



September 19, 2016

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Clerk of the Board
Air Resources Board
1001 I Street
Sacramento, CA 95814

Re: Proposed Compliance Plan for the Federal Clean Power Plan

Dear Members of the Board:

The Center for Biological Diversity (“Center”) offers the following comments on California’s Proposed Compliance Plan for the Federal Clean Power Plan (“Compliance Plan”). The Center is a non-profit organization with more than one million members and online activists and offices throughout the United States, including in Oakland, Los Angeles, and Joshua Tree, California. The Center’s mission is to ensure the preservation, protection and restoration of biodiversity, native species, ecosystems, public lands and waters and public health. In furtherance of these goals, the Center’s Climate Law Institute seeks to reduce U.S. greenhouse gas emissions and other air pollution to protect biological diversity, the environment, and human health and welfare. Specific objectives include securing protections for species threatened by global warming, ensuring compliance with applicable law in order to reduce greenhouse gas emissions and other air pollution, and educating and mobilizing the public on global warming and air quality issues.

The Center appreciates that California is moving ahead with the Compliance Plan, even as legal challenges to the federal Clean Power Plan (“CPP”) remain pending. Reducing emissions from the power sector is critical to meeting not only CPP requirements but also California’s own long-term, science-based climate policy goals.

That said, the Center has several concerns with the Compliance Plan as currently drafted. As detailed below, the Compliance Plan fails to satisfy CPP requirements for biomass energy generation, lacks a sound basis for its assumptions regarding future carbon prices used in compliance modeling, and rests entirely on continuation of existing cap-and-trade regulations that may lack a sound statutory basis. For all of these reasons, the Center respectfully urges the Board to consider revisions (and alternative, non-cap-and-trade approaches) before taking any action on the Compliance Plan.

I. The Compliance Plan Fails to Address the CPP’s Requirements for Use of Qualified Biomass

The Compliance Plan does not explicitly rely on biomass energy generation as a compliance measure. Nor does it address the role of biomass power in California’s energy sector, aside from noting the existence of about three dozen biomass plants in the state. However, the modeling underlying the Compliance Plan’s demonstration of consistency with CPP targets does seem to rely on dispatch to renewable sources—including biomass power plants—in calculating anticipated emissions from electrical generating units covered under the CPP (“covered EGUs”).

California’s treatment of biomass emissions under the cap-and-trade program—and, accordingly, under the Compliance Plan built around the cap-and-trade program—is inconsistent with the limits imposed on biomass energy generation as a compliance measure in the CPP. In the CPP, EPA confirmed that its own Science Advisory Board panel and its revised draft “Framework” for biomass carbon accounting had explicitly rejected the assumption that all biomass combustion can be considered “carbon neutral.” (Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 80 Fed. Reg. 64,662, 64,885 (Oct. 23, 2015) (“Final CPP”.) Rather, “the net biogenic CO₂ atmospheric contribution of different biogenic feedstocks generally depends on various factors related to feedstock characteristics, production, processing and combustion practices, and, in some cases, what would happen to that feedstock and the related biogenic emissions if not used for energy production.” (*Ibid.*)

The CPP thus provided that states may use only “qualified biomass”—defined as “a biomass feedstock that is demonstrated as a method to control increases of CO₂ levels in the atmosphere (40 C.F.R. § 60.5880)—in demonstrating compliance with either a rate-based or a mass-based emissions goal.¹ (Final CPP, 80 Fed. Reg. at p. 64,886.) “Not all forms of biomass are expected to be approvable as qualified biomass (i.e., biomass that can be considered as an approach for controlling increases of CO₂ levels in the atmosphere).” (*Ibid.*) Accordingly,

State plan submissions must describe the types of biomass that are being proposed for use under the state plan and how those proposed feedstocks or feedstock categories should be considered as “qualified biomass” (i.e., a biomass feedstock that is demonstrated as a method to control increases of CO₂ levels in the atmosphere). The submission must also address the

