SMUD®

April 5, 2019

Carey Bylin, Energy Section
Industrial Strategies Division
California Air Resources Board
1001 I Street
Sacramento, CA 95814

Re: Sacramento Municipal Utility District's Comments to the Discussion Draft of Potential Changes to the Regulation for Reducing SF_6 Emissions from GIS, 17 CCR, Sections 95350-95359

Dear Ms. Bylin:

SMUD appreciates the opportunity to comment on the "Discussion Draft" of potential amendments to the Regulation for Reducing SF_6 presented at the February 25th CARB workshop. We look forward to continuing collaboration with CARB staff in the upcoming months as we strive to achieve the common goals of improved reporting accuracy and advancing GHG reduction efforts in California.

SMUD is gratified that CARB is soliciting comments from utilities as it develops this Regulation. We respect that CARB values the industry's input, and we would like to propose the following for CARB's consideration. We have organized our comments by Section as presented in the Discussion Draft document.

§ 95351. Definitions and Acronyms.

SMUD requests that CARB clarify the following definitions:

(a) The definitions of **"Global Warming Potential" or "GWP"** and **"Greenhouse Gas" or "GHG"** reference Table A-1 of Subpart A of Title 40, CFR Part 98 (Federal Register 12/11/2014). However, Table A-1 is not a complete list of the gases likely to be considered for gas-insulated equipment (GIE). For example, certain gases like fluorinated ketones are absent from this Table. In situations when a GHG is not identified in Table A-1, we request that CARB provide an alternative method for determining GHG eligibility and related GWP.

(b) The definition of **"Substantive Error"** seems too broad and may introduce unintended compliance implications. We propose that CARB consider "correctible error" as an alternative. This would achieve consistency with existing language in other GHG reporting protocols while realizing similar enforcement effect. Additionally, the phrase "…or any other data element required to be reported…" and the inclusive list of regulatory sections in this definition raise the risk that typos that

do not materially impact the reported emissions calculations would unintentionally trigger the requirement for revisions to previous GHG report submittals. For example, a typo in the title of a responsible official should not require any retroactive reporting. Finally, SMUD is unsure how to interpret the phrase "… resulting from a nonconformance of this regulation," and requests clarification from CARB.

SMUD proposes this revision to the definition:

> **"~~Substantive Error~~"** ***"Correctible Error"*** means an error that affects calculated emissions or data used to calculate emissions**, ~~or any other data element required to be reported~~** ***pursuant to section 95353(a), (b), (e), (f)(5)(6)(8)(9)(10)(11), (g)(1)(3)-(7), (h), (i) and (j)*** of the annual report, ***resulting in a change in emissions greater than 5%.*** **~~, resulting from a nonconformance of this regulation~~**.

§ 95352(a) Sulfur Hexafluoride Table 1. Phase out Dates.
While SMUD understands CARB's desire to phase out use of SF_6 GIE over time, and we appreciate CARB's acceptance of the notion of a "tiered" phase out structure, we maintain that CARB's proposed phase out dates are too early given the expected state of the market for alternative equipment. SMUD proposes a revised phase out timeframe driven by product availability as communicated to SMUD by original equipment manufacturers (OEMs) and the expectation that at least two manufacturers will meet SMUD's specifications/requirements. In addition, our proposed phase out structure includes specific dates for distribution level GIE, where GIE use differs from that used in substations, etc., and product availability is unclear for some uses. These dates present a holistic timeline to safely and reliably implement alternative technologies—from pilot to planning to mass deployment—while preserving the integrity of the grid.

SMUD		
Equipment Type	**Voltage Range (kV)**	**Proposed Phase Out Date**
Distribution (Aboveground[1])	≤ 17.5	1/1/2025
	17.5 < kV ≤ 38	1/1/2031
Distribution (Subsurface[2])	≤ 38	1/1/2031
Substation / Transmission	≤ 72.5	1/1/2025
	72.5 < kV ≤ 145	1/1/2029
	145 < kV ≤ 245	1/1/2033

[1] Aboveground distribution includes padmounted or pole mounted equipment.

[2] Subsurface distribution includes below ground, vault type or medium-voltage switchgear.

