RGI Workshop on The Need for Grids

Why we need grids now

Grid Planning - Carsten Siebels
Hanover - 22nd of June 2012

TenneT Taking power further

Overview

1. Current Situation at TenneT TSO GmbH
2. Decentralised renewable Generation
3. Offshore Development
4. Conclusion

1. Current Situation

TenneT Taking power further

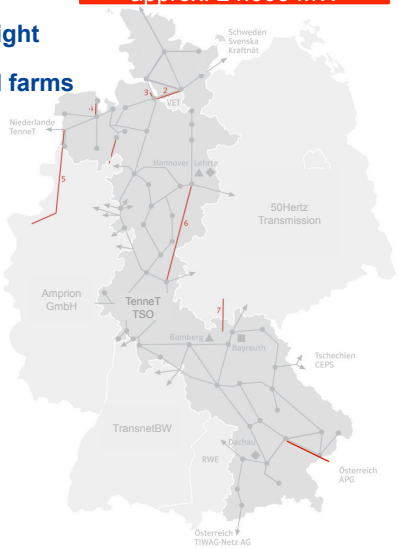
Situation 27th of May 2012

low demand in Germany approx. 24.000 MW

Spring holiday with low demand in the night

and moderate high generation from wind farms

- Low demand all over Europe
- Yellow RAAS-traffic light from 05:30h to 08:00h: Extreme high voltage (>420-kV) in some substations



→Mitigation measures for voltage control:

Redispatch & use of all available shunts

disconnection of 400 kV overhead lines

Why we need grids now | June 2012 | 4

TenneT Taking power further

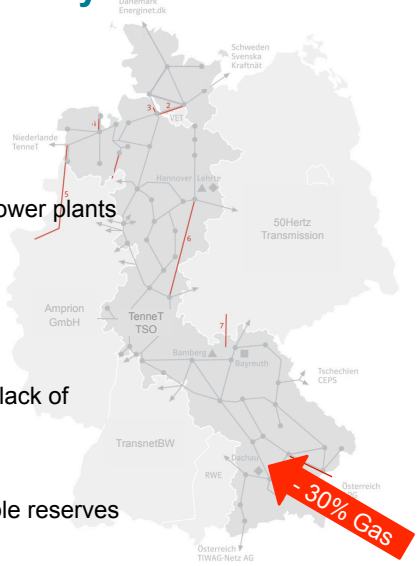
Situation 7th – 14th of February 2012

Winter with low temperatures, high load

with low generation from RES

- Some thousand Megawatt of gas fired power plants not operating due to a lack of gas
- High Spot-Prices & high trading activity
- German electricity balance timely with a lack of more than 5.000 MW

→ Critical situation: Activation of all available reserves

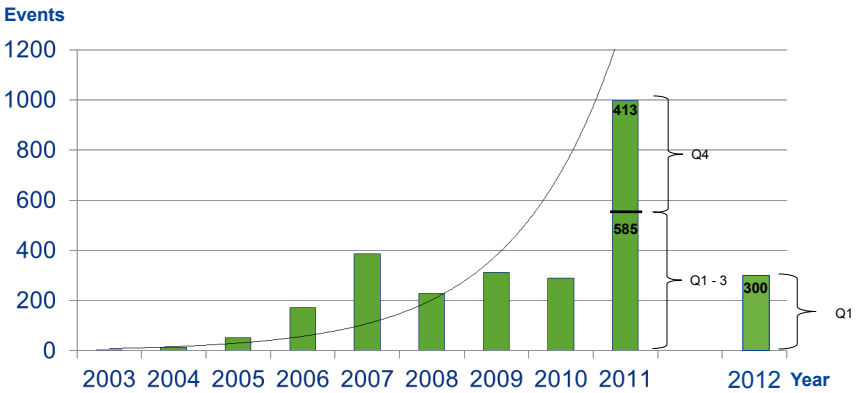


Why we need grids now | June 2012 | 5

TenneT Taking power further

Development of mitigation measures from year 2003

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	1. Quarter 2012
Events*	2	15	51	172	387	228	312	290	998	300
Days	2	14	51	105	185	144	156	161	308	86



* Eventsfollowed by measures according § 13 EnWG and § 11 EEG.

