

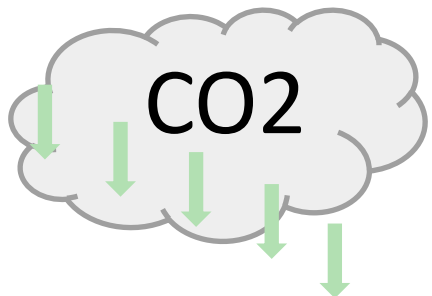


**FlexCity and FlexPower
Grid congestion and EV charging growth,
challenges or opportunities ?**

Hugo Niesing

**Projectmanager Smart Charging & Energy
Team emissionfree mobility (City of Amsterdam)**





55% CO2 reductie 2030

95% CO2 reductie 2050



Policy of Amsterdam



1. OFF gas in 2040

2. Emission free mobility in 2030



3. 500 MW Solar energy in 2025

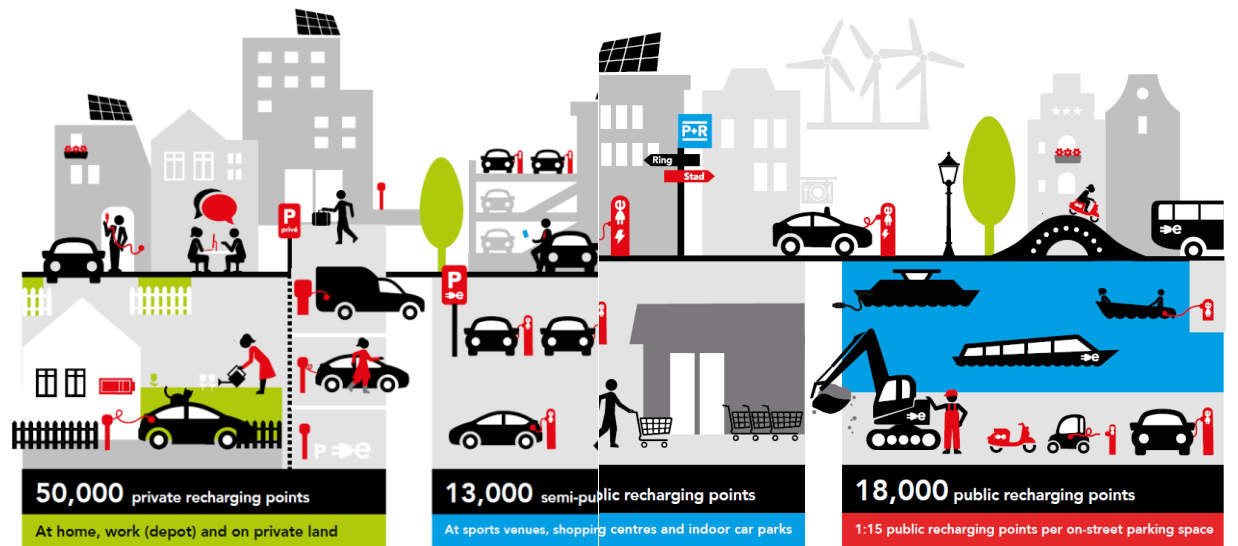




EV charging development Amsterdam

Strategic plan: Recharge me 2020 - 2030

The recharging infrastructure mix in 2030



Recharging takes place on private land as far as possible

A public recharging infrastructure spread across the district

We facilitate provision of high-power recharging points at strategic locations

Public recharging infrastructure provided on a strategic and data-driven basis

Working together on a city-wide network of hydrogen refuelling stations

Recharge Me

Strategic Plan for Recharging Infrastructure 2020-2030

We are therefore adopting a new roll-out strategy based on **five starting points**:



1. Recharging should take place on private and semi-public land wherever possible.

2. Amsterdam will install public recharging infrastructure across each district wherever necessary.



3. Public recharging infrastructure will be provided on the basis of strategic and data-driven criteria.

4. We will facilitate the implementation of high-power recharging points at strategic locations across the city.



5. We will collaborate on the provision of a city-wide network of hydrogen refuelling stations.



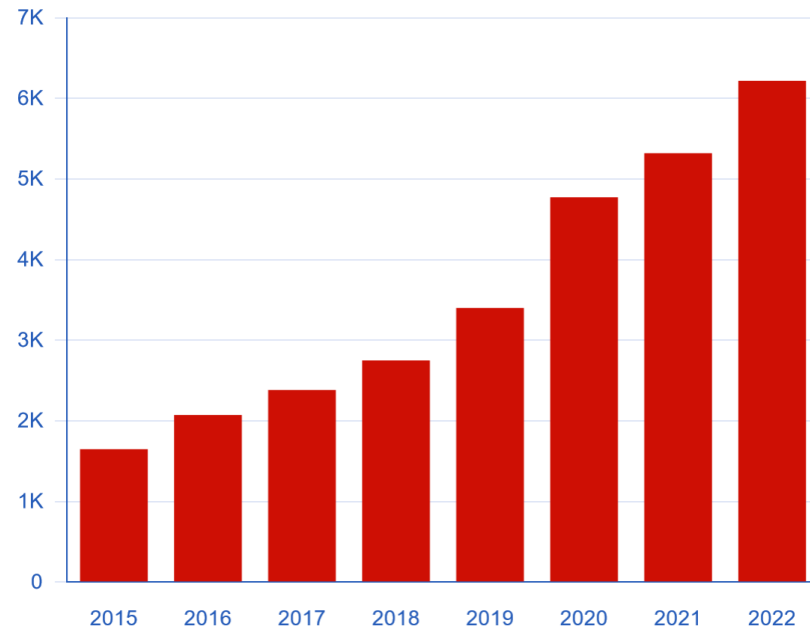
EV charging development Amsterdam



Aantal gebruikte laadpunten, **per jaar** ⓘ

Filter periode van 2015 ▼ tot 2023 ▼

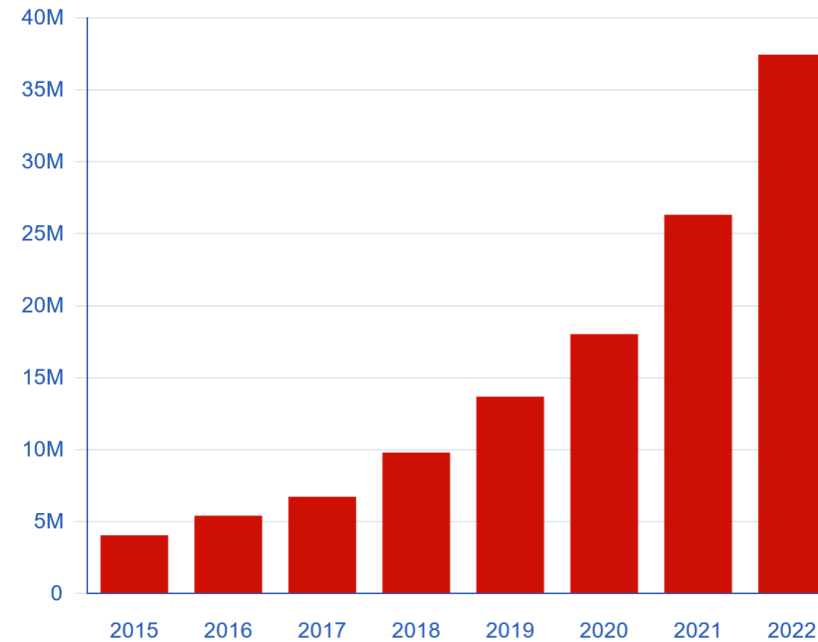
Source: www.evdata.nl



Totaal geladen kWh, **per jaar**

Filter periode van 2015 ▼ tot 2023 ▼

Source: www.evdata.nl

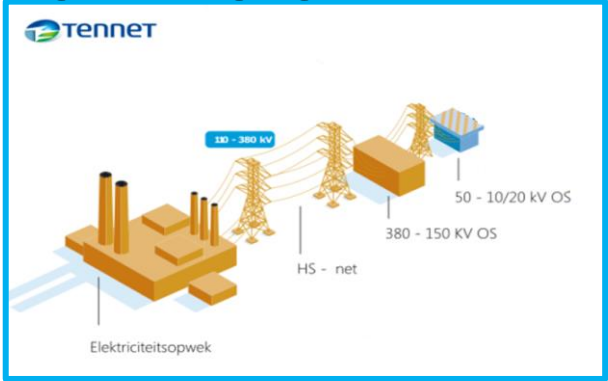


- Results of investments and constant policy:
- Amsterdam has now 4000 charging stations (over 8000 charging points) in the city.

