Date of Hearing: April 27, 2022

ASSEMBLY COMMITTEE ON UTILITIES AND ENERGY
Eduardo Garcia, Chair
AB 2878 (Aguiar-Curry) – As Amended April 20, 2022

SUBJECT: Forest Biomass Waste Utilization Program

SUMMARY: Establishes the Forest Biomass Waste Utilization Program to develop an implementation plan for using biomass waste, including—of particular interest to this Committee—requiring the California Public Utilities Commission (CPUC) to adopt measures to use biomass waste to support rural microgrids, to plan to require substation upgrades to support biomass integration, to adopt pipeline biogas standards, to provide incentives for electricity and pipeline interconnection for forest biomass projects, and to extend the date and consider increasing the megawatt (MW) cap of the Bioenergy Market Adjusting Tariff (BioMAT). Specifically, **this bill**:

1) Establishes the Forest Biomass Waste Utilization Program in California Air Resources Board's (CARB) Joint Institute for Wood Products Innovation, and requires the program to develop an implementation plan, in coordination with the Wildfire and Forest Resilience Task Force, Office of Planning and Research, the Governor's Office of Business and Economic Development, Department of Toxic Substances Control, Department of Conservation, California Energy Commission (CEC), and the CPUC, to meet the goals and recommendations of the Forest Biomass Waste Utilization Plan and the comprehensive wood utilization strategy and market framework required by the Wildfire and Forest Resilience Action Plan. Requires the implementation plan to identify funding needs, gaps in research and demonstration, necessary regulatory changes, and other needs; adopt best practices for biomass feedstock aggregation; and develop a workforce training program.

2) Requires CARB, beginning January 1, 2024, and annually thereafter, to prepare and submit an annual report to the Legislature on the progress made on implementing the implementation plan.

3) Requires CARB to include black carbon and short-lived climate pollutants from wildfire, controlled burns, and pile and burn forest waste into the 2025 update of an assessment of greenhouse gas (GHG) emissions from wildfire and forest management; and to include the findings from the assessment into any updates after January 1, 2023 to the consolidated inventory of air emissions. Additionally requires CARB to incorporate recommendations from a forest carbon plan into the Scoping Plan.

4) Requires the California Natural Resources Agency (CNRA) to include the recommendations for forest biomass waste utilization in relevant state climate adaptation plans, including recommendations for biomass energy to increase energy reliability and community resilience. Additionally requires CNRA to prepare and publish an update on

or before July 1, 2024, and at least once every five years thereafter, of both The California Forest Carbon Plan and the Wildfire and Forest Resilience Action Plan.

5) Requires the CEC to consider funding qualifying projects pursuant to the Clean Transportation Program that use forest biomass waste for advanced biofuel technology development including, but not limited to, projects that use noncombustion conversion technologies for electrical vehicle charging or hydrogen vehicle fueling.

6) Requires the CEC, as part of the 2023 edition—and biennially thereafter—of the Integrated Energy Policy Report (IEPR), to include an assessment of the potential for forest biomass waste energy to provide firm renewable power.

7) Requires the CPUC, by December 31, 2024, to adopt measures to facilitate the use of forest biomass waste to support rural microgrids and provide other grid support, and develop and adopt a plan requiring substations and other power infrastructure to be upgraded in forested regions to reduce the risk of causing wildfires and to support integration of biomass power.

8) Requires the CPUC, in coordination with CARB and the Office of Environmental Health Hazard Assessment, to adopt pipeline biogas standards, by January 1, 2024, for biomethane generated from the noncombustion thermal conversion of forest biomass waste, and periodically update those standards.

9) Requires the CPUC to provide incentives for electricity and pipeline interconnection for projects that use forest biomass waste removed for wildfire mitigation or forest restoration projects; to extend the end date of the BioMAT program; and, to consider increasing the MW requirement for distributed generation projects that use forest biomass waste in the BioMAT program.

10) Defines a number of terms for the purposes to the bill, including “forest biomass waste,” which means forest biomass that is removed for wildfire mitigation, to reduce the risks to public safety or infrastructure from falling trees, creation of defensible space, or for forest restoration projects.

11) Makes a number of findings and declarations related to the need for active forest management, and preferred end-uses of forest waste.

