From:	Fahey, Phil
To:	Bylin, Carey@ARB; Cook, Brian@ARB
Subject:	Response to CARB Proposal for Regulation for Reducing Sulfur Hexafluoride Emissions from Gas Insulated Switchgear
Date:	Friday, March 29, 2019 12:23:51 PM

Carey and Brian,

Thank you for the opportunity to comment on the proposed legislation for Regulation for Reducing Sulfur Hexafluoride Emissions from Gas Insulated Switchgear. Below is feedback on the proposed legislation.

Section 95351. Definitions and Acronyms

Issue: Propose modifying the definition of "Insulating Gas" to ensure it covers the two applications an insulating gas may perform.

Present definition: " Insulating gas" means the gas used in GIE to interrupt electrical currents

Proposed definition: "Insulating Gas" means the gas used in GIE to interrupter electrical currents and/or provide dielectric withstand ratings

Issue: Propose modifying the definition to clearly account for no change of ownership of GIE when a customer (GIE Owner) wants to return a GIE (SF6 or non-SF6) to the original equipment manufacturer for repair and return to them.

Proposed definition: "Gas-Insulated Equipment Owner" or "GIE Owner" means the entity who owns GIE. For purposes of this regulation, the "GIE Owner: excludes temporary ownership by the original equipment manufacturer during GIE transport and installation at the customer site, and also during transportation, to and from, and repair time at the original equipment manufacturer to address repair of a GIE. Each corporation or limited liability company which owns GIE is considered to be a distinct GIE Owner and is independently subject to this regulation.

Section 95352 Sulfur Hexafluoride Phase Out

Issue: While S&C supports a phase-out schedule for SF6, it is believe that the proposed phase out schedule is too aggressive given where the industry is at as a whole on non-SF6 alternatives. While non-SF6 GIE are becoming available at distribution levels (voltages up to 38 kV) that should meet the phase out timing of January 1, 2025, equipment for 46 kV through 145 kV and higher voltages are not on pace for availability by this time period to fit many of the substation designs used in both terms of kV rating and available fault current

interrupting capability (kA). S&C would suggest the separation of the distribution voltage class equipment and transmission voltage class per the following schedule. Also each voltage tier is a product development project with significant independent design challenges due to changes in either interrupting technology, alternative gas mixture performance capabilities, and/or environmental performance. S&C would support a phase-out schedule more along the lines as follows:

X <= 38 kV January 1, 2025
38 kV < X <=145 kV January 1, 2030
145 kV < X <= 230 kV January 1, 2035
245 kV < X January 2040

Issue: An issue not addressed at this time regarding hermitically sealed SF6-GIE designs are replacements parts for the repair of damaged equipment. On many hermetically sealed SF6-GIE designs there are independent SF6 interrupting devices for each pole of the three phase device that is driven by either independent operating mechanisms per pole/phase, or connected together with a common drive train and driven by a single operating mechanism. If one of more of the SF6 interrupters become damage then it is possible to replace the individual damaged SF6 interrupters instead of having to retire and replace the complete SF6-GIE prior to its intended end of life. However, this would require an allowance to be able to continue to ship replacement interrupters into California after the various phase out dates. S&C believes that there should be an exemption provided in the legislation for replacement interrupters intended to be installed on hermetically sealed SF6-GIE to avoid having to retire a complete SF6-GIE prior to the planned end of life of 40 years. The individual pole units are shipped pre-filled and hermetically sealed from the OEM. The ability to order, ship, and receive replacement interrupters should not require additional permissions or paper work.

Issue: S&C would suggest that hermetically sealed devices not be part of the SF6 phase out. Hermetically sealed units have proven to be very reliable over the decades in which they have been used on both the transmission and distribution power systems. This being the case, it seems as if these hermetically sealed units are being unfairly targeted for elimination. S&C understands the need for the phase out of non-hermetically sealed designs.

