

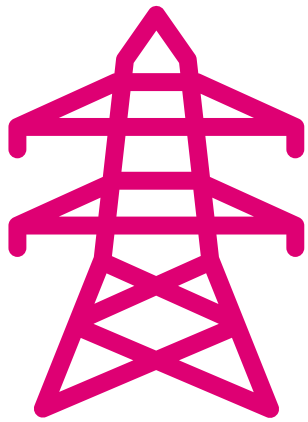


Trouble on the European electricity grids

What is it and how can we solve it?

Maarten Staats | KIVI congres | Eindhoven

11 March 2026



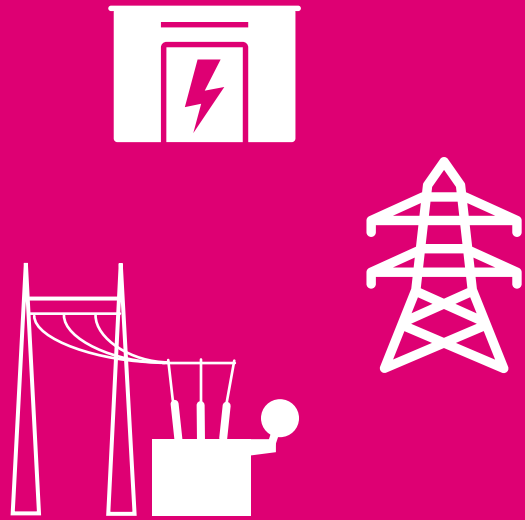
Introduction to grid congestion



The whole energysystem can be simplified into...



PRODUCTION / IMPORT



TRANSPORT



CONSUMPTION / EXPORT



Grid congestion is a hot topic



Europe | Paying the charge

Europe's need for green electricity is blowing fuses

Grid operators plan to spend hundreds of billions to keep up

MONTEL News

September 8, 2025 Europe

Home, Europe, Solar, Storage, Wind

ACER warns that grid congestion and infrastructure delays are limiting renewable integration across Europe

NL#TIMES

BUSINESS SOPHIE HERMANS POWER GRID GRID CONGESTION
MINISTRY OF CLIMATE AND ENERGY

MONDAY, 6 OCTOBER 2025 - 11:10

SHARE THIS: 

Over 14,000 businesses on waiting list to connect to congested power grid






Grid congestion is posing challenges for energy security and transitions


2 minute read

Dutch grid congestion points to wider EU problem

(Montel) A surge in renewable energy growth in the Netherlands has brought unprecedented stress on the national electricity network,



By Inés Platini  

Belgium 

Electric grid congestion: What is Belgium's strategy to avoid the Dutch scenario?



Grid congestion and transport scarcity

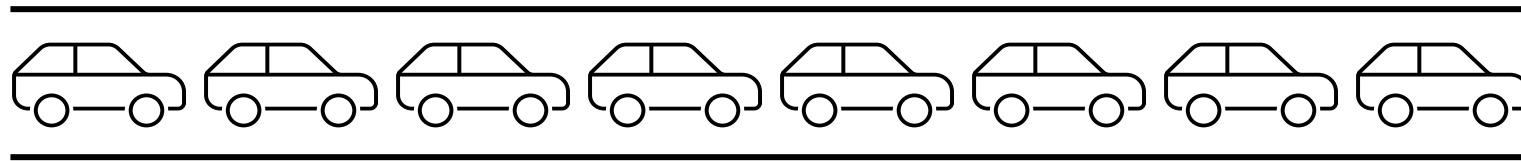
What is the difference?



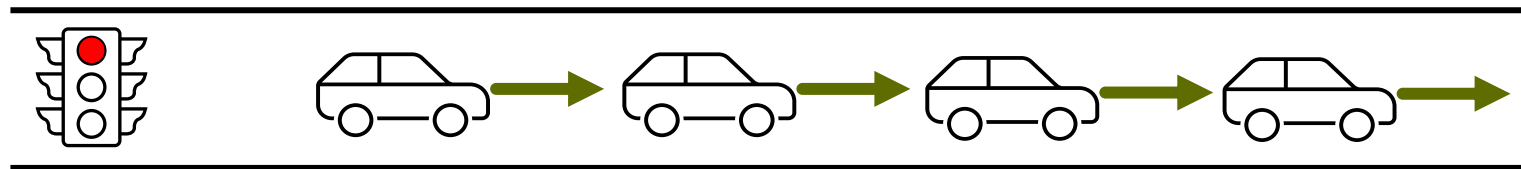
Grid congestion:

More electricity transport required than available grid capacity

Grid congestion: like a traffic jam



Transport scarcity: like a highway dosing light





Grid congestion and transport scarcity

What is their relationship?



