

SuperNode's response to the European Commission's public consultation on the revised Climate, Energy and Environmental Aid Guidelines (CEEAG)

2 August 2020

About SuperNode and Superconductors

SuperNode is a global technology development company, headquartered in Ireland, that designs and delivers cutting-edge, superconducting cable systems for bulk power transmission.

Conventional transmission cables are limited in terms of current levels which in turn limit their power transfer capability. Networks based upon superconducting cable systems can move larger quantities of power over longer distances with smaller and less obtrusive infrastructure and without electrical losses. SuperNode's technology will connect electricity markets in a way that facilitates the integration of large-scale renewables and the achievement of a decarbonised pan-European energy system.

SuperNode was founded in 2018 by Dr. Eddie O'Connor together with wind and solar energy developer Mainstream Renewable Power Ltd. SuperNode is jointly owned by Dr. O'Connor and Norwegian green investment group AKER Horizons.

1 Overall comments

SuperNode Ltd welcomes the opportunity to respond to the European Commission's public consultation on the revised Climate, Energy and Environmental Aid Guidelines (CEEAG). The focus of this response is the state aid measures relating to energy infrastructure.

The European Green Deal and the more ambitious climate targets recently agreed, requires a transformation of Europe's energy sectors unparalleled to anything in history in terms of scale, impact and pace. The transition from a largely coal-based global energy supply in 1900 to economies based on liquid and solid fossil fuel has lasted more than a century. We now have less than 15 years to decarbonise Europe's electricity supply, which is a prerequisite for a fully decarbonised EU economy before 2050.

Europe now has all the prerequisites to make the necessary transition towards a decarbonised economy, based on renewable electricity. We have access to capital at historic low rates; affordable renewable electricity generation technologies are available in abundance in the form of solar power, onshore and offshore wind; and we can process data at unprecedented speed.

The current as well as previous versions of the EU State Aid Guidelines for environmental protection and energy have been instrumental in developing national frameworks that allowed renewable energy technologies to gradually become part of the internal market. Today, renewable

energy technologies such as solar PV, onshore wind and offshore wind are the most cost competitive options for new generating capacity.

The European Commission's Offshore Renewable Energy Strategy estimates investment in offshore renewables at almost €800 billion; around two thirds to fund the associated grid infrastructure and a third for the offshore power generation.

SuperNode agrees that there is a need to revise the guidelines to reflect the increased climate ambitions of the Green Deal and the European Climate Law. However, the future guidelines should also reflect that the majority of power generating capacity needed to meet those targets, will come in the form of offshore renewables for which no grid infrastructure currently exists. Whether Europe manages to build out its electricity infrastructure in time will be the main determinant of its ability to decarbonise its economies.

Moreover, the guidelines must reflect that electricity grid infrastructure are facilitators of technology neutral, undistorted and effective competition between power suppliers and technologies situated both onshore and offshore throughout Europe. SuperNode is very supportive of the European Commission's attempt to extend the guidelines to new infrastructure categories that may emerge over the next years. Terrestrial and sub-sea superconducting power cables should be included and assessed under the general assessment principles.

Finally, it is SuperNode opinion that the revision of the guidelines provides a very good opportunity to – once and for all – end the vast, market distorting, environmentally damaging, national subsidies to fossil fuel. The Commission's Green Deal Communication is very clear about the State Aid revision with regards to fossil fuel subsidies and the current revision and the Guidelines must reflect this:

“Evaluations are underway of the relevant State aid guidelines including the environmental and energy State aid guidelines. The guidelines will be revised by 2021 to reflect the policy objectives of the European Green Deal, supporting a cost-effective transition to climate neutrality by 2050, and will facilitate the phasing out of fossil fuels, in particular those that are most polluting, ensuring a level-playing field in the internal market. These revisions are also an opportunity to address market barriers to the deployment of clean products.”

Terms meant to disguise fossil fuel components such as “low carbon”, “transition technologies”, and “hydrogen ready” should be deleted or clearly defined in section 2.4.

