Institute of High Voltage Equipment & Grids,

Digitalization & Energy Economics

RWTH Aachen University

Chair for Transmissions Systems

and Energy Economics

Univ.-Prof. Dr.-Ing. Albert Moser

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APOLLO-Link: Supporting Technical Document Demonstrating the NTC Increase

Contact

Univ.-Prof. Dr.-Ing. A. Moser

Chair of Transmission Systems and Energy Economics

IAEW, RWTH Aachen University

Schinkelstrasse 6, 52062 Aachen, Germany

+49 (0) 241 80 97653

a.moser@iaew.rwth-aachen.de

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1 Background

The present technical document seeks to fulfil ENTSO-E's TYNDP 2024 Guidance for Applicants' technical criterion "o. Initial estimation of the Transfer capacity increase" required for transmission projects. The objective of this documentation is to demonstrate the expected increase in Net Transfer Capacity (NTC) for the bidding zone border Italy North – Spain resulting from the construction of the Apollo-Link project.

This technical document provides the required information supporting the application of the Apollo-Link project to the ENTSO-E TYNDP 2024. The expected NTC increase (Delta-NTC), including the reference NTC from which this increase was calculated, will be presented following a description of the chosen best practice methodology and hypotheses applied for the specified cross-border section. This includes

i) an assessment of the **increase in transfer capacity** enabled by the project, expressed in **MW in both directions (direct and reverse),**
ii) a **justification** of the provided value **of NTC increase**, and
iii) an explanation of the **use of the transfer capacity increase**. The reference market areas (bidding zones) are, identified alphabetically, ES (Spain) and ITN (Italy North).

Lastly, in accordance with Regulation (EU) 2022/869 (TEN-E), this document also demonstrates a **minimum impact of 500 MW** in a cross-section between two (or more) Member States. This stipulation is part of the "eligibility criteria" outlined in the regulation, making it an essential aspect of the criteria to be fulfilled to obtain PCI status.

2 Technical description of the project

The newly introduced 2 GW DC interconnection standard is a significant development in the field of high-voltage direct current (HVDC) systems, specifically designed to cater to large-scale, efficient power transmission for offshore wind electricity generation facilities. This standard developed by various ENTSO-E TSOs aims at facilitating the integration of larger offshore wind farms into the grid and enhancing the overall system's reliability. The adoption of this 2 GW standard for a point-to-point interconnection project aims at setting another standard and represents a strategic move towards achieving ambitious renewable energy targets set in Europe through standardisation.

The envisaged HVDC interconnector project, which is scheduled for commissioning in 2032, will leverage this 2 GW standard to establish a technologically advanced and robust system. This system will be based on a Rigid Bipole (RBP) configuration, a setup that enhances system reliability by allowing independent operation of each pole. The link will span approximately 700 km, connecting the substations Ramis (Spain) and La Spezia (Italy), using this RBP configuration for optimal power transmission.

