	0.04	0.39
Bettendorf	0.07	0	0	0	0	0
Buffalo	27.57	0.09	0.01	0.52	0.01	0.21
Burns Harbor	250.77	0.8	0.16	4.74	0.14	1.7
Calcite	8.59	0.03	0	0.16	0	0.08
Cape Vincent	0.09	0	0	0	0	0
Carrollton	1.02	0	0	0.02	0	0.01
Charlevoix, MI	0.38	0	0	0.01	0	0
Cheboygan	8.32	0.03	0.01	0.18	0.01	0.04
Chicago	1,760.01	6.13	1.49	33.62	1.32	4.2
Cleveland	898.93	2.8	0.24	16.79	0.21	7.66
Conneaut	3.64	0.01	0	0.07	0	0.03
Copper Harbor	0.29	0	0	0.01	0	0
Detroit	181.43	0.58	0.1	3.42	0.09	1.37
Drummond Island, MI	170.57	0.53	0.11	3.18	0.1	1.5
Duluth-Superior	3,042.36	9.5	1.64	56.9	1.46	25.47
Erie	2	0.01	0	0.04	0	0.02
Escanaba	1.41	0	0	0.03	0	0.01
Fairport Harbor	15.03	0.05	0.01	0.29	0.01	0.04
Gary	157.68	0.48	0.04	2.94	0.03	1.47
Grand Haven, MI	17.95	0.06	0.01	0.34	0.01	0.16
Grand Marais	0.03	0	0	0	0	0
Green Bay, WI	0.11	0	0	0	0	0
Huron, OH	2.04	0.01	0	0.04	0	0
Iale Royale	0.03	0	0	0	0	0
Indiana Harbor	109.6	0.38	0.09	2.08	0.08	0.36
Kelleys Island, OH	0.42	0	0	0.01	0	0
Lorain	4.43	0.02	0	0.1	0	0.03
Ludington	4.07	0.02	0	0.07	0	0.01
Mackinaw City	0.23	0	0	0	0	0
Manistee	0.09	0	0	0	0	0
Manitowoc	30.01	0.11	0.02	0.61	0.02	0.06
Marblehead	0.01	0	0	0	0	0
Marine City, MI	0.73	0	0	0.01	0	0
Milwaukee	99.52	0.35	0.21	1.88	0.18	0.53
Muskegon	0.95	0	0	0.02	0	0.01
Oswego	0.07	0	0	0	0	0

Table 3.6: Estimated Vessel Emissions During Maneuvering at Ports in the Great Lakes. Emissions shown in Metric Tons (MT).

Port Name	CO_2	CO	HC	NO_X	PM	SO_2
Port Dolomite	0.86	0	0	0.02	0	0.01
Port Inland	3.16	0.01	0	0.06	0	0.03
Sandusky	3.33	0.01	0	0.06	0	0.02
St. Clair	0.12	0	0	0	0	0
Stoneport	0.3	0	0	0.01	0	0
Sturgeon Bay	0.73	0	0	0.01	0	0.01
Toledo	68.21	0.22	0.05	1.32	0.05	0.55
Turkey River	0.17	0	0	0	0	0
Two Harbors	198.5	0.61	0.04	3.7	0.03	1.88
Total	**7,120**	**22.96**	**4.28**	**134.09**	**3.8**	**47.86**

Table 3.6 (cont.): Estimated Vessel Emissions During Maneuvering at Ports in the Great Lakes. Emissions shown in Metric Tons (MT).

Vessel Type	CO_2	CO	HC	NO_X	PM	SO_2
Cargo	19,407.3	30.23	18.5	259.37	16.43	166.26
Fishing	99.11	0.35	0.09	2.09	0.08	0.21
Other	12.75	0.04	0.01	0.27	0.01	0.03
Passenger	109.15	0.44	0.57	1.97	0.51	0.23
Pleasure Craft	166.91	0.67	0.26	3.01	0.23	0.35
Sailing Vessel	0.59	0	0	0.01	0	0
Search and Rescue	0	0	0	0	0	0
Special Craft	172.41	0.6	0.13	3.63	0.12	0.36
Tanker	17.06	0.04	0.02	0.29	0.02	0.13
Tug	4,796.86	13.15	2.79	110.43	2.48	16.29
Unspecified	197.05	0.55	0.23	2.42	0.21	1.98
Total	**24,979.17**	**46.07**	**22.61**	**383.5**	**20.07**	**185.84**

Table 3.7: Emissions by Marine Vessel Type During Hotelling in the Great Lakes Ports. Emissions shown in Metric Tons (MT).

Vessel Type	CO_2	CO	HC	NO_X	PM	SO_2
Cargo	4,547.63	13.88	1.93	84.72	1.72	43.07
Fishing	3.76	0.01	0	0.08	0	0.01
NULL	0.06	0	0	0	0	0
Other	54.41	0.19	0.05	1.15	0.04	0.11
Passenger	46.95	0.19	0.15	0.85	0.13	0.1
Pleasure Craft	13.87	0.06	0.01	0.25	0.01	0.03
Sailing Vessel	0.16	0	0	0	0	0
Search and Rescue	0	0	0	0	0	0
Special Craft	24.23	0.08	0.03	0.51	0.03	0.05
Tanker	6.85	0.01	0.01	0.19	0.01	0.04
Tug	2,391.53	8.42	2.08	45.6	1.85	4.17
Unspecified	30.55	0.11	0.02	0.75	0.02	0.27
Total	**7,120**	**22.96**	**4.28**	**134.09**	**3.8**	**47.86**

Table 3.8: Emissions by Marine Vessel Type During Maneuvering in the Great Lakes Ports. Emissions shown in Metric Tons (MT).

3.5 Monthly Variations in Marine Vessel Emissions

Since data on the Great Lakes were available on a very fine time resolution, it is possible to calculate emissions even on a daily basis. In order to understand the variations in vessel activity and emissions on a monthly basis, data from Access was queried to sum up emission for the three modes (cruising, hotelling and maneuvering). The total emissions from all vessels on the Great Lakes (both US and Canadian Great Lakes) are plotted in Figure 3.4. Based on this 2014 data, in general, we can expect the vessel activity to peak after March and recede during January, February and March in a given year.

Figure 3.5, shows a Box and Whisker plots of all Cruising, Maneuvering and Hotelling mode data points on a monthly basis, where each data point is a sum of all vessel tracks in each NEI shipping lane with a unique ShapeID. In this plot, for Cruising mode, we note that the majority of emissions (as shown by the inter-quartile range) are more or less similar for each of the months after March. However, the variations on a monthly basis appear to be driven more by the outliers that are on specific shipping lanes. This is because, as noted earlier, each data point (in Figure 3.5) is a sum of CO_2 emissions for a specific shipping lane (ShapeID) in a given month. However, for Hotelling and Maneuvering, data shows increased activity (in terms of CO_2 emissions) during the months of March, October, November and December in 2014. Although, this increase is slightly subdued in Maneuvering.

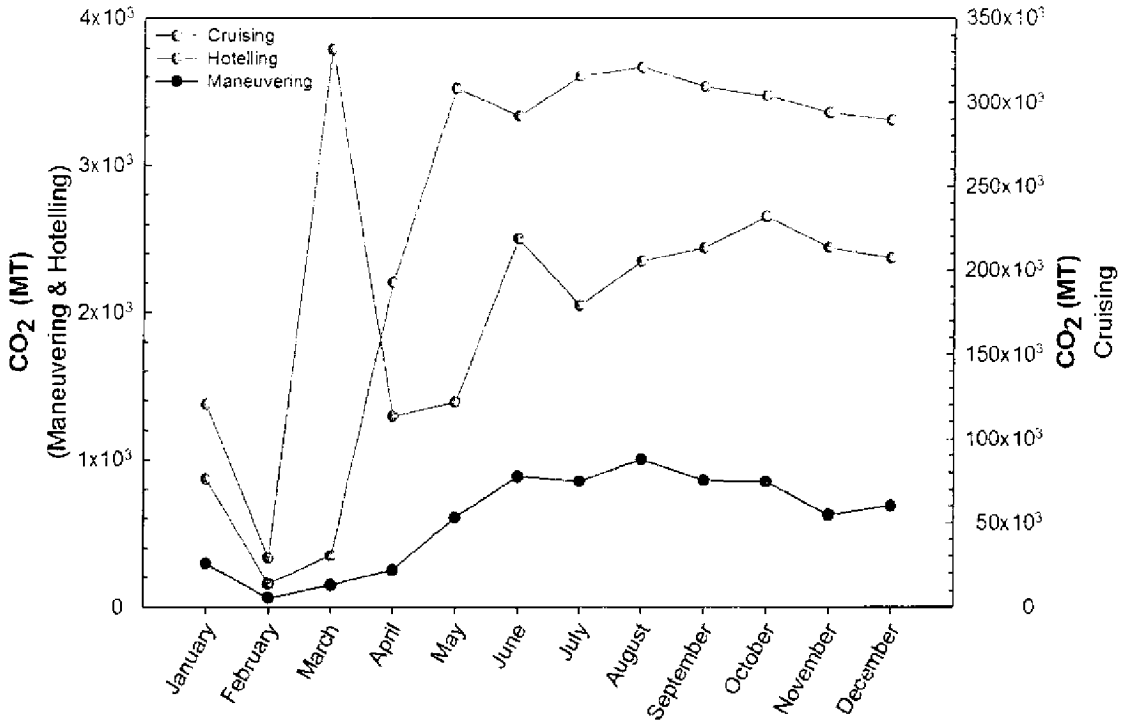

Figure 3.4: Monthly Variations in Estimated CO_2 Emissions of Marine Vessels in the Great Lakes (both in the US and Canada).

3.6 Growth Rates for Future Years

Growth rates for future years were estimated by reviewing the Marine Vessel link-level tonnages data on the Major Rivers and the Great Lakes obtained from USACE[10]. The data obtained from USACE included the link level tonnages from 2001 to 2012 (as of September 24, 2014). Year over year, compounded annual growth rate (CAGR) was computed using Equation 5.

$$CAGR = \left[\frac{EndingTonnage}{BeginningTonnage}\right]^{\frac{1}{n}} - 1 \tag{5}$$

Figure 3.6 shows the CAGR for the Major Rivers and the Great Lakes. From this plot, we note that the variability in the growth rates decrease from 2001 upto 2009 and then increase after 2009 for Ohio River, Mississippi River and the Great Lakes. Tonnage data for Illinois River and Chicago River show steady decrease from 2001 and the continue to decrease after year 2009. Due to this variability in the data between 2001 and 2009, an average CAGR was computed from 2009 to 2012. This average value was used as projected growth rates future years. Future year projected values are listed in Table 3.9.

[10] http://www.navigationdatacenter.us/data/datalink.htm

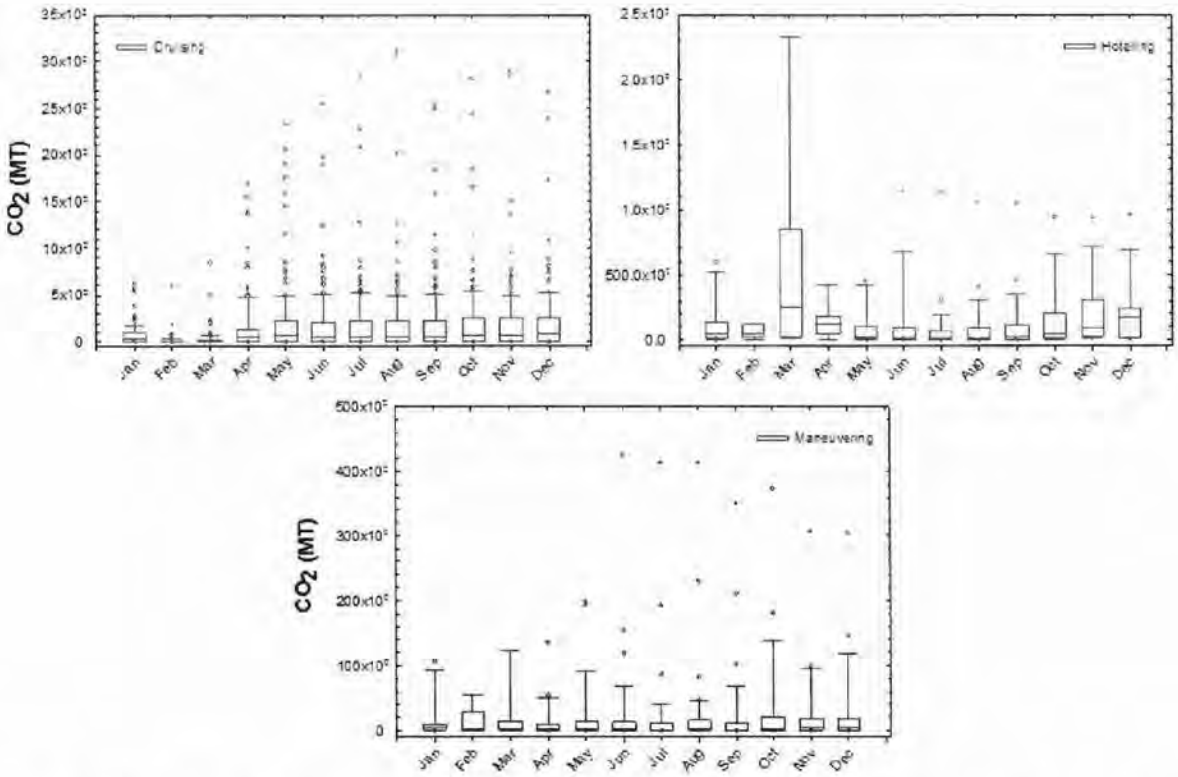

Figure 3.5: Monthly Variations in Estimated CO_2 Emissions of Marine Vessels in the Great Lakes (both in the US and Canada) during Cruising, Maneuvering and Hotelling.

Waterbody Name	Projected Growth
Ohio River	-1.2%
Mississippi	-2.5%
Illinois River	-10.5%
Chicago River	-16.3%
Great Lakes	−2.2%

Table 3.9: Projected Growth Rates for Major Rivers and the Great Lakes.

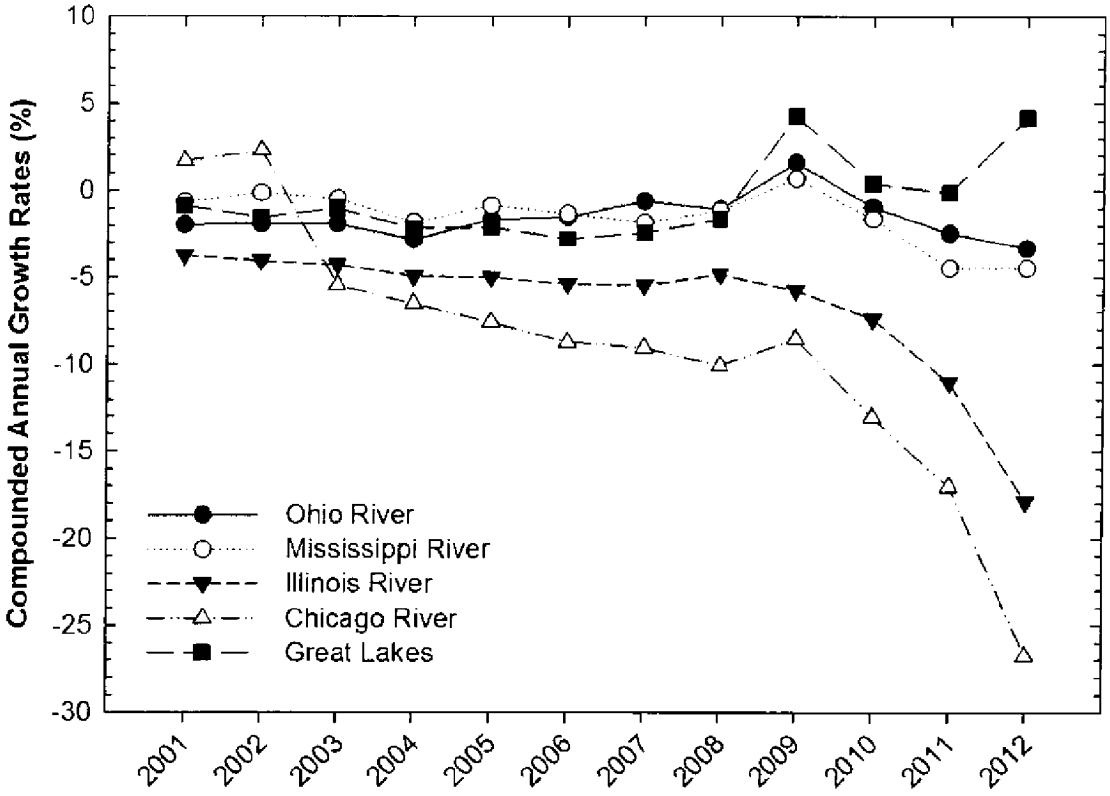

Figure 3.6: Compounded Annual Growth Rates in Marine Vessel Link-Level Tonnages from 2001 through 2012 in Major Midwest Rivers and the Great Lakes. Data obtained from USACE.

4 CONCLUSIONS AND RECOMMENDATIONS

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

This project utilized data from two distinct sources, (1) link tonnages on the National Waterway Networks provided by USACE, and (2) Vessel Traffic data including data from AIS transponder provided by MarineTraffic. Emissions were estimated using the most current emission factors available from peer-reviewed journal articles and other publications referenced in Section 5. Emission results show substantial vessel traffic that result in air emissions on the Ohio River and Mississippi River in comparison to the emissions on the Great Lakes. Within Great Lakes, emissions on the Canadian side of the Great Lakes appear to account for approximately 25% of the total emissions on the Great Lakes.

4.2 Recommendations for Future Work

The following are suggested avenues for future development on this work and potential issues that may be important, if AIS Transponder data is used to estimate emissions on the rivers and inland waterways.

4.2.1 AIS Transponder Collection Frequency and Track Resolution

During the course of this work there were minor losses of vessel tracks caused by generated tracks leaving the water surface due to both the interval between AIS reported coordinate points and the intricacy of the waterways connecting between the Great Lakes. These losses were not significant for analyzing the emissions in the Great Lakes region since the majority of the activity occurs within larger water-bodies where inaccuracy between the actual vessel path and the straight-line path was of less importance. However, if the methods described in this work were to be used in an environment requiring higher precision, such as a network of inland rivers, this source of inaccuracy would need to be further addressed. Moreover, the loss of vessel tracks on the rivers may be much higher than the loss of vessel tracks calculated in this work for the Great Lakes due to the reasons noted above.

This issue may be resolved through a combination of two adjustments. First, using an AIS dataset that consists of time intervals between each GPS coordinate in the 2-3 minute range. This, as a result, would improve time resolution and reduce the potential error inherent in approximating the vessel path as a straight line between the two coordinates. Second, a process could be developed that automated the iterative addition of an intermediate point between each set of points until the vessel paths lay completely within a water surface boundary.

For reference, 84.6% of the MarineTraffic data used in this work had an interval of 4 minutes or lower between each GPS coordinate. There were two spikes in the data that accounted for 3.0% and 1.7% of the entire data, with average GPS coordinate data intervals of 21 and 24 minutes, respectively.

Again, some of the larger time intervals are not an issue for use in the Great Lakes, but generally it is expected that a domain containing more intricate pathways would require additional manipulation of the dataset as discussed above or needing finer time-resolution AIS transponder GPS data. To put this in perspective, even one-tenth of one percent of the Marine Traffic database corresponds to thousands of track segments that would potentially need further evaluation and manual injection of GPS coordinates to address intricate vessel pathways in narrow waterways.

4.2.2 Refinement of the Intersection Grid

The purpose of this work was to develop an Emission Inventory that was compatible with the format of the EPA's National Emissions Inventory (NEI). To this end, the vessel tracks in the Great Lakes region were intersected with the Shipping Lane polygons present in the NEI. However, since the track data remains segregated by vessel, time and location, the intersection mesh could be redrawn as smaller divisions and the intersection process could be done for the new finer mesh. This would allow for greater spatial resolution and more accurate modeling for situation such as coastal interactions during ozone months and other Photochemical Modeling applications. Since the numerical uncertainty in the reported GPS coordinates is on the order of tenths of a feet, the potential resolution of the intersection grid could be increased to a much greater resolution than the NEI shape file resolution which generally aggregates, in the Great Lakes region, on or near the county level. However, the intersection process could take several days and require powerful computational hardware.

4.2.3 Consideration of Additional Pollutants and Other Sources for Emission Factors

Although a comprehensive search for emission factors was conducted in this work, the emission factors were only obtained for limited pollutants. The calculation may be extended for more pollutants, particularly Hazardous Air Pollutants (HAPs) when new information becomes available. In addition to this, the emission factors used in this work were based on the best data available at the time of this work. Therefore, if better data is available, the Access Database and Excel Spreadsheets may be updated with newer emission factors.

