



**Testimony of Rebecca K. Oyler**

**Vehicle Emissions and Electrification  
Senate Transportation Committee**

**September 27, 2021**

Good morning, Chairmen Langerholc and Sabatina and members of the committee. We appreciate the opportunity to testify today on behalf of the Pennsylvania Motor Truck Association (PMTA). I am Rebecca Oyler, President & CEO, and I'd like to introduce PMTA member Patrick Meehan, representing Bergey's Truck Centers, a Pennsylvania-based truck sales and service company with twelve locations here and in New Jersey, Maryland, and Delaware. He can answer specific questions about how the issues we are discussing here today will impact his customers. PMTA represents an industry comprised of 37,440 trucking companies in the commonwealth, the majority of which are small businesses operating fewer than six trucks.

The trucking industry employs more than 320,000 hardworking men and women in Pennsylvania. One in every 16 workers in the commonwealth is employed directly in transportation, and countless other jobs are indirectly related. Our industry is critical to many others; manufacturing, agriculture, warehousing, supply chains, and essential consumer goods distribution depend on trucking in every corner of the state. Eighty-eight percent of Pennsylvania communities depend exclusively on trucks to move their goods. When COVID-19 shut down most of our country, truck drivers kept our economy moving and continue to do so every single day.

The trucking industry is one of the most highly regulated in the country. It is also one of the most difficult to stay profitable in due to constantly increasing costs. Of course, the pandemic hasn't helped. Our industry, like many others, is struggling now because of supply chain issues. The worldwide semiconductor shortage has led truck manufacturers to shut down or slow production to a crawl, with the cost of those trucks that are available up substantially since last year.

Supply chain issues are also taking existing trucks off the road because many critical parts are unavailable. In fact, directly relevant to our conversation today, an EPA-required emissions component, the Diesel Exhaust Fuel Quality Sensor, is essentially unavailable now. Trucks all over the country are sidelined because DEF quality sensors cannot be replaced when they fail.

At the same time, a critical driver shortage is affecting our industry's ability to meet the demand of consumers, especially when so much of our economy relies on just-in-time delivery. You may have noticed this in stores when you find some shelves empty or when your Amazon package is delivered a few days later than you expected it.

All of these issues coming out of the pandemic are making it difficult for our industry to maintain the high standards and responsiveness that shippers and receivers have come to expect from truckers and that our economy depends on in so many ways.

Because we are here today to talk about emissions, I am happy to pivot to good news on behalf of the trucking industry. The remarkable progress made in recent years to reduce harmful emissions from trucks it is an extraordinary success story of innovation and technological advancement, which has improved our air and our quality of life. Heavy-duty trucks produced today are about 99% cleaner than 1970 models.<sup>1</sup> In just the past 20 years, the trucking industry has slashed NOx emissions by over 90% and particulate matter emissions by over 98%.<sup>2</sup> These emission reductions have been achieved while improving fuel efficiency by up to 75%.

When coupled with the nationwide availability of ultra-low sulfur diesel fuel, newer trucks achieve significant NOx and particulate matter emissions reductions. As more and more of our trucks are replaced with newer vehicles, emissions will continue to decline. Pennsylvania should be proud to be number three in nation for highest percentage of new generation clean diesel heavy-duty trucks at 59%, a full 10% higher than the national average.<sup>3</sup>

Cleaner trucks are part of the reason why Pennsylvania has been so successful reducing pollutants in the highway vehicle sector over the past 20 years. The following reductions have been achieved for EPA's criteria pollutants in the transportation sector in Pennsylvania:

- Sulfur dioxide (SO<sub>2</sub>) – 97.4%
- Carbon monoxide (C) – 88.4%
- Volatile organic compounds – 87.9%
- Nitrogen oxides (NO<sub>x</sub>) – 80.2%
- Fine particulate matter (PM<sub>2.5</sub>) – 77.2%
- Ammonia (NH<sub>3</sub>) – 53.9%
- Course particulate matter (PM<sub>10</sub>) – 52.8%<sup>4</sup>

At the same time, transportation-related carbon dioxide (CO<sub>2</sub>) emissions declined 12.7% during the same period.<sup>5</sup> These are amazing achievements of which we should all be proud. Of course, there is still progress to be made with commercial vehicles, which make up 24% of transportation sources of greenhouse gas emissions in Pennsylvania.

