

Impact Assessment of the Swedish Energy Agency's Regulations on Guarantees of Origin for Energy (STEMFS 2025:00)

Summary

The Swedish Energy Agency proposes new Regulations STEMFS (2025:00) on Guarantees of Origin for Energy to replace STEMFS (2017:2) on Guarantees of Origin for Electricity. The Regulations contain provisions on the metering and reporting of meter values, net electricity production, correction factor and the producer's obligation to notify changes. The Regulations also contains provisions on the information to be included in an application for Guarantees of Origin (GO) and how information is to be provided.

The Swedish Energy Agency's authorisation to issue regulations on metering, reporting, issuing, cancellation, transfer, data on the guarantee of origin and enforcement of the Act (2010:601) on Guarantees of Origin for Energy comes from Section 24 of the Ordinance (2025:000) on Guarantees of Origin for Energy. The Act (2010:601) on Guarantees of Origin for Energy was passed by the Swedish Parliament in 2022 but will enter into force on a date determined by the Government. The main amendments are made in order to comply with the revised Renewable Energy Directive¹ Article 19 and standard EN 16325, to which the Directive refers. The draft amendments are compared with previous formulations, and any identified consequences for the operators of the GO system are made visible. Several new provisions are added, mainly related to the issuing of GOs for gas, heating, cooling and energy stocks.

This assessment is a review of the economic impact for operators, producers, rapporteurs, public activity and customers of the GO system. The main consequences concern increased administration for producers due to, among other things, metering in a non-concessionary network (NCN) since GOs may no longer be issued for auxiliary power, the fact that self-consumption must be reported, and that information on energy stocks must be reported for guarantees of origin for electricity. The Swedish Energy Agency needs to update IT support and processing procedures.

After the entry into force of the Regulations, Swedish producers of gas, heating and cooling will be able to apply for the issuance of guarantees of origin, which entails new opportunities for both producers and customers.

As the GO scheme is voluntary, it mainly affects those customers who want energy with guarantees of origin and does not lead to new social impacts. The GO is handled and issued digitally, resulting in a marginal impact on the environment.

¹ Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (the Renewable Energy Directive), as amended by Directive (EU) 2023/2413 of The European Parliament and of the Council.

The Regulations introduce new provisions into Sections 4 to 5, 7, 10, 11 to 13, 16 to 18, 20 to 21, 25 to 27, 34, 35, 37, 38 and 41, which, in most cases concern the issuance of GO for gas, heating and cooling. There are also new provisions affecting electricity, gas, heating and cooling, such as Section 10, Section 25 *How electricity, gas, heating or cooling produced from electricity, gas, heating or cooling is to be reported*, Section 26 *Conversion*, Section 27 *Review report for fuel declarations*, Section 35 *How issuance from installations with energy stocks is handled*, Section 41 *Particulars on guarantees of origin for gas in the Union database*. In the provisions related to electricity, adjustments have been made to align with the revised Renewable Energy Directive and EN 16325, or for clarification purposes.

The impact assessment has been prepared in accordance with Ordinance (2024:183) on Impact Assessments.

The new Regulations are proposed to enter into force on 1 January 2026, with a transitional period until 31 December 2026. During the transitional period, holders of installations that are currently authorised for the issuance of guarantees of origin for electricity may submit a new application containing the information requested in the Regulations. Installations without a new decision on the issuance of guarantees of origin after 31 December 2026 will have their issuance of guarantees of origin withdrawn. Applications received before 31 August 2026 are exempted. For these, the issuance of guarantees of origin will continue until the application has been conclusively assessed.

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List of definitions

Words and expressions used in the impact assessment have the same meaning as in the Act (2010:601) and the Ordinance (2025:000) on Guarantees of Origin for Energy.

Cancellation: a GO shall be cancelled when the corresponding energy has been used. The cancellation is a guarantee that no more energy of a given origin is sold than has been produced. A GO shall also be cancelled if it has not been used within twelve months of the time when the energy to which the GO refers was produced. In the case of a cancellation, it is possible to obtain a cancellation certificate confirming that the GO was cancelled for a specific purpose.

Fuel declaration: specifies the type and distribution of energy sources supplied to the installation during the declaration period.

Energy distribution: the physical supply of energy from the installation.

EECS guarantee of origin: a guarantee of origin issued pursuant to the international regulatory framework Principles and Rules of Operation of the Association of Issuing Bodies (AIB) for the European Energy Certificate System (EECS).

Self-consumption of electricity: electricity consumed before the point of connection to the concessionary network and which is not auxiliary power.

Self-consumption of gas, heating or cooling: means energy used within the installation and which is not auxiliary energy.

Energy source: energy used to produce electricity, gas, heating or cooling. Is always designated with a specific fuel code.

Energy stocks: a unit used to store energy where the energy entering the storage device is of the same type as the energy emitted.

Unit declaration: specifies the distribution for the production of electricity from different energy sources during the declaration period, if the installation has different technology codes.

Auxiliary power: electricity used for the production of electricity within an installation.

Auxiliary energy: energy used for the production of gas, heating or cooling within the installation.

Non-concessionary network: electric lines which are exempted from the requirement for network concession and that may be built without a licence.

Concessionary network: electricity or natural gas pipeline that is subject to a network concession, which means that the enterprise wanting to build these must apply for a licence from the Swedish Energy Markets Inspectorate.

Conversion: the production of electricity, gas, cooling or heating by conversion of electricity, gas, cooling or heating whose origin is guaranteed by guarantees of origin.

Correction factor: used to determine the amount of electricity for which the GO is to be issued. The correction factor ensures that the auxiliary power (electricity) or auxiliary energy (gas, heating and cooling) is deducted from the gross electricity production.

Licence declaration: specifies the distribution of energy for the installation when producing gas during the declaration period.

Residual mix: is the environmental value left after deducting the energy sold with guaranteed origin. Is calculated separately for electricity, gas, heating and cooling.

Waste heat or cooling: unavoidable heating or cooling that is generated as a by-product and that would evaporate unused if there were no access to a district heating or cooling system.

Technology code: the code of a GO indicating the technology with which the installation produces energy, for which the GO is issued.

Guarantee of origin: an electronic document the purpose of which is to guarantee the origin of the electricity, gas, cooling or heating produced.

Origin labelling: the provision of information to a end customer on the proportion or amount of the energy, with specific attributes, supplied to them.

Calorific value: The calorific value of a fuel indicates how much heat energy is potentially available in the fuel. A distinction is made between gross (calorific) heating value and lower heating value.

1 Preparatory work

The new regulations have been drawn up in the light of the Government's new Ordinance (2025:000) on Guarantees of Origin for Energy. On 28 June 2024, the Swedish Energy Agency was commissioned to prepare documentation for the implementation of parts of the revised Renewable Energy Directive (reference number: KN2024/01377). The new proposals are based on Article 19 on Guarantees of Origin (GO) of Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (the Renewable Energy Directive), as amended by Directive (EU) 2023/2413 of The European Parliament and of the Council.

During its work on updating the Regulations, the Swedish Energy Agency held consultations with the Ministry of Climate and Enterprise. The Swedish Energy Agency talked with industry organisations, affected enterprises and other affected stakeholders about the change in question. The gas industry is interested in being able to have GOs issued for gas production, to facilitate biogas trade with other countries but also nationally. For the heating and cooling sector, the need for GOs is less clear as heating and cooling are mainly traded locally.

In connection with the regulatory work, an impact assessment has been drawn up in accordance with the Ordinance (2024:183) on Impact Assessments. The impact assessment concerns the new Regulations STEMFS (2025:00) on Guarantees of Origin for Energy, replacing the previous Regulations STEMFS (2017:2) on Guarantees of Origin for Electricity.

2 Background

This Section provides background information on the new Regulations based on the revised Renewable Energy Directive and the European standard EN 16325.

Electricity producers have been able to have GOs issued for their production in Sweden since 2003. With the introduction of the Renewable Energy Directive in 2010, requirements were introduced for the origin labelling of electricity and for the GOs for electricity to be electronic documents. The first revision of the Renewable Energy Directive entered into force in December 2018. According to Article 19 of the first revision of the Renewable Energy Directive, renewable energy producers are also entitled to have GOs issued for gas, including hydrogen as well as heating and cooling.

Already in the first revision of Article 19 of the Renewable Energy Directive, the Directive refers to EN 16325. This has been published since 2013, and the process of revising EN 16325 was commenced in 2020. According to the Directive, Member States shall ensure that the issuance of GOs complies with the criteria in EN 16325. The second revision of the Renewable Energy Directive entered into force in November 2023 and includes further changes to Article 19.

2.1 The guarantees of origin system

At present, in Sweden, GOs can only be issued for electricity, where each GO corresponds to 1 MWh of electricity production. The basis for the GO system for electricity, gas, heating and cooling is set out below, where producers of gas, heating and cooling will also be able to receive a GO for gas, heating or cooling issued for each MWh of gas, heating or cooling they produce.

2.1.1 Electricity

The GO for electricity serves as an instrument to track how a certain amount of electricity has been produced and used. Electricity producers can apply to the Swedish Energy Agency to have their installation approved for the issuance of a GO. The Swedish Energy Agency issues GOs for all types of electricity production, e.g., from solar power, wind power, nuclear power and cogeneration. The GOs are issued electronically in the Swedish Energy Agency's accounting system Cesar (the accounting system).

Electricity producers can sell their GOs in an open market where the pricing is negotiated between buyers and sellers for each transaction. The trade takes place via bilateral agreements or via brokers, while the transfer of sold GOs is handled in the accounting system. Buyers of GOs are usually electricity trading enterprises that wish to sell electricity contracts consisting of electricity from a specific energy source or energy mix.

To guarantee the origin of the electricity in the contract, the electricity trading enterprise needs to buy and cancel GOs corresponding to the amount of electricity that they sell to the end customer². The cancellation ensures that a GO cannot be used several times. This means that no more electricity from a particular energy source can be sold than has been produced, even though all electricity, regardless of production method, is mixed into the network.

² See Chapter 9 Section 28 of the Electricity Act ([1997:857](#)), which gives the government, or the authority appointed by the government, the right to issue regulations on this matter. More detailed provisions can be found in the Ordinance ([2023:242](#)) on the Supply of Electricity and Aggregation Services, and in the Swedish Energy Markets Inspectorate's Regulations EIFS 2023:2.

The Electricity Act's requirement to disclose origin labelling only applies to electricity trading enterprises. In addition to electricity trading enterprises, there are also enterprises that choose to purchase and cancel the GO themselves in order to show the origin of the electricity they use. Enterprises purchasing and cancelling GOs do so in order to, for example, comply with accounting requirements, consumer requirements for products or to demonstrate compliance with the enterprise's climate targets.

GOs are valid for 12 months. The period of validity is calculated from the calendar month on which the electricity to which the guarantee of origin relates was produced. In case of obsolescence, GOs are cancelled in the system, meaning that they are no longer available to the holder.

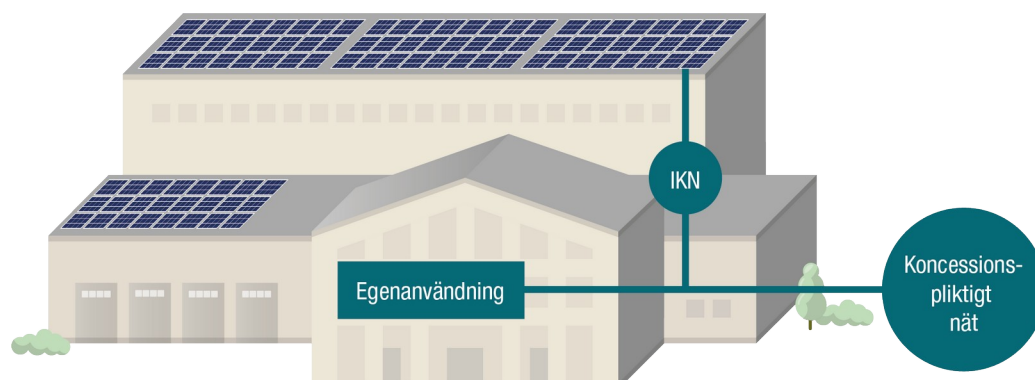
Internationally transferable guarantees of origin

In Sweden, two types of GOs are issued: nationally transferable GOs and internationally transferable GOs (EECS-GOs). Both of these variants can be used to meet the requirements for origin labelling vis-à-vis Swedish electricity customers under the Electricity Act. GOs can only be handled and used on behalf of Swedish operators in the accounting system, while EECS-GOs can also be transferred to and from other countries' registers for GOs. The prerequisite for the transfer of EECS-GOs is that the countries are members of the organisation Association of Issuing Bodies (AIB) and are connected to the AIB data hub for EECS-GO transfers. However, EECS-GOs issued for electricity produced in Switzerland and Serbia are not allowed to be used for origin labelling in Sweden. This is because GOs for electricity produced outside the EU and the EEA can only be recognised if there is a specific agreement between that country and the EU.

EECS (the European Energy Certificate System) is administered by AIB, an European organisation responsible for ensuring that GOs are managed in a coherent and transparent manner. AIB coordinates Member States and their national systems for GOs and ensures that there are common standards and rules for trade. EECS is used to manage and track renewable energy GOs in Europe. The system also helps to promote transparency and reliability in the renewable energy market.

Issuance in relation to net electricity production

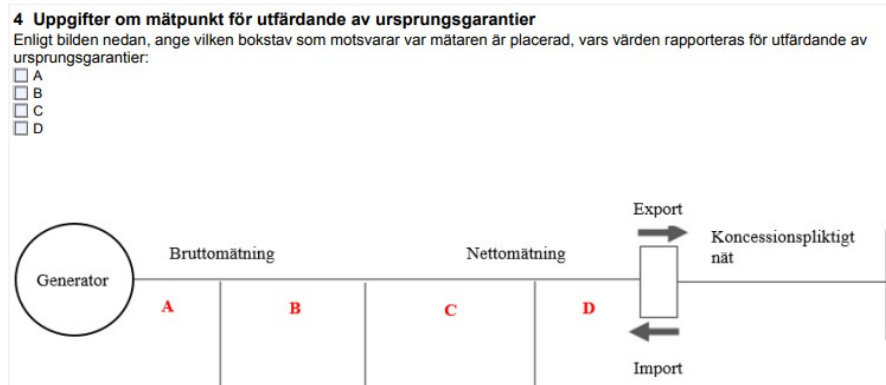
In Sweden, GOs are issued for the amount of electricity that has been metered and reported to the Swedish Energy Agency. The electricity producer may choose whether to measure the production of electricity in connection with a concessionary network or at a measuring point within the NCN.



Egenanvändning	Self-consumption
IKN	NCN
Koncessionspliktigt nät	Concessionary network

Figure 1. Illustration of alternative measuring point locations, measurement of total production in a non-concessionary network or measurement of excess electricity in connection with a concessionary network.

If the electricity producer chooses to measure and report from a measuring point in connection with a concessionary network, a GO is only issued for the excess electricity production, i.e., the electricity that is fed into the concessionary network. If the electricity producer instead chooses to use a measuring point in the NCN, a GO can be issued for the total electricity production (gross production), i.e. also for any electricity that the producer itself uses (self-consumption). Nor are any deductions made for any self-consumed electricity in EECS-OG. However, for EECS-GOs, there is a requirement to deduct auxiliary power depending on where in the NCN the exact measurement point is located. Location is determined according to Figure 2.



Uppgifter om mätpunkt för utfärdande av ursprungsgarantier

Enligt bilden nedan, ange vilken bokstav som motsvarar var mätaren är placerad, vars värden rapporteras för utfärdande av ursprungsgarantier:

Generator

Bruttomätning

Nettomätning

Export

Import

Koncessionspliktigt nät

Measurement point information for the issuance of guarantees of origin

According to the image below, indicate which letter corresponds to where the meter is located, the values of which are reported for the issuance of guarantees of origin:

Generator

Gross measuring

Net measuring

Export

Import

Concessionary network

Figure 2: Current model for providing information on the measurement point for issuance when applying for EECS guarantees of origin. Self-consumption may occur at all measurement points before D.

If the installation receiving EECS-GO has a measurement point located in Point A of the figure, a correction factor is required in order to calculate the amount of electricity on which the issuance of the GO is to be based. The correction factor ensures that the auxiliary power is deducted from gross production. Point C is placed after outputs for auxiliary power but before outputs for other electricity use, such as self-consumption. Therefore, if the installation measurement point is C, there is no need to make a deduction with a correction factor for auxiliary power. Point B of the figure applies only to pumped storage units, which are a very unusual type of installation.

Regardless of whether an installation receives a GO or a EECS-GO, the choice of measurement in NCNs presents an opportunity for more GOs to be sold to generate additional revenue. Alternatively, they can be cancelled by producers themselves if there is a need for origin labelling their own electricity use within the same NCN.

With a measurement point in an NCN, the electricity producer needs to bear the cost for the purchase and installation of an electricity meter and for ensuring that the measured values are reported to the Swedish Energy Agency via Ediel. Reporting via Ediel requires an IT system, which involves costs for the rapporteur. If electricity producers do not have a system for reporting/receiving via Ediel, they can appoint an agent for this purpose. When measuring at the connection point to the concessionary network, the network owners are required to measure and report measured values to the Swedish Energy Agency for installations receiving GOs ³.

Reporters in an NCN may be the network owner in the electricity producer's network area or another enterprise offering measurement and reporting services. Only electricity network operators are rapporteurs in concessionary networks.

The roles of the authorities

The Swedish Energy Agency is now both the accounting authority and the regulatory authority for the management of GOs. Previously, the Swedish Transmission System Operator was the accounting authority. The Swedish Energy Agency took over this role in 2015 and has since then been responsible for both the more service-oriented measures linked to the accounting system and the actual case management. This means, for example, examining applications for the issuance of GOs and supervising production installations that are already approved in the system.

The Swedish Energy Markets Inspectorate (Ei) is the supervisory authority for the origin labelling of electricity and, through supervision, verifies that the electricity trading enterprises comply with the rules on origin labelling vis-à-vis their customers.

2.1.2 Gas

Guarantees of origin for gas have not previously been issued in Sweden. GOs for gas come from the first revision of the Renewable Energy Directive, which gives producers of renewable gas, including hydrogen, the possibility to apply for the issuance of GOs. For gas, there are currently no requirements for origin labelling of gas via the GOs. Detailed rules on how to calculate net gas production and

³[SFS 1999:716](#), Section 9(1)(d).

what GOs for gas should contain are from standard EN 16325 referenced in Article 19. EN 16325 also contains specific rules for GOs for hydrogen.

AIB has developed common EECS rules for the issuance of GOs for gas before the new revision of EN 16325 is approved. The work aims to enable the transfer of gas GOs between different countries via the AIB data hub. Work is currently under way within the AIB to update the EECS rules for gas to bring them in line with EN 16325.

The implementation of GOs for gas have taken place at different times in other countries. This has led to complications for Swedish gas producers when exporting when the recipient country requires cancellation of GOs for gas, as they have not been able to have the GOs issued in Sweden for their production.

2.1.3 Heating and cooling

No GOs for heating or cooling have previously been issued in Sweden. There is no requirement for the origin labelling of heating or cooling and, thus, no requirement for any market operator to use GOs. The AIB has not developed common EECS rules for international trade in heating and cooling since heating and cooling is normally traded within local networks. In Sweden, GOs will be issued for heating and cooling of both fossil and renewable origin and for waste heat and waste cooling. Prices for GOs for heating and cooling will be placed on an open market and there are no established market prices yet.

District heating and cooling enterprises are currently required to disclose their energy mix to customers⁴, and to make available information on the share of renewable energy in the district heating or cooling system⁵. District heating and district cooling enterprises already have experience and procedures for calculating and sharing information on renewable values in their district heating and district cooling networks. GOs for heating and cooling allow enterprises to guarantee both the origin of the energy and that the renewable value has only been used once.

2.2 The electricity market

The following Section describes the electricity market and the main operators operating on the electricity market.

2.2.1 Structure of the electricity network

The Swedish electricity network can be roughly divided into two different types of networks: *concessionary networks*, such as transmission⁶, regional and local networks, and *non-concessionary networks* (NCN), such as internal networks.

⁴ EIFS 2022:3, Chapter 5, Section 3, and EIFS 2022:4, Chapter 5, Section 3.

⁵ EIFS 2022:3, Chapter 7, Section 1, and EIFS 2022:4, Chapter 7, Section 1.

Simply put, electricity producers transmit electricity through an input point to the concessionary network, which is then further transported via transmission, regional and local networks. Finally, the electricity is delivered to output points at end-users. In addition to the electricity fed into the concessionary network, an electricity producer, electricity user or an enterprise may have its own internal network consisting of one or more power lines. The internal network is referred to as an NCN and is used, inter alia, for the transmission of electricity for self-consumption or for the further distribution of electricity up to an input point into the concessionary network. Figure 3 illustrates the difference between non-concessionary networks and concessionary networks.

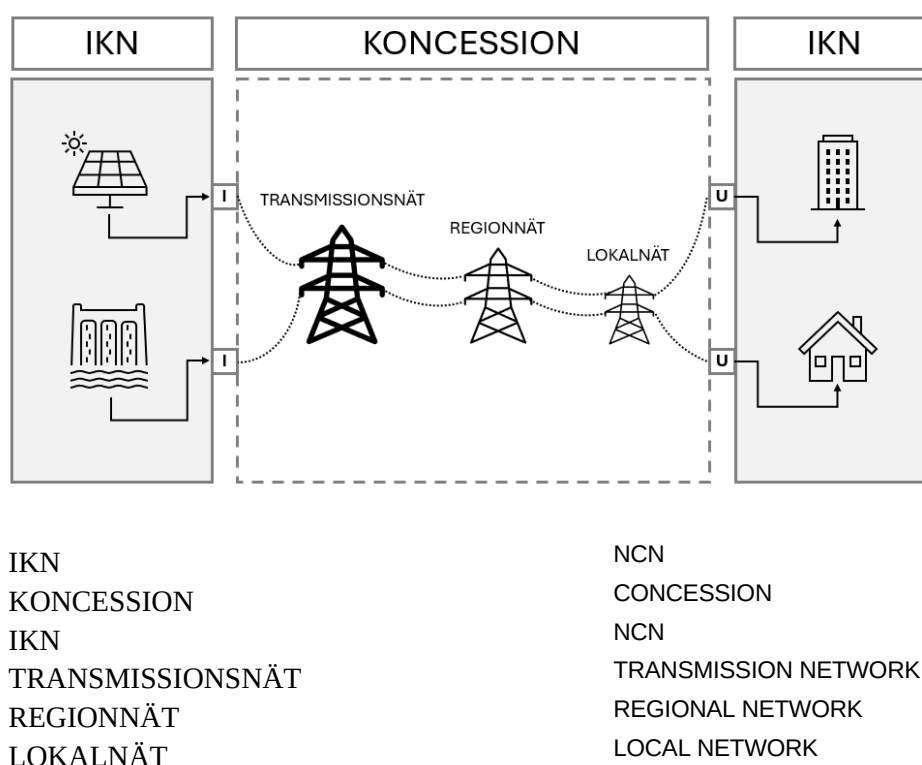


Figure 3: Difference between non-concessionary networks and concessionary networks and the relationship between them. In the picture, (I) stands for 'input point' and (U) stands for 'output point'. Example: The electricity producer produces electricity and may possibly use certain electricity for self-consumption within the non-concessionary network and feeds excess electricity into the input point to the transmission network. The electricity is transported, through regional networks, to local networks where end-users connect at an output point to the local network to consume electricity in non-concessionary networks (simplified example, there are also input points to regional and local networks).

