October 22, 2021

Rajinder Sahota
Deputy Executive Officer of Climate Change and Research
California Air Resources Board
1001 I Street
Sacramento, CA 95814

Re: California Biomass Energy Alliance Comments on 2022 Scoping Plan Update – Scenario Inputs Technical Workshop

Dear Ms. Sahota:

The California Biomass Energy Alliance ("CBEA") submits these comments on the Staff Presentation on the 2022 Scoping Plan Update – Scenario Inputs Technical Workshop presented September 30, 2021. CBEA members strongly support the goals of SB 32 and are working actively to support the state's greenhouse gas ("GHG") and renewable energy goals.

California Biomass Fuel Mix

CalRecycle currently collects fuel data for all biomass conversion facilities. "Biomass conversion" means the production of heat, fuels, or electricity by the controlled combustion of, or the use of other noncombustion thermal conversion technologies on, specific materials, when separated from other solid waste. Materials used for biomass conversion are defined as: agricultural crop residues, bark, yard, lawn and garden clippings, leaves, silviculture residue, tree and brush pruning, wood, wood chips, wood waste, nonrecyclable pulp, and nonrecyclable paper materials.

SB 498 (Lara, Chapter 746, Statutes of 2014) requires a biomass conversion facility to submit an annual report to CalRecycle containing details about each specific biomass facility's specific operations. The 2020 SB 498 reports provide data on 24 biomass conversion facilities:

Materials Source	Tons Accepted
Agriculture	1,095,988
In-Forestry	701,421
Mill Residue	1,334,054
Urban	913,930
Total	4,045, 403

Phone (916) 441-0702
Fax (916) 441-3549
1015 K Street Suite 200
Sacramento, CA 95814
www.calbiomass.org

CalRecycle reporting started for the 2015 report year, but the industry has been collecting this data since 1990 and can share it upon request.

It iss important to note that all this material is excess wood waste that has no other home. Leaving overgrowth material in the state's ecologically stressed forests leaves the forests at high risk of massively destructive wildfires, impedes the functioning of watersheds, diminishes wildlife habitat, and has other negative effects on the forests. Undisturbed mature forests in California typically had a canopy-closure density in the neighborhood of 60 percent. Some of the state's overgrown forests today have canopy closures in excess of 90 percent. These forests are being chocked, and as a result they are unable to provide the level of ecosystem services they should be able to.

Biomass energy production promotes healthy forests by lowering the cost of performing forestry treatments designed to reduce fire risks and accomplish other forestry goals. The value of the residues as fuel is not enough to pay the entire cost of the forest treatment, but it can bring the net cost down enough to make the difference as to whether or not a needed treatment is performed. It is no coincidence that some of the healthiest tracts of National Forest in California are located close to biomass power plants.

As you already know from the burn ban regulation, the ag material the existing biomass facilities used would almost exclusively otherwise be open burned. We know when biomass facilities go off-line, open burning increases.

Urban wood also has few other places to go and would otherwise be landfilled. Aside from the obvious need to reduce the amount of material going to limited landfill capacity in the state, landfill disposal of low value wood leads to a variety of adverse environmental impacts, including leachates that threaten groundwater quality, delayed stabilization of the fill, and emissions of odors, volatile organic compounds (VOCs), and greenhouse gases. Although emissions of carbon gases from a landfill are delayed compared with the case of energy production, because of the presence of CH4 in the landfill emissions within three to four years of the disposal of the material the atmospheric greenhouse gas burden exceeds that of the energy option and grows to three times greater by the end of fifteen years, or 50% greater in the case of a controlled landfill. Using solid-biomass wood residues for energy production avoids the negative impacts associated with landfilling this wood. Without the state's biomass industry, many counties would be unable to meet their waste-reduction mandates.

California's existing biomass infrastructure is providing a wood waste management service unmet by any other resource or technology.

California's Energy Needs and the Role of Biomass

California is working hard to decarbonize its electricity sector. Biomass energy can play a key role in accomplishing this goal, and in addition reducing emissions from wildfires, open burning of agricultural and forestry wastes, and reducing landfill disposal of organic wastes. California policy makers have long recognized the value of the ancillary benefits of biomass, and tailored state policies to encourage the development and operation of biomass power plants. Indeed, several of the state's biomass facilities are currently operating under power contracts that were officially authorized by legislation and executive action to encourage the use of forest management residues as biomass fuel for purposes of wildfire risk reduction, as well as renewable energy production.

The California RPS program has been a great success in stimulating the deployment of renewable energy in the state, with the great majority of the growth under the program in the wind and solar sectors. Solar in particular has seen meteoric growth during the past decade, and now contributes a large enough percentage of the electricity supply mix in the state to skew the timing of the occurrence of the net peak on the state's grid, which exacerbates the size of the afternoon ramp in many seasons of the year. As efforts are being made to phase fossil fuels out of the state's electricity supply mix and solar continues its growth, we are left with the task of molding the clean power supply output profile to the demand profile on the grid. Much of the current attention is focused on developing the fledgling energy storage industry as a means for smoothing the curve, and there is no doubt that a great deal of storage will be deployed in California over the coming years.