5 REFERENCES

5 REFERENCES

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[6] Timia A. Crisp, James M. Brady, Christopher D. Cappa, Sonya Collier, Sara D. Forestieri, Michael J. Kleeman, Toshihiro Kuwayama, Brian M. Lerner, Eric J. Williams, Qi Zhang, Timothy H. Bertram, "On the primary emission of formic acid from light duty gasoline vehicles and ocean-going vessels", Atmospheric Environment 98 (2014) 426-433.

A - APPENDIX: GREAT LAKES DATA INPUTS

BC_EF

ID	Type	EF	Unit
1	Passenger	0.27	g/kg-fuel
2	Pleasure	0.12	g/kg-fuel
3	Cargo	0.39	g/kg-fuel
4	Tanker	0.22	g/kg-fuel
5	Fishing	0.29	g/kg-fuel
6	Tug	0.59	g/kg-fuel
7	Tow	0.47	g/kg-fuel
8	All	0.44	g/kg-fuel

CO2_EF

ID	Type	EF	Unit
1	All	3.21	ton/ton-fuel

Fe_EF

ID	Type	EF	Unit
1	8%	2.84E-03	g/kw-hr
2	27%	2.58E-03	g/kw-hr
3	52%	2.15E-03	g/kw-hr
4	63%	3.48E-03	g/kw-hr
5	70%	3.89E-03	g/kw-hr

NOx_EF

ID	Type	EF	Unit
1	BulkFreight	87.00	g/kg-fuel
2	BulkFreight_0	54.10	g/kg-fuel
3	Container	59.80	g/kg-fuel
4	Container_0	42.90	g/kg-fuel
5	CrudeTanker	79.20	g/kg-fuel
6	CrudeTanker_0	27.70	g/kg-fuel
7	LPGTanker	78.70	g/kg-fuel
8	LPGTanker_0	39.50	g/kg-fuel
9	Passenger	57.90	g/kg-fuel
10	Tug	61.20	g/kg-fuel
11	Tug_0	73.90	g/kg-fuel
12	General	67.66	g/kg-fuel

CO_EF

ID	Type	EF	Unit
3	BulkFreight	7.00	g/kg-fuel
4	BulkFreight_0	7.50	g/kg-fuel
5	Container	9.80	g/kg-fuel
6	Container_0	5.00	g/kg-fuel
7	CrudeTanker	16.70	g/kg-fuel
8	CrudeTanker_0	3.60	g/kg-fuel
9	LPGTanker	11.10	g/kg-fuel
10	LPGTanker_0	8.90	g/kg-fuel
11	Passenger	12.80	g/kg-fuel
13	Tug	11.30	g/kg-fuel
14	Tug_0	8.80	g/kg-fuel
15	General	11.26	g/kg-fuel

HC_EF

ID	Type	EF	Unit
1	2Stroke	0.50	g/kw-hr
2	4Stroke	0.50	g/kw-hr

HCOOH_EF

ID	Type	EF	Unit
1	Passenger	4.56	mg/kg-fuel
2	Cargo	18.65	mg/kg-fuel
3	Tanker	27.15	mg/kg-fuel
4	All	20.35	mg/kg-fuel

Ni_EF

ID	Type	EF	Unit
1	8%	1.20E-02	g/kw-hr
2	27%	9.65E-03	g/kw-hr
3	52%	1.04E-02	g/kw-hr
4	63%	1.16E-02	g/kw-hr
5	70%	1.27E-02	g/kw-hr

EF-Emission Factor % Values in Emission Factors Indicate Engine Load
'Type_0' indicates that the Factor is for Hotelling
Fuel 'Constant' is the mathematical intercept and 'Scalar' is the coefficient of the Gross Tonnage (GT)

SO2_EF

ID	Type	EF	Unit
1	BulkFreight	20.40	g/kg-fuel
2	BulkFreight_0	24.70	g/kg-fuel
3	Container	30.40	g/kg-fuel
4	Container_0	27.50	g/kg-fuel
5	CrudeTanker	27.30	g/kg-fuel
6	CrudeTanker_0	48.10	g/kg-fuel
7	LPGTanker	28.80	g/kg-fuel
8	LPGTanker_0	32.30	g/kg-fuel
9	Passenger	6.70	g/kg-fuel
10	Tug	5.60	g/kg-fuel
11	Tug_0	10.90	g/kg-fuel
12	General	6.70	g/kg-fuel

PM_EF

ID	Type	EF	Unit	Comment
1	All_Content	0.44	g/kw-hr	0.26+0.081*%S+0.103*(%S^2)

V_EF

ID	Type	EF	Unit
1	8%	5.36E-02	g/kw-hr
2	27%	4.41E-02	g/kw-hr
3	52%	4.65E-02	g/kw-hr
4	63%	5.26E-02	g/kw-hr
5	70%	5.60E-02	g/kw-hr

Zn_EF

ID	Type	EF	Unit
1	8%	1.29E-04	g/kw-hr
2	27%	1.02E-04	g/kw-hr
3	52%	9.23E-05	g/kw-hr
4	63%	9.85E-05	g/kw-hr
5	70%	1.43E-04	g/kw-hr

FuelConsumption

ID	ShipType	Constant	Scalar	Unit	Comments
1	SolidBulk	20.186	0.00049	ton-fuel/day	Scaled by GT
2	Tug	5.6511	0.01048	ton-fuel/day	
3	LiquidBulk	14.685	0.00079	ton-fuel/day	
4	GenCargo	9.8197	0.00143	ton-fuel/day	
5	Container	8.552	0.00235	ton-fuel/day	
6	RoRoCargo	12.834	0.00156	ton-fuel/day	
7	Passenger	16.904	0.00198	ton-fuel/day	
8	HighSpeedFerries	39.483	0.00972	ton-fuel/day	
9	InlandCargo	9.8197	0.00143	ton-fuel/day	
10	SailShips	0.4268	0.001	ton-fuel/day	
11	Fishing	1.9387	0.00448	ton-fuel/day	
12	Other	9.7126	0.00091	ton-fuel/day	

Power-Fuel_Conversion

ID	Type	Conversion	Unit
1	Slow Speed	175	g-fuel/kw-hr
2	Medium Speed	195	g-fuel/kw-hr
3	High Speed	210	g-fuel/kw-hr

EF-Emission Factor % Values in Emission Factors Indicate Engine Load
'Type_0' indicates that the Factor is for Hotelling
Fuel 'Constant' is the mathematical intercept and 'Scalar' is the coefficient of the Gross Tonnage (GT)

B - APPENDIX: Outline of Data Processing Steps

B.0.4 Rivers Data - Processing Steps

1. Import NWN shapefile from USACE and the Scope County Data file into ArcGIS. The working coordinate system for all ArcGIS work was as follows: (1) Projected Coordinate System was "North America Equidistant Conic", and (2)Geographic Coordinate System was "North American 1983".

2. Create a buffered county boundary shape file using the following steps

   - Click on ArcToolbox
   - Open Analysis Tools
   - Open Proximity
   - Click on Buffer
   - Input feature is the County Boundary Shape File
   - Save the output to a folder of interest
   - Distance Value set as 150m, 300m and 1000m. This would be changed based on how close the apportionment to bounding counties needs to be. For this project, a 1000m buffer distance was finalized.
   - Click OK

3. Create Intersect Lines using the Buffered County Boundary file and the NWN file provided by USACE.

   - Open "Geoprocessing"
   - Select "intersect"
   - Select nwn shape file and the buffered County Boundary file
   - Select output file name
   - Join ALL attributes - select from dropdown menu
   - Leave XY Tolerance empty
   - Output type "Line"
   - Click OK

4. The intersection of USACE NWN Shape File with NEI Shape File splits the network by county. This split network length must be computed using a projected coordinate system. In the present work, it was computed using "North America Equidistant Conic" Projected Coordinate System. The Geographic Coordinate System was "North American 1983". In the Intersect file created in above:

   - Open Attribute Table
   - Add Field
   - Select Name "MilesLength" and number with float precision

- Select top row of the "MilesLength" column and right click
- Select "Calculate Geometry", Property "Length" and units of "miles"
- Click OK

5. Export file as text file for further calculations

6. Similar intersection process (described in item #3 was applied to the NEI Shipping Lane Shapefiles.

B.0.5 Great Lakes AIS Data - Processing Steps

Processing Steps to Remove GPS Coordinates on Land Surface:

1. List of Shapefiles used to remove GPS Coordinates reported by the AIS Transponder that fell on land surfaces

   - Use VesselPosition.shp (a file where GPS coordinates were converted to Point Shapefile) — This is a Point shapefile showing GPS navigation points. Note when importing a text file with data, use the "Schema.ini" file to specify the data formats. This would save a lot of headache.
   - NHDWaterbody.shp — Polygon file showing the water areas for selected states (MN, IA, WI, IL, IN, MI, OH, PA and NY). USGS National Hydrography Dataset obtained from `ftp://nhdftp.usgs.gov/DataSets/Staged/States/FileGDB/`
   - ghy_000c11a_e.shp — Polygon file showing the water areas for Canada. Statistics Canada, 2011 Census — Boundary files. `https://www12.statcan.gc.ca/census-recensement/2011/geo/bound-limit/bound-limit-2011-eng.cfm`
   - The first step was to make sure that the shapefiles were in the same projection (GCS_North_American_1983).

2. With all the associated shapefiles opened in ArcMap, use the "Select By Location" tool. This tool will select features from the shapefile "VesselPosition.shp" that would intersect the source layer feature "NHD Waterbody.shp" (this shapefile includes US States Waterbody) and "ghy_000c11a_e.shp" (Canadian Waterbody). An added search distance of 1 feet from the waterbody to allow for error.

   - Selection — Select by Location
   - Select Features from "VesselPosition"
   - Source — NHDArea
   - Intersect the Source Later feature
   - Apply Search Distance of 1 feet
   - Open Attribute Table after search is complete
   - Select only the selection (smaller box) — "show selected records"
   - Right click and enter "Wet_Dry" Column Name
   - Field Calculator Enter "Wet"
   - Click OK

3. In the "VesselPosition.shp" shapefile, a column was added into the attribute table called Wet_Dry. After selecting the points that would intersect the waterbodies. The attribute column Wet_Dry was populated with the word "Wet". Repeat this process until all the states and Canada Waterbodies are compared with the point file. The Blank attributes in the Wet column were then labeled "Dry".

Processing Steps to Convert "Validated" GPS Coordinates to Vessel Tracks:

1. Add the "VesselPosition.shp" point feature shapefile into ArcGIS
2. Open Arc Toolbox and navigate to "Tracking Analyst Tools" and select "Track Intervals to Line"
   - In the "Track Intervals to Line", select the "VesselPosition.shp" file
   - Enter a shapefile name for the output feature class. It saves a lot of computational time if the shapefiles are saved in a geodatabase file format.
   - TimeField format needs to be in MM/DD/YYYY HH:MM:SS with leading zeroes for MM, DD, HH, MM and SS. That is when month and dates have single digits from 1 through 9, they need to have leading zeroes in the date format.
   - Select the units, in this work Time was chosen in minutes, Distance in miles and speed in Knots.
   - Click OK
3. Once Tracking Analyst completes the process, the GPS points would have been converted to polyline feature that connects two GPS coorindates into on vessel track. However, the number of vessel tracks are approximately the same number of GPS coordinates. This is because each GPS coordinate connected sequentially with increasing time.
4. Vessel tracks thus obtained from Tracking Analyst Tool, was split by each unique Vessel ID (in this case by the Vessel's MMSI) using USGS Split By Attribute Tool available from `http://www.umesc.usgs.gov/management/dss/split_by_attribute_tool.html`

Intersection of Vessel Tracks with NEI Shipping Lanes and Port Shapefiles

- Split vessel tracks needs to be intersected with NEI Shipping Lanes and Port Shapefiles so that the emissions can be referenced with NEI ShapeID and County ID. Vessel tracks are intersected with Port Shapefiles so that emissions can be computed for Hotelling and Maneuvering, intersection with Shipping Lanes shapefiles provide Cruising mode emissions.

  Vessel tracks intersected with Shipping Lanes Shapefiles and Port Shapefiles, in ArcGIS software, contains the following fields as shown in the Table B.1.

Field Names in Tracking Analyst Results	Description
OBJECTID	ReferenceID for each Polyline Feature
From_ID	Starting ID for Vessel Track (obtained from GPS Coordinate) Shapefile
To_ID	Ending ID for Vessel Track (obtained from GPS Coordinate) Shapefile
Start_Time	Starting time for Vessel Track
End_Time	Ending time for Vessel Track
Track_ID	Vessel MMSI ID
Miles	Distance of this Vessel Track
Minutes	Duration of travel by this Vessel Track
Knots	Speed of this Vessel Track
Degrees	Direction of this Vessel Track
FID_Canada_Lanes_NoGap	Reference ID from Shipping Lane file(intersected file)
Shape_Length	Shipping Lane Shape Length
Area_sqmi	Area of Shipping Lane Polygon
ShapeID	ShapeID of Shipping Lane Polygon
FIPS2014	County ID of Shipping Lane Polygon
Shape_Length	Unused Carryover Data
Miles_Segment	Calculated Vessel Track in the Projected Coordinate System of this work

Table B.1: Header Field Names Description in Vessel Track Intersection Results.

Processing Steps to Calculate Air Emissions from Vessel Tracks in Microsoft Access Software:

1. Import exported files from ArcGIS into the appropriate tables in the Access Database "LakeEmissions_Calculations". Tracks intersected with the NEI ShippingLanes shapefile should be imported into the Tracks_p1 though Tracks_p4 or Tracks_remnant tables. Tracks intersected with the NEI Ports shapefile should be imported into the Ports table. If the imported data is replacing previous data delete all of the rows from the existing table before importing, leaving only the header row.

2. If it is necessary to change the emission factors; variables in the fuel consumption equation; or conversion factor between engine power and fuel use, this can be done in the tables labeled <Pollutant>_EF, FuelConsumption, and Power-Fuel_Conversion respectively.

3. The emission are calculated for each pollutant according to the equations written in each of the Modules for each pollutant. Assignment of the relationship between the EF table categories and the vessel types are done using IF statements in the Modules.

4. Various selections and combinations on the data are done in the queries. The purpose of each query and the dataset used are included in the query name, ex. AddVessChar_p1 adds the Vessel Characteristics (engine power, vessel type, Gross Tonnage) to the intersected paths in Tracks_p1.

5. Emissions_p1, Emissions_p2, Emissions_p3, Emissions_p4, Emissions_remnant, and Emissions_ports are the final queries that calculate emissions for each vessel path segment. To transfer these emissions to the database "EmissionResults":

   (a) Delete all of the data, that is being updated, contained in the Tables Emissions_Cruising and PortEmissions.

   (b) Either:

   - Export Emissions_p1-p4,Emissions_remnant to text files and import into Emissions_Cruising. Export Emissions_ports to a text file and import into PortEmissions.
     Or;
   - Run the queries Port_Append and Underway_Append. The filepath for the EmissionResults database may need to be changed to reflect where the file was placed on the user's machine.

Guide to Queries on Calculated Emissions

1. Open the "EmissionResults" Access Database.

2. There are several queries, named according to their function, that perform selections and table combinations on the input data tables The only one of these that may need alteration are the queries including '_Commercial'. This query currently excludes vessels categorized as Pleasure Craft, Sailing Vessels, or Wing in Ground to prevent double-counting of emissions between this emission inventory and the NMIM MOVES dataset. To alter the vessel categories excluded open the query in design mode and change the NOT statements in the WHERE SQL statement.

3. The UserInputs table is where the bounds of the returned data is entered by the User. This includes the beginning and ending date-times for emission summation and the FIPS regions to include. For example, the user could enter 1/1/2014, 2/1/2014, 17000, and 17999 to have the queries return only the emissions that occurred between January and February 2014 in Shapes associated with the state of Illinois.

4. For exporting the data into Smoke Flat-file format run the SmokeExport_Ports and SmokeExport_Underway queries and replace the data in the "NEI_Shapes" Excel file. The data tables to replace in this spreadsheet are in tabs ShapeEmissions_Lakes_Underway and ShapeEmissions_Lakes_Ports. Repeat running the SmokeExport queries for each month January-December to update the monthly fields in the Smoke FF format.

5. To export the data in the EIS format run the query "StagingTable_Annual_AllSources". The results of this query include emissions from major Midwest River vessel traffic, Great Lake cruising emissions, and Great Lake port maneuvering/hotelling emissions.

   - Note that this query is for the entirety of the year and can not be altered by the User date-time inputs, because the River Emissions are not calculated from AIS points and do not have a temporal distribution. The results can still be restricted based on a user-specified range of FIPS codes.
   - Depending on the desired ordering of lines (ex. identical ShapeIDs together) the resulting table can be sorted by clicking the drop-down arrows next to each column header.
   - The table generated by this query can be exported to a '.xml' format either through the ExternalData ribbon tab or by right-clicking the query and choosing 'Export'.

Generating the Smoke FlatFile Format:

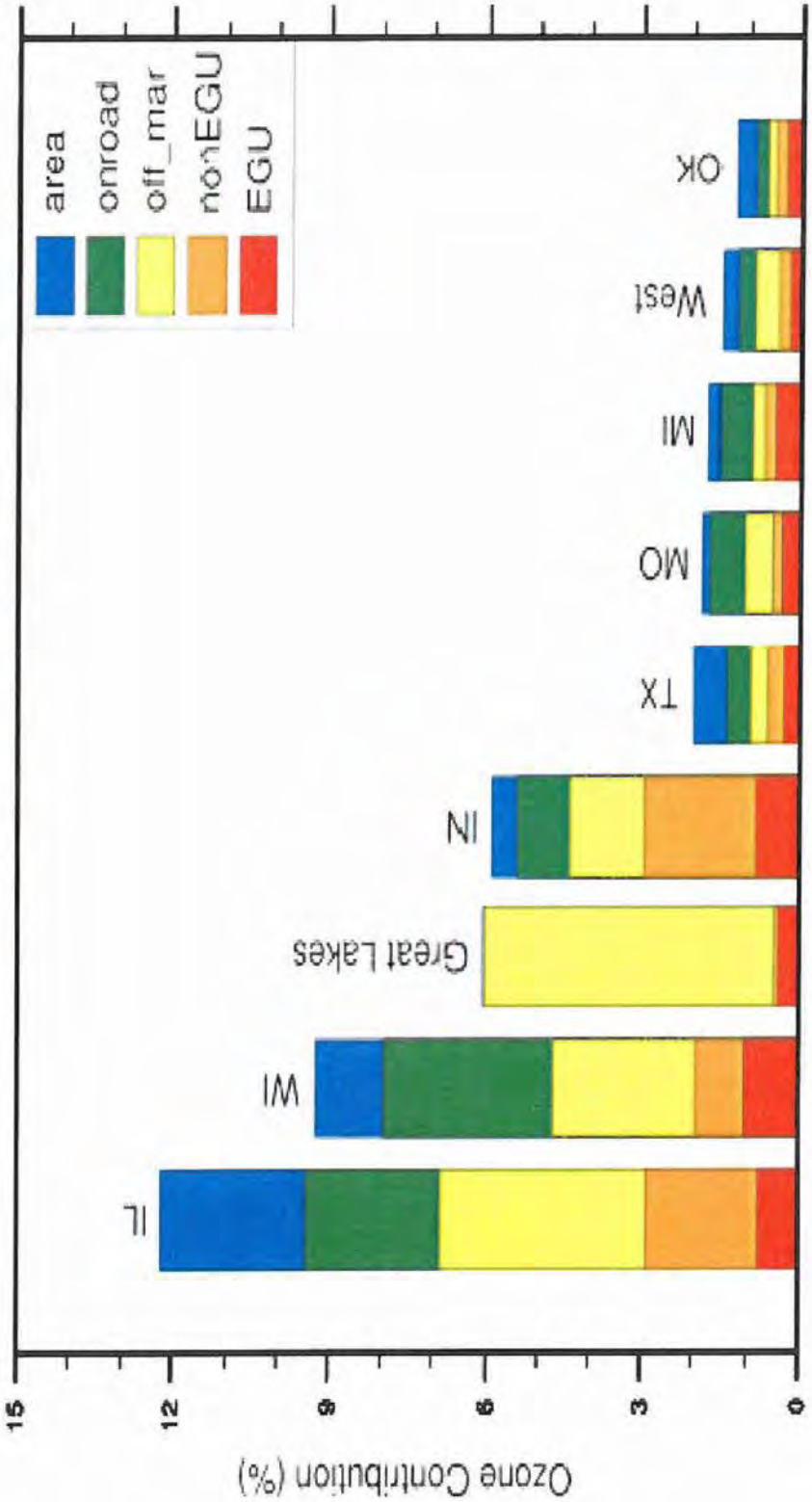
1. As discussed in the above section run the SmokeExport queries in the database and overwrite the data already present in the referenced Excel sheets.

