

August 29, 2019

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

Dear Ms. Bylin:

Subject: Comments on the August 15, 2019 Discussion Draft of Potential Changes to the Regulation for Reducing Sulfur Hexafluoride Emissions from Gas Insulated Switchgear

The Los Angeles Department of Water and Power (LADWP) appreciates the opportunity to provide additional comments on the California Air Resources Board's (CARB) *Discussion Draft of Potential Changes to the Regulation for Reducing Sulfur Hexafluoride Emissions from Gas Insulated Switchgear* (SF6 Regulation).

In general, LADWP supports reducing Greenhouse Gas (GHG) emissions in a cost-effective manner, and supports California's goals to reduce GHG emissions through the Cap-and-Trade program and the SF6 regulation that reduces SF6 emissions through leak repair and best management practices.

These brief comments are focused specifically on the following areas of concern with the Discussion Draft of the SF6 Regulation:

1. Annual Emissions Limit
2. SF6 Phase Out Dates
3. Adjustments to GIE nameplate gas capacity

LADWP would like to schedule a meeting with CARB staff to discuss these comments as well as additional items from LADWP's previous comments.

1) Discussion Draft Section 95352.2 – Annual Emissions Limit.

LADWP has ongoing concerns with the proposal to set a fixed mass-based emissions cap for each entity based on 2019 active nameplate capacity, if the emissions cap does not adjust to reflect subsequent changes in the entity's inventory of SF6 gas-insulated equipment (GIE).

Over the next decade, LADWP needs to upgrade its transmission and distribution system to accommodate a significant increase in renewable generation and demand for electricity (due to electrification at the Port of Los Angeles, the transportation sector and buildings within LADWP's service territory), as well as replace generating units due to the state's requirements to eliminate Once-Through-Cooling. These transmission and distribution system upgrades will increase the quantity of SF6 gas-insulated electrical equipment (GIE) in use within LADWP's system. LADWP estimates that planned projects over the next five years will add a minimum of 23,200 pounds of SF6 nameplate capacity by 2025, which should be considered in the emission limit.

LADWP is concerned that CARB's proposal to set a fixed mass-based emissions cap based on 2019 in-service GIE will increase the risk of non-compliance. As the number of in-service GIE grows, a fixed emission limit based on 2019 in-service GIE will create an effective emission cap less than the current established standard of one percent per year. The enforcement language currently in the rule will impose 365 daily violations for exceeding the annual emissions limit, with a potential financial penalty of \$1.825 million dollars (365 daily violations x \$5,000 per violation). This seems unnecessarily punitive.

The current SF6 Regulation sets the Maximum Annual SF6 Emission Rate limit at one percent in 2020 and each calendar year thereafter. LADWP recommends staying the course with the emission rate limit instead of changing to a fixed mass-based emissions cap, because the emission rate limit adjusts as the SF6 equipment inventory changes.

Please review the detailed discussion on this issue in LADWP's previous comments dated April 26, 2019, which are attached for reference.

2) Discussion Draft Section 95352 – Sulfur Hexafluoride Phase-Out

Adoption of new technologies should be approached with caution until it is proven that the new technologies perform correctly and do not adversely affect power system reliability. The phase-out schedule should allow sufficient time for electric utilities to procure and pilot test newly developed GIE on their respective power systems prior to the phase-out. When a newly developed GIE becomes available, LADWP needs approximately two years to design a pilot project, draft specifications, solicit proposals from vendors, procure and install the new GIE, followed by five years of field testing and evaluating the performance of the new GIE before accepting it for use within LADWP's system.

LADWP recommends the revised phase-out dates shown in the tables below based on consultation with other electric utilities, GIE manufacturers, and LADWP's timeline to acquire and pilot test new GIE. LADWP has reached out to the following GIE manufacturers for information on projected commercial availability of SF6 free GIE:

- SIEMENS INDUSTRY INC,
- ABB INC,
- GE GRID SOLUTIONS,
- MITSUBISHI ELECTRIC POWER PRODUCTS, INC,
- HITACHI T&D SOLUTIONS, INC

LADWP requests that CARB adopt the revised phase-out dates shown in blue in Tables 1 and 2 below, which are consistent with the phase-out dates provided in comments submitted by the Electric Transmission & Distribution SF6 Coalition on August 28, 2019.

