

Maryland Commission on Climate Change's Mitigation Working Group (MWG) Discussion Draft Recommendations for 2022

Discussion Draft - Oct 17, 2022 (with proposed amendments for discussion on Oct 18)

Disclaimer: *This is a compilation of discussion draft recommendations based on presentations to the MWG, suggestions from MWG members, and discussions during MWG meetings throughout 2022. All recommendations herein are subject to change and have not yet been approved by the MWG.*

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Six Priorities

The State must immediately take the following actions to ~~reduce energy costs for Marylanders, improve health conditions associated with poor air quality, create well-paying clean energy jobs,~~ and get on track for achieving a 60% reduction in statewide greenhouse gas (GHG) emissions from 2006 levels by 2031, the most ambitious GHG reduction goal of any U.S. state. The following actions alone are likely not enough to achieve this goal but are critical parts of a comprehensive plan to reduce GHG emissions.

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Rapidly accelerate the transition to zero-emissions vehicles

1. **The Governor or General Assembly should set an aspirational target for 75% of newly registered light-duty vehicles in the state to be Zero-Emissions Vehicles (ZEV) and plug-in hybrids by 2030.** The State should align ZEV purchase incentives and infrastructure planning with this target. Analysis shows that on-road gasoline consumption is the largest source of GHG emissions in Maryland and rapidly transitioning to light-duty ZEVs is one of Maryland's best opportunities to make progress toward its 60x31 goal.
2. **By the end of 2022, MDE should adopt the Advanced Clean Cars II (ACC II) standards** - following the lead of other Section 177 States - that accelerate ZEV sales percentages starting with model year 2026 and ramp up to achieve 100% ZEV sales share for new cars by 2035.
3. **The Maryland Clean Energy Center (MCEC, the state's "Green Bank") should work with public and private entities to offer low-interest, government-backed loans to assure that the average monthly cost of owning a ZEV is always lower than the average monthly cost of owning a comparable internal combustion engine vehicle (ICEV)** (for vehicles and owners that meet certain requirements). Several light-duty ZEVs already have lower monthly costs of ownership than comparable ICEVs when federal tax credits are included, so state incentives are not needed to make some ZEVs the lowest-cost option. For other ZEV models, modest state incentives may be needed to reduce the monthly cost of ownership below that of comparable ICEVs. State incentives can be phased-out as ZEVs get closer to purchase price parity with ICEVs and achieve a lower monthly cost of ownership without state support. These "lowest cost assured" loans should be available for purchasing light-, medium-, and heavy-duty vehicles and charging equipment. For heavy-duty vehicles, substantial state incentives may be needed for ZEVs to have lower monthly cost of ownership than ICEVs, especially for fleet vehicles that are turned over every few years. MCEC should work with the General Assembly to secure an appropriate amount of funding for this comprehensive loan program, which could become the state's primary financing mechanism for helping Marylanders reduce household and business costs while significantly improving air quality. MCEC should develop the program with equity as a core objective.
4. **MDE should adopt the Advanced Clean Truck rule for vehicles with a gross vehicle weight rating up to 26,000 lbs.** ~~following the lead of CA, CT, MA, ME, NJ, NY, OR, VT,~~

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~~and WA - to require manufacturers to increase the sale of zero-emission trucks and school buses.~~ The state should also coordinate with the other states in the Mid-Atlantic and New England region to seek consistency in applying the regulations, conducting infrastructure planning, and incentivizing the purchase of qualifying vehicles. Maryland should offer incentives consistent with those offered by states that have adopted the ACT.

5. **The General Assembly should require MDE to propose regulations for a Low Carbon Fuel Standard** - similar to the programs in CA and OR - ~~while accommodating Maryland circumstances and contingent on assuring adequate supply~~ to reduce the carbon intensity of motor fuels distributed in the state. This would be an important near-term action to reduce emissions from internal combustion light-, medium-, and heavy-duty vehicles, which will be on the road for decades to come since the transition to ZEVs will take time.
6. **The General Assembly should provide funding to help EV purchasers living in existing multi-dwelling unit buildings and the owners of those buildings to install charging equipment.** For new construction, the Maryland Building Codes Administration should adopt the multi-dwelling unit buildings EV charging infrastructure requirements in the draft 2024 International Energy Conservation Code as part of the statewide building performance standards.

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Increase support ~~for alternative transportation to reduce vehicle miles traveled~~ of Metropolitan Planning Organizations' efforts to reduce greenhouse gas emissions

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7. **The Governor should mandate that 50% of the Surface Transportation Block Grant and National Highway Performance Program federal funds be used by state agencies and shared with cities and counties for public transit, bike, and pedestrian infrastructure, and Transit Oriented Development programs.** These are formula grants that Maryland automatically receives from the federal government each year for transportation programs. Maryland's apportionment in FY 2022 was \$203 million and \$418 million for the Surface Transportation Block Grant and National Highway Performance Program, respectively. 50% of these federal funds can be transferred to other programs.
8. **MDOT should make major changes to the Maryland Commuter Choice program** to increase the number of employers participating from 10 employers (in 2021) to at least 500 starting in 2024, including Maryland's top 32 employers that each employ over 2,500 people. The commuter choice program includes reimbursement of 50% of employers' costs (up to \$100 per employee) per month for offering employees qualified commuting benefits programs like transit, cash in lieu of parking, telework, and more. Maryland should consider a mandate, similar to what Washington D.C. and New Jersey have, that employers of a certain size must offer sustainable commuter benefit options.

~~Alternative: MDOT should make major changes to the incentives offered by the Maryland Commuter Choice program with the goal of increasing the number of employers participating from 10 employers (in 2021) to at least 500 starting in 2024, including~~

focusing on the needs of Maryland's top 32 employers that each employ over 2,500 people. Increase the percentage of employer costs and total of employee costs eligible for reimbursement for offering employees qualified community benefits programs like transit, cash in lieu of parking, telework, and more.

The General Assembly should provide funding and other support for local and regional micro transit services to supplement rail and bus mass transit.

Pulled up from 99a.: The General Assembly should require recertification of locally designated Priority Funding Areas (PFAs) and Transit-Oriented Development (TOD) areas. Recertification should be based on whether general plans, zoning, PFA's and TOD development capacities are aligned to accommodate future population and employment projections.

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Construct more clean power generation in-state, especially solar power

9. The State should take numerous actions to increase the pace of solar power development in Maryland including consistent with the REDS report, including:

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a. The General Assembly should require each county to produce annual renewable energy development and monitoring plans adequate to implement at least their projected (population-based) share of the state's legislated solar energy targets. County plans should designate sites for utility solar according to zoning. County planning processes should include a stakeholder engagement process for affected parties, including agriculture.

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b. The General Assembly should direct request that the PSC to make the community solar program permanent and seamlessly continue it from the pilot stage without interruption while expanding capacity limits for new community solar projects in each utility territory, and ensuring that low-income household subscribers continue to benefit from significantly discounted electricity

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Add rec#84 as letter C: The legislature should act to support the added cost of developing low- and moderate-income community solar projects, especially those in preferred locations (brownfields, rooftops, parking lots etc.) through improved financing incentives.

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Add rec#85 as letter D: Allow community solar providers to use the same "Utility Consolidated Billing with Purchase of Receivables" (UCB with POR) mechanism that all other non-utility energy providers in the state get to use.

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c. The General Assembly should provide additional incentives for solar development on "preferred sites" including residential and commercial rooftops, parking lots, abandoned sites, grayfields, and brownfields.

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- i. Substantial (e.g., 25% of project cost) refundable state tax credit for new solar arrays on these sites
- ii. An SREC "multiplier" for preferred sites (e.g., a residential array's output would be valued at 1.5 SREC units).

iii. Increasing the cost of Solar Alternate Capacity Payments beyond the low and declining levels set by 2021 SB65, to increase SREC value. There are many examples of “upfront” incentives from other states that could be drawn on.

iii.iv. [Increase limits on commercial net metering, virtual net metering and the size of solar facilities on commercial property](#)

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- d. MEA should develop a program/policy in coordination with the PSC and PJM to link interconnection service agreement timelines and incentives to ensure that developers can access funding in a timely manner.
- e. The State should incorporate project “readiness” or maturity into solar project siting, and permitting (similar to what PJM is doing with “first-ready, first-serve.”)
- f. The State should require long-term contracts for renewable energy to support a portion of the Standard Offer Service in the state. (This was opposed by the PSC)
- g. The State should address opposition from county governments and neighbors over the conversion of agricultural land to solar farms through education and early outreach.

