

Mechanisms to support innovation in Norwegian electricity networks – R&D funding and the Norwegian regulatory sandbox framework

The Norwegian Energy Regulatory Authority (NVE-RME) is the national regulator for the Norwegian electricity and downstream gas market. The main statutory objective of NVE-RME is to promote economically beneficial development through an efficient and environmentally sound energy generation, as well as efficient and reliable transmission, distribution, trade and efficient use of energy. This responsibility is defined by national legislation.

This document provides information about two regulatory mechanisms designed to facilitate innovation in the Norwegian power system and electricity market.

1 Funding for R&D and pilot projects

In 2013, NVE-RME implemented a scheme where the transmission system operator (TSO) and distribution system operators (DSOs) receive full financial coverage for research and development (R&D) projects that meet certain criteria.

However, the financial coverage a DSO or TSO can receive in a year is limited to 0.3 per cent of their regulatory asset base (RAB). This means that the yearly financial potential in this scheme equals 0.3 per cent of the industry's RAB. Only projects that are relevant for the distribution or transmission of electricity may participate in the scheme. Besides, such projects must be deemed eligible by a relevant institution that provides grants to R&D projects. The Norwegian Research Council approves most projects that are part of the scheme. However, NVE-RME also accepts projects that have been reviewed by other funding institutions. NVE-RME requires that results from the projects are made public.

As of October 2021, NVE-RME has approved 215 projects in the scheme. More information is available on [our website](#) (in Norwegian only).

The financial potential and actual use of the scheme are illustrated in the figure below (text in Norwegian). The illustration shows some key figures for the R&D scheme. The red columns illustrate the development of the financial potential in the R&D scheme. We can see that the financial potential has increased with 9 per cent from 2019 to 2020 and constitutes 435 million Norwegian kroner in 2020. The blue columns illustrate the actual use of the scheme in million Norwegian kroner. The blue line shows the actual use in per cent of the potential. The general trend has been increasing over the years and was 44 per cent in 2020.

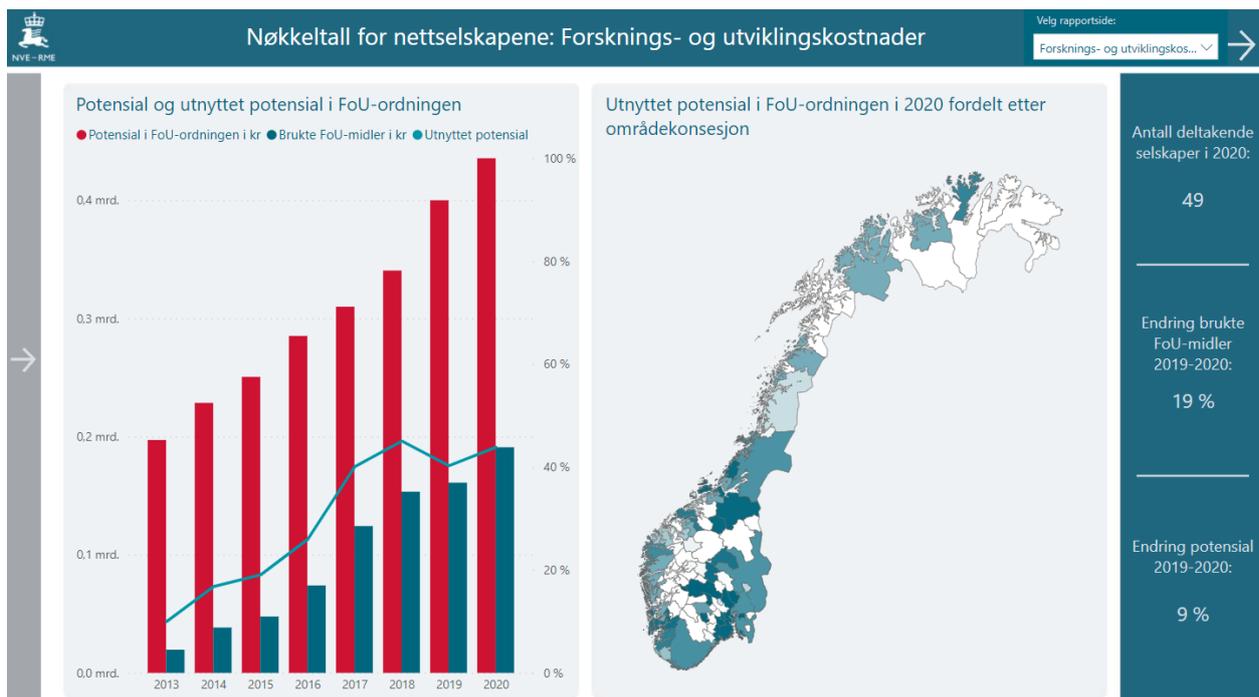


Figure 1 Key figures R&D 2020. Updated information is available on [our website](#).

The map demonstrates to which extent DSOs participate in the scheme. Out of 101 DSOs in total, 49 DSOs participated in R&D projects funded by the scheme in 2020. White colour indicates no participation, and darker blue colour indicates high use compared to potential. Statnett, the Norwegian TSO, also has several projects funded by the scheme.

2 The Norwegian regulatory sandbox framework

Over the years, NVE-RME has observed an increasing number of new project proposals from different market participants. Common features of these projects have been a need for information on how they adapt to current law and regulations, and how to apply for derogations from the requirements in the legal framework.