Note that SMUD does not address SF_6 GIE above 245 kV since we have no equipment in this category. SMUD's proposed phase out schedule achieves multiple benefits to CARB and regulated entities by:

1) providing operational flexibility by adding a fourth phase out category at 72.5kV and below, and providing more time for GIE between the 72.5 and 145 kV levels;

2) allowing for the nuances between Transmission and Distribution applications, since each class type presents unique challenges to implement (e.g., capacitor bank switching, submersibles, etc.); and

3) building in adequate time for OEMs to develop multi-faceted solutions;

§ 95352(a)(2) Label all GIE and gas containers as of January 1, 2022.
If the intent of this regulatory reference is to differentiate between SF_6 GIE and containers and non-SF_6, a better approach may be to label non-SF_6 gas GIE and containers. Currently, there are no labeling of gas type associated with SF_6 GIE and containers.

SMUD's proposed approach simplifies the task of labeling greatly while providing the same usefulness, since any container without a label is effectively labelled as an SF_6 container. To comply with § 95352(a)(2) as currently written places considerable strain on already limited utility resources.

§ 95352(a)(1)(A)(1)-(3) Manufacture, purchase, import, transfer, sell, lease SF_6 GIE for use in California.
SMUD urges CARB to clearly define the definition of "transfer." This should not apply from site to site within one entity. In the case of emergencies, it is vital to include flexibility for an "emergency" transfer or sale if reliability or safety is threatened by a delay.

We also request that CARB clarify what is meant by "converting non-SF_6 GIE to SF_6 GIE" in § 95352(a)(1)(A)(3). Was this intended to refer to the replacement of non-SF_6 GIE with SF_6 GE? Physical conversion of non-SF_6 GIE to SF_6 GIE would be at best unwise and most likely impossible.

§ 95352.2(a) Annual Emissions Limit.
SMUD recognizes the benefits of CARB's proposed Annual Emission Limit: 1) the methodology offers simplicity and uniformity; 2) it allows GIE owners to calculate their emission limit with certainty years in advance; and, 3) it provides a strong incentive for utilities to move away from SF_6, which will translate into a strong development signal for OEMs of GIE.

In reducing GHG emissions from SF_6, the reliability of the electrical system (and the personal safety of utility staff and the public) is paramount. Thus, the elimination of SF_6 GIE must be implemented cautiously.

Anchoring utilities to a 2019 baseline threshold in perpetuity is problematic. SMUD typically plans projects 3-5 years in advance; we have already acquired many high voltage (HV) SF_6 GIE that will remain inactive in 2019, and as such, these

acquisitions would be excluded from the 2019 baseline. Constraining utilities to a 2019 average nameplate capacity may compromise grid reliability by limiting a utility's options to adequately respond to load growth without undue penalty risk. Moreover, the majority of SF_6 acquisitions between 2020-2025 will be in the higher voltage (HV) categories where no alternatives to SF_6 currently exist. These HV SF_6 additions also contain the greatest mass of SF_6.

In addition to new growth, GIE replacement must be a consideration when establishing a baseline threshold. Every year, SMUD routinely replaces aging infrastructure for reliability reasons as assets approach end-of-life. For example, SMUD's Asset Management program calls for the replacement of oil circuit breakers approaching end-of-life. However, if non-SF_6 alternatives are unavailable, SF_6 GIE may be the only replacement option.

While a set baseline provides an incentive to utilities to accommodate load growth and equipment replacements with non-SF_6 GIE, it is impossible to respond to that incentive if there is no alternative equipment available. The proposed baseline should be tied to reasonable estimates of load growth and replacement schedules while GIE alternatives are unavailable. SMUD would like to propose several approaches as a compromise to the 2019 baseline. Any of these solutions, alone or in combination, will allow for the baseline to be adjusted under specific circumstances:

1) Include any SF_6 equipment procured in 2019 in preparation for load growth or replacement; OR

2) Allow any SF_6 added to inventory due to a Technical Infeasibility Exemption granted by CARB to be added to the 2019 baseline threshold, OR;

3) Allow for a 1% annual adjustment of baseline after 2019 to reflect load growth and technically infeasible installations requiring new SF_6 equipment from 2020 to the phase out dates for each voltage category, OR;

4) Allow the addition of higher voltage SF_6 GIE to the baseline for 10-15 years, since that is where current alternatives are most limited, OR;

5) Establish the baseline in 2024 rather than 2019.