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<sup>1</sup> <https://www.epa.gov/transportation-air-pollution-and-climate-change/accomplishments-and-success-air-pollution-transportation>

<sup>2</sup> <https://www.businesswire.com/news/home/20181113006083/en/>

<sup>3</sup> <https://advancedbiofuelsusa.info/nearly-half-of-u-s-commercial-trucks-now-powered-by-near-zero-emissions-diesel-technology-delivering-climate-and-clean-air-benefits/>

<sup>4</sup> [https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.epa.gov%2Fsites%2Fdefault%2Ffiles%2F2021-03%2Fstate\\_tier1\\_caps.xlsx&wdOrigin=BROWSELINK](https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.epa.gov%2Fsites%2Fdefault%2Ffiles%2F2021-03%2Fstate_tier1_caps.xlsx&wdOrigin=BROWSELINK)

<sup>5</sup> <https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.eia.gov%2Fenvironment%2Femissions%2Fstate%2Fexcel%2Ftransportation.xlsx&wdOrigin=BROWSELINK>

There are many ways to continue to reduce emissions in the trucking industry, each with its advantages. But the biggest benefits are achieved when policymakers let market efficiencies determine the best solutions, rather than picking winners and losers. Choices must be made thoughtfully to ensure that policies deliver results and not just costs with few corresponding benefits.

Existing reductions in emissions came at a significant cost to the industry, both in increased costs of equipment and in the efficiency and reliability of trucks. Regulators estimated that emissions requirements have added about \$6,400 to the cost of a 2021 truck, and by 2027, the cost could be as high as \$12,440 under federal standards.<sup>6</sup> Clean diesel trucks also experience more towing incidents, increased downtime for engine regeneration, and more time and money spent on maintenance. Diesel particulate filters (DPF), which trap emissions from exhaust, require regular cleaning to maintain performance and fuel efficiency, costing several thousand dollars each time. As a result, truck and tractor maintenance costs have more than doubled in the last 15 years. Going forward, each change in emissions requirements for trucks will have significant costs, especially if lead-time is limited, which must be carefully weighed against the benefits.

Electrification is certainly one option, one that is especially promising in the short-term in some sectors of the industry, particularly in last mile and in local delivery fleets. But significant barriers remain until electric trucks become the norm for the three out of four trucks on the road and 97% of large Class 8 trucks that are powered by diesel.<sup>7</sup> These barriers include the cost of new vehicles, which is three times more than conventional trucks. In an industry with typical profit margins between 1% and 3%, it is easy to see why cost would be a barrier, particularly for smaller companies and owner-operators. In addition, fleets that replace their equipment in shorter cycles will take a hit on resale values as used truck buyers are very price conscious and slower to adapt to new technology. Encouraging the purchase of newer, cleaner technology is important, but mandates to electrify would crush the industry.

Another barrier is the cost of charging infrastructure. Vehicle charging stations come in several options, with Level 1 being the slowest at 120V and more appropriate for electric cars. Level 2 charging stations are the next fastest option at 240V and could potentially be used for trucks. A class 5 delivery van could charge fully from 20% in about four to six hours. This option would work well for local delivery trucks with a centralized charging depot. Level 2 chargers cost up to a few thousand dollars each.<sup>8</sup>

Option 2 charging stations are less practical for big trucks. A Class 8 vehicle would need 23 to 26 hours to charge from 20% to 100%, and few companies could take their trucks off the road for a day at a time to recharge. Large trucks need DC Fast Charging (DCFC) stations, which can range

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<sup>6</sup> <https://www.trucks.com/2016/08/16/epa-trucks-greenhouse-gas-standards/>

<sup>7</sup> <https://www.dieselforum.org/about-clean-diesel/trucking>

<sup>8</sup> See <https://www.electrificationcoalition.org/wp-content/uploads/2020/11/Electrifying-Freight-Pathways-to-Accelerating-the-Transition.pdf> for a complete discussion of these issues.

in price from less than \$20,000 to as much as \$150,000. The faster the speed of charge, the more expensive the station. Chargers large enough to recharge multiple vehicles will be even more expensive. A top-end DCFC charging station can charge a Class 8 electric truck from 20% to 100% in four to six hours, much more practical a timeframe.

