ACER
European Union Agency for the Cooperation of Energy Regulators

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Report on Distribution Tariff Methodologies in Europe

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1. Executive summary

Background and content of the report

(1) The electricity transmission and distribution networks form the backbone of the local and European energy systems and play a key role in the energy transition. Electricity tariffs have the core objective to recover the costs incurred by a transmission or distribution system operator.

(2) Pursuant to Article 59 of Directive (EU) 2019/944, National Regulatory Authorities (NRAs) have to fix or to approve transmission or distribution tariffs or their methodologies in Europe.

(3) In line with Regulation (EU) 2019/943 tariff methodologies shall provide appropriate incentives to the transmission and distribution system operators (TSOs and DSOs) to increase efficiencies, to foster market integration and security of supply, to support efficient investments, to support related research activities, and to facilitate innovation in the interest of consumers in areas such as digitalisation, flexibility services and interconnection.

(4) Tariff methodologies shall also neutrally support overall system efficiency over the long run through price signals to network users. Since charges related to transmission and distribution networks can constitute a considerable cost to the network users, the way how tariffs are set can provide additional incentives (additional to those given by energy pricing) to the network users to adapt their behaviour. The effectiveness of such signals depends on factors such as the type of network user and the share of the network costs in the final bill.

(5) Tariffs can be designed in multiple ways. Finding the right balance between various tariff setting principles (e.g. cost recovery, cost reflectivity, efficiency, non-discrimination, transparency, non-distortion, simplicity, stability, predictability and sustainability) is a complex task. The complexities increase even more under a rapidly evolving energy system featured by increased integration of renewable energy sources, increased demand by electrification as well as by a more active role of network users. According to the pursued principles in each national context, the most suitable tariff basis (capacity, energy and/or lump-sum) and targeted user groups should be determined in order to send appropriate signals.

(6) This Report complements the ACER 2019 report on practices regarding transmission tariff methodologies[1] and provides a status review of distribution tariff structures across the 27 EU Member States.

(7) NRAs shall duly take the ACER best practice reports on transmission and distribution tariff methodologies into consideration when fixing or approving transmission and distribution tariffs or their methodologies.

(8) The main findings and recommendations of this Report are the following:

1 https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Practice%20report%20on%20transmission%20tariff%20methodologies%20in%20Europe.pdf

The need to develop a common understanding of the term "distribution tariffs"

(9) ACER observed a fragmented understanding of the term "distribution tariffs" when preparing this Report. Without a common understanding, ACER sees the risk that any comparison of distribution tariff values across the EU may be misleading.

(10) In some Member States, NRAs reported that distribution tariffs (as defined in this report) cover taxes, levies or other payments for non-DSO costs (such as support schemes for renewable energy sources, or co-generation of heat and power, etc.). In line with Article 18 of Regulation (EU) 2019/943 ACER is of the view that distribution tariffs should not include costs of renewable support schemes or other unrelated policy costs, in order to facilitate their cost reflectivity.

(11) With the aim of facilitating a common understanding (and comparability, when relevant), ACER suggests differentiating distribution tariffs from other regulated tariffs paid by users connected to the distribution network by using the following terms when setting or approving the next tariff methodology in each EU Member State:

- Distribution tariffs / tariff elements;
- Tariffs / tariff elements for metering services (where applicable);
- Transmission tariffs / tariff elements (which includes amounts paid by distribution connected users for the use of transmission network) related to transmission infrastructure costs, such as return on capital, depreciation and operational expenditures, to transmission losses and to the Inter-TSO compensation mechanism;
- Tariffs / tariff elements for purchasing system services (e.g. reserves, congestion management, voltage control and reactive power support, black-start capability and system balancing), paid to both TSOs and DSOs.

The NRA's role in tariff setting should be strengthened

(12) Based on current legal frameworks, in 21 Member States the NRA sets the distribution tariff methodology, while in 3 Member States the NRA approves the tariff methodology proposed by the DSOs. In Germany, the relevant Ministry defines the distribution tariff methodology, while the NRA supervises the compliance of the tariff calculation by the DSOs with the law and the tariff methodology. In Finland and Sweden , each DSO individually defines the tariff methodology based on the legal framework, but it is not subject to NRA's approval.

(13) ACER finds that in the vast majority of the Member States the same distribution tariff methodology is applied to all DSOs. In the remaining Member States either the NRA sets different methodologies for different DSOs or the DSOs are free to choose their own tariff structure under certain legal restrictions.

(14) ACER welcomes that the Spanish NRA has been granted powers to decide on distribution tariffs from 1 January 2020. ACER considers that in order to ensure that tariffs are set efficiently in line with network user interest, NRAs should have sufficient leverage and regulatory control over the tariff as stipulated by Article 59(1)(a) of Directive (EU) 2019/944.

(15) ACER is of the view that there are compelling reasons to have NRAs directly set the distribution tariff methodology or as a strict minimum approve the methodology proposed by DSOs, in order to ensure that methodologies are free from any political or commercial interest which is ensured

by NRAs' independence legally guaranteed by the EU law. ACER recalls that NRAs shall be ensured adequate human and financial resources for this purpose, pursuant to Article 57(5) of Directive (EU) 2019/944.

Tariff methodologies should allow stakeholders to reasonably predict the tariff evolution:

(16) In most Member States, the distribution tariff methodology is set for a fixed period of time, typically 4 or 5 years, while the distribution tariff values are updated on a yearly basis.

(17) ACER is of the view that setting the distribution tariff methodology for multiple years can allow appropriate analysis of the possible actions to be taken and more effective stakeholder involvement and can support tariff predictability and save resources. Further, distribution networks are in general evolving in Europe due to innovative technologies, such as smart grids, distributed generation, penetration of electric vehicles (EV), demand side response, etc. which justifies longer tariff methodology periods which allow sufficient time to the regulated entities and network users to adapt and reduce uncertainties regarding their investment decision.

(18) A regular update of the tariff values can result in better cost-reflectivity, and, if done based on a pre-defined methodology, preserve a level of predictability.

(19) For the reasons above, ACER recommends that:

- the length of the distribution tariff methodology period is at least 4 years, considering users' calls for stable tariff methodologies, the need for discussions and consultations before setting the methodology and the time needed to implement new tariff structures (the set methodology may be subject to revision before, due to rapid changes in the sector, if duly justified); and

- distribution tariff values are updated yearly based on variations of the drivers defined by the tariff methodology and on inflation.

In the context of the energy transition, ensuring a transparent and effective stakeholder involvement is of paramount importance

(20) In the vast majority of the Member States, a public consultation or more consultation rounds take place before setting or approving the distribution tariff methodology (in most instances the consultation takes about 4 weeks or more), in 3 Member States (DE, HU, PL), the consultation is targeted to some key stakeholders and in 3 Member States (FI, MT, SE[2]) the setting of the distribution tariff methodology is not accompanied by any systematic consultation.

(21) ACER considers that in the context of the energy transition, where the role of DSOs and the manner in which distribution grids are operated are likely to be significantly impacted by increased integration of renewable energy sources, increased electrification (including demand by electric vehicles, industrial energy demand and heating), more active role of some network users as well as deployment of smart meters, effective consultation of stakeholders and transparency in deciding the distribution tariff methodologies is required for well-informed regulatory decisions and better public acceptance.

[2] In Sweden, while the consultation with stakeholders is not required, the DSOs usually do it before setting the distribution tariff methodology.

(22) ACER strongly supports the systematic use of public consultations to interact transparently and inclusively with stakeholders.

Transparency in distribution tariff setting should meet at least a minimum standard

(23) ACER notes differences in terms of public availability of tariff-related information. In the vast majority of the Member States, the (decision of the) tariff methodology as well as the distribution tariff values to be paid by different network users are publicly available.

(24) Information about the cost categories and the respective amounts recovered by distribution tariff(s) is available in about half of the Member States while the actual or forecasted data (and other assumptions) based on which the distribution tariffs are determined are available in about one third of the Member States.

(25) ACER is of the view that the availability of fundamental tariff-related information is of utmost importance in order to ensure transparency and comparability in distribution tariff setting and to facilitate an efficient internal energy market. Taking stock of the provisions in Article 59(9) of Directive (EU) 2019/944, ACER recommends publishing at least:

- the detailed methodology which is applied to set distribution tariffs, including in particular the cost categories covered by them;
- at least when the tariff methodology is set, the amounts recovered by each distribution tariff element; and
- each year, the distribution tariff values for each network user group.

To facilitate comparison, a minimum set of cost categories which are recovered by distribution tariffs should be differentiated

(26) ACER finds that the categories of costs recovered by distribution tariffs vary across the Member States. In all Member States costs for building, upgrading and/or maintaining infrastructure i.e. return on capital, depreciation and operational expenditures are usually recovered by distribution tariffs (unless co-financed or partly recovered from other charges, which in this report are not included in the meaning of the term “distribution tariffs”, such as connection charges, reactive energy charges, or fees or payments to DSOs for individual services).

(27) In 23 Member States, costs of losses are recovered by distribution tariffs.

(28) Further, NRAs indicated that costs of system services purchased by DSOs are recovered via regulated tariffs in 16 Member States. In other Member States such costs do not accrue to the DSO.

(29) The variety of tariff structures, including the different scope of cost categories which are recovered, makes the comparison of distribution tariffs in Europe a difficult task. For this purpose, distribution tariffs should be differentiated from other regulated tariffs (as discussed above) and from taxes and charges levied on distribution connected network users. In addition, in order to facilitate cost reflectivity and to ensure better transparency and comparability of distribution tariffs, NRAs should be able to differentiate at least the following tariff elements:

- A distribution tariff element which covers only costs for building/upgrading/maintaining the distribution infrastructure (i.e. return on capital, depreciation and operational expenditures).

- A distribution tariff element which covers the losses in distribution networks, where such costs accrue to the DSO.

(30) ACER is of the view that the above suggested granularity of tariff elements may favour better cost reflectivity.

Distortive effects when setting tariffs for injection and for withdrawal should be avoided

(31) Some form of distribution tariffs for injection or for its possibility to inject[3] are applied in 10 Member States (AT, EE, FI, FR, LT, LU, MT, NL, SK, SE) and in Flanders and Wallonia regions of Belgium, while Germany is the only Member State applying a "negative injection charge" for avoided network costs. In the remaining Member States no injection charge is applied.

(32) In Member States that apply distribution tariff for injection the NRA typically motivates the use of injection charges by referring to the principle of cost-reflectivity or the principle to charge all network services being provided.

(33) The Member States that do not apply injection charges provided a diverse list of reasons for their non-application. The most frequently reported reasons by NRAs for non-application are that injection charges would create distortions in the national and cross-border wholesale markets or the network costs caused by producers are already recovered through other means (e.g. through licence-holder charges or connection charges).

(34) ACER notes that some Member States (DK, IE, PT[4], RO) apply transmission tariffs for injection, but not distribution tariffs for injection, which is explained by the different impacts of the injection in those networks. On the contrary, some other Member States (EE, LT, LU) apply distribution tariff for injection, but does not apply transmission tariff for injection.

(35) ACER is of the view that in order to ensure cost reflectivity and avoid market distortions, the cost caused by a network user should be properly reflected in its distribution tariff. If a network user only withdraws from or injects into the distribution grid, in principle, only the costs relevant for withdrawal or the costs relevant for injection should be attributed to this network user.[5]

(36) If a network user both withdraws from and injects into the grid both should be considered when setting distribution tariffs, by properly taking into account the potential cost-offsetting effect and the overall cost impact to the network.

Distribution tariff bases should reflect cost drivers

(37) In contrast to transmission tariffs for injection, where the vast majority of the concerned Member States bases the injection charge at least partially on the volume of energy injected into the grid,

[3] This definition includes instances where only parts of distribution costs are charged or only some network users injecting are affected.

[4] Portugal applies an injection charge through the transmission tariff to all injections into the transmission or distribution grid, except at the low voltage level. This means that even generators connected to the distribution grid at HV and MV pay this charge, to ensure a level playing field across different generators.

[5] The principle of cost reflectivity applies to all costs; here only distribution costs are mentioned as the reference is made with regard to distribution tariffs.

ACER finds a great variety in terms of applied tariff bases (including energy-based charge, power-based charge, lump sum or their combination) for distribution tariff for injection without any prevailing practice.

(38) In about the two-thirds of Member States, the distribution tariff for withdrawal has the same basis for all network user groups. In about one third of the Member States different bases apply to different groups.

(39) The vast majority of the Member States use a combination of energy-based charges with either a power-based or a lump-sum component or both. In 3 Member States, only energy-based charges are applied to all users and in additional 5 Member States to some of the users. None of the Member States apply a power based only or a lump sum only withdrawal charge to any of the network users.

(40) In the vast majority of Member States, energy-based charges have a larger weight than power-based charges in order to recover distribution costs, while in 6 Member States power-based charges have a larger weight. Lump-sum play a relatively small role in all Member States.

(41) When energy-based charging is chosen, ACER deems that, in line with the provisions of Article 15 of Directive (EU) 2019/944 for active customers, users which both withdraw from and inject into the grid should be subject to cost-reflective, transparent and non-discriminatory network charges that account separately for the electricity fed into the grid and the electricity consumed from the grid.

(42) As already indicated in the CEER Guidelines of Good Practice for Electricity Distribution Network Tariffs and witnessed by some answers regarding the ongoing changes in some national tariff frameworks, ACER considers appropriate a gradual move to increasingly power-based distribution tariffs to recover those costs which show correlation with contracted or peak capacity.[6]

(43) Still, it is worth reminding that power-based distribution tariffs, especially when referred to actual maximum power during peak load periods, may feature a higher complexity than energy-based charging[7] and can have a negative impact on some tariff principles, such as simplicity, predictability and transparency. It must also be kept in mind that some costs (e.g. infrastructure costs) show strong correlation with capacity usage, while other costs (e.g. losses) may significantly depend on the volume of energy withdrawn from the grid.

New network user groups and topics for energy transition are emerging

(44) In the context of the energy transition, power-to-X facilities, publicly accessible recharging points for electric vehicles (EV) and energy communities have gained attention for their potential to improve overall system efficiency. These activities use the distribution system and as such their treatment in the tariff methodologies may play a role in their uptake. For instance, EV charging can contribute to system efficiency by smartly charging and potentially discharging EV batteries,

[6] Conceptually, time-differentiated tariffs with sufficient granularity may achieve similar cost reflectivity as contracted-capacity or peak-based tariffs.

[7] Time-differentiated energy-based charges can also feature relatively high complexity, e.g. when granularity is high.

but may also increase the capacity needs in distribution grids and thus the costs[8]. ACER recalls that tariff methodologies shall neutrally support system efficiency in the long run.

(45) No NRAs reported that power-to-X facilities (including power-to-gas) are treated differently than other network users regarding distribution tariffs for withdrawal. Therefore, these facilities are (or in some Member States would be, when they will be installed) subject to withdrawal tariffs. This finding should be reviewed over time, given the low penetration of this technology to date.

(46) ACER considers that in order to ensure cost reflectivity where power-to-X facilities use several (regulated) networks for transmission or distribution of energy, all injections and withdrawals in each network should be charged separately according to the costs they cause or benefits they generate in each network.

(47) Publicly accessible EV re-charging stations exist in all Member States. In the vast majority of Member States, the same tariff structure for withdrawal applies to the operators of publicly accessible re-charging points for electric vehicles, as applied to other network users (of the same country).

(48) In Italy and Portugal there is a different tariff structure (energy-based) for EV charging at publicly accessible EV re-charging stations compared to other network users (mixed, with the largest part being power-based) and in Spain there is a specific tariff (which has similar structure, but the energy component has greater weight). These different tariffs can be optionally chosen by the operator of the publicly accessible EV re-charging station in Italy and Spain.

(49) ACER notes that different tariffs (more-energy-based) for EV publicly accessible recharging points apply in half of the 6 Member States, which have a larger weight of power-based elements in their withdrawal tariffs. This may be explained by a need to avoid disincentives to realise EV points when their energy utilisation could still be low.

(50) For all Member States except Portugal a tariff regime for energy communities has not yet been implemented at national level, with several NRAs suggesting that a specific tariff treatment is in fact envisaged for energy communities as defined by the Clean Energy Package. Belgium's Brussels region reported that energy communities receive a partial exemption and the Netherlands reported that innovative projects could apply for tariff exemptions under a framework that lasted until the end of 2019 and for which an alternative is being considered.

(51) In Portugal, a legal framework has been implemented at national level in 2019 and renewable energy communities can apply for a specific tariff regime for self-consumption, in place since 2020. In Portugal, the charging of distribution tariffs for a renewable energy community depends on the extent to which the public grid is used. The more an energy community is using the public grid, the more it will contribute to the payment of distribution tariffs.

Different treatment of the same user group should be avoided, unless properly justified

(52) One third of the Member States applies different rules to network users within a network user group. Within household consumers differences can be based on spatial (rural versus urban users), load profile and available metering technology (e.g. meter capable of distinguishing time-

[8] CEER made similar points on electric vehicles in its papers on Whole Systems Approaches and on Electricity Distribution Tariffs Supporting the Energy Transition. This ACER Report reviewed the tariff practice setting for publicly accessible recharging points (as a distinct network user) only.

bands). Some Member States have different treatment for non-household consumers based on type, size, load profile or available metering technology.

(53) ACER recommends that exemptions, partial exemptions or discounts from the payment of the reflective costs by a network user are provided only if justified reasons exist. Therefore, the necessity of any different treatment should be carefully considered and reassessed over time by the NRAs.

The interaction between price signals of distribution tariffs and other price signals should be paid attention

(54) Distribution tariffs for injection, where applied, typically vary based on the voltage level. Additionally, injection charges vary based on location (1 Member State) or the DSO which the network user connects to (3 Member States). In 2 Member States, time-differentiation is incorporated in the distribution tariff for injection.

(55) Distribution tariffs for withdrawal in all Member States are subject to variation. The main factors for variations are the voltage level (all Member State except Malta) and the integration of a time-element in the tariff (17 Member States). On the contrary, variation by location (unrelated to the location of a specific DSO to which network the network user connects to) is applied only in 1 Member State.

(56) Several time signals types (day/night, peak/off-peak, seasonal) often coexist in the Member States where they are implemented, to foster adequate guidance of the consumption. The most commonly used time-differentiation in the Member States is a day/night differentiation, which is implemented in some form in 13 Member States. In 9 Member States, time-differentiation is only energy-based and in 8 Member States time differentiation is both power and energy-based. Dynamic tariffs are not implemented in any Member State.

(57) With the introduction of distributed generation and increasing demand from e.g. electric heating and electric vehicles and with the increasing capability of some resources and some network users to respond to time signals, time-of-use gains a higher importance than in the past. In such cases, a cost-reflective distribution tariff may require to be time-differentiated. While care should be given to the potentially conflicting time signals given by the time-of-use energy prices, (static) time-of-use tariffs, especially for larger consumers, can be a useful tool for reducing system peak-load, which is a main driver for network investments, thereby promoting network efficiency.

Tariff stability appears as key objective being pursued when setting distribution tariffs

(58) The review of national tariff frameworks shows that there were few recent significant changes in tariff methodologies, indicating that tariff stability of the distribution tariff framework has been so far a key objective pursued when setting distribution tariffs.

(59) There is a much wider number of ongoing possible changes (in more than half of the Member States). Careful reflections (and consultations with stakeholders) seem to take place before introducing updates of the national tariff frameworks.

(60) A multi-year transition process should be preferred when changes in the distribution tariff methodology / tariff design significantly impact the tariff values for individual grid users.

2. Introduction

(61) Pursuant to Article 59(1)(a) of the Electricity Directive[9] (EU) 2019/944, each national regulatory authority (NRA) has the duty of fixing or approving, in accordance with transparent criteria, distribution tariffs or their methodologies, or both. Article 18 of the Electricity Regulation[10] (EU) 2019/943 requires that tariffs for access to (distribution) networks shall be cost-reflective, transparent, take into account the need for network security and flexibility and reflect efficient actual costs incurred and that tariffs are applied in a non-discriminatory manner.

(62) Article 18(7) specifies that distribution tariffs shall be cost-reflective taking into account the use of the distribution network by system users including active customers. Distribution tariffs may contain network connection capacity elements and may be differentiated based on system users' consumption or generation profiles.

(63) In accordance with Article 18(9) of Regulation (EU) 2019/943, ACER shall provide and update, at least every two years, a best practice report on distribution tariff methodologies, while taking account of national specificities. NRAs shall duly take the best practice report into consideration when fixing or approving distribution tariffs or their methodologies.

(64) This Report complements the ACER 2019 report on practices regarding transmission tariff methodologies[11], as a further step towards delivering a report pursuant to Article 18(9) of Regulation (EU) 2019/943, as well as towards pursuing the objectives indicated in recital (40) of that Regulation to increase transparency and comparability in tariff-setting. In such a context, this Report provides a status review of distribution tariff structure across the 27 EU Member States.

(65) This Report is based on the input provided by the NRAs between July 2020 and November 2020 via an online data collection tool and by follow-up emails on their respective distribution tariff structures.

(66) It is worth reminding that network tariff setting is the result of a three steps process. First, the allowed revenues (including the remuneration method for DSO costs) and other relevant costs are determined. Second, the tariff structure is defined. Third, the costs are allocated to each of the tariff structure's items (i.e. charges paid by network users). This Report focuses on the last two steps.

(67) The rest of this Report is structured as follows:

- Chapter 3 provides some definitions;
- Chapter 4 recalls the key principles for setting tariffs;

[9] Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU. OJ L 158, 14.6.2019, p. 125.

[10] Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity. OJ L 158, 14.6.2019, p. 82.

[11] ACER practice report on transmission tariff methodologies in Europe, December 2019. https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Practice%20report%20on%20transmission%20tariff%20methodologies%20in%20Europe.pdf

- Chapter 5 describes the national framework for electricity distribution and the distribution tariff setting processes;
- Chapter 6 investigates the cost categories recovered by distribution tariffs;
- Chapter 7 analyses the structure of tariffs applied for injection and for withdrawal;
- Chapter 8 describes the treatment of specific user groups;
- Chapter 9 deals with emerging topics linked to the energy transition;
- Chapter 10 deals with exemptions, allowances or other different rules of tariff treatment within a network user group;
- Chapter 11 discusses the variation of tariffs, including time-differentiated tariffs;
- Chapter 12 reports on recent updates and ongoing options for updating distribution tariff methodologies;
- Annex I provides detailed data for each Member State;
- Annex II presents a brief overview of the connection charges across Europe;
- Annex III provides the relevant links to the tariff methodologies and some other tariff related information in each Member State.

3. Definitions

(68) According to the definitions set by Directive (EU) 2019/944 and Regulation (EU) 2019/943:

- ‘Distribution’ means the transport of electricity on high-voltage, medium-voltage and low-voltage distribution systems with a view to its delivery to customers, but does not include supply;
- ‘Distribution system operator’ means a natural or legal person who is responsible for operating, ensuring the maintenance of and, if necessary, developing the distribution system in a given area and, where applicable, its interconnections with other systems, and for ensuring the long-term ability of the system to meet reasonable demands for the distribution of electricity;
- ‘Producer’ means a natural or legal person who generates electricity;
- ‘Smart metering system’ means an electronic system that is capable of measuring electricity fed into the grid or electricity consumed from the grid, providing more information than a conventional meter, and that is capable of transmitting and receiving data for information, monitoring and control purposes, using a form of electronic communication;
- ‘Transmission’ means the transport of electricity on the extra high-voltage and high-voltage interconnected system with a view to its delivery to final customers or to distributors, but does not include supply;

- 'Transmission system operator' means a natural or legal person who is responsible for operating, ensuring the maintenance of and, if necessary, developing the transmission system in a given area and, where applicable, its interconnections with other systems, and for ensuring the long-term ability of the system to meet reasonable demands for the transmission of electricity.

(69) ACER observed a fragmented understanding of the term "distribution tariffs" when preparing this Report. In this Report, the term focuses on charges paid to DSOs due to costs for developing and operating the distribution grid which are recurring every year and therefore it excludes charges for physical assets required for connection to the system or the upgrade of the connection (i.e. connection charges), charges for reactive energy/power and charges following user requests of individual services. The term "distribution tariffs" is also differentiated from other regulated tariffs regarding costs for metering services (where regulated), for transmission and for system services.

(70) Distribution tariffs may be levied on network users in relation to the costs due to withdrawal from the grid (i.e. distribution tariff for withdrawal) and/or in relation to the costs due to injection (i.e. distribution tariffs for injection).

(71) In addition, for the purpose of this Report, the following additional definitions apply:

- 'Distribution tariff methodology' defines the rules for allocating distribution costs to (groups of) network users. The tariff methodology as defined in this Report does not include the determination of allowed revenues of the network operators;
- 'Household consumer' means a network user who withdraws electricity from the grid for the consumer's own household consumption, excluding commercial or professional activities;
- 'Network user' means a natural or legal person connected to the transmission or distribution network (excluding the DSO and TSO), who injects electricity in and/or withdraws electricity from the network;
- 'Payment for reactive energy/power' means the charge for withdrawing and/or for injecting reactive power outside the allowed limits;
- 'Public consultation' means a publicly announced consultation, in which any individual, group or organisation is allowed to participate;
- 'Tariff methodology period' means the period for which the general rules for the tariffs are set. For sake of clarity, it does not refer to the period during which some tariff values are applicable;
- 'Time-differentiated network tariffs' (or tariff time elements) means tariffs, differentiated by the time-of-use e.g. by peak/off-peak, season, month, weekdays/weekends, hour.