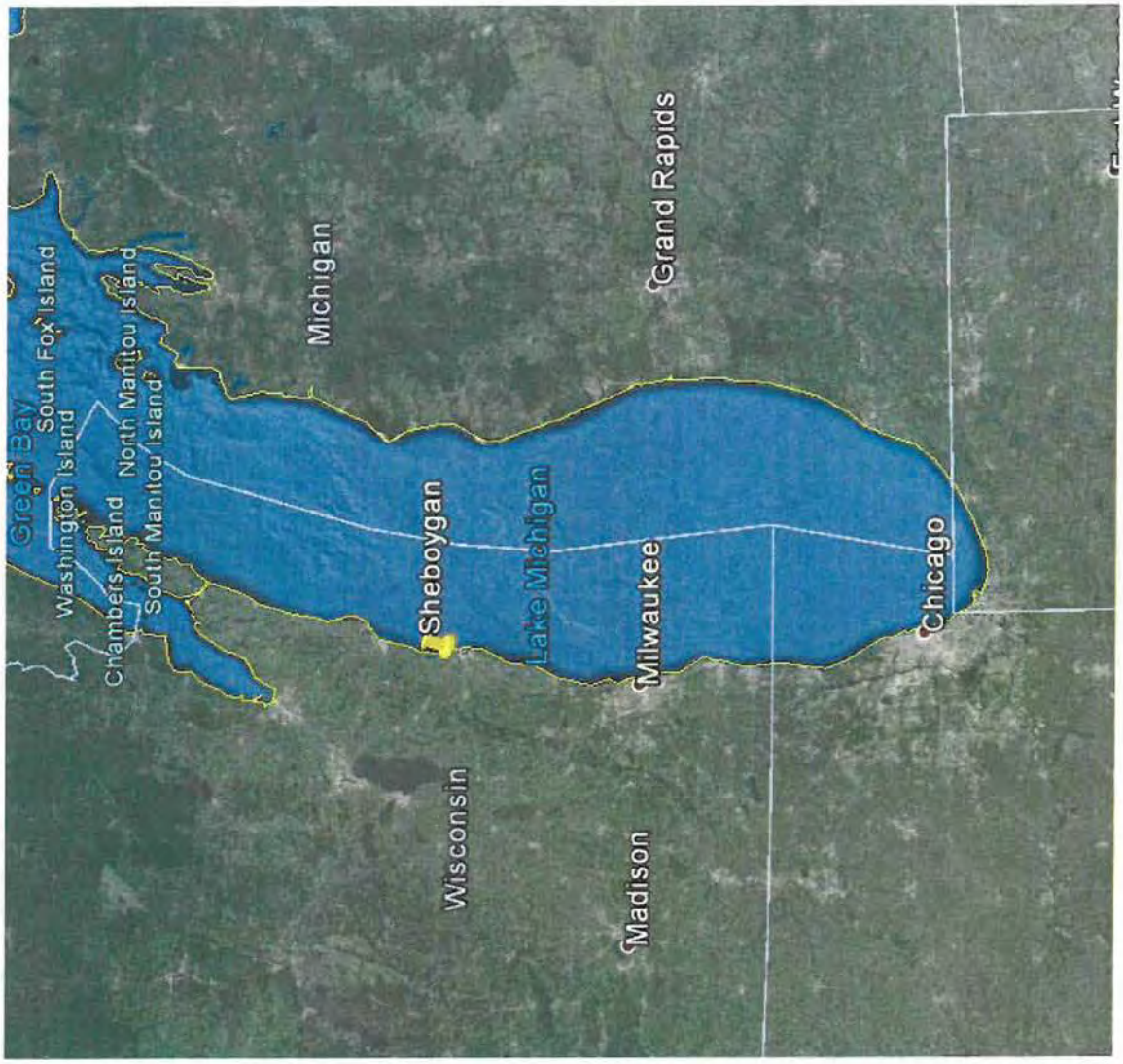
2. The imported data is pulled into the "Smoke _FF _Linked" sheet. SCC codes, growth factors, and FIPS codes are tied to each data row by the value arrays in the "Lookups" sheet. If the number of pollutants are changed from the current value of '8' then the River, GL_Cruising, and GL_Port sections will need to be copied downward and the StartingRow values will need to be updated.

3. To generate a future year inventory estimate change the value for 'FutureYear' in the "Lookups" sheet. The future year inventory is generated in the "SMOKE_FF_FutureYear" sheet and the data is also reflected in the "FutureInventory_Pivot" table sheet. Note that the value for FutureYear can also be a past year and the equations will still work as intended.

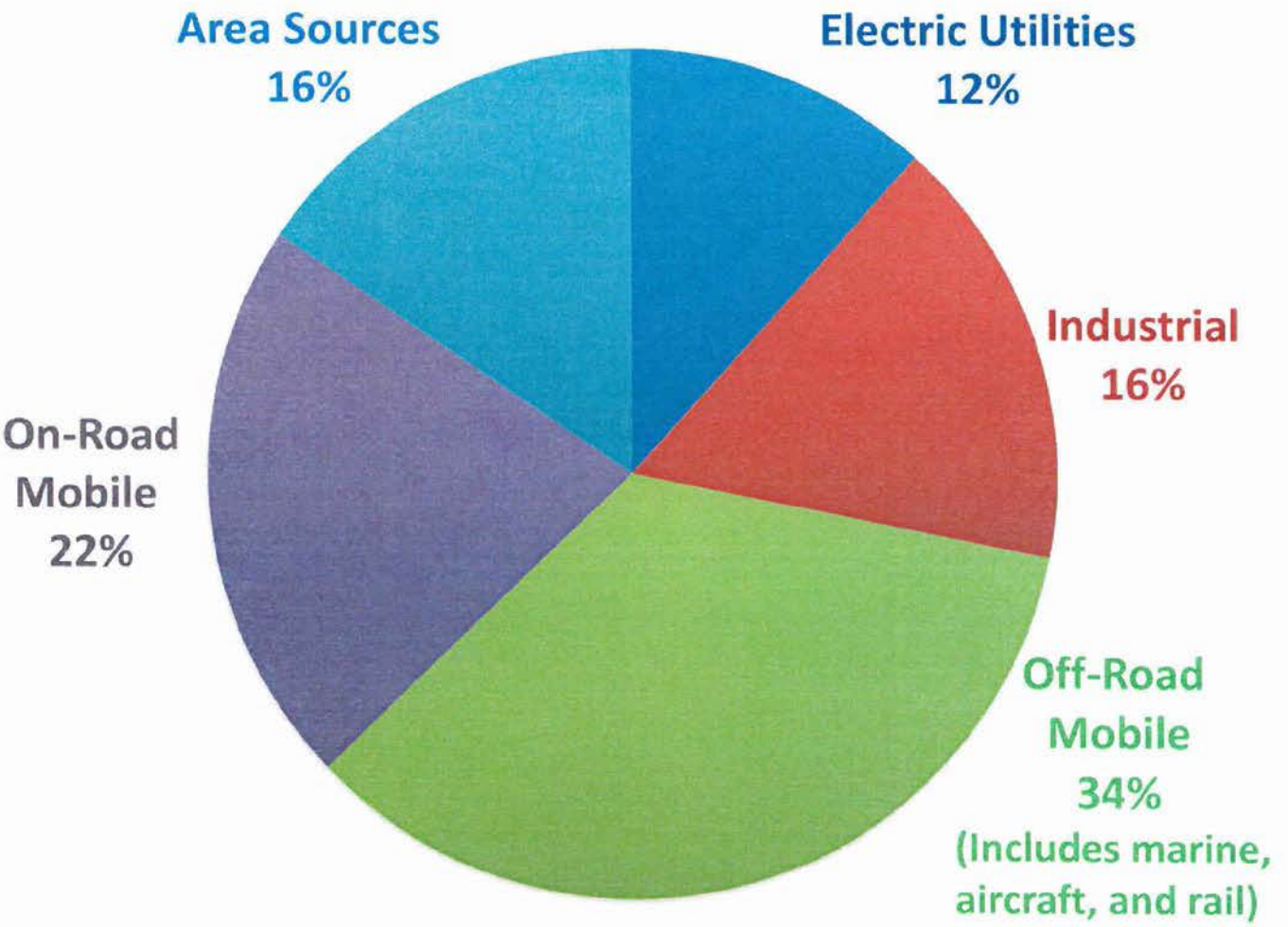
4. The header information can be changed to include any metadata desired by the user.

States' Ozone Contributions: Sheboygan

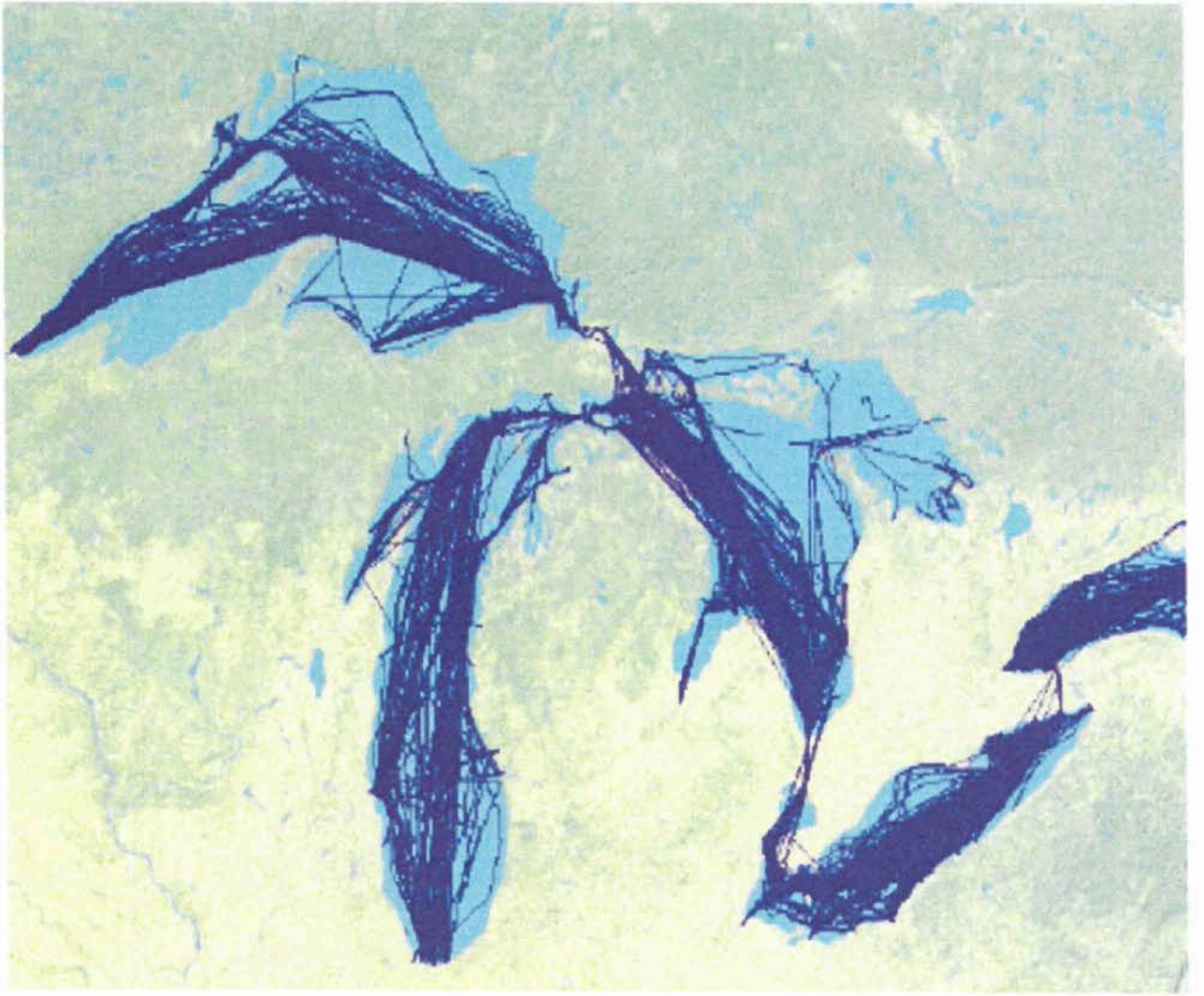



Green Bay
Washington Island
South Fox Island
Chambers Island
North Manitou Island
South Manitou Island
Michigan
Sheboygan
Lake Michigan
Wisconsin
Madison
Milwaukee
Grand Rapids
Chicago

Emission Sector Contributions: Sheboygan



Commercial Marine Vessels on the Great Lakes



From: Woody, Carolyn (ENRD)
To: Cooney, Nigel (ENRD)
Sent: 8/5/2016 3:23:35 PM
Subject: FW: Topic: Environmental

-----Original Message-----
From: ASKDOJ [mailto:askdoj@jmdpublic.doj.gov]
Sent: Friday, July 29, 2016 8:48 AM
To: Woody, Carolyn (ENRD) <CWoody@ENRD.USDOJ.GOV>
Subject: FW: Topic: Environmental

-----Original Message-----
From: no-reply@usdoj.gov [mailto:no-reply@usdoj.gov]
Sent: Friday, July 29, 2016 8:35 AM
To: AskDOJ@usdoj.gov
Subject: Topic: Environmental

Name: Dan Deppeler

Email: ddeppeler@papertransport.com

Topic: Environmental

Message:
Assistant Attorney General
Environment and Natural Resources Division U.S. Department of Justice

In re: Volkswagen “Clean Diesel” Marketing, Sales Practices, and Products Liability Litigation, Case No: MDL No. 2672 CRB (JSC), and D.J. Ref. No. 90-5-2-1-11386.

Dear Assistant Attorney General:

Please consider adding Battery operated Auxiliary Power Units (APUs) as an Eligible Mitigation Technology in Appendix D-2 of the VW settlement.

As a trucking company, we find our drivers often have to idle their truck engines overnight while complying with DOT Hours of Service requirements and maintaining a safe and comfortable environment while resting.

We consider expanding the availability of APUs, essential in addressing the needs of our drivers and in decreasing the need to idle our trucks. APUs allow 672 of the drivers in our fleet to reduce idling by 8 gallons per night. Just our fleet alone could save over 1,000,000 gallons per year

Sincerely,

Daniel Deppeler
Vice President of Maintenance
Paper Transport Inc.
Green Bay, WI

Friday, July 29, 2016 - 8:34am EDT

Authenticated Drupal user: Anonymous

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

MEMO

TO: Honorable Patrick McDonnell
Acting Secretary

FROM: Kenneth R. Reisinger
Deputy Secretary
Waste, Air, Radiation and Remediation

THROUGH: Alexandra Chiaruttini
Chief Counsel
Office of Chief Counsel

Jessica Shirley
Acting Director
Policy Office

DATE: July 29, 2016

RE: Volkswagen Partial Consent Decree

Attached are recommended comments prepared by DEP staff on the proposed Partial Consent Decree filed with the United States District Court for the Northern District of California in the lawsuit entitled, Volkswagen "Clean Diesel" Marketing, Sales Practices, and Products Liability Litigation, Case No: MDL No. 2672 CRB (JSC), partially resolving Clean Air Act and various California claims (including under the California Health and Safety Code) against Volkswagen Group of America, Inc., and others, concerning certain noncompliant 2.0-liter diesel vehicles (Partial Consent Decree). These draft comments have been jointly developed by the Bureau of Air Quality, the Department's Energy Office, the Policy Office, and our Bureau of Regulatory Counsel. These comments have also been widely shared with other state agencies that have been engaged in the settlement discussions over the past several months.

Comments are due to the Department of Justice no later than August 5. With your approval the Department will provide these comments to the DOJ both electronically and in hard copy.

_____ Approved _____ Disapproved

7/31/16 Date

Attachments

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

August 5, 2016

CERTIFIED MAIL NO. 7003 3110 0004 0492 5278

VIA EMAIL: Pubcomment-ees.enrd@usdoj.gov

Assistant Attorney General
U.S. DOJ-ENRD
P.O. Box 7611
Washington, D.C. 20044-7611

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

To Whom It May Concern:

The Pennsylvania Department of Environmental Protection (DEP) thanks the United States Department of Justice (DOJ) for the opportunity to comment on the proposed Partial Consent Decree filed with the United States District Court for the Northern District of California in the lawsuit entitled, *In re: Volkswagen "Clean Diesel" Marketing, Sales Practices, and Products Liability Litigation,* Case No: MDL No. 2672 CRB (JSC), partially resolving Clean Air Act and various California claims (including under the California Health and Safety Code) against Volkswagen Group of America, Inc., and others, concerning certain noncompliant 2.0-liter diesel vehicles (Partial Consent Decree). DEP is commenting on the Partial Consent Decree, specifically the ZEV Investment Commitment, Appendix C, and the Form of Environmental Mitigation Trust Agreement, Appendix D.

Although the environmental harm done by the actions of Volkswagen can never be undone, this settlement amount offers the opportunity to improve the air our citizens breathe and make our living and working spaces within the United States healthier. DEP thanks the DOJ for its careful consideration of DEP's comments on the proposed Partial Consent Decree. DEP believes that if DOJ makes changes based on these comments, the positive environmental effects that will be achieved from this Partial Consent Decree will be enhanced. Comments and recommendations on the proposed Partial Consent Decree are provided below.

Appendix D-2, "Eligible Mitigation Actions and Mitigation Action Expenditures"

The Environmental Mitigation Trust Agreement funding should provide at least 50 percent of the funding for the eligible cost share of projects that repower diesel equipment with newer, cleaner diesel engines. The cost-share amount of 40 percent provided throughout Appendix D-2 will not attract private business interest.

DEP has experience with repowering older diesel-powered equipment not subject to emissions standards with newer, cleaner diesel engines through DEP grants using funds from both the Diesel Emissions Reduction Act (DERA) and the American Recovery and Reinvestment Act. DEP is aware that, in most cases, businesses—specifically, railroads and tugboat operators—are looking for at least a 1-for-1 match of their funding to participate in diesel-to-diesel repower grant programs. These businesses have told DEP that a 50 percent cost share is the minimum level of funding to gain their interest. The 40 percent cost-share amount throughout the Environmental Mitigation Trust Agreement will not incentivize businesses that operate the most polluting equipment. Elevating the project match to at least 50 percent for diesel repower projects is necessary for the funding opportunity to be effective.

The Environmental Mitigation Trust Agreement should treat all fuels equally. Offering a higher level of funding for one fuel over another will lead to reduced competition among valid projects and reduce the cost effectiveness of all projects.

The Environmental Mitigation Trust Agreement offers up to 75 percent of the project cost to repower a non-government owned diesel engine with an all-electric engine, including charging infrastructure. While the pursuit of creating a market of all-electric equipment over diesel-powered equipment may be an admirable endeavor, it overlooks some essential factors about diesel engines. The diesel engine is and will be, for years to come, the workhorse of large freight movement in this country. Engines powered by other types of fuels simply do not have the horsepower, performance characteristics, or durability to equal diesel-powered engines and move freight from coast to coast. Diesel engines are powerful, operate for long hours, and can remain in service for decades. The need to rebuild long-lasting diesel engines can be infrequent, which results in excessive emissions of both oxides of nitrogen (NOx) and fine particulate matter ($PM_{2.5}$) by these older, in-use engines. Excessive emissions of NOx and $PM_{2.5}$ can elevate concentrations of ambient pollutants to unhealthy levels in our most populated areas and in downwind locations. Therefore, the largest emission reductions and some of the greatest health effects can be achieved by repowering non-government owned diesel-powered equipment with the best and most efficient engine choice for the application rather than expending more funds for a lesser number of electric engines simply because the incentive is greater. For this reason, the Environmental Mitigation Trust Agreement should adopt a more fuel-neutral approach and value the NOx and $PM_{2.5}$ emission reductions achievable by treating electric repower projects equally to diesel repower projects. Providing the same percentage of project costs for diesel replacement and repower projects, as well as for alternative fueled (*e.g.*, CNG, Propane, Hybrid) replacement projects would increase the ability for a wider range of projects and attract the most cost-effective projects based on emissions reductions. If the Environmental Mitigation Trust Agreement's intent is to provide additional funding for electric repowers and new electric vehicles due to the additional costs for charging infrastructure, it is DEP's suggestion that the costs for new electric infrastructure, where needed, be provided a 75 percent grant as a separate incentive for the infrastructure-only portion.

