

# Paris Session 2022



## Adoption of SF<sub>6</sub>-free equipment

SC C3 Power System Environmental  
Performance - PS1 Question PS1.16

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**Question 1.16. According to the papers, the most important scope 1 emissions for transmission system operators are linked with SF<sub>6</sub>. This gas being a very potent GHG contributor measures are taken to limit leakages in the atmosphere during erection, operation, maintenance, end-of-life management, and failure of gas insulated equipment. As shown in the paper from manufacturers, technical solutions exist to replace SF<sub>6</sub> in power equipment, even if the dielectric and arch switching characteristics of the gas are unbeatable. What are the development pathways to adopt SF<sub>6</sub>-free equipment? What R&D and pre-normative activities are deemed important in view of the deployment of such technologies?**

# SF<sub>6</sub> regulations

SF<sub>6</sub> became the main insulating and switching medium for High Voltage equipment

GE / 3M  
Collaboration  
on SF<sub>6</sub>-free

New SF<sub>6</sub>-  
free gas  
launched

First  
products  
based on  
alternative

First  
energizations



**Kyoto Protocol**  
SF<sub>6</sub> listed as a  
Greenhouse gas

**EU F-Gas  
Regulation**

**US EPA  
SF<sub>6</sub> Emission  
Reduction**

**California  
Global  
Warming  
Solutions Act**

**COP15 Copenhagen**  
reduce GHG  
emissions by 40 to  
70% by 2050 (vs.  
2010)

**US EPA  
Mandatory  
Reporting of  
Greenhouse Gases**

**New EU  
F-gas Regulation**  
(emissions to be  
cut 2/3 by 2030  
vs.2014)

**COP21 Paris  
Agreement**  
196 countries  
commit to  
reduce GHG  
emissions

**COP21  
Paris  
Agreement**  
entry into  
force

**EU Target**  
to cut GHG  
Emissions:  
20% by 2020  
40% by 2030  
Carbon neutral  
by 2050

**Growing number of SF<sub>6</sub> regulations in the world**

# Standardization is moving forward

*SF<sub>6</sub> became the main insulating and switching medium for High Voltage equipment*

*GE / 3M collaboration*

*New gas launched*

*First products*

*First energizations*



Existing IEC and IEEE standards are not specific to SF<sub>6</sub> but need adaptations for alternative gases



B3-45, D1-67, A3-41, JWG A3/B3-60

Start revision of IEC 62271-4



Kista meeting – creation of Ad-Hoc group to review IEC standards

Start creation of IEC63360 and 63359



Technical report on impact of alternative gases on existing standards (PES-TR64) + creation of 2 new WG