4. Tariff setting principles

(72) Electricity tariff design, in general, aims at recovering the costs incurred by a monopolistic system operator while stimulating efficiency. Cost recovery is the core objective of tariffs. Efficiency mainly relates to cost-reflectivity and the economic signals sent to the network users for optimal

use of the network. Since charges related to transmission and distribution networks can constitute a considerable cost to the network users, the way how tariffs are set can provide additional incentives (additional to those given by energy pricing) to the network users to adapt their behaviour. The effectiveness of such signals depends on factors such as the type of network user and the share of the network costs in the final bill.

(73) Other principles, such as non-discrimination, transparency, non-distortion, simplicity, stability, predictability and sustainability, are usually also pursued. In practice, it is difficult to meet all of the principles simultaneously and fully. Therefore, when setting tariffs, the NRAs aim to achieve a balance between these principles or they have to make certain trade-offs according to priorities, while also respecting legal boundaries.

(74) The structure of the tariffs has implications for the use of the grid and the costs of the grid, potentially supporting overall system efficiency, in line with Article 18 of Regulation (EU) 2019/943.

(75) The tariff structure covers all allowed costs of the DSO and can consist of a single tariff or several regulated tariffs or tariff elements, including the distribution tariff, as defined by ACER for this Report, as well as other (additional, complementary) charges. Complementary charges can recover specific DSO costs, for instance regarding first connection and the injection/withdrawal of reactive power by each network user.

(76) According to the pursued principles, the most suitable tariff basis (capacity, energy and/or lump-sum) and targeted user groups should be determined in order to send appropriate signals.

(77) With the introduction of distributed generation and increasing demand from e.g. electric heating and electric vehicles, costs imposed on the distribution grid may depend both on consumed volume and capacity. Finding the right balance between volumetric, capacity and lump-sum design elements is crucial.

(78) Costs might vary according to time or other reasons. To reflect the cost variation according to time, a cost-reflective tariff could be time-differentiated. The use of time signals can be a useful tool for reducing distribution network peak-load, which is the main driver for network investments, thereby promoting network efficiency. Not all users may be capable to react to such signals to the same extent.

(79) More advanced differentiation in time and location through dynamic tariffs could further increase tariffs' cost reflectivity and incentivise efficient network behaviour. However, such differentiation is rather complex, requires a sufficient level of automation, and may therefore contradict other principles, such as simplicity, predictability and transparency, if not implemented effectively.

5. National frameworks and distribution tariff setting responsibilities

5.1. Number of distribution system operators and tariff methodologies

(80) As shown in Table 1 below, the number of distribution system operators (DSO) varies greatly from one Member State to another, i.e. from one single DSO in 5 Member States (HR, CY, IE,

MT, SI) to 883 (DE). The number of DSOs does not always show a correlation with the size or population of a country.

(81) The number of network users served by a DSO within a Member State also greatly varies. For example, in France and Italy, where the number of DSOs is respectively 160 and 130, the largest DSO serves more than 95% and about 85% of the network users respectively.

(82) In 16 out of 22 Member States with multiple DSOs, all DSOs within the Member State (or region) apply the same tariff methodology. This is required by the national law, with 4 exceptions (FR, GR, IT, RO) where the NRA decided to apply the same tariff methodology.

(83) In the remaining 6 Member States where there is more than one DSO, different tariff methodologies apply: in 2 Member States (AT[12], PL), the NRA itself sets different tariff methodologies for different (groups) of DSOs, while in 3 Member States (DK, FI, SE), the DSOs are free to design their own tariff structure within certain legal boundaries (e.g. tariffs must be cost-reflective, clear, not detrimental to market efficiency, etc.) and the tariff structures are indeed not identical for all DSOs.

Table 1: Number of distribution system operators per Member State as of end 2019

Member State	Number of electricity DSOs	Difference in tariff methodologies in case of multiple DSOs
Austria	121	A different methodology is used for DSOs that are not audited (about half of DSOs). They can charge the tariffs that are valid in the local network area without being part of the benchmarking procedure.
Belgium (Brussels)	1	N/A
Belgium (Flanders)	10	No difference, legally required to be the same
Belgium (Wallonia)	5	No difference, legally required to be the same
Bulgaria	4	There are some differences between the tariff methodologies.[13]
Croatia	1	N/A
Cyprus	1	N/A
Czech Republic	255	No difference, legally required to be the same
Denmark	44	DSOs are free to choose their own tariff structures. Most DSOs apply the same tariff structure.
Estonia	33	No difference, legally required to be the same
Finland	77	DSOs are free to choose their own tariff structures.
France	160[14]	No difference, but the distribution tariff methodologies are not legally required to be the same to all DSOs.

[12] AT: The difference in methodologies is that the non-audited DSOs are not part of the benchmarking procedure. These DSOs charge the tariffs valid in their network area that is based on the tariff setting procedures of the audited DSOs and published in the electricity ordinance.

[13] BG: A combination of energy-based and power-based charges for all users is applied. Power and energy-based charges for 2 DSOs and energy-based charges for the other 2 DSOs.

[14] FR: CRE regulates the seven electricity DSOs which serve over 100,000 customers: Enedis, which serves 95% of continental metropolitan France; SER (Strasbourg); URM (Metz); Gérédis (DeuxSèvres); SRD (Vienne); GEG (Grenoble); EDF's insular power systems department (EDF SEI), which serves Corsica and most of France's overseas territories.

Member State	Number of electricity DSOs	Difference in tariff methodologies in case of multiple DSOs
Germany	883[15]	No difference, legally required to be the same
Greece	2	No difference, but the distribution tariff methodologies are not legally required to be the same to all DSOs.
Hungary	6	No difference, legally required to be the same
Ireland	1	N/A
Italy	130 (as of end 2018)	No difference, but the distribution tariff methodologies are not (legally) required to be the same to all DSOs.
Latvia	11[16]	No difference, legally required to be the same
Lithuania	5	No difference, legally required to be the same
Luxembourg	5	No difference, legally required to be the same
Malta	1	N/A
The Netherlands	7	No difference, legally required to be the same
Poland	189[17]	There are some differences between the tariff methodology for the 5 legally unbundled DSOs and for smaller DSOs.
Portugal	13[18]	No difference, legally required to be the same.
Romania	54[19]	No difference, but the distribution tariff methodologies are not legally required to be the same to all DSOs.
Slovak Republic	3	No difference, legally required to be the same
Slovenia	1	N/A
Spain	365	No difference, legally required to be the same
Sweden	175[20]	DSOs are free to choose their own tariff structures within certain legal boundaries.
Total		5MS with 1 DSO, 16MS: same tariff methodology within a country (or region), 6MS: different tariff methodology

5.2. Responsibilities for tariff-setting

(84) As shown in Table 2 below, in 90% of the Member States (24 out of 27) the NRA (in Belgium the regional regulator) sets or approves the tariff methodology. In the vast majority of the Member States (i.e. 21), the NRA directly defines the distribution tariff methodology, while in 3 Member States (DK, IE, MT) the NRA approves the tariff methodology defined by the DSO.

[15] DE: BNetzA (Federation level): 178, Federal states (Länder): 705. Network operators with more than 100.000 direct or indirect (through downstream networks) customers and operators whose grid exceeds the border of a federal state lie within the jurisdiction of BNetzA. In addition, some Federal states have delegated their responsibilities to BNetzA. The other network operators are regulated by the regulatory authorities of the federal states.

[16] LV: The largest DSO (AS "Sadales tīkls") serves more than 95% of network users.

[17] PL: 5 big (before unbundling part of the vertically integrated energy suppliers) and 184 small DSOs.

[18] PT: In mainland Portugal there are 11 DSOs, including 10 DSOs that only operate locally in the LV grid, covering a small fraction of LV consumers (0.5%). The remaining DSO in mainland Portugal operates the remaining LV grid and operates also the remaining distribution grid in HV and MV.

[19] RO: 8 main licenced DSOs; 46 embedded licenced DSOs (very small compared to the first).

[20] SE: 5 HV DSO and 170 LV and MV DSOs.

Table 2: Responsibilities for the setting of tariffs

Member State	Party responsible for setting the tariff methodology
Austria	NRA
Belgium (Brussels)	Regional regulator
Belgium (Flanders)	Regional regulator
Belgium (Wallonia)	Regional regulator
Bulgaria	NRA
Croatia	NRA
Cyprus	NRA
Czech Republic	NRA
Denmark	DSO (subject to NRA approval)
Estonia	NRA
Finland	DSO (without NRA approval)[21]
France	NRA
Germany	Ministry[22]
Greece	Currently NRA, from 2022: DSO (subject to NRA approval)[23]
Hungary	NRA
Ireland	DSO (subject to NRA approval)
Italy	NRA
Latvia	NRA
Lithuania	NRA
Luxembourg	NRA
Malta	DSO (subject to NRA approval)[24]
The Netherlands	NRA
Poland	NRA
Portugal	NRA
Romania	NRA
Slovak Republic	NRA
Slovenia	NRA
Spain	NRA
Sweden	DSO (without NRA approval)
Total	20MS: NRA, 1MS: regional regulators, 3MS: DSOs under NRA approval, 2MS: DSO, 1MS: Ministry

[21] FI: There is no ex-ante approval of tariffs or prices of network services by the NRA nor any other authorities. The NRA confirms ex-ante the revenue cap and connection charges. The NRA shall also approve ex-ante the terms and conditions of distribution and connection services before the network operators apply them. In addition, the NRA supervises the compliance between methodology and the Finnish electricity act. In situation of discordance, the NRA could decide on injunction.

[22] DE: Methodology is set in an ordinance by the Ministry of Economic Affairs.

[23] GR: The tariff methodology applied in year 2020 and previous years was set by the NRA. The respective tariffs were calculated also by the NRA, based on DSO forecasts for connected consumer capacity and demand for power and energy. From year 2022, the DSO proposes the tariff methodology for approval by the NRA, based on principles included in the Distribution Network Code, and calculates the tariff annually, based on the approved tariff methodology. NRA approves both the tariff methodology and the tariffs calculated annually by the DSO.

[24] MT: The DSO is required to submit the retail tariffs, which cover also the distribution costs, for the approval of the NRA. The DSO forms part of a vertically integrated company, which is also the sole supplier of electricity in Malta. The DSO is required to keep unbundled accounts at internal management accounts level only. As such there is no specific separate tariff for the use of the distribution network. The costs of the distribution network are in part covered by a maximum demand tariff, an annual fixed charge, kWh tariffs that covers also energy and the supply and connection charges. All tariffs are regulated.

(85) In Germany, the Ministry defines the tariff methodology, while the NRA supervises the compliance of the tariff calculation by the DSOs with the law and the tariff methodology.

(86) In Finland and Sweden , the DSO defines the tariff methodology based on the legal boundaries (including that the tariff must be cost reflective and facilitate efficient network use). The tariff methodology is not subject to NRA's approval. However, the NRA approves the revenue cap for the DSO and supervises the compliance between the applied methodology and the national law. In situations of discordance, the NRA can take out an injunction.

(87) In Sweden, the network users can submit a complaint to the NRA if the tariffs are not set in line with the law. In the past the NRA has investigated several cases, and in a few cases the NRA has imposed the DSO to take action.

5.3. Frequency of tariff methodologies and of tariff value updates

(88) As shown in Table 3 below, in about half of the Member States (13 out of 27), the tariff methodology is set for a fixed period of time. The period for the tariff methodology is:

- between 4 and 5 years in 8 Member States, i.e. 4 years in France, Hungary, Luxembourg and in Belgium's Flanders region and 5 years in the Czech Republic[25], Brussels and Wallonia regions of Belgium, Romania, the Slovak Republic and for the current tariff methodology period also in the Netherlands, where it varies between 3-5 years;
- a 6 to 8 year period is split up into two sub-periods in 2 Member States (in Italy 8 years with mid-term amendments, and in Spain, 6 years with mid-term amendments);
- 3 years in 3 Member States, i.e. in Portugal and Slovenia, and for the current tariff methodology period also in Bulgaria, where it varies between 2-5 years.

(89) In the remaining 14 Member States the length of the tariff methodology period is not defined. In these Member States (except in AT[26]), the party responsible for setting the tariff decides on when to revise the tariff methodology.

(90) Out of the 13 Member States where the tariff methodology is set for fixed multiple years, in all, but one (SK) the tariff values are set on a yearly basis (either ex-ante for all the years of the regulatory period or updated every year, taking into account for example, under- and over-recovery of the DSO). In the Slovak Republic, the tariff values are in principle set for the entire 5-year tariff methodology period, but if the default economic parameters applied in determination of the tariffs change significantly, the NRA may approve new tariff values. In practice, it happens almost every year.

Table 3 Frequency of tariff setting and of tariff value updates

Member State	Frequency to amend the tariff methodology	On-going period for which the tariff methodology is set[27]	Period of applicability of the same tariff values
Austria	No defined period	2020	1 year

[25] CZ: Smaller amendments in the distribution tariff methodology can be made based on stakeholder's input following annual public consultation (2-4 weeks).

[26] AT: In Austria, the tariff methodology could only change if the law changes.

[27] The provided information in this Report is valid as of 2020.

Member State	Frequency to amend the tariff methodology	On-going period for which the tariff methodology is set[27]	Period of applicability of the same tariff values
Belgium (Brussels)	5 years	2020-2024	1 year
Belgium (Flanders)	4 years	2017-2020	1 year
Belgium (Wallonia)	5 years	2011-2023	1 year
Bulgaria	Between 2-5 years	2018-2021	1 year
Croatia	No defined period	Since 2015	1 year
Cyprus	No defined period	Since 2015	1 year
Czech Republic	5 years (but smaller amendments are possible in each year)	2020	1 year
Denmark	No defined period[28]	Since April 2016	No defined period
Estonia	No defined period: the tariff methodology is amended upon DSO's proposal if the NRA agrees with it or if it is provided by law.	Current tariff methodology is in place since 2019	No defined period: the same tariff values are applied until a DSO submit an application for new tariff values approval and NRA approves it[29]
Finland	No defined period (each DSO decides separately when to update its tariff methodology)	Varies among the DSOs	No defined period: each DSO decided separately when to update its tariff values
France	4 years	2017-2021[30]	1 year
Germany	No defined period	The ordinance setting the methodology has come into force in 2005 and has since been amended several times[31].	1 year
Greece	No defined period	Since more than 10 years[32]	1 year
Hungary	4 years	2017-2020	1 year
Ireland	No defined period	Since ca. 2000[33]	1 year
Italy	8 years (two 4-years sub-periods)	2020-2023 (2nd sub-period)	1 year
Latvia	No defined period	Since 2019	1 year

[28] DK: The method can in some cases be time-limited, but there is no general rule. (E.g. NRA is able to grant permission to the DSO to differentiate prices on the basis of geographical delimitation. In these cases, the methods will typically be time-limited to 2 years.)

[29] EE: Each DSO submits such application individually and the NRA approves them separately.

[30] FR: "TURPE 5" applies over the period 2017-2021. In 2018, "TURPE 5bis" entered into force, but the tariff structure did not change.

[31] DE: Last amendment of the ordinance "StromNEV" and the ordinance "AregV" was on 30.10.2020 and 31.12.2019, respectively.

[32] GR: The same tariff methodology (required revenue allocation rules and tariff structure) applies indefinitely until modified. The tariff methodology applied in 2020 was enforced through tariff setting decisions more than 10 years ago. It has undergone only minor modifications in recent years, through the same tariff setting process. The methodology is expected to be fundamentally revised for application in 2022, pursuant to a refined set of tariff principles set in the Distribution Network Code.

[33] IE: The current methodology was put in place at the time of the electricity market opening.

Member State	Frequency to amend the tariff methodology	On-going period for which the tariff methodology is set[27]	Period of applicability of the same tariff values
Lithuania	No defined period: the tariff methodology is amended as deemed necessary by the NRA	N.A. ("more than 10 years")	1 year
Luxembourg	4 years	2017-2020	1 year
Malta	No defined period	Since 2008	No defined period[34]
The Netherlands	3, 4 or 5 years[35]	2017- 2021	1 year
Poland	No defined period	2016-2020	1 year
Portugal	3 years	2018-2020 (extended up to 2021)[36]	1 year
Romania	5 years	2019-2023	1 year
Slovak Republic	5 years	2017-2021	5 years (but in practice typically 1 year)
Slovenia	3 years	2019-2021	1 year
Spain	6 years[37]	2020-2025	1 year
Sweden	No defined period: each DSO decides separately when to update its tariff methodology	Varies among the DSOs	No defined period: each DSO decides separately when to update its tariff values
Total	14MS: Not defined, 13MS: multi-year		23MS: annual tariff values, 5MS: not defined, 1MS: other

5.4. Consultations and processes for defining tariff methodologies

(91) As shown in Table 4, in the majority (21 out of 27) of the Member States, a public consultation or more consultation rounds take place before setting the distribution tariff methodology. In 21 instances, the public consultation is carried out by the NRA (or regional regulator in Belgium).

(92) In 3 Member States (DE, HU, PL), the consultation is targeted to some key stakeholders and in 3 Member States (FI, MT, SE) the setting of the distribution tariff methodology is not accompanied by any systematic consultation of the stakeholders by any of the parties which are involved in the definition or the enforcement of a distribution tariff methodology. In Sweden, while the consultation with stakeholders is not required, the DSOs usually consult them before setting the distribution tariff methodology.

[34] MT: The latest tariff approval was in 2014, i.e. the same tariffs are currently applied without any update.

[35] NL: The national law limits the regulatory period to be 3, 4 or 5 years. The NRA decides for each regulatory cycle which length it considers appropriate.

[36] PT: In the wake of the Covid-19 pandemic, the NRA proposed to extend on an extraordinary basis the current regulatory period for a further year. Hence, the current regulatory framework is applicable for the period 2018-2021, including the tariff methodology for distribution. A public consultation was held before deciding to exceptionally extend the regulatory period.

[37] ES: For this first regulatory period (2020-2025) if it is deemed necessary it can be amended at the middle of the regulatory period (for the fourth tariff year). WACC-period is also 2020-2025.

(93) NRAs in 12 Member States conduct public consultations of 4 weeks or more. NRAs in 5 Member States conduct consultations of at least 2 weeks but less than 4 weeks. In 3 Member States (FR, IT and PT), NRAs conduct multiple consultation rounds.

Table 4 Consultations of the distribution tariff methodologies

Member State	Type of consultation carried out regarding distribution tariff methodologies	Carrier of the consultation	Duration of the consultation
Austria	Public consultation	NRA	At least 2 but less than 4 weeks
Belgium[38]	Public consultation	Regional regulators	4 weeks or more
Bulgaria	Public consultation	NRA	At least 2 but less than 4 weeks
Croatia	Public consultation	NRA	4 weeks or more
Cyprus	Public consultation	NRA	4 weeks or more
Czech Republic	Public consultation	NRA	4 weeks or more
Denmark	Public consultation	NRA	4 weeks or more
Estonia	Public consultation	NRA	At least 2 but less than 4 weeks
Finland	No consultation		
France	Public consultation	NRA	Multiple public consultation rounds[39]
Germany	Consultation of regulators, network operators and industry associations.	Ministry	
Greece	Public consultation	NRA	4 weeks or more
Hungary	Consultation TSO and DSO	NRA	
Ireland	Public consultation	NRA	4 weeks or more
Italy	Public consultation	NRA	Multiple public consultation rounds[40]
Latvia	Public consultation	NRA	At least 2 but less than 4 weeks
Lithuania	Public consultation	NRA	At least 2 but less than 4 weeks
Luxembourg	Public consultation	NRA	4 weeks or more
Malta	No consultation		
The Netherlands	Publicly announced consultation of eligible stakeholders, which demonstrated to be directly affected by the NRA decision, including TSO, DSO's, network users, traders	NRA	The duration for eligible stakeholders to provide inputs to the NRA is 6 weeks
Poland	Consultation of DSOs and DSOs association	NRA	

[38] BE: In this table the same answers apply to all 3 regional jurisdictions, i.e. Brussels, Flanders and Wallonia.

[39] FR: 3 public consultations were held for the previous tariff. Between 4 and 6 weeks were left to answer them. A round table was also organised with major stakeholders and suppliers.

[40] IT: For the mid-period update, regarding distribution, there were three public consultations during 2019. However, they mostly focussed on allowed revenues and on output-based incentives.

Member State	Type of consultation carried out regarding distribution tariff methodologies	Carrier of the consultation	Duration of the consultation
Portugal	Public consultation + targeted consultation of the tariff council	NRA	2 consultation rounds[41]
Romania	Public consultation	NRA	4 weeks or more
Slovak Republic	Public consultation	NRA	At least 2 but less than 4 weeks
Slovenia	Public consultation	NRA	4 weeks or more
Spain	Public consultation	NRA	4 weeks or more
Sweden	No consultation		
Total:	21MS: Public consultation, 3MS: some of the stakeholders, 3MS: no consultation	22MS: NRA, 1MS: Regional regulators, 1MS: Ministry,	12MS: >4 weeks, 6MS: >2 week, 3MS: multiple rounds

5.5. Transparency of distribution tariffs

(94) With a view to increasing transparency in the market and providing all interested parties with all necessary information and decisions or proposals for decisions concerning transmission and distribution tariffs, pursuant to Article 59(9) of Directive (EU) 2019/944, NRAs shall make publicly available the detailed methodology and underlying costs used for the calculation of the relevant network tariffs, while preserving the confidentiality of commercially sensitive information.

(95) As shown in Table 5 below, in all Member States (except for Malta), each of the distribution tariff values to be paid by different network users is published.

(96) The regulatory or DSO-led decision setting the tariff methodology is published in 24 out of 27 Member States. In 3 Member States (FI, MT and SE), the distribution tariff methodology is not published.

(97) The total aggregated distribution costs covered by the distribution tariffs are made available in about half of the Member States (i.e. 13 out of 27 Member States) and in 2 regions of Belgium.

(98) The list of cost categories covered by each distribution tariff is made available in 53% of the Member States (i.e. 15 out of 27 Member States).

(99) Additional tariff related information which have been reported by the Member States as being publicly available are the following:

- The actual data, assumption and forecasts based on which the distribution tariffs are determined (in 9 Member States and 2 regions of Belgium);

[41] PT: The first round consists in a public consultation to review the relevant regulatory framework, including tariff methodologies for all regulated tariffs, but also including methodologies and parameters on allowed revenues. That consultation needs to last for at least 30 days. In the last review, before the regulatory period 2018-2020, the consultation was open between 17 May 2017 and 3 July 2017. The second round consists in a targeted consultation towards the members included in the tariff council, a consultative body foreseen in the NRA's statutes. That consultation provides information on the application of the tariff methodology, allowing for scrutiny towards the exact data to arrive at the distribution tariffs. That consultation needs to last for at least 30 days. In the last review, the consultation was open between 13 October 2017 and 15 November 2017.

- Forecasts of the possible evolution of tariff values until the end of the period for which the methodology applies (in 4 Member States and 2 regions of Belgium);
- An impact assessment accompanying and explaining the tariff decision (in 9 Member States).

(100) In 8 Member States network users' understanding of the applied tariffs is facilitated by a tool to calculate their yearly individual expenditure.

(101) In 4 Member States, the complete tariff methodology (AT, CY) or at least a summary (HR, LT) is translated also in English.

Table 5 Published content with regard to the distribution tariffs

Member State	Each of the distribution tariffs	Tariff methodology	Total distribution costs covered by the distribution tariffs (aggregated)	List of cost categories covered by each distribution tariff	Actual data, assumptions and/or forecasts	Impact Assessment	Forecasts for the possible evolution of tariff values	Stakeholders views (or summary) submitted during consultation	Summary of methodology and/or other fundamental tariff-related information	Template, calculator
Austria	X	X (+EN)							X (+EN)	X
Belgium (Brussels)	X	X		X		X				X
Belgium (Flanders)	X	X	X	X	X	X	X	X	X	X
Belgium (Wallonia)	X	X	X	X	X	X	X		X	X
Bulgaria	X	X		X					X	
Croatia	X	X							X (+EN)	
Cyprus	X	X (+EN)	X	X						
Czech Republic	X	X						X		X
Denmark	X	X	X	X	X	X			X	
Estonia	X	X[42]		X						
Finland	X									
France	X	X	X	X	X	X	X	X[43]	X	X
Germany	X	X	X	X					X	

[42] EE: Standard terms and conditions for applying distribution tariffs (only in Estonian) are also published.

[43] FR: The NRA publishes all non-confidential responses to its public consultations.

Greece	X	X	X	X	X					
Hungary	X	X	X							X
Ireland	X	X	X		X	X		X	X	
Italy	X	X	X			X				
Latvia	X	X	X		X				X	X
Lithuania	X	X		X	X				X (+EN)	
Luxembourg	X	X	X						X	X
Malta						X				
The Netherlands	X	X		X	X	X	X	X		
Poland	X	X		X						
Portugal	X	X	X	X	X	X		X	X	
Romania	X	X	X							
Slovak Republic	X	X								
Slovenia	X	X					X			
Spain	X	X	X	X	X	X	X			X
Sweden	X									
Total:	26MS	24MS	13MS +2R	13MS	9MS+ 2R	9MS	4MS+ 2R	5MS+ 1R	11MS +2R	8MS

5.6. Conclusions

Tariff setting responsibility:

(102) Based on current legal frameworks, in 21 Member States the NRA sets the distribution tariff methodology, while in 3 Member States the NRA approves the tariff methodology proposed by the DSOs. In Germany, the relevant Ministry defines the distribution tariff methodology, while the NRA supervises the compliance of the tariff calculation by the DSOs with the law and the tariff methodology. In Finland and Sweden, each DSO individually defines the tariff methodology based on the legal framework, but it is not subject to NRA's approval.

