

BIOMASS POWER IS EXPENSIVE AND DEPENDS ON TAXPAYER SUBSIDIES THAT TAKE RESOURCES AWAY FROM TRULY CLEAN ENERGY

The inefficiency of using forest biomass to generate electricity makes it particularly costly. In fact, biomass power is California's most expensive energy source. Biomass power plants rely heavily on regulatory incentives and subsidies paid for by taxpayers and ratepayers. These biomass subsidies consume resources that would be better spent on cheaper and truly clean solar and wind energy alternatives and the jobs they create.

Biomass power is California's most expensive energy source.

Incinerating trees is a highly inefficient way to make electricity, which makes it very expensive. In fact, biomass power is the most expensive of California's common electricity sources.¹ In 2018, the levelized cost of biomass power averaged \$166 per megawatt hour compared to \$49 per megawatt hour for photovoltaic solar and \$57 for wind.²

Biomass power plants in California are not competitive with other electricity sources and depend on being propped up by state policies.

As of 2019, there were 23 bioenergy power plants operating in California fueled by wood and other biomass³ which contribute less than 2% of the state's total electric power.⁴ Many California bioenergy power plants have been closed or idled since the peak of more than 60 plants in the 1980s because bioenergy is not competitive with other energy sources.⁵ Because biomass energy is expensive and inefficient, bioenergy power plants depend heavily on regulatory incentives and subsidies in order to be economically viable.

Recent legislation has required electric utilities to purchase electricity from bioenergy power plants at high costs that are passed on to customers. In 2012 under SB 1122 (Rubio), California required public utilities to collectively purchase 250 MW (megawatts) of electricity from bioenergy plants, including 50 MW from forest-sourced woody biomass.⁶ As a result, in 2014, the Public Utilities Commission established the BioMAT program (Bioenergy Market Adjusting Tariff), a feed-in-tariff that effectively requires California's three investor-owned utilities—PG&E, SCE, and SDG&E—to purchase bioenergy at a price set by the CPUC. In other words, it provides a guaranteed above-market price to bioenergy facilities less than 5 MW in size. This is effectively a subsidy to bioenergy plants, the cost of which is passed through to ratepayers.

In 2016, SB 859 required that all utilities serving more than 100,000 customers must collectively procure 125 MW of power from existing bioenergy plants for which 80% of the biomass feedstock must be a byproduct of "sustainable" forestry management—defined as any logging other than clearcutting—60% of which must derive from Tier 1 and Tier 2 high hazard zones.⁷

Also in 2016, the CPUC initiated the BioRAM program (Bioenergy Renewable Auction Mechanism), which requires California's three investor-owned utilities to collectively procure at least 50 MW of biomass energy and to pay above-market rates for that electricity, provided that at least 50% of a biomass facility's feedstock derives from wildfire high-hazard zones (HHZs). This proportion was raised to 60% in 2018, and 80% for 2019 and beyond. However, because this program does not distinguish between forest thinning projects and commercial logging, so long as the wood comes from hazard zone areas, the majority of the material comes from commercial timber operations and lumber mills.

Californians bear the costs of propping up the biomass industry.

California lawmakers provide subsidies to the biomass industry without directly using state funds in two ways: by including biomass energy under the Renewable Portfolio Standard and through legislation requiring electric utilities to purchase forest-sourced biomass power. Californians wind up shouldering the cost of these subsidies when they pay for the high cost of biomass power through their electricity bills. Meanwhile, lawmakers claim that they are addressing forest fire without allocating any actual funds for community wildfire protection.

For comparison, the average wholesale price of power on the California grid is \$50 per megawatt hour (Mwh).⁸ The price for forest biomass energy through the BioMAT program is four times as much—\$199.72 per Mwh based on the price cap set by the Public Utilities Commission⁹—and more than twice as much through the BioRAM program at \$115 per Mwh.¹⁰ In practice, California residents and electric utility ratepayers are subsidizing forest biomass facilities at a rate of \$150 per Mwh above market price through the BioMAT program, and \$65 per Mwh above market price through the BioRAM program. Furthermore, BioMAT power is four times as expensive as photovoltaic solar power and 3.5 times as expensive as wind power. BioRAM power is more than twice as expensive as solar or wind power.

California policies that incentivize forest bioenergy divert resources away from truly clean energy solar and wind energy and the jobs they create.

State policies that mandate that electric utilities purchase electricity from forest-sourced woody biomass divert investment away from zero-carbon sources like solar and wind, impeding the urgently needed transition to truly clean energy. Because the Renewable Portfolio Standard is used as the means for providing subsidies to biomass, every increase in biomass energy means a direct reduction in the amount that utilities companies invest in solar or wind power.

In addition, costly forest thinning projects to fuel biomass power plants are heavily dependent on taxpayer subsidies. On national forests, the federal timber sale program operates at a net loss to taxpayers of nearly \$2 billion each year.¹¹ In California, the state government subsidizes tree-cutting in various ways, including a billion dollars over five years allocated by SB 901. These resources were intended to increase public safety during wildfires. Instead of first paying for the forest projects and then paying a second time to burn the residues in biomass facilities, these resources would be much more effectively used to directly help communities implement wildfire-safety actions right around houses, with vastly greater public safety benefits.

