May 26, 2021

Richard Corey
Executive Officer, California Air Resources Board
1001 I Street
Sacramento, California 95814

RE: Comments on Modifications to the Proposed Amendments to the Regulation for Reducing Sulfur Hexafluoride Emissions from Gas Insulated Switchgear

Dear Mr. Corey:

The "Joint Utilities Group"[1][2][3][4] (JUG) appreciates the opportunity to offer comments on the California Air Resources Board's (CARB) 'Modified Text for the Proposed Amendments to the Regulation for Reducing Sulfur Hexafluoride Emissions from Gas Insulated Switchgear' (Proposed Changes), released on May 5, 2021. The JUG represents the majority of electric transmission and distribution system owners and operators in California.

The JUG supports the overall direction of this rulemaking to further reduce potential emissions of high global warming potential (GWP) gases in the state and phase out the use of sulfur hexafluoride (SF_6) in gas insulated equipment (GIE). However, the JUG has significant concerns with two elements of the proposed amendments, which have not been adequately addressed in the Proposed Changes. Throughout this rulemaking, the JUG has actively supported CARB's decision to phase out the use of SF_6, provided that a *workable* phase-out exemption is available in the event of equipment failure or when the utility's subject matter expert determines that a non-SF_6 alternative cannot meet the technical specifications for the project. While the Proposed Changes include some modifications to the phase-out exemption, including a somewhat streamlined process for equipment failures, the JUG remains deeply concerned that both the phase-out exemption process and the failure notification process are burdensome, unclear, and could infringe on a utility's responsibility to manage its electric grid and comply with reliability requirements[5]. It is paramount, notwithstanding the aggressive limits on emissions from existing SF_6 GIE and the phase-out schedule of SF_6 in GIE, that the Proposed Amendments are implemented without compromising grid safety and reliability, and in recognition that the costs of the transition away from SF_6 GIE will be borne by the state's electricity customers. The second major issue is that the modified enforcement provisions

[1] Pacific Gas & Electric Company, San Diego Gas & Electric Company, Southern California Edison Company, Sacramento Municipal Utility District, Los Angeles Department of Water and Power, Turlock Irrigation District, , Liberty Utilities, Bear Valley Electric Service, the Northern California Power Agency, Southern California Public Power Authority and the California Municipal Utilities Association

[2] The Northern California Power Agency (NCPA) is a nonprofit California joint powers agency established in 1968 to construct and operate renewable and low-emitting generating facilities and assist in meeting the wholesale energy needs of its 16 members: the Cities of Alameda, Biggs, Gridley, Healdsburg, Lodi, Lompoc, Palo Alto, Redding, Roseville, Santa Clara, Shasta Lake, and Ukiah, Plumas-Sierra Rural Electric Cooperative, Port of Oakland, San Francisco Bay Area Rapid Transit (BART), and Truckee Donner Public Utility District—collectively serving nearly 700,000 electric consumers in Central and Northern California.

[3] The Southern California Public Power Authority (SCPPA) is a joint powers agency whose members include the cities of Anaheim, Azusa, Banning, Burbank, Cerritos, Colton, Glendale, Los Angeles, Pasadena, Riverside, and Vernon, and the Imperial Irrigation District. SCPPA Members collectively serve nearly five million people throughout Southern California. Each Member owns and operates a publicly-owned electric utility governed by a board of local officials who are directly accountable to their constituents.

[4] The California Municipal Utilities Association is a statewide organization of local public agencies in California that provide electricity and water service to California consumers. CMUA membership includes publicly-owned electric utilities that operate electric distribution and transmission systems. In total, CMUA members provide approximately 25 percent of the electric load in California.

[5] The North American Electric Reliability Corporation (NERC) develops and enforces reliability standards for the bulk electric power system in the United States. The Western Electricity Coordinating Council (WECC) is a regional entity responsible for compliance monitoring and enforcement of the bulk electric system reliability standards in the Western Interconnection (including California). The California Public Utilities Commission oversees reliability of the electricity distribution infrastructure.

in the Proposed Changes do not sufficiently address the JUG's concern about excessively punitive enforcement.

The JUG appreciates staff's responsiveness and willingness to discuss these critical issues throughout this process. In addition to the significant concerns noted above, the comments that follow highlight those areas where additional changes are necessary through a second 15-day change process for clarification or in order to ensure the proposed amendments can be successfully implemented while maintaining grid reliability and safety.

Topics addressed in this comment letter are as follows (the links below take you to each section):

The convention used to present the JUG comments is bold blue text (e.g. **addition**) to note recommended additions to the regulatory language and red text with strikeout (e.g. ~~deletion~~) to note recommended deletions. Ellipses (…) indicate additional text in the regulation that the JUG is not making recommendations on.

I. Phase-out Exemption and Failure Notification Process

The JUG believe that Section 95357 would not provide sufficient discretion to GIE owners. CARB should modify Section 95357 to clarify the requirement to obtain an exemption and create a process that provides deference to utility operators in maintaining reliability and managing their systems, including an appeals process.

In prior comments on the rulemaking, the JUG expressed their collective concerns that "as drafted, the proposed regulations would grant a third-party the authority to second-guess the decisions of the utilities' own experts in determining whether to approve either an SF_6 phase-out exemption or expedited SF_6 phase-out exemption request." These concerns have not been resolved in the Proposed Changes.