Transport scarcity is used to prevent **grid congestion**



Long term

Limit transport growth



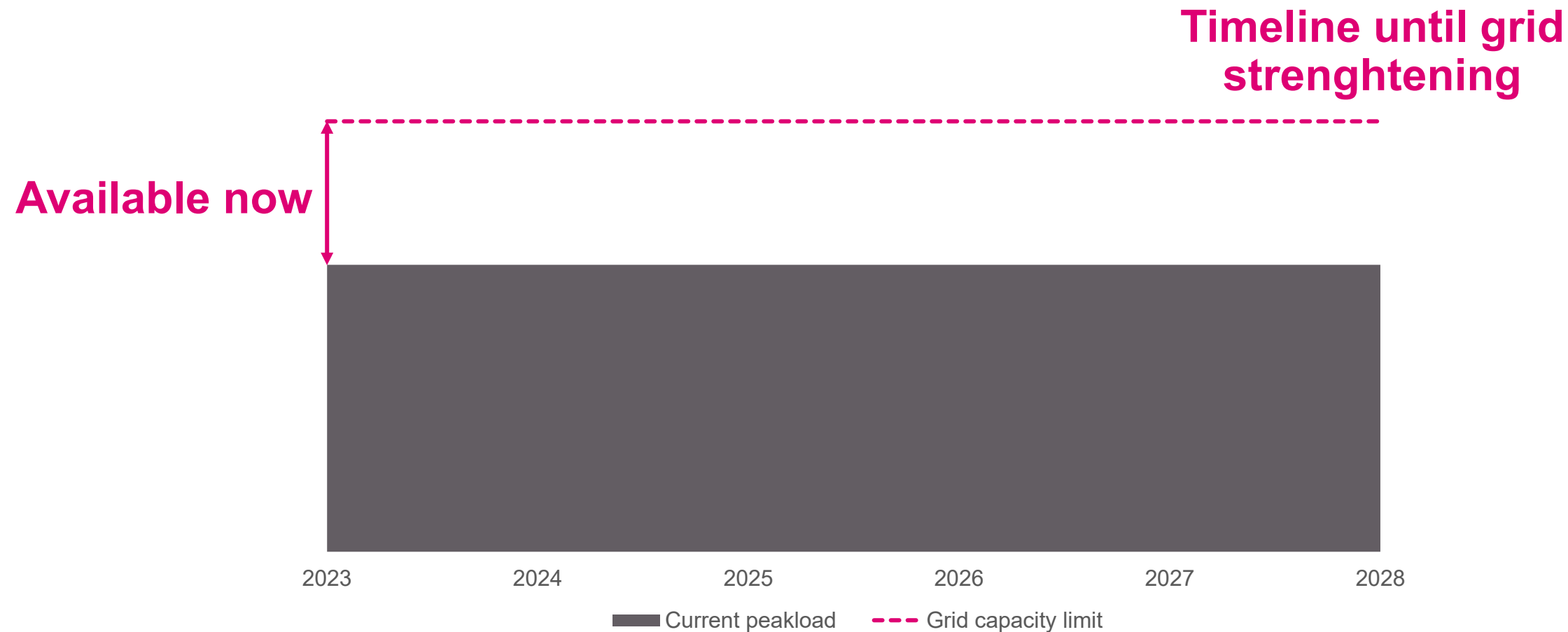
Short term

Reduce transport demand



How it's done: transport scarcity calculation

Start with current peakload measurement



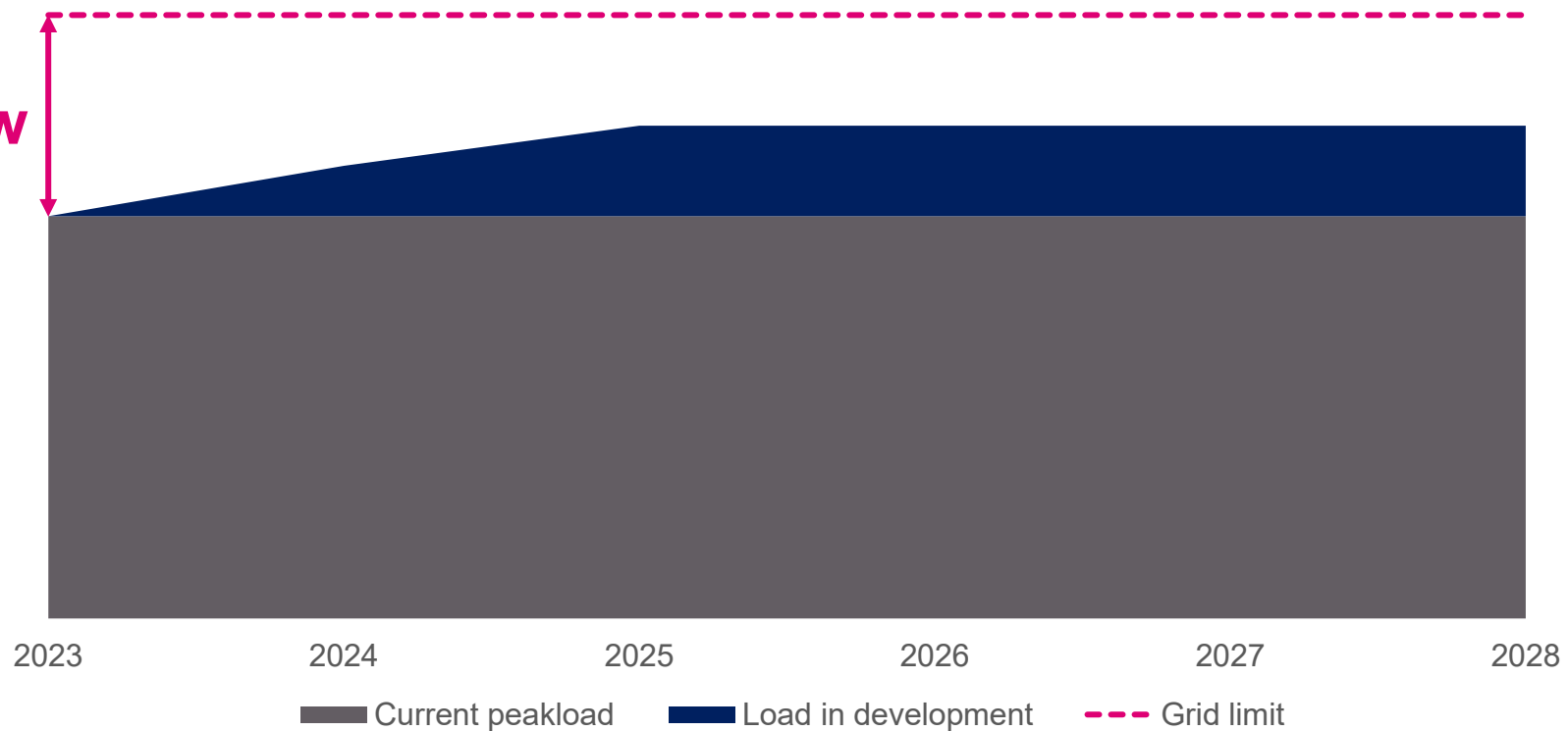


How it's done: transport scarcity calculation

Add load that is already contracted (in development)