Table 1. Phase-out Dates for Distribution-level SF6 GIE

	Voltage (kV)	Short-circuit Current (kA)	CARB Phase-out Date (Discussion Draft)	Revised Phase-out Date (Proposed)
Distribution (Aboveground)	< 38	< 25	January 1, 2025	January 1, 2025
		≥ 25	January 1, 2025	January 1, 2025
	≥ 38	< 25	January 1, 2025	January 1, 2031
		≥ 25	January 1, 2025	January 1, 2031
Distribution (Belowground)	< 38	< 25	January 1, 2025	January 1, 2031
		≥ 25	January 1, 2025	January 1, 2031
	≥ 38	< 25	January 1, 2025	January 1, 2031
		≥ 25	January 1, 2025	January 1, 2031

Table 2. Phase-out Dates for all other SF6 GIE

	Voltage (kV)	Short-circuit Current (kA)	CARB Phase-out Date (Discussion Draft)	Revised Phase-out Date (Proposed)
Substation	< 72.5	< 63	January 1, 2025	January 1, 2025
	72.5 < kV ≤ 145	< 63	January 1, 2025	January 1, 2025
	72.5 < kV ≤ 145	≥ 63	January 1, 2025	January 1, 2029
	145 < kV ≤ 245	All	January 1, 2029	January 1, 2033
	> 245	All	January 1, 2031	January 1, 2036

The table below illustrates calculation of the phase-out date based on commercial availability of newly developed GIE and LADWP's timeline for acquisition, installation and pilot testing.

Commercial Availability of new GIE (Year)	Lead Time for Project Design & Spec Writing (years)	Competitive Bidding & Selection Process (years)	Manufacture of GIE (years)	Field Installation of GIE (years)	Utility Pilot Testing & Evaluation of GIE (years)	Phase Out Year*
GIE Release Year	0.75	0.25	0.5	0.5	5	GIE Release Year + 7 years

* Phase-out Year is calculated as follows: (GIE Release Year) + (Project Design & Spec Writing) + (Competitive Bidding) + (Manufacture of Equipment) + (Utility Pilot Testing & Evaluation)

3) Discussion Draft Section 95355.2 – Nameplate Capacity Adjustments

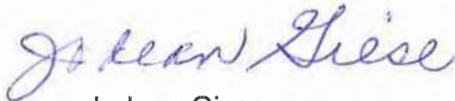
Adjustments to the nameplate gas capacity of GIE should be optional and at the discretion of the GIE owner. Since it may be difficult to take GIE out-of-service to verify the gas capacity, the SF6 Regulation should be flexible enough to accommodate nameplate revisions based on manufacturer calculations without having to go through the process of removing and refilling the SF6 in the equipment.

LADWP recommends that the SF6 Regulation include optional pathways for revising the nameplate gas capacity of GIE, such as:

1. Manufacturer provides a revised nameplate based on review of GIE components
2. Following a procedure/instructions provided by the GIE manufacturer
3. Following a procedure approved by CARB

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

Sincerely,



Jodean Giese
Manager of Air Quality

c: Mr. Brian Cook (CARB)
Ms. Rosa Lopez (CARB)
Ms. Lan Ma (CARB)
Ms. Cindy Parsons



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April 26, 2019

Ms. Carey Bylin
Manager, Energy Section
Industrial Strategies Division
California Air Resources Board
1001 "I" Street
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Dear Ms. Bylin:

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The Los Angeles Department of Water and Power (LADWP) appreciates the opportunity to review and comment on the California Air Resources Board's (CARB) *Discussion Draft of Potential Changes to the Regulation for Reducing Sulfur Hexafluoride Emissions from Gas Insulated Switchgear* (SF6 Regulation).

The 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. The LADWP is the third largest electric utility in the state, one of five California Balancing Authorities, and the nation's largest municipal utility. The LADWP's mission is to provide clean, reliable water and power in a safe, environmentally responsible, and cost-effective manner.

As a Balancing Authority, LADWP is 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. Currently LADWP's electric power system contains more than 2,000 pieces of SF6 gas-insulated electrical equipment (GIE) 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 contemplates changes to the SF6 Regulation.

Discussion Draft Section 95352 – Sulfur Hexafluoride Phase-Out

In general, LADWP supports reducing Greenhouse Gas (GHG) emissions in a cost-effective manner, and supports California's goals to reduce GHG emissions through the Cap-and-Trade program and the SF6 regulation that reduces SF6 emissions through leak repair and best management practices.

