



Ministry of Economic Affairs  
and Climate Policy



## Dutch offshore wind energy developments:

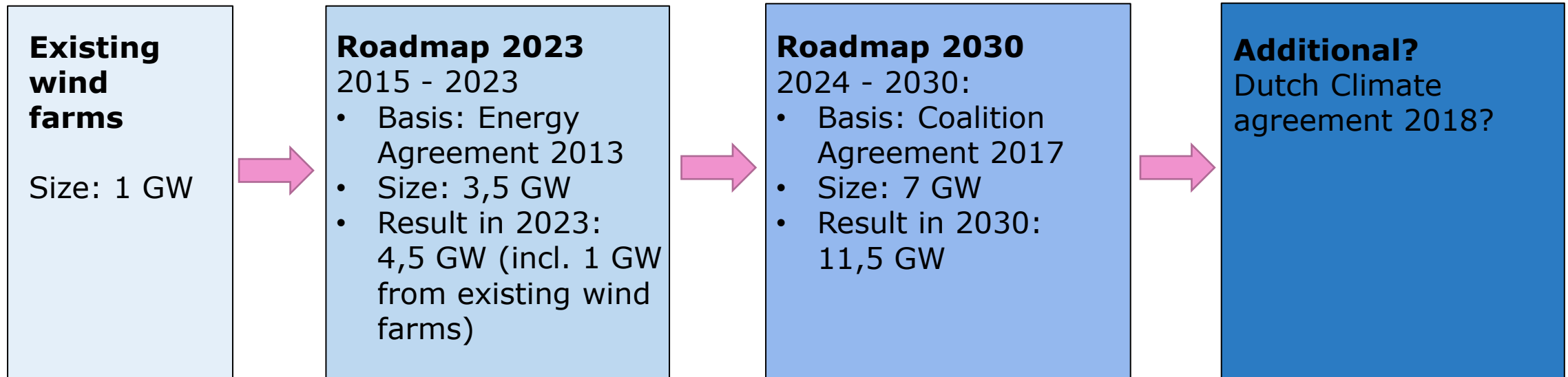
- roadmap 2023
- roadmap 2030
- offshore wind energy act

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# Offshore wind energy development in NL



