Project Sheet

St. Peter (AT) - Tauern (AT)

Project type	transmission
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Key Information

Internal Project
AC transmission line
New

PCI number 3.1.2 (4th list, 31 Oct. 2019)
Under Construction

Description

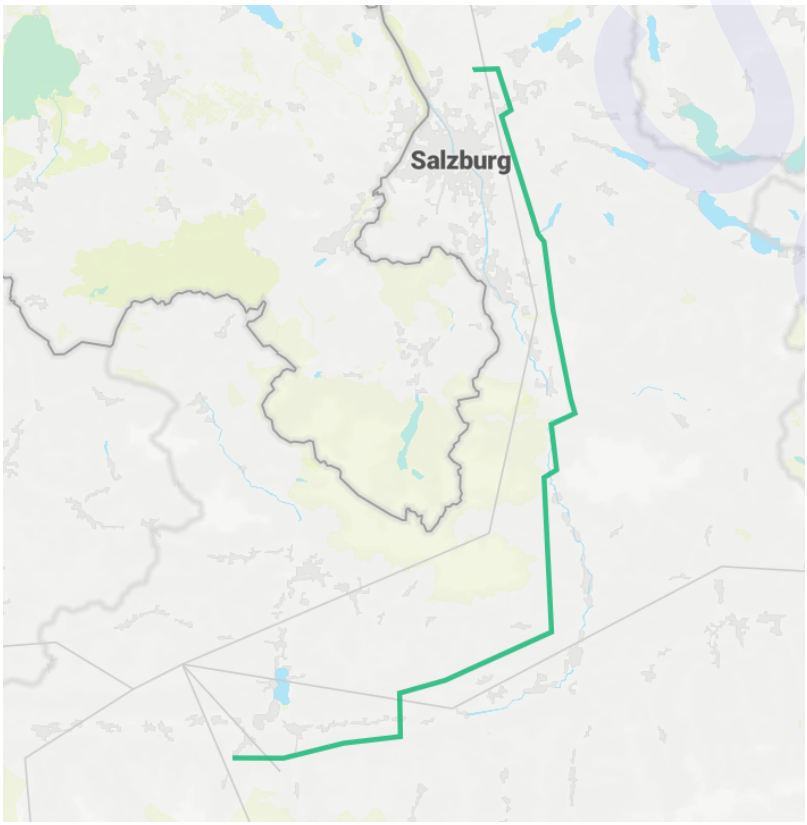
This project is part of the Austrian 380-kV security ring. It therefore provides based on the concept a redundant and robust connection and increases security of supply significantly. In addition higher transport capacities are able to connect RES production in the corners of the region with the Alpine storages and therefore integrate both efficiently and properly.

Project promoters

Austrian Power Grid

Countries

Austria



National development plan(s)

APG Netzentwicklungsplan 2019, AT, 2019, 11-10, 48,

https://www.apg.at/de/Stromnetz/Netzentwicklung

Additional information on the project

PCI 3.1.2:

3rd List:

https://ec.europa.eu/energy/sites/ener/files/documents/annex_to_pci_list_final_2017_en.pdf

4th List:

https://ec.europa.eu/energy/sites/ener/files/c_2019_7772_1_annex.pdf

National development plan:

https://www.apg.at/en/Stromnetz/Netzentwicklung

Project Homenpage:

https://www.apg.at/en/Projekte/380-kV-Salzburgleitungg

Project sheet backlog

6 Nov. 2020 - Publication as part of the draft TYNDP 2020 package for consultation

Project Description & Context

Project Investments

Main investment(s): new 380-kV-Line

Type of element	Total route length (km)	From substation 1	To substation 2	Present status	Commissioning year	Progress of the investment	Explanation in case of delay or reclustering
AC transmission line	128	St. Peter	Tauern	Under Construction	2025	Delayed	Duration of permitting process.

Is the project in the reference grid?

Yes

System Needs addressed by the project

Project promoter(s) selected up to 4 system needs that are addressed by their project in a predefined list. Available needs ranged from reduction of price differentials between countries, improvement of system flexibility and stability, enabling cost-efficient connection of high volumes of RES, improvement of voltage stability...
As part of the TYNDP 2020, ENTSO-E released a study investigating cross-border system needs in the 2030 and 2040 horizons.

Need		How the project addresses each need (explanation provided by the project promoter(s))
	Infrastructure designed to enable cost-efficient grid connection of high volumes of RES and/or reduce RES curtailment	Interconnection between huge amounts of RES and storage capacity in the Alps helps to reduce the amount of RES curtailment significantly
ITEG	Infrastructure to tackle a Need identified by one of the European ITEG indicators referring to the 15% interconnection target for 2030:1. Reduce the price differential between EU countries to below 2EUR/MWh.2. Contribute to pushing ratio between nominal transmission capacity and installed RES capacity past 30%.3. Contribute to pushing ratio between nominal transmission capacity and peak load past 30%.	facilitates interconnection capacity

Need		How the project addresses each need (explanation provided by the project promoter(s))
	Infrastructure to improve system flexibility and stability e.g. improve system or local ramp rate, improve transient stability or RoCoF to meet system Needs.	Interconnection between huge amounts of RES and storage capacity in the Alps provides flexibility and stability.

