



South Coast Air Quality Management District

21865 Copley Drive, Diamond Bar, CA 91765-4182
(909) 396-2000 • www.aqmd.gov

Office of the Executive Officer

Wayne Nastri

909.396.2100, fax 909.396.3340

August 3, 2021

Alianza Coachella Valley
California Communities Against Toxics
California Environmental Justice Alliance
California Kids IAC
CEERT
Center for Community Action and Environmental Justice
Center on Race, Poverty and the Environment
Central California Asthma Collaborative
Central California Environmental Justice Network
Coalition for a Safe Environment
Community Dreams
Earthjustice
East Yard Communities for Environmental Justice
Environmental Health Coalition
International Brotherhood of Teamsters
LAANE
Leadership Counsel for Accountability and Justice
Little Manila Rising
Long Beach alliance for Children with Asthma
Natural Resources Defense Council
Peoples Collective for Environmental Justice
Sierra Club California
Union of Concerned Scientist
White Central Valley Air Quality Coalition
350 Silicon Valley

To Partners in Environmental Justice and Environmental Health:

Thank you for your letters received on June 28th and 29th. Both letters provided essentially the same message regarding your disappointment that we are not limiting our efforts to achieve clean air to strictly zero-emission (ZE) pathways. As a public health agency charged with protecting our residents from harmful air quality, we are dismayed to find ourselves at odds with organizations that also

advocate for clean air, and are further troubled that you falsely accuse us of representing oil and gas interests. Even more disturbing is that the position you espouse – investment *solely* in ZE technology – will necessarily delay attaining federal air quality standards, prolonging community exposure to unhealthy levels of smog, particulate matter, and toxic diesel exhaust. Given that several of the signatories of one letter overlapped with the other, we are writing to respond to both letters here.

First, let me be clear that the South Coast Air Quality Management District (South Coast AQMD) is a global leader in advocating for and adopting ZE technology. We know we need to transition the transportation and freight sectors to ZE technologies at large scale in order to clean the air in the long term. To that end, since 2008 South Coast AQMD has invested \$37M for total project costs of \$316M in multiple ZE demonstration and pilot projects. Largely due to our work to push and advance technology, we are now on the cusp of a future where widespread deployment of ZE technology is a reality. But we also know that reality simply isn't here yet - at least not for heavy-duty Class 8 trucks. Manufacturers make promises, the vehicles can be ordered, but cannot be delivered and put into service on anything other than a small-scale pilot basis. And even if they were ready to be manufactured at large scale today, there are substantial challenges regarding whether the duty cycles for ZE Class 8 vehicles can meet business needs, and whether a service network is available for businesses that acquire these vehicles. In addition, the cost of ZE technologies is substantially higher than non-ZE technologies, and while eventually we expect the total cost of ownership to be lower for ZE trucks, affordability remains a significant barrier to large-scale adoption. Finally, even if all these barriers were addressed, the charging/fueling infrastructure (plugs and hydrogen dispensing stations), the electrical distribution system (neighborhood transformers, substations, etc.) and the power/fuel supply to support widespread deployment will take many years to develop.¹

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.² 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

¹ The real-world experience from light-duty vehicles is illustrative. For decades California has led the nation in policies supporting light-duty ZEVs. However, ZEVs still make up only about 9% of new sales, and about 2% of the entire light-duty fleet. In comparison, medium/heavy-duty vehicles are many years behind in their development cycle, and their existing fleet of ZEVs is much less than 1%. Ignoring the remaining 99% of vehicles while we await ZEV development for trucks is untenable.

² We note that climate advocates rightfully push for California to take all feasible actions to address carbon emissions despite the marginal impacts these steps would likely have in slowing global climate change. Similarly, we owe it to our breathing public to do everything within our power to clean the air as soon as possible even if we have a long way to go.

vehicles can also provide substantial greenhouse gas emission reductions.³ 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.

Your assertion that any investment in NZE technology is a tradeoff with investment in ZE frankly presents a false dichotomy. Today we need both – a pathway to get emission reductions now as well as plans for a ZE future. Investment in all forms of cleaner technologies does not impede progress in the development of ZE technologies. With the thousands of trucks that need to be replaced with cleaner options to meet both air quality standards and climate goals, there is plenty of space for both NZE and ZE technologies. For example, as of June the Clean Truck Program (CTP) statistics at the San Pedro Bay ports has 19,395 registered trucks of which 152 are NZE and 22 are ZE. That leaves 19,000 diesel trucks that are still in play. Even CARB's most aggressive action to date – Project 800 – would result in only 800 orders for trucks in 2021. Even if these 800 trucks were delivered in a timely manner – something we unfortunately have not observed in the current market – 800 trucks is a drop in the bucket of the thousands of trucks that need to be turned over.

