From: Kevin Fingerman, PhD
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To: California Public Utilities Commission Energy Division

Re: Comments Regarding the Bioenergy Market Adjusting Tariff Program Review and Staff Proposal

Date: December 7th, 2018

To whom it may concern at CPUC,

We are researchers at Humboldt State University and the Schatz Energy Research Center with a research interest in biomass energy systems. Our ongoing, California Biopower Impacts Project, funded by the California Energy Commission, investigates the life cycle climate impacts of residue-derived bioenergy systems in California as well as policy mechanisms that could serve to shape these systems to deliver on their joint land use, climate, energy, and forest management goals. Regarding development of a lifecycle emissions accounting methodology for Category 3 fuels, we recommend leveraging the California Biomass Residue Emissions Characterization (C-BREC) model that we are currently developing. With this background, we respectfully submit the following targeted comments in response to your staff proposal. Thank you for your consideration.

Observations Presented Regarding Disadvantaged Communities (DACs) on page 11:
We recommend decoupling the discussion of GHG emissions from the important discussion of DACs. We see GHGs as a global issue and DACs as a local issue. The paragraph addressing local air quality impacts should focus on the important issue of disproportionate exposure to power plant emissions in DACs. As the paragraph is currently written, it primarily addresses the questions of net GHG emissions and the time-explicit nature of the climate impacts of GHGs. We suggest decoupling the discussion of these important aspects of proper GHG accounting from the topic of DACs and moving it into a separate section. Focus should instead be placed on the key challenges regarding criteria pollutants and local air quality issues in DACs.

Question 14:
We support the High Hazard Zone (HHZ) requirement but have a few comments:

a) We would want to ensure verified sourcing of HHZ fuels and wonder whether PUC has sufficient safeguards in place to avoid non-qualified fuels' leakage into BioMAT supply chains.
b) While we hope there will be sufficient interest in this program, we fully expect that industry comment might push back against this requirement significantly. It may be necessary to have an HHZ carve-out or additional support rather than an across-the-board requirement.
c) Temporarily increasing the HHZ requirement to 80% only for the duration of the Governor's Emergency Proclamation adds uncertainty to long term cost projections. This could further limit the effectiveness of the Category 3 pricing mechanism.

Question 15:
The term "strategically located" isn't meaningful without geographical definition drawn from geospatial data/analysis. You have identified some of the characteristics warranting consideration; the difficulty would be in implementation. Do operators need to race to be the first to get a PPA in a given location before that location is "claimed" by someone else?

With the caveat that we have not looked carefully at this issue, our sense is that there is little risk of sufficient development of BioMAT facilities to meaningfully constrain the availability of qualified feedstock. There could possibly end up being a constraint on low-cost feedstock, but that would be a self-correcting concern. If someone wants to develop a BioMAT facility somewhere, and can ensure that they will be using >80% HHZ residues, they should be encouraged to do so. Further, we want to ensure that BioMAT does not divert material from other productive uses, but don't believe any other industry in CA is using true waste/residues at present, so this seems to be a marginal risk. More important is the fact that these facilities are most economic where they could be co-located with other facilities to enable cascading uses of biomass based on source/quality.

One key locational characteristic that is not reflected here is facility proximity to people and resultant impacts on local health. Biomass energy is an obvious point-source of pollution impacting local communities, and the public health and environmental justice implications of facility locations creates reputational risks for the industry and for the BioMAT program. A geographical requirement keeping BioMAT facilities out of populous areas, DACs, or degraded airsheds[1] would support the case that these facilities provide net benefit to CA public health.

Question 16:
This seems entirely legitimate. There is no reason that IOU-bundled ratepayers should uniquely bear these costs. It seems probable that similar charges will be forthcoming for fire prevention/compensation. Could BioMAT program charges be rolled into that?

Question 18:
Because BioMAT seeks to provide climate change mitigation benefits, the PUC should pursue a life-cycle accounting of GHG emissions associated with BioMAT projects and should integrate climate performance into program design. Quantifying the GHG emissions associated with electricity generation is in-line with various state targets, and with PUC's requirements of load serving entities (LSEs) during the Integrated Resource Planning (IRP) process outlined in SB 350. The pursuit of a life-cycle accounting of GHG emissions associated with the bioenergy sector deviates from current methods used for the electricity sector.