Lastly, we ask that CARB clarify that §95352.2(a) applies to non-hermetically sealed GIE only. The definition of "active GIE" is very helpful for this purpose, however explicitly stating the exemption of hermetically-sealed GIE emissions from the annual emission limit will eliminate any potential misinterpretation.

§ 95352.3(a) Nameplate Capacity Labeling.
SMUD concurs that setting a level of gas accuracy on new equipment will encourage OEMs to achieve nameplate accuracy. However, a 1% accuracy seems overly stringent and may be unachievable given all the factors at play (e.g., pressure,

temperature). We propose a 5% accuracy requirement as an alternative. This is still a significant improvement over current nameplate inaccuracies of 10-25% and will go a long way towards improving reported emissions accuracy.

If a regulated entity were to sell or transfer used GIE on the secondhand market, then a "transfer" would require evacuating GIE to prove the nameplate accuracy. The proposed language in the Discussion Draft is unclear on who would be responsible for ensuring the accuracy level of the secondhand GIE. The rules should clarify which entity the compliance responsibility would lie with -- the OEM or the reporting entity?

§ 95353(d) Reporting Deadline.
SMUD respectfully requests that CARB consider extending the reporting deadline to June 30th. Many of the regulated entities subject to this requirement are also required to report as an Electricity Providing Entity (EPE) under the GHG MRR program. The GHG MRR reporting deadline for EPEs is June 1st. The two concurrent deadlines put a significant burden on utility resources and may impact reporting accuracy and data quality, particularly with the enhanced recordkeeping requirements in the Discussion Draft.

§ 95353(g)(5)(A) End of Year Cylinder Weighing.
SMUD urges CARB to provide additional flexibility for the end of year ("EOY") measurement of containers. The Discussion Draft requires the EOY weighing of containers to be executed between December 1st and December 31st of the data year. This could pose some challenges, because it may limit operational flexibility since this effort takes away from construction/maintenance activities. Also, the availability of crews to perform this type of work may be limited during the December timeframe, which may pose additional constraints on resources. Inclement weather is another factor SMUD must consider, since access to our facilities in the Upper American River (Fresh Pond vicinity and at higher elevations) may be impacted by winter storms that make rural roadways impassable for extended periods. Extending the timeframe for EOY weighing for another 15 days, ending on January 15th, would assuage these concerns.

§ 95353(1) Revisions to Annual GHG Reports.
The Discussion Draft states that revised reports must be submitted "within 45 days of discovering that an annual report…contains one or more substantive errors." The Draft also allows CARB 60 days to approve a nameplate adjustment. (A nameplate adjustment is considered a substantive error under the proposed definition, so nameplate adjustments would automatically trigger report revisions.) SMUD suggests a clarification that for a nameplate adjustment, the "discovery" occurs on the date that CARB approves the adjustment. Otherwise, entities could be subject to correcting reports with information that CARB has not approved, or that CARB has approved with a timeframe that leaves no or very little time for correction and submission. While the Discussion Draft provides for another 30-day extension for report revisions (per § 95353(l)(3)), it is inefficient to require submission of extension requests due to the potential for a tight timeframe tied to CARB approval.

SMUD fully supports extending the records retention period from 3 to 5 years. However, if the retention period is extended, then back-reporting should be restricted to 3 years. Amending 5 years' worth of reports would result in a considerable burden on reporting entity resources. Also, since the previous retention requirement was 3 years, entities may not have retained 5 years of records. This would be problematic if 5 years' worth of reports may need to be revised during 2020-2021.

Additionally, as stated above, the definition of **"Substantive Error"** seems too broad and encompasses datasets that do not necessarily impact the reported emissions calculation. (For example, typos in serial numbers or kilovolts (kV) that are immaterial and will not impact emissions, would trigger revisions to previous GHG report submittals.) To this end, we request that CARB revise the definition to "…an error that affects calculated emissions or data used to calculate emissions… resulting in a change in emissions greater than 5%." We also propose that CARB consider "correctible error" as an alternative; this would achieve consistency with the language in existing GHG protocols while realizing similar enforcement effect.

