

## Grid costs: What is it all about?

Amstelveen, 16 October 2023.

Grid costs have been in the news a lot lately. It is time to take a closer look at how that works. But also, to indicate what GIGA Storage's opinion is. In this paper, we limit ourselves to the grid costs charged by the Transmission System Operator TenneT (TSO). The regional Distribution System Operators (DSOs) also charge grid costs, but we do not cover these in this document<sup>1</sup>.

### What are grid costs?

The grid costs refer to the revenues that TenneT receives for the transmission and system tasks they carry out for the government. Ultimately, this includes all TenneT's costs for the Dutch high-voltage grid, which include various aspects, such as investments and maintenance, the costs of the various ancillary services deployed (balance and transmission) and the grid losses.

For the most part, TenneT's transmission costs are passed on to the DSOs. The costs are part of the overall cost structure of the electricity supply and affect the tariffs that consumers ultimately pay for electricity. TenneT also has a number of large-scale consumers, who are directly connected to the high-voltage grid. TenneT's activities are laid down in regulations. The Netherlands Authority for Consumers and Markets (ACM) supervises ensuring that the tasks are carried out efficiently and reliably and that the tariffs fall within the regulated frameworks.

### Grid costs for batteries

Dutch law stipulates that the consumer pays. Production is exempt from grid costs. This law was introduced at the time because producers would otherwise pass on these costs in the electricity price, so the consumer ultimately pays the costs. This would make Dutch electricity more expensive than imported electricity from abroad, where these costs are not raised, creating a non-level playing field.

However, batteries are neither producers nor consumers. Batteries temporarily draw electricity from the grid to spare the power grid during peaks and return the electricity to the grid later. That energy is delivered to the final consumer at a later stage, at which point grid costs are (again) calculated. Thus, batteries could be seen as 'deferred production'. Under the current scheme, batteries are seen as consumers when they charge and as producers when they discharge.

The European Union has issued a directive<sup>2</sup> instructing member states to support energy storage<sup>3</sup>. The European countries all deal with this differently. An important theme is 'cost reflectivity'. The users that are creating (causing) the costs on the system should pay for those costs. In the Netherlands, the cost reflectivity is represented by looking at the maximum peak load caused by a connected party. In theory, this should be the cause of the total installation cost of the grid. GIGA Storage believes that a nuance is in order here. Working with large batteries, we may be purchasing large amounts of power, but we do so precisely to reduce a peak on the national electricity grid. The service we offer supports the entire electricity grid.

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<sup>1</sup> The DSOs have been asked to come up with a proposal in line with the discussions with TenneT.

<sup>2</sup> <https://eur-lex.europa.eu/legal-content/NL/TXT/HTML/?uri=CELEX:32019R0943&from=NL#d1e2506-54-1>

<sup>3</sup> According to the EU Directive 944/2019 article 2, energy storage is: ... postponing the final use of electricity until a later time than when the electricity was generated....

In our opinion, what is also forgotten is the 'benefit reflectivity'. In other words: What's in it for society if we do manage to install enough batteries in time? Ecorys<sup>4</sup> conducted an initial study on this subject, showing that the Netherlands can save up to €2 billion per year by realising large-scale energy storage on time. In many discussions, we also hear that if batteries are exempted from grid costs, the costs for other connected parties will increase. This is incorrect; It is precisely by facilitating more flexibility in the system that fewer costs are incurred to guarantee the security of the energy supply. It will also be possible to connect more parties. So, by adding more batteries to the system, the energy transmission costs for those connected will actually decrease.

We believe that more research is needed to better map out the social costs and benefits of electricity storage for efficient grid management. It must also examine what costs the batteries actually cause as a connected party.

### ACM intends to introduce a discount

European legislation stipulates that ACM<sup>5</sup> is responsible for setting tariffs. The ACM draws up a Tariff Decision based on a tariff proposal from the network operators. In consultation with the DSOs, ACM and the Ministry of Economic Affairs and Climate Policy (EZK), it has been concluded that the DSOs will submit a proposal for 2025 that effectively gives batteries a discount based on a flexible contract. ACM intends to adopt this proposal.<sup>6</sup>

### How does the discount work?

The transmission tariff comprises two components: the fixed part based on the annual reservation (KW contract) and the variable part based on the monthly peak load (KW-max). The proposal means that batteries that are connected to TenneT's high-voltage grid will be given a 'non-firm' connection. TenneT then has the right to reduce the available capacity in one direction at busy times (15% of the time). The connected party is exempted from the KW contract. This already saves about 50% of the total costs. In addition, the KW-max becomes dynamic, so the costs at quiet times are lower than at busy times. If properly anticipated, this should give a total discount of 65% compared to a fixed contract.

