Offshore Grid Development Plan 2030, Version 2017, 2nd draft

NETZ
ENTWICKLUNGS
PLAN **STROM**

Offshore Grid Development Plan 2030, 2nd draft

Key changes to the O-GDP 2025

NETZ ENTWICKLUNGS PLAN STROM

- In the Offshore Grid Development Plan (O-GDP) 2030, Version 2017, the target networks for the Scenarios A 2030, B 2030 and C 2030 are the same due to the initial values in the scenario framework and the unit size of the grid connection systems.
- For the first time, a DC network connection system with a transmission capacity of 900 MW is utilised in the Baltic Sea.
- The O-GDP also makes allowances for the new Offshore Wind Act (WindSeeG), which came into effect on 01.01.2017.
- In accordance with the German Energy Management Act, there will not be another O-GDP after the second draft of the O-GDP 2030.
- The transition from the O-GDP 2030, Version 2017 to the “Flächenentwicklungs-plan” (2019; Offshore Wind Area Development Plan) is described in the O-GDP.

Offshore Grid Development Plan 2030, 2nd draft

Key changes to first draft

NETZ ENTWICKLUNGS PLAN STROM

- The contents of the consultation statements are described in chapter 5 and the individual chapters (17 statements).
- Production-potentials in Clusters 1 and 2 in the Baltic Sea were marginally adjusted – with no effect on the timeline
- Adjustment of cost for attainment and production for individual components
- Alternative to the AC-grid-connection system OST-3-3 as HVDC-connection was added.
- On the basis of the auction results (published April 13, 2017), the dates for the connection system NOR-3-3 were adjusted.
- References to the GDP concerning the discussion of alternatives to the offshore grid connection point Cloppenburg added.

Offshore Grid Development Plan 2030, 2nd draft

Consultation

NETZ ENTWICKLUNGS PLAN STROM

- The first drafts of the GDP and O-GDP 2030 were published on Jan 31, 2017 and were available for consultation from Jan 31, 2017 to Feb 28, 2017.
- In total **17 consultation statements** concerning the O-GDP were received.
- All statements were submitted by institutions and reached the TSOs via e-mail.

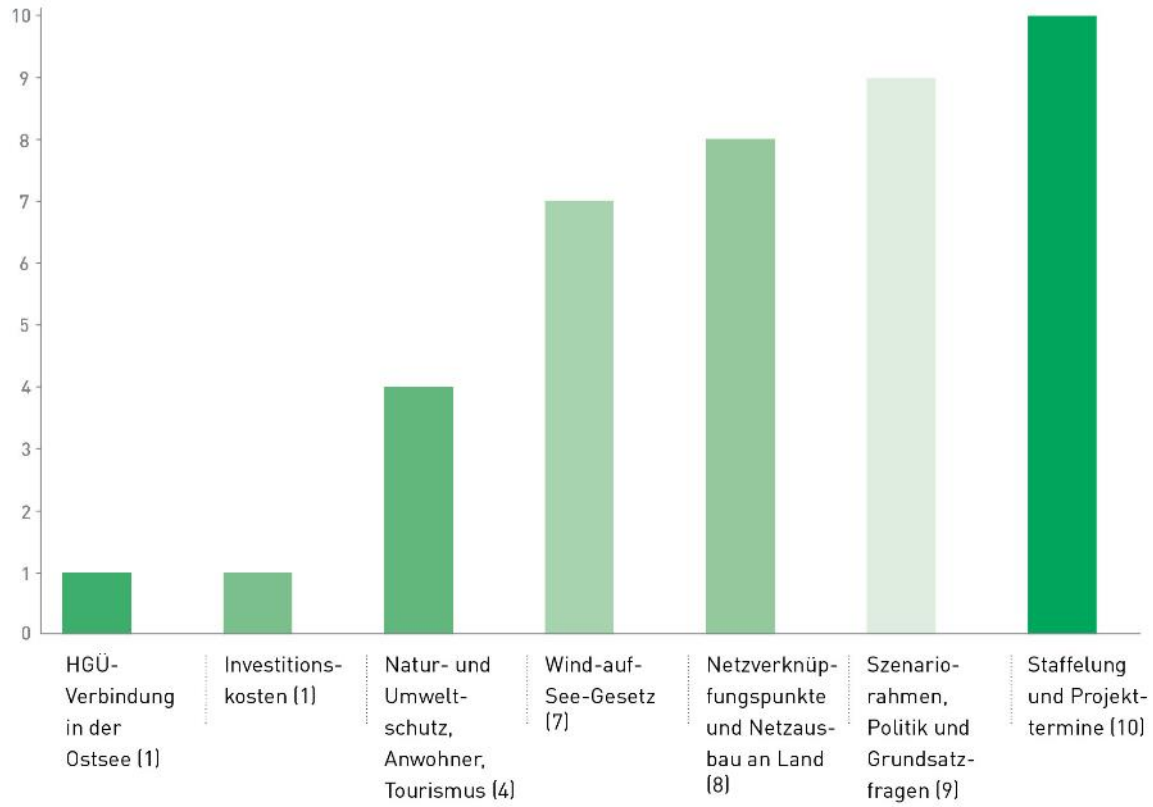
- Key topics of the consultation statements:
  - Timeline for the projects
  - Scenario framework
  - Transition to the “Flächenentwicklungsplan” (Offshore Wind Area Development Plan)
  - System change due to the Offshore Wind Act (WindSeeG)
  - Choice of appropriate grid connection points and grid expansion onshore
  - Aspects of environmental protection