However, Class 8 electric trucks can drive only about 250 miles before needing to charge. This makes them impractical for long-haul routes. To maintain current freight capacities, trucking companies would have to have at least two trucks per driver to use each driver's time effectively. With electric truck prices substantially more than conventional trucks, doubling the number of trucks they purchase and maintain is not something most companies could consider.

With current technology, long-haul electric trucks would require charging stations at least every 200-220 miles. At \$150,000 per charging station, with multiple required at each location, costs would again be an issue. And for each station deployed, the company must also deal with siting, planning, connection requirements, permitting, and installation, a project that takes nine to 13 months to complete.

There are also concerns that the facilities where trucks are stored do not have the power infrastructure available to charge larger fleets. Companies must also consider service and maintenance limitations when considering an electric fleet. In addition, electric batteries are heavy, increasing the weight of heavy-duty trucks up to 4000 lbs more than their diesel counterparts. This will necessitate increasing vehicle weight limits on roadways to make electric trucks cost-effective. The prospect of electric-powered fleets is exciting, and solutions will come, but they will take time and resources.

In the meantime, we have to consider other options as bridge technologies. Compressed natural gas (CNG) and liquid natural gas (LNG) are considered alternative fuels under the Energy Policy Act of 1992 and are widely available today, with over 1600 stations across the U.S.<sup>9</sup> Vehicles powered by CNG and LNG are cleaner and perform comparably to conventional fuel vehicles, with the advantages of domestic fuel availability and widespread distribution infrastructure. LNG is particularly well-suited for heavy-duty trucks because liquified gas has a greater energy density, allowing for more fuel to be stored onboard.<sup>10</sup> Dual-fuel LNG-powered diesel engines emit up to 75% lower NOx emissions and about 13% lower CO2 emissions compared to diesel-powered trucks.<sup>11</sup> This technology adds \$50,000 for a heavy-duty tractor and 2,000 pounds. On-site fueling stations can cost \$150,000 to well over \$1 million dollars, depending on the size needed.

Using renewable natural gas (RNG) made from waste sources such as landfill gas, dairy waste, wastewater treatment plants, and other sources reduces the environmental impact of natural-gas powered vehicles even more. In 2019 39% of all on-road fuel used in natural gas vehicles

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<sup>9</sup> <https://www.act-news.com/news/rng-as-transportation-fuel-on-road-volume-grows-to-39/>

<sup>10</sup> [https://afdc.energy.gov/vehicles/natural\\_gas.html](https://afdc.energy.gov/vehicles/natural_gas.html)

<sup>11</sup> <https://www.ctc-n.org/technologies/liquefied-natural-gas-trucks-and-cars>

was RNG. With more than 700 refueling stations nationwide today, RNG is cost-effective alternative with lots of potential.<sup>12</sup>

There are about 165,000 natural gas vehicles operating in the U.S. today. Many companies, including UPS, FedEx Freight, Waste Management, Penske, Ryder, and others, are converting much of their fleets to natural gas.<sup>13</sup> The cost of natural gas is relatively low, compared to its diesel gallon equivalent, but the price differential for NG-powered trucks or for retrofitting a diesel truck is substantial. In addition, heavy-duty NG vehicles weigh about 2000 lbs more than diesel-powered trucks, forcing companies to forego cargo that may make the difference between profit or loss on a trip. Whether the purchase makes sense over time will depend on the circumstances for each individual driver, truck, freight, and fleet.

Biodiesel and renewable diesel have been used for decades and are additional options that allow conventionally powered trucks to remain on the road yet provide significant emissions reductions. Biodiesel reduces greenhouse gas emissions by 57% to 86%. The industry's production, which reached 2.8 billion gallons in 2019, has been growing steadily and has already exceeded the biodiesel requirement under the Federal Renewable Fuel Standard.<sup>14</sup> In California's experience between 2011 and 2018, these two solutions have provided more than three times more CO2 reductions than the adoption of battery-electric vehicles have.

