February 25, 2020

Rajinder Sahota

Carey Bylin

Industrial Strategies Division

Clerk’s Office, California Air Resources Board

1001 “I” Street

Sacramento, CA 95814

*Submitted Electronically*

RE: *Bloom Energy Comments on February 10, 2020 Proposed Modification to the Fuel Cell Net Energy Metering (“NEM”) Greenhouse Gas Emissions Standards Proposed Regulation Order*

Dear Ms. Sahota and Ms. Bylin,

Bloom Energy[[1]](#footnote-1) appreciates this opportunity to provide the following comments on the February 10, 2020 modifications to the Fuel Cell NEM Regulation. Bloom supports the California Air Resources Board’s (ARB or Board) efforts to fulfill the statutory requirements of AB 1637 (2017 Low) to develop a fuel cell greenhouse gas emissions standard. AB 1637 requires the ARB to adopt a standard that “reduces greenhouse gas emissions compared to the electrical grid resources, including renewable resources, that the fuel cell electrical generation resource displaces, accounting for both procurement and operation of the electrical grid.”[[2]](#footnote-2)

Following two years of informal rulemaking activity, on October 22, 2019, the ARB formally noticed a proposed standard that meets these and other statutory requirements, such as the SB 32 emissions target for 2030. This standard was based on the best available modeling and state integrated resource planning targets for electric sector emissions through 2030, which account for the state’s range of climate and clean energy policies. The October 22nd methodology remains the most robust and rational framework for estimating the composition and emissions of the future electricity grid in California, given current information and policies. The October 22 standard was considered at the December Board hearing, and the Board issued Resolution 19-36, directing the ARB staff to determine if additional modifications are appropriate.[[3]](#footnote-3) If no additional modifications are appropriate, Resolution 19-36 directs the Executive Officer take final action to adopt the Regulation. Bloom appreciates the intent of Resolution 19-36 was to further evaluate the consistency of the standard with SB 32 emission reduction goals.

The February 10, 2020 proposed modifications would set a far stricter standard, particularly in light of the current availability and cost of renewable gas. The February 10th methodology would exponentially reduce emissions requirements from 2017 to 40 percent below 2017 levels by 2030. This standard has no basis in the state’s modeling or regulatory framework. If the Board adopts the February 10th standard, California businesses would be limited in their ability to access fuel cell technologies that reduce GHG emissions and criteria and toxic pollutants. This is particularly concerning for those companies with a near term electric resiliency needs and companies currently relying on backup diesel generators.

The ARB should avoid adopting a standard that would frustrate the broader program goals of AB 1637, as well as the Board’s stated policy interest in the use of renewable gas in fuel cell installations. As explained in these comments, the October 22, 2019 methodology fulfills the statutory requirements of AB 1637, as well as SB 32, SB 350, and SB 100. If the ARB declines to adopt the October 22, 2019 standard, it should at least modify the February 10, 2020 standard to apply a 409 g/kWh standard on a prospective basis and then apply a deeper linear reduction starting in 2021**.** As detailed below, this proposal would lead to more stringent annual reductions from this point forward than the February 10th standard (an average annual reduction of 16.4 g/kWh, or 5% per year, compared to 11.8 g/kWh, or 3.8% per year). This alternative approach would allow the fulfillment of the intention of the legislation: the deployment of GHG reducing, resilient fuel cells in California.

The adoption of the October 22nd standard or the alternative methodology proposed below would ensure consistency with the ARB Board’s direction in the Cap-and-Trade program, to facilitate the use of renewable gas in California. The methodologies would provide a smoother trajectory to stringent GHG emissions standards thereby enabling developers and customers time to develop renewable gas supplies. In addition to using the FCNEM standard to facilitate achievement of these policy goals, the ARB should also clarify its intent that the standard be consistent with other programs adopted pursuant to SB 32. Specifically, the FCNEM regulation should follow the precedent of the Cap-and-Trade program by clarifying that procurement of renewable gas qualifying under Section 95852.2 of the Cap-and-Trade Program will adjust the application of the FCNEM standard accordingly.