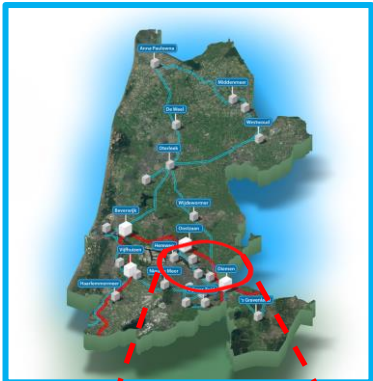


Congestion in Amsterdam

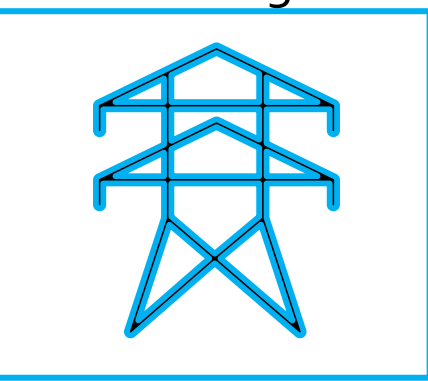
High voltage grid (TENNET)



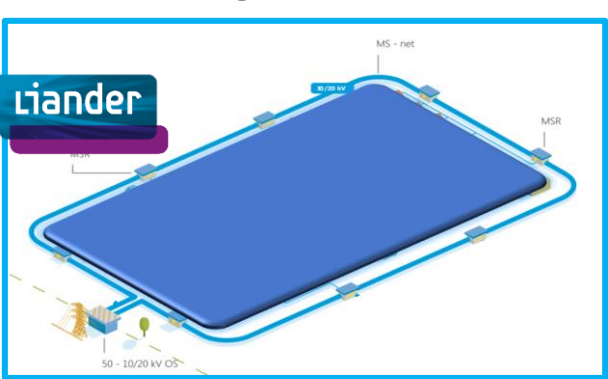
Noord-Holland



When is congestion occurring?



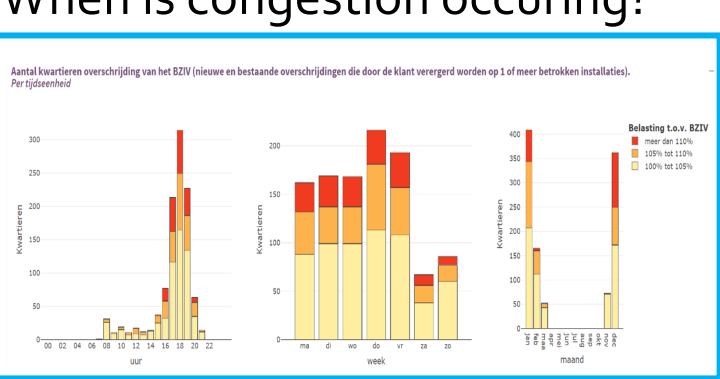
Mean voltage (Liander)



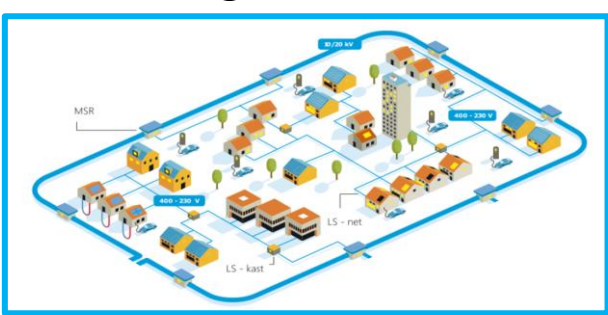
Amsterdam



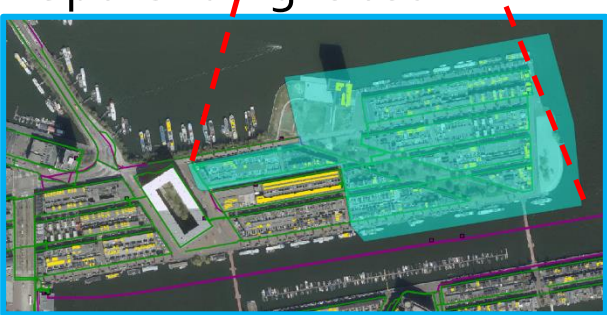
When is congestion occurring?