EXISTING LAW:

1) Establishes, pursuant to Executive Order No. B-52-18, a Forest Management Task Force, now known as the Wildfire and Forest Resilience Task Force, involving specified state agencies to create the action plan for wildfire and forest resilience. The executive order also established a Joint Institute for Wood Products Innovation.

2) Designates, under the California Global Warming Solutions Act of 2006, CARB as the state agency charged with monitoring and regulating sources of emissions of GHGs. Requires CARB to adopt a statewide GHG emissions limit and to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions. (Health and Safety Code §§ 38500-38510)

3) Requires CARB, in consultation with CAL FIRE, to develop a report on or before December 31, 2020, and every 5 years thereafter that assesses GHGs associated with wildfire and forest management activities. Requires CARB to prepare, adopt, and update an inventory of GHGs from all sources located in the state. (Health and Safety Code § 38535 and § 39607.4)

4) Requires electric investor-owned utilities (IOUs) to collectively procure at least 250 megawatts (MW) of generated resources from bioenergy projects, and the CPUC to allocate amongst the electric IOUs shares of the 250 MW from bioenergy derived from organic waste diversion, dairy and agricultural sources, and byproducts of forest management. Requires the CPUC to encourage IOUs to develop programs and services that facilitate development of bioenergy and biogas. This program is known as BioMAT. (Public Utilities Code § 399.20)

5) Requires retail sellers and publicly owned utilities to increase purchases of renewable energy such that at least 60% of retail sales are procured from eligible renewable energy resources by December 31, 2030. This is known as the Renewables Portfolio Standard (RPS). Electricity generated from biomass is considered a renewable energy resource under this policy. (Public Utilities Code §§ 399.11-399.33)

6) Establishes the policy that all of the state's retail electricity be supplied 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, to issue a joint report to the Legislature by January 1, 2021, reviewing and evaluating the 100% clean energy policy. (Public Utilities Code § 454.53)

7) Establishes within the RPS a requirement that electrical corporations, by December 1, 2016, collectively procure, through financial commitments of five years, their proportionate share of 125 megawatts of cumulative rated generating capacity from bioenergy projects commencing operation prior to June 1, 2013, that each produces its generation using specified minimum percentages of certain types of forest feedstock, including from Tier 1 and Tier 2 high hazard zones. (Public Utilities Code § 399.20.3)

8) Requires an electrical corporation, local electric publicly owned utility, or community choice aggregator with a contract to procure electricity generated from biomass that is operative at any time in 2018, and expires or expired on or before December 31, 2023, 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 2018, so long as the contract extension follows the feedstock requirement. This requirement would be limited to facilities sourcing fuel material in California and would not apply to facilities located in certain air basins. (Public Utilities Code § 8388)

9) Requires the CEC to adopt the IEPR every two years, which must contain an overview of major energy trends and issues facing the state, including, but not limited to, supply, demand, pricing, reliability, efficiency, and impacts on public health and safety, the economy, resources, and the environment. (Public Resources Code §§ 25300-25327)

10) Requires the CEC to timely incorporate firm zero-carbon resources into the IPER. (Public Resources Code § 25305.5)

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

BACKGROUND:

Biomass processes – 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). 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.

Biomass electricity – From about 1990 to 1993, California's biomass power generation was at its highest, with more than 800 MW of installed capacity.[1] In 1996, the energy production from biomass combustion decreased to about 590 MW.[2] Today, there are about 87 operating biomass facilities—both direct combustion and alternative processes—in operation with a capacity of 1,259 MW, accounting for about 3% of in-state generation.[3] 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

[1] CEC website, "Biomass Energy in California," https://www.energy.ca.gov/data-reports/california-power-generation-and-power-sources/biomass/biomass-energy-california; viewed on 04.22.2022.
[2] The expiration of governmental subsidies was a main driver for the reduction in biomass power generation during this time.
[3] CEC website, "California Biomass and Waste-to-Energy Statistics and Data," https://ww2.energy.ca.gov/almanac/renewables_data/biomass/index_cms.php, viewed on 04.22.2022

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.