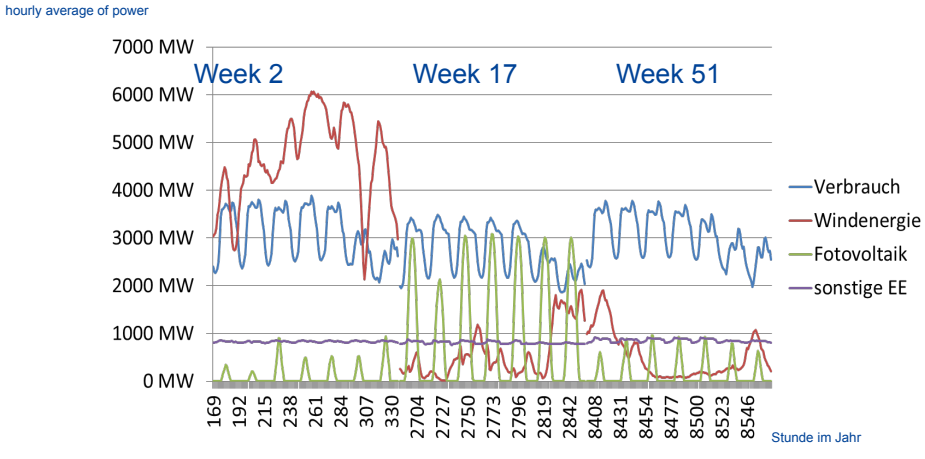
Why we need grids now | June 2012 | 6

TenneT Taking power further

2. Decentralised RES

TenneT Taking power further

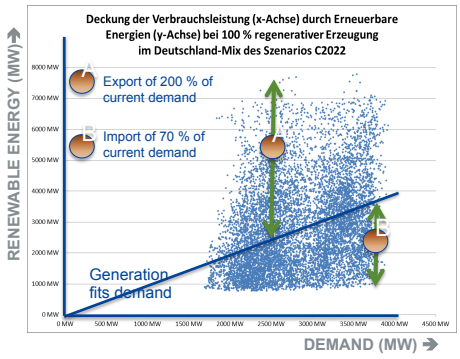
Examples of demand and RES generation

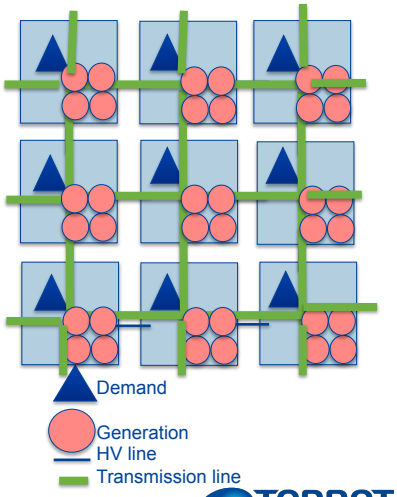


Why we need grids now | June 2012 |

TenneT Taking power further

Decentralised Generation from Renewable Energy Sources (RES)
- Example with 100 % supply of demand by RES





- no secure energy supply only by RES
- Export power exceeds maximum demand
- neighboured regions with same behavior will not balance the situation
- ➔ Need for Transmission-Grid

Why we need grids now | June 2012 | TenneT Taking power further

Development in Germany

- approx. 20 % supply from RES in 2011
- RES-installation 2011 with additional 2 % potential
- scenarios 2022 with 40, 50 and 60 % supply by RES

Stunde im Jahr

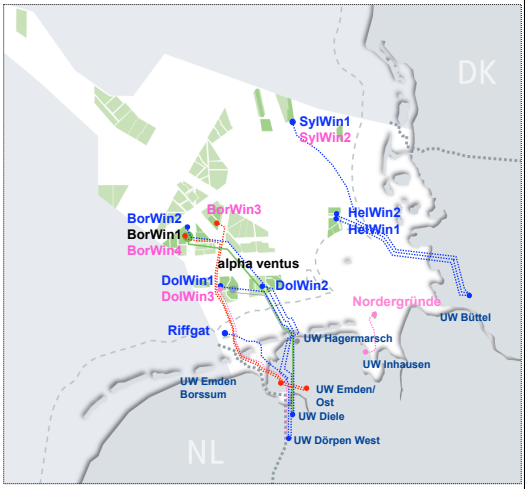
Why we need grids now | June 2012 | TenneT Taking power further

3. Offshore development

TenneT Taking power further

Projekt overview: TenneT Offshore

Status: 30.04.2012	Power (MW)	contract	EPC
built / In operation			
alpha ventus	60	2009	
BorWin 1 (West)	400	2010	ABB
under construction / contracted			
BorWin2 (West)	800	2013	SiePry
DolWin1 (West)	800	2012	ABB
DolWin2 (Ost)	900	2014	ABB
HelWin1	576	2013	SiePry
HelWin2	690	2014	SiePry
SylWin1	864	2013	SiePry
Riffgat	108	2012	NSW
Nordergründe	111	2014	ABB
Σ built / contracted	5.309		
tendered (fulfilment of criteria1/9/2011)			
DolWin3 (West)	900		
BorWin3 (East)	900		
BorWin4 (West)	900		
Σ	2.811		



4. Conclusion

TenneT Taking power further

Conclusion

1. Necessary Grid Development
   - connection of Offshore Wind Farms
   - distribution grids (connection of decentralised power)
   - transmission grids (balance of RES, long distances)

2. Delayed grid development may result in
   - reduced security of supply
   - load shedding
   - costs for redispatch
   - TSO driven market intervention
   - RES power not usable


Thank you for your attention
TenneT ist nach dem Zusammenschluss mit transpower der erste grenzüberschreitende Übertragungsnetzbetreiber für Strom in Europa. Mit ungefähr 20.000 Kilometern an Hoch- und Höchstspannungsleitungen und 36 Millionen Endverbrauchern in den Niederlanden und in Deutschland gehören wir zu den Top 5 der Netzbetreiber in Europa. Unser Fokus richtet sich auf die Entwicklung eines nordwest-europäischen Energiemarktes und auf die Integration erneuerbarer Energie.
Taking power further.
www.tennet.eu
TenneT
Taking power further