¹ EPA’s proposal for allowance trading under a federal mass-based implementation plan would require covered facilities co-firing with biomass to hold allowances for all of their CO₂ emissions, including emissions from biomass; EPA sought comment on an alternative approach allowing facilities to identify “qualified biomass” and “potential methods for demonstrating compliance, and thus reduc[ing] the mass emissions attributed to” an EGU co-firing with biomass. (Federal Plan Requirements for Greenhouse Gas Emissions From Electric Utility Generating Units Constructed on or Before January 8, 2014; Model Trading Rules; Amendments to Framework Regulations, 80 Fed. Reg. 64,966, 65,012 (Oct. 23, 2015).) Although EPA has not yet finalized the proposal, it confirms provisions in the Final CPP indicating that “qualified biomass” requirements apply to both mass-based and rate-based compliance options.

proposed valuation of biogenic CO₂ emissions (i.e., the proposed portion of biogenic CO₂ emissions from use of the biomass feedstock that would not be counted when demonstrating compliance with an emission standard, or when demonstrating achievement of the CO₂ emission performance rates or a state rate-based or mass-based CO₂ emission goal).

(*Ibid.*) EPA will “review the appropriateness and basis for proposed qualified biomass and biomass treatment determinations and related accounting, monitoring and reporting measures in the course of its review of a state plan,” and the agency will base its “determination that a state plan satisfactorily proves that proposed biomass fuels qualify . . . in part on whether the plan submittal demonstrates that proposed state measures for qualified biomass and related biogenic CO₂ benefits are quantifiable, verifiable, enforceable, non-duplicative and permanent.”

The modeling used to demonstrate compliance with CPP limits appears to rely, at least indirectly, on biomass energy generation as a means of reducing emissions at covered EGUs and meeting the state’s overall mass-based goals. The PLEXOS model dispatches anticipated generation during the CPP compliance period to a wide range of facilities based on the lowest possible cost that meets all applicable constraints. (Compliance Plan at p. 37.) Regulatory costs—including the anticipated costs of purchasing allowances under the cap-and-trade system—are included in the model, at least for those facilities with cap-and-trade compliance obligations. (*Id.* at p. 38.)

Biomass generating resources are explicitly incorporated on the supply side of the PLEXOS model. (Compliance Plan, Appx. E at pp. 34-35.) However, the Compliance Plan explains that because renewable generation is not economically dispatched through production cost simulation, model users must “input generation profiles”; in this manner, “[t]hermal resources, such as biomass and geothermal are assumed to generate according to a fixed pattern with simulated outages.” (*Id.*, at p. 35.) The model’s emissions calculations, however, expressly exclude all renewable generation. (Compliance Plan, Appx. E2a.)

The PLEXOS modeling thus explicitly assumes that at least some portion of California’s electricity demand will be satisfied by biomass generation in coming years. Satisfaction of this demand is thus essential to the ability of covered EGUs, as anticipated to be dispatched through the PLEXOS model, to satisfy mass-based CPP targets; in simple terms, the biomass plants are expected to satisfy demand that covered EGUs might otherwise have to satisfy by running more often, with increased mass emissions. Yet nothing in the Compliance Plan demonstrates that California’s biomass resources are restricted to “qualified biomass”—biomass resources that actually *control* atmospheric CO₂ concentrations—as the CPP requires. On the contrary, California’s cap-and-trade regulation simply exempts a broad range of biomass combustion emissions from any compliance obligation whatsoever. (17 Cal. Code Regs. § 95852.2(a).) The Compliance

Plan relies entirely on the cap-and-trade regulation, which in turn treats all biomass generation as “carbon neutral”—directly contrary to EPA’s intent in the federal CPP.²

This problem alternatively could be described as a leakage problem: generation and emissions from covered EGUs, which bear regulatory costs under cap-and-trade, simply “leak” to biomass units, which are not covered EGUs and bear no similar regulatory costs. The effect of this leakage on the atmosphere could be dramatic. California’s covered EGUs had a combined emissions rate of 870 lbs/MWh in 2014. (Compliance Plan at p. 12.) A new biomass steam turbine, in contrast, would have an emissions rate of more than 3,000 lbs/MWh at the smokestack.³ Absent a sound, verifiable demonstration that California biomass actually controls atmospheric CO₂ concentrations, leakage to biomass facilities could dramatically undermine achievement of California’s overall CPP emissions target.

