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Mr. Gary Collord
Air Pollution Specialist, Energy Section
California Air Resources Board
1001 - I Street
Sacramento, CA
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Subject: Comments on March 17 Staff White Paper: *Evaluation of Greenhouse Gas Benefits for Renewable Energy Technologies*

Dear Mr. Collord

The California Biomass Energy Alliance (CBEA) is a trade association comprised of the State's solid fuel biomass power industry, the largest in the nation. There are 33 biomass electric generating facilities in California, distributed across 19 counties, with a combined generating capacity of over 600 MW of reliable, baseload, renewable power that can be counted on and scheduled. Biomass power is approximately 1½ percent of the overall power generated in the State, and 17½ percent of all the renewable power generated in the state.

The existing biomass power industry provides California with significant economic and environmental benefits by:

- Diverting over 6 million tons of waste wood annually for fuel, preventing the alternate, more environmentally harmful, and greenhouse gas (GHG) generating, disposals of this waste, such as landfilling, open-burning, or biodegrading or burning in the forest.
- Diverting the wood waste also provides a net reduction of over 3.75 million tons of GHG emissions per year. Even further, an additional 3 million tons of avoided GHG emissions per year results from the biomass industry's displacement of fossil-fueled generation by the electric utilities.
- Reduces Criteria Pollutants By preventing open-field burning of 1.5 million tons of agricultural waste each year, biomass plants cut criteria pollutants up to 98%
- Employing about 750 direct jobs at the facilities and 1,200 to 1,500 dedicated indirect jobs in the fuel supply infrastructure. Most of these jobs are in rural areas of the State.

Evaluation of Greenhouse-Gas Implications of Biomass Energy Production

On March 17, 2010, ARB issued a draft of its white paper: *Evaluation of Greenhouse Gas Benefits for Renewable Energy Technologies*. In its treatment of biomass, the staff white paper makes an assumption that greatly simplifies the calculation, but at the same time seriously undervalues the benefits that are provided by energy production from biomass. The key assumption is stated on the first page of the document: “Staff assumed that GHG emissions would be the same if the biomass is allowed to decay in its natural environment or if the biomass is combusted in an energy device; consequently, the net GHG emissions are zero.”

In fact, studies have shown that net greenhouse-gas emissions are reduced when biomass is diverted from conventional disposal alternatives to use as an energy resource, by amounts that are on the same order of magnitude as the amount of displacement of fossil fuel emissions (Morris, G., *Bioenergy and Greenhouse Gases*, Report of the Pacific Institute, May 15, 2008.). The document then compounds its error by subtracting from the assumed greenhouse-gas neutral technology the diesel-fuel emissions associated with the processing and transportation of biomass fuels. The problem is not so much that the document subtracts the budget for diesel fuel use in biomass procurement, but that it neglects to add the benefits of reduced net emissions associated with the disposal of the biomass. It is important to point out, however, that in the proposed cap-and-trade program the use of diesel fuel for fuel processing and transportation will be regulated upstream at the fuel producer, not as a part of the biomass power operation.

We note that in its treatment of MSW, the staff white paper considers the benefits of avoiding landfill emissions if the material is disposed of conventionally. The same treatment should be afforded biomass, both with respect to the fuel that is diverted from landfill disposal, and also with respect to fuel that is diverted from open burning, composting, spreading, and removed from the forest during fuels-reduction treatments.

By assuming carbon neutrality the staff white paper misses a large component of the benefit of biomass. The table below, reproduced from Morris, 2008 (Table 6), shows net greenhouse-gas emissions factors for the conversion of biomass fuels to energy, as a function of the avoided fate for the fuel. The greenhouse-gas emissions factor shown in the table for the 2005 California biomass fuel mix, 1,620 lb/MWh (0.81 ton), should be added to the factor shown in the staff white paper, producing a factor of 2,650 lb/MWh for biomass combustion (1,030 + 1,620). It is this factor, 2,650 lb/MWh for biomass combustion, that should be shown in Table 1 of the staff white paper.

| Greenhouse Gas Emissions Factors for Biomass and Biogas (all factors expressed as equivalent year-1 emissions of CO ₂ equivalents) | | | |
|---|----------------|--------------------|----------------|
| | <u>ton/bdt</u> | <u>ton/bil.btu</u> | <u>ton/MWh</u> |
| Biomass | | | |
| Net Reduction in Biogenic C | | | |
| Open Burning | 0.62 | 36 | 0.62 |
| Forest Accumulation | 1.87 | 110 | 1.87 |
| Uncontrolled Landfill | 2.28 | 134 | 2.28 |
| Controlled Landfill | 0.27 | 16 | 0.27 |
| Spreading | 0.69 | 41 | 0.69 |
| Composting | 1.00 | 59 | 1.00 |
| Kiln Boiler / Fireplaces | 0.22 | 13 | 0.22 |
| California Biomass Mix 2005 | 0.81 | 48 | 0.81 |
| Avoided Fossil Fuel Use | 0.80 | 47 | 0.80 |
| Landfill Gas (LFG) | | | |
| Net Reduction in Biogenic C | | | |
| Uncontrolled Landfill | | 241 | 2.89 |
| Controlled Landfill | | 22 | 0.26 |
| Avoided Fossil Fuel Use | | 65 | 0.78 |
| Dairy Manure | | | |
| Net Reduction in Biogenic C | 2.88 | 180 | 8.64 |
| Avoided Fossil Fuel Use | 0.26 | 16 | 0.78 |

Morris, G., *Bioenergy and Greenhouse Gases*, Report of the Pacific Institute, May 15, 2008

If you any questions about this important change or supporting materials, please contact me or our Sacramento representative, Julee Malinowski-Ball, at 916-441-0702

Sincerely,



California Biomass Energy Alliance
 Director and Chairman