Hydrogen fuel cell electric vehicles could also be a longer-term option for emissions-free heavy-duty trucks. These vehicles convert compressed hydrogen from their fuel tanks into electricity that powers the motor, with the only emissions being water vapor. They can cover long distances and take significantly less time to refuel than electric vehicles do to charge. The high-energy density of hydrogen makes it particularly suitable for heavy trucks. In 2018 a consortium in California developed three large-scale hydrogen refueling stations for fuel-cell trucks using hydrogen made from biogas. The refueling network connects the Port of Los Angeles with a major warehouse complex inland, helping to reduce emissions in heavily polluted Southern California.<sup>15</sup>

However, hydrogen fuel cells have their downside as well. About 95% of today's hydrogen production is classified as "grey," meaning the hydrogen is produced from fossil fuels without carbon sequestration. An immense investment in green power generation for hydrogen production would be necessary to shift to "green hydrogen" to fully take advantage of the environmental benefits.

It is truly an exciting time to be in the trucking industry. Trucks are cleaner than ever before, and this has resulted in significant improvements in air quality and a cleaner environment for us

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<sup>12</sup> <https://www.fleetequipmentmag.com/hyliion-renewable-natural-gas-trucking/>

<sup>13</sup> <https://www.aga.org/natural-gas/good-for-business/natural-gas-fleets/>

<sup>14</sup> <https://www.biodiesel.org/production/production-statistics>

<sup>15</sup> <https://www.theautochannel.com/news/2021/01/25/949031-hydrogen-fuel-for-cars-and-trucks-coming-up-fast.html>

all. It would take 60 of today's clean diesel trucks to equal the emissions of one truck sold in 1988.<sup>16</sup> And the number of options to reduce emissions even further from trucks is encouraging.

However, it is important that we allow time for the industry to adjust – and for the technology to develop.<sup>17</sup> Choosing winners in the race to cleaner technology with mandates will lock in solutions that may be prohibitively expensive in the short-term and may or may not be the best solutions for the environment in the longer run.

Allowing companies to make choices that work for their trucks, drivers, and customers allows distributed investment in multiple solutions, which will lead to further innovation. For example, fleets of local delivery trucks may be logical candidates for electrification. Long-haul trucks carrying lighter loads between regular facilities may find LNG cost-effective. A small trucking company with many customers and variable freight may continue to use clean diesel.

Circling back to how I started today – discussing the critical importance of the trucking industry to our economy and the many challenges it faces – expensive mandates will only set the industry farther back and make it harder to adjust to changing circumstances. It is critically important to allow individual choices to guide solutions that balance costs and benefits for trucking companies and allow the market time to adjust.

I would like to discuss the California Air Resources Board (CARB) for a few minutes on the topic of mandates. By way of background, Pennsylvania adopted CARB's emissions and inspections requirements for heavy-duty trucks by reference via regulation back in 2003. Since that time, heavy duty trucks purchased or registered in Pennsylvania have had to have CARB certification stickers on them.

However, it is unlikely that, when that regulation was adopted almost 20 years ago, stakeholders here in Pennsylvania realized that CARB mandates would be guiding heavy-duty truck requirements here for the indefinite future. This is especially true because California's environment and its trucking industry are so different than Pennsylvania's. In 2020, California had 157 days exceeding federal ozone standards, while Pennsylvania had only 27, a testament to our success. Yet our state has ceded its authority to regulate truck emissions to the people of California, and that is having very real impacts on our trucking industry today.