1. ***The October 22, 2019 Methodology Is Supported By a Robust Analysis and Consistent with SB 32.***

Bloom Energy supports the ARB staff’s efforts to develop a reasonable emissions standard that fulfills the broad statutory direction of AB 1637. Section 2827.10(b)(2) of the Public Utilities Code requires that “greenhouse gas emissions reduction standards . . . reduces greenhouse gas emissions compared to the electrical grid resources, including renewable resources, that the fuel cell electrical generation resource displaces, accounting for both procurement and operation of the electrical grid.” The law also requires the ARB to update the methodology, presumably to account for the fact that developing a future emissions standard that accounts for GHG emissions benefits, which are in turn governed by the actual dispatch of generating units, is an inherently speculative exercise.

In the absence of data on future dispatch and the associated emissions rates, “CARB staff calculated the new annual reduction percentage based on the equivalent of reducing the fuel cell NEM 2017 GHG emission standard (409 kg CO2e/MWh) by 40 percent by 2030 (245 kg CO2e/MWh).” [[4]](#footnote-4) The effect of selecting 2017 the starting point is that the reductions in the standard will apply retroactively, making the February 10th methodology overly restrictive in the first few years. The February 10th notice asserts that this alternative methodology is needed to maintain consistency with SB 32. However, nothing in SB 32 requires an annual 3.85% emissions reduction rate from 2017 emissions levels. While Bloom does not refute the ARB’s analysis identifying 409 kg CO2e/MWh as an avoided emissions rate in 2017, the selection of 2017 as the starting point for a rate of decline is arbitrary and inconsistent with a plain reading of SB 32. Health and Safety Code Section 38566 requires the ARB to adopt regulations that are consistent with a 40% below 1990 levels by 2030 standard, not 2017 emissions level by 2030.

Greenhouse gas emissions in the electricity sector are already nearly 50 percent below estimated 1990 levels. According to the most recent ARB inventory, emissions in the electricity sector have declined by almost half since 2008.[[5]](#footnote-5) Thus, hypothetically, the selection of a constant, non-declining emissions standard that was established from 2021 to 2030 (subject to 3 year review) based on 2017 observed data would be consistent with the statutory language of SB 32.

Bloom acknowledges the ARB’s intent to develop a declining standard based on expectations of electric grid decarbonization. The best way to estimate the implications of SB 32 and other existing statutory requirements on future system dispatch is through the state’s energy and climate modeling efforts. The IRP modeling provided the foundation for the October 22, 2019 proposed standard. As explained in the October 22, 2019 Initial Statement of Reasons, “[t]his methodology is rooted in the idea that fuel cell electrical generating resources should reduce their GHG emissions at the same rate as California’s electricity sector.”[[6]](#footnote-6) The methodology evaluated the rate of decline based on data available from the state’s implementation of the Integrated Resource Planning (“IRP”) process (i.e., SB 350 and SB 100). As noted in the ARB’s July 2018 IRP GHG target range, SB 350 requires the IRP targets to be consistent with the SB 32 emission reduction goals.[[7]](#footnote-7)

The October 22, 2019 methodology reduced the annual emissions rate in proportion to system-wide electricity sector emission reductions contemplated in the IRP proceedings, which included SB 100 requirements. Thus, the ARB’s adoption of the October 22, 2019 proposal remains the best methodology for estimating the future trajectory of the electricity sector. It will ensure that the ARB fulfills its obligations under SB 32 with respect to developing regulations that are consistent with the states goal to reduce economy-wide emissions 40 percent below 1990 levels by 2030. If new modeling or policy provides a different trajectory than we currently understand, the 3-year review cycle included in AB 1637 provides the appropriate forum for considering that information and modifying the standard.

