

VIA ELECTRONIC MAIL

September 28, 2018

Indiana Department of Environmental Management
Indiana Government Center North
100 North Senate Avenue
Indianapolis, IN 46204
Email: VWTrust@idem.IN.gov

RE: Comments Regarding Indiana's Use of Volkswagen Environmental Mitigation Trust Funding

Dear Commissioner Pigott and members of Indiana's Volkswagen Environmental Mitigation Trust Fund Committee:

Thank you for this opportunity to provide input on the Indiana Department of Environmental Management's (IDEM) Draft Beneficiary Mitigation Plan made available in August 2018 and prepared pursuant to the Third Partial Settlement and Consent Decree and the Environmental Mitigation Trust for State Beneficiaries.

Under the Volkswagen settlement, Indiana will receive \$40.9 million to reduce emissions from diesel engines across the state. Decades of research show that reducing air pollution saves lives and reduces costs to the economy. This is a tremendous, unprecedented and unlikely to be repeated opportunity to significantly improve air quality and public health in some of our most polluted communities for some of our most vulnerable residents. It is also a unique opportunity to make choices that will result in long-term, transformative change in transportation-related technology that is both cleaner and less costly.

In my comment letter on IDEM's Request for Information, submitted on March 20, 2018, I urged that Indiana take advantage of these dedicated funds to maximize public health benefits, and to invest in and encourage implementation of the most transformative technologies. I made several comments related to both process and substance, and appreciate that IDEM has addressed some of these comments in the August 2018 Draft Plan. I continue to believe that these should be the overriding goals and driving principles behind Indiana's use of the VW Mitigation funds.

Following are comments specific to the August 2018 Draft Plan, generally organized according to the sections of the Draft Plan in order.

Comment 1: The **Mission Statement and Overall Goals** accurately capture the two priority principles of improving public health and being transformative. I agree with the four specifically stated goals. The meaning of the word "domestic" is unclear, however. Does "domestic fuel" mean fuel produced in the United States or within the state of Indiana? I suggest the following edit: "The Program

will focus on technological change and advancement with resiliency, moving in the direction of increased reliance on and favoring use of domestic non-polluting renewable fuel, where possible.”

Comment 2: Proposed allocations for the various groups of projects. The Draft Plan proposes to allocate the funds as follows:

Onroad Equipment and Vehicles--58% (~\$23.78 million), of which 40% (~\$9.51 million) would be set aside for school buses, with an additional set-aside of roughly 30% of the school bus allotment (~\$2.85 million) for electric school bus projects.

Nonroad Equipment and Vehicles--approximately 20% (~\$8.2 million).

DERA Option Project Types--4% (~\$1.64 million)

Light-Duty Electric Vehicle Infrastructure--15% (~\$6.15 million)

Administrative costs--3% (~\$1.23 million)

I agree that the bulk of the funds be used for on-road heavy duty projects, with a setaside for school buses and for electric school buses within that subcategory. This is generally consistent with choices other states have made, reflecting the evidence that cleaner school buses are extremely health beneficial and directly targeted to reduce exposure to children, one of the most vulnerable population groups. I note that Indiana’s setasides for school buses are lower, both in absolute terms and proportional to the total funding amount, than a number of other states (Illinois, Ohio and Iowa, for example), and I encourage you to consider a larger setaside for electric school buses, as they are the most transformative technology as well as cleanest at the neighborhood level. Prices are beginning to come down as more manufacturers make more models available and more school districts move to electric buses. There are also excellent opportunities for partnerships with utility companies to combine electric vehicles with renewable energy projects (wind and solar) to further reduce the emissions from these vehicles and make the projects more affordable to school districts.

I endorse the allocation of the maximum 15% for light duty electric vehicle infrastructure. Electric vehicles are the transformative technology we should be moving towards, and focusing on infrastructure is essential to increase acceptance by local governments, businesses and the public of EVs as a reliable technology that will meet their transportation needs.

I also agree that some portion of the allocation should be targeted towards DERA-eligible projects, for the flexibility and the additional funding that the DERA program provides. Indiana should make sure that the DERA allocation is large enough to attract the kinds of projects that could be funded uniquely under that program and should also make clear that projects using alternative (i.e. non-diesel) fuels and technologies will be scored higher. Each project should be evaluated on the basis of the case it makes about the positive impact on community health and whether (and how much) the project will contribute to increased transformation of the particular technology being replaced. The current proposal of 4% may or not be sufficient.

Comment 3: Match Requirements. The Draft Plan provides that for all project categories IDEM plans to use the match requirements in the USEPA Trust Agreement for non-governmental projects for both non-governmental and governmental projects. For example, on p. 7, it states:

“IDEM proposes to use Volkswagen Mitigation Trust funds to reimburse nongovernment owned fleet and equipment owners in these categories at the levels specified in Appendix D-2 of the national mitigation trust. IDEM intends to use Volkswagen Mitigation Trust funds to reimburse government-owned fleets and equipment at the same level as nongovernment owned fleet and equipment owners, as opposed to the full cost reimbursement permitted by Appendix D-2.

Lastly, IDEM intends to use Volkswagen Mitigation Trust funds to reimburse both non-government and government owned fleet and equipment owners at a lower level (require 5% more cost-share from applicant) for electric-powered equipment and vehicles.”

I appreciate IDEM inviting comment on this issue. IDEM should not require the same level of match for governmental projects as for non-governmental projects but should have as a starting point the match requirements set forth in USEPA’s Executed Trust Agreement. In addition, IDEM should not penalize electric technology projects by requiring a higher match for those projects.

The USEPA Trust Agreement establishes a higher required match for non-governmental projects because those projects will not benefit the general public but will benefit the private business receiving the public funds from the Mitigation Trust. This principle is further played out in the Trust Agreement’s provisions for non-governmental projects: it allows for a greater amount from the Mitigation Trust where non-governmental projects will be made available for use by the general public.¹ IDEM’s proposed approach to the match requirement will make it harder for governmental projects to compete for funds, since they are less likely to be able to secure what may be a significantly larger portion of the project cost. That said, IDEM could provide that projects from governmental applicants that use partnerships with other organizations to provide additional funds will be more highly scored, as a way to encourage the leveraging of additional funds. I hope also that as IDEM fleshes out the application and evaluation criteria, it will allow public applicants to provide their match in ways other than dollars (i.e. in-kind activities). I understand that a higher match requirement for all projects would, in theory, allow the VW funds to go further. But a high match expectation could also discourage certain applicants from even applying. I do note, however, that projects, whether private or public, should be judged on their effectiveness at reducing harmful air pollutants in areas where sensitive populations are exposed. My point is that this is a complex issue, deserving of more thought and opportunity for public input, including examination and consideration of approaches taken by other states. The approach in the Executed Trust Agreement was thoroughly considered from a policy perspective and subject to an opportunity for public comment. That should be IDEM’s starting position.

As noted above, I do not understand the proposal to require a higher match (e.g., 30% as opposed to 25% provided in the USEPA Trust Agreement) for projects based on EV technology than other projects. The draft BMP does not explain this proposed decision. Given that one of the draft Plan’s two main goals is to support transformative technology, perhaps there should be less match required for these projects. Putting a heavier financial burden on applicants with the most transformative technology goes in the wrong direction.

Comment 4: Strategy to Deal with Areas of Disproportionate Air Quality Burden. The Draft Plan includes an expanded list of approaches that the agency will use to guide its decision with respect to awarding projects in areas of disproportionate air quality burden, which I support. I recommend the following additions to the current text:

“To assist and guide the final determination of grant recipients, when evaluating areas of sensitive population, the agency shall consider the preferences may be made available to applicants in areas of sensitive populations, which may include but are not limited to:

- Areas designated as nonattainment or maintenance for one or more National Ambient Air Quality Standards Air quality attainment/nonattainment designations
- Historic areas of air quality concern

- Residential aAreas with high population and traffic density, including near highways or heavily traveled roadways
- Areas with localized diesel emission-producing activities such as multimodal centers, distributions centers, ports, rail and bus terminals, airports, as well as others deemed to have a localized impact on air quality
- Areas where human health data indicate higher than average respiratory ailments
- Areas where demographic data (race, poverty, educational level, linguistic isolation) indicate a high proportion of the population is especially vulnerable to adverse health impacts from air pollution
- Environmental Justice (EJ) areas as detailed in the U.S. EPA's EJ Screening and Mapping Tool or other appropriate methodology

Comment 5: Estimates of Emission Reduction Potential. The Draft Plan states on page 5 that "Project outcomes will be quantified with the U.S. EPA's Diesel Emissions Quantifier (DEQ) or other appropriate methodology that will be clarified in the solicitation for projects packet that will come at a later date." It is important that emissions reductions be quantified as accurately and consistently as possible. I support IDEM's recognition that tools in addition to (and potentially more accurate than) USEPA's DEQ may become available. As an example, the Argonne National Laboratory released the Heavy-Duty Vehicle Emissions Calculator (<https://afleet-web.es.anl.gov/hdv-emissions-calculator/>) earlier this year, partly to address concerns that DEQ underestimates emissions of nitrogen oxides from diesel engines. IDEM should use the most up-to-date tools available for emissions reduction calculation for each round of project applications. The projects packet should make clear that all applicants must use the same estimation methodology so that reductions to be achieved can be compared across applications. Applicants should also be required to provide the inputs they are using, including the assumptions that resulted in those inputs, to the estimation calculation, as those are critical to the outcome.

Comment 6: The very last sentence of the draft BMP is the following:

"It should be noted that IDEM may, at its discretion, revise the Final Beneficiary Mitigation Plan as deemed necessary and appropriate in future years in a manner consistent with the objectives and limitations of the Volkswagen Environmental Mitigation Trust."

It is essential that there be an opportunity for public review and comment on any future revisions. This sentence should be revised as follows:

"It should be noted that IDEM may, at its discretion, revise the Final Beneficiary Mitigation Plan as deemed necessary and appropriate in future years in a manner consistent with the objectives and limitations of the Volkswagen Environmental Mitigation Trust, after an opportunity for public notice and comment."

Comment 7: The Process Going Forward. I appreciate the opportunities IDEM and the Advisory Committee have provided for public input, including two opportunities to comment on a Draft Plan. Many questions remain about how the funds will be distributed, how the projects will be scored, and other important details of project implementation. Indeed, these details will determine whether the mission, goals, and principles articulated in Indiana's plan will be achieved successfully. Below are a few observations and suggestions for implementation steps moving forward.

- The funds are eligible to be spent over a ten year period. IDEM should hold at least three rounds of funding, spaced at least 2 years apart. This will allow the agency to

learn from early rounds and will also give project proponents who need it several years to develop solid project proposals with robust partnerships. This will allow Indiana's funds to stretch further and provide greater benefit. It will also allow time for innovative technologies to develop further and prices to become more competitive.

- IDEM should make its proposed application requirements and scoring criteria available for review and an opportunity for comment before finalizing them and beginning the first round of applications. The process will certainly benefit from review by entities that expect to be applicants and others interested in the process, saving time in the end.
- Once the program is underway, IDEM will, per the terms of the Consent Decree, provide a semiannual report. Those reports should be made available to the public and to the Committee. IDEM should encourage feedback from project proponents, potential applicants, and all other interested parties. If IDEM believes that adjustments need to be made, or if the Committee recommends adjustments, IDEM should provide an opportunity for the public to weigh in on any proposed changes.
- IDEM should be open to adjusting application requirements and scoring criteria after Round 1, if there are changes that would make the program more successful.
- IDEM should engage the Indiana State Board of Health and the Indiana Department of Education in the establishment of scoring criteria and in the process of reviewing applications. This program is about protecting public health, and input from ISDH on how to prioritize locations for projects would make the process more robust and more likely to address the most compelling health situations. Because of the significant benefits associated with replacement of school busses, as well as the interest expressed by a number of school districts, IDEM should also involve the Department of Education.
- The scoring process should be straightforward and transparent. IDEM should develop clear criteria that tie back to program goals and can be quantified or clearly demonstrated. Most weight should be given to criteria that tie directly to the highest priority goals. These include effectiveness in terms of health risk reduced, cost-effectiveness in terms of emissions reductions, benefit to environmental justice areas and extent that the project is transformative in nature (for example, the project helps build infrastructure to support clean technologies beyond the scope of the project itself, or implementation of the project will encourage implementation of additional projects not funded by the VW settlement).
- Evaluations of effectiveness and cost-effectiveness should take into account the full life expectancy of the proposed project and costs and benefits related to fuel savings and future maintenance costs.

Thank you again for your hard work to make this program truly benefit the residents of Indiana adversely affected by air pollution and for the opportunity to provide this input.

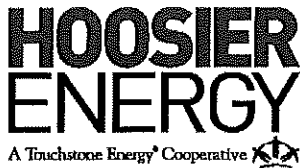
Very truly yours,

/s/

Janet G. McCabe
2042 N. Alabama Street
Indianapolis, IN 46202
janetgmccabe@gmail.com
317-902-3610

¹ For example, Section 9(c) of the Trust Agreement provides for EV infrastructure projects: "...each Beneficiary may draw funds from the Trust in the amount of:

1. Up to 100% of the cost to purchase, install and maintain eligible light duty electric vehicle supply equipment that will be available to the public at a Government Owned Property.
2. Up to 80% of the cost to purchase, install and maintain eligible light duty electric vehicle supply equipment that will be available to the public at a Non-Government Owned Property.
3. Up to 60% of the cost to purchase, install and maintain eligible light duty electric vehicle supply equipment that is available at a workplace but not to the general public."



2501 South Cooperative Way
P.O. Box 908
Bloomington, IN 47403
Office (812) 876-2021
Fax (812) 876-3476
HEPN.com

September 26, 2018

Indiana Department of Environmental Management
Indiana Volkswagen Mitigation Trust
VWTrust@idem.IN.gov

Comments Regarding the Indiana Volkswagen Mitigation Trust's Draft Beneficiary Mitigation Plan

I. Introduction

Hoosier Energy appreciates the opportunity to provide comment on the draft Beneficiary Mitigation Plan (BMP). The iterative plan development process conducted by IDEM and the Trust Advisory Committee is beneficial and will greatly enhance the effectiveness of Indiana's Mitigation Trust funds.

II. Comments on Indiana's Beneficiary Mitigation Plan

Onroad Equipment and Vehicles

The 8% increase in onroad equipment and vehicle funding in the updated BMP is a welcome revision. In fact the state should dedicate more funds to onroad equipment and vehicles for several reasons. The potential for onroad projects appears more numerous throughout the state regardless of region. The larger the potential applicant pool for trust funds the more options the committee will have when awarding the funds. IDEM noted that the reduction per dollar and project is greater for nonroad equipment and vehicles when compared to onroad. This reflects the likely larger and limited amount of projects associated with nonroad equipment. An overlooked aspect of this calculation is the effect of onroad replacement to spread the reduction benefits across Environmental Justice (EJ) areas rather than concentrate in a few areas that have viable nonroad projects.

Onroad and Nonroad Equipment and Vehicles Match Requirements

The cost-share for electric powered equipment and vehicles should be equal to diesel mitigation actions. The IDEM rationale fails to take into account the changing electricity generation mix in Indiana. While the initial capital cost may be more expensive, the evolving generation mix toward renewables and natural gas will continue to lower NOx emissions from the electric power generation sector. Thus the effective emission rate of electric vehicles will continue to decline rather than stay at constant level like a diesel engine mitigation action. This benefit should be considered as an offset to higher initial cost.