The management and use of transmission and distribution infrastructure is complex and can vary greatly by utility. Utility subject matter experts (SMEs) are best equipped to understand the intricacies of planning, procurement, and management of transmission and distribution infrastructure and the complex decisions that go into maintaining the grid reliability of their unique systems. The Proposed Changes to the Amendments make considerable modifications to Section 95357 that add additional processes on top of existing reporting requirements and emission limits in other sections of the regulation, that are already robust and extremely prescriptive. As discussed below, the Proposed Changes should be further refined to remove unnecessary processes and clarify the application of the phase-out exemption and notification process.

The current SF_6 Regulation already includes robust provisions that require accurate reporting and accounting. CARB has closely monitored SF_6 inventories while protecting against potential releases and

continues to do so. The utilities' track record in meeting rigorous reporting requirements under the existing SF_6 Regulation, as well as their efforts to comply with greenhouse gas (GHG) reduction measures like the Cap-and-Trade Program, Renewables Portfolio Standard, and other measures, have facilitated the greatest amount of emission reductions in California. The utilities have truly been partners to CARB in implementing AB 32 and SB 32. The JUG hopes that this track record demonstrates the utilities' commitment to GHG reduction and reinforces CARB's confidence and trust that GIE Owners will continue to do the right thing. Utilities will continue to meet their obligations to account for and mitigate SF_6 releases, and meet the phase-out requirements when feasible.

The Proposed Changes to Section 95357 would not only increase CARB's oversight of utility decision making for which equipment to use in their electric system, it does not clearly set forth when GIE Owners may rely on a failure notification versus the regular phase-out exemption process. This approach does not allow utilities to responsibly plan for operational or equipment changes necessitated by prudent utility practices and creates significant risks for maintaining reliability in the event that an exemption request is denied.

As stated in Resolution 20-28[6] "the modifications [to the proposed regulation] should support California's efforts to ensure a safe and reliable electricity system." Utility SMEs should be permitted to continue to be accountable for ensuring the safety and reliability of their systems by using their professional judgement in implementing exemptions when necessary. Former Chair Nichols' comments on the 45-Day Text made clear the need for deference.

> "You need to be open to the suggestion that the companies that are subject to this requirement actually know their business and are not going to be gaming the system, and that we have adequate means to test, and see if that, in fact, is what's happening. I really feel that the balance here is between literally keeping the lights on in certain locations and phasing out this very damaging chemical. And we have to find a way to do both."[7]

The Proposed Changes do not streamline the regular phase-out exemption request process as requested previously by the JUG. The regulation would still require the compilation of a virtually limitless body of material and data to justify an exemption, irrespective of whether that information is relevant to the exemption request. Many of the exemption process requirements seem unreasonable and unduly burdensome, and will tax utility staff resources to compile a package of material that includes things like "all applicable justifications for the exemption," a "description of the universe of entities eligible to bid", the complete dimensions of each space, each available non-SF_6 GIE, or identifying the universe of non-SF_6 GIE that meet the GIE characteristics.[8] Other justification requirements are not broad enough – for example, "the specific GIE characteristics (per Tables 1 and 2) that cannot be met by at least two suppliers" is a subset of all the possible GIE characteristics that need to be considered, so should not be the sole basis for making a decision. Rather than a prescriptive list of documentation that must be provided, the JUG recommends that CARB allow the applicant some discretion regarding how to justify the exemption, and to identify the list in 95357(d)(8) as examples but not requirements.

[6] Public Hearing to Consider Amendments to the Regulation for Reducing Sulfur Hexafluoride Emissions from Gas Insulated Switchgear, September 24, 2020 (https://ww3.arb.ca.gov/board/res/2020/res20-28.pdf)
[7] CARB Hearing Transcript for Agenda Item 20-9-2, October 19, 2020 Board Hearing at p. 75.
[8] 15 Day Text at 17 Cal. Code Reg. Sec. 95357(d).

Even when a failure notification is allowed under Section 95357, the Proposed Changes go on to establish a process for evaluating the failure notification, including the rationale for the failure notification and discovery of "additional information," suggesting that the notification and accompanying attestation are subject to CARB's discretionary review.

In addition, the 45-day timeframe after a GIE failure occurs to submit information about the new GIE device acquired to replace the failed GIE is not feasible. It can take months to purchase, manufacture, ship, do the construction work to remove the old GIE and install the new GIE, and connect and test the new GIE, not to mention perform a root cause analysis on what caused the old GIE to fail. The timeframe for submitting this information to CARB should be based on receipt of all the required information.

In sum, the JUG is concerned that the numerous requirements in the phase-out exemption structure lead to ambiguity and there are potentially any number of reasons that CARB could deny a phase-out exemption request. The utilities need a clear pathway to procuring critical equipment in a reasonable timeframe. A denial could pose serious challenges to utility planning and operations. In the extreme, a utility that has been denied a request to replace an SF_6 breaker could be put in the position of redesigning its system, which could include the construction of a new substation. This could expose utility operators to costs that are many orders of magnitude higher than replacing a single breaker. In addition to cost concerns, a denial would undoubtedly lengthen the timeframe over which the utility must manage system constraints and could impact the utility's ability to respond to other climate initiatives driven by electrification and the existing demands on system planners. Designing and constructing a new substation can take several years and managing constraints over this lengthy period of time would put an undue burden on utility operators. Simply put, the implications of denying a phase out exemption request could be profound, and in extreme cases could prevent GIE Owners from maintaining system reliability. To mitigate these concerns and provide the requisite degree of clarity required by the Administrative Procedures Act, the JUG recommends the following amendments to Section 95357, as set forth below:

A. JUG Recommends Removing Section 95357(k) in its entirety because it contains unnecessary process and undermines the efficacy of the failure notification process.