[Alternative: The State should address opposition from county governments and neighbors over the conversion of agricultural land to solar farms through requiring dual solar-agricultural use of the land \(a.k.a. agrivoltaics\) for installations above a certain size, education and early outreach. MDA, in collaboration with University of Maryland Extension, should develop a set of guidelines for agrivoltaics, such as those developed by the American Farmland Trust, that would include improvement of soil health and farm finances as dual objectives.](#)

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- h. The Building Codes Administration should draft a provision in the new building codes to require that all new buildings above 15,000 square feet be solar-ready [and add all new detached residential construction to be all-electric with solar sufficient for annual net zero electricity consumption.](#)

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[Alternative: The Building Codes Administration should adopt solar related provisions in the draft 2024 International Energy Conservation Code](#)

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- i. MEA should report annually in their State Agency Reports, the amount of new solar production (by project) in the previous year and report on opportunities for solar development on rooftops, parking lots, disturbed land, and less productive farmland.
- j. MEA should conduct additional outreach and education to increase citizen participation in local siting decisions, especially for large-scale solar projects.
- k. The state should prioritize solar in urban areas with incentives and tax credits.

l. The [legislature](#) PSC should consider revisions to the RPS to encourage more solar through SRECs and more ambitious carveouts. SRECs should incentivize projects on developed sites and limit use for projects on sensitive lands. [The legislature should also end the practice of allowing non-solar renewable energy electronic certificates without the purchase of the generation to fulfill the state’s RPS requirements by a certain date.](#)

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[Add rec #45 as #10](#)

[Increase emphasis on equitable benefits – On a portfolio level, the EmPOWER Maryland program was not designed to equitably serve Maryland residents. Lower-income residential customers, in aggregate, have been estimated to pay considerably more into the program on an annual basis than they receive in program benefits. The PSC should study these issues and establish more equitable goals for the EmPOWER portfolio \(e.g., utilizing Justice 40 principles\) to guide program design and evaluation. The General Assembly should also establish specific goals for energy programs administered by the Department of Housing and Community Development and direct the PSC to provide a commensurate amount of the EmPOWER budget and hold DHCD accountable for achieving those goals.](#)

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Rapidly accelerate the transition to heat pumps in buildings

[Alt title: Rapidly accelerate the transition to fully electrified, efficient buildings](#)

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[Alt title: Rapidly accelerate incentives to support building decarbonization](#)

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10. **The General Assembly should authorize MDE to develop a zero-emissions standard for space heating and water heating equipment** with the goal of achieving a structured phaseout of non-essential emissions-producing equipment by 2030. This would be the enforcement mechanism to achieve the MCCC's Building Energy Transition Plan recommendation for 50% of residential heating systems, cooling systems, and water heater sales to be heat pumps by 2025, reaching 95 percent by 2030. Incentives provided through the Inflation Reduction Act, EmPOWER, and other incentive programs should cover all or most of the cost of retrofitting an existing building with heat pump systems. MDE's Building Energy Transition Implementation Task Force should evaluate what, if any, additional state support would be required to cover retrofit costs.
11. **The General Assembly should address the Public Service Commission's (PSC) recommendations in "Recommendations on the Future of EmPOWER Maryland" to adjust the EmPOWER program to work toward achieving greater GHG reductions.** The MCCC endorses the PSC's recommendations including:
 - a. Amend or replace PUA § 7–211(g)(2) and adopt the PSC recommended GHG abatement goal for the Utilities;
 - b. Amend or replace PUA § 7–211(g) and adopt the PSC recommended limited-income GHG abatement goal for DHCD; and
 - c. Amend or replace PUA § 7–211(i)(1) and (2) and adopt the Primary Maryland Jurisdiction-Specific Test.
12. **The General Assembly should also amend PUA § 7–211 to require that EmPOWER work better for reducing GHG emissions** with provisions to:
 - a. Include specific [GHG-BTU](#) reduction targets, to be established by [MDE MEA](#);

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- b. Encourage beneficial electrification—fuel-switching from fossil fuels to efficient electric appliances that is cost effective for consumers with incentives for heat pump space heating and hot water heating, high-efficiency electric clothes dryers, and induction ranges/stovetops starting in 2024 (as recommended by the MCCC in 2020 and 2021);
- c. End incentives for fossil fuel appliances starting in 2023 (as recommended by the MCCC in 2021); and
- d. Provide audits that recommend steps for homes/buildings to become electric-ready, along with rebates for these investments.

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13. The PSC thus far has not engaged in a process to plan for the future of the natural gas utilities and the decrease in gas throughput resulting from electrification using the legal authority it has now that enables it to do so. **The General Assembly should require the PSC to issue orders and regulations by no later than January 1, 2025, for managing a transition to meet the GHG reduction goals of the Climate Solutions Now Act.** As part of its rulemaking, the PSC should evaluate different strategies for phasing out gas use in residential buildings and for substantial reductions in gas throughput in commercial buildings to determine the overall least-cost strategies and direct the utilities to implement those strategies. Strategies to be evaluated should include:

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- a. Maintaining the system in full until shut down;
- b. Shutting down the system strategically in segments to avoid significant capital investments that might otherwise be necessary for maintaining integrity and safety;
- c. Phasing out gas use based on application—for example, heating, water heating, dryers, cooking; or
- d. Any combination of the above.

Key objectives of PSC's regulations and orders include:

- e. Appropriate gas system investments and abandonments for a shrinking customer base and reductions in gas throughput in the range of 75 to 100 percent by 2045
- f. Regulatory and other policy changes needed for a managed and just transition of the gas system and infrastructure
- g. Operational practices to meet current customer needs and maintain safe and reliable service while minimizing infrastructure investments
- h. Assessment of existing gas infrastructure and options for contraction
- i. Alternative models for the gas utility's long-term role, business model, and ownership structure, as part of a managed transition
- j. Protection for customers from the economic uncertainties associated with non-fossil fuel alternative uses of gas infrastructure expenditures

Legislation should further direct that the PSC's regulations require gas utilities to file plans consistent with the PSC's requirements by no later than January 1, 2026, and

should clarify that the PSC has authority to issue orders before January 1, 2026, to further electrification and mitigate the potential for stranded gas infrastructure. Furthermore:

- k. The General Assembly should end the policy set forth in Public Utilities Article § 4-210 that has the express purpose of “accelerat[ing] gas infrastructure” investments and authorizes the PSC to provide expedited recovery from customers of such investments.
- l. Short of an all-electric construction code, or for any exceptions to an all-electric building code, the PSC should reform the gas line extension policy.

Add as #14: [Provide incentives and policy support for the optional Net Zero new construction pathway in the 2024 International Energy Conservation Code](#)

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Capture and utilize methane from waste management and CO2 from cement manufacturing

- 14. **The General Assembly should provide funding to counties to install systems that capture methane from landfills and wastewater treatment plants** and, where feasible, use the captured methane for on-site power generation.
- 15. **The Governor should appoint a task force including Maryland’s cement manufacturers, state agency staff, and technical experts to assess [feasibility of secure federal funding and technical assistance for constructing carbon capture and utilization/storage \(CCUS\) facilities and the use of renewable hydrogen instead of carbonaceous fuels](#) to mitigate unavoidable CO2 emissions from the cement manufacturing process [and if feasible, the task force should recommend methods to secure federal funding and technical assistance for constructing CCUS facilities](#).** ~~The Governor should also provide funding for one position in MDE and one position in MEA to coordinate the task force and work with public and private partners to develop CCUS projects in Maryland. Furthermore, funding should be provided to MDE and MEA to secure technical assistance to help with project development and navigating the regulatory complexity associated with CCUS.~~

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Modify the state’s thermal renewable energy credit program

- 16. **Modify definitions for qualifying biomass in the current Renewable Portfolio Standard and create a thermal energy-specific program to better support a range of clean heat solutions.** The General Assembly should 1) allow certain types of woody biomass-to-energy systems to qualify for Thermal Renewable Energy Credits (TREC), currently part of the Renewable Portfolio Standard (RPS), and 2) authorize the development of a new thermal energy-specific program [that takes into account both carbon in the air as well as in the soil](#) to absorb the TREC program and better support solutions for [verifiably having not net additions or even net negative additions to atmospheric GHG concentrations](#) ~~reducing GHG emissions associated with thermal energy.~~ These actions should lead to reduced GHG emissions from direct fuel use in buildings, reduced consumption of fossil

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fuels, enhanced carbon sequestration in Maryland's forests, and greater development of renewable electricity projects.