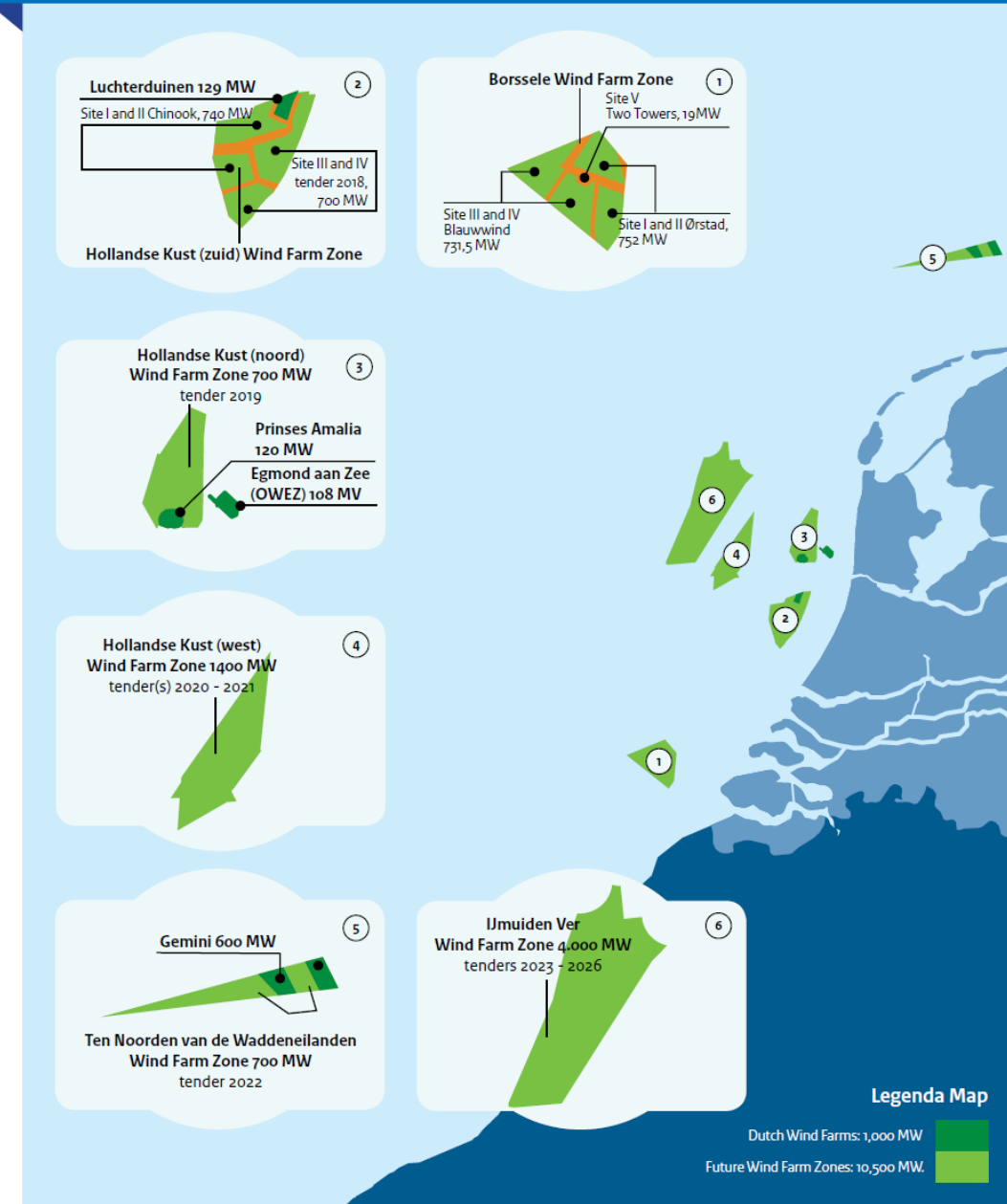


# Roadmap 2023

wind farm site	GW	tender	operator	operational
Borssele I and II	0.7	2016	Ørsted	2020
Borssele III and IV	0.7	2016	Blauwwind	2020
Borssele V	0.02	2018	Two Towers	2020
HK zuid I and II	0.7	2017	Chinook	2021
HK zuid III and IV	0.7	2018		2022
HK noord V	0.7	2019		2023