§ 95355(a)(1)(A) Measurement Procedures: Submit written procedures for gas containers by April 1, 2021.
While SMUD concurs that maintaining a standardized inventory management plan (IMP) for cylinder tracking is essential, we propose that reporting entities be allowed to maintain their respective IMPs onsite. IMPs may be made available to CARB staff for inspection upon request. Since IMPs tend to contain confidential information (i.e., substation and GIE locations), it would be problematic if this document is disclosed to the public. Our proposed approach would also harmonize the IMP requirement of this regulation with the current GHG MRR regulation and other GHG reporting protocols.

§ 95355.2 Request for Commenter Input on Potential New Section "Nameplate Capacity Adjustments." The table below contains SMUD's responses to CARB's solicitation for commenter feedback on the methodology and logistics of nameplate capacity adjustments.

Responses to CARB's Questions on 95355.2 Nameplate Capacity Adjustments		
	CARB	SMUD Response
1.0N	Does the proposed Nameplate Capacity Adjustment methodology minimize the risk of emissions?	SMUD encountered issues when we attempted to execute the methodology outlined in 95355.2(b)-(h). (Please see attached informal comments addressed to Dave Mehl dated May 8, 2018.) Suggest that CARB consider allowing the use of manufacturer recommended procedure for the Nameplate Capacity Adjustment methodology, since the limiting factor is from the recovery equipment manufacturer.
2.0N	Which non-hermetically sealed SF6 GIE should be required to go through the process (e.g., non-hermetic, equipment of a specific type, equipment manufactured by a certain manufacturer, equipment manufactured before a certain date, equipment above a certain capacity or above a certain percentage of the GIE owner's total capacity)?	Suggest allowing reporting entities to determine which GIE should go through the Nameplate Capacity Adjustment process. This could include: 1) prior to installation of new GIE. 2) whenever GIE is removed from service for maintenance or retirement.
3.0N	Should all GIE owners be required to complete the process (e.g., GIE owners not subject to the emissions limit, grant GIE owners a choice)?	SMUD suggests that Nameplate Capacity Adjustments be optional and should be at the discretion of the GIE owner.
4.0N	When should the process be performed (e.g., end of GIE life, as part of routine maintenance schedule)?	Nameplate Capacity Adjustments may be performed when GIE is taken out of service (at end of life or for maintenance), and prior to installing new GIE. Routinely removing GIE from service in order to verify Nameplate Capacity Adjustments is disruptive to our operations, introduces risk of emissions, time-consuming, and expensive.
5.0N	What should the cut-off date be after which the process can no longer be performed?	Within 40 years of manufacture date of GIE, or. "No longer allowed after 80% of equipment has been adjusted," when the risk of incorrect leakage is substantially lowered.
6.0N	Should CARB require that a consistent method be used for calculating revised nameplate capacity? If not, how can CARB be assured of consistent results?	Suggest allowing flexibility for reporting entities to determine their own processes. Once a process is established, the entity may document the process and submit its procedures to CARB for informational purposes. Once a procedure is established, the entity must adhere to it. OR Suggest that CARB consider allowing the use of manufacturer recommended procedure for the Nameplate Capacity Adjustment methodology, since the limiting factor is from the recovery equipment manufacturer.

§ 95355.2(a)-(h) Process for Determining Nameplate Capacity Adjustments. SMUD requests that the detailed procedures for nameplate capacity adjustment be included in a separate guidance document rather than embedded in the regulation. This approach will allow future flexibility to update and revise the methodology. This is important for keeping the nameplate adjustment procedure relevant as new approaches, new measuring equipment, and process improvement options become available.

To minimize the risk of emissions, SMUD intends to correct nameplate capacity on new installations and as GIE are taken out of service for retirement or internal maintenance only. SMUD will not randomly remove GIE from service to conduct nameplate verification as this is a costly endeavor, is operationally disruptive, and increases the risk of emission leakage.

SMUD encountered difficulties in attempting to execute the methodology outlined in § 95355.2(b)-(h). We attempted on multiple occasions to achieve the "less than 3.5 Torr" called out in § 95355.2(e) but were unsuccessful. The closest we could pull was 8 Torr and that effort took 12 hours, which is a level of effort that is unsustainable during our daily operations. Meeting the 3.5 Torr value **may** be achievable, but this would require all regulated entities to purchase a fleet of new DILO equipment. SMUD proposes instead that CARB allow the manufacturer recommended procedure for the Nameplate Capacity Adjustment methodology, since the limiting factor is due to variances in the recovery equipment capability from the recovery equipment manufacturer.