There is also the looming unintended consequence of CARB's Truck and Bus rule that mandates pre-2010 model year trucks be turned over to model year 2014+ trucks by 2023. With ZE trucks unavailable on a widespread scale, as a practical matter these trucks will either be replaced by newer diesel trucks or NZE trucks. And without additional intervention, truck owners will choose to comply with the cheapest possible option – a model year 2014 truck that is only marginally cleaner than the truck it replaced.⁴ From our perspective, it is far better to make sure as many of these trucks are turned over to the cleanest possible technology, which today is a NZE truck.

To build on the above point, the choice in trucks today is not between ZE and NZE trucks, but between NZE trucks and diesel. To the argument that investing in NZE trucks merely perpetuates another generation of fossil-fuel powered vehicles, if the choice is between NZE trucks and more cancer-causing diesel trucks, we choose NZE trucks. Given the average lifetimes of heavy-duty trucks in the fleet, the NZE trucks will be at the end of their useful lives by the time availability and cost of ZE trucks make them more feasible options. At that point the total cost of ownership of ZE trucks will make them far more attractive options than NZE trucks.

We recognize that there is tremendous desire in our impacted communities for ZE solutions today and hear that concern loudly and clearly. Nobody wants ZE trucks more than we do, but as outlined above and further detailed below, that is simply not possible in the near term beyond a pilot scale. This is not just our word; multiple recent technological assessments, including ones by the Ports of Los Angeles and Long Beach, and even the reports from the Luskin Center for Innovation and the ICCT that you reference

³ Renewable natural gas or biomethane has a low carbon intensity under California's LCFS and can be used to establish a carbon credit provided it meets the requirements of the Cap and Trade Regulations. See Cal. Code Regs. § 95821.1.1.

⁴ Your letter indicates that you believe MY 2014+ diesel vehicles meet the 0.02g/bhp NOx standard. That is not the case, and these vehicles are not substantially cleaner for NOx than the older vehicles.

in your letter concur with this position.⁵ Unfortunately, that information is repeatedly glossed over and community groups have been misled into believing overly rosy projections by truck manufacturers as fact.

For the above reasons, investments in NZE trucks are needed today, and will continue to be needed for the next several years. This is neither blind advocacy for oil and gas interests as you have inferred, nor a “zealous push for NZE,” but instead a fact-based position that is informed by science, frank conversations with ZE truck manufacturers, and the very real market conditions and performance issues we have observed through our years of leadership in this space. We fully acknowledge that the path in the future is ZE technology and will continue our leadership in funding demonstration projects and implementing incentives for ZE trucks and infrastructure – such as:

- Zero Emission Cargo Transport Project
- GGRF Zero Emission Drayage Truck Project
- DTNA Heavy Duty Battery Electric Truck and Infrastructure Project
- DTNA Commercial Zero Emission Truck Project
- Zero Emission Freight Facilities Project – Volvo LIGHTS
- Zero Emission Drayage Truck and Infrastructure Pilot Project

We further anticipate there will be a time where we pivot from our current approach and stop providing incentives for NZE trucks. But that time is unfortunately not here now, nor do we expect that it will be here in the next few years.

We provide more detail below setting the record straight on the misleading “false narratives and false solutions” you detail in your letter.

Setting the Record Straight

In addition to clearly outlining our position on NZE and ZE technologies, we feel it is important that we correct a number of errors and misstatements in your letters. These range from those that may be attributed to a difference in policy priorities, to others that are more far more egregious in nature.

The upcoming deadlines to meet federal air quality standards are legally-binding and cannot be ignored

As we have stated repeatedly, we are squarely focused on reducing emissions to meet federal ozone standards by 2023 and 2031. These are the deadlines for extreme ozone nonattainment areas under the Clean Air Act for the 1997 and 2008 8-hour standards respectively. While it is true that the South Coast region has experienced ozone nonattainment for decades, the Clean Air Act outlines a pathway and a hard stop by which regions must meet federal standards. That hard stop is upon our region now; as an extreme ozone nonattainment area there is no higher ozone classification that we can bump into as we

⁵ See San Pedro Bay Ports Clean Air Action Plan, *2018 Feasibility Assessment for Drayage Trucks* (Mar 2019; updated May 2020), <https://kentico.portoflosangeles.org/getmedia/0c341695-2dec-430a-b2d9-f828d4b2df1a/final-drayage-truck-feasibility-assessment-w-addendum> (last accessed July 28, 2021).

have in the past when we failed to meet other deadlines. Failure to meet these deadlines could trigger economic sanctions including the withholding of federal highway funds.

