ENVIRONMENTAL ENERGY ALLIANCE OF NEW YORK
677 Broadway, Suite 1205
Albany, New York 12207-2996

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By Electronic Submission to https://nyserda.seamlessdocs.com/f/DraftScopingComments

Draft Scoping Plan Comments
NYSERDA
17 Columbia Circle
Albany, NY 12203-6399

Re: *SF_6 recommendations in the draft Scoping Plan*

Dear Members of the Climate Action Council:

I write on behalf of the Environmental Energy Alliance of New York ("the Alliance") to provide comments on the recommendations in the draft Scoping Plan related to utility sulfur hexafluoride (SF_6) emissions. The Alliance is an ad hoc, voluntary group of electric generating companies, transmission / distribution companies and other providers of energy services in New York State (NYS). The Alliance supports our members in understanding state and national environmental regulatory initiatives to formulate and achieve their business goals and proactively advocate for cost-effective regulations and policies. The operations of Alliance members contribute to the reliability of the State's electric grid and to the economic well-being of NYS.

Alliance members support the goals of the Climate Leadership and Community Protection Act (CLCPA) and embrace the significant changes anticipated for the energy generation and delivery systems in NYS. The draft Scoping Plan acknowledges the significant investment in transmission and distribution lines that will be necessary to fulfill the goals of the CLCPA. Existing infrastructure must continue to be maintained, and new lines will be needed to deliver power from renewable resources to load centers, particularly downstate. The construction of new transmission facilities as well as the maintenance of existing facilities will continue to require the use of SF_6 because of its proven role in electrical system reliability and safety.

SF_6 gas is extremely chemically stable, non-flammable and highly electronegative, with an excellent dielectric property of approximately 2.5 times more than air. Therefore, it is commonly used in electrical switchgear, transformers, and substations as an electrical insulation, arc quenching and cooling medium. SF_6 has been used in electrical equipment for decades for the simple reason that it is highly effective under a wide range of voltage classes. It retains its functionality over a wide range of temperatures and climatic conditions. Its chemical properties allow it to retain its electrical characteristics even after many arcing events – the arc-derived byproducts will instantaneously recombine into SF_6 after an arc event.

The Alliance acknowledges that SF_6 is one of the greenhouse gases specifically listed in the CLCPA. However, the NYS Department of Environmental Conservation (DEC) 2021 statewide greenhouse gas emissions report noted that SF_6 emissions were less than 0.1% of the total greenhouse emissions in 2019[1]. Utilities in NYS have made significant, voluntary reductions in SF_6 emissions since 1990 and continue to reduce emissions.

[1] See Table ES.2 in document entitled "2021 Statewide GHG Emissions Report: Summary Report" at https://www.dec.ny.gov/docs/administration_pdf/ghgsumrpt21.pdf

First, as equipment is replaced, all new equipment must meet the Institute of Electrical and Electronics Engineers (IEEE) design standard of 0.5 percent leakage rate. Additionally, each utility has a SF_6 management program that incorporates routine inspection and monitoring of equipment and inventory controls. These monitoring and maintenance programs include sophisticated camera technology that detects minute leaks of SF_6, and the use of "gas carts" that capture SF_6 before maintenance work is undertaken on a piece of equipment containing the gas. Alliance members have every reason to expect that SF_6 emission intensity (leakage as a percentage of nameplate capacity) will continue to decline as existing equipment is replaced as part of normal utility infrastructure enhancement (which is, in part, determined by capital investment plans approved in utility rate cases).

The Alliance notes that the short discussion of SF_6 in the draft scoping plan contains the following recommendations. First, the draft scoping plan calls for the creation of "*a plan for fully phasing out SF_6 and for transitioning to environmentally friendly and cost-effective alternatives*". Second, the draft scoping plan recommends that "*DEC should adopt regulations to reduce SF_6 emissions and establish a timeline for phasing out new SF_6 equipment. New York should also collaborate with other USCA states to align policies across the country to drive a market shift toward SF_6 alternative technologies nationwide."* The Alliance believes that both recommendations are problematic and ill-advised, for the reasons discussed below.

Of greatest concern is that **there are no commercially available insulating gases that can replace SF_6 in the equipment typically found in the NYS transmission system**. The Alliance consulted with Luke Van der Zel, an SF_6 subject matter expert at the Electric Power Research Institute (EPRI). Dr. Van der Zel provided valuable insights for consideration of replacement gases. Summarizing research efforts on this topic, he pointed out that most of the development of alternative gases has been focused on the European market and not on the United States market. This reflects the fact that many of the gas-insulated equipment manufacturers are based in the European Union, and that the prevailing voltage classes in Europe are lower than the U.S. systems.

Simply stated, all the replacement gases have been focused on equipment with operating voltages well below the 345 kilovolt (kV) and 230 kV that are predominant in the transmission systems here in NYS. Specifically, there are no SF_6 alternative gas solutions for dead-tank breakers or clean air (vacuum) dead-tank breakers that are production-ready. Further, there are a host of logistical issues associated with non-SF_6 gases that have not yet been resolved such as temperature limits, voltage limits, and maintenance practices. There are currently no alternative gases under consideration that would be simple, retrofill replacements of SF_6 gas – all replacements would entail a completely new and physically larger set of devices.

There have been recent trade press reports that major manufacturers are producing SF_6 free equipment.[2] However, a careful reading of the details behind those announcements indicate that those alternatives would not be appropriate for use with voltages common to the NYS electrical system.

The Alliance also believes that a new set of regulations dealing with SF_6 emissions would be superfluous. As noted above, SF_6 emissions are less than 0.1% of total greenhouse gas emissions in NYS and utilities in the State have already reduced – and are continuing to reduce – SF_6 emissions to very low levels. The DEC should examine the efforts of California to craft as regulation around SF_6 as a cautionary tale. Any effort to draft a regulation around SF_6 would be complex and if done poorly, could result in significant cost impacts for utility customers who would need to bear the cost of replacement equipment. If the DEC ultimately

[2] https://www.power-grid.com/news/ge-renewables-rolls-out-substation-circuit-breaker-with-near-zero-ghg-emissions/?fr=operanews

believes that a regulation of SF_6 is mandated by the CLCPA, the Alliance recommends a limited "inventory and leak monitoring" approach, like the format established in 6 NYCRR Part 203 regulations. The Alliance also strongly recommends that any regulatory initiative dealing with SF_6 should be closely coordinated with the Department of Public Service to incorporate cost analysis into the overall process.

The Alliance appreciates the opportunity to address these comments to the draft scoping plan as it relates to SF_6 and stands ready to work with DEC and NYSERDA to answer any questions that may arise in this regard.

Sincerely,

Sandra Meier, Ph.D.
Director
Sandra.Meier@eeanyweb.org
518-573-0191