



SolarPower Europe

Amendments to Delegated Act on Renewable Fuels from Non-Biological Origin – RED II (Article 27)

The European Union has a unique opportunity to take decisive steps towards climate neutrality by 2050. To mainstream the use of renewable energy in the transport sector and meet the EU climate neutrality goal, Member States should guarantee that by 2030 14% of the final energy consumption in the transport sector is from renewables. To successfully achieve this goal, it is crucial to ensure that the electricity used to produce renewable liquid and gaseous transport fuels of non-biological origin (RFNBOs) is produced by renewable energy sources. Renewable hydrogen from non-biological sources like solar is a type of RFNBO and it is expected to play a key strategic role in the decarbonisation of the transport sector as well as other sectors of the EU's economy.

At the same time, electrification must remain an overarching priority to decarbonise the transport sector. For road transport, SolarPower Europe's 100% renewable study demonstrates that renewable-based electrification is the most cost-efficient and the fastest solution to achieve significant GHG emission reduction, enabling the full decarbonisation of this segment even before 2040.

It is crucial to quickly deploy renewables on a large scale if we are to meet the EU's renewable electricity needs. The electricity used to produce RFNBOs cannot be based solely on the existent electricity from the grid, which for the foreseeable future includes electricity generated from fossil fuel sources. It is therefore crucial that it comes from new renewable energy assets, such as solar plants.

The RED II established the criteria for RFNBOs to qualify for the 14% target, but it left out the methodology to demonstrate them to a Delegated Act due in December 2021. Following the requirements for 100% renewability defined in the RED II, SolarPower Europe provides the following recommendations in the context of the implementation of Article 27(3) of the RED II, for the design of the methodology to guarantee that electricity used to produce RFNBOs comes from renewable sources:

I. We welcome the possibility to count electricity taken from the grid delivered through a power purchase agreement (PPA) between the renewable electricity producer and the hydrogen producer as fully renewable.

Draft

Article 4 (a) the producer has concluded a renewables power purchase agreement with a producer of renewable electricity for an amount that is equivalent to the amount of electricity that is claimed as fully renewable;

Proposed Amendment

Article 4 (a) the producer has concluded a renewables power purchase agreement with a producer of renewable electricity for an amount that is equivalent to the amount of electricity that is claimed as fully renewable, **the agreement has been concluded with a new or repowered renewable energy plant or a renewable energy plant that is no longer receiving subsidies;**

Justification

SolarPower Europe welcomes the fact that hydrogen producers shall demonstrate they have concluded a renewable power purchase agreement (PPA) with a producer of renewable electricity for an amount that is equivalent to the amount of electricity that is claimed as fully renewable. The easiest and most effective way



to prove additionality is through a PPA between the renewable hydrogen producer and a new renewable energy installation. It is important not to limit the conditionality to new renewable energy installations. But it should also apply to renewable energy plants that have undergone an extension of their lifetime, i.e., renewable energy plants that have been repowered by increasing the power rating of the system within the surface boundaries of the existing plant. Through repowering, a solar PV plant can extend its life span for example from 20 years to 25 years. It should also be possible to conclude a PPA with a renewable energy plant that no longer receives subsidies, as clarified below in the text.

A PPA has several advantages:

- I. It can be designed to flexibly meet hydrogen production needs.
- II. It provides price certainty, which is a great advantage because the electricity cost represents more than half of all the costs involved.
- III. It can be signed to combine multiple renewable energy installations. By combining several technologies (solar, wind, storage) and spanning across various geographies, the PPA-portfolio can generate a firmer electricity profile, resulting in higher operating hours for the electrolyser.
- IV. It simplifies the verification process, because it monitors the quantity of the renewable electricity purchased and the amount of electricity consumed by the electrolyser.

Despite welcoming this criterion, it is not the only one. The criteria outlined below should improve to adequately open the market for renewable energy and renewable hydrogen in Europe and to create the demand required to meet the objectives outlined in the EU Hydrogen Strategy on time.

2. Assure that the installation generating renewable electricity through a PPA can come into operation within 18 months after the installation producing hydrogen starts operation.

Draft

(3) installations generating renewable electricity should be considered as coming into operation at the same time than the electrolyser if they come into operation within no more than 12 months of difference.