Your position appears to be that because the amount of emission reductions needed to meet the standards is so large, we should give up and ignore those deadlines to focus instead on longer-term state climate goals. First, we take issue that actions taken today to reduce emissions undercut any progress toward climate goals – they can and must go hand-in-hand. Moreover, natural gas-fueled NZE vehicles often provide a greenhouse gas credit as about 75% of the natural gas available for transportation is renewable and continues to increase.⁶ Second, we are obligated to take all feasible steps to reduce emissions now to attain federal air quality standards, even if it will be nearly impossible to meet those standards.⁷ To suggest that we turn our backs on our central mandate and obligation to deliver clean air to the public as soon as possible is a tone-deaf approach that prioritizes climate goals in the future over public health today. Finally, we remind you that the emission reduction goals established by the state legislature and targets in Governor Newsom’s Executive Order are discretionary and subject to change at any time. While these goals are important and laudable, they lack any legal consequence if they are not met, and do not supersede or obviate our obligation to meet legally enforceable deadlines to attain national air quality standards.

ZE Heavy Duty Trucks are not available today for widespread deployment

There are multiple reasons why, despite manufacturer promises to the contrary, as a practical matter ZE heavy-duty trucks are not available today. First, while there appear to be multiple heavy-duty ZE truck models available for order, getting these vehicles delivered in a timely manner is an entirely different matter. Second, there are ongoing concerns regarding whether ZE trucks can meet needed duty-cycles. Third, there is currently a dearth of charging infrastructure and concerns regarding sufficient power supply needed to support widespread electrification.

You allege that there are dozens of available ZE truck models available today, including 29 heavy-duty models, and that the number of ZE truck models is expected to grow rapidly in the next several years. We don’t question that there are a limited number of Class 7 and 8 ZE truck models available for purchase or that new products are being announced every year. However, having models available for order and purchase does not translate to having ZE trucks on the road and in use today. That is a point underscored by the ICCT report that you cite in support of your statistics on ZE model availability. In that report, the authors were clear that their tally of ZE model availability “includes vehicle models that are in various stages of the pre-production phase – that is, *before the model is available for customer purchase.*”⁸ Indeed, reviewing the list of ZE models in that report reveals that for Class 7-8 tractor-trailers only one ZE model is classified by the ICCT as production-ready, and only 2 Class 7-8 rigid trucks are similarly classified. The 2019 Luskin report that you also cite supporting the readiness of ZE technology states that “NZE natural gas trucks have the highest technological readiness with a TRL 8, which indicates that the platform has reached a final or near-final stage and has exhibited technical

⁶ See CARB LCFS data, <https://ww3.arb.ca.gov/fuels/lcfs/lrtgsummaries.htm> (last accessed July 28, 2021).

⁷ CA Health and Safety Code 40913, 40914, 40920.5, Clean Air Act Section 172(a)(2).

⁸ ICCT, *Race to Zero*, (Oct 2020) at 8 (emphasis added), <https://theicct.org/publications/canada-race-to-zero-oct2020> (last accessed July 28, 2021).

viability through testing and demonstration. ZE battery electric trucks are quickly catching up and are currently at a TRL 6-7, a demonstration and initial systems conditioning stage.”⁹ While the ICCT study’s authors point out that including models that are still in the pre-production phase is a simplification, this is in fact a critically important point regarding *actual* heavy duty ZE truck availability. Dismissing this point misleads our front-line communities into believing that ZE trucks are here today and that funding is the only barrier to their deployment.

We further note that in citing statistics regarding the availability of ZE trucks you are conflating the availability of the smaller ZE truck models (Class 6 and below) and buses with the Class 7-8 trucks. The trucks that are the largest source of smog-forming NOx in our region are the Class 7-8 trucks; they are the ones that need to be addressed for ozone and PM. As described above, almost all ZE models of this class of truck are in pre-production, and even those such as the model by BYD that you reference currently have a spotty track-record. On the other hand there are far more models of ZE medium-duty trucks both available and proven that are starting to be deployed in fleets. And – as you correctly point out – the total cost of ownership of these medium-duty ZE vehicles can be lower than that of conventional trucks, making them even more of an attractive option. But again, we are not yet at that point with the heavy-duty trucks, and it is disingenuous to suggest that because medium duty ZE trucks are available today the same holds true of the heavy-duty trucks.