Offshore Grid Development Plan 2030, 2nd draft

Consultation

NETZ ENTWICKLUNGS PLAN STROM

Abbildung 18: Themenverteilung



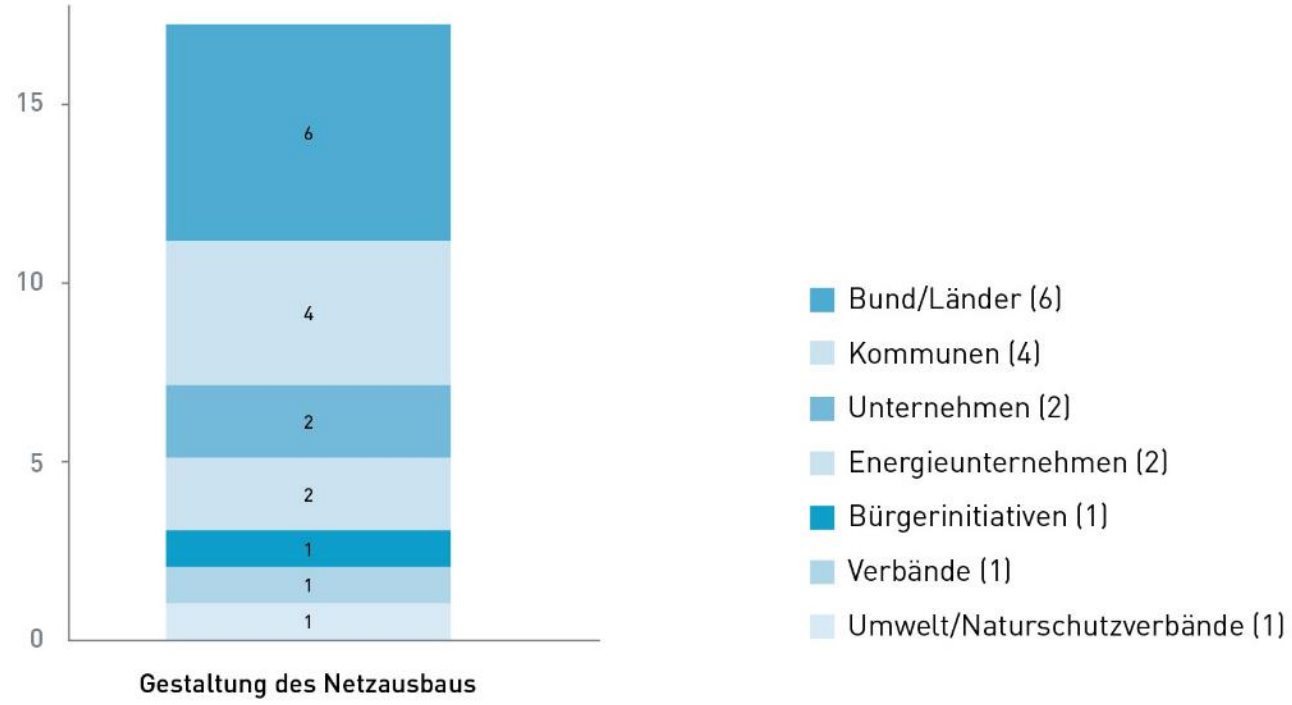
Quelle: Übertragungsnetzbetreiber

Offshore Grid Development Plan 2030, 2nd draft

Consultation

NETZ ENTWICKLUNGS PLAN STROM

Abbildung 17: Aufteilung der Stellungnahmen nach Absender



Quelle: Übertragungsnetzbetreiber

Offshore Grid Development Plan 2030, 2nd draft

Approved scenario framework from the German Federal Network Agency

NETZ ENTWICKLUNGS PLAN STROM

O-GDP 2025

Region	Scenario A 2025	Scenario B 1 and B 2 2025	Scenario B 1 and B 2 2035	Scenario C 2025
North Sea	7.7 GW	9.2 GW	16.6 GW	9.2 GW
Baltic Sea	1.2 GW	1.3 GW	1.9 GW	1.3 GW
Total	**8.9 GW**	**10.5 GW**	**18.5 GW**	**10.5 GW**

O-GDP 2030

Region	Scenario A 2030	Scenario B 2030	Scenario B 2035	Scenario C 2030
North Sea	11.2 GW	11.7 GW	14.4 GW	11.7 GW
Baltic Sea	3.1 GW	3.3 GW	4.6 GW	3.3 GW
Total	**14.3 GW**	**15.0 GW**	**19.0 GW**	**15.0 GW**