~~(k) Upon receipt of a notification pursuant to sections 95357(i)(1), (i)(2), (j) (1), or (j)(2):~~

~~(1) Within seven days, the GIE owner will receive an acknowledgement of the receipt of the notification, which will include a failure identification number. If the GIE owner does not receive a receipt within seven days of submittal, the GIE owner must contact CARB to inquire whether CARB has received the notification.~~

~~(2) Within 21 days of submittal, the Executive Officer shall notify the submitter if additional information is necessary to complete the notification;~~

~~(A) Within 21 days of being notified by the Executive Officer that additional information is necessary to complete the notification, the GIE owner must provide the requested information.~~
~~(B) Upon receipt of additional information from the submitter pursuant to Section 95357(k)(2)(A), the Executive Officer will notify the submitter if additional information is necessary to complete the notification within 21 days.~~

B. JUG Recommends adding a definition for the term "imminent" and amending Section 95357(i) to include failures that reflect compromised system reliability:

ADD to Section 95351 (Definitions): **"Imminent" means a timeframe in which a GIE Owner expects a failure is reasonably likely to occur, either due to end of useful life or the detrimental condition of a GIE device, and during which there is insufficient time for replacement equipment to be properly planned, procured, and installed prior to the anticipated failure.**

95357 (i) In the event of **compromised system reliability or** a failure of a GIE device in active service that, in the estimation of the GIE owner may only be resolved through the acquisition of SF_6 GIE that would otherwise require an SF_6 exemption, the GIE owner may acquire an SF_6 GIE device with the same GIE characteristics as the failed GIE **or compatible GIE characteristics to restore system reliability** without prior approval from the Executive Officer, and must: …

C. JUG recommends amending Section 95357(b) to provide more responsibility to the GIE owner in determining that a phase-out exemption is necessary.

(b) Beginning September 1, 2024, a GIE owner may submit an SF_6 phase-out exemption request if **the GIE owner determines**, based on bids received pursuant to section 95357 (l), either: …

D. JUG Recommends Amending Section 95357(d), (f), (g) and (i) to streamline the informational requirements for Phase-Out Exemptions so that only information germane to the specific request must be collected, while allowing the Executive Officer to request additional, *relevant* information if needed.

(d) The SF6 phase-out exemption request must contain the following:

(1)-(4) …

(5) The names of manufacturer(s):

(A) Contacted about the availability of non-SF_6 GIE that might be appropriate for use in the type of project(s) described in section 95357(d)(3)(A) and/or 95357(d)(3)(B), and the dates contact was initiated; **or**

(B) That submitted bids pursuant to section 95357(l);

~~(C) A description of the universe of entities eligible to bid based on the bidding process used by the GIE owner (e.g., public solicitation, qualified vendor list);~~

(6)-(7) …

(8) ~~All~~ **The** applicable justifications for the exemption **and any relevant supporting documentation. Examples of supporting documentation may include, but are not limited to**:

(A) For exemptions submitted under section 95357(b)(1), ~~this includes~~ the specific GIE characteristics (per Tables 1 and 2) that cannot be met by at least two suppliers **based on the bids received**.

(B) For exemptions submitted under section 95357(b)(2), ~~this includes~~ **justification may include** the complete dimensions of each space within which requested SF_6 GIE would reside; the complete dimensions of each available non-SF_6 GIE that meet the GIE characteristics (per Tables 1 and 2) identified by the equipment manufacturers **and based on bids received**; the complete dimensions of the SF_6 GIE specified in section 95357(d)(4); and a picture showing the space where the SF6 GIE would be installed. If the dimensions of the non-SF_6 GIE are smaller than the dimensions of the space available, but the device cannot be placed into the space for another reason (e.g., the space lacks the necessary clearance, another obstacle prevents transport of the device to the space), the justification **may** also include a description of the constraint that clearly demonstrates why the device cannot be placed in the available space.

(C) For exemptions submitted under section 95357(b)(3), ~~this includes~~ a list of available non-SF_6 GIE that meet the GIE characteristics (per Tables 1 and 2) identified by the equipment manufacturers **and for which bids were received,** and a justification that clearly explains why each of the available non-SF6 GIE identified are incompatible and how the SF_6 GIE described in section 95357(d)(4) are compatible.