Draft

Article 3 (b) the installations generating renewable electricity came into operation in the same year as the electrolyser or later.

Draft

Article 4 (b) the installation generating that renewable electricity covered by the power purchase agreement came into operation in the same year (12 months) as the installation producing the renewable hydrogen, or later;

Proposed Amendment

(3) installations generating renewable electricity should be considered as coming into operation at the same time as the electrolyser if they come into operation within no more than ~~12~~ 18 months of difference.

Proposed Amendment

Article 3 (b) the installations generating renewable electricity came into operation ~~in the same year~~ **no later than 18 months** as the electrolyser ~~or later~~.

Proposed Amendment

Article 4 (b) the installation generating that renewable electricity covered by the power purchase agreement came into operation in the ~~same year (12 months)~~ **the following 18 months** as the installation producing the renewable hydrogen ~~starts operation, or later, or the installation generating renewable electricity has been repowered and extended its lifetime or is an existing plant that no longer receives subsidies. The installation producing hydrogen should be able to use bundled guarantees of~~



origin from a renewable energy plant until the renewable energy plant contracted via the power purchase agreement enters operation.

Justification

The commissioning date of 12 months for renewable installations is too short, considering the multitude existing delays in the deployment of renewable energy installations. SolarPower Europe member companies have reported that delays in the deployment of solar installations can average 18 months. For this reason, the installation generating renewable electricity covered by the PPA should come into operation within 18 months after the production of renewable hydrogen. The installation producing hydrogen should be able to use bundled renewable electricity – i.e., the delivery of both physical electricity and electricity tracking certificates from a renewable energy supplier, in one package, to the consumer – until the renewable energy plant contracted via the PPA enters operation. Bundled electricity products have no chance of double counting electricity attributes if they use a tracking system at their core such as the Guarantee of Origin.

The Renewable Energy Directive does not yet include a tracking system that controls and verifies additionality, geographical, and temporal correlation. Therefore, the current GOs system is not fit for purpose, as it was designed to demonstrate the origin of energy to end consumers, but not to promote the addition of new renewable energy capacity into the grid.

The current GO system provides information on:

- I. The commissioning date of the renewable energy installation.
- II. The location of the renewable energy installation (geographical correlation).

However, the current GO system is not robust enough to control and verify the compliance of additionality and geographical and temporal correlation criteria, and therefore it is necessary to:

- I. Include information about the moment in which the plant produces renewable energy and the moment when the GO was issued (temporal correlation) with sufficient granularity. For this reason, we require all Member States to **“time-stamp”** the GOs issued to renewable energy producers to know the precise time at which the underlying unit of energy was produced. **The “time-stamping” of the time of generation should be provided up to each quarter of hour.**

3. Assure that a PPA can be concluded with a renewable energy plant that has received subsidies in the past.

Draft

Article 4 (c) the generation of the renewable electricity that is supplied under the renewables power purchase agreement has not received and does not receive support in form of operating aid or investment aid;

Proposed Amendment

Article 4 (c) the generation of the renewable electricity that is supplied under the renewables power purchase agreement ~~has not received and~~ does not receive support in form of operating aid or investment aid. **Renewable plants that have received subsidies in the past but no longer receive them should be eligible, while cross-subsidization between electricity and hydrogen consumers must be avoided.**

Justification

Subsidies should be prioritized for renewable energy plants that generate electricity for direct electrification uses. However, renewable energy plants that received subsidies in the past should not be excluded and



should qualify for production of renewable hydrogen (in particular, if they would otherwise be decommissioned). In case of formerly subsidized plants, it is important to avoid cross-subsidies between renewable electricity and hydrogen consumers, especially in countries where the cost of new renewable energy installations is borne by the electricity consumers. Allowing renewable energy plants that receive some sort of support paid by the electricity consumers to be compliant with the principle of additionality for hydrogen production would place an extra burden on the electricity consumers, endangering direct electrification, and creating an imbalanced playing field among energy carriers.

As mentioned in the section above, we recommend extending the compliance criteria to allow PPAs to be concluded with renewable energy plants that have been repowered, even if these plants may have received some sort of government support in the past.

