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Public Comments on Alternative to proposed Amendments to 7 DE Admin. Code 1140, Delaware Low Emission Vehicle

The proposed Amendments to the Low Emission Vehicle regulation should be abandoned for the reasons listed below, and a new amendment should be prepared abandoning alignment with the California standards in favor of following federal Low Emission Standards. Adoption of the California Low Emission Vehicle standards was established by regulatory action based on an Executive Order from the Governor, and can be abandoned on the same basis. Any adoption of such a major issue should come from the legislature.

Further, submission of a State Implementation Plan to the US Environmental Protection Agency should stipulate the return to following the federal Low Emission Vehicle standard along with a petition to remove New Castle County from the Philadelphia-Wilmington-Atlantic City Nonattainment Area. The county now meets all National Ambient Air Quality Standards (NAAQS) and is no longer contributing to regional nonattainment as the ten closest upwind Air Quality Monitoring Stations are also now in attainment. As the EPA often states in recognizing areas that have reached attainment, the change is accompanied by less stringent air quality permitting requirements that promotes economic development as businesses grow, and new businesses open.

As discussed below the Technical Support Document for this action is chock full of wrong assumptions and wishful thinking with no underlying honest technical support.

Section 1: DNREC lacks authority to regulate vehicle emissions for ozone or carbon dioxide

In the Technical Support Document (TSD), pages 35-36, DNREC reviews the passage of the Regional Greenhouse Gas Initiative which establishes authority to regulate carbon dioxide (CO₂) from electric generators. DNREC then claims, “By extension, the Department is authorized to reduce air contaminants which include CO₂ emissions” by motor vehicles. In the Start of Action notice DNREC states the statutory basis for this action as 7 Del. C. Chapter 60 Environmental Control Subchapter II § 6010. Section (a) states “The Secretary may adopt, amend, modify or repeal rules or regulations, or plans, after public hearing, to effectuate the policy and purposes of this chapter. No such rule or regulation shall extend, modify or conflict with any law of this State or the reasonable implications thereof.” Clearly DNREC is trying to extend the RGGI regulation illegally to motor vehicles.

The legislature has recognized this lack of authority and has been working to pass a bill to fill this void. Last year Senate Bill 305 was designed to do exactly that by memorializing the Climate Action Plan created by Executive Order by Governor Carney. The bill failed. Senator Hansen has presented a draft Climate Change Solutions Act, she often refers to as the greenhouse gas bill, to fill the legislative gap. The prudent course for DNREC is to await passage of such an act before proceeding with the regulatory process.

In addition, section (c) states “The Secretary may formulate, amend, adopt and implement, after public hearing, a statewide air resources management plan to achieve the purpose of this chapter and comply with applicable federal laws and regulations. Any implementation plan in effect at the time of enactment of this chapter shall continue to be in effect unless amended or repealed by the Secretary.” As concluded in the

US Supreme Court case *West Virginia v. EPA*, the EPA has no authority to regulate carbon dioxide emissions without an express Act of Congress. So, there is no federal law to comply with. The rest of § 6010 relates to clean water and solid waste facilities bringing into question whether (c) even applies to the Low Emission Vehicle program. High nitrous oxide, sulphur, or lead in the air can impact water quality, but none of those comes close to exceeding the NAAQS.

DNREC explains its authority to adopt the California advanced car regulations in the TSD starting on page 25. Section 177 – US Code §7543. State standards of the 1990 US Clean Air Act creates a waiver for California to establish its own air quality standards because of its special geographic and weather situation. In general other states may adopt the California standard if they exactly follow the California standard. However, Section 1 of the Clean Air Act waiver states, “No such waiver shall be granted if the (EPA) Administrator finds that, (A) the determination of the State is arbitrary and capricious, (B) such State does not need such State standards to meet compelling and extraordinary conditions”. As discussed below, Delaware has no such compelling or extraordinary conditions.

All Delaware Counties have met ozone attainment of the 2020 NAAQS of 70 PPB maximum 8 hour ambient levels for the fourth highest day averaged over three years. DNREC also references State Implementation Plan requirements in the federal Clean Air Act Section 177, 52.426 which relates specifically only to areas of non-attainment of NAAQS. Permits are no longer required. See Table 1 below for the three year period 2020 to 2022 using data from the EPA Air Quality Daily Data website. On page 20 of the TSD DNREC states they can only use 2018 to 2020 data which is certified and validated. As they show in Table 2-2 just below this statement New Castle County also met the ozone standard in those years.