Interconnection targets

In 2017, the Interconnection Target Expert Group proposed alternative indicators to the 15% interconnection criteria for every country and electrified island with a new methodology developed collaboratively between the European Commission, ENTSO-E, ENTSOG, industry, universities and other experts. The methodology is based on three indicators:
1. Price differential between EU countries, with an objective to reduce it below 2 EUR/MWh
2. Ratio between nominal transmission capacity and installed RES capacity, with a target of past 30%
3. Ratio between nominal transmission capacity and peak load, with a target of past 30%

The following maps show the ITEG methodology applied to the TYNDP 2030 scenarios, with the 2020 grid.

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Project Assessment

Transfer capacity increase (National Trends 2025)

	Border	A B	B A
Transfer capacity increase (in MW)	Internal (Austria)	2000	2000

CBA results

ENTSO-E has assessed the benefits delivered by each project in 2025 (scenario National Trends 2025) and in 2030 (three scenarios: National Trends, Distributed Energy and Global Ambition). Indicators B1 to B6 were computed by ENTSO-E, while promoters had the possibility to compute and submit so-called project-level benefits (B7 to B10). The benefits must be understood as benefits for Europe as a whole, not for the promoters of the project.
Results are presented per scenario.

Central scenario: National Trends

National Trends is the central policy scenario of the TYNDP2020, designed to reflect EU member state's National Energy and Climate Plans (NECP), in line with the requirement to meet current European 2030 energy strategy targets.

			Comparison of the COP21 scenarios with NT2030 average result		
	NT2025	**NT2030**	**DE2030 is < or > than NT2030**	**GA2030 is < or > than NT2030**	

Increase in socio-economic welfare

B1 Annual Socio-Economic Welfare (SEW) increase (M € / year)	max average min	171 162 157	283 275 268	<	<	ENTSO-E assessment
B1_CO2 Annual Socio-Economic Welfare increase resulting from CO2 emissions reduction	max average min	28 18 9	72 66 57	<	>	ENTSO-E assessment
B1_RES Annual Socio-Economic	max average	43 41	92 89	<	<	ENTSO-E assessment

Welfare increase resulting from RES integration	min	37	86			

Reduction of CO2 and GHG emissions

B4 Non-CO2 emissions (kg/year)

B4a Nitrogen oxides	average	59927	2938	n/a	n/a	ENTSO-E assessment
B4b Ammonia	average	7058	580	n/a	n/a	ENTSO-E assessment
B4c Sulfur dioxide	average	1680	-840	n/a	n/a	ENTSO-E assessment
B4d Particular matter 5	average	11591	9971	n/a	n/a	ENTSO-E assessment
B4e Particulate matter 10	average	3040	214	n/a	n/a	ENTSO-E assessment
B4f Non-methane volatile organic compounds	average	8958	9957	n/a	n/a	ENTSO-E assessment

B2a Annual CO2 variation from market simulation (ktonnes / year)		max average min	-387 -764 -1186	-2038 -2368 -2590	>	<	ENTSO-E assessment
B2a_€ Annual Societal cost variation resulting from CO2 variation from market simulation monetised (M € / year)	CO2 price	60€/ ton 100€/ ton 189€/ ton	28 59 127	76 170 381	< < <	< < <	ENTSO-E assessment
B2b Annual CO2 variation due to network losses (ktonnes / year)		average	-205	254	n/a	n/a	ENTSO-E assessment
B2b_€ Annual Societal cost variation resulting from	CO2 price	60€/ ton 100€/	4 10 21	-7 -15 -35	n/a	n/a	ENTSO-E assessment

CO2 variation from network simulation monetised (M € / year)	ton 189€/ ton					

Integration of renewable energy sources

B3 Annual avoided curtailment (RES integration) (GWh / year)	max average min	928 834 763	2264 2212 2127	<	<	ENTSO-E assessment
B3a Connected RES (MW)	-			n/a	n/a	ENTSO-E assessment

Impact on grid losses

B5 Variation of network losses (GWh / year)	average	-325	1114	n/a	n/a	ENTSO-E assessment
B5_€ Variation of network losses monetised (M€ / year)	average	1	20	n/a	n/a	ENTSO-E assessment

Security of supply

B6 Annual reduction in Energy Not Served (MWh / year)	max average min		2379	n/a	n/a	ENTSO-E assessment
B6_€ Annual Socio-Economic Welfare increase resulting from reduction in Energy Not Served monetised (M€ / year)	average	n/a	23.79	>	n/a	ENTSO-E assessment

B10 Reduction of Necessary Reserve for Redispatch Power Plants	**NT2025**	**NT2030**	
In Meuro/year	15.4	-4.1	This indicator was submitted by the