⁶ Previously called 'core networks': The Swedish Transmission System Operator, Sweden's electricity network. The Swedish Transmission System Operator. <https://www.svk.se/om-kraftsystemet/oversikt-av-kraftsystemet/sveriges-elnat/> retrieved on 16/01/2025.

Different network types are subject to different rules. However, as a general rule, a permit, known as a network concession, is required for the construction and use of an electric power line. Some electricity lines are exempt from the requirement for a network concession and may be built without a licence; these are known as non-concessionary networks. The grounds for the Non-Concessionary Network Ordinance explain how the Ordinance is to be interpreted and specify three criteria for which lines should be covered by an exemption under the Ordinance. The first criterion is that it should be an internal network, the second criterion is that it should not be too widespread, and the third criterion is that it should be well defined⁷.

2.2.2 Electricity market participants

The different operators present in the electricity market are described below.

Electricity producers

Electricity producers are responsible for the production of electricity. These include large enterprises that use, for example, hydropower, wind power, solar power or nuclear power to produce electricity, and small enterprises or private individuals that produce solar electricity for their own consumption and supply the excess electricity to the electricity network.

Electricity network operators

Electricity network operators are the enterprises that own concessionary electricity networks, from transmission networks to regional and local networks. An electricity network operator is responsible for the transmission of electricity and has the exclusive right to transfer electricity in its network. The electricity network operator is also responsible for measuring the input to the electricity network (electricity production) and withdrawal from the network⁸ (electricity use). These measurement points are located in connection with the concessionary network and the measured values are used as the basis for charging costs from both the electricity network enterprise and the electricity supplier.

Electricity network operators are also obliged to report measured values for installations to which GOs are issued to the Swedish Energy Agency⁹. This obligation covers input points in connection with concessionary networks. Electricity network operators can also offer services such as measuring and reporting measured values to the Swedish Energy Agency in non-concessionary networks.

⁷ The Swedish Energy Markets Inspectorate, The Three Criteria, 2023, *the Energy Markets Inspectorate*. <https://ei.se/bransch/undantag-fran-kravet-pa-natkoncession-ikn/ikn---forordningen/de-tre-kriterierna-hamtad-2025-03-17>

⁸ [SFS 1999:716](#).

⁹ [SFS 1999:716](#), Section 9(1)(d).

Other rapporteurs of measured values

There are also other enterprises that offer measurement and reporting of measured values within non-concessionary networks for installations to which GOs are issued. Measured values are reported electronically via Ediel¹⁰, this is a standard for information exchange developed by the Swedish Transmission System Operator in cooperation with transmission system operators in other Nordic countries. In order to report the measured values, the operator must sign an Ediel-contract with the Swedish Transmission System Operator and be allocated an Ediel-ID. An IT system is also required in order to be able to report via Ediel.

Electricity trading enterprise

Electricity trading enterprises are the enterprises that conduct electricity trading in the electricity market, and sell the electricity to the end customer. Electricity trading enterprises offer a wide range of electricity trade agreements where the production of electricity comes from different energy sources. Unlike electricity network operators, which have a natural monopoly, electricity trading enterprises operate in a liberalised market with free competition.

Electricity Users

Households and enterprises are electricity users who, through the choice of contracts, can influence which energy source (e.g. from solar, wind and water) or which combination of sources (e.g. renewable or fossil-free) their electricity comes from. The Electricity Trading enterprise then needs to be able to certify the origin of the contracted electricity with cancelled GOs for the corresponding amount of electricity. Enterprises can sometimes be both electricity users and electricity producers. Paper and pulp mills are an example where a large part of the electricity produced is used by the same enterprise.

2.3 The gas market

Under the revised Renewable Energy Directive, producers have the right to have a GO issued for gas produced from renewable energy sources. There are gas networks for natural gas (composed mainly of methane) and biomethane (biogas purified to 97 % methane¹¹), while the other gases do not have networks and are distributed, for example, via a gas pipeline to a refuelling point or by truck.

2.3.1 Structure of the gas network

There is a gas network in Western Sweden that is interconnected with the European gas network and extends from Trelleborg in the south, northwards to Stenungssund and eastwards towards Jönköping. The network consists of about

¹⁰ EIFS 2023:1, Chapter 1, Section 5.

¹¹ The Swedish Gas Association, What is biogas?, 2023. *The Swedish Gas Association*. <https://www.energigas.se/fakta-om-gas/biogas/vad-ar-biogas/> retrieved on 16/07/2024.

600 kilometres of transmission line and about 3 300 kilometres of spur line. A few large users are connected directly to the transmission network. The transmission network transfers the natural gas to the distribution networks through measuring and regulator stations where the gas flow is measured and the pressure is reduced. The distribution networks transport the gas from the transmission network to industries and to regulator stations. In a regulator station, the pressure of the gas is further reduced before it is distributed to end customers (for example to 'stove customers', customers who exclusively use gas for household purposes, or to gas boilers for heating).

There is also an urban and vehicle gas network in the Stockholm area where Gasnätet Stockholm AB is the network operator¹².

In addition, there are some smaller local gas networks. The common feature of the gas network in Stockholm and the local gas networks is that they are not connected to any transmission network.

2.3.2 Gas market participants

Gas producers

Gas producers are responsible for the production of different gases, and the mode of production varies. Below, biogas and hydrogen are described; which according to the Swedish Energy Agency's assessment are the most requested gases for GOs.

Biogas can be produced by the digestion of waste, sewage sludge and other bio-waste, or by gasification of, for example, forest biomass. In order for the energy content to be increased and used as vehicle fuel (autogas) or fed into a gas network, the biogas is purified and consists, thereafter, of 97 % methane. Biogas production installations vary in size. Biogas can be produced at centralised installations collecting waste from an entire region or at on-farm installations of an individual farmer for local energy production.

The main share of hydrogen is produced through conversion from natural gas, but there are also fossil-free water alternatives using electricity in an electrolyser that splits water into hydrogen and oxygen using fossil-free electricity. Today, other gases are produced mainly by fossil fuels in Sweden, e.g., LPG (propane and butane), ethane and pentane¹³. These gases are not described in the Impact Assessment as it is only required for GOs to be issued for renewable gases to show the consumer which proportion of the energy consumed has been produced

¹² Gasnätet Stockholm AB, Gas market operators. *Gasnätet Stockholm AB*.

<https://www.gasnätetstockholm.se/gasaktorer/gasmarknadens-aktorer/> retrieved on 15/07/2024.

¹³ The Swedish Gas Association, Production and distribution, 2017. *The Swedish Gas Association*.

<https://www.energigas.se/fakta-om-gas/gasol/produktion-och-distribution/> retrieved on 31/10/2024.

in a renewable manner, even though there is no restriction on having GOs issued for fossil gases.

Gas network owners

Network owners for gas networks correspond to owners of gas transmission networks and in Sweden there is only the West Swedish gas network that is owned and operated by Swedegas AB.

Distribution enterprises are the owners and transmission system operators of distribution lines. Distribution means the transmission of gas through local or regional pipeline networks to customers¹⁴.

Gas suppliers

The term gas supplier refers to enterprises engaged in the trading of gas. Another commonly used term for the same operator is gas supply undertaking¹⁵.

Gas consumers

There are approximately 34 000 household customers and 4 800 business customers in the West Swedish natural gas network.¹⁶ Gasnätet Stockholm AB offers biogas contracts where consumers can purchase 100 % biogas. In this case, the supply undertaking guarantees that a sufficient quantity of biogas is fed into the system, so that it corresponds to the quantity consumed¹⁷.

Vehicle gas is used by passenger cars, vans, heavy lorries and buses¹⁸.

Hydrogen is mainly used by the industry within refineries¹⁹. The amounts in the steel industry and heavy transport industry are predicted to increase²⁰.

¹⁴ The Swedish Consumer Energy Markets Bureau, Gas networks and gas suppliers. *The Swedish Consumer Energy Markets Bureau*. <https://www.energimarknadsbyran.se/gas/gasmarknaden-i-sverige/gasnat-och-gasleverantorer/> retrieved on 30/10/2024.

¹⁵ The Swedish Gas Association, Gas Market Handbook: Procedures and information structure for trading and settlement in the Western Sweden Gas System, 2022. *The Swedish Gas Association*. https://www.energigas.se/media/wthhz4yn/gasmarknadshandboken-2022_2.pdf retrieved on 30/10/2024.

¹⁶ The Swedish Energy Markets Inspectorate, Impact assessment of the Swedish Energy Markets Inspectorate's regulations and general advice on the measuring, calculation and reporting of transferred natural gas and on the declaration of transferred natural gas and balance responsibility, 2022. *The Swedish Energy Markets Inspectorate*. <https://ei.se/om-oss/publikationer/publikationer/foreskrifter-gas/2022/foreskrift-eifs-20226> (retrieved 21/01/2025).

¹⁷ Gasnätet Stockholm AB, Customer service. *Gasnätet Stockholm AB*. <https://www.gasnätetstockholm.se/kundservice/#hur-kan-jag-kopa-100-biogas-av-mitt-gashandelsbolag-nar-gasnatet-aven-innehaller-naturgas> (retrieved 15/07/2024).

¹⁸ The Swedish Gas Association, Statistics on vehicle gas, 2024. *The Swedish Gas Association*. <https://www.energigas.se/fakta-om-gas/fordonsgas-och-gasbilar/statistik-om-fordonsgas/> (retrieved 16/07/2024).

¹⁹ Hydrogen Sweden, Hydrogen in industries - refineries. *Hydrogen Sweden*. <https://vatgas.se/vatgas-i-industrin-raffinaderier/> (retrieved 16/07/2024).

2.4 The heating and cooling markets

The following Section describes the heating and cooling markets and their operators.

2.4.1 The heating market

The heating market is a substantial part of the Swedish energy market and covers almost 100 TWh every year. The market has largely shifted from fossil energy sources to renewable energy sources. Where district heating is not profitable, heating is mainly provided by heat pumps using almost entirely fossil-free electricity. District heating accounts for about half of the heating in homes and services and is currently available in 285 of Sweden's 290 municipalities.²¹

In 2022, biofuels accounted for 66 %, waste heat for 9 %, heat pumps for 7 % and other fuels for 15 % of the energy input in district heating production. Overall, the total energy input amounts to 60.6 TWh.²² In several Swedish cities, the heat from waste incineration²³ is the basis for district heating, amounting to almost 20 TWh in 2021.

The district heating network structure

District heating networks in Sweden are generally local or regional and are not interconnected in the same way electricity networks are. This means that heat cannot be transferred from one district heating network to another. Networks can be of different sizes, from networks covering only a few properties to networks covering entire city districts or urban areas. Smaller district heating networks are also called block heating. District heating has economies of scale that are characteristic of a natural monopoly, which means that in most cases it is only profitable to have one district heating pipe system per distribution area.

Electricity market operators

The different operators present in the heating market are described below.

²⁰ The Swedish Energy Agency, Hydrogen for energy and climate transition, Swedish Energy Agency, 2024, https://www.energimyndigheten.se/4ad777/globalassets/klimat--miljo/elektrifiering/vatgas/slutrappport-vatgas-for-energi--och-klimatomstallning-pdf.pdf?_t_id=U0oYhNSwvScsDIxxGtmy1w%3D%3D&_t_uuid=Fjrtut21DRg-0JxSATA4HhQ&_t_q=energy+in+sweden+20&_t_tags=language%3Aen%2Candquerymatch&_t_hit.id=Energimyndigheten_Content_Media_CustomFile/113929df-eda2-40af-8625-426c0cb35a34&_t_hit.pos=16 (retrieved 21/01/2025)

²¹ Proposal for a district heating strategy. Interim report on the assignment Proposal for a strategy for the long-term sustainable development of the district heating and cogeneration sector and report on sub-assignment 5 Mapping the potential of existing and unutilised electricity production in the Assignment to strengthen security of supply in the energy sector, ER 2023:14, p. 19.

²² The Swedish Energy Agency, Energy supplied for district heating production from 1970 onwards, TWh. The Swedish Energy Agency's statistical database. https://pxexternal.energimyndigheten.se/pxweb/sv/Energimyndighetens_statistikdatabas/Energimyndighetens_statistikdatabas_Officiell_energistatistik_Arlig_energibalans_El_och_fjarrrva_rmeproduktion/EN0202_27.px/ (retrieved 20/01/2025).

²³ Waste incineration is included in the entries for biofuels and other fuels.

Heat producers

In 2022, 49 985 GWh²⁴ of district heating was produced by 171 enterprises²⁵. The vast majority of enterprises operating in the district heating sector do so in an integrated manner, i.e., production, distribution and trading take place within the same enterprise. Approximately 65 % of the district heating networks are operated by municipal enterprises. The remainder is operated by private or state-owned energy groups or within municipal administrations²⁶. There are also cases where district heating enterprises are co-owned by different types of operators.

Some district heating networks also receive waste heat produced by, e.g., industries, supermarkets and data centres²⁷. In addition to producers that produce district heating or supply waste heat to district heating networks, there is also heat production with, for example, heat pumps and boilers.

Heat consumers

Heat is consumed by all kinds of operators in the community. At the end of 2023, there were a total of 268 425 district heating delivery points in Sweden, divided across 261 001 consumers.²⁸

2.4.2 The market for cooling

District cooling is distributed in the same way as district heating. However, the production of district cooling is not necessarily based on incineration, unlike district heating. District cooling can be produced in several ways: by heat pump, free cooling from the sea or lakes, cooling machines or absorption cooling. The production of district cooling has only indirect emissions from electricity use and possible heat use.²⁹

Structure of district cooling networks

In 2023, there were up to 545 km of district cooling lines in Sweden.³⁰ District cooling, like district heating, has the economies of scale of a natural monopoly,

²⁴ The Swedish Energy Markets Inspectorate, Production per price area technical data - district heating. *Technical data - district heating*. <https://ei.se/om-oss/statistik-och-oppna-data/tekniska-uppgifter---fjarrvarme> (retrieved 20/01/2025).

²⁵ Based on total heat input excluding total waste heat.

²⁶ *Impact assessment of the Swedish Energy Markets Inspectorate's regulations and general guidelines on measuring, invoicing and provision of information on supplied thermal energy (district heating)*, case number 2021-102154, p. 4.

²⁷ Swedenergy, District heating production. 2023. <https://www.energiforetagen.se/energifakta/fjarrvarme/fjarrvarmeproduktion/> (retrieved 20/01/2025)

²⁸ The Swedish Energy Markets Inspectorate, Technical data on delivered heat per price area — district heating. *Technical data - district heating*. <https://ei.se/om-oss/statistik-och-oppna-data/tekniska-uppgifter---fjarrvarme> (retrieved 20/01/2025).

²⁹ Swedenergy, District cooling statistics. 2023. <https://www.energiforetagen.se/statistik/fjarrkylestatistik/> (retrieved 11/11/2024).

³⁰ Swedenergy, District cooling statistics. 2023. <https://www.energiforetagen.se/statistik/fjarrkylestatistik/> (retrieved 11/11/2024).

which means that in most cases it is only profitable to have one district cooling pipeline per distribution area.³¹

Operators in the market for cooling

The different operators present in the market for cooling are described below.

Cooling producers

In 2023, there were 40 enterprises supplying district cooling.³² In 2020, all of these enterprises were also active in district heating. The vast majority of enterprises engaged in district cooling activities do so in an integrated manner, i.e., production, distribution and trading take place within the same enterprise.³³

Cooling consumers

District cooling is in demand both as comfort cooling, i.e., to keep premises such as shopping centres, offices or hospitals cool and comfortable for people to stay in, and as process chilling, which is used to cool, for example, data centres or industrial processes³⁴. In 2023, 1 007 GWh of district cooling was delivered to 2 440 delivery points. Around 40 % of district cooling deliveries are to office buildings and commercial premises, which are the largest customer group.³⁵

3 Problem and objective

On 20 June 2024, the Swedish Energy Agency was commissioned by the Government to start work on updating the regulations on Guarantees of Origin for Electricity to bring them into line with Article 19 of the revised Renewable Energy Directive.³⁶ It follows from the mandate that Sweden's system for the GO must comply with the provisions of the revised Renewable Energy Directive. The Swedish system shall, as far as possible, conform to the corresponding system in other Member States and offer easy operation to market participants. Furthermore, it is clear from the mandate that coordination with other Member States requires a detailed regulatory framework and that parts of that framework are best placed in regulations issued by the Swedish Energy Agency. In parallel

³¹ Impact assessment of the Swedish Energy Markets Inspectorate's regulations and general guidelines on measuring, billing and the provision of information on removed thermal energy (district cooling), case number 2021-102155.

³² Swedenergy, District cooling statistics. 2023.

<https://www.energiforetagen.se/statistik/fjarrkylestatistik/> (retrieved 15/11/2024).

³³ Impact assessment regarding the Swedish Energy Markets Inspectorate's regulations and general guidelines on measuring, invoicing and provision of information on removed thermal energy (district cooling), case number 2021-102155.

³⁴ Stockholm Exergi, Facts about us. <https://www.stockholmexergi.se/om-stockholm-exergi/varma-fakta-om-stockholm-exergi/> (retrieved 15/11/2024).

³⁵ Swedenergy, District cooling statistics. 2023.

<https://www.energiforetagen.se/statistik/fjarrkylestatistik/> (retrieved 15/11/2024). <https://www.energiforetagen.se/statistik/fjarrkylestatistik/>

³⁶ Government Decision 20/06/2024 (KN2024/01377), Mandate to prepare documentation for the implementation of parts of the revised Renewable Energy Directive.

with this work, the Government is developing a new Ordinance (2025:000) on Guarantees of Origin for Energy.

Article 19(6) of the Renewable Energy Directive refers to EN 16325, which is a comprehensive document that aims to harmonise in detail the GO legislation of the Member States. The development of EN 16325 has been delayed, but a revised version of the standard passed the final vote in March 2025. It is in particular this standard that underpins the new regulations relating to the GO for energy. Since EN 16325 contains specific technical requirements, it is most appropriate that most of the Swedish rules aimed at transposing EN 16325 are implemented at the level of regulations rather than by law or ordinance.

The new regulations aim to give gas, heating and cooling producers the opportunity to obtain GO, as well as to adjust the existing regulatory framework to prevent tradable GOs from being issued for energy, in particular electricity, which the producer has used for its own operations (self-consumption). The regulations shall also ensure that GOs are not issued for auxiliary power (in the case of electricity) or auxiliary energy (in the case of gas and heat/cooling) where this is not permitted in accordance with EN 16325.

Since the new regulations are comprehensive, in terms of both the number of new provisions and adjustment of existing rules, transitional rules are required in order to facilitate a smooth transition to the new regulatory framework. This ensures that the operators concerned have sufficient time to adapt to the changes introduced and to minimise the risk of legal uncertainties arising during the transition period. The transitional rules allow the existing GO market not to be disrupted beyond what is strictly necessary. These rules should be introduced at ordinance level.

3.1 The baseline scenario

The new regulations are necessary for Sweden to fulfil its obligations under Union law. The EU has legislative primacy in the field of energy, which means that Sweden is obliged, in accordance with the principle of sincere cooperation, to ensure that EU law is correctly implemented in its national legal order. Should Sweden fail to transpose binding EU law, the European Commission may bring an action for failure to fulfil obligations before the Court of Justice of the European Union under Article 258 of the Treaty on the Functioning of the European Union (TFEU).

There is also a risk that Sweden would be liable for damages under the so-called Francovich principle, if individuals or enterprises suffer damage due to non-transposition or incorrect transposition of EU directives.

A baseline scenario could also lead to continued barriers to trade, such as the export stoppage of Swedish-issued EECS-GOs to the Flemish Region in Belgium.³⁷ There is also a risk that more AIB members will introduce similar suspensions of imports on Swedish-issued EECS-GOs. Such a restriction of the market would in turn affect the ability of Swedish operators to export such GOs and thus affect their economic situation.

From a strictly national perspective, the baseline scenario means that the Swedish Energy Agency does not use the regulatory right that follows from the Ordinance (2025:000) on Guarantees of Origin for Energy. The result would be that the new regulations would not be added, to the detriment of energy producers in particular.

To summarise, the baseline scenario means that Sweden would be in breach of EU law and risk being exposed to both legal and economic consequences. Therefore, it is necessary that the Swedish Energy Agency, in accordance with the national authorisation rules, drafts the new regulations to ensure that Swedish legislation is in line with the revised Renewable Energy Directive. The legal conditions for implementing the new regulations are set out in Chapter 6.

4 Description of the proposal

This chapter presents the Swedish Energy Agency's proposal for new Regulations (2025:00) on Guarantees of Origin for Energy. The consequences of the proposals are briefly covered in this chapter, but are investigated in more detail in Chapters 7 to 9 on economic, environmental and social impacts, respectively.

4.1 The new regulations

Since more types of energy are added to the GO system as a result of the new regulations, the title of the regulations needs to be amended. The Government will amend the title of the Act on Guarantees of Origin for *Electricity* to the Act on Guarantees of Origin for *Energy*. It is therefore proposed to change the name of the regulations to the Swedish Energy Agency's Regulations on Guarantees of Origin for Energy. Several editorial amendments have been made, as the new regulations include both electricity, gas, heating and cooling, and this means that headings, paragraph numbers and paragraph references are affected. The editorial amendments also include references to updated regulations³⁸. In a more material respect, the following amendments are proposed.

³⁷ See also Section 5.1.1 (self-consumption) of this impact assessment.

³⁸ The sections covered by editorial amendments are Sections 14, 22, 29, 31, 32, and 36.

Section 3 Net production of electricity, gas, heating and cooling

According to EN 16325, GOs should only be issued for net production. Section 3-5 contain information on what is meant by net production for electricity, gas, heating and cooling.

Table 1. Draft on net electricity production

Current provision	New wording
Section 3. Net electricity production pursuant to Section 5a of the Ordinance (2010:853) on Guarantees of Origin for Electricity is electricity produced, measured at a point located after electricity consumption for the production of electricity in the installation and after any electricity consumption for pumped storage. If electricity reported under this regulation does not constitute net electricity production within the meaning of the first subparagraph, ‘net electricity production’ shall mean reported electricity adjusted by the Swedish Energy Agency by a correction factor specified by the producer.	Section 3. Net electricity production is the electricity produced, measured at a point placed after output of auxiliary power and losses in transformers. If electricity reported under this regulation does not constitute net electricity production within the meaning of the first subparagraph, ‘net electricity production’ shall mean reported electricity adjusted by the Swedish Energy Agency by a correction factor. How the correction factor is to be determined is set out in Section 6.