Table 1 Most recent ozone emissions in Delaware Counties versus the 70 PPB maximum standard

County	AQM Station	2020 4 th Highest Day	2021 4 th Highest Day	2022 4 th Highest Day	3 year Average
New Castle, DE	100031010	57	65	64	62
New Castle, DE	100032004	63	68	65	65
New Castle, DE	100031007	61	64	64	63
New Castle, DE	100031013	60	64	65	63
Kent, DE	100010002	62	67	61	63
Sussex, DE	100051002	58	64	63	62
Sussex, DE	100051003	60	61	61	61

The Greater Philadelphia area has also reached attainment for ozone

DNREC goes on to explain Delaware is part of the Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE 8-hour ozone nonattainment area, so the region must also meet the standard. DNREC has been repeatedly updating its EPA required State Implementation Plans as part of the goal to bring the region into attainment. This is done under Section 177 of the federal Clean Air Act, § 52.426 Control strategy plans for attainment and rate-of-progress: ozone. A case can be made the region is now in attainment. Table 2 below lists the Air Quality Monitoring Stations in the region and shows all stations except the Bucks County station near Bristol, Pennsylvania, meet the standards using the 2020-2022 period.

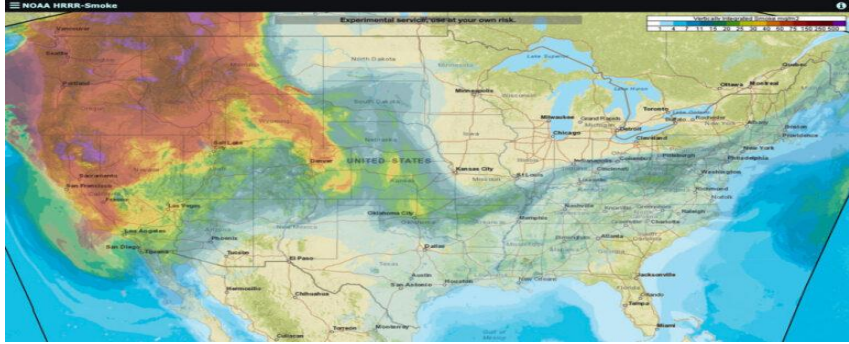
Table 2 Philadelphia region ozone emissions versus the 70 PPB standard

County	AQM Station	2020 4 th Highest Day	2021 4 th Highest Day	2022 4 th Highest Day	3 year Average
New Castle, DE	100031010	57	65	64	62
New Castle, DE	100032004	63	68	65	65
New Castle, DE	100031007	61	64	64	63

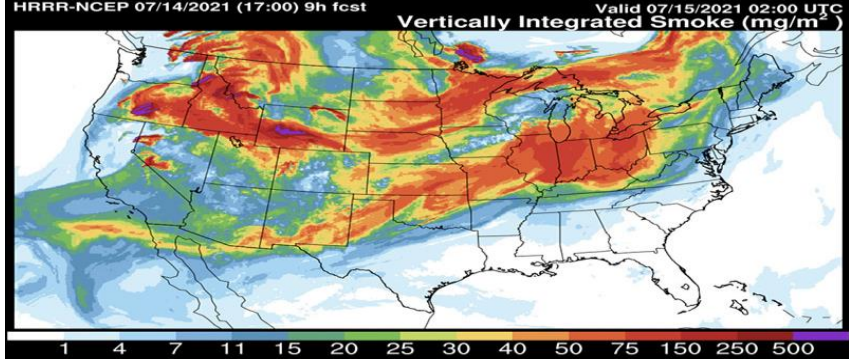
New Castle, DE	100031013	60	64	64	63
Kent, DE	100010002	62	67	61	63
Cecil, MD	240150003	64	70	63	66
Atlantic, NJ	340010006	59	59	60	59
Camden, NJ	340070002	62	68	62	64
Camden, NJ	340071001	59	62	63	61
Cumberland, NJ	340110007	60	68	61	63
Gloucester, NJ	340150002	64	67	69	67
Mercer, NJ	340210005	70	71	68	70
Mercer, NJ	340219991	65	67	65	66
Ocean, NJ	340290006	63	68	69	67
Bucks, PA	420170012	71	77	70	73
Chester, PA	420290100	60	62	58	60
Delaware, PA	420450002	62	67	66	65
Montgomery, PA	420910013	66	71	66	68
Philadelphia, PA	421010004	62	68	61	64
Philadelphia, PA	421010024	70	72	68	70
Philadelphia, PA	421010048	67	73	66	69

