NGVAMERICA
Natural Gas Vehicles for America

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November 1, 2017

Mr. William K. Montgomery
Ms. Tricia Treece
Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, AR 72118-5317

RE: NGVAmerica Comments on the State of Arkansas Volkswagen Environmental Trust Draft Beneficiary Mitigation Plan

Dear Mr. Montgomery and Ms. Treece:

Natural Gas Vehicles for America (NGVAmerica), the national trade association for the natural gas vehicle industry, respectfully submits the following comments to the Arkansas Department of Environmental Quality (ADEQ) on the State of Arkansas Volkswagen Environmental Trust Draft Beneficiary Mitigation Plan (Plan). These comments are in addition to the NGVAmerica comments submitted on March 23, 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 Arkansas to cost-effectively transition to cleaner vehicle fuels with lower vehicle emissions. Whether regional trucking, waste hauling, medium duty delivery, transit or school buses, commercially-available natural gas vehicles offer the best solutions for addressing the goals of the EMT, delivering the most nitrogen oxide (NOx) emission reductions for the least cost.

Arkansas' draft VW Plan reflects a good understanding of the goals of the EMT, especially the primary goal of ***achieving significant and sustained reductions of NOx emissions***. In reviewing the following secondary goals, it is evident that ADEQ has focused on the important outcomes that the VW funding can accelerate for Arkansas:

- Reductions in emissions of other pollutants (PM & GHG);
- Spurring private investment in alternative fueling infrastructure and vehicles;
- Creating jobs by increasing alternative fuel production in AR; and
- Establishing alternative fuel corridors along interstates to link to corridors established in other states.

The specific three programs that ADEQ has identified as funding priorities for its $14.65 million include:

- **CNG School Bus Pilot Program** (60% of AR VW funding) - $8.78 million for CNG natural gas school buses
- **Light Duty Electric Vehicle Infrastructure Rebate Program** (15%)- $2.2 million rebate program for EV charging stations
- **Statewide Alternative Fuel Grant Program** (25%) - $3.66 million for a state-wide grant program for low-NOx CNG engines/vehicles or electric vehicles

As a general comment and request, NGVAmerica asks that liquefied natural gas (LNG) and renewable natural gas (RNG) also be allowed in addition to compressed natural gas (CNG). LNG is a very viable option in the heavy-duty truck and bus sector (also rail, marine, mining and other heavy-duty applications), and RNG actually enables natural gas vehicles (NGVs) to be the cleanest available technology due to taking emissions from the waste produced through animals, plants, food and waste water, that would otherwise go into the air.

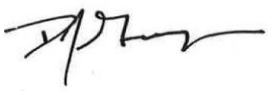
With regard to the CNG School Bus Pilot Project, a similar effort in Colorado has significantly increased the numbers of CNG school buses in the state, thereby reducing emissions, noise and cost for students and school districts. The average cost for an eighty-passenger school bus has been about $150,000 in that program, and so Arkansas with the stated desire to have cost sharing should be able to fund almost 60 buses at a 50% cost share for the $8.78 million. It should be noted that Class A, C and D CNG buses are currently available to meet the specific needs of school districts.

EV fueling infrastructure continues to be funded through several Federal and state programs, and it is NGVAmerica's position that if fueling infrastructure needs to be developed for any of the types of alternative vehicles, 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.

The proposed Statewide Alternative Fuel Grant Program will encourage the growth of NGVs and EVs, helping achieve the goals of the ADEQ VW Plan. NGVAmerica asks ADEQ to consider a funding strategy similar to that proposed in Colorado's Draft VW Plan that effectively incentivizes all alternative vehicles at the same percentage (25% of the total cost of the vehicle for private industry and 40% for the public sector) and stresses that projects that are ready now to reduce the most NOx for the funds expended will be given priority (new Argonne Lab AFLEET tool has updated emissions data).

NGVAmerica applauds the State of Arkansas for recognizing the value of natural gas vehicles in accomplishing the State's economic and environmental goals while using an important Arkansas fuel. We welcome the opportunity to meet with you to provide further information and analysis on the economic and environmental benefits of natural gas vehicles in Arkansas. Please contact Jeff Clarke, NGVAmerica General Counsel & Director Regulatory Affairs at 202.824.7364 or jclarke@NGVAmerica.org, or Sherrie Merrow, Director, NGVAmerica State Government Advocacy at 303.883.5121 or smerrow@NGVAmerica.org to set up a meeting and for additional information.