1. ***The ARB Should Consider the October 22nd and February 10th Methodologies in the Context of the ARB’s Broader Policy Objectives for Renewable Gas.***

The ARB should evaluate its implementation of the FCNEM tariff in conjunction with other related programs implemented pursuant to SB 32. The Cap-and-Trade Regulation is one of the key “sector measures” identified in the 2017 Scoping Plan. By setting a cap on all emissions, including conventional natural gas used in fuel cell installations, the Cap-and-Trade program ensures the environmental performance of the SB 32 targets. In 2019, the ARB amended the Cap-and-Trade program to list natural gas used as the feedstock in fuel cells an emissions source with a compliance obligation. In adopting those amendments, the ARB evaluated the importance of fuel cells as a GHG-reducing technology. The Board also considered the importance of using renewable fuels in fuel cell installations as a key measure that can drive cross-sectoral emission reductions. Encouraging the increased future use of renewable fuels in fuel cells is not only consistent with SB 32, but also the Short Lived Climate Pollutant (SLCP) law, SB 1383, which requires 40% reductions in SLCPs by 2030. As part of deciding to extend the Cap-and-Trade program to 2030 (consistent with SB 32), Resolution 18-51 made the following finding:

WHEREAS, in addition to providing a pathway for the use of renewable natural gas, natural gas fuel cells provide immediate reductions in GHG emissions and other criteria pollutants when displacing higher carbon intensity energy supplies.

The adopted Cap-and-Trade Regulation specifically lists emission from biomethane and biogas as an emissions source without a compliance obligation.[[8]](#footnote-8) By excluding these fuel sources from a compliance obligation, the Cap-and-Trade program enables on-site and pipeline-directed renewable gas to be used in fuel cell operations. Fuel cells using conventional natural gas are covered under the cap and subject to cap-and-trade compliance costs. Currently, the avoided costs of compliance with the cap-and-trade regulation do not provide an adequate price signal to shift biogas away from other competing uses (e.g., the LCFS). While we don’t expect this situation to change in the near term, Bloom is optimistic that greater quantities of renewable gas will become more broadly available outside of the transportation sector in the coming years.

In the context of the FCNEM tariff, the ARB should ensure that a reasonable volume of fuel cell systems can be deployed in the near term, which will enable technology costs to decline and additional renewable gas supplies to come online. This should be done through two modifications. First, the standard should be modified to create a smoother initial trajectory, as detailed in Section 3 of these comments below.

Second, just as the Cap-and-Trade enables a source to proportionately reduce its cap-and-trade compliance obligation, the application of the FCNEM tariff to individual fuel cell installations should be similarly clarified. The application of the standard is clearly within the ARB’s broad authority under Public Utilities Code Section 2827.10(b)(2), to develop a standard that “reduces GHG emissions.” To ensure that the standard actually reduces GHG emissions, the application of the standard is as important as the development of the standard itself. Consistent with ARB Board direction in Resolution 18-51, the ARB should clarify that the standard should apply to emissions associated with qualifying systems conventional natural gas use only. The regulation should be clarified that renewable gas procurement qualifying under Section 95852.2 of the Cap-and-Trade and Section 95131 of the Mandatory Reporting Regulation reduce the emissions of a qualifying installation in proportion to the quantity of renewable fuel procured on an annual basis. Appendix A of this comments includes recommended amendments to make this clarification.

1. ***If the ARB Does Not Adopt the October 22, 2019 Methodology, then at a Minimum, the ARB Should Revise the February 10, 2020 Methodology to Create a Linear Rate of Decline Starting in 2021.***

A standard that enables a smoother transition should be created with the understanding that fuel cell systems will only become cleaner over time, inline with the Board’s standards. The ARB should align the FCNEM standard with the ARB’s policy objectives stated in Resolution 18-51. A smooth trajectory would provide developers and customers with sufficient time and regulatory clarity to adjust to a stringent FCNEM standard. Board Resolution 19-36 provides the ARB Executive Officer with discretion in determining whether additional modifications to the October 22, 2019 proposed modifications are appropriate. As explained above, Bloom does not believe the February 10th modifications are appropriate or consistent with SB 32, AB 1637, or the state’s other climate and energy policies. The retroactivity and the exponential rate of reduction proposed in the February modifications could hamper the deployment of the most efficient, reliable, combustion-free fuel cells in California. However, Bloom appreciates the need to respond to Board direction to evaluate modifications, including a more significant annual decline in the emissions rate moving forward.

