

Date of Hearing: April 12, 2023

ASSEMBLY COMMITTEE ON UTILITIES AND ENERGY

Eduardo Garcia, Chair

AB 998 (Connolly) – As Amended March 15, 2023

SUBJECT: Biomass energy facilities: State Energy Resources Conservation and Development Commission: report

SUMMARY: Requires the California Energy Commission (CEC) to report on utility-scale biomass combustion facilities, and specifies information the report must contain.

Specifically, **this bill:**

- 1) Requires the CEC, on or before December 31, 2024, to issue a report on the utility-scale biomass combustion facilities still in operation as of January 1, 2024, that includes all of the following:
 - a) An assessment of the capacity of biomass combustion facilities to process forest biomass and material resulting from vegetation management and forest treatment projects.
 - b) An assessment of the role each of the biomass facilities plays in achieving the state's forest health improvement and wildfire risk reduction objectives.
 - c) Options to maximize the environmental benefits of biomass combustion facilities and an analysis of the feasibility of upgrading these facilities with new technologies or alterations in operations.
 - d) A recommended strategy to upgrade biomass combustion facilities, where appropriate, that considers the following:
 - i) Impacts on disadvantaged communities located near the facilities.
 - ii) Impacts on rural forested or agricultural communities.
 - iii) Impacts on the ability to maintain existing capacity for managing forest biomass or other excess biomass.
 - iv) The cost of upgrading biomass combustion facilities as well as financing opportunities that may exist for those efforts.
 - v) Job creation or job losses that may result from the strategy.
 - e) Recommendations for how baseload power and the capacity for managing excess biomass waste would be made up if existing biomass combustion facilities still in operation as of January 1, 2024, subsequently cease operation.
 - f) Strategies for processing forest, agricultural, urban, or postfire waste in areas where combustion biomass facilities still in operation as of January 1, 2024, may cease operation temporarily or permanently.

- g) Strategies for job training in any areas where job loss would occur due to a biomass combustion facility shutting down or being repowered.
 - h) An assessment of the type and duration of contract that would be necessary to encourage biomass combustion facilities still in operation as of January 1, 2024, to upgrade.
- 2) Requires the CEC to include in the report an evaluation of the feasibility of upgrading utility-scale biomass combustion facilities that ceased operation before January 1, 2024, to determine whether such facilities could help California increase its capacity to manage forest and other excess biomass.
- 3) Requires the CEC, when preparing the report, to do all of the following:
- a) Coordinate with the California Air Resources Board (CARB) and local air districts on assessments of environmental benefits and available technologies to maximize those benefits.
 - b) Coordinate with the Department of Forestry and Fire Protection (Cal Fire), the Department of Food and Agriculture, and the Department of Resources Recycling and Recovery on feedstock assessments for forest, agricultural, urban, and postfire waste.
 - c) Engage with and solicit feedback from local governments and communities in which biomass combustion facilities are located, and provide opportunities for stakeholder and public input.

EXISTING LAW:

- 1) Includes biomass in the definition of “renewable electrical generation facility” for purposes of the state’s renewable portfolio standard (RPS). (Public Resources Code § 25741)
- 2) Defines “biomass conversion” as the production of heat, fuels, or electricity by the controlled combustion of, or the use of other noncombustion thermal conversion technologies on specified materials when separated from other solid waste. (PRC § 40106)
- 3) Requires, by December 1, 2023, electrical corporations to collectively procure, through financial commitments of 5 to 15 years, inclusive, their proportionate share of 125 megawatts (MW) of cumulative rated generating capacity from existing bioenergy projects that commenced operations before June 1, 2013. At least 80% of the feedstock of an eligible facility, on an annual basis, shall be a byproduct of sustainable forestry management, which includes removal of dead and dying trees from Tier 1 and Tier 2 high hazard zones and is not from lands that have been clear cut. (Public Utilities Code 399.20.3 § (b)(1))
- 4) Requires an electrical corporation, local publicly owned electric utility, or community choice aggregator (CCA) with a contract to procure electricity generated from biomass that expires or expired on or before December 31, 2028, to seek to amend the contract to include, or seek approval for a new contract that includes, an expiration date five years later than the expiration date in the contract that was operative in 2022, except as specified. (PUC § 8388)

FISCAL EFFECT: Unknown. This bill is keyed fiscal and will be referred to the Committee on Appropriations for its review.