III. Conclusion

Hoosier Energy would like to thank IDEM and the Trust Advisory Committee for their effort in this endeavor. The incorporation of public comment is crucial to the success of the program and the opportunities for communication have been numerous to date. We look forward to contributing to the process going forward.



September 26, 2018

Mr. Shawn M. Seals
Indiana Department of Environmental Management
(317) 233-0425
SSeals@idem.IN.gov

Re: IPGA's comments regarding State of Indiana's proposed mitigation plan

The Indiana Propane Gas Association (IPGA) appreciates the opportunity to provide comments regarding the State of Indiana's proposed mitigation plan. The IPGA believes that the mitigation plan should attempt to get the best "bang-for-the-buck" with settlement dollars being used to remove as many polluting vehicles from the road as possible. The IPGA believes propane autogas can play a key role in achieving that goal.

Interest in propane as an alternative transportation fuel stems from its domestic availability, high-energy density, clean-burning qualities, and its relatively low cost. It is the world's third most common transportation fuel and is considered an alternative fuel under the Energy Policy Act of 1992.

Propane Vehicles' Successes

Propane has a proven track record as a transportation fuel in fleets across the country. Right now, the Propane Education and Research Council (PERC) estimates that there are nearly 200,000 propane-powered vehicles on the road in the U.S. Worldwide, propane is the third most utilized auto fuel, behind the conventional fuels of gasoline and diesel. The popularity of propane as an alternative fuel has led to its growing adoption in the United States, particularly by fleets. Currently, in Indiana there are already 324 propane powered school buses on the road. Both public and private sector organizations have found success in adopting propane vehicles into the fleets of various sizes. These include light duty, medium duty, and school bus applications¹.

According to PERC, some of the advantages for fleets to switch to propane autogas-fueled vehicles include:

- Lower total-cost-of-ownership
- Comparable performance to conventional fuels
- Onsite fueling
- Reduced maintenance
- Lower emissions

¹ <http://www.propane.com/on-road-fleets/case-studies/>



There are several companies that offer both OEM and aftermarket conversions for propane vehicles. This variety allows fleet managers to select the option that best fits their need. Also, as the technology continues to improve, fleets will see better fuel economy, more power output, and even lower emissions from propane-powered engines.

Bang for the Buck

The use of these funds should maintain the focus on offsetting the excess Volkswagen NO_x emissions. Here, the data is clear that propane is an effective way of decreasing emissions. This is not only true when comparing the older, eligible diesel engines with modern propane engines, but also when comparing propane engines to the best, modern diesel platform. For example, Type C school buses, diesel engines emit 18 percent more NO_x than comparable propane models². And according to the California Air Resources Board (CARB) certification data, the NO_x savings by choosing the best-in-class propane engine instead of a modern diesel engine can be as high as 81 percent³.

This “bang-for-the-buck” goes further when factoring in other bus ownership costs. For maintenance, a school district can expect to save \$2,000-\$2,500 per bus per year. This is due to propane buses requiring fewer fluids and filters to keep running. And for price, wholesale propane falls between the price of oil and natural gas, the two sources of the fuel. This makes propane price competitive with the conventional fuels. For comparison, according to the most recent Clean Cities data, the price of propane is almost 50 cents-per-gallon cheaper than diesel⁴. This figure does not take into account the savings that occur from individual propane marketers negotiating favorable pricing with fleet managers.

One concern regarding the Indiana proposed mitigation plan is the discussed 30% (~\$2.75 million) carve out of the school bus allocation for electric school buses. Respectfully, if this carve out is adopted the State of Indiana will reduce NO_x emissions at a lesser rate than simply allowing the free-market to choose the best value. The mitigation plan should not pick winners and losers when it comes to selection of the newer type of buses. Currently, a propane powered school bus has the purchase price of \$95,000 and can reduce NO_x emissions by 537 lbs. This is a cost of \$177 per pound of NO_x reduction. Comparably, a new clean diesel school bus costs \$90,000 but reduces emissions by only 331 lbs. for a cost per pound reduction of \$272. An electric school bus has a purchase price of \$300,000 and reduces emissions by 593 lbs. This is a cost of \$506 per pound reduction. **Propane school buses are the most cost-effective solution to reduce NO_x emissions from school buses** so the \$8.2 million set aside of onroad for school buses funds should be made open to all options and no carve out should be made for electric school buses. By guaranteeing a carve out for highly expensive electric buses there is a risk that older, dirtier diesel buses will have to stay on the road longer.

Finally, it is also important to look at what the marketplace already offers for NO_x reduction. For instance, the Volkswagen funds are available for electric forklifts. I would discourage you from focusing

² *Propane Greenhouse Gas and Criteria Pollutant Emissions Comparative Analysis* Gas Technologies Institute

³ CARB low NO_x certification data for MY2017 Roush 6.8L propane model compared with MY2016 Cummins 6.7L diesel model

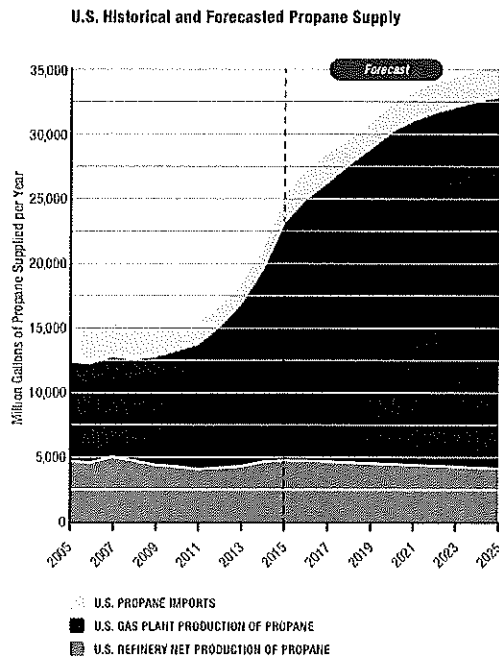
⁴ http://www.afdc.energy.gov/uploads/publication/alternative_fuel_price_report_oct_2016.pdf



on these. The forklift market already has a NO_x reducing option—propane. By supporting electric forklifts, it would take money away from applications that can better reduce harmful diesel emissions. By replacing one clean source of fuel (propane) with another clean source of fuel (electricity) no substantial air quality improvement will be achieved.

Fuel Availability

America’s current domestic energy renaissance has meant drastic increases in the production of propane. Propane has traditionally been viewed as a byproduct of the oil refining process. However, the increase in production from natural gas processing has shifted this perception. In 2014, there was enough propane produced from the domestic natural gas supply to meet about 98 percent of the U.S.’s consumer and petrochemical demand. The increase of domestic production has led to record high levels of propane in recent years. Production is forecasted to continue to increase⁵, ensuring a steady supply of this American-made fuel.



Source: ICF International

In the last ten years, the United States has gone from being a net importer to a net exporter of propane. In fact, we are currently exporting nearly 12 billion gallons of propane annually. That’s the equivalent of the fuel needed for nearly 5 million fleet vehicles. Energy security and independence has been a goal of the United States for many years. By using more of our domestically produced propane, we can continue to decrease the reliance on foreign-sourced fuel.

⁵ 2016 Propane Market Outlook ICF International



In order to get this large propane supply to the consumer transportation market, the industry relies on a network of public and private refueling stations. Nationwide, there are more than 3,600 stations ready to supply consumers with propane. In Indiana, there are already 64 public and private stations⁶. Although growth will need to continue, propane infrastructure is in place to support Indiana's propane autogas needs.

Additionally, many fleet managers opt to install their own central refueling infrastructure to ease the adoption of propane into the transportation fleet. Propane infrastructure is relatively easy and affordable to install and maintain. Depending on the needs and equipment, the infrastructure installation costs can range from \$37,000 - \$175,000⁷. When compared to competing alternative fuels, propane's availability and accessibility is one of the most cost effective ways for adopting new technologies.

Summary

Once again, the IPGA strongly supports a mitigation plan reflecting the outlined principles:

- Significant NO_x reduction
- Eliminating exposure to a high-risk population—school children
- Provide benefits to Hoosiers in all corners of the state
- Stretch the settlement dollars to the fullest extent possible

Should you have any immediate questions please contact me at matt@kdafirm.com or 317.655.4444.

Sincerely,

A handwritten signature in black ink that reads "Matthew Solak". The signature is fluid and cursive, with the first name being more prominent.

Matthew Solak
Executive Director
Indiana Propane Gas Association

⁶ http://www.afdc.energy.gov/fuels/stations_counts.html

⁷ http://www.afdc.energy.gov/fuels/propane_infrastructure.html



September 28, 2018

Shawn Seals
Senior Environmental Manager
Indiana Department of Environmental Management
VWTrust@idem.IN.gov

RE: Comments on the Indiana Volkswagen Beneficiary Mitigation Plan Draft Framework

Dear Mr. Seals,

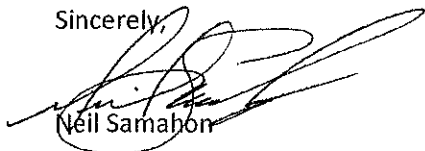
Metro Recycling Inc., a member of South Shore Clean Cities (SSCC), is pleased to submit these comments on the Indiana Volkswagen Beneficiary Mitigation Plan (BMP) Draft Framework. South Shore Clean Cities is a 501(c)(3) organization under the U.S. Department of Energy's Clean Cities program. The coalitions are designed to reduce petroleum consumption in the transportation sector by advancing the use of clean fuels and vehicles, idle reduction technologies, hybrid electric vehicles, fuel blends and fuel economy while reducing dependence on imported oil.

Metro Recycling concurs with SSCC that the amount of funds allotted to the Diesel Emissions Reduction Act (DERA) option in the BMP should remain at 10 percent as originally proposed in the draft framework. As you know, SSCC and its parent company Legacy Environmental Services, Inc. conducted Indiana Volkswagen Mitigation Roadshow workshops throughout the state in partnership with the Indiana Department of Environmental Management, with you presenting details on the program and SSCC and Legacy Environmental Services presenting details on how they can help public, private and nonprofit entities throughout the state become grant-ready through fleet audits.

In meeting with stakeholders and members throughout the state and conducting fleet analyses for them, it became abundantly clear to SSCC that the benefits of the program would be maximized by increasing the DERA option back to the 10 percent as originally proposed. Doing so would increase the number of eligible projects, thereby increasing the diesel emission reductions across the state and maximizing the benefits of the trust funds.

Thank you for this opportunity to participate in this public process.

Sincerely,



Neil Samahon



September 28th, 2018

Shawn M. Seals
Indiana Department of Environmental Management
Office of Air Quality
100 North Senate Avenue, Room N1003
Indianapolis, IN 46204

Re: Public Comment on the Indiana Beneficiary Mitigation Plan

Mr. Seals,

I write to express my support of the mission statement and goals identified for the Indiana Volkswagen Environmental Mitigation Trust Fund Program and to submit public comment on the proposed Beneficiary Mitigation Plan. I own Propane Autogas, LLC, a small business in Waterloo, Indiana. The state of Indiana has embraced innovation fueling technology through funding programs such as IDEM's DieselWise and the Office of Energy Development's Propane School Bus Grant. I have worked with 5 local school districts to pursue these dollars in support of converting their fleets to propane school buses. Through this process, we have gained an insider's view of the challenges school districts and other public entities face when exploring options to switch to cleaner fuels. The lessons learned are included in my general comments as well as specific responses to the following questions:

Eligible Mitigation Actions Comments

- Allocations
 - Propane Autogas LLC is in favor of the 8% increase to the Onroad Equipment and Vehicle Group and the 40% (\$9.51 million) set aside for school buses.
 - Propane Autogas LLC opposes the 30% allotment of the school bus funding (\$2.85 million) for electric school bus projects as this technology is unproven and extremely expensive. This is best demonstrated in the cost per ton reduced as presented by IDEM at the Advisory Committee Meeting (6/4) in the "Project Fuel Type Comparisons" chart (Figure 1.0). As stated in this chart, the cost per ton reduced of NOx for propane school buses is \$198,666 while the cost per ton of NOx reduced for electric school buses is \$672,851. A similarly stark difference is seen in the fine particulate matter (PM2.5) reduction where the cost per ton reduced for propane school buses is \$31,475,327 as compared to the cost per ton reduced for electric school buses at \$105,525,174.
- Eligibility
 - Propane Autogas LLC is in favor of the Beneficiary Mitigation Plan (BMP) maintaining zero area restrictions but considering preferences for applicants in areas with sensitive populations. This allows for maximum access to the VW

Mitigation fund programs and will ultimately lead to greater NOx reductions statewide.

- Propane Autogas LLC is in favor of the model year eligibility (1992-2009) for local freight and school buses, but encourages IDEM to consider including buses with 2010- 2012 engine model year class 4-8 school buses due to the 12-year replacement cycle requirement in the State of Indiana. Currently, Propane Autogas LLC has found that many Indiana school districts are ineligible for federal replacement or conversion programs due to statewide restrictive model year requirements.

Onroad Vehicles Match Requirement Comments

- Match
 - Propane Autogas LLC opposes the stated plan to reimburse government-owned fleets at the same level as nongovernment-owned fleet owners, as opposed to the full cost permitted by Appendix D-2.
 - Propane Autogas LLC recommends that in all categories aside from the School Bus replacement, public entities should be required to contribute 20%. School Districts purchasing school buses should be required to contribute less at 10%.
 - This recommendation is due to the limited budgets that so many school districts face, especially in rural Indiana. Many school districts are currently unable to replace any buses, let alone upgrade to an alternative fuel powered bus and purchase alternative fueling infrastructure. In many scenarios involving alternative fuels, energy efficiency, or “green” technology it is often seen as a privilege or as an “extra.” Yet, school buses are the only eligible project determined by the VW Mitigation Trust that directly impacts Indiana’s children on a daily basis. With this in mind, it is vital that school districts located throughout Indiana with varying resources are able to access school bus technology that decreases particulate emissions output. Particulate emissions output is associated with both short-term and long-term negative health effects, including respiratory and cardiovascular issues. Children should not be exposed to this output on their ride to school every day.
- Reimbursement
 - Propane Autogas LLC is in support of IDEM’s intention to reimburse both non-government and government-owned fleet and equipment owners at a lower level for electric-powered equipment and vehicles.

Lower match requirements, with increased ranges for eligible model years, zero area restrictions, and a significant amount of funds available for onroad vehicle replacements present a monumental opportunity for IDEM to prioritize sustainable projects that are transformative, positively impacting the environment, enhancing the health and well-being of residents, and promoting Indiana’s growing economy.

Maximum Award Amount per Grant

Though not discussed in this version of the BMP, Propane Autogas LLC recommends that a separate maximum award is determined for each eligible project within the percentage of the

\$41,000,000 that will be devoted to it. This is necessary due to the massive differences in equipment and technology costs associated with the different project area. Based on the interaction that Propane Autogas LLC has had with Indiana school districts, vehicle providers, and local businesses, it is recommended that a reasonable maximum amount per grant for Class 4-8 school/shuttle/transit buses and Class 4-7 local trucks is \$100,000 per vehicle, with a max amount of \$750,000 per entity.