To support healthy and climate-adapted forest stand densities, sustainable urban tree management, and a resilient wood products industry, the General Assembly should modify statutory definitions for qualifying biomass in COMAR and the Public Utilities Article to allow TRECs to be generated from a thermal energy system that:

- a. is constructed or installed in the State after April 28, 2014 (the date of the passage of the latest air emissions standard for biomass fuel); and
- b. produces useful thermal energy that is both produced and consumed within the geographic limits of Maryland; and
- c. complies with all applicable State and federal statutes and regulations, as determined by the appropriate regulatory authority; and
New sub rec: ensures that the net annual carbon balance is zero or negative including both atmospheric and soil carbon within the year of biomass use as energy; and
- d. where "useful thermal energy" means thermal energy utilized for heating, cooling, combined heat and power, humidity control, or mechanical work that can be measured by an appropriate metering device in accordance with standards by the Public Service Commission; and
- e. where "qualifying biomass" means a nonhazardous, organic material that is available on a renewable or recurring basis, and is:
 - i. waste material that is segregated from inorganic waste material and is derived from sources including:
 - except for old growth (as defined in the statute) timber, any of the following forest-related resources:
 - wood residues derived from the processing of raw forest products; or
 - residues free of inorganic substances derived from manufacturing or processing wood products; or
 - material from a forest management action with a demonstrated net positive carbon benefit within the year of biomass use as energy or identified as a climate adaptation strategy by the Forest Carbon Management Menu (incorporate by reference), in accordance with a forest management plan prepared by a Maryland Licensed Forester, and in accordance with all state, federal and local regulations; or
 - natural wood wastes as defined by COMAR 26.04.09.02 excluding old growth timber; or
 - solid wood material including pallets, crates dunnage, construction wastes, or similar materials not containing

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preservative chemicals, paints, adhesives, or other inorganic contaminants.

Furthermore, to return the RPS to its original intent of increasing the share of renewable energy in Maryland's electricity supply, provide a level playing field for thermal energy credits, and support alternative approaches to reducing GHG emissions from thermal energy systems, the State should study and develop recommendations for a thermal energy-specific program separate from RPS to incentivize low-cost solutions for reducing GHG emissions associated with direct fuel use in residential, commercial, and industrial buildings. [Biomass use as a fuel should produce no increase of GHG concentrations in the atmosphere within one year of such use, taking into account the atmospheric and soil aspects of biomass production and use \(including GHG emissions during combustion, any net changes of soil CO2, etc.\)](#). Credits in this expanded program should be made available to support measures that decarbonize heating fuel supplies, reduce methane leaks from natural gas distribution systems, improve the energy efficiency of homes/buildings, replace equipment that runs on fossil fuels with equipment that runs on qualifying biomass fuels, and replace equipment that runs on fossil fuels with efficient electric alternatives such as heat pumps.

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- Incentivize the development of forest product industries that support sustainable forest management and maximize long-term carbon sequestration.** The Department of Commerce should build a targeted incentive package to attract and grow forest product industries, like structural wood for construction and innovative use of fiber in manufacturing, that support sustainable forest management and utilizes forest products in a way that maximizes long-term carbon sequestration. Doing so would support the Maryland Forestry Economic Adjustment Strategy and sustainable forest management practices in the state. Incentives should include up to 30% capital of manufacturing investment in new or expanded plants, capped at an amount such as \$10M per applicant. Several conditions would need to be met first: the products manufactured would need to be carbon neutral or positive; [taking into account soil carbon as well as atmospheric balance on an annual basis](#); at least 50% of the raw materials would be sourced from within Maryland; the energy used by the manufacturer would be from Tier 1 or renewable thermal sources, and the investments supported by the incentives would need to have zero or positive impact on the number of jobs in Maryland.

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The Department of Commerce should also convene a Forest Products Council including DNR, MDE, MEA, DGS, and others to inform the structure and implementation of the aforementioned incentive program and provide ongoing support and guidance to the development of an environmentally and economically beneficial forest products industry in Maryland.

Additional Recommendations

Electricity Generation

18. **Maryland should codify a commitment to [zero hourly emissions](#) [free](#) electricity for both a consumption and a production basis by 2040. Additionally, Maryland should aggressively encourage the Regional Greenhouse Gas Initiative states to reduce the regional CO₂ emissions cap to zero by 2040.**

The 2030 GGRA plan modeled for RGGI to achieve 100% reductions by 2040. (GGRA 2030 Plan, Appendix F, p. 11). But this goal isn't codified in RGGI yet.

A zero-emissions electricity requirement by 2040 would track what New York codified in its Climate Leadership and Community Protection Act (see N.Y. Pub. Serv. L. § 66-p) and what Connecticut recently codified on a consumption basis. While Maryland, as part of the PJM Regional Transmission Organization, cannot fully control the generation mix in the regional grid (beyond its advocacy regarding the RGGI cap), it can put significant constraints on the emissions associated with the electricity it consumes and produces. Requiring 100 percent zero-emissions electricity on a [time-matched](#) consumption basis would require that load service entities in Maryland procure electricity exclusively from zero-emissions sources by 2040 [in a sufficient volume to meet their actual hourly demand](#). Requiring 100 percent zero emissions electricity on a production basis would ensure that Maryland is not housing polluting power generators that sell their power out of state. A [time-matched](#) zero-emissions electricity requirement is critical to the achievement of Maryland's broader climate goals. Achieving deep decarbonization of sectors including transportation and buildings will require widespread use of electricity as the primary fuel in these sectors. Ensuring that the electricity relied upon is non-emitting [during each hour of consumption](#) will maximize the emissions benefit of electric vehicles and air- and ground-source heat pumps.

19. **The Maryland General Assembly should mandate that the PSC implement a planning process for phasing out reliance on [dirty](#) fossil fuel generation in Maryland and replacing it with non-emitting resources such as renewable energy, energy storage, energy efficiency, demand response, and transmission solutions.**

Maryland's 2030 GGRA model assumes a significant increase in clean energy, but the policy driver – the CARES ACT – was controversial and ultimately did not pass. Reducing fossil fuel use and increasing in-state renewable energy is critical, but requires planning and targeted policies. As seen in the 2030 GGRA model, participation in RGGI and the Clean Energy Jobs Act gets us only part way to a 50% by 2030 reduction. Under the Climate Solutions Now Act (CSNA), Maryland must now reach a 60% reduction of greenhouse gasses by 2031. This will require new ambitious and concrete policies in the electricity sector.

While Maryland has made significant progress in reducing coal-fired power generation in the state, several of Maryland's coal plants are converting to burning other fossil fuels rather than retiring, in part due to local reliability needs for their capacity. In particular, the Baltimore area coal plants (Brandon Shores and Wagner) will convert to oil by 2025 due to localized grid needs. Maryland should initiate a process to proactively plan for the

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retirement of the dirtiest remaining fossil fuel generators in the state, with particular focus on those located in or near environmental justice communities and large population centers. A proactive planning process for the retirement of the dirtiest fossil fuel generators tracks processes planned for New York (see Governor Hochul 2022 State of the State Book (p. 150) and New York Climate Action Council Draft Scoping Plan (p. 155). Such a process would involve: (1) identification of facilities; (2) coordination with PJM to proactively identify reliability issues associated with the future retirement of fossil fuel generation facilities in Maryland; and (3) the development of a process (e.g., through a competitive all-non-emitting-resource solicitation) to procure resources to address those reliability needs.

Relatedly, Maryland may want to proactively plan for transmission and other grid resource investments that will be needed to support the build-out of renewables to achieve the State's RPS requirement and consider these grid improvements in conjunction with the improvements needed to alleviate reliance on the dirtiest fossil fuel-fired plants.

20. **The legislature should amend the state's Renewable Portfolio Standard (RPS) to improve its environmental performance and increase its greenhouse gas (GHG) reduction impact.** Maryland's RPS suffers from two defects. First, it does not require qualifying electricity generation to be low-emitting and delivered in the hour the electricity is being consumed. Second, utilities are electing to pay alternative compliance payments rather than meeting the solar carve-out. To remedy these defects:

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a. The legislature should modify the qualifications for the RPS to limit qualifying resources to those that are truly renewable and non-emitting.

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b. Maryland should issue RFPs for bundled Energy Attribute Credits (EACs) RECs and energy from new-renewable- non-emitting resources located in or deliverable directly into Maryland. Connecticut has used this RFP approach to cover the bulk of its RPS compliance. If the State has concerns about the fact that most non-solar RECs are coming from projects located far from Maryland, the deliverability requirements for these resources could be modified to make them more similar to those for solar.

