



Maryland
Department of
the Environment

Appendix L

Public Comments on the 2019 GGRA Draft Plan

2030 GGRA Plan

2019-2020 GGRA Draft Plan Outreach - Summary of Comments (as of 4/17/2020)

MDE hosted 8 public meetings (5 in-person and 3 webinars)

- December 3, 2019 - Eastern Shore – Chesapeake College
- December 17, 2019 - Central Maryland – MDE Main Office
- January 10, 2020 Western Maryland – Frostburg State University
- January 14, 2020- Southern Maryland – Charles County Government Building
- January 29, 2020 – Webinar
- January 31, 2020 - Central Maryland – MDE Main Office
- February 12, 2020 – Webinar
- March 4, 2020 - Webinar

Comments were received verbally at public meetings, electronically via email, and by letter. All comments will be considered in the development of the final GGRA Plan. The comments will be compiled and included in the final plan as an appendix, consistent with the previous GGRA Plan writing process.

General Comments

- Lateness of draft Plan
- Plan doesn't consider the latest science (Oct 6, 2018 IPCC report)
- Market forces will not be sufficient to meet more aggressive goals
- Plan should provide guidance for the public on adapting to climate
- MD should set a 40-60% reduction goal by 2030, net-zero by 2045
- Plan should follow established science in specific areas
- Communities should be required to build only high-density housing
- 40% of state resources dedicated to emissions reduction should be spent in frontline and disadvantaged communities
- Plan should establish labor protections
- Plan relies on undeveloped and unproven technologies
- MD is wealthy and should bear the GHG reduction load
- GGRA should include the moral impact of inaction
- all state agencies should consider climate impacts in their decisions

GGRA plan doesn't include:

- How affordable clean energy will be made available to disadvantaged communities
- How MD will increase RE and EVs
- How transportation spending will reduce GHGs
- How to mitigate GHGs through food production/consumption
- Green Purchasing
- Cost of inaction in economic analysis
- Public Health (asthma rates in MD)
- Risk assessment analysis
- Impacts on criteria air pollutants
- Electricity grid efficiency

Process

- Final Plan should be on-time
- MDE should consult public in development via interim draft
- need to advertise GGRA outreach meetings via social media

Sector-specific: Buildings

- Require new public buildings (funded at least 25% with state funds) to meet net zero emissions buildings standards
- Require at least one of the next five schools in each county to meet net zero for state funded buildings
- Require new commercial buildings with at least 20,000 square feet of roof space to install rooftop solar
- No new gas in government buildings
- Plan should include EE standards for existing buildings when they undergo renovation or retrofit
- complete fossil fuel elimination in buildings by 2050
- net zero building standards for new buildings by 2025
- No new natural gas connections to new buildings
- enhance EmPower
- reduce GHGs not kWh
- electrify w/ EmPower investments
- the Public Service Commission adopt a new program for EmPOWER Maryland that specifically incentivizes the switching from fossil fuels (gas, propane, heating oil, etc.) to electric heating systems and appliances
- “green” building construction in both the public and private sectors

Sector-specific: Energy

- Increase energy efficiency from 2% to 2.8% annually
- No new gas-fired power plants in Maryland
- 100% Clean Electricity
- Moratorium on additional new fracked gas infrastructure
- Prohibit trash incinerators
- electric motors redesigned to help reduce pollution
- Accelerate wood energy in Maryland
- All six (6) existing coal plants should be shut down now
- MD to create a “Coal Community Transition Fund”
- PSC to factor climate change into all its electric sector regulation
- “aggregating” power for residents through contracts
- GGRA doesn’t include a mechanism to increase RE in CARES
- Mattawoman Power Plant permit should be revoked
- no fracked gas consumption in MD
- include upstream leakage of NG in GHG inventory
- CARES should only rely on RE
- RGGI needs to be expanded
- no Nuclear resources in CARES
- 20 yr GWP for GHGs in goals and inventory
- MDE should review NG sector fugitive leak rate
- MD should prohibit NG expansion
- No more WTE, Biomass/Poultry litter in CARES
- MD should make Ocean City OSW part of GGRA
- Plan needs to require long term contract for Solar
- include the programs to clean up coal’s power plant ash storage seepage
- retrofit existing buildings, e.g.,40% conversion of oil and propane and 20% natural gas to electricity by 2030; 80% oil and propane and 60% natural gas by 2040; and 100% in 2050.

Sector-specific: Transportation

- Electrify the state light vehicle fleet by 2030
- fully electrify bus transport in Maryland by 2035
- expand funding for WMATA and MTA.
- fund Red Line, the Corridor Cities Transitway, and MARC expansion initiatives

- Stop highway expansion
- how are GHGs reduced while expanding highways
- Increase public transit funding
- Only purchase electric buses starting in 2022
- Support expansion of charging stations, especially in multi-unit housing
- MD should keep working on TCI
- TCI not ambitious (40% by 2032)
- transit investment are insignificant
- EV goal is too ambitious w/out mechanism to implement
- need better EV incentives
- MD should pressure auto industry

Sector-specific: Waste

- more robust zero waste policies and practices
- assess all waste treatment facilities for resilience and reliability of operation

Environmental Justice

- MD needs a plan for coal plant shut-downs
- Just transition: how to fund and implement
- landlords holding back EE in low income

Nature-based Solutions

- Plant 5 million trees by 2030
- net forest and tree canopy gains in Maryland by 2025
- strengthened Forest Conservation Act.
- Promote composting
- Prevent large organic waste generators from sending waste to landfill or incinerators if there is a compost or digester facilities within 30 miles
- Provide incentives to transition to sustainable agriculture practices
- Update MDE air emission regulations for the use of woody biomass
- Establish thermal energy credits as an incentive the development of woody biomass.
- provide sustained support for the Maryland Wood Grant Program
- better support of commercial woody biomass projects by state government

From: **David Smedick** <david.smedick@sierraclub.org>
Date: Tue, Apr 21, 2020 at 5:05 PM
Subject: Sierra Club Comments on Draft GGRA Plan
To: Ben Grumbles -MDE- <ben.grumbles@maryland.gov>
Cc: Chris Hoagland -MDE- <chris.hoagland@maryland.gov>, <gslater@mdot.maryland.gov>, <climate.change@maryland.gov>, Josh Tulkin <josh.tulkin@mdsierra.org>

Secretary Grumbles,

Attached to this email please find Sierra Club's comments (and supporting resources) on the MDE's Draft Greenhouse Gas Reduction Act Plan. I have CC'd Secretary Slater for MDOT, Chris Hoagland, the Climate Change Program's general email address.

We appreciate the opportunity to submit these comments and resources and look forward to working with you and everyone at MDE, MDOT, and the Hogan administration on finalizing the state's GGRA Plan.

If you or your staff have any questions please do not hesitate to contact me.

Sincerely,
David

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David Smedick
Senior Campaign Representative
Beyond Coal and Dirty Fuels Campaigns
Maryland, Delaware, & District of
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[Click here](#) to complete a three question customer experience survey.



November 9, 2019

Sierra Club
7338 Baltimore Ave, Suite 102
College Park, MD 20740

Maryland Commission on Climate Change
1800 Washington Blvd
Baltimore, MD 21230

RE: Comments Regarding Maryland Commission on Climate Change Annual Report
Recommendations

Dear Commissioners,

We are deeply concerned that the Commission on Climate Change (the Commission) and the Mitigation Working Group (MWG) within the Commission are failing to meet their charge of providing recommendations to the Governor and General Assembly on strategies and programs to reduce climate-disrupting pollution.

For consecutive years, the recommendations from the MWG fail to propose any specific new or innovative programs to tangibly reduce climate pollution. Instead, the MWG is again proposing to recommend merely analysis, study, and coordination, in many cases on programs that already exist. The state, nation, and planet are facing an existential climate emergency, yet Maryland's primary stakeholder body charged with considering climate mitigation efforts is not recommending action to reduce pollution. This is unacceptable and damaging to our efforts to fight climate change.

We urgently request that the Commission adopt the following tangible recommendations. Many of these recommendations have been included in previous Commission Annual Reports or discussed in the MWG and in the public for the past two or more years.

Electricity Sector

- **Responsible phase-off of coal power plants in Maryland¹** — We recommend that by the end of 2020 the General Assembly and the Governor work with public stakeholders to develop and finalize a responsible and specific plan for transitioning from Maryland's six large-scale coal electricity generators over the ensuing decade, while maintaining reliable power, and for the establishment of programs that protect and support

¹ This recommendation was included in the 2018 Annual Report of the Commission, within the Minority Note, but was not adopted by the Governor or the General Assembly. (pages 64-65, https://mde.maryland.gov/programs/Air/ClimateChange/MCCC/Documents/MCCC_2018_final.pdf)

communities and workers traditionally reliant on these fossil fuel facilities before those coal plants are closed.

- The plan should follow the best practices for just transition as detailed in Appendix I of the Maryland Department of the Environment's (MDE) Draft 2019 Greenhouse Gas Reduction Plan, including, but not limited to:
 - Providing a timeline for the phase-out of activities and facilities
 - Receiving input from workers and impacted communities early in the planning stages
 - Responding to the concerns, feedback, and questions from those impacted stakeholders
- **No new gas-fired power plants in Maryland** — We recommend that the Governor or General Assembly adopt a moratorium on the construction or permitting of any gas-fired power plants in the state that are not already online and fully operational.
- **100% Clean Electricity** — We recommend the Governor, MDE, and the Maryland Energy Administration (MEA)—in consultation with the General Assembly, relevant stakeholders, and the public—develop a plan to reach 100% clean electricity no later than 2040 that does not include electricity generated in Maryland from fossil fuels like coal, gas, and oil, nor additional ratepayer or taxpayer subsidies for nuclear power.

Transportation

- **Electric Buses** — We recommend MDE and MDOT set a goal to fully electrify bus transport in Maryland by 2035, including setting aggressive targets for the rapid deployment of EV school buses, as well as provisions for low-interest financing.
- **Funding Public Transit and Sustainable Land Use** — We recommend that the state expand funding for WMATA and MTA. Maryland should also provide funding for critical projects such as the Baltimore Red Line, the Corridor Cities Transitway, and MARC expansion initiatives. We recommend the state also fund and support sustainable land use initiatives such as adding a bicycle and pedestrian crossing on the rebuilt Harry W. Nice Memorial/Senator Thomas "Mac" Middleton Bridge.
- **Stop Highway Expansion** — We strongly recommend that Maryland not expand or build new major highways. Maryland should not expand I-495 (the Capital Beltway), I-270, or the Baltimore Washington Parkway, or add a third span across the Potomac. These projects do not solve congestion issues and induce demand for more cars on the road, exacerbating air, water, climate, and noise pollution. Instead, Maryland must invest in real solutions that avoid and reduce congestion including funding transit oriented development projects, expanding affordable housing, and funding public transit as listed above.

Buildings

- **No new gas in Government buildings** — We recommend that the Governor issue an Executive Order or the General Assembly enact legislation to end gas hookups for state-owned new construction projects and instead rely on air source heat pump systems and induction cooking alternatives, where appropriate.

- **Incentivize Switching from Fossil Fuel Heating and Appliances to Electric** — We recommend the Public Service Commission adopt a new program for EmPOWER Maryland that specifically incentivizes the switching from fossil fuels (gas, propane, heating oil, etc.) to electric heating systems and appliances. The program should seek to annually incentivize the retrofit of 40,000 homes in order to meet a goal of a decarbonized residential building sector by 2050.

Other

- **Moratorium on additional new fracked gas infrastructure** — We recommend the Governor direct agencies to place a moratorium on approval of permits and applications of new fracked gas infrastructure such as new pipelines and compressor stations.
- **Forest Protection and Gains** — We recommend that the General Assembly and the Governor require net forest and tree canopy gains in Maryland by 2025 through the enactment of various forest management and tree planting programs and initiatives; including a strengthened Forest Conservation Act.²

This list of recommendations is not all-encompassing of what we believe needs to be done in the state to mitigate climate disruption. Maryland needs to adopt more robust zero waste policies and practices by phasing off of polluting trash incinerators and expanding composting, expand healthy soils and wetlands practices to draw-down and sequester carbon through natural processes, and provide more funding for the equitable deployment of more light-duty electric vehicles.

A body that is charged to recommend measures to mitigate climate disruption, but does not provide any recommendations for the state to reduce pollution, is a body that is broken. The Commission must fill in the missing pieces left by the MWG's failure to do its job by adopting specific recommendations to reduce climate pollution in its 2019 Annual Report.

Thank you for your time and consideration. Please do consider these recommendations and do not hesitate to reach out to the Sierra Club for additional information.

Sincerely,

David Smedick
Senior Campaign Representative
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² This recommendation was included in the 2018 Annual Report of the Commission, within the Minority Note, but was not adopted by the Governor or the General Assembly. (pages 66, https://mde.maryland.gov/programs/Air/ClimateChange/MCCC/Documents/MCCC_2018_final.pdf)



February 18, 2020

Via Electronic Mail (Christopher.Beck@maryland.gov)

Christopher Beck
Climate Change Program
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Re: Comments on the 2019 GGRA Draft Plan

Exelon Generation Company, LLC (“ExGen”) appreciates the opportunity to provide comments in response to the Maryland Department of the Environment (“MDE”) request for comments on the 2019 Greenhouse Gas Emissions Reduction Act Draft Plan (“GGRA Draft Plan” or “Draft Plan”). These comments focus on a central flaw in the Draft Plan, which is that the Draft Plan hinges on the assumption that Maryland’s largest source of carbon-free electricity, the Calvert Cliffs Nuclear Power Plant (“Calvert Cliffs”), will continue to operate through 2030 and beyond to 2050. Maryland cannot take for granted that Calvert Cliffs will continue to operate and serve as a pillar of greenhouse gas (“GHG”) reduction in Maryland through the remainder of this decade, let alone 2050. In short, the long planning horizon expected to be featured in the Final Plan warrants a more fulsome analysis that accounts for the possibility of the early retirement of Calvert Cliffs.

As background, ExGen operates Maryland’s most abundant source of carbon-free electricity, Calvert Cliffs, and Maryland’s largest renewable generation asset, the Conowingo Hydroelectric Generating Station (“Conowingo”). In addition, ExGen markets wholesale energy and capacity products to municipal, cooperative, and investor-owned utilities, retail suppliers, retail energy aggregators, power marketers, and major commodity trading houses. ExGen is also a major supplier of electricity to Maryland consumers at retail through its Constellation business. Constellation serves residential, commercial and industrial customers, as well as municipal aggregation programs throughout the State and has developed 85 MW of installed solar on behalf of its customers in Maryland. Based upon its experience in Maryland and elsewhere, ExGen submits the following comments to aid in the development of the GGRA Final Plan (“Final Plan”).

