

Revision of the F-Gas Regulation

A Eurelectric position paper

June 2022

Eurelectric represents the interests of the electricity industry in Europe. Our work covers all major issues affecting our sector. Our members represent the electricity industry in over 30 European countries.

We cover the entire industry from electricity generation and markets to distribution networks and customer issues. We also have affiliates active on several other continents and business associates from a wide variety of sectors with a direct interest in the electricity industry.

We stand for

The vision of the European power sector is to enable and sustain:

- A vibrant competitive European economy, reliably powered by clean, carbon-neutral energy
- A smart, energy efficient and truly sustainable society for all citizens of Europe

We are committed to lead a cost-effective energy transition by:

investing in clean power generation and transition-enabling solutions, to reduce emissions and actively pursue efforts to become carbon-neutral well before mid-century, taking into account different starting points and commercial availability of key transition technologies;

transforming the energy system to make it more responsive, resilient and efficient. This includes increased use of renewable energy, digitalisation, demand side response and reinforcement of grids so they can function as platforms and enablers for customers, cities and communities;

accelerating the energy transition in other economic sectors by offering competitive electricity as a transformation tool for transport, heating and industry;

embedding sustainability in all parts of our value chain and take measures to support the transformation of existing assets towards a zero carbon society;

innovating to discover the cutting-edge business models and develop the breakthrough technologies that are indispensable to allow our industry to lead this transition.

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KEY MESSAGES

- Eurelectric fully embraces the European Commission's decarbonisation objectives and its ambition to cut F-gas emissions, which have a very high global warming potential. DSOs and electricity generation companies are committed to adopting a sustainable approach to the development and operation of their assets. Therefore, DSOs and generators are committed to adopting electrical SF₆-free equipment for new installations.
- Eurelectric welcomes the Commission's prohibition of electrical switchgear with high GWP. The EC suggests phasing out these technologies following a transition period varied according to the voltage levels – this too supported by Eurelectric. However, to achieve these objectives without jeopardising network reinforcement, or the connection of ever more EVs, heat pumps, and renewables, Eurelectric recommends the following:
 - **Regulation should not disrupt network operation, security of supply, or the EU's decarbonisation process.** The power sector and DSOs in particular have a key role in the EU's decarbonisation. Anything that disrupts DSO operations will risk security of supply and jeopardise these efforts. In the next 8 years, the EU needs to deploy 750 GW of new wind and solar PV according to the Commission's RePowerEU plan. This is more than twice what was achieved in the past decades. 70 % of this will be connected to distribution grids. Meanwhile, RePowerEU could add 100 TWh of electricity demand in the next 5 years which is unprecedented in the history of Europe. This will further strain the distribution grids.
 - **Regulation should not limit competition.** The current proposal could significantly limit competition in switchgear manufacturing in the EU. First, only one European HV switchgear manufacturer can supply solutions compliant with the proposal. Others who have already invested in different technologies during last 8 years will be left out. Second, there is only one compliant technology, which could create a 'technology monopoly' and a supply chain risk due to the limited number of suppliers. **Establishing clear and comprehensive preconditions for POM (Placing on the market) prohibitions is necessary to avoid this situation.** The preconditions in the draft proposal are inadequate, they must be clearer in the regulation of both standard

and non-standard applications. Eurelectric considers the following preconditions essential:

- For the relevant voltage level or application area, the availability of proven SF6 alternative solutions that fulfil common quality requirements must be ensured. These solutions must be compliant with IEC/CENELEC and other EU standards, tested by at least two pilot applications, and must not entail disproportionate costs to the users.
- **There must be at least two manufacturers** providing proven solutions fulfilling common quality requirements with sufficient delivery capacities. These products must be offered for specific application areas. This ensures sufficient competition and production capacity for alternative technologies and avoids the risk of monopolistic market structures. Insufficient production capacity creates the risk of a significant delay in grid expansion which is urgently needed to integrate renewable energy resources and new types of end-user technologies.
- **Reconsider the transition times for switchgear in the voltage level 12-24 kV:** Eurelectric is deeply concerned that manufacturers will not be able to enlarge production capacities and deliver enough SF6-free switchgear for up to 24 kV from 1 January 2026 for the whole EU market. Therefore, this date should only apply to 12 kV. For voltage levels above 12 kV and up to 24 kV, the date should be postponed by two years.
- **Clarify how to handle the dates of prohibition specified in Annex IV Nr. 23.** Confirm that switchgear that does not fulfil the GWP requirements after the prohibition date specified in Annex IV Nr 23 but which was purchased and due to be delivered before this date can be installed and operated for its whole technical lifetime.
- **Revise the GWP (Global Warming Potential) threshold from 10 to 1000 for voltage levels above 24 kV.** The GWP value of 10 will exclude meaningful and worthwhile technologies which significantly reduce greenhouse gases in comparison to SF6. Some of these technologies have a GWP around 1000 which is significantly lower than SF6-based technologies. They will be needed when technologies with a GWP <10 cannot be used. It will be detrimental from an ecological and economic perspective to force switchgear operators to buy products with a GWP <10 if this implies that existing housing can no longer be used. This means developing new sites and changing the network topology which increases the carbon footprint and costs.
- **Clarify the status of SF6-free solutions (excluding vacuum ones).** Eurelectric would like to stress that some alternative technologies are based on gases containing substances currently under regulatory assessment for the EU Chemicals Strategy for Sustainability. Coherence should be ensured to avoid prohibiting a solution which can be useful for some applications should SF6 be further restricted. As a no-regret option, a clear roadmap would provide visibility to the industry.
- **Clarify the continuation of existing SF6 based installations until the end of their lifetime.** The operation, maintenance, and repair of existing SF6 switchgear must

be permitted until the end of their lifetime. While the Regulation is clear on the permission to buy the gas itself (Art. 11.5), it remains unclear on the procurement and installation of spare parts. Art 11.1 includes spare parts in the POM prohibition. It should be clarified that this prohibition does not apply to the parts for existing installations. Furthermore, the replacement and the expansion of existing Gas-insulated switchgear (e.g. addition of new circuit breaker cells) must also remain allowed during the entire lifetime of the switchgear. If existing switchgear were forcefully decommissioned prematurely because of a prohibition on the purchase of spare parts this would seriously endanger the security of supply.

Considering the above requirements, Eurelectric proposes the following amendments to the EC's proposal.

EC's proposal	Eurelectric's proposal
<p><u>Art 11 (1)</u></p> <p>The placing on the market of products and equipment, including parts thereof, listed in Annex IV, with an exemption for military equipment, shall be prohibited from the date specified in that Annex, differentiating, where applicable, according to the type or global warming potential of the gas contained. Products and equipment unlawfully placed on the market after the date referred to in the first subparagraph, shall not be subsequently used or supplied, or made available to other persons within the Union for payment or free of charge or exported. Such products and equipment may only be stored or transported for subsequent disposal and for the recovery of the gas prior to the disposal pursuant to Article 8. Two years following the individual dates listed in Annex IV, the subsequent supply or making available to another party in the Union for payment or free of charge of products or equipment lawfully placed on the market prior to the date referred to in the first subparagraph shall be allowed only if evidence is provided that the product or equipment was placed lawfully on the market prior to the date.</p> <p><u>Art 11 (4)</u></p> <p>Following a substantiated request by a competent authority of a Member State and taking into account the objectives of this Regulation, the Commission may, exceptionally, by means of</p>	<p>Remove "including parts thereof" for switchgears...</p> <p>The placing on the market of products and equipment, including parts thereof, listed in Annex IV, with an exemption for military equipment, shall be prohibited from the date specified in that Annex, differentiating, where applicable, according to the type or global warming potential of the gas contained. Products and equipment unlawfully placed on the market after the date referred to in the first subparagraph, shall not be subsequently used or supplied, or made available to other persons within the Union for payment or free of charge or exported. Such products and equipment may only be stored or transported for subsequent disposal and for the recovery of the gas prior to the disposal pursuant to Article 8. Two years following the individual dates listed in Annex IV, the subsequent supply or making available to another party in the Union for payment or free of charge of products or equipment lawfully placed on the market prior to the date referred to in the first subparagraph shall be allowed only if evidence is provided that the product or equipment was placed lawfully on the market prior to the date.</p> <p><u>Art 11 (4)</u></p> <p>Following a substantiated request by a competent authority of a Member State and taking into account the objectives of this Regulation, the</p>