Energy storage is not the only option that can help meet load on a grid powered by clean energy resources. Baseload renewables like biomass offer a means to reduce the scale of afternoon ramps and serve load throughout the duration of the evening peak. Unlike storage, baseload renewables add new renewable energy to the grid (storage merely decouples the timing between when other generators produce energy and when it is used). The RPS and IRP proceedings at the CPUC have consistently undervalued the reliability attributes of baseload renewables, which has skewed the deployment of renewables to favor only the lowest cost alternative, which is solar PV. This has occurred despite the fact that California statute clearly states a preference for a diverse renewables buildout.

It is important to understand that one MW of biomass generation capacity produces as much energy as 4 MW of solar, so there is not a one-to-one correspondence between the two resources. Biomass facilities are able to reliably produce during all hours of need and can be operated in a partial load following mode, dropping output during the midday when there is surplus solar available, and ramping back up to full output as solar output wanes. This mode of operation can be particularly desirable during the Spring when demand is moderate, and hydro is at its maximum.

The summer 2020 power supply shortfalls on the California grid, combined with near-term scheduled shutdowns of the state's once-through cooling power plants and the retirement of the state's largest generator, Diablo Canyon, have thrust concerns about sufficiency of power supply and grid reliability to

the fore. This concern becomes even more compelling when considering the state's efforts to increase transportation electrification and building electrification as major pathways for reducing greenhouse-gas emissions.

California policymakers and regulators are grappling with whether to extend operations of existing natural gas generators, and/or encourage the pursuit of major upgrades and repowers at existing gas-fired facilities, and possibly even the development of new fossil-fuel generators. These measures would be pursued in the interest of electric grid reliability, but they would significantly hinder the state's efforts to decarbonize its fuel supply. Among the clean-energy options available for avoiding further development of the state's gas fleet, the lowest hanging fruit, has to be the retention of the existing baseload renewable generating fleet. And the next best option is to tap into the collection of idle but operable baseload renewable generators in the state. There are approximately 100 MW of idle but operable biomass facilities in California. It is considerably cheaper to recommission these facilities than to develop new ones. This resource – recommissioned biomass generators – is never included in the modeling studies of future supply carried out by the California Public Utilities Commission or the California Energy Commission. The time has come to include it.

Leveraging California's Existing Biomass Infrastructure to Support Future Goals

California's existing biomass infrastructure is the least expensive and quickest path to achieving your goals by modernizing these resources. Some facilities will continue to be what they are today and continue serving the needs of the regions in which they are located. Some will be recruited to pursue gasification, carbon capture and hydrogen technology advancements.

The GTI Report ***Low-Carbon Renewable Natural Gas (RNG) from Wood Wastes***[1] conducted an engineering design study that provides an understanding of the costs and issues surrounding the conversion of an existing biomass power plant into an RNG producing facility utilizing commercial technologies. In addition to the benefits of developing RNG from wood waste -- environmental benefits as well as reduced potential for forest fires and open burning of agricultural wastes – the cost benefits of integration of these technologies into an existing facility. It notes: "Using the existing energy infrastructure to produce and move low carbon energy can enable a lower cost pathway to reduced carbon dioxide (CO2) emissions in a shorter time." (p. 5). Specifically, the report lists the following systems could be reused upon conversion to an RNG production facility: (p. 27)

- Cooling tower and cooling water
- Demin water
- Instrument air
- Natural gas supply
- Fire water

[1] *California RNG Production from Woody Biomass*, Gas Technology Institute, February 2019.

- Biomass handling
- Electrical distribution
- Plant control system

The report goes even further by exploring the possibility to improve the emission profile of the technology further through sequestering carbon that originated from the atmosphere while producing RNG. With an additional compressor needed to pressurize the CO2 in order to inject into a hypothetical GHG pipeline near the site, the CI score with carbon sequestration is -77.4. (p.60)

No-Combustion scenario should be discarded

CBEA has already commented on this and provided justification (September 2, 2021). CBEA would like to additionally submit for the record Sanchez' et al[2], which highlights that biomass with CCS (regardless of application) assists with the near-term goals and is essential for long-term goals. The electricity sector is the one place this can be accomplished. The existing fleet of biomass plants needs to be modernized with CCS technology over the next few years. In addition, new technology biomass plants (IGCC) need to be added to the fleet. To make that happen, the existing biomass to electricity infrastructure must be maintained – and be converted to new technologies as the use of biomass expands over the planning horizon.

Modeling Option One with non-combustion should be discarded as commented on in previously cited submittals.

Sincerely yours,

Julee Malinowski Ball, Executive Director
California Biomass Energy Alliance

[2] Daniel L. Sanchez, et. al. *Biomass enables the transition to a carbon negative power system across western North America*, Published Online: 9 February 2015, DOI: 10.1038/NCLIMATE2488