ExGen Concurrs with Maryland's Aggressive GHG Reduction Goals

The PATHWAYS modeling for the Draft Plan provides several scenarios to explore strategies to achieve Maryland's 2030 goals of 40 percent reduction in statewide GHG emissions from 2006 levels. The plan must also, per the 2016 legislative requirements and as noted in the Draft Plan, be developed "in recognition of the finding by the IPCC that developed countries will need to reduce GHG emissions by between 80 percent and 95 percent from 1990 levels by 2050."¹ We applaud MDE for committing to 100 percent clean energy and advancing Maryland's goal to achieve a 40 percent reduction in emissions by 2030. That commitment aligns with what the climate science indicates we need to achieve globally to avoid the worst impacts of climate change. ExGen strongly supports this objective, and we intend to play a constructive, proactive role in helping identify and support the policy and technology changes that will need to occur if Maryland is to achieve its clean energy goals. We look forward to working further with MDE and other stakeholders to promote policies to sustain and grow zero-carbon energy, including nuclear, solar, wind and hydro power.

ExGen agrees with the Draft Plan that Maryland can achieve its 2030 decarbonization goals, as long as it maintains its existing zero carbon emission resources, such as renewables, hydropower and nuclear. We also concur with the Draft Plan that Maryland's successful achievement of its longer term goals like reducing GHG emissions between 80% and 95% from 1990 levels by 2050 will call for the state to combine preservation of existing zero carbon resources, implementation of the recently enacted Clean Energy Jobs Act (CEJA) and the implementation of the Draft Plan with "bold new programs."² A key tenet of Maryland's existing portfolio and virtually any "bold new program," however, is that Maryland's largest generator of carbon-free electricity will continue to serve as a backbone of GHG reduction. This, of course, is evidenced by the inclusion of Calvert Cliffs as an available resource not only through its current license but being extended through at least 2050. Continued operation of Calvert Cliffs through that time period will require significant investment by ExGen, which it would not make unless it had confidence that Calvert Cliffs will earn compensation sufficient to cover its ongoing costs and risks of operation. It is fair to say that without the continued existence of nuclear power, Maryland's goals would not be attainable without exorbitant cost.

¹ Maryland Department of the Environment, *2019 GGRA Draft Plan*, p. 15 (October 2019) ("*Draft Plan*")

² *Draft Plan*, ES p.12

Zero-Emission Hydropower, Nuclear, and Renewable Resources Will Combine To Form the Foundation of Maryland's Decarbonized, Affordable, Reliable, and Diverse Energy Future

In 2018, 55% of Maryland's in-state electricity generation came from natural gas and coal-fired power plants.³ Electricity generated by these plants represents 94% of in-state electricity sector greenhouse gas emissions, totaling 20.5 MMT (million metric tons) of carbon.⁴ In contrast, nuclear and other renewable energy produce zero greenhouse gas emissions or other criteria air pollutants.⁵ In 2018, nuclear power accounted for 34 percent of the total power generated in the state while renewable energy generation represented about 10 percent of the mix.⁶ Maryland's only nuclear power plant, the dual-unit Calvert Cliffs plant, generated 80% of the zero-carbon electric power in Maryland, making it by far the state's largest zero-carbon resource. Calvert Cliffs is also a major contributor to economic growth for Maryland's local communities.⁷ In a 2015 [report](#), The Brattle Group evaluated the contribution that Calvert Cliffs, the only nuclear plant in Maryland, makes to the State's economy. Brattle considered how the plant affects electricity markets and prices, as well as in-state production activity, and studied the ramifications of these factors throughout the Maryland's economy. Brattle's analysis showed that during the ten-year period spanning 2015–2024, the operations of Calvert Cliffs in Maryland would:

- Contribute approximately \$397 million annually to state gross domestic product (GDP);
- Account for 2,300 in-state jobs (direct and secondary);
- Help keep electricity prices low - Maryland consumers would pay \$40 million more for electricity annually, and about \$340 million more in present value over the ten years, without this plant;
- Fund \$15 million in state tax revenues annually;
- Avoid 9.1 million metric tons of CO2 emissions annually, valued at \$392 million per year; and
- Avoid significant amounts of other air pollutants annually, valued at \$129 million per year.⁸

³ U.S. DOE, EIA State Historical Tables for 2018; Revised Nov. 2019, at https://www.eia.gov/electricity/data/state/generation_monthly.xlsx

⁴ GGRA_DRAFT_Emissions_estimates_110519.xlsx, shared at MWG Meeting 11/19/19, Tab "Electricity Emissions – Ref", at: https://mde.maryland.gov/programs/Air/ClimateChange/MCCC/MWG/GGRA%20DRAFT_Emissions%20Estimates_110519.xlsx

⁵ Maryland Department of Natural Resources (DNR) Power Plant Research Program (PPRP). [Nuclear Power in Maryland: Status and Prospects](#) ("PPRP Nuclear Report"), pp. 17-18. (Jan. 2020)

⁶ U.S. DOE, EIA State Historical Tables for 2018; Revised Nov. 2019, at https://www.eia.gov/electricity/data/state/generation_monthly.xlsx

⁷ PPRP Nuclear Report, pp. 19-21

⁸ Brattle Report at p. 12.

In addition to Calvert Cliffs, conventional hydroelectric power (predominantly Conowingo) accounted for 15% of the zero-carbon electric power in Maryland, representing the state’s largest carbon-free *renewable* electric power source. Wind and solar (both solar thermal and photovoltaic) were 3% and 2% of Maryland’s in-state carbon-free power, respectively.⁹

Maryland Policymakers Cannot Assume its Cheapest and Most Abundant Source of Zero Emission Generation Will Exist Through its Current License, Let Alone Through 2050

A foundational assumption in all four Draft Plan scenarios is that Calvert Cliff’s units remain online through 2050, with Calvert Cliffs’ units relicensed in 2034 and 2036 at end of their current licenses. Despite the fact that many nuclear plants have retired prematurely due to economic challenges, no sensitivities were performed with Calvert Cliffs retiring prior to the end of its current license life. Instead, every case except for one assumes that Calvert Cliffs operates well beyond its current license life. Only a single sensitivity presented in Appendix F of the Draft Plan includes an earlier retirement date; the sensitivity “assumed that it retired at the end of its scheduled license, and de-rated annual capacity based on the months of operation each year as documented in Table 2-4”:

*Table 2-4. Calvert Cliffs Nuclear Power Plant Capacity by Year*¹⁰

Year	2033	2034	2035	2036	2037
Nuclear Capacity (MW)	1708	1350.5	850	602.1	0

Calvert Cliffs’ current licenses expire August 2034 for Unit 1 and August 2036 for Unit 2. In practice, both renewals will likely be needed for either unit to operate past August 2034 because single-unit operation at a dual-unit site is cost-prohibitive. Where economic conditions warrant, nuclear operators have pursued twenty-year extensions after 60 years of operation. If those are in fact sought and granted, both Calvert Cliffs units could continue to provide reliable, carbon-free energy through 2054. Renewal applications to extend licenses to 80 years have been submitted for units at three other nuclear plants. Florida Power and Light’s Turkey Point nuclear power station was granted its second license renewal recently in December 2019, making it the first plant in the country authorized to operate for 80 years. Ultimately, relicensing a nuclear plant requires a significant capital investment and a number of years to process the application with the Nuclear Regulatory Commission (NRC).

⁹ Loc. cit.

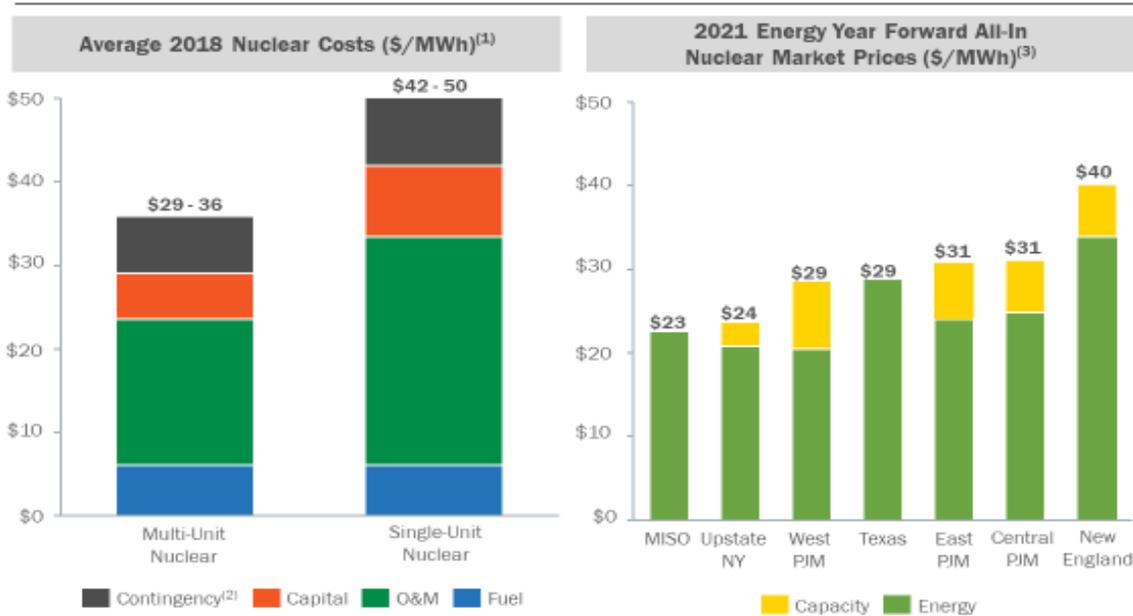
¹⁰ Draft Plan, Appendix F p. 14, Table 2-4.

The decision to proceed with an application for a license extension would require Exelon to have confidence that revenues available over the life of the extension will cover the costs and risks of operation of the plant. Under current and projected future market conditions, that will not happen.

It is well demonstrated that the current energy market environment is leading to premature retirements of nuclear plants throughout the US.¹¹ This is based on a continued lack of demand growth, decreases in the price of natural gas, and further gas overbuild.¹² Calvert Cliffs faces the same economic headwinds with forward market revenues falling short of covering costs plus risk. A primary challenge for plants like Calvert Cliffs that they participate in organized wholesale markets that do not value the environmental attribute of zero emission generation, which provides a competitive advantage to emitting generators that can pollute for free.

See Figure 1 regarding the economics of a generic nuclear plant in PJM and the other organized wholesale electricity markets:

Merchant nuclear plants in all regions of the country face a shortfall of market revenues relative to costs



(1) Source: Nuclear Energy Institute, "Nuclear by the Numbers," March 2019
 (2) Contingency (or risk) is calculated as 10% of total costs plus \$4/MWh
 (3) Based on 1/31/20 ICE forward energy prices from 6/2021 through 5/2022 for relevant hub less 2017-2019 average basis differential to nuclear plants

¹¹ See PPRP Nuclear Report, Table 1-1 and Table 1-2 showing announced closures and closures since 2013.
¹² See S&P Global Market Intelligence, *Overpowered: PJM market rules drive an era of oversupply* (12/3/2019), and PPRP Nuclear Report, pp. 6-9.

Unfortunately, many who contend that Calvert Cliffs is financially secure through current licenses often cite to the PJM Independent Market Monitor (“IMM”) State of the Market Report that shows IMM’s view of the profitability of nuclear plants in PJM. For example, in its recent January 2020 report on nuclear energy, even the Power Plant Research Project (PPRP) under the Maryland Department of Natural Resources accepted without analysis the IMM’s conclusion that Calvert Cliffs is financially strong and expected to retain positive margin going forward. Reliance on the IMM creates a biased view of profitability.

The IMM’s profitability analysis systemically overstates the economic viability of nuclear plants and the IMM’s general conclusion that almost all nuclear plants in PJM are “profitable” is directly contradicted by the actions of unit owners, states/state agencies, and other stakeholders. More than half of the nuclear plants in PJM have publicly disclosed financial challenges and/or announced retirement. Several of these retirements were reversed when states, after reviewing detailed confidential financial information related to plant profitability, provided zero emission payments to facilities based on demonstrated need.

The IMM’s flawed analysis understates costs and overstates revenues. On the cost side, the IMM fails to include a number of actual costs and risks. Operational risks (the risk that costs will be higher than projected) are contained in PJM’s FERC-approved tariff, but are ignored in the IMM’s analysis. The IMM also does not account for any market risk (the risk that the plant will not secure forward energy revenues due a number of factors). In addition to these cost understatements, the IMM does not reflect the fact that Calvert Cliffs is only 80% of the size of the average multi-unit site used in the NEI cost estimate. Because of this smaller size, Calvert Cliff’s benchmark costs should be higher than the average multi-unit site.

On the revenue side, the IMM tends to overstate revenues. The energy revenue estimate is based on a forward price for guaranteed energy delivery every single hour the year regardless of plant operation. Therefore, when a facility experiences an outage, the owner will need to cover its forward obligation by purchasing replacement energy from the spot market even if spot market prices are very high. The difference between the price for guaranteed energy and the price for energy from a facility can either be accounted for by reducing energy revenues or by increasing costs to reflect market risks. The IMM does not make either adjustment.

As a result of these biases, the IMM analysis results in conclusions that are completely inconsistent with market evidence for nuclear plants in general and incorrect for Calvert Cliffs in

particular. Similar to most nuclear plants in PJM, Calvert Cliffs is financially challenged, contrary to the PPRP’s conclusion that Calvert Cliffs is “expected to retain positive revenue going forward.”

Maryland Cannot Meet its GHG Reduction and Clean Energy Goals without Calvert Cliffs

In the Calvert Cliffs retirement scenario, the Draft Plan model shows that Maryland’s Policy Scenario 4 misses its GHG reduction targets by an additional 6.7 million metric tons in 2040 and by an additional 7.4 million metric tons in 2050. For context, that exceeds the 6.2 – 6.4 mmt combined annual emission reductions from Maryland’s participation in the RGGI program through 2020 (3.6 mmt), enhanced forestry management (1.8 mmt), and all potential measures for sequestration in agricultural soils (0.75-1.0 mmt annually).¹³ If Calvert Cliffs were to retire prior to 2030, Maryland would miss its 2030 goal by more than 3.0 mmt in 2030 alone.¹⁴

To provide policymakers with a more accurate and robust forward outlook, ExGen recommends including this Calvert Cliffs retirement scenario in the main body of the Final Plan. Further, ExGen recommends that the Final Plan include scenarios with Calvert Cliffs retiring *in advance* of the expiration of its respective licenses.

¹³ Maryland Commission on Climate Change, *2018 Annual Report*, p. 30, p. 38, and p. 44.