There are also real concerns regarding whether ZE heavy-duty trucks would be able to meet the duty-cycles required of current diesel vehicles. This includes the distance traveled – which is limited by battery capacity – and the time needed in service – which is hampered by long charging times. In your letter you assert that the real issue is that the freight industry can and must change how they use heavy-duty trucks to meet these duty-cycle limitations. However, as with your claims on the availability of ZE truck models, the very report you cite as support for that claim (the 2019 Luskin report) indicates the contrary. First, we note that we are very familiar with that report as our Chief Technology Officer, Dr. Matt Miyasato, was one of the lead reviewers of the report. Second, in acknowledging the long distances that drayage trucks travel the report recognizes that “ZE trucks have yet to be proven in large-scale drayage operations, but the technology is advancing rapidly.”¹⁰ The report further notes that “[w]hile driving a battery electric truck is similar to driving a diesel truck, fueling with electricity is a paradigm shift. Challenges include charging times that require trucks to remain stationary for extended periods.”¹¹ Finally, even if the technology and duty-cycle issues were resolved, neither the fueling structure nor the electrons are available to support widespread heavy-duty ZE truck deployment. Charging infrastructure has proven difficult to implement in our pilot projects with power capacities just over 100 kW. Installing the thousands of chargers with future 500kW and 1MW capabilities to shorten charge times have serious infrastructure challenges that impacts not only local distribution but also main utility line distribution and generation. We have spent over \$37 million to address the significant

⁹ As the citation for the “Luskin report” is blank, we surmise that you meant the report by CJ. Di Filippo, C. Callahan, N. Golestani; *Zero-Emission Drayage Trucks – Challenges and Opportunities for the San Pedro Ports*. (Oct 2019), https://innovation.luskin.ucla.edu/wp-content/uploads/2019/10/Zero_Emission_Drayage_Trucks.pdf (last accessed July 28, 2021). See p. 12 for the relevant quote.

¹⁰ *Id.* at 2.

¹¹ *Id.*

barriers that must be overcome to advance HD charging infrastructure. Unfortunately, it will be many years and tens of billions of dollars before this network is sufficient, utility infrastructure improvements made, and the installation process streamlined. As an example of the work needed, the California Energy Commission has forecast that approximately 141,000 50 kW chargers and 16,000 350 kW chargers would be needed statewide to support 180,000 electric medium and heavy-duty vehicles by 2030 (consistent with CARB's draft Mobile Source Strategy).¹² This is beyond the 31,000 50+ kW chargers (and the more than 1.2 million level 1 and 2 chargers) needed to support 8 million light duty ZE vehicles in 2030. As a comparison, there are only about 21,000 50+ kW chargers across the entire nation today.¹³

The inference that NZE trucks pose greater risks than diesel trucks is absurd and unsupported by science

You strongly suggest that NZE trucks threaten public health because 1) they are only "incrementally cleaner", 2) natural gas is a toxic fuel, and 3) NZE trucks produce more ultrafine particles. You further infer that NZE trucks may be more toxic than diesel trucks because of their ultrafine emissions. Neither of these statements is supported by science and belie a zealous belief that any technology associated with natural gas is inherently polluting over a more fact-based and objective view.

First, NZE trucks are not "incrementally cleaner" as you suggest. They emit 90% less NO_x and 100% less cancer-causing DPM, a fact also acknowledged by the very literature you cite.¹⁴ That represents a massive potential reduction in emissions and a substantial health-benefit that you appear to dismiss.

Second, it is unclear what you mean by your characterization of natural gas as a toxic fuel. Natural gas is a fossil fuel, but it burns relatively cleanly compared to most fuels. This is especially true in comparison to diesel, whose combustion by-products have been recognized as a carcinogenic air toxic in California for over 20 years, and are known to contribute the bulk of the air toxic risk in our region.¹⁵ The health benefits of reducing DPM are both easily monetized and have been well-established for decades. It is puzzling that groups such as NRDC and UCS who rang early alarm bells on the toxicity of diesel particulate matter and estimated that every dollar spent on diesel emission reduction would yield \$9-16 in monetized health benefits over 15 years ago are now claiming that such benefits are amorphous, defy quantification, and are less toxic than the combustion of natural gas.

Finally, you claim that NZE vehicles may be more harmful than diesel vehicles due to increased emissions of ultrafine particles. We fully acknowledge that ultrafine particles are an important and emerging threat. In fact, over 15 years ago we convened one of the earliest conferences to cover the

¹² CEC AB 2127 Report, <https://efiling.energy.ca.gov/getdocument.aspx?tn=238853> (last accessed July 28, 2021).

