



484 Norristown Road - Suite 122  
Blue Bell, PA 19422  
Tel: 610.709.5500  
Fax: 610.415.5585  
www.vng.co

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Mr. Joshua Cunningham  
Branch Chief, Advanced Clean Cars Branch  
ECARS Division  
California Air Resources Board  
1001 I Street  
Sacramento, CA 95814

VIA E-MAIL

**RE: VEHICLE EMISSIONS AND SLCP POLICY**

Dear Joshua,

On behalf of my VNG colleagues and Brad Couch at Ariel, I'd like to thank you and your colleagues for taking the time to meet with us on November 13. We found the conversation to be very useful and informative and I hope you did too.

I'm writing to reiterate the key point we made during our meeting: we believe that the minor changes in greenhouse gas (GHG) emissions regulations we are suggesting would have a profound and powerfully positive impact on ARB's evolving Short-Lived Climate Pollutant (SLCP) strategy. As evidenced by the Northern California wildfires, climate change is inflicting devastating impacts on California *today*, not in the far-off future. This urgency for near-term climate action is already reflected in the SLCP strategy, but we believe its effectiveness could be greatly enhanced by integrating ARB's SLCP goals into transportation policy, specifically by encouraging the adoption of renewable natural gas (RNG) by light truck natural gas vehicles (NGVs), particularly pickups, in order to enable a much larger and consistent market that will encourage substantially more methane capture.

We recognize that automakers may be able to meet their 2025 emissions targets under the current regulations – in many cases, by over-complying for passenger cars to compensate for under-complying light trucks (to the extent allowed). However, we believe that there are compelling reasons why our proposals discussed in this letter will help California go even further in achieving its objectives:

- **SLCP Alignment:** Align vehicle emissions regulations with the new SLCP program, a critical linkage due to the primary role of NGVs in driving market development for RNG production;
- **Reward Lifecycle Emissions of RNG in Rules:** Recognize and reward the huge lifecycle greenhouse emission reductions of RNG, which are left on the table in the current rules; and,

- **2030 and Beyond:** Transition pickups to advanced NGV platforms, which offer a path to meeting more stringent emission rules than would be possible for gasoline vehicles in 2030 (and beyond).

### **Light Truck NGVs Provide Greatest Leverage for Accelerating RNG Development**

As ARB has found, the capture and use of RNG (also known as biomethane or biogas) from sources like dairies, organic waste, and landfills is essential to avoiding catastrophic climate change – and the transportation sector is unquestionably the most potent driver of methane capture in California. ARB has certified pathways for RNG use under the Low Carbon Fuel Standard (LCFS) that deliver reductions of up to -255 (negative) grams/mile on a CO<sub>2</sub> equivalent basis – the lowest carbon intensities of any vehicle fuel. According to the SLCP strategy, credits under the LCFS program make transportation the most profitable market for RNG producers, offering more than three times the revenues of electricity sales.

Thanks to the LCFS, the state’s heavy-duty NGV fleets now fuel predominantly on RNG – in fact, according to the Coalition for RNG, NGV fueling in the state will reach 100% once the LA Metro bus fleet (the largest NGV fleet in the country) finishes converting to RNG. This is impressive, but it barely begins to show the potential of this sector: a UC Davis study conducted for ARB found that currently-economic RNG production potential in California is equal to 85 billion cubic feet per year – roughly five times the consumption of the current, heavy-duty-dominated NGV fleet. This doesn’t include the vast RNG resources available on a national basis, which can be transported via California’s pipeline system; indeed, current RNG use in the state is almost entirely from out-of-state producers.

In our conversations with RNG marketers, we’ve heard repeatedly that the RNG industry needs new and expanding markets to grow – and we believe that the light truck market is the biggest and best near-term opportunity to massively increase RNG demand. Pickup trucks are the best-selling but most-polluting vehicles in the country, and natural gas is currently the only commercially-available low-carbon technology for this vehicle segment. Like heavy-duty vehicles, these light trucks have weight and performance requirements that pose major challenges to the development of commercially-viable electric options – for example, EPA’s 2016 Technical Assessment Report projects *zero* electric towing-capable pickups through 2025.