Board of Forestry and Fire Protection recommendations – On November 4, 2020, the Joint Institute for Wood Products Innovation and the Board of Forestry and Fire Protection released a set of recommendations to promote biomass utilization in California, specifically seeking to put forest fuels to its highest value use rather than pile burning or leaving the material to decompose.[4] The report includes a comprehensive list of market and regulatory challenges in bioenergy, and offers a couple dozen recommendations for various state agencies, many of which appear in this bill. Recommendation 2.3.1 urged ensuring microgrid tariffs include forest waste-based energy and forested communities. Recommendation 2.3.3 urged adopting pipeline injection standards for non-combustion thermal conversion of forest biomass. Recommendation 2.3.4 urged adopting incentives or rate basing a portion of the costs to interconnect forest biomass projects to the electricity grid and common carrier pipelines.

BioMAT – BioMAT is a feed-in-tariff program established by SB 112 (Rubio, Chapter 612, Statutes of 2012). Feed-in-tariffs offer long-term contracts with price certainty—usually above-market—for financing renewable energy investments. BioMAT created a 250 MW procurement requirement for small-scale bioenergy projects for California's three largest IOUs,[5] broken into biogas, agriculture, and sustainable forest management categories. As shown in Table 1, the program has received limited adoption since its implementation in 2014.

Table 1: BioMAT Mandated Allocations

Category	MW Allocation	MW Contracted	MW Remaining	Contract Price ($/MWh)
Biogas	110	10	100	127.72
Dairy/Agriculture	90	26.5	63.5	187.72 (Dairy) 183.72 (Other Agriculture)
Sustainable Forest Management	50	11	39	199.72
Total	**250**	**47.5**	**202.5**	

The BioMAT program underwent a formal program review in 2018,[6] where CPUC staff recommended programmatic and procedural improvements to the program. The goal of the program review was to simplify the BioMAT procurement process, enable expanded program participation, address program barriers, reduce ratepayer expenditures, and promote statewide goals. In September 2020 a decision was issued directing changes to the BioMAT program rules,

[4] CPUC, CAL-FIRE, "Joint Institute Recommendations to Expand Wood and Biomass Utilization in California," November 4, 2020.
[5] Pacific Gas & Electric (PG&E), Southern California Edison (SCE), and San Diego Gas & Electric (SDG&E)
[6] R. 18-07-003

contract terms, as well as clarifications to the procurement process.[7] As part of that decision, the CPUC established a technical working group to develop a project specific lifecycle GHG emissions reduction model—a Lifecycle Assessment (LCA) approach—to quantify the net emissions of the BioMAT program's project operations. The final BioMAT LCA tool is expected to be available for public comment in late 2022.

COMMENTS:

1) *Author's Statement.* According to the author, "California's forests cover nearly one-third of the state and provide enormous benefits for the climate, the environment, and the economy. Our forests are, however, increasingly vulnerable to wildfire, invasive species, drought, and other threats. AB 2878 will address the need to remove forest biomass waste to reduce wildfires and create healthier forests by prioritizing state agency use of and focus on the processing of biomass waste into bioenergy and other wood products."

2) *Statewide benefits of forest management.* 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. CAL FIRE 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.[8]

   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. This bill seeks recommended and alternative strategies for forest fuel load reduction in the hopes of creating end-use markets for biomass that will