Figure 1.0



Indiana Department of Environmental Management

Protecting Hoosiers and Our Environment Since 1986



Project Fuel Type Comparisons

PER VEHICLE (Lifetime of School Buses)	NOx Reduction Percentage	Lifetime NOx Reductions (Ton)	Cost/Ton Reduced	PM2.5 Reduction Percentage	Lifetime PM2.5 Reductions (Tons)	Cost/Ton Reduced
School Bus - Diesel	79.1%	0.382	\$235,560	47.4%	0.001	\$61,650,540
School Bus - Propane	99.0%	0.478	\$198,666	98.0%	0.003	\$31,475,327
School Bus - CNG	99.0%	0.478	\$271,859	98.0%	0.003	\$43,071,500
School Bus - Electric	100.0%	0.483	\$672,851	100.0%	0.003	\$105,525,174
Refuse Hauler - Diesel	84.3%	1.467	\$143,175	41.8%	0.004	\$52,907,277
Refuse Hauler - CNG	99.0%	1.722	\$142,235	98.0%	0.009	\$26,327,669
Switcher Locomotive - Diesel	89.9%	315.507	\$19,968	97.6%	14.532	\$433,537
Switcher Locomotive - CNG	99.0%	347.444	\$21,586	98.0%	14.591	\$514,009

Note: Reductions based on U.S. EPA Diesel Emission Quantifier runs of 2009 diesel vehicle replacements for 10-year lifetime (School Buses and Refuse Haulers) and 45-year lifetime (Switcher Locomotive)

Sincerely,

Mark Gibson
Owner
Propane Autogas LLC

Date: September 26, 2018

To: Indiana Department of Environmental Management

Subject: Siemens Comments, Indiana VW Beneficiary Mitigation Plan

Siemens is pleased to provide comments on Indiana's beneficiary mitigation plan regarding the VW settlement. We respectfully urge Indiana to allocate the maximum allowed 15% of the fund to increase the availability of critically-needed light-duty electric vehicle (EV) charging stations.

Siemens, founded in 1847, was the world's first large industrial corporation to commit to zero net carbon emissions by 2030. The company is a global powerhouse in technology, infrastructure, and services, offering a wide variety of technology solutions to a broad spectrum of customers. We employ 800 Indianans at 13 locations and generate \$300 million of in-state revenues.

Relevant to emobility, our technologies include:

- hardware and software for charging light, medium, and heavy duty vehicles;
- software and services, including smart phone apps, for managing charging and engaging electric vehicle and electricity customers;
- make-ready equipment ranging from transformers to service drops;
- utility software to plan, operate, and manage the grid, including integrating EV charging into system operations;
- software to run transmission grids and wholesale electricity markets;
- battery storage and microgrid systems for DC fast charging installations; and
- building management and operations software that can integrate EV charging operations.

We operate in over 180 countries and spend over \$5 billion annually on research and development, including substantial amounts on emobility-specific technologies. Our customers span a wide range of participants in the emobility ecosystem. We sell to utilities, federal and state governments, cities, site owners (both residential and commercial, including for workplace charging), transit authorities, non-utility charging network providers, and others. We sell to customers in all 50 states.

There are a number of barriers to EV adoption, but one of the largest is availability of charging infrastructure. According to a 2016 survey conducted by Altman Vilandrie & Company, 85 percent of Americans believe EV charging infrastructure is inadequate.¹ In Indiana, there are about 5,000 EVs, but only 175 public EV charging stations in the entire state – compared to over 3,000 gas stations.²

Given that this is a nascent market, EV charging infrastructure today has not attracted sufficient investment to establish sufficient public charging stations, including at workplaces and multi-family dwelling units. In turn, the lack of charging stations continues to stunt the adoption of EVs.

¹ <http://www.businesswire.com/news/home/20161208005809/en/High-Costs-Lack-Awareness-Threaten-Short-Electric>

² https://www.afdc.energy.gov/fuels/stations_counts.html; gas stations as of 2012 (latest data).

Morgan Stanley predicts that 2025 could be a turning point for EVs. In its base case, it predicts that EVs will constitute 10 percent of new car sales in 2025, grow to 30 percent in 2035, and reach 70 percent in 2049. It prepared a more aggressive scenario putting EVs at 90 percent of new car sales by 2045. However, it also presented a bearish model – one that could be the result of insufficient charging infrastructure – that saw EVs at or below 10 percent of new car sales for the foreseeable future.³

A comprehensive vision for EV charging infrastructure in Indiana is needed to promote EV adoption. Indiana should ensure that the resulting EV charging infrastructure is as convenient for consumers as possible.

The vision should also include technical and payment standards. Technical standards for communications interoperability and functionality minimize the likelihood of stranded assets. Payment standards, especially requiring credit card payment as a consumer choice at public sites, are critical to enhance the consumer experience. That experience has been poor to date, because EV drivers have to carry multiple RF ID cards and sign up for multiple charging networks separately. For these reasons, Nevada has adopted the credit card requirement, California has proposed a regulation requiring credit cards, and Massachusetts bill S.2505 of 2017 requires credit cards.

While the majority of all EV charging today is done at the home, there are still critical infrastructure needs not met by single-family home charging. The following are critical EV charging infrastructure needs:

- Highway corridor DC fast-charging
- Workplace charging
- Multi-unit dwelling
- Public charging at key destinations such as parks and beaches
- Urban core DC fast-charging

Siemens encourages Indiana to consider all of these needs both in allocating the maximum 15% of mitigation funds to light-duty charging infrastructure and in developing Indiana's strategic vision for supporting EV adoption through provision of sufficient infrastructure.

Please feel free to contact me with any questions.

Thank you,



Chris King
Chief Policy Officer
Siemens Digital Grid
chris_king@siemens.com
(510) 435-5189

³ <https://electrek.co/2017/05/05/electric-vehicle-sales-vs-gas-2040/#jp-carousel-43397>



September 28, 2018

Via Electronic Mail (VWTrust@idem.IN.gov)

Mr. Sean Seals,
Indiana Department of Environmental Management
Indiana Government Center
100 North Senate Avenue
Indianapolis, IN 46204

Re: Waste Management Comments - Revised August 2018 Draft Indiana Beneficiary Mitigation Plan Under the Volkswagen Environmental Mitigation Trust

Dear Seals,

I am writing on behalf of Waste Management of Indiana, Inc., to provide comments on the revised draft Beneficiary Mitigation Plan (“BMP”) for the expenditure of funds from the Volkswagen Environmental Mitigation Trust (“EMT”). We appreciate this opportunity for further public input as the Indiana Department of Environmental Protection (IDEM) finalizes Indiana’s BMP.

We strongly support the Department’s plan to set aside at least 14 percent of funds at the outset for eligible mitigation actions, such as incentivizing the purchase or conversion of medium and large diesel-powered fleet vehicles to natural gas fuels. We also urge the Department to release a solicitation for such projects because a solicitation would help to inform the Department of available options for effective utilization of the EMT funds and the opportunities to leverage such funds to achieve the greatest environmental benefits.

The draft of the BMP accurately notes that on-road heavy duty vehicles contribute to NOx emissions in Indiana. If the stated goal of the BMP is to achieve significant reductions in NOx emissions, then incentivizing projects that convert diesel-powered fleet vehicles to natural gas fuels should be a component of the EMP. Otherwise, the Indiana will be losing significant opportunities to partner with the private and municipal sectors to stretch EMT funds to effect even further NOx reductions.

The draft BMP sets out several general factors that will be part of the project review process. As discussed below, we believe that many of these factors certainly support utilization of EMT funds to incentivize the conversion of fleet vehicles to natural gas fuels:

NOx Emissions Reductions and Cost Effectiveness

The opportunity for greater NOx reductions is apparent. Natural gas vehicles offer up to 90% NOx reductions over traditional engine types. Moreover, many models of natural gas vehicles are available from OEMs and are currently in use.

Also, the costs are considerably lower than electric vehicles in the same class. The costs per pound of NOx reduced by a natural gas refuse truck is \$140 versus \$313 per pound of NOx reduced by an electric refuse truck. Thus, natural gas vehicles are very cost effective in the reductions they achieve and are supported in the draft plan.

Leveraged Funding Opportunities and other Potential Funding Sources

Utilizing a 25% incentive to encourage fleets to convert to natural gas fuels offers significant opportunities for leveraging EMT funding and will result in greater NOx reductions than 100% funding of a NOx-reducing vehicle. Fleet owners have projects that they are ready to implement, and a 25% incentive will encourage many to go forward with purchasing natural gas vehicles. We support Department actions to not lose the benefit of private sector and other funding to utilize the EMT allocation to Indiana to greatest effect.

Demonstrated Experience and/or Ability to Implement Project and Economic Benefits

Fleet owners also have the demonstrated experience and ability to implement such projects. Moreover, they will do so in a timely and efficient manner because they will have invested their own capital in the project. This type of capital commitment will also spur further investment in natural gas fueling infrastructure. While such infrastructure is available, more gas fueling stations will be added if fleets convert to natural gas fuels. As a result, more businesses will be attracted to Indiana to support the natural gas vehicle market, and employment opportunities will expand. This will provide the current and long-term environmental and economic benefits that the draft BMP intends to promote.

Benefits to All Communities

Finally, incentivizing fleets to convert to natural gas fuels will benefit all communities, including vulnerable populations, across Indiana. Commercial and municipal fleets travel throughout the Indiana, including rural, suburban, and urban areas. Thus, many areas will see the health benefits of reduced NOx emissions, as well as the economic benefits identified above.

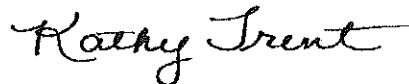
Again, thank you for the opportunity to comment on the revised draft of Indiana's BMP. We strongly encourage the Department to set aside 14% of the EMT funds for other eligible mitigation actions such as presented in these comments. The Department should, at a

Mr. Sean Seals
September 28, 2018
Page 3

minimum, issue a solicitation for such projects to enable it to identify promising opportunities to leverage the EMT funds to achieve the greatest impact with these dollars.

Please do not hesitate to contact me if you have questions or need further information.

Sincerely,

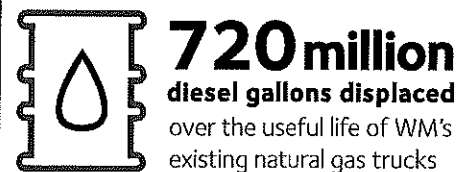
A handwritten signature in cursive script that reads "Kathryn Trent". The signature is written in black ink and is positioned above the typed name and title.

Kathryn Trent
Government Affairs Director

OUR SUSTAINABLE FLEET STORY

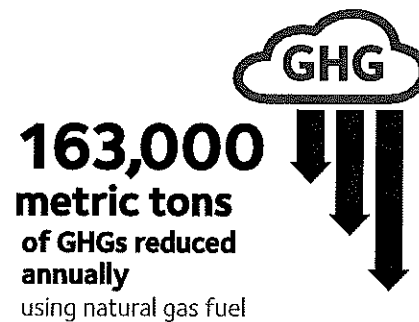
Waste Management is committed to reducing our fleet's CO₂, NO_x and GHG emissions.

WM is the largest private vocational heavy-duty fleet user of natural gas in North America. The company has been a pioneer in natural gas since the early 1990s and has invested more than \$1 billion in transportation innovation. Here's a snapshot of our accomplishments:



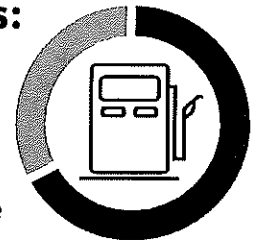
>45 million gallons of natural gas total are supplied at our 95 natural gas stations each year

>16 million gallons of renewable natural gas are produced by harnessing the methane in our landfills



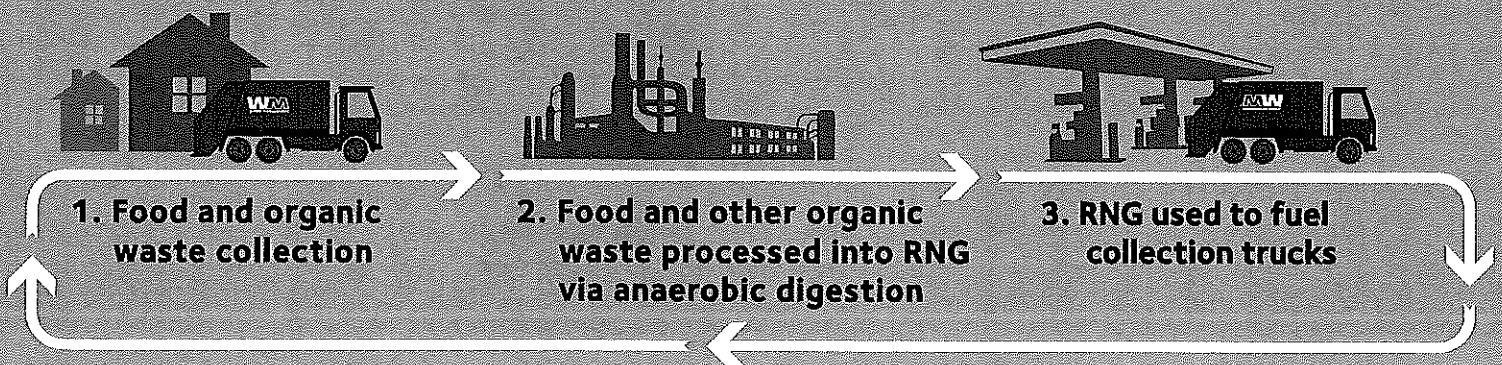
95 WM natural gas stations:

- 25 public stations
- 70 private stations



Innovation That Closes the Loop

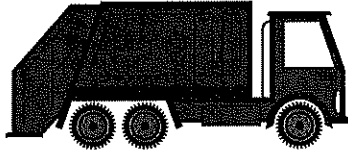
The refuse industry, and Waste Management in particular, has the unique systems in place to produce renewable natural gas (RNG) fuel from organic waste (e.g., landfills, wastewater treatment facilities, and food waste). WM uses this RNG to fuel its collection fleet, lowering fuel costs and reducing GHG emissions more than 80% compared to those powered by diesel.



BUILDING ON OUR SUCCESS

Maximize the VW Environmental Mitigation Trust's benefits by funding natural gas collection trucks.

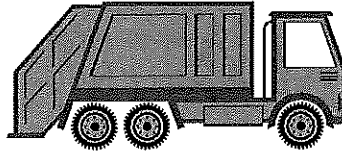
\$140 per lb of NOx



Natural Gas

Technology Cost \$300,000
NOx Reduced 2,141 lbs

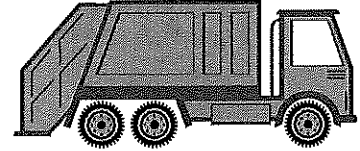
\$190 per lb of NOx



Diesel

Technology Cost \$270,000
 NOx Reduced 1,417 lbs

\$313 per lb of NOx



Electric

Technology Cost \$670,000
 NOx Reduced 2,141 lbs

When comparing the cost per ton of NOx reduction, natural gas collection trucks are:

26% more
 cost effective than diesel

65% more
 cost effective than electric

Funding Private Sector vs. Municipal Collection Trucks

What Would \$10 Million Fund?

The VW program settlement funds enables states to fund 25% of the new vehicle cost for private sector business and 100% for municipalities. If a state has \$10 million dollars in funding and the average cost of a collection truck is \$300,000, states could fund 33 municipal collection trucks or 133 private sector collection trucks. WM urges the state to prioritize private industry investments in order to achieve the greatest air quality benefits for communities, and provide fleet operators the ability to significantly reduce fuel costs.