In recognition of this, automakers have introduced natural gas (or natural gas-ready) versions of their top-selling pickups in recent years. Leading natural gas conversion company Westport Innovations would go even further, with their concept for an advanced NGV pickup truck with 33% greater fuel economy than gasoline pickups and near-zero NO<sub>x</sub> emissions thanks to engines that take advantage of the high-octane, clean-burning properties of natural gas.

Combining these advanced engines with hybridization offers potential for ultra-low tailpipe emissions – and potentially negative emissions on a lifecycle basis with RNG. Thus, NGVs are a clear pathway to solving the challenges automakers face in meeting accelerating emissions targets for pickups through 2025 – as well as a pathway for ARB to implement significantly more stringent requirements for GHGs from these vehicles in 2030 and beyond.

In the longer term, the growth of the NGV industry offers major synergies with the growth of hydrogen fuel cell vehicles (FCVs), further complementing the state's existing ZEV strategy. Thanks to their shared properties as a gaseous fuel, compressed natural gas (CNG) vehicle storage technologies such as adsorption tanks will advance analogous technologies for FCVs. Fueling station infrastructure for CNG and hydrogen also share similar equipment requirements (e.g. compressors and storage tanks), opening possibilities for combined CNG/hydrogen stations as well as the conversion of CNG stations to provide hydrogen. This is VNG's long-term vision. Furthermore, the ability of NGVs to drive the market for RNG capture in the near term will pay dividends for future hydrogen fuel providers – such as VNG -- which will have a ready source of RNG for hydrogen production via steam reformation.

### **Policy Proposals for Enabling the NGV Light Truck Market**

We recognize that the relationship of natural gas and internal combustion engine vehicles to climate action is complicated; in the long term, we need a 100% renewable, zero-emission economy. However, we can't afford to wait until 2040 or 2050 to make progress on SLCPs and pickup truck emissions – and we don't have to. With well-designed policies, California can ensure that NGV adoption delivers accelerated fuel economy benefits for pickups through advanced technologies, leverages existing programs like the LCFS to provide maximum new RNG demand growth, *and* avoids disrupting continuous growth in EV and FCV adoption for passenger cars.

In our comments and meetings with EPA regarding greenhouse gas emissions regulations, we are proposing several steps to incentivize automakers to produce light-duty NGVs and pickups in particular. These include:

- **0.15 Divisor for Emissions:** EPA should return to the use of the “0.15 divisor” for NGVs, counting emissions as 0.15 times those of gasoline vehicles. Just as the 0 g/mi emission incentive for EVs reflects the potential emissions of a 100% renewable electricity supply, this 0.15 divisor would approximate the emissions of a 100% renewable gas fuel supply – which is a rapidly-approaching reality in California. It would also harmonize incentives under the greenhouse gas program with NGV incentives provided under the CAFE program, simplifying automaker compliance strategies.

Like the current EV incentive, this incentive could be phased out and replaced with a calculation of lifecycle emissions based on actual use of RNG in the NGV fleet. And just like EVs, the transition to lifecycle emission calculations for NGVs would be based on per-manufacturer sales thresholds (e.g. 200,000 in the case of EVs in the current rules) during the 2022-2025 period. Because ARB and EPA collect data on RNG sales for transportation through the LCFS and RFS programs, determining the appropriate lifecycle emissions at the start of each model year should be relatively simple from an administrative perspective.

The benefits of this approach would be the same for NGVs as they have been for EVs: a limited (in terms of number of vehicles and model year availability) incentive will catalyze automaker investments in new technology, after which a more precise accounting of lifecycle emissions will ensure that the rules fully capture all the climate benefits of renewable energy – no more, and no *less*. Under the current *status quo*, the lifecycle emissions benefits of capturing methane for

RNG are not being recognized at all, which risks leaving considerable potential for climate mitigation and linkage with the SLCP program on the table.

