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Calpine Corporation

March 11, 2019

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

RE: Calpine Corporation Comments Regarding Potential Changes to the Regulation for Reducing Sulfur Hexafluoride Emissions from Gas Insulated Switchgear

Dear Ms. Coombs,

Calpine Corporation (hereinafter, "Calpine") offers the following comments regarding the potential changes to the Regulation for Reducing Sulfur Hexafluoride ("SF_6") Emissions from Gas Insulated Equipment ("SF_6 GIE Regulation") proposed by California Air Resources Board ("ARB") Staff in its February 2019 discussion draft ("Discussion Draft") and as presented at the February 25, 2019 workshop.[1]

Calpine is one of California's largest energy providers and the State's leader in renewable energy and combined heat and power production. Calpine is a long-time supporter of federal and State efforts to control greenhouse gas emissions ("GHG") and an advocate for achieving California's climate goals.

Calpine is committed to working with ARB Staff and other interested stakeholders to craft amendments to the SF_6 Regulation that achieve the stated goals of furthering GHG emissions reductions and streamlining the regulatory requirements. Calpine also appreciates the ARB staff's openness to considering flexible compliance mechanisms. The ARB should also provide more specific consideration of costs and other constraints some generation owners may face in meeting the emission reduction requirements. With these general goals in mind, Calpine offers specific recommendations on the SF_6 GIE Regulation.

- ***Calpine recommends that the ARB Continue to Evaluate the De-Minimis Threshold.***

It is not clear from the ARB's Discussion Draft and presentation how the de-minimis threshold was set. It appears that the 5,500 $MTCO_2(e)$ threshold was arbitrarily set based on the ARB's review of all of the compliance submittals and proposal of a threshold at which more than half of

[1] See February 19, 2019 Discussion Draft, available at: https://ww2.arb.ca.gov/sites/default/files/2019-02/sf6-gis-discussion-draft022219.pdf.

the entities are exempted from the program, while still keeping the majority of the emissions from larger transmission and distribution systems. This demarcation is seemingly arbitrary because similarly situated generators will be above and below the threshold. Many of these generators compete against one another in the CAISO markets. Based on Calpine's initial research, the costs associated with non- SF_6 equipment are considerable, and it would be concerning that only a subset of the independent generators would incur the costs of compliance with the proposed SF_6 GIE Regulation. Calpine proposes two potential methods to address this concern.

Calpine proposes that the de minimis threshold be set at 10,000 $MTCO_2(e)$. This threshold level would be consistent with other reporting and regulatory requirements, such as the Regulation for the Mandatory Reporting of Greenhouse Gas Emissions ("MRR").

In the alternative, Calpine proposes incorporating additional flexibility into the SF_6 GIE Regulation that would allow generators two different reporting options: (1) report on a facility basis (as in the current regulation) or (2) report multiple facilities in a single compliance filing (e.g., akin to the Cap-and-Trade provisions allowing multiple sources within a direct corporate association to be aggregated for purposes of the Cap-and-Trade surrender obligation).

- ***The ARB should clarify that the "emergency exemption" is not limited to events caused by acts of nature.***

Calpine understands that when the ARB evaluates whether an emergency event exemption will apply to a particular release above the emissions threshold, the key consideration is whether the release was beyond the control of the operator. This interpretation should be made clear in the emergency exemption because under the current reading it is not clear whether the exemption is limited to acts of nature. For example, if there is a mechanical failure that results in a release of SF_6 and the mechanical failure could not have been prevented based on the normal safety, operational or maintenance protocols applicable to the GIE, then the emergency exemption should apply irrespective of whether the mechanical failure was caused by an act of nature. Calpine recommends that the term, "emergency event" be revised as set forth in Attachment A, and corresponding changes be made to proposed Section 95355.4.

- ***The SF_6 GIE Regulations should define "technical infeasibility" using language paralleling the definition of "feasible" in the California Environmental Quality Act.***

To ensure clear and consistent application of the technical infeasibility exemption set forth in Section 95355.3, the regulation should define the key term, "technical infeasibility." While there is a general sense of what things may be "infeasible," and certainty in the regulatory setting is paramount.