We note the 2021 77 PPB result at Bristol seems out of line with the 70 in 2022 and 71 in 2020. A little research turned up high days matched high wildfire smoke days from western wild fires on at least three occasions. Smoke maps dated around the four highest days (shown below) suggest smoke played a role in the high numbers. The EPA allows states to petition to exclude such days. Unfortunately, Pennsylvania did not do so. In addition, the EPA has changed the status to attainment without all stations meeting the standard. Charlotte, NC was found to be in attainment in 2015, though one station had a 73 PPB average.

August 13, 2021



July 15, 2021



August 27, 2021



The Clean Air Act allows states to petition the EPA through a “Request for Redesignation and Maintenance plan” for nonattainment areas for air quality standards. A previous redesignation request for Kent County was approved. The request is based on Section 107(d)(3)(D) which states “the governor of any state may, on the governor’s own motion, submit to the administrator a revised designation of any area or portion thereof within the state. Within 18 months of receipt of a complete state redesignation submittal, the administrator shall approve or deny such redesignation.” Section 107(d)(3)(E) establishes specific requirements to be met in order for an area to be considered for redesignation. Part (a) states “A determination that the area (or portion thereof) has attained the 2015 8-hour ozone National Ambient Air Quality Standard (NAAQS)”. New Castle County and the ten closest upwind air quality monitoring stations have met the NAAQS to justify a redesignation.

The Clean Air Act waiver for California was issued for air pollutants, not greenhouse gases. States have sued over California misusing the waiver and the case is being considered by the US Supreme Court and the California standards may be disallowed. The EPA has just issued revised motor vehicle standards similar to the California standards. DNREC has the ability to follow the federal standards and should do so.

Section 2: DNREC has made incorrect assumptions in supporting statements of its regulatory proposal

- 1) DNREC claims the annual ZEV requirement aligns with where the market is expected to be at 43% in 2026 and continues to ramp up quickly. However, EV market share of light and medium duty cars and trucks is only estimated to be 5.9% nationally according to a just released forecast by the US Energy Information Agency 2023 Annual Energy Outlook, Table 35. The same forecast predicts an 8.2% market share in 2034 compared to DNREC’s 100% forecast. The two forecasts are compared in Table 3 below. To make matters worse Delaware lags behind the adoption of the nation as a whole with about 2% EV sales in 2022 compared to almost 6% nationally. The lag reflects Delaware’s relatively small EV subsidy of \$2,500 compared to California at up to \$14,000. DNREC’s key assumption is having the number of vehicles mandated on a dealers lot is the same as selling those vehicles. However, their own chart on page 45 of the TSD shows only a 5% increase in 2022 in full battery EV sales between the states following the CA standard and states who did not. In reality dealers will not stock large numbers of vehicles that won’t sell. They will do exactly what has been the case for the last few years of vehicle shortages. They will stock a small number of vehicles to allow test drives, and to show the products, and will then take orders for delivery. Manufacturers may stock vehicles to allow quicker delivery, but will likely stock them in a state not following the California regulation. DNREC has repeatedly stated one of the reasons for the regulation is to have larger stocks of EVs in state. Dealers now report EV inventory on their lots is increasing with unsold vehicles available. The regulation will actually do the opposite, and lead to less in state stock.

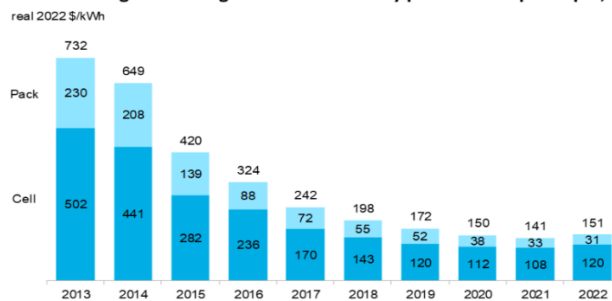
Table 3: DNREC compared to EIA Sales Forecast by Year