¹⁴ Draft Plan, Appendix F, p. 61

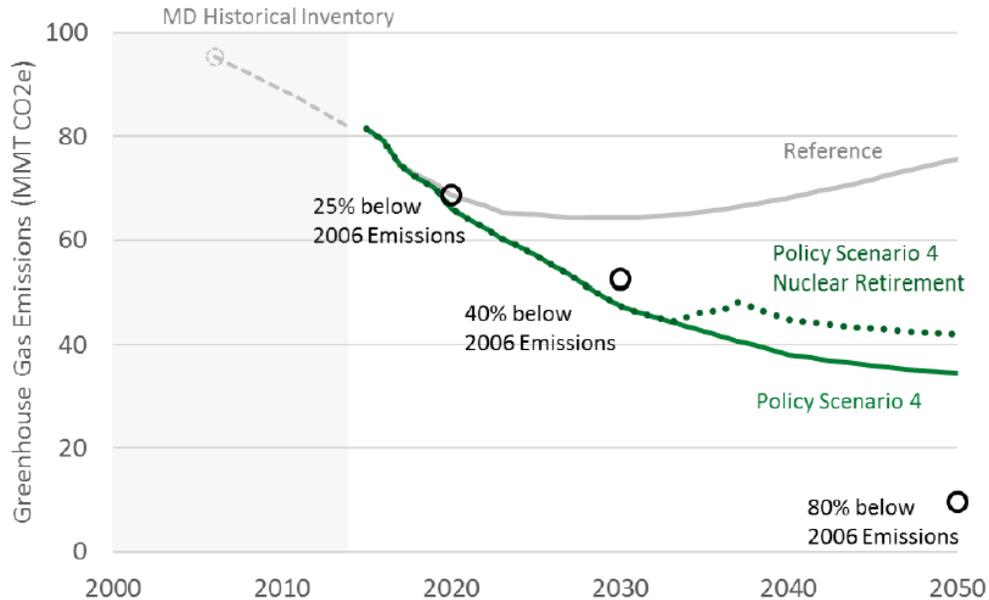


Figure 3-17. Maryland Net GHG Emissions for Policy Scenario 4 with and without Nuclear Retirement

The impact of Calvert Cliffs retiring is about 7.4 million metric tonnes CO₂e in 2050, widening the gap to reach the state’s GHG target.

Table 3-3. Maryland Net GHG Emissions for Policy Scenario 4 with and without Nuclear Retirement

[MMT CO ₂ e]	2020	2030	2040	2050
Policy Scenario 4	66.1	48.1	38.7	35.2
Policy Scenario 4 with Nuclear Retirement	66.1	48.7	45.4	42.6
GHG Goals	68.6	52.5	31.1	9.7

These added scenarios will better inform Maryland policymakers’ decisions, particularly on the relative costs of addressing climate change.

When existing nuclear power plants close, they are replaced by the increased dispatch of fossil fuels, primarily natural gas and coal, and, as a result, materially threaten decarbonization goals. For example:

- “Without new policies and with low natural gas prices, early nuclear retirements are replaced primarily with natural gas and coal.” -- Union of Concerned Scientists¹⁵ (Nov. 2018)
- “The reality is that shuttered nuclear plants are replaced mostly by output from existing fossil plants.” -- ScottMadden,¹⁶ (June 2019)

¹⁵ Union of Concerned Scientists, *The Nuclear Power Dilemma*, p.4 (Nov. 2018)

¹⁶ ScottMadden, *Spinning Our Wheels, How Nuclear Plant Closures Threaten to Offset Gains from Renewables* (June 2019)

- “[N]uclear plant closures, by removing a non-carbon source from the resource mix, threaten the ability to achieve future, deeper decarbonization targets, in the United States and elsewhere.” – MIT¹⁷ (Sept. 2018)

There is broad agreement on the need to keep existing nuclear plants open to achieve the imperative of slashing greenhouse gas emissions as quickly as possible.

“We want to keep open every nuclear plant that can run safely until we reach net zero carbon and can replace nuclear energy with solar and wind. In short, we see no reason to arbitrarily decide in advance which technologies will ultimately be sustainable or morally preferable. We want the longest possible list of options for quickly slashing carbon.”¹⁸ – From the book “[A Planet to Win – Why We Need a Green New Deal](#)”

It simply is not possible to build out renewables even more quickly to make up the gaps that would be left if Calvert Cliffs is not available. Closure of Calvert Cliffs would result in Maryland importing additional carbon-intensive energy. Maryland’s expanded RPS from the Clean Energy Jobs Act in the 2019 legislative session requires Maryland electricity suppliers to obtain renewable energy credits (RECs) from qualified renewable energy generators for 50 percent of their electricity by 2030, including a 14.5 percent carve-out for solar energy generation tied to Maryland’s electric distribution grid.¹⁹ As the Draft Plan identifies, a challenge is that “The RPS does not directly account for the siting of renewable resources, especially Maryland solar, which requires land that could otherwise be devoted to agriculture, forestry, or other uses.”²⁰

As the Draft Plan points out, building out in-state renewables even more rapidly will exacerbate these land use challenges that Maryland faces.²¹ Calvert Cliffs has a 1,734 MW operating capacity and operates at a capacity factor of more than 95 percent, producing 15 million MWh of electricity per year. To generate that much power from solar operating at 25% capacity factor would require 6,900 MW of solar. At solar land use of 7.5 acres per MW, that would require 51,750 acres of solar panels or about 81 square miles which is the equivalent of the land area of Baltimore. Alternatively, to generate the same amount of power from wind operating at 35% capacity factor would require 4,900 MW of wind. With a wind land use of 0.75 acres per MW, that would require 3,670 acres of wind farms (about 5.7 square miles, or 2,760 football fields). Further, to have the power available 24/7, as it is from nuclear energy, would require improvements in storage technology

¹⁷ MIT, Buongiorno & Parsons, *The Future of Nuclear Energy in a Carbon-Constrained World* (Sept. 2018)

¹⁸ From the book “[A Planet to Win – Why We Need a Green New Deal](#)”

¹⁹ *Draft Plan*, p. 48

²⁰ *Draft Plan*, p. 49

²¹ PPRP Nuclear Report, pp. 22-23

and an extraordinarily large build-out of storage. Absent improved storage technology, more flexible resources will have to fill in which means increased imports and dispatch from carbon-emitting coal, gas, and oil-fired generation.

Maryland needs new renewables, existing renewables, existing hydropower, and existing nuclear power to meet its greenhouse gas goals. As one expert, David Roberts, puts it, “Some environmentalists seem determined to establish a zero-sum conflict between renewables and nuclear power – not only new nuclear but existing nuclear. They say it can be replaced with efficiency and renewable energy, which are safer. Problem is, we’ve seen several nuclear plants shut down in recent years and now have a pretty good idea what replaces them. It’s mostly natural gas and some coal.”²²

Loss of nuclear power plants wipes out years of investment in renewables and energy efficiency. In 2018, a Brattle Group study found that if four PJM nuclear plants in Pennsylvania and Ohio were to retire (Davis-Besse, Perry, Beaver Valley, and Three Mile Island), at the historical “rate of renewable additions total zero-emission generation in PJM would not return to 2017 levels until 2032.”²³ Even if the development rate of wind and solar were doubled, they found it would take over 15 years, until 2034, to replace their combined lost zero emission production. Brattle found the retirements “would also involve higher cumulative emissions in the intervening years, contributing to higher CO₂ concentrations in the atmosphere.”²⁴

On September 20, 2019, Exelon powered down Three Mile Island Unit 1 in Pennsylvania. The closure of TMI Unit 1 was a sobering reminder of the financial challenges facing nuclear generation, brought on in large part by federal and state policies that fail to evenly value clean energy resources and, at the same time, allow emitting resources to pollute for free. To provide some context, Three Mile Island Unit 1 produced more zero-carbon energy than all the solar, hydro and wind in Pennsylvania, effectively wiping out the more than \$3.5 billion spent developing Pennsylvania’s 1,300 MW of wind and 325 MW of solar resources.

Electrification Benefits and Fuel Mix

The Draft Plan includes estimated emission reductions from electric vehicles in 2030 as 1.61 mmt from “on-the-books” strategies and 0.322 mmt from an additional 100K ramp up for a total of 704,840 EVs and 1.93 mmt reductions. The source of electricity has an effect on the emissions of

²² David Roberts @drvoxdavid@vox.com, “The simple argument for keeping nuclear power plants open” (4/5/18)

²³ Dean Murphy and Mark Berkman, *Impacts of Announced Nuclear Retirements in Ohio and Pennsylvania*, available at http://files.brattle.com/files/13725_nuclear_closure_impacts_-_oh_pa_-_apr2018.pdf, (April 2018)

²⁴ *Ibid.*

electric vehicles (EVs), however.²⁵ The estimated CO₂ reductions in the Draft Plan will be smaller if the fuel mix loses its largest source of zero-carbon power, the nuclear plants, and replaces it with in-state natural gas generation or increased imports from the grid. When PJM nuclear power plants retire, they are being replaced by increased dispatch of fossil fuel-fired generation, raising CO₂ emissions. All the available wind and solar resources are already dispatched, so polluting resources fill in the gap.²⁶ The continued operation of existing zero-carbon resources, especially existing nuclear power plants, is needed to make the most of the electrification goals in the Draft Plan.

Calvert Cliffs' Value to Maryland Clean Energy Plans

Beyond the technical importance of both Calvert Cliffs and Conowingo in avoiding greenhouse gases with Maryland in-state carbon-free generation, the most important consequence of not supporting all zero-emission technologies for achieving Maryland's long-term GHG emission reduction goals is the staggering \$473 billion net cost increase compared to the least-cost cases. In presentations to the MCCC Mitigation Working Group (MWG) on September 17, 2019, the Clean Air Task Force (CATF) and the Center for Climate and Energy Solutions (C2ES) explained that "to stabilize climate, electric power sector emissions need to fall to near-zero around mid-century," and that numerous analyses and Maryland data suggest that the chances of achieving this transition affordably will be greater if policy allows for a diversity of technologies, including firm/dispatchable power generation such as nuclear. Six states have adopted this technology-inclusive approach, and Maryland should follow suit."²⁷

CATF and C2ES explained that "having firm zero carbon power available reduces costs and risks in achieving a zero carbon grid especially as CO₂ reductions move to more than 50%." They showed that in Maryland in particular seasonal energy storage needs for a 100% renewable system (solar, on-shore wind, and off-shore wind) would span multiple weeks at a time, and that to fill in the gaps with battery storage would require roughly fifty times Maryland's peak demand. According to CATF and C2ES, even if storage capacity costs were to drop by 400%, a 100% renewable power system would cost Maryland at least \$473 billion more than one with a technology-inclusive approach that permitted firm zero carbon technologies.²⁸

²⁵ https://afdc.energy.gov/vehicles/electric_emissions.html

²⁶ Monitoring Analytics, *PJM State of the Market 2019 Q3*, p. 393 and p. 395.

²⁷ CATF and C2ES, presentation to MWG, 9/17/2019, Slide 1

²⁸ CATF and C2ES, presentation to MWG, 9/17/2019, Slide 18

These experts strongly recommend that Maryland to keep all options on the table, including firm zero-carbon energy from existing nuclear, in order to protect consumers and achieve Maryland's clean energy goals. Their conclusions²⁹ for Maryland include the following:

- “Firm electricity will likely be necessary for affordable deep decarbonization of the power sector and therefore the energy system as a whole; and
- It is therefore wise to keep all plausible *zero/low carbon* options on the table, while ramping up renewables significantly in the next decade.

The Maryland Clean and Renewable Energy Standard, like the standards recently set in other states such as CA, NM, WA, NV, NY, and CO, should establish a 100% carbon-free goal and keep technology pathways open to allow for evolving innovation and costs”

Even if it were technically possible to get to a zero-carbon electrical grid without nuclear power, most experts agree that it is safer and less expensive strategy to include.³⁰ Experts have indicated that it makes particular sense to maintain the nation's existing reactors: “there is little disagreement that keeping safely operating plants around for as long as possible would be a boon for the climate. ‘Maintaining our existing fleet is a good way to keep costs low and an accelerated retirement schedule simply makes it that much harder.’”³¹ Similarly, MIT researchers analyzed what it would take to decarbonize the electric power sector by 90%. Their “simulations show that the availability of nuclear reduces the needed carbon price in the power sector to meet the 90% reduction target from near \$120/ton (2006\$) of CO₂ to under \$40/ton (2006\$) by 2050.”³²

In another example, in July 2017, former New York City Mayor and United Nations Secretary-General's Special Envoy for Climate Action Michael R. Bloomberg and then-California Governor Edmund G. Brown Jr., launched an initiative known as America's Pledge. The initiative seeks to analyze, catalyze, and showcase climate action leadership by U.S. governors, mayors, business leaders, and others. In its latest report released in December 2019 at the 25th Conference of the Parties in Spain, America's Pledge looks out toward 2030. The America's Pledge project team responsible for this report was co-led by the University of Maryland Center for Global Sustainability, among other institutes such as the Rocky Mountain Institute, World Resources Institute and CDP. The study assesses what would be delivered from expanded actions by states, cities, businesses, and citizens

²⁹ CATF and C2ES, presentation to MWG, 9/17/2019, Slide 27

³⁰Jessica McDonald, “[What Does Science Say About the Need for Nuclear?](#)”, FactCheck.org, a project of the Annenberg Public Policy Center (11/1/2019)

³¹ *Loc. cit.*

³² MIT Joint Program on the Science and Policy of Global Change. *Deep Decarbonization of the U.S. Electricity Sector: Is there a role for nuclear power?* (Sept. 2019)

(“The Bottom-up Scenario”) and then layers on a robust, complementary, and ambitious federal policy program after 2020 to form a comprehensive American climate strategy (“The All-In Scenario”). In both scenarios, nuclear generation declines only slightly from today, providing 17 percent of generation in 2030, highlighting the importance of nuclear’s role in achieving deep decarbonization goals and the inclusion of nuclear in 100% clean energy definition and goals.

Likewise, New Jersey recently released a Rocky Mountain Institute analysis of potential transition pathways for its Energy Master Plan (EMP) intended to set the state on a path to a conversion to 100% clean energy by 2050. Under a scenario where nuclear retires, Rocky Mountain Institute found New Jersey’s costs would be \$19.0 billion per year higher by 2050 than in other transition pathways, largely driven by the need for energy storage at longer durations.³³

Maryland must both foster new clean resources and stay committed to preserving its existing clean energy resources, including renewables, nuclear, and hydropower, if it is to deliver a cost-effective pathway to a clean energy future. This point is reinforced in the recently published PPRP Nuclear Report which declares that “States can play an important role in supporting both the continued operation of nuclear power plants and the development of new nuclear plants.”³⁴ The report discusses numerous ways that state initiatives can or have supported continued operation of nuclear power plants in support of their goals, including 23 different state measures that could support nuclear energy that should be considered by Maryland policymakers.³⁵

Deep decarbonization in response to climate change requires bold, immediate action.³⁶ To this end, ExGen applauds the efforts of Maryland policymakers and the Hogan administration to fulfill Maryland’s greenhouse gas reduction and clean energy goals.³⁷ Without such efforts, the impact of climate change will grow year after year, damaging the environment, harming human health, threatening the economy, and increasing national security risks. The Draft Plan modeling analysis shows that growing, not reducing, the total zero-carbon energy production in Maryland will help the State reach its decarbonization goals. We encourage policymakers to take note of these findings and remain focused on recognizing nuclear for its contributions to decarbonization.

