



April 25, 2022

The Northeast States for Coordinated Air Use Management (NESCAUM)

The Honorable Gavin Newsom
Governor, State of California

The Honorable Jared Polis
Governor, State of Colorado

The Honorable Ned Lamont
Governor, State of Connecticut

The Honorable Muriel Bowser
Mayor, District of Columbia

The Honorable David Ige
Governor, State of Hawaii

The Honorable Janet Mills
Governor, State of Maine

The Honorable Larry Hogan
Governor, State of Maryland

The Honorable Charles D. Baker
Governor, Commonwealth of MA

The Honorable Phil Murphy
Governor, State of New Jersey

The Honorable Kathy Hochul
Governor, State of New York

The Honorable Roy Cooper
Governor, State of North Carolina

The Honorable Kate Brown
Governor, State of Oregon

The Honorable Tom Wolf
Governor, Commonwealth of PA

The Honorable Daniel McKee
Governor, State of Rhode Island

The Honorable Phil Scott
Governor, State of Vermont

The Honorable Glenn Youngkin
Governor, Commonwealth of VA

The Honorable Jay Inslee
Governor, State of Washington

RE: Multi-State Medium- and Heavy-Duty Zero Emission Vehicle Draft Action Plan

Dear NESCAUM, Governors and Mayor:

Natural Gas Vehicles for America (NGV America) and its members commend the Multi-State Medium- and Heavy-Duty (MHD) Zero Emission Vehicle Memorandum of Understanding (MOU) Signatory States and the District of Columbia for their leadership and coordinated action to reduce greenhouse gases (GHG), nitrogen oxides (NOx), particulate matter (PM) and other toxic air emissions.

Your leadership on this issue is important because climate change is cumulative. The longer we wait, the harder it gets to solve. And your MOU recognizes the need to immediately employ the use of commercially available low-NOx natural gas vehicles today to achieve their proven steep emissions reductions while additional advanced technologies are developed, tested, and finally commercialized.

Natural Gas Vehicles for America, the national trade association for the natural gas vehicle industry, respectfully submits the following comments on the Multi-State Medium- and Heavy-Duty Zero Emission Vehicle Draft Action Plan (Plan). This Plan only focuses on electrification when it is proven that using renewable natural gas (RNG or biomethane) for the transportation sector (especially for medium- and heavy-duty on and off road applications) can result in net-zero carbon and even carbon-negative greenhouse gas emissions. And, when using the near zero emission engines, tailpipe emissions are virtually the same as an electric vehicle.

NGVAmerica endorses strategies that support the use of zero emission vehicles (ZEV), near-zero emission vehicles and a transition to low and net negative carbon transportation fuels such as renewable natural gas, and eventually hydrogen. There is **no one solution** to the pressing environmental issues facing the transportations sector. The MOU states and DC should move quickly to deploy those technologies and solutions that are readily available, maximize cost-effective emission reductions, and provide a real pathway to carbon neutral or carbon-negative emissions.

The Multi-State MOU language rightly recognizes the need for low-NOx near-zero medium- and heavy-duty vehicles to be used now, as noted here:

*“Whereas, electrification of the transportation sector is essential to achieve the GHG emission reductions needed to avoid the worst effects of climate change, **and in conjunction with the introduction of low-NOx heavy duty trucks, to reduce harmful emissions of NOx, particulate matter, and toxic air contaminants that adversely impact public health;**”*

NGVAmerica fully agrees with the expressed imperative to deploy low-NOx heavy-duty trucks and offers that natural gas trucks, especially those using RNG must be a key component to any strategy if these reductions are to occur in any reasonable time frame to improve the areas of greatest need. Policies and programs that encourage and incentivize the adoption of low-NOx trucks in the near term are necessary to expedite the needed emissions reductions today.

California’s Governor Newsom in issuing Executive Order N-79-20 regarding the state goal of 100% zero emission vehicles (which is the basis for the MOU) also indicated that the technology may not be ready for medium- and heavy-duty vehicles by 2045 and so included the words “where feasible” in multiple locations in the Order. One example follows: *“It shall be a further goal of the State that 100 percent of medium- and heavy-duty vehicles in the state be zero-emission by 2045 for all operations **where feasible...**”* It is highly likely that zero emission tailpipe vehicles will never be practical for all medium- and heavy-duty vehicles, but with RNG even hard to electrify medium- and heavy-duty vehicle applications can be net zero emission now if the focus goes beyond tailpipe emissions. The MOU should continue to include a role for natural gas low-NOx trucks, include a greater role for natural gas and other low-carbon fuels that deliver carbon-neutral or greater greenhouse gas reductions, and also with respect to the adoption of zero emission vehicles, recognize that this should only be pursued “where feasible.”