(103) ACER finds that in the vast majority of the Member States the same distribution tariff methodology is applied to all DSOs. In the remaining Member States, either the NRA sets different methodologies for different DSOs or the DSOs are free to choose their own tariff structure under certain legal restrictions.

(104) ACER welcomes that the Spanish NRA has been granted powers to decide on distribution tariffs from 1 January 2020. ACER considers that in order to ensure that tariffs are set efficiently in line with network user interest, NRAs should have sufficient leverage and regulatory control over the tariff as stipulated by Article 59(1)(a) of Directive (EU) 2019/944.

(105) ACER is of the view that there are compelling reasons to have NRAs directly set the distribution tariff methodology or as a strict minimum approve the methodology proposed by DSOs, in order to ensure that methodologies are free from any political or commercial interest which is ensured by NRAs' independence legally guaranteed by the EU law. ACER recalls that NRAs shall be ensured adequate human and financial resources for this purpose, pursuant to Article 57(5) of Directive (EU) 2019/944.

Stability of tariff methodologies and predictability of tariffs:

(106) In most Member States, the distribution tariff methodology is set for a fixed period of time, typically 4 or 5 years, while the distribution tariff values are updated on a yearly basis.

(107) ACER is of the view that setting the distribution tariff methodology for multiple years can allow appropriate analysis of the possible actions to be taken and more effective stakeholder involvement and can support tariff predictability and save resources. Further, distribution networks are in general evolving in Europe due to innovative technologies, such as smart grids, distributed generation, EV penetration, demand side response, etc. which justifies longer tariff methodology periods which allow sufficient time to the regulated entities and network users to adapt and reduce uncertainties regarding their investment decision. A regular update of the tariff values can result in better cost-reflectivity, and, if done based on a pre-defined methodology, preserve a level of predictability.

(108) For the reasons above, ACER recommends that:

- the length of the distribution tariff methodology period is at least 4 years, considering users' calls for stable tariff methodologies, the need for discussions and consultations before setting the methodology and the time needed to implement new tariff structures (the set methodology may be subject to revision before, due to rapid changes in the sector, if duly justified); and
- distribution tariff values are updated yearly based on variations of the drivers defined by the tariff methodology and on inflation.

Stakeholder involvement:

(109) In the vast majority of the Member States, a public consultation or more consultation rounds take place before setting or approving the distribution tariff methodology (in most instances the consultation takes about 4 weeks or more), in 3 Member States (DE, HU, PL), the consultation is targeted some key stakeholders and in 3 Member States (FI, MT, SE) the setting of the distribution tariff methodology is not accompanied by any systematic consultation[44].

(110) ACER considers that in the context of the energy transition, where the role of DSOs and the manner in which distribution grids are operated are likely to be significantly impacted by increased integration of renewable energy sources, increased electrification (including demand by electric vehicles, industrial energy demand and heating), more active role of some network users as well as deployment of smart meters, effective consultation of stakeholders and transparency in deciding the distribution tariff methodologies is required for well-informed regulatory decisions and better public acceptance.

(111) ACER strongly supports the systematic use of public consultations to interact transparently and inclusively with stakeholders.[45]

[44] In Sweden, while the consultation with stakeholders is not required, the DSOs usually do before setting the distribution tariff methodology

[45] ACER's guidance note for ACER public consultation:
https://www.acer.europa.eu/Official_documents/Other%20documents/Guidance%20Note%20on%20Consultations%20by%20ACER.pdf

Transparency in distribution tariff setting:

(112) ACER notes differences in terms of public availability of tariff-related information. In the vast majority of the Member States, the (decision of the) tariff methodology as well as the distribution tariff values to be paid by different network users are publicly available.

(113) Information about the cost categories and the respective amounts recovered by distribution tariff(s) is available in about half of the Member States, while the actual or forecasted data (and other assumptions) based on which the distribution tariffs are determined are available in about one third of the Member States.

(114) ACER is of the view that availability of fundamental tariff-related information is of utmost importance in order to ensure transparency and comparability in distribution tariff setting and to facilitate an efficient internal energy market. Taking stock of the provisions in Article 59(9) of Directive (EU) 2019/944, ACER recommends publishing at least:

- the detailed methodology which is applied to set distribution tariffs, including in particular the cost categories covered by them;
- at least when the tariff methodology is set, the amounts recovered by each distribution tariff element; and
- each year, the distribution tariff values for each network user group.

6. Costs recovered by tariffs

6.1. Costs accruing to distribution connected users

(115) ACER identifies the following costs (potentially) paid by network users connected to the distribution grid:

a) Distribution network costs:
   - return on capital, depreciation of investments and operational expenditures;
   - costs of distribution losses;

b) Transmission network costs:
   - return on capital, depreciation and operational expenditures;
   - costs of transmission losses; and
   - costs (revenues) of the Inter-TSO compensation mechanism;

c) System services costs (e.g. reserves, congestion management, voltage control and reactive power support, black-start capability and system balancing);

d) Metering costs;

e) Non-network-related policy costs: (non-VAT) taxes, levies, costs of support schemes (RES, stranded power generation, etc.)

(116) ACER notes that some of the costs listed above are not applicable in some Member States, because they are recovered by other means.

6.2. Recovery of distribution costs

(117) As shown in Table 6, the distribution costs are fully covered via distribution tariffs in 4 Member States (AT, LT, SK, ES). In Brussels region of Belgium distribution costs in principle are also fully recovered via distribution tariffs, but in exceptional cases some distribution costs are partially covered by connection charges. In the remaining 22 Member States and in the Flanders and Wallonia regions of Belgium, the distribution costs are covered by a mix of tariffs and other means.

(118) ACER notes that, beyond distribution tariffs, the following means are mainly used in the EU to recover part of the distribution costs:

- Connection charges cover part of the distribution costs in the vast majority (22) of the Member States and Belgium's Flanders and Wallonia regions;
- Reactive energy withdrawal/injection outside the allowed limits is charged separately in 8 Member States and in Belgium's Flanders and Wallonia regions;
- EU/national/local co-financing instruments cover part of the distribution costs in 9 Member States and Belgium's Flanders and Wallonia regions;
- Individual fees or payments cover part of the distribution costs in 9 Member States and Belgium's Flanders and Wallonia regions.

Table 6 Recovery of distribution costs in each Member State

Member State	All (efficient) distribution costs are covered via tariffs only	Part by connection charges	Part by charges for reactive energy	Part by EU/ national/ local (co-) financing instruments	Part by individual fees or payments by a single user for DSO services upon individual request
Austria	X				
Belgium (Brussels)	X	only exceptionally			
Belgium (Flanders)		X	X	X	X
Belgium (Wallonia)		X	X	X	X
Bulgaria		X	X		
Croatia		X		X	
Cyprus		X			

Member State	All (efficient) distribution costs are covered via tariffs only	Part by connection charges	Part by charges for reactive energy	Part by EU/ national/ local (co-) financing instruments	Part by individual fees or payments by a single user for DSO services upon individual request
Czech Republic[46]		X	X		
Denmark		X			X
Estonia		X	X	X	X
Finland		X		X	X
France		X			
Germany		X			
Greece		X		X	X
Hungary		X	X		
Ireland		X			X
Italy		X	X	X	
Latvia		X		X	X
Lithuania	X				
Luxembourg		X			X
Malta		X			
The Netherlands		X			
Poland		X			
Portugal		X	X	X	
Romania		X	X	X	X
Slovak Republic	X				
Slovenia		X	X	X	X
Spain	X				
Sweden		X			
Total	4MS+1R	22MS+2R	8MS+2R	9MS+2R	9MS+2R

Return on capital, depreciation and operational expenditures:

(119) All Member States indicate that efficiently incurred investments (return on capital and depreciation) and operational expenditures are paid by distribution-connected users via tariffs, to the extent they are not covered by connection charges, charges for reactive energy, by EU/national/local (co-) financing instruments and/or by individual fees or payments by a single user of DSO services upon individual request.

Costs of distribution losses:

(120) Costs of distribution losses are paid by distribution-connected users via tariffs in the vast majority of Member States (23 out of 27). In the 4 remaining Member States (GR, IE, IT, PT), the costs of distribution losses are covered by other means:

[46] CZ: Cost of switching between suppliers is covered via market operator tariff.

- In Greece, the cost of distribution losses is borne by suppliers and included in the energy component of the final electricity price charged to their final customers;

- In Ireland, the distribution loss adjustment factors (DLAFs) apply to the metered withdrawal of a network user connected to the distribution network. The DLAFs values apply to demand on the basis of which voltage level they are connected to (i.e. LV, MV and 30kV);

- In Italy, consumers pay (in kind, i.e. as additional energy bought in the energy market) for a "standard" level of losses. The difference between the actual losses and the standard losses is paid (or retained) by network operators. The reason for introducing standard level of losses (and thus an implicit reward/penalty scheme for network operators) is to incentivise network operators to reduce losses in their networks.

- In Portugal, energy suppliers have to procure more energy in the market to cover grid losses. The amount of energy to compensate for grid losses is added to the metered withdrawal of the supplier's customers and calculated using the hourly losses profiles which are approved annually by the NRA[47].

(121) According to the ACER transmission tariff report of December 2019, these 4 countries (GR, IE, IT, PT) cover by similar (i.e. non-network-tariff) means also the transmission losses. By comparing the two reports, the treatment of distribution losses appears to be different from transmission losses in Spain and the Slovak Republic:

- in Spain suppliers must buy the energy for their clients including transmission losses, while distribution losses are recovered via tariffs; and

- in the Slovak Republic all the consumers pay a separate tariff for transmission losses, while distribution losses are part of the distribution tariff without any segmentation.

6.3. Recovery of DSO-purchased system service costs

(122) Costs of ancillary and/or flexibility services purchased by the DSO are not paid by distribution connected network users in 11 Member States (CY, DK, EE, FR, GR, HU[48], IE, IT, RO, SI, ES).

(123) Costs of purchasing ancillary and/or flexibility services by the DSO are paid by distribution-connected users via regulated tariffs in 16 Member States (AT, BE, BG, HR, CZ, FI, DE, LV, LT, LU, MT, NL, PL, PT, SK, SE).

6.4. Regulation of metering

(124) According to Directive (EU) 2019/944, metering activity can be deregulated and must not necessarily be a DSO activity.

(125) However, as shown in Table 7, the metering remains largely regulated in the vast majority of the Member States. Germany and the Netherlands are the only 2 Member States, where a part of

[47] PT: These losses profiles are differentiated by network type (transmission and distribution) and voltage level (VHV, HV, MV, LV).

[48] HU: In case the DSO were to purchase ancillary and flexibility services, the cost would be covered by distribution tariffs. However, such purchase has not taken place yet by the Hungarian DSOs.

the activity is deregulated: smart metering in Germany and metering of the large (non-household) consumers in the Netherlands.

(126) The cost of metering is a part of a tariff, but is not distinguished as a separate tariff or tariff element in 17 Member States and in Wallonia region of Belgium, while it is distinguished as a separate tariff or tariff element in the remaining Member States and in Brussels and Flanders regions of Belgium.

Table 7 Tariff treatment of metering costs

	Metering is a deregulated activity	**Part of a single distribution & metering tariff**	**Separate tariff or tariff element**
Member States	DE (smart metering only) NL (only for larger non-household consumers)	BG, BE (Wallonia), CZ, EE, FI, GR, HR[49], HU, IE, LV, LT, PL, PT[50] RO, SK, SI, ES, SE	AT, BE (Brussels) BE (Flanders), CY, DE (conventional metering only), DK, FR, IT, LU, MT, NL (only for household and small non-household consumers)
Total	2 MS (partially)	17MS+1R	7MS+2MS (partially) +2R

6.5. Policy costs, taxes and other costs

(127) In addition to the costs mentioned above, in some Member States there are some additional costs recovered as part of the distribution tariff or as a separate tariff element within the distribution tariff:

- In Flanders region of Belgium: taxes (different than VAT), local retributions, pension scheme of DSO employees, public service obligations, cost of public lights are recovered as a separate tariff element of the distribution tariff;
- In Luxembourg, the costs of EV-recharging points accessible to the public operated by the DSO are recovered as part of the distribution tariff, without distinguishing such tariff element;
- In Portugal, past employee downsizing costs are recovered as part of the distribution tariff, without distinguishing such tariff element.

[49] HR: Cost of the first meter at first connection is part of the connection charge. The DSO is obliged to replace the meters and the cost is included in the tariff.

[50] PT: investment cost (CAPEX) of meters (both traditional and smart meters) is not recovered through distribution tariffs. OPEX related to metering are part of the costs recovered via the distribution tariff.

(128) As shown in Table 8 below, there are some Member States which apply surcharges, levies and taxes (for example for the support of renewable energy), which are paid by distribution connected users as a separate charge. In some other Member States, similar surcharges are paid by energy customers or taxpayers, but not by network users per se. These latter instances have not been thoroughly reviewed for the purpose of this Report.

Table 8 Other costs (i.e. not related to transmission or distribution, system services or metering) separately paid by distribution-connected network users

Policy and other costs	Separate charge levied on distribution - connected users
RES support	AT (fully, set by law), SI, ES
Cogeneration of Heat and Power support	PL
Energy efficiency support	SI
Stranded power generation costs	ES (for electricity production in Spanish non-peninsular territories)
Taxes (different than VAT) / Local retributions	BE (Brussels)[51]
Pension scheme of DSO employees	BE (Brussels) (set by law)
Public service obligations / public lights	BE (Brussels)
Market Operator Cost	SI

6.6. Conclusions

Differentiation of distribution tariffs from other charges

(129) ACER observed a fragmented understanding of the term “distribution tariffs” when preparing this Report. Without a common understanding, ACER sees the risk that any comparison of distribution tariff values across the EU may be misleading.

(130) In some Member States NRAs reported that distribution tariffs (as defined in this Report) cover taxes, levies or other payments for non-DSO costs (such as support schemes for renewable energy sources, or co-generation of heat and power, etc.). In line with Article 18 of Regulation (EU) 2019/943 ACER is of the view that distribution tariffs should not include costs of renewable support schemes or other unrelated policy costs, in order to facilitate their cost reflectivity.

(131) With the aim of facilitating a common understanding (and comparability, when relevant), ACER suggests differentiating distribution tariffs from other regulated tariffs paid by users connected to the distribution network by using the following terms when setting or approving the next tariff methodology in each EU Member State:

- Distribution tariffs / tariff elements;
- Tariffs / tariff elements for metering services (where applicable);
- Transmission tariffs / tariff elements (which includes amounts paid by distribution connected users for the use of transmission network) related to transmission infrastructure costs, such as return on capital, depreciation and operational expenditures, to transmission losses and to the Inter-TSO compensation mechanism;

[51] BE (Brussels): Local municipality taxes (€/kWh), taxes paid by the DSO (contribution ISOC) (€/kWh).

- Tariffs / tariff elements for purchasing system services (e.g. reserves, congestion management, voltage control and reactive power support, black-start capability and system balancing), paid to both TSOs and DSOs.

Cost categories recovered by distribution tariffs

(132) ACER finds that the categories of costs recovered by distribution tariffs vary across the Member States. In all Member States, costs for building, upgrading and/or maintaining infrastructure i.e. return on capital, depreciation and operational expenditures are usually recovered by distribution tariffs (unless co-financed or partly recovered from other charges, such as connection charges, reactive energy charges, or fees or payments to DSOs for individual services.

(133) In 23 Member States, costs of losses are recovered by distribution tariffs.

(134) Further, NRAs indicated that costs of system services purchased by DSOs are recovered via regulated tariffs in 16 Member States. In other Member States, such costs do not accrue to the DSO.

(135) The variety of tariff structures, including the different scope of cost categories, which are recovered, makes the comparison of distribution tariffs in Europe a difficult task. For this purpose, distribution tariffs should be differentiated from other regulated tariffs (as discussed above) and from taxes and charges levied on distribution connected network users. In addition, in order to facilitate cost reflectivity and to ensure better transparency and comparability of distribution tariffs, NRAs should be able to differentiate at least the following tariff elements:

- A distribution tariff element, which covers only costs for building/upgrading/maintaining the distribution infrastructure (i.e. return on capital, depreciation and operational expenditures);
- A distribution tariff element, which covers the losses in distribution networks, where such costs accrue to the DSO. [52]

(136) ACER is of the view that the above suggested granularity of tariff elements may favour better cost reflectivity.

7. Distribution tariff structure

7.1. Tariffs for injection

(137) For the purpose of this Report, an injection charge exists whenever a network user connected to the distribution grid pays[53] distribution tariffs for its injection or for its possibility to inject. This definition includes instances where only parts of distribution costs are charged or only some network users injecting are affected.

[52] Transmission losses are around 2% and distribution losses around 7% in Europe (average for EU countries reported in CEER report on power losses of March 2020); losses are valued above 40 euro/MWh (ACER ITC monitoring report).

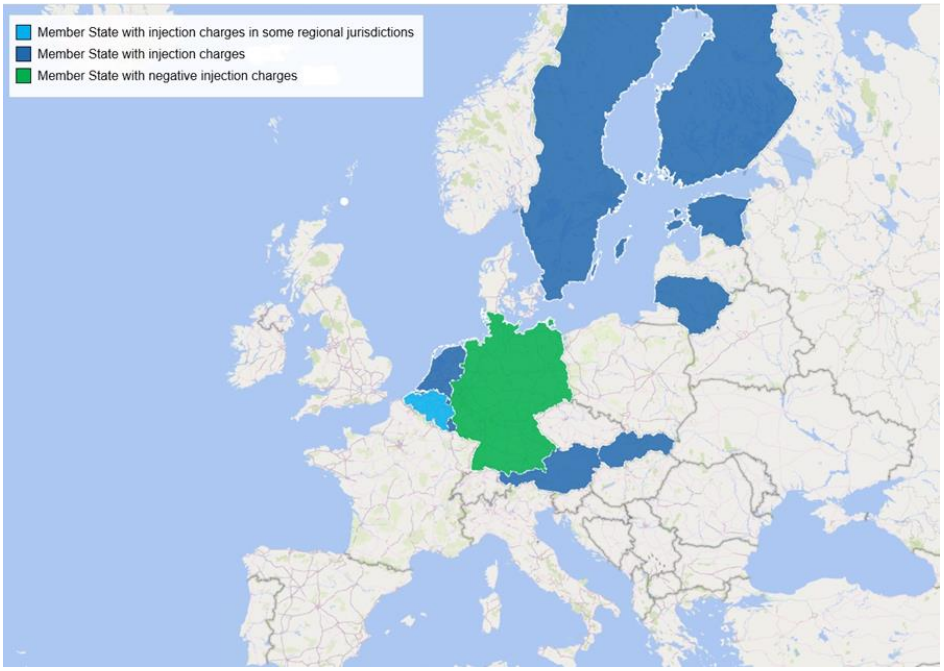
[53] If distribution tariffs take into account avoided network costs, the payment may be negative in some circumstances (i.e. a reward for the network user).

(138) As shown in Figure 1, some kind of distribution tariffs for injection (i.e. injection charges) are applied in 10 Member States (AT, EE, FI, FR[54], LT[55], LU[56], MT[57], NL[58], SK, SE), with a further Member State (BE) only applying injection charges in 2 (Flanders and Wallonia) of its 3 regions.

(139) Germany applies a "negative injection charge" for avoided network charges as DSOs can avoid drawing the amount of electricity from the upstream grids that is injected into their grid by decentralised generators. Thus, non-volatile decentralised generators are receiving the so called "avoided network charges" in turn for their system-beneficial impact.

(140) In the remaining Member States and in Brussels region of Belgium, neither injection charges nor negative injection charges are applied. In Latvia, distribution tariffs for injection will be applied as from 2021 onwards. In Greece, the NRA is currently reviewing the framework considering the introduction of injection charges in the distribution tariffs.

Figure 1: Map of EU Member States with some kind of injection charges



Note: Member States with injection charges are AT, BE (only Flanders and Wallonia regions), EE, FI, FR, LT, LU, MT, NL, SK, SE; A negative injection charge for avoided network charges is applied in Germany.

(141) As to the reason why the referred Member States apply injection charges, the guiding principle in almost all Member States is cost-reflectivity, referring often to the argument that all network

[54] FR: The only tariff component paid by producers in France is a yearly management charge, which aim is to cover costs related to the management of producers by the DSO.

[55] LT: Prosumers who produce electricity for their own use and inject the surplus of electricity into the grid pay a "energy network usage" tariff for injected electricity.

[56] LU: The only tariff component paid by producers in Luxembourg is a monthly access fee due by any low voltage user (regardless of whether it is a consumer a prosumer or a producer) to cover costs for metering services and for the possibility to inject or withdraw the subscribed connection capacity from the grid.

[57] MT: Users that only inject into the network pay the "fixed annual service charge" only. This charge relates to metering and distribution costs.

[58] NL: In the Netherlands, an injection tariff is defined as being a charge based on the amount of energy injected. Such injection tariff is not allowed by national law. However, the definition of injection charges in this Report differs from the one adopted in the Dutch law.

users should be charged for the network services being provided to them. One NRA (SK) argues that the injection charge is applied to reduce the cost burden falling onto consumers.

(142) The Member States that do not apply injection charges provided a list of various reasons for their non-application. The most frequently reported reasons by NRAs for the non-application are that injection charges would create distortions in the national and cross-border wholesale markets (4 Member States) or the network costs caused by producers are already recovered through other means (e.g. through licence-holder charges or connection charges) (4 Member States). Less frequently reported reasons include concerns about ensuring the cost-reflectivity of injection charges; the potential shift of costs from producers to end-consumers in the energy price; low contribution of producers to overall DSO revenue recovery; and fears of disincentives to local generation. Several NRAs reported that the national law does not foresee or does not allow the application of the injection charges, without providing a reason for it.

(143) In 5 Member States (AT, EE, FI, NL, SE) and in Flanders and Wallonia regions of Belgium, the injection charges present to network users the underlying cost structure to some extent, either through a single tariff with multiple components or through multiple tariffs[59], recovering different costs (e.g. capital and operational expenditures, power losses, costs of system services, administrative costs and/or other costs[60]). In Germany, the underlying cost structure, as indicated earlier, includes avoided network losses, where the latter implies that network users bring benefits to the system for which they are rewarded.

(144) In the remaining Member States, where this information was reported, a single distribution tariff covering overall costs is applied to injections, presenting no further cost break-down to network users.

7.2. Tariffs for injection in transmission vs. distribution networks

(145) ACER report on existing practices in transmission tariffs identified 11 Member States (AT, BE, DK, FI, FR, IE, PT, RO, SK, ES, SE) applying transmission tariffs for injection in 2019.

(146) ACER notes that 4 Member States (DK, IE[61], PT, RO) apply injection charges to recover transmission costs but not for distribution costs, while 3 Member States[62] (EE, LT, LU) apply such charges only for the recovery of distribution costs. In addition, the “negative” injection charge in Germany is only applied at the distribution level but not at the transmission level. In Spain, injection tariffs have been removed by the methodology adopted by the NRA in 2020. These differences have been explained by the NRAs with the following reasoning:

- in Denmark injection charges at transmission level are applied to recover part of grid and system costs from the producers. Each DSO has the opportunity to decide whether or not to apply injection charges. None of the DSOs so far has chosen to apply injection charges;

[59] A network user pays a single distribution tariff with multiple components for injection in Finland, the Netherlands and Sweden and Wallonia region of Belgium. A network user pays multiple distribution tariffs for injection in Austria, Estonia and Flanders region of Belgium.

[60] BE: In Flanders region of Belgium, the injection charge includes costs of pension schemes and local retributions (will be excluded after year 2022).

[61] IE: Distribution-connected generators in Ireland with a capacity equal or above 5 MW pay transmission network charges. From 5 MW onwards there is an incremental rule, e.g. a 7 MW generator is charged for 2 MW (7-5MW).

[62] Malta is not listed as Malta has no TSO or transmission tariff.

- in Ireland and Romania, the reason is cost reflectivity. In Ireland, the generators are held liable for the costs of the generation excessing the assumed local demand and therefore exported onto the transmission network. In Romania, the generators are held liable for losses, re-dispatching and congestion management costs in relation to the generation exported into the transmission network;

- in Portugal, the main reason for the application of a transmission tariff for injection was to ensure a level playing field with producers in the neighbouring country when competing on the wholesale market, as they were subject to an equivalent injection charge. The transmission tariff in Portugal for injection applies to all generators connected to the transmission and the distribution grids.[63] In Estonia, the law does not require the application of the injection charges for transmission nor distribution. Each DSO and TSO has the opportunity to decide whether or not to apply injection charges. The Estonian TSO proposed not to apply injection charges, to encourage investments in large RES projects[64], while the Estonian DSOs proposed to apply them for cost reflectivity and equity reasons (i.e. each network user should pay for the use of the network).

7.3. Structure of tariffs for injection

(147) Table 9 illustrates the structure of distribution tariffs for injection. ACER finds that regarding the cost drivers (basis) of injection charges applied to network users, there is no clear preference for a certain tariff structure. The NRAs reported very different schemes applied to network users, namely:

- energy-based, in €/kWh (AT, Flanders region in BE);

- power-based, in €/kW (SK);

- lump-sum, in €/year (FR, MT, NL, LU); and

- a combination of power-based and lump-sum (EE, Wallonia region in BE).

(148) The power-based charge is applied in the form of contracted or rated power in all 3 instances.