The California Environmental Quality Act ("CEQA") provides a statutory definition of "feasibility" that is instructive since the primary function of CEQA is to inform decision making concerning potential adverse environmental impacts. Under CEQA, lead agencies consider whether a particular mitigation measure for a potentially significant environmental impact is "feasible." If the mitigation is feasible, the lead agency cannot approve the action without mitigating the potentially significant environmental impact. Thus, the feasibility definition is analogous to the evaluation of the infeasibility exemption of the SF_6 regulation.

"'Feasible' means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors. (Public Resources Code, § 21061.1.) Infeasibility is defined as those things that are not capable of being accomplished given the constraints set forth in the CEQA definition of feasibility.

Accordingly, as set forth in Attachment A, Calpine recommends that addition of the defined term "technical infeasibility" to Section 95355.3, using the CEQA statutory language, as follows:

> For the purposes of this section, "technical infeasibility" means that use of non SF_6 GIE is not capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.

- ***The technical infeasibility exemption should be clarified to specify that the exemption allows for acquisition and use of GIE.***

Calpine recommends the clarifying changes described below and set forth in Attachment A to make clear that GIE may be acquired and used prior and subsequent to the phase out dates set forth in Table 1 of Section 95355.3(a). There are three specific changes that are needed to clarify the exemption, as discussed here and in the following sections.

Proposed Section 95352(a) would restrict the "use" of certain SF_6 GIE by a date certain, and Section 95352(a)(1) provides a list of activities related to SF_6 that are precluded after the phase-out date: "manufacture, purchase, import, transfer, sell, lease, or offer for sale or lease". However, proposed Section 95355.3 provides that only a GIE owner "who wishes to *acquire* SF_6 GIE" (emphasis added) may seek a technical infeasibility exemption.

Proposed Section 95355.3 should be clarified to state that the exemption permits both acquisition of GIE through the phase out dates set forth in Table 1 of Section 95355.3(a) and use of SF_6 GIE after the phase out dates, as set forth in the proposed revisions in Attachment A.

- ***The technical infeasibility exemption should be clarified to allow for consideration of potential site and operational constraints in the granting the infeasibility exemption.***

Section 95355.3(a)(2) provides that the owner may submit a technical infeasibility exemption application after the phase-out date indicated in Table 1 if "[a]vailable non-SF_6 GIE cannot meet the size requirements for the particular project or application." Calpine supports this provision but seeks further clarity on this section's applicability.

We understand "size" to mean both the physical size of the GIE as well as the potential physical constraints affecting the siting of GIE. There are other constraints that should be included within the technical infeasibility exemption, including for example, site physical constraints, meteorological conditions, geological features, or operational constraints. These and other variable affect the ability of an operator to install a non-SF_6 GIE.

Calpine proposes that Section 95355.3(a)(2) be revised to more clearly discuss the constraints affecting the availability of GIE, as set forth in Attachment A.

- ***In addition to bid solicitations, the technical infeasibility exemption should be clarified to allow for consideration of other technical, engineering, vendor, or design documentation.***

Section 95355.3(b) places heavy emphasis on the use of bid solicitations and vendor responses to support a technical infeasibility exemption. It may be impossible, for example, to produce a bid solicitation to provide evidence of size constraints, incompatibility with existing equipment, or the GIE is not suitable based on safety or reliability requirements, as required by proposed Sections 95355.3(a)(2)-(4).

The references to "bid solicitations" in Section 95355.3(b) and its subsections should be replaced to allow for additional means of demonstrating infeasibility. Calpine recommends that bid solicitations should be only one method by which a GIE owner can demonstrate infeasibility, but that other technical, engineering, vendor, or design documentation can be utilized as well. Please see the proposed revisions to Section 95355.3(b) in Attachment A to these comments.

- ***Responses to Staff's questions regarding the nameplate capacity adjustment process.***

Potential new Section 95355.2 would provide a mechanism whereby GIE owners can adjust the nameplate capacity of SF_6 GIE. Calpine agrees with the policy that GIE owners should have the ability to demonstrate whether a demonstrated capacity value other than the nameplate capacity would allow for more accuracy in reporting to the ARB.