23 October 2018 RVO Offshore wind workshop

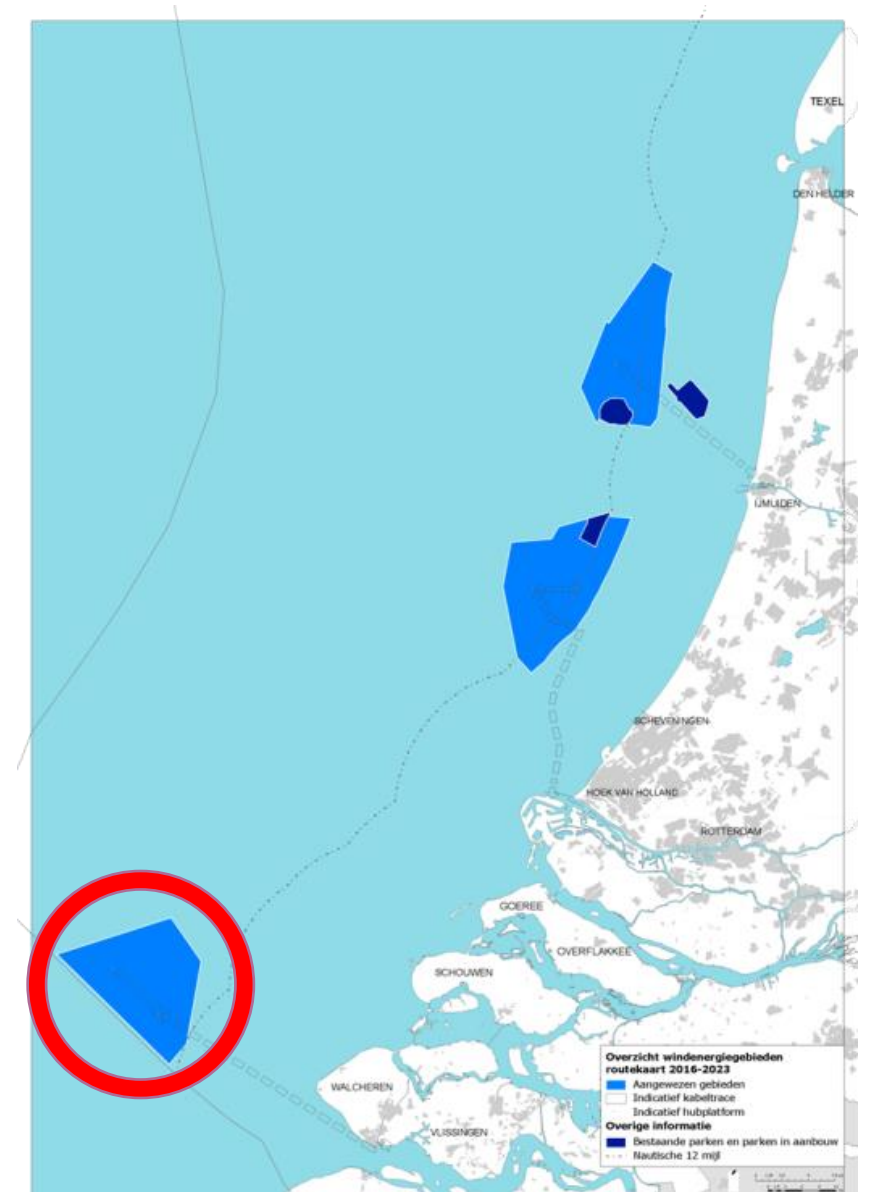
## Dutch offshore windenergy





# Borssele offshore grid connection

- › July 2018: Jacket platform alpha installed by TenneT
- › Current low water conditions challenge for cable transport
- › Discussions on crossing and proximity of telecom cables

