

State of California
Air Resources Board
BOARD ITEM SUMMARY

ITEM # 20-9-2: Public Hearing to Consider Proposed Amendments to the Regulation for Reducing Sulfur Hexafluoride Emissions from Gas Insulated Switchgear

STAFF RECOMMENDATION:

Staff requests that the Board consider the proposed amendments to the Regulation and advise if additional conforming modifications are warranted. Additional substantive modifications would be proposed through a 15-day comment period.

DISCUSSION:

Staff is proposing amendments to the Regulation for Reducing Sulfur Hexafluoride Emissions from Gas Insulated Switchgear (Regulation). Switchgear equipment is used in the electricity transmission and distribution system to de-energize equipment to allow work to be done safely and to clear electrical faults. This equipment is commonly found in electrical substations and in underground vaults. Since the 1980s, sulfur hexafluoride (SF₆) has been used extensively in this equipment as a dielectric medium and interrupter. SF₆ is an extremely powerful and long-lived greenhouse gas, with an effect on the climate 22,800 times that of carbon dioxide and an atmospheric lifetime of 3,200 years. Because of the extremely strong effect of this gas on the climate, the current Regulation was enacted as an early action measure pursuant to Assembly Bill 32 (Núñez, Statutes of 2006, Chapter 488) and requires reductions of SF₆ emissions from these equipment.

The current Regulation sets an annual emission rate limit that each equipment owner may not exceed. In the absence of proposed changes to the Regulation, the one percent limit reached in 2020 would remain at that level going forward. Staff's analysis and projections from equipment owners indicate that, in the absence of amendments to the Regulation, use of SF₆ in switchgear equipment will grow. As this SF₆ capacity grows, so too would emissions of this potent greenhouse gas.

Since the current Regulation was adopted, California's commitment to take further action against climate change has been reaffirmed through numerous statutes and executive orders. Meanwhile, over the past decade, equipment manufacturers have made considerable progress in the development of non-SF₆ equipment. Despite this progress, non-SF₆ technologies have not yet been widely adopted. Staff is proposing this regulatory change to phase out the use of SF₆. The proposed amendments are the result of a robust public process that began in November of 2017 and incorporate significant stakeholder feedback.

SUMMARY AND IMPACTS:

The proposed amendments to the Regulation would clarify regulatory coverage, expand the scope to include other greenhouse gases beyond SF₆, accelerate the

transition to technologies that do not use SF₆, improve the ability of equipment owners with relatively small amounts of SF₆ to comply with the Regulation, specify reporting and accounting procedures to increase reporting accuracy and facilitate tracking of greenhouse gases covered under the proposed Regulation, and improve CARB staff's ability to verify reported data.

Staff analyzed the impacts of the proposed amendments, in particular the acquisition of non-SF₆ equipment due to the phase out, through 2036. Because this equipment lasts approximately 40 years, emissions reductions from non-SF₆ equipment acquired between 2025 and 2036 would continue through 2075, resulting in cumulative emissions reductions of approximately 3,143,000 metric tons of carbon dioxide equivalent (MTCO_{2e}). To determine the overall cost-effectiveness of the proposed Regulation, staff first calculated the net cost to regulated entities by subtracting the total cost savings from the total costs (non-SF₆ equipment have lower operational cost). This net cost is then divided by the anticipated emission reductions to calculate the cost-effectiveness. Of note, the cost savings from operating non-SF₆ equipment are also realized over the 40-year lifetime of the equipment. Staff estimated the cost-effectiveness of the proposed Regulation to be \$33 per MTCO_{2e} reduced.