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Maryland Clean Energy Center (MCEC) was created as a not-for –profit corporate instrumentality of state in 2008 through an act of the Maryland General Assembly.

MCEC focuses on an economic development mission to advance the adoption of clean energy and energy efficiency products, services and technologies along with the associated jobs and wages for Maryland. MCEC leverages private capital and private sector capabilities; facilitates the commercialization of innovative advanced energy technologies; strives to reduce energy costs for consumers, and drive reductions in greenhouse gas emissions associated with the use of fossil fuels.

HB 11 - Renewable Portfolio Standard- Tier I Renewable Source- Alterations (Reclaim Renewable Energy Act of 2022)

Hearing Dates: March 4th, 1pm
House Economic Matters Committee

INFORMATIONAL TESTIMONY

In considering the appropriate action of the committee on this pending legislation, the Maryland Clean Energy Center (MCEC) offers the following for consideration by its members:

Currently, Maryland sources 75% of its energy consumption needs from fossil fuel resources[1], but has committed itself to The Greenhouse Gas Emissions Reduction Act[2] which has goals of sourcing 50% of all energy needs from renewable sources by 2030 and 100% by year 2040.

The Maryland Renewable Portfolio Standard (RPS) acts as a signal to the marketplace to incentivize the investment in certain forms of renewable energy generation capacity. The RPS allows for fiscal benefit to project developers who wish to own, build and operate various forms of energy technology to serve the Maryland consumer audience, but the incentive is also a tool for the state to achieve certain desirable environmental outcomes including but possibly not limited to the reduction of greenhouse gas emissions.

The Maryland Climate Change Commission (MCCC) 2021 Annual Report lists biomass energy as a sustainable energy solution that will help the state achieve a net-zero economy by 2045[3]. The Maryland Climate Change Commission's Mitigation Working Group (MWG) is currently investigating the impacts from adding woody biomass (decoupled from animal manure) to the RPS in the form of a Thermal Renewable Energy Credit (TREC). The analysis will take place through the beginning of 2022, so to bar biomass as a TREC without the findings from the MWG would be preemptive.

This bill proposes to alter the eligibility language in the regulation, effectively remove all qualifying biomass and biosolids gasification technologies (BGTs) specifically the Tier I category and entirely

[1] *Maryland Energy Consumption Estimates.* (2019.) U.S. Energy Information Administration. https://www.eia.gov/state/?sid=MD#tabs-1
[2] Maryland Department of the Environment. (Feb 2021). The Greenhouse Gas Emissions Reduction Act; 2030 GGRA Plan.
[3] Maryland Commission on Climate Change. (2021). *2021 Annual Report and Building Energy Transition Plan*. https://mde.maryland.gov/programs/air/ClimateChange/MCCC/Documents/2021%20Annual%20Report%20FINAL%20%282%29.pdf

from the RPS. In addition to wind and solar energy generation, deployment of other energy technologies may allow the State to achieve other desirable outcomes related to sustainability; and as such should be considered in relation to accessing the RPS incentive benefits. Biomass can be a valuable part of reducing and eliminating dependence on fossil fuels, and mitigating issues with intermittency that can occur with solar and wind generation. If passed this bill will likely be an economic disincentive to project developers whose projects may help the state achieve those outcomes.

Management of feedstock associated with the deployment of biomass and BGTs energy solutions is important when considering a broader array of Maryland environmental goals. Excess poultry litter, woody biomass waste from forest management, refuse shipping pallets and storm debris; and municipal solid waste are all materials that must be disposed of could end up in landfills where the resulting methane emissions could be equally, if not more harmful to Maryland air quality standards than CO_2.

Removing biomass and BGTs as eligible energy sources from the RPS could result in the export of Maryland waste and emissions across state lines to other states with less stringent regulations.

Modern Biomass Energy Technologies are designed to meet or exceed Maryland Air Quality Standards. Maryland has strict regulations that limit emissions and require the most efficient technology that help filter emissions and reuse waste heat to achieve higher efficiencies. Facilities with biomass boilers must comply by law with proper notification, reporting, and record-keeping requirements Maryland has already established for environmental protection.

The Maryland Greenhouse Gas Reduction (GHG) Act[4] requires a reduction of 40% of baseline levels (2009 emissions) by 2030. Studies have found that the lifecycle for bioenergy can achieve emission reductions of GHGs by over 80% compared to fossil fuels[5]. Wood energy releases less sulfur oxides (SO_x) and nitrogen oxides (NO_x) than traditional fossil fuels[6].