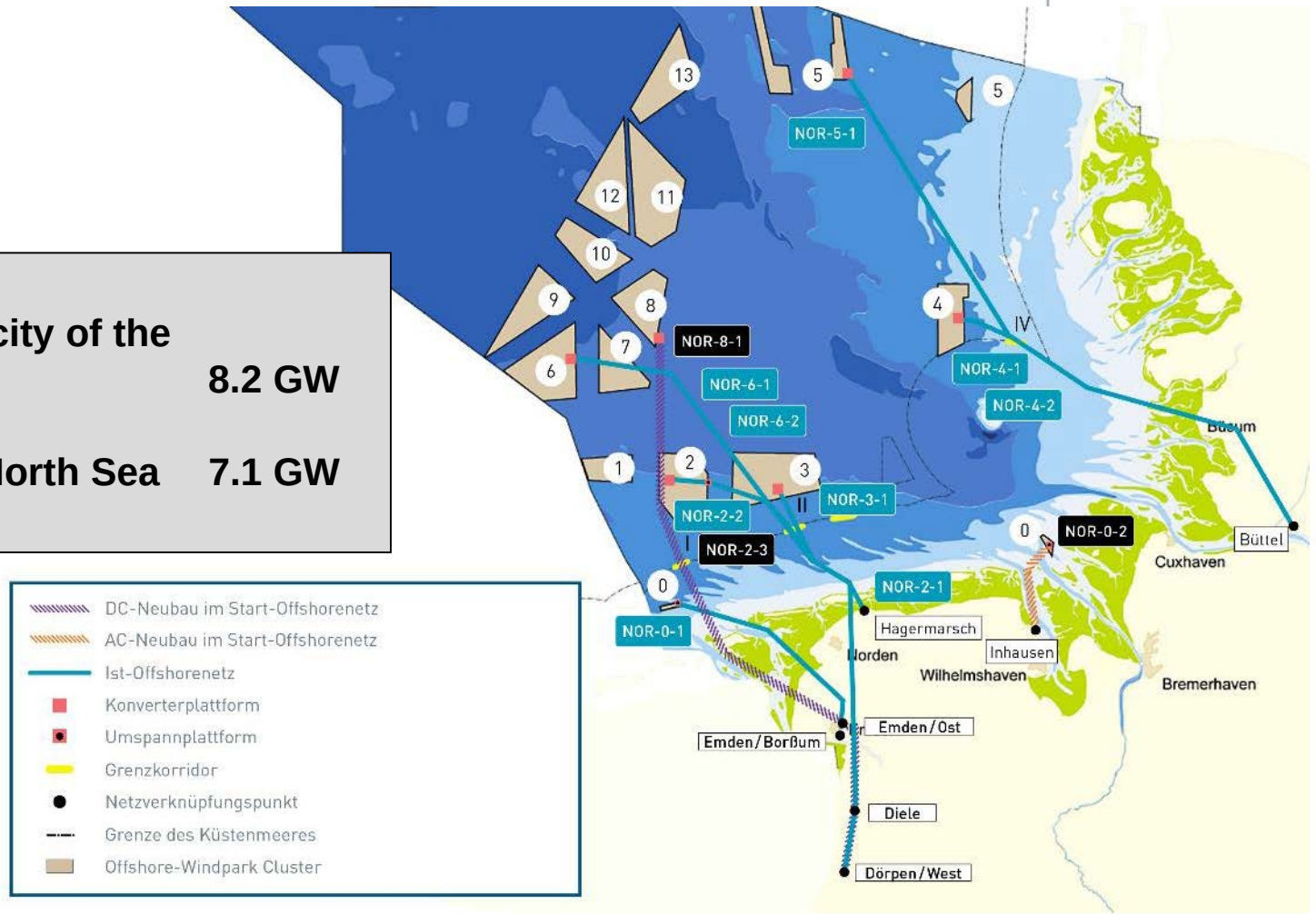
Offshore Grid Development Plan 2030, 2nd draft