Sincerely,



Daniel J. Gage
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
- ✓ Because the EMT was created for NOx pollution associated with non-compliant diesel vehicles, 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

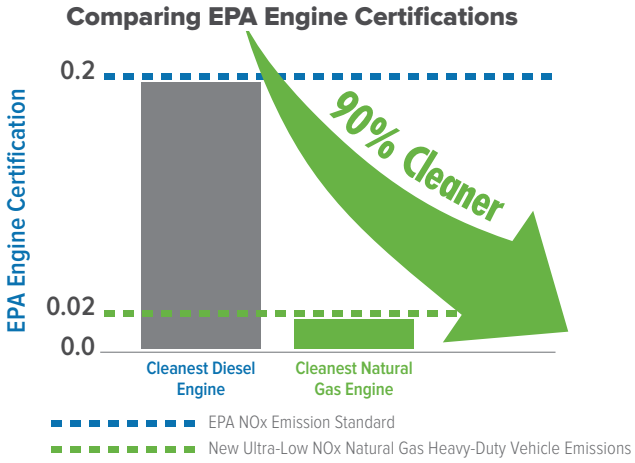
Make a Bold Impact on Air Quality Today

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:

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

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

Refuse Trucks

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

School Buses

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

Transit Buses

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

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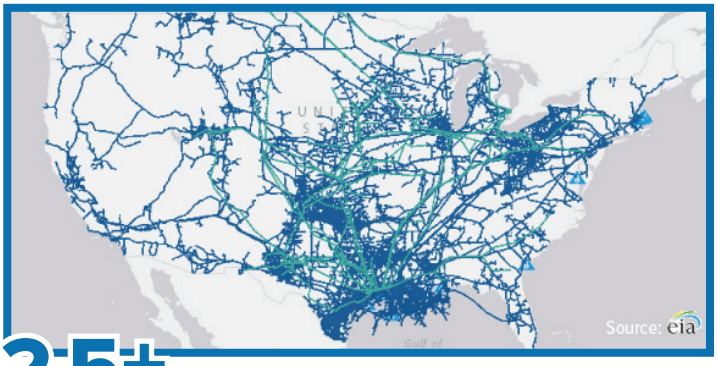
For more information visit: **www.ngvamerica.org/vwsettlement**

#1 Natural Gas Producer in the World

90+ years supply of recoverable natural gas

Continual supply by harnessing **renewable sources**

Source: U.S. Energy Information Administration



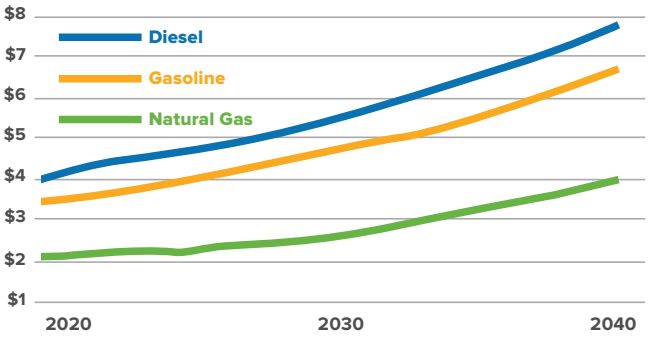
2.5+ million miles of U.S. pipeline infrastructure

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.

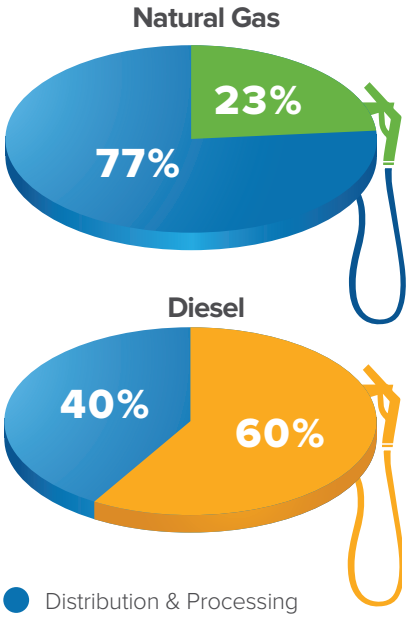
Natural gas is a clean, low-cost, and domestically abundant transportation fuel.

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

Projected Fuel-Price Differentials
(prices per $DGE)



Source: U.S. Energy Information Administration



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.

Natural Gas Reduces WTW Greenhouse Gas Emissions

Compared to Diesel:

GHG

- LNG — **11% reduction**
- CNG — **17% reduction**
- RNG — **115% reduction**

Source: NGVAmerica Fleets Run Cleaner on Natural Gas White Paper 2016

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!

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For more information visit: **www.ngvamerica.org/vwsettlement**

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March 23, 2017

Mr. William K. Montgomery
Ms. Tricia Treece
Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, AR 72118-5317

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

Dear Mr. Montgomery and Ms. Treece:

Natural Gas Vehicles for America (NGVAmerica), the national trade association for the natural gas vehicle industry, respectfully submits the following comments on how the Arkansas Department of Environmental Quality (ADEQ) can best use the Environmental Mitigation Trust (EMT or Trust) funds ($14.6 million) that the state will receive as part of the Volkswagen (VW) diesel emission settlement.

The VW EMT funds provide an extraordinary opportunity for Arkansas to cost-effectively transition to cleaner vehicle fuels to lower vehicle emissions. Whether regional trucking, waste hauling, medium duty delivery, transit or school buses, commercially available natural gas vehicles offer the best solutions for addressing the goals of the EMT, delivering the most nitrogen oxide (NOx) emission reductions for the least cost.