(D) For exemptions submitted under section 95357(b)(4), ~~this includes~~ **justification may include** ~~a~~ list of available non-SF_6 GIE that meet the GIE characteristics (per Tables 1 and 2) identified by the equipment manufacturers **and for which bids were received,** and a justification that clearly explains why each of the available non-SF_6 GIE identified fail to meet the technical specifications and/or the GIE owner's documented safety or reliability requirements, such as failure rates or other indicators of reliability, and how the SF_6 GIE described in section 95357(d)(4) do meet the requirements. ~~If failure rates or other indicators of reliability are used, specific details must be provided. If the GIE owner's justification cites a company-specific policy or procedure that available non-SF6 GIE do not currently meet and that is within the control of the GIE owner (for example, the company requires three years of testing for new equipment), the justification must also provide an explanation as to how the GIE owner will address the situation to enable the transition to non-SF6 alternatives in a timely manner.~~

…

(f) Within 45 days of submittal, the Executive Officer shall notify the submitter that **their application is approved** ~~their application is complete~~ or that additional information and/or clarification is necessary ~~to complete the application and/or~~ to ensure the Executive Officer has sufficient information to issue a decision. Upon receipt of additional information and/or clarification pursuant to section 95357(d)(8)(E) from the submitter, the Executive Officer will ~~perform the actions specified in this subsection~~ **notify the submitter of the approval or denial of their application request** within 45 days. **In the event that the request is denied, the Executive Officer shall specify the reasons for denial.**

~~(g)Within 30 days of the acknowledgment that the request is complete pursuant to section 95357(f), the Executive Officer shall notify the submitter of the approval or denial of the SF6 phase-out exemption request~~. In the event that the Executive Officer has not responded to the submitter within ~~30~~ **45** days of the ~~notification that the~~ application ~~is complete~~, the SF_6 phase-out exemption request is approved.

(i) In the event of **compromised system reliability or** a failure of a GIE device in active service that, in the estimation of the GIE owner may only be resolved through the acquisition of SF_6 GIE that would otherwise require an SF_6 exemption, the GIE owner may acquire an SF_6 GIE device with the same GIE characteristics as the failed GIE **or an SF_6 GIE with compatible characteristics, in order to restore system reliability** without prior approval from the Executive Officer, and must:

(1) Within 15 days of the failure, electronically submit a notification to the Executive Officer that includes:

…

(C) The following information regarding the failure:

1. The date and time ~~of~~ the failure **was identified**;

2. The location of the failure; and

3. The manufacturer's serial numbers, pursuant to section 95354(a)(3), of all GIE that were affected by the failure.

(2) Within 45 days of ~~the failure~~ **obtaining all of the information specified below,** electronically submit the following information to the Executive Officer for each GIE device acquired.

(A) Date acquired;

(B) Date activated;

(C) GIE characteristics;

(D) Equipment type;

(E) Manufacturer's serial number;

(F) An explanation of the cause of the failure; and

(G) The appropriate attestation statement from section 95355(c).

E. <u>The JUG recommends the inclusion of a phase-out exemption appeal process to provide an option for recourse if CARB denies an exemption.</u>

As expressed in previous comments, the JUG remains concerned that the phase-out exemption process would grant CARB the authority the second-guess the decisions of the utilities' own experts in determining whether to approve or deny an exemption request. While the JUG continues to believe that GIE owners' subject matter experts are the best positioned to determine whether an exemption is necessary, the JUG recommends that if the regulation amendments allow the Executive Officer to reject an exemption request, they must also include a process by which the utility may appeal this decision.

II. Nameplate Capacity Adjustments

Section 95357.2 is overly prescriptive and will limit the ability of some utilities to utilize the procedure. CARB should modify Section 95357.2 and related terms in Section 95354 to ensure the

procedure is feasible for all utilities and compliance entities. The JUG also requests additional clarification in relation to certain sections of the procedure.

The JUG appreciates inclusion of the optional nameplate capacity adjustment procedure in the Proposed Changes. The purpose behind the nameplate capacity adjustment procedure is to determine the true gas capacity of non-hermetically sealed GIE to which the user adds and removes gas, in order to more accurately report SF_6 emissions and avoid reporting "phantom emissions" due to discrepancies between the nominal gas capacity value stated on the original equipment manufacturer (OEM) nameplate (data plate) and the true gas capacity of the GIE at design operating pressure. Since the gas capacity value is used in the equation to calculate emissions, utilizing the procedure to verify or adjust the GIE gas capacity value will improve the accuracy of reported emissions.

The nameplate capacity adjustment procedure should be practical and feasible for utility maintenance crews to perform when in the field with their existing gas carts and measurement tools, in order to avoid incurring unnecessary capital costs to purchase additional equipment. The utilities are concerned about the prescriptive requirement that the gas cart must be capable of recovering gas from the GIE device to a blank-off pressure of 3.5 Torr or less (§ 95354(f)(4)). While the JUG appreciates the desire for accuracy, imposing prescriptive equipment requirements in the name of accuracy may prevent some utilities from utilizing the procedure if their gas cart is incapable of attaining a blank-off pressure of 3.5 Torr or less due to gas cart specification range limitations. Since the purpose of the nameplate capacity adjustment procedure is to improve the accuracy of reported emissions, the ability to utilize the procedure is vital to ensuring the accuracy of the SF_6 inventory. It is more important that the procedure be feasible for all utilities to implement, if utilities opt to do so, rather than overly prescribing which equipment can and cannot be used, in order to realize the full benefit of the nameplate capacity adjustment procedure.

Since one size does not fit all, the JUG recommends that the nameplate adjustment procedure be used in combination with the GIE manufacturer and gas cart instructions for recovery of the insulating gas. The blank-off pressure is GIE-specific, so rather than specify a capability for the gas cart and a five-minute hold time, the procedure should direct the user to follow the GIE manufacturer and gas cart instructions for recovery of the gas. For example, the blank-off pressure for a small GIE is different than for a large GIE, and a gas cart that is suitable to recover gas from a smaller GIE may not be suitable to recover gas from a large GIE.