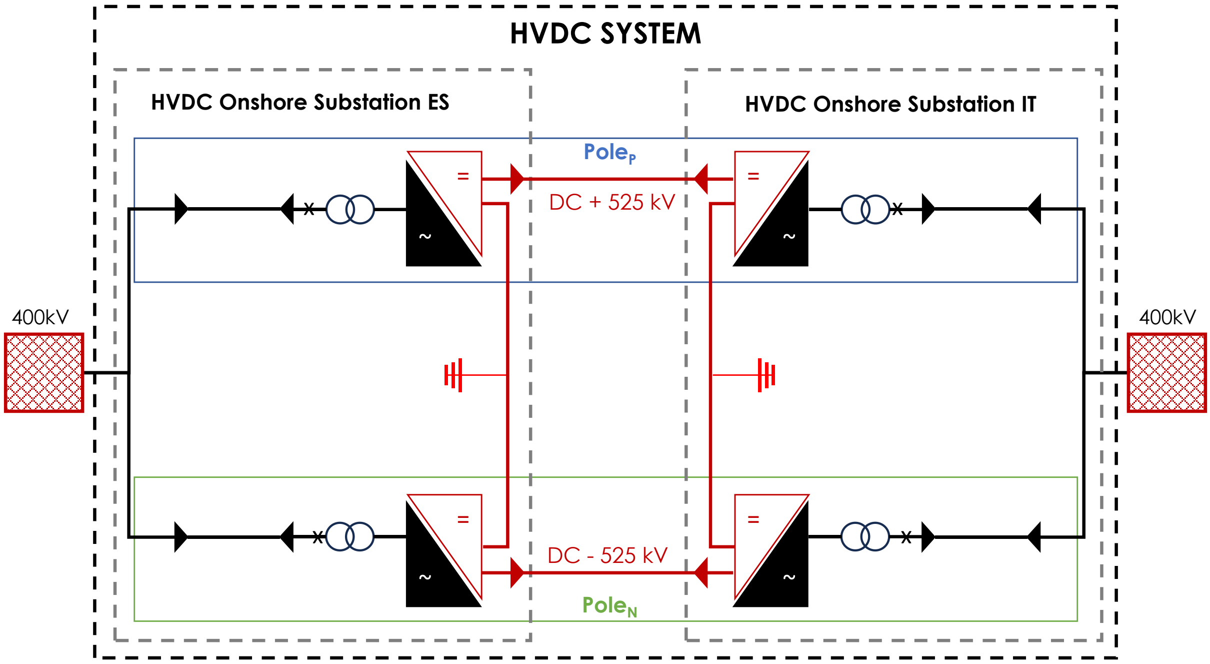

Figure 1: Single Line Diagram of 2 GW Interconnection System[1]

The system will employ a 525 kV transmission cable, designed with two poles or strands. The cable uses cross-linked polyethylene (XLPE) insulation, renowned for its excellent dielectric strength, thermal characteristics, and resistance to environmental stressors. XLPE is ideally suited to this specific project, which involves high voltage and long-distance transmission in deep waters up to approx. 2,500 m water depth. Currently, there are ongoing investigations on potential alternatives to XLPE conducted by some of the EU TSOs that created the 2 GW HVDC standard. Where these developments bring about new insights and findings into better, more economic, or more comprehensively available solutions, the project is inclined to adopt new standards. Furthermore, a fiber-optic cable will be integrated for real-time communication and system monitoring.

Voltage Source Converters (VSCs) will be deployed in both converter stations of this project. VSCs are known for their ability to independently control active and reactive power, offering a more advanced alternative to traditional Line Commutated Converters (LCCs). This technology aids in ensuring grid stability, providing reactive power support, and enabling black-start capability, which is crucial for quick system recovery following power outages.

The design of this system ensures identical transmission limits throughout the year, maintaining a steady 2 GW transmission possibility regardless of the season. This uniformity is achieved through

[1] Based on Alefragkis, Kabul (2022): 'Next Generation Offshore Grid Connection Systems: TenneT's 2GW Standard', available here: https://electra.cigre.org/321-april-2022/technology-e2e/next-generation-offshore-grid-connection-systems-tennets-2-gw-standard.html, as of 27 July 2023.

efficient thermal management systems that cool both the converter stations and transmission cables, as well as in-built redundancy in the system design.

Specific details like the Mvar control, losses, and unavailability due to planned maintenance will be determined based on the final design that will be put forward in the tender process. For the present document, relevant assumptions were made based on experience with existing HVDC system connecting EU Member States where needed (see below, i.e. chapter 33.4). The particular equipment proposed by a/several to be selected suppliers will also affect these technical aspects. Given the early stage of the project ("under consideration") these elements will be fine-tuned/determined in later, more advanced project stages to ensure maximum system efficiency and reliability.

In essence, the HVDC interconnector project is a technologically sound and robust solution for large-scale, efficient power transmission across the specified regions.

3 Determination of NTC increase

3.1 Hypothesis and methodology

This chapter provides information on the hypothesis and methodology underlying the estimated NTC increase attained by the Apollo-Link. First, the principal hypothesis of the Apollo-Link project, where it is assumed that the connecting Alternating Current (AC) grid would not impose limitations on the project's implementation and performance, is outlined. This assumption aligns with the principle in the Electricity Regulation[2], which stipulates that cross-zonal capacity should not be curtailed to resolve internal congestion. In essence, the hypothesis places faith in the robustness and capacity of the existing AC grids in the areas of implementation, thereby not constraining the project's potential.