The explanation of net electricity production in Section 3 is simplified in the regulations by deleting reference to the authorisation in the Ordinance. Furthermore, deductions shall continue to be made for electricity consumption for the production of electricity in the installation, and the amended wording to refer to it as auxiliary power does not change anything in substance. In addition, the statement is supplemented with information that losses in transformers are not to be included in net electricity production. This addition is based on the description of auxiliary power according to EN 16325. The amendment is deemed not to have any consequences.

Previously, the deduction of auxiliary power has only been a requirement for EECs-GOs and high-efficiency cogeneration, but now the requirement to deduct auxiliary power is applicable irrespective of the type of guarantee of origin. This is the result of an amendment to the Ordinance. The handling of pumped storage

has been moved to the part of the regulations relating to energy stocks in Section 35.

Table 2. Draft on net gas production

New wording
Section 4. Net gas production is the gross production of gas minus auxiliary energy and losses within the installation. Net gas production is calculated based on the volume or mass of the gas, at standard pressure and temperature, and then multiplied by the gross calorific value to convert it into energy.

According to EN 16325, GOs for gas may only be issued for net gas production. The proposal is that net gas production is defined in these regulations as the gross production of gas less auxiliary energy and losses within the installation. Exceptions for when deductions for auxiliary energy for gas are not necessary are described in Section 7 of the regulations.

According to Section 34 of the regulations, net gas production must be reported as megawatt hours to the Swedish Energy Agency. This is done by measuring the volume or mass of the gas produced, converting it to standard gas pressure and temperature (temperature of 0 degrees Celsius and pressure of 101.325 kPa) and multiplying it by the gross calorific value. The producers will then obtain a value for their net gas production during the period in MWh and will have the possibility to report it in the accounting system in order to have GOs for gas issued. According to EN 16325, only the gross calorific value may be used in the calculation of net gas production in order for the calculation to be consistent for all operators.

The change will impact operators applying for the issuance of GOs. They will need production measurement, which is a new requirement for gas producers. In some cases, the producer may need to purchase a new metering device, which implies an economic investment. The change also gives rise to a review of administrative procedures for the reporting of measured values.

Table 3. Draft on net heating production and net cooling production

New wording
Section 5. Net heating production and net cooling production are gross heating and cooling production, respectively, minus auxiliary energy, self-consumption and losses within the installation.

The proposed wording of the regulation in Section 5 means that net heating production and net cooling production are defined as the gross production of heat and cooling, respectively, less auxiliary energy, self-consumption and losses within the installation. This means that it is for this part of the production that the heating or cooling GOs will be issued.

One impacts of the wording is that producers who produce heating or cooling for self-consumption only will not be able to have GOs issued and that producers partly self-consuming the heat will not have to declare the percentage of self-consumption every month. The requirement acts as an indirect distribution requirement as only the heat distributed from the production installation will be eligible for GOs. Furthermore, the proposed wording has the effect that producers may need to be able to measure or calculate the auxiliary energy, self-consumption and losses within the installation in order to determine the net heat or net cooling production amount. Whether a manual calculation is required depends on the location of existing meters in the installation and is likely to be time consuming for producers.

Section 6 Correction factor for electricity

The correction factor for electricity addresses deductions for electricity used for the production of electricity, so-called auxiliary power, for which GOs may not be issued, according to EN 16325.

Table 4. Draft on a correction factor for electricity and how this is to be calculated

Current provision	New wording
Section 4. The correction factor for net electricity production shall be calculated taking into account the electricity consumption of the generating installation's auxiliary systems, the consumption of any pumping in pumped storage units and the losses in the installation's transformers. The calculation shall be carried out by an independent operator not connected to the operator. The correction factor shall be expressed as the percentage of reported electricity corresponding to net electricity generation.	Section 6. The correction factor for net electricity production shall be calculated taking into account the consumption in the installation's auxiliary system and losses in the installation's transformers. The calculation shall be carried out by an independent and autonomous operator in relation to the producer. The correction factor shall be expressed as the percentage of reported electricity corresponding to net electricity generation. Where a correction factor has been calculated, the producer shall attach a verification report to the application stating:

For an installation with an installed power of less than 10 MW, a producer may choose to not calculate in accordance with the first sub-paragraph. Then, the correction factor is set at 97 % of reported electricity produced from wind, solar or hydro power, or 90 % of reported electricity for other electricity production. Section 9. In an application for the issuance of EECS-GOs for the production of electricity in an installation, the producer shall indicate at which point in the installation the reported electricity is measured and any correction factor calculated pursuant to Section 4. Where a correction factor has been calculated, the producer shall attach a verification report to the application stating: 1. the technical competence of the independent party that performed or verified the calculation; 2. the methodology used for the calculation, including assumptions and measurements; and 3. how the final correction factor was determined.	a) the technical competence of the independent party that performed or verified the calculation; b) how the final correction factor was determined; and c) the measurements, measured values and any assumptions included in the determination of the correction factor. For an installation with a production capacity of less than 10 MW, a producer may choose not to calculate in accordance with the first sub-paragraph. Then, the correction factor is set at 97 % of reported electricity produced from wind, solar or hydro power, or 90 % of reported electricity for other electricity production.
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In Section 7 of the new Ordinance (2025:000) on Guarantees of Origin for Energy, the Government has proposed changes regarding net production, so that the correction factor shall also apply to GOs and no longer solely to the EECS-GOs. Therefore, all producers with metering located within an NCN are affected by the new Section 6 of the Regulations. Section 9 is removed as it only applies to EECS-GOs.

In the existing management of EECS-GOs and high-efficiency cogeneration, there are two approaches to fulfil the requirement to deduct auxiliary power with a correction factor, calculation by an independent operator or standardised deduction. The option that can be used depends on the size of the facility. In line with the Government's proposal, the Swedish Energy Agency proposes that the same two approaches be applied to installations with metering in NCNs receiving GO, which after the change will need a correction factor for the deduction of auxiliary power. Uniform management of GOs and EECS-GOs is preferable in order to facilitate implementation for both electricity producers and the Swedish Energy Agency.

For most installations, the option of using standardised values will be possible. However, the requirement to calculate the correction factor and submit the associated verification report will affect around 50 installations, which will incur an additional cost. A correction factor also means that producers will receive fewer GOs than before, leading to economic impacts.

The wording on pumped storage in the first sub-paragraph is proposed to be removed as the information is misleading, as any pumped storage in pump power units is not deducted using the correction factor. Instead, the deduction requires a more detailed declaration of what proportion of electricity production comes from natural water flow versus what comes from water previously pumped up to higher levels. That which is applicable to pumped storage units is instead clarified in Section 35. The deletion in Section 6 does not entail any practical change, as pumped storage is already handled today by means of a so-called unit declaration for the few authorised installations in the GO system. However, what applies to any pumped storage producers that may apply for GOs in the future will be clearer.

In addition, it is proposed to clarify in the first sub-paragraph what is meant by an independent and autonomous operator, that it should be independent and autonomous from the producer.

The contents of the second sub-paragraph of Section 6 has been moved from Section 9 of the existing regulations, but the second and third sub-paragraphs of the requirements for the verification report have switched places. In addition, the now proposed third paragraph has been clarified to make it clear that it relates to the underlying variables for the determination of the correction factor. The context of the amendment is to provide greater clarity on the reporting requirements and is deemed to facilitate the understanding for those needing to produce a verification report, which, with the proposal for the amendment of the Ordinance, will affect more.

In the third sub-paragraph, the designation ‘installed power’ is changed to ‘production capacity’ in order for the same term to be used in the update of both the Ordinance and the Regulations. What is meant by production capacity is defined in the new Section 2 of the Regulations but has the same meaning as the currently used concept of ‘installed power’. The adjustment to use the concept of production capacity is made throughout the regulation but is not explained further in connection with the following sub-paragraph descriptions. ‘Vindkraft, solkraft eller vattenkraft’ [wind, solar or hydro power] in the current provision has been shortened to ‘vind-, sol- eller vattenkraft’ [wind, solar or hydro power] in the new proposal, which is only an editorial change without any impact.

Section 7. Auxiliary energy for gas

Table 5. Draft on when auxiliary energy for gas does not need to be deducted from the net gas production

New wording
Section 7. When calculating net gas production, it is possible to derogate from the requirement to deduct auxiliary energy if one of the following criteria is met: a) The auxiliary energy is renewable and of a different type than the energy produced and has been produced within the installation, and no guarantees of origin have been issued for this energy. b) The auxiliary energy is renewable and of a type other than the energy produced and purchased from a supplier that has cancelled guarantees of origin, which shall be contractually substantiated. c) The auxiliary energy is necessary for waste treatment. d) The auxiliary energy is used in the production of gas through the digestion of biogenic materials. e) The auxiliary energy is used for the compression or liquefaction of gas for transport.

According to EN 16325, GOs for gas may only be issued for net gas production where auxiliary energy and losses need to be deducted before issuance. However, there are several exceptions in EN 16325 that allow for it to not be necessary to make deductions if certain criteria are met. If the auxiliary energy is renewable and produced at the installation and no GOs have been issued for that energy. Alternatively, if the renewable energy is purchased from a supplier, it must be supported by a contract and the supplier needs to cancel the GOs. Auxiliary energy necessary for waste treatment does not need to be deducted when calculating net gas production.

Furthermore, it is possible to make deductions for all auxiliary energy used in the production of gas by digestion of biogenic material. The auxiliary energy used for liquefaction or compression of gas for transport does not need to be deducted in the calculation either.

The requirement for the issuance of GOs for net gas production is based on the premise that GOs should be issued for the energy available to the market. It becomes more complex as there are more types of energy within the GO system since there is also a requirement under Article 19 of RED III to avoid double counting. This led to the introduction into EN 16325 of some exemptions from when auxiliary energy needs to be deducted. For example, the deduction for auxiliary energy in waste treatment is a way to ensure that it is possible to get GOs issued for the production of biogas from sewage sludge. As this is a very energy-intensive process, the amount of GOs issued would be very few if it is not possible to use the deduction. It was also considered relevant that the treatment is necessary to manage the waste.

The reason why there is an exemption for the deduction of all auxiliary energy for gas if it is produced by anaerobic digestion of biogenic material is due to the fact that there was a long discussion during the work on EN 16325 on how gas production was to be calculated. Some participants felt that it was important that double counting from other types of energy was rewarded, while others felt that it would be negative for the gas market if the number of GOs for gas issued was always less than the gas delivered to the market. The solution was a compromise where it is possible to deduct auxiliary energy for gas, but only if the gas is produced through the digestion of biogenic material. According to EN 16325, it is also voluntary to introduce the deduction, but the Swedish Energy Agency considers that it is reasonable for Swedish gas producers to use the deduction as this results in more GOs being issued for biogas when there is no need to deduct auxiliary energy, and that the administrative burden is reduced for producers as they do not have to calculate the amount of auxiliary energy when reporting net gas production.

Section 8. Auxiliary energy for heating and cooling

Table 6. Draft on when auxiliary energy for heating or cooling does not need to be deducted from net heat production or net cooling production

New wording
Section 8. When calculating net production for heating and cooling, it is possible to derogate from the requirement to deduct auxiliary energy if the auxiliary energy is of a different type than that produced in the installation and if one of the following criteria is met: a) The auxiliary energy is renewable and has been produced within the installation and no guarantees of origin have been issued for this energy. b) The auxiliary energy is renewable and purchased from a supplier that has cancelled guarantees of origin, which shall be contractually substantiated. c) The auxiliary energy is necessary for waste treatment. d) The total auxiliary energy does not exceed 2 % of net heat production or net cooling production.

The draft means that auxiliary energy need not be deducted from net heat or net cooling production in all cases. The derogations come from EN 16325 and apply when the auxiliary energy is of energy other than that produced in the installation. This could be, for example, auxiliary energy from electricity produced with own solar cells, provided that no GO is issued for this electricity, purchased renewable electricity or if the total auxiliary energy amounts to a maximum of 2 per cent of the net production.

The derogations from the deduction for auxiliary energy are voluntary for producers and allow producers to have more GOs issued than they would otherwise have. If these derogations are used, the producer must calculate or ensure that any of the criteria in Section 8 is met and can be substantiated before measured values are submitted to the Swedish Energy Agency. This means that the producer who has applied needs to determine whether the benefit of the derogation from the deduction for auxiliary energy exceeds the possible time cost of making calculations or producing documentation that supports the right to utilise the derogation. On the other hand, the derogations may also entail a certain simplification for producers as, when using certain derogations, they do not need to spend time measuring or calculating and deduct the auxiliary energy from net heat or net cooling production.

Section 9. How to submit an application to the Swedish Energy Agency

Table 7. Draft on how to submit an application to the Swedish Energy Agency

Current provision	New wording
Section 5. An application for the issuance of guarantees of origin for electricity shall be submitted to the Swedish Energy Agency and be signed by an authorised representative of the electricity producer. The application shall specify for which installation the electricity production GOs are to be issued.	Section 9. An application for the issuance of guarantees of origin for electricity, gas, heating or cooling shall be submitted to the Swedish Energy Agency and be signed by an authorised representative of the producer.

The proposal in Section 9 means that producers of electricity, gas, heating and cooling are entitled to apply for the issuance of GOs. Previous requirements only applied to electricity, and it is therefore proposed that ‘producer of electricity’ be replaced by the generic ‘producer’. The consequence will be that more producers will have the opportunity to apply for GOs. The Swedish Energy Agency shall handle the applications and prepare IT systems to accommodate all new producers and types of energy.

Section 10. Production of more than one type of energy

Table 8. Draft for installations that can produce more than one type of energy

New wording
Section 10. If an installation can produce several types of energy, an application needs to be made for each type of energy for which the producer wishes to have guarantees of origin issued.

The Section 10 draft means that if a production installation can produce several different types of energy, such as a cogeneration plant that produces both electricity and heat, the producer needs to draw up different GO applications, one for each type of energy for which the producer wishes to obtain GOs. In practice, each type of energy is produced in separate units, and measurement also takes place separately. This means that information on the production of each type of energy needs to be specified in the application to the Swedish Energy Agency. Separate applications are expected to provide greater clarity for both applicants and for the Swedish Energy Agency.

Section 11. Information to be included in an application for the issuance of guarantees of origin for electricity, gas, heating and cooling

Table 9. Draft of information to be included in the application for the issuance of guarantees of origin for electricity

New wording
Section 11. When applying for the issuance of guarantees of origin for electricity, the producer shall submit one or more of the following items of information on the installation to the Swedish Energy Agency upon request, for example in a flow diagram: a) information on flows of other types of energy; b) transformer stations; c) connection point to the concessionary network; d) auxiliary power; e) import and export meters for electricity; f) energy stocks; or g) self-consumption of electricity within the production installation.

The proposed wording of Section 11 means that the producer applying must, on request, submit one or more pieces of information about an installation, for example in the form of flow and single line diagrams. The change is due to the increased complexity of today's production installations in combination with the new requirements of the standard, as well as the need to ensure reliability and acceptance of the Swedish management of GOs for self-consumed electricity. The change is necessary to ensure that GOs are only issued for net electricity production and to ensure that self-consumed electricity can be reliably managed. The handling of self-consumed electricity is described in more detail in Section 34.

The information may, in particular, be required from producers who indicate that they have energy stocks within the same NCNs as the production installation. However, single line diagrams may also be needed to ensure correct measurement in relation to the issues of auxiliary power and self-consumption. If the Swedish Energy Agency requests the information, this may involve administrative costs for the producer.

Table 10. Draft of information to be included in the application for the issuance of guarantees of origin for gas

New wording
Section 12. When applying for the issuance of guarantees of origin for gas, the

following information on the installation, if available, shall be attached to the application and marked in a flow diagram:

- a) information on flows of other types of energy;
- b) the connection point to the gas network or where the gas becomes available for trading;
- c) auxiliary energy;
- d) import and export meters for gas;
- e) energy stocks; and
- f) self-consumption of gas within the installation.

If hydrogen is produced in the installation, markings shall also be made in the flow diagram showing any compression system, purification system and liquefaction system.

A report by an independent operator who has carried out an on-site inspection of the installation shall be attached when an application is made for the issuance of guarantees of origin for gas. The report shall not be more than four years old.

The report does not need to be attached if the producer instead attaches one of the following to the application:

- a) environmental permits issued by the County Administrative Board in accordance with Chapter 21, Sections 2, 4 or 5 of the Environmental Assessment Ordinance (2013:251); or
- b) notification to the municipality under Chapter 21, Sections 3 or 6 of the Environmental Assessment Ordinance if installations are not subject to environmental permit requirements.

When applying for the issuance of GOs for gas, it is mandatory to attach to the application a flow diagram with details of the installation. Further information on any compression system, purification system or liquefaction system is necessary to attach if the installation produces hydrogen. The requirement comes from EN 16325 and aims to ensure that the issuing authority has sufficient information to process the application and, during inspection, is able to assess the reported net gas production. The reason why it says 'provided they exist' is because connection points to gas networks, energy stocks and self-consumption do not always exist at gas installations. This also applies to the additional information applicable to hydrogen. Import/export meters specified for gas are to clarify that it applies to gas meters and not to electricity, heat, or cooling meters.

According to EN 16325, it is a requirement that organisations applying for the issuance of GOs need to carry out an on-site inspection by an independent auditor before approval. According to EN 16325, it is possible to waive this requirement for on-site inspection if an inspection of gas producing installation is performed in a national context.

In Sweden, there is already an inspection of gas installations in other areas of legislation. In order to avoid cost-driving measures for producers and reduce administration within the GO system, the Swedish Energy Agency has made the assessment that an on-site inspection of the installation is not necessary if the producer attaches to the application: a certificate of environmental permit from the County Administrative Board or a notification of the gas production to the municipality.

The proposal also means that gas installation operators must either attach a certificate of environmental authorisation from the County Administrative Board, or a notification of the gas production to the municipality.

Table 11. Draft of information to be included in the application for the issuance of guarantees of origin for heating or cooling

New wording
Section 13. When applying for the issuance of guarantees of origin for heating or cooling, the following information on the installation, if available, shall be attached to the application , and marked in a flow diagram: a) information on flows of other types of energy; b) connection point to heating or cooling networks; c) auxiliary energy; d) import and export meters for heating or cooling, e) energy stocks; and f) self-consumption of heating or cooling within the installation. The producer shall state in the application that the measurement and/or calculation of net heat production or net cooling production is carried out in accordance with Section 5 and also refer to measurement and/or calculation points in the flow diagram.

The Section 13 draft is based on EN 16325, which requires that a flow diagram containing information on the installation be attached to the application. In connection with the application, the producer must also explain how the net heat or net cooling production is calculated and/or measured, and refer to the points in the flow diagram in accordance with Section 13 so that the Swedish Energy

Agency can process the application and assess whether the reported net heat and net cooling production is correct. The proposal has a economic impact for operators who need to spend time preparing flow diagrams. Some producers probably already have a flow diagram developed and used in other contexts, but these may need to be adapted to comply with the provisions of Section 13. The time it takes will vary between operators and depends, among other things, on the complexity of the installation. The Swedish Energy Agency will also have to spend time on reviewing the flow diagram together with the application and possibly requesting consultancy assistance for technical assistance.

Section 15. Additional installation information to be included in the application

Table 12. Draft of additional information on the installation to be included in the application for the issuance of guarantees of origin

Current provision	New wording
Section 7. The application shall contain the following information about the plant covered by the application: a) name of the installation; b) cadastral designation, postal code and location of the property where the installation is located. If this information is missing, coordinates may be given instead. Coordinates may be specified in SWEREF 99 TM or as latitude and longitude in SWEREF 99/WGS 84; c) the estimated normal year production; d) network area ID; e) installation ID for electricity production; f) network owner or other enterprise reporting measured values; g) the EDIEL ID of the measured value reporting enterprise; h) specification as to whether	Section 15. The application shall contain the following information about the plant covered by the application: a) name of the installation; b) cadastral designation, postal code and location of the property where the installation is located. If this information is missing, coordinates may be given instead. Coordinates may be specified in SWEREF 99 TM or as latitude and longitude in SWEREF 99/WGS 84; c) production capacity expressed in kW; d) the estimated normal year production; e) date of commissioning; f) network owner or other enterprise that reports measured values;

generation is measured every 15 minutes; i) specification as to whether generation is reported at a connection point to a concessionary network; and j) the date of receipt of investment aid and the amount of the aid in the case that k) such aid has been granted to the installation. For installations reporting generation from a measurement point into a non-concessionary network, the abbreviation 'IKN' [NCN] shall be indicated instead of the network area ID referred to in Point (d) of the first sub-paragraph.	g) whether the installation has received investment aid and the type of aid; and h) if the establishment receives production aid and the nature of the aid.
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There has been a change from the current provision with the addition of several types of energy, so data in the application has been divided into a generic part and one relating to the specific type of energy. For this reason, Section 7 of the current provision is divided into Sections 15 and 16 for electricity in the new provision.

Points (d), (e), (g), (h) and (i) of the current provision are moved to the new Section 16.

The date of commissioning is moved from the current text in Section 8 of the existing regulations and moved to the new Section 15(e), in order to provide a clearer overview of the information to be provided in the application for the installation.

Point (f) of the current provision is proposed to be moved to the new Section 15(f) without change.

Point (j) of the current provision is proposed to be moved to the new Section 15 and amended to be consistent with the revised Renewable Energy Directive, which no longer requires the timing or amount of support to be specified. The latter is deemed to make it easier for applicants, who will not have to search for detailed information on the support received.

A further requirement introduced by the revised Renewable Energy Directive is that producers must declare whether and what type of production aid they have received. The change may cause the application to take slightly longer.

Table 13. Draft for additional information to be included in the application for the issuance of guarantees of origin for electricity

Current provision	New wording
Section 7. The application shall contain the following information about the plant covered by the application: a) name of the installation; b) cadastral designation, postal code and location of the property where the installation is located. If this information is missing, coordinates may be given instead. Coordinates may be specified in SWEREF 99 TM or as latitude and longitude in SWEREF 99/WGS 84; c) the estimated normal year production; d) network area ID; e) installation ID for electricity production; f) network owner or other enterprise reporting measured values; g) the EDIEL ID of the measured value reporting enterprise; h) specification as to whether generation is measured every 15 minutes; i) specification as to whether generation is reported at a connection point to a concessionary network; and j) the date of receipt of investment aid	Section 16. An application for the issuance of guarantees of origin for electricity shall, in addition to what is stated in Sections 11, 14 and 15, contain the following information: a) network area ID; b) installation ID for electricity production; c) the EDIEL ID of the measured value reporting enterprise; d) specification as to whether generation is measured every 15 minutes; e) the location of the measuring point;

and the amount of the aid in the case that k) such aid has been granted to the installation. For installations reporting generation from a measurement point into a non-concessionary network, the abbreviation 'IKN' [NCN] shall be indicated instead of the network area ID referred to in Point (d) of the first sub-paragraph.	f) whether energy stocks installations are located within the same non-concessionary network as the installation and whether the energy stocks installations can be charged with electricity from the concessionary network; g) whether there is any self-consumption of electricity and, if so, to what extent; and h) all types of energy that the production installation can produce. For installations reporting generation from a measurement point into a non-concessionary network, the abbreviation 'IKN' [NCN] shall be indicated instead of the network area ID referred to in Point (a) of the first sub-paragraph. The production capacity for electricity is the intended maximum power under ideal conditions.
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Points (d), (e), (g) and (h) in Section 7 of the current regulations are proposed to be moved to Section 16 as the information relates to the production of electricity.