BACKGROUND:

Biomass – Biomass is renewable organic material that can include wood and wood processing wastes, yard and food waste, agricultural crops, animal manure, and human sewage (municipal solid waste). Forest operations such as logging, thinning, fuels reduction programs, and ecosystem restoration create a huge amount of woody biomass, and as much as half of the biomass is left in the forest. When residues from mastication and slash from timber harvests are left scattered throughout the forest, they act as additional dry surface fuel and serve to increase intensity and severity if a wildfire burns through the area. Often biomass materials are piled and burned creating air pollution, such as black carbon, or left to decay, creating methane, which has a global warming potential 28 times more powerful than carbon dioxide (CO₂) over a 100-year time horizon.

Biomass electricity – Biomass can be used as feedstock to generate heat and electricity out of what would otherwise be waste material. Biomass is converted to energy through four main processes: direct combustion, and thermochemical, chemical, and biological conversion. Direct combustion, or simply burning the biomass, is the most common method for converting biomass to useful energy. Thermochemical conversion—such as pyrolysis and gasification—breaks down the biomass material with heat, usually with little to no oxygen so there is no burning. Chemical conversion breaks down the biomass material through chemical reactions; whereas biological conversion—including fermentation and bacterial decay—breaks down the biomass material through the use of enzymes, bacteria, or other microbes.¹

In 2019, California increased its aggressive renewable energy goals with the passage of Senate Bill 100 (De León, Chapter 312, Statutes of 2019). That bill mandates RPS-eligible sources must provide 60% of electricity by 2030, and renewable and carbon-free sources must provide 100% of electricity by 2045. There are currently more than 80 biomass facilities operating in California—both direct combustion and alternative processes—with a total capacity of 1,259 MW, accounting for about 3% of in-state generation.² Electricity generated from biomass is considered a renewable energy resource for the purposes of meeting the state’s RPS requirements. Unlike variable renewable energy resources (such as solar and wind), bioenergy technologies can provide reliable and renewable baseload generation, or firm power, meaning that electricity can be generated during scheduled times and at predetermined power levels.

The total potential electricity generation of biomass feedstocks, which include products from agriculture and forestry, as well as municipal solid waste, in California is 21,500 Gigawatt hours

¹ U.S. Energy Information Administration (EIA); “Biomass explained”; Updated June 2022; <https://www.eia.gov/energyexplained/biomass/>

² CEC; “California Biomass and Waste-to-Energy Statistics and Data”; https://ww2.energy.ca.gov/almanac/renewables_data/biomass/index cms.php

(GWh) or enough to support 4,650 megawatts (MW) of capacity.³ Biomass may aid in offsetting fossil fuel usage by supplying biogas and combustion products, which provide many of the same fast ramping capabilities as natural gas systems. The 21,500 GWh of electrical potential would offset roughly 24% of 2018 natural gas usage in California. The CEC has estimated that the electricity generation possible from bioenergy, if the entire technical capacity is captured, would be enough electricity to provide 6.6% of 2045 SB 100 goals.⁴

Forest biomass and wildfire – Wildfires have been growing in duration and ferocity over the past 20 years. Their growing risk is due to a number of factors, from accumulating forest fuels to a warming climate to expanding development in the wildland-urban interface. Better management of the fuels that contribute to this wildfire risk is one of the main strategies to help mitigate fires.