Funding Private Industry Natural Gas Collection Trucks



285,000
 Pounds of
 NOx Reduced

Total Gallons of Diesel Displaced



Funding Municipal Owned Natural Gas Collection Trucks



70,653
 Pounds of
 NOx Reduced

Total Gallons of Diesel Displaced



Make a Bold Impact on Air Quality Today

NGVAMERICA

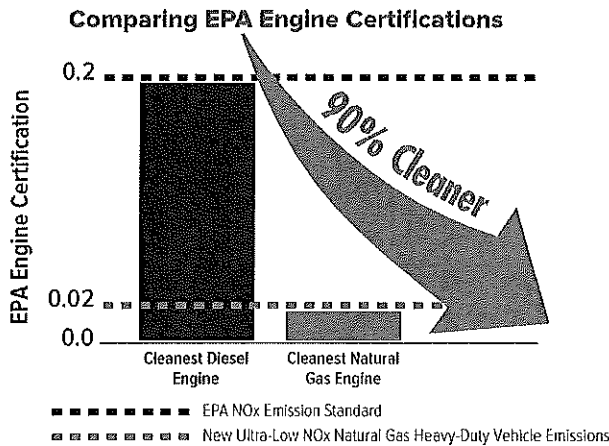
Natural Gas Vehicles for America

More than 50% of Americans are exposed to unhealthy levels of ozone and particulate pollution, putting them at greater risk for asthma, lung cancer, cardiovascular disease, and premature death. Volkswagen's \$2.9 billion Environmental Mitigation Trust fund provides each state an incredible opportunity to make an immediate and tangible impact on air quality by targeting medium- and heavy-duty engines—the leading source of these toxic air contaminants in almost every metropolitan area.

Natural gas vehicles (NGVs) can transform the medium- and heavy-duty transportation sector.

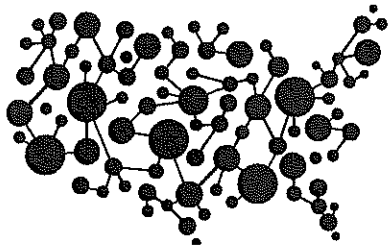
Sustainable:

NGVs Offer the Cleanest Heavy-Duty Truck Engines in the World



Natural gas medium- and heavy-duty engines provide unmatched reductions of smog-forming emissions of nitrogen oxides (NOx). In 2015, a revolutionary natural gas engine was certified by the U.S. Environmental Protection Agency and California Air Resources Board to a level 90% below the EPA's current exhaust standard and 90% below the cleanest diesel engine.

A truck with this engine has an emission profile equivalent to that of a heavy-duty battery electric truck.



Available:

NGVs are Commercially Available Now

Dozens of models of medium- and heavy-duty low-emission natural gas vehicles and engines are commercially available from traditional truck OEMs with established sales and service networks—such as Peterbilt, Freightliner, Volvo, Kenworth and Mack. Retrofit and repower options are also available from a variety of manufacturers.

Responsible:

Dollar-for-Dollar, NGVs Deliver the Most Cost-Effective NOx Emissions Reductions

The calculations shown below assume the deployment of the cleanest commercially available model for each application. Funding natural gas vehicles will lead to the largest total reduction in NOx emissions.

Short/Regional Haul Trucks



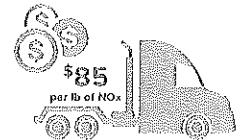
Natural Gas

Technology Cost \$150,000
NOx Reduced 3,810 lbs



Diesel

Technology Cost \$100,000
NOx Reduced 1,858 lbs



Electric

Technology Cost \$324,000
NOx Reduced 3,810 lbs

Refuse Trucks



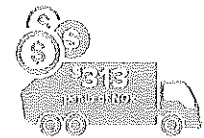
Natural Gas

Technology Cost \$300,000
NOx Reduced 2,141 lbs



Diesel

Technology Cost \$270,000
NOx Reduced 1,417 lbs



Electric

Technology Cost \$670,000
NOx Reduced 2,141 lbs

School Buses



Natural Gas

Technology Cost \$148,000
NOx Reduced 671 lbs



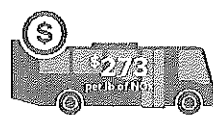
Diesel

Technology Cost \$115,000
NOx Reduced 396 lbs

Not Included
Due to Lack of Availability

Electric

Transit Buses



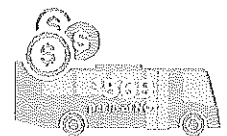
Natural Gas

Technology Cost \$360,000
NOx Reduced 1,318 lbs



Diesel

Technology Cost \$300,000
NOx Reduced 555 lbs



Electric

Technology Cost \$750,000
NOx Reduced 1,318 lbs

Contact NGVA for additional detail on the data.

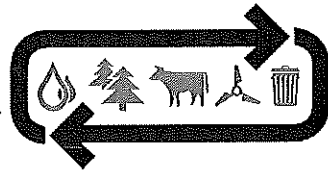
#1

Natural Gas Producer in the World



90+ years supply of recoverable natural gas

Continual supply by harnessing renewable sources

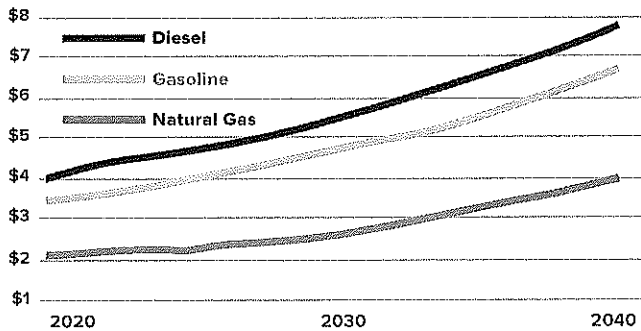


2.5+ million miles of U.S. pipeline infrastructure

The U.S.' expansive natural gas pipeline system is well poised to support a national network of natural gas fueling stations. Nearly 2,000 CNG and LNG fueling stations are operating today, with rapid expansion underway.

Natural gas is a clean, low-cost, and domestically abundant transportation fuel.

Projected Fuel-Price Differentials (prices per \$DGE)

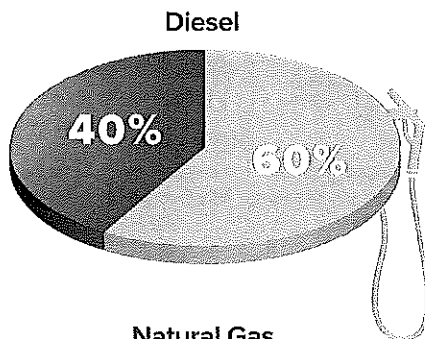


Source: U.S. Energy Information Administration

Natural Gas Provides Long-Term Fuel Cost Savings

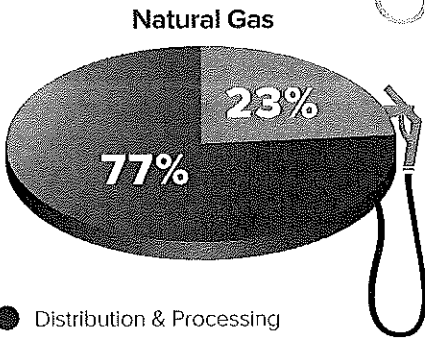
Currently, natural gas has a 3:1 price advantage over oil on a Btu basis (historically, this spread has ranged as high as 8:1). At the pump, average natural gas prices are currently \$0.75 to \$1 lower than diesel.

This price spread is predicted by well-documented economic models to remain for several decades. This fuel-price savings will allow fleet operators to improve their bottom-line and invest in other areas of their business.



Natural Gas Provides Fuel Price Stability

The chart demonstrates why diesel prices are subject to significant swings. Approximately 60% of the price of diesel fuel is impacted by the market cost of crude oil, which is largely sourced from politically unstable, high-conflict regions. When crude oil prices increase, diesel prices follow suit.



However, the pump price of natural gas remains relatively stable for two reasons. One, it is domestically sourced. Two, the commodity cost of natural gas only makes up 23% of the pump price so price fluctuations have a smaller impact.

- Distribution & Processing
- Natural Gas Commodity Cost
- Crude Oil Commodity Cost

Natural Gas Reduces Transportation Emissions

Compared to Diesel:

CO₂ Emissions:

27% reduction

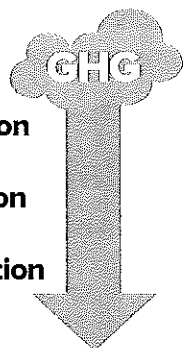


Greenhouse Gas Emissions:

CNG 17% reduction

LNG 11% reduction

RNG 115% reduction



NGVAMERICA

Natural Gas Vehicles for America

www.NGVAmerica.org

September 28, 2018

Indiana Department of Environmental Management
100 N Senate Ave
Indianapolis, IN 46204

RE: Volkswagen Mitigation Trust – IDEM Draft Beneficiary Mitigation Plan

To Whom It May Concern:

We are writing on behalf of Ryan LLC, a consulting firm who represents multiple clients across various industries – most of whom are interested in applying for the proposed grants provided by the Volkswagen (VW) Environmental Mitigation Trust Settlement.

In reviewing Indiana’s Draft Beneficiary Mitigation Plan (BMP), we have ascertained that the established allocations are advantageous to achieving the primary goals of the Department of Environmental Management (IDEM), however we would like to pose considering the ensuing alterations.

With an allocation of 58% (\$23.78 MM) devoted to on road equipment and vehicles, our clientele would be able to leverage the funding to incorporate cleaner, more modern vehicles into their fleet. However, when considering the disbursement of the \$23.78 MM, we would like to point to the population that would benefit from increasing the apportionment for school buses (\$9.51 MM) – school-aged children.

Empirical research published in the Journal of the Air & Waste Management Association states, “A high percentage of school buses are powered by diesel engines and commuting children may be exposed to high concentrations of exhaust particles and gases during their commutes, at school bus stops, or at loading/unloading zones.” Furthermore, considering the fact the IDEM received strong sentiment in the previous comment round, we propose increasing the apportionment of funds dedicated to school bus replacement.

Regarding the funding of nonroad equipment and vehicles, the projected allocations laid out in the Draft BMP coincide with what we have ascertained to be appropriate. Dedicating a substantial portion of funding to these vehicles and equipment will certainly have a beneficial impact on air quality for employees at such facilities, as well as communities adjacent to airports and similarly concentrated operations.

In conclusion, we suggest considering funding fleet specific, heavy duty, electric infrastructure costs for appropriate projects. Allocating even a small percentage to such infrastructure projects would provide the necessary foundation for fleets to achieve economies of scale in connection with future electric investment initiatives.

We would like to thank the IDEM for the opportunity to provide feedback regarding the BMP and taking the time to consider the public input. Please feel free to contact Allea Newbold at 813-371-0566 or Allea.Newbold@ryan.com for any questions regarding the above comments.

Sincerely,

Allea Newbold – Ryan, LLC

NGVAMERICA

Natural Gas Vehicles for America

400 North Capitol Street, N.W.
Washington, D.C. 20001
ngvamerica.org



September 27, 2018

Commissioner Bruno Pigott
Mr. Shawn M. Seals
Indiana Department of Environmental Management
Indiana Government Center North
100 North Senate Avenue
Indianapolis, IN 46204

RE: NGVAmerica Comments on the Indiana Draft Beneficiary Mitigation Plan

Dear Commissioner Pigott and Mr. Seals:

Natural Gas Vehicles for America (NGVAmerica), the national trade association for the natural gas vehicle industry, respectfully submits the following comments to the State of Indiana Department of Environmental Management (IDEM) on its Draft Beneficiary Mitigation Plan (Plan) for information as you finalize your Plan. These comments are in addition to the NGVAmerica comments submitted to you on April 21, 2017 (attached) regarding NGVAmerica's recommendations on how states can best use the Environmental Mitigation Trust (EMT or Trust) funds that each state will receive as part of the Volkswagen (VW) diesel emission settlement.

The VW EMT funds provide an extraordinary opportunity for Indiana and other states to put significantly cleaner, lower-polluting vehicles on the road in public and private fleets. This funding (\$40.9 million) can and should be used by Indiana to continue its commitment to accelerating the use of cleaner, alternative fuels that offer a cost-effective alternative to funding diesel vehicles.

As shown in our VW Comment Letter submitted on April 21, 2017, NGVAmerica believes that natural gas vehicles (both LNG and CNG) offer the best solutions for the projects that will address the goals of the EMT, to reduce the most nitrogen oxide (NOx) for the least cost. Please see the diesel, electric vehicle and natural gas vehicle comparisons on the attached NGVA VW Flyer for heavy duty trucks, transit buses, refuse trucks and school buses.

The latest natural gas engines are the only zero emission equivalent or near zero engines that are certified to perform at 0.02 g/bhp-hr of nitrogen oxide (NOx) emissions or better and should not be confused with diesel engines certified to the 2010 EPA standard of 0.2 g/bhp-hr NOx standard.¹ The 0.02 g/bhp-hr NOx standard requires that new engines outperform the federal standard by 90 percent and is the cleanest heavy-duty engine standard today. It also is the lowest level currently recognized under California's Optional Low-NOx Standard (OLNS) for engine. Additionally, studies have shown that the near zero engines perform at or better than their EPA tested rating, while new diesel engines may have in use emissions that are as much as 5 times higher than their EPA tested rating (see NGVAmerica's April 21st Comments).

¹ See SCAQMD press release from June 3, 2016 providing details on the petition filed by state authorities urging the U.S. EPA to adopt the 0.02 NOx standard (<http://www.aqmd.gov/home/library/public-information/2016-news-archives/nox-petition-to-epa>) (Today's action follows a March 4 vote by the SCAQMD's Governing Board to formally petition the U.S. EPA to adopt a so-called "near-zero" or "ultra-low" emissions standard for heavy-duty truck engines that is 90 percent cleaner than the current standard).

Advocating the increasing use of NGVs where they benefit most.
For the economy. For the environment. For health. For security. For America.

If renewable natural gas (RNG) is used, life cycle greenhouse gas emissions from NGVs are reduced further, potentially becoming carbon negative. As Indiana knows from the Fair Oaks Dairy and Pig Farm example, using RNG also creates a market for energy created from waste water treatment, landfills, animal waste and other methane sources and significantly increases air quality by reducing the amount of methane released.

In addition to the above on-road applications, natural gas also is capable of powering non-road applications such as freight switchers, other locomotives and marine vessels. For freight switchers, natural gas technology effectively provides what would be a Tier 5 emissions freight switcher (labeled Tier 4 until the U.S. EPA puts out the Tier 5 specifications) at Tier 4 diesel freight switcher pricing. The Indiana Plan allocates 20 percent of its VW funding for rail, marine and other off-road projects and we ask the IDEM to ensure that these funding opportunities are open to natural gas options.

The Indiana Draft Plan has set effective goals for its Volkswagen Mitigation Trust Program including to *“Improve air quality across Indiana through cost-effective NOx emission reduction strategies.”* The VW EMT funds provide an opportunity for Indiana to cost-effectively accelerate the transition to cleaner vehicles and lower emissions. Natural gas vehicles are commercially available in all the vehicle classes and offer the best solutions today for addressing the goals of the EMT, delivering the most nitrogen oxide emission reductions for the least cost.

The IDEM has allocated a significant portion of its funding for medium and heavy duty trucks, transit, shuttle and school bus projects. Natural gas medium and heavy duty trucks, transit, shuttle and school buses are widely used across the country and offer near-zero emissions at very competitive prices, providing cost-effective NOx reductions that will enable Indiana’s VW funding to produce the most NOx reductions for the funds spent.