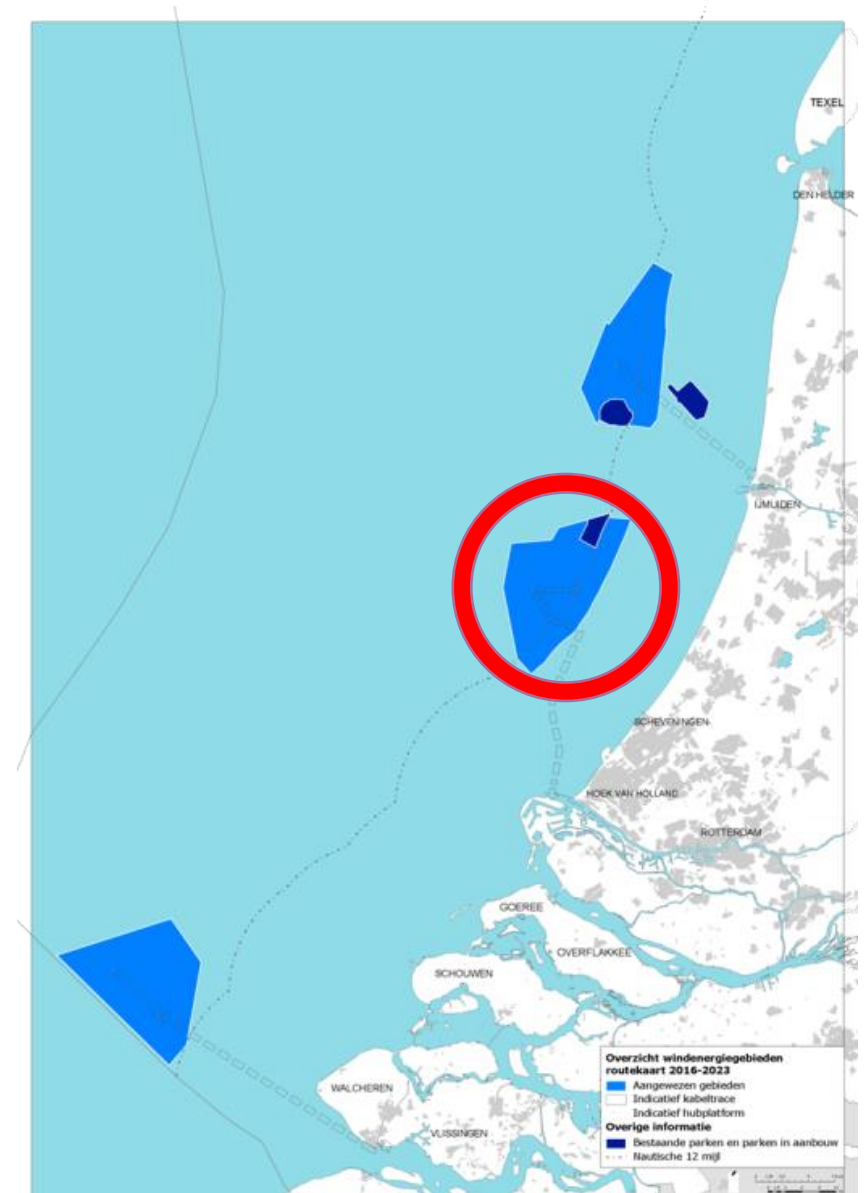




# Hollandse Kust (zuid)

## Sites III/IV

- › Wind Farm Sites III and IV (partially within 12 NM):
  - Final wind farm sites decisions published 19 January 2018
  - Appeals from 3 parties
  - Delays at Council of State: wind farm site decisions not yet irrevocable
  - Tender published Q4 2018





# Hollandse Kust (zuid) offshore grid connection

- › Decisions published 2 March 2018, open for appeal until 13 April 2018
- › No appeals, decisions irrevocable
- › 2018: start tenders platforms, cable and land-based stations
- › 2019: start construction
- › 30 June 2021: platform Alpha operational, 31 March 2022: platform Beta operational\*

› \* see <https://www.rvo.nl/file/ontwikkelkader-windenergie-op-zee-september-2018>