Year	DNREC BEV	EIA BEV	DNREC PHEV	EIA PHEV
2026	13,951	1,727	1,500	954
2027	17,862	1,782	1,553	959
2028	21,856	1,837	1,561	964
2029	26,886	1,938	1,569	969
2030	33,659	2,086	1,576	1,020
2031	36,606	2,236	1,583	1,071
2032	38,031	2,386	3,134	1,076
2033	38,850	2,537	5,308	1,127
2034	39,007	2,689	8,160	1,179
Total	265,709	19,216	25,945	9,321

- 2) The price premium for EVs is a major impediment to increased sales, and prices are largely driven by battery cost. DNREC provides a battery cost estimate on TSD page 107, Table 11-16 based on an estimate done by the California Air Resource Board. These prices are compared to a battery forecast from the US Energy Information Agency 2023 Annual Energy Outlook, Table 52, and the comparison by year is shown in Table 4 below. By 2034 the EIA price is 2.2 times higher battery prices than the DNREC estimate. DNREC shows Figure 1 below on page 59 of the TSD showing lithium-ion battery pack pricing history. The chart is a classic example showing economies of scale as cost decline through higher volume production. Economies of scale only work to a point and prices flatten out as is seen for the battery packs. In 2022 the price actually went up 7% because of higher material cost. It is likely both the DNREC and EIA forecasts are too optimistic and battery pack prices may not fall much. That means EVs will not drop much in price undermining another key DNREC assumption.

Table 4: Electric Vehicle Battery Cost Forecast DNREC v EIA, \$/KWh

Year	DNREC	EIA
2026	\$95.30	\$180.10
2027	\$88.79	\$168.20
2028	\$82.40	\$157.60
2029	\$76.70	\$148.10
2030	\$72.50	\$140.70
2031	\$68.90	\$137.40
2032	\$65.40	\$134.50
2033	\$62.20	\$132.00
2034	\$59.10	\$129.95

Figure 1: Volume-weighted average lithium-ion battery pack and cell price split, 2013-2022

Source: BloombergNEF. All values in real 2022 dollars. Weighted average survey value includes 178 data points from passenger cars, buses, commercial vehicles and stationary storage.

- 3) On page 54 of the TSD DNREC admits, “The increase in electric range is necessary for market development as consumers are looking for EVs that can go 300 to 500 or more miles on a single charge, and EVs that cost about the same as their gasoline counterparts.” Yet greater range means bigger batteries that increase the cost of an EV. Range is a big issue especially for towing. On page 55 DNREC gives the expected towing capacity of Ford 150 EV as “a medium weight 5,260-pound camper, the range dropped to 100 miles and towing a heavier 7,218 pound camper the range was only 90 miles.” This limit is a major impediment to EV truck sales.
- 4) DNREC dismisses concerns about the ability to charge an EV in an emergency evacuation situation. DNREC claims, “Weather emergencies are typically forecasted days in advance, providing the impacted population time to prepare.” However, real emergencies such as fire evacuations in California left EVs stranded because of the time needed to charge a vehicle, or the loss of electric service. On the same pages DNREC states, “Another concern voiced by consumers is product durability or the expected lifespan for the batteries before it requires replacement or a new vehicle. EVs currently rely on lithium-ion batteries to operate; however, these batteries do not have an unlimited lifespan.” The current requirement for battery warranties is 8 years or 100,000 miles assuming 1,000 deep cycle discharges over that period. However, there are 2,500 days in eight years and some owners are likely to charge every night just like is done with most cell phones. DNREC discusses a specific example of the Nissan Leaf lasting over 10 years but neglects to mention Nissan switched to a more durable Nickel-Cadmium-Manganese design. Similarly, Toyota Prius has had good battery life with metal-hydride batteries but auto companies are sticking with lithium-ion for lower cost.
- 5) DNREC keeps referring to the need to provide environmental justice to low income and minority communities. This is discussed on page 43 of the TSD. DNREC states, “greater availability of ZEVs, will reduce exposure to vehicle pollution in communities throughout Delaware, including in low income and disadvantaged communities that are often disproportionately exposed to vehicular pollution’. No science based data is given to prove this disproportionate impact claim. Urban areas do tend to have higher levels of air pollution than rural areas. However, both urban and rural areas have a wide range of income levels. We are fortunate in Delaware that now the entire state meets federal air pollution standards. That helps everyone.
- 6) DNREC expects to spend less than \$20 million on public chargers, but the Auto Alliance estimates a need for \$100 million in public charger investments. No money has been set aside for the tens of thousands of public chargers that will be needed at multi-family housing complexes, and city streets to accommodate lower income families that do not have dedicated parking spaces. DNREC claims on page 78 of the TSD a proposed bill requiring municipalities with more than a 30,000 population will study how to provide chargers for people without off street parking will fix the problem. However DNREC provides no details of how that might work. It is wishful thinking. Similarly, DNREC assumes auto manufacturers will figure out a way to sell lower priced vehicles to low income people but provides no idea on how that will be accomplished. More wishful thinking. DNREC does plan to offer low income people more sidewalks, bike trails, buses, and a fund for car sharing (again no details). The assumption is low income folks will buy a used car but a used EV will have a limited time until the battery must be replaced. General Motors has a list price to replace the Chevy Bolt battery of over \$17,000. Unsaid is the actual result will be low income people will have to give up owning a car, and at least charge at public sites. Public charging stations lose money for the owners resulting in low maintenance even with electricity charges triple home charging costs. On average 20% of chargers are out of service at any one time. DNREC does not calculate this cost, or how the problem will be handled.