The start-offshore grid in the North Sea by 2020

NETZ ENTWICKLUNGS PLAN STROM

Transmission capacity of the start-offshore grid **8.2 GW**

- **of which in the North Sea** **7.1 GW**



Offshore Grid Development Plan 2030, 2nd draft

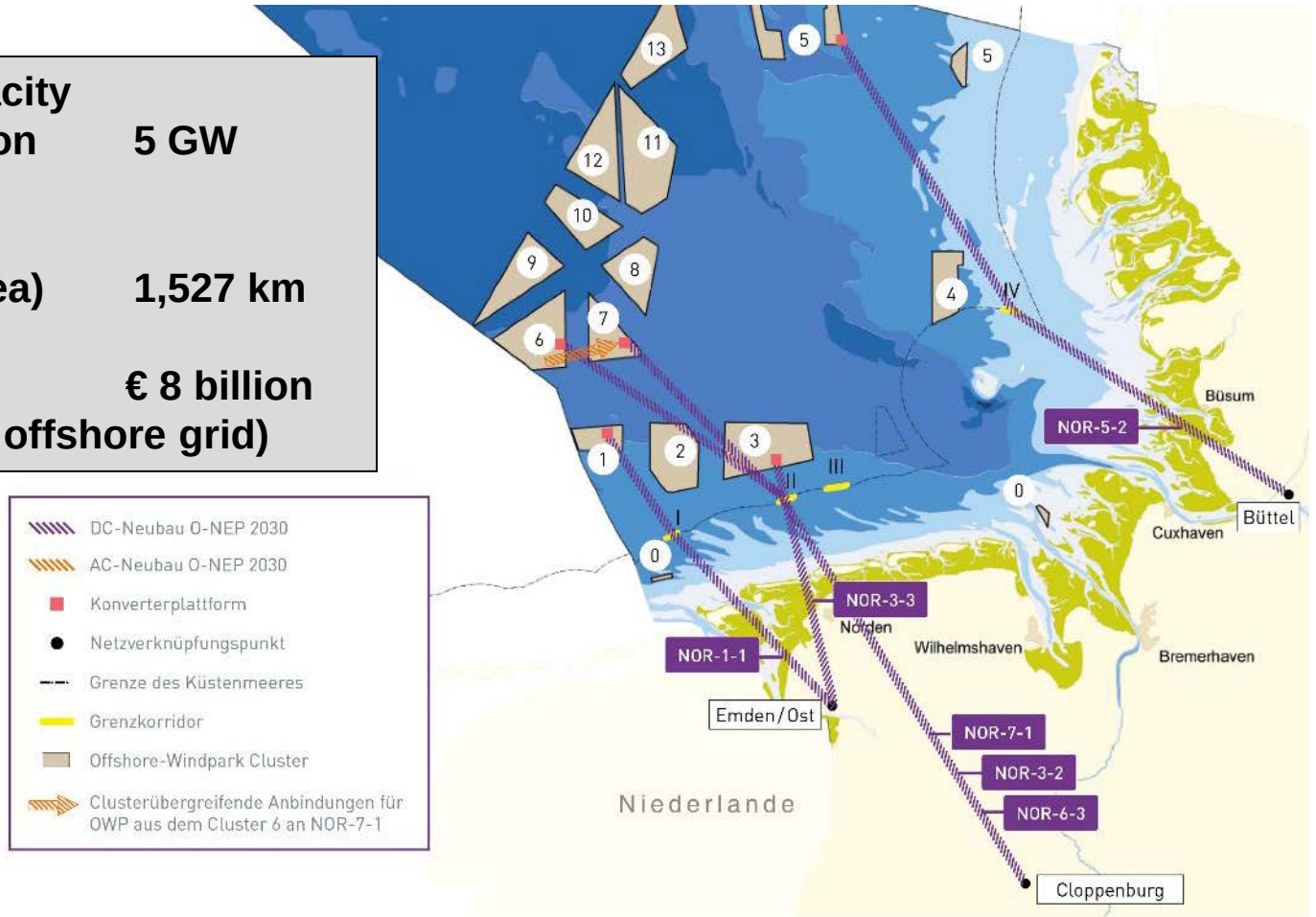
Offshore grid extension in Scenarios A 2030, B 2030 and C 2030 in the North Sea

NETZ ENTWICKLUNGS PLAN STROM

Total transmission capacity of offshore grid extension **5 GW**

Total length of offshore grid extension (North Sea) **1,527 km**

Estimated investment (extension of North Sea offshore grid) **€ 8 billion**



Offshore Grid Development Plan 2030, 2nd draft

Offshore grid extension in Scenarios A 2030, B 2030 and C 2030 in the North Sea

NETZ ENTWICKLUNGS PLAN STROM

Project	Name of the measure	Grid connection point	Start of implementation	Planned completion
NOR-3-3	HVDC connection line NOR-3-3 (DolWin6)	Emden/Ost	2017	2023
NOR-1-1	HVDC connection line NOR-1-1 (DolWin5)	Emden/Ost	2019	2024
NOR-7-1	HVDC connection line NOR-7-1 (BorWin5)	Cloppenburg	2020	2025
NOR-5-2	HVDC connection line NOR-5-2 (SylWin2)	Büttel	2020	2025
NOR-3-2	HVDC connection line NOR-3-2 (DolWin4)	Cloppenburg	2023	2028
NOR-6-3	HVDC connection line NOR-6-3 (BorWin4)	Cloppenburg	2025	2030