³³ Rocky Mountain Institute, New Jersey Integrated Energy Plan, Public Webinar (11/1/19) Slide 44, available at <https://nj.gov/emp/pdf/NJ%20IEP%20Public%20Webinar%20Nov1%20Final.pdf>

³⁴ PPRP Nuclear Report, p. 72

³⁵ PPRP Nuclear Report, Summary Table pp. 121-124.

³⁶ <https://www.c2es.org/document/pathways-to-2050-scenarios-for-decarbonizing-the-u-s-economy/> & <https://www.catf.us/resource/retirement-of-nuclear-power-plants-in-illinois/>

³⁷ Draft Plan Webinar at Slide 9.

Existing Policies May Reduce Emissions in the Short-Term but are Not Sufficient to Meet GGRA and 100% Clean Energy Targets

Since at least the 1970s, federal and state policymakers have looked for ways to bring cleaner sources of electricity to customers. Across the board, however, federal and state policies have ignored – until very recently - the largest and most reliable source of clean energy: nuclear generation. In recognition of this increasingly dire reality, states are now aggressively exploring ways to value the carbon-free power provided by nuclear plants until a more comprehensive approach to national clean energy policy emerges. To this end, an increasing number are now supplementing renewable portfolio standards with technology-neutral policies to ensure that new clean generation does not displace existing clean generation. The Draft Plan analysis implicitly provides powerful evidence that maintaining and growing Maryland’s zero carbon emission resources are important components to the most effective way to meet the Greenhouse Gas Reduction Act (GGRA) emissions reduction goals and Governor Hogan’s directive for “100% Clean Energy by 2040.”³⁸

On the other hand, if states with nuclear generation assets choose to exclude existing nuclear generation assets from clean energy programs and fail to adopt and maintain programs that recognize the carbon emission avoidance value of nuclear generation, those states will reverse virtually all of the carbon-reduction gains that have been achieved in recent years and, perhaps more importantly, time, a precious asset in the fight against climate change, will be lost.³⁹ If nuclear plants close, achieving carbon-emission reduction goals only grows more challenging because the energy they now generate will be replaced, at least in the near to middle term, with fossil fueled generating resources.

Conclusion

ExGen would like to again thank MDE and the Climate Change Program for the opportunity to provide comments on the Draft Plan and looks forward to working with the Hogan administration, members of the Maryland General Assembly, the Maryland Public Service Commission, and other key stakeholders to move the state toward a decarbonized, clean energy future.

ExGen reiterates that the assumptions and the corresponding scenarios imbedded in the Final Plan should be updated to reflect the challenging energy market environment and the possibility of Calvert Cliffs retiring. If we ignore the current economic challenges facing nuclear facilities like Calvert Cliffs, Maryland’s progress towards meeting its goals will be undermined. We would like to work with Maryland stakeholders to promote a broad understanding of the value of Calvert Cliffs to

³⁸ Draft Plan Webinar at Slide 18.

³⁹ Dean Murphy & Mark Berkman, *Impacts of Announced Nuclear Retirements in Ohio and Pennsylvania*, available at http://files.brattle.com/files/13725_nuclear_closure_impacts_-_oh_pa_-_apr2018.pdf, (April 2018).

keeping the state on track to reducing greenhouse gas emissions. We look forward to working with Climate Change Program on potential pathways to convert what is currently a questionable assumption in the plan, that Calvert Cliffs will be available through 2030 and beyond, to a more realistic assumption.

Maryland is all too familiar with the consequences of climate change - extreme weather and rising sea levels chief among them. It is critical that the Final Plan and Maryland policymakers continue to acknowledge that the operating characteristics and environmental attributes of existing nuclear generation offer critical benefits to Maryland as it endeavors to achieve its carbon reduction goals. Maryland's energy policy will best serve the state by preserving zero carbon energy resources and emphasizing the contributions of nuclear to carbon emission reductions, jobs preservation, grid reliability, low energy costs, and consumer protection.

Respectfully submitted,

/s/ Lael Campbell

Lael Campbell
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Phone: 202.637.0350



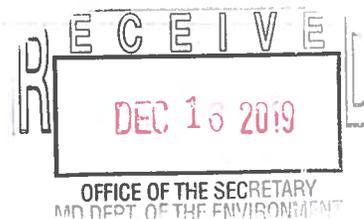
MARYLAND HOUSE REPUBLICAN CAUCUS

6 Bladen Street, Room 212 · Annapolis, Maryland 21401 · Phone 410-841-3401 · Fax 410-841-3451

Minority Leader
Delegote Nicholas R. Kipke, District 31

Minority Whip
Delegote Kathy Szeliga, District 7

December 12, 2019



The Honorable Lawrence J. Hogan, Jr.
Governor of Maryland
State House
Annapolis, MD 21401

Dear Governor Hogan:

I write with concern regarding Maryland's participation in the Transportation and Climate Initiative (TCI). A cleaner environment is a need that we can all agree on. However, the ways and means of getting there vary widely. We must be sure that the policy choices we make create not only a healthy environment, but maintain a healthy economy.

As you are aware, the TCI proposals are under development. One of the more concerning aspects being considered by TCI planners is a Cap & Trade program similar to the one enacted in California. The measure would impose carbon taxes on businesses and consumers in this state. Currently, the Carbon Tax in California is 12 cents/gallon. We already know the regressive nature of fuel taxes, they have the most impact on those who can least afford it. As of October, gas prices in California were averaging \$4.13 per gallon, \$1.50 above the national average. Even with these exorbitant prices, California is one of six states whose carbon emissions have increased since 2013.

With the potential impact to the everyday lives of Marylanders, notice and input from the public and from stakeholders is key. To date, there have been very few opportunities for the public and stakeholders to weigh in on these significant policy matters.

Before Maryland moves forward with TCI, I urge you to hold multiple public outreach sessions across the state to educate, engage, and get feedback from our citizens – those who will be the most impacted by these policy decisions. There is no doubt that we all have a stake in a cleaner environment, and it is that very reason why everyone should have a voice.

Thank you in advance for your consideration of this matter. Please feel free to contact me should you like to discuss this issue in greater detail.

Sincerely,

Nic Kipke
Minority Leader

cc: The Honorable Ben Grumbles, Secretary, Maryland Department of the Environment

Dear Governor Hogan,

I have recently read over the Maryland Draft Plan for Reducing Greenhouse Gas Emissions. The plan has several positive qualities such as being the increases in Average Job Impact, GSP Impact, Personal Income Impact, Avoided Mortality, and Avoided Climate Damages. This will save about 52.96 billion dollars by 2030 and 11,649 job-years, by 2050 will save about 65.09 billion dollars and 6,703 job-years. Not only is the GGRA helping the environment, but it is also helping the economy, public health, and employment rate, this could be monumental. Another positive quality is the commitment to try and get 100% clean electricity by 2040, this is super significant because the GGRA will do this at the lowest cost possible, CARES is trying their absolute best to make this happen by 2040. They are taking steps to ease into the idea in converting to a complete clean electricity system in Maryland. Another positive quality is the duty of reducing Greenhouse Gases, they have the state goal of reducing Greenhouse Gases by 40% by 2030 and 80% by 2050, which is a tremendous amount. The work being put towards the reductions are amazing, and I'm sure if the GGRA keeps up the hard work we will have no problem reducing Greenhouse Gas emissions. Although, the plan has some areas to improve, such as how will new jobs open up for coal miners, qualification for the new "green" job could be higher than what coal miners have. Shutting down the coal mines will leave many people unemployed. Another question would be what is the cost of this new clean electricity, many may not be able to afford this because clean electricity has to come at a high cost. Also expanding transportation ways is contradicting to the reduction of fossil fuel pollution. Expanding transportation more people will drive and release more carbon dioxide into the atmosphere.

Therefore, Governor Hogan, I hope that you will maintain the aspects of the new plan that are strong, but also encourage you to improve upon the weaknesses before the plan is put into action.

Sincerely,

A blacked-out signature, likely a redaction of the sender's name.

Dear Governor Hogan,

I have recently read over the Maryland Draft Plan for Reducing Greenhouse Gas Emissions. The plan has several positive qualities such as, the overall plan to reduce emissions by 40% by 2030. Also, providing 100% clean electricity at the lowest cost is very beneficial to the residents of Maryland, and that ensuring a net increase in jobs and economic benefit are positive factors within this document.

However, the plan also has some areas to improve. I have concerns with converting to 100% green energy, I live in Western Maryland where coal runs everything. Everywhere you go, you will probably talk to two or more coal miners and not even know it. All around are families that are relying on coal to heat their homes, and to be able to shelter them and their family, and put food on their tables. Converting to 100% clean energy could cost people more money than needed and send the less wealthy ones into bankruptcy. It could also cost people their jobs, the coal miners for example. Also where I live, hunting and fishing are very common. Taking away privately owned land for forest management could take away the citizen's hunting and fishing grounds making people very unhappy.

Therefore, Governor Hogan, I hope that you will maintain the aspects of the new plan that are strong, but also encourage you to improve upon the weaknesses before the plan is put into action.

Sincerely,

A black oval redaction mark covering the signature of the sender.

Dear Governor Hogan,

I have recently read over the Maryland Draft Plan for reducing Greenhouse Gas Emissions. The plan has several positive qualities, including the goal of reducing carbon emissions by 40% by the year 2030. Another positive quality is the goal of the 100% clean electricity by 2040. Lastly, I thought the idea of the expansion of public transport has potential.

The plan also has some areas to improve especially when it comes to how we will be paying for all the changes. Another area that can be improved is including ways that normal citizens can help out. Finally, I think that there should be more focus on renewable energy sources instead of “cleaner” energy sources.

Therefore, Governor Hogan, I hope that you will maintain the aspects of the new plan that are strong, but also encourage you to improve upon the weaknesses before the plan is put into action.

Sincerely,

[Redacted Signature]

Dear Governor Hogan,

I have recently read over the Maryland Draft Plan for reducing Greenhouse Gas Emissions. The plan has several positive qualities such as a set of measures to reduce and sequester GHGs, including investments in energy solutions, widespread adoption of electrical vehicles (EVs), and improved management of forests and farms to sequester more carbon in trees and soils. I also think that clean energy will open up more job opportunities for our area.

The plan also has some areas to improve such as the public transit expansion. In our area we don't have many options for public transit and it may be difficult to expand further. I think that reducing 44% of the state's GHG emissions is a good goal to have, but we need to spread more awareness to achieve it. Adaption to better solutions are needed, but people need to want to make a change themselves which could be sparked by initiatives to want to change lifestyles.

Therefore, Governor Hogan, I hope that you will maintain the aspects of the new plan that are strong, but I also encourage you to improve upon the weaknesses before the plan is put into action. Overall, I think that this is an excellent step in the right direction to becoming a more sustainable state.

Sincerely,

████████████████████

Dear Governor Hogan,

I have recently read over the Maryland Draft Plan for Reducing Greenhouse Gas Emissions. I feel as if this is a very good plan that can overall be successful. The plan has several positive qualities. The first one being the Enhanced Forest Management which is supposed to increase the rate of carbon sequestration in forest biomass and increase the amount of carbon stored in harvested wood products. This is supposed to result in increased availability of renewable biomass for energy production. Another thing is to continue on the path of decreasing GHG emissions. If we have already decreased past our goal for 2025 in 2017, then there's no reason that we are incapable of going even lower than our goal to make the air cleaner. The last thing is spending on capital is lower which leaves consumers with more money to spend on other goods and services. The plan also has some areas to improve in. First off there should be more things in this article that the people of Maryland can do to help out. Another is that this act should not have a risk that will cause certain resident's electric bills to go up just because you are trying to reduce GHG. Also if we reduce GHG emissions there is a chance of it greatly affecting human health. Not only that but also affecting the frequency and intensity of a variety of storms. One more thing to add would be if there could be more focus on 100% renewable energy and not just clean energy. I'm very glad that your ideas focus on energy conservation. Therefore, Governor Hogan, I hope that you will maintain the aspects of the new plan that are strong, but also encourage you to improve upon the weaknesses before the plan is put into action.

Sincerely,

[REDACTED]

December 03, 2019

To: The Maryland Department of the Environment

My name is Anthony Field and I am the Maryland Campaign Coordinator with the Chesapeake Climate Action Network. Thank you for the opportunity to comment on the Administration's draft Greenhouse Gas Reduction Plan ("draft Plan").

At CCAN, I focus on helping to ensure that fracked gas does not replace coal as an energy source and crowd out renewables. Emerging science shows that when the full lifecycle of gas is taken into account, it is likely just as bad for the climate as coal. Unfortunately, as demonstrated by this Plan and other policy commitments, this Administration continues to embrace fracked gas as a bridge fuel.

Released almost a year after it was due, the draft Greenhouse Gas Reduction Plan relies heavily on Governor Larry Hogan's Clean and Renewable Energy Standard ("CARES") plan, which claims to create a path to 100% clean electricity despite continued reliance on fossil fuels. CARES is essentially a set of bullet points that proposes to achieve "100% zero- and low-carbon" electricity by 2040.

Of particular concern is CARES's reliance on gas. The plan qualifies gas plants that employ carbon capture and storage as "available and emerging zero- and low-carbon sources" that will help to achieve 100 percent clean electricity, but a reliance on these technologies could continue our dependence on fossil fuels and impede the transition to renewable energy sources. Further, this technology is not currently an approved fuel source within Maryland's existing renewable energy program.

Additionally, the draft Plan's evaluation of methane is not based on the best available science. For example, the latest report from the Intergovernmental Panel on Climate Change finds that methane is 86 times more potent a greenhouse gas over a 20-year period than carbon dioxide, yet the draft Plan uses an outdated global warming potential of 21--underestimating methane's impact on the climate by a factor of four.