- 7) DNREC claims gas powered vehicles will not be banned but Delaware code 1140, section 2.1 already states no new vehicle can be registered in Delaware if not certified by the California Air Resource Board. That Board already states they will only certify EVs and hydrogen fueled vehicle in 2034. Gasoline/hybrid vehicles actually save 50% more carbon dioxide emissions than an EV, but will also be banned. Kent and Sussex Counties are in attainment so they should be excluded from the mandate. DNREC states they can't figure out how to deal with some counties not included in the standard on page 38 of the TSD. However, on page 110 of the TSD DNREC discusses the use of mileage based user fees to replace lost fuel tax revenue needed for highway maintenance and construction. DNREC has done a trial on this. They track individual vehicles driving mileage. This kind of data, while overly intrusive, could track vehicles just registered in New Castle County.
- 8) DNREC claims heavy duty vehicles will not be impacted but California is already preparing limits on heavy duty vehicles.
- 9) EVs pay no fuel taxes into the Highway Trust Fund to pay for road construction and maintenance. EVs weigh about 1,000 pounds more than conventional vehicles, and will actually cause more wear on roadways. On page 110 of the TSD DNREC says the highway fund shortfall could be met by, "increasing existing motor fuel tax rates, indexing motor fuels to inflation, implementing mileage based user fees and studying fuel-neutral fees, based on energy consumption." However, DNREC makes no specific recommendation and has taken no steps to implement alternate plans. It's simply another problem DNREC ignores in implementing their regulation. DNREC shows a \$30 million deficit in fuel tax revenue in 2034 in Figure 11-3 on page 111 of the TSD.
- 10) On TSD page 51 DNREC dismisses concerns about EV fire hazards stating, "Firefighters are preparing for a ZEV future and should a vehicle fire occur, they will be prepared to handle it safely." Training is being done but we heard from fireman the fires are much harder to put out requiring thousands of gallons of water over up to eight hours to put out compared a few minutes and hundreds of gallons of water to put out gasoline fires. Damaged batteries in a vehicle accident can spontaneously combust doing rescues endangering passengers and first responders. There are no current standards for color coding EV battery wires making it harder to disable the batteries. New York City recently banned parking EV bicycles in buildings because of spontaneous combustion. DNREC is not taking the fire hazards seriously enough.
- 11) DNREC dismisses concerns about critical mineral supplies for batteries starting on page 52 of the TSD. DNREC claims, "The United States is taking steps to reduce human rights violations seen in the mines and to minimizing dependence on foreign supplies of these essential minerals." While steps are being taken there is no guarantee of success, in fact success is unlikely. Every attempted new mining operation in the US has been defeated by opposition from environmental groups. China monopolizes mineral processing, and that is unlikely to change.
- 12) DNREC dismisses concerns about battery recycling on page 63 of the TSD stating, "Retired traction batteries can be reused, repurposed, recycled, or ultimately discarded in a hazardous waste landfill." One idea is to use vehicle batteries in electric storage facilities, however this is simply not happening as expensive storage facilities don't want to start off with unreliable batteries with limited life expectancy. Recycling is rarely done as the captured material only pays for a small fraction of the recycling cost. There are no rules requiring recycling so most batteries will eventually be landfilled, and as stated they will be considered hazardous waste.
- 13) On page 66 of the TSD DNREC states, "Comments received during the Department's public engagement identified concerns regarding the supply of electricity, and the ability to deliver that electricity without straining the transmission and distribution system." DNREC states, "The Renewable Portfolio Standard as amended in 2021 requires that by 2040, up to forty percent of the state's electricity supplied to customers is generated from renewable sources." The section on grid reliability goes on for another 10 pages but doesn't actually deal with the ultimate question of