II. The Compliance Plan Relies on Potentially Unrealistic Allowance and Offset Prices.

The Compliance Plan describes the CO₂e price projections used in the model as conservative, but the starting price in 2020 for California (\$27.15) is more than twice as high as the settlement price for both 2016 and 2019 vintage allowances established in the August 2016 auction (\$12.73).⁴ The Compliance Plan does not explain the basis for its assumption that CO₂e prices will increase by 5%, plus any increase in the consumer price index, on an annual basis. (Compliance Plan, Appx. E, at p. 44.) Moreover, the Compliance Plan does not seem to include any projections regarding the availability of offsets (as opposed to allowances) under the cap-and-trade regulation. (*Ibid.* [explaining that starting price was based on weighted 2015 auction settlement price and assumed price escalation factor].) If offsets prove to be less expensive in future years than allowances, facilities’ ability to satisfy at least some portion of their compliance obligations with offsets could depress the overall CO₂e price.

² As the Center has addressed in detail elsewhere, it is extremely doubtful that many, if any, biomass resources typically used in California can be verifiably demonstrated to “control” atmospheric CO₂ concentrations on the timescales relevant to the CPP (i.e., between 2022 and 2030). (See Center for Biological Diversity, Comments on the Proposed Short-Lived Climate Pollutant Strategy (May 26, 2016), available at <https://www.arb.ca.gov/lispub/comm/bccommlog.php?listname=slcp2016> [comment nos. 94, 96, 97]; Center for Biological Diversity, Comments on Second Set of Proposed Modifications to the AB 32 Greenhouse Gas Cap-and-Trade Regulation (Sept. 27, 2011), available at <https://www.arb.ca.gov/lispub/comm/bccommlog.php?listname=capandtrade10> [comment no. 93]; Center for Biological Diversity, Comments on the Proposed Greenhouse Gas Cap-and-Trade Regulation (December 15, 2010), available at <https://www.arb.ca.gov/lispub/comm/bccommlog.php?listname=capandtrade10> [comment nos. 718, 746].) Each of the comment letters referenced in this footnote, and all exhibits submitted with those letters, are hereby incorporated by reference.

³ This figure is based on heat rate and efficiency data from the Department of Energy, Energy Information Administration, and Oak Ridge National Laboratory. (See Partnership for Policy Integrity, CO₂ Emission Rates for Modern Power Plants (Sept. 2016) (Attachment 1 hereto).)

⁴ California Cap-and-Trade Program and Québec Cap-and-Trade System August 2016 Joint Auction #8 Summary Results Report at 4 (Aug. 23, 2016), available at <https://www.arb.ca.gov/cc/capandtrade/auction/auction.htm#auction> (visited September 15, 2016).

If the CO_{2e} price used in the modeling is too high, least-cost dispatch to covered units would presumably be curtailed, resulting in lower emissions rates from covered units overall—and a potential underestimate of CPP emissions.

III. The Compliance Plan Relies Entirely on the Extension of the Cap-and-Trade Regulation Beyond 2020.

The Compliance Plan depends entirely on the assumption that California’s cap-and-trade program will exist, in its present form, as a “state measure” throughout the CPP compliance period. However, it is far from clear that the cap-and-trade regulation can be extended beyond the end of 2020 under existing statutory authority. *Compare* Health & Saf. Code § 38551(b) (declaring intent of Legislature that “the statewide greenhouse gas emissions limit continue in existence and be used to maintain and continue reductions in emissions of greenhouse gases beyond 2020”) *with* Health & Saf. Code § 38562(c) (authorizing Air Resources Board to adopt “a regulation that establishes a system of market-based declining annual aggregate emission limits for sources or categories of sources that emit greenhouse gas emissions, applicable from January 1, 2012, to December 31, 2020, inclusive”).