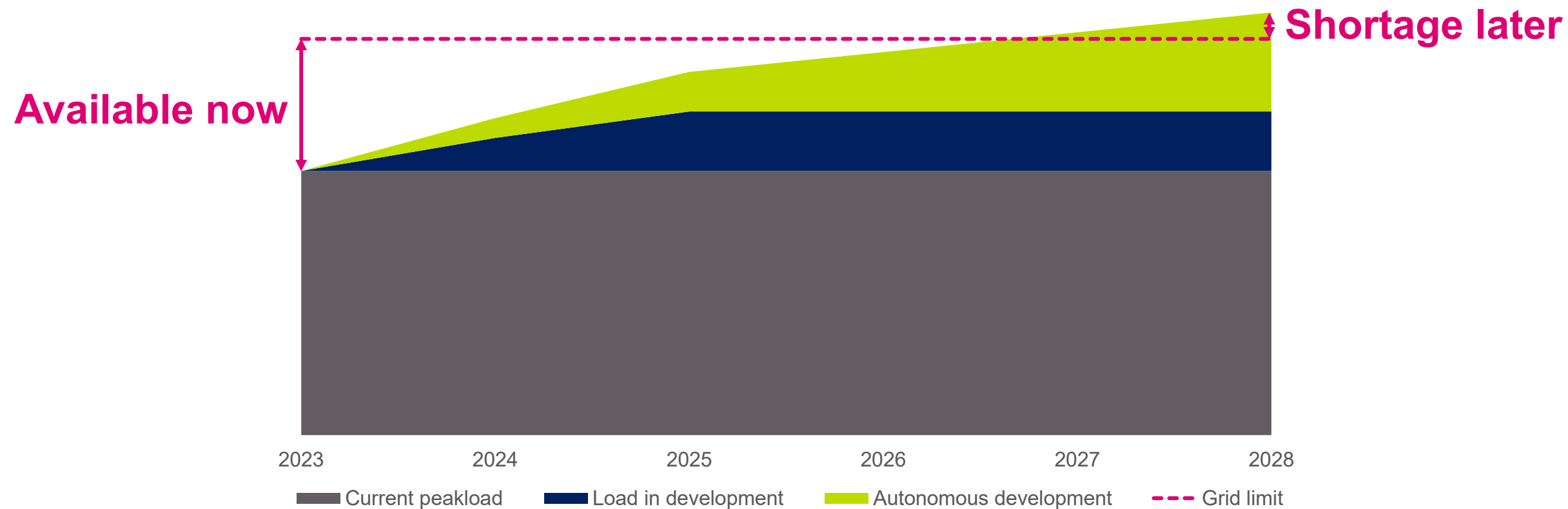
Available now





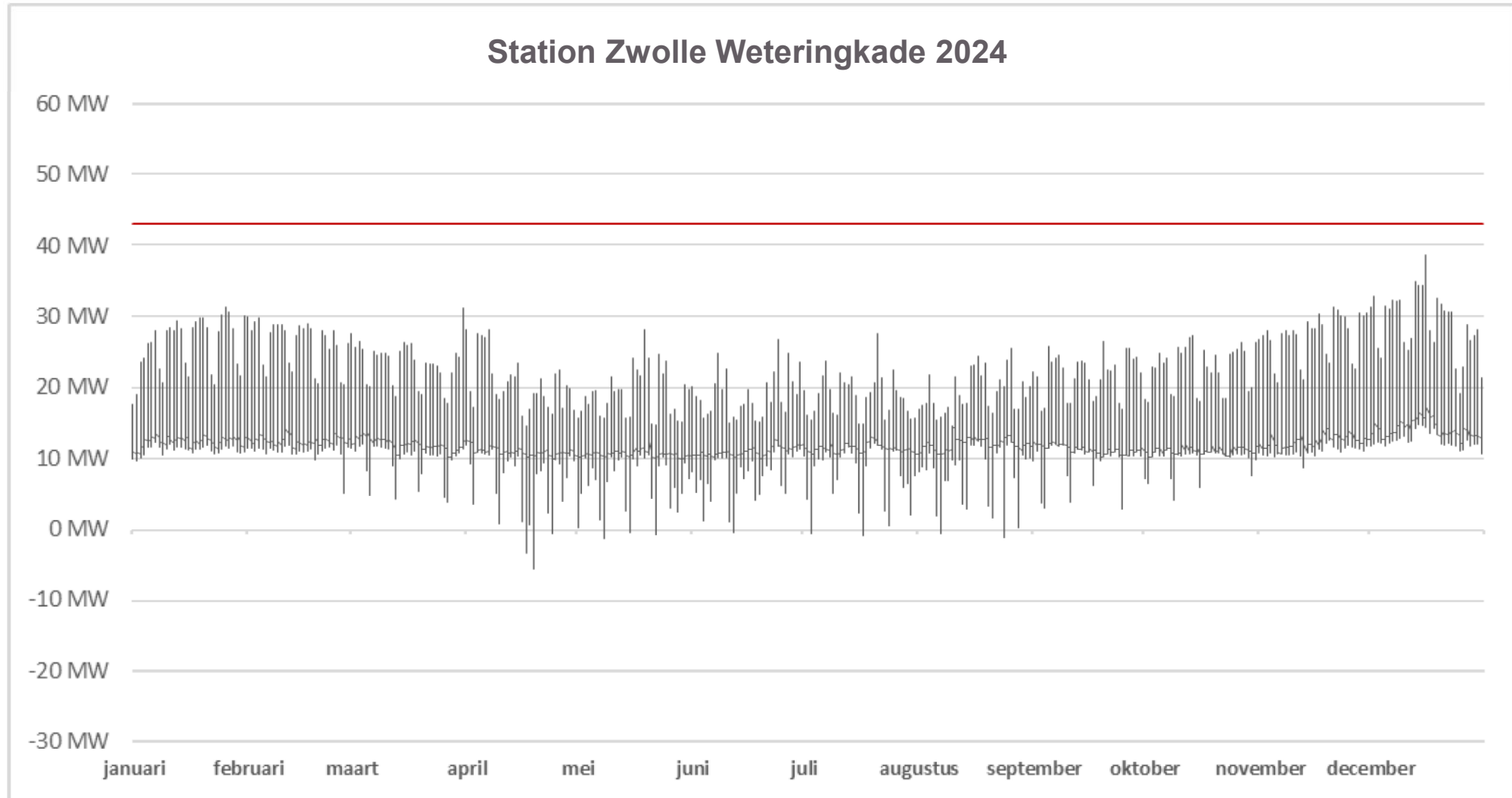
How it's done: transport scarcity calculation