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<sup>4</sup> <https://www.energystoragenl.nl/grote-batterijen-kunnen-nederlandse-samenleving-e2-miljard-per-jaar-besparen/>

<sup>5</sup> In the FD [article](#) of 27 September 2023, the FD incorrectly indicates that Minister Jetten has taken this decision. However, a change in the tariffs is reserved for ACM.

<sup>6</sup> <https://www.acm.nl/nl/publicaties/acm-ziet-grond-voor-verlaagd-transporttarief-voor-batterijen>

## Is that enough to achieve 9 GW of energy storage by 2030?

TenneT<sup>7</sup> has indicated that it needs 9 GW of flexibility by 2030. Other studies<sup>8</sup> show that this should be 12 to 15 GW in 2030 and around 50 GW in 2050. In its most recent "Integrated Infrastructure Outlook 2030-2050", Netbeheer Nederland also looks at the amount of installed capacity: "In 2050, *the battery capacity will vary between 40 and 70 GW*".<sup>9</sup> If we were not to achieve these figures, it would mean that the Netherlands will depend on coal- and gas-fired power stations for flexibility for longer, these power stations cannot be switched off in time, and the national sustainability targets can become further out of reach<sup>10</sup>. In addition, Netbeheer Nederland foresees a major impact on the electricity price: "*In the scenario with one-third less battery storage, the average electricity price is 22% higher than in the basic variant. In the complete absence of batteries, this is as high as 140%*".<sup>11</sup>

With the current proposal, the first gigawatts<sup>12</sup> of electricity storage capacity will be realised, but the required 9 GW in 2030 will certainly not be achieved. It is an important first step, but it is not yet sufficient to guarantee the security of energy supply in the Netherlands in the future.

After all, a problem with the security of energy supply can be one of the justifications<sup>13</sup> for providing technology-neutral financial support for sources of flexibility, including batteries. There is currently no formal problem of security of energy supply, although TenneT has indicated that there will be. If a European and/or national security of energy supply analysis identifies a future capacity problem, the use of (some form of) a capacity mechanism can be considered. European rules apply to this. In the Letter to Parliament on the Security of Electricity Supply, Minister Jetten announced<sup>14</sup> that he will meet with experts from academia, among others, to discuss the development of the electricity system and to specifically address the advantages and disadvantages of possible capacity mechanisms.

The European Commission expects<sup>15</sup> to need 200 GW for Europe in 2030 and 600 GW in 2050.

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<sup>7</sup> <https://www.tennet.eu/nl/nieuws/tennet-ziet-grote-rol-voor-batterijen-voor-stabiel-elektriciteitsnet-2030>

<sup>8</sup> <https://www.rijksoverheid.nl/documenten/rapporten/2023/04/06/het-energiesysteem-van-de-toekomst-de-ii3050-scenarios>

<sup>9</sup> <https://www.tennet.eu/nl/nieuws/klimaatneutraal-energiesysteem-haalbaar-als-we-durven-te-kiezen>

<sup>10</sup> There are also other forms of flexibility that can be scaled up, so that doesn't have to be fossil controllable power in all cases. Batteries are one of the best techniques that can be used as a flexibility mechanism and in our view the most important form. There are a number of alternatives, such as Demand-Response, (CO2-free) controllable power, conversion and interconnection. We believe that these alternatives are less scalable and will not be sufficient to achieve the necessary amount of flexibility.

<sup>11</sup> Integrated Infrastructure Outlook 2030-2050: [A II3050 Final Report 3.pdf \(netbeheernederland.nl\)](#)

<sup>12</sup> Opinions on how many are divided on this. ESNL indicates that, based on a study by EnAppSys, this could be a maximum of 1.7 GW: <https://www.energystoragenl.nl/geen-doorbraak-voor-energieopslag-in-bestuurlijk-overleg/>. More research seems to be in order here as well.

<sup>13</sup> Incidentally, reducing/preventing grid congestion is another good justification.

<sup>14</sup> <https://www.rijksoverheid.nl/documenten/kamerstukken/2023/09/18/kamerbrief-leveringszekerheid-elektriciteit>

<sup>15</sup> [https://energy.ec.europa.eu/topics/research-and-technology/energy-storage/recommendations-energy-storage\\_en](https://energy.ec.europa.eu/topics/research-and-technology/energy-storage/recommendations-energy-storage_en)

## What do Minister Jetten and the Ministry of EZK think about this?

The Ministry is very open in its discussions with this new industrial sector. In the meantime, many meetings have taken place and the Minister has even personally 'electrified' the GIGA Buffalo battery.<sup>16</sup> There is a good relationship with ESNL<sup>17</sup> and there is structural cooperation.