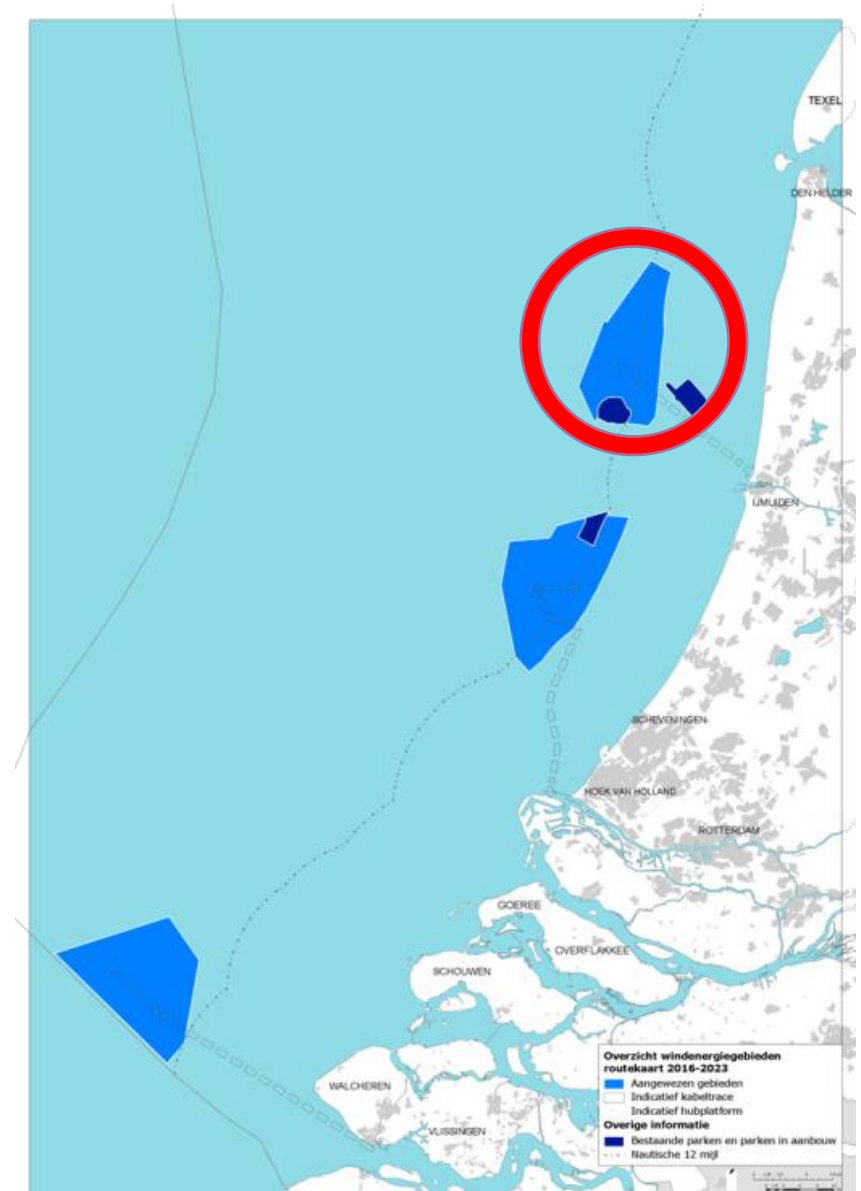






# Hollandse Kust (noord) Site V

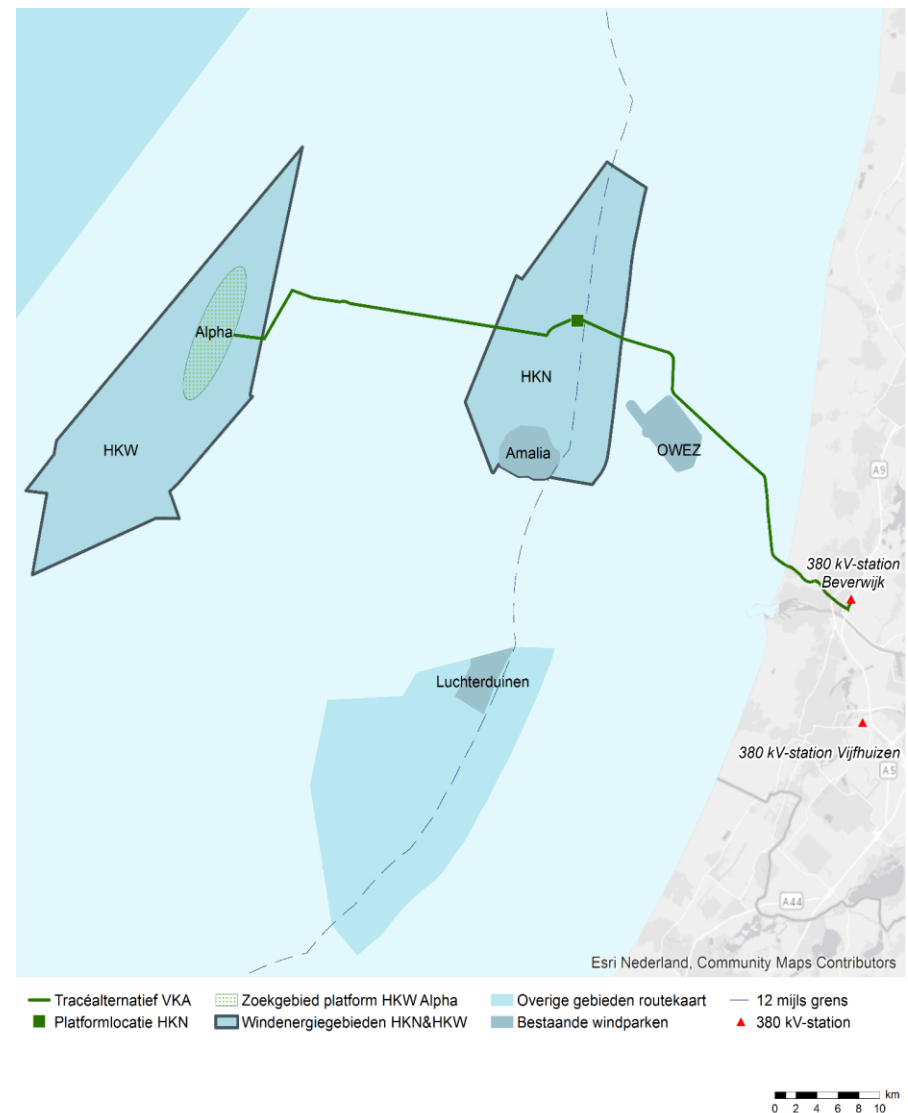
- Wind Farm Site V (partially within 12 NM)
  - Draft site decision published in summer 2018: 17 reactions
  - No innovation site
  - (Telecom) cables and helicopter accessibility of gas platforms
  - Possible development of electrification of gas platform
- Site decision expected Q4 2018
- Tender expected in 2019