In the Discussion Draft, CARB proposes to phase-out the purchase of new SF6 GIE starting in 2025 in order to drive the transition to non-SF6 technologies. This proposal is a significant change for the electric power system which has utilized SF6 GIE technology over the past 40 years. While moving towards more environmentally friendly alternatives is a worthy endeavor, it should be approached with caution until it is proven that the alternatives perform correctly and do not adversely affect power system reliability. LADWP encourages CARB to continue working with equipment manufacturers and electric utilities to develop a phase-out plan that is feasible with sufficient time to pilot test new GIE technologies prior to the phase-out.

LADWP appreciates CARB including the technical infeasibility exemption in the Discussion Draft. LADWP proposed the technical infeasibility exemption to the Utilities Group during initial discussions on the Strawman draft changes to the SF6 regulation. The technical infeasibility exemption concept is very applicable to CARB's proposal to transition from SF6 GIE to more environmentally friendly alternatives, and is a very important contingency measure that will work hand-in-hand with the phase-out to protect reliability of the power system.

The proposed SF6 phase-out schedule in the Discussion Draft seems to consider only transmission level GIE; however, different types of GIE are used in electricity distribution systems. The table below shows the SF6 GIE phase-out dates proposed by CARB along with alternative phase-out dates (shown in blue) developed by a group of electric utilities including LADWP. The changes include adding subcategories for different types of distribution level GIE, and more realistic phase-out dates for transmission level GIE above 72.5 kV. It is important that the phase-out schedule allow sufficient time for electric utilities to procure and pilot test new GIE technologies on their respective power systems prior to the phase-out. When a new type of GIE becomes commercially available, LADWP needs approximately two years to design a pilot project, draft specifications, solicit proposals from vendors, procure and install the new

GIE, followed by five years of field testing and evaluating the performance of the new GIE before adding it to our standard. LADWP recommends that CARB adopt the revisions shown in blue in the table below.

	Voltage (kV)	Joint Utility Group ² Proposed Phase-out Date	CARB Discussion Draft Phase-out Date
Distribution (aboveground ¹)	≤ 17.5	1/1/2025	1/1/2025
	17.5 < kV ≤ 38	1/1/2031	1/1/2025
Distribution (subsurface)	≤ 38	1/1/2031	1/1/2025
Substation	≤ 72.5	1/1/2025	1/1/2025
	72.5 < kV ≤ 145	1/1/2029	1/1/2025
	145 < kV ≤ 245	1/1/2033	1/1/2029
	245 < kV ≤ 550	1/1/2036	1/1/2031

¹ Aboveground distribution includes pad mounted and pole mounted equipment

² Includes LADWP

If a technical infeasibility exemption is granted, the equipment manufacturer should not be prohibited from manufacturing and selling the SF6 GIE – otherwise, the exemption would be ineffective. Therefore, LADWP recommends the following changes in section 95352(a)(1)(A)(1):

- (1) After the phase-out date, no person may:
- (A) Manufacture, purchase, import, transfer, sell, lease, or offer for sale or lease SF6 GIE for use in California.
1. This provision does not apply to when a GIE owner ~~who~~ has received a technical infeasibility exemption pursuant to section 95355.3.

In addition, the SF6 phase-out must not compromise LADWP’s ability to provide safe and reliable power. Following failure of in-service GIE, LADWP must be able to replace the GIE as quickly as possible to restore service. If a spare is not available to replace the failed GIE, there should be an exemption to allow for the emergency purchase of an in-kind replacement without delay. To address reliability needs, LADWP recommends adding the following to section 95352(a)(1)(A):

3. This provision does not apply to the replacement of an existing in-service GIE that has failed and must be replaced promptly to ensure system reliability.

Section 95352(a)(2) states that starting January 1, 2022, "GIE owners must ensure that all GIE and gas containers are clearly marked or labeled such that it is readily apparent which gas they are to be filled with." If the manufacturer labels, color codes, or uses a different type of fill port on the non-SF6 GIE and gas cylinders to distinguish them from SF6, that should be sufficient to satisfy this objective. Requiring the GIE owner to label all GIE and gas containers would divert utility staff away from their system maintenance responsibilities. LADWP believes that the labeling requirement should apply only to new non-SF6 GIE and not to existing GIE. Also, the labeling requirement should exclude hermetically sealed GIE and vacuum breakers since they cannot be filled with gas.

(2) Starting January 1, 2022, GIE owners manufacturers must ensure that all new non-SF6 GIE and gas containers are clearly marked or labeled such that it is readily apparent which gas they are to be filled with. This requirement does not apply to hermetically sealed GIE or vacuum breakers.

