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# currENT Response to "PROPUESTA DE DESARROLLO DE LA RDT DE ENERGÍA ELÉCTRICA. PERÍODO 2021-2026"



**CURRENT**

Enabling Network Technology  
throughout Europe

currENT welcomes the opportunity to provide input on the *Spanish Network Development Plan 2021-2026* as part of this consultation. Making significant progress in this time period will be critical for integrating the additional 40 GW renewable generation that is planned, and ultimately achieving the 2030 target of 74% of generation from renewable energy sources. We believe that its ambition could be even better met in insisting more on the value add of Grid-Enhancing Technologies (GETs), which would further enhance the overall impact of the plan by acting as enablers of faster connection of renewables and delivery of larger infrastructure projects.<sup>1</sup>

currENT is the industry association representing the voice of innovative grid technology companies that operate in Europe. Our vision is a European power network that is the recognised world leader in enabling decarbonisation through the efficient use of modern grid technology. Our members offer solutions that climate proof existing power networks and add innovative elements to the new ones that are yet to be built. Power networks can be optimised and reinforced through these solutions, and additional networks can start off with the latest state-of-the-art technology. Our solutions enable power networks to deliver the energy transition at least cost; in a secure, sustainable and socially responsible manner.

currENT aims to generate greater awareness of Grid Enhancing Technologies and to accelerate their implementation on electric grids across Europe. We do so by working with the wider stakeholder ecosystem to generate awareness of the benefits of these technologies, share learnings, and contribute to developing future-proof regulatory and policy frameworks.

CurrENT proposes four key points for MITECOs and REE's consideration:

**1. GRID ENHANCING TECHNOLOGIES ARE READY FOR WIDE-SCALE IMPLEMENTATION IN SPAIN**

currENT strongly supports the inclusion of multiple projects in the NDP 2021-2026 that involve Grid Enhancing Technologies (GETs)<sup>2</sup>, notably 80 DLR applications and greater use of power flow control solutions. However there is scope to further increase the use of GETs in the current and future NDPs, particularly those GETs which have higher TRLs and thus proven benefits. This is in line with recent European legislation which seeks to accelerate the transition to smarter low carbon grids, such as the Smart Grid Indicator which NRAs were tasked to develop by end 2020 and the relevant provision in the Energy Efficiency Directive relating to the efficiency of networks<sup>3</sup>. This is valuable not only for the Spanish transmission network and national targets, but also on cross border lines where GETs can support Spain's linear progress towards the EU 70% available capacity target.

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<sup>1</sup> For more information read our [Policy Recommendations](#).

<sup>2</sup> hardware, software and associated protocols applied to existing transmission facilities that increase the network's operational transfer capacity.

<sup>3</sup> Please see the report commissioned by currENT's sister association in the US, WATT [Report: Unlocking the Queue – WATT \(watt-transmission.org\)](#). See here also the JRC report of December 2020 [Improving Energy Efficiency in Electricity Networks | EU Science Hub \(europa.eu\)](#)

## 2. INNOVATIVE NEW GRID SOLUTIONS MUST BE ADDED TO THE NETWORK PLANNING TOOLBOX

Given the 40 year plus lifetime of new grid assets, it is critical that the latest innovative and technological advancements are taken into account when planning new grids. currENT recommends that MITECO and REE review the processes for qualification of new technologies that have been proven in other geographies, to ensure that technologies which can deliver significant value to Spain in the long-term are sufficiently included and fairly considered as possible solutions as part of the network development plan process. This would need to be supported by a strong sharing of learnings and 'best practices' between MITECO, REE and other network companies and stakeholders to minimise the risk of wasting research money and duplicating work on proving a technology that has already been proven on another network.

## 3. RAPIDLY DEPLOYABLE SOLUTIONS ENABLE DELIVERY OF PROJECTS AND RENEWABLE INTEGRATION

Given the common delays associated with implementing new infrastructure projects due to permitting and public acceptance complexities, the value of rapidly deployable solutions must be recognised e.g. Dynamic Line Rating and modular power flow control solutions such as SSSC devices<sup>4</sup>. Rapidly deployable solutions can often be delivered in less than a year, leading to the quicker release of capacity and increased efficiency of the existing network. currENT recommends that MITECO and REE consider whether any of the existing projects identified in the NDP could be improved through using rapidly deployable solutions as an interim or enabling measure, or in some cases as a more optimal solution to part or all of the proposed project. Existing selection and evaluation processes for projects should also be reviewed by MITECO and REE to ensure that the processes fairly value the benefits of rapidly deployable solutions (see example in detailed comments section).

## 4. COMPLEMENTARY SOLUTIONS OPTIMISE USE OF THE EXISTING GRID

currENT would like to highlight the complementarity of GETs, particularly in terms of maintaining network resilience, managing congestion and optimising the power flows across the network. By leveraging multiple GETs with different functionalities to meet a network need, in most cases the overall impact will be far greater than if only one technology was used in isolation. currENT recommends that MITECO and REE consider GETs not only as standalone solutions, but also as solutions that can be combined in order to maximise the benefits of an existing or new project, and ultimately provide maximum value to both the network and consumers.