The Environmental Mitigation Trust Agreement should expand the eligibility of funding locomotives from just switcher engines to all locomotives, including line-haul locomotives.

Line-haul locomotives operate at high speeds and typically have greater horsepower engines than switcher engines. Engines that have high horsepower and operate at higher speeds produce greater emissions, most notably NOx emissions. NOx is the pollutant that Volkswagen's defeat

device produced in much greater amounts than allowed by state and federal vehicle emission standards. In Pennsylvania, line-haul locomotives produce NOx emissions just upwind of urban centers and in urban centers as these locomotives pass through Pennsylvania cities. Line-haul locomotives are responsible for emissions that lead to elevated ambient concentrations of both ozone and $PM_{2.5}$. By not including line-haul locomotives in the list of eligible projects, the Environmental Mitigation Trust Agreement closes the door on a source of emission reductions that offers the most cost-effective projects for lowering the very emissions that the Environmental Mitigation Trust Agreement is trying to offset. Line-haul locomotives should be included in the list of eligible emission reduction projects.

The Environmental Mitigation Trust Agreement list of eligible mitigation actions states a specific percentage cost share available to government and non-government entities. Before every percentage of cost share listed, the words "up to" should be included.

The DEP will likely distribute funds for projects by using an existing grant program. DEP's grant programs are competitive. If DOJ were to state "up to 75 percent" instead of just "75 percent" on the eligible mitigation list in Appendix D-2, applicants would be afforded the flexibility to fund their share of the project at a percentage rate selected by them and not prescribed by the Environmental Mitigation Trust Agreement. The variability of the percentage could encourage competition through the grant application process. Grant applicants would then have the option to vary the amount of their funding contribution to the project and increase their chances for grant funding by providing a greater amount of funding than rival applicants. This provides a greater potential to leverage the amount of available mitigation funding into additional projects to reduce NOx emissions. If a specific type of project is guaranteed a specific percentage of cost share from the mitigation fund, the grant applicant will not be able to offer a higher percentage of funding for the project costs, effectively eliminating an element of competition between applicants.

Provide a greater percentage of cost share from the Environmental Mitigation Trust Agreement to Class II and Class III railroad companies and owners of smaller tugboat fleets.

Pennsylvania is home to dozens of Class II and Class III railroads and smaller tugboat fleets. In the past, Pennsylvania diesel emission reduction grants have not attracted many applicants from these smaller fleets, although the need to upgrade emission controls on their diesel equipment is most likely great and the most cost effective because these companies typically have older equipment. The Environmental Mitigation Trust Agreement should provide <u>at least</u> an additional 10 percent premium to all cost-share percentages for Class II and Class III railroad companies and owners of tugboat fleets that have fewer than six tugboats. This additional cost-share funding provided by the Environmental Mitigation Trust Agreement would attract worthy applicants that may have difficulty raising funds for their company's portion of the project's costs.

The Environmental Mitigation Trust Agreement should include a wider array of nonroad equipment on its eligible mitigation action list. At a bare minimum, the additional types of nonroad vehicles and equipment should include nonroad diesel equipment that operates at high load factors, has high activity levels, and uses larger horsepower engines. DEP advocates for an even broader spectrum, however.

The current terms of the Environmental Mitigation Trust Agreement exclude many types of nonroad equipment from the list of projects eligible for funding. There are other such examples of unnecessary limitation in this category. Additional emission reductions could be available from the excluded types of nonroad equipment. As stated previously, diesel engines have the durability, high horsepower, and performance characteristics that lead to high levels of emissions. Because the Environmental Mitigation Trust Agreement excludes various types of high-emitting nonroad equipment, DEP would not be able to consider these types of equipment for upgrade; consequently, cost-effective and helpful emission reductions would needlessly not be realized.

The Environmental Mitigation Trust Agreement should include truck stop electrification projects or other low emission idling reduction technologies in the list of eligible projects.

Idle reduction technology is one of the most cost-effective ways of reducing sources of mobile source diesel air pollution. Diesel truck idling is an unnecessary practice, but truck drivers need alternatives to main engine idling to bring this practice to an end. Truck stop electrification and other electric-based idle reduction technologies are solutions to reducing emissions from diesel vehicles. This type of project should be included in the Environmental Mitigation Trust Agreement. Because truck stop electrification is an electric replacement to operating a diesel engine, truck stop electrification should be funded similarly to other zero emission infrastructure technology, such as ship-based shore power technology, which <u>is</u> funded in the Environmental Mitigation Trust Agreement.

The Environmental Mitigation Trust Agreement should better explain how available funds can be used as part of a state grant program that follows DERA guidelines. [Appendix D-2, p. 217 of 225]

It is unclear how the Environmental Mitigation Trust Agreement will fund Pennsylvania's State Clean Diesel Program, which is normally funded by DERA funds. The Environmental Mitigation Trust Agreement should better explain how the Environmental Mitigation Trust Agreement and state DERA programs can interact.

The Environmental Mitigation Trust Agreement should fund <u>all</u> Class 8 trucks that operate in a freight or drayage capacity. If the Environmental Mitigation Trust Agreement will only fund "local" Class 8 trucks, as is suggested in the first item of Appendix D-2 ("Eligible Large Trucks include 1992-2006 model year Class 8 Local Freight or Drayage"), then "local" should be better defined. [Appendix D-2, p. 209 of 225]

DEP supports funding repower or replacement projects that extend the eligibility to all Class 8 trucks that operate in a freight or drayage capacity. If all Class 8 trucks cannot be made eligible, then the term "local" needs to be defined so that the operating area of the trucks is not overly limited. DEP believes that the term "local" should mean "a truck that operates predominately within the state where it is based." In addition, care should be taken in using portions of defined terms, such as using "Class 8 Local Freight or Drayage" when there is a defined term "Class 8 Local Freight, and Port Drayage Trucks (Eligible Large Trucks)."

The Environmental Mitigation Trust Agreement should fund <u>all</u> Class 4-7 trucks that operate in a freight or drayage capacity, or the Mitigation Trust Agreement needs to better

define what is meant by the term "local," which is contained in the sentence, "Eligible Large Trucks include 1992-2006 model year Class 4-7 Local Freight or Drayage." [Appendix D-2, p. 213 of 225]

DEP supports funding repower or replacement projects that extend the eligibility to all Class 4-7 trucks that operate in a freight or drayage capacity. If all Class 4-7 trucks cannot be made eligible, then the term "local" needs to be defined so that the operating area of the trucks is not overly limited. DEP believes that the term "local" should mean "a truck that operates predominately within the state where it is based."

The term "Trust Funds" should be defined.

The capitalized term "Trust Funds" is used in multiple places in the Environmental Mitigation Trust Agreement but is not included in the "Definitions" section. Please define the term to prevent confusion.

Up to 10 percent of the beneficiaries' administrative costs should be reimbursable expenditures under the terms of the Environmental Mitigation Trust Agreement. [Appendix D-2, p. 218 of 225]

DOJ should clarify whether the list of actions under the heading "Eligible Mitigation Action Measures" for which the beneficiary may use the Trust Fund applies to the expenditures by the beneficiary itself, the final recipient of the funding, or both the beneficiary and final recipient. DEP believes that up to 10 percent of the beneficiaries' administrative costs should be reimbursable by the Trust Fund.

Appendix C, "The ZEV Investment Commitment"

The ZEV Investment Commitment should further clarify the role of and manner in which a State may participate in the review of projects being considered by the ZEV Fund.

While the Consent Decree identifies the roles of EPA and Settling Defendants under the ZEV Fund, the State's role is less specific and therefore less clear. Clearer guidance is needed in the Partial Consent Decree regarding the State's role in acting as an intermediary, administering and/or participating in the ZEV Fund with regards to both public and private sector project proposal submissions. DEP believes that for projects which are considered by the ZEV Fund as a part of the National ZEV Investment Plan that are to be located in Pennsylvania, DEP should be able to provide a recommendation or a preference/ranking of those projects. Often, other in-state opportunities or financial assistance may already be leveraged for projects which may be under consideration by the ZEV Fund. An open line of communication regarding opportunities under consideration could help identify those opportunities and also ameliorate projects which may have other challenges to overcome, whether it be permitting, local approvals, or additional project financing. For instance, Pennsylvania has existing programs such as the Small Diverse Business Program for Procurement for all verified Minority-, Woman-, Veteran-, and Disabled Veteran-owned businesses and could play a helpful role as an intermediary to connect these Pennsylvania businesses with the Settling Defendants for service-level contracting opportunities, including construction, accounting, human resources, legal, procurement, etc. Opportunities may also exist for multi-state projects, and information sharing between states could be a vital

component to the successful deployment of projects whereby shared resources and coordination is required among state agency approval processes.

The ZEV Investment Commitment should clarify how the role of other entities, i.e., municipal government, non-profit, for-profit and colleges and universities, etc., may interact with the ZEV Fund.

With respect to the National ZEV Outreach Plan and National ZEV Investment Plan, DEP seeks clarification as to whether a municipal government, non-profit, for-profit and colleges and universities, for example, can submit ZEV Investment recommendations to the Settling Defendants without going through the agency that the State has identified as the designee to attend to matters under this Partial Consent Decree. DEP recommends that projects should be submitted to the Settling Defendants through the selected designated State agency for this Partial Consent Decree. In Pennsylvania's case, this will be the Pennsylvania Department of Environmental Protection, an agency that already has a strong working relationship with both municipal governments and the private sector on a variety of energy/environmental-related projects. Such an approach will result in more organized and complete project submissions to the Settling Defendants and will also help Settling Defendants to more effectively allocate ZEV investments as opposed to letting a disorganized process occur by having various entities not communicate with the State agency in charge. This approach would also be beneficial for the applicant because the State agency, as an intermediary, could assist in identifying potential flaws in a project submittal, which could be remedied by the municipal and/or private sector applicant.

The ZEV Investment Commitment should further clarify how a State may benefit from the information generated from ZEV Investment projects.

DEP recommends that, in addition to anticipated or projected costs, the Settling Defendants should be required to submit post-completion costs as well as the results of any third-party audits on the ZEV website for public review. Such sharing and access to information and costs would help to determine the ability to reproduce projects in each state based on the true costs for innovation and deployment. The ZEV Investment Fund should be revised to more clearly identify the State's participation role during the completion and analysis of service-level contracts.

The ZEV Investment Commitment is not clear on the potential funding of projects which might be currently planned or have received funding from other sources.

Pennsylvania recommends that the ZEV Investment Fund provide guidance on the ability to allow for the financing of preapproved state ZEV projects for which state funds have already been allocated or committed. Pennsylvania has multiple ZEV projects totaling nearly $1.5 million in various stages of completion. It is unclear whether a project of this type with existing funding could be funded and/or if the state funding could be replaced with ZEV funding such that the project is shovel-ready for the first 30-month investment period.

The ZEV Investment Commitment should define underserved areas and include a social media campaign that targets those areas to ensure equal opportunities and access for the vulnerable populations.

The National ZEV Investment Plan should include an environmental justice component. Specifically, the National ZEV Investment Plan should take into account the EPA definition that environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. In order to accomplish this, the National ZEV Investment Plan's brand-neutral media activities should include a robust community engagement plan to ensure that all communities have an equal voice and equal access to the resources provided by the National ZEV Investment Plan. This engagement should include direct outreach to community organizations that serve environmental justice communities. The DEP recommends that the National ZEV Investment Plan utilize the newly created EPA C-FERST tool, EJ Screen, NEJAC, the ECOS environmental justice community, and the EPA all-states environmental justice community to develop a broad engagement process with underserved communities. This should include traditional outreach (community meetings, schools, and places of worship) and also a social media campaign that targets those areas to ensure equal opportunities and access for the vulnerable populations. Economically and environmentally disadvantaged populations are often in non-attainment areas, and education and awareness requirements should include targeted messages to them. A single marketing firm that would receive input from all the states will ensure consistent messaging and leveraging of activities as well achieving economies of scale. Programs such as car share and "ride and drive" and any other programs should be included in an outreach plan. The plan should also require input from the states. This will not only save costs for research and targeted messaging, but it will also give in-depth guidance on the locations of the vulnerable populations as well as any special needs such as bilingual messaging.

The ZEV Investment Commitment should clarify which types of funding mechanisms can be used to support ZEV Investments, including the design/planning, construction/installation, operation, and maintenance of ZEV infrastructure.

There are many types of funding mechanisms that have been used to successfully support clean transportation programs and projects. These mechanisms include not only direct grant and rebate programs, which have the benefit of simplicity, but also financing programs, such as state revolving loan funds, which are advantageous because they provide the opportunity to sustainably support projects and programs for a longer time period. Pennsylvania manages several clean energy and/or transportation programs, such as the Green Energy Loan Fund, Pennsylvania Energy Development Authority, Alternative Fuels Incentive Grant Program, Alternative and Clean Energy Fund, and the Pennsylvania Sustainable Energy Finance Program, which use various mechanisms to support energy projects that provide air quality benefits. DEP recommends the use of existing financing program mechanisms to achieve the ZEV Investment Plan goals. A mechanism to achieve cost-effective program development is to use already existing programs. Provision of a portion of the funding to be transferred to states for use in existing programs will allow a determination of the most appropriate funding mechanism to use and lessen program development costs for the ZEV Fund.

The ZEV Investment Commitment should clarify whether there will be standard operating procedures for EPA and the Settling Defendants associated with the ZEV Fund and, if so, whether states will be provided with them.

In order to determine what projects and programs can be selected, it is important to understand the limitations there are on the funding sources and the reporting requirements the projects and programs will be subject to if they receive funding. For example, if federal requirements such as those related to prevailing wage, disadvantaged business enterprises, historic preservation, and the National Environmental Policy Act apply to the funding, certain projects may not be able to be completed due to the additional costs associated with tracking and reporting activities associated with these requirements. The Plan should clarify the conditions under which these requirements may apply.

The ZEV Investment Commitment should allow for an extended cycle of time to expend any funds left over at the end of the 10-year time frame.

It is our interpretation that funding may be left unspent in the ZEV Fund at the end of the final 30-month ZEV Investment Plan. This leftover money could include any penalties incurred during the Investment Plan period as well as the penalties incurred for not expending the entire $1.2 billion of the National ZEV Investment Fund within the 120-month timeframe. Those funds, plus any unexpended funds from projects committed but uncompleted within the final 30-month timeframe, should be allowed to be re-deployed by the states through a formula basis as was used for the Environmental Mitigation Trust Agreement. DEP suggests a timeframe of an additional 30 months. This would be the same incremental time period the Settling Defendants would have had to make their ZEV investments under this Partial Consent Decree for the final performance period. In any event, any leftover money as well as penalties or income to the fund should be invested in the states for ZEV and related infrastructure projects.

Conclusion

DEP recommends that the Environmental Mitigation Trust Agreement be structured so that more vehicles, equipment, and project types are eligible for funding. In addition, expanding the universe of eligible projects will increase the number of applicants, promote competition among applicants, and lead to projects that have higher emission reduction potential and increased cost-effectiveness. Projects funded by the Environmental Mitigation Trust Agreement should achieve the greatest emission reductions possible for the citizens of Pennsylvania.

Further guidance for the ZEV Investment Commitment is suggested relative to the role States will have in the implementation process as well as the manner of participation allowed by all entities in the project selection, deployment, reporting and analysis phases during the entire 10-year ZEV Investment Plan period. DEP believes that the expertise of the Commonwealth of Pennsylvania should help direct and support activities. The information which could be gleaned from the successful implementation of projects is an invaluable resource to all states and state programs that cannot be overlooked. Our comments regarding clarity of process and evaluation of opportunities and results, if implemented, will benefit Pennsylvania as well as surrounding states.

Should you have any questions or need additional information, please contact Krishnan Ramamurthy, Acting Director, Bureau of Air Quality, by e-mail at ramamurth@pa.gov or by telephone at 717.787.9702.

Sincerely,

Patrick McDonnell
Acting Secretary

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Assistant Attorney General
U.S. DOJ--ENRD
P.O. Box 7611
Washington, D.C. 20044-7611
Submitted via email at: pubcomment-ees.enrd@usdoj.gov

August 5, 2016

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

Dear Assistant Attorney General, Environment and Natural Resources Division:

Thank you for the opportunity to provide comments to the U.S. Department of Justice Partial Consent Decree with the U.S. District Court for the Northern District of CA in the lawsuit entitled "Volkswagen `Clean Diesel' Marketing, Sales Practices, and Products Liability Litigation", Case No: MDL No. 2672 CRB (JSC).

Plug In America is the national consumer voice for electric vehicles (EVs) and works to promote policies and programs nationwide that put more EVs on the road.[1] Our members are passionate EV advocates and have driven EVs for many years, affording Plug in America a unique perspective on how consumers think about EVs and what actually inspires a consumer to purchase an EV. Therefore, our comments herein pertain to the Partial Consent Decree IV, Section C, on the "ZEV Investment Commitment" and Appendix C, which is the particular area of our expertise.[2]

The Partial Consent Decree IV, Section C states that the "Settling Defendants shall make $2,000,000,000 in ZEV Investments in accordance with the requirements set forth in Appendix C."[3] These requirements specify that the Settling Defendants (hereafter VW) develop and follow a National ZEV Investment Plan and a CA ZEV Investment Plan. VW is directed to spend $1.2 billion on the National ZEV Investment Plan over 10 years, and $800 million on the CA ZEV Investment Plan over 10 years.

On behalf of our members, we recommend the below top five principles to be included in the National ZEV Investment Plan and the CA ZEV Investment Plan, and urge the EPA and CARB to approve plans with these five principles included. The top five principles are:

1. The National ZEV Investment Plan and CA ZEV Investment Plan should focus heavily on ride and drive events for consumers across the country.

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[1] More information available at: www.pluginamerica.org
[2] Partial Consent Decree IV, Section C is available on page 13, and Appendix C is at page 148: https://www.justice.gov/sites/default/files/enrd/pages/attachments/2016/06/28/vw_partial_2l_cd_and_appendices_docketed.pdf
[3] See page 13 of the Partial Consent Decree, available at: https://www.justice.gov/sites/default/files/enrd/pages/attachments/2016/06/28/vw_partial_2l_cd_and_appendices_docketed.pdf

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2. The National ZEV Investment Plan and CA ZEV Investment Plan should focus heavily on workplace charging events for consumers across the country.

3. The National ZEV Investment Plan and CA ZEV Investment Plan should support a broad array of clean vehicles, including BEVs and PHEVs.

4. VW should create a program within the National ZEV Investment Plan and CA ZEV Investment Plan that rewards matching funds from non-VW sources, to encourage long-term awareness efforts.

5. The National ZEV Investment Plan and CA ZEV Investment Plan should not directly benefit the VW business, but should support the awareness and infrastructure for all ZEVs.

Our comments hereafter detail these top five principles.

Recommendation #1: The National ZEV Investment Plan and CA ZEV Investment Plan should focus heavily on ride and drive events for consumers across the country.

In order to increase the adoption of ZEVs across the country, activity within the National ZEV Investment Plan and CA ZEV Investment Plan should focus on programs that expose the consumer to ZEVs and encourages rides in ZEVs. Consumer behavior studies show that consumers will not participate in new methods of transportation and technology without having a certain level of comfort with the technology first.[4] California and the rest of the country must first shift beyond the early adopter stage of EV deployment and into the mass market stage of EV deployment before funding should be spent on TV advertisements or other multi-million dollar advertising avenues.

Plug In America supports two programs that have been an enormous success nationwide in encouraging the adoption of EVs: National Drive Electric Week (NDEW) and workplace ride and drive events. Plug In America, with partners Sierra Club and the Electric Auto Association, is the national organizer for NDEW and has supported more than 500 events in the past five years in nearly every state. Since 2010, when NDEW started as National Plug In Day, cities large and small throughout California alone have held more than 50 events, totaling nearly 8,000 EV rides and leading to positive consumer exposure to EVs. This year, NDEW celebrations are scheduled for September 10-18, 2016, and registrations have been very positive so far.

Local events are run by a "City Captain," often an EV driver. NDEW facilitates comfortable peer-to-peer conversations between non-EV drivers and EV drivers. The non-EV drivers learn about the vehicles through a non-sales setting, including about the ease of charging, maintenance, safety, cost, performance, and range of the vehicles. These conversations are invaluable for converting a non-EV driver into an EV driver. In addition to direct hands-on-experience, NDEW raises awareness about the existence of EVs among consumers by garnering significant mainstream and social media coverage.

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[4] Rezvani, Zeinab; Jansson, Johan; Bodin, Jan. "Advances in Consumer Electric Vehicle Adoption Research: A Review and Research Agenda." November 2014. Available at: http://www.sciencedirect.com/science/article/pii/S1361920914001515

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These kinds of ride and drive events should be a critical piece of the National ZEV Investment Plan and the CA ZEV Investment Plan.