(149) 2 Members States (FI, SE) reported that different tariff structures apply to different network groups of network users:

- in Sweden, the injection charges apply to all producers mainly as a combination of power-based and lump-sum, except for micro producers and injectors below 1500 kW, which are exempted from part of injection charges according to the national law and pay for metering and reporting only;

- in Finland, the injection charges are mainly energy-based (with a ceiling set by the national law), but individual DSOs may also have power-based and/or lump-sum charge components in the injection tariff.

[63] PT: Only injection into the LV grid is exempted from this injection charge.

[64] EE: such large-scale RES producers have not requested connection to the distribution grid.

Table 9 Structure of the distribution tariffs for injection (i.e. injection charge basis)

	AT	BE (Flanders)	BE (Wallonia)	EE	FI	FR	MT	LT	LU	NL	SK	SE
Energy	100%	100%			X							
Power			≈ 100%	X	(X)						100%	X
Lump sum			≈ 0%	X	(X)	100%	100%		100%	100%		X

7.4. Tariffs for withdrawal

(150) All Member States apply some sort of distribution tariffs for withdrawal.

(151) However, in Malta there is no DSO unbundling and the distribution tariff is partially bundled into the payment for energy.

(152) As shown in Table 10, in the majority of Member States, there are multiple distribution tariffs for withdrawal or there are multiple tariff components within a single distribution tariff for withdrawal in order to recover different parts of the distribution costs.

(153) In one third of Member States (BG, HR, CY, GR, LT, LU, RO, SK, SI), the network user pays a single distribution tariff for withdrawal, which covers all relevant distribution costs. In these Member States, there is no distinction between different tariff components (i.e. no segmentation of the distribution tariff) for different distribution cost categories.

(154) In Estonia, the DSOs apply different “tariff packages” for different network users. For example, household network users have the opportunity to choose between a single distribution tariff (EUR/kWh) or 2 distribution tariffs (EUR/kWh in day and night) or 3 distribution tariffs (EUR/kWh in day and night and lump-sum (EUR/month).

Table 10 Distribution tariffs for withdrawal

Member State	A single D-tariff which covers all relevant costs	Single D-tariff with at least 2 components reflecting different parts of distribution costs	Multiple D-tariffs covering different parts of distribution costs
Austria			X
Belgium (all regions)			X
Bulgaria	X		
Croatia	X		
Cyprus	X		
Czech Republic	optional for some users, rarely used	X	
Denmark			X
Estonia	X (optional)		X (optional)
Finland		X	
France			X

Member State	A single D-tariff which covers all relevant costs	Single D-tariff with at least 2 components reflecting different parts of distribution costs	Multiple D-tariffs covering different parts of distribution costs
Germany		X	
Greece	X		
Hungary		X	
Ireland			X
Italy		X	
Latvia		X	
Lithuania	X		
Luxembourg[65]		X	
Malta	*N/A no separate distribution tariff from the payment for energy*		
The Netherlands			X
Poland			X
Portugal			X[66]
Romania	X		
Slovak Republic	X		
Slovenia	X		
Spain		X	
Sweden		X	
Total	8MS + 1MS (optional)	9MS	8MS + 1MS (optional)

7.5. Structure of tariffs for withdrawal

(155) ACER notes a wide variety in the application of tariff basis (i.e. energy, capacity and/or lump sum) for withdrawal charges.

(156) As shown in in Table 11, the vast majority of Member States use a combination of energy-based charges with either a power-based or a lump-sum component or both. In 3 Member States, only energy-based charges are applied to all users and in additional 5 Member States to some of the users. None of the Member States apply a power based only or a lump sum only withdrawal charge to any of the network users.

(157) All network users are charged on the same basis in 16 Member States and Wallonia region of Belgium:

- 3 Member States (CY, LT, RO) apply an energy-based only charge for all network users;

[65] LU: On low voltage, the distribution costs are recovered via a volumetric tariff and a monthly access fee, which depends on the connection capacity and also includes metering costs. On other voltage levels in distribution, the distribution tariff consists of an energy component and a power component and the metering is a separate monthly fee.

[66] PT: Distribution tariffs are segmented based on a cost cascading principle: A LV connected user pays a separate distribution tariff for each voltage level which is utilised by this user (i.e. HV, MV, LV) following a cost-cascading principle. In contrast, a HV connected user only pays a single distribution tariff, corresponding to the use of HV distribution grid.

- 8 Member States (HR, CZ, GR, LV, PT, SK, SI, ES) and Wallonia region of Belgium apply a combination of energy-based and power-based charges for all (or almost all) users;
- 1 Member State (DK) applies a combination of energy-based and lump sum for all users; and
- 4 Member States (FR, MT, NL, PL) apply a combination of energy-based, power-based and lump-sum charges for all users.

(158) In the remaining 10 Member States (AT, BG, DE, EE, FI, HU, IE, IT, LU, SE) and in Brussels and Flanders regions of Belgium, a different basis is used for different network user groups, in 1 instance (EE) with the possibly of network users to choose from a predefined list of tariff basis options available to them, in 2 instances (FI and SE) the applied basis also varies depending on the DSO.

Table 11 Basis for withdrawal tariffs

Member State	Energy-based	Energy + lump sum	Power + lump sum	Energy + Power	Energy + Power + lump sum
Austria		X (some LV users)		X (most users)	
Belgium (Brussels)		X (LV users)[67]		X (HV users)[68]	
Belgium (Flanders)	X (households)[69]			X (non-households)[70]	
Belgium (Wallonia)				X	
Bulgaria	X (some users)			X (some users)	
Croatia				X[71]	
Cyprus	X				
Czech Republic	X (optional for few users)			X (almost all users)[72]	
Denmark		X			
Estonia	X (optional for any user)	X (optional for households only)		X (optional for any user)	X (optional for any user)
Finland[73]		X (typical for households)			X (typical for non-households

[67] BE (Brussels): Network users (on LV) pay a yearly fee based on the capacity of their connection (i.e. less than or equal to 13 kVA vs. greater than 13 kVA).

[68] BE (Brussels): Network users (on HV) with peak measurement pay a capacity (€/kW) fee based on their actual monthly peak (maximum of the last 12 months).

[69] BE (Flanders): Only energy-based tariffs are applied to household consumers (until 2022).

[70] BE (Flanders): Both power-based and energy-based tariffs are applied to most non-household consumers (depending on the metering regime).

[71] HR: Power-based charge only has to be paid during peak periods.

[72] CZ: Some network users (MV or HV) have the option to have energy-based tariff only. However, this option is taken by a fraction of the eligible network users.

[73] FI: In general, for households and small buildings, the tariff consists of an energy-based fee and a fixed basic fee, which, in some DSOs' tariff structures, depends on the size of the main fuse. For industrial consumers, the tariff usually consists of a basic fee, power fee, reactive power fee and distribution fee.

Member State	Energy-based	Energy + lump sum	Power + lump sum	Energy + Power	Energy + Power + lump sum
France					X[74]
Germany[75]		X (in exceptional cases for LV users)		X (in case of power metering + for non-LV users)	
Greece				X	
Hungary		X (other users)			X (for larger users)[76]
Ireland	X (some users)	X (some users)			X (some users)
Italy	X (few users)[77]		X (most users)[78]		
Latvia				X	
Lithuania	X				
Luxembourg		X (LV users)[79]		X (for non-LV users)[80]	
Malta					X[81]

[74] FR: Management component is a lump sum (same for metering). Pure withdrawal charge consists of a power-based charge and an energy-based charge. Depending on the voltage level, there are different possible combinations of power-energy component values that users will subscribe to according to their utilisation of the network.

[75] DE: Tariffs generally consist of a power-charge and an energy-based charge depending on the annual consumption (kW peak for power-based charge and kWh for energy-based charge). The weight of components depends on the user's peak load occurring simultaneously with the network's annual peak load. For users exceeding 2500 hours of consumption, the power-based term is than the energy-based term. The opposite is true for consumers under the 2500-hour threshold. At the low voltage level for consumers without power-metering, there is only an energy-based tariff unless DSOs make use of the option to additionally introduce a so-called “base charge” (lump sum). The combined tariff consisting of an energy-based component and the base charge must be proportionate to the tariff (consisting of a volumetric and a capacity component) that would be applicable on the low voltage level in case of power metering. The vast majority of DSOs make use of this option.

[76] HU: Larger users at low voltage level above 3×80A connection capacity and users connected to higher voltage levels.

[77] IT: For public lightning and public charging points for electric vehicles.

[78] IT: For most users, the network tariff has three components: fixed, energy-based and power-based. The energy-based component is only addressing transmission; therefore, the distribution tariff can be deemed as a combination of fixed and power-based.

[79] LU: For low voltage users the energy component is paid on the consumption and an access fee is due monthly. The access fee contains the metering costs and some of the distribution costs.

[80] LU: For non-low voltage users in distribution, the tariff has an energy and a power component, while metering is a separate monthly fee.

[81] MT: Network users with a service rating not exceeding 60A per phase pay an energy-based tariff and an annual fixed service charge. The energy-based tariff is paid on consumption only and covers part of the distribution costs as well as the energy and supply costs. Prosumers do not pay any extra charges for injection. Producers that only inject but not withdraw pay only the annual fixed service charge. Users with a service rating exceeding 60A per phase pay an energy-based tariff, an annual fixed service charge and a maximum demand tariff based on the highest demand (kW or kVA) sustained for any thirty consecutive minutes during the year multiplied by two. The energy-based tariff is paid on the electricity consumed only. Prosumers do not pay any extra charges for injection. Producers that inject pay only an annual fixed service charge. This service charge covers the metering and cost-related administration of feed-in tariff account. In Malta, all producers sell to the DSO/supplier, there is no third-party access and the retail market is not open to competition.

Member State	Energy-based	Energy + lump sum	Power + lump sum	Energy + Power	Energy + Power + lump sum
The Netherlands					X[82]
Poland					X
Portugal				X[83]	
Romania	X[84]				
Slovak Republic				X	
Slovenia				X[85]	
Spain				X	
Sweden[86]		X (typical for households)			X (typical for LV non-households and HV)
Total	3 MS: for all, 5MS + 1R: for some	1MS: for all, 8MS + 1R: for some	1MS: for some	8MS + 1R: for all, 5MS + 2R: for some	4MS: for all, 5MS: for some

(159) The power-based charges can be applied based on different criteria. Based on the information provided for 13 Member States and Wallonia region of Belgium, ACER notes that the following criteria are applied:

- actual maximum power (DK, MT, SE and the Wallonia region of Belgium);
- actual power at a specified time (e.g. system peak periods) (HR);
- contracted or rated power (CZ, FR, LV, PL, SK); or
- mix of the above listed criteria or different criteria for different network users (GR, NL, PT, ES):

[82] NL: network users pay withdrawal tariffs on the basis of: the contracted amount of power; the actual maximum amount of power required within a week or month; kWh: the amount of energy used; and a lump sum per year.

[83] PT: Each separate distribution tariff (HV, MV and LV) has the following billing variables: contracted power, peak power, active energy and reactive energy. Notwithstanding the general structure of the distribution tariffs, when applying them to small consumers connected to the LV grid (≤ 41.4 kVA), the following simplified structure applies: contracted power and active energy.

[84] RO: The tariffs are energy-based, calculated based on the distribution costs and distributed energy related to each voltage level. These are voltage-specific tariffs (for low, medium and high voltage). The tariff payed by a user is calculated by summing the specific tariffs for its own connection voltage level and for higher voltage levels.

[85] SI: different bases depending on the voltage level and capacity. For customers connected to low voltage with capacity up to 43 kW, the withdrawal charges are applied based on the rated power according to the size of fuse. For those on low voltage with capacity above 43 kW, the charges are based on the actual monthly peak power at a specified time (e.g. system peak periods between 6h and 22h only on working days). On medium and high voltage, the withdrawal charges are based on the actual monthly peak power at a specified time – a period of two continuous hours (between 6h and 22h on working days) defined as system peak periods by the DSO. The DSO is obliged to define system peak periods (hours) for each month a year in advance.

[86] SE: In general, households often has a fixed charge (based on fuse size) plus energy charges. Low voltage other than households often have energy, power and fixed charge. High voltage has energy, power and fixed components.

- In Greece, the criteria for the power-based charge actual power at specified time (e.g. system peak periods) at medium voltage level and contracted or rated power at low voltage level;
- In the Netherlands, both the contracted amount of power and the actual maximum amount of power required within a week or month are applied;
- In Portugal, the criteria for the power-based charge is contracted power and peak-power, except for some of the LV level connected consumers, where peak-power is not applied;
- In Spain, there is a power-based charge set for each of the 6 differentiated time-periods. Additionally, there is a penalty for excess of actual power over contracted power.

Table 12 Basis for power-based charges

Member State	Actual maximum power	Actual power at specified time (e.g. system peak periods)	Contracted or rated power	Other
Belgium (Wallonia)	X			
Croatia		X		
Czech Republic			X	
Denmark	X			
France			X	
Greece		X (MV)	X (LV)	
Latvia			X	
Malta	X			
The Netherlands				X[87]
Poland			X	
Portugal				X[88]
Slovak Republic			X	
Spain				X[89]
Sweden	X			
Total	4MS	1MS + 1MS (for MV only)	5MS + 1MS (for LV only)	3MS

Note: includes only those Member States for which this information has been provided by the NRAs.

(160) As presented in Table 13 below, in the recovery of distribution costs, for the vast majority of Member States, energy-based charges have a larger weight than power-based charges. In 6

[87] NL: Both the contracted amount of power and the actual maximum amount of power required within a week or month are applied as power-based components.

[88] PT: The criteria for the power-based charge is contracted power and peak-power, except for small consumers connected to the LV grid (denominated as Normal Low Voltage, with power levels ≤ 41.4 kVA), where peak-power is not applied.

[89] ES: Tariffs are based on time of use. Six periods are considered and there is a power-based charge for each of the periods. Additionally, there is a penalty for excess of actual power over contracted power.

Member States power-based charges have a larger weight (CZ, IT, NL, PT, SK, ES). Lump-sum play a relatively small role in all Member States.

Table 13 Percentage split among withdrawal charges

Member State	Energy (%)	Power (%)	Lump-sum (%)	Year
Austria[90]				2020
Belgium (Brussels) [91]	82	0	18	2020
Belgium (Flanders)	85-90	10-15	<1	2020
Belgium (Wallonia) [92]	95	0	5	2020
Bulgaria	75	25	0	2019
Croatia	84.8	15.2	0	2019
Cyprus	100	0	0	2020
Czech Republic[93]	51	49	0	2018
Denmark	95	0	5	2019
Estonia	81	Not available	Not available	2018
Finland	Not available	Not available	Not available	
France	70	16	14	2019
Germany[94]				2020
Greece	82	18	0	2020
Hungary	77	20	3	2019
Ireland	68	9	23	Tariff year (Oct. 2019 – Sept. 2020)
Italy[95]	0	95	5	2020
Latvia	68	32	0	2020
Lithuania	100	0	0	2020
Luxembourg	59	16	25	2020
Malta	Not available	Not available	Not available	
The Netherlands[96]				

[90] AT: For low voltage consumers with yearly energy consumption of 3,500 kWh and without measured power consumption, the split is: 81.1% for energy, 18.9% for lump-sum. Consumers on low voltage level with measured power consumption as well as consumers on other voltage levels have different percentages divided between energy-based and power-based charges but not lump-sum. For low voltage consumers with yearly energy consumption of 210,000 kWh and power consumption of 75 kW, the split is: 65.2% for energy, 34.8% for power and 0% for lump-sum. As the voltage increases, the percentage of energy has a decreasing tendency and the percentage of power an increasing tendency (meaning that the customer connected to higher voltages would pay more percent for power and less percent for energy).

[91] BE (Brussels): The provided values (%) apply to Low voltage consumers. Lump sum is mostly based on the capacity of the delivery point, whether it is above or under 13kVA.

[92] BE (Wallonia): The provided values (%) apply to Low voltage consumers without peak measurement.

[93] CZ: Aggregated value for the whole country.

[94] DE: For household customers with low-voltage supply and an annual consumption of 3,500 kWh. Customers with an annual consumption below 100,000 kWh are charged with a fixed lump sum charge and an energy-based charge. For commercial customer with low-voltage supply and an annual consumption of 50,000 kWh, the split is: 98% for energy, 0% for power and 2% for lump-sum. For industrial customer with medium-voltage supply, an annual consumption of 24,000,000 kWh and an annual maximum load of 4,000 kW, the split is 37% for energy, 63% for power and 0% for lump-sum.

[95] IT: The energy-based element of network tariff is for transmission. The lump-sum element mostly covers the metering costs and only a small part (about 5%) is for distribution.

[96] NL: The tariff code specifies the weight of each tariff driver for different type of consumers. For the large consumers connected to the highest voltage networks the share of distribution costs that are recovered on the basis of energy as tariff driver is 0% and on the basis of power is 100%, but for residential consumers connected

Member State	Energy (%)	Power (%)	Lump-sum (%)	Year
Poland	71	23	6	
Portugal[97]	49.4	50.6	0	2020
Romania	100	0	0	2020
Slovak Republic	35	65	0	2020
Slovenia	69.3	30.7	0	2019
Spain	25	75	0	2020
Sweden	Not available	Not available	Not available	

7.6. Percentage of distribution costs covered by tariff for injection and by tariff for withdrawal

(161) As mentioned in Section 7.1, injection charges apply in 10 Member States and 2 regions of Belgium.

(162) In 2 Member States (FR, NL) and for Flanders and Wallonia regions, the NRAs reported that almost 100% of the distribution costs are covered by tariffs for withdrawal, while maximum a few percent is covered by distribution tariffs for injection.

(163) In the remaining Member States with injection charges, such information was not provided by the NRA or it was not available to the NRAs, in some instances because the injection and withdrawal charges are not clearly differentiated for each tariff or tariff element for each network users (e.g. a prosumer pays a single charge for the use of the network, not separate charges for injection and withdrawal).

7.7. Conclusions

Distribution tariffs for injection and for withdrawal:

(164) Some form of distribution tariffs for injection or for its possibility to inject[98] is applied in 10 Member States (AT, EE, FI, FR, LT, LU, MT, NL, SK, SE) and in Flanders and Wallonia regions of Belgium, while Germany is the only Member State applying a “negative injection charge” for avoided network costs. In the remaining Member States no injection charge is applied.

(165) In Member States that apply distribution tariff for injection, the NRA typically motivates the use of injection charges by referring to the principle of cost-reflectivity or the principle to charge all network services being provided.

(166) The Member States that do not apply injection charges provided a diverse list of reasons for their non-application. The most frequently reported reasons by NRAs for non-application are that injection charges would create distortions in the national and cross-border wholesale markets or

to the lowest voltage levels the share is 84% energy and 16% power. Only a small part of the distribution cost uses lump sum: it only covers a very limited set of fixed distribution costs: administrative costs, costs for facilitating switching, costs for allocation, verification and validation and the cost of maintaining the register of connections.

[97] PT: The energy component includes charges for active energy only and covers distribution tariffs for the use of HV, MV and LV grids. The power component includes charges for contracted power and peak power and covers distribution tariffs for the use of HV, MV and LV grids.

[98] This definition includes instances where only parts of distribution costs are charged or only some network users injecting are affected.

that the network costs caused by producers are already recovered through other means (e.g. through licence-holder charges or connection charges).

(167) ACER notes that some Member States (DK, IE, PT[99], RO) apply transmission tariffs for injection, but not distribution tariffs for injection, which is explained by the different impacts of the injection in those networks. On the contrary, some other Member States (EE, LT, LU) apply distribution tariff for injection, but does not apply transmission tariff for injection.

(168) ACER is of the view that in order to ensure cost reflectivity and avoid market distortions, the cost caused by a network user should be properly reflected in its distribution tariff. If a network user only withdraws from or injects into the distribution grid, in principle, only the costs relevant for withdrawal or the costs relevant for injection should be attributed to this network user[100].

(169) If a network user both withdraws from and injects into the grid both should be considered when setting distribution tariffs, by properly taking into account the potential cost-offsetting effect and the overall cost impact to the network.

Distribution tariff bases:

(170) In contrast to transmission tariffs for injection, where the vast majority of the concerned Member States bases the injection charge at least partially on the volume of energy injected into the grid, ACER finds a great variety in terms of applied tariff basis (including energy-based charge, power-based charge, lump sum or their combination) for distribution tariff for injection without any prevailing practice.

(171) In about two-thirds of the Member States, the distribution tariff for withdrawal has the same basis for all network user groups. In about one third of the Member States different bases apply to different groups.

(172) The vast majority of the Member States use a combination of energy-based charges with either a power-based or a lump-sum component or both. In 3 Member States, only energy-based charges are applied to all users and in additional 5 Member States to some of the users. None of the Member States apply a power based only or a lump sum only withdrawal charge to any of the network users.

(173) In the vast majority of Member States, energy-based charges have a larger weight than power-based charges in order to recover distribution costs, while in 6 Member States power-based charges have a larger weight. Lump-sum play a relatively small role in all Member States.

(174) When energy-based charging is chosen, ACER deems that, in line with the provisions of Article 15 of Directive (EU) 2019/944 for active customers, users which both withdraw from and inject into the grid should be subject to cost-reflective, transparent and non-discriminatory network

[99] Portugal applies an injection charge through the transmission tariff to all injections into the transmission or distribution grid, except at the low voltage level. This means that even generators connected to the distribution grid at HV and MV pay this charge, to ensure a level playing field across different generators.

[100] The principle of cost reflectivity applies to all costs; here only distribution costs are mentioned as the reference is made with regard to distribution tariffs.

charges that account separately for the electricity fed into the grid and the electricity consumed from the grid.

(175) As already indicated in the CEER Guidelines of Good Practice for Electricity Distribution Network Tariffs and witnessed by some answers regarding the ongoing changes in some national tariff frameworks, ACER considers appropriate a gradual move to increasingly power-based distribution tariffs to recover those costs which show correlation with contracted or peak capacity.[101]

(176) Still, it is worth reminding that power-based distribution tariffs, especially when referred to actual maximum power during peak load periods, may feature a higher complexity than energy-based charging[102] and can have a negative impact on some tariff principles, such as simplicity, predictability and transparency. It must also be kept in mind that some costs (e.g. infrastructure costs) show strong correlation with capacity usage, while other costs (e.g. losses) may significantly depend on the volume of energy withdrawn from the grid.

8. Groups of network users subject to distribution tariffs

(177) Network users subject to distribution tariffs can be divided into two groups:

- network users who are injecting electricity into the network; and
- network users who are withdrawing electricity from the network.

(178) The network users who are both injecting into and withdrawing from the network belong to both groups.

8.1. Network users who inject electricity into the network

(179) Within the first group, i.e. injecting into the network, network users can be classified into the following sub-groups:

a) Producers, including both renewable energy sources (RES) and Non-RES producers, which do not withdraw electricity from the network except for the purpose of feeding the auxiliary services of their power plant, when needed;

b) Pumped hydroelectric energy storage facilities (PHES);

c) Other storage facilities (e.g. batteries);

d) Other network users, who both inject and withdraw.

(180) The treatment of the different network users, connected to the distribution network, who inject into the network are presented for each Member State where an injection charge applies in Table 14 below.

[101] Conceptually, time-of-use tariffs with sufficient granularity may achieve similar cost reflectivity as contracted-capacity or peak-based tariffs.

[102] Time-differentiated energy-based charges can also feature relatively high complexity, e.g. when granularity is high.

Table 14 Distribution-connected network users subject to injection charges

Member State	Producers (RES and non-RES)	Users who are both injecting and withdrawing		
		Pumped hydroelectric storage	Other storage facilities (e.g. batteries)	Other network users
Austria[103]	Yes	Yes	N/A	Yes
Belgium (Flanders)	Yes	N/A	Yes	No
Belgium (Wallonia)	Yes	N/A	Yes	No
Estonia	Yes	N/A	N/A	Yes (prosumers, usually households, installed capacity >0.015 MW)
Finland	Yes	No	No	Yes (prosumers)
France	Yes	Yes	Yes	Yes (self-producers)[104]
Lithuania	No	N/A	N/A	Yes
Luxembourg[105]	Yes (LV)	N/A	Yes (LV)	Yes (LV)
Malta	Yes	N/A	N/A	No
The Netherlands	Yes	N/A	N/A	Yes (prosumers and self-producers)
Slovak Republic	Yes	No	N/A	Yes (prosumers in case their injection capacity is higher than the their withdrawal capacity)
Sweden	Yes	Yes	Yes	Yes (prosumers with installed capacity >0.0435 MW)
Total	9MS+2R: Yes, 1MS: No	3MS: Yes, 2MS: No, 5MS+2R: N/A	3MS+2R: Yes, 1MS: No, 6MS: N/A	9MS: Yes,1MS+2R: No

Note: N/A means there is no such network user in that Member State.

(181) 10 Member States (AT, EE, FI, FR, LT, LU, MT, NL, SK, SE) and 2 regions of Belgium apply injection charges to at least some of the distribution-connected network users who are both injecting and withdrawing to/from the grid:

- 3 Member States (AT, FR, SE) apply injection charges to pumped hydroelectric storage facilities;
- 3 Member States (FR, LT, SE) and 2 regions of Belgium apply injection charges to other storage facilities (e.g. batteries);

[103] AT: In Austria, any user that can generate electricity and has a capacity over 5 MW is subject to injection charges.

[104] FR: the management component applying to self-producers injecting into the grid and is worth 1.5 times the component for a conventional user.

[105] LU: For the low voltage level, a monthly access fee is due by every connected user on the LV grid.