reliability. Certainly setting higher renewable power goals is not reassuring as our current standard requires we get about 23% from intermittent wind and solar this year, but we are only generating about 2% in state. Our in state power generation has dropped from 78% in 2016 to 36% in 2022. Our regional grid operator, PJM, released a report in February (Energy Transition in PJM: Resource Retirements, Replacements & Risks, <https://www.pjm.com/-/media/library/reports-notice/special-reports/2023/energy-transition-in-pjm-resource-retirements-replacements-and-risks.ashx>) warning of potential shortfalls in power by 2026 when reserve margins will fall below the required 115% of peak demand to as low as 113%. By 2030 reserve margins could be as low as an unacceptable 103%. EV mandates could push electric demand even higher, so reliability concerns are justified.

- 14) Scientific surveys show between 73% and 80% of people do not support this regulatory change. A DNREC survey in the TSD Appendix shows 65% of Delawareans are not likely to buy an EV compared to 30% who would. DNREC needs to consider this widespread opposition. A big reason for the opposition is the high price of EVs as shown in Table 5 below.

Table 5: Price comparison Electric Vehicle versus an Equivalent Gasoline Power Vehicle 2022 MY

Manufacturer	EV Model	Base Price	ICE Model	Base Price	\$ Difference
Mazda	MX30	\$ 33,470	CX30	\$ 22,950	\$ 10,520
Hyundai	Kona	\$ 34,000	Kona	\$ 21,990	\$ 12,010
Kia	Niro	\$ 39,450	Niro	\$ 26,490	\$ 12,960
VW	ID4	\$ 37,495	Taos	\$ 24,155	\$ 13,340
Audi	Etron	\$ 48,800	Q3	\$ 38,700	\$ 10,100
Volvo	XC40 Recharge	\$ 55,300	XC40	\$ 36,350	\$ 18,950
BMW	Edrive 40	\$ 55,900	330I	\$ 42,300	\$ 13,600
Toyota	BZ4X	\$ 42,000	RAV4	\$ 27,575	\$ 14,425
Ford	F150 Lightning	\$ 51,974	F150	\$ 33,695	\$ 18,279
Average					\$ 13,798

Section 3: Critique of DNREC Regulatory Flexibility Analysis and Impact Statement

DNREC must create a Regulatory Flexibility Analysis (RFA) to consider, where applicable, lawful, feasible and desirable, specific methods of reducing the burdens of the regulation on individuals and/or small businesses, including: (1) establishing less stringent requirements and deadlines; (2) establishing performance standards to replace design standards; (3) exempting individuals and small businesses from all or part of the regulation; and (4) examining other ways to accomplish the regulation’s purpose, while minimizing the impact upon individuals and/or small businesses.

The agency also must prepare a Regulatory Impact Statement (RIS) to (1) describe the purpose of the regulation; (2) identify the individuals and/or small businesses subject to it; (3) provide an estimate of the potential costs of compliance; and (4) describe any less intrusive or less costly alternative methods of achieving the purpose of the regulation. In addition, the Act further enhances transparency by requiring the

Registrar of Regulations to transmit regulatory impact statements to the appropriate standing committee of the General Assembly.

DNREC chose to exempt itself from the RFA requirements citing the fact the regulation only requires automotive manufacturers to comply, and there are no such manufacturers in Delaware. This falsely overlooks the impacts on individuals and small businesses suffering secondary impacts of buying more expensive vehicles, buying vehicles with inadequate towing range, and the possibility of buying used vehicles that may need a very expensive replacement battery. DNREC must consider these costs to comply with the intent of the law. DNREC could exempt Kent & Sussex County’s from the regulation using a mileage tracking system they have already tested as a way to charge a fuel tax to fund the Highway Trust Fund. DNREC could also decide to follow the Federal Low Emission Vehicle standards instead of California, as DNREC offered as an alternative during the workshop meetings.