Discussion Draft Section 95352.1 – Determining Emissions Limit Applicability

It is unnecessary to determine applicability of the annual emission limit every year if the GIE nameplate capacity has not fallen below the applicability threshold. For clarity, LADWP recommends adding the following paragraph to 95352.1:

(b) To determine whether the emissions limit applies, GIE owners shall calculate the average CO2e nameplate capacity of all GIE they own within California in the year 2019. If the emission limit applies, it shall continue to apply until the GIE owner re-calculates their average CO2e nameplate capacity to demonstrate they have fallen below the annual emissions limit applicability threshold of 5,500 MTCO2e.

When calculating the average system nameplate capacity and average CO2e capacities, GIE owners should include all GIE within their inventory, regardless of whether the GIE is in-service (active) or in-storage (inactive). C_{avg} should be calculated for each type of insulating gas, and the number of pounds in a metric ton is 2204.62, not 2205 (this conversion factor should not be rounded). Please see suggested revisions below:

(c) GIE owners shall calculate their average CO2e capacity as follows: ~~on~~
an annual basis

Average CO2e capacity = sum of $\frac{GWP * C_{avg}}{2205 \ 2204.62}$

Where:

Average CO₂e capacity = The average system nameplate capacity of a GIE owner's active GIE, expressed in units of metric tons of carbon dioxide equivalent (MTCO₂e).

GWP_j = The global warming potential of insulating gas *j*.

C_{avg} = Average system nameplate capacity for each type of insulating gas *j* (pounds).

22052204.62 = The number of pounds in a metric ton.

Discussion Draft Section 95352.2 – Annual Emissions Limit

Under the existing SF₆ Regulation, the emission limit is based on an annual emission rate, and the nameplate capacity in the denominator of the emission rate changes as the GIE inventory changes. In the Discussion Draft, CARB proposes to change from a rate-based limit to a mass-based limit of one percent of the GIE owner's 2019 nameplate capacity. Under the existing regulation, the one percent limit begins in 2020, not 2019.

LADWP recommends that CARB either:

1. Retain the existing rate-based limit of 1.0 percent from 2020 through 2034, or
2. If changing to a mass-based limit, allow adjustments to the baseline nameplate capacity to reflect changes in the GIE owner's nameplate capacity prior to the SF₆ phase-out date for each category of GIE, and changes resulting from technical infeasibility exemptions.

Retaining the rate-based limit would be simpler and would reflect ongoing changes in the GIE inventory. Changing to a mass-based limit adds complexity to the regulation and will not lessen the workload on reporters, since the Discussion Draft proposes to require GIE owners to continue calculating their average CO₂e nameplate capacity each year anyway. Adjusting for changes in the GIE nameplate capacity is important to avoid setting a limit that is too low. The limit needs to be reasonable so that compliance with the limit is achievable. For example, LADWP needs to reconfigure and upgrade its power transmission and distribution system over the next decade to enable incremental replacement of its local natural gas fueled generating units with imported renewable energy sources. These upgrades will add more SF₆ GIE to LADWP's system, since SF₆ GIE is currently the only technology available for higher voltage circuit breakers.

If CARB changes to a mass-based limit, the nameplate capacity on which the annual emission limit is based, should include all existing GIE within inventory, changes in GIE inventory prior to the phase-out date for each category of GIE, and changes in GIE inventory as the result of technical infeasibility exemptions. The SF₆ GIE phase-out dates differ for the various voltage classes within substation and distribution equipment. Until the phase-out date for each category of GIE is reached, SF₆ GIE may be

purchased and added to the transmission and distribution system as needed. After the phase-out date for each category of GIE, SF6 GIE may be added under a technical infeasibility exemption if non-SF6 GIE will not satisfy the need. LADWP believes it is reasonable and appropriate to adjust the average nameplate capacity to include these changes in the GIE nameplate capacity.

LADWP recommends revising the equation to calculate the annual emission limit as follows:

(a) GIE owners that are subject to the annual emissions limit shall establish their emissions limit using the following formula:

$$\text{Emissions Limit} = \text{AEF}/100 * (\text{Baseline CO}_2\text{e Capacity} + \text{Change in CO}_2\text{e Capacity}_{\text{Pre-Phase-Out}} + \text{Change in CO}_2\text{e Capacity}_{\text{Technical Infeasibility}})$$

Where:

Emissions limit = The GIE owner's emissions limit in data year i (MTCO₂e).

AEFi = The annual emission factor from Table 2 for data year i.