Moreover, the stated goal in the Plan is to “avoid the worst effects of climate change and improve air quality and health outcomes, especially in frontline and overburdened communities.” Electrification only is chosen in the Plan to achieve this goal, however the MHD electric vehicles are not proven and largely unavailable today. Add to this that if the vehicles were available, they would not likely be charged with carbon-free power, resulting in continued GHG emissions with minimal reductions. And electric vehicles require materials that must sourced external to the U.S. and often from volatile areas unfriendly to America. The Plan must include vehicles that are available and are emissions and cost effective today.

Converting medium- and heavy-duty vehicle transportation networks to low NOx trucks operated on RNG provides a readily available, proven and cost-effective solution to accelerate the transition to a low-carbon transportation future. Further, dedicating program resources to cleaner alternative fuel technologies that are available now will significantly and immediately benefit all communities by maximizing the displacement of older, higher emitting diesel trucks and buses, including those higher emitting vehicles that operate in communities that are underserved by current transportation options.

Near-zero engines operated on RNG produce at least 90% *less* NOx than the cleanest diesel engines and operate at virtually zero NOx emissions (0.02 g/bhp-hr or less). In California RNG is used to fuel low NOx vehicles providing reduced life cycle emissions of greenhouse gases that in some cases can be net zero or even carbon-negative.

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The California Air Resources Board (CARB) data from the LCFS for Q3 2021 confirms the energy weighted carbon intensity (CI) value of California's RNG vehicle fuel portfolio is below zero at -62.7 gCO₂e/MJ (negative CI for last 5 reporting quarters). California fleets that fueled with bio-CNG in 2020 achieved carbon negativity in 2020 for the first time ever, with an annual average CI score of -5.845 gCO₂e/MJ. Renewable CNG (dairy gas) is now close to -600 gCO₂e/MJ. Additional information may be found at the following link:

<https://ww2.arb.ca.gov/resources/documents/lcfs-pathway-certified-carbon-intensities>.

NGVAmerica believes that the Plan must include and promote the use of RNG low NO_x trucks for the near term and beyond to reduce emissions from the transportation sector, especially in disadvantaged communities that have been relegated to diesel solutions while we wait on the EV industry to commercially mature. Some of the issues with MHD ZEVs include:

- Vehicles can be ordered, but cannot be delivered
- Small-scale pilot service basis only today
- Substantial challenges whether duty cycles can meet business needs
- Limited service networks
- Cost of ZEV technologies substantially higher than non-ZEV technologies
- Affordability remains a significant barrier to large-scale adoption
- Little charging/fueling infrastructure exists
- Electrical distribution system upgrades required
- Power/fuel supply to support widespread deployment will take many years to develop

Low NO_x vehicles with the potential of carbon net zero and even carbon negative emissions with RNG are:

- Commercially demonstrated and available today
- Sufficient fueling infrastructure that is largely funded by the private sector
- 90% cleaner than diesel trucks on NO_x (without requiring after-treatment apparatus)
- 100% elimination of diesel particulate matter emissions
- When fueled by RNG, can provide substantial GHG emissions reductions
- More cost-effective than ZEV trucks, allowing limited incentive funds to stretch further
- Addresses elements of the transportation sector that are hard to electrify
- Enables a diversity of effective technology/fueling solutions
- Fueled with RNG that is produced from domestic, renewable, plentiful feedstock
- Supports sustainability goals of organizations and fleets

Moreover, the salient points to promote the use of RNG include:

- The immediate reduction of fugitive methane emissions is necessary to rapidly reduce the impacts of climate change
- Waste generators including livestock operators can gain a sustainable outlet for their waste
- Animal manure can be collected on a single large farm or combined from several "cluster" farms and delivered to a single anaerobic digester for RNG production
- If manure is stored in open lagoons that emit methane, moving it to enclosed digesters prevents those emissions
- Addresses agricultural waste and emissions to help offset costs thereby reducing pressure on food prices and farmers
- The RNG produced also displaces fossil NG that would have been consumed by NG vehicles, thereby reducing CO₂ emissions
- Avoided methane emissions and displaced fossil CO₂ emissions can produce large reductions in carbon intensity

- The California Air Resources Board’s assessment shows that RNG produced from dairy waste has one of the lowest carbon intensity (CI) ratings of any transportation fuel
- RNG for transportation can reduce greenhouse gas emissions up to 283%, with an average of 51% reduction (varies by feedstock)

Real World Experience

Recently the California South Coast Air Quality Management District (SCAQMD) responded to communications from Environmental Justice and Environmental Health organizations objecting to the use of low NOx trucks in the heavy-duty vehicle sector. The SCAQMD response letter states:

“As the agency responsible for clean air in the greater Los Angeles area we have a statutory obligation to take all reasonable and feasible steps to reduce emissions. We face a rapidly approaching hard legal deadline in 2023 to meet the 1997 ozone standard, and 2031 for the 2008 ozone standard. The only way to get there is a massive push for cleaner heavy-duty trucks – the largest source of smog-forming emissions in our region – as soon as possible. While the amount of emission reductions needed to attain clean air standards is daunting, it would be irresponsible for our agency to effectively throw up our hands and not explore all options for reducing emissions now. Near-zero emission (NZE) technology has been commercially demonstrated and is available today, has sufficient fueling infrastructure that is largely funded by the private sector, and is at least 90% cleaner than new diesel trucks on NOx and 100% cleaner on cancer-causing diesel particulate matter. When fueled by renewable natural gas, these vehicles can also provide substantial greenhouse gas emission reductions. Further, these vehicles are far more cost-effective than ZE trucks, allowing limited incentive funds to stretch further. Given these benefits, it is disturbing that you advocate for investments only in technologies that are not yet ready for prime time, a position that would leave our residents no option but to continue to suffer the ill effects from diesel exhaust for years to come.”

Amazon has ordered thousands of Classes 6 through 8 trucks, choosing low NOx vehicles because they would not buy diesel trucks and could not buy electric trucks now or in a reasonable timeframe. UPS, WM, Republic Services, Fort Collins Transfort Buses, Denver International Airport Buses and equipment, Los Angeles World Airports Buses, City of Los Angeles, City of Fresno Transit, LA Metro Transit, New York’s Hunts Point fleet Industries and many other fleets have chosen low NOx trucks as the only available non-diesel heavy-duty truck that outperforms other alternative technologies in all aspects of vehicle operation.

To support low NOx markets in the United States, Asia, Europe, South America and elsewhere, Cummins has initiated a worldwide low NOx engine division to fulfill the demands for immediate diesel alternatives across the world. In addition to 3 heavy duty low NOx engines, they are bringing forward a new heavy-duty 15L engine that provides the power and performance of diesel and that is 500 pounds lighter and more efficient. Also, Hyliion is field testing its CNG range extender equipped electric Class 8 powertrain, the Hypertruck ERX, which is scheduled to be commercially available in late 2023.

As is evidenced in the above paragraphs, low NOx vehicles are growing in the MHD truck market, especially as new technology is introduced, EV technology is delayed, cleaner engines are mandated and diesel prices continue to climb. It should be noted that using the AFLEET calculations, low NOx trucks are truly virtually zero since it takes only 1.05 low NOx trucks to equal the NOx tailpipe emissions reductions of a battery electric (BE) short-haul truck. When the range/duty cycle issues are factored in (may take more than one BE truck/bus to replace a diesel or low NOx truck/bus), the cost-effectiveness of using electric vehicles is a significant issue.

Investments in RNG-fueled trucks and transit buses accessing ports, cities, and densely-populated neighborhoods are the most immediate and fiscally-responsible investment to clean our air and combat

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climate change. Communities get more clean vehicles having greater clean air and climate impact for the money with RNG than with any other alternative fuel option, especially electric. No other transportation fuel is as sustainable, adaptive, and competitive across all applications and vehicle classes. And heavy-duty

low NOx trucks are not demonstration science projects; they are proven, scalable, and on U.S. roads today. We will not meet emissions reductions goals or timeframes without using RNG.

Reduce Emissions Now and in the Future

More than four of every ten Americans live in communities with dangerously dirty air. According to the American Lung Association, over 135 million people are living in places with unhealthy levels of ozone or particle pollution. And the burden of living with unhealthy air is not shared equally; people of color are over three times more likely to be breathing the most polluted air than white people.¹

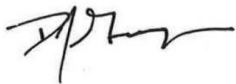
Low NOx engines are proven, cost-effective and available today for medium- and heavy-duty vehicles. Moreover, because RNG is used, life cycle greenhouse gas emissions from low NOx vehicles are reduced further. Fueling with RNG also creates new economic development for energy created from wastewater treatment, landfills, animal waste and other methane sources and significantly increases air quality by reducing the amount of methane released. Please see the NGVAmerica “Start Now. RNG is How!” brochure at <https://ngvamerica.org/rng-is-how>.

NGVAmerica strongly believes that RNG-operated low NOx vehicles must be included in the MOU Action Plan if emissions reductions are to occur in any reasonable timeframe. Statutory requirements are pressing on most states, requiring solutions that work now to decarbonize and clean the environment. Therefore, we request that RNG-operated low NOx trucks be prominent in CARB’s strategies as an immediate pathway to a zero emission future.

Your leadership in recognizing that there are several viable vehicle technologies to reduce emissions will go a long way toward ensuring that real progress is made toward accomplishing critical emissions reduction goals in the given time frames. Net Zero Emission Vehicles producing **Net Zero Now** and for the future is the responsible and visionary path to take and we encourage you to lead the way.

Thank you for your consideration, and please contact me or Sherrie Merrow at smerrow@ngvamerica.org or 303.883.5121 with any comments or questions.

Sincerely,



Daniel J. Gage
NGVAmerica President

¹ American Lung Association, *State of the Air Report*, April 2021.

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