The JUG also recommends relying on the GIE manufacturer-provided temperature-compensated pressure gauge attached to the GIE (if available) to measure the GIE gas pressure prior to recovery of the insulating gas. If the GIE does not have an integrated temperature-compensated pressure gauge, then an external temperature-compensated pressure gauge or separate external pressure gauge and external temperature gauge may be used to measure the GIE gas pressure. The GIE integrated temperature-compensated pressure gauge is typically used when initially filling the GIE with gas (fill to pressure not weight); it is also used to monitor the GIE pressure over the service life of the GIE. For consistency, the JUG recommends using the same gauge to measure pressure prior to recovering the gas.

As such, the JUG recommends modifying the nameplate adjustment procedure and associated accuracy requirements as follows:

A. <u>JUG recommends modifying Section 95357.2 (c) to remove overly prescriptive requirements and defer to GIE manufacturer instructions:</u>

(c): If a GIE owner elects to adjust the nameplate capacity of any GIE, the owner must:

(1) **Measure and record the ambient temperature.** ~~Record the initial system pressure and vessel temperature prior to removing any insulating gas using a precision pressure gauge meeting the minimum accuracy requirements of section 95354(f)(2) and a precision temperature gauge meeting the minimum accuracy requirements of section 95354(f)(3).~~

(2) **Using the GIE temperature/pressure curve or other manufacturer specified method, ensure that the GIE's pressure is within the manufacturer specified limits using the GIE's integrated gauges. If the GIE does not have an integrated pressure gauge, an external temperature-compensated pressure gauge or separate external pressure gauge and external temperature gauge may be used to measure the GIE gas pressure.** ~~Convert the initial system pressure to a temperature compensated initial system pressure by using the manufacturer-specified temperature/pressure curve.~~

(3) …
(4) …

(5) **Follow the GIE manufacturer and gas cart instructions to recover insulating gas from the GIE until the GIE reaches the maximum achievable blank-off pressure, then hold for the appropriate amount of time as specified in the manufacturer instructions.** ~~Recover insulating gas from the GIE device until five minutes after the pressure in the GIE device reaches the blank-off pressure.~~

B. <u>JUG recommends modifying Section 95354 (Inventory and Insulating Gas Procedures) parts (f) and (l) to remove overly prescriptive accuracy and calibration requirements and defer to GIE manufacturer instructions:</u>

Section 95354(f) Accuracy Requirements

(f) The following accuracy requirements apply to equipment used to determine values required to be recorded under this subarticle:

(1) …
(2) ~~*Precision*~~ ***External*** *pressure gauges* must be certified by the manufacturer to be accurate within 0.5% of the largest value that the gauge can, according to the manufacturer's specifications, accurately record.
(3) ~~*Precision*~~ ***External*** *temperature gauges* must be certified by the manufacturer to be accurate within +/-1.0° F.
(4) *Gas carts* used to perform nameplate capacity adjustments must be **suitable to recover SF_6 from the GIE to the maximum achievable blank-off pressure as specified by the GIE manufacturer.** ~~capable of recovering gas from the GIE device to a blank-off pressure of 3.5 Torr or less.~~

Section 95354(l)(4) Calibration Requirements

(4) Recalibrate mass flow meters~~, precision pressure gauges, and precision temperature gauges~~ used to measure quantities reported under this subarticle at the minimum frequency specified by the manufacturer.

C. The JUG recommends adding the following clarifications to Section 95357.2(a)(1)(C) to confirm the notification would be a one-time, upfront notification of the intent to perform nameplate capacity adjustments with a list of serial numbers for the non-hermetically sealed GIE the procedure is intended to be performed on over time:

(a) **Provide a one-time opt-in notification to** ~~Notify~~ CARB of the intention to perform nameplate capacity adjustments. The provisions of sections 95357.2(b)-(e) will only apply to GIE owners that elect to perform adjustments and that have notified CARB of their intent to do so going forward.

(1) The notification must include:
(A) …
(B) …
(C) ~~The~~ **A list of** manufacturer serial numbers of the **non-hermetically sealed** GIE subject to the nameplate capacity adjustment process per section 95357.2(b).

D. The JUG requests that CARB clarify 95357.2(e) to specify that the revised nameplate capacity value should be utilized beginning in the year the procedure was performed.

(e) For each GIE device whose nameplate capacity was adjusted during the data year, the revised nameplate capacity value must be used **beginning** in **the year the procedure is performed for** all provisions wherein the nameplate capacity is required to be recorded, reported, or used in a calculation in this subarticle unless otherwise specified herein.

E. The JUG requests clarification on the recordkeeping requirements in Section 95356(a)(14) as they relate to the nameplate capacity adjustments procedure:

Given the JUG's recommended edits in part II.A. above to remove the requirement to use the manufacturer temperature/pressure curve, the JUG requests modifying the record keeping requirement in Section 95356(a)(14)(C) to reflect the fact that the manufacturer temperature/pressure curve may not be available:

(C) Manufacturer temperature/pressure curves for each GIE device subject to nameplate capacity adjustments pursuant to section 95357.2, **if available and used for the nameplate capacity adjustment**.