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c. While the RPS should continue to include a carve-out for solar energy generated in Maryland, an adjustment should also be made to allow solar energy generated outside the state to count toward compliance with the non-solar carve-out portion of the RPS.

e.d. The legislature should establish a new carve-out within the state's RPS that requires non-emissint generation to be matched with end-use customer load on an hourly basis.

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21. **To meet its 2031 and 2045 climate goals, the General Assembly should establish a laddered schedule by which:**

a. The State's electric utilities and retail suppliers procure 100% of electric generation from zero-carbon resources by 2045; and

- b. Fossil fuel generation within Maryland is phased out and replaced with wind, solar, energy storage, demand reductions and load shifting, ~~and~~ energy efficiency and other non-emitting resources.
22. **With any necessary funding, the General Assembly should require the Public Service Commission, Department of Environment, and the Power Plant Research Program, as appropriate, to:**
- a. Identify and coordinate with PJM transmission and distribution enhancements to facilitate the integration of renewable resources;
- b. Evaluate and complete a study no later than January 1, 2024, on implementing a 24/7 tracking system for renewable energy credits to align renewable credits with generation output; and
- Alt language: Complete a study no later than June 30, 2023 on the economic and environmental benefits of implementing a cap out in the state's renewable portfolio standard (RPS) requiring that energy attribute credits (EACs from non-emitting resources purchased on behalf of the end-use customers are matched with electricity consumption on an hourly basis; and
- c. Develop a consumer education campaign for electrification.
23. **The General Assembly should adopt measures to allow for power purchase agreement (PPA) termination rights if a utility solar project does not receive necessary interconnection or permitting approvals.**
24. **The General Assembly should add to the considerations listed in PUA § 7-802 (CSNA distribution planning requirements) the promotion of competitive neutrality, innovation, and diversity of service and product providers, including the implementation of alternatives to utility ownership, such as third-party procurement, of investments in traditional and non-traditional distribution technologies such as non-wires alternatives.**
25. **Abandon the policy of accepting electronic non-solar RECs unbundled from renewable energy as a fulfillment of the state's RPS requirements.**
- Alt language: In conjunction with the study of hourly matching of clean energy with end-use electricity consumption referenced in item (5e) above, the legislature should study the benefits of requiring bundled renewable energy credits and energy for compliance with the state's renewable portfolio standard (RPS). The state should also study the benefits of expanding eligibility under the RPS to include all non-emissint resources.
26. **Institute a policy of requiring the purchase of bundled renewable electricity with the RECs in fulfillment of the state's RPS. Virtual PPAs for bundled power and RECs within PJM should be acceptable.** This is because wind or solar will displace primarily carbon-emitting resources (since nuclear is operated in baseload mode).
27. **Commission a study for a 100% emissions-free renewable electricity system (with existing Conowingo hydro) by 2040 along the lines of Prosperous, Renewable Maryland**

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(including balanced solar and wind and hydrogen production for peaking power in light duty fuel cells and extensive demand response and moderate battery storage), but with

- a. Due attention to the targets in the Climate Solutions Now Act.
- b. Extensive Vehicle to Grid (V2G).
- c. Seasonal thermal storage (cold in the spring and heat in the fall) from the electricity that would otherwise be curtailed for supplying some of the air-conditioning and heating requirements (large existing commercial loads, and new commercial and residential developments and microgrids, particularly public purpose microgrids).
- d. Resilience blocks for creating renewable microgrids with specified criteria for resilience beyond the normal Loss of Load Expectation. Specifically, essential loads should be defined and the duration for which microgrid resources could supply those loads.
- e. Integration of V2G with distributed solar and distributed stationary resources.
- e.f. [Other non-emitting resources including existing nuclear \(after potential operation license extensions\)](#)

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Energy Efficiency/EmPOWER

28. **Require PSC to sunset financial subsidies for fossil fuel appliances within EmPOWER starting in 2023.** This was part of the MCCC 2021 recommendations, but the legislature did not include this in the Climate Solutions Now Act (SB 528) in 2022. Earlier this year, Earthjustice and the Office of People Council asked the PSC to include these in EmPOWER plans, but the PSC declined, claiming that the legislative intent of SB 528 was unclear. The MCCC should urge the legislature to pass legislation to make this directive explicit. Gas-powered furnaces, boilers, water heaters, dryers, stove tops, and ovens account for most of the residential use of natural gas. They are replaced on cycles of as long as 20 years and need to be electrified prior to 2045 to meet Maryland's climate goals. Starting soon will have a significant impact on future GHG emissions. Replacing them with electric appliances as they reach the end of life is a logical way to accomplish our climate goals. To reach the CSNA goal of 60% by 2031, financial incentives should be aligned immediately.
29. **Require PSC to require fuel-switching in the EmPOWER program starting in 2024.** Additionally, all EmPOWER audits should include a proposal to make the building electric-ready (electric service panel, wiring), along with an offer of a 100% subsidy for electric-ready implementation.
30. Further, to facilitate fuel switching when boilers and furnaces stop functioning requires buildings to be properly wired. To that end, **all EmPOWER audits should include a proposal to make the building electric-ready (electric service panel, wiring), along with an offer of a significant subsidy for electric-ready implementation.** The vast majority of furnace, boiler and water heater replacements take place when the existing fossil fired appliance fails. To be ready to electrify heating, water heating and appliances, the home

must be ready for the transition. To that end, **all home-retrofit and home health improvement work and audits should include a proposal to make the building electric ready (electric service panel, wiring), along with an offer of a significant subsidy for electric ready implementation.** By upgrading electric systems, at no cost to the homeowner, fuel switching can occur when furnaces, boilers and water heaters fail. This should be included in the 2023 EmPOWER legislation.

31. **Urge legislature to enact a moratorium on integrating biogas into existing gas pipelines until an independent study can assess the GHG impact of biogas integration and consistency with state's GHG goals.** Recently the PSC approved putting biogas into pipelines.¹ This runs counter to MCCC recommendations related to utility transition. An independent study is needed to measure the GHG impact of biogas, including the impact of leaks and the impact of burning the fuel, from the source (i.e. digestion), transmission, leaks, and combustion. The limited supply of biogas that will be available to Maryland should not be used for applications where electrified alternatives are readily available (e.g., for building heating/cooling and hot water; for light-duty vehicles, etc.) but rather should be prioritized for high heat industrial processes and other hard-to-electrify uses and locations. In particular, the potential availability of some amount of biogas does not justify perpetuating the use and expansion of gas infrastructure, which is vulnerable to leaks, costly to maintain, and a burden on gas ratepayers (especially low-income ratepayers).

Building Electrification And Gas Distribution

32. **The legislature or PSC should authorize alternative business model experiments for utilities including heat/cooling as a service and on-bill financing of electrification.** To achieve the MCCC recommendation 2, and jumpstart recommendation 4 (“Develop Utility Transition Plans”), the state should authorize the PSC to begin experiments to test other models to encourage electrification. A key to successful electrification will be to convince owners of rental housing (about 35% of total housing and 60% of low-income housing) to invest in heat pumps and weatherization. Since the landlord typically does not pay the electric bill, they have limited incentive to electrify. At the same time, providing heat and cooling as a service (either with air or ground source heat pumps) can provide gas utilities with an alternative business model, with potentially more assets under management than they currently have with gas infrastructure. Experiments and follow-up studies are needed to test and prove the business model. This will require legislation to authorize these experiments.
33. **The legislature should direct the PSC to regulate utilities to achieve GHG reduction goals of 60% in 2031 (v. 2006) and Net Zero by 2045.** The Climate Solutions Now Act sets a target of 60% reduction in Maryland GHG emissions by 2031 relative to levels in 2006. The electric and gas utilities will play a critical role in reaching this target. The PSC has requested that the legislature add GHG goals as a legislatively approved goal for EmPOWER. Collectively electric and gas consumption account for close to 40% of GHG emissions in Maryland. To achieve the target of a 60% reduction, utilities must be regulated to deliver significant reductions in GHG emissions. While continued closure of

¹ Supplement No. 479 to P.S.C. Md. G-9: Renewable Natural Gas Interconnection Service.

coal plants will play a role, electrification and efficiency will be critical to meeting the targets.