§ 95355.2(j) Nameplate Capacity Adjustments.
SMUD requests a revision to language from "30 days" to "60 days" for entities to electronically submit all measurements, calculations, and the revised nameplate to CARB from the date on which the measurements were taken.

§ 95355.2(k) Nameplate Capacity Adjustments.
SMUD requests a revision to language from "30 days" to "60 days" for entities to permanently affix a revised nameplate capacity label when the GIE owner updates inventory.

§ 95355.3(a)-(d) Technical Infeasibility Exemption.
As a publicly-owned utility (POU), SMUD requires that at least 2 vendors provide a similar product for competitive pricing and low bid. This discourages monopoly and provides for a contingency supplier in the event a product fails after several years or an OEM ceases operation.

To facilitate our procurement process, SMUD maintains "alliance contracts" (e.g., pre-approved, trusted OEMs with open contracts where we place orders for GIE). The current language in § 95355.3(b)(5) will require SMUD to undertake an open competitive bid on every single project, which is overly burdensome. To this end, SMUD asks that CARB revise the language in § 95355.3(a)(1) to read: "Non-SF_6 GIE meeting the specifications for the particular project or application are unavailable ***from at least two independent manufacturers***."

SMUD requests that CARB clarify that an approved exemption is valid for the lifetime of the GIE (this was verbally alluded to by CARB staff at the February 25th workshop, but it should be explicitly spelled out in the regulation as well).

Finally, we ask that CARB consider additional revisions to the Technical Infeasibility section, such as:

a) Emergency installations (§ 95355.3(b)), where the 75-day stipulation lead time for submittal for CARB approval is not feasible.
Revised language proposed: "…at least 75 days prior to the intended date of SF_6 GIE acquisition, ***or within 5 days of GIE replacement due to failure or imminent failure in a reliability or safety situation…***"

b) § 95355.3(b)(3): "The specific project (including location ***or locations***)…"

c) § 95355.3(b)(5): "Summary of bid solicitation and responses received from vendors ***if appropriate, or description of procurement and market survey actions and documentation of why a bid solicitation is not appropriate;***"

d) Delete § 95355.3(b)(6). CARB can rely on "certification by responsible official" in § 95355.3(b)(7).

e) Remove references to “bid solicitation” in § 95355.3(9)(B)-(C).

§ 95357 Enforcement.
SMUD requests that CARB reconsider the Enforcement section of the Discussion Draft. The language in § 95357(a)-(c) that “each day or portion thereof….is a separate offense” could result in penalties in the millions, which is disproportionate to the offense. While the SF_6 leakage requirement is an annual requirement, assessing a penalty for each day of the year as in § 95357(c): “…separate violation for each day of the calendar year …” is problematic for two basic reasons:

1) Penalties are not clearly proportionate to the size of the utility – the smallest utility and the largest utility face the same basic penalty; and,

2) Penalties are not clearly proportionate to the size of the exceedance – a one ton exceedance faces the same basic penalty as a 500 ton exceedance.

Given the basic penalty amount in the Health and Safety Code of $10,000 (negligent or intentional penalties are higher) per violation, any exceedance of the emission limit of any amount by any size utility could result in a $3,650,000 fine. While CARB has penalty flexibility under the law and has previously made verbal promises to structure actual penalties in consideration of the significance of the actual violation, clarity about this in the actual regulations is important (particularly for insurance and liability reasons).

When the initial SF_6 regulations were proposed and adopted in 2009-2010, these same penalty concerns were raised. However, the situation is far different today in that utilities are facing years of leakage limits of 1% and perhaps below, rather than the 10% leakage limit in the initial year of the regulation. Despite utility best efforts, violations and hence penalties would appear to be more likely going forward, and CARB should take some time to develop a penalty structure that is reliably proportionate to the violation. CARB should move away from a penalty structure based on 365 days with no clear relation to the size of the utility or the significance of the violation to a methodology that accounts for these nuances. If the emission limit is changed to an absolute limit as proposed, a penalty structure based on tons over the limit would seem appropriate.

As always, SMUD appreciates the opportunity to comment on the Discussion Draft proposal. We look forward to the ongoing dialogue with CARB in the upcoming months as we strive to formulate solutions to enhance the positive impacts of the SF_6 Regulation.

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