Fuel Cell Net Energy Metering GHG Emission Standards

JULY 8, 2019

Workshop Materials and Comments

- This presentation and other materials are posted on our webpage: https://ww2.arb.ca.gov/our-work/programs/stationary-fuel-cell-net-energy-metering/meetings-workshops
- Presentation webcast: https://video.calepa.ca.gov/
- During this workshop, e-mail questions to: sierrarm@calepa.ca.gov
- Following the workshop, please submit written comments by 5:00 p.m. Pacific time on Monday, July 22, 2019 via our webpage: https://ww2.arb.ca.gov/our-work/programs/stationary-fuel-cell-net-energy-metering/meetings-workshops

Assembly Bill (AB) 1637 (Low, 2016)

- Effective January 1, 2017
- Extends the CPUC's Fuel Cell Net Energy Metering (NEM) program tariff through 2021
- Increases individual system eligibility to 5 MW, and extends overall program cap to 500 MW over existing installed capacity
- Directs CARB to establish annual GHG emission reduction standards for "customer-generators" participating in Fuel Cell NEM program
- GHG standards are to reduce emissions relative to grid resources that would be displaced, including renewable resources, and account for both procurement and electrical grid operation

Background

- CARB has been tasked with developing GHG emission standards for the Fuel Cell NEM program
  - Implementation overseen by the CPUC with IOU program administration
- Eligible fuel cell technologies must reduce GHG emissions relative to the grid resources being displaced and meet CARB's Distributed Generation (DG) Certification Program requirements for criteria pollutants
- Customer-generators receive generation rate credits and avoid nonbypassable utility charges for onsite energy consumption
- Prior to AB 1637, the Fuel Cell NEM GHG eligibility standard used the SGIP standards

Key Objectives

- Comply with AB 1637 legislative mandate
- Encourage availability and deployment of fuel cells to promote GHG reductions and local air quality benefits
- Transition away from diesel as a distributed generation resource
- Promote replacement of fossil fuels with renewable gas over time
  - 2017 Scoping Plan Update stated the need to move away from natural gas toward cleaner fuels
- Align with other State policies to achieve legislatively-mandated climate goals and cleaner electricity grid

Previously Considered Methodologies (1 of 2)

- May 2017 Proposal: Use the average emission rate of combined cycle plants located in California
- May 2017 Proposal: Use the average emission rate of combined cycle plant located in California with a 25 percent renewable adjustment
- November 2017 Proposal: Use the 2017 Avoided Cost Calculator (ACC)
- May 2018: CPUC released the 2018 ACC

Previously Considered Methodologies (2 of 2)

Method	Basis	Kg CO2e/ MWh	Standards year	Proposal Date
1	Displacement of combined-cycle gas turbine (CCGT) power plants (Marginal grid resource)	400	2017	May 2017
2	Displacement of CCGT generation with a 25% renewable energy adjustment (RPS target of 25% by January 1, 2017)	300	2017	May 2017
3	2017 ACC modified with emission tab	324	2017	November 2017
4	2018 ACC	444	2017	Released May 2018

Avoided Cost Calculator (ACC)

- CPUC ACC developed by E3 for the CPUC to evaluate the cost effectiveness of energy efficiency programs
- 2017 ACC included a 1-RPS factor to account for how behind-the-meter distributed generation changes procurement of renewable generation
- 2018 ACC did not include the RPS factor due to over-procurement of renewables
- E3 recommended that CARB should not use the 2018 version of the ACC to determine an emission reduction standard
- CARB determined the ACC not viable for Fuel Cell NEM standard development

Proposed Fuel Cell NEM Methodology

- Start with 2017 estimated power plant marginal emission rate for California combined and simple cycle power plants (414 kg CO_2e/MWh, CEC data)
- Determine the number of hours in a year the cost of generation is zero using 2017 CAISO data (110 hours)
  - When cost of generation is zero, it is assumed that renewable generation is on the margin
- Adjust 2017 marginal emission rate by the percent of time the cost generation is zero
- Reduce the standard by 2.5 percent per year through 2022
  - Setting standard through 2022 allows for update “every three years”
- Update standard for 2023 based on most recent public data, not to exceed 2022 standard

Current Emission Standards Proposal

	2017	2018	2019	2020	2021	2022
CARB Proposal ($kgCO_2e/MWh$)	409	399	389	379	370	360

Considerations for Setting Fuel Cell NEM Emission Standards

- Projected marginal emission rates are always an estimate
- Operation of the electrical grid is highly complicated and changes rapidly
- Use of 2017 public data ties the base year to actuals
- Declining standard ensures fuel cells reduce GHG emissions compared to the electrical grid resources being displaced (including renewables)
  - Annual reduction rate aligns with expectations of legislatively-mandated emission reduction efforts to achieve cleaner electricity grid

Next Steps and Additional Information

- Please submit written comments by 5:00 p.m. Pacific time on Monday, July 22, 2019 via our webpage: https://ww2.arb.ca.gov/our-work/programs/stationary-fuel-cell-net-energy-metering
- Present regulation to the Board before the end of 2019
- Regulation effective in 2020
- For additional information on Fuel Cell NEM, visit our webpage or email energy@arb.ca.gov
- Contact:

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