Current State Beneficiary Mitigation Plans

Forty-five states have released Beneficiary Mitigation Plans and NGVAmerica has reviewed these plans and offered comments. NGVAmerica believes the Colorado Plan provides an excellent model for other states that wish to segment their funding, maximize the use of alternative fuels, and provide parity among alternative fuels ([https://www.colorado.gov/pacific/sites/default/files/AP VW Beneficiary Mitigation Plan.pdf](https://www.colorado.gov/pacific/sites/default/files/AP_VW_Beneficiary_Mitigation_Plan.pdf)).

In allocating its funds, Colorado did not pick a preferred alternative fuel (diesel is excluded except for model years 1992-2001) and provides a relative parity for funding for the various fuels through its choice of percentage funding by fuel type. The funding set aside by Colorado for Alt Fuel Trucks/School and Shuttle Buses funds all alternative fuels at 40% of the vehicle cost for government and public entities, while private vehicles are funded at 25% of the vehicle cost for all alternative fuels.

The IDEM has chosen to fund its projects at the private industry levels except for electric-powered equipment and vehicles which will be reduced to 70 percent funding. This approach does not achieve parity among fuels and will promote diesel and electric projects over other fuels. NGVAmerica recommends that since diesel does not perform to the EPA standard when in use at low speeds or idling, we recommend that diesel receive a lower (or no) funding amount than alternative fuels, and that the electric vehicle percentage be reduced further.

Additional Options for Vehicle Scrappage

NGVAmerica also recommends that the IDEM consider the following vehicle scrappage options in the Plan:

- Increase the options for scrappage beyond a strict replacement of a current fleet vehicle (e.g., allow a fleet to acquire an older vehicle from another fleet or allow a fleet to exchange one of its newer vehicles for another fleet’s older vehicle that is then scrapped)

Advocating the increasing use of NGVs where they benefit most.
For the economy. For the environment. For health. For security. For America.

- Since the Trust does not specify the fuel of the scrappage vehicle, allow natural gas vehicles that meet the year criteria to be scrapped and replaced with new NGVs

Use the Most Current Emissions and Cost Benefit Calculation Tools – HDVEC created for VW Projects

The Argonne National Laboratory's (ANL) AFLEET tool should be used to calculate vehicle / fuel type emissions since this tool has recently been updated to include current data on all vehicles and fuels including in-use emissions data. The AFLEET Tool 2017 updates include:

- Added low-NOx natural gas engine option for CNG and LNG heavy-duty vehicles
- Added diesel in-use emissions multiplier sensitivity case
- Added Idle Reduction Calculator to estimate the idling petroleum use, emissions, and costs for light-duty and heavy-duty vehicles
- Added well-to-pump air pollutants and vehicle cycle petroleum use, GHGs, and air pollutants
- Added more renewable fuel options
- AFLEET Tool spreadsheet and user manual at: http://greet.es.anl.gov/afleet_tool and tool link is: <http://www.afdc.energy.gov/tools>

ANL has also just released a new vehicle emissions calculator (HDVEC) to provide state officials and fleet managers with an accurate tool to gauge emissions reductions across various medium- and heavy-duty vehicle project options affiliated with the Volkswagen Environmental Mitigation Trust Settlement. The HDVEC tool is available at: <http://afleet-web.es.anl.gov/hdv-emissions-calculator/>.

The IDEM anticipates that it will use the U.S. EPA Diesel Emissions Quantifier (EPA DEQ) tool to calculate vehicle emissions. The DEQ tool is not current in its underlying assumptions and data for today's engines and in-use emissions, therefore NGVAmerica requests that the IDEM use the ANL HDVEC tool for all applicable categories of projects, since the data is current, easy to use and was created for VW projects (after reviewing the tool, New Mexico is requiring that its project applicants use the HDVEC to calculate their emissions reductions). NGVAmerica is available to discuss the operation of this tool and show comparisons between it and the DEQ if the IDEM desires to do this.

Summary of NGVAmerica's Recommendations for EMT Funding

- ✓ Given that the EMT was created because of NOx pollution associated with non-compliant diesel vehicles, we believe that the funding should be set aside for clean, **alternative fuel vehicle projects that focus on maximizing NOx reduction for the funds spent**
- ✓ Provide a larger incentive and greater overall funding for medium- and heavy-duty engines that deliver **greater NOx reductions than currently required** for new vehicles and engines
- ✓ Target funding for technologies that have demonstrated the ability to deliver actual **lower in-use emissions** when operated in real-world conditions
- ✓ Provide the **highest level of funding to applications that produce the largest share of NOx emissions** (in most regions this means prioritizing for short-haul, regional-haul and refuse trucks)
- ✓ Prioritize funding for **commercially available products that are ready for use**
- ✓ Prioritize funding for **clean vehicles rather than fueling infrastructure**

Advocating the increasing use of NGVs where they benefit most.
For the economy. For the environment. For health. For security. For America.

- ✓ **Scale funding to incentivize the cleanest engines available** – at a minimum, provide parity among alternative fuels by following a version of the Colorado VW Plan that funds non-diesel alternative vehicles in the private sector at 25% of the cost of the vehicle and public sector vehicles at 40%
- ✓ Ensure that funding incentivizes adoption by **both public and private fleets**
- ✓ Prioritize projects that include **partnerships that provide a match** such as a CNG or LNG station being built in locations that will receive the VW funding
- ✓ **Accelerate the funding** in the early years to maximize the NOx reduction benefits
- ✓ Use vehicles emissions measurement tools that reflect current technologies and performance under real world operation duty cycles – **Argonne National Laboratory’s AFLEET tool and HDVEC tools** are the most current tools available

Compared to other alternative fuels and to diesel vehicles, natural gas vehicles that are commercially available today, offer the best solution for addressing the goals of the EMT. The IDEM recognizes the value of cost-effective NOx reductions that NGVs provide, and that these emission reductions can be realized today.

NGVAmerica welcomes the opportunity to provide further information and analysis on the economic and environmental benefits of natural gas vehicles in Indiana. Please contact Jeff Clarke, NGVAmerica General Counsel & Regulatory Affairs Director at 202.824.7364 (jclarke@NGVAmerica.org), or Sherrie Merrow, NGVAmerica State Government Advocacy Director at 303.883.5121 (smerrow@NGVAmerica.org) to set up a meeting and for additional information.

Sincerely,



Daniel J. Gage
President

NGVAMERICA

Natural Gas Vehicles for America

400 North Capitol Street, N.W.
Washington, D.C. 20001
ngvamerica.org



April 21, 2017

Ms. Rebecca Holwerda
Governor's Energy Director
200 W. Washington Street #206
Indianapolis, IN 46204

RE: NGV America Comments on the Volkswagen Diesel Emissions Settlement and the Environmental Mitigation Trust Implementation for the States

Dear Director Holwerda:

Natural Gas Vehicles for America (NGV America), the national trade association for the natural gas vehicle industry, respectfully submits the following comments on how the State of Indiana can best use the Environmental Mitigation Trust (EMT or Trust) funds (\$40.9 million) that the state will receive as part of the Volkswagen (VW) diesel emission settlement. These comments are intended to inform the decision-making process as Indiana begins to consider and develop the Environmental Mitigation Plan required by Trust.

The VW EMT funds provide an extraordinary opportunity for Indiana and other states to put significantly cleaner, lower-polluting vehicles on the road in public and private fleets. This funding can and should be used by Indiana to continue its commitment to accelerating the use of cleaner, alternative fuels that offer a cost-effective alternative to funding diesel vehicles.

The latest natural gas engines are the only "near-zero" engines that are certified to perform at 0.02 g/bhp-hr of nitrogen oxide (NOx) emissions or better and should not be confused with diesel engines certified to the 2010 EPA standard of 0.2 g/bhp-hr NOx standard.¹ The 0.02 g/bhp-hr NOx standard requires that engines outperform the federal standard by 90 percent and is the cleanest heavy-duty engine standard today. It also is the lowest level currently recognized under California's Optional Low-NOx Standard (OLNS) for engines.

NGV America's comments rely on data generated by evaluating the latest commercially available technology when comparing emissions benefits between natural gas, diesel and electric vehicle and engine types. Natural gas engines are the only available internal combustion engines that have been certified to California's 0.02 OLNS and thus are the only true Near Zero engines available in the marketplace today. Additionally, if renewable natural gas (RNG) is used, life cycle emissions from NGVs are reduced further. Putting more NGVs on the road today provides a strong customer base for the growing RNG market.

¹ See SCAQMD press release from June 3, 2016 providing details on the petition filed by state authorities urging the U.S. EPA to adopt the 0.02 NOx standard (<http://www.aqmd.gov/home/library/public-information/2016-news-archives/nox-petition-to-epa>) (Today's action follows a March 4 vote by the SCAQMD's Governing Board to formally petition the U.S. EPA to adopt a so-called "near-zero" or "ultra-low" emissions standard for heavy-duty truck engines that is 90 percent cleaner than the current standard).

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Compared to other alternative fuels and to diesel vehicles, natural gas vehicles that are commercially available today, offer the best solution for addressing the goals of the EMT and delivering the most nitrogen oxide (NOx) emission reductions for the lowest cost.

The following pages outline key facts related to vehicle emissions, total cost of ownership, and current availability, and NGVAmerica's recommendations on how EMT funds can be allocated effectively for reducing emissions.

The Need to Take Meaningful Action Today

The funding available through Volkswagen's Environmental Mitigation Trust comes at a time when it is critical to address transportation emissions. The American Lung Association's "State of the Air 2016" report found that air pollution continues to be a pressing concern with more than half of all Americans—166 million people—living in counties where they are exposed to unhealthy levels of ozone and particulate pollution.

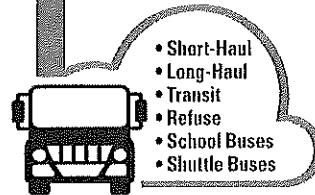
Medium- and heavy-duty on-road vehicles are the number one source of ozone-forming emissions of nitrogen oxides (NOx) in almost every metropolitan region in the U.S., therefore there is considerable opportunity to develop and deploy funding programs that make an immediate and tangible impact on air quality and related public health issues.

166 Million



*Approximately
50% of Americans
live in
areas with air that
is unhealthy to
breathe*

#1 Source



*Medium- and
heavy-duty
vehicles are the
#1 source of
smog*

Sustainable, Responsible, Available: Natural Gas Vehicles

Today's natural gas vehicles (NGVs) are proven technologies that can uniquely, immediately, and cost-effectively transform our nation's medium- and heavy-duty transportation sector. The advantages of natural gas as a transportation fuel include its domestic availability, widespread distribution infrastructure, low cost, and inherently clean-burning qualities.

In these comments NGVAmerica presents the compelling reasons that states should prioritize funding for NGVs to *maximize the impact* of the available funding. As your organization is aware, the EMT was set up to fund projects that make an impactful reduction on NOx emissions to mitigate the excess emissions currently in our air from the non-compliant light-duty diesel vehicles VW sold. NGVAmerica strongly believes that NGVs are the best solution to meet the core goals put forth by the Volkswagen EMT funding. NGVs are:

1. **Sustainable:** NGVs maximize long-term emission reductions
2. **Responsible:** NGVs extend the funding and foster economic development
3. **Available:** NGVs meet the diverse operating requirements of every fleet application

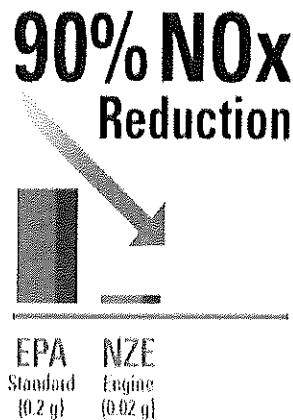
Advocating the increasing use of NGVs where they benefit most.
For the economy. For the environment. For health. For security. For America.

1. Sustainable: NGVs Maximize Long-Term Emission Reductions

- ❖ **Key Point:** Today's natural gas medium- and heavy-duty engines provide *unmatched* reductions of smog-forming emissions of nitrogen oxides (NOx).

"Near Zero-Emissions": EPA and CARB Certified a Heavy-Duty Natural Gas Engine to 0.02 g Standard

In September 2015, the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) certified the world's first heavy-duty engine that emits oxides of nitrogen (NOx) at levels so low that they are considered at "near-zero" (0.02g NOx/bhp-hr). This is the cleanest commercially available heavy-duty truck engine available in the market today, offering the ability to reduce emissions 90% below even the most stringent U.S. EPA standards.



Today's natural gas engines offer a 90% NOx reduction over the EPA's strictest emission standards, making them the cleanest commercially available technology

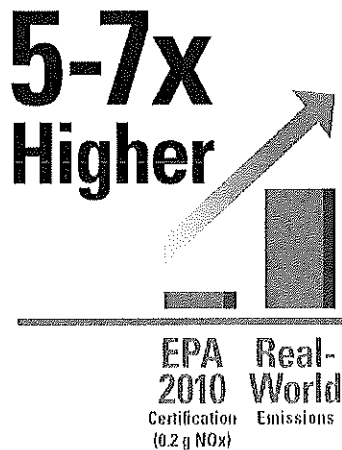


The "Game Changer" report shows that "Near-Zero" NGVs are cleaner than "Zero-Emission" All-Electric trucks

NGVs Have Lower NOx Emissions Than All-Electric Trucks

The emission benefits of the new "Near-Zero" engine are well documented in the 2016 *Game Changer* report issued by Gladstein, Neandross and Associates (GNA)². The GNA report indicates that a truck or bus equipped with a natural gas engine that has been certified to the 0.02 g/bhp-hr Optional Low NOx Standard has tailpipe NOx emissions that are comparable to – or possibly lower than – the amount of NOx emitted to produce electricity used to charge a comparable heavy-duty All-Electric Truck.

² Gladstein, Neandross & Associates, *Game Changer Technical White Paper* (2016) <http://ngvgamechanger.com/>, Section 6.4 and Appendix 1. Emissions of low-NOx natural gas engines produce NOx emissions that are comparable to or lower than similar electric drive vehicles in all 50 U.S. states when considering upstream NOx.



Heavy-duty drayage trucks:

Diesel trucks tested in study exceed certification level

Critical Insight:

Study Finds that Natural Gas Engines Outperform Diesel Engines in Real World Situations

Natural gas (NG) engines today meet an optional Low-NOx standard that is ten times cleaner than the standard required for new diesel and natural gas engines. However, the in-use emission benefits of NG engines could be even more significant.

A recent report published in *Environmental Science and Technology*³, evaluated in-use emissions of earlier model year NG vehicles and found that NG engines performed much better in real world conditions (i.e., operating within city limits in low-speed, high-idling situations), registering NOx levels that were 96% lower than levels produced by tested diesel engines equipped with the latest emissions controls. The study found that diesel NOx emissions operating in similar conditions produced emissions that were 5 -7 times higher than in-use certification limits in some cases.

Related Recommendations for EMT Funding

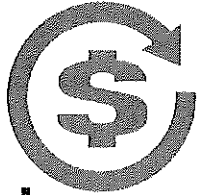
- ✓ **Provide a higher level of funding for technologies that are proven to exceed federal emission levels for nitrogen oxides**
 - Vehicles with engines certified to California's Optional Low-NOx Standard should receive the highest level of funding (e.g., 25% in the case of private sector vehicle replacements)
 - Use the state's approved DERA plan to fund low-NOx natural gas trucks (i.e., 35% of the replacement cost for private vehicles equipped with low-NOx engines)
- ✓ **Provide the highest level of funding to applications that will reduce the largest share of NOx emissions**
 - Evaluate the main mobile source(s) of NOx emissions in urban and non-attainment areas (Note: In most regions, this means prioritizing funding for short-haul, regional-haul, and refuse trucks)
 - Do not segment the funding – fund the projects that best achieve the most NOx reductions

³ *Environ. Sci. Technol.*, 2015, 49 (8), pp 5236–5244 (Emission Rates of Regulated Pollutants from Current Technology Heavy-Duty Diesel and Natural Gas Goods Movement Vehicles).