- 9 Member States (AT, EE, FI, FR, LT, LU, NL, SK, SE) apply injection charges to other network users (prosumers or self-consumers), in some instances only above certain installed capacity levels[106].

8.2. Network users who withdraw electricity from the network

(182) Within the second group, i.e. withdrawing from the network, network users can be classified into the following sub-groups:

a) Household consumers;

b) Non-household consumers;

c) Auxiliary services of generators (i.e. an equipment at the electric plant site that provides power for the operation of the electric plant itself, including related demands such as plant lighting), during periods when the electric plant is not generating;

d) Power-to-gas and Power-to-X facilities;

e) Pumped hydroelectric energy storage facilities (PHES);

f) Other storage facilities (e.g. batteries);

g) Other network users, who both inject and withdraw.

(183) The distribution network user groups, which are subject to distribution tariffs for withdrawal (withdrawal charges), are presented in Table 15 below.

Table 15 Distribution-connected network users subject to withdrawal charges.

Member State	Household	Non-household consumers	Auxiliary services of generators	Users who are both injecting and withdrawing		
				Pumped hydroelectric storage	Other storage facilities (e.g. batteries)	Other network users (see table below)
Austria	Yes	Yes	Yes	Yes	N/A	Yes
Belgium (Brussels)	Yes	Yes	No	No	No	Yes
Belgium (Flanders)	Yes	Yes	Yes	N/A	Yes	Yes
Belgium (Wallonia)	Yes	Yes	No	N/A	Yes	Yes
Bulgaria	Yes	Yes	No	No	No	Yes
Croatia	Yes	Yes	Yes	No	No	Yes
Cyprus	Yes	Yes	No	N/A	N/A	Yes
Czech Republic	Yes	Yes	No	N/A	N/A	Yes
Denmark	Yes	Yes	No	N/A	N/A	Yes
Estonia	Yes	Yes	Yes	N/A	N/A	Yes
Finland	Yes	Yes	Yes	No	No	Yes
France	Yes	Yes	Yes	Yes	Yes	Yes

[106] Threshold: 5 MW in Austria, 0.015 MW in Estonia, 0.0435 MW in Sweden. There is no generally applied threshold in Finland, France, the Netherlands and the Slovak Republic.

Member State	Household	Non-household consumers	Auxiliary services of generators	Users who are both injecting and withdrawing		
				Pumped hydroelectric storage	Other storage facilities (e.g. batteries)	Other network users (see table below)
Germany	Yes	Yes	Yes	Yes[107]	Yes[108]	Yes
Greece	Yes	Yes	Yes	N/A	N/A	Yes
Hungary	Yes	Yes	No	N/A	Yes	Yes
Ireland	Yes	Yes	Yes	N/A	Yes	Yes
Italy	Yes	Yes	No	No	No	Yes
Latvia	Yes	Yes	Yes	N/A	N/A	Yes
Lithuania	Yes	Yes	Yes	N/A	N/A	Yes
Luxembourg	Yes	Yes	No	N/A	Yes	Yes
The Netherlands	Yes	Yes	Yes	N/A	N/A	Yes
Malta	Yes	Yes	N/A	N/A	N/A	Yes
Poland	Yes	Yes	No	No	No	Yes
Portugal	Yes	Yes	Yes	No	N/A	Yes
Romania	Yes	Yes	Yes	Yes	Yes	Yes
Slovak Republic	Yes	Yes	Yes	Yes	N/A	Yes
Slovenia	Yes	Yes	Yes	N/A	No	Yes
Spain	Yes	Yes	Yes	No	No	Yes
Sweden	Yes	Yes	Yes	Yes	Yes	Yes
Total	27MS: Yes	27MS: Yes	17MS+1R: Yes, 8MS+2R: No, 1MS: N/A	6MS: Yes, 7MS+1R: No, 13MS+2R: N/A	7MS+2R: Yes, 7MS+1R: No, 11MS: N/A	27 MS: Yes

Note: N/A means there is no such network user in that Member State.

(184) The vast majority (17) of Member States and Flanders region of Belgium apply withdrawal charges to auxiliary services of generators. Withdrawal charges are not applied to auxiliary services of generators in 8 Member States (BG, CY, CZ, DK, HU, IT, LU, PL), and Brussels and Wallonia regions of Belgium.

(185) All Member States apply withdrawal charges to at least some network users who are both injecting to and withdrawing from the grid:

- 6 Member States (AT, FR, DE, RO, SK, SE) apply withdrawal charges to pumped hydroelectric storage facilities[109], in the remaining Member States such facilities are either exempted from such charges or there are no such facilities connected to the distribution grid yet;

[107] DE: Facilities whose pump capacity or turbine power has been increased by at least 7.5% or whose storage capacity has been increased by at least 5% after 4 August 2011 are exempted for the first 10 years of operation.

[108] DE: Storage facilities built after the 31 December 2008 put into operation within 15 years from 4 August 2011 are exempted for the first 20 years of operation.

[109] Out of the Member States which apply both injection and withdrawal charges, AT, FR and SE apply both of them to PHES, while SK apply only withdrawal charges to PHES.

- 7 Member States (DE, FR, HU, IE, LU, RO, SE) and Flanders and Wallonia regions of Belgium apply withdrawal charges to other facilities (e.g. batteries)[110];
- All Member States apply withdrawal charges to other network users (e.g. prosumers).

8.3. Other different rules between network user groups

(186) Some tariff differences between the network user groups have already been reported in Section 7 (regarding different tariff bases for different network user groups) and in Sections 8.1 and 8.2 (regarding network users groups subject or not subject to injection and/or withdrawal charges). Further tariff differences are described in Section 11, regarding the application of time-elements and other tariff variations for different network user groups.

(187) Additionally, some Member States apply different rules between some network user groups, as described in Table 16.

(188) Some of them apply different treatment to user groups, which are both withdrawing and injecting into the grid, such as pumped hydroelectric storage (AT, DE), other storage facilities (DE) and/or to prosumers/ self-consumers (NL, PT). Different treatments to user groups, which are only withdrawing, apply between household and non-household consumers (CZ, GR, IT, NL, PL), or for auxiliary services of generators (CZ).

Table 16. Different rules applied between network user groups

Member State	Different treatment rules between network user groups
Austria	PHES units receive a discount on the withdrawal charge, called "system utilization charge" (commodity and capacity).[111]
Czech Republic	Auxiliary services providers of producers with at least 80% of the generated electricity being injected are exempted from the power-based payment. Tariffs on low voltage level differ upon consumer's load profile and category (households, legal entity)[112].
Germany	PHES units under specific conditions are exempted for the first 10 years or 20 years of Operation[113]. Other storage facilities built after 31 December 2008 put into operation within 15 years from 4 August 2011 are exempted for the first 20 years of operation.
Greece	Aggregated (c€/kWh) charge is the same for all low voltage consumers. However, charges for households are based 90% on energy and 10% on contracted power, whereas charges for all other users are based 80% on energy and 20% on contracted power. In addition, the largest low voltage consumers are also charged for reactive power consumption. This charge is incorporated in the calculation of the energy component of the tariff.

[110] Out of the Member States which apply both injection and withdrawal charges, BE (Flanders and Wallonia regions), FR, and SE apply both of them to other storage facilities.

[111] AT: The system utilization charge is applied to withdrawal only. PHES units contribute to grid balancing and stability and provide reserves, hence the discounted charge.

[112] CZ: This translates into different cost allocation methodologies between household and other consumers. The average load profile of legal entities is peak-concentrated at a certain time of the day, whereas the average household's load profile is peak-randomized, so the aggregated average load profile of legal entities causes higher demands on the grid than the household's aggregated average load profile.

[113] DE: The exemption is limited to PHES whose pump capacity or turbine power has been increased by at least 7.5% or whose storage capacity has been increased by at least 5% after 4 August 2011 are exempted for the first 10 years of Operation. Storages built after 31 December 2008 put into operation within 15 years from 4 August 2011 are exempted for the first 20 years of operation (cf. Article 118 para. 6 of the Energiewirtschaftsgesetz).

Italy	The tariff values for household consumers are different than those for non-household consumers. There is no discount or exemption; the different tariff levels depend upon the cost allocation that was defined about 20 years ago, according to participation of each customer group to peak demand.
Malta	Segmentation of customers according to type of premises (domestic, primary residence (subset of domestic) and non-households) with different tariff levels. The kWh tariff and maximum demand tariff (for services rated above 60Amps/phase) is charged on withdrawals only. Users that only inject in the network pay the fixed annual service charge only.
The Netherlands	On LV capacity-based tariffs vary between household consumers and other consumers.
Poland	The tariff values for household consumers are different than those for non-household consumers. Household consumers pay an energy-based charge and a lump sum subscription charge and fixed charge, while non-household consumers pay a lump sum subscription charge and power based fixed charge[114].
Portugal	Self-consumers (including renewable energy communities acting as collective self-consumers) that use the public distribution grid can benefit from a deduction of the D-Tariff of voltage levels above the one of production (e.g. for a LV energy community, where injection and withdrawal take place at LV, the D-tariff may only include the LV component, not the HV or MV components). This benefit is conditional on the non-observation of reverse power flows (from lower to higher voltage levels).

8.4. Conclusions

(189) Injection charges apply to pumped hydroelectric storage facilities and other storage facilities (e.g. batteries) in a few Member States. They apply to other network users (e.g. prosumers) who are both injecting to and withdrawing from the grid in most of the Member States where injection charges exist.

(190) Withdrawal charges apply to pumped hydroelectric storage facilities and other storage facilities (e.g. batteries) in 6-7 Member States. They apply to other users (e.g. prosumers) who are both injecting and withdrawing from the grid in the vast majority of Member States.

9. Emerging topics linked to the energy transition

(191) In the context of the energy transition, power-to-X facilities, publicly accessible recharging points for electric vehicles (EV) and energy communities have gained attention for their potential to improve overall system efficiency. These activities use the distribution system and as such their treatment in the tariff methodologies may play a role in their uptake. For instance, EV charging can contribute to system efficiency by smartly charging and potentially discharging EV batteries, but may also increase the capacity needs in distribution grids and thus the costs[115]. ACER recalls that tariff methodologies shall neutrally support system efficiency in the long run.

[114] PL: Ministerial ordinance establishes that the fixed component of distribution rate shall be calculated according to costs in PLN/MW or kW and for household end-users in PLN/month.

[115] CEER made similar points on electric vehicles in its papers on Whole Systems Approaches and on Electricity Distribution Tariffs Supporting the Energy Transition. This ACER Report reviewed the tariff practice setting for publicly accessible recharging points (as a distinct network user) only.

9.1. Power-to-X facilities

(192) Power-to-gas facilities are subject to distribution tariffs for withdrawal in 15 Member States (AT, BE, CZ, EE, FR, DE, HU, IT, LU, NL, PL, RO, SK, ES, SE). For the remaining Member States, NRAs answered that the question was not applicable, as there is no such a network user group connected to the distribution grid in the country (BG, HR, CY, DK, FI, GR, IE, LV,LT, MT, PT, SI) yet[116].

(193) Other power-to-X facilities are reported to be subject to distribution tariffs for withdrawal in all the previously mentioned Member States. In the remaining Member States, there are no power-to-X facilities yet.

(194) No NRAs reported that power-to-X facilities (including power-to-gas) are treated differently than other network users regarding tariffs for withdrawal.

9.2. Publicly accessible recharging points for electric vehicles

(195) "Re-charging points for electric vehicles" (EV) which are accessible to the public exist in all Member States. In Greece such charging points have no dedicated connection to the network or metering. In 23 out of the remaining 26 Member States, the same withdrawal tariff structure applies to the operators of these charging points, as applied to other network users in the same country.

(196) The distribution tariff treatment of EV recharging points is different in 3 Member States (IT, PT, ES):

- in Italy, operators of dedicated public points for electric vehicle recharging (i.e. points without any other loads connected) can opt for a special tariff structure, , which is energy-based only, or opt for the same tariff structure for withdrawal applied to other Italian network users;
- in Portugal, the distribution tariff is converted into an energy-only charge (EUR/kWh), different than the general structure that also includes power charges (EUR/kW or EUR/kVA): the tariff applies to EV users through their electricity mobility supplier, and not to charging points operator;
- in Spain, there is a specific tariff (which has similar tariff but the energy component has greater weight), which can be optionally chosen by the operator of the publicly accessible EV re-charging station. Alternatively, the same tariff structure for withdrawal applies to the operators of these charging points, as applied to other network users in the same country.

(197) ACER notes that different tariffs (more-energy-based) for EV publicly accessible recharging points apply in half of the 6 Member States, which have a larger weight of power-based elements in their withdrawal tariffs. This may be explained by a need to avoid disincentives to realise EV points when their energy utilisation could still be low.

[116] In some instances, the NRAs flagged that if such facilities were to exist they would be subject to the same withdrawal charge as other users.

9.3. Energy communities

(198) The recently adopted Clean Energy Package has introduced new definitions for the concept of energy communities, namely new definitions for "Renewable Energy Communities"[117] (RECs) and "Citizen Energy Communities"[118] (CECs). According to a CEER Report[119] from June 2019, the main differences between the two definitions relate to the rules on membership, admissible generation technologies[120], the geographic scope[121] and the allowed activities[122]. This analysis will refer to both definitions as energy communities.

(199) That CEER Report summarises the main conceptual differences between collective self-consumption and energy communities. Collective self-consumption corresponds to energy sharing among several local consumers, namely if they are located in the same building or multi-apartment block[123]. In contrast, energy communities possess community-owned generation assets and may include energy sharing, operation of micro-grids or other activities and cover a larger geographic scope.

(200) For all Member States except for Portugal, NRAs have reported that a tariff regime for energy communities has not yet been implemented at national level, with several NRAs suggesting that a specific tariff treatment is in fact envisaged for this new type of network users. The NRA of the Brussels region of Belgium reported that energy communities receive a partial exemption and the NRA of the Netherlands reported in this context the relevance of innovative projects, which could apply for tariff exemptions in the Netherlands under a framework that lasted until the end of 2019 and for which an alternative is being considered.

(201) In Portugal, a legal framework has been implemented at national level in 2019 and renewable energy communities can apply for a specific tariff regime for self-consumption, in place since 2020. In Portugal the charging of distribution tariffs for a renewable energy community depends on the extent to which the public grid is used. The more an energy community is using the public grid, the more it will contribute to the payment of distribution tariffs. The Portuguese NRA

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[117] According to Article 2(16) of Directive (EU) 2018/2001 *"renewable energy community" means a legal entity: (a) which, in accordance with the applicable national law, is based on open and voluntary participation, is autonomous, and is effectively controlled by shareholders or members that are located in the proximity of the renewable energy projects that are owned and developed by that legal entity; (b) the shareholders or members of which are natural persons, SMEs or local authorities, including municipalities; (c) the primary purpose of which is to provide environmental, economic or social community benefits for its shareholders or members or for the local areas where it operates, rather than financial profits".*

[118] According to Article 2(11) of Directive (EU) 2019/944 *"citizen energy community' means a legal entity that: (a) is based on voluntary and open participation and is effectively controlled by members or shareholders that are natural persons, local authorities, including municipalities, or small enterprises; (b) has for its primary purpose to provide environmental, economic or social community benefits to its members or shareholders or to the local areas where it operates rather than to generate financial profits; and (c) may engage in generation, including from renewable sources, distribution, supply, consumption, aggregation, energy storage, energy efficiency services or charging services for electric vehicles or provide other energy services to its members or shareholders".*

[119] CEER Report on Regulatory Aspects of Self-Consumption and Energy Communities, 25 June 2019
https://www.ceer.eu/documents/104400/-/-/8ee38e61-a802-bd6f-db27-4fb61aa6eb6a

[120] RECs can only include renewable energy technologies.

[121] Shareholders or members of RECs must be located in the proximity of the renewable energy projects that are owned and developed by the REC (there is no geographic limitation for CECs).

[122] CECs are limited to the electricity sector (RECs can cover any energy sector) but can cover more activities, namely generation, distribution and supply, consumption, aggregation, storage or energy efficiency services, charging services for electric vehicles or other energy services (RECs can only cover production, consumption and selling of energy).

[123] Cf. Article 2(15) of Directive (EU) 2018/2001

mentions the example where both the consumption and production units are connected to LV: in that case distribution tariffs may be due only for the use of the LV grid, but not for the use of higher voltage levels, such as MV and HV (as is applicable to consumption-only units). However, this circumstance is conditional on the non-observation of reverse power flows (from lower to higher voltage levels).

Table 17: Description of the distribution tariff regime applicable to energy communities

Member State	Description
Belgium (Brussels)	Some innovative projects will begin in 2020. Different possibilities regarding the distribution tariffs to apply have been considered by both the DSO and project owners, in collaboration with the NRA. Projects have a limited scope and timeframe at the end of which recommendations will be made on the tariff topic. The current legal and regulatory frameworks allow an exception regime for energy communities and no global changes to these frameworks are planned at short notice.
Finland	Energy communities have not yet been implemented in the national legislation, so the NRA has no experience yet on the matter. The NRA has given 4 closed network permits and the DSOs have determined tariffs. DSOs set the tariffs independently but the NRA monitors that tariffs are reasonable and sets the revenue cap.
France	No specific tariff for "energy communities" per se as of today. However, one optional tariff was introduced in 2018 for participants to what is described "collective self-consumption operations", where LV consumers and producers share the power produced within a given perimeter. According to this tariff, local withdrawals are cheaper in order to reflect the fact that they only burden the local LV network infrastructures. This tariff incentives the participants to such operations to synchronise their consumption with the time of production of the producers taking part to the same operation. To make sure that network gains are really performed with such operations, this tariff option is only available to operations that take place downstream of a same MV/LV transformer.
Italy	Currently under consultation (ARERA document 112/2020): the proposal is not to apply energy-based components of network tariffs. However, given that the energy-based component is only for transmission costs, there would be no difference for the D-tariff (which is largely power-based and to small extent fixed).
The Netherlands	Energy communities are treated in the same manner as any other network user in terms of cost allocation and tariff structures. However, until the end of 2019, there was exemption regulation (‘Experimentenregeling’) that allowed for 'experiments' in the energy sector to apply for exemptions from the Electricity and Gas Law. One of the aims of this Regulation – which was focused on the energy sector as a whole and not exclusively on distribution utilities – was to facilitate learning with respect to new technologies, new roles and different tariff structures. This Regulation was considered quite successful but expired by the end of 2019 and its follow up was prepared but got stalled due to legal issues. Under this exemption regulation quite a number of initiatives involving energy communities cooperating with DSOs were successful in applying for an exemption. This allowed them to experiment with for example different tariff structures (time and location differentiated).
Portugal	The legal framework for renewable energy communities is established in the same Decree-Law (162/2019) that establishes the activity of RES self-consumption. This legal framework specifies the application of distribution tariffs for energy communities in the case when its members act as (collective) self-consumers. In this case, the network tariff for self-consumption applies. As a general rule, the charging of distribution tariffs for self-consumption depends on the extent to which the public distribution grid is used. A first provisional tariff regime for self-consumption has been approved for year 2020, concerning only situations where an intelligent metering system is in place and the consumption unit and the production unit for energy sharing over the public grid are connected to the same voltage level. For instance, if inside the energy community

	energy is injected in LV and consumed in LV, in what regards the energy shared over the public grid as self-consumption, the consumption unit will only have to pay a distribution tariff relative to the LV grid, but will be exempted to pay for the HV and MV grids (compared to a normal consumer connected to the LV grid). A supplier delivers the remaining consumption, and the regular distribution tariff structure applies, with a cost-cascading effect from HV to LV. During the second half of 2020 the NRA must approve the tariff regime considering all possible configurations for self-consumption (i.e. production and consumption units connected to different voltage levels) to be applied form 2021 onwards. A consultation process was held between 19 November 2020 and 7 January 2021.Also, the non-application of some distribution tariffs related to upper voltage levels is conditional on the non-observation of reverse power flows (from lower to higher voltage levels).

Note: Only includes Member States providing specific information in what regards energy communities.

9.4. Conclusions

Power to X facilities:

(202) No NRAs reported that power-to-X facilities (including power-to-gas) are treated differently than other network users regarding distribution tariffs for withdrawal. Therefore, these facilities are (or in some Member States would be, when they will be installed) subject to withdrawal tariffs. This finding should be reviewed over time, given the low penetration of this technology to date.

(203) ACER considers that in order to ensure cost reflectivity where power-to-X facilities use several (regulated) networks for transmission or distribution of energy, all injections and withdrawals in each network should be charged separately according to the costs they cause or the benefits they generate in each network.

EV re-charging points accessible to the public:

(204) Publicly accessible EV re-charging stations exist in all Member States. In the vast majority of Member States the same tariff structure for withdrawal applies to the operators of publicly accessible re-charging points for electric vehicles, as applied to other network users (of the same country).

(205) In Italy and Portugal there is a different tariff structure (energy-based) for EV charging at publicly accessible EV re-charging stations compared to other network users (mixed, with the largest part being power-based) and in Spain there is a specific tariff (which has similar structure, but the energy component has greater weight). These different tariffs can be optionally chosen by the operator of the publicly accessible EV re-charging station in Italy and Spain.

Energy communities:

(206) For all Member States except Portugal, a tariff regime for energy communities has not yet been implemented at national level, with several NRAs suggesting that a specific tariff treatment is in fact envisaged for energy communities as defined by the Clean Energy Package. Belgium's Brussels region reported that energy communities receive a partial exemption and the Netherlands reported that innovative projects could apply for tariff exemptions under a framework that lasted until the end of 2019 and for which an alternative is being considered.

(207) In Portugal, a legal framework has been implemented at national level in 2019 and renewable energy communities can apply for a specific tariff regime for self-consumption, in place since 2020. As a general rule, the charging of distribution tariffs for a renewable energy community

depends on the extent to which the public grid is used. The more an energy community is using the public grid, the more it will contribute to the payment of distribution tariffs.

10. Tariff exemptions and other tariff differences within a network user group

10.1. Exemptions and other tariff differences

(208) In addition to the different tariff treatment of EV re-charging points accessible to the public, which was reported in the previous Section, in 9 Member States (AT, FI, DE, GR, IE, IT, NL, SI, SE), the NRAs reported that different rules to specific network users within one or more network user groups apply. For reasons behind the application for each of these different treatments please refer to Table 18:

- Within household consumers, differences are made based on spatial (rural versus urban users) and available metering technology (e.g. meter capable of distinguishing night and day or peak power demand). Such different treatment has been reported by NRAs in 3 Member States (AT, GR, IE). Further, in the Netherlands tariffs for households are differentiated according to the size of the network connection.

- In 3 Member States (GR, IE, IT), there exists a different treatment for some non-household consumers based on type (e.g. public lights), size, load profile or available metering technology.

- In 1 Member State (NL) tariffs for network users on high voltage according to the number of hours of operation (i.e. less or more than 600 hours).

- 3 Member States - FI (some DSOs), SI, SE, - apply partial exemptions or different treatment for those prosumer and producers which are below certain installed or contracted capacity level.

- Germany applies different tariff treatment to storage units (both groups: PHES and other storage facilities) due to several conditions, e.g. the date of entry into operation.

Table 18. Overview of different treatment between users within the same user group

Member State	Different treatments between users within the same user group and reasoning provided by the NRA
Austria	Household consumers who do not have power (kW) metering pay a lump-sum for kW.
Finland	Some DSOs do not apply injection tariff for small power producers.
Germany	PHES units under specific conditions are exempted for the first 10 years or 20 years of Operation. Other storage facilities built after the 31 December 2008 put into operation within 15 years from the 4 August 2011 are exempted for the first 20 years of operation.
Greece	For consumers with the necessary meter functionality, night time consumption is exempt from being charged with distribution use of system. (Reasoning: incentivise shifting of consumption to periods of low system demand). Agricultural (irrigation) users are fully exempt from distribution charges (Reasoning: agricultural users are considered interruptible customers in case of system emergencies).

Member State	Different treatments between users within the same user group and reasoning provided by the NRA
Ireland	Segmentation of domestic users between "urban" and "rural": rural users pay a different standing charge to urban customers while both urban and rural domestic customers pay the same Use of System (kWh) charge. (Reasoning: rural customers concern higher maintenance costs on longer more vulnerable networks). Segmentation of business users: "<50 kVA" pay a tariff based on kWh only, whereas "≥50 kVA" pay a tariff based on kWh and kVA maximum import capacity[124]. (Reasoning: may provide an incentive to consumers to right size their connection.)
Italy	Electricity consumption for public lighting has a different treatment than other non-household consumers. (Reasoning: The different treatment of public lighting is due to historical reasons and very likely correlated to the different level of participation to peak demand and to the absence of metered public lights in the previous decades.)
The Netherlands	On HV level there is a differentiation in withdrawal tariffs between consumers that withdraw less than 600 hours per year and consumers that withdraw more than 600 hours per year. (Reasoning: cost reflectivity. Network users with relatively few withdrawal hours a year pay tariffs that are based on different tariff drivers than network users with a large number of withdrawal hours a year. For example, the former pay a tariff for kW max per week, whereas the later pay a tariff for kW max per month). On LV capacity-based tariffs for households being differentiated according to the size of the network connection. There are different connection size categories and a network user with a larger network connection pays a larger tariff. (Reasoning: cost reflectivity. Network users with a larger network connection make relatively more use of the network and thus should pay for a larger share of the costs.)
Slovenia	Self-consumers or self-consuming communities with contracted capacity up to 43 kW are subject to net-metering (regarding the energy-based component of the distribution tariff for withdrawal) with 1 year accounting interval based on the Decree on the self-supply of electricity from renewable energy sources issued by the government, while self-consumers with contracted power above 43 kW are subject to gross metering. (Reasoning: to incentivise small consumers to become active consumers and produce their own electricity.) RES and CHP producers up to 50 kW are paying only the volumetric part of the distribution tariff for withdrawal (for the operation of the electric plant) because of their relatively low connection capacity for withdrawal.
Sweden	RES prosumers and producers with generators less than 1500 kW installed capacity pays only parts of the injection tariff. (Reasoning: to ease the burden for small producers and to promote small scale renewable generation.)