In addition to this primary assumption, this chapter will discuss the quality and capacity of the selected connection points, which form the critical nodes in the project's implementation. A careful analysis of these preferred connection points has been carried out to ensure they meet the required standards. Moreover, the chapter also details a current best practice methodologies for Net Transfer Capacity (NTC) determination. These widely accepted calculation procedures are employed to derive the expected NTC enhancement from the project. Through these analyses, this chapter aims to provide the technical foundation of the NTC increase of the project, guided by established standards and a best practice in the field.

[2] Regulation (EU) 2019/943 on the internal market for electricity

3.2 Qualitative analysis of leading grid expansion scenario

The identification of the leading scenario for the planned HVDC interconnector project necessitates careful examination of three key factors:

i) the projected development of the generation portfolio,
ii) the future electricity demand, and
iii) the derived power exchange patterns between the two countries.

Each dimension plays a crucial role in shaping the specifics of the project and determining the most probable expansion scenario for the grid.

Ad i): Both Italy and Spain are poised to experience significant growth in renewable energy generation capacity in the coming years. This growth is a cornerstone of their national energy strategies[3] and reflects a broader European trend towards renewable energy resources. Given this expected increase in generation capacity, power production will become more decentralized and intermittent, requiring substantial enhancements to transmission infrastructures and systems.

Ad ii): On the demand side, the increasing electrification of various sectors, including transport, heating, and industry, is expected to drive a 40-50% surge in electricity consumption in these sectors in both Italy and Spain until 2030. This increase is not confined to these two countries but extends across the entire European Union as nations transition towards cleaner energy systems and digitalized

[3] The respective National Energy and Climate Plans of Italy and Spain are available here: https://commission.europa.eu/document/download/75b8162c-3d62-4627-8706-c62997b324da_en?filename=ITALY%20-%20DRAFT%20UPDATED%20NECP%202021%202030%20%281%29.pdf, and https://commission.europa.eu/document/download/9ea170ec-fdce-49cb-9424-4ee95db33a4a_en?filename=EN_SPAIN%20DRAFT%20UPDATED%20NECP.pdf, as of 27 July 2023.

economies. In order to ensure supply security, Transmission System Operators will need to step up their efforts drastically to upgrade their main AC transmission systems. [4]

Ad iii): These anticipated developments in generation and demand allow deriving two main assumptions for the project's leading grid expansion scenario. First, there will be significant power exchange patterns, mainly due to the high price differences between the two then directly connected bidding zones, with an expected price spread based on the calculated marginal costs[5] ranging from 14-15 EUR/MWh (2030) to 16-18 EUR/MWh (2040) considering all assumed scenarios from IoSN step in the TYNDP 2022. Second, there will be extensive grid reinforcement by the connecting TSOs, considering the national development plans, the needs identified by ENTSO-E for interconnection, and the grid requirements arising from decarbonization and electrification initiatives.

For that, the use of that transfer capacity increase will be to the benefit of electricity trading within the internal energy market as the project will be fully regulated and the project promoter not seeking any exemption. All available capacity will be allocated according to current legal and regulatory requirements set out especially, but not exclusively, by

- the Capacity Allocation and Congestion Management Guideline's market coupling processes,
- the Forwards Capacity Allocation Code's future FTR allocation mechanisms,
- the Electricity Balancing Guideline's European balancing platforms, as well as,
- bi- or multilateral balancing capacity sharing or exchange initiatives,

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[4] Cp. Goldman Sachs' European Utilities Research: 'Electrification and Europe's Path to Net Zero', available here: https://www.goldmansachs.com/intelligence/pages/from-briefings-03-february-2022.html, as of 27 July 2023; or

Electrification Alliance: , Electrification is the core of any sustainable decarbonisation strategy', available here: https://electrification-alliance.eu/articles/electrification-is-the-core-of-any-sustainable-decarbonisation-strategy/, as of 27 July 2023; or

McKinsey&Company: 'Transformation of Europe's power system until 2050' https://www.mckinsey.com/~/media/mckinsey/dotcom/client_service/epng/pdfs/transformation_of_europes_power_system.ashx, as of 27 July 2023; or

Clean Energy Wire: 'European energy companies to invest up to one trillion euros in renewables by 2030', available here: https://www.cleanenergywire.org/news/european-energy-companies-invest-one-trillion-euros-renewables-2030, as of 27 July 2023.