During 2019, NVE-RME developed a framework for pilot and demonstration projects. The aim was to facilitate the implementation of projects in a controlled environment, and an intent that these types of projects may lead to a more efficient power system in the future. The framework addresses two main purposes; information about current rules and regulations and a transparent derogation process. Such regulatory sandboxes have also been developed by other energy regulatory authorities, and also within other sectors, for example finance.

Pilot and demonstration projects differ from R&D projects because they require actual testing in real environments. Before a new product or service is launched in a market, it is vital that it has undergone testing. NVE-RME bases its understanding of these projects on the technology readiness levels (TRL) scale used in EU's Horizon 2020 projects¹. Pilot and demonstration projects typically refer to TRL 5 – 8.

¹ https://ec.europa.eu/research/participants/data/ref/h2020/other/wp/2018-2020/annexes/h2020-wp1820-annex-g-trl_en.pdf.

2.1 Derogation process

2.2.1. Legal framework

The energy legislation framework is based on a system of licenses. All activities related to generation, transformation, transmission, distribution and trade of electricity requires a trading license unless the activity is explicitly exempted, of limited scale or deemed unnecessary. NVE-RME is a licensing authority, meaning that it is the body that determines if the activity of a licence applicant is of such nature that it requires a trading license, and which terms and conditions should apply. In general, terms and conditions depend on the activity, and transmission and distribution of electricity have the most extensive terms and conditions. Terms and conditions are related to financial and technical reporting of data, revenue caps, tariffs, quality of supply, metering and invoicing, branding, neutrality, and unbundling.

A project participant who wishes to carry out an activity that may require a trading license, must submit an application to NVE-RME via [our website](#) requesting such license. Which activities are subject to a trading license obligation is prescribed by the Norwegian energy legislation. This means that even a project participant who intends to perform activities for a temporary period through a pilot or demonstration project, would need to apply for a license, if the activities are covered by the requirement for a trading license.

A project participant who already operates under a trading license, must first assess whether the activities under the pilot and demonstration project are covered by the existing license. If this is the case, the project can commence without additional specific approval from NVE-RME. If, on the other hand, the project cannot be carried out within the scope of an existing license or the energy legislation in general, the project participant must apply for changed terms or a derogation from specific provisions in the legislation.

2.2.2. NVE-RME has the authority to grant a derogation

The project participant may apply for amendments in the trading license or for a derogation from the legislation if the activities in the project cannot be carried out in compliance with the current legal framework. NVE-RME may grant such exemptions for a limited time period.

Which provisions that could be temporarily set aside depends on the project and must be considered on a case-by-case basis. The purpose of the framework is to facilitate that new, innovative activities can be tested for a limited period of time, which the current regulations do not take into account, and thus gain experience and knowledge about discrepancies in our regulations and a possible need for regulatory amendments. NVE-RME will have to assess the usefulness of the project and the degree of innovation before concluding on whether a derogation is to be granted and the scope thereof.

NVE-RME has the authority to award derogations from several requirements under the wider legal framework, but not all. Once NVE-RME receives an application for exemptions, we begin by assessing whether the requested exemptions relate to laws and regulations where NVE-RME is the competent regulatory authority. In cases where we receive such applications, we assess our authority based on the specific provision. In cases where another public body has such authority, we will refer the project coordinators to the right authority.

2.2.3. Application requirements

To facilitate a transparent derogation process, the regulatory sandbox framework includes these elements:

- Guidance on necessary information to provide in a derogation application:
 - Purpose of the project.
 - Expected value and innovation from the project. The applicant must describe the expected effects, and for whom.
 - The maturity of the project.

- Cooperation and partners. If final customers participate, are there any reservation and/or opt-out possibilities?
- The need for a derogation. For which project participants? From which terms and conditions? Why is it necessary, and for how long?
- A plan for liquidation of the project when the derogation period is over, if necessary.
- Other information that may be relevant to describe the project.
- NVE-RME has developed an internal case handling guidance document to facilitate our case handling in these cases.
- For projects where we grant temporary amendments in the trading license or a derogation, the following terms and conditions apply:
 - Time limitations. In most cases 1 – 3 years, maximum 5 years.
 - The project owner must prepare a report describing the goals and results of the project. The report will be published on our website.
 - The project owner may be required to report periodically to NVE-RME during the derogation period.

2.2 Information about rules and regulations

In NVE-RME's experience, many projects can test new solutions within the existing legal framework, without need to apply for any derogations from the requirements under the current legal framework. Such clarifications are often sorted out through dialogue between NVE-RME and the relevant project coordinators. Hence, informing market participants of the applicable rules is considered an essential part of the regulatory sandbox framework.

To provide this information, the framework consists of:

- Information about rules and regulations on our website.
- Contact information that provides direct contact to regulatory experts (by email or phone).
- The possibility to present and discuss a project in a meeting with NVE-RME (open door policy).

2.3 More information about the framework

Nine projects have until now² been granted a time-limited amendment of the trading license or a derogation from the energy legislation under the regulatory sandbox framework.

The aim of most of these projects is to test out new, innovative solutions connected to flexibility, aggregation and new tariffs to improve pricing signals. Some projects have been awarded derogations to try out different tariff models such as Time of Use. Furthermore, several projects apply for derogations to try out solutions enabling residents within defined areas to distribute surplus electricity from self-production among themselves. NVE-RME has also awarded several derogations enabling the TSO to procure flexibility services which do not meet the current requirements on bid size and composition.

All projects, but one, are still ongoing. As of October 2021, no results from the projects have been published.

More information about the framework and updated information about projects are available on [our website](#). The information is in Norwegian only.

² As of October 2021.