If the ARB rejects the October 22, 2019 methodology, it should ensure that any modifications to the methodology apply on a prospective basis and provide enough time to adapt to a much lower emissions standard, including development of supplies of renewable gas outside of the transportation sector. There is precedent for such an approach in the ARB’s Cap-and-Trade Regulation, which includes numerous provisions for “transitional assistance.”

Both the October 22, 2019 and February 10, 2020 methodologies envision applying annual reductions on a percentage basis. This leads to exponential declines in the annual standards, rather than linear declines. For example, in the proposed February 10, 2020 standard, the standard declines initially by 16 g/kWh per year in 2018, but only 9 g/kWh per year in 2030. This is inconsistent with how the state often applies standards, and doesn’t appear to be justified either by the modeling the ARB originally relied on in its October 22, 2019 proposal, or with any requirements of SB 32. Regardless of the standard set by ARB, it should apply constant, linear reductions in the greenhouse gas targets, rather than percentage-based, exponential reductions. For example, to reach the same endpoint in 2030, instead of 2.5 percent per year, as proposed in October 22, 2019, a linear version of the October 22, 2019 standard would decline by about 8.5 g/kWh per year from 2021 onward. Instead of 3.85 percent per year in the February 10, 2020 standard, a linear standard would decline by about 11.8 g/kWh per year from 2021-2030.

Using 409 g/kWh as a starting point and then applying the reductions on a prospective basis (starting in 2021) is an appropriate starting point for the FCNEM standard. While not required by SB 32, to achieve a 40 percent reduction from 2020 levels, the ARB would need to adopt a greater annual average decline rate than even envisioned in the February 10, 2020 proposal (i.e., an average annual reduction of 16.4 g/kWh vs. 11.8 g kWh from 2021-2030, or a 5% average annual reduction, compared to 3.8%). Even though this alternative proposal is more stringent on a prospective basis, it avoids stringent and unfounded retroactive reductions to the standards and will nevertheless facilitate the policy goals articulated above by providing time for the market to adapt to the new methodology. This would be consistent with the intention of AB 1637, SB 32, and – we believe – the direction of the Board.

The table below compares the October 22 and February 10 proposals to this “alternative methodology”

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **October 22, 2019 proposal** | **February 10, 2020 proposal** | **February 10, 2020 proposal - linear** | **Alternative Methodology: 40 percent linear reduction starting in 2020** |
| **2017** | 409 | 409 | 409 | 409 |
| **2018** | 399 | 393 | 396 | 409 |
| **2019** | 389 | 378 | 384 | 409 |
| **2020** | 379 | 364 | 371 | 409 |
| **2021** | 370 | 350 | 359 | 393 |
| **2022** | 360 | 336 | 346 | 376 |
| **2023** | 351 | 323 | 333 | 360 |
| **2024** | 342 | 311 | 321 | 344 |
| **2025** | 334 | 299 | 308 | 327 |
| **2026** | 325 | 287 | 295 | 311 |
| **2027** | 317 | 276 | 283 | 294 |
| **2028** | 309 | 266 | 270 | 278 |
| **2029** | 302 | 255 | 258 | 262 |
| **2030** | 294 | 246 | 245 | 245 |
| **Avg. reduction,  2020-2030 (%)** | 2.5 | 3.8 | 4.0 | 5.0 |
| **Avg. reduction,  2020-2030 (g/kWh)** | 8.5 | 11.8 | 12.6 | 16.4 |

