CONCERNS about *Maryland's Climate Pathway* (June 2023 report)
https://mde.maryland.gov/Pages/index.aspx

Maryland citizens are the primary stakeholders in any plans for implementing *Maryland's Climate Pathway.* We encourage consideration of the comments below:

- Utilize incentives not mandates and prohibitions.
- Our freedom of choice -- type of home heating and cooling system, cooking system, appliances, and vehicles – should not be restricted or denied.
- Maryland is not a major air polluter -- Maryland's carbon dioxide (48.1 million metric tons) is 1% of the U.S. share of emissions.
- Maryland uses less electricity per capita than 80% of the states.
  Source: U.S. Energy Information Administration, *Maryland State Profile and Energy Estimates* https://www.eia.gov/state/analysis.php?sid=MD
- The plan does not address the significant cost (increased taxes and fees) to reach the climate goals.
- There is no mention of the pollution resulting from building the solar arrays or wind farms that supply renewable energy.
- Extend the timeframe to meet the 60% reduction in GHG emissions by 2-4 years to allow adequate time for increased energy production and strengthening the transmission grid so that Maryland's citizens are not subjected to energy restrictions, rationing or blackouts.

ENERGY RESOURCES

GOAL: Homes, vehicles and industry will operate on electric power by 2045.

A mix of all energy sources is necessary to ensure a reliable, continuous flow of electricity for homes, businesses, agriculture, and government services. Adequate generation and supply, transmission and distribution are essential.

Source: NRC, *Maryland's Power Industry*
https://www.nrc.gov/docs/ML1004/ML100490770.pdf

Source: Maryland Matters, *The nation's biggest electric capacity market needs fixing, critics say* (15 Mar 2023)

https://www.nrc.gov/docs/ML1004/ML100490770.pdf

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Before the State implements a plan that will force all homes, vehicles, and industry to operate on electric power by 2045, it must conduct an analysis of the current electric grid's transmission capacity to reliably transmit the quantities of electricity that will be needed, especially in extreme weather, and define needed upgrades to enlarge the grid system and the time and cost to do so.

Cost estimates in the models used in the *Climate Pathways* Appendix are too vague. Realistic estimates of the cost to increase capacity and upgrade will be integral to acceptance by Marylanders. Be honest about who will pay (increased taxes and fees) and how much.

Maryland is a small geographic state and land is a finite resource. In choosing the mix of energy sources, the amount of land required to produce a given quantity of electricity must be considered.

The *Climate Pathway* report assumes that the operating authorization for Calvert Cliffs (Maryland's only nuclear power plant) will be extended from 2036 to 2050. Inclusion of this extension in the final plan would go far in ensuring a reliable energy supply.

Instead of encouraging solar "farms" on agricultural land, provide incentives for development of solar installations on flat-roofed commercial and industrial buildings.

Calvert Cliffs Nuclear Plant generates 38% of the electricity produced in Maryland (1,708MW) on 1,500 acres. Equal solar photovoltaic generation would require 13,664 acres, assuming 8 acres per MW of installed capacity (DNR Pub. No. 12-011620-203).

Building one additional nuclear plant of similar capacity or several smaller plants would greatly expand Maryland's continuously operating electricity generating capacity and reduce imports.

The *Climate Pathway* report relies on importing large amounts of electricity from states in the PJM region where 7 out of 13 states continue to produce energy from coal. Maryland ratepayers will pay carbon credit fees for this electricity to offset the pollution in other states.

Plans need to be realistic about the amount of electric energy needed to fuel all vehicles, heat and cool all homes, businesses, government facilities, farms and industry; and, if and when Maryland can produce that energy.

Recent reports of the increased cost and delays in construction of off-shore wind turbine projects in New Jersey make the heavy reliance on offshore wind energy in the CSNA and the timeframes very questionable. (*New Jersey's Wind Giveaway Gets Worse* –

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7/10/23 - Wall Street Journal). How financially burdensome will these increases be to ratepayers and taxpayers, especially those on fixed or limited incomes?

Evaluating the installation of offshore wind turbines must emphasize the environmental impacts of industrializing the ocean floor:

- Impacts on marine ecosystems -- construction and operating vibrations, acoustic disturbances, electromagnetic fields, etc.
- Seabed destruction -- disruptions to the ocean floor to lay collection pipes or lines between wind turbines and to the onshore transmission station.
- Impacts on tides and ocean currents from temperature changes and changes in wind and air currents.
- The discharge of heated water from cooling wind turbines at electrical substations (up to 90 degrees Fahrenheit).
- Disassembly, removal and reconstruction when wind turbines wear out or are damaged.
- Impacts on commercial watermen, the seafood industry, and our food supply.

