BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Continue Implementation and Administration, and Consider Further Development, of California Renewables Portfolio Standard Program.	Rulemaking R.18-07-003

INFORMAL COMMENTS OF THE GREEN POWER INSTITUTE ON THE BIOMAT PROGRAM REVIEW AND STAFF PROPOSAL

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Pursuant to the October 30, 2018, and November 19, 2018, emails of Staff Member James McGarry, in Proceeding R-18-07-003, the **Order Instituting Rulemaking to Continue Implementation and Administration, and Consider Further Development, of California Renewables Portfolio Standard Program**, the Green Power Institute, the renewable energy program of the Pacific Institute for Studies in Development, Environment, and Security (GPI), provides these Informal Comments of the Green Power Institute on the BioMAT Program Review and Staff Proposal.

Our comments address selected questions in the ED's *BioMAT Program Review and Staff Proposal*, pgs. 20-23. We agree with the general premise of the Staff Proposal, which is that this program has had, and is likely to continue to have a relatively small bidders pool, and that therefore the program should be tailored to this reality. While we are unable to provide detailed answers to the questions on pricing mechanism and program administration, questions 1-9, we agree with the implications of the questions, which we interpret to be an effort to adjust the program to the market reality that the BioMAT program is likely to operate with a relatively restricted group of potential projects and bidders.

We also note that in contrast to the PURPA proceeding, R.18-07-017, in which there are concerns that the ReMAT process has produced contracts that are below avoided cost, which is in conflict with PURPA rules, due to the intrinsic characteristics of small biomass projects there is simply no possibility that these projects could come in below avoid cost levels, as evidenced by the market clearing prices that have recently been established for the various segments of the BioMAT program (see pg. 7 of the *BioMAT Program Review and Staff Proposal*).

Answers to Questions

Q.10. The GPI supports the proposal to extend the current program end date for an additional five years, to February 2026. As a matter of principle, we believe that the ultimate achievement of the program's goals, 250 MW in three program categories, is far more important than imposing an arbitrary termination date. In addition, the BioMAT program has endured lengthy delays since its implementation for a variety of reasons, and with the complete implementation having taken place just a month ago (D.18-11-004), it only makes sense to now give the program ample time to function.

Q.11. The GPI supports the proposal to extend a project's Guaranteed Commercial Operation Date by 12 months if it fails to interconnect by the date in the PPA due to delays beyond the generator's reasonable control. There is a long history in California of delays in interconnecting projects of all sizes, and holding a project developer accountable for delays beyond his or her control is not productive.

Q.12. The GPI supports the proposal to increase the capacity limit on BioMAT program participants from 3 MW to 5 MW. Recent legislation enabled facilities up to 5 MW in size to participate in BioMAT, in order to allow facilities with up to 2 MW of onsite productive load to participate fully in the program. Current BioMAT program rules limit the delivery rates of facilities that exceed 3 MW in capacity to 3 MW. The Staff Proposal removes the limit on delivery rate, allowing up to the full 5MW to be delivered during times when the onsite load is low. The objective of the proposal is to allow all BioMAT facilities to run to the extent of their physical limits, in order to maximize the amount of fuel that can be processed, and thus the amount of benefit that can be delivered. It also reduces their overall cost of electricity production, and thus their trigger price. We strongly support this proposal as good policy on the part of the Commission.

Q.14. The GPI opposes the proposal to set a temporary or permanent 80 percent HHZ fuel requirement for category 3 facilities. Generators participating in the BioRAM program have such a requirement, and most or all of them are struggling to comply, even as it is

readily demonstrated that fuel that they obtain from non-HHZ designated sources also delivers valuable environmental benefits to California. As discussed on page 4 of the *BioMAT Program Review and Staff Proposal*, the forestry category of the program has already run up against the trigger price ($197/MWh), which is the circumstance that spawned this very program review, and putting new restrictions on their fuel supply would only drive their costs up further, to the detriment of the program.

It should be kept in mind that one advantage that small biomass generators have over larger facilities is that their average fuel haul is much shorter. The corollary of this is that once a BioMAT facility has been sited, its fuel-shed is set. Thus the key to ensuring that the goals of the Governor's May 2018 Executive Order are met, as discussed in the program review, can be best accomplished during the site-selection process, not by adding fuel restrictions to the PPA.

Q.15. As our answer to the previous question demonstrates, we certainly believe that the physical (geographic) location of BioMAT projects determines the kinds of fuels that will be utilized, and that location is a valid criterion to be used in the project-selection process. However, we would not go so far as to agree that generators should be required to locate in predesignated areas. Incentives tend to work positively in a market-based model. Requirements and restrictions tend to push costs up, with little benefit derived thereby.

Q.16. The GPI believes that the costs of the BioMAT program should be applied at the wires-utility level, and charged to all customers that benefit from the wires-utility's transmission and distribution services. We are not expert in the details of how current non-bypassable charges are structured, but we would assume that the BioMAT costs would be assessed using equivalent methodologies.

