September 22, 2020

Ms. Mary Jane Coombs
Manager, Program Development Section
California Air Resources Board
1001 "I" Street
Sacramento, CA 95814

Dear Ms. Coombs:

Subject: Comments on the Proposed Amendments to the Regulation for Reducing Sulfur Hexafluoride Emissions from Gas Insulated Switchgear (45-Day comment period)

The Los Angeles Department of Water and Power (LADWP) appreciates the opportunity to provide comments to the California Air Resources Board (CARB) on the *Proposed Amendments to the Regulation for Reducing Sulfur Hexafluoride Emissions from Gas Insulated Switchgear* (Proposed Amendments) that were posted July 21, 2020 for public review and comment.

LADWP is a vertically-integrated publicly-owned electric utility of the City of Los Angeles, serving a population of over 4 million people within a 465 square mile service territory covering the City of Los Angeles and portions of the Owens Valley. LADWP is also a Balancing Authority, responsible for the safe and reliable operation of its portion of the electric power system in cooperation with neighboring Balancing Authorities. LADWP operates and maintains more than 3,700 miles of transmission lines that transport electricity from generating facilities in the Pacific Northwest, Wyoming, Utah, Nevada, Arizona, and within California to Los Angeles. LADWP also operates and maintains over 10,000 miles of distribution lines. LADWP owns or maintains more than 2,400 pieces of Sulfur Hexafluoride (SF6) gas-insulated electrical equipment in addition to other types of equipment such as oil filled circuit breakers and vacuum circuit breakers.

LADWP's roles as a multi-utility Balancing Authority, and as an open-access transmission provider with 26 percent of the state's transmission capacity, necessitate that, at any given moment, electrical energy destined for numerous users throughout California travels through LADWP's power system, much of which depends on SF6-insulated equipment. Reliability of the electric power system is essential for public health and safety. LADWP encourages CARB to keep reliability of the power system in mind as it considers the Proposed Amendments to the SF6 Regulation.

Comments on the Proposed Amendments

LADWP appreciates the constructive dialogue between stakeholders and CARB staff during the informal rulemaking phase, and the changes made to the rule language in response to feedback. LADWP acknowledges the work CARB staff has done on this regulation, which has evolved to include detailed calculations, recordkeeping and reporting requirements. LADWP

recognizes there is still work to be done on the rule language, and looks forward to continued discussions with CARB staff in order to finalize the rule language. LADWP respectfully submits the comments below identifying specific sections of the Proposed Amendments where further revisions are needed.

§ 95351. Definition of Substantive Error needs to include a materiality threshold.

CARB is proposing the following definition:

"Substantive Error" means an error that affects calculated emissions, data used to calculate emissions, data used to calculate the emissions limit or compliance with the emissions limit, and data needed by CARB staff to verify reported data and compliance with this Regulation.

As written, this definition implies zero tolerance for errors that affect calculated emissions in any way, or errors in data used to calculate emissions or the annual emissions limit, regardless of whether the effect of the error is material or immaterial. This is concerning given the proposed enforcement language which would assign daily violations for any data field that contains inaccurate information.

LADWP believes that the definition of substantive error needs to include a reasonable materiality threshold for errors to be considered substantive. For example, CARB's *Regulation for the Mandatory Reporting of Greenhouse Gas Emissions* (MRR) uses a materiality threshold of five percent (5%) (see below).

> *"Material misstatement" means any discrepancy, omission, or misreporting, or aggregation of the three, identified in the course of verification services that leads a verification team to believe that the total reported covered emissions (metric tons of CO_2e) or reported covered product data contains errors greater than 5%, as applicable, in an emissions data report. Material misstatement is calculated separately for covered emissions and covered product data, as specified in section 95131(b)(12)(A).*

The term "substantive" implies the error has a material impact on the end result. LADWP recommends incorporating the 5% materiality threshold and percent error calculation from the MRR into this regulation. Copied below for reference is the percent error equation.

$$Percent\ error\ (emissions) = \sum \frac{[Discrepancies + Omissions + Misreporting\ ]x\ 100\%}{Total\ reported\ covered\ emissions}$$

The stated purpose of this regulation is "to achieve greenhouse gas (GHG) emission reductions from the operation of electrical equipment that uses a GHG as an insulating medium." The focus of this regulation is on the emissions, not on the accuracy of the data in the equipment inventory. It does not seem suitable to apply the substantive error definition to "data needed by CARB staff to verify reported data and compliance with this Regulation".