34. **To reaffirm MCCC 2021 Recommendation 4, “develop utility transition plans,” encourage the legislature to pass legislation to a) direct the PSC to create a “utility transition docket” to begin planning and b) “Require all gas utilities to fully depreciate their distribution infrastructure by 2045.”** In order to achieve Net Zero by 2045, a significant portion or all of the gas distribution infrastructure will need to be retired. Therefore, the gas system should plan to recover its investments by that time. In 2022 gas companies argued against utility planning, but the MCCC Building Transition Study and recommendations of the MCCC were clear that utility planning is critical to protect low-income ratepayers. This point should be reaffirmed to the legislature.
35. **The General Assembly should direct the PSC to develop a plan for managing that transition, including technical studies, a just transition for the state’s affected workforce, and reforms to how natural gas infrastructure is paid for to equitably safeguard lower-income residents and small businesses.** Maryland must transition away from its existing fossil fuel infrastructure to meet its climate goals.
36. Short of an all-electric construction code, or for any exceptions to an all-electric building code, **the PSC should reform the gas line extension policy. While the PSC has this authority currently, to ensure reform, the General Assembly should require the PSC to require gas line extension and gas expansion policies to reflect reduced gas throughput and the reduced useful lifespan of line extensions caused by customer migration to all-electric homes.**
37. **The PSC should be directed to rein in the expansion of gas infrastructure, with future expenditures exclusively focused on health and safety improvements of existing lines.**
38. **The General Assembly should end the policy set forth in Public Utilities Article § 4-210 that has the express purpose of “accelerat[ing] gas infrastructure” investments and authorizes the PSC to provide expedited recovery from customers of such investments.**
39. **Set a target for ending natural gas use in buildings by 2040 and commission a study of how to get there and the associated stranded cost issues.**
40. **Suspend further funding authorization and implementation of the costly STRIDE initiative** and instead prioritize the identification and targeted repair of Grade 3 leaks. Rather than investing enormous sums in the existing gas delivery infrastructure, assess opportunities to instead decommission the gas delivery system in geographically contiguous areas that can be fully electrified.
41. **The legislature should direct PSC to require all gas utilities to report on each leak quarterly, including the grade and volume of each leak.**

Commented [56]: Move up to priorities - Arjun Makhijani

- a. In order to achieve Net Zero by 2045, a significant portion or all of the gas distribution infrastructure will need to be retired. Therefore, the gas system should plan to recover its investments by that time. In 2022 gas companies argued against utility planning, but the MCCC Building Transition Study and recommendations of the MCCC were clear that utility planning is critical to protect low-income ratepayers. This point should be reaffirmed to the legislature.
 - b. The GGRA calls for approximately a 10% reduction in building emissions from burning fossil fuels between 2020 and 2030. It also calls for reduced methane emissions from transmission and distribution (2.4.6.4). With leaks of methane under-reported and generating a significant portion of the greenhouse gas emissions from fuels delivered to buildings (on a 20-year basis), meeting the GGRA target, or the more aggressive target in the Climate Solutions Now Act will be virtually impossible. We can only address the problem and potentially meet the targets with adequate reporting.
 - c. Sources of Grade 3 leaks (high vol, enviro sensitive) should be repaired not replaced. We need to know where they are - determine if they are spending ratepayer money reasonably and make decisions about where to decommission gas infrastructure and where to repair it. Leaks in the distribution system are larger than the EPA has reported in Baltimore. With a timeframe of 20 years, they represent a significant portion of the GHG emissions from fossil gas. Reporting of leaks in Maryland fall significantly behind the leak reporting in other locations. With more accurate reporting, sound financial and environmental decisions can be made to repair, replace or retire gas infrastructure.
 - d. Measure indoor air pollutants in natural gas-heated homes, including in the kitchen, at the time of retrofits.
42. **Conduct an external evaluation of the capacity of the Public Service Commission (PSC) to effectively address environmental issues.** In 2021, the PSC's mandate was changed to require the PSC to consider environmental issues when regulating public service companies. Specifically, under 2-113 (a) (2), in regulating public service companies, the PSC must consider the protection of the global climate from continued short-term and long-term warming and the achievement of the State's climate commitments for reducing statewide greenhouse gas emissions. The PSC lacks environmental expertise and thus cannot begin to assess the effect public service company proposals and actions may have on the environment. The PSC has acknowledged its inadequate capacity in this regard. The legislature should independently examine staffing and other aspects of the PSC to determine the changes necessary to enable the PSC to adequately perform its broader duties.
43. **Align energy programs with the Commission's Building Energy Transition Plan** – The Commission recommended in 2021 that all energy plans, approvals, and funding be aligned with the objectives of the "Building Energy Transition Plan", and that targets be set for 50 percent of residential HVAC and water heater sales to be heat pumps by 2025, and 95 percent by 2030.⁵ The General Assembly should direct the PSC to develop plans to achieve these goals and to directly incorporate those plans into future EmPOWER Maryland program cycles.

44. **Increase emphasis on equitable benefits** – On a portfolio level, the EmPOWER Maryland program was not designed to equitably serve Maryland residents. Lower-income residential customers, in aggregate, have been estimated to pay considerably more into the program on an annual basis than they receive in program benefits.⁴ The PSC should be directed to study these issues and establish more equitable goals for the EmPOWER portfolio (e.g., utilizing Justice 40 principles) to guide program design and evaluation. The General Assembly should also establish specific goals for energy programs administered by the Department of Housing and Community Development and direct the PSC to provide a commensurate amount of the EmPOWER budget and hold DHCD accountable for achieving those goals.
45. **The General Assembly should adopt measures and provide funding to ensure affordable utility service for low- and moderate-income ratepayers in the transition to a highly electrified buildings sector.**
- a. Comprehensive equity strategy to enable LMI households to improve energy efficiency and electrify affordably
 - b. Ratepayer protections, especially for LMI Marylanders
46. The State should create a permanent position at the MDE that is responsible for outreach and engagement with communities whose primary responsibility is aligning state climate goals, renewable energy project developer goals, and community goals, to avoid negative impacts, and support community needs and benefits.

New buildings should be required to be all-electric with gas connections disallowed after January 1, 2024 for residential buildings and January 1, 2025 for commercial buildings.

The General Assembly should ensure by law that landlords allow access to rental properties for weatherization and electrification and for related audits.

DHCD should commission a study on the infrastructure (technical training, materials, equipment, standards, etc.) that would be needed to make passive house and passive building standards the norm in Maryland; the study would also address the monetary costs and benefits, including lower utility costs, and higher resilience.

Rebates for heat pumps should be geared to coefficient of performance. A minimum coefficient of performance at 0oF should be specified for a heat pump to get a rebate, and rebates should be increased on a sliding scale based on average seasonal performance (instead of the very large step difference at present from Energy Star air-to-air heat pumps to geothermal heat pumps).

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Modification to 2021 recs

Adopt an All-Electric Construction Code

[Retain recommendation – modify discussion to acknowledge CSNA progress and reinforce additional urgency in light of the CSNA's more aggressive GHG reduction goals.]

- Mandate the code for all new residential construction starting in mid-2024, with net zero achieved with rooftop solar for detached structures and as much rooftop solar as other structures can accommodate.
- Same as for residential but mid-2025, with as much on-site solar as structure and land will allow. Include a mandate for solar parking lot canopies where there are new parking Lots.
- Specify minimum Coefficient of performance for heat pumps of 2.5 down to 5 °F.
- Mandate induction cooking as part of the all-electric code.

Develop a Clean Heat Retrofit Program

These recommendations should be retained. Below we suggest modifications to bullets a-e:

Retrofit 100 percent of low-income households by 2030

[Modification—add:] The General Assembly should direct MEA and DHCH to develop a roadmap that identifies the barriers, core strategies, existing conditions, funding needs and gaps. The roadmap should identify how many buildings need help, the types of buildings, the current state of those buildings, and any other relevant factors. The roadmap should include interim milestones for retrofits.

Other modification ideas:

- Efficient all-electric retrofits only.
- Focus on superusers of gas, fuel oil, and propane;
- Convert resistance heating superusers to efficient heat pumps with high priority;
- Convert all fossil fuel water heaters to efficient heat pump water heaters whenever space is available for reasonable recovery time.
- [The GA should](#) Ensure, by law, that landlords allow access [to rental properties](#) for weatherization and electrification [and for related audits](#).
- Enroll low-income households in discounted community solar at the time of retrofit.
- Adopt a “Green and Healthy Homes” approach to retrofits of low-income homes
- (including affordable rental property, with appropriate incentives and regulations).

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Encourage beneficial electrification through EmPOWER beginning in 2024

[Modification: The CSNA addressed the first sentence of this recommendation which can be removed. The remaining language should be retained.]