In Section 16, which relates to what must be stated in an application for GOs for electricity, it is proposed that the information on the location of the metering point be added. The information is needed to determine the need for deduction of auxiliary power and the differentiation of self-consumed electricity (new Section 31). In connection with the new wording, the previous Section 7(i) is no longer required. It is included in the new Section 16(e), where it is proposed to specify measurement location according to the existing model for EECS-GO (see Figure 2 in Section 2.1.1). In addition, information on the connection point to the concessionary network is also included in the proposed new Section 11 on which information the Energy Agency shall be entitled to request in connection with the application.

The request for the measurement point information will affect all producers receiving GOs based on measurement in the NCN. This will have administrative costs for the electricity producers concerned and may take different amounts of time depending on the producer's expertise in the matter and how well the metering point location is documented.

The new request for energy stocks data in new Section 16(f) will affect all producers applying for GOs or EECS-GOs. For those who have battery storages within the same NCN as the installation and are able to charge the batteries with electricity from the concessionary network, the addition will have greater administrative and economic impact. This is because it requires that a solution be in place to ensure that GOs are only issued for net electricity production, and not for electricity from the concessionary network that has been stored intermittently in the batteries. Issuance from energy stocks installations is further described in the proposed Section 35.

The information on energy stocks is also further clarified compared with Section 11 to enable the Swedish Energy Agency to ask questions in the application form about whether energy stocks exist, and whether the energy stocks installations can be charged with electricity from the concessionary network.

The proposed new Point (g) ensures that the Swedish Energy Agency is informed of whether and to what extent self-consumption occurs if an electricity producer has any measuring within the NCN. It therefore represents a new question that a producer needs to answer. The management of occurrences of self-consumption is described in more detail in Section 34.

Point (h) of the new wording is proposed as EN 16325 requires that the application includes the types of energy (electricity, gas, heating/cooling) that can be produced in the installation. Also this point means that the producer needs to provide information that was not previously requested.

Since production capacity is calculated differently for electricity, gas, heating or cooling, a clarification has been added that production capacity for electricity is the intended maximum power under ideal conditions.

Table 14. Draft for additional information to be included in the application for the issuance of guarantees of origin for gas

New wording
Section 17. An application for the issuance of guarantees of origin for gas shall, in addition to what is stated in Sections 12, 14 and 15, contain the following information: a) if the installation is connected to a network and the name of that network; b) if there is an upgrading installation, the commissioning date in Section 15(e) shall be the date on which the upgrading installation was commissioned; and c) production capacity under Section 15(c) is the estimated normal year production divided by 8 760 hours. If the installation produces hydrogen, the purity of the produced hydrogen may also be indicated

According to EN 16325, it is a requirement to provide information if the gas installation is connected to a network. On the other hand, it is optional under EN 16325 to indicate the name of the network. As there are two gas distribution networks in Sweden, the Swedish Energy Agency considers that this is necessary information to provide when applying for GOs for gas, as Article 19 of RED III contains provisions on the relevant characteristics of the network. Other EU legislation such as the Union Database (UDB)³⁹ also has different requirements linked to whether the installation is connected to a gas network.

EN 16325 clarifies that the commissioning date must be specified for gas installations that upgrade their biogas. If the installation started producing raw biogas at one date and later started upgrading its biogas, the date of commissioning of the upgrading installation shall be indicated in the application.

Since, according to the new draft Ordinance on the GOs for energy, only installations with a generating capacity of 50 kW or higher are able to apply for the issuance of the GOs for gas, it is important to specify how this is to be calculated. For gas, the Swedish Energy Agency has based its calculations on other existing legislation, and production capacity is proposed to be calculated in the same way as in the second paragraph of Section 3d of the Ordinance (2011:1088) on Sustainability Criteria for Biofuels. The idea is that gas installations should have the same calculation method for production capacity, regardless of what control mechanism is used.

In the proposal for Section 17, if the installation is connected to a gas network, the network name and commissioning date of any upgrading installation must be stated, which is deemed to be basic information that is available for all

³⁹ Renewable Energy Directive, Article 31a.

installations. A consequence of being able to state production capacity in kW is that the producer has to make a calculation by dividing the normal year production in MWh with the number of hours in a year; which affects the administrative time to complete the application.

Table 15. Draft for additional information to be included in the application for the issuance of guarantees of origin for heating or cooling

New wording
Section 18. An application for the issuance of guarantees of origin for heating or cooling shall, in addition to the information set out in Sections 13-15, contain the following information: a) if the installation is connected to a network and the name of that network; b) the medium used to convey heating or cooling: water, thermal oil, air or residual gases, salt, coolants or unspecified. If there is more than one medium, unspecified should be used; c) production capacity under Section 15(c) is the estimated normal year production divided by 8 760 hours.

In the proposal for Section 18 it is specified that additional information on the network connection and medium shall be provided when applying for a GO for heating or cooling. The indication of whether the facility is connected to a network and the name of that network is, according to EN 16325, an optional indication. One consequence of including the indication as a mandatory field in the application is that it will be possible to cancel the GO for the benefit of customers in the same network as the heating or cooling has been produced.

As a consequence of the proposal, there will be additional information that the applicant will need to enter in the application. The information is considered to be basic information available to all installations. A further consequence of the proposal is that the Swedish Energy Agency will have to update the list of network names on an ongoing basis.

In Section 18, it is proposed that the medium should be indicated to be unspecified if different media are used in the same installation. The reason for the wording is that only one medium can be specified per installation. The wording thus simplifies matters for applicants who use more media within the same installation.

Furthermore, Section 18 specifies how the production capacity shall be calculated for installations that produce heating or cooling. One consequence of the wording is that producers need to make a calculation to obtain the production

capacity. The calculation requires that the applicant for GO has knowledge of the normal year production of the installation. The Swedish Energy Agency considers this to be information which the applicant for the GO is aware of.

Section 19. Information on energy source

Table 16. Proposal on the information on the source of energy to be included in an application for the issuance of guarantees of origin for electricity

Current provision	New wording
Section 8. In addition to what is stated in Sections 6 and 7, the application shall contain information on the energy source and type of the installation, indicating one or more of the following options: a) water; b) onshore wind; c) offshore wind; d) sun; e) industrial backpressure from biofuel/peat/fossil; f) cogeneration from biofuel/peat/fossil; g) condensing power from biofuel/peat/fossil; h) gas engine from biofuel/peat/fossil; i) geothermal energy; j) wave; k) nuclear power; or l) other, if none of options (a) to (k) are applicable. If the application relates to an installation consisting of several production units, the energy source and type referred to in the first subparagraph and the date of commissioning and installed power shall be specified for each of the	Section 19. An application for the issuance of guarantees of origin for electricity shall, in addition to the provisions of Sections 11 and 14 to 16, contain information on the energy source and type of installation with reference to the relevant electricity technology code specified in the EECS Rules Fact Sheet 5 issued by the Association of Issuing Bodies as one or more of the following: a) water; b) onshore wind; c) offshore wind; d) sun; e) industrial backpressure from biofuel/peat/fossil; f) cogeneration from biofuel/peat/fossil; g) condensing power from biofuel/peat/fossil; h) gas engine from biofuel/peat/fossil; i) geothermal energy; j) wave; k) nuclear power; or l) other, if none of options (a) to (k) are applicable. If the application relates to an installation able to produce electricity from several different energy sources, the energy source and type referred to in the first sub-

production units. If the application concerns the issuance of guarantees of origin that must be transferable to another EU Member State (EECS guarantees of origin), the energy source and the type of installation and production unit as referred to in the first and second subparagraphs must be specified with reference to the relevant technology code specified in the EECS Rules Fact Sheet 5 issued by the Association of Issuing Bodies.	paragraph and the date of commissioning and production capacity shall be specified for each of the production units.
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Amendments to Section 19 clarify how an application for GOs for electricity is to be filled in if the installation generates electricity from different energy sources. As before, these should be filled in as different production units in the form and the proposed change clarifies that separate energy sources means filling in separate production units in the application. Other than that, the same requirements for commissioning date and production capacity apply.

The last part of the section clarifies that the technology codes are based on the same documents from AIB, regardless of whether it is for EECS-GOs or GOs. These technology codes are already used for GOs, so there is no actual impact on producers. The management is uniform and the requirements of EN 16325 are complied with. The text of the regulations has been re-worded by combining the first and last sentence of the previous regulations into one sentence.

Table 17. Draft of the fact that the application for the issuance of guarantees of origin for gas should include information on the type of gas produced in the installation

New wording
Section 20. An application for the issuance of guarantees of origin for gas shall, in addition to what is stated in Sections 12, 14, 15 and 17, contain information on what type of gas is being produced, entered as one of the following alternatives: a) methane; b) ethane; c) propane; d) butane; e) ammonia; f) dimethyl ether;

- g) hydrogen; or
- h) gas mixture.

Energy sources and technology codes are specified according to the EECS Rules Fact Sheet 5 issued by the Association of Issuing Bodies. If the installation has several different technology codes, the technology code 'unspecified' should be indicated.

According to EN 16325, it is required that the GOs for gas indicate the type of gas. Since Article 19 of the RED III requires that a GO is issued in response to a request from an energy producer, the work on EN 16325 has specified the gases that are possible to produce on the basis of renewable energy, regardless of whether GOs for that type of gas are requested. Hydrogen and gas mixes are different from the other gases since, for hydrogen, there are additional rules such as purity, mentioned under Section 17, and gas mixes are used only for gas production where the energy value is within several types of gas.

The Swedish Energy Agency is currently a member of AIB and follows the EECS rules for electricity. The goal after the GOs for gas are issued in Sweden, is for the Swedish Energy Agency to also become an approved member of the group within the AIB that issues GOs for gas. AIB membership enables the export and import of GOs via the AIB data hub. One requirement in order to become a member is that the EECS rules that exist for gas are followed. For this reason, the regulations refer to Fact Sheet 5 when it comes to fuel and technology codes. These are also included in Annexes A and B of EN 16325. As technical standards are not publicly available, reference is instead made to Fact Sheet 5, which is publicly available on the AIB website and has also been updated to comply with the fuel and technology codes contained in EN 16325.

There are voluntary rules in EN 16325 for the issuance of GOs for a gas mixture. Instead of entering 'gas mixtures' under the type of gas, it is possible to have GOs marked with a specific type of gas. Although this voluntary management is included in EN 16325, it is not included in the EECS rules and therefore not possible to implement in Sweden as it would mean that the Swedish Energy Agency cannot become a member of the AIB for GOs for gas.

The proposal in Paragraph 20 means that the production of the specified gases are those for which producers may apply GOs for. It is foreseen that mainly applications for the issuance of GOs for biogas and hydrogen will be received. However, in order to future-proof the GO system and to ensure that requirements under the Renewable Energy Directive can be met, it is necessary that the system is adapted to the gases present on the market.

Additional information on the energy source and technology code is basic information that all installations should have available, but takes time for the producer to produce. The producer needs to identify which technology code(s) apply to the installation based on the EECS Rules Fact Sheet 5 issued by AIB.

The accounting system to be used for gas, heating and cooling is only able to manage one technology code per installation, so the regulations specify that the technology code 'unspecified' shall be used if an installation has several production units.

Table 18. Draft for additional information to be included in the application for the issuance of guarantees of origin for heating or cooling

New wording
Section 21. An application for the issuance of guarantees of origin for heating or cooling shall, in addition to what is stated in Sections 13 to 15 and 18, contain information on whether the energy produced by the installation is in the form of heating or cooling. If an installation is capable of producing both heat and cooling, separate applications must be submitted for heat and cooling, respectively, if the producer wishes to apply for the issuance of guarantees of origin for both. Technology codes and energy sources for heating and cooling must be specified with reference to the document 'Bränslekoder och teknikkoder för värme och kyla' [fuel codes and technology codes for heating and cooling] available on the website of the Swedish Energy Agency. If the installation has several technology codes, the technology code 'unspecified' should be indicated.

The proposal in Section 21 means that producers who apply for GOs for both heating and cooling need to make two different applications, which is a result of technical limitations of the accounting system.

Furthermore, it is proposed that technology codes and energy sources must be specified with reference to the document 'Bränslekoder och teknikkoder för värme och kyla' [fuel codes and technology codes for heating and cooling], which will be available on the website of the Swedish Energy Agency. The document will reflect the fuel and technology codes contained in EN 16325. The proposal means that the Swedish Energy Agency must update the list if changes are required.

Furthermore, the wording in Section 21 specifies that applicants shall indicate the technology code 'unspecified' if more than one technology code exists within an installation. This makes it easier for applicants, because they would otherwise

have had to apply for one installation per technology code. This also reduces the administration required for producers.

Section 23. Application for a special account for guarantees of origin that may be transferred to other EU Member States

Table 19. Application for a special account for EECS guarantees of origin

Current provision	New wording
Section 9a. An application to open a special account for guarantees of origin that can be transferred to other EU Member States shall be made in writing to the Swedish Energy Agency. In the event that the account applicant is to be regarded as another party trading in guarantees of origin in accordance with Section 11(2) of the Ordinance (2010:853) on Guarantees of Origin for Electricity, detailed information shall be provided on the business activities of the applicant as set out below: a) Name or enterprise name; b) Personal identification number or business registration number; c) Contact details; d) Financial data; e) Field of activity, including business plan; f) Ownership structure; g) Estimated business volume; h) Whether the applicant is active in similar registers in other countries; i) The enterprise's level of experience in trading guarantees of origin or similar instruments. The information in Points 1 to 9 may be provided on a know-your-customer form provided by the Swedish Energy Agency upon request and on its website. The Swedish Energy Agency	Section 23. The following information shall be attached to the application for a special account for EECS guarantees of origin pursuant to Section 18 (1) of the Ordinance on guarantees of origin if the applicant is to be regarded as a person other than a producer or a supplier: a) Name or enterprise name; b) Personal identification number or business registration number; c) Contact details; d) Financial data; e) Field of activity, including business plan; f) Ownership structure; g) Estimated business volume; h) Whether the applicant is active in similar registers in other countries; and i) The enterprise's level of experience in trading guarantees of origin or similar instruments. The information in Points (a) to (i) may be provided on a know-your-customer form provided by the Swedish Energy Agency upon request

may grant exemptions from the provisions of the first sub-paragraph if there are special reasons for doing so.	and on its website. The Swedish Energy Agency may grant exemptions from the provisions of the first sub-paragraph if there are special reasons for doing so. An example of a special reason is that a previously known operator in the system has already submitted an up-to-date know-your-customer form.
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In the draft, the text in the first paragraph has been updated to make it easier to comprehend. In the Ordinance, the definition has been changed from 'guarantees of origin transferable to other EU Member States' to 'EECS guarantees of origin'. A further clarification is that Points 1 to 9 have been changed to Points (a) to (i). In addition, an example of a special reason has been added to the text.

Section 24. How energy sources for the production of electricity, gas, heat or cooling are to be reported

Table 20. Draft on how energy sources for the production of electricity, gas, heat or cooling are to be reported

Current provision	New wording
Section 16. The producer shall report the distribution of used fuel in installations where electricity can be produced using different fuels. If electricity is produced using household waste, the producer may assume that 40 % of the electricity produced comes from fossil waste and 60 % comes from biomass. The producer shall indicate the proportion of energy supplied per fuel type of the total energy supplied. Total fuel supplied does not include fuel supplied without electricity being	Section 24. Energy sources shall be reported in a fuel declaration. In the case of installations where electricity, gas, heating or cooling is produced by the use of different energy sources, the producer shall report the distribution between the used energy sources in a fuel declaration. The producer shall indicate the proportion of energy supplied per energy source of the total energy supplied. Total energy supplied only

produced. If electricity is produced using commercial waste, the producer may calculate the distribution between fossil waste and biomass in accordance with a report regarding the installation that the producer has established and verified in accordance with Chapter 5, Section 1, of the Emissions Trading Act (2004:1199)	includes energy that has been supplied to produce the electricity, gas, heat or cooling for which guarantees of origin are to be issued. A fuel declaration is not necessary if the installation produces electricity and has one energy source or if the installation has production units with different technology codes, as regulated in Section 33. If household waste is an energy source, the producer must declare the energy source as consisting of 40 % fossil energy source and 60 % renewable energy source. If electricity, gas, heating or cooling is produced using commercial waste, the producer may calculate the distribution between fossil waste and biomass in accordance with a report for the installation that the producer has established and verified in accordance with Section 6 of the Act (2020:1173) on certain greenhouse gas emissions. Further allocation of the share of renewables in energy sources shall be based on the reference values established by Sweden's Environmental Protection Agency in accordance with Article 31(1)(c) of Regulation (EU) 2018/2066 on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council.
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The proposal in Section 24 is an adaptation of the previous Section 16. It is mainly an adaptation of the previous text as it is possible to get GOs issued for more types of energy than electricity.

For installations producing electricity, gas, heat and cooling, it will be necessary to carry out a fuel declaration before issuance to indicate the fuel(s) used to produce the energy. Even if an installation producing gas, heating or cooling would only use one energy source, they will still have to carry out a fuel declaration before issuing the GO. Exemptions are installations authorised to issue GOs for electricity that have an energy source or installations performing unit declaration. They will not have to perform a fuel declaration as their energy source cannot change during the period. Fuel declarations have previously been used in the GO system for electricity for bio-installations, indicating the fuels used during the month. Since it is now possible to use several different types of energy forms in the fuel declaration, such as electricity to produce hydrogen, the wording has been changed to refer to energy sources instead of fuel.

Further adaptation to gas, heating and cooling has been made by using the term energy instead of electricity. The wording on energy input has also been adapted to refer to the production of electricity, gas, heating and cooling instead of just electricity.

In previous regulations, it has been stated that electricity produced using household waste can be classified as 40 % fossil and 60 % biomass. It has been changed to energy so that it is also applicable to gas, heating and cooling. Energy produced from commercial waste is now also applicable to all types of energy and the reference in there to the legal text has also been updated.

In addition to household and commercial waste, there are other fuels used in the GO system. For these fuels, such as recycled wood, there are reference values from the Swedish Environmental Protection Agency on the renewable share of the fuel. Updates of these reference values are carried out on an ongoing basis and thus there is a reference to the legislation in force.

Section 25. How electricity, gas, heating or cooling produced from electricity, gas, heating or cooling is to be reported

Table 21. Proposal on reporting of energy production from other types of energy

New wording
Section 25. In the case of installations where electricity, gas, heating or cooling is produced by conversion of electricity, gas, heating or cooling for which guarantees of origin have not been issued, the energy supplied shall be

indicated as an energy source in the fuel declaration.

It is also possible to use energy for which guarantees of origin have been issued, if the producer can demonstrate that there is a contract in which the energy supplier cancels guarantees of origin corresponding to the producer's energy consumption.

The proposal in Section 25 regulates how GOs for electricity, gas, heating or cooling are issued if the energy is produced from electricity, gas, heating or cooling where it is not necessary to issue it after conversion. The scenarios where conversion is not necessary are addressed in Section 25, as well as the requirements that exist for them to be possible to use. Conversion is not necessary if the energy has not had GOs issued or if the producer has a supplier who cancels GOs on their behalf.

Section 26. Conversion

Table 22. Proposal on the issuance of guarantees of origin after conversion

New wording
Section 26. In the case of installations where electricity, gas, heating or cooling is produced by conversion of electricity, gas, heating or cooling for which guarantees of origin have already been issued, with the exception of Section 25(2), issuance of guarantees of origin for outgoing energy shall take place only after the cancellation of the guarantees of origin for the input energy in accordance with Section 8 of the Ordinance on Guarantees of Origin for Energy. a) Before issuing guarantees of origin after conversion, the producer needs to attach a certificate of cancellation for guarantees of origin equivalent to the input energy. b) When issuing guarantees of origin after conversion, the energy losses incurred in the conversion process shall be taken into account when calculating net production for electricity, gas, heating and cooling. After conversion, the information on the guarantee of origin shall be taken over in accordance with the second sub-paragraph of Section 16 of the Ordinance on Guarantees of Origin for Energy. In the case of a proportion of a guarantee of origin when issuing after conversion, rounding must always be done downwards to the nearest whole

megawatt hour.

The producer shall apply for the issuance of guarantees of origin after conversion in the manner indicated by the Swedish Energy Agency on its website.

When the GO system contains several different types of energy, it will be necessary in some cases to perform a conversion of electricity, gas, heating or cooling in order to avoid double counting. This requirement is from EN 16325.

Conversion is necessary when energy for which a GO has been issued is being used to produce electricity, gas, heat or cooling, except in cases where the producer can present an electricity contract guaranteeing that the GO issued has been cancelled in accordance with the second sub-paragraph of Section 25. In order to ensure that there is no double counting, the GO for the input energy needs to be cancelled in connection with the conversion issuance with regards to losses. With this procedure, the GO must always be cancelled before issuance, meaning that there is no double counting.

Please note that this is only necessary when GOs have been issued for the energy used. For example, if hydrogen is produced from electricity directly connected to the installation, conversion is not necessary since the electricity is not allocated GOs.

After the conversion issuance, information that the guarantee of origin was issued after conversion will be available on the GOs issued.

The proposal requires the producer to prepare and send the cancellation certificate to the Swedish Energy Agency, which entails some administrative work for both parties.

Section 27. Review report for fuel declarations

Table 23. Proposal on the review of fuel declarations

New wording
Section 27. If a producer declares energy sources of biological origin or a mix of biological and fossil origin, the producer shall submit, every two years, a report by an independent reviewer verifying the declared energy sources for electricity, heating and cooling. If the energy produced is gas, a report shall be submitted annually. The review report shall cover three consecutive months within the last 12 months.

The report shall ensure that:

- a) the fuel declarations submitted to the Swedish Energy Agency are correct for the reviewed period; and
- b) it is reasonable that the composition and quantity of the reported energy source can result in the amount of energy produced that the issued guarantees of origin correspond to as regards period and the respective attributes.

For electricity, gas, heating and cooling, the producer does not have to submit a report pursuant to the first and second sub-paragraphs, if the producer is required to report pursuant to Chapter 3, Section 1, of the Act (2010:598) on Sustainability Criteria for Certain Fuels and has a sustainability statement covering declared fuels of biological origin or a proof of certification pursuant to Section 18 of Ordinance (2011:1088) on Sustainability Criteria for Biofuels.