[5] 49 EUR/MWh (2030) and 55 EUR/MWh (2040), respectively, for Spain and 64 EUR/MWh (2030) and 73 EUR/MWh (2040), respectively, for Italy; source: ENTSO-E: 'System Needs Study - Opportunities for a more efficient European power system in 2030 and 2040' available here: https://eepublicdownloads.blob.core.windows.net/public-cdn-container/tyndp-documents/TYNDP2022/public/system-needs-report.pdf, as of 27 July 2023.

- or any of the operational measures to support the security of the integrated Continental European Synchronous area through processes like cross-border redispatch, future DC loop flows with the Italian HVDC structures, or countertrading.

The expected main trade direction will be from Spain to Italy transporting solar and wind power given the outlined average base prices of the bidding zones. Additionally, we expect specifically in the early hours of the day an overproduction of Italian PV which can be matched with early hour demand in Spain when PV is not yet producing full. This will also trigger flows from Italy to Spain on the new Interconnector, further increasing European socio-economic welfare.

Finally, based on the project promoter's preliminary calculations and analysis, it can be assumed that this project after being positively evaluated by the next Ten-Year Network Development Plan (TYNDP 2024) it will be granted the status of a Project of Common Interest (PCI). This designation would ensure adequate integration of the project and its connection environment into the National Grid Development Plans (NGDPs). In light of this, it's reasonable to anticipate that the connection TSOs would implement any necessary expansion of the national transmission grids if required. This assumption aligns with the current NGDPs of both Italy and Spain, which acknowledge the need for significant transmission grid development to meet the expansion targets for cross-border interconnection capacity and renewable generation capacity. [6]

Concluding, it is safe to assume that no internal critical network element – neither in Spain nor in Italy – will restrict the trading capacity of the Apollo-Link interconnector below its technical capacity of 2 GW.

3.3 Quality and capacity of preferred connection points

The selection of connection points is an integral aspect of planning an HVDC interconnector project. The eligibility and technical capacity of these points play a critical role in ensuring optimal usage of the Apollo project to maximize increase of European socio-economic welfare. For the Apollo-Link project, the preferred connection points have been judiciously chosen based on the already existing transmission grid connection capacity. These connection points are well equipped, with infrastructure featuring 400 kV transmission lines, enabling substantial power transmission and enhancing system reliability.

In the Apollo-Link project, robust backbone connection points have been chosen, corresponding to current power plant locations with substantial capacities (1,282 MW and 1,087 MW) and/or the proximity of large demand centres. Such a selection enables the DC interconnector to tap into well-developed, already existing transmission capacity and contribute additional transfer capabilities to the

[6] Available here: https://www.planificacionelectrica.es/sites/webplani/files/2023-02/REE_Plan_Desarrollo.pdf, and https://www.terna.it/en/electric-system/grid/national-electricity-transmission-grid-development-plan, as of 27 July 2023.

grid. As already described in the previous chapter, it is expected that the respective Transmission System Operators (TSOs), Terna for Italy, and REE for Spain, will determine the necessary enhancements in the upcoming NGDPs and facilitating a possible build-out of eventually critical network elements in due time in line with the requirements Apollo project and the broader national grid development strategies if further grid reinforcements are required beyond the existing capacity.

On the Spanish side, the main proposal for the grid connection point is the substation Ramis. Given the proximity to the industrial demand centres around Barcelona and north of it towards the Spanish-French border, we assume a highly beneficial offtake of the transmitted electricity. In the export case (flow from ES to IT), we assume high overproduction of local renewable capacity such as coastal onshore wind, PV and/or water from the Pyrenees. Alternatively, we are open for the alternative grid connection point at or close by the substation Vandellòs. There, the grid connection situation is already very favourable given the already decommissioned nuclear power plant Vandellòs I and is expected to improve even further due to the planned decommissioning of the nuclear power plant Vandellòs II early/mid 2030s. The transmission grid in the area is already build-out for the assumed synchronous infeed of 2 nuclear power plants, resulting in a densely meshed local grid with consultive connections to several substations. It is also well connected to local demand centre such as Tarragona, Barcelona, and others. These fortuitous circumstances offer significant advantages for the project, reducing eventual needs for grid reinforcement and facilitating smoother project implementation. The final determination of the Spanish grid connection point of the Apollo-Link project will be subject for decision in the next Spanish NGDP, following all required processes, i.e. extensive grid analysis in cooperation with REE and a broader stakeholder inclusion.