DNREC estimated possible health benefits of the regulation in its RIS along with the electric vehicle ownership savings. These were stated as “good-faith estimates”, but suffer from massive false assumptions, and were not accompanied by cost estimates, and DNREC offered no alternatives such as following federal standards which are on track to reduce air pollution from light and medium duty vehicles by about 95%. This is not a good-faith estimate. Problems will be highlighted below frequently citing assumption tables from the US Energy Information Agency 2023 Annual Energy Outlook found at https://www.eia.gov/outlooks/aeo/tables_ref.php . The Energy Information Agency is the official federal source for energy related forecasts.

While it is DNREC’s responsibility to make these cost estimates, it is easy to make a few quick estimates. Federal subsidies for buying electric vehicles end in 2032. Since no new vehicles may be registered in 2034, other than electric and hydrogen fueled vehicles, businesses and individuals will be forced to buy such new vehicles. DNREC estimates 47,167 new vehicles will be purchased in 2034, and EIA Table 52 estimates vehicle prices by size and technology and electric vehicles will average about \$4,400 more than similar gasoline powered vehicles for an extra cost of \$207.5 million in just one year.

In its RIS DNREC calculates supposed cost savings of owning an electric vehicle shown below in Table 6. Included is an alternative calculation in Table 7 described in a comparison calculated by the Caesar Rodney Institute in its article, “Electric Vehicles v Internal Combustion Engines”, comparing a Chevy Bolt with a Honda Fit, located at https://www.caesarrodney.org/pdfs/EV_v_ICE2.pdf with updated fuel cost and finance data, along with a 2030 estimate using EIA estimated vehicle price premium of \$5,800. As shown, instead of showing a lower electric vehicle savings in the DNREC estimate of \$8,633, the alternate calculation shows a premium cost of owning an electric vehicle of \$17,000 today dropping to about \$5,800 in 2030. Note DNREC provides no assumptions in its calculation.

Table 6: DNREC estimated cost of owning an electric vehicle

Cost Category	BEV with home charger
Incremental Vehicle Price	\$4,514
Home Level 2 Charger	\$850
Finance Cost with Document Fee	\$789
Incremental Fuel Cost	-\$8,804
Incremental Maintenance Cost	-\$8,239
Incremental Insurance Cost	\$2,257
Incremental Registration Cost	\$0
Total (Ten Years)	-\$8,633

Table 7: CRI estimated cost of owning an EV in 2023 and 2030 after 100,000 miles

Cost Category	2023	2030	Explanation difference from DNREC
Incremental Vehicle Price	\$14,316	\$5,800	2023 actual, 2030 Table 52
Home Level 2 Charger	\$850	\$850	DNREC Table 4
Finance Cost	\$1,854	\$751	Loan Calculator at 4.9%, 5 years
Incremental Fuel Cost	-\$6,056	-\$6,056	DP&L Home Charger price, \$3.14.gallon Table 12
Incremental Maintenance Cost	-\$1,120	-\$1,120	19 oil changes @ \$55 each air filters 3 times @ \$25 each
Incremental Insurance Cost	\$2,557	\$1,306	2023 DNREC Table 4, 2030 adjusted for lower vehicle price
Incremental Registration Cost	\$644	\$261	4.5% document fee
Resale Value	\$3,972	\$3,972	Actual quote for Fit, EV no value as battery at warranty end
Total (8 Years)	\$17,017	\$5,764	Battery warranty 8 years, 100,000 miles

DNREC estimated health benefits by 2040 of \$95.7 million in table 10-1, page 89 of the TSD, from the cumulative emission savings in the below Table 8.

Table 8: Cumulative emission savings from adopting the ACC 2 regulation

By Year	NOX tons	PM2.4 Tons	CO2 equivalent tons
2030	123	8	1.2
2035	502	38	5.3
2040	1,169	85	11.9

Health cost savings are typically measured on a maximum single year benefit compared to a single year of cost, not a cumulative benefit. Air quality monitoring stations measure current ambient air, not some future emission level. Daily measurements are viewed annually to determine whether a national standard is met. Since the supposed benefits will peak in year 2034 that is the year that should be used to calculate any net benefits. Following is a discussion listing reasons DNREC's Health Benefits estimate is grossly overstated.