Source: NIH/National Library of Medicine, *Environmental Impacts of Global Offshore Wind Energy Development until 2040* (28 Jul 2022)

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9386896/

Source: Energy.gov, Office of Energy Efficiency & Renewable Energy, *Mid-Atlantic Wildlife Studies* (2015)

https://www.energy.gov/sites/default/files/2018/05/f51/FINAL%20DOE%20booklet%20092515.pdf

Source: BioMed Central (BMC), *Assessing environmental impacts of offshore wind farms: lessons learned and recommendations for the future* (14 Sep 2014)

https://aquaticbiosystems.biomedcentral.com/articles/10.1186/2046-9063-10-8

Maryland's total per capita petroleum consumption is the 4th lowest among the states, after NY, RI and MA.

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Source: Energy Information Administration (EIA), *Maryland State Profile and Energy Estimates* (17 Nov 2022)
https://www.eia.gov/state/analysis.php?sid=MD

By 2031, Maryland will still likely import half its power from nearby states (WV, PA, OH) that have no plans to fully phase out coal power.

Source: Governing, *Maryland Plans to Cut Greenhouse Gas Emissions by 60% in 2031* (30 Jun 2023)
https://www.governing.com/climate/maryland-plans-to-cut-greenhouse-gas-emissions-by-60-in-2031

HOUSING

GOAL: Prioritize dense, compact development and build a transit infrastructure that discourages the number of miles residents travel by car

Many proposals will limit an individual's right to choose:

- Proposed upzoning and housing densification ignores those who do not want to live in densely-populated areas.
- Forcing increased use of public transportation, walking and biking for commuting.

Counties' zoning authority for single family housing areas could be restricted to accommodate auxiliary dwelling units in those areas, increasing density and negatively impacting property values.

Source: Energy Information Administration (EIA), *Maryland State Profile and Energy Estimates* (17 Nov 2022)
https://www.eia.gov/state/?sid=MD

- *About 11% of Maryland households use heating oil, propane or kerosene for home heating.*
- *About 40% of Maryland households use natural gas as their primary fuel for home heating.*

Geothermal heating-cooling systems are a viable, reliable alternative to air-to-air electric heat pumps in some circumstances.

Electric air-to-air heat pumps alone are not sufficient in winter in a geographic area such as Maryland without a back-up emergency or auxiliary heating system. Electric back up service is very expensive to run and will burden low-income families the most. Allow natural gas or propane backup systems.

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TRANSPORTATION

GOAL: 300,000 zero-emission vehicles (ZEVs) in Maryland by 2025

Is it realistic or advisable to ban the sale of gasoline-powered vehicles by 2035?

- At July 2022, the Maryland Motor Vehicle Administration reported 4.5M registered vehicles: 3.8M passenger and multipurpose vehicles -- 761K trucks -- approximately 53K EVS (19K plug-in hybrid EVs + 34K battery powered EVs)

Supplemental Table 3 on Appendix page 14 unrealistically assumes that all new bus sales will be 100% electric by 2025.

How much carbon-based fuel, such as coal and natural gas, went into the electrical energy that charged the batteries?

Transportation needs in Maryland (maintenance, operations, administration, capital projects, debt service) are funded by the Transportation Trust Fund. Motor fuel tax accounted for 28% of MDOT's FY2021 revenue. The "fuel" that powers EVs contributes nothing to the Transportation Trust Fund. This is unfair and inequitable.

Source: MD Department of Transportation, *Fiscal 2023 Budget Overview* (Jan 2022)
https://mgaleg.maryland.gov/pubs/budgetfiscal/2023fy-budget-docs-operating-J00-Maryland-Department-of-Transportation-Overview.pdf

EV charging stations must be equitably distributed and maintain a high degree of reliability. The MD Public Service Commission's pilot program that resulted in +/- 1,000 charging ports run by utilities have polled poorly in customer reliability surveys; and program deficits have been passed along to ratepayers.

Mandating all electric vehicles will require an extremely large investment in charging stations including ones designed for trucks at depots and along travel routes. In cold weather electric vehicles travel range can be reduced by up to 30% due to heating the cabin. Carrying heavy loads can reduce the driving range of electric vehicles by about 25% according to a study by the American Automobile Association as reported in the

Source: Plug-In Sites, *Category: Reliability – Broken Charging Stations Threaten Maryland's Electric Vehicle Goals* (22 Mar 2023)
https://pluginsites.org/category/reliability/

- *Maryland aims to have 300,000 electric vehicles on the road by 2025. As of December 31, 2022, there were 62,744 EVs registered in the state.*
    - That requires a 478% increase in 3 years' time.