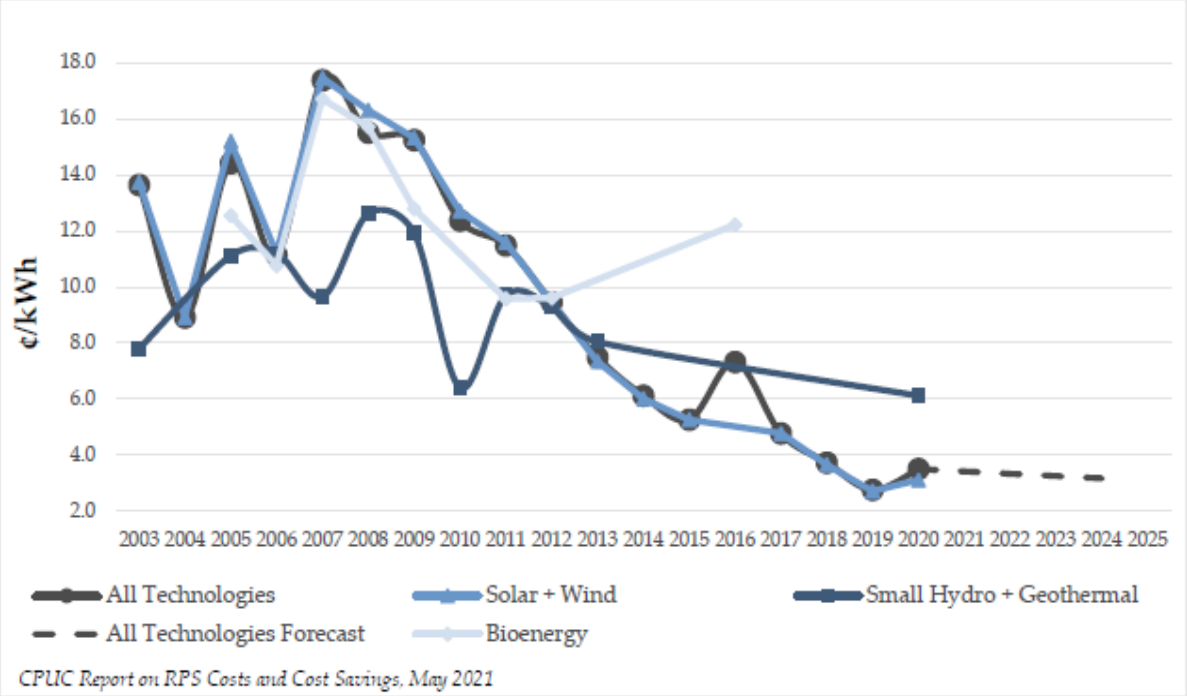
[7] D. 20-08-043
[8] Memorandum of Understanding, "Agreement for Shared Stewardship of California's Forest and Rangelands between the State of California and the USDA, Forest Service Pacific Southwest Region," August 12, 2020.

encourage and accelerate healthy forest management to prevent wildfire spread while reducing GHG emission.

3) *Cost Considerations.* The main end-use of biomass today is as a fuel for California's existing biomass power plants. This has largely been driven by direct mandates to procure biomass electricity.

In October 2015, Governor Brown issued an Emergency Order addressing Tree Mortality, and called upon the CPUC to review and update its procurement programs for small bioenergy generators.[9] The Bioenergy Renewable Action Mechanism (BioRAM) program was established in response. Subsequently, SB 859 (Committee on Budget and Fiscal Review, Chapter 368, Statutes of 2016) directed additional BioRAM procurement resulting in the requirement on large IOUs to procure 146 MWs of bioenergy from High Hazard Zone fuel. SB 901 (Dodd, Chapter 626, Statutes of 2018) further amended the BioRAM program to add program flexibility and extend certain biomass contracts by five years. Without these efforts, the viability of electricity generation from biomass is unclear. Biomass often experiences high operation and transportation costs, which often make electricity generated from biomass more expensive than other sources.

Figure 1- Historical Trend of All Load Serving Entities' RPS Contract Costs by Technology



As shown in Figure 1,[10] RPS contract prices saw a spike in 2016 due to the execution of the BioRAM contracts. Figure 1 does not show contracts of 3 MW or less, so BioMAT contracts are not represented; however, their 2020 average contract price exceeded what

[9] Governor Edmund G. Brown, E.O. B-52-18
[10] Taken from pg. 14 of the CPUC's 2021 Padilla Report, published May 2021.

is shown for the BioRAM.[11] To date, the total contracted capacity and average contract price of existing BioMAT contracts is 46 MW and 17.4 ¢/kWh, and for BioRAM it is 178 MW and 12.0 ¢/kWh, respectively. For comparison, the IOUs' weighted average RPS procurement expenditures were approximately 8 ¢/kWh for geothermal, 10 ¢/kWh for small hydro, 11 ¢/kWh for solar PV, and 8 ¢/kWh for wind.[12] Community Choice Aggregators are not required to offer BioMAT or BioRAM contracts.