I was last on the Eastern Shore to testify at a public hearing held by the Maryland Energy Administration, another Maryland agency, to express my concerns about its plan to "kick-start" a gas expansion across Maryland. Two gas pipelines are currently proposed for the Eastern Shore with another, nearly 100-mile-long pipeline being contemplated and Maryland is poised to invest \$30 million in state funding into this expanded fossil fuel infrastructure. I joined 27 concerned Eastern Shore residents at that meeting to ask this Administration to stop its efforts to lock Maryland into further

reliance on this harmful fossil fuel. Unfortunately, this draft Plan further demonstrates this Administration's blind spot when it comes to gas. Instead, Maryland should be focusing on proven clean energy technologies that continue to decrease in cost that can and must be deployed at increasing rates across the country.

The United Nations' Intergovernmental Panel on Climate Change has made it overwhelmingly clear that we have 10 short years to reduce our climate-disrupting emissions to avoid the worst impacts of a rapidly warming planet. The use of fracked-gas and fossil fuel infrastructure has no place in a real greenhouse gas reduction plan.

These are not bridge fuels to a better climate, they are bridges to disaster.

Thank you again for the opportunity to comment.

Anthony Field

Maryland Campaign Coordinator

Chesapeake Climate Action Network anthony@chesapeakeclimate.org

From: Jonathan S. Kays jkays@umd.edu 
Subject: Comments on Draft GHG Reduction Plan
Date: April 2, 2020 at 12:28 PM
To: climate.change@maryland.gov, Christopher.Beck@maryland.gov, Suzanne Dorsey -MDE- suzanne.dorsey1@maryland.gov
Cc: Bill Hubbard whubbard@umd.edu



Attached are comments for consideration regarding the Draft MD Greenhouse Gas Reduction Plan. Please feel free to contact me. Given the present situation I can be reached on my cellphone at 301-318-8044.

Jonathan

--

Jonathan S. Kays, Forestry Extension Specialist
University of Maryland Extension
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Phone: 301-432-2767 x323
Email: jkays@umd.edu
Website: www.extension.umd.edu/woodland



GHGR plan
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Christopher Beck, Climate Change Program Division Chief
Maryland Department of the Environment
Christopher.Beck@maryland.gov

Mr. Beck,

I am a forestry extension specialist and faculty with the University of Maryland College of Agriculture and Natural Resources. I have been providing organizational leadership for the Maryland Wood Energy Coalition since 2010, and my role has been to provide research-based educational information for policymakers, citizens, and others. The Coalition is composed of agencies, industry, nonprofits and others who seek to advance the adoption of clean-burning wood energy technology in Maryland. I have organized a number of educational efforts such as:

- Accelerating Wood Energy in Maryland – 2012
<https://www.youtube.com/playlist?list=PL0RQ962SbK2gKrlUcl6wbywK8J6OpmMiO>
- Advancing Sustainable Wood Energy In Maryland – 2013
- Biomass Boot Camp – 2015 <https://extension.umd.edu/woodland/your-woodland/workshop-resources-library#Biomass2015>
- A Prospectus For Advancing Biomass Thermal Energy In Maryland Developed By the Maryland Wood Energy Coalition – February 2012
<https://extension.umd.edu/sites/extension.umd.edu/files/docs/programs/woodland-steward/2012012MarylandWoodEnergyProspectus.pdf>

The Coalition has four main objectives:

- 1) Update MDE air emission regulations for the use of woody biomass which was accomplished
- 2) Establish thermal energy credits as an incentive the development of woody biomass. The Thermal REC bill has not passed.
- 3) Provide sustained support for the Maryland Wood Grant Program. MEA continues to support this very popular program.
- 4) Public agencies & facilities to lead the way. There is a great need for better support of commercial woody biomass projects by state government to demonstrate the technology.

Based on my knowledge of the use of woody biomass I have provided some specific points to address in the draft and then some suggestions for inclusion.

1) Pg 73 has references to biomass - see text below from plan:

EPA Biogenic Carbon Accounting Framework not finalized

- *Considerable debate amongst academics/policy makers how to treat biomass emissions*
- *Agreed that timescale of emissions source/sink is critical*

- MDE has chosen to include biogenic emissions at the point of consumption

The text says biomass is not considered carbon neutral but considers all emissions at the point of consumption as an input with no reduction due to regrowth. That is counter to EPA policy and how it is treated by other states and the European Union Climate Action. I do not believe there is "considerable debate" on this issue. Researchers that argue biomass energy is not carbon neutral recognize the carbon is re-sequestered but do not have assurance it will be taken back over time, and question what damage the initial released carbon may cause before that regrowth. There are nuances to be addressed perhaps if land is not reforested or mitigated elsewhere, but harvesting and then regrowth of forests on the same land or mitigated land to produce biomass is an accepted part of a reasonable long-term strategy for carbon cycling.

The present MDE modeling eliminates counting the reduction in greenhouse gases provided by using biomass that would otherwise be produced by fossil fuels. Fossil fuels add to the pool of carbon, they do not recycle as per the definition of renewable and is not a viable long-term solution, biomass is. The present modeling is really saying that woody biomass is not a quantifiable renewable energy source. MDE has made an erroneous assumption here that needs to be addressed to bring carbon neutrality within more accepted thinking. A recent paper "Forests: Carbon sequestration, biomass energy, or both?" provides an excellent overview of this issue and concludes that the expanded use of wood for bioenergy will result in net carbon benefits, but an efficient policy is also needed to regulate forest carbon sequestration.

- Alice Favero, Adam Daigneault, and Brent Sohngen. (2020). *Forests: Carbon sequestration, biomass energy, or both?* *Science Advances*, 25 Mar 2020: Vol. 6, no. 13, eaay6792. DOI: 10.1126/sciadv.aay6792

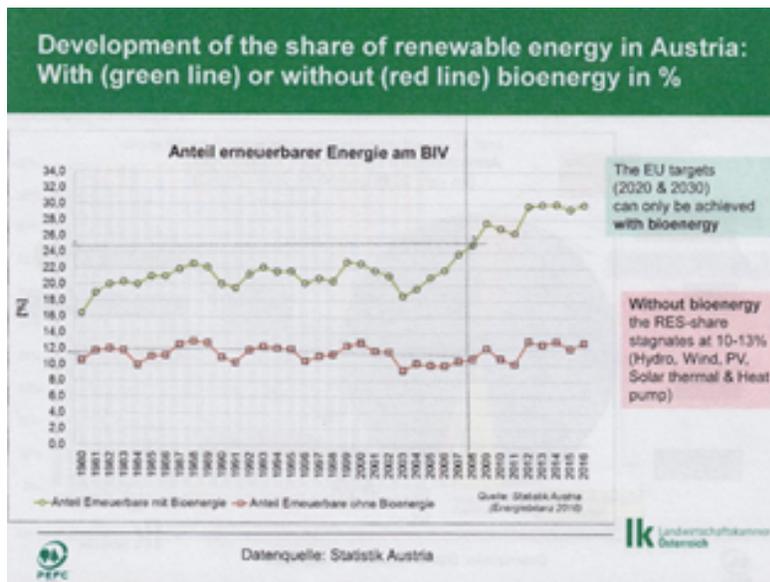


Figure 1

It is highly questionable if the aggressive goals for greenhouse gas reduction in Maryland will be met without woody biomass. The European Union Climate Action Plan includes thermal energy from district heating systems as a contribution to reducing GHG's. I visited Austria and Germany for 10 days in February 2019 and I have seen how they incentivize biomass use. The graph below shows the major contribution biomass has made to reaching Austria's GHG reduction goal. This is progressive thinking and should be adopted in Maryland. This requires providing a method

to account for the thermal production using biomass. The development of a thermal REC program in Maryland would incentivize biomass and geothermal contributions. I have attached

an article that I wrote on, “*What Can The US Can Learn from Europe Advances in Biothermal Energy?*” It provides a useful perspective on the issue.

2) Page 122. Biomass for Energy Production

This section does not provide an accurate assessment of the biomass situation and fails to provide recommendations that would encourage commercial biomass applications.

- DNR is working with partners. Much of what has been accomplished since 2010 on woody biomass has come from the MD Wood Energy Coalition, which worked with MDE to update regulations so that the use of wood as a fuel is no longer prohibited for commercial boilers. This was an implementation milestone. The University of Maryland Extension has helped to organize many conferences and resources to educate policymakers, nonprofits, agencies, citizens and others about wood energy applications. This includes a website with resources and information:
<https://extension.umd.edu/woodland/wood-energy-opportunities>.
- Coalition members were instrumental in communicating with policymakers to establish the Maryland Energy Administration Residential Wood Grant Program to expand the use of pellet and wood stoves for residential citizens. This program has been very successful.
- Due the lack of passage of a Thermal REC bill, there is the lack of incentives for development of the industry. This was done for solar and wind and would do much to advance the use of woody biomass in Maryland.
- The MEA Wood Boiler grant program referred to under Implementation Milestones did not have a successful project. However, it must be noted there was only about one month given around the Christmas holiday to find project applicants and even with the short timeframe, there were three good application. Unfortunately, none were negotiated. Any grant program must allow a reasonable timeframe to get out the word and find potential project.
- Government needs to lead the way with renewable energy technologies that are not well understood. This was done with the solar and wind industries but is not being done for woody biomass. The best use of woody biomass is for producing thermal energy (heat), not electricity. However, all the legislation and renewable portfolio standard (RPS) address electricity, not thermal. This is where policy and government can have influence.
- Some enhancements that would help include:
 - Establish a Fuel for Schools program that has been very successful in PA, VT, NH and other states. Schools are low hanging fruit as are state prisons and hospital facilities that require large amounts of heat and hot water. Combined heat and power units could also produce electricity at these facilities. This is off-the-shelf technology that is widely available.
 - Provide funding to analyze state facility records and identify best candidates for woody biomass systems. Facilities that due for a boiler replacement, are off the natural gas grid, and require large amounts of steam and hot water are good candidates.
 - Address environmental justice for rural and low income populations. Forests now produce more than 2.6 times that which is harvested or dies. Forests can be sustainably managed to produce forest products including woody biomass that is now underutilized. Many rural areas contain an abundance of woody biomass that is presently underutilized due to closure of mills.

- The use of biomass creates jobs and economic development that is now lost. Studies in Maine have found that for every dollar spent on oil for heating, 80 cents leaves the community, while for every dollar spend on woody biomass for heating, 80 cents stays in the community. This is because wood can economically be transported about 50 miles, so it creates local jobs and economic development. Not using biomass fails to access potential economic development.
- A few biomass enterprises in Maryland have not materialized because of the stringent air toxics regulation that applies to drying of wood. If wood is burned for heat the new regulations apply, but if the heat is used to dry wood then a whole new air toxic regulation applies. Extra cost for modeling of various pollutants is required whether or not a permit is approved, which seems to depend on how far the stack is from the border. This applies whether it is an urban or rural area. Many states do not apply this toxic regulation to wood drying. It is an indirect barrier to biomass development. What businessperson would build a facility, then have MDE require the modeling, and if it meets the air toxic regulation, then approve the installation? This happened to an eastern shore enterprise with the resultant loss of jobs and economic development to another state. This is a barrier to enterprise development and while it does not directly affect greenhouse gas reduction, it reduces the development of businesses and jobs that would use woody biomass. The air toxic regulation for drying wood should be reexamined.
- An informative webinar on this topic was held with Matt Hafner of MDE.
<https://www.youtube.com/watch?v=oOJiQjzLj4Q&feature=youtu.be>

These are few items to consider based on my work with the MD Wood Energy Coalition. As per the webpage, I am sending the comments to: climate.change@maryland.gov .

Sincerely,

Jonathan Kays
Forestry Extension Specialist

Attachment: • What Can The US Learn from Europe Advances in Biothermal Energy?

What Can The US Learn from Europe Advances in Biothermal Energy?

April 26, 2019

In 2008 I traveled with a group of forestry and engineering professionals to Austria to learn about the application of biothermal wood energy taking place on a national scale. The number of wood biomass plants was impressive. It is now 2019 and I had the opportunity to visit Austria again and see the advances in technology and application that has taken place in Austria, and much of Europe. In 2015 Austria had 2,200 biomass heating plants and 140 biomass combined heat and power (CHP) plants, all in a country no bigger than the state of North Carolina (Figure 1). The use of wood to produce thermal heat and some electricity (use CHP) in Austria has the full support of government through generous subsidies to residential and commercial applications, and through progressive policies and regulations that use carbon taxes and other policy tools. The question is how would this approach work in the US, what parts are applicable, and what can we learn from the Austria experience?

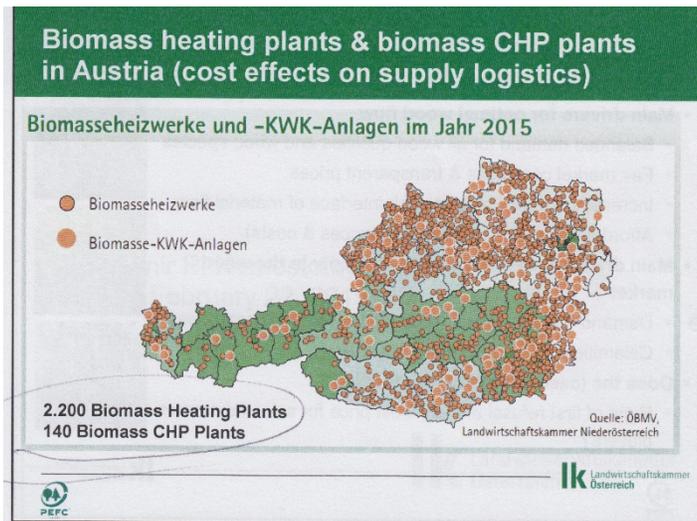


Figure 1

In the last few decades the Austrians have supported all technologies they will achieve renewable energy, sustainability, energy security and fossil carbon energy reduction objectives. In brief, they have taken seriously climate change goals imposed by the European Union (EU) and they want to reduce the dependence on Russian gas supplies, which is a huge security issue. European Union Renewable Energy Target 2020 sets binding targets for member states to reduce greenhouse gas emission (GHG) by 20% by 2020 compared to 1990 levels. The EU 2030 targets seek a 40% cut in GHG emissions by 2030. They realized that the only way to significantly increase renewable energy and meet the EU targets was with bioenergy, more specifically, the use of wood fuel, which is carbon neutral by EU definition and by the US Environmental Protection Agency (EPA).