<p>implementing acts, authorise an exemption for up to four years to allow the placing on the market of products and equipment listed in Annex IV, including parts thereof, containing fluorinated greenhouse gases or whose functioning relies upon those gases, where it is demonstrated that:</p> <ul style="list-style-type: none"> (a) for a specific product or a piece of equipment, or for a specific category of products or equipment, alternatives are not available, or cannot be used for technical or safety reasons; or (b) the use of technically feasible and safe alternatives would entail disproportionate costs. <p>Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 34(2).</p>	<p>Commission may, exceptionally, by means of implementing acts, authorise an exemption for up to four years to allow the placing on the market of products and equipment listed in Annex IV, including parts thereof, containing fluorinated greenhouse gases or whose functioning relies upon those gases, where it is demonstrated that:</p> <ul style="list-style-type: none"> (a) For a specific product or a piece of equipment, or for a specific category of products or equipment, proved and qualified alternatives that are compliant with EU standards and tested by at least 2 pilot applications are not available, or cannot be used for technical or safety reasons or (b) The use of technically feasible and safe alternatives would entail disproportionate costs (c) There is no sufficient market availability or production capacity for the qualified and proved alternatives with at least 2 manufacturers providing these solutions. <p>Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 34(2).</p>
<p><u>Art. 11 (5)</u> Only undertakings that hold a certificate required under Article 10(1), point (a) or the training attestation required under Article 10(2), or undertakings that employ persons holding such a certificate or a training attestation shall be allowed to purchase fluorinated greenhouse gases listed in Annex I or Annex II, Section 1, for the purpose of carrying out the installation, servicing, maintenance or repair of the</p>	<p><u>Art. 11 (5)</u> Only undertakings that hold a certificate required under Article 10(1), point (a) or the training attestation required under Article 10(2), or undertakings that employ persons holding such a certificate or a training attestation shall be allowed to purchase fluorinated greenhouse gases listed in Annex I or Annex II, Section 1, for the purpose of carrying out the installation, servicing,</p>

equipment containing those gases, or whose functioning relies upon those gases, referred to in Article 5(2), points (a) to (g), and Article 10(2).	maintenance or repair of the equipment containing those gases, or whose functioning relies upon those gases, referred to in Article 5(2), points (a) to (g), and Article 10(2). Operators of electrical switchgear shall also be allowed to buy, for the purposes mentioned above, spare parts for existing switchgear as well as parts for their extension in the manner foreseen by the respective technology.
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Amendment Proposals to the Annex IV			
Current text in the proposal	Amendment Proposed	Date of Prohibition	Remarks
23 (a)medium voltage switchgear for primary and secondary distribution up to 24 kV, with insulating or breaking medium using, or whose functioning relies upon, gases with GWP of 10 or more, or with GWP of 2000 or more, unless evidence is provided that no suitable alternative is available based on technical grounds within the lower GWP ranges referred to above;	23 (a)medium voltage switchgear for primary and secondary distribution up to 24 ¹² kV, with insulating or breaking medium using, or whose functioning relies upon, gases GWP of 10 or more, or with GWP of 2000 or more, , unless evidence is provided that no suitable alternative is available based on technical grounds within the lower GWP ranges referred to above;	1 January 2026	Change in voltage range to include a new category of 12–24 kV with different date of prohibition
	23 (b) medium voltage switchgear for primary and secondary distribution from more than 12 kV and up to 24 kV, with insulating or breaking medium using, or whose functioning relies upon gases with	1 January 2028	New category. The date of prohibition for 12–24 kV to be changed to 2028

	GWP of 10 or more, or with GWP of 2000 or more; unless evidence is provided that no suitable alternative is available based on technical grounds within the lower GWP ranges referred to above;		instead of 2026. Therefore, a new category 23 (b) is to be added with different date.
23 (b) medium voltage switchgear for primary and secondary distribution from more than 24 kV and up to 52 kV, with insulating or breaking medium using, or whose functioning relies upon gases with GWP of 10 or more, or with GWP of more than 2000, unless evidence is provided that no suitable alternative is available based on technical grounds within the lower GWP ranges referred to above ;	23 (b) (c) medium voltage switchgear for primary and secondary distribution from more than 24 kV and up to 52 kV, with insulating or breaking medium using, or whose functioning relies upon gases with GWP of 10 or more, or GWP of more than 2000 1000, unless evidence is provided that no suitable alternative is available based on technical grounds within the lower GWP ranges referred to above;	1 January 2030	Change in serial number and also removal of GWP 10 threshold. No change in date of prohibition
23 (c) high voltage switchgear from 52 and up to 145 kV and up to 50 kA short circuit current with insulating or breaking medium using, or whose functioning relies upon gases with GWP of 10 or more, or with GWP of more than 2000, unless evidence is provided that no suitable alternative is available based on technical grounds within	23 (c) (d) high voltage switchgear from 52 and up to 145 kV and up to 50 kA short circuit current with insulating or breaking medium using, or whose functioning relies upon gases with GWP of 10 or more, or with GWP of more than 2000 1000, unless evidence is provided that no suitable alternative is available based on technical grounds within the	1 January 2028	Change in serial number and also removal of GWP 10 threshold. No change in date of prohibition