Q.17. It has long been known that, in addition to renewable electricity, biomass power production provides valuable ancillary services, such as reduced conventional pollution from open burning of agricultural and forestry wastes, reduced use of landfill space and associated emissions, improved management of California's highly stressed forests, and

community development benefits in rural and DAC communities. In recognition of these benefits, the Brown administration set up a number of interagency mechanisms in order to coordinate the interests and actions of the various beneficiary agencies.

From the perspective of the GPI, and we are not participants in any of the interagency efforts, it appears that there is a healthy amount of dialog and strategizing. Nevertheless there are two fundamental structural roadblocks. The first is a lack of funds to carry out the actions that all parties agree are desirable. The second is that even while agencies work together, at the end of the day they all have to fall back on performing their own missions first. Commission President Picker, for example, has stated in several forums that while he is sensitive to the needs of the state's forests, the Commission is empowered to regulate the electric utilities, not the forests. This is a structural problem in representative government that the Commission admittedly cannot solve in this proceeding, but embracing flexibility and cooperation as a principle would be a valuable step forward.

Q.18. Achieving pollution and greenhouse-gas reductions were original goals of BioMAT. However, whether or not individual projects reduce net lifecycle emissions depends not only on project-specific factors, as mentioned in the *BioMAT Program Review and Staff Proposal*, it depends on the assumptions and algorithms that are used to make the determination.

Like fossil fuels, biomass fuels are carbon-based. However in contrast to fossil fuels, whose carbon is locked in geological storage, the carbon in biomass fuels is part of the stock of carbon that is already in active circulation between the atmosphere (CO_2, CH_4) and the biosphere. In other words, the use of fossil fuels represents an addition of new carbon to the active carbon cycle, whereas the use of biomass fuels uses carbon that is already part of the active carbon cycle. As a result, assessing the greenhouse-gas implications of biomass generating projects is a far more complex process than assessing the greenhouse-gas implications of fossil-fuel generating projects, which simply mine stored carbon and add it to the atmosphere. For biomass energy projects the question is

how the energy trajectory affects the stocks of the two forms of carbon in the atmosphere, CO_2 and CH_4., as well as the linked stock of carbon in the biosphere. A consequence of this complexity is that studies of the greenhouse-gas implications of biomass energy production have produced a variety of sometimes conflicting results, which span the range from biomass energy production being a net reducer of greenhouse gases, to biomass energy production being a net contributor of greenhouse gases.

In many jurisdictions, including in the Commission's RPS program, a distinction is made between fossil carbon and biogenic carbon. Biomass energy production, like other renewables, is considered to be carbon neutral with respect to greenhouse-gas emissions. This distinction is consistent with the treatment of carbon in the CARB's Cap-and-Trade Program, which requires the separate reporting of fossil- and biogenic-carbon emissions by biomass generators, and only subjects fossil-carbon emissions to the Cap-and-Trade requirements for offsetting emissions permits.

The designation of biomass as carbon neutral has been a useful simplification for many programs aimed at reducing greenhouse-gas emissions, but our interpretation of the thrust of question 18 is that the question is asking whether we should go beyond the broad simplification of carbon neutrality, and ask each BioMAT applicant to demonstrate that their particular project is actually carbon neutral or better. As a policy matter, the GPI's strong advice is to **not** impose such a requirement on BioMAT program applicants. These projects are already expensive enough, and adding additional regulatory requirements will only make them more expensive. Moreover, there is abundant evidence that on a generic basis projects of the kind that are eligible for the BioMAT program clearly reduce net emissions of biogenic greenhouse gases, for example by reducing landfilling and open burning of biomass residues, open lagoon treatment of animal wastes, and reducing the risks, intensity, and extent of wildfires in California's forests (see, for example, Morris, G., Bioenergy and Greenhouse Gases, Report of the Pacific Institute, May 15, 2008,[1] USDA Forest Service Pacific Southwest Research Station, Biomass to Energy: Forest

[1] http://pacinst.org/wp-content/uploads/sites/21/2015/12/Bioenergy_and_Greenhouse_Gases.pdf

Management for Wildfire Reduction, Energy Production, and Other Benefits, CEC report no. CEC-500-2009-080, January 2010,[2] and USEPA, Framework for Assessing Biogenic CO_2 Emissions from Stationary Sources, November 20143).

From a technical perspective, the GPI has analyzed the three relevant models on the CARB website that are referenced on pages 12-13 of the *BioMAT Program Review and Staff Proposal*, and found them lacking. For example, the forestry model (CalFire's *Reforestation, Pest Management, Fuels Reduction, Forest Conservation, Biomass Utilization* model) uses both too many simplifying assumptions, and highly inaccurate growth curves. One particularly problematic assumption in the model is that all carbon emissions from wildfires are in the form of CO_2. In fact a not insignificant fraction of the carbon emitted during a wildfire is in the form of CH_4 or higher hydrocarbons, which are much more potent greenhouse gases than CO_2. Methane and higher hydrocarbons are especially emitted around the edges of fires and when the fires are being extinguished, when temperatures are high enough to pyrolize wood, but not high enough to ensure that the pyrolytic gases are completely combusted. The CH_4 in wildfire emissions can double or triple the greenhouse-gas potency of the emissions compared to the emissions from biomass power plants.