Policy makers may want to consider all aspects of sustainability before changing the status of a technology for eligibility in the RPS. MCEC suggests a study be done by the DNR Power Plant Review Program (PPRP); to better inform this decision in the future. The study could examine the following:

- What is the net environmental gain or loss of taking qualified biomass sources out of the RPS or moving to an alternative tier?
- How would waste that is managed by existing, or could be managed with currently viable waste-to-energy (WTE) solutions be otherwise addressed? Where would the waste go, what would the cost be to manage it and what would the environmental impact be of managing in this new manner?
- What would the economic consequences be to Maryland in terms of jobs and business retention, as well as changing the economic viability of enterprises that currently exist for waste to energy technologies? How would local economies be impacted? How could it be economically advantageous to retain the biomass incentive in Tier I or Tier II?
- How has WTE technology evolved to ensure that particulates are captures and environmental impacts are mitigated?

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[4] Maryland Department of the Environment. (Feb 2021). The Greenhouse Gas Emissions Reduction Act; 2030 GGRA Plan.

[5] Röder, M., Whittaker, C., Thornley, P. (2015). How certain are greenhouse gas reductions from bioenergy? Life cycle assessment and uncertainty analysis of wood pellet-to-electricity supply chains from forest residues. *Biomass and Bioenergy*, *Vol 79*, pages 50-63. https://doi.org/10.1016/j.biombioe.2015.03.030

[6] Bowyer, J. (2012). Life Cycle Impacts of Heating with Wood in Scenarios Ranging from Home and Institutional Heating to Community Scale District Heating Systems. *Dovetail Partners*. https://www.lrl.mn.gov/docs/2016/mandated/161074/2011_07_4.pdf

Due to its efficiency and ability to be used on-demand without energy storage, biomass is complementary to other renewable energy sources. Biomass energy is efficient – ranging from 30-40% when generating electricity[7] and 70-90% when in thermally-led systems[8]. In 2019, the Environmental Protection Agency recognized woody biomass as a carbon-neutral, renewable energy source due to the increased carbon sequestration rate of actively managed forests. The IPCC's 2018 Special Report *Global Warming of 1.5º* states that biomass plays a key role in a "rapid and profound near-term de-carbonization of energy supply.[9]"

Biomass in the RPS is linked to maintaining healthy forests for Maryland. In 2013, Maryland adopted a "No Net Loss of Forests" policy to ensure that 40% of the state will remain covered by tree canopy. Currently, Maryland forests are growing 2.6 times faster than they are being removed with natural mortality rates increasing and removal rates decreasing since 1999[10]. Active forest management practices such as thinning can help decrease natural mortality by preventing overcrowding of forests, an important mechanism for adapting forest to changing climate conditions.

Biomass energy creates a market for small-diameter, "low-value" generated by active forest management upkeep. Having a market for landowners to sell the waste generated from regular management creates an incentive for landowners to resist high-grading forests and/or land use change that would result in deforestation.

Biomass reduces fossil fuel imports and helps stimulate the local economy. For biomass to make economic and environmental sense, it is typically sourced within 50 miles of the facility where it will be used. Since the supply chain is Maryland-based, the money spent on biomass residues will remain in the community's radius. Unlike imported fossil fuels, which only produces $0.34 of economic activity per dollar invested, biomass has a pay back of $1.50 per $1 spent within the community[11]. Additionally, it is estimated that producing 100,000 tons of pellets annually can create up to 342 direct jobs[12].

Entirely removing biomass as a renewable energy source eligible for Tier one credits in the Maryland RPS, may be environmentally and economically disadvantageous for the State. MCEC advises further research be done before action is taken in HB11.

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[7] U.S. Department of Energy. (2010). *Biomass Energy for Transport and Electricity: Large Scale Utilization Under Los CO2 Concentration Scenarios*. https://doi.org/10.2172/973408

[8] International Renewable Energy Agency. (2015). *Biomass for Heat and Power*. Retrieved from: https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2015/IRENA-ETSAP_Tech_Brief_E05_Biomass-for-Heat-and-Power.pdf

[9] IPCC. (2018). *Global Warming of 1.5º: Chapter 2: Mitigation Pathways Compatible with 1.5-Degree Celsius in the Context of Sustainable Development.* Retrieved from: https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_Chapter2_Low_Res.pdf

[10] United States Department of Agriculture. (2019). *Forests of Maryland*.

[11] Massachusetts Division of Energy Resources and Massachusetts Department of Conservation & Recreation. (2007). *Energy from Forest Biomass: Potential Economic Impacts in Massachusetts*. https://bct.eco.umass.edu/wp-content/uploads/2009/04/bio-eco-impact-biomass.pdf

[12] Heating the Northeast with Renewable Biomass; A Vision for 2025, *Biomass Thermal Energy Council* April 2010. https://www.biomassthermal.org/resource/pdfs/heatne_vision_full.pdf