2. Responsible: NGVs Extend the Funding and Foster Economic Development

- ❖ **Key Point:** NGVs are far more cost-effective in delivering emission reductions than other alternative fuel options, such as hybrid and electric vehicles.

**18-24
month
payback**



Due to lower fuel and maintenance costs, NGVs offer an 18 to 24 month payback. As production increases and fuel tank prices come down, vehicles will become less expensive and enjoy a shorter payback period

NGVs Offer a Fast Return on Investment

While NGVs typically cost more than gasoline or diesel vehicles upfront (largely due to the cost of high-pressure and insulated fuel tanks which are necessary to store CNG or LNG), owners and operators of high mileage vehicles typically see a pay back in as little as 18–24 months. This is due to:

- **Lower Fuel Costs:** Natural gas fuel prices have historically had a significant discount relative to gasoline and diesel and offer more stability compared to the costs of petroleum based fuels. Lower oil prices have recently reduced the differential in price, but according to the Energy Information Agency, the long-term outlook is for natural gas prices to remain stable and low, while volatility and higher prices return for gasoline and diesel fuels. For many users, the savings in fuel costs can translate into significant savings over the life of a vehicle, depending on fuel efficiency and the number of miles driven. The greatest savings are currently being seen in heavy-duty, high mileage fleets.
- **Lower Maintenance Costs:** NGVs are easier and cheaper to maintain than diesel trucks because they have:
 - No diesel particulate filter (DPF)
 - No DPF regeneration or waste disposal
 - No selective catalytic reduction (SCR)
 - No diesel emission fluid (DEF)



160,000+
NGVs on U.S. Roads Today



High-profile fleets across the U.S. are using natural gas vehicles in their everyday operations, transporting passengers, and hauling waste, packages, beverages, and other goods

NGVs Have Been Road-Tested by Leading Fleets

There are more than 160,000 NGVs on U.S. roads today, spanning all weight classes and vehicle applications. The adoption of NGVs has been pioneered by several high-profile fleet operators, including UPS, Anheuser-Busch, Kroger, FedEx, Frito Lay, Waste Management, LA Metro, all of which performed exhaustive analysis to determine the best vehicle and fueling options for their fleet based on application, range, duty cycle, and payload.

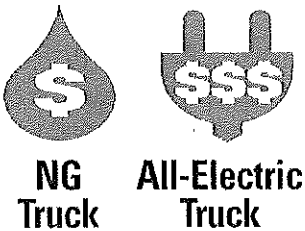
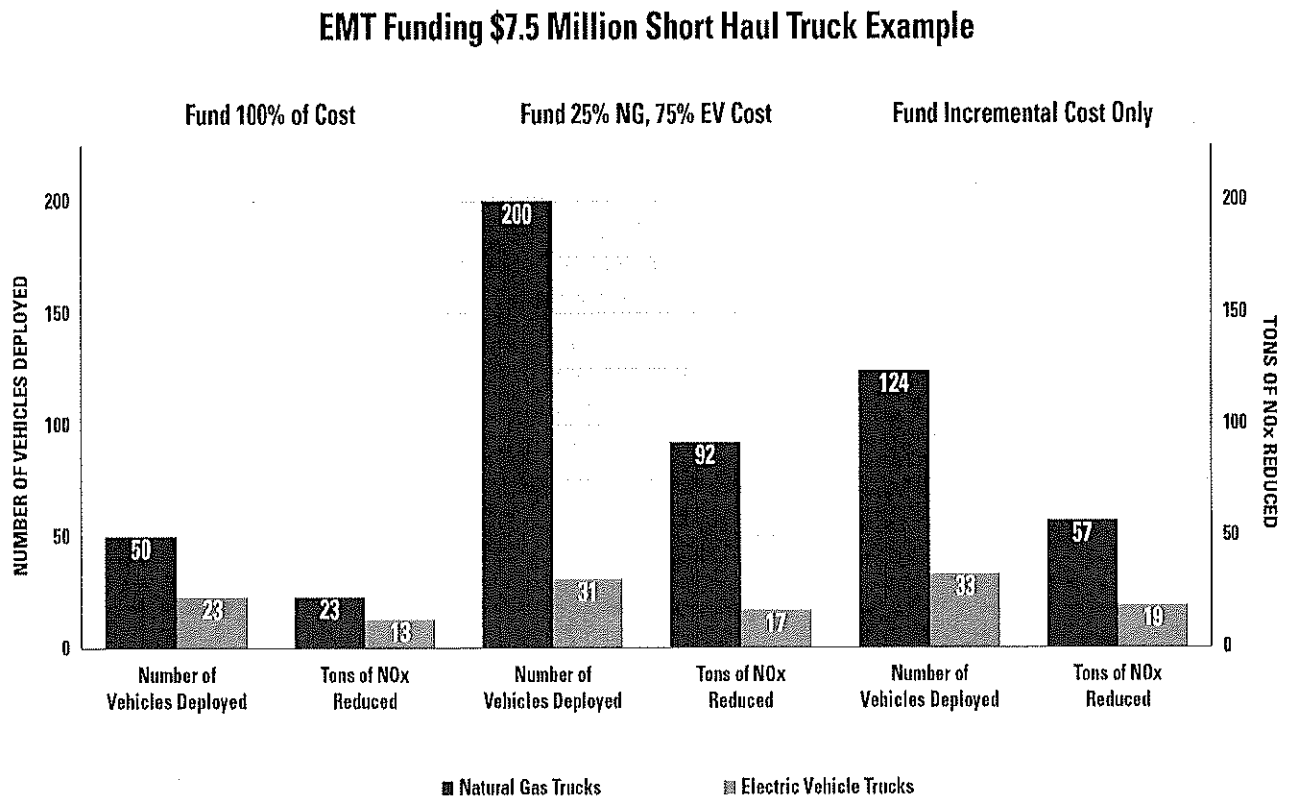
Given the significant fuel and emission reductions realized by early adopters, the popularity of NGVs has continued to build in the U.S., with 20% of all U.S. transit buses now running on CNG or LNG, 35 airports operating NGVs in their private fleets or championing policies that encourage use by private fleets, and more than 50% of new refuse trucks running on natural gas.

To fuel these vehicles, natural gas infrastructure is rapidly expanding with more than 1,640 CNG and 123 LNG fueling stations operating today.

Dollar-for-Dollar Natural Gas Delivers Greater Numbers of Total Vehicles and Greater Total Tons of NOx Emission Reductions

This is illustrated by the chart below which looks at several different funding options for natural gas and electric vehicles including providing 100% of the cost of new, replacement vehicles for public fleets, using the maximum funding levels specified in the settlement for natural gas and electric vehicles purchased by private fleets, or funding only the incremental cost of new, replacement vehicles. In each case, the deployment of natural gas vehicles (e.g., regional haul trucking, refuse trucks, and transit buses) will provide the most NOx emissions reduction to comply with the EPA's latest national ozone standards.

Chart: Heavy-Duty Truck Deployment & NOx Reduction Comparisons Under Different Funding Scenarios



Critical Insight:
Comparable All-Electric Vehicles Cost 2-3x More Than an NGV

While actual cost depends on the application, an all-electric medium- or heavy-duty vehicle usually costs two to three times the amount of a comparable vehicle powered by a 0.02 g NOx natural gas engine. As noted above, funding heavy-duty NGVs delivers greater emission reductions than similar projects involving all-electric trucks, and they offer the best ability to reduce emissions on a large scale because the funding will extend further.

Related Recommendations for EMT Funding

- ✓ **Ensure that funding incentivizes adoption by both public and private fleets**
 - While it might be tempting to fund public vehicles at the 100% level, this will limit the total number of deployed vehicles and therefore lessen the overall emission reductions
 - Funding levels should be large enough to offset the incremental cost (as compared to cost of a new diesel vehicle) of new, cleaner vehicles, as well as to address the fact that replaced vehicles must be scrapped
 - For private fleets, use available state funding sources to supplement the Volkswagen funds to ensure that new, cleaner trucks are truly incentivized by covering the full incremental cost (compared to baseline diesel vehicles) and to address economic loss associate with scrappage

- ✓ **Prioritize funding for clean vehicles rather than fueling infrastructure**
 - Funding should be used to incentivize fleets and vehicle acquisitions where existing fueling infrastructure exists to better support investments that have already been made
 - If fueling infrastructure needs to be developed, funding should be secured as part of private-public partnerships. Using the funding in this way will encourage additional economic development in the state and increase the availability of stations for future deployments

3. Available: NGVs Meet the Diverse Operating Requirements of Every Fleet Application

- ❖ **Key Point:** Dozens of models of medium- and heavy-duty low-emission natural gas vehicles and engines are commercially available from reputable, world-known OEMs with established sales and service networks.



Wide Array of NGV Options Commercially Available

There are many natural gas vehicle options available from several original equipment manufacturers (OEM). These vehicles can be purchased from the dealership through a process that has been streamlined for the customer.

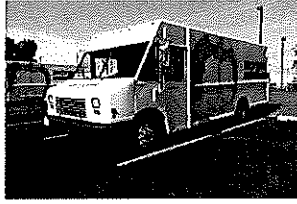


Many other medium- and heavy-duty vehicle options are available through small vehicle modifiers (SVM). These companies manufacture conversion systems that have been certified and approved by the U.S. Environmental Protection Agency and/or the California Air Resources Board. These approved systems can be installed on new and used vehicles to run on natural gas.



Additionally, Cummins Westport currently offers the 6.7L ISB-G, 8.9L ISL-G and the 11.9L ISX-G natural gas engines. These spark-ignited engines are used in a variety of applications, including refuse trucks, transit buses, cement trucks, short- and regional-haul tractors, delivery trucks, school buses, and shuttles. Roush offers a school bus engine that is certified to the Low-NOx standard of 0.10. Retrofit and repower options are also available from a variety of manufacturers.

For a full list of EPA and CARB certified engines, visit www.ngvamerica.org/vehicles/vehicle-availability. A list of available NGV manufacturers and conversion companies follows.



HD Vocational OEMs

Autocar Truck
Capacity
Crane Carrier
Elgin
Johnston
Kalmar
McNeilus
Mack
Peterbilt
Power Solutions Int'l.
Schwarze
Tymco



HD Truck OEMs

Cummins Westport
Freightliner
Kenworth
Mack
Peterbilt
Volvo



HD Bus OEMs

Blue Bird Bus
DesignLine
El Dorado
Gillig
New Flyer/NABI Bus
NOVA Bus
Motor Coach Industries
Thomas Built Bus

HD Retrofit/ Repowers

American Power Group
Clean Air Power
Diesel 2 Gas
Fyda Energy Solutions
NGV Motori
Omnitek Engineering

MD Retrofits

AGA Systems
Altech-Eco
Crazy Diamond Performance
Greenkraft
Landi Renzo USA/Baytech
M-Tech Solutions
NAT G
NGV Motori USA
PowerFuel Conversions
Roush CleanTech
STAG
Westport Fuel Systems
Zavoli

Fuel Systems

Agility Fuel Systems
Mainstay
Momentum Fuel
Technologies

Critical Insight: Heavy-Duty Electric and Fuel Cell Vehicles are Not Commercially Available

As of today, three unique fuel-technology combinations hold the most promise to successfully transform America's HDV transportation sector to zero and near-zero emissions:

1. Near-zero-emission internal combustion engines fueled by conventional or renewable natural gas
2. Zero-emission battery-electric-drive systems
3. Zero-emission hydrogen fuel cell systems

While battery-electric and hydrogen fuel cell systems can offer extremely low emissions profiles, the lack of commercially available heavy-duty and limited medium-duty products and charging/fuel distribution networks makes implementation in the near future impractical. Furthermore, these vehicles are being developed by niche, start-up companies and have only been used in early test programs; comparatively, medium- and heavy-duty NGVs from major OEMs have been widely, commercially available in dozens of applications for over two decades. Near-zero-emission internal combustion engines fueled by conventional or renewable natural gas are the only option to immediately and cost-effectively provide extremely low NOx and GHG emissions in high-impact HDV sectors.

Related Recommendations for EMT Funding

- ✓ **Prioritize funding for commercially available products**
 - Given that the NOx emissions from Volkswagen vehicles are already in the air, funding should be concentrated to projects that allow us to deploy the cleanest vehicles available today (i.e., not pre-commercial or research and development projects)
- ✓ **Scale funding to incentivize the cleanest engines available**
 - Provide greater funding for medium- and heavy-duty engines that deliver NOx reductions over and above what is currently required for new diesel vehicles
 - Given that the EMT was created because of NOx pollution associated with non-compliant diesel vehicles, we believe that the funding should be set aside for clean, alternative fuel vehicle projects and should not be used to fund more diesel fueled vehicles

Let's Transform Clean Transportation Together

NGVAmerica and its members are eager to serve as a resource to assist the State of Indiana in its evaluation and development of the state's Beneficiary Mitigation Plan. We strongly encourage the state to recognize the superior and unmatched role that natural gas vehicles can play in delivering nitrogen oxide (NOx) emissions reductions required by the settlement and Trust.

NGVAmerica welcomes the opportunity to meet with you to provide further information and analysis on the economic and environmental benefits of natural gas vehicles in Indiana. Please contact Jeff Clarke, NGVAmerica General Counsel & Director Regulatory Affairs at 202.824.7364 or jclarke@NGVAmerica.org, or Sherrie Merrow, NGVAmerica State Government Advocacy Committee Chair at 303.883.5121 or smerrow@NGVAmerica.org to set up a meeting and for additional information.

Sincerely,



Matthew Godlewski
President

Summary of NGVAmerica's Recommendations for EMT Funding

- ✓ Provide a larger incentive and greater overall funding for medium- and heavy-duty engines that deliver greater NOx reductions than currently required for new vehicles and engines
- ✓ Target funding for technologies that have demonstrated the ability to deliver actual lower in-use emissions when operated in real-world conditions
- ✓ Provide the highest level of funding to applications that produce the largest share of NOx emissions (in most regions this means prioritizing for short-haul, regional-haul and refuse trucks)
- ✓ Prioritize funding for commercially available products that are ready to begin
- ✓ Prioritize funding for clean vehicles rather than fueling infrastructure
- ✓ Scale funding to incentivize the cleanest engines available
- ✓ Ensure that funding incentivizes adoption by both public and private fleets
- ✓ Accelerate the funding in the early years to maximize the NOx reduction benefits
- ✓ Given that the EMT was created because of NOx pollution associated with non-compliant diesel vehicles, we believe that the funding should be set aside for clean, alternative fuel vehicle projects that focus on maximizing NOx reduction for the funds spent

Volkswagen Diesel Settlement Funding Opportunity

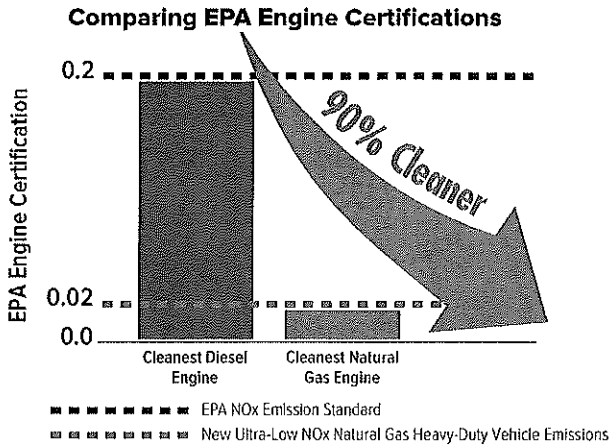
Make a Bold Impact on Air Quality Today

Allocating funds to deploy low-NOx natural gas vehicles provides the best way to deliver immediate and cost-effective NOx reductions and air quality benefit. Nearly 40% of Americans are exposed to unhealthful levels of ozone and particulate pollution. Volkswagen's \$2.9 billion Environmental Mitigation Trust fund provides each state an incredible opportunity to make an immediate and tangible impact on air quality by targeting medium- and heavy-duty vehicles, the leading source of these toxic air contaminants in almost every metropolitan area.