According to the Assembly Committee on Natural Resources, the State of California is responsible for fire and resource protection on nearly 13.3 million acres of private and state-owned forested lands. The state owns about 1.1 million acres of these lands, and 12.2 million acres of lands are under private ownership. In the past several years, forest management has significantly expanded on these lands. CalFire has increased its forest thinning and prescribed fire activities from about 30,000 acres in 2016 to more than 50,000 acres in 2020. Partners receiving state-funded grants treated more than 30,000 acres in 2020. Private landowners currently actively manage 250,000-300,000 acres through fuels reduction, mechanical thinning, and timber harvest projects. In addition, SB 901 (Dodd, Chapter 626, Statutes of 2018) requires California to double forest fuel removal. And in August 2020, California and the US Forest Service agreed to scale up vegetation treatment and maintenance to one million acres of federal, state, and private forest and wildlands annually by 2025.⁵ All of these efforts produce forest waste. Sometimes that waste is left in piles, contributing to wildfire risk; whereas at others times the waste is burned on site, contributing to air pollution.

Challenges to biomass energy – Many of California’s biomass plants that originally came on-line in the 1980s and 1990s either shut down or were idled starting around 2010 as supply contracts ran out.⁶ Biomass plants are hindered by high operation and feedstock transportation costs, which can result in insufficient revenue to cover operation and maintenance expenses. California’s forestry waste has increased as drought and tree die-off have provided large amounts of fuel for forest fires. This situation has highlighted the need for additional biomass plants to use forest waste productively. As a result, some idled biomass generation has come back into operation, not necessarily at full capacity, and new projects are being developed. Unlike biomass plants that had large fuel streams from local farms, these new and repowered facilities rely on forest waste, which is less concentrated and produces less waste within the same fuel supply distance. There are various limitations to utility scale biomass combustion, including cost of

³ CEC; “Utility-Scale Renewable Energy Generation Technology Roadmap”; September 2020.

⁴ CEC; “Utility-Scale Renewable Energy Generation Technology Roadmap”; September 2020.

⁵ Memorandum of Understanding, “Agreement for Shared Stewardship of California’s Forest and Rangelands between the State of California and the USDA, Forest Service Pacific Southwest Region,” August 12, 2020.

⁶ CEC; “Estimated Cost of New Utility-Scale Generation in California: 2018 Update”; May 2019

feedstocks, which are highly variable due to the difficulty and expense to transport them from rural, mountainous areas to biomass facilities.

The effect of biomass utilization on air quality presents another challenge. Biomass conversion systems produce air emissions due to the combustion of biomass or through production and subsequent combustion of syngas or biogas.^{7,8} California's air quality standards can be prohibitive to the location and permitting of these facilities. Notably, while these facilities play an important role in mitigating wildfire risk, many facilities are decades-old and still rely on rudimentary combustion technology. Remaining biomass facilities may have opportunities for retrofits to reduce emissions, make technological improvements, and potentially increase forest waste processing capabilities.

COMMENTS:

- 1) *Author's Statement.* According to the author, "As California continues to struggle with the monumental task of processing millions-of-tons of forest waste generated by wildfire mitigation projects, the State remains reliant on many older, combustion biomass facilities. With forest material byproducts increasing, it is incumbent upon the State to identify opportunities to modernize remaining combustion biomass facilities to improve their function and reduce operational emissions. AB 998 accomplishes this task by requiring CEC to study these issues, as well as creating a contingency plan to respond to the loss to forest waste processing capacity and local jobs that could occur as the result of combustion biomass facilities shutting down, or temporarily ceasing to operate."
- 2) *A Biomass Balancing Act.* Biomass energy production serves critical functions in California, processing much of the forest waste produced by California's wildfire mitigation efforts while providing electricity and acting as an economic engine in many, largely rural, communities. However, the utility of these functions should be balanced with concerns about the price-competitiveness of biomass-produced electricity and pollution, particularly from aging biomass facilities that have not been upgraded with more efficient emissions-reducing technologies. In considering the possibility of upgrades to biomass combustion facilities, questions regarding the practicality, cost-effectiveness, and potential cost impact on ratepayers should be addressed. *As such, the author and committee may wish to consider amendments to strike "feasibility" from 25544. (a)(3) and 25544. (b) and replace it with more specificity around the study topics, including "practicality and cost-effectiveness," as well as add a subparagraph requiring that the cost impact to ratepayers be considered in the recommended strategy to upgrade biomass combustion facilities.*