The ideal program structure would support projects directly on the basis of their relative life-cycle GHG reduction performance in a market-driven system similar to the Low Carbon Fuel Standard. The

[1] We recommend including those areas that experience relatively higher numbers of exposure events to poor air quality due to wildfire in the definition of a degraded air shed.

approach suggested by the staff proposal would also promote climate performance, but would require drawing a GHG-intensity line for qualification. The staff proposal implies that the climate performance qualification should be defined as "net GHG emissions reduction." However, this then begs the question: "reduction compared to what?" This issue is not simple and would need to be addressed.

Further, requiring emissions reductions for BioMAT eligibility may add duplicative regulatory burden since LSEs already assess the emissions intensity of their resource mix. As the IRP process affects the contracts that LSEs enter into, leveraging the IRP process may result in a more market-driven approach. While relying on the IRP process may allow BioMAT facilities with positive net GHG emissions, it would effectively just replace other net positive sources, and help minimize BioMAT eligibility constraints.

In general, developing an emissions quantification methodology for BioMAT projects will be needed to help facilities and LSEs to correctly report emissions intensities. If the IRP process were to be utilized for assessing the impact of BioMAT projects, a quantification methodology would have to be developed for the bioenergy sector in general, not just for BioMAT facilities. The Clean Net Short methodology used in the current IRP process assigns an emissions factor of zero to biomass sources. Furthermore, it applies a single emissions factor to all biomass sources regardless of the facility or feedstock source. This is not an accurate approach for accounting for GHG emissions from the bioenergy sector.

The following additional comments to question 18 focus on Category 3 fuels.

From a life-cycle accounting perspective, it is important to classify BioMAT projects into two types: those that catalyze new forest management activity that would otherwise not have occurred, and those that do not catalyze new forest management activity. It is our understanding that BioMAT **does** intend to catalyze new forest management activity, specifically in HHZs, in order to drive fuel reduction efforts that may reduce wildfire risk and/or severity and increase forest health. If this is true, then BioMAT is intending to support activities that change the landscape carbon stock. Therefore, the life-cycle methodology developed by the PUC must allow co-product allocation of the net emissions associated with the forest management activity. In some such cases, it may still be appropriate not to allocate to the bioelectricity any "upstream" emission or sequestration associated with forest management activity, but this cannot be assumed *a priori*.

In those cases where BioMAT projects are utilizing material that would be generated regardless of the BioMAT project (i.e. the BioMAT project is enabling the off-site mobilization of that residue, not its generation), we believe it is defensible for the life-cycle impact of that BioMAT project to be limited to the supply chain and residue counterfactual. We recognize the argument that mobilization of residues may impact wildfire risk and/or severity at a landscape scale. However, to date we are not aware of any strong evidence showing that this impact is significant. In other words, it is a reasonable first-order assumption that the removal of material for electricity generation simply means that material will not combust in a wildfire, not that it will result in a significant change in wildfire risk and/or severity.

We recommend that, at minimum, the following be included in any methodology the PUC develops either specifically for BioMAT facilities or for the bioenergy sector:

1. Inclusion of biogenic emissions
2. Time-explicit accounting of the climate impacts of both biogenic and anthropogenic emissions
3. Rigorous and transparent approach to allocating emissions associated with net carbon stock change in those cases where demand for fuel is catalyzing new forest management activity.

The CARB GHG Quantification Methodology for the CalFire Forest Health Program (CARB Methodology) offers a useful foundation for developing an emissions methodology for either the BioMAT program or for the biomass electricity sector in general (if the IRP process were to be leveraged). However, this methodology primarily focuses on the life-cycle impacts associated with forest management activity, and only offers only a very basic pathway for life-cycle GHG accounting and co-product allocation to electricity. For those cases where BioMAT is catalyzing new forest management activity, the CARB methodology can be leveraged for developing the co-product allocation pathway for a limited set of management activities.

We believe that the PUC should leverage the California Biomass Residue Emissions Characterization (C-BREC) model that we are developing for bioenergy generated from Category 3 fuels. It is by far the most detailed and spatially-disaggregated tool of its kind to date. The model will soon be in available in "beta" form, and we are able to brief PUC staff on its structure and function. C-BREC's key limitation for this application is that it takes forest management activity as an external characteristic, not driven by the biomass energy market for the purposes of GHG calculation. For PUC's purposes, this means we would need to couple it to another methodology, such as the CALAND model or the CARB Methodology, for integrated system evaluation.

It is important to note that any approach to correctly account for the emissions impacts of BioMAT facilities (or the bioenergy sector in general) will require third-party verification of climate performance based on location, harvest activity type, supply chain characteristics, and reference feedstock fate.