Pacific Gas and Electric Company

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

RE: Comments to August 15, 2019 Discussion Draft of Potential Changes to SF_6 Regulation

Dear Ms. Bylin:

Pacific Gas & Electric Company (PG&E) would like to offer our comments to the August 15, 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 support an orderly and systematic transition of the Electricity Transmission and Distribution industry away from the use of SF_6 in gas insulated equipment (GIE). The comments below, which build on or reiterate prior comments will, if incorporated, allow PG&E to successfully comply with this important Climate regulation. Our concern is that the following elements of this Discussion Draft will collectively adversely impact our ability to maintain compliance with the regulation:

I. § 95351 - Definitions and Acronyms: The proposed definition of "Permanently decommissioned" will result in premature decommissioning of leak-free equipment.
II. § 95352 - Sulfur Hexafluoride Phase Out: The proposed phase-out schedule for medium and high voltage GIE cannot be met due to equipment being unavailable.
III. § 95352.1 - Average CO2e Capacity and § 95355.1 - Calculating Annual Emissions: The removal of an incentive to voluntarily introduce SF_6 alternatives prior to the mandated phase-out dates will create further challenges to meet the ambitious Annual Emissions Limits, and
IV. § 95352.2 - Annual Emissions Limit: The proposed 2019 inventory baseline mandates a reduction below the allowable 1% emissions limit ahead of 2025 especially when SF_6 GIE cannot be substituted. Additionally, we still believe that the annual emission factors will not be achievable.

We recommend that CARB consider the specific comments on the Discussion Draft sections below and incorporate the proposed changes.

I. <u>Amend definition of "Permanently Decommissioned" (§ 95351 – Definitions and Acronyms)</u>

As proposed, the definition will require utilities to retire functional and non-leaking GIE prematurely. Instead of establishing an arbitrary requirement that prevents use of GIE three years after removal from active service, we recommend that these GIE be recategorized as 'in storage'. The nameplate capacity of the 'in storage' GIE would be accounted for when calculating the 'Net increase in total nameplate capacity'. PG&E's operational practices often result in functional equipment being maintained as 'spares' when taken out of service. We recommend the following change to the definition:

"Permanently decommissioned" means a GIE device owned by a GIE owner that can never again be placed into active service. ~~*Any GIE device which was in active service at some point in time that has been consecutively out of active service for 3 years has been permanently decommissioned*~~

II. Amend Table 2 - Phase-out Dates for all other SF_6 GIE (§ 95352, Sulfur Hexafluoride Phase Out)

As communicated in our comments on April 15, 2019, we generally support the proposed phase out schedule. However, to align with the published availability of alternative solutions from manufacturers of higher voltage equipment, we recommend the following changes to Table 2, as provided below, based on anticipated GIE availability when at least two qualified commercial solutions are available in each voltage class:

Table 2. Phase-out Dates for all other SF_6 GIE

Voltage (kV) and Interrupting Capacity (KA)	Short-circuit Current (kA)	Phase-out Date
≤ 145 kV	≤63 kA	January 1, 2025
145 < kV ≤ 245 kV	≥63 kA	January 1, 2027
> 245kV	All	January 1, 2031

III. Provide an incentive for installation of non-SF_6 GIE prior to phase-out dates (§ 95352.1 - Average CO2e Capacity and § 95355.1 - Calculating Annual Emissions)

The removal of an incentive to voluntarily introduce SF_6 alternatives prior to the mandated phase-out dates will create further challenges to meet the ambitious Annual Emissions Limits and delay the advancement of new technologies that eliminate the use of SF_6. We recommend that CARB retain these incentives by amending the proposed language as follows:

§ 95352.1(a) GIE owners must calculate their average system nameplate capacity, C_{avg}, ~~*for each insulating gas j with a GWP>1*~~ *on an annual basis as follows:*

….

(2) For all other data years, GIE owners must calculate C_{avg} for each ~~*insulating gas j with a GWP>1 used in GIE*~~ *active or in-storage GIE.*

Additionally, we recommend that § 95355.1 – Calculating Annual Emissions to be amended to recognize the nameplate capacity of SF_6 GIE that was installed or replaced prior to the appropriate phase-out date.

IV. Amend the proposed 2019 inventory baseline (§ 95352.2, Annual Emissions Limit)

Staff's proposal to retain the 2019 "baseline" for purposes of calculating emissions limits after January 1, 2020 effectively penalizes PG&E for any scheduled SF_6 GIE installation and essentially mandates a SF_6 GIE phase-out ahead of the dates proposed in Tables 1 and 2.

PG&E has made firm commitments to install high voltage SF_6 GIE (230 kV, 50kA) in 2021-2022 and has deferred other projects to use non-SF_6 GIE alternatives. This will result in an increase in the SF_6 baseline inventory through 2022. If excluded from the allowable baseline, this will result in the effective allowable emissions limit to decrease 5%, (from 1% to 0.95%). Along with other utilities, the regulation would significantly increase our risk of exceeding the annual emissions limit for the reporting year from work that is already scheduled. We request that CARB change the baseline inventory date to accommodate commitments already made by PG&E and other utilities.

PG&E has proactively taken actions to eliminate SF_6 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

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

Conclusion

PG&E appreciates that CARB staff have received and incorporated many of the comments previously submitted. We believe that by incorporating our recommendations, this regulation will support 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: Fariya Ali, PG&E
Tom Rak, PG&E
Rudy Bartley, PG&E
Mark Krausse, PG&E
Randy Fox, PG&E