Add load increase within current contracts (autonomous development)





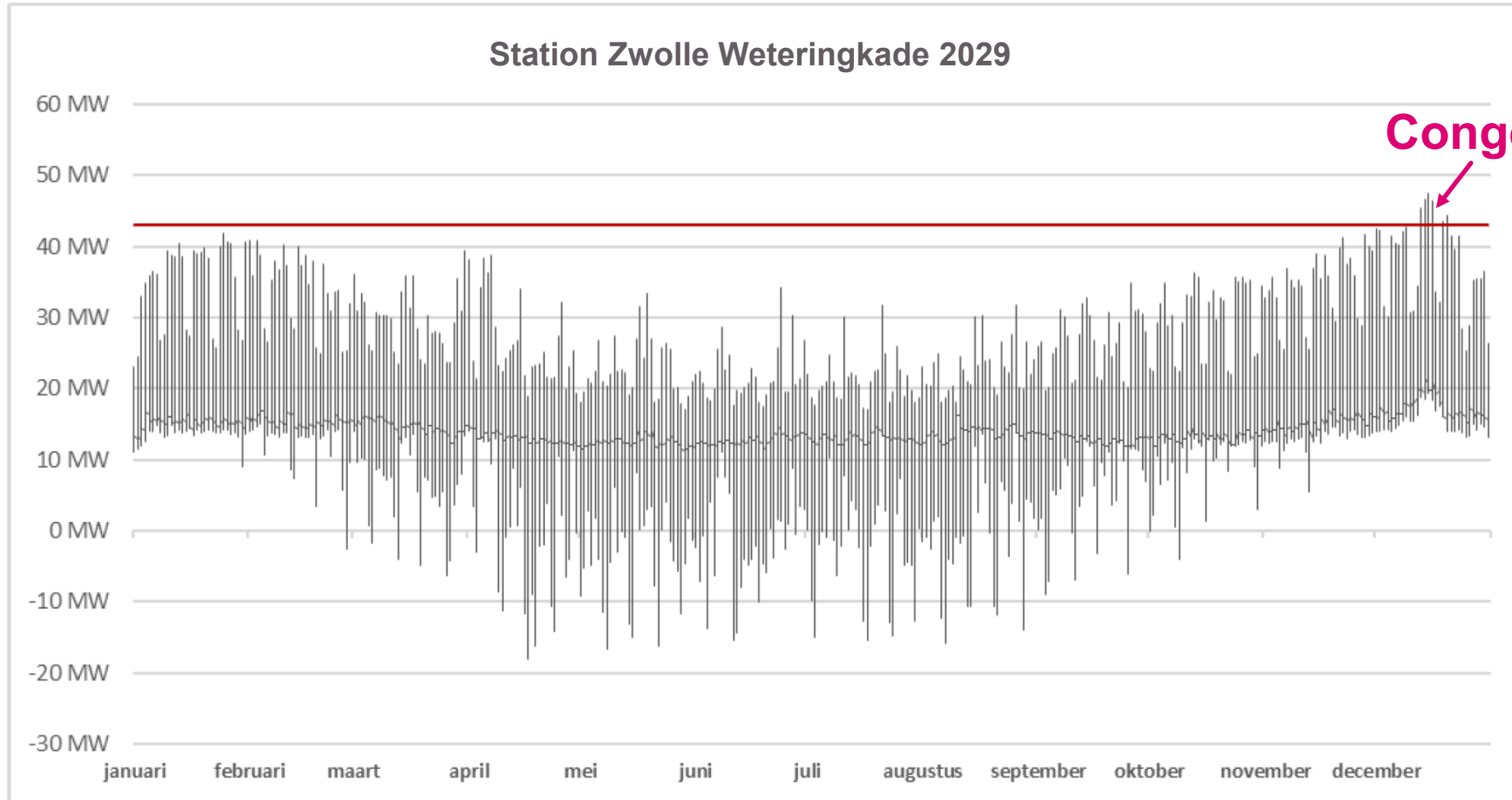
This is what that looks like...





This is what that looks like...

Congestion analysis is done for each grid bottleneck



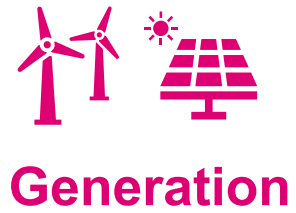


Congestion in Europe

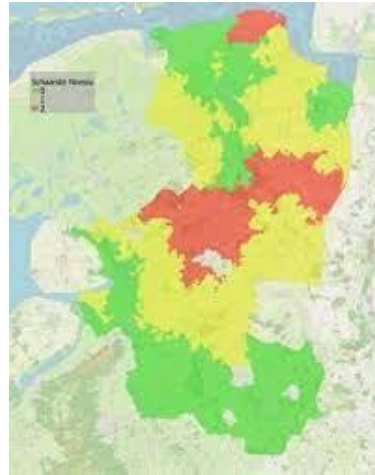




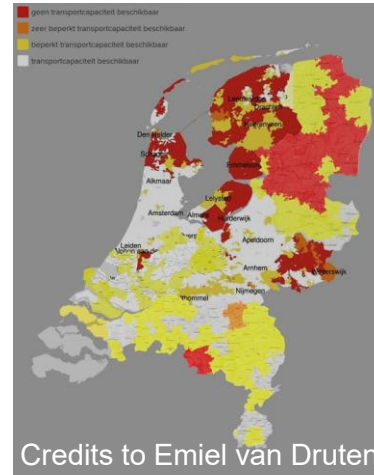
The history of grid transport scarcity in the Netherlands