The Italian connection point also comes with its set of benefits. The plan to directly connect at the current connection point of the lately decommissioned lignite power plant in La Spezia secures already sufficient available grid capacity. Furthermore, the connection point Avenza (close to and well-connected with La Spezia) is foreseen as a vital part of one out of five new electrical backbones for Italy – defined as "HVDC Milan – Montalto" and as part of the larger the "Hypergrid project" of the Italian NGDP 2023.[7] Aside of the already favourable existing local grid connections, a further coupling of the planned enforcements with the Apollo project could further increase the synergies between both projects. The final decision on the Italian grid connection point of the Apollo project and eventual further interaction with other, already envisaged enforcements will be part of the next Italian NGDP, following all required processes, i.e. extensive grid analysis in cooperation with Terna and a broader stakeholder inclusion.

[7] The HYPERGRID project and development requirements, available here: https://download.terna.it/terna/2023_Hypergrid_project_and_development_requirements_8db79602cedc732.pdf

These project-specific strategies align well with the broader European energy policy, which acknowledges the need for 88 GW of new interconnector capacity until 2040[8]. This overarching goal, aimed at bolstering cross-border power exchange and integrating renewable resources, requires adequate grid reinforcement. The Apollo-Link project, with its prudent choice of connection points and commitment to the necessary capacity enhancements, contributes to this larger vision of a unified and robust European power grid.

Concluding, given the strategic selection of connection points and the inherent grid capacity, any potentially required reinforcements are expected to be manageable. Therefore, the ultimate goal to realize an additional Net Transfer Capacity (NTC) of 2,000 MW appears achievable given the current planning and assumptions.

3.4 Best practice NTC determination

The determination of the Net Transfer Capacity (NTC) of an HVDC project in specific can follow different approaches. The present paper selected the NTC method applied for most HVDC interconnections in the EU, which is hence considered a best practice capacity calculation approach for this project, namely the Common Coordinated Capacity Calculation Methodology for the Capacity Calculation Region Hansa. This approach posits that the NTC or Available Transfer Capacity (ATC)[9] of an HVDC link is equivalent to the Total Transfer Capacity (TTC). Essentially, this method implies that the maximum exchange of power between two bidding zones, ensuring the security of all other regions, equals the total capacity of the link taking into account losses and outages. Relevant for the NTC calculation of the project pursuant Hansa CCM NTC determination methodology[10] are the following provisions and formulas:

> **Common Coordinated Capacity Calculation Methodology for Capacity Calculation Region Hansa in accordance with Article 20(2) of the Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a Guideline on Capacity Allocation and Congestion Management**
>
> **Art. 2(1)a**
>
> The Net Transfer Capacity (NTC) is the maximum total exchange program between two adjacent bidding zones complying with security standards, and taking into account the technical uncertainties on future network conditions: NTC = TTC - TRM. In case the Transmission Reliability

[8] CP. ENTSO-E: 'System Needs Study - Opportunities for a more efficient European power system in 2030 and 2040', available here: https://eepublicdownloads.blob.core.windows.net/public-cdn-container/tyndp-documents/TYNDP2022/public/system-needs-report.pdf, as of 27 July 2023.

[9] ATC = NTC, where the Already Allocated Capacity is zero.

[10] Available here: https://eepublicdownloads.entsoe.eu/clean-documents/nc-tasks/Hansa%20NRAs'%20revised%20version%20of%2026%20April%202021%20of%20Hansa%20TSOs'%20amendment%20proposal%20for%20CCR%20Hansa%20cf.%20CACM%20Article%2020%20(3).pdf, as of 27 July 2023.

Margin (TRM) equals zero, the NTC equals the Total Transfer Capacity (TTC).