The Legislature recently adopted (and Governor Brown has now signed) SB 32, legislation requiring California to reduce emissions 40 percent below 1990 levels by 2030. Stats.2016, ch. 249 (Sen. Bill 32), § 2 (Health & Saf. Code § 38566, eff. Jan. 1, 2017). Again, however, the role of the cap-and-trade regulation in achieving these increasingly steep reductions after 2020 is uncertain. Although SB 32 strengthened the state’s greenhouse gas reduction goals, it did not specify cap-and-trade as a vehicle for attaining those goals. Moreover, AB 197—companion legislation to SB 32—specifically requires the Air Resources Board to prioritize “direct emission reductions” in achieving reductions beyond the 2020 limit. Stats.2016, ch. 250 (Asm. Bill 197), § 5 (Health & Saf. Code § 38562.5, eff. Jan. 1, 2017).

The merits of the cap-and-trade regulation are beyond the scope of this letter.⁵ But it is at the very least risky for California, in preparing for CPP compliance, to rely entirely on a cap-and-trade program whose future is at least presently in considerable doubt. The state may be well-advised to consider alternative approaches, consistent with the priorities announced in AB 197 and the goals of SB 32, that demonstrate compliance with CPP requirements.

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⁵ The Center’s comments on concurrent proposed changes to the cap-and-trade regulation will be filed under separate cover.

California Air Resources Board
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Thank you very much for your consideration of these comments. We look forward to working with you and Air Resources Board staff as California's efforts to comply with the CPP move ahead in the coming years.

Sincerely,

Kevin P. Bundy
Senior Attorney

Attachment 1: Partnership for Policy Integrity, CO₂ Emission Rates for Modern Power Plants (Sept. 2016).

ATTACHMENT 1

CO₂ Emission Rates From Modern Power Plants

	Lb CO ₂ /MMBtu	Facility efficiency	MMBtu /MWh	Lb CO ₂ /MWh	Biomass v. Tech
New gas combined cycle^a	117	51%	6.7	786	385%
New subcritical coal steam turbine^b	210	39%	8.7	1,839	165%
U.S. coal fleet avg, 2013^c	210	33%	10.5	2,198	138%
New biomass steam turbine^d	213	24%	14.2	3,028	

References:

CO₂ per MMBtu

a, b, c : from EIA at http://www.eia.gov/environment/emissions/co2_vol_mass.cfm. Value for coal is for "all types." Different types of coal emit slightly more or less.

d: Assumes HHV of 8,600 MMBtu/lb for bone dry wood (Biomass Energy Data Book v. 4; Oak Ridge National Laboratory, 2011. <http://cta.ornl.gov/bedb>.) and that wood is 50% carbon.

Efficiency

a: DOE National Energy Technology Laboratory: Natural Gas Combined Cycle Plant F-Class (http://www.netl.doe.gov/KMD/cds/disk50/NGCC%20Plant%20Case_FClass_051607.pdf)

b: International Energy Agency. Power Generation from Coal: Measuring and Reporting Efficiency Performance and CO₂ Emissions. https://www.iea.org/ciab/papers/power_generation_from_coal.pdf

c. EIA data show the averaged efficiency for the U.S. coal fleet in 2013 was 32.6% (http://www.eia.gov/electricity/annual/html/epa_08_01.html)

d: ORNL's Biomass Energy Data Book (<http://cta.ornl.gov/bedb>; page 83) states that actual efficiencies for biomass steam turbines are "in the low 20's"; PFPPI's review of a number of air permits for recently proposed biopower plants reveals a common assumption of 24% efficiency.