¹³ https://afdc.energy.gov/stations/#/analyze?fuel=ELEC&ev_levels=dc_fast&ev_levels=3 (last accessed July 28, 2021).

¹⁴ Id. at 13.

¹⁵ See OEHHA, *Health Effects of Diesel Exhaust* (May 2001), <https://oehha.ca.gov/air/health-effects-diesel-exhaust> (last accessed July 28, 2021); South Coast Air Quality Management District, *MATES V Multiple Air Toxics Exposure Study* (Draft, 2021) <http://www.aqmd.gov/home/air-quality/air-quality-studies/health-studies/mates-v> (last accessed July 28, 2021).

science, technology and policy issues associated with ultrafines¹⁶ and have characterized levels of ultrafines in our MATES IV and recent draft MATES V studies.¹⁷ While the science continues to evolve, it is clear that 1) ultrafine particle pose health risks, and 2) the extent of these health risks are currently uncertain and likely vary with particulate composition.

We also know that *all* combustion sources produce ultrafine particles. Whether certain engine types produce more or less ultrafine particles is not well settled in the current science, and we agree this is an issue that should be tracked. However, given that particle composition very likely plays a key role in the toxicity of these particles, it is fair to say that ultrafine particles saturated with highly toxic cancer-causing PAH's and other by-products of diesel combustion are likely far more harmful than those that are not the result of diesel fuel.

The papers you cite in support of the ultrafine particle threat posed by NZE natural gas-fueled trucks are non-peer reviewed reports that don't shed much light on this subject. The report by Transport & Environment merely points out the risks posed by ultrafine particles and that in comparing zero emission vehicles and natural gas-fueled vehicles, the natural gas vehicles will pose additional health risks from ultrafine emissions. The one line suggesting that in narrow cases natural gas-fueled vehicles emit more ultrafines than diesel vehicles refers to a study evaluating the relative contribution of passenger vehicles meeting Euro VI emission standards and is not comparable to heavy-duty trucks.¹⁸ The CENEX report, while reporting that the number of particles emitted by certain heavy-duty natural gas vehicles were higher than diesel vehicles only evaluated a limited number of natural gas-fueled engine types, did not evaluate the engines currently used in the U.S. (which meet far lower NOx standards and so are likely not comparable to the Euro VI engines), and compared the natural gas engines to diesel engines equipped with particle filters that would greatly reduce both particle mass and count. Indeed, the report's authors carefully caveat these results citing the limitations of this work and call for more research in this area.¹⁹ This is a thin reed upon which to base a blanket claim that NZE heavy-duty vehicles emit more ultrafine particles than their diesel counterparts.

In summary, we are very disappointed by your continued campaign against the funding of NZE natural gas-fueled trucks as part of the solution needed to clean the air. It is a campaign that will necessarily prolong the use of diesel trucks and sacrifices short-term emission reductions and health benefits for climate goals decades in the future. It is a campaign that falsely pits NZE and ZE technologies against each other when an all-of-the-above approach is needed to eliminate diesel. It is a campaign that misleads the public into believing ZE heavy-duty technologies are ready to go today and that the only barrier is political will. Most disturbingly, it is a campaign that plays loose with fundamental facts and science. It is our sincere hope that we can move beyond this rhetoric and work together on policies

¹⁶ See South Coast Air Quality Management District, *Ultrafine Particles Conference* (May 2006).

<http://www.aqmd.gov/home/technology/cfpag/ultrafine-particles-conference> (last accessed July 28, 2021).

¹⁷ See MATES V Chapter 5, *Ultrafine Particles and Black Carbon Measurements*.

¹⁸ See Transport & Environment, *Compressed Natural Gas Vehicles are not a Clean Solution for Transport* (June 2020), [2020_06_TE_CNG_particle_report.pdf \(transportenvironment.org\)](#) (last accessed July 28, 2021) at 9.

¹⁹ See CENEX, *An Innovate [sic] UK Research Project to Assess the Viability of Gas Vehicles* (Mar 2019) at 31-33.

Environmental Justice and Environmental Health Partners

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informed by the best available science to achieve our mutual goals of cleaning the air and protecting public health.

Sincerely,

A handwritten signature in black ink, appearing to read "Wayne Nasti", with a stylized flourish at the end.

Wayne Nasti
Executive Officer

cc: South Coast AQMD Governing Board