2 Comments to the specific provisions

SuperNode has the following comments to specific provisions of the European Commission's proposal for revised guidelines:

Paragraph 18 - Definitions

For SuperNode, it is very important that the scope of the future guidelines include superconducting cable systems (SCS). Electricity grids based on superconductor technology have been operating in Europe and elsewhere for many years. The technology is developing fast, and will be vital to

integrate the future production from remote, renewable power assets and transmit it to the centres of European consumption.

ENTSO-E's Technopedia of innovative and state-of-the-art technologies covering the fields of transmission assets, attach a technology readiness level (TRL) 5-6 for High Temperature Superconductor (HTS) Cables in DC transmission systems and a TRL of 7 to 8 for HTS Cables in AC Transmission Systems¹.

Superconducting Cable Systems (SCS) should be included in the definitions in section 2.4 (35) (a) (i) on energy infrastructure concerning electricity – paragraph (35). The current guidelines and the Commission's proposal does not reflect that some grid technologies, such as those based on superconductors, can move bulk transmission power at much lower voltage levels (down to 100 kV) compared to existing HVDC technology, while delivering superior transmission ability and functionality.

SuperNode suggests that the text highlighted in blue below is added to the definition in 2.4 (35) (a) (i):

“transmission and distribution systems, where ‘transmission’ means the transport of electricity on the extra high-voltage and high-voltage interconnected system with a view to its delivery to final customers or to distributors, but does not include supply and ‘distribution’ means the transport of electricity on high-voltage, medium-voltage and low-voltage distribution systems with a view to its delivery to customers, but does not include supply. Underground terrestrial cables and submarine cables based on superconductor technology are also considered ‘transmission’ if they have been designed for a voltage of 100 kV or more;

Paragraph 69 – “do no significant harm” Principle

SuperNode welcomes that the proposal for revised guidelines includes references to the “do no significant harm” Principle and the Article 3 Criteria for environmentally sustainable economic activities. In addition reference should be made to the “energy efficiency first” Principle, e.g. by referring to the definition in recital (64) of REGULATION (EU) 2018/1999 on the Governance of the Energy Union and/or Article 3 and 25 of the European Commission's recast proposal for a Directive on Energy Efficiency - COM(2021) 558 final.

Paragraph 109 – positive environmental effects

4.1.4 (Paragraph 109) states that the Commission consider that certain aid measures have negative effects on trade and competition that are unlikely to be offset and mentions “the most polluting fossil fuels, such as coal, diesel, lignite, oil, peat and oil shale” as examples.

SuperNode suggest that the words “the most polluting” are deleted from the paragraph so that all fossil fuels are considered to have negative effects that cannot be offset.

¹ See www.entsoe.eu/Technopedia/techsheets/high-temperature-superconductor-hts-cables

Paragraph 333 – Legal and Natural monopolies

In section 4.9.2 (330-333), it is proposed that the Commission considers that no State aid is involved if infrastructure investments are within the framework of a legal monopoly (331) or if energy infrastructure is run under a natural monopoly (333). To ensure that European research institutions and companies are allowed to the best and most innovative infrastructure technology solutions for both domestic use and exports, SuperNode suggest to add a new paragraph after 333:

“Similarly, the Commission considers that there is no State aid involved in investments where the energy infrastructure takes the form of a demonstration project or prototype testing of new, innovative grid technology, regardless of whether this is conducted by a legal monopoly, a natural monopoly, a private company or a research organisation,”

Paragraph 339 – Fit for hydrogen

In section 4.9.4, it is state that “the Commission considers that for natural gas infrastructure investments, the positive effects on competition manifestly outweigh its negative effects on competition where the resulting infrastructure is fit for use for hydrogen and renewable gases or fuels of non-biological origin.”

SuperNode suggests that the word “renewable” is added before the word “hydrogen” so it reads:

“the Commission considers that for natural gas infrastructure investments, the positive effects on competition manifestly outweigh its negative effects on competition where the resulting infrastructure is fit for use for [renewable](#) hydrogen and renewable gases or fuels of non-biological origin.”

It should also be more clearly defined in the new guidelines what “fit for hydrogen” means.

Contact:

Christian Kjaer
Chief Public Affairs Officer
Christian.Kjaer@Supernode.energy

SuperNode Ltd.

NovaUCD
Belfield Innovation Park
Belfield, Dublin 4, Ireland