⁷ U.S. Energy Information Administration (EIA); "Biomass and the environment"; Updated November 2022; <https://www.eia.gov/energyexplained/biomass/biomass-and-the-environment.php>

⁸ The Hill; "Biomass is not health neutral"; March 2022; <https://thehill.com/opinion/energy-environment/599950-biomass-is-not-health-neutral/>

3) *Unpacking Impact.* In developing the recommended strategy to upgrade biomass combustion facilities, the CEC is asked to consider the impacts on certain communities that may rely on, or be adversely effected by, the operation of biomass combustion facilities. Fully exploring the potential outcomes for these communities should biomass combustion facilities be upgraded is critical to ensuring that the recommended upgrade strategy is equitable. *As such, the author and committee may wish to consider amendments to specify in 25544(a)(4)(A) and 25544(a)(4)(B) that impact on disadvantaged, rural forested, and agricultural communities includes, but is not limited to, health, economic, and cultural impacts.*

4) *Related Legislation.*

AB 625 (Aguiar-Curry) establishes the Forest Waste Biomass Utilization Program to develop an implementation plan to meet the goals and recommendations of, and the comprehensive framework to align with the state's wood utilization policies and priorities and focused market strategy of, specified statewide forest management plans, and to develop a workforce training program to complement the workforce needs associated with the implementation plan. Status: *pending hearing* in the Assembly Committee on Natural Resources, after passing out of this committee on March 22nd, 2023 with a 13-0-2 vote.

5) *Prior Legislation.*

SB 1109 (Caballero) extended the electrical corporations' obligation to collectively procure their proportionate share of 125 megawatts of cumulative rated generating capacity from existing bioenergy projects, require those entities with a contract to procure electricity generated from biomass that expires before December 31, 2028, to seek 5 year extensions on those contracts, and require any new contracts for incremental procurement of electricity from bioenergy resources to be from a resource that meets emission limits equivalent to the best available retrofit control technology. Status: Chapter 364, Statutes of 2022.

AB 322 (Salas) requires the CEC to consider, in the investment planning process for electric ratepayer-funded Electric Program Investment Charge program, funding for eligible biomass conversion to energy projects. Status: Chapter 229, Statutes of 2021.

SB 100 (De León) establishes the 100 Percent Clean Energy Act of 2018 which increases the Renewables Portfolio Standard (RPS) requirement from 50% by 2030 to 60% and creates the policy of planning to meet all of the state's retail electricity supply with a mix of RPS-eligible and zero-carbon resources by December 31, 2045, for a total of 100% clean energy. Requires the CPUC, in consultation with the CEC, CARB, and all California balancing authorities, issue a joint report to the Legislature by January 1, 2021, reviewing and evaluating the 100 percent clean energy policy. Status: Chapter 312, Statutes of 2018.

SB 1122 (Rubio), established a statewide procurement of up to 250 MW of renewable energy from small biomass or biogas technologies that utilize low emission technologies, and requires 50 MW be from small-scale bioenergy from the byproducts of sustainable forestry. This established the BioMAT program. Status: Chapter 612, Statutes of 2012.

- 6) *Double Referral*. This bill was previously heard in the Assembly Committee on Natural Resources on March 27th, 2023, where it passed with an 11-0-0 vote.

REGISTERED SUPPORT / OPPOSITION:**Support**

California Compost Coalition
Marin Clean Energy (MCE)
Rural County Representatives of California (RCRC)
San Joaquin County Board of Supervisors
San Joaquin Farm Bureau Federation
Sierra Business Council

Opposition

None on file

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