Offshore Grid Development Plan 2030, 2nd draft

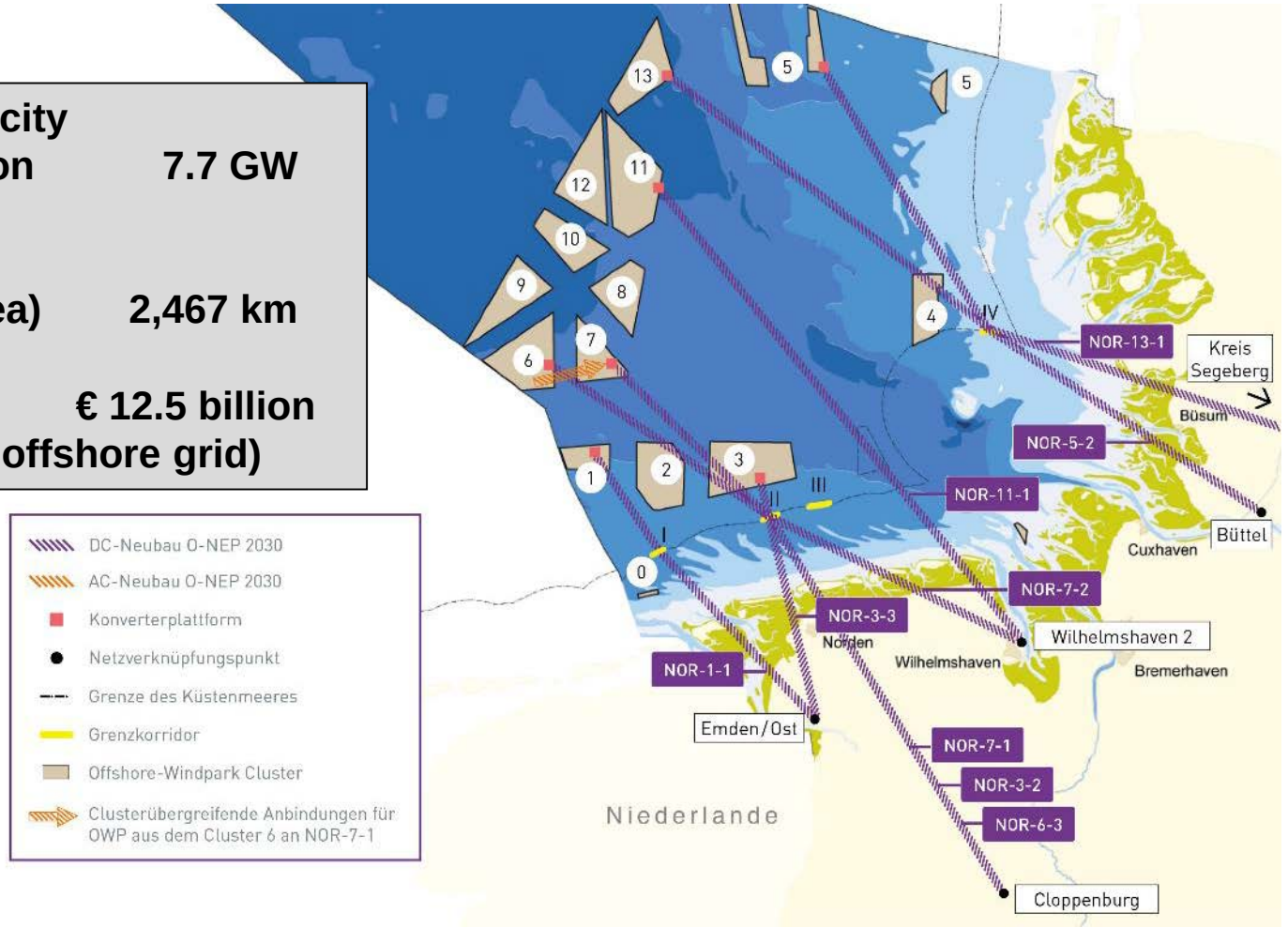
Offshore grid extension in Scenario B 2035 in the North Sea