# Hollandse Kust (noord) and (west-Alpha) offshore grid connection

- › April 2018: preferred cable route published, backed by Province and municipalities
- › November 2018: publication draft decisions
- › Spring 2019: publication final decisions
- › From January 2019 start tenders for platforms and cables

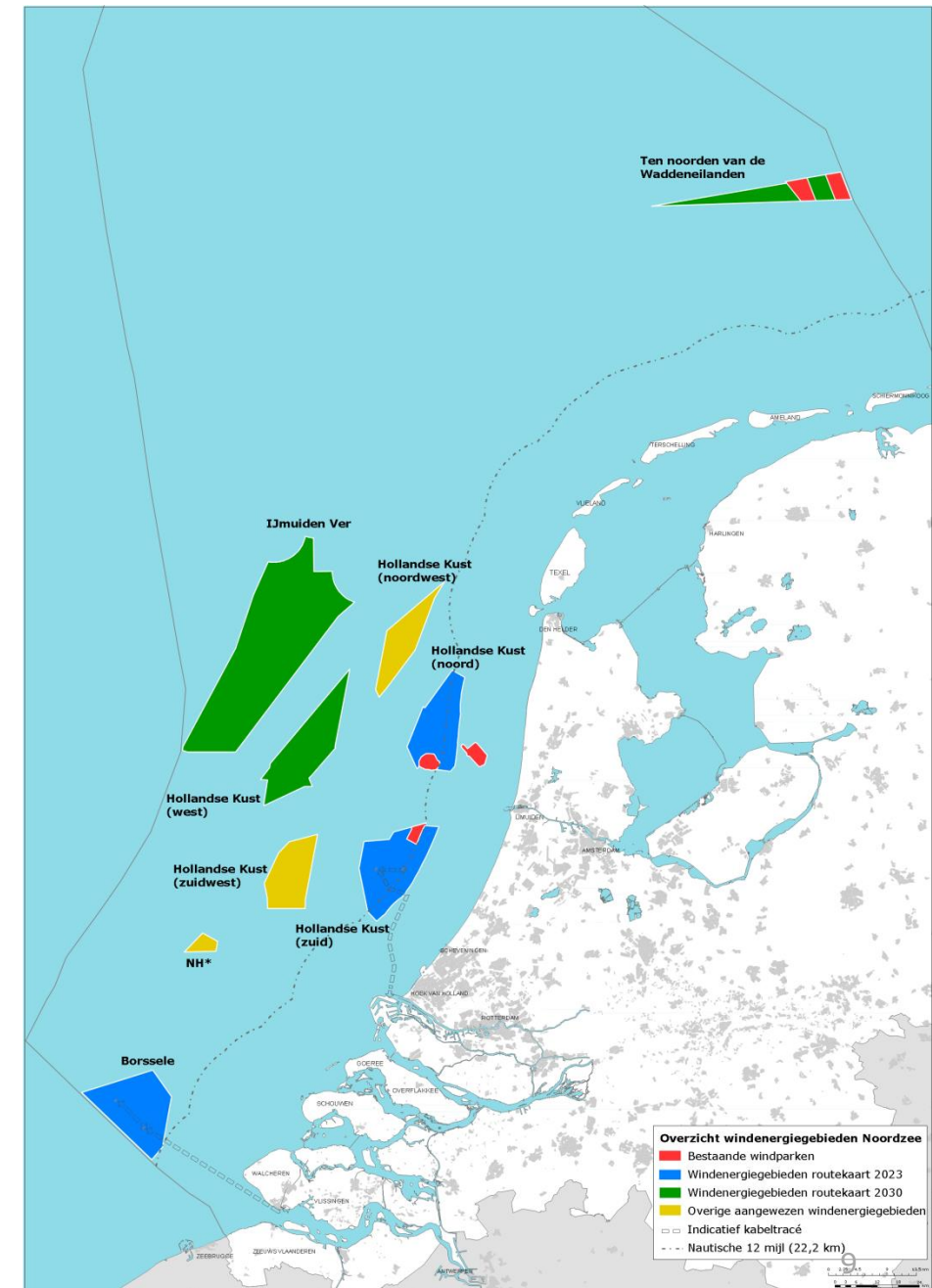






# Roadmap 2030

Wind farm zone	GW	Start permit	Tender	Oper.
Hollandse Kust (west)	1.4	2018	2020/21	2024/25
Ten Noorden van de Wadden	0.7	2019/20	2022	2026
IJmuiden Ver	4	2020	2023 - 2026	2027 - 2030





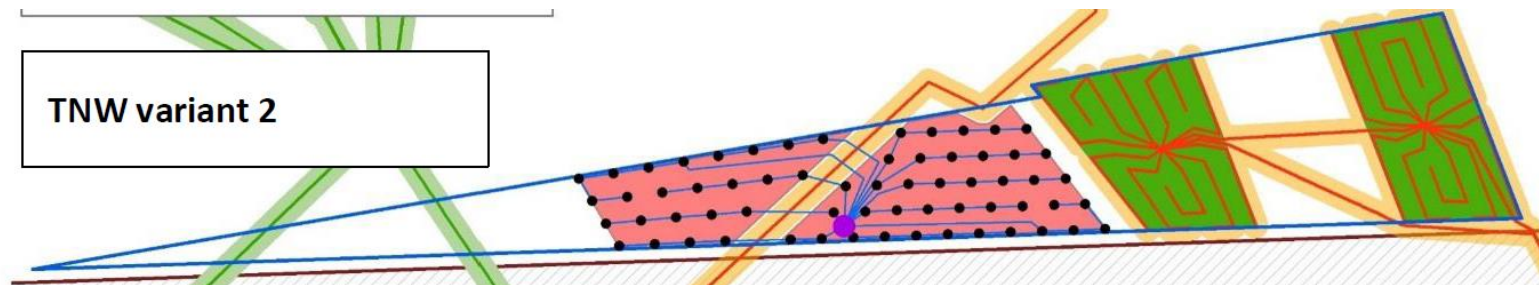
# Implementation Roadmap 2030

- Implementation agenda (2018)
  - Divide Wind Farm Zones into Sites
  - Design of offshore grid (TenneT)
  - Locations and cable routes offshore grid (offshore and onshore)
  - Update of Ecology and Accumulation Framework
  - Update Development Framework for Offshore Wind Energy
  - Policy decisions on passage (shipping corridors?) and co-use (e.g. fishing?) of Wind Farm Zones
- Q4 2018: Start procedures Wind Farm Site Decisions and permits offshore grid



- › Hollandse Kust (west)
- › Sites VI and VII
- › 2x 700-760 MW
- › ~ 9 MW/km<sup>2</sup>

## Division into sites (indicative)



- › Ten noorden van de Waddeneilanden
- › Site I
- › ~ 700 MW
- › ~ 11 MW/km<sup>2</sup>



# Design of offshore grid

- › Optimal transport capacity:  
1.35 or 2 GW
- › Platforms or artificial island at *IJmuiden Ver*
  - Planning
  - Costs
  - Ecological challenges
  - Additional benefits or disadvantages