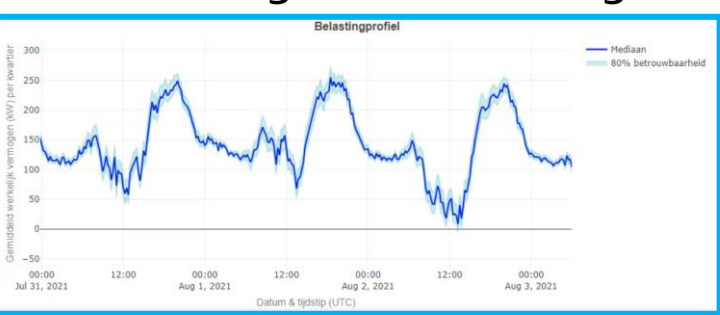
Low voltage (Liander)



Sporenburg-Oost

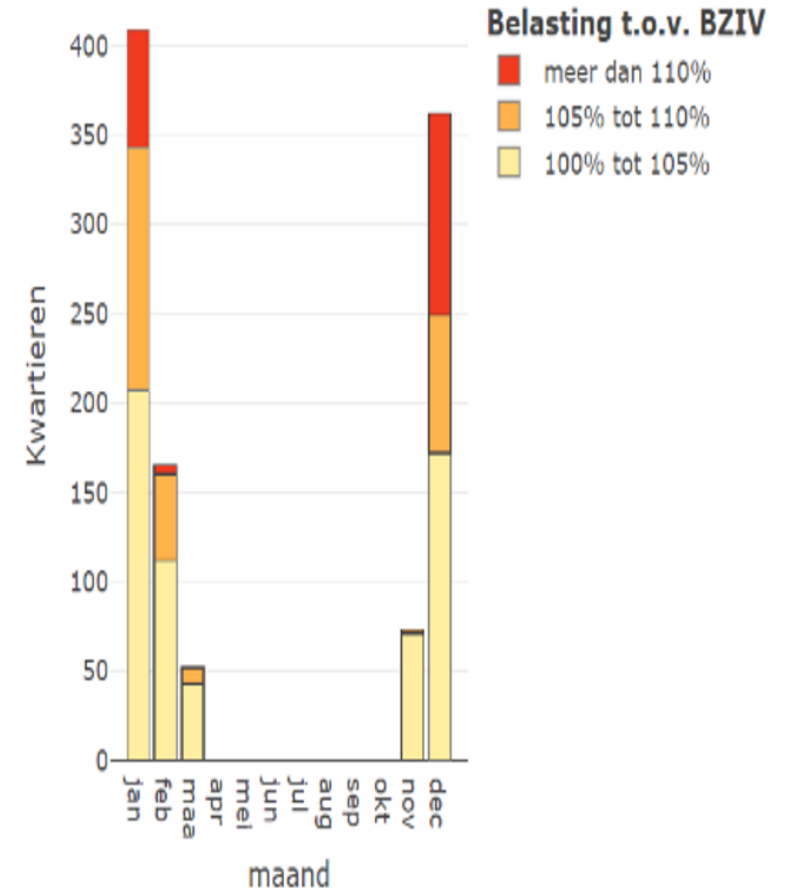
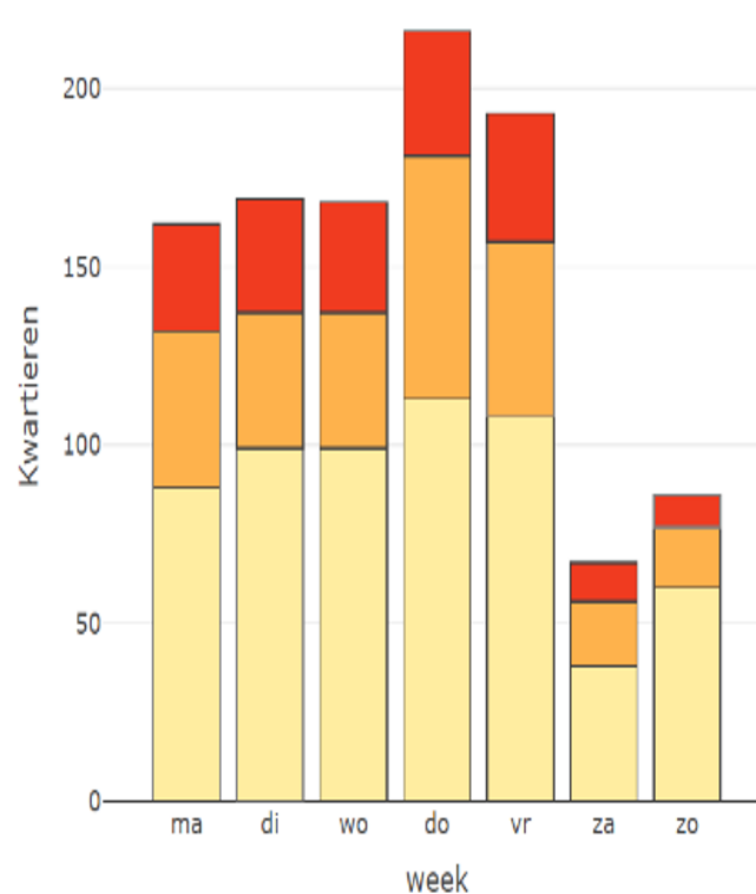
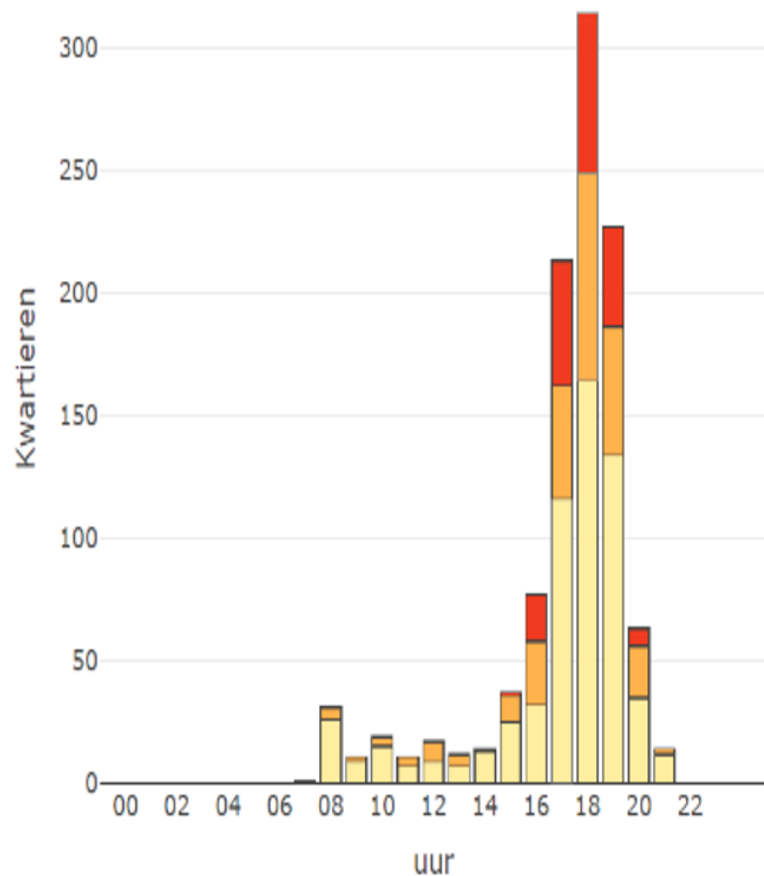