1. ***Conclusion***

The ARB should not adopt the February 10, 2020 modifications because the methodology is not consistent with a plain reading of SB 32 and would create a retroactively reduced standard that would be inconsistent the ARB Board’s policy to encourage the use of clean fuel cells and renewable gas. The October 22, 2019 methodology is consistent with SB 32 and the policies underpinning the Cap-and-Trade Regulation. The October 22, 2019 methodology would create a much smoother transition to long-term GHG targets by providing fuel cell customers and developers time to adjust to the standard and develop and integrate renewable gas as the primary fuel stock. If the ARB departs from the statutory direction in SB 32 and uses some year after 1990 as the starting point for measuring emissions levels, the ARB should at least ensure that the emission rate decline is constant (linear) and applies on a prospective basis (i.e., starting in 2021). While Bloom believes the October 22, 2019 proposal is based on the most appropriate and currently achievable methodology, the ARB could adopt a modified methodology that achieves a similar reduction in the standard by 2030 as included in the February 10 proposed standard without limiting the achievement of the broader AB 1637 policy objectives in the near term. Finally, as detailed in Appendix A of these comments, Bloom recommends that the ARB clarify that in the application of the standard, any renewable gas that meets the requirements of the Cap-and-Trade and Mandatory Reporting Regulation will proportionately reduce a fuel cell installation’s assessed emissions rate.

*Respectfully Submitted,*

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Erin Grizard

Bloom Energy

**APPENDIX A**

§ 95409. Applicability

The provisions of this Article apply to fuel cell electrical generation resources that participate in fuel cell net energy metering under section 2827.10 of the Public Utilities Code. The provisions of this Article solely apply to the use of fossil fuels in fuel cell electrical generation resources. The provisions of this Article shall not apply to the partial or full use of any biogas or biomass derived fuel in a qualifying fuel cell installation that meets the requirements of Sections 95852.2 and 95131 of this Title.

1. Bloom Energy develops on-site distributed generation using innovative fuel cell energy technology that utilizes natural gas or biogas. Our unique on-site power generation systems utilize an innovative new [fuel cell energy technology](https://www.bloomenergy.com/solutions/advanced-applications/microgrid) with roots in NASA's Mars program. Our technology is able to produce clean, reliable, affordable energy, practically anywhere, from a wide range of renewable energy sources or traditional fuels. Our Energy Servers® are among the most efficient energy generators on the planet; providing for significantly reduced electricity costs and dramatically reduced greenhouse gas emissions. By generating power on-site, where it is consumed, Bloom Energy offers increased electrical reliability and improved energy security, providing a clear path to energy independence. [↑](#footnote-ref-1)
2. California Public Utilities Code Section 2827.10. [↑](#footnote-ref-2)
3. See Board Resolution 19-36, available at: <https://ww3.arb.ca.gov/regact/2019/fcnem19/finalres1936.pdf>. [↑](#footnote-ref-3)
4. See February 10, 2020 Notice of Public Availability of Modified Text, available at: <https://ww3.arb.ca.gov/regact/2019/fcnem19/15daynotice.pdf> [↑](#footnote-ref-4)
5. See 2019 California Greenhouse Emissions Inventory 2000 – 2017, at p. 5, available at:

   <https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2017/ghg_inventory_trends_00-17.pdf> [↑](#footnote-ref-5)
6. See October 22, 2019 Staff Report, ISOR, at p. 2, available at: <https://ww3.arb.ca.gov/regact/2019/fcnem19/isor.pdf> [↑](#footnote-ref-6)
7. California Public Utilities Code Section 454.52(a)(1)(A) and Public Utilities Code Section 9621(b)(1); See July 2018 ARB IRP Staff Report, available at <https://ww3.arb.ca.gov/cc/sb350/staffreport_sb350_irp.pdf>. [↑](#footnote-ref-7)
8. Title 17, California Code of Regulations Section 95852.2(a)(8). [↑](#footnote-ref-8)