The JUG also requests clarification on what type of supporting documentation will be acceptable to demonstrate a GIE had compromised integrity, as required in Section 95356(a)(14)(D).

III. Enforcement Provisions

The JUG recommends amending Section 95359 to provide consistent, fair, and reasonable enforcement provisions.

The JUG appreciates CARB's Proposed Changes to the Enforcement Section §95359(b). These changes revert back to the previous rule language which provided clear authority, and adequate deterrence, for CARB to enforce any violation of the rule—be they emissions, reporting, or recordkeeping.

The JUG believes that our originally requested changes to paragraphs (c) and (d) are still necessary. As currently proposed, sections (c) and (d) are unnecessarily punitive, as even a minor error has the potential to result in exorbitant fines due to the "per MTCO2e" language and the multiplier of the SF_6 GWP, as explained below.

The focus of section (c) is the annual emission limit, and the focus of section (d) is the unauthorized acquisition of a SF_6 GIE. CARB has adequate enforcement penalty authority without needing the per tonne equivalent multiplier. The JUG understands that CARB wants the penalty structure to be consistent with the Cap-and-Trade Program and the Mandatory Reporting Regulation (MRR), but is deeply concerned that factoring in the multiplier of SF_6 GWP could lead to excessively punitive results, rendering even small infractions subject to very large potential penalties. Such a regulatory structure would be counterproductive, and would not serve the regulated community, or CARB, in implementation.

If it were determined that a single 'small' GIE containing 30 lbs. of SF_6 were to be acquired without an approved Phase-Out Exemption or proper failure notification, the potential penalty calculation, based on the value of SF_6 GWP referenced in the ISOR[9], could be as follows:

30 lbs of SF_6 x 22,800 GWP x (mt/2,205 lbs) = ~310 violations/day/mtC02e

Depending on the assumed per day penalty, which could be up to $5,150 per violation per day[10], and if the determination was made six months after acquisition, the maximum potential penalty based on this understanding would be approximately ***$287,000,000***. If the timing, quantity of GIEs, or size were increased, this number would be even more ridiculous. The JUG believes this is excessive, unnecessary and should be changed. If the annual limit were violated, then there could be a 365-day multiplier leading to similarly unrealistic potential penalties.

The unique nature of SF_6 is why these regulations are being promulgated, but there should also be recognition that such a GWP multiplier doesn't work on the enforcement side. The JUG urges CARB to exercise its discretion here to ensure the regulation is clear and does not result in unreasonable outcomes.

As such, the JUG proposes the following limited, yet important, additional modifications:

> (c) ~~Each MTCO2e~~ **An** exceedance of the emission rate limit for a data year prior to 2020 or to the emissions limit for data year 2021 and beyond shall constitute a single, separate violation of this subarticle for each day of the calendar year.
>
> (d) Any acquisition of an SF_6 GIE device after the dates provided in Table 1 and Table 2 shall constitute a single, separate violation of this subarticle for each day the GIE owner is in possession of the device ~~and for each MTCO2e of covered insulating gas at activation, in that device, or that the device is designed to contain,~~ unless it was acquired pursuant to one of the exceptions noted in section 95352(a)(1-4).

[9] https://ww3.arb.ca.gov/regact/2020/sf6/isor.pdf
[10] https://ww2.arb.ca.gov/sites/default/files/2020-06/2019_Annual_Enforcement_Report.pdf

IV. Calculating Annual Emissions

The JUG recommends revising Section 95354.1 to include additional ways that covered insulating gas can be acquired or disbursed, and utilize adjusted gas capacity values determined in accordance with section 95357.2.

The JUG recommends revising the description of the terms in the equation for calculating annual emissions to 1) include additional ways that covered insulating gas can be acquired or disbursed, and 2) utilize adjusted GIE gas capacity values determined using the nameplate capacity adjustment procedure in section 95357.2.

As written, the Acquisitions and Disbursements terms of the equation account for gas inside of active GIE transferred from/to another entity, but do not account for gas inside of inactive GIE transferred from/to another entity. An example of this is a GIE that comes fully charged from the factory to which the user does not add or remove gas. These GIE are received fully charged, and can be shipped back to the manufacturer for repairs or to an outside vendor for salvage with the gas still inside.

In addition, gas inside cylinders belonging to the same entity may be transferred from a facility inside California to a facility outside California and vice versa. As written, the Acquisitions and Disbursements terms of the equation account for acquisitions of gas obtained in bulk from chemical producers, distributors or other entities, and disbursement of gas returned to suppliers or sent to other entities, but not cylinders belonging to the same entity that come into California or leave California.

The last term of the equation, which accounts for the net increase in nameplate capacity of active GIE, needs to include any revised nameplate capacity values determined using the nameplate adjustment procedure in section 95357.2.