Natural gas vehicles (NGVs) are transforming the medium- and heavy-duty transportation sector.

Sustainable:

NGVs Offer the Cleanest Heavy-Duty Truck Engines in the World



Natural gas medium- and heavy-duty engines provide unmatched reductions of smog-forming emissions of nitrogen oxides (NOx). In 2015, a revolutionary natural gas engine was certified by the U.S. Environmental Protection Agency and California Air Resources Board to a level 90% below the EPA's current exhaust standard and 90% below the cleanest diesel engine. A truck with this engine has an emission profile equivalent to that of a heavy-duty battery electric truck.

Available:

NGVs are Commercially Available Today Across All Applications Qualified for Funding

NGVs are commercially available from traditional truck and bus OEMs with established sales and service networks. Retrofit and repower options are also available from a variety of manufacturers.

- Applications Include:**
- Heavy Semi Tractor
 - Single Axle Van
 - Cement Mixer
 - Large Walk In Van
 - School Bus
 - City Delivery Truck
 - Motor Coach
 - Shuttle Bus
 - Conventional Van
 - Rack Truck
 - Transit Bus
 - Dump Truck
 - Refrigerated Van
 - Tow Truck
 - Fuel Truck
 - Refuse Truck
 - Utility Truck

Responsible:

Dollar-for-Dollar, NGVs Deliver the Most Cost-Effective NOx Emissions Reductions

The calculations shown below assume the deployment of the cleanest commercially available model for each application. Funding natural gas vehicles will lead to the largest total reduction in NOx emissions.

Short/Regional Haul Trucks

Technology	Cost per lb of NOx	Technology Cost	NOx Reduced
Natural Gas	\$39	\$150,000	3,810 lbs
Diesel	\$54	\$100,000	1,858 lbs
Electric	\$85	\$324,000	3,810 lbs

Refuse Trucks

Technology	Cost per lb of NOx	Technology Cost	NOx Reduced
Natural Gas	\$140	\$300,000	2,141 lbs
Diesel	\$190	\$270,000	1,417 lbs
Electric	\$313	\$670,000	2,141 lbs

School Buses

Technology	Cost per lb of NOx	Technology Cost	NOx Reduced
Natural Gas	\$220	\$148,000	671 lbs
Diesel	\$291	\$115,000	396 lbs
Electric	Not Commercially Available		

Transit Buses

Technology	Cost per lb of NOx	Technology Cost	NOx Reduced
Natural Gas	\$273	\$360,000	1,318 lbs
Diesel	\$540	\$300,000	555 lbs
Electric	\$569	\$750,000	1,318 lbs

#1

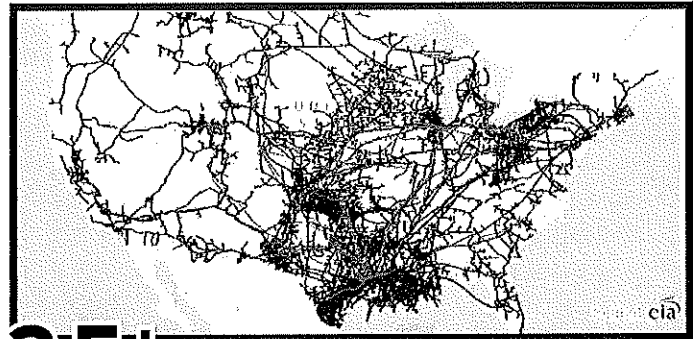
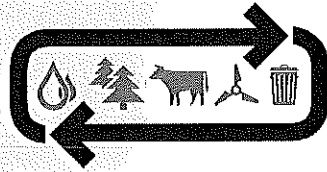
Natural Gas Producer in the World



90+ years

supply of recoverable natural gas

Continual supply by harnessing renewable sources



2.5+ million

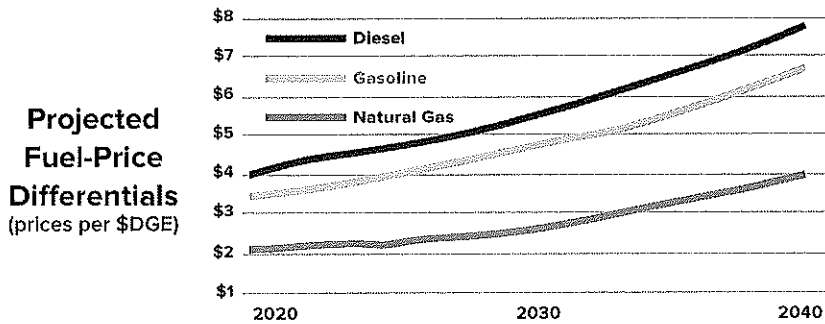
miles of U.S. pipeline infrastructure

The U.S.' expansive natural gas pipeline system is well poised to support a national network of natural gas fueling stations. Nearly 2,000 CNG and LNG fueling stations are operating today, with continual expansion underway.

Source: U.S. Energy Information Administration

Natural gas is a clean, low-cost, and domestically abundant transportation fuel.

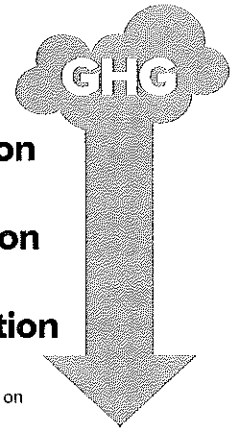
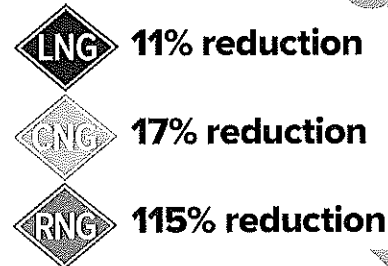
Natural Gas Provides Long-Term Fuel Price Stability and Cost Savings



Source: U.S. Energy Information Administration

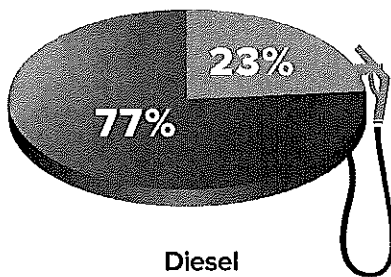
Natural Gas Reduces WTW Greenhouse Gas Emissions

Compared to Diesel:

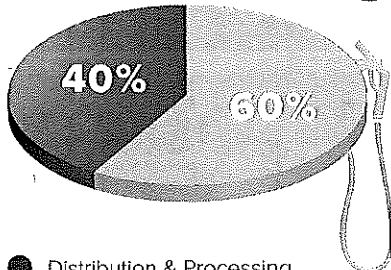


Source: NGV America Fleets Run Cleaner on Natural Gas White Paper 2016

Natural Gas



Diesel



- Distribution & Processing
- Natural Gas Commodity Cost
- Crude Oil Commodity Cost

Currently, natural gas prices can be \$0.75 to \$1 or more lower than diesel at the pump, with a firm price advantage expected to remain for decades as shown in the chart above.

Beyond the fuel-price differential, the pump price of natural gas remains relatively stable for two reasons. First, it is domestically sourced. Second, the commodity cost of natural gas only makes up 23% of the pump price so price fluctuations have minimal impact.

In contrast, approximately 60% of the price of diesel fuel is impacted by the market cost of crude oil, which is largely sourced from politically unstable, high-conflict regions. When crude oil prices increase, diesel prices follow suit which can lead to significant swings in a fleet's fuel costs.

Volkswagen EMT Funding Recommendations

- ✓ Fund alternative fuel vehicle projects that cost effectively maximize NOx reductions for both public and private fleets
- ✓ Provide higher funding levels for medium- and heavy-duty engines that deliver NOx reductions greater than current EPA standards
- ✓ Target funding for technologies that have demonstrated lower in-use emissions
- ✓ Prioritize funding for commercially available products and projects that are ready to begin
- ✓ Stay flexible in plans and leverage private investment to stretch dollars and get more alternative vehicles on the road

Natural gas vehicles can fulfill all of these recommendations today!

SEALS, SHAWN

From: Britta K Gross <britta.gross@gm.com>
Sent: Friday, September 28, 2018 4:17 PM
To: IDEM VWTrust
Subject: GM Comments relative to the Draft Indiana Beneficiary Mitigation Plan (August 2018)
Attachments: Indiana - Draft Beneficiary Mitigation Plan - General Motors comments_28 Sept 2018.pdf

**** This is an EXTERNAL email. Exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email. ****

Indiana Department of Environmental Management (IDEM)
Indiana Volkswagen Mitigation Trust

Please find attached the comments from General Motors relative to the Draft Indiana Beneficiary Mitigation Plan (version August 2018). We appreciate your efforts and the opportunity to provide comment.

If ever we can be of any help, or answer any questions, please don't hesitate to ask.

Regards, Britta

Britta Gross
Director, GM Advanced Vehicle Commercialization Policy
586-596-0382
britta.gross@gm.com



GENERAL MOTORS

Nothing in this message is intended to constitute an electronic signature unless a specific statement to the contrary is included in this message.

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GENERAL MOTORS

Britta K. Gross Director
Advanced Vehicle Commercialization Policy
Environment, Energy & Safety Policy

General Motors Global Headquarters
MC: 482-C30-C76
300 Renaissance Center
Detroit, MI 48265-3000

28 September 2018

Indiana Volkswagen Mitigation Trust
VWTrust@idem.IN.gov


Subject: GM Comments relative to the Draft Indiana Beneficiary Mitigation Plan (August 2018)

General Motors LLC (GM) appreciates the opportunity to provide input on the updated (August 2018) Draft Indiana Beneficiary Mitigation Plan. GM is very supportive of the proposed plan and commends the Indiana Department of Environmental Management (IDEM) for firmly allocating the maximum allowed 15% of the fund (equating to approximately \$6mil) to increase the availability of critically-needed electric vehicle (EV) charging stations that will drive a forward-looking technology and mobility strategy for the state. Such a vision will be required to attract EVs and even more advanced transportation technologies to the state, such as self-driving EVs in shared mobility applications, that are key to future mobility.

GM also commends the IDEM for recognizing the importance of creating regional consistency by coordinating with "other Midwest Clean Diesel Initiative partner states (Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin) where necessary" and to "coordinate with the Electrify America program to reduce or remove any duplicate efforts." This inclusive effort will ensure that the plan developed for Indiana will result in an EV charging infrastructure that is as effective and visible to consumers as possible. Note, Indiana can also significantly increase the impact of these investments by directly engaging electric utilities in the strategic planning of EV infrastructure to ensure the most cost-effective and grid-responsible EV charging solutions.

The VW Environmental Mitigation Trust is an opportunity to invest in forward-looking infrastructure that lays a much-needed foundation for EV market growth and will help attract even more advanced transportation technologies to Indiana. GM greatly appreciates Indiana's commitment to support the strategic transition to transportation electrification and all efforts to help drive this emerging market.

Sincerely,



Britta K. Gross, Director
Advanced Vehicle Commercialization Policy
britta.gross@gm.com
(586) 596-0382

SEALS, SHAWN

From: Glenn Luksik <Luksik_Glenn_M@cat.com>
Sent: Friday, September 28, 2018 4:17 PM
To: IDEM VWTrust
Subject: Cat response to the IN BMP
Attachments: 2018-09-27 (CR+3,GRN) Caterpillar Comments for Indiana Proposed Plan of MTF.pdf

**** This is an EXTERNAL email. Exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email. ****

Please see our response attached. Thank you for the opportunity.

Best Regards,
Glenn

Glenn M Luksik / Verifications Manager / Global Regulatory Affairs
Ph: 309 494 6937 / Cell: 614 563 8927 / Fax: 309 992 7709

Caterpillar: Confidential Green



Caterpillar Inc.
P.O. Box 610
Mossville, Illinois 61552-0610

Mr Shawn Seals
Indiana Department of Environmental Management
Indiana Government Center North
100 North Senate Avenue
Indianapolis, IN 46204

September 27th, 2018

Re: Caterpillar Inc. comments regarding Indiana Department of Environmental Management's Request For Information on the Proposed VW Environmental Trust Beneficiary Mitigation Plan.

Caterpillar appreciates the opportunity to comment on Indiana's proposed allocation plan for the State's share of the \$2.9B Mitigation Trust Fund (MTF) established under the Volkswagen Consent Decree. Pursuant to section 2.0.3 of the 2016 Consent Decree¹, the *primary* purpose of the Mitigation Trust Fund is to fund Eligible Mitigation Actions which have the goal of reducing NOx emissions in the United States. Caterpillar believes that Indiana's plan could meet this objective by focusing funds towards Eligible Mitigation Actions which are more cost effective for the NOx reduction benefits.

Comment 1: Indiana should invest its Mitigation Trust Funds in cost-effective Eligible Mitigation Actions which would realize greater NOx reductions and better meet the stated purpose of the Mitigation Trust Fund.

Marine, locomotive, and nonroad equipment have significantly longer service lives, higher load factors and higher usage rates than on-highway vehicles. As a result, emission reduction solutions offered by Caterpillar for these sectors have cost effectiveness that are up to 200 times better.

Many States have allocated a large portion of their Mitigation Trust Funds to fund electric and CNG powered on-highway vehicles, including buses. A comparison of cost effectiveness of Mitigation Actions to marine, locomotive, and nonroad options shows that buses obtain less NOx emissions reductions for a much higher cost.

Indiana may be considering investing funding towards electric and clean diesel buses, when the cost effectiveness for NOx reduction is high relative to other mitigation options. Total cost effectiveness for buses is approximately \$440,000/ton² (lifetime).

¹ Order Granting the United States' Motion to Enter Proposed Consent Decree, *In re: Volkswagen "Clean Diesel" Marketing, Sales Practices, and Products Liability Litigation*, Case No. 3:15-md-02672 (N.D. Cal., Oct. 25, 2016) ("2016 Consent Decree")

² http://www.CNGamericangvamerica.org/wordpress/wp-content/uploads/2017/06/CNGA-One-Sheet_School-Bus.pdf

There are several factors contributing to this poor cost effectiveness.