Figure 2 shows that without the use of bioenergy the renewable energy share stagnates at 10-13% relying only on hydro, wind, PV, solar & heat pumps. The only path

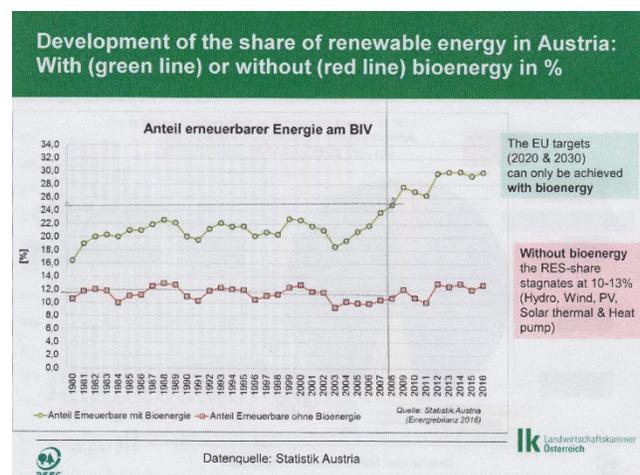


Figure 2

to reach EU targets for 2020 & 2030 is with bioenergy.

State governments in US have set similar goals known as Renewable Portfolio Standards (RPS) but they are largely limited to producing 20 or 30% of electricity from renewable sources, they never acknowledge the use of thermal energy, its contribution to the energy stream, nor the use of wood biomass an efficient and clean technology to produce thermal energy and CHP.

Europeans countries generally understand the thermal energy value of wood and have incentivized it while the US has not. They have well-developed supply chains and woodland owners regularly thin their woods and leave logs along the roadside to be picked up and transported to district energy facilities or other locations, from whom they are paid. Harvest areas are immediately planted with new seedlings and the young forest nurtured to grow vigorous to produce a new forest (Figure 3). The level of forest management is impressive because there are markets for low and high-quality wood products, much of this in the thermal energy production market.



Figure 3

Unfortunately, the US has an unrealistic look at energy production, which is about one-third for electricity, one-third for transportation, and one-third for thermal energy to heat and cool our homes. Renewable energy production is focused primarily on electricity, with only one state including thermal energy. Environmentalist in the US are supportive of solar and wind, but unwilling to accept the carbon neutral status of renewable wood biomass and encourage its use. Fortunately, many US citizen know better and wood and pellet stoves and furnaces are very popular, the challenge being to replace older high emission units with more current clean burning technology.

The lesson that Europe can provide the US is, for renewable energy to increase, solar and hydro must be supplemented by wood biomass to attain the renewable portfolio standards (RPS) that are presently in place and the increases being recommended. The Austrians and Europeans in general, have recognized the carbon-neutral status of woody biomass and developed supply chains, incentives and markets needed to aid its development. The US needs to follow suit.

There are some other major differences between Austria and the US, especially regarding workplace safety. During visits to many manufacturing facilities, workers did not wear hardhats, ear or eye protection, or have any of the safety requirements required by OSHA in the United States. Workers smoked at work stations, there were no beepers on equipment, and wiring and equipment installed in district heating systems lacked the level of protection found in the US. OSHA regulations protect US workers and they are essential. The point is that lower work safety

requirements in Austria translate into lower costs for installation and maintenance of biomass and other energy systems compared to the US.

Austrian policies to incentivize wood biomass result in significant carbon-based taxes on fossil fuels and electricity to cover the higher cost of thermal and electrical energy produced by biomass and conservation improvements. Austrians pay about \$0.24/kwh for electricity while in the US electricity is a half to a third of that depending upon where you live. Gasoline is more than twice as much in the US. The use of carbon taxes on gas and electricity is not politically likely in the US but allowing wood biomass systems to compete equally with other renewables such as solar and wind for public projects makes sense. Btu's of thermal output is typically converted to kilowatt hours of electricity using the conversion of 3,412 Btu's per kilowatt hour. Wood is not the answer for many energy applications but if builders, architects, and governments have the choice, it can then rise or fall on its own merits.

A major stumbling block is the unfamiliarity of architects and engineers with commercial and residential wood biomass systems. This is where government agencies, trade organizations, and other educational institutions can have an impact. Enhancing demand and supply chains can be encouraged with public facilities putting biomass on an equal level with other renewable energy systems. This was the case with the fledgling solar industry years ago and it can be repeated for the wood biomass industry. Creating a thermal Renewable Energy Credit for wood and heat pumps would be a positive step by capture existing energy production in RPS targets and providing an incentive for more development.

As a forester, expansion of wood markets for renewable energy production would provide woodland owners more opportunities to derive income from forest properties to accomplish their objectives and encourage sustainable management. Forests of high-quality trees can only developed if there are markets for low-grade material and solutions to thinning forests to prevent wildfires requires economic models with viable markets to utilize the wood. The US is not Europe but incorporating aspects of Austrian wood energy economy would benefit renewable biomass energy efforts in the US.

Jonathan Kays
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From: maryjeffsilva@verizon.net 
Subject: GGRA Comment: GGRA Plan With CARES Is Not Legitimate
Date: April 22, 2020 at 3:48 AM
To: Christopher.beck@maryland.gov



Dear Mr. Beck and Members of The Maryland Commission on Climate Change:

The 2019 GGRA Plan Draft from the Maryland Commission on Climate Change (MCCC) is deficient because it fails to comply with COMAR §2-1206, and the Greenhouse Gas Emissions Reduction Act – Reauthorization (GGRA of 2016). As stated in ES.2 of the Draft of 2019 GGRA Plan release to the public on 10/15/2019, “The GGRA of 2016 also requires MDE to solicit public comment on the proposed draft plan from interested stakeholders and the public, and to adopt a final plan by Dec. 31, 2019.” We are past that Dec. 31, 2019 date for a final plan.

In ES.3 of the Draft of 2019 GGRA Plan it says, “the state’s GHG emissions are already below the 2020 Plan goal.” While that is fortunate, we still have to identify the state and local government infrastructure that will be taken from us when damaged by the effects of Climate Change and have the money to pay for adaptation programs that are yet to be determined. Continuing on through ES.3, Governor Hogan’s Clean and Renewable Energy Standard (CARES) proposal components are described.

The following will be a deconstruction, *in italics*, of the phrases used in the CARES proposal.

ES.3 asserts the state will have 100% clean electricity by 2040. *Who would not want 100% clean electricity immediately? So, we are starting in agreement.*

ES.3 asserts CARES would adopt a Market Based and Technology-Neutral approach to achieving 100% clean electricity at the lowest cost. *Maryland already has a Market Based choice of different generators of electricity that supply to the customer through his electricity distribution company. Electricity is not technology-neutral. It needs exacting technological conditions to perform as we have used it in the past. Now, the challenge is to repeat that past reliability harnessing diffuse, variable forces that have no pollution, converting what was collected into some form of stored energy and then converting the stored energy into usable electricity with a 99.9% reliability.*

By incorporating all available and emerging zero- and low-carbon sources in Maryland, CARES would foster greater competition among available renewable and clean energy resources, which would reduce costs for ratepayers. *Notice CARES focus is on vague future zero and low-carbon sources. What CARES is doing is promoting energy production and ignores conserving and storing energy.*

The broad set of eligible technologies would include:

- Additional Maryland solar beyond the requirements of the RPS solar carve out *An assertion performed in writing only. Maryland’s ability to fulfill the new RPS carve out depends on allocating tax money for rebates and tax credits. The carbon tax revenue distribution plan in Policy Scenario 3 would obtain the solar gain beyond the RPS carve out.*

- New efficient Combined Heat and Power (CHP), cogeneration systems in Maryland
 - Will insurers allow Maryland to relax its fire prevention codes to facilitate wide spread use of uncommon devices used to fulfill this claim?*

- Hydropower in Maryland
 - This is possible, but it conventionally requires permanent disturbance of large tracts of land where there is adequate elevation change. Tidal current flow technology to harness the tide conditions of the Chesapeake Bay could be researched and developed if the Governor pays for it.*

- Nuclear Power in Maryland
 - First, nuclear power requires many mining, manufacturing, construction, and disposal operations that permanently damage the environment. Has any nuclear reactor been disassembled and disposed? Has any spent nuclear fuel been moved from a single commercial electricity production plant? Does anyone prefer to use a product of a process that requires a hostile, around the clock level of armed security? If nuclear power is so clean, does everybody knowingly want to be in its presence? Is nuclear power a market-based energy provider when the government pays its accident liability insurance?*
 - Since no was the answer to all these questions about nuclear power, the conclusion is nuclear power is disqualified from being clean and market based. Furthermore, during the Feb. 21, 2020 Mitigation Working Group meeting a representative of Exelon Corp. using teleconference mentioned the company's confidence the money dedicated to maintenance of the Calvert Cliffs nuclear power station would last only through 2021.*
 - The Draft of 2019 GGRA relies on Calvert Cliffs to be relicensed to continue operating past 2034, but the plant's owner is confident about it being economical only through 2021.*
 - Finally, the C2ES and CATF presentation that emphasized the advantages of nuclear power never once used the word 'safe'.*

- Natural gas power with carbon capture and storage (CCS) technology in Maryland
 - With CCS, carbon pricing would first need to be established to induce market-based forces towards research, development and manufacturing machinery capable of economically performing CCS. However, CARES was intended to negate market-based carbon pricing yet Governor Hogan still claims CARES is market-based. Then there still is the sequester problem of a substance that is only valuable if it is inaccessible for thousands of years.*

- Homegrown Energy and Jobs
 - o CARES would rely on electricity generators in Maryland to make progress beyond the existing goals, ensuring that Marylanders benefit from the direct job creation resulting from investments in clean energy resources.

All of the above makes Maryland pay the established organizations that control of existing polluting power production facilities to greenwash the public while the public is endangered by the consequences of their past business practices. Resilience and sustainability will require distributed onsite energy collection, municipal energy storage and thorough energy conservation design and implementation. CARES insures homeowners will be sending their money out of their communities. Marylanders want careers, and that implies work is more sustainable than a job. Renewable energy is sustainable energy that is collected, stored and used in the local community. The money spent for conservation and the collection of onsite energy stays in the community instead of constantly buying out of state sources of energy, such as natural gas.

This is a good introduction to the pricing of carbon and envisioned in Policy Scenario 3 (PS3) model that explored the environmental and economic results of Maryland placing a tax on carbon based fuels. Policy Scenario 3 contains carbon pricing as a strategy to reduce carbon emissions instead of using regulations. The carbon price for this scenario was modeled as starting at \$20 per metric ton in 2020, rising to the social cost of carbon in 2030 and beyond.

Revenue from the carbon pricing scheme (PS3) is allocated based on the Regional Cost Collection Initiative (RCCI) bill, or House Bill 939, introduced in the Maryland General Assembly in 2018, with modifications:

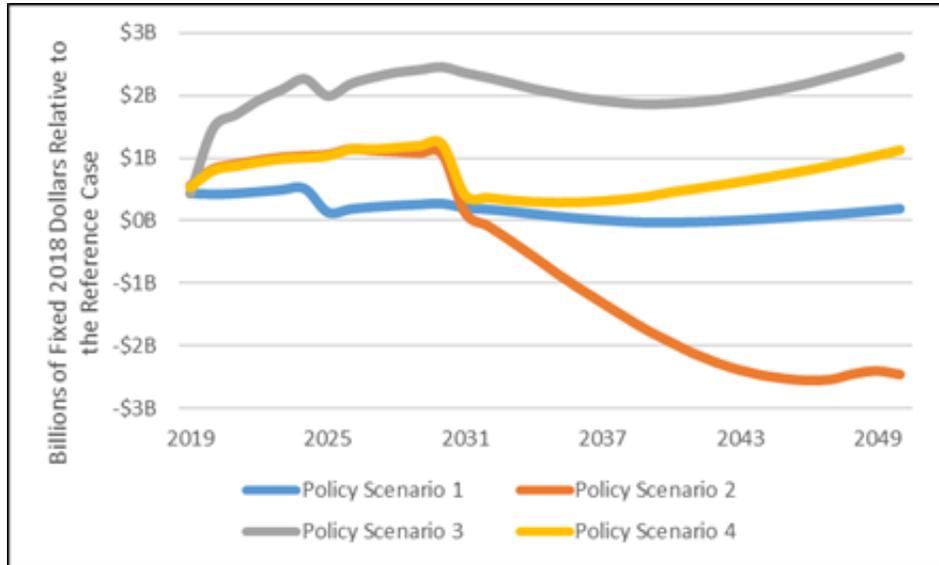
- \$10 million each year is allocated towards administration of the program;
- 50 percent of total revenue, less \$10 million, is rebated to consumers in lower income brackets;
- 30 percent of total revenue each year is allocated to additional carbon mitigation measures;
- 10 percent of total revenue is allocated to adaptation and resilience policies, which help vulnerable communities to prepare for and react to climate change; and
- 10 percent of total revenue is allocated to just transition efforts, which provide job retraining efforts and assistance for workers and communities impacted by the transition away from fossil fuels.

A disadvantage of PS3 is it is estimated to increase the cost of a gallon of gasoline by over 50 cents in 2030. At the time PS3 was calculated gasoline cost 78 cents more per gallon in 2018 than it does now. According to AAA, the average price of gasoline in Maryland is now \$1.94/gallon and in 2018 the average price of gasoline was \$2.72. Considering that yesterday, 4/20/2020, West Texas intermediate (WTI), a benchmark in oil pricing, closed with the price for a barrel of oil at minus \$13.10 or -\$13.10! Obviously, the drag on the economy that a carbon tax is expected to create does not exist at this time and quite possibly will not if renewable energy quickly replaces fossil fuels. If fossil fuels had their artificial subsidies removed then they could be made obsolete. A tax on carbon at this time would not be felt by the public. The revenue collected could be pumped back into Maryland's economy providing mitigation work and training to significantly reduce the need for fossil fuels.

Establishing a carbon tax would start the Transfer Effect. The carbon fee reduces profits of industries that have relatively low employment in-state (utilities and

profits of industries that have relatively low employment in state (mining and petroleum manufacturing). Revenue reinvestment, in the form of consumer rebates, construction and government spending, tends to stay within Maryland.

Below is a graph that illustrates the transfer effect as in the form of personal income.



This comment about the 2019 Draft of the GGRA Plan started by saying it fails to comply with COMAR §2-1206. COMAR Environment Article §2-1206 (8) requires that the plan produce a net economic benefit to the State’s economy, and a net increase in jobs in the State. Comparing the job creation in 2030 between Scenario 3 and Policy Scenario 4 (PS4) we see 698 more jobs in PS4, but there are more jobs in 2050 with PS3 by 802 jobs. Also, there is much more personal income when pricing carbon as in PS3 than with out pricing carbon as in PS4 for both 2030 and 2050.

COMAR §2-1206 (5) and (6) require MDE to ensure that the plan doesn’t threaten the reliability and affordability of electrical service and statewide fuel supplies, and to consider whether it will increase electricity costs to consumers. The household energy burden is a significant issue for low- and moderate-income Marylanders.