Section 95252.2 Annual Emissions Limit

Issue: Why would the Average CO2e in section part 95252.2.a be based upon the first data year after 2018 for which the average CO2e capacity is equal to or greater than 5,500 MTCO2e? The first year after the GIE Owner's MTCO2e goes above the 5,550 limit makes sense. However the reference to 2018 seems to be in possible error. For GIE Owners who already are above the 5500 MTCO2e, this effectively sets the baseline capacity at the 2019 level and seems to ignore the fact that the installed capacity of SF6 will be increasing in 2020 and through the end of 2024 for just the first proposed tier of the phase out schedule. While it is realized that CARB wants to encourage early adoption of new technologies, it was

acknowledged by CARB that the phase out schedule was based upon obtaining 3 years of experience with any given new technology. That being the case, for the first phase out date of 2025 this means new equipment would not start to be installed until approximately 2022 and those would be in trial quantities. So you have new SF6 GIE being installed in 2019, 2020, 2021, and at a bit of a lower rate in 2022, 2023, and 2024. In addition the phase out schedule for the higher kV ratings, which generally use more SF6, do not get completed until 2031. So fixing the capacity at 2019 levels for the larger users does not coordinate well and would seem to place them at unfair risk of an emissions limit violation. In addition how do exemptions for SF6-GIE get factored into the baseline. It would seem that as exemptions are granted the additional SF6 nameplate capacity needs to be included into the baseline via some methodology. It would seem that the emissions limit should be calculated on a yearly based upon actual installed capacity. Once a given phase out date is reached, the base line associated with the particular voltage class of equipment will be automatically frozen, except for any exemptions granted.

Section 95352.5 Nameplate Capacity Labeling

Issue: The proposed accuracy of 1% or 1 pound whichever is larger, may not work effectively for various types of GIE. S&C SF6 GIE uses SF6 that ranges from 0.1 pounds to 30 pounds of gas per device depending on the GIE type and voltage. So whether or not it is a distribution device or transmission, our products do not contain a significant amount of SF6. It is the number of units on the system that adds up from a capacity perspective. In the case of our products we would be attempting to use a 1% accuracy measurement not 1 pound even though the 1 pound would be greater in all instances. The 1 pound would produce a larger degree of error when accounting for the gas at end of life as compared to a 1% number. For other original equipment manufacturers, the 1% or 1 pound rule may make more sense depending on their offerings.

Section 95355.3 Technical Infeasibility Exemption

Issue: Item 95355.3.b.6 seems to be overkill as a requirement when 95355.3.b.7 requires certification by a responsible official. Suggest removing the need for a sign and stamp from a professional engineer.

Issue: GIE Owners may have specific electric power system applications where the only alternative will remain SF6 GIE…for instances Protection devices at higher voltages with high fault current interrupting ratings, example a 138 kV 40 kA protection device. Instead of having to apply for a project by project exemption, it would be more efficient for a GIE Owner, and CARB, for the GIE Owner to describe the application and the reason why a non-SF6 GIE cannot be used and get approval for use of the SF6-GIE across their system where this issue exists. This also would then cover instances where any of the original equipment manufacturers may fall short of their projections for timing associated with providing non-SF6 GIE at the various voltages and kA ratings.

Section 95355.1 Calculating Annual Emissions

Issue: In the explanation of the Emissions equations the description for Disbursements of insulating gas has change in a manner that may cause confusion. In the previous 11/16/17 date draft, the wording for distributions was as follows:

Disbursements of insulating gas= (insulating gas in bulk and contained in active GIE that is sold to other entities) + (insulating gas returned to suppliers) + (insulating gas sent off site for recycling) + (insulating gas sent to destruction facilities)

The new wording is as follows:

Disbursements of insulating gas= (insulating gas disbursed with or inside active GIE) + (insulating gas returned to suppliers) + (insulating gas sent off site for recycling) + (insulating gas sent to destruction facilities)

The new proposed wording highlighted in yellow is much more vague and may cause confusion. Some may read the new definition as including GIE that has been put into service on their own systems during the current year. I would suggest keeping with the former wording for clarity purposes.

Regards,

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