LADWP recommends simplifying the definition of Substantive Error to focus on the regulated emissions and the emission limit, and apply a 5% materiality threshold similar to the MRR.

AMEND "Substantive Error" means an error that materially affects calculated emissions or, ~~data used to calculate emissions, data used to calculate~~ the emissions limit ~~or compliance with the emissions limit, and data needed by CARB staff to verify reported data and compliance with this Regulation~~, resulting in a change in total reported emissions or the emission limit greater that 5%.

§ 95353. Annual Emissions Limit

A. Average System Capacity and Annual Emissions Limit should include GIE acquired with a SF6 phase-out exemption.

LADWP appreciates inclusion of the phase-out exemption in the Proposed Amendments, which appropriately recognizes there are situations where non-SF6 alternatives cannot be used due to unavailability or technical infeasibility. In cases where a SF6 phase-out exemption is granted, the gas capacity of GIE acquired with that exemption should be reflected in the average system capacity and the annual emissions limit. Therefore, LADWP recommends deleting the following provision that would exclude GIE acquired with a SF6 phase-out exemption from the average system capacity and annual emissions limit.

DELETE § 95353(b)(3)(C) ~~The GIE device was not acquired with an SF6 phase-out exemption, either by the GIE owner or by a previous owner of the GIE device.~~

B. Conversion Factor from pounds to metric tons should not be rounded

When calculating the baseline gas capacity, annual emission limit and annual emissions, LADWP recommends using the more accurate conversion factor of 2204.62 pounds per metric ton. This conversion factor is consistent with the unit of measure conversions in 40CFR 98 Subpart A Table A-2, which is also used for calculating CO2e emissions under the EPA mandatory reporting rule. In the Proposed Amendments, the rounded conversion factor of 2205 should be replaced with 2204.62 in the formulas in section § 95353 (c) and (e) and the formulas in section § 95354.1 (b) and (c).

AMEND § 95353 (c) and (e) "~~2205~~2204.62" is the number of pounds in a metric ton.
AMEND § 95354.1 (b) and (c) "~~2205~~2204.62" is the number of pounds in a metric ton.

§ 95354. Inventory and Insulating Gas Procedures.

A. Year of manufacture rather than date of manufacture

Manufacturers do not provide a specific date when a GIE was manufactured, and often provide only the year of manufacture on the data plate. The year of manufacture is sufficient to determine the age of the GIE, and will avoid guesswork to estimate the month and day of manufacture. Given the stricter enforcement language, LADWP is concerned that an estimated date of manufacture could be considered inaccurate information, resulting in multiple daily violations. Therefore, LADWP recommends changing the GIE inventory requirement from "Date" to "Year" equipment was manufactured as follows:

AMEND § 95354(a)(2): ~~Date~~ Year equipment was manufactured.

B. Adjust gas capacity for existing GIE with inaccurate name plate values

For new GIE, LADWP agrees with establishing the "covered insulating gas at activation (CIGAA)" gas capacity value based on the amount of insulating gas used to fill the GIE at the time of commissioning. Experience shows that the actual amount of gas used to fill the GIE to proper operating pressure may differ from the manufacturers' theoretical gas capacity based on assumptions (nameplate value). This difference may be due to component manufacturing tolerances, bushing type, and the actual pressure and temperature conditions at the facility where the GIE is installed and filled. Therefore, CIGAA is a more accurate representation of the actual gas capacity value and should be used in calculations instead of the theoretical gas capacity (nameplate value).

For existing in-use GIE, the proposed rule language does not offer insight into how to address adjustments to the original nameplate gas capacity value. Experience shows there can be significant discrepancies between the original nameplate gas capacity value for in-use equipment and the amount of gas recovered from the equipment. For example, the amount of SF6 recovered from eight large (500 kV) circuit breakers during decommissioning was 200-240 pounds lower than the nameplate gas capacity value. In this case, if the original nameplate gas capacity value is used in the emission mass-balance calculation, the result would be "phantom emissions" (emissions that did not actually occur) due to the gas capacity value on the nameplate not reflecting the actual gas capacity of the GIE. Since the gas capacity of decommissioned equipment factors into the emissions mass-balance calculation, it is important to determine the actual gas capacity value for in-use equipment in order to accurately calculate emissions.