PS3 meets this directly with 50 percent of total revenue, less \$10 million, is rebated to consumers in lower income brackets. CARES does not mention a policy or intent to fulfill §2-1206 (5) and (6) directly. Then there is the reliability part of §2-1206 (5) and (6), which is addressed by the renewable energy’s on-site collection characteristics. If the power source of one area is lost the rest of the network may still function, if the network is designed for it, because renewable energy production in Maryland involves hydroelectricity, solar power, wind, and biomass. Immediate replacement of fossil fuel power plants with renewable energy will diminish the severity of an atmospheric storms destabilized by manmade Climate Change.

COMAR §2-1206 (8) requires MDE to ensure that the plan does not disproportionately impact rural or low-income, low- to moderate-income, or minority communities, or any other particular class of electricity rate-payer.

PS3 meets this directly with 50 percent of total revenue, less \$10 million, is

PS3 meets this directly with 50 percent of total revenue, less \$10 million, is rebated to consumers in lower income brackets. CARES does not mention a policy or intent to directly fulfill §2-1206 (8). In addition, owners of fossil fueled power stations had to scrub the exhaust from their power plants. Where was enforcement of COMAR §2-1206 (8) when collected toxic exhaust materials were dumped in ash storage sites frequently adjacent to black property owners. Those fossil fuel power plant owners stole those black Maryland citizens their wealth and shorten their lives.

COMAR §2-1206 (8) also requires the plan to encourage new employment opportunities in the State related to energy conservation, alternative energy supply, and GHG emissions reduction technologies.

PS3 has 30 percent of total revenue each year is allocated to additional carbon mitigation measures beyond those of CARES. CARES does not directly fund energy conservation, alternative energy supply, and GHG emissions reduction technologies. Therefore, CARES is not able to encourage new employment opportunities. Also, PS3 has 10 percent of its carbon tax total revenue is allocated to just transition efforts, which provide job retraining efforts and assistance for workers and communities impacted by the transition away from fossil fuels. CARES does not pay for just transition programs.

Last, CARES does not directly budget money to adaptation and resilience policies, which help vulnerable communities to prepare for and react to climate change. Contrast that to PS3 that allocates 10 percent of total carbon fee revenue to adaptation and resilience policies.

Thank you for your time and attention.

Jeff Silva
Jftsilva13@gmail.com
12517 Fostoria Way
Darnestown, MD 20878

From: [REDACTED]
Subject: GGRA Draft Plan comments
Date: April 21, 2020 at 4:39 PM
To: christopher.beck@maryland.gov



Hi Christopher,

Many thanks for the opportunity to comment. I've been working in the climate change field (Paris Agreement and coastal wetlands) for the past 7 years so feel obliged to provide the following feedback:

- 1) The 40% by 2030 GHGe reduction target is not ambitious enough. The plan makes clear that the goal will be surpassed with policies/activities to be undertaken (44%). We have to up the ante on ambition. Why not make the goal 45%-50% by 2030? Or "at least 44% by 2030"?
- 2) A mid-century carbon neutrality target is needed. 100% carbon neutrality by 2050. This kind of ambition is necessary to embolden regulatory and legal action to MEET the targets. We need to be reaching, not settling.
- 3) There needs to be an emphasis on protecting living shorelines as an adaptation strategy. Our salt marsh is one of the most precious in the world. Controlling nitrate pollution alone will not save it. Development pressures are vast and compounded in a changing climate. The plan should include a conservation or restoration of salt marsh target given their climate mitigation and adaptation values.

Many thanks,

[REDACTED]
Silver Spring, MD

From: [REDACTED]
Subject: GGRA Comment: Plan Does Not Demand Abatement Reserves for Coal Ash Dumps
Date: April 21, 2020 at 12:27 PM
To: Christopher Beck christopher.beck@maryland.gov



Dear Members of The Maryland Commission on Climate Change:

The 2019 GGRA Plan Draft from the Maryland Commission on Climate Change (MCCC) is deficient because it has no requirement for power plant owners to post a bond or fill an escrow account to pay for the abatement of hazardous materials when their properties are decommissioned and/or abandoned. All fossil fueled power plants in Maryland dump collected exhaust ash containing toxic materials in storage ponds.

According to an article “One of The Most Polluting Coal Ash Dumps in The U.S. Is in Maryland” on March 4, 2019 by WAMU’s Jacob Fenston it states, a “landfill in Prince George’s County has been in operation since the early 1970s, storing decades’-worth of ash from three coal-fired power plants. It now holds nearly 8 million tons of the stuff.” “Among the pollutants in the groundwater at Brandywine, lithium is 222 times higher than the safe level, as determined by the Environmental Protection Agency. According to the EPA, lithium can cause neurological damage, birth defects, and kidney damage. Molybdenum is 111 times the safe level. Cobalt is 47 times the safe level, and Arsenic is five times the safe level.” And that is not an exceptional case. “According to a new report by the Environmental Integrity Project and Earthjustice, 91 percent of coal ash sites nationwide have unsafe levels of at least one pollutant from coal ash in the groundwater. The landfill in Prince George’s is in the top 10 — ranked as the seventh-most-contaminated out of 265 sites across the country.”

Prince George’s County is a minority majority jurisdiction. The real estate industry, from which Governor Hogan has prospered, has practiced both government sanctioned and tacit segregation of black minority Marylanders when they purchased property. The conservative edict of property ownership as experienced by black people was that attainable properties were limited by all facets of the real estate industry and as a result, they did not have the wide choices of locations to purchase as compared to white people of the same income level. The black people did the best that they could and so they bought where they could, which was less desirable because it was close to industrial forms of transportation such as railroad tracks or worn down or both. Simultaneously, the electric power companies located their fossil-fuel power facilities adequately far enough away from influential neighborhoods to avoid drawing attention and close to railroad lines for fuel and equipment. Then when owners of power stations had to scrub the exhaust from their power plants the collected toxic materials were and still is dumped in ash storage sites frequently adjacent to black property owners who did everything the wealthy and/or conservative majority population told them to do. These power plant owners stole those black Maryland citizens their wealth and shorten their lives.

The Draft of the Maryland Commission on Climate Change’s 2019 GGRA Plan intends to retire all existing coal fired power plants in 2023. Without Maryland

.....
demanding those power plant owners to fill an escrow account to pay for the abatement of hazardous materials prior to demolition and the cleaning of the land under and surrounding their facilities then MCCC will be complicit with the harm done to black Maryland citizens. The way an industry treats its neighbors is how it will treat everyone. For example, Murray Energy filed for bankruptcy to abandon its pension obligation to its retired employees. Now the households within the states where Murray operated are burdened with the former employees of a company whose chairman still had \$300,000 to give to Trump's inauguration. According to votesmart.org, as of 2018 Governor Hogan received over \$365,000 of contributions from energy and natural resource companies.

Please include within the Draft of the 2019 GGRA Plan the requirement that power companies start paying into an escrow fund that pays for the inspection and the abatement of hazardous material at their power generating facilities. If MCCC recommends halting the use of power plant owners' assets then you have the obligation to be smart by protecting Marylander's from a tactic used by others in fossil-fuel industries.

Thank you for your time and attention.

[REDACTED]

From: [REDACTED]
Subject: Re: Cimate and Recent Event
Date: April 8, 2020 at 2:20 PM
To: christopher.beck@maryland.gov



Thank you for your reply. Regarding the electric motor I have in mind. The idea needs a group with skills for custom designs and a lot of imagination. If the idea does not prove to be a success; I hope the groundwork could be in place for a future breakthrough. The patent office is not available to me or anyone else at this time. If you could advise who could help develop my idea let me know, After I can vet the idea and patent it the idea could be tested.

All the best.
David

-----Original Message-----

From: Christopher Beck -MDE- <christopher.beck@maryland.gov>
To: dposner585 <dposner585@aol.com>
Sent: Mon, Mar 30, 2020 4:32 pm
Subject: Re: Cimate and Recent Event

Thank you for your comment David. Also, any comments you would like to offer about electric motors is welcome.

Chris



Christopher Beck
Division Chief
Climate Change Program
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore, Maryland 21230
christopher.beck@maryland.gov
410-537-3594 (O)
[Website](#) | [Facebook](#) | [Twitter](#)

Click here to complete a three question [customer experience survey](#).

On Mon, Mar 30, 2020 at 10:14 AM [REDACTED] wrote:

Dear Mr. Beck:

I am writing to say we are living in a once in a lifetime situation to obtain data and other information about the greenhouse gas emissions.

As we focus on them many challenges of the day I wonder can any good emerge from our current situation?

Please tell all like minded concerned People about the hidden cost of carbon emissions on the public. Collect data needed to go forward in a more sustainable world.

When I open the windows and doors now I believe the air is much better now than.

I do have some ideas for electric motors redesigned to help reduce pollution. My ideas are untested and unproven. I am not a person with a lot of expertise in design or engineering but I do have some

ideas which I hope have merit.

Thank you for your consideration.

Sincerely

[REDACTED]

[Click here](#) to complete a three question customer experience survey.

From: [REDACTED]

Subject: Comments on the MD Draft GGRA

Date: March 26, 2020 at 3:15 PM

To: Jonathan Kays

Cc: [REDACTED]

LM

Dear Mr. Beck,

Jonathan Kays of UMD Extension requested that interested parties provide comments to you on the Maryland Draft Greenhouse Gas Reduction Act.

The attached comments are the result of the review of the draft MD GGRA by members of the US Forest Service Wood Energy Technical Assistance Team. Our Team provides assistance to agencies, communities, facility owners, and facility managers across the US that are interested in the use of wood energy. We provide assistance in the use of wood energy for both thermal and combined heat and power (CHP) applications. We have provided this assistance for more than 12 years and have worked on the review and development of more than 200 projects ranging in size from small community buildings to projects that served over 1,000,000 ft² of conditioned space or utilized in excess of 150,000 tons of wood residues annually.

In addition to our comments on the Draft GGRA, we have attached an example of the importance of the use of wood for energy to combat creation of additional greenhouse gas impacts. This example is based on our experience at trying to utilize the material managed at Baltimore's Camp Small wood yard. This facility is one of the sites that the City of Baltimore stores and processes urban wood residues removed during the management of the city's street trees and other city owned or managed properties. We believe that this analysis provides additional support to the importance of being able to use wood for energy in Maryland.

I have also attached an analysis of a project that was proposed to utilize a portion of the material coming to Camp Small. Unfortunately, the Poly-Western High School project was not implemented. However it would have provided a great opportunity to reduce the amount of material stored annually at Camp Small and reduce fossil fuel use at the school.

Best regards,

[REDACTED]



Lew R. McCreery
Forest Products Technologist
Wood Energy Technical Assistance Team Leader
Forest Health and Economics

Forest Service
Eastern Region State and Private Forestry

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Caring for the land and serving people

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Date: 03/26/2020

TO:

Christopher Beck
Climate Change Program Division Chief
Maryland Department of the Environment

Subject: US Forest Service Wood Energy Technical Assistance Team Comments on the Maryland Draft Greenhouse Gas Reduction Act (GGRA)

- 1) There are conflicting and confusing statements with respect to the treatment of biomass in the GGRA draft. This has a **major negative impact on the forest products manufacturing industry**. This industry is not mentioned as seeing an impact from this rule in Section 7 Protecting Manufacturing. In primary forest products manufacturing, between 50-60% of the wood material that comes into a mill in log form ends up as a manufacturing residue that must be removed from the facility. These residues, unless beneficially reused, will ultimately become methane or carbon dioxide released to the atmosphere without positive benefits. Additionally, if this material does not have a market with any value, it becomes a waste that must be landfilled, and a major cost for this manufacturing industry. This is a cost that the industry cannot absorb and stay viable.

One of the most sustainable and beneficial uses of this low value material is for energy that offsets the use of a non-renewable fossil fuel. This avoids these wood residues from becoming emitted methane, while offsetting emissions from fossil fuel, thus, directly and immediately reducing GHG impacts. Even more importantly from a carbon perspective, it is absolutely critical to understand that **a thriving forest products manufacturing industry is required to allow for sustainable forest management**, which is a pillar of the GGRA as currently written. Undermining this industry limits the ability to sustainably manage forests, and drives land use changes that move land away from being forested.

- a. **Chapter 7 should be amended to include major protection of Forest Products Manufacturing given the current discussion on biomass in the GGRA and the lack of policies supporting a market for wood manufacturing residues. Note that if the GGRA is changed to include policies that generate markets for manufacturing residues for clean and efficient use for energy, these industries will not need protection.**
 - b. Overall methane from landfills is a reasonably significant concern, as identified in several locations in the GGRA. The fate of wood residues from industry do not seem to be considered or mentioned, and a new influx of wood manufacturing residues to landfills is not discussed in the GGRA.
- 2) The GGRA relies heavily on expanding existing sustainable forest management in the State to avoid land use changes on existing forestland, and to provide a very valuable carbon sink. This sustainable management, by definition, will generate low value residues that need to be removed from the forests. It is imperative that there is a market for these residues. Otherwise, their fate is to generate methane and carbon dioxide, or possibly worse if the residues are addressed with open burning. The mix of GHG emissions from these residues depends on their ultimate fate. **The benefits of sustainable forest management should not be claimed in the GGRA if the GGRA is ambiguous or negative on the use of wood residues from sustainable**

forest management for clean and efficient use of these residues for thermal and combined heat and power energy pathways.

- a. GGRA counts around 11% of the annual emissions as taken back up by forests in MD, and forests are by far the largest carbon sink claimed. The claim is around what is sustainably managed, and there are targets for bringing more acres under sustainable management over time to maintain or increase the size of this carbon sink.
- 3) There is a good discussion of the importance of encouraging the use of wood for thermal / combined heat and power in support of sustainable forest management. Section 4.3.10.4 Biomass for Energy Production identifies ongoing steps to help create these sustainable markets being taken by DNR (see below). However, in terms overall recommendations to address GHG emissions, there is no mention of policy recommendations that will specifically address this in any way.
 - a. The following are the summarizing statement of actions needed as defined by DNR: “Actions that still need to be implemented include:
 - i. 1. Developing a policy supporting thermal energy
 - ii. 2. Recognizing wood as a renewable energy source, on par with solar, geothermal and wind”
 - 4) The GGRA does not significantly address potential land use changes associated with any of the policies around renewable energy adoption, particularly solar and wind projects. These can have a major impact on Maryland’s forestland if not carefully considered, as can the lack of policies recognizing the need for sustainable management and what to do with the residues that come from this sustainable management.
 - 5) There is very little mentioned with regard to addressing renewable thermal energy in the GGRA. Key steps are identified as using more efficient gas appliances, electrification of buildings (and switching electric to renewables), and encouraging bio methane to reach 25% of gas delivery by 2050. This seems to be a large hole in the GGRA with respect to real policies that will drive change. Low value wood residues are a particularly good match for protecting industrial energy users that could be majorly impacted from a thermal energy cost perspective if there is a carbon tax or other changes to address carbon emissions that drive up their energy costs.
 - 6) In a related item, Maryland policy language seems to limit the use of woody biomass (both manufacturing and forest management residues) for obtaining thermal REC’s. Currently, wood residues (other than old growth timber) are “qualifying biomass” that fall under Tier I resources for electric REC production. However, wood residues do not appear to be allowed for thermal REC production unless they are used in systems where the majority of the energy comes from animal manures. Allowing wood residues to be the major fuel for both thermal and/or combined heat and power is a more efficient use of this fuel rather than electricity only. Additionally, most wood-fired thermal and CHP projects are at a scale that makes mixing wood and animal manure not financially viable. Thus, the technical merits of requiring mixtures with animal manure do not seem to make sense.