NETZ ENTWICKLUNGS PLAN STROM

Total transmission capacity of offshore grid extension **7.7 GW**

Total length of offshore grid extension (North Sea) **2,467 km**

Estimated investment (extension of North Sea offshore grid) **€ 12.5 billion**



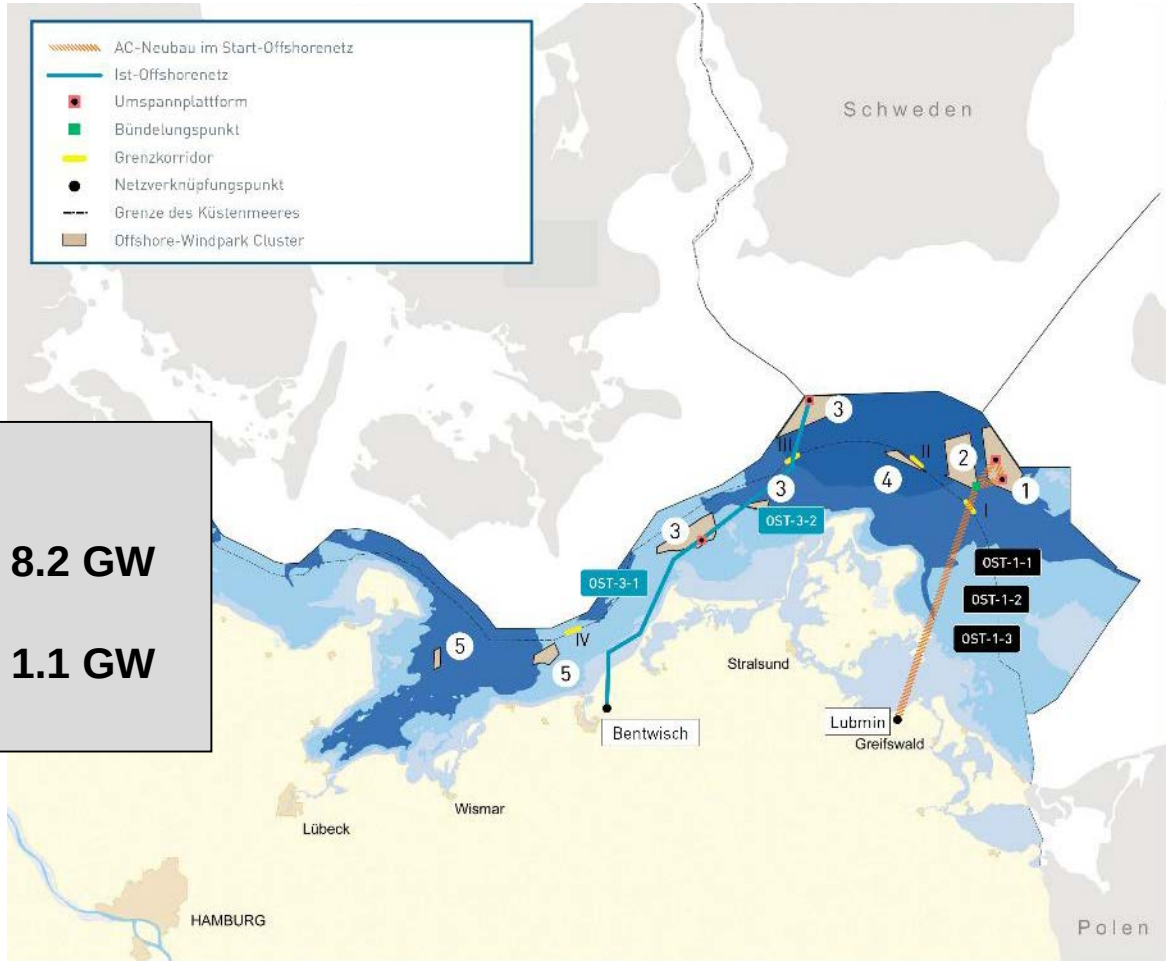
Offshore Grid Development Plan 2030, 2nd draft

The start-offshore grid in the Baltic Sea by 2020

NETZ ENTWICKLUNGS PLAN STROM

Transmission capacity of the Start-offshore grid **8.2 GW**

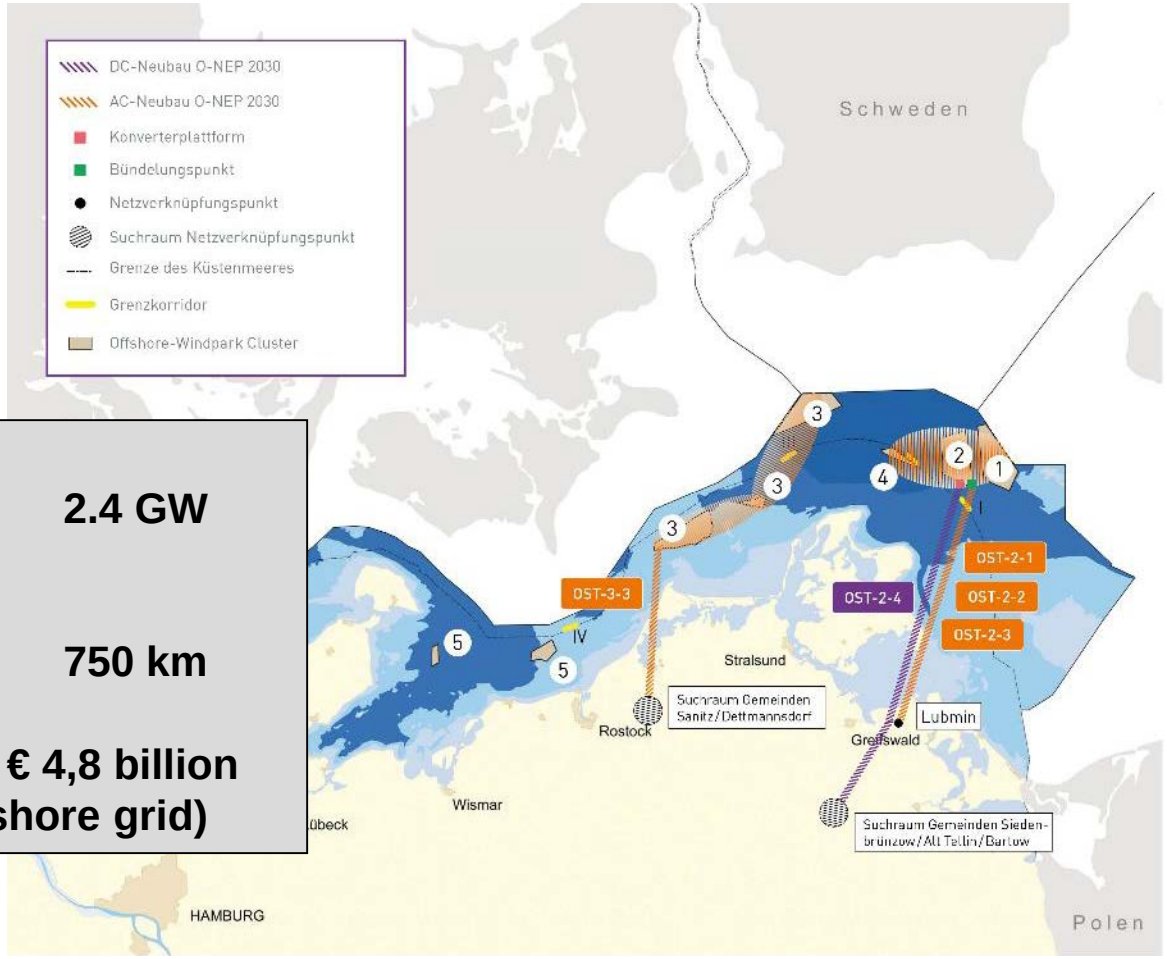
- **of which in the Baltic Sea** **1.1 GW**