Redirecting resources to home fire safety work and solar and wind energy would also be better for job creation, bolstering rural communities. While bioenergy proponents tout biomass power plants as a source of jobs, the reality is that these facilities are highly automated, so they produce few jobs for the massive subsidies necessary to prop them up. In contrast, fire-safety work directed at homes and the zone right around them requires much more intensive involvement by well-trained workers, and thus generates far more jobs per dollar spent. One study found that an equal amount of government investment could produce two to three times as many jobs—and better paying jobs—if those funds were used to support fire-safety work right around homes rather than subsidizing forest-cutting projects to fuel biomass power plants.¹² In addition, solar and wind energy are driving massive job creation with relatively high, family-sustaining wages.¹³

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¹ California Energy Commission, Staff Report, Estimated Cost of New Utility-Scale Generation in California: 2018 Update (May 2019), <https://ww2.energy.ca.gov/2019publications/CEC-200-2019-005/CEC-200-2019-005.pdf> at 40

² California Energy Commission, Staff Report, Estimated Cost of New Utility-Scale Generation in California: 2018 Update (May 2019), <https://ww2.energy.ca.gov/2019publications/CEC-200-2019-005/CEC-200-2019-005.pdf> at B-12 (levelized mid-level cost of Solar PV: C-Si, Tracking 100 MW is \$49), at B-18 (levelized mid-level cost of Wind 80 m Hub Height 100 MW is \$57), and B-21 (levelized mid-level cost of Biomass fluidized bed boiler 20 MW is \$166). The levelized cost estimates reflect the average cost per megawatt-hour for an independent developer to build and operate a power plant over the lifetime of the facility.

³ University of California, Division of Agriculture and Natural Resources, Woody Biomass Utilization, https://ucanr.edu/sites/WoodyBiomass/Project/California_Biomass_Power_Plants/. The 23 operational plants burning woody biomass and other organic materials are ARP Loyaltan Biomass Power, Burney Forest Power, Chowchilla Biomass Power, Collins Pine Biomass Power, DG Fairhaven, DTE Mt. Poso Cogen, DTE Stockton Biomass Power, DTE Woodland Biomass Power, Greenleaf Desert View Power, Honey Lake Power, Humboldt Redwood Company Scotia Power, Merced Power, Pacific Ultrapower Chinese Station Power, Rio Bravo Fresno Biomass Power, Rio Bravo Rocklin Biomass Power, Roseburg Forest Products Biomass Power, SPI Anderson Biomass Power II, SPI Burney Biomass Power, SPI Lincoln Biomass Power, SPI Quincy Biomass Power, SPI Sonora Standard Biomass Power, Wadham Biomass Power, Wheelabrator Shasta Energy. In addition, three small-scale gasification plants are operating as pilot/demonstration projects: Dixon Ridge Farms Gasifier Power Pilot, Ortigalita Power Company, and Cal Forest Nursery Gasifier.

⁴ California Energy Commission, California Biomass and Waste-To-Energy Statistics and Data, https://ww2.energy.ca.gov/almanac/renewables_data/biomass/index cms.php. In 2017, 22 operational bioenergy plants produced 3,205 GW, which was 1.6% of the state total 206,387 GW produced.

⁵ Morris, Gregory, Biomass Energy Production in California: The Case for a Biomass Policy Initiative, Final Report, NREL (2000), <https://www.nrel.gov/docs/fy01osti/28805.pdf> at 5

⁶ Forest-sourced woody biomass is eligible for up to 50 MW of the total, along with 110 MW from landfills and wastewater sources, and 90 MW from dairy and agricultural sources.

⁷ Cal. Pub. Utilities Code § 3.99.20.3(a). (In addition to the requirements of subdivision (f) of Section 399.20, by December 1, 2016, electrical corporations shall collectively procure, through financial commitments of five years, their proportionate share of 125 megawatts of cumulative rated generating capacity from existing bioenergy projects that commenced operations prior to June 1, 2013. At least 80 percent 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 that from lands that have been clear cut. At least 60 percent of this feedstock shall be from Tier 1 and Tier 2 high hazard zones.)

⁸ California ISO, 2018 Annual Report on Market Issues & Performance (May 2019), <http://www.caiso.com/Documents/2018AnnualReportonMarketIssuesandPerformance.pdf> at 1

⁹ PG&E reported executed BioMAT contracts with three biomass facilities at a price of \$199.72 per MWh: North Fork Community Power (2 MW), Blue Mountain Electricity Company (3 MW), and Hat Creek Bioenergy (2.88 MW), *See BioMAT Executed PPAs Awarded, 10 Day Report*, https://pgebiomat.accionpower.com/biomat/doccheck.asp?doc_link=biomat/docs/FIT/2015/documents/d.%20PPAs%20Awarded/2.%20PPAs%20Awarded-10-Day%20Report/BioMAT_ExecutedPPAs_10DayReport.xlsx

¹⁰ MB&G and The Beck Group, High Hazard Fuels Availability Study, Prepared for The High Hazard Fuel Study Committee and PG&E, (June 13, 2019), https://fntf.fire.ca.gov/media/2180/hhzfuelstudy_final_20190613.pdf at 63

¹¹ Center for Sustainable Economy, Environmentally Harmful Subsidies in the U.S.: Issue #1: The federal logging program (May 2019), <https://sustainable-economy.org/wp-content/uploads/2019/05/CSE-Federal-logging-report-May-2019.pdf>

¹² Natural Resource Economics, Potential Jobs and Wages from Investments in Defensible-Space Approaches to Wildfire Safety (April 2018), http://nreconomics.com/reports/2018-04-28_EnvNow_Report.pdf

¹³ Muro, Mark et al., Advancing Inclusion Through Clean Energy Jobs, Metropolitan Policy Program at Brookings (April 2019), https://www.think-asia.org/bitstream/handle/11540/10116/2019.04_metro_Clean-Energy-Jobs_Report_Muro-Tomer-Shivaran-Kane_updated.pdf?sequence=1