10.2. Conclusions

(209) One third of the Member States applies different rules to network users within a network user group. Within household consumers differences can be based on spatial (rural versus urban users), load profile and available metering technology (e.g. meter capable of distinguishing time-bands). Some Member States have different treatment for non-household consumers based on type, size, load profile or available metering technology.

[124] IE: For business users less than 50 kVA, the distribution tariff is based on kWh tariff and a standing (fixed) charge. For larger business customers (>50 kVA), a maximum demand tariff applies which consist of a standing (fixed) charge, a kWh charge and a kVA per MIC charge. Domestic users less than 30kVA and in excess of 30kVA pay a kWh tariff and a standing (fixed charge); the unit rates are different for users depending on whether the maximum import capacity is greater than or less than 30 kVA.

(210) ACER recommends that exemptions, partial exemptions or discounts from the payment of the reflective costs by a network user are provided only if justified reasons exist. Therefore, the necessity of any different treatment should be carefully considered and reassessed over time by the NRAs.

11. Tariff variations across different network users and time-differentiated network tariffs

11.1. Variation of the distribution tariff for injection across network users

(211) As shown in Table 19, in 7 Member States (AT, EE, FI, FR, NL, SK, SE) and Wallonia and Flanders regions of Belgium the distribution tariffs for injection vary on certain basis:

- in all 7 Member States and 2 regions, the tariff for injection varies based on the voltage level. These variations may be related to the level of the charges at each voltage level (EE, FR, NL) or to different charges' component according to the voltage level (FI, SE);
- in 1 Member State (AT), it also varies based on the location (network area) of the entity which injects into the network, regardless of the DSO to which the network user is connected;
- in 3 Member States (EE, FI and NL) and in Wallonia and Flanders regions, it varies according to the DSO to which network users are connected;
- in 2 Member States (FI, SE[125]), tariff for injection varies based on the time of injection (e.g. across seasons and between peak/normal hours), as further detailed in Section 11.3 below.

Table 19 Scope of the tariff variation applied to injection charges

Member State	Variation of tariff based on voltage level	Variation based on the DSO to which the user is connected to	Variation based on the time of injection	Variation based on location (unrelated to the connection to a specific DSO)
Austria	X			X[126]
Belgium (Flanders)	X	X		
Belgium (Wallonia)	X	X		
Estonia	X	X		
Finland	X	X	X	
France	X			
The Netherlands	X	X		
Sweden	X		X (applied by some DSOs)	
Slovak Republic	X			
Total	7MS + 2R	3MS + 2R	2 MS	1 MS

Note: the table includes only the Member States where any variation of the injection charge has been reported.

[125] SE: DSOs can decide if they use or not time differentiated tariffs. Some, but not all DSOs apply time differentiated network tariffs.

[126] AT: different tariffs are set for different network areas. Multiple DSOs can operate within a single network area.

11.2. Variation of the distribution tariff for withdrawal across network users

(212) In all Member States (except for MT), tariff variations are applied based on the voltage level. These variations notably reflect the cost cascading principle[127] of tariff construction, as well as the recovery of specific costs (such as power losses).

(213) Location signals unrelated to the connection to a specific DSO are applied in 1 Member State (AT).

(214) In 12 Member States (CZ, DK, EE, FI, DE, GR, LV, LT, NL, PL, RO, SE) and in Flanders and Wallonia regions of Belgium the connection to different DSOs implies a variation in the withdrawal tariff.

(215) In 17 Member States (AT, BE, HR, CZ, DK, EE, FI, FR, IE, LV, LT, MT, PL, PT, SI, ES, SE) variations are applied based on the time of withdrawal, as further detailed in Section 11.2.

Table 20 Scope of the variation applied to withdrawal charges

Member State	Variation of tariff based on voltage level	Variation based on the DSO to which the user is connected to	Variation based on the time of withdrawal	Variation based on location (unrelated to the connection to a specific DSO)
Austria	X		X	X[128]
Belgium (Brussels)	X	N/A (1 DSO only)	X	
Belgium (Wallonia)	X	X	X	
Belgium (Flanders)	X	X	X	
Bulgaria	X			
Croatia	X	N/A (1 DSO only)	X	
Cyprus	X	N/A (1 DSO only)		
Czech Republic	X	X	X	
Denmark	X	X	X	
Estonia	X	X	X	
Finland	X	X	X	
France	X		X	
Germany	X	X		
Greece	X	X		
Hungary	X			
Ireland	X	N/A (1 DSO only)	X	
Italy	X			
Latvia	X	X	X	
Lithuania	X	X	X	
Luxembourg	X			
Malta		N/A (1 DSO only)	X	
The Netherlands	X	X		

[127] Typically network users on a lower voltage level pay for distribution costs of their own connection voltage level and for distribution costs of higher voltage levels.

[128] AT: different tariffs are set for different network areas. Multiple DSOs can operate within a single network area.

Poland	X	X	X	
Portugal	X		X	
Romania	X	X		
Slovak Republic	X			
Slovenia	X	N/A (1 DSO only)	X	
Spain	X		X	
Sweden[129]	X	X	X	
Total	26MS	12MS + 2R	17MS	1MS

11.3. Characteristics of time-differentiation in distribution tariffs

(216) As shown in Table 21, in 2 Member States (FI, SE), a time-differentiation is incorporated in the distribution tariffs for injection. In Finland, an energy-based time differentiation is applied and in Sweden, both power- and energy-based time differentiation is applied.

(217) In 17 Member States a time-differentiation is implemented in the withdrawal charge. In 9 Member States (AT, BE, EE, IE, LV, LT, MT, PL, SI) a time-differentiation is applied for the energy-based component of the withdrawal charge and, in 8 Member States (HR, CZ, DK, FI, FR, PT, ES, SE), a time differentiation is applied for both the power and energy-based component of the withdrawal charge.

(218) In the remaining 10 Member States (BG, CY, DE, GR, HU, IT, LU, NL, RO, SK) time-differentiation is not applied in any distribution tariff.

Table 21 Charge basis in Member States where a time-differentiation is implemented in the withdrawal and/or injection charge

	Injection charge:		**Withdrawal charge:**	
	Energy-based	**Power and energy-based**	**Energy-based**	**Power and energy-based**
Member States	FI (some DSOs)	SE	AT, BE, EE[130], IE, LV, LT, MT[131], PL, SI	FI (some DSOs)[132], HR, CZ, DK, FR[133], PT, ES[134], SE
Total	1 MS	1MS	9MS	8MS

[129] SE: DSOs decide themselves. In practice they use variations based on voltage levels, time, segmentation of users. Due to that DSO set their tariffs, variation is also based on the DSO to which the user is connected to.

[130] EE: MV connected consumers have to pay lower variable tariffs than LV connected consumers, but higher fixed fees. Consumers whose electricity consumption is higher have a possibility to use network services with network charges, which include lower variable fees and higher fixed fees compared to network charges, which are more suitable for lower electricity consumption consumers.

[131] MT: A time-differentiated kWh or KVAh tariff structure is available for consumers with a consumption exceeding 5GWh.

[132] FI: Differences typically apply in the energy-based withdrawal charge, but there are DSOs that apply time elements in the power-based withdrawal charge.

[133] FR: MV: power and energy; LV (<36 kVA, i.e. residential all small professionals): only energy

[134] ES: 6 periods are considered for power-based withdrawal charge except for households were there are 2 periods, 6 periods are considered for energy-based withdrawal charge except for households were there are 3 periods.

(219) Time differentiated tariffs can be applied on a mandatory basis (i.e. the network users cannot avoid time-differentiated tariffs) or they can be applied on an optional basis (i.e. the user may choose).

(220) As shown in Table 22 time-differentiated tariffs for withdrawal are:

- mandatory for all network users in 2 Member States (AT, ES);
- optional for all network users in 4 Member States (BE, DK, EE, PL);
- optional for some network users in 5 Member States (CZ, FI, LV, LT, MT); and
- optional for some users whilst mandatory for other users in 5 Member States (FR, HR, IE, PT, SI).

(221) In Sweden, it is up to the DSO to decide whether the time differentiated are applied on a mandatory or optional basis to the network users.

Table 22: Mandatory or optional use of time-elements in the tariff for withdrawal (in Member States where time-differentiation applies)

Member State	Mandatory for all users	Optional for all users	Optional for some users	Optional for some users and mandatory for others	Additional info
Austria	X				
Belgium (Brussels)		X			Network users can opt for a standard meter and a single price or can opt for a dual meter with a different price for day and night consumption.
Belgium (Flanders)		X			
Belgium (Wallonia)		X			Network users can opt for a standard meter and a single price or can opt for a dual meter with a different price for day and night consumption.
Croatia				X	Time-differentiated tariffs are only optional for LV users below 20 kW.
Czech Republic			X		
Denmark		X			
Estonia		X			
Finland			X		
France				X	In MV all tariff options are differentiated by season, whilst in LV consumers can choose between a flat option and time-differentiated options.

Member State	Mandatory for all users	Optional for all users	Optional for some users	Optional for some users and mandatory for others	Additional info
Ireland				X	Network users within categories DG 1, 2 and 5 (including households and LV non-domestic consumers) have the option to choose a 24h tariff or a day/night tariff. Network users within categories DG 6-10, have mandatory day/night tariffs.
Latvia			X		Network users can choose tariff plans based on the time of withdrawal (two time zones or three time zones)
Lithuania			X		Time-differentiated tariffs are only applied for generators and prosumers. Time element applied to consumers is yet only in pilot state.
Malta			X		Available for consumers with a consumption exceeding 5 GWh/year.
Poland		X			The use of time-differentiated distribution tariffs is optional for all users.
Portugal				X	Mandatory for all users connected to HV, MV and LV above 20.7 kVA. Optional for users connected to LV, equal to or below 20.7 kVA.
Slovenia				X	Mandatory for users above 43 kW and optional for users below 43 kW
Spain	X				Mandatory to all users since the current regulatory period. Previously, it was optional for users connected in LV with a contracted power of less than 15 kW.
Sweden					Time-differentiated tariffs are applied based on DSO decision. (Varies among the DSOs)
Total	2MS	4MS	5MS	5MS	

(222) As shown in Table 23, different time-signals are frequently combined in the Member States.

(223) The most commonly used time-differentiation in the Member States is a day/night differentiation. It is implemented in 13 Member States (AT, BE, HR, DK, EE, FI, IE, LV, LT, MT, PL, PT, ES) and in Flanders and Wallonia regions of Belgium.

(224) Peak/off-peak differentiation is the second most used time elements in distribution tariff. It is implemented in 10 Member States (CZ, DK, FR, LV, LT, PL, PT, SI, ES, SE).

(225) A seasonal (summer/winter) differentiation is implemented in 8 Member States (AT, DK, FI, FR, PL, PT, ES, SE).

(226) Dynamic tariffs are not implemented in any Member State.

Table 23 Granularity of the time-differentiation in the relevant Member States

Member State	Day/night	Peak/off peak	Seasonal (summer/winter)
Austria	X		X
Belgium (Brussels)	X		
Belgium (Flanders)	X		
Belgium (Wallonia)	X		
Croatia	X		
Czech Republic		X	
Denmark[135]	X	X	X
Estonia	X		
Finland	X (typical)		X (typical)
France		X	X
Ireland	X		
Latvia	X	X	
Lithuania	X	X	
Malta	X		
Poland	X	X	X
Portugal	X	X	X
Slovenia		X	
Spain	X	X	X
Sweden		X (typical)	X (typical)
Total	13MS	10MS	8MS

(227) The following cost drivers generating variations of the time-differentiation as well as differences in the treatment of network users regarding time-differentiation[136] apply:

- voltage level in 10 Member States (AT, CZ, EE, FI, FR, LV, LT, PL, PT, ES) and in Wallonia region of Belgium,

[135] DK: as described by the NRA, different load periods are operated throughout the day, where the load periods express the load factor in the electricity grid. The costs attributed to the tariff for a given voltage level are allocated in connection with time differentiation of the tariff on the load periods. When allocating the costs over load periods, it is taken into account that part of the costs varies with the load in the electricity grid, while another part of the costs is unaffected by the load in the electricity grid. Thus, tariffs in periods with the greatest load (peak load) are high, while the tariffs are lower in periods with less load in the electricity grid. The general principle is that the electricity network's total revenue from a given network user category is unchanged - regardless of whether time-differentiated tariffs or a flat tariff are used.

[136] Not accounting for differences in availability as well as mandatory or non-mandatory use for time differentiated tariffs for different network users.

- technology in 3 Member States (CZ, DK, PL) and in Flanders region of Belgium, as the time-element is implemented in a specific way for some "technology" such as electric heating (CZ, PL, Flanders region of Belgium) or street lighting (PL),

- the size of the contracted capacity or consumed energy in 5 Member States (DK, EE, MT, PL, PT), with distinction made between households, or small industries (PL), a variation adapted to the consumption of users (DK, EE).

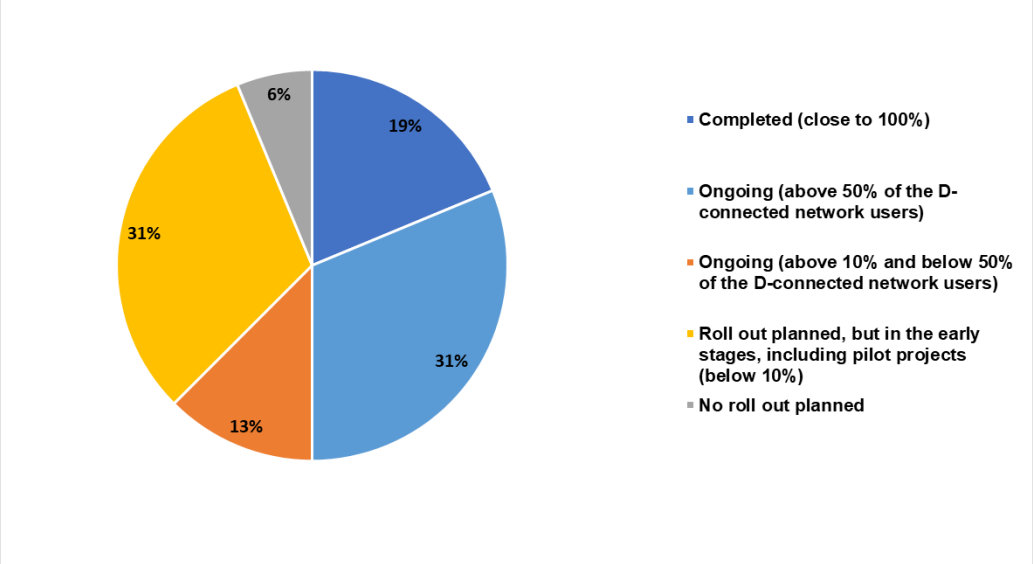
- In SE the DSOs can decide on the cost drivers generating variations of the time differentiation.

11.4. Correlation between the development of smart metering systems and the existence of time signals in distribution tariff

(228) The status of roll-out of smart metering system(s) (at the end of 2019) has been reviewed for the 16 Member States and for Flanders and Wallonia regions of Belgium, which apply time-differentiated tariffs. In about half of these Member States, the roll out of smart meters is still to reach 50% of the users.

(229) ACER finds that the roll-out of metering system is fully completed in 3 Member States (EE, FI, ES), in 8 Member States the roll out is ongoing – with 5 Member States for which the roll-out has been undertaken for above 50% of the Distribution-connected network users (DK[137], FR, LV, MT, SI) and 2 Member States (AT, PT) and Flanders region of Belgium for between 10 and 50% of the users. For 5 Member States (HR, CZ, IE, LT[138], SE) and Wallonia region of Belgium, the roll-out is planned but still in early stage (less than 10% of the users, or under the form of a pilot project. One Member State (PL) did not plan any roll-out.

Figure 2: Stage of development of smart metering systems in the Member States with time-differentiated distribution tariffs



(230) In some Member States, the integration of time elements in distribution tariffs is a longstanding tradition, which for example traces back to the second half of the 20th Century for Croatia, Czech

[137] DK: The roll-out should be fully completed by 2020 in Denmark

[138] LT: A pilot project was fulfilled in 2017, smart meter installation is planned between 2020-2023.

Republic, France (in 1956) and Slovenia, where they were made possible by the use of electromechanical meters and mechanical timers. In Sweden, time signals were also tested for the first time in the 1970s due to progress of metering technologies.

(231) In other Member States where time elements have been implemented more recently, only Estonia (which applies time differentiated tariffs since 2005), explicitly established a link between the development of time signals and the development of smart meters. In Wallonia region of Belgium, Finland and Spain, no correlation was established between the development of smart meters and the implementation of time-differentiated distribution tariffs.

(232) In Ireland, smart meters will enable the implementation of time signals, due in 2021.

11.5. Conclusions

(233) Distribution tariffs for injection, where applied, typically vary based on the voltage level. Additionally, injection charges vary based on location (1 Member State) or the DSO which the network user connects to (3 Member States). In 2 Member States, time-differentiation is incorporated in the distribution tariff for injection.

(234) Distribution tariffs for withdrawal in all Member States are subject to variation. The main factors for variations are the voltage level (all Member State except Malta) and the integration of a time-element in the tariff (17 Member States). On the contrary, variation by location (unrelated to the location of a specific DSO to which network the network user connects to) is applied only in 1 Member State.

(235) Several time signals types (day/night, peak/off-peak, seasonal) often coexist in the Member States where they are implemented, to foster adequate guidance of the consumption. The most commonly used time-differentiation in the Member States is a day/night differentiation, which is implemented in some form in 13 Member States. In 9 Member States, time-differentiation is only energy-based and in 8 Member States time differentiation is both power and energy-based. Dynamic tariffs are not implemented in any Member State.

(236) With the introduction of distributed generation and increasing demand from e.g. electric heating and electric vehicles and with the increasing capability of some resources to respond to time signals, time-of-use gains a higher importance than in the past. In such cases, a cost-reflective distribution tariff may require to be time-differentiated. While care should be given to the potentially conflicting time signals given by the time-of-use energy prices, (static) time-of-use tariffs, especially for larger consumers, can be a useful tool for reducing system peak-load, which is a main driver for network investments, thereby promoting network efficiency.

12. Latest updates of distribution tariff methodologies and future outlook

12.1. Recent significant changes

(237) The review of national tariff frameworks shows that there were few recent significant changes in tariff methodologies, indicating that tariff stability of the distribution tariff framework has been so far a key objective pursued when setting distribution tariffs.

(238) In particular, five significant changes were introduced or decided in the Brussels region of Belgium, France, Latvia, Slovenia and Spain, as reported in Table 24 below.

Table 24. Recently decided changes in national tariff frameworks

Member States	Recently decided changes
Belgium (Brussels)	A capacity-based tariff has been created for low voltage customers (yearly lump-sum for connection capacity above or under 13 kVA). Some exception regimes are progressively being terminated.
France	An optional seasonal Time-of-Use tariff was introduced for users connected to low voltage networks.
Latvia	From 2021 distribution tariff for injection will be applied to ensure better cost-reflectivity.
Slovenia	From 2019 onwards, any network user (including "smaller consumers") with smart meters capable of 15-minutes registration are allowed to participate in the provision of ancillary and/or balancing services through aggregation and/or demand response. Their peak consumption will not be considered in case of negative reserve provision.
Spain	The Royal Decree lay 1/2019, of 1 of January established that the CNMC will be responsible for establishing transmission and distribution tariffs from 1st of January of 2020. There is a change in the generation / load split as there is no longer a charge applicable for injections[139]
Total	4MS + 1R

12.2. Possible future changes

(239) There is a much wider scope for possible changes, with at least 14 Member States where possible changes are being considered or consulted, as reported in Table 25 below.

(240) A frequently considered change is a move to (or an increasing role of) power-based charging.

Table 25. Possible upcoming changes in national tariff frameworks

Member State	Possible upcoming / under discussion changes
Austria	There are ongoing consultations regarding the proposed changes. Among them: i) Connection charges: upgrade of the system admission charge and elimination of the system provision charge ii) System utility charges: integration of the metering charge and capacity charges for all customers[140].
Belgium (Wallonia)	The new structure should provide the relevant incentives to use the network rationally and to prevent unnecessary investments.
Belgium (Brussels)	The capacity-based tariff could become more important as the roll-out of the smart meters will allow more precise cost allocations (time of use / seasonal tariffs).
Belgium (Flanders)	In the next regulatory period 2021-2024, the tariff structure will change significantly from 1/1/2022. In order to facilitate the energy transition and anticipating on the roll-out of smart meters, a shift from energy-based tariffs towards power-based tariffs will

[139] ES: Up to 1 January 2020, the Government established the access tariffs which included the transmission and distribution cost, and other cost like incentives to promote cogeneration and renewables, off-peninsular compensation, income imbalances in the settlement procedure. The methodology is unknown and hence, it is not possible to describe the changes.

[140] https://www.e-control.at/marktteilnehmer/strom/netzentgelte/tarife-2-1 (link in German)

Member State	Possible upcoming / under discussion changes
	be made. Non-household tariffs will be fully based on contracted power and peak load, plus a tariff for any excess of the agreed offtake capacity. Household tariffs will be partly (80%) based on 12-monthly average monthly peak load registered in digital meter. Tariff difference between day and night will disappear. The discount on the tariff for accumulation heating will be reduced. Energy-based tariffs remain in place for the costs of public service obligations, pension schemes and local retributions.
Czech Republic	Simplifying tariff structure on low voltage level and to increase share of lump-sum and power-based components. Simplifying tariff structure on high/medium voltage level.
Estonia	The largest DSO in Estonia (Elektrilevi OÜ) would like to apply energy-based tariffs, only time-based (day-night).In general, DSOs would like to apply higher power-based charges and lower energy-based charges, because most of distribution costs do not depend on consumer's electricity consumption.
France	The next tariff structure that should be implemented in mid-year 2021, should take into account forward-looking charges, based on more detailed data provided by the TSO and DSO regarding the structure, the load and the costs of the networks they operate. Based on this data, the energy/power split could evolve in favour of power (the evolutions from the current period to the next being controlled).
Germany	On the low voltage-level, DSOs offer discounts to network tariffs, in exchange for the ability to directly control the charging point for the purpose of managing the load on the network and the coincidence of loads. To improve possibilities to integrate EVs, Germany is considering reversing this mechanism and moving towards a system where conditional network use is standard and unconditional network use is an option that is available for higher compensation.
Greece	The Greek NRA is considering a number of changes, such as: a) aligning tariff components (fixed, capacity, energy) to related distribution costs (efficiency, fairness), b) refining the process of allocating required revenue to consumer classes on the basis of their contribution to a representative number of periods of high network demand (efficiency), c) making extensive use of capabilities offered by digital meters, where available, to enable charging on the basis of demand at system peaks or time-of-use tariffs (efficiency), d) harmonising tariff calculation for all consumer categories (fairness).
Ireland	The Irish NRA has started a full review of the tariffs structure in 2020. The purpose is to ensure that network tariffs are fit for purpose and that the right framework is in place to facilitate the energy transition to a low carbon future. The NRA plans to publish an "Objectives, Principles and Call for Evidence" paper regarding the Tariffs Review in the first quarter of 2021.
Italy	Although the next regulatory period will start in 2024, a procedure for reviewing the cost allocation to network users is already ongoing. Next, the proposal for the tariff treatment of energy communities is under consultation. Last, ARERA is exploring possibilities to facilitate night-time EV recharge at home, by doubling - free of any connection or power-based charge - the contractual power during night and other low-load hours.
Luxembourg	The NRA is analysing together with network providers, the possibility of a new future-proof tariff structure allowing better integration of new flexible loads of heat pumps and electric vehicle charging.
Portugal	Subsequent to a pilot project, realised from June 2018 to May 2019, aimed at improving the network tariffs applied at EHV, HV and MV, the next regulatory revision (to be held in early 2021) will probably include changes to the network tariffs applied to transmission and/or distribution. The new elements tested with the pilot project include the definition of a narrower peak period (super peak) and the application of time-of-use schedules differentiated by geographic area. Moreover, since Spain is

Member State	Possible upcoming / under discussion changes
	going to remove its injection charge as of April 2021, the Portuguese NRA must assess whether to maintain its injection charge in place, as it was introduced in the past to ensure a level playing field for generators operating on the Iberian Peninsula.
Romania	The Romanian NRA intends to introduce a power-based component of distribution tariff. It also intends to introduce power-based distribution tariffs for generators. These changes will be considered for the next regulatory period (2024-2029).
Slovenia	In year 2020 the NRA has launched a study on modification of tariff system in line with CEP requirements. Based on the study changes are expected in next regulatory period (starting in 2022).
Sweden	There is an ongoing review of the secondary legislation steering how the DSO tariffs can be set up. The new secondary legislation will give more clear guidelines to DSO how their tariffs should look like to complies with the legislation regarding rules of tariffs being transparent, cost reflective and promote an efficient usage of the network.
Total	14MS

12.3. Conclusions

(241) The review of national tariff frameworks shows that there were few recent significant changes in tariff methodologies, indicating that tariff stability of the distribution tariff framework has been so far a key objective pursued when setting distribution tariffs.