4. Develop a phased approach to temporal correlation that allows, in the short term, upscaling the market for renewable-based hydrogen fast.

Draft

Article 4 (d) the electricity that is used for the production of renewable hydrogen is consumed in the same quarter of an hour as the renewable electricity supplied under the renewables power purchase agreement, or it can be demonstrated based on data reported by the national transmission system operator that the share of renewable electricity in the same quarter of the hour in the bidding zone where the electrolyser is located is higher than the average share of electricity from renewable sources in the country where the electrolyser is located, as measured two years before the year of producing of the renewable liquid and gaseous transport fuels of non-biological origin;

Proposed Amendment

Article 4 (d) **In a first phase until 31 December 2024**, the electricity that is used to produce renewable hydrogen is consumed **at least** in the **same day ~~same quarter of an hour~~** as the renewable electricity supplied under the renewables power purchase agreement. **In second phase from 1 January 2025, temporal correlation shall become more granular, and the electricity used to produce renewable hydrogen can be consumed at least in the same thirty minutes, down to the same quarter of hour, as the renewable electricity supplied under the renewable power purchase agreement. Another possible condition is that** ~~or~~ it can be demonstrated based on data reported by the national transmission system operator that the share of renewable electricity in the same quarter of the hour in the bidding zone where the electrolyser is located is higher than the average share of electricity from renewable sources in the country where the electrolyser is located, as measured two years before the year of producing of the renewable liquid and gaseous transport fuels of non-biological origin.

Justification

We must design our energy system to be fit for the future, requiring careful consideration to appropriately define temporal correlation between the renewable electricity generated (and contracted via PPAs) and the hydrogen produced through electrolysis. Doing so now is essential as solar power plants and electrolysers have a lifespan of at least 25 years and, any requirement that is valid in the present, will need to be valid under future market conditions.

Having too strict requirements for temporal correlation might hamper the deployment of renewable hydrogen in the short term. In Europe, the shortest time unit for electricity trading is 15 minutes. This is a very short time span. In this case, renewable-based hydrogen producers must either have a very diverse portfolio covering the day and night hours when the electrolyser is generating or shut down the hydrogen production for several hours to comply with the criteria. For the electrolysers to produce hydrogen in the most cost-effective way possible, they must run for as many hours as possible. Therefore, defining a short time



correlation requirement may hamper the efficiency of the electrolyser and therefore lead to the production of renewable-based hydrogen at sub-optimal costs.

A phased approach focused on accelerating deployment of renewable-based hydrogen may be needed.

- **In a first phase** (until 31 December 2024), the temporal correlation should not be too strict and have **at least daily granularity**, to achieve an upscaling of the market for renewable-based hydrogen fast.
- **In a second phase** (from 1 January 2025), temporal correlation could introduce **shorter timeframes**, taking into consideration the corresponding provision set forth by Article 8 of Regulation 2019/943: “By 1 January 2021, the imbalance settlement period shall be 15 minutes in all scheduling areas, unless regulatory authorities have granted a derogation or an exemption. Derogations may be granted only until 31 December 2024. From 1 January 2025, the imbalance settlement period shall not exceed 30 minutes where an exemption has been granted by all the regulatory authorities within a synchronous area.”

As renewable energy provides an ever-increasing portion of power on the grid, energy procurement methods need to be updated. Current methods allow organizations to match their total energy consumption with renewable energy that was produced at any time within a 12-month period. This means that organizations following today’s criteria for being 100% renewable rely on fossil fuel electricity from the grid at many times of the day, and throughout the whole year.

Some companies have recognized the need to go one step further and move to hour-by-hour tracking of renewable energy consumption. The benefits of this include improving consumer confidence and incentivizing the delivery of renewable energy when and where it is most needed, for example through energy storage technologies such as batteries or hydrogen. For this reason, it is crucial that GOs from a renewable energy plant contain an increased level of information both to support consumers seeking to obtain more detail on the origin of their electricity and to empower renewable energy producers to market their electricity. Information related to the time of generation of the GO should be provided at a more granular level than an annual level of measurement, in order to support consumers willing to attest to the matching of supply and demand. As mentioned, to accomplish this, we require all Member States to **“time-stamp”** the GOs issued to renewable energy producers to know the precise time at which the underlying unit of energy was produced. **The “time-stamping” of the time of generation should be provided up to each quarter of hour.**

5. Develop an approach to geographical correlation that allows for cross-border access to renewable electricity and safeguard the EU Internal Energy Market.

