



Natural Gas Vehicles for America

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October 26, 2018

Commissioner Basil Seggos
New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233-1010

RE: NGVAmerica Comments on the New York State Draft Beneficiary Mitigation Plan

Dear Commissioner Seggos:

Natural Gas Vehicles for America (NGVAmerica), the national trade association for the natural gas vehicle industry, respectfully submits the following comments to the New York State Department of Environmental Conservation (DEC) on its Draft Beneficiary Mitigation Plan (Plan) for information as you finalize your Plan. These comments are in addition to the NGVAmerica comments submitted on April 7, 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 New York and other states to put significantly cleaner, lower-polluting vehicles on the road in public and private fleets. This funding (\$127.7 million) can and should be used by New York 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 7, 2017, 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). Additionally, studies have shown that the near zero engines powered by natural gas 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 7th 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).

If renewable natural gas (RNG) made from organic waste is used, life cycle greenhouse gas emissions from NGVs are reduced further, potentially becoming carbon negative. As New York knows, using RNG also creates environmental and economic development opportunities for energy created from wastewater, landfills, agricultural waste and other anthropogenic methane sources that may otherwise escape into the atmosphere as potent greenhouse gases.

In addition to the above on-road applications, natural gas is also 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 New York Plan allocates 8.5 percent (plus 8 percent for DERA projects) of its VW funding for rail, marine and other off-road projects, however natural gas is not included as a potential fuel source for such projects. Due to proven technology and increasing natural gas projects in rail and marine as well as the renewable consideration that the projects could use RNG, we ask the DEC to ensure that these funding opportunities are open to natural gas options.

The New York Draft Plan has set effective goals for its Volkswagen Mitigation Trust Program including to *“Achieve desired environmental benefits as cost-effectively as possible by leveraging private and other financing.”* The VW EMT funds provide an opportunity for New York 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 DEC 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 New York’s VW funding to produce the most NOx reductions for the funds spent. The DEC, however, has chosen to only allow electric vehicles in the Transit bus funding which NGVAmerica believes diminishes the opportunity for New York to use the best technology for the purpose (especially when considering range and fuel source of electricity for electric vehicles).

DEC Should Use VW Funding to Purchase More Natural Gas Buses

The DEC Draft Plan trusts in the expectation that electric buses are fully substitutable for current transit buses and will be significantly less expensive to operate and maintain and therefore much more cost-effective than diesel or natural gas buses. The findings concerning electric buses run counter to the experiences of a number of prominent transit agencies operating electric buses. NGVAmerica urges the DEC to take a more rigorous look at the relative benefits of new natural gas buses and to also consider the investments New York transit agencies have already made in natural gas fueling infrastructure and garage upgrades.

Natural gas transit buses are an extremely cost-effective solution to addressing NOx, PM and greenhouse gas emissions. Powering buses with the new low-NOx natural gas engines virtually eliminates all NOx emissions and particulate matter emissions, thereby providing real and immediate public health benefits. Continuing to purchase more natural gas buses also provides a sustainable pathway to significant greenhouse gas emissions since communities with natural gas buses have the flexibility of using conventional natural gas and extremely low-carbon renewable natural gas, which is increasingly available and accounts for a growing percentage of natural gas used for transportation. Investing in new natural gas buses allows communities that have invested in natural gas fueling infrastructure to continue to monetize these investments for many years while continuing to deliver cost-effective emissions reductions and extremely reliable service for riders.

Providing additional funding for natural gas transit buses also helps ensure that cleaner-burning, low-NOx medium and heavy duty natural gas engines continue to be available for the U.S. market. The transit bus market accounts for a large share of new natural gas engine sales and enables manufacturers to continue to make investments in new, cleaner ultra-low NOx natural gas engines. These same engines can power trucks that in many cases are simply not

practical for battery electric applications. Increasing support for natural gas use in the transit sector helps ensure that natural gas engines are available to support other markets that might not be feasible for electric vehicles for many years to come.

Studies conducted for California transit agencies show that investing in natural gas buses powered by RNG provide greater long-term, more cost-effective emission reductions of criteria and greenhouse gas emissions when compared to electric and fuel cell buses.² Analysis of bus fleets operating natural gas and electric buses demonstrate that natural gas buses provide superior operational cost-savings in certain types of service uses (longer range, higher mileage routes) and even when operating on the lower speed routes. In contrast to the figures reported in the DEC Draft Plan, the cost differential per mile for electric buses operated by Foothills Transit in California is only 10 cent per mile less than for natural gas buses in low-speed operation (and excluding tire costs which would have nullified much of the electric vehicle benefit).³ Operational savings of 10 cent per mile over 500,000 life-time miles would only result in \$50,000 in lifetime savings, much less than reported in the NY VW Plan. At this rate of savings, new electric buses are not more cost-effective than natural gas buses and do not offset their higher incremental cost.

Electric buses are still in the demonstration phase, are not feasible in all types of operations such as longer-range routes, often do not replace full size buses in many applications as they do not have the same range or performance capabilities. Natural gas buses have proven highly reliable in a number of service modes including shorter buses, standard 40-foot buses, motor coach style buses, and articulated buses, meeting the full range of needs for transit agencies. Many of the claims made by electric bus manufacturers are yet to be supported by real-world experience and there is very little experience with battery replacement costs. Recent electric vehicle projects around the country have been plagued by significant difficulties and setbacks. Most notably with Los Angeles Metro, it was reported that battery electric buses operated there had a “record of poor performance and mechanical problems.”⁴ Similar issues were reported for buses operated in Albuquerque, New Mexico where the transit agency ultimately sent back the buses it had purchased and decided to purchase more natural gas buses.⁵

It also is worth noting that transit buses regardless of fuel type are effective in replacing vehicle miles traveled and passenger trips and therefore contribute to greenhouse gas reductions. From that standpoint, communities should pursue strategies that allow them to maintain and increase ridership by targeting the deployment of proven, cost-effective solutions. However, reducing the emissions of individual transit buses for greenhouse gas emission purposes results in very little additional reductions and is an extremely expensive option for reducing greenhouse gas emissions. Experimenting with or deploying a limited number of extremely expensive electric buses simply because funding is available is not the best use of this funding and will be unsustainable once funding runs out.

Current State Beneficiary Mitigation Plans

Forty-six 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).

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

² “Zero Emissions Bus Options: Analysis of 2015-2055 Fleet Costs and Emissions,” Ramboll Environ (Feb. 5, 2016) (prepared for LA Metro) (https://media.metro.net/board/items/2016/09_september/20160914atvcitem4.pdf).

³ <https://www.nrel.gov/docs/fy17osti/67698.pdf>

⁴ *LA Times* (May 20, 2018).

⁵ *Albuquerque Business Journal* (May 17, 2018).

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 DEC has not stated what the percent of cost of vehicle numbers will be for private and government projects. If the EMT percentages are followed there will be no achievement of any parity among fuels and diesel and electric projects will be promoted 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.

Additional Options for Vehicle Scrappage

NGVAmerica also recommends that the DEC 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 fleets older vehicle that is then scrapped)
- 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/>.

Some states use the U.S. EPA Diesel Emissions Quantifier (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 DEC 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 DEC desires to do this.

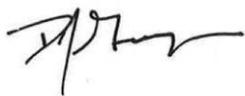
Summary of NGVAmerica's Recommendations for EMT Funding

- ✓ 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**
- ✓ **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 DEC 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 New York. 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