When is congestion occurring?

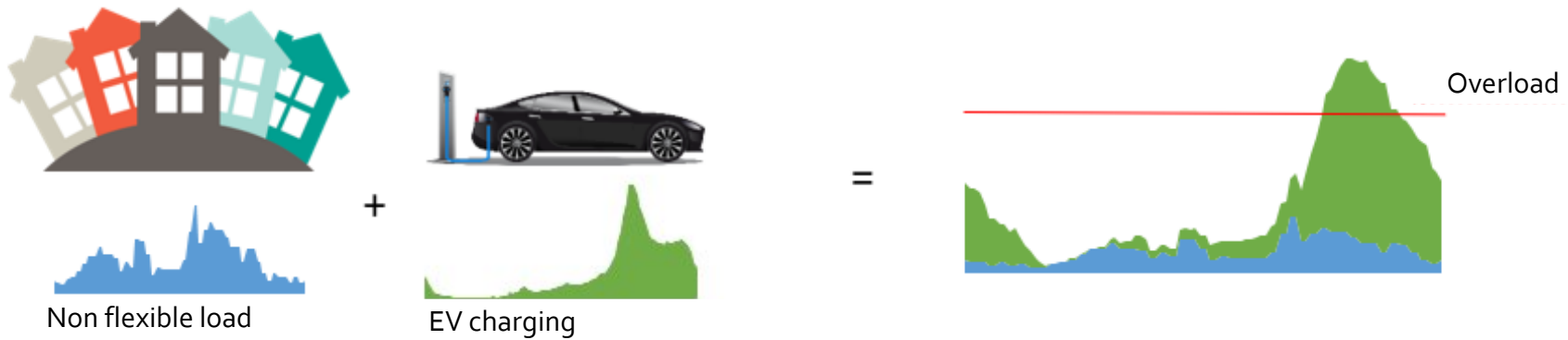


When is congestion occurring?