Draft

Article 4 (e) the installation generating renewable electricity is located at the time it came into operation in the same bidding zone as the electrolyser, or the installation generating renewable electricity is located in a neighbouring bidding zone and the competent national authorities have determined that there is no systematic electricity grid congestion between the bidding zones and electricity prices in the two bidding zones in the relevant time period are equal;

Proposed Amendment

Article 4 (e) the installation generating renewable electricity is located, at the time it came into operation, in the same bidding zone as the electrolyser;⁷ or the installation generating renewable electricity is located in a neighbouring bidding zone and the competent national authorities have determined that there is no systematic electricity grid congestion between the bidding zones and electricity prices in the two bidding zones in the relevant time period are equal;⁷ **or the installation generating renewable electricity has concluded a cross-border power purchase agreement with an electrolyser. The**



hydrogen produced through a power purchase agreement with a renewable energy plant would be considered renewable, regardless of whether the congestion is removed or if the bidding zone has been changed. When the installation generating renewable electricity came into operation in the same or in a different bidding zone as the electrolyser, cross-subsidies between electricity consumers and hydrogen consumers must be avoided.

Justification

Having too strict requirements for geographical correlation might hamper the deployment of renewable hydrogen in the short term. Limiting the geographical correlation to the same bidding zone (or country), would exclude electricity imports from a different bidding zone (or country). Among the various detrimental consequences for the development and upscaling of the renewable hydrogen market, some include:

- This approach is incompatible with the EU Internal Energy Market and too short-term since bidding zones may change in 1-2 years depending on the evolution of grid congestion.
- **Having cross-border access to renewable electricity is a necessary pre-requisite to deliver on the volumes of renewable energy needed for demand in the short-term.** In regions where energy consumers cannot benefit from enough regionally produced renewable energy, electricity imports will be required to supply energy-intensive industry when transitioning to renewable energy consumption.

For example, Italy has several bidding zones from North to South. A hydrogen producer in an industrial cluster in the North may be interested in concluding a PPA with a solar plant in the South, where the irradiation levels are the highest and therefore the resulting cost of solar electricity production may be lower, everything else remaining equal. **Cross-border physical and virtual PPAs** are an effective way of procuring renewables, even if the best solar resources are in a different bidding zone. This allows for the addition of renewable capacity on the grid in a cost-effective manner, while allowing customers to take advantage of cheaper land and better irradiation conditions, making the energy procurement more competitive for end-users. We believe such an approach should be used more widely in the EU, and that it could be very useful in the context of green hydrogen procurement, provided it comes with an effective tracking system of GOs.

Particularly, virtual PPAs are growing in familiarity and legitimacy in Europe due to attractive project economics, since they offer the added advantage of contracting a project with the most beneficial economics regardless of geography, when:

- Corporate renewable PPAs are not available in the market where the load is located due to the regulatory framework or there are not enough renewable energy generators.
- Corporate renewable PPAs are available in the market where the load is located, but are cost prohibitive or otherwise constrained; or
- The corporate buyer can achieve a better outcome (such as lower cost, lower risk, or higher environmental impact) by procuring renewable electricity in a different market.

The increasing interest in virtual PPAs was also recognized by the European Commission in a publication in 2019 on the competitiveness of corporate sourcing of renewable energy and named “important element[s] for expanding the contribution of corporate renewable energy PPAs to Europe’s energy transition...allow[ing] renewable energy to be purchased from where it is cheapest and delivered to centers of consumption.”

Also, for the Delegated Act to be in line with the objectives of the EU Financing Mechanism to both deploy more renewable energy and enhance regional cooperation – the enabling framework provided by Article 33(2) of the Governance Regulation – then cross-border activity – in the form of electricity imports and exports – should be encouraged and not disincentivized.



At all costs we should avoid the electricity consumers bearing the cost of adding new renewable energy into the grid, which may lead to a cross-subsidization of the electrolyzers' owners. For this reason, it is crucial to develop a dedicated mechanism to avoid cross-subsidies between electricity consumers and hydrogen consumers.