Recommendation #2: The National ZEV Investment Plan and CA ZEV Investment Plan should focus heavily on workplace charging events for consumers across the country.

Similar to the ride and drive events that Plug in America supports through National Drive Electric Week and other singular events across the country, workplace charging events have been an enormous success in promoting the adoption of ZEVs nationwide. A workplace may sponsor the event and encourage employees throughout the day to experience a drive in an EV. With a workplace event, not only does the employee learn about the EV, but also the potential for workplace charging and added perks such as close parking. Allowing for a non-EV driver to conveniently experience an EV at the workplace leads to more familiarity and acceptance of the EV technology.

Workplace charging events have the potential to reach wide audiences of consumers across all 50 states and all demographics. Again, these kinds of ride and drive events - whether at the workplace or separately - should be a critical piece of the National ZEV Investment Plan and the CA ZEV Investment Plan. Exposure to more EVs through programs such as these will complement federal actions to accelerate EV adoption in the U.S.[5], and will assist in achieving the CA Governor's goal of 1.5 million ZEVs on the road by 2025.[6]

Recommendation #3: The National ZEV Investment Plan and CA ZEV Investment Plan should support a broad array of clean vehicles, including BEVs and PHEVs.

The National ZEV Investment Plan and the CA ZEV Investment Plan that the EPA and CARB will ultimately approve should include measures that promote a broad array of clean vehicles, such as battery electric vehicles (BEVs) and plug in hybrid electric vehicles (PHEVs). While inclusion of BEVs into the ZEV Investment Plans is obvious, as BEVs emit zero pollutants, the inclusion of PHEVs might not be an obvious choice. However, PHEVs are cleaner than traditional vehicles that run on gasoline, and permit consumers with particularly long-range driving behavior to achieve a better fuel efficiency than a gasoline vehicle. As battery technology develops, and the range for vehicles expands from 100 miles to 200 miles to 500 miles, it may make sense to place more emphasis in the National ZEV Investment Plan and the CA ZEV Investment Plan on BEVs and not PHEVs.

Recommendation #4: VW should create a program within the National ZEV Investment Plan and CA ZEV Investment Plan that rewards matching funds from non-VW sources, to encourage long-term awareness efforts.

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[5] White House Factsheet "Obama Administration Announces Federal and Private Sector Actions to Accelerate Electric Vehicle Adoption in the United States", released on July 21, 2016. Available at: https://www.whitehouse.gov/the-press-office/2016/07/21/fact-sheet-obama-administration-announces-federal-and-private-sector

[6] Executive Order B-16-2012: https://www.gov.ca.gov/news.php?id=17472

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While $2 billion total to spend on a National ZEV Investment Plan and a CA ZEV Investment Plan is a significant sum, over all, this equates to only $200 million per year across the country. In order to achieve mass market adoption of ZEVs, VW should include within its Plans a program that will reward matching funds for certain ZEV awareness or ZEV charging infrastructure projects. For example, should a utility propose a ZEV project of $10 million, VW could match provide $5 million of the funding while the utility provides the remaining $5 million. This approach would better leverage the ZEV Investment Plans and could involve local governments, state governments and utilities. Criteria for selecting which projects receive the match funding should be developed, and should include a portion of the funding to be spent on projects that serve low-middle income areas.

Recommendation #5: The National ZEV Investment Plan and CA ZEV Investment Plan should not directly benefit the VW business, but should support the awareness and infrastructure for all ZEVs.

The ZEV investments that will be a part of the National ZEV Investment Plan and the CA ZEV Investment Plan should not directly benefit the VW business. Instead, the ZEV investments should support the awareness and adoption of all makes and models of ZEVs. For example, the vehicles at ride and drive events should not be limited to the Audi A3 E-tron, but should include ZEVs from Nissan, GM, BMW, Honda, Toyota, Tesla, etc. – any ZEV auto manufacturer. In addition, should VW include charging infrastructure projects within the National ZEV Investment Plan or the CA ZEV Investment Plan, the projects should use common charging standards for the benefit of all ZEVs.

The inclusion of these top five principles in the National ZEV Investment Plan and the CA ZEV Investment Plan will lead to the promotion and adoption of more ZEVs on the road.

Please send any questions to Katherine Stainken, Policy Director, at kstainken@pluginamerica.org.

We thank you for this opportunity to provide comments on the Volkswagen "Clean Diesel" Marketing, Sales Practices, and Products Liability Litigation, and look forward to working with you.

Best regards,

Joel Levin

Joel Levin
Executive Director
Plug In America

From: jkim@shorepower.com
To: jkim@shorepower.com; ENRD, PUBCOMMENT-EES (ENRD)
Sent: 8/4/2016 11:32:33 PM
Subject: In re: Volkswagen "Clean Diesel" Marketing, Sales Practices, and Products Liability Litigation, Case No: MDL No. 2672 CRB (JSC), and D.J. Ref. No. 90-5-2-1-11386.

John C. Cruden Esq.
Assistant Attorney General
Environment and Natural Resources Division
U.S. Department of Justice
In re: Volkswagen "Clean Diesel" Marketing, Sales Practices, and Products Liability Litigation, Case No: MDL No. 2672 CRB (JSC), and D.J. Ref. No. 90-5-2-1-11386.

Dear Mr. Cruden:

Our organization writes to request that the final settlement between the U.S. government and Volkswagen provide maximum flexibility for States and Native American tribes to consider allocating some of their funds to electrified parking spaces (EPS) and truck stop electrification (TSE). Specifically, we ask that the settlement expressly list truck stop electrification as an eligible mitigation activity within Appendix D-2, along with the nine other activities that already include various forms of diesel retrofits and the marine equivalent of truck stop electrification. While TSE is eligible for funding under the DERA program option, we are concerned that some States and Tribes will decline or minimize use of the DERA option. Moreover, should Congress decide not to provide funding for the DERA program, there would be limited opportunity to invest in TSE. We know TSE is a cost-effective strategy to reduce NOx emissions and value this mitigation option.

Too often, drivers idle their engines during overnight stays in order to maintain a safe and comfortable cab interior environment. The practice takes place on a large scale and has a disproportionate impact on disadvantaged communities where truck stops and fleet terminals are often located. DERA's own guidelines flag the communities surrounding truck stops for programmatic priority. The Argonne National Laboratory (http://www.afdc.energy.gov /uploads/publication/hdv_idling_2015.pdf) estimates that rest-period idling wastes about 1 billion gallons of diesel and results in the emission of about 55,000 tons of nitrogen oxides released annually in the US. The EPA rates Truck Stop Electrification as the single most cost effective activity to mitigate mobile sources of NOx emissions (less than one third of the cost per ton achieved through diesel retrofits). See page 13 (https://www3.epa.gov /otaq/stateresources/policy/general/420b07006.pdf). Truck Stop Electrification, an EPA SmartWay verified technology, provides long-haul truck drivers an alternative to idling their diesel engines during their overnight stays. Significant NOX mitigation can be achieved through 1) installation of new TSE locations; and 2) TSE vouchers for truck drivers to encourage more truckers to use existing TSE facilities.

Again, we urge you to specifically list EPS/TSE infrastructure and TSE vouchers as eligible mitigation activities under Appendix D-2 of the settlement. This would afford beneficiaries maximum flexibility to achieve the settlement's goal of improving air quality in disadvantaged communities by reducing harmful diesel emissions.

Thank you for your consideration!

Sincerely,

Margaret Puckette
Pollution Prevention Resource Center
Portland, OR
mpuckette@pprc.org

Truck stop electrification prevents the emission of tons of CO2 in the atmosphere, as well as reducing consumption of

diesel fuel. Supporting this industry is a wise use of the VW settlement funds. My organization is dedicated to pollution reduction and prevention in industrial operations.

Auto-Respond to messages quickly with Email Responder for Gmail.

This email was sent via the Google Forms Add-on.

THE PORT AUTHORITY OF NY & NJ

Via Email: pubcomment-ees.enrd@usdoj.gov

August 4, 2016

John C. Cruden
Assistant Attorney General
Environment and Natural Resources Division
U.S. DOJ -ENRD
P.O. Box 7611
Washington, DC 20044-7611

RE: Volkswagen "Clean Diesel" Marketing, Sales Practices
and Products Liability Litigation
Partial Decent Decree - Case No: MDL No. 2672 CRB (JSC)

Dear Mr. Cruden:

The Port Authority of New York and New Jersey respectfully submits the following comments regarding eligible mitigation actions and mitigation action expenditures under the referenced proposed settlement. The partial settlement of Volkswagen's Clean Air Act violations, the requirement to pay $2.7 billion to fund NO_x reduction projects, presents opportunities for New York and New Jersey to advance emissions reductions projects.

The Port Authority of New York and New Jersey (Port Authority) is a bi-state agency that owns and/or operates, seaports, airports, tunnels, bridges, ferry terminals, the Port Authority Bus Terminal and the PATH commuter rail system. The Port Authority is committed to reducing emissions and recognizes the opportunities outlined in the settlement, particularly for drayage truck and airport ground support equipment improvements. Our comments are based on our experience overseeing Truck Replacement Programs since July 2009. Under these Programs, the Port Authority has replaced 477 older drayage trucks with newer vehicles that generate less emissions.

Our comments pertain to the limitations that would be caused by requiring the 1992-2016 port drayage trucks to be replaced by *new* (model year in which the mitigation action occurs) vehicles. The Appendix D-2 eligible mitigation actions and mitigation action expenditures should not be restricted to replacement by *new* vehicles. The Port Authority suggests that "new vehicle" be replaced by "Model Year 2011 or newer than the existing model that produces lower emissions". This language would provide for pre-2011 engine model year trucks to be replaced with trucks that meet the 2011 EPA emissions standards.

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The drayage truck fleet in our port is dominated by independent owner operators (IOOs); most do not have the financial means to afford the latest model year truck, even with large financial incentives (i.e. grants and low interest loans). The language in the settlement which states the replacement must be with the "model year in which the truck (replacement) occurs" is overly restrictive. In our extensive experience, such grants would benefit fleet operators but will fail to appeal to small businesses and independent operators. More inclusive terminology would allow independent, often minority owned, trucks to be eligible for grants under the referenced settlement.

All drayage trucks manufactured in or since 2011, for operation within the United States, must be powered by an engine that is certified to meet EPA's 2011 emission standards. Therefore, emission standards for Model Year 2016 trucks are the same as emission standards for Model Year 2011 trucks. However, the typical $60,000 price tag for a used Model Year 2011 truck is affordable to the IOO, with emission reductions comparable to the unaffordable new $120,000 Model Year 2016 truck. Furthermore, twice the number of trucks can be replaced with the used-truck option, thereby doubling the emission reductions.

The Port Authority is committed to environmental stewardship, economic development and environmental justice. We look forward to the opportunity to apply for grants that would reduce emissions within our region, advance environmental justice and benefit our patrons and neighbors.

Sincerely,

Bernice R. Malione

Bernice R. Malione
Deputy Director
Office of Environmental and Energy Programs

From: Kenneth Gathright
To: ENRD, PUBCOMMENT-EES (ENRD)
CC: Leah Oberlin
Sent: 8/3/2016 3:59:49 PM
Subject: In re: Volkswagen "Clean Diesel"Marketing, Sales Practices, and Products Liability Litigation, Case No: MDL No. 2672 CRB (JSC), and D.J. Ref. No. 90–5–2–1–11386.

Dear Assistant Attorney General, Environment and Natural Resources Division;

The Port of Houston Authority supports the mitigation plan that is part of the VW Partial Consent Decree. However, to make it more successful we submit the following comments on Appendix D-1 and Appendix D-2.

1. In Appendix D-1, add ports that are governmental entities to the list of beneficiaries.

2. In Appendix D-2, add EPA SmartWay Verified Idling Reduction Technologies (https://www.epa.gov/smartway/learn-about-smartway-verified-technologies) for truck, buses, and locomotives to the list of Eligible Mitigation Actions.

3. In Appendix D-2, add other Idle Reduction Technology products for EMS, fire/rescue, law enforcement, and government owned service vehicles (such as those offered by Stealth Power at www.idlereduction.com/solutions) to the Eligible Mitigation Actions

4. In Appendix D-2, add Cargo Handling Equipment at Marine Terminals/Intermodal Rail Yards as an Eligible Mitigation Action using the same criteria that is found in the Airport Ground Support Equipment category. Electric powered terminal tractors used at marine terminals and intermodal rail yards are coming on the market and should be eligible.

5. In Appendix D-2 at 1.e., for Non-Governmental owned drayage trucks, fund natural gas trucks at that same level as electric (75%). This is because for drayage activities, a new diesel truck will travel short distances and the emission system will not reach high enough temperatures for the optimal performance of the diesel particulate filter (DPF) and selective catalytic reduction (SCR) systems. This will lead to operational emissions that are above the applicable emission standard for the diesel truck. On the other hand, for natural gas trucks that are engaged in drayage activities, the trucks are inherently cleaner and only need the three-way catalyst that is not dependent on a higher temperature that DPF/SCRs need. Therefore, the operational emissions from these natural gas trucks will not exhibit the same increase in emissions as the diesel trucks. For more information see http://www.aqmd.gov/docs/default-source/technology-research/clean-fuels-program/clean-fuels-program-advisory-group---january-29-2015/truck-in-use-emission-testing-results---adewale-oshinuga.pdf?sfvrsn=7

Thanks,

Ken

Ken Gathright
Environmental Compliance Coordinator

Port of **Houston** Authority

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Port of
LONG BEACH
The Green Port

August 1, 2016

Assistant Attorney General
United States Department of Justice
Environment and Natural Resources Division
P.O. Box 7611
Washington, DC 20044-7611

Submitted electronically to pubcomment-ees.enrd@usdoj.gov

August 1, 2016

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

To the Assistant Attorney General:

The Port of Long Beach (Port) is pleased to see such a significant monetary settlement for nitrogen oxides (NO_x) reductions and zero-emission vehicle investments as part of the above referenced Volkswagen Partial Consent Decree (Consent Decree). The Port—the nation's second busiest seaport and a global leader in reducing air quality impacts associated with industrial operations—has long advanced clean-air strategies and zero-emissions (ZE) technology, and we encourage the Department of Justice (DOJ) and California Air Resources Board (CARB) to consider the need for sizeable ZE investments in the goods movement sector as part of this Consent Decree, specifically as it relates to the ZEV Investment Commitment (Appendix C) and Environmental Mitigation Trust Agreement, or Agreement (Appendix D). Specifically, we offer the following comments.

ZEV INVESTMENT COMMITMENT

1. Conduct a public, competitive process to identify ZEV infrastructure projects.

The Port strongly supports the ZEV Investment Commitment's focus on infrastructure for zero-emission vehicles including heavy-duty trucks, and the development of a California ZEV Investment Plan (Plan). The Consent Decree indicates that in developing this Plan, CARB may provide information to the Settling Defendants regarding ZEV investment opportunities; however, the Consent Decree does not make clear how CARB will identify those opportunities. The Port urges CARB to undertake a public and competitive process to identify viable infrastructure investment opportunities and requests that CARB make the Draft California ZEV Investment Plan available for public comment in advance of approval.

2. Allow for upstream infrastructure costs, particularly for heavy-duty investments.

Additionally, the Port urges CARB to consider significant investments in heavy-duty fueling infrastructure such as electric charging and hydrogen fueling stations, in order to reduce emissions along goods movement corridors. In defining the Creditable Costs for such infrastructure, the Port requests that CARB allow for upstream equipment costs such as transformers, substations, conduits, and lines to bring additional power to the charging stations. Such upstream costs—which can be significant and a major barrier to more widespread deployment—are reasonable, necessary, directly connected, and directly allocable to implementation of ZEV investment projects as required by the Creditable Cost Guidance Document (Appendix C-1).

3. Include off-road equipment ZE infrastructure.

Furthermore, the Port strongly supports inclusion of off-road equipment in the definition of "zero-emission vehicle" to facilitate development of terminal-based ZE infrastructure. Port cargo-handling equipment is a category ripe for ZE investment; the Port believes that with additional funding, there is a significant opportunity for forklifts, rubber-tired gantry cranes, and yard tractors to transform to ZE within the next 5 years. In order to support this transition, a massive investment in terminal infrastructure will need to occur. One study estimated roughly $1.4 billion in electrical and civil infrastructure to support battery-electric container handling at the Port of Long Beach and Port of Los Angeles alone.[1] Funds from this settlement could greatly accelerate the transition to ZE cargo-handling by supporting the necessary infrastructure.

ENVIRONMENTAL MITIGATION TRUST AGREEMENT

The Port is pleased to see inclusion of off-road equipment in the Agreement (Appendix D-2), particularly the inclusion of forklifts, freight switchers, tugboats, and shorepower. The Port, however, believes the eligible mitigation actions overlook several key opportunities to reduce NO_x emissions and to deploy more zero-emissions vehicles.

1. Consider the following additions and/or provide clarification as to the eligibility of harbor craft, shorepower installations, and cargo-handling equipment.

- Although the Agreement references ferries and tugs, it does not include other harbor craft that pose significant air quality challenges for seaports such as ours. Such harbor craft include crew boats, work boats, and pilot boats. The Port requests that all harbor craft be eligible for mitigation funding under this Consent Decree.

- The Agreement permits shorepower as an eligible mitigation action. Shorepower, however, is not a viable option for many vessels. Thus, the Port requests that alternative at-berth emission control systems be included as an eligible mitigation action under the Consent Decree. Two such systems have been approved for use in California and have the potential to generate tremendous NO_x reductions from ocean-going vessels.

[1] Moffat & Nichol, "Sustainable Freight Strategy Impact Study." Technical Memorandum for Pacific Merchant Shipping Association. December 4, 2015.

- It is unclear which types of cargo-handling equipment are included in the Agreement's definition of "forklift." The Port requests clarification on what is meant by "nonroad equipment used to lift and move materials short distances," and if not already contemplated in this definition, encourages inclusion of equipment such as yard tractors, cranes, and top handlers. This equipment comprises the bulk of our cargo-handling equipment fleet, and thus, the majority of those emissions.

2. ***Establish an equitable reimbursement rate for equipment regardless of ownership status.***

The Port is concerned that the proposed reimbursement rates favor government-owned equipment over privately-owned equipment, which will put most seaports at a disadvantage and severely hamper the transition to cleaner goods movement. More than 92% of the nation's seaports—including the Port of Long Beach—are privately owned or lease their facilities to private operators. Thus, the vast majority of port-related equipment is privately owned and would be reimbursed at rates of 40% to 75% compared to 100% for government-owned equipment. This disparity results in a much higher hurdle for replacing the 2,200 pieces of cargo-handling equipment, 12,000 trucks, and 80 harbor craft that service the Port of Long Beach and the Port of Los Angeles, and thus, diminishes the opportunity for significant NO_x reductions. We strongly urge DOJ to devise an equitable reimbursement rate for all equipment, regardless of ownership status.

The Port of Long Beach appreciates the opportunity to provide comments on the Volkswagen Partial Consent Decree, and we look forward to working in partnership with DOJ and CARB to implement these settlement funds as expeditiously as possible.

Sincerely,

Heather A. Tomley
Director of Environmental Planning
Port of Long Beach

THE PORT OF LOS ANGELES 425 S. Palos Verdes Street Post Office Box 151 San Pedro, CA 90733-0151 TEL/TDD 310 SEA-PORT www.portoflosangeles.org

Eric Garcetti | Mayor, City of Los Angeles
Board of Harbor Commissioners | Ambassador Vilma S. Martinez, President | David Arian, Vice President | Patricia Castellanos | Anthony Pirozzi, Jr. | Edward R. Renwick
Eugene D. Seroka | Executive Director

August 3, 2016

Assistant Attorney General
United States Department of Justice
Environment and Natural Resources Division
P.O. Box 7611
Washington, DC 20044-7611

Submitted electronically to: pubcomment-ees.enrd@usdoj.gov

To the Assistant Attorney General:

SUBJECT: VOLKSWAGEN "CLEAN DIESEL" MARKETING, SALES PRACTICES, AND PRODUCTS LIABILITY LITIGATION, CASE NO: MDL NO. 2672 CRB (JSC), AND D.J. REF. NO. 90-5-2-1-11386

The Port of Los Angeles (Port) is pleased to see such a significant monetary settlement for nitrogen oxides (NOx) reductions and zero-emission vehicle investments as part of the above referenced Volkswagen Partial Consent Decree (Consent Decree). The Port – the nation's busiest seaport and a global leader in reducing air quality impacts associated with industrial operations – has long advanced clean-air strategies and zero-emissions (ZE) technology.