The proposal in Section 27 is derived from EN 16325 to regularly ensure that fuels are correctly declared and, thus, also the correctness of the GOs issued. Producers using fuels of biological origin need to verify the fuels used with a sustainability statement or a proof of certification. The report entails costs for enterprises that do not have a sustainability statement or a proof of certification since independent reviewers are needed to check fuel management. Therefore, operators can avoid the cost of the report by using their sustainability statement or proof of certification.

Section 28. Report timing

Table 24. Proposal on report timing

Current provision	New wording
Section 18. Reporting in accordance with Sections 15 to 17 shall be submitted to the Swedish Energy Agency no later than the 14th of each month. Reports shall cover the preceding calendar month.	Section 28. Reporting in accordance with Sections 24 to 26, 33 to 34 and 37 to 38 shall be submitted to the Swedish Energy Agency no later than the 14th of each month. Reports shall cover the preceding calendar month.

The proposal in Section 28 encompasses the fact that several types of reporting need to be submitted to the Swedish Energy Agency by the 14th of each month, at the latest. More references have also been added so that gas, heating and cooling are covered. The reporting of electrical installations with different

technology codes has also been moved from the previous Section 17 to Section 33 and reporting of partial self-consumption under Section 34. When reporting, the producer submits information that the Swedish Energy Agency needs in order to be able to issue GOs. When reporting takes place on a monthly basis, the GOs can also be issued on a monthly basis. The effect is that the rapporteur has two weeks to report measured values, fuel declarations and licence declarations for the GOs to be issued the month after production.

Section 30. Measurement and reporting from installations in non-concessionary networks

Table 25. Draft on the measuring and reporting from plants in non-concessionary networks

Current provision	New wording
Section 12. The producer shall measure and report electricity production in accordance with Sections 13 and 14 if the installation feeds electricity into a non-concessionary network.	Section 30. The producer shall measure and report the electricity production in accordance with Sections 31 and 32 if the installation's electricity production is measured in a non-concessionary network.

Editorial change where "feeds electricity" has been changed to "the electricity production of the installation is measured" to make the regulatory text clearer.

Section 33. How electricity produced with different technology codes is to be reported

Table 26. Draft on how electricity produced with different technology codes is to be reported

Current provision	New wording
Section 17. The producer shall report the share of produced electricity from each energy source in production installations where electricity is produced using several energy sources. Reporting shall be based on the measurement of electricity production. In cases where the producer has, pursuant to Section 8, specified different technology codes for units	Section 33. In cases where the producer has, pursuant to Section 19, specified different technology codes for units within the same production installation, the installation shall be

within the same production installation, the installation shall be deemed to use several energy sources in accordance with the first paragraph.	deemed to use several energy sources. The producer shall report the share of electricity produced from each energy source in a unit declaration . Reporting shall be based on the measurement of electricity production.
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The unit declaration was previously described in Section 17. As GOs are possible to issue for more types of energy than electricity, the unit declaration has been moved to the chapter of the regulations concerning measuring and reporting for electricity. Unit declaration is only relevant for electricity because it is only electrical installations that can have different production units in an installation, and it is then possible that there are production units with different technology codes.

Section 34. How self-consumption of electricity is to be reported

Table 27. Draft on how self-consumption of electricity is to be reported

New wording
Section 34. If electricity production reported from a measurement point in a non-concessionary network is partly used for self-consumption, the producer shall declare each month what proportion of the net electricity production has been used for this purpose.

The Swedish Energy Agency's proposal for new regulations, together with the Government's proposal for a new ordinance, introduces a new way of dealing with GOs issued for self-consumed electricity. The proposal means that GOs based on self-consumed electricity will be labelled with self-consumption according to EN 16325 and will be cancelled by the producer. The cancellation takes place for the benefit of the producer. Once GOs are issued for self-consumed electricity, they will not be transferable, ensuring that GOs for self-consumed electricity cannot be resold and thus that no double counting occurs, while the producer receives a so-called cancellation certificate in connection with the cancellation, which can be used for origin labelling of the self-consumed

electricity. The GOs representing electricity fed onto a concessionary network will instead receive the label 'redistribution to a distribution or transmission network'.

The solution of cancelling self-consumption GOs by the producer will have economic impact for those who previously resold GOs based on self-consumed electricity, both those with partial or total self-consumption.

By origin labelling electricity with GOs issued for own production, the intention of GOs for self-consumption is ensured. Thus, only operators with an interest in cancellation for their self-consumption will apply for this type of issuance, as these GOs will not be able to be sold on the market. For operators who are not interested in obtaining their own GOs, it is possible to apply to have GOs issued based on measuring in connection with a concessionary network. In this way, it is ensured that no double counting can occur, which is one of the basic principles of the system for the guarantee of origin.

In order to be able to implement this, the Swedish Energy Agency proposes that a new Section be introduced under the chapter on measuring and reporting for electricity, which concerns self-consumption of electricity for installations with measuring in the NCN. This addition means that all producers who receive GOs based on measurement in the NCN will be required to provide an answer to the question of whether or not self-consumption occurs. The producer is given two response options. One is relevant for those who partly use their electricity production for self-consumption, and the other is relevant for those where all their own electricity production is used for self-consumption.

If partial self-consumption occurs, the producer must, according to the proposal in Section 34, on a monthly basis declare the percentage of self-consumed electricity, i.e. the electricity used between the specified measurement point and the connection point to the concession network. This will mean an increase in the administration, which entails costs for the time it takes to make the declaration. If all electricity production is always for self-consumption, the producer can instead indicate this in the application form and does not have to declare the share of self-consumption monthly. Then all GOs are instead labelled as for self-consumption and must be cancelled by the producer. The distinction between total and partial self-consumption allows for an increased administrative burden for as few as possible.

The administrative and economic impact for self-consumed electricity will mean that electricity producers are faced with a choice of whether to keep the measuring point in the NCN or whether they want to switch to a measuring point in the concessionary network. The consequences are then compared with the

benefits that the operator has from having its self-consumption origin labelled. This applies to both private individuals and enterprises. As the requirements for cancellation of GOs for origin labelling only apply to electricity trading enterprises that need to account for their electricity sold to end customers, cancellation by operators takes place on a voluntary basis.

Section 35. How issuance from installations with energy stocks is to be handled

Table 28. Draft on how issuance from installations with energy stocks is to be handled

New wording
Section 35. If there are any energy stocks within the same non-concessionary network as a production installation, the stored electricity can only form the basis for issuing guarantees of origin if the electricity is produced in the production installation. For pumped storage units, guarantees of origin may only be issued for electricity production from natural water flow.

The existing regulations do not explicitly mention energy stocks, which may make it difficult for electricity producers to understand how energy stocks may affect the measured values that form the basis for the GOs. Therefore, an addition in the form of a clarification is proposed for energy stocks (e.g. batteries) that are installed within the same non-concessionary network as a production installation. If the energy stocks can be charged with electricity from a concessionary network, there is a risk that the wrong electricity will be used as the basis for the GOs that are issued. To prevent this, the producer needs to ensure that any electricity transferred from the concessionary network to energy stocks within the installation is not included in the measured values reported to the Swedish Energy Agency.

The clarification is aimed at electricity producers with measuring in both a non-concessionary network and a concessionary network. The meter in connection with the concessionary network cannot distinguish between electricity output from the production facility and electricity initially output from the concessionary network to an energy stocks facility to be sold (input) at a later date. This means that all electricity producers in the system will have to answer the question of whether energy stocks installations exist within the same NCN as the production facility and whether these can be charged with electricity from the concessionary network. For those who do not have energy stocks, the question is considered to be easy to answer and does not entail any administrative cost.

The addition to the regulations does not actually change the existing requirements regarding which electricity may be used for the basis of the GOs. Despite this, the requirements to submit information on energy stocks may show that there have previously been misunderstandings on the matter. This means that these producers may need to implement measures to ensure the correct measurement and then notify the change to the Swedish Energy Agency. Alternatively, the installation's authorisation for GOs is withdrawn if acceptable measurements cannot be ensured. Measures may include, for example, installing an NCN meter placed before the energy stocks or establishing a, by the Swedish Energy Agency accepted, calculation of measuring values for production, which excludes electricity from the concessionary network. Such measures have economic impacts for the electricity producers in question.

A clarifying addition is proposed at the end of the sub-paragraph regarding the issuance of GOs from pumped storage. The addition clarifies that pumped storage units can only receive hydropower GOs for the natural water flow. Electricity production from water previously pumped up to a higher level is not considered renewable electricity under the Renewable Energy Directive and is therefore to be deducted from the production of electricity produced by the pumped storage unit which is the basis for renewable hydropower GOs. Since the Renewable Energy Directive only requires renewable GOs to be issued, it will only be possible to obtain pumped storage GOs issued for the natural water flow.

Section 37. Measuring and reporting for gas

Table 29. Draft on the measuring and reporting for gas

New wording
Section 37. Net gas production per month shall be reported to the Swedish Energy Agency as megawatt hours. The reporting shall be carried out digitally in the accounting system by an authorised representative of the producer. After reporting the net gas production, the producer shall also indicate the distribution of energy for the period. The producer may voluntarily indicate whether they have a sustainability statement and the type of sustainability statement.

Measuring and reporting for gas differ from how measured values are entered into the electricity accounting system today. For gas, both installations connected to distribution networks and stand-alone installations will apply for GOs for gas. It is therefore not an option to use a similar EDIEL system to report measured values directly in the accounting system. Instead, the producer will have to

calculate its net gas production for the period from meters and report it in the accounting system as megawatt hours. The person reporting the production will also need to prove that they are authorised to represent the enterprise when applying for access to the accounting system.

However, reporting the net gas production for the period as megawatt hours is only the first step of what is required before the issuance of GOs for gas. The producer will have to carry out a fuel declaration and also a so-called licence declaration, with requirements to specify how the energy has been distributed, as well as the opportunity to provide information on sustainability statements.

When applying, electricity, heating and cooling producers will only have to indicate in what way the energy is distributed, while gas producers will have to indicate the mode of distribution and the distribution per modes on a monthly basis. For example, there may be a difference in how gas used for self-consumption is distributed compared to via vehicles or pipelines.

The reason for stating ‘at the request of the holder of the installation for sustainability statements’ is that this is voluntary information to provide in the declaration. If the producer has a sustainability statement but does not want to indicate it, it is possible to not fill in the field. The reason for including information on sustainability labelling in the GOs for gas is because it has been requested by operators in the gas market. There are other instruments such as the EU-ETS and the Union database where this is considered to be relevant information linked to GOs for gas. There are Swedish producers who have both sustainability statements issued by independent certification bodies and sustainability statements issued by the Swedish Energy Agency.

The proposal in Section 37 means that production must be reported to the Swedish Energy Agency every month and that gas must be reported as energy and not in volume or mass, which are common ways of measuring gas⁴⁰. The energy can be used in several ways, for example for self-consumption or distributed via transmission networks. The effect will be that additional calculations of measured values and the collection of information may be required, which may mean new procedures or investments in new meters.

Section 38. Measuring and reporting for heating and cooling

Table 30. Draft on the measuring and reporting for heating and cooling

New wording

⁴⁰ The Swedish Gas Association, Gas Measurement Instructions 2023, 2023. *The Swedish Gas Association*. <https://www.energigas.se/media/bvygs5mt/gasm%C3%A4tningsanvisningarna-2023.pdf> retrieved on 09/09/2024.

Section 38. The producer shall measure or calculate the net heat production and net cooling production in accordance with Section 5. Net production of heating or cooling shall be reported per month to the Swedish Energy Agency as megawatt hours. The reporting shall be carried out electronically in the accounting system by an authorised representative of the producer.

The proposal means that producers who apply for GOs for heating or cooling can choose to either measure or calculate their net production, which they then report to the Swedish Energy Agency's accounting system as megawatt hours so that the same unit is used regardless of the type of energy.

This means that the producer should, to a large extent, be able to use the method they use also in other contexts to measure or calculate net production, saving administrative costs. Producers who are currently unable to measure their net production do not need to purchase new meters, which means that they will not have to incur a large potential initial cost. The proposed wording also means that producers will have to report their measured values in the accounting system every month.

Section 39. Obligation to notify changes when electricity, gas, heating or cooling is no longer produced

Table 31. Draft for an obligation to notify changes when electricity, gas, heating or cooling is no longer produced

Current provision	New wording
Section 19. The producer shall, without being requested, notify the Swedish Energy Agency if electricity no longer is produced in an installation for which guarantees of origin are issued. The producer shall notify this no later than 14 days from the cessation of electricity production.	Section 39. The producer is obliged to notify the Swedish Energy Agency if energy is no longer being produced in an installation for which guarantees of origin are issued. The producer shall notify this no later than 14 days from the cessation of the energy production.

The proposal means that the text is amended to cover gas, heating and cooling in addition to electricity. The amendment of 'shall, without being requested' to 'is obliged to' is an editorial change as the previous wording was considered outdated.

Section 40. Obligation to notify any changes relevant to the issuance of guarantees of origin

Table 32. Draft for an obligation to notify any changes relevant to the issuance of guarantees of origin

Current provision	New wording
Section 20. The producer shall, without being requested, notify the Swedish Energy Agency of changes that are relevant to the issuance of guarantees of origin. The producer shall notify this no later than 14 days from the decision on the change.	Section 40. The producer is obliged to notify the Swedish Energy Agency of any changes that are relevant to the issuance of guarantees of origin. The producer shall notify this no later than 14 days from the decision on the change.

The proposal introduces an editorial amendment whereby ‘shall, without being requested’ is amended to ‘is obliged to’ as the previous wording was considered outdated.

Section 41. Particulars on guarantees of origin for gas in the Union database

Table 33. Draft for guarantees of origin for gas and the Union database

New wording
Section 41. When information on a consignment of gas is reported in the Union database, in accordance with regulations issued pursuant to Chapter 3, Section 1f of the Act on sustainability criteria for certain fuels, guarantees of origin relating to that consignment of gas shall be transferred to the database. Such a guarantee of origin shall be cancelled when the gas has been extracted from the interconnected Union gas infrastructure.

Article 31a, Paragraph 4, of the Renewable Energy Directive creates a link between the system of guarantees of origin and the Union database. If the consignment of gas reported in the Union database also has issued guarantees of origin for gas, the guarantees of origin for gas may only be cancelled when the gas is withdrawn from the interconnected Union gas infrastructure.

According to the information received by the Swedish Energy Agency from the Commission, this is to be managed through the interconnection of the Union database and national guarantees of origin accounting system. For that reason, this Section shall enter into force when the Commission has notified that the accounting system is connected to the Union database.

5 Alternative solutions

The new regulations are based on the EN 16325 referenced in the Renewable Energy Directive, which provides some guidance on the implementation of its rules. This chapter therefore presents alternative solutions for different ways of implementing the new requirements.

5.1 Electricity

Alternative solutions for the implementation of the new GO requirements for electricity are described below.

5.1.1 Self-consumption

There are several possible options for implementing the rules contained in the revised Renewable Energy Directive and EN 16325 regarding net electricity production and self-consumption.

Issuance in connection with a concessionary network

One alternative is to issue GOs only for electricity that is measured in connection with a concessionary network. This means that the electricity that forms the basis for a GO is only measured after withdrawal of both auxiliary power and any self-consumed electricity, after which no further changes would have to be made in the event of net electricity production. Issuance in connection with what corresponds to a concessionary network is the practice in most other European countries, and in this way the option would lead to a more uniform management and reduced risk for Swedish EECS-GOs being blocked.

However, the alternative would result in certain disadvantages for Swedish producers who currently make use of GOs issued for the electricity they themselves use within the facility. This has a negative impact, especially for producers with a high proportion of self-consumption, such as paper and pulp mills. Removing the possibility of issuance based on measurement in the NCN may also pose challenges for hybrid installations with both electricity production and batteries. For these, there is a greater complexity to take into account to ensure that it is only the generated electricity of the installation that is the basis for the issuance of the GOs, and not any purchased electricity from the electricity network. There, NCN measurements have today provided a possible solution for the continued issuance of GOs.

Distinguishing and labelling self-consumed electricity

Another possible alternative to implementing the requirements of the Renewable Energy Directive and EN 16325 is to continue to allow GOs based on measurements in the non-concessionary network, but to, in that case, distinguish

GOs by means of how the energy has been distributed. The different means of distribution set out in EN 16325 and which are relevant to use for the purpose are that the electricity is

- 1) used by the producers themselves (self-consumption);
- 2) is redistributed to a distribution or transmission network.

Using this separation by means of the mode of distribution would solve the technical and contractual challenges of the previous option. If self-consumption occurs within the installation, the corresponding GO amount is labelled with self-consumption to be distinguished from the others. It is then up to market participants to choose which GO they want to buy, and the market thus determines the value of different GOs.

The challenge with this alternative is that there is no obstacle to GOs labelled with self-consumption being sold on to other operators, both within Sweden and internationally. This has several consequences and risks in terms of international trade, the reliability of the GO system and the acceptance of Sweden's application of the system of guarantee of origin. Although EN 16325 indirectly allows the issuance of GOs labelled with self-consumption, there is a difference of opinion as to whether this can be classified as double counting or not.

This is a question of interpretation, but the reliability of the Swedish GO system is questionable if the issuance of GOs for self-consumption is allowed. Several countries, such as the Flanders Region⁴¹, could block Swedish EECS-GOs due to different interpretations of which GOs can be used for origin labelling. As most other countries issue on the basis of measurement in connection with a concessionary network, Sweden's handling can be seen as controversial if GOs for self-consumption are allowed to be resold.

Another consequence is linked to the market's valuation of the different types of GOs. If they are valued differently in price but are used for the same purpose, i.e., origin labelling, this may affect the credibility of the system in general. It can also become more complex for the end user's understanding, transparency and ability to compare contracts.

5.2 Gas

With regard to GOs for gas, there are several alternative solutions and the most important ones are presented below.

⁴¹ The Swedish Energy Agency, Swedish EECS guarantees of origin are stopped for import to the Flanders Region, Belgium, 2019. *The Swedish Energy Agency*.
<https://www.energimyndigheten.se/nyhetsarkiv/2019/svenska-eeecs-ursprungsgarantier-stoppas-vid-import-till-flandern-belgien/> (retrieved 16/01/2025).

5.2.1 *Auxiliary energy*

According to EN 16325, for biogas produced by digestion, there is no need to make a deduction from the produced gas in respect of auxiliary energy. Thus, an alternative solution would be to not introduce the exemption for biogas for the deduction for auxiliary energy. EN 16325 Section 5.3.8 ‘Calculation of Net Energy Production eligible for GO issuing’ describes the exemption.

If auxiliary energy must be deducted from gross gas production for digestion for the production of biogas, the producers will not have GOs issued for the entire quantity of biogas produced. This would result in a difference between the amount of gas produced and the number of GOs issued. This would also lead to fewer GOs being issued and some of the gas might not be sold on an international market that may require the gas to have GOs. Not having access to all markets for the gas volume corresponding to auxiliary energy may result in missed revenues for the producer, but may also mean that consumers will have to pay more as access to the GO for gas becomes decreases.

A further consequence, if auxiliary energy has to be deducted from gross gas production, is that there will be a difference in whether the gas needs to be reported in the Union database (UDB). UDB does not take into account auxiliary energy from other energy sources when calculating net production. Using the possibility of not deducting auxiliary energy for the production of gas via digestion of biogenic materials means that the calculation of net production for gas is more closely consistent with the gas reported within the UDB.

5.2.2 *On-site inspection*

According to EN 16325, an on-site inspection shall be carried out before the installation is authorised. However, there is an exception that allows this requirement to be bypassed if this has already been done within another framework. An example could be installations that are reviewed in the context of obtaining an environmental permit. These installations do not need to undergo on-site inspections before they can be approved for the issuance of GOs. If the Swedish Energy Agency were to nevertheless choose to carry out on-site inspections at all installations, this would entail more work for the Agency. This would mean that producers would have to spend time organising and undergoing an on-site inspection, as well as longer processing time.

5.3 Heating and cooling

In the case of GOs for heating and cooling, there are several alternative solutions. The main ones are presented below.

5.3.1 *Auxiliary energy*

An alternative solution to the proposal presented is to not include the voluntary exemptions from deducting auxiliary energy. Not allowing these exemptions could potentially make the system easier for operators to understand. However, this would also mean that some producers would receive fewer GOs. A consequence of implementing the exemptions is that the producers who make use of the exemptions need to be able to show documents proving their entitlement to the exemptions during inspections. Thus, not allowing for exceptions would reduce the administrative burden for those producers who would otherwise be making use of them. Since the exemptions are not only voluntary for Member States to implement, but are also voluntary for producers to use, they are unlikely to be used if a producer considers that the administrative burden exceeds the benefits.

There is a risk that the exemptions will not be used by operators if they are considered complicated or if the benefit is not sufficiently large. In that case, the Swedish Energy Agency may, in the context of a future evaluation of the regulations, assess whether they should be removed in order to make the system more understandable. As the exemptions have the potential to benefit producers in the system, the Swedish Energy Agency is of the opinion that these should be introduced.

5.3.2 *Self-consumption*

An alternative solution for self-consumption of heating and cooling could be to issue GOs for self-consumption but that the producer cancels them for its self-consumption. This option would be in line with the self-consumption management proposal for GOs for electricity. This solution would also allow producers that only produce heating or cooling for self-consumption to have GOs issued and cancelled. This would give producers the opportunity to claim that the self-consumed heating or cooling is of a certain origin.

Issuing and cancelling these GOs would require a monthly declaration from producers and additional administrative work from the Agency and the producer. In some types of electricity-producing installations, often with a different main purpose than electricity production, self-consumption is relatively high. In these cases, the Swedish Energy Agency sees the advantages of the fact that electricity producers can origin label their self-consumption of electricity. In installations that produce heating or cooling, self-consumption does not occur to the same extent, and the Swedish Energy Agency does not see the same need to prove the origin of producers' self-consumed heating or cooling. The Swedish Energy Agency therefore considers that there is no purpose in issuing and cancelling GOs for self-consumption for heating and cooling, and is of the opinion that this option is not resource efficient.

6 Legal situation

Here, the basis for the Swedish Energy Agency's authority to issue new regulations on guarantees of origin for energy is described. The chapter also concerns whether the new regulations are deemed to have any effect on costs for the state, municipalities or regions, and whether it may affect local self-government. Thereafter, the compliance of the new regulations with EU law is described. The regulations are not deemed to affect or be affected by other international law, which is why only EU law is discussed.

6.1 The Agency's powers to issue regulations

The Energy Agency's new regulations on Guarantees of Origin for Energy are based on the authorisation provided for in Section 24 of Ordinance (2025:000) on Guarantees of Origin for Energy. Under the first sub-paragraph of Section 24 of the Ordinance, the Energy Agency is authorised to issue regulations on measuring and reporting in accordance with Sections 10 and 12 to 15. It allows the Energy Agency to issue regulations on the measuring and reporting for the issuance of guarantees of origin for electricity, gas, heating and cooling.