Average Baseline CO₂e capacity = The GIE owner's average CO₂e capacity value for the first data year, after 2018, in which average CO₂e capacity is equal to or greater than 5,500 MTCO₂e.

Change in CO₂e capacity (Pre-Phase-Out) = average CO₂e capacity of GIE added to the GIE owner's inventory prior to the phase-out date for each voltage class in the phase-out table.

Change in CO₂e Capacity (Technical Infeasibility) = average CO₂e capacity of GIE added to the GIE owner's inventory as the result of a technical infeasibility exemption

Section (b) should be clarified to apply only to GIE owners subject to the annual emissions limit rather than to all GIE owners. The limit does not apply to GIE owner's whose total nameplate capacity is below the 5,500 MTCO₂e applicability threshold. This revision will avoid potential confusion for GIE owners that are under the limit.

(b) For GIE owners subject to the annual emissions limit, No GIE owner's annual emissions, as calculated pursuant to section 95355.1(c), shall not exceed their annual emissions limit.

Discussion Draft Section 95353 – Reporting Requirements

- Reporting Deadline: LADWP recommends clarifying the submittal due date in section (d). The rule language should reflect CARB's practice of moving the due date to the following business day if the due date falls on a weekend.
 - (d) By June 1 of each year, or the following business day if June 1 falls on a weekend, any person who was a GIE owner at any point during the previous calendar year must submit an annual report to the Executive Officer for emissions that occurred during the previous data calendar year.
- Section (f) (3) (A) should be clarified to include GIE with serial numbers that are not visible.
 - (f)(3) Serial number assigned by the manufacturer;
 - (A) For any GIE that do not have a serial number or the serial number is not visible, another permanently affixed unique identifier must be used in place of the serial number.
- The list of equipment types in section (f) (4) should be expanded to include capacitor bank (CAP-BANK), circuit switcher (CIRC-SW), coupling capacitor potential device (CCPD), enclosed switchgear (ENSWGR), gas-insulated substation (GIS), interrupter, and line interrupter (LID) to reduce use of "other."
 - (f)(4) Equipment type from the following list of options: busbar, bushings, capacitor bank (CAP-BANK), circuit breaker (CB), circuit switcher (CIRC-SW), coupling capacitor potential device (CCPD), enclosed switchgear (ENSWGR), gas-insulated substation (GIS), interrupter, line interrupter (LID), switch, transformer, and other. Other may only be reported if the equipment type does not fall into the other options listed. If the equipment type is reported as "other," report the type of equipment.
- The reporting requirements in section (f) (5) should be uniform. For example, the number of days in service should be reported for both hermetic and non-hermetic equipment.
- Section (f)(10)(A) states "For GIE that are jointly owned, each joint GIE owner must apply its equity share (ownership or entitlement share) of the relevant GIE when calculating nameplate capacity and report their share of the nameplate capacity." For clarification, the GIE gas capacity (as stated on the nameplate) should be provided in the equipment inventory portion of the report, but the GIE owner's equity share of the GIE should be applied when calculating each GIE owner's average nameplate capacity.

- In Section (f)(11), the meaning of “added to the GIE inventory” and “removed from the GIE inventory” needs to be clarified. Does “added to inventory” mean received from another entity? Does “removed from inventory” mean sold to another entity? Does this reporting requirement apply if GIE moves between active service and storage within a GIE owner’s inventory? Why is the date of change needed?
- Sections (g)(3)(A) and (g)(4) are redundant and should be removed. The same language is in (f)(8) and (f)(9).
- LADWP recommends that (g)(5)(A) and (B) be clarified that the end-of-year weight serves as the beginning weight for the next year, to avoid possible confusion that the cylinders have to be weighed twice -- once for the end-of-year then again for the beginning-of-year. In order for the SF6 emission calculation to balance correctly, the end-of-year weight must be the true end-of-year weight. However, specifying that the SF6 cylinders must be weighed between December 1 and December 31 may not capture the true end-of-year weight. If a SF6 cylinder is weighed on December 15 but then used on December 30 to fill a breaker, the end-of-year weight should be the December 30 ending weight, not the December 15 weight. Weighing the SF6 cylinders in early January prior to first use in the New Year should also be acceptable, since it would also capture the true end-of-year weight and is more compatible with employee time off at the end of December. The regulation language should clearly convey the intent (weight of gas in each container at the end of the data year) without being prescriptive about how to do it. LADWP recommends the following clarifications:

(5) For gas containers owned by or stored on the property of the GIE owner, the weight of insulating gas in each container (pounds):