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<sup>4</sup> The static synchronous series compensator (SSSC) is a power quality FACTS device that employs a VSC connected in series to a transmission line through a transformer or multilevel inverters [[ENTSO-E Technopedia](#)]

More details on each of these four points are in the following section.

## Detailed comments

### 1. Grid Enhancing Technologies are ready for wide-scale implementation in Spain

The term Grid Enhancing Technologies (GETs) refers to hardware, software and associated protocols applied to existing transmission facilities that increase the network's operational transfer capacity. Examples of rapidly deployable solutions with medium to high TRLs include Dynamic Line Rating, intelligent sensors, modular power flow control solutions such as SSSC devices and many more. These GETs can enable network operators to maximise the capacity on the existing grid, minimise renewables constraint costs, increase network resilience, and create more flexibility on the network. GETs act horizontally on existing grids that they optimise, on reconductoring and new grids that they equally optimise and complete. While the energy transition requires more grids to be built, public opposition leads often to delays, so that GETs can act as in-betweens. This is valuable not only for the Spanish transmission network, but also on cross border lines where GETs can support Spain's linear progress towards the 70% available capacity target set by the EU over a number of years.

The greater implementation of GETs is also in line with recent European legislation which seeks to accelerate the transition to smarter low carbon grids, such as the Smart Grid Indicator which NRAs were tasked to develop by end 2020 and the relevant provision in the Energy Efficiency Directive relating to the efficiency of networks.

GETs are typically modular, quick to deploy, cost-effective and can be relocated as system needs evolve over time. This ensures that GETs are a 'no risk' investment as the solution sizes can be scaled up or down over time, moved to a new location on the network if the system need changes, or used as a temporary solution while a project is underway or in outage conditions.

currENT strongly supports the inclusion of multiple projects in the NDP 2021-2026 that involve GETs, notably 80 DLR applications and greater use of power flow control solutions. However there is scope to further increase the use of GETs in the current and future NDPs, particularly those GETs which have higher TRLs and thus proven benefits. In this regard, currENT notes that MITECO and REE concluded that 70 – 80% of the benefits can be captured from the planned projects in the NDP compared to a theoretical network without limitations. We would like highlight here that greater use of GETs over the 2021-2026 time period has strong potential to further increase the 70 – 80% through maximising the benefits of and enabling existing projects, while also acting as smaller projects that can be scaled up incrementally over the 6 years and the next development plan period.



## 2. Innovative New Grid Solutions must be added to the network planning toolbox

The priorities for innovation must be aligned with the overall strategic priorities for the Spanish and wider transmission network to ensure the highest potential innovations are funded, developed, trialled and ultimately rolled out. It is important at once that high potential solutions with low Technology Readiness Levels (TRL) are prioritised for pilot projects, and implemented at scale once the benefits are proven on that network or in other geographies. High Technology Readiness Level technologies can be rolled out on a wider scale and learning from other geographies - where they are deployed - is key. We recommend the use of ENTSO-E Technopedia<sup>5</sup> for seeing the TRLs as well as the deployments of technologies in networks.

The energy transition requires more grids to be built, in order to facilitate the massive amounts of new renewables which are planned over the coming years. Given the 40 year plus lifetime of new grid assets, it is critical that the latest innovative and technological advancements are taken into account when planning new grids. Where the existing network is insufficient or non-existent (e.g. offshore or high capacity cross border lines), innovative New Grid Solutions must be considered to ensure that the grid can be as efficient as possible from the outset, with minimal impact on local communities and the environment.

CurrENT recommends that MITECO and REE review the processes for qualification of new lower TRL technologies, to ensure that technologies which can deliver significant value to Spain's in the long-term are sufficiently included as part of the network development plan process i.e. newer technologies are not excluded as options to resolve near, medium or longer-term needs. This could be supported by an obligation on system operators to consider all possible solutions for an identified need as part of the network planning process.

This would result in more efficient long-term investments, and ultimately enable end-consumers to benefit from the new technology as early as possible. This would need to be supported by a strong sharing of learnings and 'best practices' between MITECO, REE and other network companies and stakeholders to minimise the risk of wasting research money and duplicating work on proving a technology that has already been proven on another network.

## 3. Rapidly Deployable solutions enable delivery of projects and renewable integration

currENT commends the NDP's ambitious plans to integrate 40 GW of additional renewable generation in the relatively short time period of 6yrs. We are strong advocates that power networks must be enablers, rather than barriers, to Europe's green recovery and achievement of national and European energy

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<sup>5</sup> [ENTSO-E Technopedia - ENTSO-E](#)

targets. Hence, the implementation of key network projects and next generation solutions must be accelerated.