Target 50 percent of residential HVAC and water heater sales to be heat pumps by 2025, 95 percent by 2030

[Modification—add:] Require MEA to benchmark status and progress on at least an annual basis

Solar

47. **MEA should develop a program/policy in coordination with the PSC and PJM to link interconnection service agreement timelines and incentives to ensure that developers can access funding in a timely manner.**
48. **The State should incorporate project “readiness” or maturity into solar project siting, and permitting (similar to what PJM is doing with “first-ready, first-serve.”)**
49. **MD counties should consider how their land use plans can accommodate 100% clean energy.**
50. **MD counties should zone sufficient land to meet that county’s electric needs and the land zoned must be demonstrated to be practicable for renewable energy.**
51. **The state should require long-term contracts for RE to support a portion of the Standard Offer Service in the State. (This was opposed by the PSC)**
52. **The state should address opposition from county governments and neighbors over the conversion of ag land to solar farms through education and early outreach. Counties should designate sites for utility solar according to zoning.**
53. **The Building Codes Administration should draft a provision in the new building codes to require that all new buildings above 15,000 SF be PV-ready.**
54. **MEA should report annually in their State Agency Reports, the amount of new solar production (by project) in the previous year and report on opportunities for solar development on rooftops, parking lots, disturbed land, and less productive farmland.**
55. **MEA should conduct additional outreach and education to increase citizen participation in local siting decisions, especially for large-scale solar projects.**
56. **The PSC should report to the MCCC any electricity grid infrastructure issues or limits that restrict the buildout of in-state PV.**
57. **The State should prioritize PV in urban areas with incentives and tax credits.**
58. **The PSC should consider revisions to the RPS/CEJA to encourage more PV through SRECs and more ambitious carveouts. SRECs should incentivize projects on developed sites and limit use for projects on sensitive lands.**
59. **Examine successes in other states and identify best practices by Maryland local governments, to identify effective land use policies for solar siting that can be agreed to (or, if necessary, mandated) for MD’s local jurisdictions.**

Commented [59]: only the legislature has legal authority to alter compliance requirements of the RPS.

60. **Amend the Maryland Agricultural Land Preservation Foundation (MALPF) statute to accommodate buried collection line easements to help piece together solar parcels to the transmission system.**
61. **Consider mandates for parking lots/rooftops.**
62. **Examine in greater depth possible ways to use the substantial land involved in transmission rights of way, within the limitations of ownership and utility access requirements.**
63. **Work with state/counties on properties that are underutilized, maintenance yards, golf courses, and road median strips.**
64. **Transition all Maryland public schools to 100% solar with battery back-up.**
65. **Limit the percentage of prime farmland that can be covered with solar, such as no more 20%.**
66. **Ensure that farmers leasing their land (more than 80% of farms) receive some financial consideration when potentially losing some viable farmland to solar.**
67. **Require dual-use (“agri voltaics”) where vegetables, pollinators, and even animal grazing is done under different configurations of solar panels.**
68. **Prioritize soil health in combination with solar placement, also consider less-viable farmland parcels, such as those that have high FIV values, salt-water intrusion, or other reasons to make them less viable for farming.**
69. **Support local jurisdictions in developing appropriately balanced solar land use policies.** (NJ Energy Master Plan)
70. **When setting market rates for electricity, the PJM should account for all costs of electricity generation, including the costs to current and future generations from greenhouse gas-caused climate change**
71. **Increase the RPS’s Alternative Compliance Payments (ACPs)**
72. **Establish financing mechanisms such as Green Banks**
73. **The legislature should amend 2022 HB1039 to expand tax relief and exemption to other types of solar with community benefits like aggregate virtual net metering which can only be developed to serve nonprofits and government entities.**
74. **Tax carbon emissions.**
75. **Advocate for steeper declines in emission allocations under RGGI during Program Review.**

Commented [60]: Arjun: Farmers already receive compensation if they own the land. Does this mean farmers who lease land. There are very few who lease all their land. This is a very complex question.

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76. **The legislature should revise the RPS to include only zero carbon energy and “additionality. The revised RPS should prioritize moving Maryland’s RPS to an approach like New York’s, which requires recent “vintage” for installations receiving RECs (i.e, only those being built, or built within the previous several years, which are those that “add” clean renewable energy that displaces fossil fuel generated electricity and thus actually reduces Greenhouse Gas emissions)**
77. **The legislature should remove all combustibles from the RPS.**
78. **Examine possible support (including the possibility of federal infrastructure funds) for “Make-Ready” consumer-end grid and other upgrade requirements needed for progressive use of distributed resources and increased electrification**
79. **Assure adequate and effective use of federal infrastructure funds to carry out needed transmission (e.g., from Offshore Wind) and distribution system remodeling to accommodate the decentralization of electricity generation needed.**
80. **Support and require collaborative planning between utilities and developers to maximize the “locational value-added” and other beneficial aspects of renewable energy development.** Each utility should be required to develop an analysis of where on its distribution grid community solar projects would benefit the grid. The utilities should be required to share this information with community solar developers so that developers can consider this locational value-add in determining the location of their projects.
81. **Examine and reconsider any less than full capacity restrictions put on some circuits by some MD utilities.**
82. **Examine and reconsider the present policy of some MD utilities requiring residential customers to establish a one-year increased baseline use, if they want to add more solar to support the purchase of an Electric Vehicle.**
83. **The legislature should act within the coming year to continue the PSC’s community solar pilot program.**
84. **Examine the best ways to support the added cost of developing low- and moderate-income community Solar projects.**
85. **Allow Community Solar providers to use the same “Utility Consolidated Billing with Purchase of Receivables” (UCB with POR) mechanism that all other non-utility energy providers in the state get to use.**
86. **Prospectively evaluate the effect of HB1039 and SB264/HB76 on project development, and use that evaluation to consider modification of these incentives and/or development of additional incentives.** Prospective evaluation should also consider future grid demands from the increased prevalence of EVs in both State and local fleets, as well as personal automobiles. Evaluation should consider potential reliability improvements from having local power and storage options for charging stations as the result of integrated community solar developments. Additionally, prospective evaluation

could also be done with an eye to community and residential solar offsetting additional electric grid demands from mandating building electrification.

87. **Instruct the PSC to examine and rebalance the incentives for utilities' capital investment in maintaining and expanding traditional grid capabilities, rather than considering lower-cost "non-wire solutions" including distributed energy resources.**
88. **Encourage adoption of the NREL/DOE/SEIA-developed "Solar+App," which standardizes a virtual permit review and approval process that incorporates all standard land use, engineering, and other criteria.**
89. **Require local jurisdictions to generate renewable energy development and monitoring plans adequate to implement at least their projected (population-based) share of the state's legislated solar energy targets (and/or, greenhouse gas reduction targets).**
90. **The PSC should work with the PJM to streamline the interconnection process.**
91. **The General Assembly should adopt measures to accelerate adoption of solar energy in the State, including incentives and tax credits for customer adoption of electrification.**
92. **Consider other brownfield locations working with CSX and Amtrak - they have abandoned lines and storage facilities that are not in use - lease property for 40 years; also consider military facilities**
93. **The Public Service Commission should conduct a definitive "value of solar" proceeding.** While the PSC commissioned a "Value of Solar" analysis under PC 44, that study has not had a functional impact, for example, in evaluating the positive potential "locational benefit" of solar in distribution system planning or in establishing appropriate incentives that take into account the quantifiable value-added of solar in the energy transition. Other states, like Illinois, have undertaken such proceedings with the involvement of relevant stakeholders so that the outcomes are broadly accepted and can be used without argument in making policy decisions.
 - a. Support and require collaborative planning between utilities and developers to maximize the "locational value-added" and other beneficial aspects of renewable energy development. Each utility should be required to develop an analysis of where on its distribution grid community solar projects would benefit the grid. The utilities should be required to share this information with community solar developers so that developers can consider this locational value-add in determining the location of their projects.
 - b. Support from the work group for the study prompted by SB 334/HB624. This Bill would require long-term contracts for renewable energy to support a portion of the Standard Offer Service in Maryland.
94. **The Maryland Energy Administration should provide/seek funding to offset end-user "Make Ready" costs associated with clean energy implementation.** While many costs of the transformation of our electricity distribution grid will be borne by utilities (generally

passed on to ratepayers if not, hopefully, offset by federal infrastructure funds), some – like interconnection costs – will be borne by large distributed electricity generators, other costs of clean energy technology expansion will be increasingly borne by end-users. These individual costs will become an increasing barrier to the expansion of solar and other clean energy technologies.

Three examples include:

(1) Utilities presently apply a “cost-causation” approach to system upgrades; this means that if a homeowner wants to install solar on a circuit that already has other solar arrays on it and is near capacity, that homeowner’s installation is seen to be the “causation” of the cost of a required system upgrade and they will have to pay that extra cost (this will be in the thousands of dollars above the cost of their own solar installation).