the lower GWP ranges referred to above ;	lower GWP ranges referred to above		
23 (d) high voltage switchgear of more than 145 kV or more than 50 kA short circuit current with insulating or breaking medium using, or whose functioning relies upon gases with GWP of 10 or more, or with GWP of more than 2000, unless evidence is provided that no suitable alternative is available based on technical grounds within the lower GWP ranges referred to above ;	23 (d)(e) high voltage switchgear of more than 145 kV or more than 50 kA short circuit current with insulating or breaking medium using, or whose functioning relies upon gases with GWP of 10 or more, or with GWP of more than 2000 1000, unless evidence is provided that no suitable alternative is available based on technical grounds within the lower GWP ranges referred to above ;	1 January 2031	Change in serial number and also removal of GWP 10 threshold. No change in date of prohibition
<u>Footnote 2 of Annex IV</u> The evidence referred to in point 23, shall include documentation establishing that following an open call for tender no suitable alternative on technical grounds , given the demonstrated specificities of the application, was available that could meet the conditions set out in point 23. The documentation shall be kept by the operator for at least five years and shall be made available to the competent authority of the Member State and to the Commission, upon request	<u>Footnote 2 of Annex IV</u> The evidence referred to in point 23, shall include documentation establishing that following an open call for tender no suitable alternative on technical and economic grounds , given the demonstrated specificities of the application, was available that could meet the conditions set out in point 23. The documentation shall be kept by the operator for at least five years and shall be made available to the competent authority of the Member State and to the Commission, upon request		

Table of Contents

1. Introduction
2. The Power sector and DSOs' role in the EU decarbonisation
3. Mandatory preconditions for POM prohibitions
4. Reconsider the transition period for 12-24 kV SF6 switchgear
5. Ensure continued use of existing SF6 installations
6. Necessary clarifications & other reconsiderations
7. Conclusions & Recommendations

1.Introduction

EU wants to cut down the F-gas emissions to achieve its climate ambitions and to ensure compliance with the Montreal Protocol. With these objectives, the European Commission recently proposed a revision in the F-gas regulation with measures envisaged to cut down F-gas emissions. Phasing down SF6-based switch gears which constitute less than 0.1 %¹ of the EU's total GHG emissions is seen as a potential area to reduce F-gas emissions by the EC. Article 11 of the proposal prohibits the placing of several equipment listed in the Annex IV on the market. In the recent revision, electrical switchgears (GWP >2000 & GWP >10) have been included in the Annex IV with the year of prohibitions varying according to the voltage levels.

Eurelectric welcomes the Commission's approach to prohibit new electrical switchgear with high GWP. We support phasing out these technologies following a transition period varied according to the voltage levels. Eurelectric fully embraces the EC's decarbonisation objectives and its ambition to cut down emissions from F-gases which have a very high global warming potential. DSOs and electricity generation companies are committed to adopting a sustainable approach to the development and operation of their assets. One way to achieve this is to adapt their equipment with sustainable solutions. Therefore, DSOs and generators are committed to reducing F-gas emissions from their operations by adopting electrical switchgear equipment that is SF6-free and works with gases of low GWP for new installations.

However, Eurelectric believes that certain additional considerations are needed if we want to achieve our objectives without jeopardizing the EU's decarbonisation process. We are concerned about the associated preconditions in the proposal and the transition time proposed for the POM prohibition of switchgear for the voltage level 12-24 kV. Also, clarifications about existing SF6-based installations and alternative SF6-free technologies other than vacuum technology are needed.

In this position paper, Eurelectric lays down the position of switchgear operators – i.e. DSOs and operators of electricity generation facilities that have accumulated extensive experience by each managing many hundreds of installations – on the proposed draft Regulation. In this regard, the paper describes key role of the power sector and DSOs in the EU's decarbonisation, the preconditions necessary for the transition and to avoid limiting competition in switchgear manufacturing, the need for reconsidering the transition time allowed for the switchgear in the 12-24 kV voltage level, the need for the continued use of existing SF6-based installations until the end of their lifetime, power industry's view on the alternative technologies and the amendment proposals from Eurelectric.