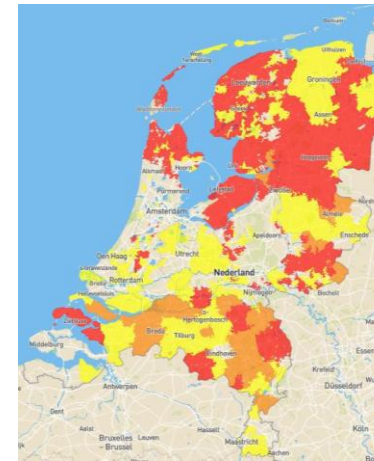
Local maps
2019



Combined map
2020

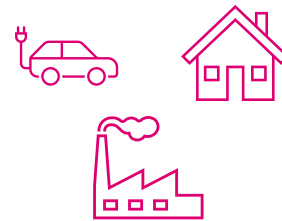
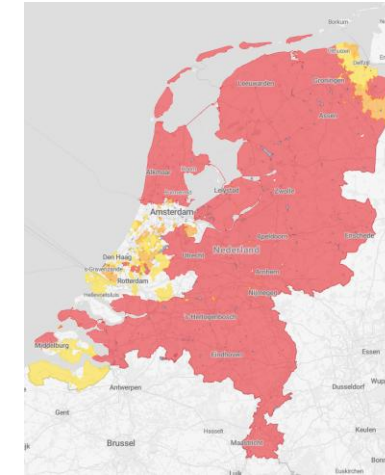


Demand map
2021

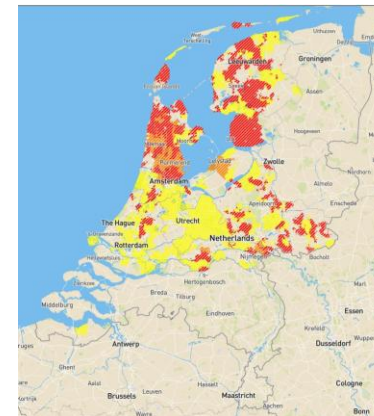


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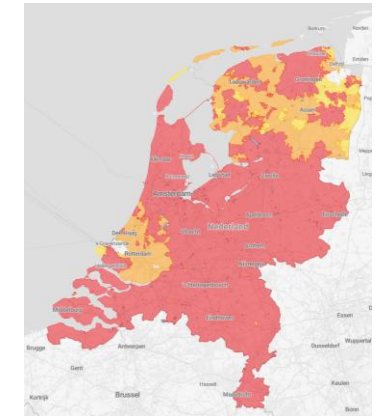
Split TSO/DSO
2025



Demand



[...]





Does this problem only exist in the Netherlands?

Belgian grid operator publishes grid capacity map

Belgian network operator Elia says its new grid map shows available capacity, in addition to existing and already reserved capacity. The map, which considers growth in residential load and generation, shows that there might still be enough free capacity for 3.3 GW of solar and 2.8 GW of storage.

DECEMBER 15, 2023 **EMILIANO BELLINI**

Austria publishes map of locations with available grid capacity for PV

The Austrian government introduced the Electricity Industry and Organization Act (ElWOG) two years ago, leading to the creation of a map of locations with available grid capacity for solar. The ElWOG require grid operators to be transparent about grid-connection capacity.

AUGUST 7, 2023 **SANDRA ENKHARDT**

The Economist

Europe | Paying the charge

Europe's need for green electricity is blowing fuses

Grid operators plan to spend hundreds of billions to keep up



Home » All news items » Map of hosting capacities for storage

Add to favorites

RTE publishes a map of hosting capacities for storage. It displays, for each electrical substation, the highest hosting capacity (in MW) available for a storage facility without power limitation.

MONTEL News

September 8, 2025

Europe

Home, Europe, Solar, Storage, Wind

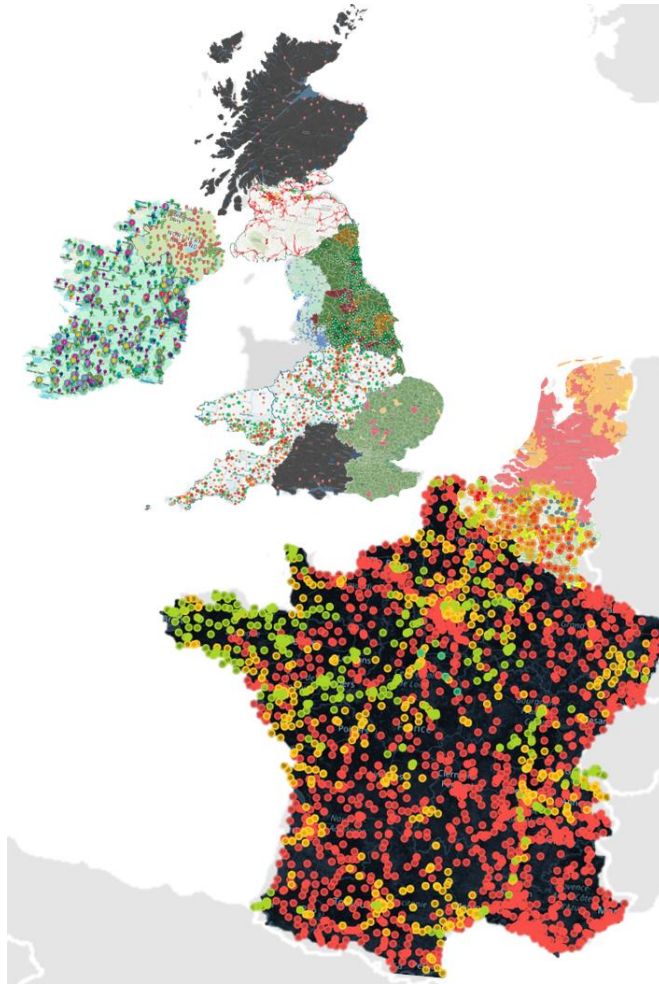
ACER warns that grid congestion and infrastructure delays are limiting renewable integration across Europe