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

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 unhealthful 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.

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

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

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 they are considered "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)[1]. 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.

[1] 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*[2], 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

[2] *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.

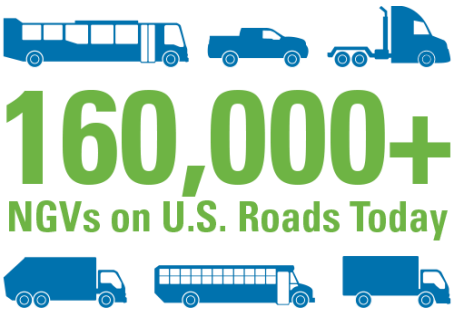
Due to lower fuel and maintenance costs, NGVs offer an 18 to 24 month payback. As production increases and fuel tank prices come down, vehicles will become less expensive and enjoy a shorter payback period

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 is currently $0.50 to $1.00 less per gallon. 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)



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.

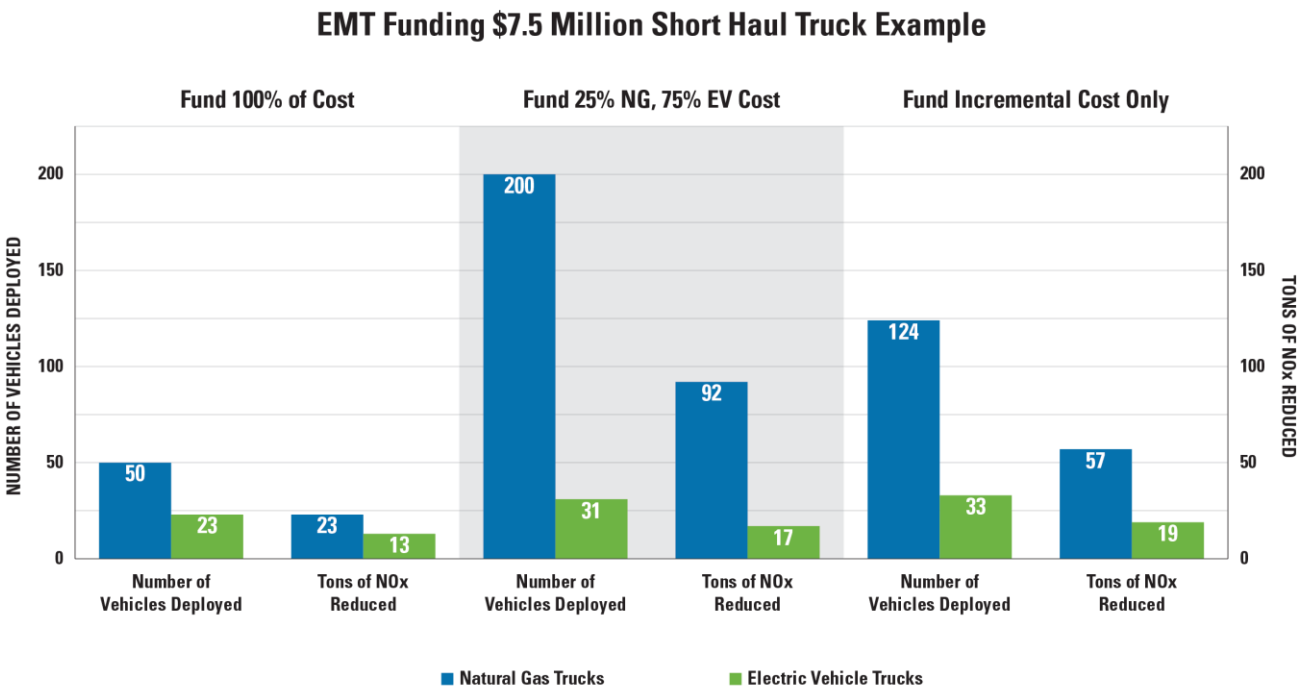
Given the significant fuel and emission reductions realized by early adopters, the popularity of NGVs has continued to build in the U.S., with 20% of all U.S. transit buses now running on CNG or LNG, 35 airports operating NGVs in their private fleets or championing policies that encourage use by private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

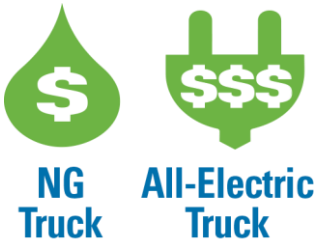
To fuel these vehicles, natural gas infrastructure is rapidly expanding with more than 1,640 CNG and 123 LNG fueling stations operating today.

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





<u>Critical Insight:</u>

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 of new, cleaner vehicles, as well as to address the fact that replaced vehicles must be scrapped

✓ **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 or very difficult. 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 commerically available products**
- Given that the NOx emissions from Volkwagen 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 ADEQ in their evaluation and development of the state's Beneficiary Mitigation Plan. We strongly encourage Arkansas 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 Arkansas. 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