Many PMTA members are concerned about new CARB requirements taking effect next year. In 2022, CARB requires the warranty for emissions controls systems in trucks to be extended from 150,000 miles for class 8 vehicles to 350,000 miles. The extension of these warranty restrictions is increasing the cost of new truck costs between \$2100 and \$5500 next year. PMTA has heard

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<sup>16</sup> <https://www.dieselforum.org/about-clean-diesel/trucking>

<sup>17</sup> Note that the same is true for vehicle emissions testing requirements. Mandates for emissions tests must come with sufficient time for manufacturers to develop and deploy them.

from many concerned members about these cost increases as they place orders for next year's trucks. The increases are on top of already high truck prices caused by the aforementioned supply issues. Further, though many states have adopted CARB's emissions requirements, only two states (outside California) have adopted the warranty requirements – New Jersey and Pennsylvania – leading many companies to consider purchasing and registering their trucks outside of our state. This will have a significant impact on sales tax and license fees collected by the state.

This warranty requirement an example of a mandate that imposes substantial costs on the industry with no real benefit. It is important to note that the trucks at issue are EXACTLY THE SAME TRUCK, with the same emissions system, that is sold in other states. The only difference is that trucks with CARB stickers in 2022 also require the purchase of costly warranty extensions at the worst possible time. This mandate forces purchasers to pay upfront rather than over time for costs associated with the maintenance of their emissions systems. Giving them the choice of whether to pay now or later has no impact on the environment, but it could make it easier for companies to afford to purchase new, cleaner trucks in Pennsylvania next year. PMTA awaits answers from DEP about next year's warranty requirements in Pennsylvania.

Last year, CARB approved sweeping new emissions regulations for heavy-duty trucks. These regulations, by virtue of Pennsylvania's adoption of CARB regulations by reference, will automatically take effect in Pennsylvania. The Omnibus Low-NOx Rule will require engine NOx emissions to be cut to approximately 75% below current standards beginning in 2024 and 90% in 2027. It also requires a 50% reduction in particulate matter emissions, new testing protocols, low-load and idle standards, and other rules. Truck manufacturers have decried the rule as "not technologically feasible or cost-effective," with too little lead-time to develop such advanced systems.<sup>18</sup>

The Omnibus Low-NOx Rule will add significant costs for truck manufacturers, which will be passed on to customers, at a time of significant upheaval the new truck market. These costs have not been fully considered, and unfortunately, will not be considered at all in Pennsylvania, since they are adopted by reference. Pennsylvania trucking companies and owner-operators, along with their customers, will have no say on whether they believe this California rule is appropriate for our state.

Another CARB initiative, the Advanced Clean Trucks Rule, which will also take effect in 2024, mandates manufacturers provide increasing percentages of truck sales be zero-emissions vehicles (ZEVs). The Advanced Clean Trucks Rule has not been adopted by reference like CARB emissions requirements in Pennsylvania, so a rulemaking would be required from DEP to do so.

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<sup>18</sup> <https://www.truckinginfo.com/10124652/californias-new-low-nox-rules-concern-truck-engine-makers#:~:text=The%20Omnibus%20Low-NO%20X%20Rule%2C%20approved%20by%20CARB,regulatory%20requirements%20on%20new%20heavy-duty%20truck%20and%20engines>

Other states have been considering it. Earlier this month, New York announced that it will move forward to adopt the rule for medium- and heavy-duty trucks.

Mandating extreme policies like CARB's Omnibus Low-NOx and Advanced Clean Trucks Rules ahead of the technological solutions that could facilitate them will cause problems. For one, many truckers will be forced to hold onto older, less clean trucks because newer trucks with advanced emissions solutions will be unaffordable. Zero-emissions requirements mandate electrification and will push other sensible solutions and bridge technologies, like natural gas and biodiesel, out of the market altogether.

At a time when the trucking industry is struggling to meet the demand placed on it, while dealing with significant uncertainty caused by supply chain and workforce issues, it's important for policies to remain flexible so that each individual company can determine the best solutions. Government incentives to invest in new technologies can be beneficial, but mandates are not helpful and could lock in costs and inefficiencies that will be difficult to remedy in the future. Worst of all, they may not help the environment.

Trucking delivers America. The industry has gone above and beyond in one of the most trying years in our nation's history, it and continues to do its best every day to keep our economy moving. We ask for your support to responsibly encourage emissions innovations without imposing costly mandates that will raise the price of moving the goods our economy needs to succeed.

Thank you for the opportunity to be here today. We are happy to answer questions.