- **NGV Pickup Incentive:** Current regulations provide special incentives for the deployment of low-emission technologies in full-sized pickups. However, as currently structured, these advanced technology incentives are only provided if automakers deploy a given technology in at least 10% of the pickups they sell – an unfeasibly high initial threshold for alternative fuel vehicles. Creating a NGV pickup incentive and removing the minimum deployment requirement (so that automakers receive a bonus for every single NGV pickup produced) would ensure that automakers focus their NGV efforts on the pickup sector, where they are most needed.
- **Eliminate Bi-Fuel Design Requirements:** In order to receive full credit for their expected natural gas use, bi-fuel NGVs must have a natural gas range at least double their gasoline range and be designed to use gasoline only when the natural gas tank is empty. PHEVs face no such requirements, despite having a much lower all-electric range than the CNG range of bi-fuels. These requirements represent a significant, unnecessary and expensive obstacle to automakers interested in quickly bringing new bi-fuel vehicle designs to market by adding natural gas tanks to existing gasoline vehicle designs. Removing these requirements would enable more robust NGV (and RNG) market development in the same way that PHEVs have helped EV adoption.
- **Partial Credits for Retrofits:** With conventional gasoline cars and trucks, it is essentially impossible to improve the fuel economy and emissions of a given vehicle with electricity after it rolls off the assembly line. However, retrofitting existing vehicles to fuel on natural gas has long been a major part of the NGV industry, and offers an opportunity to significantly accelerate progress on transportation emissions. Retrofits could be incentivized by allowing conversion companies to receive emissions credits for NGV retrofits in proportion to the remaining useful life of a given vehicle – for example, a 50% credit for a 5-year-old-vehicle (based on a 10-year useful life). These credits could then be sold to automakers.

We are optimistic that these steps would enable automakers to achieve the current 2025 emissions targets for light trucks – the point of greatest contention in EPA’s current review of the rules – by delivering real-world, upstream GHG reductions from RNG while achieving even greater increases in petroleum independence. As such, we have argued in our comments to EPA that these limited reforms would provide a way to maintain the stringency of the current rules, potentially avoiding unnecessary legal battles and automaker uncertainty that would come with any attempt to relax the regulations more broadly – particularly if ARB also finds these reforms acceptable.

Of course, as you know, the most powerful regulatory driver for vehicle technology development has always been ARB’s ZEV program, not federal regulations. In addition to their role in commercializing EVs, partial ZEV credits for NGVs were previously responsible for the existence of the CNG version of the Honda Civic – which was discontinued in part due to ARB’s phase-out of these credits starting in 2018. While the flourishing of the EV market in passenger cars has obviated the need for a CNG Civic, we believe the ZEV program can focus automaker efforts on the CNG pickup trucks that we *do* need.

- **TZEV Credits for NGV Light Trucks:** Partial ZEV credits could be reintroduced for NGVs, but limited to light trucks – passenger car NGVs would not be eligible. These credits could be included as another type of Transitional ZEV (TZEV) alongside PHEVs and hydrogen-fueled ICE vehicles. This inclusion is justified by the fact that RNG can be considered a ZEV fuel based on its own emissions properties as well as its importance as a hydrogen feedstock. Like other TZEV vehicles, automakers would only be able to use a certain portion of TZEV credits to meet their overall ZEV obligation, which would ensure that ZEV adoption is not negatively impacted.

### **Aligning Transportation Policy with the SLCP Strategy**

California has always led the way in the development of clean vehicle technologies, including a long history of promoting NGVs. While ARB's focus has more recently shifted to exclusively emphasizing EVs and FCVs for light-duty vehicles, we believe that the compelling economics of RNG-fueled NGVs combined with the increased urgency of the state's SLCP agenda merits a selective reconsideration of this focus.

By incentivizing the production of light truck NGVs specifically, ARB can better align its transportation emissions policies with its SLCP strategy – without endangering continued progress for EVs and FCVs in the passenger vehicle segment. Moreover, by transitioning pickups and other “heavy” light trucks to advanced NGV platforms, automakers will be able to achieve much deeper emission reductions at the tailpipe than would be possible with gasoline vehicles, creating a pathway to much more stringent regulations in 2030 and beyond.

We believe these recommendations could achieve all of these goals, and we hope to work with ARB on their implementation as soon as possible. We'd be happy to meet with the ARV staff working on the SLCP policy if you think that would be helpful.

Climate action simply can't wait. Please let me know how we can help.

Respectfully,

*Robert C. Atkinson*

Robert C. Atkinson

Chief Regulatory Officer, VNG

[rcatkinson@vng.co](mailto:rcatkinson@vng.co)

[rca53@columbia.edu](mailto:rca53@columbia.edu)

909-447-42901

cc: Dario Frommer – Akin, Gump  
Brad Couch – Ariel  
John Atkinson – VNG