(A) ~~At the end of the data year. The measurement must occur between December 1 and December 31 of the data year. This value should reflect the weight as of close of business on December 31, and is also used as the weight at the beginning of the next data year;~~

(B) ~~At the beginning of the data year. For containers reported in the previous data year, this value must be the same as the value reported for the end of the previous data year;~~

- (h)(3) and (6) can be combined as follows:
 - (h) Each time insulating gas is transferred into or out of GIE, report:
 - (1) The GIE serial number.
 - (2) The container identification number.
 - (3) ~~Whether the insulating gas was transferred into or out of GIE;~~
 - (4) The date of the transfer;

- (5) The type of insulating gas;
- (6) The quantity of gas (pounds) transferred and whether the gas was transferred into or out of the GIE.

- In section (i)(4), the Change in Nameplate term in the equation to calculate annual emissions should reflect transfers of gas between cylinders and equipment during the year. If one or more switches are removed from service during the year and placed in storage fully charged, the switch would be removed from active service without removing the gas from the switch. In the emission calculation equation, if Change in Nameplate (from active service to inactive) is counted, but there is no corresponding change in gas stored in cylinders, it will not balance. The switches removed from service can be reused at a different location, kept in storage, or decommissioned for salvage. If the switch is to be salvaged, but the gas extracted in a later year (not the year the switch was removed from service), the gas extracted will increase the gas stored in cylinders in the later year without a corresponding Change in Nameplate so again the equation will not balance. If the equation does not balance, you get either negative emissions or phantom emissions. To solve this problem, the word "active" should be removed from the terms in the mass-balance equation, to avoid counting switches moved within the GIE inventory from in-service (active) to storage (inactive) as Change in Nameplate. For clarification, LADWP recommends the following revisions:

(4) Annual emissions for each insulating gas used in GIE as calculated pursuant to section 95355.1(a) (pounds), and all the following values used to calculate this value:

- (A) Insulating gas stored in containers, but not in GIE, at the beginning of the data year;
- (B) Insulating gas stored in containers, but not in GIE, at the end of the data year;
- (C) Insulating gas obtained in bulk from chemical producers, distributors, or other entities;
- (D) Insulating gas obtained with or inside ~~active~~ GIE;
- (E) Insulating gas returned to site after off-site recycling;
- (F) Insulating gas disbursed with or inside ~~active~~ GIE;
- (G) Insulating gas returned to suppliers;
- (H) Insulating gas sent off site for recycling;
- (I) Insulating gas sent to destruction facilities;
- (J) Nameplate capacity of ~~new active~~ GIE filled with gas;
- (K) Nameplate capacity of active GIE emptied of gas permanently taken out of service;

- In Section 95353(I) – Revisions to annual GHG reports, CARB’s proposed language would require a GIE owner to revise its annual report if the report contains “substantive errors.” The term “substantive error” is defined as “an error

that affects calculated emissions, data used to calculate emissions, or any other data element required to be reported pursuant to section 95353(a), (b), (e), (f), (g), (h), (i), and (j) of the annual report, resulting in nonconformance of this regulation". LADWP agrees that substantive errors affecting calculated emissions should be corrected. However, LADWP believes that "any other data element required to be reported pursuant to section 95353(a), (b), (e), (f), (g), (h), (i), and (j) of the annual report, resulting in nonconformance of this regulation" should be removed from the definition of substantial errors. For example, GIE equipment inventory data reported in section (f) has no bearing on emissions, so an error in the date of equipment manufacture should not trigger revising and resubmitting a previous report or reports.

Discussion Draft Section 95355 – *Measurement Procedures*

- Section 95355(a)(2) states "whenever a gas container is required to be weighed, weigh the gas container on a scale that is certified by the manufacturer to be accurate to within one percent of the true weight." LADWP agrees that this scale accuracy standard should apply to the annual inventory of gas stored in cylinders at the beginning and end of each year, or when cylinders are added to or removed from the GIE owner's inventory, since those weights are used in the equation to calculate annual emissions. However, the scale accuracy standard should not apply to weighing of cylinders during the year when SF6 is transferred into or out of equipment, because the scales on the gas processing carts do not meet the scale accuracy standard. For transfers into or out of equipment during the year, the relative difference between the starting and ending weight is sufficient to report the quantity transferred. The gas transferred weights are not used to calculate emissions.
- LADWP recommends revising the scale accuracy language in the CARB SF6 Regulation to be consistent with EPA Subpart DD, which states "Ensure that cylinders weighed for the beginning and end of year inventory measurements are weighed on a scale that is certified to be accurate and precise to within 2 pounds of true weight and is periodically recalibrated per the manufacturer's specifications. All scales used to measure quantities that are to be reported under §98.306 must be calibrated using calibration procedures specified by the scale manufacturer. Calibration must be performed prior to the first reporting year. After the initial calibration, recalibration must be performed at the minimum frequency specified by the manufacturer."
- LADWP proposes the following language for the CARB SF6 Regulation:
(a) (2) For the annual end-of-year inventory of gas stored in cylinders, and whenever cylinders are added to or removed from the GIE owner's inventory, ensure the cylinders are weighed on a scale that is certified to be accurate and precise to within 2 pounds of the true weight. Whenever a gas container is required to be