The move to ZE technology is among the highest priorities for the Port in the next decade. This is not just a goal or a hope - it is a necessity to address ongoing health risk concerns and continued emission reduction needs for pollutants such as NOx to address regional ozone attainment requirements. ZE technology is also needed to help address the current Climate Change crisis faced by the world.

In July 2011, the Port, along with the neighboring Port of Long Beach, published the "Roadmap for Moving Forward with Zero Emission Technologies at the Ports of Long Beach and Los Angeles,"[1] which provided an initial course of action for identifying, evaluating, and integrating ZE technologies into maritime goods movement related activities. In July 2015, the Port published its draft Zero Emission White Paper[2], to further refine the Roadmap effort, which resulted in the Port's Zero Emission Action Plan.

[1] https://www.portoflosangeles.org/pdf/Zero_Emissions_Road_Map.pdf
[2] https://www.portoflosangeles.org/pdf/Zero_Emmissions_White_Paper_DRAFT.pdf

Since publication of the White Paper, the Port has conducted limited demonstrations of ZE vehicles and equipment with the goal of advancing these technologies to a point that they can be used effectively by our customers. However, limited demonstrations are not enough to jump start full-scale commercialization. Multiple unit demonstrations with rigorous in-use operation are needed to provide marine terminal operators with confidence in the technology and developers with data for performance claims and warranty provisions. Larger-scale deployment is also needed to make these vehicles more cost competitive, as the projected cost of ZE trucks, for example, is $150,000 per unit or more above the cost of conventional drayage trucks or yard tractors.

In addition to technical and economic barriers, the lack of infrastructure to support charging of ZE equipment looms as another significant challenge for wide scale use of ZE vehicles and equipment. At this time, there are less than ten charging locations for heavy-duty electric vehicles and equipment in or near the port area. The proliferation of appropriate infrastructure to support ZE technologies will need regional planning and resource allocation. In addition, the cost of infrastructure is a huge barrier to overcome. Preliminary cost planning indicates that the cost of regional and onsite infrastructure to support ZE equipment could equal the cost of the vehicles themselves on a per unit basis. For this reason, we believe infrastructure investment is at least as large of a hurdle to overcome as maturation of the ZE technology itself.

For these reasons, we encourage the federal government to consider the need for sizeable ZE investments in the goods movement sector as part of this Consent Decree, specifically as it relates to the ZEV Investment Commitment (Appendix C) and Environmental Mitigation Trust Agreement, or Agreement (Appendix D), and also with consideration of the areas in greatest need due to proximity to environmental justice areas and/or significant nonattainment designations. Specifically, we offer the following comments.

ZEV INVESTMENT COMMITMENT

1. ***Conduct a public, competitive process to identify ZEV infrastructure projects.***

   The Port strongly supports the ZEV Investment Commitment's focus on infrastructure for ZE vehicles, including heavy-duty trucks, and the development of a California ZEV Investment Plan (Plan). The Consent Decree indicates that in developing this Plan, the California Air Resources Board (CARB) may provide information to the Settling Defendants regarding ZEV investment opportunities; however, the Consent Decree does not make clear how CARB will identify those opportunities. The Port urges the federal government to prescribe a public and competitive process to identify viable infrastructure investment opportunities and requests that any Draft ZEV Investment Plan be available for public comment in advance of approval.

2. ***Allow for upstream infrastructure costs, particularly for heavy-duty investments.***

   Additionally, the Port urges the federal government to consider significant investments in heavy-duty fueling infrastructure, such as electric charging and hydrogen fueling stations, in order to reduce emissions along goods movement corridors, where many disadvantaged communities are located. In defining the Creditable Costs for such

infrastructure, the Port requests that the federal government allow for upstream equipment costs, such as transformers, substations, conduits, and lines to bring additional power to the charging stations. Such upstream costs – which can be significant and a major barrier to more widespread deployment – are reasonable, necessary, directly connected, and directly allocable to implementation of ZEV investment projects as required by the Creditable Cost Guidance Document (Appendix C-1).

3. Include off-road equipment ZE infrastructure.

Furthermore, the Port strongly supports the inclusion of off-road equipment in the definition of "zero-emission vehicle" to facilitate the development of terminal-based ZE infrastructure. Port cargo-handling equipment is a category ripe for ZE investment; the Port believes that with additional funding, there is a significant opportunity for forklifts, rubber-tired gantry cranes, and yard tractors to transform to ZE within the next 5 years. In order to support this transition, a massive investment in terminal infrastructure will need to occur. One study estimated roughly $1.4 billion in electrical and civil infrastructure to support battery-electric container handling at the ports of Los Angeles and Port of Long Beach (Ports) alone.[3] Funds from this settlement could greatly accelerate the transition to ZE cargo-handling by supporting the necessary infrastructure.

ENVIRONMENTAL MITIGATION TRUST AGREEMENT

The Port is pleased to see the inclusion of off-road equipment in the Agreement (Appendix D-2), particularly the inclusion of forklifts, freight switchers, tugboats, and shorepower. The Port, however, believes the eligible mitigation actions overlook several key opportunities to reduce NOx emissions and to deploy more zero-emissions vehicles.

1. Consider the following additions and/or provide clarification as to the eligibility of harbor craft, shorepower installations, and cargo-handling equipment.

- Although the Agreement references ferries and tugs, it does not include other harbor craft that pose significant air quality challenges for seaports such as ours. Such harbor craft include crew boats, work boats, and pilot boats. The Port requests that all harbor craft be eligible for mitigation funding under this Consent Decree.

- The Agreement permits shorepower as an eligible mitigation action. Shorepower; however, is not a viable option for many vessels. Thus, the Port requests that CARB-approved alternative at-berth emission control systems be included as an eligible mitigation action under the Consent Decree. To date, CARB has approved two such systems for use in California. These systems are in operation at the Port of Los Angeles and the Port of Long Beach and have the potential to generate tremendous NOx reductions from ocean-going vessels.

[3] Moffat & Nichol, "Sustainable Freight Strategy Impact Study." Technical Memorandum for Pacific Merchant Shipping Association. December 4, 2015.

- It is unclear which types of cargo-handling equipment are included in the Agreement's definition of "forklift." The Port requests clarification on what is meant by "nonroad equipment used to lift and move materials short distances," and if not already contemplated in this definition, encourages the inclusion of equipment such as yard tractors, cranes, and top handlers. This equipment comprises the bulk of our cargo-handling equipment fleet, and thus, the majority of those emissions.

2. ***Establish an equitable reimbursement rate for equipment regardless of ownership status.***

   The Port is concerned that the proposed reimbursement rates favor government-owned equipment over privately owned equipment, which will put most seaports at a disadvantage and severely hamper the transition to cleaner goods movement. More than 92% of the nation's seaports – including the Port of Los Angeles – are privately owned or lease their facilities to private operators. Thus, the vast majority of port-related equipment is privately owned and would be reimbursed at rates of 40% to 75% compared to 100% for government-owned equipment. This disparity results in a much higher hurdle for replacing the 2,200 pieces of cargo-handling equipment, 12,000 trucks, and 80 harbor craft that service the Ports, and thus, diminishes the opportunity for significant NOx reductions. We strongly urge the federal government to devise an equitable reimbursement rate for all equipment, regardless of ownership status.

The Port of Los Angeles appreciates the opportunity to provide comments on the Volkswagen Partial Consent Decree, and we look forward to working in partnership with the federal government to implement these settlement funds as expeditiously as possible.

Sincerely,

CHRISTOPHER CANNON
Director of Environmental Management and
Chief Sustainability Officer

CC:LW:yo
APP No.: 150812-513

From: Amelia Pellegrin
To: ENRD, PUBCOMMENT-EES (ENRD)
CC: Matt Gresham; Amelia Pellegrin
Sent: 8/5/2016 4:26:45 PM
Subject: Partial Consent Decree re Volkswagen "Clean Diesel" Marketing, Sales Practices, and Products Liability Litigation, Case No. MDL No. 2672 CRB (JSC)

August 5, 2016
Assistant Attorney General
U.S. Department of Justice, Environment and Natural Resources Division
Pubcomment-ees.enrd@usdoj.gov
SUBJECT: Partial Consent Decree re Volkswagen "Clean Diesel" Marketing, Sales Practices, and Products Liability Litigation, Case No. MDL No. 2672 CRB (JSC)

The Port of New Orleans appreciates the opportunity to comment on the subject document and offers the following recommendations and comments. We have been actively engaged in the EPA Ports Workgroup, are working on our first DERA-funded air quality program, and have a vested interest in improving local air quality. For more information about our environmental commitments and programs see http://www.portno.com/EnvironmentHome. We concur with all of the recommendations made previously by the American Association of Port Authorities, and present these below that are of most importance to the Port of New Orleans.

Appendix D-2 – Section 10, the Diesel Emission Reduction (DERA) Option
The DERA program has made a substantial impact on ports throughout the U.S.'s ability to lower diesel emissions in their communities. Using this successful program as a model is something AAPA strongly supports. We urge that the trustee be allowed to approve an expansion of current DERA grants, not just be allowed to waive cost-shares of future activities. These programs have been well vetted and often have the ability to be expanded very quickly, therefore, bringing reductions in NOx to port communities more quickly. For example, the Port of New Orleans currently has DERA funding to replace 20 heavy-duty trucks with cleaner burning engines – this could be expanded to meet more of the demand easily through the settlement funds, without having to incur extensive administrative costs to create a new program from scratch.

Zero emission vehicle (ZEV) definition – Page 2 of Appendix C provides a definition of ZEV to apply only to on-road vehicles. In the port area, some of the greatest opportunities for achieving zero emissions includes off-road equipment – the cargo-handling equipment such as yard hustlers, gantry cranes, and forklifts. We therefore request that the definition be expanded to include off-road use.

Beneficiaries – The proposed consent decree calls for the states to be the only beneficiary of the environmental mitigation trust agreement. Port Authorities, as independent state, local and bi-state agencies, should be allowed to apply directly to the trustee for funds rather than go through the states. This is similar to how the Diesel Emission Control Act (DERA) program works – part goes to the regions and for other funds port authorities apply directly to EPA. The Port is concerned that the state may not make ports a priority as they are not as familiar with how these independent government agencies function or the emissions reduction programs they currently employee. By including port authorities as public beneficiaries allowed to directly submit to the trustee, any revision should make it clear that port authorities are not precluded from participating through the state beneficiary and their applications are not adversely affected when participating through the state beneficiary.

Appendix D-2 – Government versus non-government Expenditures
The proposed settlement, makes a significant distinction between government owned and non-government owned. The Port of New Orleans believes the lower percentage allowed for non-governmental owned equipment will make this program of much less use to the port industry as many times the terminal is leased to a private terminal operator or for trucks are privately owned. Drayage truck drivers, for example, are some of the lowest paid working in the port industry and successful truck replacement programs have required significantly higher government cost-share than provided in the proposed settlement. Drayage truck drivers are private individuals or work for private companies, therefore, AAPA does not expect any to benefit from the higher allocations for government vehicles, even if the money

comes through a public entity like a port authority. We, therefore, ask the parties to agree to a higher level of support for equipment that is part of a public port authority program.
Port NOLA is looking forward to continuing to work with the trustee, states and Volkswagen on implementation of the mitigation program and the zero emission programs.

Sincerely,
Amelia Pellegrin
Director of Sustainable Development
Port of New Orleans

PORT NOLA
THE PORT OF NEW ORLEANS

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www.portno.com/EnvironmentHome

From: Breen, David
To: ENRD, PUBCOMMENT-EES (ENRD)
Sent: 7/29/2016 8:50:14 PM
Subject: Comment from Port of Portland

Appendix D contains the eligible mitigation actions and mitigation action expenditures. It is very prescriptive on marine vessel shore power, which is of limited benefit for bulk and break-bulk vessels. With the ongoing development of capture and control technologies, it is better to have more flexibility regarding future funding for reducing at berth emissions.

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August 2, 2016

John Cruden, Assistant Attorney General
Environment and Natural Resources Division
US Department of Justice
PO Box 7611
Washington DC 20044

SUBJECT: Partial Consent Decree re Volkswagen "Clean Diesel" Marketing, Sales Practices, and Products Liability Litigation, Case No. MDL No. 2672 CRB (JSC)

Dear Assistant Attorney General Cruden:

I am writing on behalf of the Port of Seattle regarding the Volkswagen partial consent decree lodged in case number MDL No. 2672.

The Port of Seattle is setting a global standard for emissions reduction in the transportation industry. On top of our many successful achievements in recent years to reduce maritime and aviation-related emissions, our 25-year strategic plan commits us to further reducing our criteria air pollutants and carbon footprint by 50% and meeting all our increased energy needs through conservation and renewable sources. DERA grants and other federal programs have played a crucial role in our emissions reductions achievements to date. Our partnership with the federal government also will be critical in our effectiveness in meeting our ambitious goals for the future.

We were pleased to learn that the partial negotiated settlement included two programs that could advance our ongoing emissions reduction efforts. Port of Seattle is specifically interested in the $2.7 billion mitigation trust fund and the $2 billion to promote zero emissions vehicles. We offer the attached comments in order to help ensure that ports can be strong partners in maximizing the impact of these funds for protecting public health and the environment while also preserving the economic benefits that our facilities contribute to the nation.

If you have any questions about these comments, please do not hesitate to contact me.

Sincerely,

Stephanie Jones Stebbins
Director, Maritime Environment & Sustainability

Appendix C: The ZEV Investment Commitment

Zero emission vehicle (ZEV) definition – Page 2 of Appendix C provides a definition of ZEV to apply only to on-road vehicles. In the port area, some of the greatest opportunities for achieving zero emissions include off-road equipment. We therefore request that the definition be expanded to include off-road use.

Appendix D-2: Eligible Mitigation Actions and Mitigation Action Expenditures

Appendix D-2 – Government versus non-government Expenditures

Port of Seattle is pleased to learn that Appendix D-2 includes several categories that could benefit ports including: Section 1 related to freight trucks and port drayage trucks; Section 3 freight switchers which could be used for on-dock rail; Section 4 ferries/tugs; Section 5 ocean going vessels; Section 8 forklifts; Section 9 light duty zero emission vehicle supply equipment; and, Section 10 Diesel Emissions Reduction Act option.

The proposed settlement, however, makes a significant distinction between government owned and non-government owned equipment. We believe the lower percentage allowed for non-government owned equipment will make this program of much less benefit toward reducing emissions in port areas as many times the terminal is leased to a private terminal operator and drayage trucks are privately owned. Drayage truck drivers, for example, are some of the lowest paid workers, and successful truck replacement programs have required significantly higher government cost-share than provided in the proposed settlement. Drayage truck drivers are often independent owner operators or work for private companies. Therefore, we do not expect any to benefit from the higher allocations for government vehicles, even if the money comes through a public entity like a port authority. We ask the parties to agree to a higher level of support for equipment that is part of a public port authority program or make non-government equipment subject that is part of a public port authority program to the same reimbursable rate as government owned equipment.

Appendix D -2 - Section 1 definition of "new engine"

In our experience, often the most polluting trucks are the older trucks and it is often more successful and cost effective to offer an improvement over the current truck year rather than require the most recent model year as the only replacement option. Because drayage trucks travel short distances as opposed to long hauls, for some in the industry the limited benefit of the newest technology is not worth the cost-share to buy these new trucks/engines. We suggest "any vehicle newer than the current model that produces lower emission" serve as the definition for the drayage fleet. That would mean that pre-2007 engines could be replaced with 2007 EPA emission standard trucks rather a 2011 compliant engine.

In addition, the court might consider a higher reimbursement allowed for the 2011 engines in order to encourage greater conversion as many port truck programs have the feature, but Port of Seattle believes an option for a 2007 emission truck should be permitted if allowed locally. We believe this would result in even greater emission reductions for port communities.

Appendix D-2 - Section 5 Ocean Going Vessels (OGV) Shorepower

Section 5 of Appendix D-2 notes that ocean going vessel shorepower equipment is an eligible expenditure. Port of Seattle strongly supports this and recommends this section be expanded to a broader group of technologies that reduce ship emissions at ports at berth, including scrubbers (e.g. METS-1 and AMECS). It is recommended that this include any California Air Resources Board (CARB), or EPA DERA verified technologies that reduce NOx or other technologies that the beneficiaries would like to fund. While we support the CARB and EPA verified technology program, it often is slow and does not fit well with approving small innovative manufacturers' equipment and additional flexibility would be welcome.

As noted above, our port also supports a higher and more equal cost-share for government and non-government sources. At times, the shorepower equipment is located on a private terminal within a port authority owned facility. It also may be more efficient to contract with barge operators for scrubber/bonnet services that can pull up to a ship to capture emissions from the stack of a ship.

Appendix D-2 – Section 8 Forklifts

Port of Seattle recommends that this section be expanded beyond forklifts to other off-road terminal equipment including yard tractors, rubber tired gantry cranes (RTGs) and electric bus bars. RTGs for example have replaced many forklifts in the port environment because they can handle significantly heavier cargo. Additionally, the parties are asked to reconsider the requirements that eligible forklifts must be scrapped. We recommend that engine conversions that reduce diesel emissions by 90% or more not require that the engine be destroyed. As noted above, we also request that there is no distinction between the cost reimbursements between non-government owned or government owned or the final agreement should classify government owned as equipment that is part of a public port authority program, as private marine terminal operators manage much of the operation of seaports.

Appendix D-2 – Section 10, the Diesel Emission Reduction (DERA) Option

The DERA program has made a substantial impact on US ports' ability to lower diesel emissions in their communities. Using this successful program as a model is something Port of Seattle strongly supports. We urge that the trustee be allowed to approve an expansion of current DERA grants, not just be allowed to waive cost-shares of future activities. These programs have been well vetted and often have the ability to be expanded very quickly, thus bringing reductions in NOx to port communities more quickly. However, we also think it is important that ports and other entities have the option of using these funds to initiate new programs that are not tied to existing DERA projects.

PROTERRA

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August 4, 2016

Assistant Attorney General
U.S. DOJ—ENRD
P.O. Box 7611
Washington, D.C. 20044-7611

RE: *In re: Volkswagen "Clean Diesel" Marketing, Sales Practices, And Products Liability Division*, Case No: MDL No. 2672 CRB (JSC); D.J. Ref. No. 90-5-2-1-11386

Dear Department of Justice, Environment and Natural Resources Division:

Proterra appreciates the opportunity to comment on the Proposed Consent Decree lodged in connection with the above-captioned case.

About Proterra

Proterra is a leader in the design and manufacture of zero-emission, battery-electric transit vehicles that enable bus fleet operators to significantly reduce operating costs while delivering clean, quiet transportation to their communities. Transit agencies across the country are embracing battery-electric transit buses as the proven procurement option to meet the needs of today's dynamic transportation market. With the launch of the Proterra EcoRide™ battery-electric bus in 2010, Proterra became the first manufacturer with EV transit buses in revenue service in the United States. Proterra's buses have now generated 2.5 million+ miles of customer revenue service. The company's second-generation bus, the Proterra Catalyst™, builds upon the company's industry knowledge and insight to meet industry needs for vehicles that can meet a broader set of routes. Made of carbon fiber and advanced composite materials, the Proterra Catalyst is the lightest and most efficient 40' transit vehicle on the market. Growing market demand for the Proterra Catalyst™ vehicle has also led the company to expand national operations on the West Coast, duplicating its South Carolina advanced manufacturing line in Southern California.

The Company's mission is to deliver clean, quiet transportation to all communities by replacing heavy-duty, fossil-fueled transit buses with zero-emission public transit buses. Proterra's battery, all-electric buses provide several benefits to those transit agencies that have adopted zero-emission technology – including significant total cost of ownership benefits due to lower operating and maintenance costs; the highest MPGe (~22.5); lowest weight and most torque of any 40' bus on the market; a clean, quiet and spacious modern bus; and tremendous air quality and local health benefits. Moreover, Proterra's bus performance is exceptional compared with traditional buses. Our new Catalyst™ bus recently broke records for efficiency, gradeability, weight and acceleration at the Altoona Bus Research and Testing Center, where all new model buses must be tested before they can be purchased with federal funds.

Proterra's zero-emission public transit buses provide the opportunity for all communities throughout the United States to ride an electric vehicle and realize the health and other associated air quality benefits, including eliminating toxic diesel emissions.