In response to specific questions raised by ARB Staff, Calpine does not recommend that all SF_6 GIE owners be required to undergo that demonstrated capacity process. Instead, the draft SF_6 GIE Regulation should be revised to clarify that the capacity adjustment process is voluntary. If, in the alternative, GIE owners are required to undergo the nameplate capacity adjustment process, a safe harbor provision should be adopted that allows GIE owners to exempt from the GIE owner's annual emissions any emissions from releases that occur during the adjustment process, if the release could not have been prevented by the exercise of prudence, diligence, and

care. Calpine's concern is that once the switchgear has SF_6, it is virtually impossible to measure the weight of SF_6 in the switchgear absent completely releasing all of the SF_6 and then refilling the switchgear.

Further, the language should be revised to reflect that the capacity adjustment demonstration should be performed during maintenance activities or other time specified by the GIE owner to ensure that facility operations and grid reliability is not affected by the adjustment process. Adjustments should be completed in a manner that reflects the equipment subject to the GIE owner's reporting obligation.

- ***The ARB Should Evaluate the Potential Costs of Generation Facilities' Compliance With the 1% Emissions Standard.***

During the February 25th presentation, the factors underlying the economic analysis for SF_6 GIE phase-out were discussed, and included capital purchase, operation and maintenance, and training and reporting. However, it is unclear whether other key potential costs where identified and analyzed, including permitting, environmental review, and potential facility re-design and construction to incorporate non-SF_6 GIE. These costs have serious implications on the potential costs to implement the SF_6 GIE phase-out for facilities that may not receive an exemption.

Calpine also recommends that the economic analyses take into consideration potential system wide GHG impacts if certain facilities ultimately are unable to phase out GIE and must shutdown. The proposed GIE Regulations apply equally to renewable powerplant as well as conventional facilities. The economic analyses should consider whether the inability to cost-effectively phase out GIE might actually increase the system-wide GHG profile by leading to the early retirement or some other disproportionate impact of the SF_6 GIE Regulation on renewable power facilities.

From a consumer prospective, the economic analyses should also consider the potential impacts of the phase out on California's electric customers. Investor-owned utilities, publicly owned utilities, community choice aggregators, and other entities that provide retail electric service will ultimately pay the costs associated with the phase out in the form of increased energy costs. The potential rate impacts of the phase out should be part of the economic analyses.

CONCLUSION

Calpine appreciates the opportunity to provide these comments to the ARB. We look forward to continuing to work with you on these important issues.

Sincerely,

/s/

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Note: Calpine's proposed changes to the February 22, 2019 Discussion Draft are shown in underlined, strikeout and bold font.

§ 95351. Definitions and Acronyms.

(a) For the purposes of this subarticle, the following definitions apply:

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"Emergency Event" means a situation arising from a**n** ~~**sudden and**~~ unforeseen event that could not have reasonably been prevented **by the exercise of maintenance, prudence, diligence, and care**, including but not limited to an earthquake, flood, ~~**or**~~ fire**, or equipment failure or malfunction**.

§ 95355.3. Technical Infeasibility Exemption.

Pursuant to section 95350(c)(1), a GIE owner who wishes to acquire **and use** SF6 GIE after the phase-out date indicated in Table 1 must electronically submit a technical infeasibility exemption to CARB under one of the conditions described in section (a) following the process described in section (b). **For the purposes of this section, "technical infeasibility" means that use of non SF6 GIE is not capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.**

(a) A GIE owner may submit a technical infeasibility exemption to allow for the acquisition **and use** of SF6 GIE after the phase-out date indicated in Table 1 if either:

(1) Non-SF6 GIE meeting the specifications for **or site of** the particular project or application are unavailable; or

(2) Available non-SF6 GIE cannot meet the size requirements for the particular project or application**, taking into consideration the physical size of the GIE and/or, the GIE site's physical constraints**; or

(3) Available non-SF6 GIE cannot be used for the specific project or application due to incompatibility with existing equipment, wiring, or connectors; or

(4) Available non-SF6 GIE is not suitable based on safety**, operational,** or reliability requirements.