~~weighed, weigh the gas container on a scale that is certified by the manufacturer to be accurate to within one percent of the true weight.~~

- Since gas carts cannot be weighed easily and the cart itself retains only a few pounds of gas in the hoses and filter, LADWP recommends that gas carts should be excluded from the definition of “gas container.”

Discussion Draft Section 95355.1 – Calculating Annual Emissions

LADWP recommends removing “active” from the terms of the emission calculation equation for the reasons discussed previously, and because the term “active GIE” is not relevant if the regulation changes from a rate-based limit to a mass-based limit. In the original SF6 Regulation, the average nameplate capacity in the denominator of the emission rate was limited to “active GIE,” so “active GIE” was used to calculate emissions for the numerator of the emission rate for consistency.

LADWP recommends the following changes to the terms in the emission calculation equation:

Emissions = (Decrease in insulating gas inventory) + (Acquisitions of insulating gas) – (Disbursements of insulating gas) – (Net increase in total nameplate capacity of active GIE owned for each gas type).

Decrease in insulating gas inventory = (insulating gas stored in containers, but not in GIE, at the beginning of the data year) - (insulating gas stored in containers, but not in GIE, at the end of the data year).

Acquisitions of insulating gas = (insulating gas obtained in bulk from chemical producers, distributors, or other entities) + (insulating gas obtained with or inside active GIE) + (insulating gas returned to site after off-site recycling).

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

Net increase in total nameplate capacity of active GIE owned = (The nameplate capacity of new active GIE filled with gas) - (Nameplate capacity of active GIE permanently taken out of service emptied of gas).

Discussion Draft Section 95355.3 – Technical Infeasibility Exemption

LADWP supports CARB’s approach to provide a technical infeasibility exemption from the SF6 phase-out in circumstances where no feasible non-SF6 alternative exists (e.g. commercial unavailability, size, location, incompatibility, safety requirements). In the

interest of improving and streamlining this provision, LADWP provides the following recommendations:

1. Allow identical projects at different locations to be submitted and approved as a package. Applying for each specific location individually with the exact same specifications would be administratively burdensome. LADWP recommends adding section 95355.3(b)(3) as follows:

(b)(3)(A) If identical projects are being submitted for different locations under the same exemption request, the owner must list all locations but does not need to submit multiple requests.

2. Allow consideration of an exemption if only one valid bid is received. For many publicly owned utilities, there must be at least two valid bids received from vendors in order to purchase from a vendor. With only one valid bid, GIE owners are at the mercy of the manufacturer that can charge any amount they want for their product.
3. Include a separate exemption based on economic feasibility. While higher costs for non-SF6 GIE are expected, there should be a reasonable limit on the amount utilities will be required to pay as a result of the SF6 phase-out. The SF6 regulation should not require utilities to buy non-SF6 GIE at any cost. Including a cost containment mechanism in the SF6 Regulation is appropriate given the Assembly Bill 32 (AB 32) requirement that CARB adopt regulations to achieve cost effective GHG emission reductions. Adding an exemption based on economic feasibility would alleviate concerns about potential for exorbitant prices if non-SF6 GIE is available from only one vendor.
4. If a Professional Engineer (PE) is required to stamp and sign the exemption request, CARB should have a PE with substation and distribution experience in the electric utility sector review the request. Only a qualified engineer should be able to approve or deny the exemption request.
5. If a PE is required to certify that the information contained in the technical infeasibility exemption request submittal is true, accurate and complete, it is redundant to also require a responsible official to certify the submittal is true, accurate and complete. To eliminate this redundancy, LADWP recommends deleting certification by a responsible official in section 95355.3(b)(7).
6. LADWP recommends that CARB set up a special email address or other mechanism for submittal of documents to CARB for review (such as technical infeasibility exemption requests and nameplate capacity adjustments), similar to how the mandatory GHG reporting section set up the ghgreport@arb.ca.gov email address.