Determining the actual gas capacity value for in-use equipment can be done in several ways:

1) Full recovery of the insulating gas from the GIE, starting from proper operating pressure and ending at vacuum.

2) The manufacturer reviews the GIE components, calculates the gas capacity and issues a revised nameplate.

LADWP recommends adding the following provision to adjust the gas capacity value for in-use equipment:

ADD § 95354 (a)(10)(A)7. For in-use GIE, the "covered insulating gas at activation" gas capacity value may be revised based on 1) full recovery of the insulating gas starting from proper operating pressure and ending at vacuum, 2) manufacturer review and revision to the GIE name plate gas capacity value, or 3) other method approved by the manufacturer.

C. Add option to use mass flow meter to measure gas transferred into / out of GIE

The Proposed Amendments require weighing the gas container(s) before and after transfer of gas into or out of a GIE. LADWP encourages CARB add the option to use a mass flow meter to measure the amount of gas transferred, in lieu of weighing the gas

container before and after the transfer. A mass flow meter is connected between the GIE and the gas container, and can measure the flow of gas with an accuracy of 0.5%. Use of a mass flow meter is beneficial in situations where the gas container cannot be weighed (such as a gas cart).

ADD 95354(b)(2): A mass flow meter may be used to measure the amount of covered insulating gas transferred in to the GIE.

ADD 95354(d)(2): A mass flow meter may be used to measure the amount of covered insulating gas transferred out of the GIE.

D. Fully-charged switches and hermetically sealed GIE should be excluded from the requirements to add or remove gas from the GIE

Sections 95354 (b) and (d) of the Proposed Amendments would require the owner to 1) add gas to the GIE in the year it becomes active GIE, and 2) remove gas from the GIE in the year it is "removed from regular use".

These requirements should not apply to any GIE that is designed to be shipped, stored and installed fully charged. Examples of fully-charged GIE include distribution switches and hermetically sealed switches and interrupters. Since these GIE are designed to remain fully charged, they can be sent to the manufacturer for repair or transferred to a different facility while fully charged. Removing the gas from this type of GIE could render the GIE useless.

For GIE that are designed for the user to add and remove gas, the timing of gas filling or removal does not necessarily coincide with the calendar year. For example, a GIE may be filled in November of one year and placed in active service in February of the next year. A GIE removed from service in November may have the gas removed in January.

LADWP recommends revising the proposed rule language as follows:

AMEND 95354(b) Beginning January 1, 2021, for any GIE device that has never been in the GIE owner's inventory as active GIE or that was accounted for in section 95354(c)(1) in a prior data year, and to which covered insulating gas must be added for it to become active GIE, GIE owners shall ~~not~~ add covered insulating gas to a GIE device ~~prior to the data~~ within one year of the date ~~in which~~ it first becomes active GIE or becomes active GIE after being accounted for in section 95354(c)(1). The amount of covered insulating gas transferred to the GIE device (pounds) must be recorded. This requirement does not apply to GIE including hermetically sealed GIE that are designed to be shipped, stored and installed fully charged.

AMEND 95354(d) For any GIE device meeting the specifications in sections 95354(c)(1)(A) and 95354(c)(1)(B), covered insulating gas must be removed and evacuated into a covered gas container or containers, and accounted for following the requirements of section 95354(d)(1) ~~in the same~~ within one year of the date that the GIE device is counted as "removed from regular use." The amount of covered insulating gas transferred out of the GIE device (pounds) must be recorded. This requirement does not

apply to GIE including hermetically sealed GIE that are designed to be shipped, stored and installed fully charged.

§ 95354.1. Calculating Annual Emissions: equation needs to account for additional gas acquisitions and disbursements, and exclude GIE where gas is neither added nor removed.

The following changes are needed to accurately account for gas in the mass-balance emission calculation equation:

1) The Acquisitions category does not account for all the possible means of adding gas to the inventory. For example, the "gas obtained in bulk" term also needs to include gas cylinders found (hidden) within the entity's facilities that previously were not accounted for in the container inventory, as well as gas cylinders coming into California from an out-of-state facility owned by the same entity. For example, LADWP owns several facilities located in Nevada that have SF6 cylinders. If cylinders from LADWP's out-of-state facilities are moved to LADWP's facilities within California, that amount of gas in the cylinders needs to be counted as an acquisition in the mass balance. On the flip side, cylinders from LADWP's facilities within California may be moved to LADWP's out-of-state facilities, so would need to be counted as a disbursement.