6. Assure that the reporting period is in line with the requirements for temporal correlation allowing, in the short term, a quick upscaling of the market for renewable-based hydrogen.

Draft

Article 5 The hydrogen producer shall thoroughly document the following information for each quarter of hour.

Proposed Amendment

Article 5 The hydrogen producer shall thoroughly document the following information **following the same period as defined in the criteria under Article 4 paragraph (d) on temporal correlation for each quarter of hour.**

Justification

In line with our recommendations on temporal correlation, we find it too restrictive for hydrogen producers to document, for each quarter of hour, criteria related to the renewable electricity consumed. For this reason:

- We recommend documenting the information in line with the required temporal correlation specified in Article 4 paragraph (d).

7. Develop an approach to additionality that allows for a fast upscaling of the market for renewable-based hydrogen.

This Delegated Act and the "Fit for 55" review must ensure that new investments on Renewable Fuels of Non-Biological Origin (RFNBO), such as renewable hydrogen, increase renewable energy penetration in line with the new 2030 targets, and increase the decarbonisation efforts in line with the Green Deal objective of achieving carbon neutrality by 2050.

The fact is that the production of 1 unit of renewable hydrogen will not always result in an increase of renewable penetration in the energy system. Thus, it is essential that both the review of the Renewable Energy Directive and the Delegated Act address the definition of additionality for new RFNBO investments, to guarantee an overall additional increase in renewable energy deployment. Moreover, impact on emissions must always be analysed to check whether new investments increase EU's decarbonisation progress. To ensure that total emissions of the energy system are reduced, it is crucial to prove geographical and temporal correlation between the renewable energy installation and the hydrogen producer.

Proposed definition

To be on track for the EU to become climate neutral by 2050, it is crucial to deploy new renewable energy assets as the production of renewable-based hydrogen increases. Thus, it is key to ensure that the electricity used to produce renewable-based hydrogen is coming from additional renewables being added to the system, and not just existing renewables being diverted to new end-users. That said, requirements on additionality need to adapt to incentivize the renewable energy volumes needed in the short-term. It must strike the right balance between strongly incentivizing the installation of new renewable assets and enabling the early upscaling of the market.

Hence, we support the following approach to additionality:



- **In a first phase**, additionality would apply to a scenario where a PPA has been concluded with a newly deployed renewable energy plant, a repowered renewable energy plant, or with a renewable energy plant that is no longer subsidised. The surplus of renewable electricity generation that is curtailed will also be counted towards additionality. The use of curtailed renewable electricity for hydrogen production contributes to increasing the load factor of the electrolyser and, thereby, reduces the renewable hydrogen production cost. Until the renewable energy plant starts operation, the hydrogen producer can use GOs from a renewable energy plant.
- **In a second and longer-term phase**, additional renewable generation capacity for renewable hydrogen will no longer be necessary since renewables would be the dominant source in the electricity mix.

8. Assure that the renewable electricity stored is counted as fully renewable electricity.

The Delegated Act must also incorporate the role of storage appropriately. Electrical storage is a key component for today's energy system, since it can provide a better balance between the electricity supplied by the renewable energy plant and the demand from the hydrogen facility. As storage will flatten the electrolyser's consumption profile, it will result in higher operating hours. Moreover, adding storage could help to comply with temporal correlation.

Article 2 (3) excludes storage from the definition of "installation generating renewable electricity", which we understand. For this reason, it is even more important to appropriately incorporate in the Delegated Act the role of storage. We recommend recognizing in the Delegated Act that: **when the renewable energy output is stored, even during the times that the contracted renewable generation unit is not generating electricity, that electricity should be counted as fully renewable electricity, provided that the storage installation can demonstrate that the stored energy is renewable.**

For a storage installation on the same premises as the electrolyser facility, the temporal correlation criterion described above would apply to storage as if storage and the electrolyser facility were the same unit. We want to reiterate that it is crucial to enhance the current GO system so GOs contain an increased level of information. So, we require all Member States to "**time-stamp**" the GO to know the time of generation when the underlying unit of energy was produced. Likewise, every MWh the battery charges from the grid, in order to produce renewable hydrogen, must come with a time-stamped GO.