The European grid capacity map

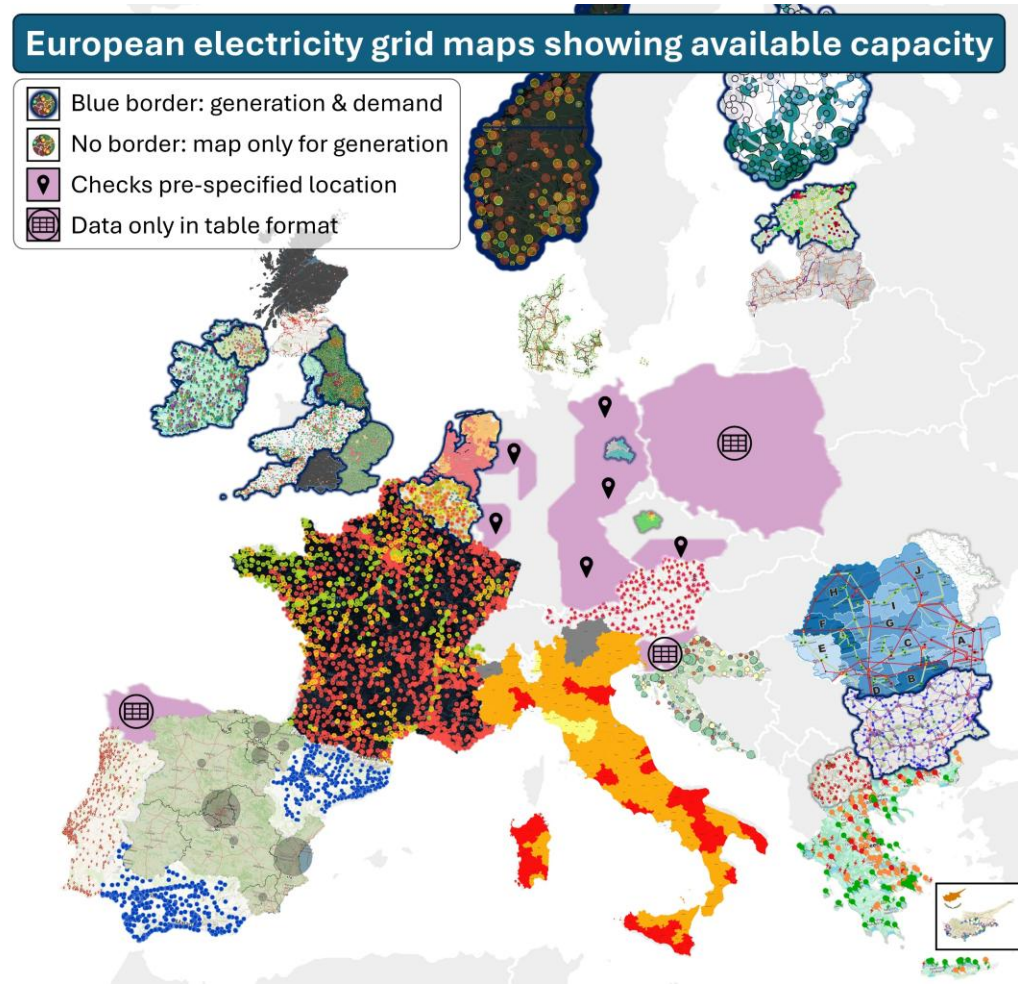
404

page not found

Generating an overview of European grid capacity maps

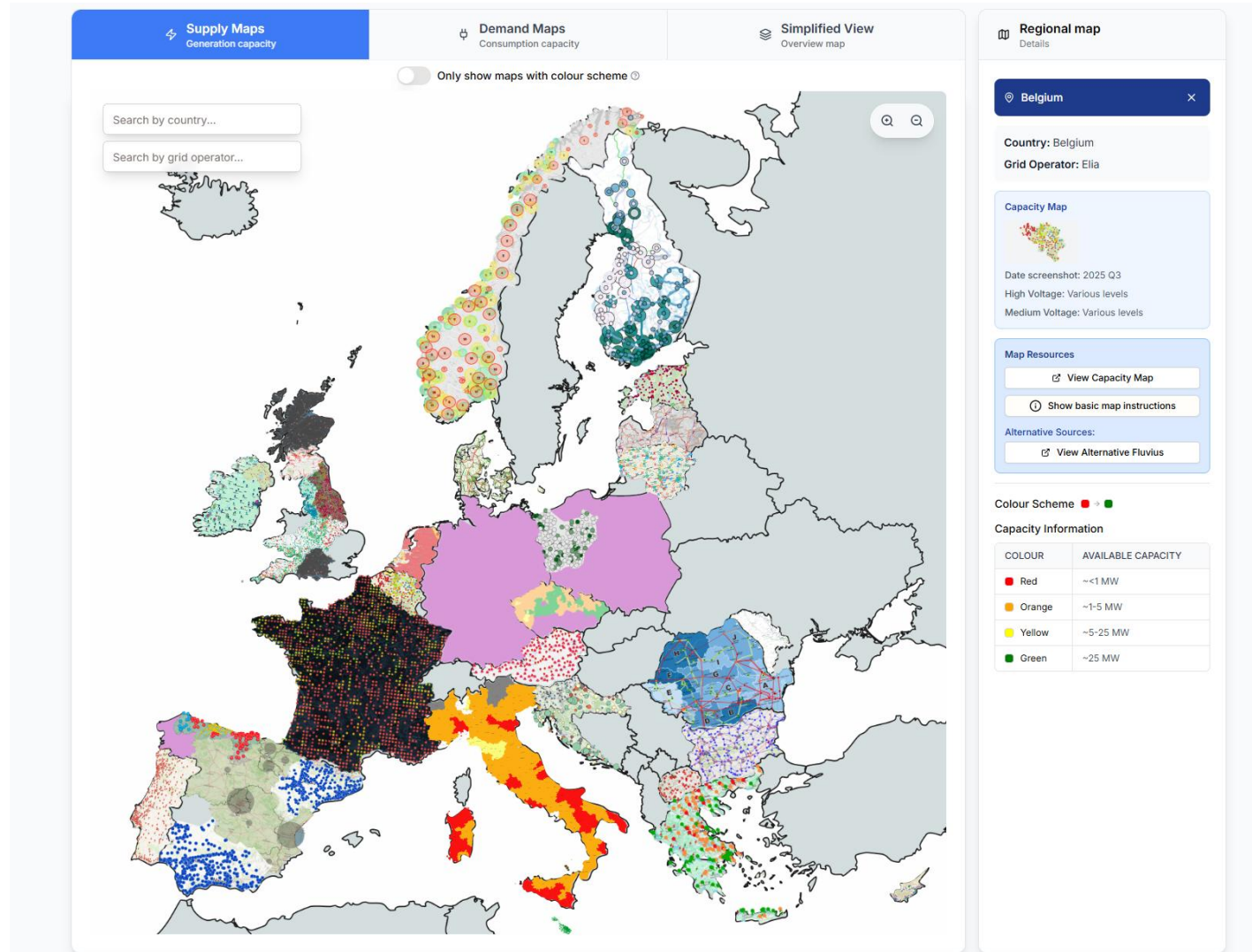


Version 1: Various maps



Version 3: static map most European countries

Free online tool: www.gridcapacitymaps.eu



Version ~20: interactive online resource tool