A. To ensure accurate accounting of covered insulating gas, the JUG recommends revising the terms of the emission calculation equation as follows:

Acquisitions of covered insulating gas j = (covered insulating gas *j* obtained in bulk during the data year (e.g., in gas containers or gas carts) ~~from chemical producers, distributors, or other entities~~) + (covered insulating gas *j* inside GIE when acquired by the GIE owner, for any GIE that became active GIE for the first time during the data year) + (covered insulating gas *j* ~~at activation for~~ **inside of** active **or inactive** GIE transferred ~~while in use~~ from another entity during the data year ~~pursuant to section 95354(c)(2)~~) + (covered insulating gas *j* returned to site during the data year (e.g., in gas containers or gas carts) after off-site recycling);

Disbursements of covered insulating gas j = (covered insulating gas *j* ~~at activation for~~ **inside of** active **or inactive** GIE transferred ~~while in use~~ to another entity during the data year ~~pursuant to section 95354(c)(2)~~) + (covered insulating gas *j* returned to suppliers **or sent to a facility outside of California belonging to the same entity** (e.g., in gas containers or gas carts) during the data year) + (covered insulating gas *j* sent off site for recycling in gas containers or gas carts during the data year) + (covered insulating gas *j* sent to destruction facilities in gas containers or gas carts during the data year) + (covered insulating gas *j* sent to other entities); and

Net increase in total capacity of active GIE owned and filled with covered insulating gas j = (covered insulating gas *j* at activation for GIE whose status changed to active GIE for the first time during the data year or **reactivated** after being considered removed from regular use ~~during the data year pursuant to section 95354(c)(1)~~) -(covered insulating gas *j* ~~at activation~~ **at removal** for GIE removed from regular use during the data year pursuant to section 95354(c)(1)) –

(covered insulating gas *j* at activation for **active or inactive** GIE transferred ~~while in use~~ to another entity during the data year ~~pursuant to section 95354(c)(2)~~) + (covered insulating gas *j* at activation for active **or inactive** GIE transferred ~~while in use~~ from another entity during the data year ~~pursuant to section 95354(c)(2)~~).

B. The JUG also recommends adding a definition for "Covered Insulating Gas at Removal" to account for adjusted nameplate capacities determined using the procedure in section 95357.2:

ADD to Section 95351 (Definitions): **"Covered Insulating Gas at Removal" means the nameplate capacity value determined using the nameplate adjustment procedure in section 95357.2; or the design capacity of the GIE device specified by the manufacturer.**

V. Inventory and Insulating Gas Procedures

The JUG seeks clarification from CARB on the following subarticles within Section 95354

A. Section 95354(a)

The JUG asks CARB to clarify that this is only required for GIE equipment that have covered insulating gas with a GWP:

(a) GIE owners must establish and maintain a current and complete GIE inventory for each data year, which includes the following information for each GIE device that uses covered insulating gas:…

B. Section 95354(a)(12)

Pertaining to Section 95354(a)(12), the JUG would like to point out that SF_6 capacity of parts will not always be available by manufacturers. There is an array of replacement parts for GIE. On the lower end of the spectrum, there are interrupters for air switches holding miniscule amounts of SF_6, where the SF_6 capacity data may or may not be published by the OEM. On the higher end of the spectrum, there are interrupter tanks on dead tank breakers where the amount of SF_6 capacity would be the capacity of the dead tank breaker. The JUG asks for clarification on what types of replacement parts are required for reporting and possibly consider making this part of the regulation optional since it is for informational use only. If this section of the regulation becomes a requirement, this will need to be brought up to the attention of the National Electrical Manufacturers Association (NEMA) and manufacturers.

(12) For SF_6-containing replacement parts installed during the data year on active SF6 GIE for which the phase-out date has already passed (required beginning January 1, 2025):

(A) Name or description of the part;

(B) SF6 capacity of the part**, if available**; and

(C) Manufacturer's serial number of the SF6 GIE device.

C. Section 95354(c)(1)(A)(B)(C)

Pertaining to Section 95354(c)(1) on classification of GIE considered to be "removed from regular use", it is unclear whether spare GIE is subject to this section of the regulation. Spare GIEs can be in a GIE owner's possession for greater than 5 consecutive years without being connected to the system. If CARB considers spare GIEs as inactive equipment after the 5 consecutive year period, this would create unnecessary amounts of surplus SF_6 GIE that would be rendered unsuitable for service, which could potentially end up in scrap yards, creating more environmental challenge to address down the road.

> (c) Beginning January 1, 2022, any GIE device that has been active GIE at some point during ownership by the GIE owner:
>
> > (1) Shall be considered "removed from regular use" in section 95354.1(a) when covered insulating gas has been extracted pursuant to section 95354(d) after in any of the following circumstances:
> >
> > > (A) When the GIE device has not been active GIE for five consecutive years, or
> > >
> > > (B) When the GIE device is taken out of active service for the purpose of removing the device from a GIE owner's inventory (e.g., to be disposed of, sold, transferred to a new GIE owner).
> > >
> > > (C) When the GIE device has been inactive GIE for less than five consecutive years and is being removed from the GIE owner's inventory (e.g., to be disposed of, sold, transferred to a new GIE owner).

D. Section 95354(d)

There are instances where GIE was active but taken out of service at its original location and placed into spare status since it had not reached end of life. Scenarios where this could occur include temporary construction, substation relocation, fault duty increase, etc.

> (d) Within one year of a GIE device meeting the specifications in sections 95354(c)(1)(A) through 95354(c)(1)(C), covered insulating gas must be removed and accounted for…

Per Section 95354(d), GIEs that are taken out of service will need to have gas completely recovered and accounted for as part of the gas inventory. This includes the minimum 5 psi that is typically recommended by manufacturers to be kept inside the breaker to prevent moisture intrusion inside the equipment. To inquire whether other gases, such as nitrogen or dry air, can be used to maintain the 5 psi, there was some hesitancy by the manufacturer with this approach since the breakers are designed to be filled with SF_6. JUG asks CARB for further clarification on whether this requirement would be applicable to GIE that become spare.