This paper builds upon the following previous publications:

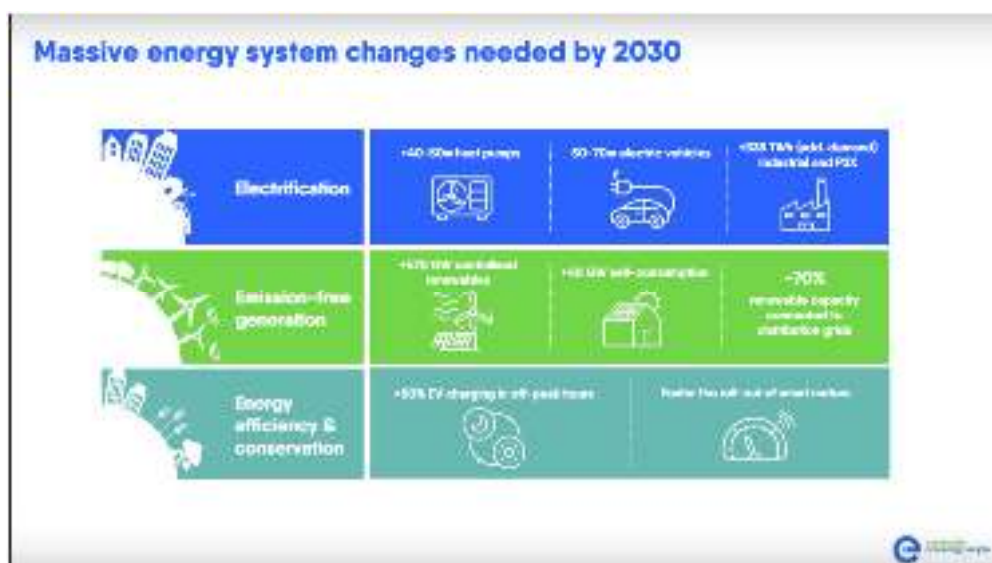
[Eurelectric, E.DSO & Geode position paper on revision of the F-gas regulation \(2021\).](#)

- [Common feedback by CEDEC, E.DSO, Eurelectric and GEODE on the report from the European Commission assessing the availability of alternatives to fluorinated greenhouse gases in switchgear and related equipment, including medium-voltage secondary switchgear](#)
- [Eurelectric's response to the European Commission's Open Public Consultation on the revision of the F-gas regulation](#)
- [Eurelectric's feedback to the European Commission's Fluorinated greenhouse gases – review of EU rules \(2015–20\) Initiative](#)

2.The Power sector and DSOs' role in the decarbonisation

The Power sector has consistently been a frontrunner in the EU's decarbonisation. Electricity represents 23 %² of the final energy consumption of the EU. 63 %³ of this was provided by clean electricity in 2021, and the power sector is foreseen to be carbon neutral well before 2050. To leverage this decarbonisation potential of the power sector, the European Commission envisages electricity representing more than 50 %⁴ of the EU's final energy consumption by 2050. To achieve this significant level of clean electrification, all participants in the power sector value chain starting from the generators to distribution system operators have a significant role to play.

Furthermore, DSOs even have a central role in this decarbonisation process. In the next 8 years, the EU needs to deploy 750 GW of new wind and solar PV installations according to the Commission's RePowerEU plan. This is more than twice what was achieved in the past decades. 70 % of these capacities will be connected to DSOs' grids which shows the key role of DSOs in the integration of renewables. Moreover, RePowerEU could add 100 TWh electricity demand in the next 5 years which is unprecedented in the history of Europe but which further strains distribution grids. Additional electrification via 50-70 million electric vehicles, 40-50 million heat pumps and significant additional electricity demand from industries and P2X⁵ is going to further challenge DSOs by 2030. This shows how DSOs will be facilitating the decarbonisation process but also the huge challenges to DSOs in ensuring a stable, secure, and reliant power supply.



Moreover, energy efficiency and digitalisation measures demand DSOs deploy smart and innovative technologies. DSOs must optimise their investments in grid reinforcement, smart grid solutions, flexibility procurement and modernisation. This translates to huge infrastructure and annual investment needs of 34–39⁵ billion euros in this decade.

Therefore, any regulation that would disrupt the DSOs' operations and future investments will be detrimental to the EU's security of supply and the decarbonisation process. Furthermore, any disproportionate costs to DSOs will be reflected in the electricity bills to the end consumers through the distribution tariffs. This will skyrocket the cost of the energy transition.