Does this problem only exist in the Netherlands?



Transport scarcity and **grid congestion** are a **European** ~~Dutch~~ problem

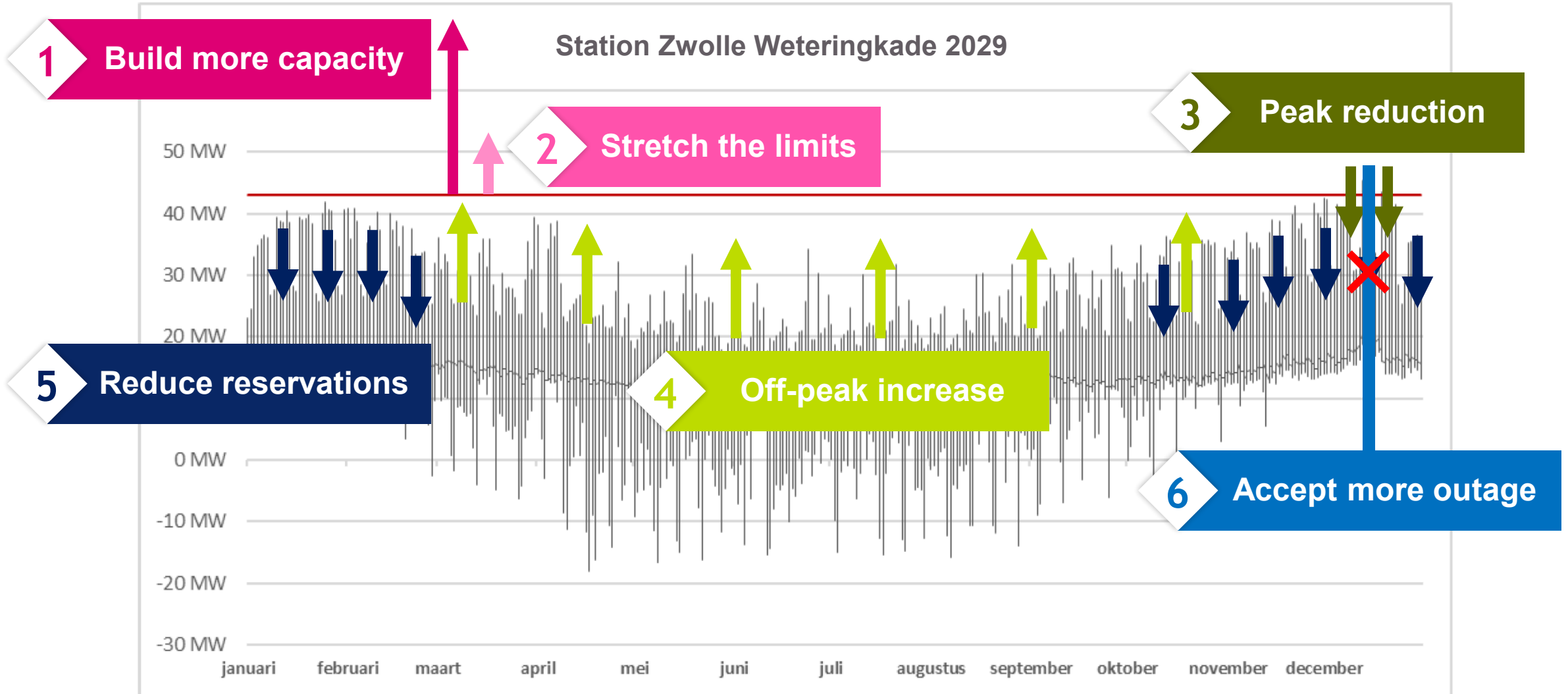


Possible solutions



What are our options to unlock the grid?

Important note: the impact on future and/or existing consumers can be low to very high!



What are our options to unlock the grid?

