European Engine Power Plants Association

Public Consultation for the Revision of the Guidelines on State Aid for Environmental Protection and Energy 2014-2020

EUGINE Contribution

EUGINE thanks the European Commission for the opportunity to contribute to the consultation on the revision of the EEAG.

EUGINE is the voice of the European engine power plants industry. Its members are the leading European manufacturers of engine power plants and their key components, providing forward-looking solutions for flexible and efficient electricity generation.

Engine power plants are an optimal solution for both backing-up and generating electricity from renewable sources (such as biogas). Cogeneration, the combined generation of power and heat, is another typical engine power plant application.

Given that state aid rules have a strong impact on the business case of environmentally friendly energy projects such as gas engines running on biogas or used for high-efficiency cogeneration (on-site combined heat and power production), we would like to provide some additional input to complement our reply to the questionnaire.

Gas power plants in the future energy system

Contrary to what is often believed, **thermal generation will not disappear from the energy mix in a net-zero system**, but will continue to be an essential contributor to the integration and decarbonization of the energy sector.

In a net-zero energy system, thermal power plants will run on waste-based biogas and biomethane and hydrogen produced using excess electricity. They will balance the electricity sector through Power-to-X-to-Power and help the agricultural and waste sectors utilize biomethane that would otherwise escape into the atmosphere.

Already today, almost all biogas plants are using engines to generate power and heat. In the near future, our technology will be able to run on either different blends of hydrogen and methane or also exclusively on hydrogen.

In addition, in a power system in which variable energy makes up the largest share, the flexibility (very quick ramp-up and down- times) of our technology will provide the even more essential service of grid balancing, by making sure supply fits demand.

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The new state aid rules should therefore support the enabling framework for green gases and continue putting security of supply (generation adequacy) at the centre of the objectives to be pursued.

Creating a Level-playing Field between Green Gases and Electricity

It is often stated that renewable energy costs have significantly decreased over the last years. While that may be true for some technologies (esp. wind and solar), it is not yet true for all forms of renewable energy – including biogas and biomethane, waste-gases and hydrogen.

According to the IEA[1], there is significant potential for biogas and biomethane to deliver low-carbon energy by 2040. However, the cost-gap with natural gas remains significant, especially in regions such as Europe: while natural gas came at a cost of 7.2 USD/MBtu in 2018, the cost of biomethane (biogas upgraded to the same quality than natural gas) was still at 16.4 USD/MBtu.

The same goes for low-carbon hydrogen production, where the price of sustainable sources is still higher than conventional methane-reformed hydrogen, but where costs could fall fast with the correct policy support (according to the European Commission' recent report on progress of clean energy competitiveness[2], citing IEA figures, renewable hydrogen today comes at a cost of about 2.5-5.5 EUR/kg, compared to about 2 EUR/kg for fossil-based hydrogen with CCS).

Given the cost-gap between renewable and conventional gases, operating costs for electricity generation with green gases remain relatively high. These high operating costs are disincentivizing electricity generation with green gases in relation to zero-marginal-cost technologies that nevertheless have higher capital costs (wind and solar).

To establish a level-playing field among energy sources and technologies, EU state aid rules should therefore allow member states to provide operating aid to projects producing green electricity with renewable gases. Wind and solar benefitted from early support through generous feed-in-tariffs, which created a market for the technology and made the sector competitive. It is time to give renewable gases the same chance.

Ensuring Generation Adequacy

Engines used in gas power plants are a proven and flexible technology, ready to operate in a net-zero energy system. **Thanks to their very quick ramp-up time and their capacity to run on renewable gases, engines provide essential services to the energy system by balancing supply and demand**. With ever increasing shares of variable renewable energy, gas engines (together with other technologies such as batteries and demand-response) will ensure the lights stay on at all times.

The interlinkages between the gas and electricity sectors in a net-zero future and the need for sufficient residual load are extensively modelled in a variety of studies, such as the very recent

[1] IEA: Outlook for biogas and biomethane: Prospects for organic growth, Paris, March 2020. Link: https://www.iea.org/reports/outlook-for-biogas-and-biomethane-prospects-for-organic-growth

[2] European Commission: Clean Energy Transition – Technologies and Innovations [COMMISSION STAFF WORKING DOCUMENT SWD(2020) 953 final PART 3/5, page 100], Brussels, October 2020. Link: https://ec.europa.eu/transparency/regdoc/rep/10102/2020/EN/SWD-2020-953-F1-EN-MAIN-PART-3.PDF

Agora Energiewende study "Towards a climate neutral Germany"[3]. In the future energy system, gas supports the development of a high share of variable renewable energy sources (RES) and will increasingly be linked to electricity demand and supply. The ENTSO-E and ENTSO-G prediction that "with significant variable RES capacities in the energy system, the gas demand may be impacted by Dunkelflaute events more often and more intensely"[4] is a clear example of this growing integration of gas and electricity systems.

In industries and public buildings and for large consumers needing both electricity and heat and cold, cogeneration plants running on green and renewable gases will continue to be a technology of choice, allowing important energy savings and efficiency gains. Cogeneration will also allow larger consumers to participate in demand response and decentralised electricity production and thus help save on network development costs.

This is why **any support mechanism should consider the global contribution of a given technology and energy carrier to an integrated energy system, not only in terms of CO2 reduction, but also in terms of flexibility, reliability and efficiency** – helping to ensure the security of supply mentioned in article 194 of the Treaty.

How to Get There

- To avoid giving an uncompetitive advantage to larger market players, the tendering requirement should not be the general rule against which to measure the conformity of a state aid measure.
- The legitimacy of state aid in the energy sector should not only be evaluated based on economic aspects and climate policy and environmental targets but must also take into account the other core targets of EU energy policy: security of supply and efficiency, both in terms of demand and supply.
- Member States should still be allowed to run technology-specific and sector-specific tenders. Differences across technologies and sectors make the comparison between different offers extremely difficult and highly dependent on the (correct) initial tender design.
- Establish a level-playing field among different technologies and energy carriers, considering the public funding already received per sector and technology in the past and the effect such funding has had on market development.

[3] Prognos, Öko-Institut, Wuppertal-Institut: Towards a Climate-Neutral Germany. Executive Summary conducted for Agora Energiewende, Agora Verkehrswende and Stiftung Klimaneutralität, October 2020. Available at : https://www.agora-energiewende.de/en/publications/towards-a-climate-neutral-germany-executive-summary/

[4] ENTSO-E, ENTSO-G, TYNDP 2020 Scenario Report, Brussels, June 202. Link: https://www.entsos-tyndp2020-scenarios.eu/wp-content/uploads/2020/06/TYNDP_2020_Joint_ScenarioReport_final.pdf