4) *The Best End-Use?* The need to better manage California's forest waste is apparent. Having a robust biomass market spurring that forest management can help drive down the cost of forest waste removal activities. However, the biomass supply chain is underdeveloped in California. As noted above, government intervention has led the biomass energy sector to be the main end-use for California's biomass waste. This bill appropriately seeks a more holistic approach by establishing a Forest Biomass Waste Utilization Program, with an emphasis on examining innovative new projects to manage the large volume of forest waste anticipated to arise in the coming years.[13]

   While this bill largely focuses on *planning* for these new biomass end-uses, the exception is the energy sector where this bill requires the CPUC to adopt measures to use biomass waste to support rural microgrids, to plan to require substation upgrades to support biomass integration, to adopt pipeline biogas standards, to provide incentives for electricity and pipeline interconnection for forest biomass projects, and to extend the date and consider increasing the MW cap of BioMAT. The supporters of this bill point to a study conducted by The Nature Conservancy to justify the requirements on the energy sector in this bill. The study found biomass energy as one of the three most viable end markets for addressing the forest health crisis on a 10-year timeline. The study prioritized the expeditious treatment of forest waste, and thus selected end-uses that built on California's established infrastructure: sawmills (for both small and medium to medium-large logs), biomass energy, and integrated wood-utilization campuses.[14] The study suggested the repowering of shuttered biomass combustion plants was one of the most efficient ways to manage the waste. However, such repowering of old combustion plants is not contemplated in this bill; rather, innovative approaches are the focus.

   Given the bill's appropriate focus on innovation, it is unclear how the energy sector may fare over newer, more innovative end-uses. Moreover, there is no funding source specified in the bill; the presumption is ratepayers will bear the cost. As the state already has two mandated forest biomass energy programs–BioMAT and BioRAM—subsidized by ratepayers, it may be prudent for the energy end-use section of this bill to align with

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[11] 12.8 ¢/kWh for biogas; 18.8 ¢/kWh for dairy/ag; and 20 ¢/kWh for forest; pg. 15, 2021 Padilla Report.
[12] Pg. 23, 2021 Padilla Report
[13] According to the Board of Forestry, state requirements to remove forest fuels on one million acres per year will lead to 10 to 15 million bone dry tons of forest waste biomass annually. Existing biomass plants use about five million BDT of biomass per year.
[14] Pg. 10, The Nature Conservancy and Bain & Co., *Accelerating Forest Restoration*, December 2020.

the bill's focus on planning and innovation. Additionally, the BioMAT program, as shown in Table 1, has plenty of remaining capacity to meet short-term waste management needs. *As such, the author and committee may wish to consider amendments to strike Section 399.20.6 (d) and 399.20.6 (e)(2), modify the remaining provisions of 399.20.6 to emphasize planning, and direct the CPUC to examine pathways for forest biomass waste using innovative bioenergy technologies that have better environmental performance and grid reliability benefits.*

5) *Related Legislation.*

AB 2587 (E. Garcia, 2022), among its provisions, expands the type of firm resources to be considered in an upcoming CEC assessment to include biomass and bioenergy firm resources. Status: *pending hearing* in the Assembly Committee on Appropriations.

6) *Previous Legislation.*

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

AB 3163 (Salas), expands the definition of "biomethane" to include methane that is produced from the non-combustion thermal conversion of eligible biomass feedstock, for purposes of the CPUC's consideration of adopting biomethane procurement targets. Status: Chapter 358, Statutes of 2020.

SB 901 (Dodd), among its many provisions, required an extension by 5 years of the existing biomass procurement contracts authorized under an executive order from Governor J. Brown. Status: Chapter 626, Statutes of 2018.

SB 859 (Committee on Budget and Fiscal Review), among its many provisions, directed 125 MW of bioenergy procurement. Status: Chapter 368, Statutes of 2016

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.

7) *Double Referral.* This bill was previously heard in the Assembly Committee on Natural Resources on April 18th, 2022, where it passed with an 11-0-0 vote.

REGISTERED SUPPORT / OPPOSITION:

Support

Bioenergy Association of California
California Biomass Energy Alliance
California Forestry Association
Earth Foundries, INC.
Ganrock
Golden State Natural Gas Systems
Golden State Power Cooperative
H Cycle LLC
Humboldt Redwood Company LLC
Marin Wildfire Prevention Authority
Mendocino Redwood Company
Microgrid Resources Coalition
Mote, INC.
Northstar Community Services District
Placer County Air Pollution Control District
Rural County Representatives of California (RCRC)
Santa Clara County Firesafe Council
Sierra Business Council
The Watershed Research and Training Center
TSS Consultants
County of Tulare
Wisewood Energy
Yosemite Clean Energy

Opposition

None on file.

Analysis Prepared by: Laura Shybut / U. & E. / (916) 319-2083