3. Mandatory preconditions for POM prohibitions

In its impact assessment, the European Commission highlights that the market will not deliver the possible SF₆ emissions reduction without policy intervention. While discussing different stakeholder views, it mentions that the electrical switchgear stakeholders (probably manufacturers) believe that their significant investments in SF₆ alternatives had been fruitful. However, a clear regulatory framework would be needed to market these solutions, promote continued R&D and maintain the EU's technological leadership in this area. The Commission also notes the concerns from switchgear users that a smooth transition should not be risked, and the ongoing decarbonisation process should not be disrupted. Unfortunately, the latest proposal from the Commission does not reflect these concerns.

While Eurelectric agrees that a policy intervention is needed to drive the market to deliver SF₆ alternatives, a POM prohibition in the short-term without sufficient preconditions will bring negative outcomes. Most important would be the restriction in competition and risk of a 'technology monopoly' in switchgear manufacturing, as currently only one European HV switchgear manufacturer will be able to supply solutions compliant with the requirements in the proposal. In addition, the current proposal is too restrictive with a GWP threshold of 10 which gives room to only one switchgear technology.

The current proposal includes a provision for the possibility for the Commission to postpone the prohibitions by up to 4 years if the evidence is provided that certain preconditions are not met. However, these are insufficient. Therefore, Eurelectric strongly believes that the following preconditions should be established in the regulation:

- Availability of proven SF₆ alternative solutions

The POM prohibitions of products with high GWP values apply if at least one low GWP alternative is available for the respective voltage level or application area. An exemption from the prohibition must be possible if no low GWP alternative is available for the respective voltage level or application area and a proven and qualified SF₆-based solution exists. Such a low GWP solution must be compliant with IEC/CENELEC and other EU standards so that a user can specify the solution. The lack of internationally recognised standards for SF₆-free switchgears hinders the comparability between different products. Moreover, the solution must have been tested by at least 2 pilot applications to ensure operational suitability and reliability. Additionally, these solutions must not entail disproportionate costs to the users and must be safe to operate without any toxicological risk.

- Availability of at least 2 manufacturers

The availability of at least two manufacturers for every product segment must be a minimum criterion along with the availability of proven alternatives. This is important to ensure sufficient competition and hence avoid monopoly in the switchgear industry in the EU. Also, these manufacturers must have sufficient production and delivery capacities to ensure certainty to

the switchgear users. Currently, in the segment of alternative switchgear with GWP < 10, there is only one major manufacturer. Hence, a possibility to only use alternatives with GWP < 10 creates a risk of insufficient availability but also ‘technology monopoly’ and supply chain risk in the switchgear industry.

4. Reconsider the 12-24 kV SF₆ switchgear transition period

The proposed transition times for switchgear in the voltage level 12-24 kV laid down in Annex IV Nr. 23 must be reconsidered. Eurelectric is deeply concerned that manufacturers won’t be able to enlarge production capacities and deliver enough SF₆-free switchgear for up to 24 kV from 1 January 2026 for the whole EU market. Following the EC’s text proposal, limited volumes on the market won’t be accepted as a justification for installing SF₆ products once other technologies exist for the respective voltage level. As a result, many projects will have to be postponed until enough SF₆-free products can be purchased. Since switchgear is urgently needed for the connection of new electricity generation sites (wind, solar power etc.) and new consumption points like e-vehicle charging infrastructure, a switchgear supply shortage will inevitably slow down the energy transition.

Currently, very few manufacturers have made SF₆-free products commercially available for voltage levels between 12 kV and 24kV and hence there is little experience in this segment. Given that it is a widely used segment with massive use of switchgear, there are reasonable doubts that they do not fulfil the same or at least comparable operational suitability and reliability requirements of SF₆ solutions for all scenarios (e.g., outdoor applications, the effect of ocean air or urban areas with spatial constraints). Distribution networks must be deployed in very different geographies and circumstances, and DSOs must ensure that their equipment can be operated with safety and reliability. Previous experiences from dry-type transformers deployed in windfarms, where a significant number of failures occurred after some years in service, should be avoided.

To solve this problem, the date in Annex IV Nr. 23 (a) should be applied to voltage levels of up to 12 kV only. Then manufacturers will have enough time to produce for this market area first and to speed up their production capacities to supply the higher voltage levels. For voltage levels above 12 kV and up to 24 kV, the GWP thresholds should be applied as of 1.1.2028 (new Nr. 23 (b) in Annex IV). For the subsequent voltage ranges (above 24 kV), the time frame as proposed by the Commission can be kept.