(2) Electrification of many homes and businesses will require expensive upgrades to their installed wiring and power panels.

(3) The same need to “heavy up” individual residential electric capacity will apply to many households who wish to benefit from the bidirectional charging capacity of an F-150 truck.

The state may be able to get federal infrastructure or Inflation Reduction Act funding to support these “Make Ready” costs, especially for low-income households.

95. **Ease solar rights for condominiums.** Efforts to install solar panels on condominium rooftops often run into barriers associated with requirements to connect with and secure approval from a super-majority of mortgage holders. Following the lead of several other states that have adopted “solar rights” legislation⁷, requirements should be eased to allow a majority of the board of directors or the HOA council to approve the installation of leased clean energy equipment, including solar panels and electric vehicle charging infrastructure.

Transportation

96. **Maryland should set a goal for reducing VMT 20% under 2019 levels by 2030** and undertake modeling to determine the best alternative or combination of alternatives to reduce VMT. The state should also put in mechanisms to track and measure overall VMT as well as measure VMT reduction potential for each proposed transportation project.
97. **Increase transparency of MDOT spending to guide MDOT and local government planning and budgeting.**
- a. MDOT’s Consolidated Transportation Program (CTP) should include a breakdown of what percentage of total spending goes toward transit, walking and biking.
 - b. MDOT’s CTP should include a breakdown of what percentage of total spending goes toward new capacity projects that increase the flow of vehicles and/or people versus system preservation projects that maintain the transportation assets we already have.

- c. MDOT's future budgets should show sources of all income including federal grants.
98. **The Maryland General Assembly should take legislative action to encourage transit-oriented development, especially transit-oriented affordable housing, to reduce VMT.** Such legislation could include:
- a. Require a study to evaluate the use and effectiveness of Priority Funding Areas (PFAs) and designated Transit-Oriented Development (TOD) areas. The study should review whether general plans, zoning, affordable housing funding, and other factors are aligned with PFAs and TOD designations.
 - b. Create a mechanism to enforce counties' general plan's housing targets and ensure alignment between the general plan's land use and PFAs.
 - c. Encourage and allow accessory dwelling units and small multifamily housing in areas near transit centers.
 - d. Place caps on parking minimums for all multi-use buildings near transit, including offices and multi-family residential housing.
99. **The state should take immediate action to address significant frequency and reliability issues of current transit service to grow ridership:**
- a. Increase frequency of service, including weekend and evening service on transit service throughout the state. Fund transit operating budget increases to close operator shortages and support more frequent service as a strategy to grow ridership.
 - b. The state legislature should strengthen WMATA's ability to provide rail and bus service, contingent on parallel action in DC and Virginia, by allowing WMATA to increase year-over-year operating expenditures by more than three percent.
 - c. In order to address the operator shortage, MTA, WMATA, and the Locally Operated Transit Systems (LOTS) should actively recruit, hire, and train additional transit operators with necessary incentives including signing bonuses, and the state should help provide the funding for the transit agencies to do so.
 - d. Ensure funding and completion of the Frederick Douglass Tunnel Project that will dramatically reduce bottlenecks and speed up MARC & Amtrak Service on the Northeast Corridor.
100. **The state should take the following actions to expand transit service, and bike and pedestrian access to grow ridership:**
- a. Collaborate with the federal government to secure an updated plan, re-evaluation of the National Environmental Policy Act process, Record of Decision, and funding needed to complete the Red Line East-West light rail project in Baltimore.

- b. Secure funding needed to implement the MARC Cornerstone Implementation Study and Investment Program, I-270 Corridor Forward Plan, Southern Maryland Rapid Transit plan, and MARC run through service to Virginia and Delaware.
 - c. Ensure the completion of the Purple Line.
 - d. Complete the cost and construction plan of extending MARC service into Western Maryland (this was required under the Transit Safety & Investment Act in 2021 but no concrete action has been taken).
 - e. Repurpose the existing Harry W Nice Bridge for bike and pedestrian lanes.
101. **The Governor should revoke plans to expand I-495 and I-270 with private toll lanes, withdraw plans to build a third Bridge across the Chesapeake Bay,** and instead work on comprehensive congestion management plans that will reduce VMT.
102. **Charging Infrastructure Interoperability.** The General Assembly should modify the state's EV charging infrastructure incentives to require that any installation of Level 1, Level 2 and DC Fast charging equipment that receives state or federal funding (tax credits or grants) must serve the needs of all PEV types expected to be in the marketplace within the foreseeable future.
103. **Equity and Transportation.** Modeled after SB 457 of the 2022 California session and in acknowledgement of the associated greenhouse gas emissions savings from not using a motor vehicle, **the Comptroller's Office should consider providing an income tax credit to households without a registered vehicle.** The tax credit would be modeled in the following manner: Allows an income tax credit equal to \$1,000 to every household that has zero registered vehicles for taxable years 2023 through 2028.

Definitions:

- a) "Qualified taxpayer" means either of the following:
 - i) For spouses filing joint returns, head of household, and surviving spouse returns, qualified taxpayer means those with an adjusted gross income (AGI) of \$60,000 or less.
 - ii) For all other filing types, qualified taxpayer means those with an AGI of \$40,000 or less.

Single occupancy vehicles remain the number one contributor to greenhouse gasses. The United States Environmental Protection Agency reports that a typical passenger vehicle emits about 4.6 metric tons of carbon dioxide per year. Particle pollution is 10 percent higher in lowest-income areas compared to the average number for California. Besides being a source of climate pollution, single-occupancy vehicles are also a leading cause of death, injuries, and health problems. SB 457 will incentivize mass mode shift towards sustainable transportation by allowing a credit against the 'net tax' in the amount of \$1000 for each household with zero registered vehicles.

104. **Starting in 2025, require the procurement of zero-emission buses for locally operated transit systems (LOTS)***, and either provide grants to help fund this or provide the administrative support for LOTs to secure grants from other sources such as the federal IIJA programs. The same training and worker protections contained in the legislation governing the transition for new MTA buses should apply to the LOTS.
105. **The General Assembly should allocate funding over a multi-year period dedicated to school bus electrification**, including charging infrastructure, and prioritizing school districts in environmental justice communities.
106. **The state should create a multi-agency and stakeholder (including utilities and school districts) working group to accelerate the deployment of electric school buses** by providing technical assistance and support with applications for federal funding.
107. **Allocating funding adequate to support the rapid increase in EV adoption** needed to meet Maryland's transportation commitments and regulations or otherwise direct the PSC to authorize utility EVSE (electric vehicle supply equipment) programs* to this effect. This money should be used to deploy charging stations in a way that recognizes the power levels and physical needs of light-medium- and heavy-duty vehicles, and identify public and private charging locations that will meet the needs of commercial drivers, while also ensuring strong workforce and equity provisions.
108. **Directing the MD Office of Energy, MDOT, PSC and MDE to coordinate and take all reasonable steps to maximize the ability of MD entities to take advantage of federal funds**, such as the National Electric Vehicle Infrastructure Formula Grant and the Clean School Bus program including by providing administrative support for public entities' grant applications
109. **The Public Service Commission (PSC) should require new utility EVSE program proposals to be submitted that are scaled to building/supporting the EVSE needed for Maryland's electrification regulations**. The PSC should also approve prudent proposals for publicly funded public chargers, incentives for off peak/managed charging, pass through requirements for fuel cost savings, and adoption of an open system for payment.
110. **Increase funding for electric vehicle equipment incentives**. The Maryland Energy Administration (MEA) Electric Vehicle Supply Equipment (EVSE) Rebate Program provides funding assistance for costs incurred acquiring and/or installing EV charging equipment to help increase EV adoption in support of the state's EV deployment and GHG reduction goals. This is first-come, first-served funding with a total amount available in the fiscal year 2022 up to \$1,800,000. Funding was exhausted by April last year and MEA staff predict that funding may run out by January this year. These incentives are powerful carrots to accelerate EV adoption and doubling the program budget would accelerate the adoption of EVs in Maryland.
111. **Extend EV HOV incentives**. HOV permits for EVs are sunsetting on September 30, 2022. The General Assembly should extend this benefit for EV drivers as a market-influencing carrot for an additional few years.