Based on this collaboration, the Minister published the Energy Storage roadmap in the spring of 2023<sup>18</sup> and sent it to the Dutch House of Representatives.

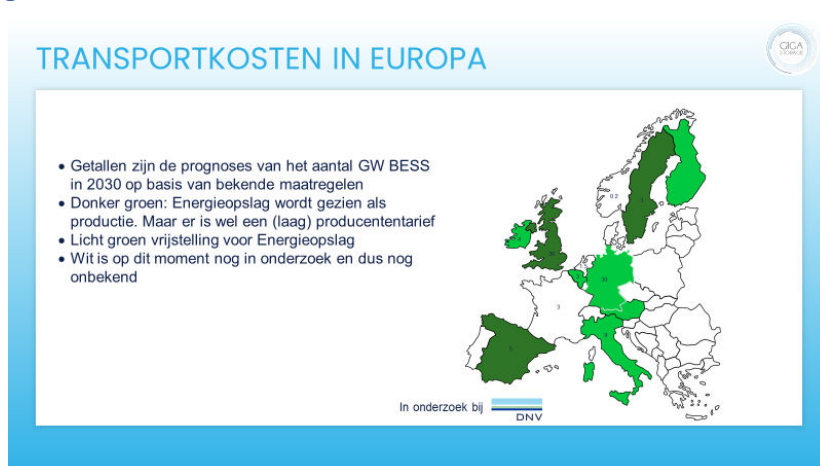
The Minister endorses the aforementioned 65% discount as set by the ACM in his letter to parliament.<sup>19</sup> He also indicates that with this measure, it is expected that there will be 2 to 5 GW of batteries in 2030. GIGA Storage has the ambition to develop a large part of this.

## European and national level playing field

Our neighbouring countries have now taken far-reaching measures on this subject. This varies from a complete exemption for large-scale energy storage of grid costs to giving the (always much lower) producer tariff. We know from our activities in Belgium<sup>20</sup> that, for example, energy storage projects there are exempt from grid costs for the first 10 years<sup>21</sup>.

In our view, there is no level playing field between the European countries, which means that there is a chance that battery developers will focus more on countries other than the Netherlands.

In our opinion, there is also no national level playing field, because energy storage companies have to offer their services more expensively than gas and coal power plants or sustainable wind and solar will have to be curtailed.



<sup>16</sup> <https://giga-storage.com/nl/nieuws/grootste-batterij-van-nederland/>

<sup>17</sup> <https://www.energystoragenl.nl/>

<sup>18</sup> <https://www.rijksoverheid.nl/documenten/rapporten/2023/06/07/bijlage-1-routekaart-energieopslag>

<sup>19</sup> <https://www.rijksoverheid.nl/ministeries/ministerie-van-economische-zaken-en-klimaat/documenten/kamerstukken/2023/10/05/voortgangsupdate-rol-batterijen-in-het-energiesysteem>

<sup>20</sup> <https://giga-storage.com/nl/nieuws/giga-storage-kondigt-grootschalig-energieopslagproject-aan-in-belgie/>

<sup>21</sup> More information about this in the methodology chapter 5.2 art 4 §9

<https://www.creg.be/sites/default/files/assets/Publications/Decisions/Z1109-10NL.pdf>

### What are the next steps?

We see the current proposal as an important first step towards achieving the (minimum) 9 GW of large-scale energy storage in the Netherlands by 2030. We therefore think it is a good thing to monitor the security of supply, which TenneT is carrying out on behalf of the Ministry of Economic Affairs and Climate Policy. It is an instrument to see whether we are on the right track or deviating from our set course. All stakeholders know that the current measures will not be enough and have agreed that additional research will be carried out in the coming months. Other possible actions outside the tariff system will be explored.

It is actually extraordinary to see that many stakeholders see the usefulness and necessity of large-scale energy storage. This concerns the DSOs, the Ministry of EZK, ACM, the energy companies and industry. In that context, GIGA Storage therefore sees the current decision of the 65% discount as positive.

#### **NOTE TO THE READER**

*This document has been prepared by the authors, all of whom work at GIGA Storage, and is offered as a contribution to the discussion on grid costs to anyone who is interested.*