Pursuant to Section 24, second sub-paragraph, of the Ordinance, the Swedish Energy Agency may issue additional regulations on: the issuance, transfer and cancellation of guarantees of origin, which information a guarantee of origin shall contain and the enforcement of the Act on Guarantees of Origin for Energy and the Ordinance (2025:000) on Guarantees of Origin for Energy. The extended authorisation enables the Swedish Energy Agency to issue regulations that cover the increased need for regulation at a technical level when the system of guarantees of origin is extended to include gas, heating and cooling. Examples of this are regulations for conversion, energy stocks and calculation of production capacity.

6.2 Cost impact for the public sector and local self-government

The Swedish Energy Agency considers that the new regulations, which include GOs for gas, heating and cooling, as well as the updated rules for electricity, do not entail sufficiently significant cost impact for the State, municipalities or regions to require approval from the Government. This is based on the fact that the proposed rules mainly involve modifications to existing systems and processes, where most of the necessary measures, in particular IT measures, are already established within the framework for GOs for electricity.

The new regulations are also not deemed to affect local self-government, as the new rules mainly involve modifications to existing systems and processes without imposing new or extended obligations on municipalities or regions.

6.3 Compliance with EU rules

In Section 3.1 (the baseline scenario), the Swedish Energy Agency has described what it would mean not to introduce the new regulations, focusing in particular on Sweden's obligation to comply with EU law. This Section describes how the new regulations comply with EU law.

In the field of energy, the EU has shared legislative competence with the Member States pursuant to Article 4(2)(i) of the Treaty on the Functioning of the European Union (TFEU). It follows from Article 2(2) TFEU that, when the EU legislates in an area of shared competence, the power of the Member States to adopt their own laws is restricted. Instead, it follows from the so-called blocking effect of Union law, the precedence of EU law and the principle of sincere cooperation, expressed in Article 4(3) of the Treaty on European Union (TEU), that Member States are to comply with and fulfil Union law in the area concerned.

According to Article 288(3) TFEU, directives are binding, as to the result to be achieved, upon the Member State, but leave flexibility as to how it is to be implemented. Thus, Sweden and other Member States can choose how to transpose a directive, as long as the objectives of the directive are achieved.

The new regulations are based on Article 19 of the revised Renewable Energy Directive, which cover GOs for energy from renewable sources⁴². An important part is Article 19(6), which refers to standard EN 16325⁴³. This standard is already mentioned in the revised Renewable Energy Directive (RED II),⁴⁴ but has since been subject to extensive revision work. The revised standard has not yet been adopted, but passed the final vote that took place in March 2025. In addition, Article 19(2) now includes GOs for gaseous renewable fuels, such as hydrogen, and Article 19(7) regulates minimum requirements for what is to be specified in GOs.

The majority of the new regulations are based on the requirements of the Renewable Energy Directive and EN 16325. The amendments that do not do so are presented separately. In any case, the proposals are based on the conditions that apply in the Swedish context; in terms of the energy type of electricity, Sweden has a relatively large proportion of producers who use most of their self-produced electricity themselves, making the proposals more complex than they would otherwise have needed to be. Against this background, the Swedish

⁴² DIRECTIVE (EU) 2023/2413 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 October 2023 amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652.

⁴³ CEN-CLC-JTC 14_N285_FprEN_16325_(E).

⁴⁴ See Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources.

Energy Agency has considered that it is not appropriate to introduce measurement only at the connection point to the concessionary network, but to allow the issuance of GOs also for electricity production measured at an earlier stage (NCN). Therefore, in order to ensure a uniform system that meets the general requirements of the GOs, namely that the system can guarantee the origin of energy from renewable energy sources within the meaning of the Renewable Energy Directive, the proposals have gone beyond what is required by the Renewable Energy Directive and the standard in some respects. This concerns, in particular, the issue of cancelling self-consumption GOs, which are issued for self-consumed electricity in installations with the measuring point in the non-concessionary network. The standard only actually requires such GOs to be marked with the attribute 'self-consumption', and should therefore leave it up to market operators to determine whether trade in such GOs is desirable or not. The Swedish Energy Agency's proposal is therefore stricter and involves requirements for the cancellation of these types of GOs in order to completely prevent the possibility of trading with them. The sixth sub-paragraph of Article 19(2) certainly gives Member States the possibility to issue a GO to a producer and immediately cancel it. However, the aim of this is to ensure that the market value of GOs issued to a producer receiving financial support for the same production is properly taken into account, for example by the fact that the guarantee cannot be transferred to other accounts and is thus not available for the market. Other than that, the proposals are deemed to be in accordance with the requirements arising from the Renewable Energy Directive and EN 16325.

Swedish energy producers will continue to be able to be issued with both GOs and EECS-GOs, and electricity suppliers and others who trade in GOs will also continue to be able to trade in both variants. The obligation of Member States under Article 19(9) of the Renewable Energy Directive to recognise the GOs issued by other Member States is therefore not affected by the Swedish scheme of issuance of both GOs and EECS-GOs. The arrangement is not considered to have a restrictive effect on trade.

Overall, the new regulations for GOs are considered to be in line with the obligations arising from Sweden's membership of the EU.

7 Economic impact

The chapter presents the economic impact of the new regulations for producers and consumers of electricity, gas, heating and cooling, as well as for network owners, rapporteurs and the public sector. Furthermore, it describes the other impact of the new regulations on enterprises and competitive conditions, as well as the special consideration given to small enterprises.

The electricity section of the chapter contains compiled statistics from the Swedish Energy Agency's register of electricity production installations already approved for GOs. Statistics are also presented to the operators who own the installations, as well as to their rapporteurs. The number of electricity producers within the GO system will decrease as a result of the new regulation proposing a capacity limit of 50 kW to apply for a GO. The limit applies to all types of energy but means that some existing electricity producers will no longer remain in the system. In the chapter's statistics on electricity producers and their rapporteurs, installations with a production capacity of less than 50 kW are therefore excluded from the compiled data. All statistical data are taken from the register on 6 December 2024.

In this chapter, some assumptions are made, which are summarised in Table Table 34.

Table 34. General assumptions about economic impacts

Subject matter	Estimate
Additional remuneration (holiday pay, employer's contribution, and an overhead cost)	84 %
Monthly hours worked	160 hours
Civil servant in the government sector with additional remuneration (median monthly salary government sector, 2023, average women and men SEK 40 100) ⁴⁵	SEK 73 784/month SEK 885 408/year SEK 461/hour
Civil servant in the private sector with additional remuneration (median monthly salary, 2023, average women and men SEK 44 600) ⁴⁶	SEK 82 064/month SEK 984 768/year SEK 513/hour
Man-year of the Swedish Energy Agency ⁴⁷	SEK 1 400 000
Market price per renewable GO ⁴⁸	SEK 10

⁴⁵ Statistics Sweden, Median wages in Sweden, 2024. *Statistics Sweden, SCB*.
<https://www.scb.se/hitta-statistik/sverige-i-siffror/utbildning-jobb-och-pengar/medianloner-i-sverige/>
(retrieved 18/09/2024). Median salaries in the government sector for civil servants, average of women and men in 2023.

⁴⁶ Statistics Sweden, Median wages in Sweden, 2024. *Statistics Sweden, SCB*.
<https://www.scb.se/hitta-statistik/sverige-i-siffror/utbildning-jobb-och-pengar/medianloner-i-sverige/>
(retrieved 18/09/2024). Median salaries in the private sector for civil servants, average of women and men in 2023.

⁴⁷ Swedish Energy Agency, Estimated cost for a man-year in 2025.

Time to complete the application and produce supporting documents	10 hours
Time for cancellation per month	15 mins.

7.1 Impacts for energy producers and rapporteurs

The economic impact presented is based on the direct costs incurred by energy producers, electricity network operators and other enterprises that report measured values.

An ongoing cost that affects all operators who have GOs issued is the account fee for the guarantee of origin account of SEK 200 per year and an ongoing fee per GO issued of SEK 0.10. The amount of the issuance fee for each producer depends on how many GOs a producer is issued and is therefore not included in the calculation for each type of energy. For example, a producer with a production of 100 GWh per year⁴⁹ would receive a total issuance fee of SEK 10 000 per year.

Since biofuels must be reviewed, producers who do not have a sustainability statement may need to apply for it. The time needed to complete the application and to produce the necessary documentation to the Swedish Energy Agency is estimated to take ten hours, corresponding to a cost of SEK 5 100⁵⁰ for a civil servant in the private sector. If an independent review also has to be carried out, this will lead to additional costs of approximately SEK 32 000 to 80 000⁵¹. This could mean relatively large costs for operators who do not have a sustainability statement and could lead to them not applying for GOs. The economic impact is estimated to mainly affect crude gas producers who do not upgrade the gas and use it mainly for their self-consumption. The requirement to review biofuels has not previously existed for electricity, and those who do not have a sustainability statement will have to make an assessment of whether revenues from GOs exceed the costs of auditing every two years. This may lead to electricity producers that are not subject to sustainability criteria choosing to withdraw their GOs for electricity. For installations producing heating and cooling, the impact can be similar to that of electricity.

⁴⁸ Based on the average of the highest and lowest monthly EECS-GO prices for electricity from hydropower April 2024 to January 2025 based on data from Svensk Kraftmäklare AB.

⁴⁹ For example, an annual production of 100 GWh corresponds to a large gas production installation and a small district heating production installation.

⁵⁰ SEK 513/hour · 10 hours = SEK 5 130 ≈ SEK 5 100

⁵¹ The estimated hourly cost for an independent reviewer is SEK 2 000/hour, who is estimated to work for 16 to 40 hours on the matter. 16 hours · SEK 2 000 per hour = SEK 32 000. 40 hours · SEK 2 000 per hour = SEK 80 000.

Producers who convert one type of energy to another in the production installation will have to produce information for the cancellation certificate and then apply for the issuance of GOs after conversion to the Swedish Energy Agency. This leads to administrative costs for the producers, which is estimated to take one hour per operator per conversion, which corresponds to a cost of approximately SEK 500 within the private sector.

According to Section 6 of the Ordinance (2025:000) on Guarantees of Origin for Energy, the Swedish Energy Agency will be able to stop issuance in the event of an investigation, which will mean that the investigation of information on the reliability of GOs does not result in a producer's decision on entitlement to GOs needing to be revoked, but that the issuance will instead be temporarily suspended. The decision will be governed by conditions in the text on the decision. The producer has an opportunity to correct any deficiencies without the decision on the right to GOs being revoked. It can be considered to have a positive economic impact for the producer as they do not have to leave the system and then re-apply after the error has been corrected and the conditions for entitlement to the GOs are again met. A retroactive issuance can then be made for the period for which the issue has expired, but for a maximum of six months back in time. This means that the revenue for GOs is not completely cancelled but only delayed, which also has positive economic impact in relation to the management taking place under the current regulatory framework.

The provision may have a negative economic impact for producers where there are GO trading contracts that may become difficult to fulfil with the cessation of an issuance. Ultimately, in individual cases, there could be a breach of contract with economic impacts such as penalties.

Further economic impact may arise due to price fluctuations in the GO market. Prices may have changed both positively and negatively over the duration of the interruption. GOs have a validity period of one year, and for negative impacts to actually arise from a cessation of the GO issuance, it is required that the producer had the intention to sell its GOs during the cessation period and that the producer was obliged to sell its GOs at a given point in time after the issuance is resumed.

7.1.1 Electricity

The operators directly affected by the proposed changes for auxiliary power, self-consumption and batteries are electricity producers with installations already approved for GOs or EECS-GOs. Those mainly affected are producers with a measuring point placed in the non-concessionary network. However, producers with a measuring point at the connection point to the concessionary network are also affected by the proposed rules on batteries.

The changes will also affect enterprises that report measured values for these electricity producers to the Swedish Energy Agency's accounting system. The rapporteurs mainly consist of electricity network enterprises that measure and report measured values within, in particular, concessionary networks, but they also consist of other enterprises that offer measuring and reporting services within non-concessionary networks.

Impacts for electricity producers

There are currently a total of 5 979 installations approved for GOs. In total, 11 029 installations are excluded as a result of the 50 kW capacity limit introduced in the Ordinance. These installations account for 0.1 % of issued GOs. The majority of all 5 979 remaining installations, i.e. 62 %, are measured in connection to a concessionary network, while the remaining 38 % of the installations have a metering point located within an NCN according to Table 35.

Table 35. Installations authorised for GOs or EECS-GOs based on the location of the measuring point in an NCN or the concessionary network.

Authorised installations		
	Measurement point located in:	
	Concessionary network	NCN
GO	2 423	1 237
EECS-GO	1 282	1 037
<i>Total</i>	3 705	2 274

Table 36 shows, in detail, how many production installations each type of operator has from each energy source. Primarily, private limited companies, private individuals/sole traders and associations and foundations will be affected by the proposed change regarding self-consumption. Operators' installations approved for GOs will also have to make deductions for auxiliary power.

Table 36: The number of operators owning production installations within an NCN, broken down by energy source and type of operator. The table includes both GOs and EECS-GOs.

Type of owner	Solar	Wind	Bio/fossil/peat	Water	Total ⁵²
Private individual, sole trader	227	8	3	11	249
Associations and foundations	66	2	1	1	70
Limited liability companies ⁵³	447	42	60	30	579
General partnership, limited partnership	18	1	1	1	21
Religious communities	5	0	0	0	5
State, municipality, county council	19	2	2	0	23
Other ⁵⁴	1	0	1	0	2
Total					949⁵⁵

Initial costs

There are 2 274 installations with measurement in an NCN, where the current location of the measurement point today results in measured values that include electricity used for auxiliary power and/or self-consumption. The operators owning these installations will have to choose whether to keep the existing metering point of the installation or to switch to a metering point connected to a concessionary network. The choice is influenced by how much self-generated electricity the producer has, how GOs for this electricity were used before the change, and how the producer views the burden and costs of the additional administration that the changes entail. Thereafter, any changes shall be reported to the Swedish Energy Agency. It is estimated that the decision and notification of changes will take an employee (civil servant in the private sector) an average of two hours, which would result in a cost of approximately SEK 1 000. If more

⁵² Only installations with the energy source solar, wind, bio/fossil/peat and water currently have measurement in an NCN.

⁵³ Also includes, for example, municipally owned property enterprises that are run as limited companies.

⁵⁴ Aggregation of operators consisting of public corporations and foreign enterprises that conduct business or own real estate in Sweden.

⁵⁵ The total figure of 949 operators contains duplicates in the form of operators that own installations for several energy sources and thus are included in more than one column. The number of unique operators who own installations that are approved with a measuring point in a non-concessionary network is 940.

people or decision-making levels need to be included in the decision-making process, the cost may be higher.

The proposed changes for auxiliary power will have administrative and economic impacts for the 1 237 installations authorised for GOs and with a metering point located in an NCN. It is difficult to estimate how many of the 1 237 installations will need to have a correction factor as it depends on how many have measurements in point A (see Figure 2 in Section 2.1.1). The correction factor means that the producer receives between 90 to 99 % of the production eligible for the issuance of GOs depending on the energy source, and is therefore proportionate to the size of the installation.

Of the installations approved for GOs with measurement in an NCN, 53 of the 1 237 have a power from 10 MW and higher. They will therefore need to submit a verification report if they wish to continue to have the measuring point located in point A. A total of 29 operators (27 limited liability companies, 1 limited partnership and 1 economic association) own the 53 installations. Obtaining a calculated correction factor via an independent operator involves a one-off cost as the verification report is valid as long as no major changes are made to the installation. The cost of the service may vary depending on the construction of the installation. A roughly estimated cost of approximately SEK 50 000 is assumed in the investigation, based on dialogue with the operator concerned for the service. The remaining 1 184 installations (those with lower production capacity) may instead choose to use a standardised correction factor if they wish to avoid the cost of using an independent operator.

The proposed change for self-consumption of generated electricity will initially affect all 2 274 installations with a metering point within an NCN. Installations are affected regardless of whether they are approved for GO or EECS-GO in that the change requires them to submit responses to the question of whether self-consumption of produced electricity occurs in the installation (in whole or in part). This involves a one-off cost that is assumed to take 15 minutes and therefore corresponds to just over SEK 100 per operator, where the cost corresponds to a civil servant in the private sector. If the electricity producer replies that self-consumption partially occurs, there will be additional administrative and economic impacts, which are described in more detail in the next Section on operating costs. For enterprises that own a production installation where self-consumption occurs, there may be several aspects that determine whether it is of interest to retain the measuring point in the non-concessionary network. For example, accounting requirements or customer requirements for environmental labels may justify GOs based on self-consumption.

The addition on what applies to energy stocks concerns operators that have batteries that can be charged with electricity from the concessionary network, regardless of the measurement point location. If the current measurement does not ensure that only self-produced electricity forms the basis for GOs, the operator needs to remedy the problem and notify the Swedish Energy Agency via a change case. Based on the estimate that the case as a whole takes 45 minutes, the labour cost would be around SEK 400 for a civil servant in the private sector.

However, the measure required to ensure the accuracy of measurements may entail a higher cost for the operator. There are different ways to ensure that only measured values for self-generated electricity are reported to the accounting system. Since the electricity network enterprises are *unable* to see, via their meter, whether the electricity fed into the concession network comes from the production of electricity or is previously fed from the same network, other metering solutions are required. One option previously chosen by producers with energy stocks is to install an NCN meter that is placed before the battery. This entails an average cost of approximately SEK 3 000⁵⁶ for purchase and installation. In addition to this, there is the cost for a rapporteur to report measured values from the meter.

Another solution in use today is so-called virtual metering, in which the readings from several physical electricity meters are reconciled to produce a value for only self-generated electricity. This solution can be perceived as more complex and requires a rapporteur who is able to deal with this. Here, too, the measurement will entail costs for the producer. In the context of this investigation, data for reporting costs is not available, which means that financial estimates are lacking.

If an operator has both self-consumption and energy stocks that can be charged with electricity from a concessionary network, it will be all the more complex to ensure that only self-generated electricity is the basis for GOs. This implies increased costs to ensure accurate metering compared to those who do not have self-consumption, which may be more detrimental to the smaller electricity producers of the system as costs for meters are not proportionate to the size of the installation.

Running costs

The proposed amendments mean that electricity producers within the NCN with installations where there is partial self-consumption of electricity must declare

⁵⁶ The estimate is based on data and assumptions from:
Impact assessment regarding amendments to the Swedish Energy Agency's Regulations on Guarantees of Origin for Electricity (STEMFS 2017:2), case number 2023-011230, 2024, pp. 26-28.
In the impact assessment, the cost estimate was based on data from the Swedish Energy Markets Inspectorate on the cost of an electricity meter, wage costs for the professional group that can install and operate the meter, and assumptions regarding the travel time for these.

the proportion of self-consumed electricity versus the electricity fed into the concessionary network as excess electricity on a monthly basis. It requires the producer to find out the breakdown of electricity for use and further distribution, in order to then declare the data in the accounting system for each issuance. In order to do this, producers need to obtain information from their electricity network enterprise or electricity trading enterprise about the amount of excess electricity fed into the concessionary network. With this information, they can then calculate the difference in relation to the measured values reported in the accounting system and thus find out the total amount of self-consumed electricity. Based on the estimate that the declaration of self-consumed electricity as a whole takes 15 minutes to perform, this cost amounts to just over SEK 100 per month (SEK 1 500 per year) where the cost corresponds to an official in the private sector. For installations whose self-consumption always amounts to 100 % of the electricity production, the producer can instead state this when applying and then does not have to declare, so there is no additional cost for them. Those with self-consumption of electricity will also have to cancel self-consumption GOs, which is estimated to take 15 minutes to do if it is done every month. The cost is also equivalent to SEK 100 per month (SEK 1 500/year) for a civil servant in the private sector.

The proposed management for self-consumption means that GOs should be cancelled by the producer. Private individuals/sole traders are not affected by rules on origin labelling and are not considered to have a vested interest in cancelling GOs to origin label their self-consumed electricity. They are therefore not deemed to have the incentive to maintain the existing measurement point in the NCN. Therefore, the Swedish Energy Agency estimates that private individuals/sole traders will represent a large proportion of those who choose to switch to a metering point in connection with the concessionary network. The number of installations changing metering point is thus estimated to be at least 250⁵⁷.

Revenue

Table Table 37 shows the comparison of the revenue reduction due to the introduction of a correction factor between a bio-installation, such as a cogeneration plant, and a wind energy producer. One way for the biogas installation to minimise the reduction in revenue is to, instead, submit a verification report with a calculated correction factor.

Table 37. The impact of the correction factor on revenue per year.

⁵⁷ According to the Swedish Energy Agency's register, 262 installations are owned by private individuals with metering in NCN (statistics retrieved 06/12/2024).

Installation (NCN)	Number of GOs per year before change	Correction factor	Number of GOs per year after change to correction factor	Reduction in revenue per year ⁵⁸
Wind power	10 000	97 % Via standard value	9 700	SEK 3 000
Cogeneration	10 000	90 % Via standard value	9 000	SEK 10 000

Table Table 38 shows that the 53 installations with a production capacity of 10 MW or more have an estimated production between approximately 11 500 and 900 000 MWh per year, which with gross metering without deduction for auxiliary power results in a potential revenue between SEK 115 000 and 9 000 000 based on a GO price of SEK 10/GO. This revenue will decrease as a result of the correction factor requirement. The exact amount of the reduction depends on the correction factor set in the verification report. If a correction factor of 98 % is assumed, it would mean a reduction in revenue of SEK 2 300 to 180 000.

Table 38: Number of installations with a generation capacity of 10 MW or more, authorised for GOs and with metering point in an NCN, broken down by energy source and size of annual production.

	11 500 to 50 000 MWh/year	50 001 to 100 000 MWh/year	100 001 to 300 000 MWh/year	300 001 to 900 000 MWh/year
Solar	1	0	0	0
Wind	0	0	1	0
Bio/fossil/peat	3	12	19	7
Water	5	1	3	1
<i>Total</i>	9	13	23	8

If the one-off cost is assumed to be SEK 50 000 for the verification report to benefit from the GO system, revenues are assumed to be higher for all installations with a production capacity of 10 MW or higher.

⁵⁸ Based on a GO price of SEK 10 (statistics retrieved from Syspower 09/09/2024).

The proposal to manage self-consumption allows for continued issuance within the NCN and gives the producer the possibility to origin label their self-consumed electricity with their own GOs. This can make it easier for, among others, paper and pulp mills with a high degree of self-consumption and need to origin label it. For enterprises that already cancel their own GOs for their self-consumption, it has no financial impact on revenues. On the other hand, it will have negative economic impact and reduced revenues for the enterprises that currently refuse to sell their GOs based on self-consumption. It could potentially have an impact if the enterprise has existing agreements to sell a certain quantity of GOs, a quantity that they may no longer receive under the proposed new rules.