Offshore Grid Development Plan 2030, 2nd draft

Offshore grid extension in Scenarios A 2030, B 2030 and C 2030 in the Baltic Sea

NETZ ENTWICKLUNGS PLAN STROM



Total transmission capacity of offshore grid extension **2.4 GW**

Total length of offshore grid extension (Baltic Sea) **750 km**

Estimated investment (extension of Baltic Sea offshore grid) **€ 4,8 billion**

Offshore Grid Development Plan 2030, 2nd draft

Offshore grid extension in Scenarios A 2030, B 2030 and C 2030 in the Baltic Sea

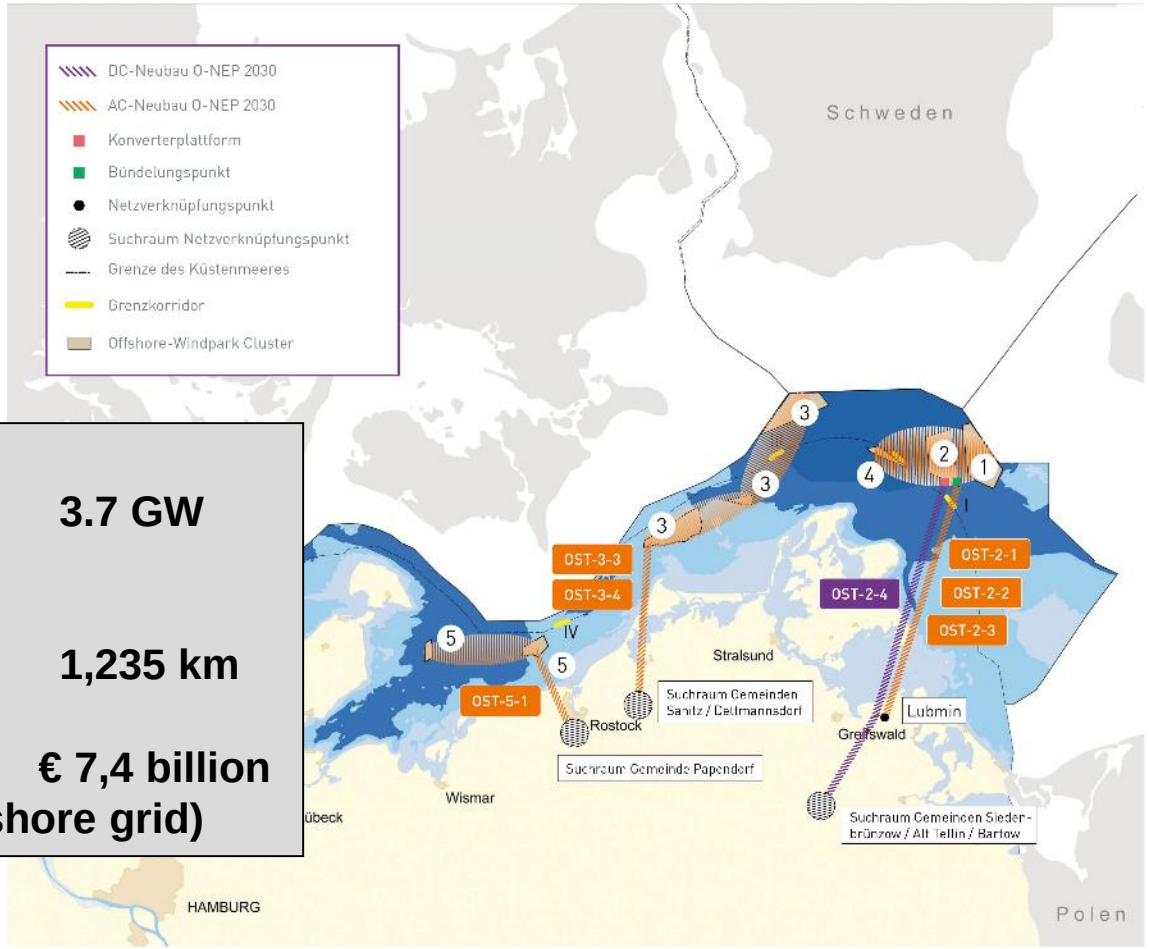
NETZ ENTWICKLUNGS PLAN STROM

Project	Name of the measure	Grid connection point	Start of implementation	Planned completion
OST-2-1	AC connection line OST-2-1	Lubmin	2018	2021
OST-2-2	AC connection line OST-2-2	Lubmin	2018	2021
OST-2-3	AC connection line OST-2-3	Lubmin	2018	2022
OST-3-3	AC connection line OST-3-3	Search area in Sanitz / Dettmannsdorf municipalities	2022	2027
OST-2-4	HVDC connection line OST-2-4	Search area in Siedenbrünzow / Alt-Tellin / Bartow municipalities	2024	2029