5. Ensure continued use of existing SF₆ installations

SF₆ gas has been in use since the 1960s as insulation and the breaking medium for electrical switchgear. Due to its optimal technical characteristics, it has become the most important technology for these purposes. The usual lifetime of an SF₆-based electrical switch gear is 40 years or more. In the coming years, while replacing existing switchgear after the end of their lifetime, significant efforts will be needed to install additional switchgear to enable the connection of new (mostly decentralised) electricity production sites and new uses like e-mobility charging infrastructure. Production capacities (on the manufacturers’ side), as well as installation capacities (on the operators’ side), will be strained. In this situation, prematurely phasing down existing installations will not be possible from both a technical and organisational point of view. It would delay the installation of additional switchgear and thus jeopardise the EU’s decarbonisation.

EC’s proposal for the revision of the F-gases regulation bears unclear provisions for existing installations. While the Regulation is clear on the permission to buy the gas itself (Art. 11.5), it

remains unclear on the procurement and installation of spare parts. The Art 11.1 includes spare parts in the POM prohibition. It should be clarified that this prohibition does not apply to the parts for existing installations. If not, this will risk the availability of maintenance services and spare parts from manufacturers. This could create a situation where existing switchgear can't be repaired and would have to be replaced before the end of their lifetime. Apart from the economic detrimental consequences, this is not always possible in short term or even impossible on existing sites because new technologies need more space. Besides, the number of players offering maintenance and repair services for the existing installations would decrease which would intensify the repair problem. All these developments will not only risk the necessary expansion of the grids to connect new (mostly renewable) electricity generation sites but also endanger the smooth network operation by DSOs which will be detrimental to the security of supply to the EU.

Therefore, the regulation must provide clear provisions allowing for existing SF₆-based switchgear to be operated, repaired, maintained, and refilled (including regenerated SF₆) during their entire lifetime. Also, replacing and adding more circuit breaker cells to existing MV switchgear must be possible. The provisions in Article 11 of the draft Regulation must be adapted accordingly.

In short, these measures enabling existing installations to be repaired until the end of their lifetime will be needed to enable the further decarbonisation of the electricity system. This brings positive climate effects which will outweigh the effect of SF₆ leakages from existing switchgear until the end of their lifetime. Today, the emissions from SF₆ electrical switchgears constitute less than 0.1 % of the total GHG emissions of the EU. DSOs and generators are further committed to ensuring their leakage rate is below the design standard.

6. Necessary clarifications & other reconsiderations

Clarify the status of SF₆-free technologies other than vacuum technology & Revise the GWP threshold from 10 to 1000

Some alternative technologies are based on gases containing substances which are currently under regulatory assessment as part of the EU Chemicals Strategy for Sustainability. Coherence should be ensured between both regulations to avoid the prohibition of a solution which can be useful for some applications and products' availability should SF₆ be further restricted. As a no-regret option, a clear roadmap would provide visibility to the industry. Moreover, any inconsistency may lead to a disruption in the development of alternatives to SF₆ and delay the market introduction of appropriate solutions for end-users, i.e. DSOs.

Furthermore, the proposal specifies a threshold of Global Warming Potential (GWP) above 10. This means all switchgears functioning on gases with GWP > 10 shall be prohibited after the specified dates unless no alternative exists. This could lead to two major consequences. Firstly, this will exclude meaningful and worthwhile technologies which significantly reduce greenhouse gases in comparison to SF₆. These technologies mustn't be excluded in new installations. They will be needed in places where technologies with a GWP < 10 cannot be used due to the size of the installations. It will be detrimental from an ecological and economic point of view to force switchgear operators to buy products with a GWP < 10 if this implies that existing housing can't be used anymore. This means developing new sites and changing the network topology that increases the carbon footprint and the costs. Secondly, a GWP threshold of 10 could limit the market to only one manufacturer and exclude these practical technologies with significantly lower GWP compared to SF₆.

Some of these technologies have a GWP more than 10 but less than 1000. Therefore, we recommend revising the GWP threshold of 10 to a GWP threshold of 1000 for voltage levels above 24 kV. For voltage levels of up to 24 kV, it must be assured that the lack of space for alternative products is considered a “technical ground” which allows the use of switchgear with higher GWP values but lower size. Furthermore, Eurelectric would like to highlight that limiting too much the GWP threshold of alternative gas to SF₆ would not always be favourable for decarbonisation. Some of the cleanest technologies (GWP <10 with air + vacuum interruption) must be operated at higher pressures, so they are bigger, require more raw materials, and so cause more manufacturing and transport related emissions.