For enterprises that do not need to label their own electricity consumption with GOs, the proposal means that it is most advantageous to switch to a measuring point after self-consumption (for example, the one connected to a concessionary network) since it does not benefit from cancelled self-consumption GOs.

Impacts for rapporteurs

There are 39 electricity network enterprises currently dealing with metering and reporting for installations that are allocated GOs in NCN. In total, they handle measurements and reporting for 152 out of 2 037 installations that report measured values from NCNs. Most electricity network enterprises (35) meter and report for five or fewer electricity production installations. The number of electricity network enterprises, broken down by the number of installations managed by each enterprise is shown in Table Table 39.

Table 39. Number of electricity network enterprises, broken down by the number of installations with NCN metering for which they are responsible for reporting.

Number of electricity network enterprises	Number of installations for which they report
31	1–5
4	6–10
3	11–20
1	21–40

There are eight other rapporteurs who measure and report measured values for installations that are allocated GOs in an NCN. In total, these rapporteurs handle

1 885⁵⁹ installations in NCN, i.e. the majority of the installations. Two of these enterprises manage over 200 installations. The breakdown of how many rapporteurs report for how many sites is shown in Table 40.

Table 40. Number of other rapporteurs, broken down by the number of installations with NCN metering for which they are responsible for reporting.

Number of rapporteurs	Number of installations for which they report
2	Fewer than 10
2	10–100
2	101–200
2	More than 200

The rapporteurs that are electricity network enterprises and to which the above-mentioned electricity producers would switch must not refrain from providing the reporting service⁶⁰, for which they would then be expected to experience increased demand. The Swedish Energy Agency assesses that this will not lead to significant consequences, as the electricity network enterprises already record measured values from the relevant measurement point in order to know how much production the electricity producer has fed into the concessionary network. In addition, the electricity network enterprises already report measured values to the accounting system for other installations. However, to start, a hands-on intervention by an employee of the electricity network enterprises may be required to start the reporting for a new installation. However, the initial manual handling is deemed to represent negligible costs in this context, and thereafter the reporting is handled automatically.

Costs of other rapporteurs used by producers are not reported, as they operate in a market with demand for the reporting services for which they themselves price the service. On the other hand, the Swedish Energy Agency considers that these

⁵⁹ The sum of these 1 885 installations and the 152 installations with network owners as rapporteurs amounts to 2 037, which is less than the total number of authorised installations with a metering point in an NCN (2 274). This is because the numbers in this Section exclude installations whose rapporteur no longer has an active ediel ID with the Swedish Transmission System Operator, which is a prerequisite for reporting measured values to the accounting system. However, the installations are still approved in the system, but the operators have not announced a new rapporteur.

⁶⁰ [SFS 1999:716](#), Section 9.

rapporteurs can have a reduced demand for their reporting services from the at least 250 private individuals/sole traders that they may lose as customers due to measurement point changes.

7.1.2 Gas

The number of biogas installations with co-digestion and wastewater treatment plants applying for GOs is estimated to be 165, which includes the installations that produce the most and therefore are likely to be more interested in GOs⁶¹. Any hydrogen and other renewable gas production is not included in the economic calculation, as no official statistics are available. The production of hydrogen in Sweden amounts to 180 000 tonnes per year, of which only 3 % is via electrolysis⁶², which is a fossil-free production method. The fossil-free fraction is considered to be negligible in the context and is excluded from the calculation of economic impact.

The producers that will be most affected by the proposal are deemed to be the smallest operators, which generally corresponds to agricultural holdings that join the GO system and that then need to declare fuels and report measured values monthly. Such an enterprise may have one or a few employees⁶³ and the ongoing costs of GOs will then have a greater impact, from a time perspective, compared to large enterprises. Farm installations mainly produce raw biogas and to a lesser extent than those producing upgraded biogas in, e.g., co-digestion installations.

For biogas production in Sweden, there are a total of 296 installations and the majority are those where biogas is produced by wastewater treatment plants and co-digestion installations. Together, wastewater treatment plants and co-digestion installations produce 1 870 GWh/year (165 installations) while farm installations produce 132 GWh/year (61 installations)⁶⁴. Sweden's largest wastewater treatment plant has 650 employees, which can be compared to a large farm with 85 employees⁶⁵. The direct revenues at an assumed GO value of SEK 10/MWh exceed the running costs if the installation produces at least 482 MWh/year, which corresponds to an installation with a production capacity of 55 kW⁶⁶.

Table 41 Ownership of different types of biogas production installations⁶⁷

⁶¹ The Swedish Gas Association, Statistics on biogas, 2024. *The Swedish Gas Association*. <https://www.energigas.se/fakta-om-gas/biogas/statistik-om-biogas-2023/> (retrieved 07/01/2025).

⁶² The Swedish Gas Association, Statistics on hydrogen, 2021. *The Swedish Gas Association*. <https://www.energigas.se/fakta-om-gas/vatgas/statistik-om-vatgas/> (retrieved 30/08/2024).

⁶³ The Swedish Board of Agriculture, Agricultural holdings and entrepreneurs 2023, 2024. *The Swedish Board of Agriculture*. <https://jordbruksverket.se/om-jordbruksverket/jordbruksverkets-officiella-statistik/jordbruksverkets-statistikrapporter/statistik/2024-03-21-jordbruksforetag-och-foretagare-2023> (retrieved 25/09/2024).

⁶⁴ The Swedish Gas Association, Statistics on biogas, 2024. *The Swedish Gas Association*. <https://www.energigas.se/fakta-om-gas/biogas/statistik-om-biogas-2023/> (retrieved 05/12/2024).

⁶⁵ Wapnö gård AB, History. *Wapnö gård*. <https://www.wapnogard.se/historia/> (retrieved 24/09/2024).

⁶⁶ 482 MWh = 482 000 kWh. Production capacity = annual production/number of hours per year = 482 000 kWh / 8760 hours = 55 kW.

	Proportion of privately owned	Proportion of public owned
Biogas installations excl. landfill	41 %	59 %
Upgrading installations	48 %	52 %
Liquefaction installations	60 %	40 %

According to Table Table 41, there is an even distribution between private and public ownership (mainly municipal energy enterprises) of biogas production installations, as it is distributed as about half each.

Initial costs

Producers' initial administration costs consist, among other things, of completing and submitting an application to the Swedish Energy Agency in order to have their installation authorised. The time required for the application and other preparations before the first reporting of measured values and fuel declaration is assumed to take 15 hours. The preparations include the establishment of procedures, entering into sales contracts, amending customer contracts, updating information material and knowledge acquisition. The cost corresponds to 15 hours · SEK 513/hour ≈ SEK 7 700 per operator, i.e., approximately SEK 1 270 000 for all operators.

It is assumed that producing a simplified flow diagram of the installation will take an average of four hours, but this may vary as some installations already have simplified sketches produced or some installations are more difficult to survey. The cost corresponds to 4 hours · SEK 513/hour ≈ SEK 2 000 per operator or approximately SEK 339 000 for all operators.

Large operators with several installations will be able to submit several applications and will need to report measured values and fuel declarations for all installations, rendering a larger work effort and associated costs but, at the same time, the possibility of new financial revenues.

Regarding investment costs, it is assumed that all installations that produce upgraded biogas already have meters to be able to measure net production, as measuring equipment is required for quality control of the gas. If an installation needs to invest in meters, volumetric flow meters, electronic converters (from measured volume to volume in standard pressure and temperature) and calorific value meters are needed. After consultation with the gas industry⁶⁷, it is assumed

⁶⁷ Estimate of private and public sector ownership from the Swedish Gas Association (retrieved 07/01/2025).

⁶⁸ Meeting on 26 September 2024 with the Swedish Gas Association and gas industry representative.

that volume flow meters cost SEK 200 000, electronic converters SEK 50 000 and calorific value meters (e.g. calorimeters) cost SEK 400 000. IR spectrometer is an alternative meter that may be cheaper, but in the context of this assessment, no up-to-date price information is available. The cost of the installation is assumed to be included in the sums. This would involve a cost of approximately SEK 650 000 per operator for meters.

In order to be able to pay for the metering costs over 10 years with only the revenues from the sale of GOs, the installation must receive revenues equivalent to SEK 65 000⁶⁹ per year. This means that the production installation needs to produce at least 6 500 MWh each year, which is more than the average producer among small installations produces annually, see Table

Table 42 Potential revenue from GOs for biogas production.

Running costs

Producers need to declare fuels monthly. This is estimated to take an average of 15 minutes for a civil servant in the private sector, which adds up to about SEK 1 500 per operator per year or about SEK 254 000 in total administrative costs for all 165 operators.

Monthly reporting of measured values, including additional calculation to deduct auxiliary energy and self-consumption, is estimated to take as long as the fuel declaration and results in an additional SEK 1 500 per operator and year or SEK 254 000 in administrative costs for all 165 operators combined. The time and cost of cancellation is assumed to be the same as for the reporting of measured values, which will be a further SEK 1 500/operator and year or SEK 254 000 in administrative costs for all 165 operators.

In summary, the total running costs from the reporting of measured values, fuel declaration and cancellation correspond to $3 \cdot \text{SEK } 1\,539 + \text{SEK } 200 \approx \text{SEK } 4\,800/\text{operator}$ or $165 \text{ operators} \cdot \text{SEK } 4\,800/\text{operator} = \text{SEK } 792\,000$ for all operators plus issuing fees depending on the number of GOs issued.

Revenue

Potential revenues are shown as an average for small, medium-sized and large biogas producers according to Table Table 42. There is potential for revenues to exceed the costs for all installation sizes, but there are many factors affecting the revenue, such as the current market price of GOs, if all GO are sold, or unforeseen events that require more administration and thus may have a positive or negative impact on this simplified calculation.

⁶⁹ Annual revenue GO SEK 650 000/10 years = SEK 65 000/year.

The lower capacity limit for a production installation under the GO system is 50 kW, which corresponds to $50 \text{ kW} \cdot 8\,760 \text{ hours/year} = 0.438 \text{ GWh/year}$, as shown in Table Table 42.

Table 42. Potential revenues from GOs for biogas production per year.

Size categorisation of biogas producers	Number ⁷⁰	Average production, per producer (GWh)	Potential revenue from GOs based on average production, per producer (SEK) ⁷¹
Small producers: $0.438 < x \leq 10 \text{ GWh}$	195	2.6	26 000
Medium-sized producers: $10 < x \leq 50 \text{ GWh}$	40	24.1	241 000
Large producers: $> 50 \text{ GWh}$	10	77.2	772 000

For biogas, there is the biogas subsidy, which is a production subsidy. After the biogas subsidy has been paid, an over-compensation analysis (cost analysis so that the subsidy does not make the biogas cheaper than its fossil equivalent) is carried out each year for all installations. If the majority of all biogas producers receive both the subsidy and GOs, revenues from these instruments may lead to a reduced biogas subsidy to avoid overcompensation.

7.1.3 Heating and cooling

The operators mainly concerned by GOs for heating and cooling are producers of heating and cooling whose installations have a production capacity of at least 50 kW. It will be voluntary to apply for GOs, which is why the costs described here will not be mandatory. At present, there is a certain possibility to prove the environmental value of heating and cooling through other labels for ecolabelled or renewable district heating and cooling, which means that producers whose customers demand renewable heat can, to some extent, meet that need at the present time.

The ownership of district heating enterprises is divided between municipal enterprises and municipal administrations and private and state energy groups according to TableTable 43.

⁷⁰ The Swedish Gas Association, Map of biogas installations. *The Swedish Gas Association*.
<https://www.energigas.se/fakta-om-gas/biogas/karta-biogasanlaggningar/> (retrieved 19/11/2024)

⁷¹ Based on a GO price of SEK 10.

Table 43. Ownership in the district heating market⁷²

Type of owner	Proportion of owners
Municipal enterprises	65 %
Municipal administrations, private or state energy groups	35 %

In 2022, there were 171 enterprises producing district heating⁷³. In addition to district heating producers, waste heat or waste cooling producers can also apply for GOs. According to statistics from Ei, waste heat is supplied to approximately 80 district heating networks, which is why the number of waste heat producers is estimated at 80 producers⁷⁴. Cooling producers can also apply for GOs. In 2023, there were 40 enterprises supplying district cooling.

Since it is unclear how much interest there will be for GOs for heating and cooling, it is assumed that 50 % of the above-mentioned producers will apply. The number of district heating enterprises expected to apply is thus 86, the number of waste heat producers 40 and the number of district cooling producers 20. In total, 146 producers are expected to apply for GOs for heating and cooling. If the distribution of applicants is assumed to be the same for all categories, the majority of operators applying for GOs for heating and cooling will be municipal enterprises. Since municipal enterprises are to be run in a business-like way, the Swedish Energy Agency considers that they will not be affected in different ways than private enterprises.

Initial costs

Producers' initial administration costs consist, among other things, of completing and submitting an application to the Swedish Energy Agency in order to have their installation authorised. This includes drawing up a flow diagram for the installation, explaining the measuring and calculation method, and providing other information and completing the application. This is estimated to take a total of 5.5 hours per installation. Other initial administrative costs consist of setting up internal procedures, concluding any sales contracts, amending customer contracts and updating information material. Since GOs did not previously exist for heating and cooling, producers are also considered to need extra time for

⁷² *Impact assessment of the Swedish Energy Markets Inspectorate's regulations and general guidelines on measuring, invoicing and provision of information on supplied thermal energy (district heating)*, case number 2021-102154, p. 4.

⁷³ The Swedish Energy Markets Inspectorate, Production per price area technical data - district heating. *Technical data - district heating*. <https://ei.se/om-oss/statistik-och-oppga-data/tekniska-uppgifter---fjarrvarme> (retrieved 20/01/2025).

⁷⁴ The Swedish Energy Markets Inspectorate, Production per price area technical data - district heating. *Technical data - district heating*. <https://ei.se/om-oss/statistik-och-oppga-data/tekniska-uppgifter---fjarrvarme> (retrieved 20/01/2025).

knowledge acquisition. This is estimated to take 15 hours in total. The total initial administrative costs are summed up to approximately SEK 10 500⁷⁵ per installation. For the district heating enterprise with the lowest net turnover, which was SEK 5 million in 2023⁷⁶, the costs correspond to 0.2 % of the net turnover. The total initial costs amount to SEK 1 535 000⁷⁷ if all producers who are expected to apply do so for one installation each.

Most producers are deemed to be able to measure and/or calculate their net production with existing equipment⁷⁸. Producers who do not have the possibility to measure with existing meters have the possibility to calculate their net production. Therefore, the Swedish Energy Agency assesses that producers should not have to install new meters to be able to report their production for the issuance of GOs for heating and cooling.

The above cost calculation applies per type of energy and installation. This means that producers applying for GOs for different types of energy or for several installations will incur greater costs than those reported above. Producers who apply for GOs for both heating and cooling need to make two different applications, but will only need one account, and thus only need to pay one account fee.

Running costs

The producers' running costs for each approved installation include, inter alia, running administrative costs in the form of monthly calculation and reporting of measured values, and the monthly submission of a fuel declaration to the Swedish Energy Agency. In addition, there is also some administration in the Energy Agency's accounting system for GOs, for example for the cancellation and/or transfer of GOs. This is estimated to take about 45 minutes each month.

⁷⁵ 20.5 hours · SEK 513 /hour = SEK 10 517 ≈ SEK 10 500.

⁷⁶ The Swedish Energy Markets Inspectorate, Profit and loss account financial data - district heating. *Economic data – district heating*. <https://www.ei.se/om-oss/statistik-och-oppga-data/ekonomiska-uppgifter---fjarrvarme> (retrieved 22/01/2025).

⁷⁷ 146 · SEK 10 517 = SEK 1 535 482 ≈ 1 535 000

⁷⁸ According to consultation with a trade organisation and a number of its member enterprises.

Table 44. Running costs for producers applying for GOs for heating and cooling

Running costs	Time per month	Cost per year
Administration costs	45 min.	SEK 4 600 ⁷⁹
Fees		SEK 200
<i>Total running costs per producer per year</i>		<i>SEK 4 800</i>
<i>Total running costs per year for producers expected to apply for GO</i>		<i>SEK 703 000</i>

In total, the running costs are estimated to amount to SEK 4 800⁸⁰ per producer per year, see Table Table 44. For the district heating enterprise with the lowest net turnover, which was SEK 5 million in 2023⁸¹, the costs correspond to 0.1 % of the net turnover. The running costs are therefore considered to be relatively low and manageable even for the smaller enterprises applying for GOs. The total running costs, if all producers eligible to apply for GOs apply for authorisation for one installation, amount to SEK 703 000⁸² per year. In addition to this, there are costs related to the issuance fee, see 7.1.

Revenue

A producer who is issued GOs and who sells them will also receive a revenue from the sale. Even producers who cancel their GOs themselves, such as producers who are also suppliers, indirectly gain revenue from GOs as it means that they can sell contracts guaranteed with GOs to customers at a higher price.

⁷⁹ (0.75 hours · SEK 513/hour) · 12 = SEK 4 617 ≈ SEK 4 600.

⁸⁰ (0.75 hours · SEK 513/hour) · 12 + SEK 200 = SEK 4 817 ≈ SEK 4 800.

⁸¹ The Swedish Energy Markets Inspectorate, Profit and loss account financial data - district heating. *Economic data – district heating*. <https://www.ei.se/om-oss/statistik-och-oppna-data/ekonomiska-uppgifter---fjarrvarme> (retrieved 22/01/2025).

⁸² 146 · SEK 4 817 = SEK 703 282 ≈ SEK 703 000.

Table 45. Potential revenues from renewable GOs for district heating enterprises, 2022

Size categorisation of district heating enterprises	Number	Average production, per producer (GWh) ⁸³	Potential revenues from renewable * GOs based on average production, per producer (SEK) ⁸⁴
Small producers: 0.1 ≤ 400 GWh	141	94	620 400
Medium-sized producers: 400 ≤ 1,000 GWh	22	651	4 296 600
Large producers: 1 000 ≤ 9 000 GWh	8	2 807	18 526 200

* The renewable portion of production is assumed to be equal to the share of biofuel in the energy input in district heating production, which, according to statistics from the Swedish Energy Agency, was 66 % in 2022. The renewable portion is assumed to be the same for all producers.

In 2022, 49 985 GWh⁸⁵ of district heating was produced by 171 enterprises⁸⁶. There is a large spread in the size of production between the different enterprises, which is why a division into three different groups based on the size of the operator's production has been made in Table Table 45. A small operator with an average production of 94 GWh would, according to the estimate above, be able to receive revenues of approximately SEK 620 400 per year from renewable GOs, a medium-sized producer with an average production of 651 GWh is expected, according to the reasoning, to receive SEK 4.3 million per year and a large producer with an average production of 2 807 GWh would be able to receive an estimated SEK 19 million per year, see Table Table 45. The actual revenue depends on the market price of GOs for heating and cooling, which may vary depending on the origin and demand of these GOs. If consumers' willingness to pay is low, distributors' interest in purchasing GOs may be low, and not all producers may be able to sell all their GOs. If the market price is lower than the SEK 10 used in the example above, the revenue will be lower.

The Swedish Energy Agency has no information on how much district cooling is produced per enterprise. In 2022, 1 018 GWh⁸⁷ of district cooling was delivered by approximately

⁸³ The Swedish Energy Markets Inspectorate, Production per price area technical data - district heating. *Technical data - district heating*. <https://ei.se/om-oss/statistik-och-oppna-data/tekniska-uppgifter---fjarrvarme> (retrieved 20/01/2025).

⁸⁴ Based on a price of SEK 10 per renewable GO.

⁸⁵ The Swedish Energy Markets Inspectorate, Production per price area technical data - district heating. *Technical data - district heating*. <https://ei.se/om-oss/statistik-och-oppna-data/tekniska-uppgifter---fjarrvarme> (retrieved 20/01/2025).

⁸⁶ Based on total heat input excluding total waste heat.

⁸⁷ Swedenergy, District cooling statistics. 2023. <https://www.energiforetagen.se/statistik/fjarrkylestatistik/> (retrieved 22/01/2025).

40 enterprises. The average production of district heating is greater than the average production of district cooling, which is why revenues will be lower for district cooling. The same reasoning applies to revenue from waste cooling.

In addition to monetary revenues, GOs could also improve the image of an enterprise. This, in turn, could lead to potential customers who previously were not interested in 'unlabelled' district heating to connect to the district heating network. However, there are many other factors that influence customers' choice of means of heating.

7.2 Impact on competitive conditions

This Section analyses the possible impact of the new regulations on competitive conditions related to the proposals for each type of energy.

In the new Ordinance (2025:000) on Guarantees of Origin for Energy, the Swedish Energy Agency is proposed to have the possibility to stop the issuance during investigations and will be added as a condition to the text of the decision. It may temporarily affect the competitive situation of the producer concerned for the application of the provision. Reduced supply of GOs and loss of revenue may temporarily lead to a producer not having the same competitive position as before on the market. The consequences for the producer are likely to be less than in the case of a withdrawal, as a new application to join the scheme needs to be made. This situation reasonably results in more time and resource consumption for the producer and has greater economic impact as well as reduced competitiveness.

7.2.1 Electricity

For electricity, cancellation of self-consumption GOs, no issuance of GOs for auxiliary power and 50 kW generation capacity limit (Ordinance) means that fewer GOs will be available for trading on the market compared to the current situation. It affects the supply on the GO market and may cause the price to increase for GOs from specific energy sources due to a lower supply.

Producers

For electricity producers, only those who have measurements in a non-concessionary network, which corresponds to a maximum of 2 274 installations that have a reduced number of marketable GOs, are affected, if they currently receive GOs issued for auxiliary power and/or self-consumption. There is no data on how many GOs this might correspond to. Electricity producers in the form of paper and pulp mills are expected to be more affected by the change, as they have a larger share of self-consumed electricity compared to other producers. However, with the cancellation of self-consumption, they will continue to be able to use their GOs from self-consumed electricity to obtain environmental labels and meet customer requirements for manufactured products or for meeting

climate objectives. In this respect, therefore, the conditions for competition should not be adversely affected.

Other countries that have expressed doubts about Sweden's handling of GOs in the non-concessionary network are deemed to have increased reliability for Swedish GOs with the proposal, whereupon electricity producers are also encouraged in these markets.

The Ordinance's 50 kW production capacity limit means that 11 029 electricity producers will no longer be part of the GO system. This corresponds to an annual production, at the time of application, of 171 869 MWh, which corresponds to 171 869 GOs per year by which the market will decline. In relation to the total estimated production corresponding to 186 701 027 MWh⁸⁸, the installations under 50 kW produce approximately 0.1 % of the total annual production, making it negligible in this context.

Rapporteurs

Changing competitive conditions may arise as the proposal may result in some electricity producers who currently have measurement in the non-concessionary network choosing to switch to a measurement point in connection with a concessionary network. The competitiveness of non-concessionary network rapporteurs, who are not electricity network operators, can be impeded as the rapporteurs in connection with a concessionary network, that is to say, electricity network operators, have a monopoly position at this measurement point. As a result, electricity network enterprises may have more customers to report for, while other enterprises offering reporting services may have fewer customers, which may also increase competition between them.