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Source: Cars.com, *How Much Does It Cost to Charge an Electric Car?* (7 Mar 2022)
https://www.cars.com/articles/how-much-does-it-cost-to-charge-an-electric-car-447817/

- *…EV efficiency changes based on the conditions in which you drive (vehicle load, elevation changes, temperatures)…*
- *… home-charging efficiency…the measure of the total energy used in the charging process versus energy added to the battery — ideally, 100% with no losses to heat or battery conditioning — … ranged from 69% to 96%...*
- *… DC fast charging…more efficient charging method…ranging from 97%-100% efficiency*

Source: Institute of Electrical Engineers, *How Efficient Is Your EV? It's Complicated* (2 Aug 2021)
https://spectrum.ieee.org/how-efficient-is-your-ev-its-complicated

- *Depending on factors like the ambient-air temperature, how empty the battery is when you start charging, and the supply voltage to your EV's charging unit, the efficiency of charging can vary between 70 percent and 90 percent.*
- *… how much carbon-based fuels such as coal and natural gas went into the electrical energy that charged our batteries.*

Source: Car and Driver, *EVs Explained: Charging Losses* (10 Apr 2021)
https://www.caranddriver.com/features/a36062942/evs-explained-charging-losses/

- *A rough expectation is that your EV may use as much as 12 to 15 percent more energy than what you add back to the battery. Some energy is written off to what's known as "transmission loss," some is converted to heat, and some is used to keep the battery at the right temperature during charging.*
- *…as the battery reaches its maximum capacity, heat can increase, reducing the efficiency of the charge…*
- *If you're charging at 120 or 240 volts, the car has to convert the alternating current (AC) provided by the circuit to direct current (DC) that can be used to charge the battery.*

Those least able to absorb the increased costs of purchasing an electric vehicle, those on low and limited incomes, will be disproportionately impacted in the negative.

Source: Natural Resources Defense Council, *Electric vs. Gas Cars: Is It Cheaper to Drive an EV?* (25 May 2022)
https://www.nrdc.org/stories/electric-vs-gas-cars-it-cheaper-drive-ev

- *The average sticker price of a new electric car in 2021 was about $10,000 higher than the industry average, which includes both gas-powered and electric vehicles.*

Source: Cars.com, *How Much Do Electric Car Batteries Cost To Replace?* (24 Apr 2023)
https://www.cars.com/articles/how-much-do-electric-car-batteries-cost-to-replace-465308/

- *Most automakers say that a vehicle's battery should last up to 20 years… an EV would need a new battery if it is damaged in an accident… even a minor collision can scratch the battery and require a replacement or result in a total loss of the vehicle…*

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out-of-pocket cost for a replacement ranges from $5,000 to $20,000…depends on the pack, size and manufacturer of the battery…

- *… properly maintain the vehicle's battery to prolong its life. Limiting DC fast charging to when it's really needed, keeping the battery charged at around 20%-80% and minimizing exposure to heat are the best ways to slow battery degradation.*

Source: J.D. Power, *How Much Does It Cost To Charge An EV?* (20 Sep 2022) https://www.jdpower.com/cars/shopping-guides/how-much-does-it-cost-to-charge-an-ev#:~:text=Most%20EVs%20can%20generally%20travel,at%20the%20price%20of%20convenience.

- *Most EVs can generally travel 3 to 4 miles per kilowatt-hour (kWh) of energy. A full recharge, if your vehicle's range is 300 miles, would require 75-100 kWh and cost $10-$14.*

  …cost-efficiency comes at the price of convenience. All EVs are supplied with a home-charging cable that plugs into a wall outlet and charges about 3 to 6 miles into your car per hour (Level 1 charger). To achieve faster charging, many owners install Level 2 chargers, which are wall-mounted panels with a 240-volt circuit. They deliver about 20-40 miles of range per hour but cost $550 for the unit, not taking into account the cost of labor.

  When using this method, costs will depend on the price of electricity in your area. They differ from state to state, so your monthly mileage will vary.

- *Public charging stations are equipped with Level 3 chargers or DC fast chargers, capable of adding a significant range to your EV in a short amount of time…pretty convenient but tend to cost much more.*

  …different stations have their own "counting practices." They could bill you for 1 kWh of energy or just for 1 minute of charging time…if you decided to use a Tesla Supercharger in Illinois, they could bill you for each minute of charging time with 30-37 cents per kWh... to increase your battery charge from 26% to 95%, you would have to spend around $19.72 to do it in just 49 minutes.

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