PROTERRA

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Overview

As the leading manufacturer of battery-electric buses, Proterra has known for years that "clean diesel" is a fiction. It did not take a cheating scandal or "defeat devices" to reveal that diesel exhaust emits a number of hazardous air pollutants, including Particulate Matter (PM), Carbon Monoxide (CO), Nitrogen Oxides (NOx), Hyrdrocarbons (HC), Volatile Organic Compounds (VOCs) and Greenhouse Gases (GHG), specifically carbon dioxide. And while Volkswagen's light duty vehicles have received much of the attention in connection with the above suit, the reality is that the harmful effects of vehicle exhaust from medium and heavy-duty trucks are on the rise and have been for years. The EPA reports that medium and heavy duty vehicles account for 20% of GHG emissions and oil use in the United States' transportation sector, but represent only 5% of the vehicles on the road. Similarly, GHG emissions from heavy duty vehicles across the globe are growing rapidly and are expected to surpass emissions from passenger vehicles by 2030. As a result, there is a need to not only mitigate past criteria pollutant emissions, but to continue to reduce toxic air pollutants in the medium and heavy duty sector.

Zero-emission public transit buses are ripe for immediate scaling and investment is needed now to further accelerate the adoption of zero-emission advanced heavy-duty technology. The Volkswagen settlement provides a much-needed opportunity to further demonstrate that commercially available zero-emission technologies have the lowest cost of ownership, improved maintenance and performance, and better serve the public's transit needs, including the reduction of GHG and the elimination of criteria emissions. Transit buses have consistently been the forerunners in advancing heavy-duty transportation technology and transferring lower-emission technology throughout the heavy-duty, class-8 sectors. This technology progression has evolved from CNG buses with lower emissions to electric drive buses with zero emissions. Zero-emission transit buses provide the opportunity for everyone to realize the health benefits of riding an electric vehicle, regardless of income.

For these reasons, Proterra believes it is appropriate and in the public interest to allow settlement funds to make investments for on-road heavy-duty electric vehicles. We strongly recommend that a significant portion of the settlement funds be directed to incentivize the deployment of zero emission, battery electric transit buses and expand zero-emission public transportation to help reduce greenhouse gas emissions and vehicle miles traveled, as well as provide other health and associated benefits throughout the United States, resulting in a more sustainable and cleaner transit system. This approach is consistent with other terms of the ZEV investment commitment where minimum or maximum amounts or expenditure are specified, such as brand neutral media activities (Paragraph 2.5.6, Appendix C).

The ZEV Investment Commitment

1) California ZEV Investment Plan

Headquartered in Burlingame, CA, Proterra is proud to call California home. For years we have worked with California's Air Resources Board (ARB), which is leading the nation in efforts to transition the entire heavy-duty mobile source sector to zero and near-zero technologies to meet air quality, climate and public health protection goals.

PROTERRA

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The Consent Decree proposes an investment of $800M over a period of ten years and specifically covers zero emissions transit applications, including battery-electric buses. Proterra supports this proposal as the minimum amount of funding needed to accelerate the adoption of zero-emission technologies that will help ARB achieve its air quality goals, including the proposed Advanced Clean Transit Rule to completely transition transit fleets to zero-emission technologies by 2040. Proterra specifically recommends that ARB set an objective for the Settling Defendants to expand significantly existing programs that provide incentive funding for zero-emission public transit buses, including the Zero-Emissions Bus and Truck Program and HVIP Program. Further, Proterra encourages ARB to allocate funding for research and the development of a low-cost, lightweight battery-electric school bus, which will allow ARB to facilitate the replacement of California's aging school bus fleet.

2) National Investment Plan

The proposed National Investment Plan calls for an investment of $1.2B over a 10-year period in areas of the United States outside of California. Proterra applauds the emphasis here to increase public exposure and access to ZEVs, including measures to increase access in underserved areas. But we strongly encourage the inclusion of heavy-duty ZEV fueling infrastructure as a creditable cost in order to further incentivize transit agencies to bring clean, quiet, emission-free vehicles to our city streets and community roadways. Most zero-emission transit buses in revenue service are fast charge vehicles, and bus manufacturers predominately use a separate overhead conductive charging facility. Reliable alternative fueling infrastructure is critical for further acceleration of zero-emission advanced heavy-duty technology, particularly in disadvantaged communities. In this spirit, Proterra recently announced that it would be opening its overhead on-route fast-charge technology to the transit industry on a royalty-free basis. Proterra will be granting anyone royalty-free access to its patents covering its industry leading single-blade overhead charging design, which will help accelerate widespread EV technology adoption and infrastructure development. The Proterra single-blade overhead fast-charge system is the most utilized on-route charging technology in the industry. Over the past five years, public transit agencies across the country have performed more than 250,000 charging events using the Proterra single-blade overhead fast-charge system, providing these agencies with the flexibility of keeping their buses on the road all-day, and seamlessly integrating electric buses with existing route schedules. Additionally, Proterra's Catalyst extended range (XR) vehicles are designed to be fully compliant with SAE J1772CCS for DC plug-in charging compatibility. This same charging infrastructure is used for light-, medium- and heavy-duty vehicle applications. Designing the zero-emission battery-electric transit buses with SAE J1772CCS charging capability allows for an easier adoption of zero-emission battery-electric technology and is the standard that is applicable to the entire automotive industry.

The Environmental Mitigation Trust

Proterra strongly supports the proposed Environmental Mitigation Trust, which provides the needed incentives to accelerate the deployment of zero-emission battery electric transit buses to help clean the air and benefit communities across the country. We specifically appreciate the inclusion of zero-emission battery-electric transit bus replacement, as many transit agencies lack sufficient funding to replace their older model year buses, and do not have adequate additional support from private or other public funding sources. Proterra looks forward to working with each of the Beneficiaries to identify projects that will replace older and dirtier heavy-duty diesel vehicles and equipment with advanced zero technologies.

That being said, we respectfully request prioritizing Trust expenditures for zero-emission heavy-duty vehicle

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technology that eliminates toxic NOx emissions and provide much greater GHG reductions than near-zero, petroleum-based heavy-duty technologies. Specifically, Beneficiaries should be able to draw funds from the Trust in the amount of 100% of the cost of a new All-Electric bus, including the associated charging infrastructure, regardless of whether these buses are Government-owned. Further, Beneficiaries should not be able to draw funds greater than 25% of the cost of a new or Repowered diesel or Alternate Fueled bus. We therefore respectfully request that Appendix D-2, §§ 2(d)(4) (increase funding from 75% to 100%), 2(e)(1) (decrease funding from 100% to 25%) and 2(e)(2) (decrease funding from 100% to 25%) be amended accordingly.

Additionally, to further support the effort to replace older and dirtier heavy-duty diesel vehicles and equipment with advanced technologies nationwide, we strongly recommend that eligible buses under Appendix D-2, §§ 2(a) include 2007-2012 model year for all Beneficiaries, not solely those that currently have State regulations requiring upgrades. Expanding eligible bus years will allow for greater penetration of advanced zero-emission technologies into the heavy-duty fleet industry, leading to additional NOx and GHG reductions. Trust expenditures prioritized for advanced zero-emission heavy-duty vehicles at this stage of development will spur industry investment in production scale, thereby lowering unit costs and driving continued adoption.

Deploying zero-emission heavy-duty technology helps immediately address all past and future excess emissions of NOx from the 2.0-liter smog-forming vehicles sold throughout the United States. In addition to their environmental benefits, zero emission buses will, in the long run, help transit agencies operate more efficiently by saving money on fuel and maintenance costs. According to the National Renewable Energy Laboratory, zero emission buses can achieve up to 87% greater fuel economy compared to buses running on diesel and other fuels.

Summary

The Proposed Consent Decree provides a timely opportunity to accelerate the adoption of zero-emission advanced heavy-duty vehicle technology and further demonstrate that battery-electric buses have the lowest cost of ownership, improved maintenance and performance, and better serve a diverse range of communities' public transit needs. Proterra strongly supports the requirement for Settling Defendants to direct $2+ billion of investments over 10 years to increase zero emission vehicles in the United States. This funding will reduce our nation's dependence on fossil fuels and support the growing sustainable energy industry in the United States. Proterra is looking forward to continuing to work with stakeholders to identify projects that will replace hazardous air polluting vehicles with advanced zero-emission technologies. More zero emission buses on the road will significantly reduce toxic emissions and improve fuel efficiency for heavy-duty vehicles, creating a sustainable transportation system for generations to come.

Thank you for your consideration. Proterra looks forward to working with the agencies to provide further input on the ZEV Investment Commitment and Environmental Mitigation Trust. If you would like to discuss the issues raised in this letter, please contact me at (864) 214-2668.

Sincerely,

Eric J. McCarthy
Vice President Government Relations and General Counsel

pscleanair.org
Puget Sound Clean Air Agency

Clean healthy air for everyone, everywhere, all the time.

Board of Directors

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Pub. No. 80-7 RWJ Revised 5-25-2016

August 5, 2016

Assistant Attorney General
Environment and Natural Resources Division
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U.S. DOJ – ENRD
P.O. Box 7611
Washington, DC 20044-7611

pubcomment-ees.enrd@usdoj.gov

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

Dear Assistant Attorney General Cruden:

In this letter are the Puget Sound Clean Air Agency (PSCAA) comments on the *Notice of Lodging of Proposed Partial Consent Decree Under the Clean Air Act*, which was published in the *Federal Register* on July 6, 2016 (81 Fed. Reg. 44,051). The notice pertains to the proposed partial Consent Decree (CD) with the United States District Court for the Northern District of California in the lawsuit entitled *In re: Volkswagen "Clean Diesel" Marketing, Sales Practices, and Product Liability Litigation*, Case No: MDL No. 2672 CRB (JSC).

PSCAA is a local air pollution control agency representing four counties and approximately four million residents in the largest urban corridor of Washington State. Our vision is for everyone, everywhere to breathe clean, healthy air all the time – regardless of who they are or where they live. In addition to reducing air pollution overall, we focus on equity, so nobody is more at risk because of where they live or their socio-economic status.

More than 21,000 vehicles registered in Washington State are equipped with the allegedly fraudulent Volkswagen (VW) software. We estimate that the majority of these vehicles are driven primarily in the four counties that compose our jurisdiction. On average, King County, Kitsap County, Pierce County and Snohomish County have the highest percentage of new vehicles (post-1998) in WA State, 67%, compared with the state median, 55%. The excess NO_x emissions from these vehicles directly impact air quality for communities that live near roadways, especially those along Interstate 5, which sees the highest vehicle counts in the Pacific Northwest, along with U.S. Route 99 and Interstate 405. Near-road communities in our jurisdiction have lower economic status and represent historically disadvantaged groups that tend to have greater health disparities than communities that don't live near roadways. In addition to nitrogen oxide pollution, particulate matter and toxic air pollutants from

these vehicles exacerbate respiratory and cardiovascular illness and can cause asthma, COPD, and even premature death.

PSCAA has a strong background and record of success in developing and successfully implementing incentive-based emission-reduction programs. We have administered programs to retrofit and replace school buses, cargo-handling equipment, and other public and private fleets; and also replaced and or repowered marine and locomotive engines. Through the Western Washington Clean Cities Coalition that we host under the U.S. Department of Energy, we managed $15 million in American Recovery and Reinvestment Act funds to deliver alternative fuel and electric vehicle projects throughout the region. We have also designed and delivered voucher/rebate programs for woodstoves (~$11 million grant funding) and drayage trucks (~$10 million grant funding) that allow our partners to choose the options that best suit their needs. We have partnered with and received grants from federal, state, and local agencies and have an excellent understanding of grants and grant processes.

To ensure our region continues to meet our agency goals and the National Ambient Air Quality Standards for NO_2, ozone, and particulate matter, and to maximize the benefit for public health of the CD, we submit the following recommendations.

Appendix C – The ZEV Investment Commitment

We support the requirements outlined in the ZEV Investment Commitment and appreciate the emphasis on increasing public awareness of, and access to, zero emission vehicles. We request, however, that investments in heavy-duty electric vehicle fueling infrastructure be eligible in every state, not only in California. The automotive industry is electrifying heavy-duty vehicles such as transit buses, school buses, yard trucks and big rigs. Electric transit buses are commercially available. Other medium-heavy duty applications are maturing and may become commercially viable within the timeframe of the CD.

Additionally, as an automaker with a commercially viable and popular electric vehicle on the market (in California), VW ought to be compelled to make its electric vehicles (e-Golf and subsequent models) easily available in non-ZEV states. Washington State has one of the highest per capita rates of EV adoption in the nation, yet lacks in consumer offerings as many automakers, including VW, only sell their electric vehicles in ZEV states.

Appendix D – Form of Environmental Mitigation Trust Agreement

Mitigation Trust Beneficiaries (page 10)

The proposed CD outlines a process for governmental entities identified in Appendix D-1 to elect to become Beneficiaries of the Trust. We believe strongly that local air pollution control agencies should also be eligible to become Beneficiaries under the Environmental Mitigation Trust Fund. Local agencies such as PSCAA have strong records of success, and direct disbursement to local agencies will increase effectiveness and reduce administrative costs.

Beneficiary Mitigation Plan (page 11)

We request the time allotted to Beneficiaries to submit a Beneficiary Mitigation Plan be extended from 30 days to 60 days. In situations where the mitigation work includes multiple agencies (e.g. local and state regulators) or partners, an extended window would ensure the plan takes maximum advantage of all stakeholder input including environmental justice communities.

Appendix D-2 – Eligible Mitigation Actions and Mitigation Action Expenditures

We recommend several changes and clarifications concerning scope, eligibility, and expenses:

1. Expand the list of eligible vehicles/equipment to the whole diesel "economy" by adding other off-road equipment. We recommend that other off-road equipment, beyond freight switchers and tugs, be eligible. Three local examples include yard trucks, cargo-handling equipment (CHE), and construction equipment. All have high emissions and multiple mitigation options exist. The initial capital costs for the cleanest option – switching to electric – usually exceeds that of conventional higher pollution options, and so electric is routinely passed over, despite there being a good business case for significantly lower maintenance costs in the long-term. CHE and construction equipment are significant sources of NO_x pollution. Yard trucks and CHE are ongoing, significant pollution sources in several of our region's environmental justice communities.

2. Include shore-power/truck stop electrification (TSE) for drayage and other Class 8 Trucks. The CD offers shore-power for ocean going vessels (OGV) and so should include shore-power/TSE for Drayage and other Class 8 Trucks. There may be significant opportunities to reduce impacts from "Large Trucks" through plugging in to reduce idling. While TSE is eligible for funding under the DERA program option, some potential Beneficiaries may not use the DERA option.

3. Refocus or expand the implicit "like-to-like" requirement on equipment, to a requirement on work accomplished. This could be done through a separate item for eligible expenditures that states that operational paradigm shifts, such as replacing one type of diesel-powered equipment with another type of equipment that either emits less diesel PM per unit "work" delivered or is not diesel-powered at all, is an eligible expenditure. For example, when loading gravel on and off barges, diesel bulldozers could be replaced with electric cranes to do the same job with significantly lower emissions.

4. Expand Eligible Mitigation Actions to include an open-ended category. Since the CD could extend 15 years in to the future, it is important to have a mechanism to keep mitigation options current, subject to trustee approval.

5. Allow or clarify eligibility for programs structured to disburse funds through rebates.

6. (p. 1, item 1) Allow "scrap only" for Class 8 and Drayage trucks. Some owners of old highly-polluting trucks may not intend to replace them but may be willing to scrap them for an incentive. Such a project could be highly cost-effective.

7. Under the School and Transit Bus project category (pp. 3-4), school bus companies that contract with a government entity are considered government entities for the purpose of 100-percent government cost sharing (item 2, paragraph c). We recommend that this principle be extended to the Class 4-7 (item 6) and Class 8 (item 1) local freight truck categories, which, for example, would allow replacement or repowering of waste haulers contracted to a municipality to be funded at 100 percent.

8. Define Tugs/Ferries (pp. 4-5) such that the term includes river barge towboats or tugs and large diesel-powered river cruise boats.

9. (pp. 1-9) As written, the current language in paragraph b in items 1-4, and 6-8, would suggest all vehicles must be scrapped, even if repowered. We recommend clarification that replaced vehicles would be scrapped, and repowered vehicles would have only their engines scrapped.

10. (pp. 1-9) In paragraph c of items 1, 2, 3, and 6, we recommend flexibility on the model year of the replacement vehicle, as long as the replacement engine meets current emission standards. For heavy-duty trucks, the engine model year is often one year earlier than the model year of the vehicle it powers. And for electric vehicles, where emission standards are irrelevant, older model years may be more cost effective than newer model years.

11. (p. 10) Allow the Trustee to approve, where cost effective, higher administrative expense caps for projects that involve multiple participants or sub-recipients or for high-quantity/small-capital projects.

12. (p. 10) Ensure that Beneficiaries can include their federally approved indirect costs in administrative expenses, e.g. by explicit inclusion in item #8, or an additional item.

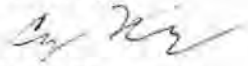
13. Expand the definition of "Class 8 Local Freight Trucks" (p. 11) to include not only tractor trucks, as stated, but also straight trucks. The following definition would accomplish this: "Class 8 Local Freight, and Port Drayage Trucks (Eligible Large Trucks)' shall mean trucks with a Gross Vehicle Weight Rating (GVWR) greater than 33,000 lbs used for port drayage and/or freight cargo delivery (including waste haulers, dump trucks, concrete mixers)."

14. Expand the definition of "Zero Emission Vehicle" (p. 12) by adding at the end of the current definition "or other vehicles that demonstrate comparable emissions benefits."

Conclusion

We commend the Department of Justice for reaching this proposed settlement to address the environmental impacts of VW's alleged violations. We thank you for this opportunity to comment on the *Notice of Lodging of Proposed Partial Consent Decree Under the Clean Air Act*, related to *Volkswagen "Clean Diesel" Marketing, Sales Practices, and Product Liability Litigation*, Case No: MDL No. 2672 CRB (JSC). We look forward to discussing the details of the program with you further as you develop the final CD. If you have any questions or require additional information, please do not hesitate to contact me at CraigK@pscleanair.org or (206) 689-4004.

Sincerely,



Craig Kenworthy
Executive Director

jwc

From: [redacted]
To: ENRD, PUBCOMMENT-EES (ENRD)
Sent: 8/5/2016 12:34:47 AM
Subject: In re: Volkswagen "Clean Diesel" Marketing, Sales Practices, and Products Liability Litigation, Case No: MDL No. 2672 CRB (JSC), and D.J. Ref. No. 90-5-2-1-11386.

John C. Cruden Esq.
Assistant Attorney General
Environment and Natural Resources Division
U.S. Department of Justice
In re: Volkswagen "Clean Diesel" Marketing, Sales Practices, and Products Liability Litigation, Case No: MDL No. 2672 CRB (JSC), and D.J. Ref. No. 90-5-2-1-11386.

Dear Mr. Cruden:

Our organization writes to request that the final settlement between the U.S. government and Volkswagen provide maximum flexibility for States and Native American tribes to consider allocating some of their funds to electrified parking spaces (EPS) and truck stop electrification (TSE). Specifically, we ask that the settlement expressly list truck stop electrification as an eligible mitigation activity within Appendix D-2, along with the nine other activities that already include various forms of diesel retrofits and the marine equivalent of truck stop electrification. While TSE is eligible for funding under the DERA program option, we are concerned that some States and Tribes will decline or minimize use of the DERA option. Moreover, should Congress decide not to provide funding for the DERA program, there would be limited opportunity to invest in TSE. We know TSE is a cost-effective strategy to reduce NOx emissions and value this mitigation option.

Too often, drivers idle their engines during overnight stays in order to maintain a safe and comfortable cab interior environment. The practice takes place on a large scale and has a disproportionate impact on disadvantaged communities where truck stops and fleet terminals are often located. DERA's own guidelines flag the communities surrounding truck stops for programmatic priority. The Argonne National Laboratory (http://www.afdc.energy.gov /uploads/publication/hdv_idling_2015.pdf) estimates that rest-period idling wastes about 1 billion gallons of diesel and results in the emission of about 55,000 tons of nitrogen oxides released annually in the US. The EPA rates Truck Stop Electrification as the single most cost effective activity to mitigate mobile sources of NOx emissions (less than one third of the cost per ton achieved through diesel retrofits). See page 13 (https://www3.epa.gov /otaq/stateresources/policy/general/420b07006.pdf). Truck Stop Electrification, an EPA SmartWay verified technology, provides long-haul truck drivers an alternative to idling their diesel engines during their overnight stays. Significant NOX mitigation can be achieved through 1) installation of new TSE locations; and 2) TSE vouchers for truck drivers to encourage more truckers to use existing TSE facilities.

Again, we urge you to specifically list EPS/TSE infrastructure and TSE vouchers as eligible mitigation activities under Appendix D-2 of the settlement. This would afford beneficiaries maximum flexibility to achieve the settlement's goal of improving air quality in disadvantaged communities by reducing harmful diesel emissions.

Thank you for your consideration!