- 1) On TSD page 89, Table 10-1 DNREC estimates PM_{2.5} maximum savings of ten metric tons per year. That is 0.2% of the 4,871 metric tons per year of total PM_{2.5} shown in TSD page 30 in Figure 4-3, an amount so small it is unlikely to show up at air quality monitoring stations.
- 2) The COVID lockdowns provided a useful natural experiment. Between March 15, 2020 and May 31, 2020 traffic on Interstate 95 fell by about 50% below normal. Many air quality monitoring stations near I-95 did not record data but Marcus Hook, PA did and we see PM_{2.5} averaged 7.2 µg/M³ in 2020 which was slightly higher than both 2019 and 2021. Table 9, created from EPA's Daily Air Quality Data website, shows the 2019 to 2021 results for three sites with data. Cutting traffic in half had no impact on measured PM_{2.5}. Note 2020 was actually higher than the non-lockdown years. That may be because more people were home with the heat on or up. PM_{2.5} pollution is higher in winter because of emissions from oil fired heating equipment. In Wilmington last winter from December through February the average ambient level was 10 compared to last June through August that averaged 8.2 during periods of higher levels of motor vehicle traffic.

Table 9: PM 2.5 Air Quality average 3/15 to 5/31 for 2019-2021 in µg/M³

Site	2019	2020	2021
Marcus Hook, PA	6.9	7.2	7.1
Killen's Pond, DE	5.6	6.7	5.9
Delaware City, DE	5.3	6.4	6.2

- 3) DNREC shows 65% of the calculated health benefits occur out of state which should not be shown as a benefit to Delaware.

- 4) Over the last 3 years the highest station in Delaware averaged 8.8 compared to a NAAQS of 12 $\mu\text{g}/\text{M}^3$. NAAQS are set based on a level with no significant health impacts with a margin of safety, so, there are likely no actual health benefits from this small an amount of reduced $\text{PM}_{2.5}$ when the NAAQS was met.
- 5) Similarly, ozone levels only dropped 3% during the COVID lockdowns with vehicle miles falling in half. Three year average ozone dropped from 74 PPB in 2017 to 65 in 2022 with no exceedance days.
- 6) Emission inventory for 2021 compared to 2017 of NOX emissions dropped 38% (83% from 1990), and VOC 66% (91% from 1990), according to EPA Air Pollution Emission Trends by State. Emissions from gasoline powered vehicles will continue to fall as older vehicles leave the fleet, and even tighter emissions standards are adopted by the EPA. DNREC states in the TSD page 36, “By MY 2027, new vehicles in Delaware will emit 75% less smog-forming pollution (mainly non-methane hydrocarbons and nitrogen oxides) than the average new car sold today”, or about 95% total reduction from 1990.
- 7) By 2034 58% (554,000) of Delaware’s 962,000 registered vehicles will have been replaced by more efficient vehicles. In addition the most urban air quality monitoring station in Wilmington is measuring ozone only 6% higher than the most rural station in the state. Not much room for improvement.
- 8) DNREC references claims by the American Lung Association Delaware giving New Castle County an “F” for air quality. Instead of using NAAQS, the official standard, they simply came up with their own measure. They literally give an “F” to a county meeting the NAAQS 99.7% of the hours for the year. Their report has no scientific basis, and is meant as a scare tactic and a fund raising gimmick.
- 9) We note DNREC remains concerned about NOX emissions even though NOX emission levels have a three year average maximum of 41 PPB compared to a 100 PPB standard as measured by an air quality monitoring station in Wilmington. We also note DNREC stopped monitoring NOX levels in the state a year ago because levels were so low. It is unlikely lower NOX levels will contribute to health benefits.

Clearly, Delaware is unlikely to see any health benefits from this regulation.

Summary

DNREC has ignored impacts to individuals and businesses such as high vehicle cost, unexpected battery replacement cost, charging limitations, range limitations, and the fact EV dealer inventory is improving on its own. DNREC has miscalculated the emissions savings, costs, savings, market forecasts, and health benefits of the proposed regulation. DNREC is also ignoring federal lawsuits and coming regulatory changes that will make the regulation obsolete, and is ignoring wide spread public opinion against adopting the regulation. There are questions about the basis for the claims DNREC even has the authority to adopt the regulation. DNREC needs to abandon this regulation and let the free market work.

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