Art. 2(1)c

The Available Transfer Capacity (ATC) is a measure of the transfer capability remaining in the physical transmission network for further commercial activity after already committed uses: ATC = NTC – AAC. In case the Already Allocated Capacity (AAC) equals zero, the ATC equals the NTC.

Art. 4(1)

The following mathematical description applies for the calculation of ATC on the DC lines between bidding zones. The capacity shall be calculated for both directions, A→B and B→A.

The $\mathrm{ATC}_{\mathrm{i,DC,A\rightarrow B}}$ on a DC line i in the direction A→B is calculated as follows:

$$\mathrm{ATC}_{\mathrm{i,DC,A\rightarrow B}} = \mathrm{TTC}_{\mathrm{i,A\rightarrow B}} - \mathrm{AAC}_{\mathrm{i,A\rightarrow B}} + \mathrm{AAC}_{\mathrm{i,B\rightarrow A}}$$

When the DC line is not in operation (TTC = 0) due to a planned or unplanned outage:

$$\mathrm{ATC}_{\mathrm{i,DC,A\rightarrow B}} = 0$$

Where

A	:=	Bidding zone A.
B	:=	Bidding zone B.
$\mathrm{ATC}_{\mathrm{i,DC,A\rightarrow B}}$	:=	Available Transfer Capacity on a DC line i in direction A→B provided to the day-ahead market.
$\mathrm{TTC}_{\mathrm{i,A\rightarrow B}}$	:=	Total Transfer Capacity (TTC) of a DC line i in direction A→B. The TTC corresponds only to the full capacity of the DC line, in case of no failure on the CCR Hansa interconnector, including converter stations. The TTC for a DC line i is defined as follows: $\mathrm{TTC}_{\mathrm{i,A\rightarrow B}} = \alpha_{\mathrm{i}} \cdot \mathrm{P}_{\mathrm{i,max\,thermal}} * \left(1 - \beta_{\mathrm{i,Loss,A\rightarrow B}}\right)$
$\mathrm{AAC}_{\mathrm{i,A\rightarrow B}}$	:=	Already Allocated and nominated Capacity for a DC line i in direction A→B in accordance with Article 11.
$\mathrm{AAC}_{\mathrm{i,B\rightarrow A}}$	:=	Already Allocated and nominated Capacity for a DC line i in direction B→A in accordance with Article 11.

α_i := Availability factor of equipment defined through scheduled and unscheduled outages, α_i, being a real number in between and including 0 and 1.

$P_{i,max\ thermal}$:= Thermal capacity for a DC line i.

$\beta_{i.Loss,A\rightarrow B}$:= Loss factor in case of explicit grid loss handling on a DC line i in direction A→B, can be a different value depending on α_i. In case of implicit loss handling, the loss factor is set to zero but taken into account as an allocation constraint in accordance with Article 8.

Essential for the NTC determination is consequently the thermal capacity of a DC line. Pursuant to the technical description above, the application of the 2 GW standard, the thermal capacity of the planned project is 2,091 MW, assuming a loss factor of 3.3%[11] and 94 hours of annual maintenance (scheduled outages) and no unscheduled outages. As the Apollo project would create the first direct electrical connection between Italy and Spain, it would also introduce the new bidding zone border ES-ITN. This underpins the following conclusion given the lack of interactions with other, already existing interconnections, which might have shared certain integrated allocation constraints.

Following the Hansa best practice capacity calculation methodology, the average annual Delta NTC of the project in both flow directions is the following:

NTC (ITN→ES) = 2,000 MW

NTC (ES→ITN) = 2,000 MW

Further context to why such an approach is prudent can be gained from the Advanced Hybrid Coupling (AHC) method envisaged to be implemented as of 2024[12], as it provides another perspective on the relevant capacity calculation methods. In the context of a Direct Current (DC) interconnector, such as the Apollo-Link, the AHC method underscores that the DC interconnector regions provide only the NTC

[11] Calculated based on: ABB: 'HVDC Cable Transmission', available here: https://library.e.abb.com/public/d4863a9b0f77b74ec1257b0c00552758/HVDC%20Cable%20Transmission.pdf, as of 27 July 2023.