Offshore Grid Development Plan 2030, 2nd draft

Offshore grid extension in Scenario B 2035 in the Baltic Sea

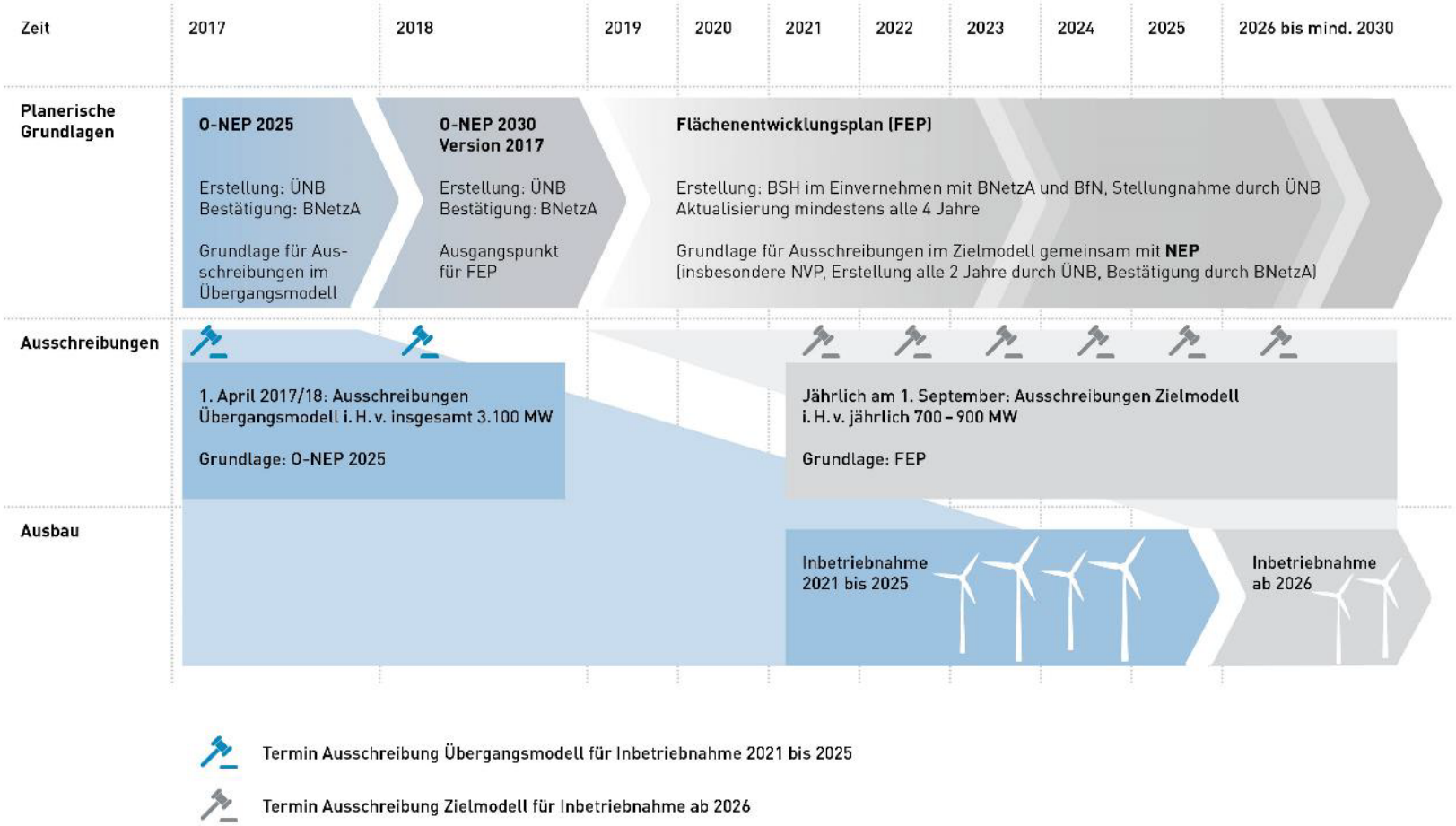
NETZ ENTWICKLUNGS PLAN STROM



Total transmission capacity of offshore grid extension	**3.7 GW**
Total length of offshore grid extension (Baltic Sea)	**1,235 km**
Estimated investment (extension of Baltic Sea offshore grid)	**€ 7,4 billion**

Offshore Grid Development Plan 2030, 2nd draft

Transition from Offshore Grid Development Plan to the “Flächenentwicklungsplan”



Other tables and diagrams from the Grid Development Plan and the Offshore Grid Development Plan can be found here:

Onshore Grid Development Plan (GDP)

Offshore Grid Development Plan (O-GDP)