112. **Expand funding for mass transit and alternative modes.** While a conversion to EVs powered by a clean grid will be necessary on a statewide basis, the State should also encourage mode shifting to low/no carbon mobility through transit, bicycle, and pedestrian infrastructure improvements. These investments should prioritize communities with significant potential for mode shift adoption and communities heavily impacted by transportation pollution and historically excluded from transportation decision-making and infrastructure resources, including communities of color, low-wealth communities, rural communities, and people with disabilities. For example, there may be potential to utilize a higher percentage of Surface Transportation Block Grant and National Highway Performance Program federal funds for these purposes. Reducing vehicle miles traveled, especially by single occupancy vehicles, should be a primary objective of all state transportation planning and investments.
113. **Restructure the state's EV incentives for greater emissions reductions and energy cost savings.** The General Assembly should modify the state's EV incentives to 1) make the state's program complementary to new federal EV incentives, 2) achieve the greatest reduction in emissions this decade, and 3) achieve the greatest reduction in household energy costs. Gasoline consumption is both the largest single source of GHG emissions in Maryland and is often the largest part of household energy costs. The state should target incentives to help Marylanders reduce their consumption of gasoline.

The problem: The state's existing EV purchase incentives might have little impact on reducing emissions or household energy costs. Studies show that the people who typically take advantage of EV purchase incentives like those authorized by Maryland's Clean Cars Act of 2022 would have likely purchased an EV or a fuel-efficient gasoline vehicle *even without the incentives*, which calls into question the effectiveness of the state's existing program. The state's program is also underfunded: it is anticipated that the state would run out of funding within the first month that incentives are available each year (scheduled to begin in 2023), which could deter potential buyers from purchasing an EV. New federal incentives funded by the Inflation Reduction Act are also not structured to achieve the greatest reduction in emissions.

A solution: The state should offer Marylanders an incentive of \$10 per gallon of gasoline that would be saved by switching to an EV. The average Maryland driver uses around 500 gallons of gasoline per year and would receive a \$5,000 upfront incentive from the state for switching to an EV. This driver would also save around \$1,500 per year in household energy costs. For the 10% of Marylanders with the longest commutes – individuals who use more than 1,000 gallons of gasoline per year and collectively account for 30% of gasoline consumption in Maryland – the incentive to switch to an EV would be at least \$10,000. These individuals would likely reduce their household energy costs by more than \$7,000 per year. Gasoline cost savings could potentially be spent in ways that provide economic benefits to Maryland, which could help fund the cost of the program. Income caps could ensure that incentives go to those who need them the most.

Additional EV Rebates/Incentives Recommendations

- State rebates and tax credits for EVs for individual purchasers should be ended.

- The EV rebate funds should be expanded and provided to:
 - i. “super-users” – as identified in the Maryland study; taxis, commuters in rural areas are super-users;
 - ii. Integrating EVs, last-mile public transport (including taxis, Lyft, etc.) with V2G, and
 - demand response. Integration with DR would lower the cost of EVs.
- Rebates and incentives should be provided to electrifying all drayage trucks for the Port of Baltimore by 2035.
- Rebates for electrification of delivery vehicles and other diesel vehicles that contribute
- disproportionately to air pollution.
- Rebates for companies that provide lawn and leaf-blowing services to completely electrify their equipment by 2030.

114. **Need alternative funding mechanisms to be considered to meet the gap that will eventually be left by fuel taxes. Some of this is to be allocated to support EV infrastructure.**

115. **Medium and Heavy-Duty Vehicles.**

- a. Government fleets should be transitioned first. Agencies must lead in the adoption of these vehicles before any mandates on the private sector are implemented.
- b. Massive infrastructure investments, including large-scale increases in the number of truck parking spaces, must occur. Numerous reports have identified the severe shortages in available parking spaces, let alone those that are equipped with charging devices.
- c. Substantial financial incentives that include tax credits, rebates, loans, and vouchers are needed to assist motor carriers with purchasing costs. If Maryland wishes to mirror California's mandates, the state should offer similar financial support.
- d. Maryland should separate its plans for medium-and heavy-duty vehicles. They are operationally much different. There are also many more medium-duty trucks than heavy-duty registered in the state.
- e. Any mandate should have a mid-course review to provide opportunities to revisit the goals.
- f. Any mandate should be tied to the development of public and private charging stations. The American Transportation Research Institute is currently developing a state-by-state analysis of the number of charging stations that will be required as part of a transition to ZEV trucks.

- g. Maryland should consider a wider range of options to reduce greenhouse gas emissions beyond ZEV approaches and the NESCAUM report. The expanded use of natural gas and biofuels can deliver important GHG reductions in the near term and continue to meet the operational needs of the trucking industry without the major infrastructure investments that other fuel sources require. Likewise, accelerating the turnover of the oldest vehicles in the existing fleet to the newer generation of advanced diesel technology can provide immediate emissions reductions at a far lower cost.
- h. Maryland should offer financial incentives based on a percentage of a vehicle's cost. A percentage based approach allows for the subsidized dollar amount to be automatically reduced should the cost of these vehicles go down as technology advances. It also automatically adjusts based on the lower pricing of a medium-duty ZEV. Given the cost differential that exists, the minimum percentage would be 40%. This would still require an additional outlay by a motor carrier of more than \$100,000 compared to a diesel-powered tractor. Of note, this does not include the cost of charging equipment. The California Electric Vehicle Infrastructure Project indicates that charging equipment receives an average subsidy of approximately 58%.

MDE should adopt the Heavy-Duty Omnibus (low NOx) regulation to reduce the pollutant nitrogen oxide by comprehensively overhauling exhaust emission standards, test procedures, and other emissions-related requirements.

Natural and Working Lands

To maximize NWL engagement with carbon markets, the MCCC should support the Carbon Markets and Trees Commission's recommendation:

- 116. **Led by MDE, Maryland state agencies should establish a common quantification, verification, and registration system for carbon credits/outcomes, clarify carbon ownership of state-funded projects, and detail conditions for state procurement of carbon outcomes.**
- 117. **As part of the 2031 GGRA Plan, MDE, in collaboration with MDA and DNR, should complete a comprehensive assessment of potential strategic pathways for growing the state's natural carbon sinks.** Such an effort should begin by leveraging the science and research on NWL currently included within the 2030 GGRA Plan and GHG Inventory. Implementing this recommendation may require additional engagement with scientists, the U.S. Climate Alliance, or other funding partners.
- 118. **In line with the Maryland Forestry Economic Adjustment Strategy, the Maryland Department of Commerce should build a targeted incentive package to attract and grow forest product industries, like structural wood for construction and innovative use of fiber in manufacturing, that support sustainable forest management, and utilize forest products in a way that maximizes long-term carbon sequestration.**

119. **In 2023, MDE and DNR should develop a blue carbon coordinating strategy in Maryland, highlighting intersections between climate action and OA Action.**
120. **MDE and DNR, in coordination with the University of Maryland UMCES, the EPA Chesapeake Bay Program, and the state of Virginia, should execute a tributary and main stem carbonate system monitoring plan within the Chesapeake Bay in 2023; monitoring the carbonate system chemistry affected by climate change is necessary to improve scientific understanding of potential ecosystem effects, natural and anthropogenic controls, and to establish a more robust baseline for assessing future trends.**
121. **In 2023, MDE should develop a virtual platform that makes accessible to the public ongoing OA Action outcomes.**

Manufacturing

122. **Cement.** State legislators should promote low-carbon product procurement and streamline regulation, siting, and permitting practices to support near-term actions in switching to PLC products and fuel switching to RDF. Also, adopt market-based policies, such as carbon pricing and net-zero fuel incentives, to help lower the costs of long-term technology options like hydrogen and CCUS. |

[ALT: Cement. State legislators should promote low-carbon product procurement including enhancing policies and standards that increase low carbon cement specifications in construction projects. State legislators should also streamline regulation, siting, and permitting practices to support near-term actions in switching to lower carbon cement products \(such as PLC\) products and fuel switching to lower carbon, circular economy \(e.g., RDF\) and/or renewable fuels \(e.g., renewal hydrogen, biomass\). Also, consider adopting market-based policies, such as carbon pricing and net-zero fuel incentives, to help lower the costs of long-term technology options like hydrogen and CCUS only to the extent these can be enacted such that they do not cause cross-border leakage of cement manufacturing.](#)

Commented [62]: Mike Remsberg

123. **Non-cement.** To achieve emissions reductions compatible with ambitious state goals, supportive policies will be needed such as: state procurement policies to accelerate the switch to clean products; circular economy incentives and regulations to reduce excessive demand and utilize waste streams; and market-based policies to lower the cost burden of reaching net-zero emissions. Recent federal actions provide substantial funding opportunities for the state and individual manufacturers to pursue more ambitious emissions reductions, making this an opportune time to address these difficult emissions.