2) The Disbursements category does not account for all the possible means of removing gas from the inventory.

    a. The disbursements term needs to account for gas inside inactive GIE that is sold to another entity. For example, if an existing GIE within California is sold to another entity as allowed under section 95352 (a)(2) of the proposed amendments, the gas inside the GIE needs to be counted as a disbursement. This would not count as "transferred while in active use" because the GIE is being moved to the other entity's facility.

    b. Gas cylinders can be moved from a facility within California to a facility outside of California under the same ownership. Since data reported to CARB is limited to the geographic boundaries of California, moving a gas cylinder from California to outside of California would be considered a disbursement in the mass-balance equation.

3) Fully charged switches and hermetically sealed GIE that are placed in active service or removed from active service should be excluded from the mass-balance equation, since gas is neither added to or removed from the GIE.

To properly account for net changes in gas and GIE capacity in the mass-balance equation, LADWP recommends revising the terms of the mass-balance 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 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 contained in GIE sold to another entity) + (covered insulating gas *j* at activation for 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 another facility outside of California (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); and

Net increase in total capacity of active GIE owned and filled with covered insulating gas j (excluding hermetically sealed and GIE received fully charged from the manufacturer) = (covered insulating gas *j* at activation for GIE whose status changed to active GIE for the first time during the data year or after being considered removed from regular use during the data year pursuant to section 95354(c)(1)) -(covered insulating gas *j* at activation for GIE removed from regular use during the data year pursuant to section 95354(c)(1)) – (covered insulating gas *j* at activation for 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 GIE transferred while in use from another entity during the data year pursuant to section 95354(c)(2)).

§ 95355. Annual Reporting

A. Change the annual report deadline from June 1 to June 30.
LADWP recommends clarifying the annual report submittal due date to reflect CARB's practice of moving the due date to the following business day if the due date falls on a weekend. In addition, LADWP would like to reiterate the Utilities Group's April 2019 request to move the annual SF6 report due date from June 1 to June 30 (or the following business day). Many of the utilities subject to this regulation are also required to submit an Electric Power Entity report under CARB's *Regulation for the Mandatory Reporting of Greenhouse Gas Emissions*, which is also due on June 1. Moving the annual SF6 report due date to June 30 would be much appreciated. This would allow utilities to better manage their deadlines and achieve compliance.

> 95355 (a) By June ~~1~~ 30 of each year, or the following business day if June 30 falls on a weekend, any person who was a GIE owner at any point during the previous calendar year must submit an annual GHG emissions data report to the Executive Officer for the previous ~~data~~ calendar year.

B. Incorrect reference to sections containing information to be reported
There appears to be an incorrect reference in 95355(a)(5) to the information to be included in the annual report. 95355(a)(5) refers to the information in section 95354 (a), (d), (g), (h) and (l). However, the information that is traditionally included in the annual report is found in section 95354 (a) GIE inventory, (g) gas container inventory, (h) gas transfers, and (i) gas carts.

§ 95356. Recordkeeping

A. The physical address of GIE should not be collected.

CARB is proposing to include the physical address of GIE in the recordkeeping requirements. The records may need to be provided to CARB staff upon request.

> (a) GIE owners must retain the following records for the time period specified by section 95356(b) and, upon request by CARB, provide these records to CARB staff within 30 days of the request:
>
> (3) The location, either expressed as a physical address or a latitude and longitude, of each device included in the GIE inventory and each covered gas container and gas cart included in the inventory of containers reported pursuant to section 95354(a) and (g);

LADWP has security concerns with disclosing sensitive information such as the physical location of critical infrastructure. GIE subject to this regulation may be located in areas governed under critical infrastructure protection policies. Divulging the location of critical assets that are potential targets for terrorist activity could compromise the integrity of the electric grid.

The physical location of electrical equipment was purposely omitted from the original CARB SF6 GIS regulation for security reasons. Before adopting this particular proposed amendment, LADWP recommends deleting the physical location of GIE devices from the recordkeeping requirement in order to safeguard this sensitive information from disclosure to the public.