From: [REDACTED]
Subject: Comments: 12 Feb 20 GGRA Public Presentation
Date: February 12, 2020 at 1:44 PM
To: Christopher.beck@maryland.gov



Dear Mr. Beck:

Thank you for your service to the public. Below are my comments for improving the GGRA plan.

Item 1

Searched of GGRA draft for the word ash using the Ctrl-F method and ash had 4 returns. None mentioned coal fly ash storage ponds generated by the filtering of coal power stations to reduce the particulate.

That is a serious defect.

Appendix I titled Just Transitions has the same defect.

The Governor must include the programs to clean up coal's power plant ash storage seepage that has contaminated the adjacent ground water from those power plants' supplemental facilities. The power plant owners must be made to pay for their pollution or Just Transitions is "just a travesty".

Item 2

Searched of GGRA draft for the words "waste treatment" using the Ctrl-F method and the phrase waste treatment had 1 return on page 156 as a source of methane and other GHG.

These facilities are crucial to the infrastructure that makes urban and suburban areas home to the majority of Maryland's population but they are not directly mentioned in the GGRA draft plan. Many of these sewage waste treatment facilities are placed in low elevation locations to take advantage of gravity to perform its collection function. In the event of high quantity rain events and prolong periods of precipitation these treatment plants must operate during flood conditions and possible power outages.

I doubt without a direct mention of this requirement within the GGRA draft, the protection of Maryland's urban and suburban population centers will be left to a thin layer of capability that municipal governments have available to meet an increased level of adversity. Maryland should individually assess all waste treatment facilities for resilience and reliability of operation during periods of high participation that are anticipated by our Climate Crisis as part of the final GGRA. After that assessment, the evaluation of sewage treatment plants in major population centers for renovations to capture and use GHG could be performed.

Thank you for your time and attention.

[REDACTED]
10517 E. ... W. ... MD 20870

Dear Governor Hogan,

I have recently read over the Maryland Draft Plan for reducing Greenhouse Gas Emissions. The plan has several positive qualities, and will have a positive impact on Maryland's economy. The Draft Plan provides strong evidence to support each point, and is very influential and encouraging to make change. This plan protects manufacturing jobs and creates significant "Green Jobs" in Maryland. The Draft Plan uses a high-end dynamic modeling tool used by various federal and state agencies, which makes all of the models very reliable. It also mentions that fuel savings will be greater than the amount that they spend on capital cost. The plan also has some areas to improve. The Draft Plan offers natural gas as the main conversion to "clean energy", even though it still has a high, negative impact on the environment. The plan does not explain what the actual people of Maryland can do. It contains many ways that the government and businesses can help, but not simple ways that we can. Although this plan explains many ways to convert to cleaner energy and the reduction of emissions, the plan does not mention or even offer the use of renewable energy sources. The Maryland Greenhouse Gas Reduction Act Draft Plan provides many strong points, but leaves the citizens in Maryland with many questions. What "green jobs" is the government providing? Will this require funding, and come from higher taxes? The Draft Plan is a great start for a cleaner, more sustainable and more efficient future, but does need a few improvements. Therefore, Governor Hogan, I hope that you will maintain the aspects of the new plan that are strong, but also encourage you to improve upon the weaknesses before the plan is put into action.

Sincerely,

A thick black horizontal bar redacting the signature of the sender.

Dear Governor Hogan,

I have recently read over the Maryland Draft Plan for Reducing Greenhouse Gas Emissions. I feel as if this is a very good plan that can overall be successful. The plan has several positive qualities. The first one being the Enhanced Forest Management which is supposed to increase the rate of carbon sequestration in forest biomass and increase the amount of carbon stored in harvested wood products. This is supposed to result in increased availability of renewable biomass for energy production. Another thing is to continue on the path of decreasing GHG emissions. If we have already decreased past our goal for 2025 in 2017, then there's no reason that we are incapable of going even lower than our goal to make the air cleaner. The last thing is spending on capital is lower which leaves consumers with more money to spend on other goods and services. The plan also has some areas to improve in. First off there should be more things in this article that the people of Maryland can do to help out. I live in Western Maryland where many people are coal miners and many families rely on coal to heat their homes. Therefore I'm a little concerned with the 100% green concept relating to what will happen to these people. Another is that this act should not have a risk that will cause certain resident's electric bills to go up just because you are trying to reduce GHG. Also if we reduce GHG emissions there is a chance of it greatly affecting human health. Not only that but also affecting the frequency and intensity of a variety of storms. One more thing to add would be if there could be more focus on 100% renewable energy and not just clean energy. I'm very glad that your ideas focus on energy conservation. Therefore, Governor Hogan, I hope that you will maintain the aspects of the new plan that are strong, but also encourage you to improve upon the weaknesses before the plan is put into action.

Sincerely,

A black oval redaction mark covering the signature of the sender.

From: [REDACTED]
Subject: 2019 GGRA draft plan comments
Date: February 7, 2020 at 9:03 AM
To: christopher.beck@maryland.gov



Dear Governor Hogan,

I have recently read over the Maryland Draft Plan for reducing Greenhouse Gas Emissions. I think it is a great thing that our state's government is taking proactive measures to reduce Greenhouse Emissions, and I think this is a step in the right direction to be a green state.

The plan has several positive qualities. One of the positive qualities that will benefit the state tremendously is that it will create jobs. Not only will it give those already living in Maryland jobs and bring the unemployment rate down, but it will cause others from other states to relocate in search for jobs. The reduction of the use of these gas emissions will help to protect the public health of Maryland citizens and improve air quality and the Chesapeake Bay water quality, which will also improve our economy because it depends on the fisheries in the Chesapeake Bay. The plan also wants to transition to cleaner and more efficient public transportation, which will reduce pollution and gas emissions.

The plan also has some areas to improve. These possible improvements are to identify where the money to make these changes happen. Also, this plan is identifying what the state is going to do to make changes and improvements, but is not identifying what we as Maryland citizens can do to make improvements. Another improvement that could be added to the plan is that 100% clean energy is not the same as 100% renewable energy. Renewable energy is solar and wind energy, and the plan states that it wants to stray away from using coal and oil to become 100% clean, while natural gas is still a nonrenewable fossil fuel. The last improvement that I identified was that there are no standards of renewable energy, such as exactly how much coal we want to be using by 2030, and the amounts of wind, solar, and natural gas we are hoping to be using by 2030.

Therefore, Governor Hogan, I hope that you will maintain the aspects of the new plan that are strong, but also encourage you to improve upon the weaknesses before the plan is put into action.

Sincerely,

[REDACTED]

From [REDACTED]
Subject: GGRA draft plan comments
Date: February 5, 2020 at 11:11 AM
To: Christopher Beck christopher.beck@maryland.gov, Chris Hoagland MDE chris.hoagland@maryland.gov

DM

To: Christopher Beck and Chris Hoagland
From: [REDACTED]

re: GGRA draft plan

Thank you so much, and to Governor Hogan and the General Assembly, for embarking on this plan. The future of our state, nation, and world is at stake, and our actions (and inactions) will have consequences.

I will review the plan in depth, and I signed up for the February webinars.

In the meantime, let me share the following comments:

The emphasis on conservation is important, but I didn't see anything specific about encouraging "green" building construction in both the public and private sectors. Buildings consume about 50% of total energy generated, and smart designs techniques can reduce that use considerably. The LEED system bears this out. If you haven't done so already, you might want to contact the US Green Building Council and the state's Green Building Council.

For energy generation, please add specifics about solar, wind, and other renewables. What can be done to encourage use by the public and private sectors?

As noted, trees are important to sequester carbon. The draft emphasizes forests, which is fine, but is silent about trees in urban and suburban areas. This should be added.

Last, there's an excellent 55-minute documentary movie about environment, design, and the role of business, which I urge you to watch. It's "The Next Industrial Revolution", available through the usual sources and <https://vimeo.com/20372160>.

Regards,

[REDACTED]

[REDACTED]

[REDACTED] 8

From: [REDACTED]
Subject: Our comment on draft plan
Date: February 1, 2020 at 9:47 AM
To: christopher.beck@maryland.gov



Dear Mr. Beck:

Please consider this message as our comment on the draft plan under the Greenhouse Gas Reduction Act. I participated in yesterday's public meeting at MDE headquarters. Thank you and the MDE team for the lucid presentation of the plan. I appreciated the presence of Secretary Ben Grumbles to hear some of our questions and comments.

We have three concerns we would like MDE to include in the final plan:

1. All coal-fired power plants in Maryland should be shut down by 2025. We need aggressive action to get rid of this source of greenhouse gases. MDE has already done the analysis. We heard the results at MDE public meetings on the subject several years ago. But nothing was done. Please include shutdown of these plants in the final plan.
2. Rewrite the transportation section of the draft to cut down on highway expansions. We reject the rationale that adding more lanes on the interstate highways could in any way reduce greenhouse gas emissions. We've seen the effect of opening Maryland Route 100 on our neighborhood traffic. At first Route 100 drew commuter traffic off South Rolling Road, which passes one block from our house. But after a few years the commuter traffic on South Rolling is back at the same level. It's clear to us that if you build more highways, traffic will expand to fill them, and we'll have more greenhouse gas emissions from the cars.
3. Rewrite the public transportation section to call for more public transportation, especially rail routes that can take people where they need to go. In our vacations in France we have seen new urban streetcar systems open in city after city over the past 30 years. They take people to work, to school, and to recreation sites such as parks and stadiums. The final plan should reinstate the Red Line here in Baltimore and also provide for effective systems of urban rail, suburban rail comparable to the RER in the Paris region, and intercity rail connecting Baltimore-Annapolis-Washington-Frederick-Hagerstown-York PA. Existing lines such as the MARC Penn Line, Camden Line, and Brunswick Line should have more service and go farther to serve riders farther out. All these elements will replace gasoline-fueled private cars.
4. Strengthen the carbon sequestration provisions by providing more incentives for agriculture and for forest management. The state forests are part of the picture and should be managed for more old-growth stands instead of small trees that are cut before they store much carbon. Incentives should be provided to landowners to grow trees to an older age. Incentives should be provided to housing developers to keep part of their property in forest cover.

Thank you for considering our comments.

Sincerely,

[REDACTED]
[REDACTED]
[REDACTED]

From: [REDACTED]
Subject: Re: Ambitious Goal for Greenhouse Gas Reduction Necessary
Date: January 21, 2020 at 7:29 PM
To: Christopher Beck -MDE- christopher.beck@maryland.gov



Chris -

Thank you for that information. I appreciate it. I look forward to reviewing a summary of the discussion.

Regards,
[REDACTED]

-----Original Message-----

From: Christopher Beck -MDE-
Sent: Jan 21, 2020 1:29 PM

Cc: Chris Hoagland -MDE-
Subject: Re: Ambitious Goal for Greenhouse Gas Reduction Necessary

Thank you for your email Susan. I'll include your comments in the record. Many of the issues you mentioned in your email were discussed today at the Mitigation Work Group of the Maryland Commission on Climate Change (MCCC). MDE and partner agencies, along with the MCCC have committed to review programs in the transportation sector like TCI. Please check the MCCC website in the coming days for a summary of the discussion.

<https://mde.maryland.gov/programs/Air/ClimateChange/MCCC/Pages/MWG.aspx>



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On Mon, Jan 20, 2020 at 2:01 PM Susan Nerlinger <snerlinger@earthlink.net> wrote:
Memo to: The Maryland Commission on Climate Change – Mitigation Working Group,
Mr. Ben Grumbles, Chairperson

From: [REDACTED]
Date: Monday, January 20, 2020
Re: Ambitious Goal for Greenhouse Gas Reduction Necessary

Via email to Christopher.beck@maryland.gov; climate.change@maryland.gov

To the Commission –

I am writing as a concerned citizen of Maryland and member of the Maryland Sierra Club to urge the Commission to adopt an ambitious goal for greenhouse gas emission reduction for the decade from 2022 to 2032. The global climate change crisis is in full swing. The U.S. is already behind the curve in reducing greenhouse gas emissions.

Recent events clearly show the need for decisive action. Recently widespread fires in Australia were so powerful they could not be extinguished. Receiving less media attention but no less disturbing, some 15 inches of rain fell in one day in Jakarta, Indonesia. In 2019, the hottest temperature ever recorded in the UK was exceeded on July 25 in Cambridge, where the thermometer hit 38.7C (101F).

So the time for assertive action is now, because the damaging effects of climate change are here already. The Intergovernmental Panel on Climate Change recommends a reduction of climate pollution of 45% by 2030. What needs to be done to limit greenhouse gas emissions? We will have to greatly expand public transportation and develop walking and biking infrastructure. We will need to electrify the school and public transit bus fleets and promote passenger electric vehicles (EVs). Personally I live in a multi-family residence and our community does not have EV charging stations. They would have to be installed in our parking lots at great expense, something for which our Homeowners' Association does not have funds. The state of Maryland will need to get involved in making EV ownership available to the millions of citizens who live in multi-family communities if we are going to expand EV ownership sufficiently to make a real difference.

The Sierra club recommends a 45% reduction in emissions. I am informed that the Commission is considering reductions of as little as 20 to 25%. That is insufficient, but even opting for the larger reduction of 25% would make huge positive difference. Projected revenues would be \$500 million annually if a reduction of 25% were adopted. This is the equivalent of the entire budget of the Maryland Transportation Authority and would begin to generate the funds that will be needed to finance the degree of change in our transportation infrastructure that needs to happen.

Furthermore, in addition to limiting pollution from gas and diesel fuels, it will also be necessary to address emissions from biofuels, aviation fuels, marine fuels and methane and propane used as transportation fuels. The state should regulate CO2 emissions upstream, focusing on "prime suppliers" of transportation fuels as defined by the US Energy Information Administration.

Finally investments should provide people with equitable and reliable access to housing, jobs, education and other amenities through improvement of the transportation infrastructure.

I hope the commission will have the courage to commit to the bold action that the times demand.

Sincerely yours,

[Redacted signature block]

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