(242) There is a much wider number of ongoing possible changes (in more than half of the Member States). Careful reflections (and consultations with stakeholders) seem to take place before introducing updates of the national tariff frameworks.

(243) A multi-year transition process should be preferred when changes in the distribution tariff methodology / tariff design significantly impact the tariff values for individual grid users.

Annex 1: Detailed data for each Member State

Updates of tariff values

Table 26 shows the parameters based on which the tariff values are recalculated in each Member State, where applicable.

Table 26 Parameters for updating tariff values

Member State	Parameters based on which the tariff values are recalculated
Austria	The tariffs in each network area are recalculated every year in order to cover the costs of audited network operators based on predicted demand. To ensure this cost reflectivity, the regulatory commission can adjust system provision charges, system admission charges, capacity-dependent and volumetric charges, charges for network losses as well as other charges.
Belgium (Brussels)	The tariff values are set ex-ante for each year of the period for which the tariff methodology is set based on forecasted parameters, mainly inflation and interest rates. Some specific tariffs (tariff to support public obligation for example) are recalculated every year
Belgium (Flanders)	The tariff values are recalculated every year in relation to the following parameters: for endogenous DSO costs: CPI, efficiency indices. For exogenous DSO costs: no parameter is used, revenue reflects budgeted costs for next year including the passing through of regulatory balances.
Belgium (Wallonia)	The tariff values are possibly adjusted based on the allocation of export connections approved by the CWAPE (difference actual costs - budgeted costs - controllable)
Bulgaria	The tariff values are recalculated every year. The parameters have been not specified.
Croatia	The tariff values are recalculated every year in relation to the following parameters: realized difference between revenue and OPEX+CAPEX in previous regulatory year adjusted for inflation as well as planned OPEX+ CAPEX and revenue for the future regulatory year[141].
Cyprus	The tariff values are recalculated each year based on allowed revenues[142].
Czech Republic	The tariff values are based on allowed revenues with annual update based on the difference between forecasted parameters and actual parameters.
Denmark	The tariffs can be changed continuously, but reflect an income framework that can be changed every year, but which is relatively stable for a period of 5 years.
Estonia	*N/A (new tariff values are approved by the NRA)*
Finland	DSOs independently set the tariff values (taking into account the current revenue cap). DSOs can update the tariff values when needed, but there is a yearly 15% for tariff increases.
France	Tariff values evolve yearly depending on the difference between the predicted and realized values for some categories of charges or income.
Germany	The values are recalculated every year in relation to the following parameters: mainly forecasted amount of energy flows and adaption of non-influenceable cost categories within the allowed revenues (e.g. tariffs paid to upstream network operators).
Greece	The tariff values normally apply for one year and they are reviewed annually considering changes in required revenue, connected consumer capacity and demand for power and energy.

[141] HR: DSO submits to HERA the proposal for determining or changing tariffs in current regulatory year for the future regulatory year. Furthermore HERA can initiate an independent procedure of setting tariffs for the future regulatory year, of which it informs DSO.

[142] CY: DSOs shall prepare and submit to CERA for approval, tariff proposals based on the published methodology, not later than six months before the start of the regulatory period during which the proposed tariffs will be implemented.

Member State	Parameters based on which the tariff values are recalculated
Hungary	During the tariff methodology period the distribution tariff values are recalculated annually in relation to the following parameters: CPI forecast, economic efficiency index in relation with operation costs, incentive for reported measures of performance, the difference of forecasted and actual revenue in year n-2, activated investments, electricity market price change.
Ireland	The values are recalculated every year in relation to the following parameters: revised and approved annual DSO's revenues (inflation correction, under/over recoveries from previous years, incentives for reported measures of performance, costs not provided by the relevant Price Control, better forecasts of items forecasted at the time of the relevant Price Control and updated energy demand)[143].
Italy	The values are recalculated every year in relation to several parameters. Mainly, yearly updates are based on actual investments committed in the last year and on new forecasts of volume parameters (energy, capacity and # of PoD, per voltage level).
Latvia	The values are recalculated every year in relation to the following parameters: the difference between DSO's planned (and approved by NRA) and actual revenue for the previous year; the difference between planned and actual cost of electricity losses for the previous year (not taking into account changes in the amount of losses); the difference between planned and actual inflation for the previous year; the difference between planned and actual cost of electricity transmission services for the previous year (not taking into account changes in the installed capacity).
Lithuania	Tariff price cap is set for 5 years regulatory period. Tariff values are set for 1 year but can be recalculated during regulatory year. Tariff setting model depends on the number of consumers supplied. In general all models depend on LRAIC, economically justifiable costs of providing the services, WACC, the amount of distributed electricity and price cap.
Luxembourg	Tariffs are calculated for one year, based on the tariff method applicable to the period in which that year takes place. The tariffs are re-evaluated after the closure of the accounts of the year. Surpluses or deficits are taken into account during subsequent tariff calculations. Allowed revenues as well as energy and power demand are taken into account during the tariff setting and are revised during the re-evaluation exercise.
Malta	*N/A (no tariff values updates since last NRA approval)*
The Netherlands	The values are recalculated ever year taking into account the following parameters: inflation, local taxes, distribution net losses and purchase costs of energy and power. In addition, we recalculate tariffs on aspects that have been subject to court rulings regarding to the initial distribution tariff methodology and oblige us to adopt a modified tariff methodology.
Poland	Tariffs cover the justified costs. Some parameters OPEX are determined by benchmarking method for 5 years and some costs can change every year (taxes).
Portugal	Tariff values between years of the same regulatory period have in common the incremental cost parameters, defined for the contracted power and peak power billing variables. These are scaled by multiplicative factors to account for the allowed revenues and the forecasted demand.
Romania	The allowed revenues for next year are calculated with consideration of the cost corrections (difference between realized and estimated revenues from the previous year) for: new investments; cost of losses; uncontrollable costs; distributed energy.

[143] IE: The reasons for updating the values annually are: to set tariffs based on the most up to date information, to understand and communicate cost-drivers to stakeholders and to ensure that there is a an smooth as possible change in values year on year. The process for updating the values: the CRU sets the allowed revenues for the DSO every 5 years for the next 5 years. Every year, the DSO submits its annual revenue requirement based on most up to date information. The CRU revises the revenue requirement and engage with the DSO for the understanding of the money sought. The CRU approves the allowed annual revenue. The DSO calculate the D-tariffs based on the approved revenues and the demand forecast and submit these to the CRU for approval. The CRU approves the D-tariffs annually.

Member State	Parameters based on which the tariff values are recalculated
Slovak Republic	If the default economic parameters applied in determination of the tariffs change significantly, NRA may approve new tariffs for DSOs. Usually it happens once a year.
Slovenia	The tariff values for more years are defined simultaneously.
Spain	The annual tariffs are recalculated considering the allowed revenues, energy and power forecasted demand for the tariff year and last available energy balances and load curves.
Sweden	No information available, tariff value updates are up to DSOs

Inter-DSO revenue transfers

As shown in Table 27, 10 Member States (out of 22 Member States with multiple DSOs) apply some kind of DSO revenue pooling and reallocation or any inter-DSO compensation mechanism or revenue transfers across DSOs. The most frequently mentioned reason to apply such mechanism is to ensure that the income by DSOs matches their allowed revenue.

Table 27 Member States which apply any DSO revenue pooling and reallocation or any inter-DSO compensation mechanism or revenue transfers across DSOs

Member States	Inside / outside tariffs	Reasoning
Austria	Outside tariffs	Inter DSO compensation is applied yearly in order to ensure that the DSOs receive the allowed revenues.
Belgium (Flanders)	Within tariffs	The DSOs are compelled to buy green and CHP certificates from the generators at a minimum price. These costs are partly reallocated between DSOs.
Belgium (Wallonia)	Within tariffs	
Czech Republic	Within tariffs	The mechanism is based on actual use of electricity on the interface between regional DSOs
France	Outside tariffs	There is only one distribution tariff in France, based on Enedis' charges. This mechanism aims to ensure that the tariff income covers other DSO's real charges. This amount transferred through this mechanism depends on the size of the DSO (based on its real charges or not).
Greece	Outside tariffs	Revenue collected from consumers connected to the Athens International Airport Distribution Network reflects use of both the airport distribution network (AIADN) and the upstream national distribution network (HEDN). The part of this revenue (collected by the AIADN Operator) that reflects use of the HEDN is transferred to the DSO of the national distribution network (HEDNO). The AIADN tariff is actually related to the HEDN tariff and includes a premium to account for the increased supply security (redundancy) of the AIADN.
Hungary	Outside tariffs	The distribution tariff values are the same in the whole country. Because of this reason the revenue in case of some DSOs exceeds the justified costs. In order to pass the revenue to the appropriate DSOs a reallocation revenue pool is operated by the TSO.
Italy	Outside tariffs	Allowed revenues are defined individually for all DSOs above 25000 network users and based on a parametric approach for all DSOs below 25000 network users. Transfers across DSOs reconcile the collected tariff amounts to the allowed revenues.
Luxembourg	Within tariffs	Due to common tariffs for all DSOs, compensation payments between DSOs are necessary to ensure the tariff equalization.

Portugal	Within tariffs	By law, tariffs shall be uniform in Portugal, including in mainland Portugal and in the autonomous regions. In mainland Portugal, ERSE does not set allowed revenues for the 10 local DSOs operating LV-only grids (allowed revenues are only set for the DSO covering the entire territory). These local DSOs earn an income corresponding to the distribution tariff for the LV grid. Hence, no revenue reallocation is necessary. In the autonomous regions, as tariffs are uniform but costs are higher, the difference in costs (distribution and energy supply) is socialized through an access tariff applicable to all consumers (separate from the distribution tariff).
Spain	Outside tariffs	There is a settlement system where there is a regulatory account for each DSO. The NRA assigns through the settlement system the system's income to each DSO based on their allowed revenues.

Granularity of distribution costs' allocation to network users

Distribution costs can be allocated to the tariff structure with different granularities. In the vast majority of the Member States (23 out of 27) at least 2 distribution cost categories are differentiated for the purpose of allocating them to the network users via the distribution tariff methodologies.

As shown in

Table 28, the most frequent segmentation of the distribution costs for the purpose of tariff inclusion is by voltage levels (19 Member States) and by DSOs (14 Member States and 2 regions of Belgium). Less than half of the Member States (10) and Brussels region of Belgium apply separation of CAPEX and OPEX and only 5 of the Member States differentiate between other costs categories (than CAPEX and OPEX) when allocating the distribution costs to the tariffs. Other granularity has been indicated in some instances, including separation by costs which are capacity based and those costs which are non-capacity based4 Member States (GR, IE, MT[144], SI) indicate that there is no requirement on granularity, the distribution costs enter the tariff methodology as an overall amount. In Finland and Sweden the DSOs choose granularity and the DSOs in practice use several of the available options.

A segmentation of allowed costs of the DSOs, which are not included in distribution costs as defined in this Report has not been taken into account for the above assessment.

Table 28 Required granularity for the separation of the distribution costs for the purpose of allocating the costs into the tariffs

Member State	By DSO	By voltage level	At least into CAPEX and OPEX	Cost categories other than CAPEX and OPEX need to be individualised	Generation -Load split	Other
Austria	X	X				
Belgium (Brussels)	N/A (1 DSO only)	X	X	X		
Belgium (Flanders)[145]	X	X			X	X (Capacity based costs vs

[144] MT: The overall amount of distribution costs less the amount to be recovered through connection charges.

[145] BE (Flanders): Under the tariff methodology 2021-2024.

						non-capacity based costs)
Belgium (Wallonia)	X	X			X	
Bulgaria	X	X	X			
Croatia	N/A (1 DSO only)	X	X			
Cyprus	N/A (1 DSO only)	X				
Czech Republic	X	X				
Denmark	X	X	X		X	
Estonia	X	X	X	X		
Finland[146]	X		X (some DSOs)	X (some DSOs	X	X
France		X			X	
Germany	X	X				
Greece	No separation of the distribution costs for tariff allocation					
Hungary	X	X	X	X		
Ireland	No separation of the distribution costs for tariff allocation					
Italy		X				
Latvia	X	X	X			
Lithuania	X	X	X			
Luxembourg		X				
Malta	No separation of the distribution costs for tariff allocation					
The Netherlands	X		X	X	X	
Poland	X		X	X		
Portugal		X				
Romania	X	X	X	X		
Slovak Republic		X			X	
Slovenia	No separation of the distribution costs for tariff allocation					
Spain		X				
Sweden[147]	X				X	X

Segmentation of distribution tariffs for withdrawal

Table 29 displays the multiple tariffs or tariff components for withdrawal by Member State, by indicating which costs they recover. The segmentation in the Table is provided based on how distribution tariffs are defined in each Member State (and not based on how it is defined in this Report), as such, in some instances they also include costs of system services, metering and/or metering and/or non-related policy costs.

[146] FI: Each DSO can use any granularity they prefer as long as the tariff complies with legislation demand on tariffs being non-discriminatory, objective and promote efficient network utilization. In practice DSOs uses several of the available options.

[147] SE: Each DSO can use any granularity they prefer as long as the tariff complies with legislation demand on tariffs being non-discriminatory, objective and promote efficient network utilization. In practice DSOs uses several of the available options.

Table 29 Segmentation of the distribution tariff (or tariff components) for withdrawal per cost categories they cover

Member State	Withdrawal charge segmentation per cost categories
Austria	(1) Cost of system utilization (CAPEX+OPEX-costs listed below) (2) Costs of network losses (3) Metering costs (4) Costs of network reinforcements (5) Cost of system services (6) Costs of connecting a new grid user (7) Costs of supplementary services
Belgium (Brussels)	(1) Costs of network usage (2) Costs of metering and counting activity (3) Costs of additional charges (local taxes, taxes by the DSO, pension scheme) (4) Costs of public service obligations (5) Transmission costs (cascade from the TSO)
Belgium (Flanders)	(1) Network costs (2) Costs of system balancing (3) Metering costs (4) Costs of network losses (5) Costs of public service obligations (6) Other costs (pension schemes and local retributions)
Belgium (Wallonia)	(1) Costs of the use of the grid (2) Costs of public service obligation (3) Costs of "surcharges" (4) Costs of exceeding of the lump-sum reactive energy
Bulgaria	*N/A (No segmentation of the distribution tariff)*
Croatia	*N/A (No segmentation of the distribution tariff)*
Cyprus	*N/A (No segmentation of the distribution tariff)*
Czech Republic	For HV and MV users: (1) Costs of losses (2) Other costs For LV users the segmentation may be different.
Denmark	(1) Operation and maintenance (2) Collection and validation of measurement data (3) Depreciation on meters and return on capital
Estonia	(1) Depreciation and the return on capital (2) Operational expenditures (3) Costs of distribution losses
Finland	DSOs may apply different segmentations
France[148]	(1) Management costs incurred by each customer. (2) Costs related to metering activities. (3) Depreciation and the return on capital, operational expenditures and the costs of distribution losses.
Germany	(1) Costs of network operation (CAPEX+OPEX), including system services and network expansion (2) Losses (3) Conventional Metering
Greece	*N/A (No segmentation of the distribution tariff)*
Hungary	(1) Costs of metering and billing. (2) O&M and CAPEX of the network. (3) Costs of network losses

[148] FR: On each voltage level, network users can subscribe among different tariff options for the withdrawal component that covers the category of costs (3) (i.e. all costs incurred by a customer except those related to management and metering that are respectively covered by components (1) and (2)).

Ireland	(1) All distribution costs (OPEX, CAPEX, etc.), excluding indirect overheads, associated with network assets (a factor is applied to all apportioned costs to absorb indirect overheads) (2) Costs associated with services and meters can be directly attributed to the appropriate customer category (there are 10 customer categories) (3) The costs associated with the network assets which are shared by a number of customer categories, are apportioned based on information derived from load profiles or on customer numbers depending on the nature of the cost.
Italy	(1) Cost of withdrawal (2) Cost of majority of the incentive schemes (3) Costs of some distribution activities related to resilience against extreme conditions, (4) Costs of potential unbalances in the Inter-DSO compensation scheme, (5) Redistribution effects determined by tariff reductions for vulnerable customers
Latvia	(1) Fixed component recovers the cost of installed capacity (2) Consumption component recovers the cost of distributed energy
Lithuania	*N/A (No segmentation of the distribution tariff)*
Luxembourg	*N/A (No segmentation of the distribution tariff)*
Malta	*N/A (No separate distribution tariff from the payment for energy / No segmentation of the distribution tariff)*
The Netherlands	(1) Return on capital of electricity distribution investment (2) Depreciation of electricity distribution investment (3) Operational expenditures for electricity distribution (4) Costs of managing the switch between suppliers (e.g. related administrative costs) (5) Costs of purchasing ancillary and flexibility services by the DSO (6) Costs of distribution losses
Poland	(1) Fixed costs such as the cost of infrastructure: property taxes, depreciation, Return on Capital, operation and maintenance, fixed grid fee (TSO) (2) Variable costs such as the cost of losses, transit balance (paid to or by another DSO) and the part of fixed costs which is not covered by the fixed charge (3) Cost for metering and customer service (4) Costs that are not DSOs own costs (5) Cost of system services, internal redispatching and balancing (6) Stranded costs arising from long-term contracts (7) Co-generation charge (8) RES charge
Portugal	(1) Low voltage distribution tariff (2) Medium voltage distribution tariff (3) High voltage distribution tariff All three tariffs include: network costs (CAPEX and OPEX, subject to rate-of-return and/or price-cap regulation), OPEX related to metering, incentives based on reward/penalty schemes (e.g. for loss reduction and for the investment in smart grids) and past employee downsizing costs. In addition, the low voltage distribution tariff includes concession rents paid by the DSO to municipalities and an incentive for the integration of LV installations into smart grids. Also, a further incentive scheme for quality of service is reflected in the distribution tariffs for high and medium voltage.
Romania	*N/A (No segmentation of the distribution tariff)*
Slovak Republic	*N/A (No segmentation of the distribution tariff)*
Slovenia	*N/A (No segmentation of the distribution tariff)*
Spain	(1) Fixed costs (2) Variable costs
Sweden	Up to the DSO to decide. Typically the following segmentation applies:

	(1) Fixed customer specific charges (e.g. metering) (2) Variable charges (e.g. cost of losses) (3) Power based charges (fuse based for household customers and actually used power for larger customers)

Network users subject to withdrawal tariffs

Table 30 shows the "other network users who are both injecting and withdrawing to/from the network" to which withdrawal charges apply. In 6 Member States (HR[149], CY, DK,HU, PL, SI[150]) the prosumers or at least some of them are subject to net-metering, i.e. they pay a withdrawal charge only for the difference between the withdrawn and injected energy.

Table 30 Network users that fall under category "other network users", who are both injecting and withdrawing to/from the network, subject to withdrawal charges

Member State	Network users that fall under category "other network users, who are both injecting and withdrawing to/from the network", subject to withdrawal charges	Additional information
Austria	All other users that can inject to and withdraw energy from the grid.	Tariff is based on gross withdrawal
Belgium (Brussels)	Residential customers with a Photo-Voltaic installation	Tariff is based on gross withdrawal[151]
Belgium (Flanders)	Prosumers (mostly PV) connected to the low-voltage network.	
Belgium (Wallonia)	Prosumers (mostly PV) connected to the low-voltage network.	
Croatia	Prosumers	Tariff is based on net withdrawal only for household prosumers which withdraw more or the same as they inject into the grid within calendar year.
Cyprus	Prosumers	Tariff is based on net withdrawal[152]
Czech Republic	Any user that has its own electricity generation.	
Denmark	All users who own solar cells and windmills.	Tariff is based on net withdrawal
Estonia	Prosumers, usually households.	Tariff is based on gross withdrawal
Finland	Prosumers	
France	Prosumers and self-consumers.	
Germany	Prosumers	As there is no injection charge, Prosumers are only charged for withdrawal according to the regular tariff system.
Greece	Prosumers and self-consumers (e.g. cogeneration).	Tariff is based on gross withdrawal

[149] HR: Prosumers generally do not pay the tariff based on the net withdrawal, except special category-households which withdraw more than they inject into the grid

[150] In Slovenia, only for some users: Self-consumers or self-consuming communities with contracted capacity up to 43 kW are subject to net-metering with 1-year accounting interval.

[151] BE (Brussels): since 1 January 2020, there is no netting of the injected/withdraw volumes, the full withdraw volume is used for grid fee invoicing.

[152] CY: Prosumers are charged only for the excess of withdrawn energy, i.e. the injected energy is deducted.

Member State	Network users that fall under category "other network users, who are both injecting and withdrawing to/from the network", subject to withdrawal charges	Additional information
Hungary	Prosumers operating their own power generator.	Tariff is based on net withdrawal[153]
Ireland	Autoproducers, which is a person who has entered into a connection agreement with the DSO and generates and consumes electricity in a single premises.	
Italy	Combined consumption units with storage for peak-shaving purposes.	
Latvia	Prosumers	
Lithuania	Prosumers, which pay a full distribution tariff if they use more energy than they provide and inject in grid.	
Luxembourg	Prosumer generating electricity from RES.	
Malta	Prosumers generating electricity from RES and CHP.	Tariff is based on gross withdrawal
The Netherlands	Network users with small or large-scale Combined Heat and Power generating units. These are present in for example the horticulture sector ('glass houses') and in industry.	
Poland	Producers	Tariff is based on net withdrawal[154]
Portugal	Self-consumers	Tariff is based on gross withdrawal
Romania	Prosumers[155]	
Slovenia	Any user with generators or storage in internal installation.	Tariff is based on net withdrawal for prosumers up to 43 kW[156]
Spain	Prosumers and self-consumers.	
Sweden	Prosumers.	

Cost approaches

As shown in Table 31, an average cost approach (i.e. distribution costs are allocated through the cost drivers as an average cost) is applied in the vast majority of the Member States.

Distribution tariffs in 3 Member States (LT, PT, RO) follow an incremental cost approach, i.e. increments in distribution costs are associated to increments in cost drivers, where data used refers mainly to historic data (requires rescaling of prices to ensure full cost recovery).

Distribution tariffs in 3 Member States (CZ, EE, FR) follow a forward-looking cost approach, i.e. increments in distribution costs are associated to increments in cost drivers, where data used refers mainly to forecasted data and/or simulation models (requires rescaling of prices to ensure full cost recovery), in the Czech Republic, with a correction based on historical data.

In Poland a mixed forward-looking and incremental cost approach (PL) is applied.

[153] HU: The reason for applying net metering policy in case of prosumers was to promote the spread of small-scale generators.

[154] PL: prosumers are charged only for the excess of withdrawn energy, i.e. the injected energy is deducted).

[155] RO: Previously, the term used in the relevant legislation was self-producer; whereas currently, the term is prosumer.

[156] SI: Self-consumers or self-consuming communities with contracted capacity up to 43 kW are subject to net-metering with 1-year accounting interval.

Table 31: Detailed approach to tariff revisions

	Average cost approach	Incremental cost approach	Forward-looking cost approach	Mix of forward looking and incremental cost approach
Member States	AT, BE, BG, HR, CY, DK, FI, DE, GR, HU, IE, IT, LV, LU, MT, NL, SK, SI, ES, SE	LT, PT, RO	CZ[157], EE, FR	PL
Total	20MS	3MS	3MS	1MS

Additional information on time-differentiated tariffs

Table 32 and Table 33 below provide some additional information on the application of time-differentiation in the respective Member States, including specifications on the time-bands and granularity as well as on the characteristics of the time variation and resulting differences.

Table 32 Specifications on the granularity of time-differentiation elements

Member State	Specifications on the granularity of time-differentiation elements
Austria	Some (but not all) of the 14 network areas use variation based on season (summer/winter tariff) and/or time of day (high/low tariff). The tariff possibilities are: summer high tariff, summer low tariff, winter high tariff, winter low tariff. In case of different summer/winter tariffs, the winter tariff is higher.
Belgium (Flanders)	Network users can choose between only day- or day and (night and weekend)-tariff. In the latter, day tariff is from 6:00-21:00 or 7:00-22:00 and not in weekends (24 h). Low tariff during other times. For 'accumulation heating' by end customer the DSO offers a total charging time of 8 to 9 hours at a lower night rate.
Croatia	High tariff is applied from 8:00 to 22:00 and low tariff is applied from 22:00 to 8:00
Czech Republic	DSO's responsibility to reduce peak loads in the nodes. The DSO is obliged to ensure off-peak zone for given number of hours per day, differentiated by customers group. The exact hours of a day are chosen by the DSO.
Denmark	The characteristics of the price signal depends on the approach of each specific DSO in relation to a time-specific consumption of a consumer. The time-differentiated tariffs reflect the different load periods throughout the day. The general principle is that the electricity network's total revenue from a given customer category is unchanged - regardless of whether time-differentiated tariffs or a flat tariff are used.
Estonia	Daily tariffs are applied from 08:00 to 00:00 in summer and from 07:00 to 23:00 in winter. Night-tariffs are applied from 00:00 to 08:00 in summer and from 23:00 to 07:00 in winter.

[157] CZ: Forward-looking cost approach with correction based on actual historic data from the year i-1.