[12] 'First amendment of the Day-Ahead Capacity Calculation Methodology of the Core Capacity Calculation Region in accordance with article 20ff of the Commission Regulation (EU) 2015/1222 of 24th July 2015 establishing a guideline on capacity allocation and congestion management', available here: https://eepublicdownloads.entsoe.eu/clean-documents/nc-tasks/NRA_Approval_of_the_First_Amendment_Proposal.pdf

value as calculated above, with the surrounding Alternating Current (AC) regions providing the Critical Network Elements and contingencies (CNEC) based information. This distinction underpins the unique role and features of DC interconnectors in power transmission networks, which shall also be taken into consideration in the pan-European and national transmission operation and grid planning processes, implying a shift towards flow-based calculation in AC-grids.

In this context, the DC technology of the Apollo-Link project and hence its Delta NTC is not subjected to constraints stemming from AC network congestion or loop flows. As a result, the thermal limit-based approach for NTC determination of a DC interconnector is in line with the target model AHC approach, as eventual congestion constraints would lie within the AC network. This is reinforced through the paradigm of the Electricity Regulation (EU) 2019/943 that “cross-zonal capacity should not be reduced in order to resolve internal congestion”. In this scenario, the NTC of the DC interconnector is equivalent to its TTC, as the DC interconnector does not contribute to AC congestion.

In addition to that, this approach to determining the Delta-NTC of the Apollo-Link project aligns with a current best practice approach reflected in the last Ten-Year Network Development Plan (TYNDP 2022) applied by ENTSO-E. Most HVDC projects specified in the TYNDP 2022 define their NTC as equal to their installed thermal capacity[13], which substantiates the chosen method for determining the Delta-NTC of the Apollo-Link project. This consistent approach across multiple HVDC projects further validates the Apollo-Link project's capacity calculation strategy, demonstrating its conformity with established industry practices. In conclusion, based on an aforementioned best practice for NTC determination, it is assumed that the delta NTC in both flow directions of the Apollo-Link project is equal to its technical capacity of 2 GW.

4 Conclusion

Applying a best practice NTC determination methodology as described **in chapter 3.4**, the planned HVDC project's thermal capacity fundamentally dictates the NTC, which in turn determines the Delta-NTC in both directions. As such, the Delta-NTC for the Apollo-Link project, following a current best practice calculations and under assumptions of plausible and adequate grid expansion and intake structures, is projected to be **2,000 MW in both directions (direct and reverse) for the new bidding zone border ES-ITN**.

[13] Examples of HVDC projects where the TTC is used as NTC for the 2022 TYNDP: Harmony Link (Investment #1034), Greenconnector (Investment #1014), Hansa PowerBridge I (Investment #995), NorthConnect (Investment #1382), AQUIND Interconnector (Investment #1381), or HVDC Aragon region -Marsillon (Investment #1211)

This Delta-NTC of 2,000 MW signifies the introduction of a new bidding zone border ES-ITN with a considerable trading capacity in both directions (direct and reverse). In line with the **"eligibility criteria" outlined in** Regulation (EU) 2022/869 (TEN-E), the establishment of a new bidding zone border ES-ITN with a trading capacity of **2 GW is more than 500 MW**, therefore exceeding the stipulated minimum.

Additionally, the project's integration into the next Ten-Year Network Development Plan (TYNDP 2024) is an integral part of the Apollo-Link’s development and implementation approach. As the project advances and NGDP development steps follow, it is anticipated that the project and the Transmission System Operators (TSOs) will incorporate all eventually required auxiliary transmission enhancements to accommodate the full capacity, should these become necessary.

In essence, the Apollo-Link project, with its robust technical design and commitment to best practice, promises the introduction of a new bidding zone border ES-ITN with a significant NTC of 2,000 MW, **enhancing the capacity and efficiency of the cross-border power transmission of Italy and Spain**. By doing so, it stands to make a substantial contribution to the energy landscape of the region and contributes positively to the broader ambitions of energy integration across the European Union.

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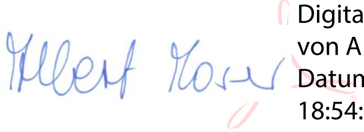

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(Univ.-Prof. Dr.-Ing. Albert Moser)