Given the common delays associated with implementing new infrastructure projects due to permitting and public acceptance complexities, we would like to highlight the value of rapidly deployable solutions to enable on-time delivery of other critical infrastructure projects and/or act as an interim solution while these projects are under permitting/construction. Rapidly deployable solutions are often non-wires solutions that can be delivered in less than a year, leading to the quicker release of capacity and increased efficiency of the existing network. For example in Belgium, Dynamic Line Rating is used to manage high power flows on the transmission network during major planned outages. The outages are required to carry out the work to uprate the 400kV network with HTLS lines. During such outages which can extend over months, costly congestion management can be avoided without any risk of overloads by using DLR. This allows the uprating work to be carried out on time, safely, and with minimal financial impact<sup>6</sup>. In this way, rapidly deployable solutions are particularly valuable to system operators where there is network congestion, high renewable constraints, or issues utilising the existing lines due to weather conditions or other factors.

Another example of a rapidly deployable solution is modular power flow control solutions such as the modular SSSC (Static Synchronous Series Compensator) which can optimise power flows across circuits, be quickly deployed in existing substations or corridors, and due to the modular design can be easily scaled up or down or redeployed to another location. This limits costs that result from delayed networks, and is very complementary with DLR or other GETs (see point 4). The value of such near- and short-term solutions needs to be recognized by the NDP more generally, and regulatory framework and processes should make sure that such solutions become part of the TSOs operational toolboxes. Modular SSSC are now deployed across the World: the specific ENTSO-E overview in the Technopedia provides for a comprehensive overview.<sup>7</sup>

CurrENT recommends that MITECO and REE consider whether any of the existing projects identified in the NDP could be improved through using rapidly deployable solutions as an interim or enabling measure, or in some cases as a more optimal solution to part or all of the proposed project.

Existing selection and evaluation processes for projects should also be reviewed by MITECO and REE to ensure that the processes fairly value the benefits of rapidly deployable solutions, particularly the benefits that would be accrued before the alternative solution could feasibly be implemented or while other infrastructure projects are under permitting/construction. Projects should be evaluated in terms of which solution or combination of solutions can best meet the identified system need in the required timeframe, as the value of reducing carbon emissions in the near-term is far greater than reducing the same carbon emissions in 10 years' time.

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<sup>6</sup> Presentation by Elia in the <https://www.currentheurope.eu/conclusions-dynamic-line-ratings-for-optimised-grids/>

<sup>7</sup> [Static Synchronous Series Compensator - ENTSO-E](#)

*Example of the value of rapidly deployable solutions*

*Compare two projects that meet the same need of reducing congestion but project A can be delivered in 1 year (using rapidly deployable solutions) and project B in 10 years' time. All other factors being equal, project A will be delivering operational, societal and financial benefits for at least 9yrs before project B is even built. The same principle applies to projects which combine rapidly deployable solutions with larger infrastructure projects, as the project benefits can be realised over a number of years as the project is delivered incrementally. In this way the 'cost of delay' associated with some projects can be taken into account.*

In this way, MITECO and REEE can ensure that the projects, most critical to Spain and its consumers are prioritized and – even more importantly - delivered on time.

#### 4. Complementary solutions optimise use of the existing grid

As noted in point 1, currENT welcomes the strong commitment of MITECO and REE to implementing GETs as part of transmission network development in Spain, notably DLR and power flow control. DLR is an effective way of increasing the observability of lines, maintaining the availability of lines in severe environmental conditions, and maximizing the utilization of the existing assets. This provides more flexibility, capacity and cost savings to the system operator, often even reducing the need for some more risky investments.

CurrENT would like to highlight the complementarity of GETs, particularly in terms of maintaining network resilience, managing congestion and optimising the power flows across the network. By leveraging multiple GETs with different functionalities to meet a network need, in most cases the overall impact will be far greater than if only one technology was used in isolation.

For example, DLR provides visibility in real-time of the dynamic rating of the circuits and informs the system operator of the real available thermal headroom in the circuits among other factors. To fully leverage this benefit, the system operator then operates the network in such a way to utilise the capacity identified or take other action as required to maintain network resilience. Modular power flow control solutions is an effective solution to manage power flows and other network conditions in order to direct power towards underutilised lines or away from congested lines. In this way the overall impact is maximised by combining solutions that enable the system operator to first identify network conditions in real-time and then take fast action using power flow control to optimise how the network is operated given these conditions.

CurrENT recommends that MITECO and REE consider GETs not only as standalone solutions, but also as solutions that can be combined in order to maximise the benefits of an existing or new project, and ultimately provide maximum value to both the network and consumers.

## Concluding Remarks

currENT appreciates the opportunity to engage in this transparent consultation process on the Spanish Network Development Plan 2021-2026, and to share our industry perspective on the planned network projects in Spain. We are intentionally submitting a short response, which we believe highlights the key points that MITECO and REE should consider as part of this consultation and before approval of the NDP. We would welcome the opportunity to engage further with REE, MITECO, and other stakeholders on this network development plan.