B10 Reduction of Necessary Reserve for Redispatch Power Plants	NT2025	NT2030	
			promoter(s). Based on the information provided, ENTSO-E has not been able to confirm the consistency of the proposed indicator with the CBA Guideline 3.0. About the computation of this indicator by the project promoter(s)
In MW			

This indicator was computed based on NT2025 and NT2030, in a study performed by TYNDP 2020 in 2020. The promoter(s) stated that the submitted value was computed in accordance with the CBA Guideline and explained it as follows:

• *Market simulation tools: Only one markets simulation per project and scenario (PYMAS for P312)*• *Scenarios: NT2025 and NT2030; Full compliance with the TYNDP 2020 Scenarios* • *Climate year: 2007*• *Number of points in time: full year (8736 hours)*• *Model perimeter: AT only, cross border flows based on full CE model*• *Load flow calculation type: AC ; No Time Coupling constrains* • *No Multiple TOOT/PINT* • *Consider Branches: only 380-kV and 220-kV Elements*• *No deviation from the guidelines due to special national regulatory conditions*

The promoter(s) certified that the values submitted and assessed in the study relate to countries located within the ENTSO-E perimeter only.

Scenarios: Distributed Energy & Global Ambition

DE and GA are two scenarios created in line with the COP21 targets to understand the impact on infrastructure needs agains different pathways reducing EU-28 emissions to net-zero by 2050. For these two scenarios, projects were assessed with a subset of CBA parameters.

	DE2030	GA2030	

Increase in socio-economic welfare

B1 Annual Socio-Economic Welfare (SEW) increase (M€ / year)	average	133	140	ENTSO-E assessment
B1_CO2 Annual Socio-Economic Welfare increase resulting from CO2 emissions reduction	average	59	85	ENTSO-E assessment
B1_RES Annual Socio-	average	56	69	ENTSO-E assessment

Economic Welfare increase resulting from RES integration			

Reduction of CO2 and GHG emissions

B2a Annual CO2 variation from market simulation (ktonnes / year)	average	-1111	-2423	ENTSO-E assessment
B2a_€ Annual Societal cost variation resulting from CO2 variation from market simulation monetised (M€ / year)	CO2 price 60€/ ton 100€/ ton 189€/ ton	8 52 151	61 157 373	ENTSO-E assessment

Integration of renewable energy sources

B3 Annual avoided curtailment (RES integration) (GWh / year)	average	970	1577	ENTSO-E assessment
B3a Connected RES (MW)	-			ENTSO-E assessment

Non scenario-dependent indicator(s)

	2020			
B9 Avoidance of the Renewal/ Replacement Costs of Infrastructure (Meuro)	108			This indicator was submitted by the promoter(s). ENTSO-E confirms the consistency of the proposed indicator with the CBA Guideline 3.0. About the computation of this indicator by the project promoter(s)

This indicator was computed in a study performed by APG - Austrian Power Grid in 2020. The promoter(s) stated that the submitted value was computed in accordance with the CBA Guideline and explained it as follows:

I hereby state that the study performed to provide the project level input for TYNDP 2020 is compliant with the draft 3rd CBA Guideline.

The promoter(s) certified that the values submitted and assessed in the study relate to countries located within the ENTSO-E perimeter only.

Sensitivity Study: Current Trends

'Current Trends' describes a future where the energy transition is slower than planned.

		CT2030	

Increase in socio-economic welfare

B1 Annual Socio-Economic Welfare (SEW) increase (M€ / year)	average	63	ENTSO-E assessment
B1_CO2 Annual Socio-Economic Welfare increase resulting from CO2 emissions reduction	average	17	ENTSO-E assessment
B1_RES Annual Socio-Economic Welfare increase resulting from RES integration	average	36	ENTSO-E assessment

Reduction of CO2 and GHG emissions

B2a Annual CO2 variation from market simulation (ktonnes / year)	average	-594	ENTSO-E assessment
B2a_€ Annual Societal cost variation resulting from CO2 variation from market simulation monetised (M€ / year)	CO2 price 60€/ ton 100€/ ton 189€/ ton	19 43 96	ENTSO-E assessment

Integration of renewable energy sources

B3 Annual avoided curtailment (RES integration) (GWh /	average	655	ENTSO-E assessment

year)		
B3a Connected RES (MW) -		ENTSO-E assessment

Residual impact

Information on the residual impact of the project was provided by the project promoter(s).

Residual environmental impact

Investment	Investment status	Distance (km)	Type of sensitivity

Residual social impact

Investment	Investment status	Distance (km)	Type of sensitivity
St. Peter (AT) - Tauern (AT)	Under Construction	43	

Project Costs

The project costs were provided by the project promoter(s).

	CAPEX (Meuro)	Uncertainty range (%)	OPEX
1472. St. Peter (AT) - Tauern (AT)	890	10%	4
Total	890		4

Explanation provided by the project promoter on the CAPEX uncertainty range:

1472