> 95356 (3) The location, either expressed as a physical address or a latitude and longitude, of ~~each device included in the GIE inventory and~~ each covered gas container and gas cart included in the inventory of containers reported pursuant to section 95354(a) and (g);

§ 95357. SF6 Phase-Out Exemption

LADWP supports inclusion of the phase-out exemption in the Proposed Amendments. The purpose of this exemption is to allow for the purchase of SF6 insulated GIE in cases where non-SF6 alternative equipment is not available or not suitable for the application. While moving away from SF6 towards more environmentally friendly alternatives is a worthy endeavor, the new technology needs to be performance tested to ensure the device will operate reliably prior to widespread use in the power system. The phase-out exemption is a very important contingency measure for the transition from SF6 GIE to the non-SF6 alternatives that will work hand-in-hand with the phase-out to protect reliability of the power system.

LADWP offers the following comments on the phase out exemption.

a. Most steps in the process state the number of days to complete the action. “Day” is defined as one calendar day. The exception is section 95357(i)(1) which specifies “within two State of California business days”. Please clarify that, unless otherwise

specified, the number of days in each step of the process are calendar days not business days.

b. Procurement of GIE for use in the electric power system must go through an engineering and specification process. The utility engineer(s) that perform the evaluation are the subject matter experts who have intimate knowledge of the electric system and type of GIE needed for each application. In addition, utilities procure GIE from qualified suppliers of reliable equipment that can meet the utility's specifications and requirements. The utility lead engineer's determination that the procurement of a GIE is necessary and meets the requirements for an exemption should be sufficient to warrant an approval. In the Proposed Amendments, the potential for CARB to deny the exemption creates regulatory uncertainty. It seems reasonable that if the request for exemption meets all the criteria laid out in the regulation to obtain an exemption, then the exemption should be approved. To address this uncertainty, LADWP supports the Utilities' Group proposal that SF6 phase-out exemption requests would be submitted with an attestation from the lead engineer that the exemption is necessary and complies with all the criteria to receive an exemption set forth in the regulation, and CARB's approval of the exemption will not be denied if such an attestation is provided.

c. If a spare GIE is used to replace an in-service GIE that failed catastrophically (cannot be repaired), CARB's Initial Statement of Reasons recognizes the need to replace the spare GIE. Having a spare on hand allows the utility to replace a GIE as quickly as possible to ensure system reliability. This is especially important during times of high demand on the electric system. However, the criteria to obtain a phase-out-exemption do not include replacement of a spare SF6 GIE. LADWP recommends adding a new category to the exemption criteria to enable replacement of spare SF6 GIE after the phase-out date.

> 95357(b)(5) To replenish inactive spare SF6 GIE.

d. An SF6 phase-out exemption request to replace spare SF6 GIE is a special case that is not project specific. For example, a particular make and model of circuit breakers may be installed at multiple facilities, so the spare GIE(s) of that make and model could be used at any of those facilities. LADWP recommends amending section 95357(d)(3) as follows:

> 95357(d)(3) A description of the specific project(s) to which the SF6 phase-out exemption would apply, including location(s); whether it is an existing or new facility, or if it has been subject to a process that significantly changes the in-place infrastructure (e.g., overhaul, re-powering); and the number of each type of GIE device described in section 95357(d)(4) that would be installed there; this provision does not apply if the exemption is for replacement of spare SF6 GIE;

§ 95359. Enforcement: the proposed changes appear to be punitive and could result in excessive violations.

LADWP recognizes the following significant changes made to the enforcement section of the regulation.

- The original enforcement language would impose daily violations for late submittal of the annual report, incomplete or inaccurate information in the report, and for exceeding the annual emission limit.

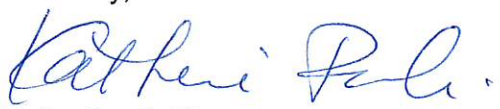
- The revised enforcement language would impose daily violations for incomplete or inaccurate information in each separate data field in the report, each metric ton of emissions (MTCO2e) over the emission limit, and acquisition of a SF6 GIE after the phase out date without an exemption as well as each MTCO2e of gas in that SF6 GIE.

Proposing such strict enforcement standards while at the same time significantly expanding the complexity of this regulation appears unfair to the utility. The expanded data collection requirements create significant opportunity to have incomplete or inaccurate data. The purpose of this regulation is to achieve GHG emission reductions; therefore, enforcement should be limited to emission exceedances.

LADWP requests that CARB reconsider the proposed changes to the enforcement section and incorporate by reference the Utilities Group comments on the enforcement language.

Thank you for your consideration of these comments. If you have any questions, please contact Ms. Andrea Villarin at (213) 367-0409 or Ms. Cindy Parsons at (213) 367-0636.

Sincerely,



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