The JUG also requests that CARB does not limit this activity to just the GIE owner or the original manufacturer. There are many instances where the original manufacturer was purchased by another manufacturer or company. There are also circumstances among the JUG where a vendor performs this activity. The JUG recommends the following modification and requests that CARB clarify that these two cases can be accommodated by the requirement in the second half of part (d) as follows:

> (d) …The amount of covered insulating gas transferred out of the GIE device (pounds) must be recorded by the GIE owner or by the ~~original manufacturer of the GIE device if the~~ manufacturer**, contractor or vendor that** recovers the gas. The GIE owner is responsible for ensuring the gas is accounted for consistent with the methodologies specified in section 95354(d)(1) or (2).

E. Section 95354(a)(10)(A)(6)

Establishing a "covered insulating gas at activation" (CIGAA) value in 95354 (a)(10)(A)(6) is currently limited to only GIE acquired after 12/31/21 and made active for the first time after December 31, 2021. The JUG recommends broadening this to establish a CIGAA value for GIE already in the inventory that are re-filled with covered insulating gas after performing maintenance, as well as inactive GIE that were installed, filled with gas, and placed into service.

6. For GIE acquired after December 31, 2021 and **inactive GIE already in the GIE owner's equipment inventory that are** made active for the first time after December 31, 2021, covered insulating gas at activation shall be calculated as the sum of the values recorded in sections 95354(a)(10)(A)2. and 95354(a)(10)(A)3.b. (pounds). If no covered insulating gas was added to the GIE device per section 95354(a)(10)(A)3., covered insulating gas at activation shall be equal to the value recorded in section 95354(a)(10)(A)2. **For inactive GIE to which covered insulating gas is added to make the GIE active; GIE removed from regular use that is put back into active service; or GIE refilled with covered insulating gas after maintenance that involves replacement of parts; covered insulating gas at activation shall equal the total amount of covered insulating gas added to the GIE starting from strong vacuum and ending at the manufacturer specified operating pressure, calculated per one of the methods in section 95354(b)(1) or 95354(b)(2).**

VI. Reporting Requirements

The JUG requests that CARB modify Section 95355 to include a period of time in which errors can be corrected after submission of the annual report without enforcement action, similar to the Mandatory Reporting Regulation (MRR).

Based upon the statement by CARB (via a teleconference with JUG) on May 19, 2021, it is the JUG's understanding that although sections 95355(c) and 95355(c)(1) have been removed from the Proposed Changes, reporting entities may still submit revised SF6 reports to CARB upon determination of correctable errors on previously submitted reports. The JUG requests conformity of this regulation to that of CARB's MRR which explicitly recognizes the ability to amend a report's correctable errors within a specific timeframe without penalty of enforcement.

The JUG acknowledges that the SF_6 regulation does not have a verification period as the MRR program does, but believes that a similar approach would be appropriate. Below are the relevant sections of the MRR as an example:

> Section 95131 (b)(9): Emissions Data Report Modifications. As a result of data checks by the verification team and prior to completion of a verification statement(s), the reporting entity must fix all correctable errors that affect covered emissions or covered product data in the submitted emissions data report, and submit a revised emissions data report to ARB.
>
> Section 95107(c): ARB will not initiate enforcement action under this subparagraph until after any applicable verification deadline for the pertinent report.

VII. Spare GIE

The JUG requests that CARB revise Section 95352(b) (SF_6 Phase-Out) to clarify the usage of spare GIE

In the event of GIE failure, it is essential that GIE owners be able to replace the device with available spares to minimize any disruptions. It is the JUG's understanding that intent of the Proposed Changes would allow spare SF_6 GIE to replace any GIE that fails, but the JUG requests CARB modify the provisions of section 95352 (b) to make this explicit:

> (b) Starting on the applicable dates provided in Table 1 and Table 2, no GIE owner may ~~convert~~ **replace existing** non-SF_6 GIE ~~to~~ **with** SF_6, **except as provided in 95352(a)**.

VIII. Annual Emissions Limit

The JUG recommends the following modifications to Section 95353 for greater clarity.

A. Section 95353(d)

Beginning with data year 2021, GIE owners who elect to apply an early action credit must calculate their early action credit (EAC) on an annual basis using Equation 3. For consistency, the JUG recommends editing the title of Table 3 so that the header also includes the term "Cer"

B. Section 95353(e)(1)

In this section, for data years 2025 and beyond, GIE owners must calculate the value of the baseline for year i using equation 5. The JUG suggests modifying the description of term "Ckrj" to say, "**during the data year and was either not replaced by any GIE device or was replaced with a SF_6 GIE device;**"

Conclusion

The JUG supports the objective of this rulemaking to transition away from the use of high GWP gases in the state and appreciates the opportunity to provide these constructive comments to improve clarity and address concerns with the Proposed Changes. In keeping with the direction of the former Board Chair and Board Members to resolve the JUG's concerns, the JUG urges CARB to issue a second round of 15-day changes to the Proposed Amendments to address the comments above.