France	Peak/off-peak approximately corresponds to day/night (8 hours per day of "full hours" (peak) and 16 hours of "empty hours" (off-peak), but the DSO has the possibility to locally position these hours to fit with networks local realities. Consequently, it is possible that peak and off-peak hours do not coincide with day and night. In medium voltage, a "mobile" peak period option is available: it is composed of a given number of "peak days" that are not set ex ante. Customers who have subscribed to this option only know the day before when peak period (with the highest price) will happen, depending on TSO's forecast, in order to match as best as possible with real congestions when they happen.
Ireland	Daily tariffs are higher than nightly tariffs.
Latvia	Network users can choose between two or three time zones - night/weekend zone and day zone or night/weekend zone, day zone and peak time zone.
Lithuania	There are night, morning, day, evening time tariffs.
Malta	Day tariff: between 06.00-22:00; Night tariff: between 22:00-6:00
Poland	Typically there are 3 zones during the day (morning peak, afternoon peak and off-peak) and 2 zones (peak/off peak and day/night).The charges can be also differentiated for summer and winter.
Portugal	For customers connected at HV and MV the time-of-use structure has 4 periods (peak, half-peak, normal off-peak, super off-peak), with the peak period corresponding to 5 hours per working day during winter time (≈5 months) and to 3 hours per working day during summer time (≈7 months). For customers connected to LV the time-of-use structure can have 4, 3 or 2 periods, or no time differentiation at all, depending on the contracted power level. These customers may choose between a weekly (working days ≠ Saturday ≠ Sunday/national holidays) or a daily (the same every day) time differentiation. Similar rules apply to the autonomous regions (Azores, Madeira).
Slovenia	Peak: between 06:00 - 22:00 on working days; Off peak: between 22:00 - 6:00 on working days, 0:00-24:00 on Saturday, Sunday and National Holidays
Spain	Due to daily 2 peaks (morning and afternoon) there are 3 periods each day. In addition, 2 types of days (working days/weekends) and a seasonal differentiation (high, medium and low).[158]
Sweden	It's up to the DSO to decide. DSOs follow various practices. Typically the following time differentiations apply: peak is working days during day time; off-peak is working day night time and weekends; Seasonal differentiation between summer and winter.

Table 33 Explanation of how the distribution tariffs can vary depending on the time element / time of use (ratio of differentiation according to the different options):

Member State	Characteristics of the time variation
Austria	The ratio depends on specific network area and voltage level.
Belgium (Brussels)	During the period 2020-2024, the night tariff always equals 60% of the day tariffs.
Belgium (Wallonia)	Depending on the DSO, the difference day/night may be higher than 2 times (for the tariff based on energy distributed (proportional term) – the methodologies differ for each DSO.

[158] ES: From 1 January 2021 daily peaks and the seasons will be updated. There will be four seasons (high, medium-high, medium and low) applied, opposed to the current 3 seasons. (high, medium and low).

Belgium (Flanders)	Night tariff: In 2020, the night tariff equals 45% of the average tariff (= total cost divided by the total energy consumption) or 60% of the day tariff (depending on the DSO). In 2021, the night tariff always equals 60% of the day tariff. In 2022, there will be no difference between the day tariff and night tariff. Exclusive night tariff (=accumulation heating): In 2020, the exclusive night tariff equals 20% of the average tariff of 40% of the day tariff (depending on the DSO). In 2021 and 2022, the exclusive night tariff equals the night tariff.
Croatia	In energy-based tariff component the ratio between high tariff and low tariff is around 1:2
Czech Republic	Different price in energy-based component of the tariff (the off-peak/peak price ratio varies from 1:3 to 1:16 upon given tariff)
Estonia	Time-based tariffs are usually cheaper than single tariff if consumer use network services at least 40% with nightly tariffs.
Finland	DSOs have their own mix of tariff structures. This ratio varies between DSOs and the NRA does not have statistics on different options.
France	In LV seasonal tariff (4 time periods), winter peak hours are 4 times more expensive than summer peak hours, and winter off-peak hours are still almost 3 times more expensive than summer off-peak hours.
Ireland	The ratio of day to night rates are approximately 88% day charge and 12% night charge.
Lithuania	Each consumer can choose tariff plan depending on time element. Generally, tariff is higher during peak hours[159] (daytime, evening). Tariff is lower during night time and early morning.
Malta[160]	Non-household consumers with a consumption > 5000 MWh or 5500 MVAh billed on a day and night basis are charged a day premium of €0.0015 and a night discount of €0.0262 over the applicable non-household tariffs cover also the energy and supply components.
Poland	Three zones tariff periods (Morning peak, afternoon peak, off-peak) are slightly different for the summer and winter
Portugal	The peak/off-peak ratio for distribution tariffs, measuring the maximum price differentiation of the TOU schedule, differs by voltage level: Network user at HV: 7.1; Network user at MV: 9.7; Network user at LV (> 41.4 kVA): 10.6
Slovenia	Ratio is 1.3 for all system users. Time differentiated tariffs are applied for working days for all consumers group. The ratio between High Tariff (peak) and Low Tariff (off-peak) reflects average system load profile (ratio between peak and off-peak) in the country and with that the usage of grid.
Spain	When allocating the allowed revenues to the different periods, the participation of the different periods in the peak demand of each voltage level is considered. When a period has no participation in the peak demand, one hour is considered for the computational purpose. Ratios for power-based tariffs vary between 11 times (for "≥1 kV and <30 kV") and 58 (for "≥30 kV and <72.5 kV"); Ratios for energy-based tariff vary between 110 (for "≥72.5 kV and <145 kV") and 185 (for "≥30 kV and <72.5 kV")

[159] Table for ratios: https://www.regula.lt/elektra/Puslapiai/tarifai/persiuntimo-tarifai-ab-lesto-.aspx

[160] Link to tariffs: https://www.rews.org.mt/#/en/a/13-regulated-electricity-tariffs

Annex 2: Brief overview of connection charges

Connection charges are typically one-off charges covering the costs (or part of the costs) of connecting new users to the distribution system. Since the reinforcement of the network due to new connections can also benefit the other grid users, part of those costs may be covered by distribution tariffs, instead of the connection charges, as there is a connection between these regulatory charges.

For the purpose of this Annex, the following connection charge categories applied[161]:

- Super-shallow: All costs are socialized via the tariff, no costs are charged to the connecting entity;
- Shallow: grid users pay for the infrastructure connecting its installation to the distribution grid (line/cable and other necessary equipment);
- Deep: grid users pay for the shallow category plus all other reinforcements/extensions in existing network, required in the distribution grid to enable the grid user to be connected.

As shown in Table 34, ACER observes that all Member States use connection charges in their regulatory schemes. 11 Member States use solely shallow charges, 4 Member States and Flanders and Wallonia regions of Belgium use solely deep charges, while 11 Member States and Brussels region of Belgium use a combination of both shallow and deep, depending on types of users, voltage or distance. These Member States typically apply the shallow charge to consumers on low voltage level, while the deep charge to producers and consumers on medium/high voltage level. Slovenia applies connection charges based on withdrawal capacity and applies deep charges to consumers and shallow charges to producers.

The most important cost driver of the connection charges is related to the connected capacity (in 22 Member States) and is typically used together with the other frequently used cost drivers, i.e. with the actual cost of the new connection (in 18 Member States) and with a charge per distance (in 15 Member States). Further, a lump sum is used in 12 Member States, while voltage levels and user types determine the connection charge in 11 and 10 Member States respectively. The Netherlands, as the only Member State, applies connection charges based on an annual fee that covers the cost of capital and maintenance, while France is the only Member State that applies a combination of all the above cost drivers.

About one third of the Member States, the same rules apply for all connection charges / network users. Most commonly, connection charges are applied differently to (i) producers and consumers or to (ii) high and low voltage connections; only occasionally both cost drivers are applied together.

Table 34 Type of connection charges applied in Europe and the relevant cost drivers

Member State	Connection charge category applied	Cost components / cost drivers	Further description and subject to connection charges
Austria	Shallow	actual cost, lump sum	All network users are subject to connection charges, same rules for all.
Belgium (Brussels)	Shallow and deep	actual cost, lump sum, €/MW, distance	Different approaches determining the charge can be used: actual costs are typically charged (lump-sum possible) and can be based on voltage and distance.
Belgium (Flanders)	Deep	actual cost, lump sum, €/MW, distance	Different rules apply, mostly depending on contracted power.

[161] Cf. ENTSO-E in its 2019 Overview of Transmission Tariffs in Europe.

Member State	Connection charge category applied	Cost components / cost drivers	Further description and subject to connection charges
Belgium (Walllonia)	Deep	lump sum, voltage	Charges based on voltage level.
Bulgaria	Shallow	€/MW, distance	All network users are subject to connection charges, same rules for all.
Croatia	Deep	actual cost, €/MW, user type	Producers charged the actual costs, consumers charged €/MW.
Cyprus	Shallow	actual cost	All network users are subject to connection charges, same rules for all.
Czech Republic	Shallow	€/MW, distance, voltage,	The shallow charge is applied in urban areas. The payment is differed based on the connected capacity in €/MW. The deep charge is applied in rural areas and the payment corresponds to actual cost.
Denmark	Shallow and deep	lump sum	All network users are subject to connection charges.
Estonia	Shallow and deep	actual cost, €/MW, distance, voltage	Different rules apply on low voltage and high/medium voltage level as well as for different user types (combined with voltage) and distance from a substation.
Finland	Shallow and deep	actual cost, €/MW, lump sum, voltage	Different rules apply based on combinations of voltage and different user types.
France	Shallow	actual cost, €/MW, user type, distance, voltage, lump sum	Different rules apply based on combinations of voltage and different user types. The typical (low voltage) charges take form of a lump-sum (can be combined with distance charge). Special cases may be charged with actual cost.
Germany	Shallow and deep	lump sum, user type, €/MW,	Different rules apply based on user types. Typically, a lump-sum (the average costs of comparable situations) is used. In special cases, a capacity ratio (new connection vs. grid capacity) can be used.
Greece	Shallow and deep	actual costs, lump sum, €/MW, distance, user type	Consumers charged a lump sum and capacity- and distance-based charge. Producers charged actual costs.
Hungary	Shallow and deep	actual cost, €/MW, distance, user type, voltage	Generators charged the actual cost. Consumers on high voltage charged 70% of the actual cost. Consumers on low or medium voltage charged for capacity and distance.
Ireland	Shallow	actual cost, €/MW, user type, distance, voltage	LV and MV connections are based on standard charges which are updated annually. LV and MV customers do not pay for specific deep reinforcement works for their connection. HV connection charges are based on the actual project cost of the customers' connection, which has compromised shallow costs to date.
Italy	Shallow	€/MW, distance, user type	Consumers charged based on capacity and distance.
Latvia	Shallow and deep	actual cost, user type	Consumers charged actual costs (shallow), producers actual costs (deep).

Member State	Connection charge category applied	Cost components / cost drivers	Further description and subject to connection charges
Lithuania	Shallow	€/MW, distance	All network users are subject to connection charges, same rules for all.
Luxembourg	Shallow	actual cost, lump sum, voltage, €/MW	Low voltage connections charged based on a lump-sum depending on capacity[162]. Other voltage levels charged with real costs.
Malta	Shallow and deep	actual cost, lump sum, €/MW	Up to 60 Amps, connections charged a lump-sum. Over 60 Amps, connections extended from an existing substation based on the actual cost and capacity. If new substation is needed, the actual cost is charged.
The Netherlands	Shallow	actual cost, distance, annual fee	All network users are subject to connection charges, same rules for all. The annual fee covers costs of capital and maintenance.
Poland	Shallow	actual cost, €/MW, distance, voltage	Medium and high voltage charged 25% of CAPEX (small RES 50%, micro-generation 0%, electromobility 6%). Low voltage charged by tariff-based multiplications of capacity.
Portugal	Deep	actual cost, €/MW, distance	All network users are subject to connection charges, same rules for all. Connections charged based on actual cost, potentially depending on distance. Reinforcements charged based on actual cost or capacity.
Romania	Shallow and deep	actual cost, lump sum, user type, voltage	Consumers charged (shallow) actual costs on medium and high voltage and lump-sum on low voltage. Producers charged actual costs (deep).
Slovak Republic	Shallow and deep	actual cost, €/MW, voltage	Different rules apply on low voltage and high voltage level.
Slovenia	Shallow and deep	€/MW, user type	All network users are subject to capacity-based connection charges. Producers are charged shallow costs (based on their maximum demand of withdrawal), consumers charged deep costs.
Spain	Deep	lump sum, €/MW, distance	All network users are subject to connection charges, same rules for all. Connections charged with standard costs and with the cost of reinforcement.
Sweden	Deep	€/MW, distance	All network users are subject to connection charges, same rules for all.

[162] In the rare case of a connection to an area not being part of a constructible zone, additional charges are invoiced based on distance to reach the constructible zone or another network line.

Annex 3: Link to national tariff methodologies

Table 35 Link(s) to the regulatory or DSO decision(s) setting the tariff methodology and other relevant tariff related information

Member State	Link(s) to the regulatory or DSO decision(s) setting the tariff methodology and other relevant tariff related information
Austria	https://www.e-control.at/en/marktteilnehmer/strom/netzentgelte
Belgium (Brussels)	Decision setting the tariff methodology: https://www.brugel.brussels/publication/document/notype/2019/fr/Methodologie-Methodologie-tarifaire-Elec.pdf Consultation page : https://www.brugel.brussels/actualites/methodologies-tarifaires-portant-sur-la-periode-regulatoire-2020-2024-307 Final documents : https://www.brugel.brussels/acces_rapide/tarifs-de-distribution-12/methodologie-tarifaire-2020-2024-320
Belgium (Flanders)	https://www.vreg.be/nl/tariefmethodologie-2017-2020 https://www.vreg.be/nl/tariefmethodologie-2021-2024
Belgium (Wallonia)	https://www.cwape.be/?lg=1&dir=7&title=Tarifs+des+grd
Bulgaria	https://www.dker.bg/uploads/normative_docs/naredbi/Naredba_1_22052020.pdf
Croatia	Decision setting the tariff methodology: https://narodne-novine.nn.hr/clanci/sluzbeni/2015_09_104_2034.html https://www.hera.hr/hr/docs/2018/Odluka_2018-12-13_01.pdf https://www.hera.hr/hr/docs/2018/Odluka_2018-12-13_02.pdf
Cyprus	Decision setting the tariff methodology: https://www.cera.org.cy/Templates/00001/data/nomothesia/ethniki/hlektrismos/rythmistikes_apofaseis/2015_02%20en.pdf https://www.eac.com.cy/EL/RegulatedActivities/Supply/tariffs/Pages/supply-tariffs.aspx
Czech Republic	Tariff methodology: https://www.eru.cz/cs/-/zasady-cenove-regulace-pro-obdobi-2016-2018-pro-odvetvi-elektroenergetiky-plynarenstvi-a-pro-cinnosti-operatora-trhu-v-elektroenergetice-a-plynarens-1 Additional specific rules / each of the distribution tariffs (values) to be paid by different network users: https://www.eru.cz/cs/-/cenove-rozhodnuti-c-2-2020 Template, calculator or any other tool to calculate the yearly individual expenditure of a specific network user related to distribution tariff: http://kalkulator.eru.cz/
Denmark	https://www.danskenergi.dk/sites/danskenergi.dk/files/media/dokumenter/2017-10/PrincipnotatTarifmodel20.pdf https://forsyningstilsynet.dk/media/3060/15-00185_-_tarifering-tarifmodel-20.pdf
Estonia	Decision setting the tariff methodology: https://www.konkurentsiamet.ee/sites/default/files/3_2_elektrienergia_vorgutasude_arvutamise_uhtne_metoodika.pdf

Member State	Link(s) to the regulatory or DSO decision(s) setting the tariff methodology and other relevant tariff related information
	Distribution tariffs - https://www.konkurentsiamet.ee/en/electricity-natural-gas/electricity/network-tariffs Standard terms and conditions for applying distribution tariffs - https://www.konkurentsiamet.ee/et/elekter-maagaas/elekter/tuuptingimused
Finland	https://energiavirasto.fi/documents/11120570/13078331/Appendix_2_Regulation_methods_DSOs_2016-2023.pdf/0c4db75e-826a-8ca6-c749-1e69fa37a5e3/Appendix_2_Regulation_methods_DSOs_2016-2023.pdf (English) DSOs provide tariff related information in their webpages. Other tariff related information: https://energiavirasto.fi/verkkotoiminnan-julkaisut (only in Finnish)
France	Decision setting the tariff methodology: https://www.cre.fr/Documents/Deliberations/Decision/Tarifs-d-utilisation-des-reseaux-publics-d-electricite-dans-les-domaines-de-tension-HTA-et-BT Other tariff-related Information: https://www.cre.fr/calculatrice/detail https://www.cre.fr/Electricite/Reseaux-d-electricite/Tarifs-d-acces
Germany	Fundamental tariff-related Information: https://www.bundesnetzagentur.de/DE/Sachgebiete/ElektrizitaetundGas/Unternehmen_Institutionen/Netzentgelte/netzentgelte-node.html List of cost categories: https://www.gesetze-im-internet.de/stromnev/ Total costs covered: https://www.bundesnetzagentur.de/DE/Sachgebiete/ElektrizitaetundGas/Unternehmen_Institutionen/Netzentgelte/Transparenz/Transparenz_node.html
Greece	NRA decision for setting the 2020 tariff: http://www.rae.gr/site/categories_new/about_rae/actions/decision/2020/0002.csp?viewMode=normal Other tariff related information: http://www.rae.gr/site/categories_new/about_rae/actions/decision/2020/0002.csp?viewMode=normal http://www.rae.gr/site/categories_new/about_rae/actions/decision/2019/572.csp?viewMode=normal
Hungary	http://www.mekh.hu/download/7/1a/20000/modszertani_utmutato_villamos_energia_ii.pdf http://www.mekh.hu/download/f/51/c0000/arak_az_egyetemes_szolgaltatasban_2020_januartol.xlsx http://www.mekh.hu/download/8/1a/20000/modszertani_utmutato_villamos_energia_i.pdf
Ireland	Existing Structure of Tariffs: https://www.cru.ie/wp-content/uploads/2003/07/cer03298-1.pdf

Member State	Link(s) to the regulatory or DSO decision(s) setting the tariff methodology and other relevant tariff related information
	Commission's Response to Submissions Received on Consultation Paper CER/03/298: https://www.cru.ie/wp-content/uploads/2004/07/cer04100-1.pdf Electricity Tariff Structure Review Alternative Tariff Structures: https://www.cru.ie/wp-content/uploads/2004/07/cer04239-1.pdf The CRU's Decision on the "Electricity Distribution Network Allowed Revenue for 2020 & the Distribution Use of System (DUoS) Tariffs and Distribution Loss Adjustment Factors for 2019/2020": https://www.cru.ie/document_group/electricity-distribution-network-allowed-revenue-2020-distribution-tariffs-2019-2020-distribution-loss-adjustment-factors/ The ESBN's Statement of Charges: https://www.esbnetworks.ie
Italy	Decision setting the tariff methodology: https://www.arera.it/it/docs/19/568-19.htm No technical report in 2020, because it was a mid-period update. The technical report was published at the beginning of the regulatory period (2016): https://www.arera.it/allegati/docs/16/654-15_039-16.pdf
Latvia	Decision setting the tariff methodology: https://likumi.lv/ta/id/241677-elektroenergijas-sadales-sistemas-pakalpojumu-tarifu-aprekinasanas-metodika Tariffs for the largest DSO: https://likumi.lv/ta/id/311033-par-akciju-sabiedribas-sadales-tikls-elektroenergijas-sadales-sistemas-pakalpojuma-tarifiem Tariff calculator: https://www.sadalestikls.lv/klientiem/tarifi/tarifu-kalkulators/ Summary of fundamental tariff-related information from largest DSO: https://www.sprk.gov.lv/sites/default/files/uzklausisanas_sanaksmes/Tarifa_projekts_2020-2024T_publisk%25C4%2581%2520versija_0.pdf
Lithuania	Decision setting the tariff methodology: https://www.e-tar.lt/portal/lt/legalAct/0e1684709cc311e48dcdae4eb2005eaf/asr https://www.e-tar.lt/portal/lt/legalAct/TAR.D7749C87DD9A/asr https://www.e-tar.lt/portal/lt/legalAct/83778010052011e9a5eaf2cd290f1944/asr https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/049c46b09dcb11e48d7bacdf30d64d66/asr
Luxembourg	Current tariff methodology: http://legilux.public.lu/eli/etat/leg/rilr/2016/04/13/n1/jo http://legilux.public.lu/eli/etat/leg/rilr/2016/04/14/n1/jo 2021-2024 tariff methodology: http://www.legilux.lu/eli/etat/leg/rilr/2020/05/26/a561/jo Tariff decisions: https://web.ilr.lu/FR/Professionnels/Electricite/Commun/Decisions-et-reglements-ILR/_layouts/15/ILR.Internet/Publications.aspx Distribution costs: https://web.ilr.lu/FR/Professionnels/Electricite/Commun/Publications/Rapports-et-

Member State	Link(s) to the regulatory or DSO decision(s) setting the tariff methodology and other relevant tariff related information
	etudes/Pages/default.aspx Calculator: www.calculix.lu (only for low voltage level)
Malta	Publicly available information: https://www.rews.org.mt/#/en/rewsfa/27
The Netherlands	Tariff methodology https://www.acm.nl/sites/default/files/old_publication/publicaties/16174_methodebesluit-regionale-netbeheerders-elektriciteit-2017-2021.pdf https://www.acm.nl/nl/publicaties/publicatie/16174/Methodebesluit-regionale-netbeheerders-elektriciteit-2017---2021 Distributions tariffs are published yearly per DSO, e.g. tariffs for DSO Liander in 2020: https://www.acm.nl/nl/publicaties/tarievenbesluit-liander-elektriciteit-2020 List of cost categories covered by each tariff is described in the Tariff Code: http://wetten.overheid.nl/BWBR0037951/ Actual data and assumptions are published in the format of (several) excel files containing all relevant calculations on costs, volumes and tariffs: Total cost: https://www.acm.nl/sites/default/files/old_publication/publicaties/16347_regionale-netbeheerders-elektriciteit-2017-2021-kostenbestand.xlsx) Total output https://www.acm.nl/sites/default/files/old_publication/publicaties/16349_regionaal-netbeheerders-elektriciteit-2017-2021-so-bestand.xls X-factor https://www.acm.nl/sites/default/files/old_publication/publicaties/16351_regionale-elektriciteit-2017-2021-x-factorberekening.xlsx Forecasts of the evolution of the allowed revenues and expected volumes until the end of the period: https://www.acm.nl/nl/publicaties/publicatie/16351/X-factorberekening--bij-x-factorbesluiten-RNBs-elektriciteit-2017-2021 Stakeholder views on the concept tariff methodology: https://www.acm.nl/nl/publicaties/publicatie/16174/Methodebesluit-regionale-netbeheerders-elektriciteit-2017---2021
Poland	The description of methodology:https://www.ure.gov.pl/pl/biznes/taryfy-zalozenia/zalozenia-dla-kalkulacj/7828,Zalozenia-dokalkulacji-taryf-OSD-na-rok-2016.html
Portugal	NRA's tariff decision of the first year in the current regulatory period (2018-2020): https://www.erse.pt/atividade/regulacao/tarifas-e-precos-eletricidade/#a2018 NRA's tariff decision of the most recent year in the current regulatory period (2018-2020): https://www.erse.pt/atividade/regulacao/tarifas-e-precos-eletricidade/#atuais Link to the public consultation on the regulatory review before the regulatory period 2018-2020: https://www.erse.pt/atividade/consultas-publicas/consulta-p%C3%BAblica-n-%C2%BA-61/

Member State	Link(s) to the regulatory or DSO decision(s) setting the tariff methodology and other relevant tariff related information
Romania	https://www.anre.ro/ro/energie-electrica/legislatie/metodologii-tarife/distributie-energie-electrica https://www.anre.ro/ro/energie-electrica/legislatie/preturi-si-tarife-ee/energie-electrica-2020 https://portal.anre.ro/PublicLists/Decizie https://www.anre.ro/ro/energie-electrica/legislatie/documente-de-discutie-ee/tarife-preturi-reglementate/proiecte-de-ordine-privind-aprobarea-tarifelor-specifice-pentru-serviciul-de-distributie-a-energiei-electrice-si-a-pretului-pentru-energia-electrica-reactiva-pentru-operatorii-de-distributie-concesionari-pentru-anul-2019&page=2
Slovak Republic	Decision setting the tariff methodology: http://www.urso.gov.sk/?q=content/legislat%C3%ADva-vyhl%C3%A1%C5%A1ky
Slovenia	Tariff methodology: http://www.pisrs.si/Pis.web/pregledPredpisa?id=AKT_1050 Distribution tariffs until the end of the period for which the tariff methodology is set: https://www.uradni-list.si/glasilo-uradni-list-rs/vsebina/2018-01-4011/tarifne-postavke-za-omreznine-elektrooperaterjev-za-regulativno-obdobje-2019-2021
Spain	Decision setting the tariff methodology: https://www.boe.es/buscar/act.php?id=BOE-A-2020-1066 Impact assessment: https://www.cnmc.es/sites/default/files/2808025_42.pdf Tariff model: https://www.cnmc.es/sites/default/files/2808026_42.xlsx Provisional costs to be updated when the Final Judgement of adverse effects: https://www.boe.es/diario_boe/txt.php?id=BOE-A-2016-5932 Methodology for definitive costs: https://www.boe.es/diario_boe/txt.php?id=BOE-A-2019-18261
Sweden	Tariff methodologies of the largest 3 DSOs that cover more than half of the network users in Sweden: https://www.eon.se/el/elnat/avgift https://www.ellevio.se/privat/elnatspriser-och-avtal/se-vara-priser/ https://www.vattenfalleldistribution.se/el-hem-till-dig/elnatspriser/