School buses:

1. Experience relatively low usage, approximately 12,000 mi/year on average³.
2. Experience relatively low engine load factors during usage.
3. Are relatively new with an average age of about 9 years and thus have engines that are relatively lower emitting compared to other sectors.⁴

Lifetime NOx reduced with \$ 2.925B of funding at the partial cost effectivity of the applications listed

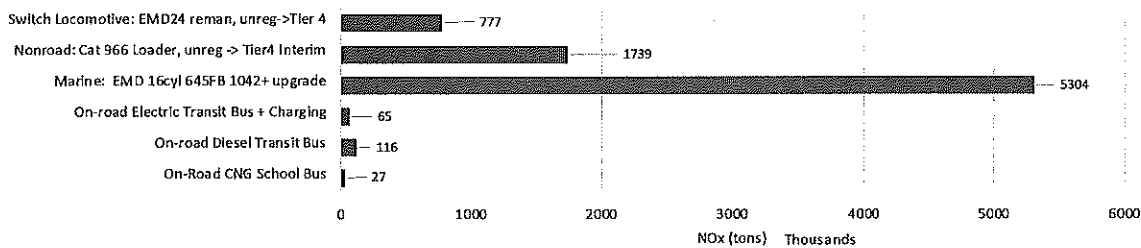


Figure 1: NOx emission reductions available with \$2.93B of MTF

Figure 1 above illustrates the difference in NOx reductions that could be achieved by applying the same amount of MTF towards reductions in different mobile sectors.

In addition to the higher cost per ton of NOx reduced, electric vehicle grants may be too optimistic about the actual environmental benefits. Currently 93.7%⁵ of the electric generation in the State comes from the combustion of fossil fuels. Only 5.5% of Indiana’s electricity which is renewable. While Indiana and the nation progress slowly towards the decarbonization of the electrical grid, the current sources of renewable electricity generation in the State are typically fully utilized; therefore, sudden increases in electrical demand (such as would occur by adding more EV’s) will likely be met by increased fossil fuel combustion. In contrast, current diesel engines have a CO2 and NOx footprint per kWh that is comparable or slightly better than the average combustion electrical generation source in Indiana.

One of the intended goals of the 2016 Consent Decree is to mitigate the total, lifetime excess NOx emissions from the Subject Vehicles to the 2016 Consent Decree. Accordingly, we recommend that Indiana focus on targeting the maximum NOx reductions that can be achieved with the options available today to achieve that mitigation goal, rather than seeding technology to further a particular industry which will not result in immediate and/or significant emissions benefit.

³ <http://www.americanschoolbuscouncil.org/issues/environmental-benefits>

Note that NGV America uses an estimate of 15,000 mi/year for their cost effectivity calculations.

⁴ <http://files.schoolbusfleet.com/stats/SBF0317-MaintenanceSurvey.pdf>

⁵ U.S. Energy Information Administration, Indiana, July 2016 Electric Generation Profile:

<https://www.eia.gov/state/index.php?sid=IN>

Comment 2: Indiana Department of Environmental Management should invest a proportional amount of its allocated Trust Fund towards Eligible Mitigation Actions in the nonroad space of marine, locomotive, and nonroad mobile sectors, which have been shown to have better cost effectiveness for the NOx emissions reduced in line with the stated purpose of the Mitigation Trust Fund.

The Indiana “emissions inventory” chart, Figure 2 below, is generated from data published by the EPA⁶. It shows that 41.8% of NOx emissions in Indiana arise from the off-road sectors of marine, locomotive, and nonroad mobile sources combined. We believe these sectors should be addressed by the Mitigation Trust Funds because these sectors represent a significant portion of the emissions in Indiana and far greater reductions in NOx emissions can be realized through Eligible Mitigation Actions in these sectors. Eligible Mitigation Actions in these sectors have the potential to help Indiana realize greater NOx reductions compared to other Eligible Mitigation Actions.

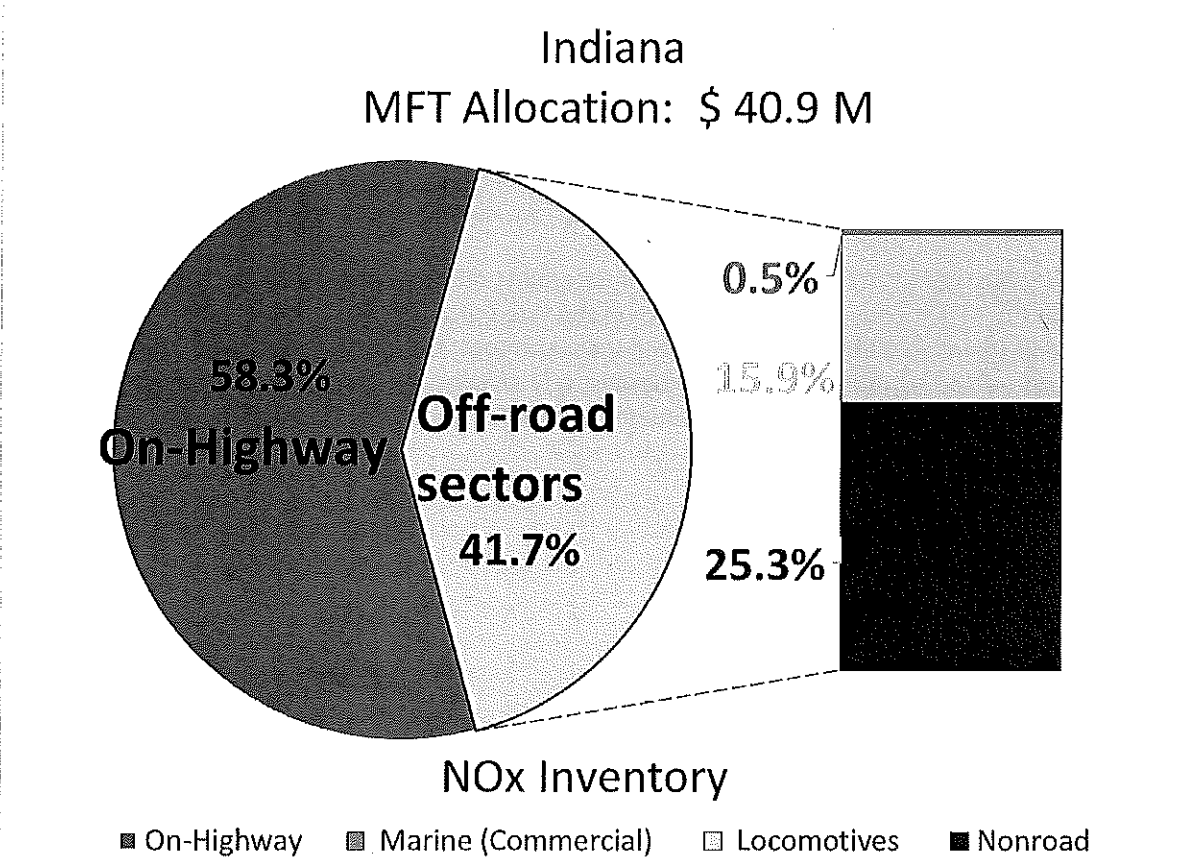


Figure 2: Indiana Mobile NOx sources

⁶ USEPA National Emissions Inventory 2014;
<https://www.epa.gov/air-emissions-inventories/2014-national-emissions-inventory-nei-data>

According to the EPA Green Book⁷, Indiana is listed as being in Marginal Nonattainment for Ozone. Indiana Department of Environmental Management should focus on areas that historically have NAAQS attainment issues and those areas that *receive a disproportionate quantity of NOx emissions*. The most populated cities typically have the highest on-road NOx emissions and also the highest number of VW vehicles that are involved in the consent decree. Caterpillar’s emission solutions are more cost effective and reduce far more annual tons of NOx than other MTF options. Figure 3 below provides a comparison of NOx reduction cost effectiveness between some key products that Caterpillar can offer in metropolitan areas.

Lifetime NOx reduced with \$ 2.925B of funding and the partial cost effectivity of the applications listed														
	Cost	VW MTF Funding	Partial MTF Cost	Est out of pocket	NOx Reduced	Service Life*	Lifetime NOx	Total Cost Effectivity	Partial Cost Effectivity	Proposed Qty **	Total Cost	Partial MTF Cost	NOx Reduced	Lifetime NOx
On Road:	per unit	percent	per unit	%	tons/year	years	tons	\$/ton	\$/ton	units	all units	all units	tons/year	tons
CNG School Bus	\$ 148,000	25%	\$ 37,000	35%	0.067	5	0.34	\$ 441,133	\$ 110,283	79,054	\$ 11,7000 B	\$ 2,9250 B	5305	26523
Diesel Transit Bus	\$ 450,000	25%	\$ 112,500	-25%	0.446	10	4.46	\$ 100,800	\$ 25,200	26,000	\$ 11,7000 B	\$ 2,9250 B	11607	116071
Diesel Electric Bus + Charging	\$ 900,000	25%	\$ 225,000	50%	0.500	10	5.00	\$ 180,000	\$ 45,000	13,000	\$ 11,7000 B	\$ 2,9250 B	6500	65000
Caterpillar Nonroad Repowers														
Marine: EMD 16cyl 645FB 1042+ upg	\$ 475,000	40%	\$ 190,000	-29%	14.98	23	344.51	\$ 1,379	\$ 552	15,395	\$ 7,3125 B	\$ 2,9250 B	230593	5303642
Nonroad: Cat 777C C32 Repower, unreg ->Tier 2	\$ 265,000	40%	\$ 106,000	2%	6.29	10	62.91	\$ 3,196	\$ 1,279	27,594	\$ 7,3125 B	\$ 2,9250 B	228774	2287736
Switch Locomotive: EMD30 reman, unreg->Tier 4	\$ 2,400,000	40%	\$ 960,000	31%	14.05	20	281.08	\$ 8,538	\$ 3,415	3,047	\$ 7,3125 B	\$ 2,9250 B	42821	856416

Figure 3: Cost Effectiveness Comparison

Total Cost Effectiveness is the total cost of the retrofit, repower, or replacement, divided by the lifetime NOx reduction.
Partial Cost Effectiveness is the funded portion of retrofit, repower, or replacement, divided by the lifetime NOx reduction.

Figure 3 above, illustrates the Cost Effectiveness of Caterpillar offerings compared to CNG School Buses. If all \$2.93B of the MTF money was spent on each of the listed products, it shows that the listed nonroad options could yield up to 200 times more NOx reductions, in tons, for the same money spent. This difference is due to the significantly better partial cost effectiveness of the off-road options as shown in the yellow column above. Although not a mandate of the MTF, the off-road reductions listed above also result in significant PM reductions.

⁷ USEPA Green Book, 8-hour Ozone (2008)
<https://www3.epa.gov/airquality/greenbook/hbtc.html>

Comment 3: Indiana Department of Environmental Management should consider distributing its proposed allocation for funding of emission reductions for marine vessels, switcher locomotives, and nonroad equipment in the top NOx counties in Indiana as these Eligible Mitigation Actions provide the most cost-effective NOx reductions and would benefit the urban areas in Indiana most impacted by the VW, Audi and Porsche vehicles.

Of the Trust Fund's list of Eligible Mitigation Actions, repowers and upgrade kits for marine vessels, switcher locomotives and nonroad equipment provide the most cost-effective NOx reductions for Indiana. The following are just some examples of Eligible Mitigation Actions in these areas.

Switch Locomotives

Indiana has approximately 57 switcher locomotives in the State that have various reduction options available under the Eligible Mitigation Actions of Appendix D-2, section (3)(d)(1).



Remanufacture Switch Locomotive EMD24 to Tier 4

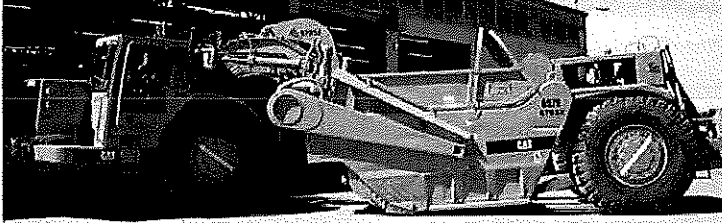
Total cost effectiveness: \$ 9,411/Ton NOx
Partial cost effectiveness: \$ 3,765/Ton NOx

Nonroad Mobile Machines

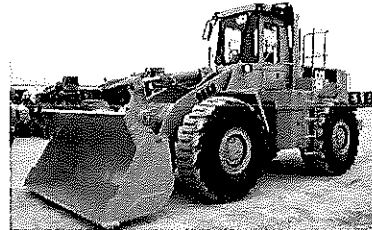
Caterpillar has been developing and providing retrofits to reduce emissions from older equipment since 2004. We have engineered 31 machine solutions that upgrade nonroad machines to Tiers 2, 3, and 4. Mitigation Trust Fund Appendix D-2, option 10, allows States to fund retrofit programs through EPA's Diesel Emissions Reduction Act (DERA). Options that replace only the engine rather than the entire machine achieve better cost effectiveness while significantly lowering the emissions of the engine/machine.

The following machines shown below with unregulated engines can be repowered to Tier 4.

Nonroad Repowers – Upgrading from unregulated to Tier 4



657 Scraper, unregulated to Tier 4 (dual engine)



966 Loader, Unregulated to Tier 4

Tractor cost effectiveness:
Total cost effectiveness: \$ 1,154/Ton NOx
Partial cost effectiveness: \$ 462/Ton NOx

Scraper cost effectiveness:
Total cost effectiveness: \$ 1,640/Ton NOx
Partial cost effectiveness: \$ 656/Ton NOx

Total cost effectiveness: \$ 4,204/Ton NOx
Partial cost effectiveness: \$ 1,682/Ton NOx

Marine Tugs

Caterpillar has a very large selection of emission reduction solutions for marine under Eligible Mitigation Actions of Appendix D-2, section (4)(d)(1). Marine repowers have the best cost effectiveness due to their continual rate of use.



EMD 645FB 1042+ upgrade kit w/ NOx reduction
Total cost effectiveness: \$ 1,379/Ton NOx
Partial cost effectiveness: \$ 551/Ton NOx

Closing Remarks

Large engines used in marine, locomotive, and nonroad mobile equipment, are often an “invisible fleet”. Buses and trucks receive higher visibility for funding for replacement and retrofits, since they are seen and used daily by the public. Trucks are the starting and end points of a transportation chain that frequently involve locomotive and marine in the middle. But despite a lower visibility for replacement and retrofits, locomotive, marine and nonroad equipment frequently have long service lives, up to 40 years for some applications. In contrast, school buses typically have a service life of 16 years and public metro buses typically have a service life of 12 years. There is equipment running in this invisible fleet that is over 50 years old. Without incentivizing the replacement or retrofit of engines in this invisible fleet, owners and operators will continue to overhaul the equipment to the same unregulated status for future decades. This is an important sector that makes up 42% of Indiana’s Mobile Source NOx emissions.

Based on these facts, Caterpillar recommends Indiana consider the proposed allocation of funds from the VW Mitigation Trust Fund, to significantly improve the NOx reductions in the state. This can be achieved through an allocation to Options 10 (DERA), Option 3 (Freight Switchers), and Option 4 (Marine Tugs and Ferries). The significantly better cost effectiveness of the solutions available under these type of emission solutions justifies a significant allocation to these off-road sectors. This kind of investment will yield the greatest benefit to the State and help Indiana provide improved air quality.

Caterpillar appreciates the opportunity to offer our suggestions for Indiana’s Beneficiary Mitigation Plan for the Volkswagen, Audi, and Porsche Clean Air Act Settlement Funds, and looks forward to receiving Indiana’s response on our comments. Caterpillar and its dealers are ready to accomplish these replacements and emission retrofits. We look forward to the opportunity to discuss these and more options with the Indiana Department of Environmental Management.

Sincerely,



Rey Agama
Global Regulatory Affairs Manager
Caterpillar Inc.

JRA:gl