Clarify how to handle the dates of prohibition specified in Annex IV Nr. 23 The EC proposal says that placing on the market will be prohibited after the dates stated in this Annex. “Placing on the market” means – following the definition in Article 2 – selling the products. Taking into consideration that projects to install new switchgear or to replace existing ones takes several years, especially at higher voltage levels, it is clear that there is a high risk of having delays in the delivery date (e.g. due to delay in building permits, limited production capacities at the manufacturers’ side etc.). Therefore, it must be confirmed that switchgear which does not fulfil the GWP requirements which apply from the date in Annex IV Nr. 23 but which were due to be delivered to the customer before this date will be allowed to be installed and operated during its whole technical lifetime. Otherwise, the grid operator would be forced to start from scratch the whole process of planning, getting approval from authorities, tendering and buying the switchgear in another technology. This would induce extreme delays and would be highly detrimental to the grid reinforcement which is urgently needed for the connection of RES power generation units and new customers.

Clear formulation of the text in the Annex IV Nr.23 regarding the GWP thresholds

The EC proposal specifies the date of prohibition in Annex IV Nr.23 (a-d) for switchgears. The text is formulated as switchgear “with insulating or breaking medium using, or whose functioning relies upon gases with GWP of 10 or more, or with GWP of more than 2000”. The text is ambiguous about the GWP threshold giving room for several interpretations. The text should be made clear about the GWP threshold. In light of what has been mentioned earlier, we recommend to the retention of single GWP threshold of 10 for voltage levels up to 24 kV and GWP threshold of 1000 for voltage levels above 24 kV.

7. Conclusions & Recommendations

Eurelectric supports the Commission's proposal to prohibit new switch gear that is not SF₆-free and which functions on gases with high GWP. We are happy to implement this prohibition with varied transition periods according to voltage levels. Phasing down new SF₆-based installations is a potential lever to reduce F-gas emissions in the EU and helps further decarbonisation. However, Eurelectric thinks that there are several considerations to be addressed in the regulation if the decarbonisation objectives are to be met.

First, the regulation must recognise the key role of the power sector and particularly DSOs in the EU’s decarbonisation. Anything that disrupts DSOs’ operations would be detrimental to the EU’s security of supply and decarbonisation process. DSOs will have to integrate 70% of the 750 GW of renewables into the grid in the next eight years. A lack of sufficient switchgear will risk this integration process. Therefore, the regulation should carefully consider this risk before introducing any new measures.

Second, the regulation should not limit competition in switchgear manufacturing in the EU. To avoid this and not disrupt decarbonisation, the preconditions associated with the POM prohibitions of switchgears should be made clear and comprehensive. Eurelectric believes that having at least one qualified SF₆-free alternative solution for every voltage segment that

is tested for at least 2 pilot applications is a must. Moreover, two manufacturers with sufficient production capacities being able to provide these solutions are necessary to avoid restricting competition and supply chain risks in the switchgear market. A derogation should be possible if these preconditions cannot be fulfilled.

Third, Eurelectric is deeply concerned about the transition period provided for the phase out of SF₆ switchgear within 12-24 kV. This is a widely used segment and currently there is only limited commercial availability of suitable alternatives. Therefore, Eurelectric strongly recommends applying the prohibition by 1 January 2026 only to the 12 kV level and to grant two more years for voltage levels between 12 and 24 kV.

Furthermore, the proposal is uncertain about the existing installations including their maintenance and repair. Regulations should allow the continued use of these installations until the end of their lifetime. Any uncertainty about the existing installations will risk a lack of service and spare parts for these installations. This will disrupt DSOs' operations and the integration of renewables and other clean energy technologies essential to the EU's decarbonisation.

Finally, the regulation should clarify the status of SF₆-free alternative technologies that function on gases containing substances which are currently under regulatory assessment as part of the EU Chemicals Strategy for Sustainability. These solutions have a significantly lower GWP than SF₆ and could be useful when no suitable alternatives exist. An easy option would be a clear roadmap that provides visibility to industry. Furthermore, we recommend that the GWP threshold of 10 in the current proposal should be revised to GWP 1000 for voltage levels of more than 24 kV.

Sources

1. Calculated from Okoresearch's preparatory study
2. Eurostat
3. Ember-Climate based on ENTSO-E transparency platform
4. EC's impact assessment for the 2030 climate target plan
5. Eurelectric's connecting the dot study

Eurelectric pursues in all its activities the application of the following sustainable development values:

Economic Development

- Growth, added-value, efficiency

Environmental Leadership

- Commitment, innovation, pro-activeness

Social Responsibility

- Transparency, ethics, accountability



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