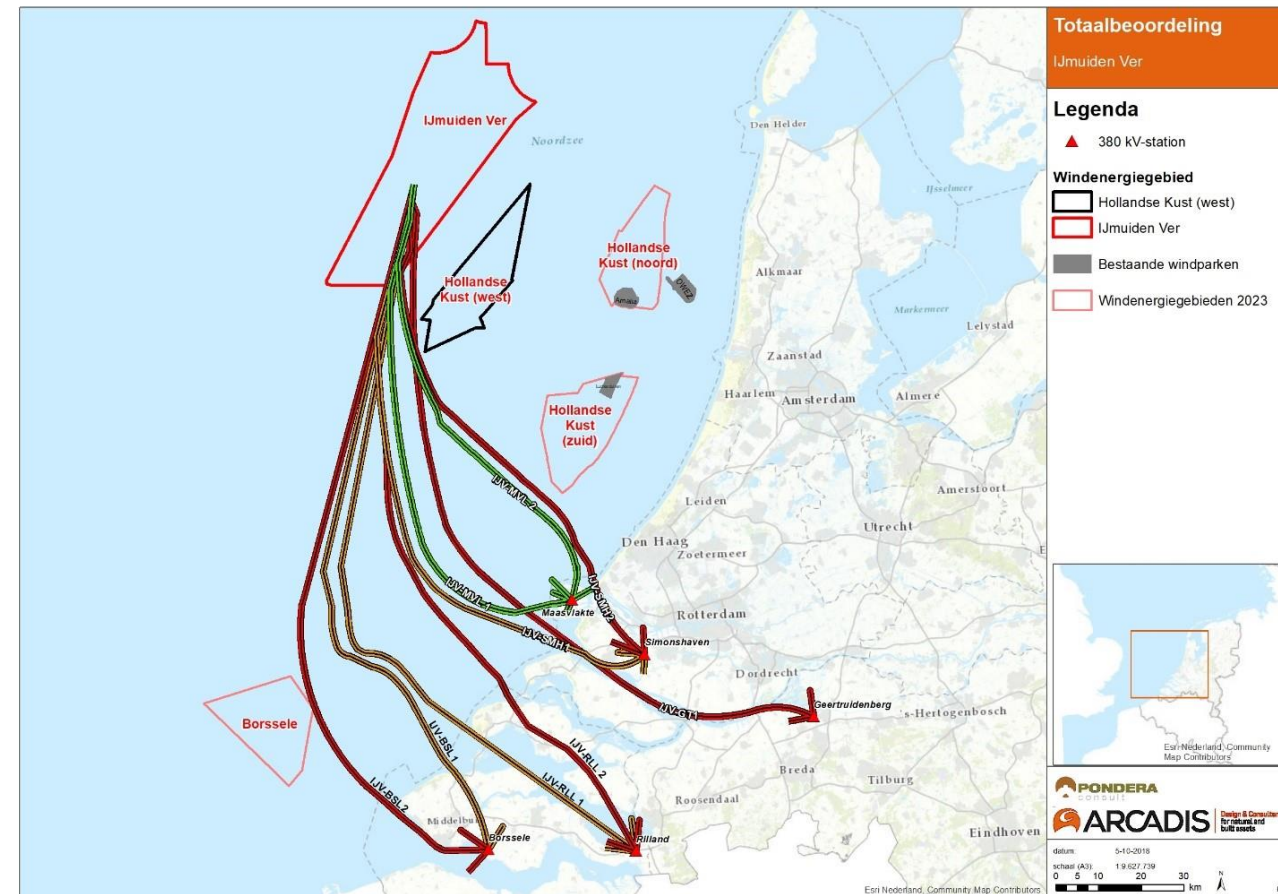






# Locations and cable routes offshore grid

- › Electric vs. non-electric (e.g. H<sub>2</sub>) transport options
- › AC and DC electric options
- › 2\*2 GW or 3\*1,35 GW cables
- › Spreading to avoid congestion on the onshore grid
- › Connecting close to industrial clusters





# Update of Ecology and Accumulation Framework

- › Expected to be published end 2018
- › Underwater noise (first indication: 11,5 GW possible with ~ same noise levels)
- › Casualties among birds and bats (first indication: possible, because far offshore and bigger/less turbines)







# Amendment of offshore wind energy act

- › Addition of auctioning option
- › Elaboration/clarification of comparative assessment criteria
- › Addition of possibility to prolong permit with another 10 years, also for permits already issued