However, there is another consequence of the new regulations, which may partly compensate for any loss of customers. This is the proposed clarification about energy stocks and producers' need to ensure that reported measured values consist only of electricity production. It has the potential to have a positive impact on the activities of other rapporteurs. For example, if the solution consists of installing an additional NCN meter before the energy stocks or if the rapporteur offers solutions for reporting through a virtual meter.

Electricity trading enterprise

A reduction in the supply of GOs from a particular energy source may have an impact on the ability of electricity trading enterprises to origin label contracts with that specific energy source. The changes may therefore have the

⁸⁸ The number includes production from installations with a production capacity of less than 50 kW.

consequence that electricity trading enterprises need to origin label their sold electricity with other types of GOs than before.

Based on the standard annual production indicated in the application, approximately 13.6 %⁸⁹ of the GO-eligible production comes from installations with a measuring point located in NCN. It is currently unclear how much of this electricity production constitutes self-consumption, and thus also how much the supply of GOs would be reduced as a result of the proposal to cancel self-consumption. However, the Swedish Energy Agency's assessment is that the changes will not have any major impact on competition for electricity trading enterprises, as the portion of GOs issued from NCN already accounts for a small part of the total amount of GOs issued.

7.2.2 Gas

For gas, producers joining the GO system will be able to sell gas on an international market., which has not been possible to the same extent in the past. This means that Swedish producers will have an impact on the international market in the form of a larger supply.

7.2.3 Heating and cooling

Since district heating networks constitute a form of natural monopoly in the distribution of heating, free competition between district heating enterprises does not exist. Thus, it is likely that no significant impact on the conditions of competition between them would result from the introduction of GOs for heating.

On the other hand, the heating market as such is a competitive market because alternative heating methods exist, such as heat pumps and boilers. This means that the introduction of GOs for heating could affect the competitive conditions between enterprises offering different heating solutions. If the prices of GOs are high and burden customers a lot, they may choose another form of heating. However, it is likely that factors such as fuel prices will have a greater impact on the price of district heating than on GOs. Changing the heating method is often associated with relatively high costs for the customer and is in some cases not practically possible. Competition between enterprises is therefore primarily for customers who have not yet chosen their heating method.

At the same time, GOs can enable district heating enterprises to offer differentiated contracts, giving the opportunity for environmentally conscious customers to get a 100 % renewable or fossil-free contract guaranteed with GOs.

⁸⁹ The specified standard annual production for installations measuring in a non-concessionary network is 25 322 831 MWh, while the total standard annual production for all installations is 186 529 158 MWh. The numbers are based on installations with a production capacity of at least 50 kW as a result of the regulation proposal on the capacity limit.

The introduction of GOs for heating may therefore mean that district heating as a heating method becomes more attractive for these customers.

GOs for heating will not be tradable internationally. The Swedish Energy Agency assesses that the competitiveness of Swedish enterprises on the global market will not be affected to any great extent.

The same reasoning applies for producers of cooling.

Enterprises supplying waste heat or cooling to a district heating or cooling network may have a competitive advantage over other enterprises in their industry. The GO system provides an opportunity for an additional income that the provider of the waste heating or cooling did not previously have. In addition to this, the potential additional income from GOs could mean that it becomes profitable for more enterprises to supply waste heat or cooling. This could lead to increased competition between enterprises wishing to supply waste heat or cooling to a particular network.

7.3 Other impacts on enterprises

The activities of enterprises may be affected by the new regulations and this part describes the impact on enterprises.

In order to obtain the correct GO issuance, producers need to ensure that correct measured values are reported, which requires expertise on the installation but also on the GO system. There are also requirements for energy stocks for electricity, as the metering point must be reviewed in order to avoid incorrect issuance.

For gas, there are specific rules in the revised Renewable Energy Directive for installations that both receive GOs for gas and report gas in the Union database. It is not possible to cancel the GOs for origin labelling until after the same consignment of gas is cancelled in the UDB. This may mean that producers avoid applying for GOs for gas if they also report gas within the UDB. This may also make it more difficult to use the GOs because it is necessary to ensure that the gas has been handled correctly within the UDB before it can be cancelled.

The Swedish Energy Agency does not consider that a producer joining the GO system will lead to any need for employment, as the administrative time per month is estimated to be 45 minutes (see Section 7.1). As the time needs are small compared to one month's working time, it is more likely that someone who is already employed will receive the additional task.

7.4 Special consideration for small enterprises

Regulatory changes tend to affect small enterprises more than large enterprises. Among other things, they have fewer working hours to implement changes. This Section describes how special consideration has been given to small enterprises in the new regulations.

7.4.1 Electricity

Special consideration has been given to small enterprises by limiting the system to production installations with a production capacity of at least 50 kW. In order to account for average cases for photovoltaic power plants under 50 kW, where self-consumption generally amounts to 40 % and production capacity amounts to 16 kW with a fee of SEK 10 per GO sold, this results in a cost of just over SEK 100 per year⁹⁰. For photovoltaic power plants with a production capacity of 50 kW, and otherwise the same assumptions, this corresponds to revenue of SEK 70 per year. The capacity limit then protects most producers with a production capacity below 50 kW from costs under the given assumptions.

The number of battery installations has increased⁹¹ in recent years, and to avoid incorrect issuance due to the mixing of purchased and produced electricity in the battery, the new regulations mean increased requirements to separate the electricity through, for example, virtual measurements. The requirements are then imposed on producers who may have to invest in more meters and change their reporting of metering values, which means an increase in costs which, in 7.1.1, are estimated on average at an initial cost of SEK 3 000 for the purchase and installation of meters and approximately SEK 400 for the administrative costs of communicating with the Swedish Energy Agency as regards the change case. Alternatively, this results in running costs equivalent to approximately SEK 1 500 per year if the measurement point becomes a non-concessionary network due to monthly declaration of self-consumption. Both options correspond to higher costs than possible revenues from the sale of GOs. The costs are not scaled proportionately with the size of the installation, either, resulting in small enterprises being affected more than large enterprises.

The proposed regulations contain requirements for correction factors to deduct auxiliary power of installations approved for GOs with a measuring point in an NCN. To simplify matters for installations with an installed power below 10 MW, there is the possibility to use a standard rate. The Swedish Energy Agency considers that this should make it easier for small enterprises in

⁹⁰ The Swedish Energy Agency, Are guarantees of origin for me?, 2024. *The Swedish Energy Agency*. <https://www.energimyndigheten.se/energisystem-och-analys/styrmedel-for-elproduktion/ursprungsgarantier/ansokan-om-ursprungsgarantier/ar-ursprungsgarantier-nagot-for-mig/> (retrieved 16/01/2025).

⁹¹ The Swedish Transmission System Operator, Supply on the markets for reserves. *The Swedish Transmission System Operator*. <https://www.svk.se/aktorsportalen/bidra-med-reserver/behov-av-reserver-nu-och-i-framtiden/utbud-pa-marknaden-for-reserver/> (retrieved 04/12/2024).

particular. The simplification, which is already used today for EECS-GOs, takes into account that the requirement for a verification report may have greater economic impact for operators with smaller installations.

7.4.2 Gas, heating and cooling

Also for gas, heating and cooling, special consideration has been given to small enterprises by limiting the system to production installations with a production capacity of at least 50 kW. The Swedish Energy Agency's experience with the GO system for electricity is that it is not profitable for small producers to be part of the system, and this could harm small enterprises financially. To estimate the profitability of producers below 50 kW, a conversion is made corresponding to the installation producing every hour throughout the year (maximum annual production), which corresponds to 438 GOs⁹². If the remuneration per GO sold corresponds to SEK 10/GO, this results in approximately SEK 4 400/year.

Costs for reporting measured values, 15 mins. per month, monthly declarations, 15 mins. and cancellation, 15 mins. per month, for civil servants in the private sector will then be approximately SEK 4 600 per operator per year. There is also an annual fee of SEK 200 per year. The sum shows that the costs will be greater than the income SEK 4 400 - SEK 4 800 = SEK -400. Although the GO price may change, many small producers will not benefit economically from accessing the GO system at present, when there are several manual processes.

Special consideration has also been given to small heating and cooling enterprises by allowing for the calculation of net production in addition to measuring. If requirements were to be imposed on the measurement of net production, the Swedish Energy Agency believes that small enterprises would be most affected. This is because it is most likely that these do not already have such meters today since they are expensive⁹³ and there is currently no requirement for such measurements. The Swedish Energy Agency considers that the possibility of calculating one's net production is necessary in order for small enterprises that do not have the financial means to buy meters to be able to participate in the system.

7.5 Impact on the public sector

The implementation of the new regulations entails costs for the public sector, as presented below.

7.5.1 Impacts for the Swedish Energy Agency

The Swedish Energy Agency reviews applications for the right to issue GOs, exercises supervision and publishes ongoing information about GOs.

⁹² 50 kW · 8760 hours/year corresponds to 438 MWh/year, which generates 438 GOs/year.

⁹³ According to industry data, meters for production in an installation can cost approximately SEK 50 000.

Administrators will need to be trained on the new types of energy and on the IT systems, which corresponds to 20 people who need to spend a working week each, i.e., 25 % of a month, which corresponds to approximately SEK 369 000⁹⁴. The IT development of the e-service Eugen is also required for, e.g., application forms via My pages on the Swedish Energy Agency's website and the accounting system in order, for example, to be able to issue GOs. In addition, these systems need to be able to communicate with each other.

The investment cost for the IT development of the Eugen e-service and the accounting system together is estimated at around SEK 9 million according to the budget documentation. Then, the running cost of operating the systems will increase by approximately SEK 6 000 per month, which will be a further SEK 72 000⁹⁵ per year.

Communication efforts are one-off costs and will be required in the form of adapting the website in a user-friendly way and creating instructions for stakeholders to optimise the application process. Adaptation of the website is assumed to take six days (48 hours) for a developer with a salary as a civil servant in the government sector equivalent to SEK 22 000⁹⁶. Then, six working days are estimated for the work of the communicators, resulting in an additional SEK 22 000⁹⁷. Instructions are expected to take one month to produce for a civil servant in the government sector, which corresponds to approximately SEK 74 000.

For the Swedish Energy Agency, the handling per conversion case is assumed to take half an hour, resulting in administrative costs of approximately SEK 200⁹⁸ for a civil servant. Assuming that all 86 district heating enterprises that are expected to apply for GOs will also make one conversion per month, this corresponds to running costs of approximately SEK 238 000⁹⁹ per year.

The new Ordinance (2025:000) on Guarantees of Origin for Energy, Section 6, second sub-paragraph, proposes that the Swedish Energy Agency's decision to issue the GOs may be subject to conditions. For example, be able to temporarily stop issuance during investigations. This could be a new tool for the Swedish Energy Agency to prevent GOs whose reliability is questioned from reaching the market. Such a condition may give installation holders an incentive to quickly provide the authority with the documentation required for the investigation. This could have benefits for the Agency's resource utilisation by reducing the time needed for investigations.

⁹⁴ 20 people · SEK 73 784 per person per month · 0,25 months = SEK 368 920.

⁹⁵ SEK 6 000/month · 12 months = SEK 72 000.

⁹⁶ SEK 461/hour · 48 hours = SEK 22 128 ≈ SEK 22 000.

⁹⁷ SEK 461/hour · 48 hours = SEK 22 128 ≈ SEK 22 000.

⁹⁸ 0.5 hour · SEK 461/hour = SEK 231 ≈ SEK 200.

⁹⁹ SEK 231/conversion · 86 conversions/month · 12 months = SEK 238 392 ≈ SEK 238 000.

In summary, the total amount of one-off costs for the Swedish Energy Agency corresponds to approximately SEK 9 500 000 to introduce the regulations, and running costs after the regulations have entered into force are estimated to increase by a further SEK 310 000 per year.

Electricity

The proposed changes for electricity will mean that more data will be required from the electricity producers in the system. This will mean a greater administrative burden for the Swedish Energy Agency. Targeted efforts are also required from the Swedish Energy Agency to ensure that communication about the new requirements is as easy to understand as possible for all operators in the system, despite their previous level of knowledge. When applying, it is important that the questions asked are clear and that applicants know where to turn for answers if they do not know how to respond.

Gas, heating and cooling

The proposed changes to the regulations mean that the Swedish Energy Agency will need to spend time on skills development in order to be able to process new types of cases. In order to process these, new processing procedures also need to be developed. When the regulations enter into force, this will lead to an increased volume of cases, which means that the Swedish Energy Agency will need to spend more time on case processing. It will probably, especially at an initial stage, require a review by several administrators. This may lead to longer processing times for GOs. As the reporting of measured values will not be done via the EDIEL system as for electricity, but will be done manually by the producer, it may lead to additional reviewing or manual handling for the Swedish Energy Agency. Furthermore, the Swedish Energy Agency will need to expand its external monitoring to also follow the GO market for gas, heating and cooling.

7.5.2 *Impact on other public activities*

The impact of the new regulations for other public activities is described below.

Electricity

Other public activities affected by the proposed changes include public operators that have electricity production installations in the system or who may want to connect existing or future installations. There are currently 38 public sector operators with production installations in the system. Of these, 27 operators are municipalities, while the remaining are composed of, inter alia, regions and universities. Together they own a total of 102 installations in the system. Many municipalities also have installations via municipal limited companies, but these are not covered in this Section.

Table 46. Number of installations owned by public organisations, broken down by type of energy source. The numbers include both those approved for GOs and EECS-GOs, regardless of what measurement point they have.

Energy source	Number of installations
Solar	70
Wind	23
Bio/peat/fossil	2
Water	7
<i>Total</i>	<i>102</i>

Other than that, the changes are not expected to have any impact on public activities.

Gas, heating and cooling

Other authorities, such as Swedac, may also need to make regulatory changes regarding meter accuracy, as this is not included in the existing regulations for net production at the production facility.

The majority of all district heating installations are municipally owned and there are also municipally owned gas installations, mainly in biogas. They have the possibility to apply for the issuance of a GO and in that case are financially affected in the same way as other producers according to 7.1.2 Gas and 7.1.3 Heating and cooling.

Other than that, the new regulations are not expected to have any impact on public activities.

7.6 Impact for energy costumers

The new regulations are expected to affect electricity, gas and heating/cooling customers as follows.

7.6.1 Electricity

The economic impact for electricity customers may in many cases be related to the consequences for GO customers. GO customers are largely electricity trading enterprises that set the final price for the end customer's electricity. The Swedish Energy Agency's assessment is that the price of GOs is the only way that the new regulations may financially affect electricity customers.

In addition to the financial consequences for electricity customers, their trust in the GO system is affected. The cancellation of GOs for self-consumed electricity

ensures that consumers can be confident that the electricity certified by a GO was actually supplied to the network, both in terms of type and quantity. This reinforces the credibility of the GO system and prevents an environmental value from being used multiple times. The proposals also clarify that GOs cannot be issued for network electricity stored in energy stocks, such as batteries, thus preventing the mislabelling of the electricity.

7.6.2 Gas, heating and cooling

The new regulations will have consequences for customers who buy gas, heating or cooling. It is reasonable to assume that both the costs of the GOs and the costs of the enterprise's administration for being part of the scheme will be passed on to the end customers. Furthermore, district heating networks constitute a form of natural monopoly for the distribution of heating, which means that a district heating customer cannot change supplier. Also, it is not always practical for district heating customers to change their heating method.

The running costs described in 7.1 amount to approximately SEK 4 800 per operator per year. The running average cost will be less per GO the more GOs are produced. For a small gas producer producing 1 GWh of energy per year, it corresponds to 1 000 GOs. The cost will therefore be SEK 5 per MWh¹⁰⁰. For a larger gas producer or a small heat producer producing 100 GWh per year, the cost estimated to be transferred to the end customer is SEK 0.05 per MWh¹⁰¹. For a large heat producer producing 3 000 GWh per year, the cost estimated to be transferred to the end customer is SEK 0.002 per MWh¹⁰².

In addition to the administrative costs mentioned above, there are also costs for GOs for the end customer. For a residential customer with a contract guaranteed with GOs and a heat consumption of 20 MWh per year, the supplier is required to cancel 20 GOs per year in favour of the customer. This means that if 100 % of these costs are transferred to the customer, the costs for the contract increase by SEK 200 per year¹⁰³ for GOs.

8 Environmental impact

The environmental impact of the new regulations is negligible according to the following reasoning, which, first, addresses ongoing environmental impacts, followed briefly by initial impacts.

¹⁰⁰ SEK 4 817 per year / 1 000 MWh per year = SEK 4.8 per MWh ≈ SEK 5 per MWh.

¹⁰¹ SEK 4 817 per year / 100 000 MWh per year = SEK 0.048 per MWh ≈ SEK 0.05 per MWh.

¹⁰² SEK 4 817 per year / 3 000 000 MWh per year = SEK 0.0016 per MWh ≈ SEK 0.002 per MWh.

¹⁰³ 20 GOs · SEK 10/GO = SEK 200, based on the assumed GO price of SEK 10, see Section 7.1.3.

If electricity production installations that are also allocated electricity certificates change their measurement point, which forms the basis for GOs, so that it differs from that for electricity certificates, this leads to a doubling of the reporting amount of measured values. As the reporting for electricity is done every 15 minutes, every day, 365 days/year, there are 35 040 additional measurement reports per year for each of these installations. It is estimated that up to just under 1 800 installations¹⁰⁴ may have different measurement points for GOs and electricity certificates and therefore report for electricity certificates and GOs separately. Measured values are sent digitally via the Ediel system. Assuming that carbon dioxide equivalent emissions of reporting a measured value correspond to a short email¹⁰⁵ (0.1 g), 35 040 additional measured values are equivalent to approximately 3.5 kg/year and the emissions for all installations combined increase by a maximum of $3.5 \text{ kg/year} \cdot 1\,800 = 6\,300 \text{ kg/year}$.

In addition, there is the monthly manual reporting of measured values for an estimated 296 biogas installations plus 146 heating/cooling installations, as well as for self-consumed electricity of about 100 biogas installations. Every year, $542 \cdot 12 = 6\,504$ reports giving rise to an additional 111 kg of carbon dioxide equivalent (calculated with 17 g/report corresponding to an email that takes 10 minutes to write and received by a laptop where it takes 3 minutes to read¹⁰⁶).

Together, the new regulations are estimated to result in carbon dioxide equivalent emissions of 6.4 tonnes/year, which is less than the annual consumption-based emissions of one person in Sweden of 8.4 tonnes¹⁰⁷. Therefore, the increased emissions resulting from reporting are estimated to marginally contribute to all of Sweden's total emissions.

In this context, it can be mentioned that the capacity limit for smaller production installations proposed in the Ordinance has the consequence that approximately 11 000 electricity production installations cease to report their measured values, which in turn results in reduced emissions of approximately 38.5 tonnes/year.

¹⁰⁴ On 6 December 2024, there are 1 832 installations reporting in NCN with a production capacity of 50 kW or more, and which receive both GOs and electricity certificates. If you subtract installations having biofuel, which therefore perhaps would prefer to keep the metering point but who report for self-consumption, there are 1 776 installations left that could potentially have different metering points for GOs and electricity certificates.

¹⁰⁵ The Carbon Literacy Trust, The Carbon Cost of an Email: <https://carbonliteracy.com/the-carbon-cost-of-an-email/> 2022. *The Carbon Literacy Project*. <https://carbonliteracy.com/the-carbon-cost-of-an-email/> (retrieved 31/10/2024).

Based on these figures, 0.1 g of carbon dioxide emissions per measure value reporting is assumed.

¹⁰⁶ The Carbon Literacy Trust, The Carbon Cost of an Email: <https://carbonliteracy.com/the-carbon-cost-of-an-email/> 2022. *The Carbon Literacy Project*. <https://carbonliteracy.com/the-carbon-cost-of-an-email/> (retrieved 31/10/2024).

¹⁰⁷ Statistics Sweden, Environmental accounting. *Statistics Sweden, SCB*. <https://www.scb.se/hitta-statistik/statistik-efter-amne/miljo/miljoekonomi-och-hallbar-utveckling/miljorakenskaper/> (retrieved 20/01/2025). The number 8.4 tonnes/year refers to the year 2022.

In terms of initial environmental impact, there may be a need for the expansion of IT infrastructure and new electricity meters in NCNs, and thus an increased need for elements. The extraction of these elements has a negative environmental impact, but due to the small quantities involved, the impact is also considered to be marginal.

9 Social impact

The Swedish Energy Agency estimates that the proposals have a minimal or no impact on human health, living conditions, labour market and housing conditions. With regard to equality between women and men, the proposals are not considered to give rise to any known or potential direct effects. The purpose of the GO system today is to increase transparency about the origin of electricity by making it possible to ensure that as much electricity has been produced from a certain power source as an electricity user has requested through his electricity agreement. The new regulation aims to align the system with the objectives of EU co-operation to extend the scope to more types of energy than just electricity and to increase the reliability of the system. Any issues relating to, for example, uneven gender representation in the energy sector, or differences in how women and men use household electricity, are not affected by the current proposals in a sufficiently direct manner to justify an in-depth reasoning about their effects in these respects.

10 Entry into force and information initiatives

The draft regulations specify the rules introduced in the Ordinance. The regulations should therefore enter into force as close as possible in time to the entry into force of the new Ordinance on 1 January 2026. There is a transitional provision in sub-paragraph three of the regulation, stating that the correction factor for net electricity production may be determined for installations above 10 MW without the producer having to enclose a verification report. This is valid from 1 January 2026 until 31 December 2026. This means that installations over 10 MW during the transitional period have the possibility to use a standard value for correction factor, but that before 31 December they need to have received a decision on the issuance of guarantees of origin for electricity with a correction factor on the basis of a verification report in order to continue to receive guarantees of origin issued after 31 December 2026.

The consultation on the new Ordinance was also published on the Swedish Energy Agency's website. All subscribers to the news on electricity certificates and GOs will receive this information by email.

10.1 Consultation

In connection with the work to develop the proposed new regulations and the associated impact assessment, several dialogue meetings with representatives of the industries concerned have taken place. Two meetings with *Swedenergy* have been held, one of which focused on GOs for heating/cooling and the other focused on the reporting of measured values for electricity. Two dialogue meetings have also been held with the *Swedish Forest Industries* and the *Swedish Solar Energy Association* regarding GOs for electricity, and with the *Swedish Gas Association* regarding GOs for gas. A further meeting has been held with the *Swedish Gas Association* and a representative of the gas industry on questions concerning gas meters. The *Swedish Wind Energy* has also been offered an opportunity for a dialogue meeting, but no feedback has been received. The draft new regulations will be circulated to the industry and relevant authorities on 12 June 2025. The consultation will give stakeholders the opportunity to comment on the new Regulations.

10.2 Follow-up

Some time after the entry into force of the regulations, the Swedish Energy Agency will investigate, through supervision, whether electricity producers are complying with the rules laid down in the Regulations.

10.3 Contact persons

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