Sincerely,

Alan Bates
ReachNow
Portland, OR
[redacted]

Please consider idle reduction projects where the most diesel can be saved...at truck stops and warehouses where

engines run nearly all the time without any alternative.

Send recurring emails with Email Scheduler for Gmail.

This email was sent via the Google Forms Add-on.

August 5, 2016

Assistant Attorney General,
Environment and Natural Resources Division
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In re: Volkswagen "Clean Diesel" Marketing, Sales Practices, and Products Liability Litigation, Case No: MDL No. 2672 CRB (JSC), and D.J. Ref. No. 90–5–2–1–11386.

Dear Assistant Attorney General:

The Renewable Hydrogen Fuel Cell Collaborative (RHFCC), an Ohio based organization devoted to moving the use of hydrogen as a transportation fuel forward in the Midwest, is pleased to submit these comments to the U.S. Department of Justice concerning the Partial Consent Decree in the above-referenced Volkswagen ''Clean Diesel'' case. Overall, RHFCC is encouraged by the broad goals of the partial settlement decree to buy back vehicles or terminate leases for consumers, reduce oxides of nitrogen (NOx) from existing diesel equipment, and expand zero-emission vehicle (ZEV) investments across the United States. The following comments specifically address the $2.0 billion ZEV Investment Commitment ("ZEV Investments") aspects of the Decree.

$2.0 Billion Zero-Emission Vehicle Investment Commitment

1. **Balanced Infrastructure Investment:** In the hydrogen world, the most critical need in the Midwest is the development of refueling infrastructure. Vehicle OEMs will not consider releasing vehicles into this region without a preceding and significant investment in infrastructure. As an example, our group recently submitted a concept paper for the DOE's FOA 0001535 on alternative fueled vehicles. Our proposal was to deploy 15 fuel cell vehicles into 4 municipal fleets, and develop 4 refueling stations to support these vehicles. We were invited to submit a full proposal. But despite the prospect of DOE support, all OEMs still refused to sell us their fuel cell vehicles. To the OEMs, the missing element was a network of refueling infrastructure. Thus we strongly urge that a significant portion of the ZEV investment be placed in the development of a network of refueling points, that could service all fuels, to kick start the adoption of alternative fueled vehicles.

2. **Transparency and Accountability in Volkswagen's ZEV Plan:** In alignment with the comments of Clean Fuels Ohio, the RHFCC believes that hydrogen fuel cell vehicles and refueling infrastructure are at a critical stage of development. Broad, market-oriented investments, in refueling infrastructure and consumer education, are critical. As currently drafted, the settlement agreement lacks transparency and would appear to create a program that lacks accountability, proper structure and rules to ensure investments that are effective and even-

handed. The RHFCC recommends that the government provide much greater detailed guidance and accountability mechanisms for the ZEV program and create a program structure that ensures transparency and follows the best market-oriented practices for similar investments.

3. **ZEV Vehicle Deployment**: It is very advantageous for consumers in the region to witness the successful local implementation of hydrogen fuel cell vehicles. This can be done effectively by supporting the fleet use of these vehicles. Our region can train the technicians to support these vehicles, but help is needed to support the purchase price of these vehicles and to help with the cost of refueling stations. Hence the RHFCC recommends that a portion of the settlement monies be allocated to a program to assist state and municipal fleets in acquiring a small number of hydrogen fuel cell vehicles to act as demonstrators to the region.

4. **Educational Outreach**: Educational outreach in alternative fuels, and in particular in hydrogen, is a critical need in the region. The RHFCC recommends that a portion of the VW settlement funds be directed to educational outreach that covers all alternative fuels. This can take the form of social media, a website, or community lectures and workshops. There is a critical need for people to become familiar with the various alternative fueled vehicle technologies, and their respective benefits, thus in supporting educational outreach, the settlement monies can provide a key benefit.

5. **Balanced Investments in ZEV Market by State**: The government's draft settlement would direct 40% of the ZEV funding, $800 million, to a single state, California, while spreading the remaining 60% to the 49 remaining states. The justification is that California's ZEV market is more advanced. In alignment with the comments of Clean Fuels Ohio, the RHFCC strongly disagrees with this justification and distribution. California has large support (in the hundreds of millions of dollars) from state taxes, federal programs, and commercial investment. California does not need assistance. They are well on the path. The VW settlement money can provide the most good by igniting the alternative fuel markets in other regions of the country, where investment is difficult or impossible to obtain, and where roll out is currently projected to be in the next 5 to 10 years. The VW settlement funds could then provide a critical accelerant for the implementation of alternative fuels across the nation, rather than move one state a little further along the path.

The RHFCC is a regional organization dedicated to making hydrogen happen in the Midwest. We appreciate the opportunity to submit these comments for your review.

Respectfully,

Dr. James Durand Ph.D., P.E.
Director, Renewable Hydrogen Fuel Cell Coalition
Center for Automotive Research, The Ohio State University
930 Kinnear Road
Columbus Ohio 43212

RUAN

August 5, 2016

John C. Cruden Esq.
Assistant Attorney General,
U.S. Department of Justice--ENRD, P.O. Box 7611,
Washington, D.C. 20044-7611

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

Dear Assistant Attorney General Cruden:

Ruan Transport Corporation (Des Moines, IA) respectfully submits the following comments in response to the proposed draft partial settlement with Volkswagen. Founded in 1932, Ruan is a family-owned, asset-based 3PL, providing Dedicated Contract Transportation and Supply Chain Solutions to customers across the country. With more than 84 years of transportation management experience, Ruan is one of the top 10 privately owned transportation service companies in the country. Our company works with shippers, vehicle and component manufacturers, fuel providers, community leaders, and other stakeholders to reduce petroleum use and promote cleaner burning transportation fuels. We participate in the Carbon Disclosure Project (CDP), and are members of the National Clean Fleets Partnership. We operate (98) Compressed Natural Gas (CNG) powered vehicles, and have (27) more on order.

We urge the Department of Justice (DOJ) to work with other stakeholders and other parties to amend the June 28 Consent Decree to include an increased incentive for low-NOx engine technologies, and vehicles powered by low-NOx engines. As currently drafted, the Consent Decree does not provide any additional benefit for technologies like low-NOx engines that are much cleaner than required under federal emission regulations. Thus, a new vehicle powered by a low-NOx engine certified to the 0.02 optional low-NOx standard and that is 90 percent cleaner than a vehicle powered by an engine that meets the current 0.2 g/bhp-hr standard receives the same 25 percent allowance (40 percent for a repower) under the Consent Decree. We therefore urge the DOJ to amend the Consent Decree to increase the incentive for these cleaner burning trucks and engines to 75%.

We urge the DOJ to modify section 1(a) of the Consent decree to include all Class 8 vehicles subject to emission standards prior to 2013 when being replaced by CNG powered or low NOx CNG powered equipment (for the entirety of the U.S., not just relevant States with more stringent requirements). Substantial emissions reductions can be realized by replacing pre 2013 emission standard vehicles with these clean technologies. Companies such as ours that have shown both the intent and follow-through to deploy cleaner vehicles simply do not have the 1992-2006 fleets in service.

We also urge the DOJ to expand the definition of Class 8 Freight Trucks to allow local communities and state authorities the ability to provide an incentive for local and regional trucks that transport goods through them. As currently written, the definition and use of the term "local" could be construed to narrow the ability to fund regional trucks despite the fact that most regional trucks still pass through or near local communities, having an emissions impact. Moreover, the emissions of over the road trucks contribute to the occurrence of ozone transport, contributing to pollution issues in up-wind areas. For these reasons, we would urge that the Consent Decree define additional flexibility to fund regional trucks as well as local trucks.

Lastly, we would like to support the comments submitted by other organizations that have highlighted concerns related to the inclusion of the scrappage requirement. Based on our experience in evaluating and participating in incentive programs, we have found that scrappage programs can be onerous and make it difficult to successfully deploy new, cleaner burning vehicles and technologies. We therefore support the comments urging the DOJ to expand the eligible years for scrappage and to waive the requirement in the case of fleets or businesses that acquire low-NOx engines. We urge the DOJ to also waive scrappage requirements for businesses that sell eligible outgoing vehicles to locales outside North America and Central America.

Sincerely,

Steve Larsen, Director of Procurement and Fuel
Ruan Transport Corporation

Securing America's Future Energy

Electrification Coalition

August 5, 2016

John C. Cruden
Assistant Attorney General
Environment and Natural Resources Division
U.S. Department of Justice
P.O. Box 7611
Washington, DC 20044-7611

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

Dear Assistant Attorney General Cruden,

For more than a decade, Securing America's Future Energy (SAFE), a nonpartisan organization, has worked to strengthen our country's national and economic security by reducing its dependence on oil. SAFE advocates for expanded domestic production of oil and natural gas, continued improvements in vehicle fuel efficiency, and in the long-term, breaking oil's stranglehold on the transportation sector through the use of alternative fuels like electricity and natural gas. SAFE's efforts are spearheaded by the Energy Security Leadership Council (ESLC), a non-partisan group of business and former military leaders, co-chaired by Frederick W. Smith, Chairman, President and CEO of FedEx, and General James T. Conway, 34th Commandant of the U.S. Marine Corps (Ret.).

Securing America's Future Energy (SAFE) respectfully submit the following comments in response to the Department of Justice's notice concerning the above-referenced litigation and the proposed consent decree, which was published in the Federal Register on July 6, 2016 (the "Consent Decree").1

We write to urge the government, the court and the other parties to modify the Consent Decree to enable the use of the Environmental Mitigation Trust in ways that will provide greater, faster reductions in petroleum use at lower cost. These modifications are consistent with the Environmental Mitigation Trust's goal of reducing NOx emissions.

Introduction

SAFE strongly supports the basic structure of the Environmental Mitigation Trust. The size and scope of the settlement sends a clear message that vehicle and engine manufacturers must comply with our nation's fuel efficiency standards. The Decree should help deter any future attempts to circumvent these standards and prevent any automaker from gaining an unfair and illegal advantage over its competitors. More specifically, the Environmental Mitigation Trust will help ensure that funding goes to replacing or

[1] **Notice of Lodging of Proposed Partial Consent Decree Under the Clean Air Act, 81 Fed. Reg. 44051 (July 6, 2016).** Capitalized terms used herein shall have the meanings attributed to them in the proposed Consent Decree documents unless otherwise defined herein.

repowering many of the remaining pre-2007 diesel engines in our midst, and will do so in a way that will deliver benefits across the country and in many communities.

SAFE is submitting a separate letter in reference to the National and ZEV Investment Plan fund. If both these sets of programs/funds are used smartly, the nation can reduce its dependence on oil and solve its national, economic, and environmental issues effectively and cost-efficiently, overcoming a chicken and egg problem that has hampered the introduction of new vehicle fuels and technologies for decades.

The need for swift action is real. Despite improvements in fuel efficiency, the United States still depends on oil to power 92 percent of its transportation sector, a virtual monopoly. This strategic commodity is priced on a volatile global oil market influenced by actors many of which share neither our values nor goals. This poses serious risks to our national and economic security—the government spends an estimated $67.5 billion annually to protect the flow of oil around the world, and consumers and businesses are simply forced to pay more whenever conflict or supply disruptions cause an oil price spike. Curtailing U.S. exposure to such volatility, thus improving energy security, can only be achieved by reducing the nation's overall oil intensity through improved fuel efficiency and the greater use of alternative fuels. Both of these strategies also reduces NOx emissions.

The good news is that alternative fuel vehicles and engines exist today that emit NOx at levels that are 90 percent lower than the current EPA limit of 0.2 g/bhp-hr, and many more will enter the market over the life of the Consent Decree. SAFE's recommendations are aimed at accelerating the deployment of these vehicles and engines to meet the goals of the Environmental Mitigation Trust.

Recommendation 1: SAFE recommends that the final Consent Decree provide 75 percent funding for all new trucks powered by a non-oil fuel.

As currently drafted, the Consent Decree's Environmental Mitigation Trust provides funding for Non-Government Owned Eligible trucks and buses based on the technology used. Thus, the Environmental Mitigation Trust provides 40 percent funding for a repower (diesel, CNG[2], propane, hybrid) and 25 percent funding for a new diesel, CNG, propane, or hybrid vehicle, compared with 75 percent of the cost of a new all-electric vehicle. These funding percentages are consistent for eligible large trucks, eligible buses, freight switchers, and medium trucks. New diesel, CNG, propane, or hybrid drayage trucks receive 50 percent funding.

While SAFE supports the strong incentive toward electrification the percentages, in practice, could lead to a binary choice between buying a new electric vehicle (with 75 percent funding) or a new diesel vehicle (with 25 percent funding). SAFE therefore respectfully requests that the list of Eligible Mitigation Actions contained in Appendix D-2 be modified to provide a 75 percent funding incentive for the purchase of new trucks powered by any non-oil fuel. This should include CNG, propane, and other fuels, such as hydrogen. Nevertheless, given the importance of improving vehicle fuel efficiency, SAFE supports the Environmental Mitigation Trust proposal to provide 40 and 25 percent funding incentives to diesel and hybrids for the cost of repowers and new vehicles, respectively. Moreover, SAFE requests that the Environmental Mitigation Trust prioritize vehicles with the largest oil-displacement and NOx emission savings potential in the disbursement of funds (typically long-haul, heavy-duty trucks which travel an average of approximately 70,000 miles per year[3]).

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[2] It is worth noting that Class 8 trucks also operate on liquefied natural gas (LNG), so we request clarification that these funds will be available to LNG trucks as well.

[3] Oak Ridge National Laboratory, Transportation Energy Data Book: Edition 34, 2015.

If a 75 percent funding incentive for all non-oil technologies is cost prohibitive, SAFE recommends lowering the incentive for all non-oil technologies (the incentive available to hybrids should also be lowered accordingly to remain a meaningful amount lower).

Recommendation 2: SAFE recommends that Appendix D is modified to enable Beneficiaries to use funding to replace model year 2007-2012 vehicles in all states.

SAFE requests that Appendix D be modified to enable Beneficiaries to receive funding for Eligible Large Truck, Eligible Bus, and Medium Truck projects that include the replacement or repowering of model year 2007-2012 vehicles in all states. Currently, the Consent Decree's Environmental Mitigation Trust requires the replacement or repower of 1992-2006 model year trucks but allows areas that already require fleets to retire these older trucks to also fund the replacement or repower of 2007-2012 model year vehicles.

The current proposal to limit the funding for certain 2007-2012 model year vehicles unnecessarily restricts potential of funding for eligible truck and bus projects in two ways. First, it limits this opportunity to only a few areas of the country. California is currently the only state that requires upgrades for 1992-2006 model year trucks and buses. Second, it excludes a significant number of fleets that operate only 2007 or newer model year trucks, but that operate very high mileage vehicles. In many cases, these high-mileage trucks can be the best candidates for cost-effective reductions in oil consumption and NOx emissions.

Moreover, the fleets that are most likely to invest in ultra-modern fleet technologies are large corporations that tend not to have model year 2006 trucks in their operation, even today. Therefore, the largest potential audience for this funding program and targeted technology will effectively be excluded from participation, except in a few instances. For the growth of the market for alternative technologies and fuels, it is critical that leading fleets be able to participate in this program. We therefore request that the replacement program be expanded to allow fleets in all areas of the country to replace or repower 2007-2012 model year vehicles.

It is worth noting that, as time goes on, the 1992-2006 limitation will become an anachronism. The Consent Decree will govern funding that will be used to repower or replace vehicles in 2026 and potentially beyond, when pre-2006 engines will be few and far between. The program should have a mechanism for updating the model year eligibility annually to ensure that it is always repowering or replacing the appropriate model year engines and vehicles.

Recommendation 3: SAFE recommends that Appendix D be modified to provide a waiver from the scrappage requirements.

Given the need to accelerate the transition to advanced vehicle technologies SAFE strongly urges that the scrappage requirement be waived when fleets are using Environmental Mitigation Trust funds to purchase these new vehicles.

Nearly twenty years of experience with California and federal retrofit and replacement programs has shown that scrappage requirements often limit the demand for new vehicle purchases. Simply stated, forcing a fleet to strand an asset that still has some value makes it more difficult for many fleets to invest in advanced vehicle technologies. Again, it is imperative that leading fleets be encouraged by this program to participate in order to accelerate and scale the deployment of new vehicle and fuel technologies in the marketplace to both reduce oil consumption and NOx emissions.

Conclusion

In conclusion, SAFE urges the Justice Department to work with the other parties to integrate our recommendations into the final Consent Decree. Doing so will help maximize the displacement of oil in the transportation sector, thereby strengthening U.S. energy security, and simultaneously having the biggest impact to achieve the Environmental Mitigation Trust's goal of reducing NOx emissions.

If you have any questions or wish any additional information on any of the points discussed in this letter, please do not hesitate to contact me.

Thank you for the opportunity to provide these comments.

Sincerely,

Robbie Diamond

Robbie Diamond
President and CEO
Securing America's Future Energy

SemaConnect

5 August 2016

Mr. John Cruden
Assistant Attorney General
United States Department of Justice
Environment and Natural Resources Division
P. O. Box 7611
Washington, D.C. 20044-7611

RE: Comments on Proposed Partial Consent Decree Under the Clean Air Act concerning Volkswagen "Clean Diesel" Litigation, Case/MDL No. 2672 CRB (JSC)

Dear Mr. Cruden:

SemaConnect is a developer and manufacturer of plug-in ZEV infrastructure including commercial-grade L2 charging systems and comprehensive network services. At present, SemaConnect is in the top two of smart networked EV charging system manufacturers in the North American market. SemaConnect is headquartered outside of Washington DC, in Bowie Maryland, and maintains nine field offices in Boston, Washington DC, Atlanta, Orlando, Denver, Seattle, San Francisco, Los Angeles and San Diego. SemaConnect's plug-in ZEV infrastructure is deployed in a wide range of applications that include refueling at home, at the workplace and "on-the-road" for drivers of all types of mass-market electric vehicles.

SemaConnect is pleased to have the opportunity to provide comments on the Partial Consent Decree in the Volkswagen "Clean Diesel" Marketing, Sales Practices, and Products Litigation case. Specifically, SemaConnect's comments are focused on Appendix C, where Volkswagen has agreed to "Invest $2.0 billion over 10 years in zero emission vehicle (ZEV) infrastructure, access and awareness initiatives." Our comments are as follows:

1. **Goal is Correct**: The overall goal to grow the adoption of ZEV vehicles through the investment of $2.0 billion in ZEV infrastructure will help this important emerging new industry. At this early stage of the mass market ZEV industry there still exists a "chicken and egg" hurdle that slows wide spread adoption of ZEVs. This additional investment in refueling infrastructure will increase consumer confidence and accelerate the growth of ZEVs in the United States.

2. **Competitive Market Conditions should be Maintained**: Today, in the United States, there exists a robust competitive electric vehicle charging industry. This "plug-in" ZEV infrastructure marketplace includes a combination of major electrical product and services manufacturers, electric power utilities, start-up technology businesses, commercial real estate companies and multinational corporations. This competitive environment has fostered innovation with the rapid development of plug-in ZEV infrastructure solutions that meet the needs of both ZEV consumers and service providers. It is vital that the $2.0 investment be implemented in a manner that supports and strengthens this competitive market.

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SemaConnect

3. **ZEV Infrastructure should be "Electric" vs "Hydrogen" Vehicle Infrastructure**: There also exists today in the U.S. a strong and diverse electric vehicle industry. This "plug-in" ZEV marketplace includes dozens of major automakers who have multiple plug-in ZEV models on the market today and who are investing billions in expanding their plug-in ZEV portfolio. As a result, the plug-in ZEV marketplace is ready to maximize the benefit of a $2.0 billion investment. In contrast, the hydrogen ZEV industry is extremely small and consists of only one major automobile manufacture, Toyota, promoting hydrogen technology.

4. **ZEV Infrastructure should be Level-2 and DCFC**: The plug-in ZEV market in the United States has stabilized and standardized on two primary categories of infrastructure. The two categories are referred to as Level-2 EV Charging and DC Fast Charging. The combination of Level-2 and DCFC infrastructure effectively addresses the charging needs of plug-in ZEV drivers and is also supplied by a robust industry of manufacturers and service providers. As a result, the $2.0 billion program contemplated in Appendix C of the Partial Consent decree should be directed to only these two categories of EV charging infrastructure.

We, at SemaConnect, appreciate the opportunity to provide comments on the proposed Partial Consent Decree. The investment in plug-in ZEV infrastructure proposed in the Consent Decree can make a real impact in accelerating plug-in ZEV adoption in the United States. We ask that you sincerely consider our comments offered with the intent of advancing our nation's progress to a truly sustainable future.

Sincerely,

Mark Pastrone
Vice President, Business Development
SemaConnect, Inc.

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