

April 15, 2019

Ms. Carey Bylin  
Manager, Energy Section  
Industrial Strategies Division  
California Air Resources Board  
1001 I Street  
Sacramento, California 95812

**RE: Comments to February 22, 2019 Discussion Draft of Potential Changes to SF<sub>6</sub> Regulation**

Dear Ms. Bylin:

Pacific Gas & Electric Company (PG&E) would like to offer our comments to the February 22, 2019 California Air Resources Board (CARB) 'DISCUSSION DRAFT of Potential changes to the Regulation for Reducing Sulfur Hexafluoride Emissions From Gas Insulated Switchgear' ("Discussion Draft"). We generally support the proposed amendments to eliminate sulfur hexafluoride (SF<sub>6</sub>) gas emissions in new gas insulated equipment (GIE), and appreciate that several of our comments offered to date that support a systematic transition of the Electricity Transmission and Distribution industry away from the use of SF<sub>6</sub> as an insulating gas have been considered. The comments below propose changes that we believe will improve this important Climate regulation, and include:

- Support of the proposed phase out schedule with amendments
- Proposed amendment to refine the definition, "Substantive Error"
- Proposed modification of the labeling requirement for GIE and containers
- Recommendation to include all owned GIE (in-service *and* in-storage GIE) in the Annual Emissions Limit calculation
- Proposed amendment to the Annual Emissions Limit

I. § 95350 – Purpose, Applicability, and Exemptions

Since the Discussion Draft includes a phase-out schedule for new GIE we request the following amendment:

*(a) Purpose. The purpose of this regulation is to achieve greenhouse gas (GHG) emissions reductions from the operation of electrical equipment ~~that uses GHG as an insulating medium.~~*

II. § 95351 – Definitions and Acronyms

We propose the following change to the definition of "Substantive Error" to be consistent with the application of this definition with other CARB GHG regulations. This change will avoid unintended risks of non-compliance from minor administrative reporting errors that do not result in a meaningful change in emissions from SF<sub>6</sub> GIE:

*"Substantive Error" means an error that affects calculated emissions, data used to calculate emissions, or any other data element required to be reported pursuant to section 95353(a), (b), (e), (f), (g), (h), (i) and (j) of the annual report, resulting ~~from a nonconformance of this regulation~~ in a change in emissions greater than 5%.*

III. § 95352 – Sulfur Hexafluoride Phase Out

The Discussion Draft includes a requirement that owners ensure that all GIE and gas containers are clearly marked or labeled. PG&E has an asset management program that can readily identify each of the over 4,000 GIE presently in operation within our system. Since we have high confidence that each GIE is labeled or marked, we would like clarification that this is not a new requirement that will require at least one site visit to each active GIE. This will be an onerous and labor-intensive task that will not materially reduce GHG emissions. We propose the following amendment:

*(2) Starting January 1, 2022, GIE owners must ensure that all GIE and gas containers are ~~clearly marked or labeled~~ identified such that it is readily apparent which gas they are to be filled with the insulating gas used is readily determined.*

IV. § 95352.1. Determining Emissions Limit Applicability

We support the CARB proposal to establish an annual emissions limit rather than an emissions rate. We believe that this will simplify the implementation of the regulation. The Discussion Draft proposes an annual emission limit based on the nameplate capacity for ‘active GIE’. We recommend that the annual emission limit be calculated for all GIE (i.e. active and in-storage GIE). GIE is normally procured as part of a larger project several months in advance and GIE that have already been purchased or are already part of a GIE owner’s inventory should be included when determining the average system nameplate and average CO<sub>2e</sub> capacities.

V. § 95352.2. Sulfur Hexafluoride Phase Out

We generally support the proposed phase out schedule. Since the phase out is predicated on availability of alternative solutions, particularly with higher voltage equipment, we propose the following changes to Table 1 based on anticipated GIE availability when at least two qualified commercial solutions are available in each voltage class:

- a) Add the GIE Interrupting Capacity (kA) to each voltage class and
- b) Add a separate phase out date for GIE  $\leq 145$ kV with a  $\geq 63$ kA interrupting capacity

Table 1. Phase out Dates

Voltage (kV) and Interrupting Capacity (KA)	Phase-out Date
$\leq 72.5$ kV (31.5 kA and $\geq 40$ kA)	2025
$\leq 145$ kV (40 kA)	2025
$\leq 145$ kV ( $\geq 63$ kA)	2027
$\leq 245$ kV (40kA and $\geq 63$ kA)	2029
$> 245$ kV (40kA and $\geq 63$ kA)	2031

VI. § 95352.2. Annual Emissions Limit

PG&E has proactively taken actions to eliminate SF<sub>6</sub> gas use in our electricity distribution system equipment and is introducing zero global warming potential (GWP) GIE starting as early as 2020. However we believe that incorrect assumptions were used to develop the proposed annual emissions factors. As a result, regulated entities will not be able to meet the proposed limits, particularly after 2042 since the life expectancy of GIE is likely to exceed the assumed 20 and 40-years. Based on our asset management projections, we propose the following annual emission factors:

Table 2. Annual Emission Factors

<i>Year (i)</i>	<i>AEFi</i>
<i>2020 through 2034</i>	<i>1.0</i>
<i>2035 through 2039</i>	<i>0.95</i>
<i>2040 through 2042 and beyond</i>	<i>0.90</i>
<i>2043 through 2045</i>	<i>0.80</i>
<i>2046 through 2048</i>	<i>0.70</i>
<i>2049 and beyond</i>	<i>0.60</i>

VII. § 95353. Reporting Requirements

We recommend that CARB remove the notification requirement in '(c) Designated Representative' since the reporting entity assigns the Designated Representative within the organization to certify the annual report. We believe that this requirement is unnecessary.

VIII. § 95355. Measurement Procedures

The proposed regulation requires that the GIE owner electronically submit written procedures to track gas containers to CARB by April 1, 2021 and similarly submit revised procedures within 60 days if requested by CARB. We recommend that all entities subject to reporting under this regulation prepare an Inventory and Monitoring Plan that meets the requirements specified in this regulation, and make that Plan available to CARB upon request.

IX. § 95355.2. Nameplate Capacity Adjustments

We support the requirement that manufacturers of new GIE meet nameplate accuracy requirements. However we do not believe that GIE owners should be required to revise the nameplate capacity of any GIE. Instead a reporter may optionally revise the nameplate capacity of a non-hermetically sealed GIE based on an acceptable industry standard or a method that is approved by CARB. This approach will allow a reporter to improve the nameplate accuracy of their GIE as needed.

X. § 95355.3. Technical Infeasibility Exemption

We support CARB's proposal for a Technical Infeasibility Exemption request that can be submitted to allow PG&E the ability to continue to use SF<sub>6</sub> GIE in situations where SF<sub>6</sub>-alternative GIE cannot be used.

Conclusion

Thank you for considering comments to the regulatory amendment that reflects the state's goal to reduce high GWP gas emissions while ensuring the continued safe and reliable operation of the statewide electricity grid. Please contact Tom Rak at 415-973-5066 or me with any questions.

Sincerely,

/s/

Linus Farias

Cc: Mary Jane Coombs, CARB  
Fariya Ali, PG&E  
Tom Rak, PG&E  
Mark Krausse, PG&E  
Randy Fox, PG&E