(b) A technical infeasibility exemption request pursuant to this section must be electronically submitted to the Executive Officer at least 75 days prior to the intended date of SF6 GIE acquisition **from and after phase out dates set forth in Table 1 of section 95352(a)**. The submittal must contain the following information:

(1) GIE owner's name and ARB identification number (if assigned);

(2) Responsible official's name, title, address, phone number and email address;

(3) The specific project (including location) and application to which the technical infeasibility exemption would apply;

(4) Description and quantity of electrical equipment to be exempted, including but not limited to GIE equipment type, GIE seal type, GIE manufacturer and model, GIE maximum rated voltage capacity and GIE SF6 nameplate capacity;

(5) Summary of bid solicitation and responses received from vendors **or other technical, engineering, vendor, or design documentation, if available**;

(6) Signed and stamped certification from a professional electrical engineer accredited under California Code of Regulations, Title 16, Division 5, Board for Professional Engineers and Land Surveyors that the information contained in the submittal is true, accurate and complete;

(7) Certification signed by a responsible official that the information contained in the submittal is true, accurate, and complete, and the date of signature;

(8) The section number under which the exemption is being submitted (95355.3(a)(1), (2), (3), or (4)); and

(9) A justification for the exemption.

(A) For exemptions submitted under section 95355.3(a)(1), this includes the specific requirement(s) that cannot be met (e.g., voltage, short-circuit amperage rating).

(b) For exemptions submitted under section 95355.3(a)(2), this includes measurements of existing GIE and available GIE identified in the bid solicitation **or other technical, engineering, vendor, or design documentation, if available,** and a picture showing the location where the GIE would be installed.

(c) For exemptions submitted under section 95355.3(a)(3), this includes an explanation that describes why ~~**the**~~ available GIE identified in the bid solicitation **or other technical, engineering, vendor, or design documentation, if available,** are incompatible.

(d) For exemptions submitted under section 95355.3(a)(4), this includes an explanation that describes why ~~**the**~~ available GIE identified in the bid solicitation ~~**fail the**~~**or other technical, engineering, vendor, or design documentation, if available, do not meet** safety, operational, or reliability requirements.

(c)The Executive Officer shall acknowledge receipt within 15 days. 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 60 days of acknowledging receipt of the technical infeasibility exemption, or within 60 days of receiving additional data from the submitter, the technical infeasibility exemption is approved.

(d) All emissions from SF6 GIE acquired utilizing a technical infeasibility exemption must be included in the GIE owner's annual emissions reported pursuant to Section 95353(i).

§ 95355.4. Emergency Event Exemption.

Pursuant to section 95350(c)(2), a GIE owner may apply for an emergency event exemption under one of the conditions described in section 95355.4(a) following the process described in section 95355.4(b).

(a) A GIE owner may exclude emissions from an emergency event that impacted one or more active GIE from the GIE owner's annual emissions as calculated pursuant to section 95355.1(b) if it is demonstrated to the Executive Officer's satisfaction that the release of insulating gases could not have been prevented by the exercise of prudence, diligence, and care, and was beyond the control of the GIE owner.

(b) A request for an exemption pursuant to this section must be submitted to the Executive Officer within 30 days of the beginning of the emergency event, and must contain the following information:

(1) The GIE owner's name, physical address, mailing address, and the e-mail address and telephone number of the responsible official;

(2) A detailed description of the emergency event, including but not limited to the following:

(A) The nature of the event (e.g., fire, flood, earthquake**,** **equipment failure or malfunction**),

(B) The date and time the event occurred,

(C)The location of the event,

(D)The manufacturer's serial numbers of GIE that were affected by the event,

(E) The type and amount of each insulating greenhouse gas released(pounds);

(3) Supporting documentation that the release occurred as a result of an emergency event; and

(4) A signed statement, under penalty of perjury, provided by a responsible official that the statements and information contained in the submitted request are true, accurate, and complete; and the date of signature.