The model also assumes that forest growth is linear, including in overstocked forests that are approaching stasis (little or no net growth), and it completely fails to address landscapes that are loaded with dead trees, which are the highest of priority targets for the forestry portion (category 3) of the BioMAT program. In our work with the CalFire forestry model we attempted to create a dataset for a stand of dead trees that could be used effectively within the forestry model's framework, but we were unable to do so.

Another particularly weak assumption embedded in the forestry model is that the fire-risk-reduction benefits of thinning a forest are constant in magnitude for the period of time that

[2] http://www.energy.ca.gov/2009publications/CEC-500-2009-080/index.html
[3] https://19january2017snapshot.epa.gov/sites/production/files/2016-08/documents/framework-for-assessing-biogenic-co2-emissions.pdf

the modeler enters as the "effective period for fuels reduction treatment (years)" in the Fuels Reduction tab, and then immediately fall to zero. In fact, the benefits of a thinning are at a maximum when the treatment is completed, and decay away exponentially as the enhanced growth rate after thinning works to replace the removed material over time, as long as fire does not occur in the thinned site. In the opinion of the GPI, the best way to correct this deficiency is to move from the use of static models, such as those on the CARB website, to the use of dynamic models, such as those that were employed in the Pacific Institute and USDA Forest Service studies referenced above. Dynamic models do not require the modeler to choose an arbitrary lifetime for the effectiveness of a forest treatment, or an arbitrary timeframe for purposes of comparing CO_2 emissions to CH_4 emissions. Instead, a dynamic model shows how the effects of various choices change over the course of time.

The CalRecycle and CDFA models also referenced on pages 12-13 of the *BioMAT Program Review and Staff Proposal* similarly make assumptions and simplifications that strongly limit their usefulness for the purposes under consideration in question no. 18 for category 1 and 2 BioMAT projects. Unlike the forestry model, these models do attempt to deal with the issue of whether carbon is emitted in the form of CO_2 or CH_4, but they vastly understate the difference in the greenhouse-gas potency of the two gases in real time by selecting a timeframe that is inappropriately long. We note again that the use of a dynamic model would remove the need for making arbitrary assumptions about timeframe, by illuminating how the effects of the two greenhouse gases compare over time.

Question no. 18 asks whether there are alternative tools or methodologies that the Commission could use in place of, or in addition to, the three models referenced on pages 12-13 of the Oct. 30, *BioMAT Program Review and Staff Proposal*. The GPI asserts that due to the complexity of modeling the effects of biomass energy production on the global carbon cycle, as well as contentious environmental politics, the chances that the Commission could develop or adopt a customized calculator tool in a timeframe relevant to the functioning of the BioMAT program are quite low.

We repeat our strong recommendation that the Commission not impose any rule or regulation that requires BioMAT projects to individually demonstrate that they produce greenhouse-gas benefits in order to be eligible to participate in the BioMAT program. The literature is replete with studies that demonstrate that biomass projects that use the kinds of fuels that BioMAT projects are required to use, including waste water, municipal organic waste, food-processing waste, dairy and other agricultural residues, and residues from sustainable forest management, will produce substantial net reductions in biogenic greenhouse-gas emissions compared with alternative pathways for the fuel materials. We respectfully request that the Commission make a finding that qualifying BioMAT projects reduce emissions of biogenic greenhouse gases compared to alternative pathways for the resources used as fuels for these projects, and move forward with the BioMAT program.

Q.20. Question no. 20 asks whether there might be challenges in transitioning from the existing BioMAT program to a modified program consistent with whatever elements of the Staff Proposal are eventually adopted. The GPI reminds the Commission that the BioMAT program so far has seriously underperformed, and that, assuming that the elements of the Staff Proposal that are ultimately adopted are improvements to the program, the program can only benefit from the modifications. Remember, the goal of the BioMAT program is to fully fill the quotas set for each program category, and ultimately to launch a self-sustaining small bioenergy industry.

Conclusion

Due to inherent characteristics of the resources and the technologies available to convert them to energy, biomass power projects are not cheap at any scale. They are particularly tricky at the small scale of the BioMAT program, with the result that the range of project developers interested in entering the market is likely to be relatively limited. Many of the proposed modifications in the Staff Proposal are designed to tailor the program to be able to function on a relatively limited population of participants, while others are designed to

expand the opportunities for participation in the program. The GPI supports proposals in these categories.

The one proposal in the Staff Proposal that we particularly oppose is the proposal to impose a requirement on BioMAT projects to individually demonstrate that they are carbon neutral or better. The tools that are available on the CARB website are quite limited in their capabilities, and they make some highly questionable assumptions that bring their usefulness into question. There is ample evidence in the literature to demonstrate that projects that qualify for BioMAT will provide substantial reductions in biogenic greenhouse-gas emissions, and the imposition of any additional regulatory hurdles in this area would be duplicative and unnecessary.

We recommend that the Commission adopt our recommendations herein.

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Respectfully Submitted,

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