7. In section 95355.3(c), LADWP urges CARB to consider reducing the timeframe for CARB Executive Officer response to a technical infeasibility exemption request. A more timely response is needed considering that bid prices from vendors are only good for a finite period. For example, LADWP's experience has been that bid prices are valid for 90 days. Within that 90 day timeframe, the following activities need to be completed:

Day 1 - 30	GIE owner evaluates bids received against the specifications. If non-SF6 GIE is not available or not suitable for the project, then GIE owner prepares a technical infeasibility exemption request, which must be reviewed and signed off by a PE. GIE owner submits the technical infeasibility exemption request to CARB.
Day 31 -70	CARB reviews the technical infeasibility exemption request, requests additional information if needed, and issues decision.
Day 70 - 90	Prepare paperwork to award contract.

The Discussion Draft provides the Executive Officer 15 days to acknowledge receipt of the technical infeasibility exemption request and an additional 60 days to respond to the request. This proposed timeline is not compatible with the timeline for LADWP to complete its procurement process. LADWP requests that CARB consider the following streamlined timeframe to review and make a decision on the technical infeasibility exemption request within 30-40 days:

(c) The Executive Officer shall ~~acknowledge receipt within~~ review and respond to the exemption request within 15 30 calendar days and ~~Subsequently, the Executive Officer shall notify the submitter of her or his approval or denial of the technical infeasibility exemption, pursuant to section 95355.3(b). If necessary, the Executive Officer will solicit additional data from the submitter to inform the decision. In the event the Executive Officer has not responded to the submitter within 30 60 days of the initial electronic submittal of~~ acknowledging receipt of the technical infeasibility exemption request, or within 10 60 days of receiving electronic submittal of additional data from the submitter, the technical infeasibility exemption is deemed approved.

Discussion Draft Section 95357 – Enforcement

LADWP believes the language in subsection (c) "Any exceedance of the emission rate limit for a calendar year shall constitute a single, separate violation of this subarticle for each day of the calendar year" is an excessive penalty that is not appropriate when compliance is based on an annual average emission limit. A small exceedance of the annual emission limit should not constitute 365 separate violations.

As written, section 95357(c) specifies that any exceedance of the annual emission rate limit is automatically 365 separate daily violations, no matter how large or small, without regard to the duration or magnitude of the exceedance, and without considering

whether 365 daily violations is appropriate. The legislature authorized the ARB to exercise its discretion in developing a method, as appropriate, to determine the appropriate number of separate violations attributable to an entity that violates any of the regulations adopted under AB 32.

Section 38580 of the California Health and Safety Code ("Code") gives ARB discretion to develop a method to convert a violation of a regulation into the number of days in violation, where appropriate, for purposes of assessing penalties. Section 38580(b)(3) of the Code states:

The State Board **may** develop a **method to convert a violation** of any rule, regulation, order, emission limitation, emissions reduction measure adopted by the State Board pursuant to this division **into the number of days of violation, where appropriate**, for purposes of the penalty provisions of Article 3 (commencing with section 42400) of Chapter 4 of Part 4 of, and Chapter 1.5 (commencing with section 43025) of Part 5 of, Division 26. (emphasis added)

LADWP urges CARB to exercise its discretion to develop a method to calculate the number of days in violation for entities that exceed the annual emission rate or mass emission limit. Such a method should include a review of all emissions records for the facility and a determination as to what caused the exceedance, the duration of the exceedance and the extent of the exceedance.

Alternatively, a simpler approach would be for the ARB to deem an exceedance of the annual emission rate or mass emission limit to be a single violation, and specify a method for assessing penalties proportional to the magnitude of the violation. For instance, it would be simple to calculate the pounds of excess SF6 emissions using data provided in the annual report, as follows:

Excess Emissions = (actual annual emissions) – (allowed emissions based on the maximum annual emission rate and the nameplate capacity of the entity's GIE)

Subsequently, a penalty could be assessed based on the pounds of excess emissions, taking into consideration mitigating circumstances and the entity's efforts to comply with the regulation. This method would provide a fair and objective means to assess penalties proportional to the degree to which the annual emissions limit is exceeded.

Ms. Carey Bylin
Page 15
April 26, 2019

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

Sincerely,

Cindy Parsons for

Jodean Giese
Manager of Air Quality

c: Ms. Mary Jane Coombs (CARB)
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