Build, build, build

1 Build more capacity

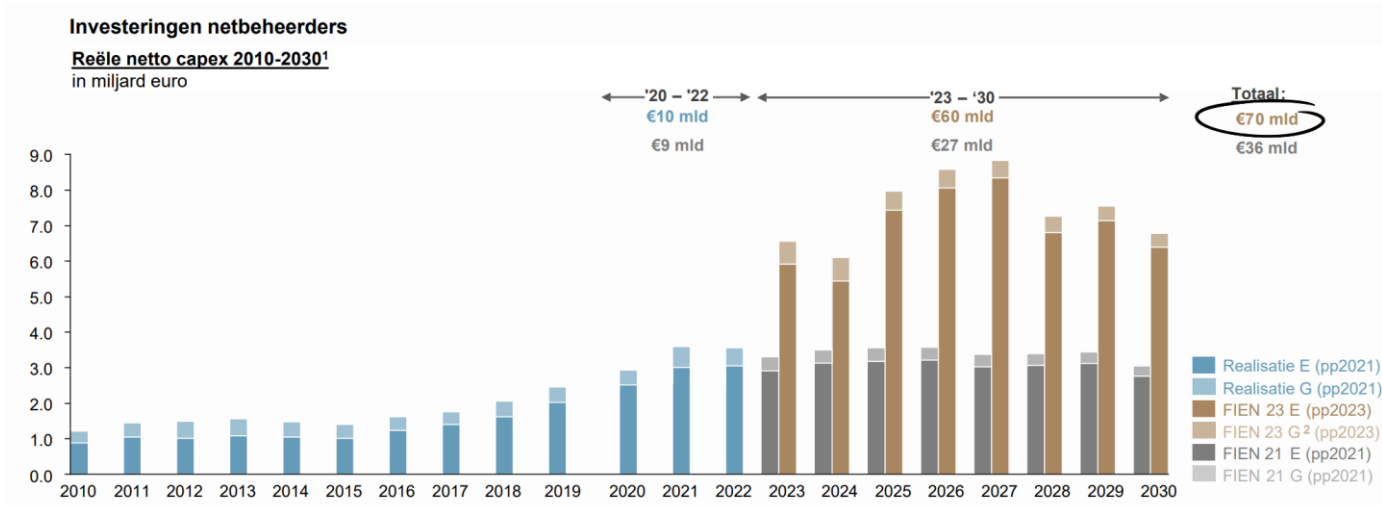
2 Stretch the limits

3 Peak reduction

4 Off-peak increase

5 Reduce reservations

6 Accept more outage



**Zoektocht naar nieuwe locatie hoogspanningsstation
Utrecht-Noord vertraagt grote uitbreidingsprojecten in regio**

2029 → 2033 → 2035

What are our options to unlock the grid?

Alternative Transport Agreements



1 Build more capacity

2 Stretch the limits

3 Peak reduction

4 Off-peak increase

5 Reduce reservations

6 Accept more outage

Firm capacity (current)



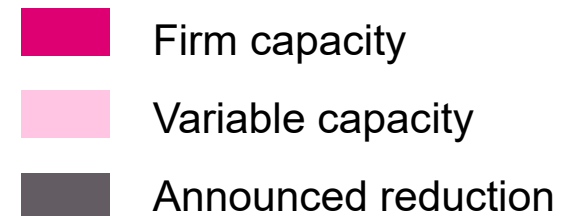
Timeblock based



Announced day-ahead



Fully variable



What are our options to unlock the grid?

Let us prepare...

1 Build more capacity

2 Stretch the limits

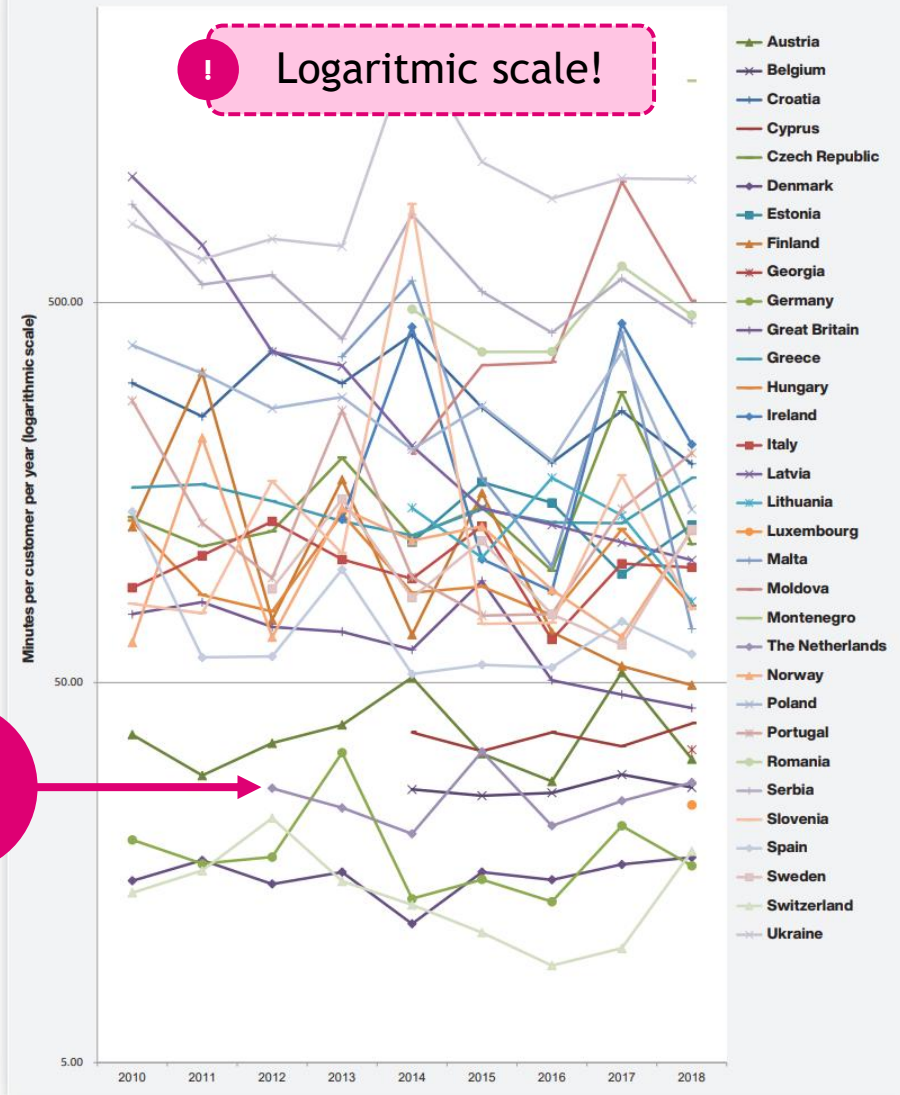
3 Peak reduction

4 Off-peak increase

5 Reduce reservations

6 Accept more outage

FIGURE 2-9: Unplanned long interruptions, SAIDI, all events (minutes per customer per year) – time series





Trouble on European Grids

Challenge for the energy transition

Maarten Staats

Want to know/read more? I make short & simplified explainers in Dutch:

 maartenstaats.substack.com

Link to the overview of European capacity maps:

 www.gridcapacitymaps.eu



ENEXIS
NETBEHEER