Aantal kwartieren overschrijding van het BZIV (nieuwe en bestaande overschrijdingen die door de klant verergerd worden op 1 of meer betrokken installaties).
Per tijdseenheid



Power consumption by EV's



Capacity transformation house limited

1. High costs;
2. Inefficient;
3. Time and space limited available;
4. Sustainability and Flexibility key;
5. Including citizen involvement;
6. Alternative energy system.





Two initiatives in a nutshell





FlexCitizen





1

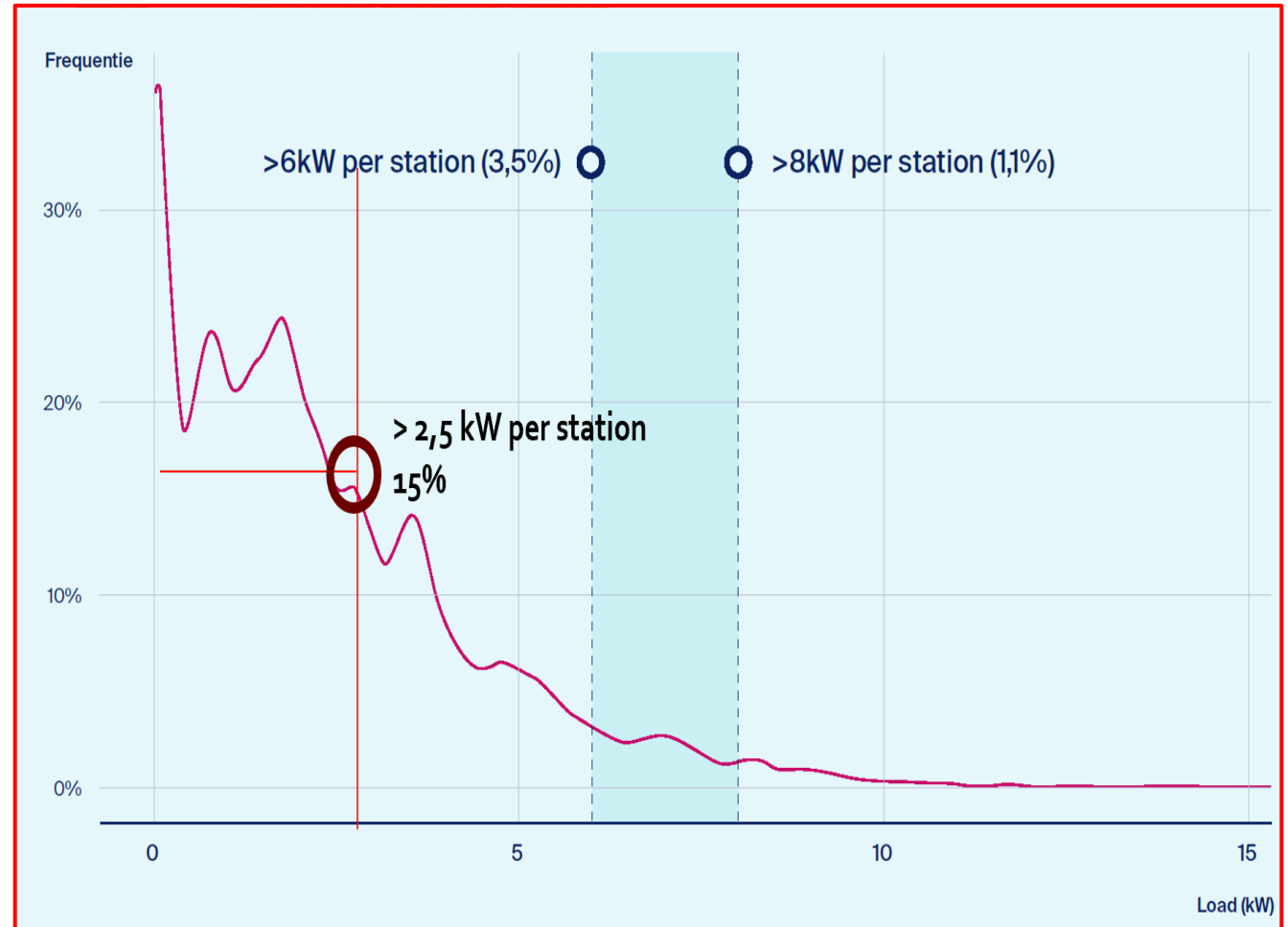
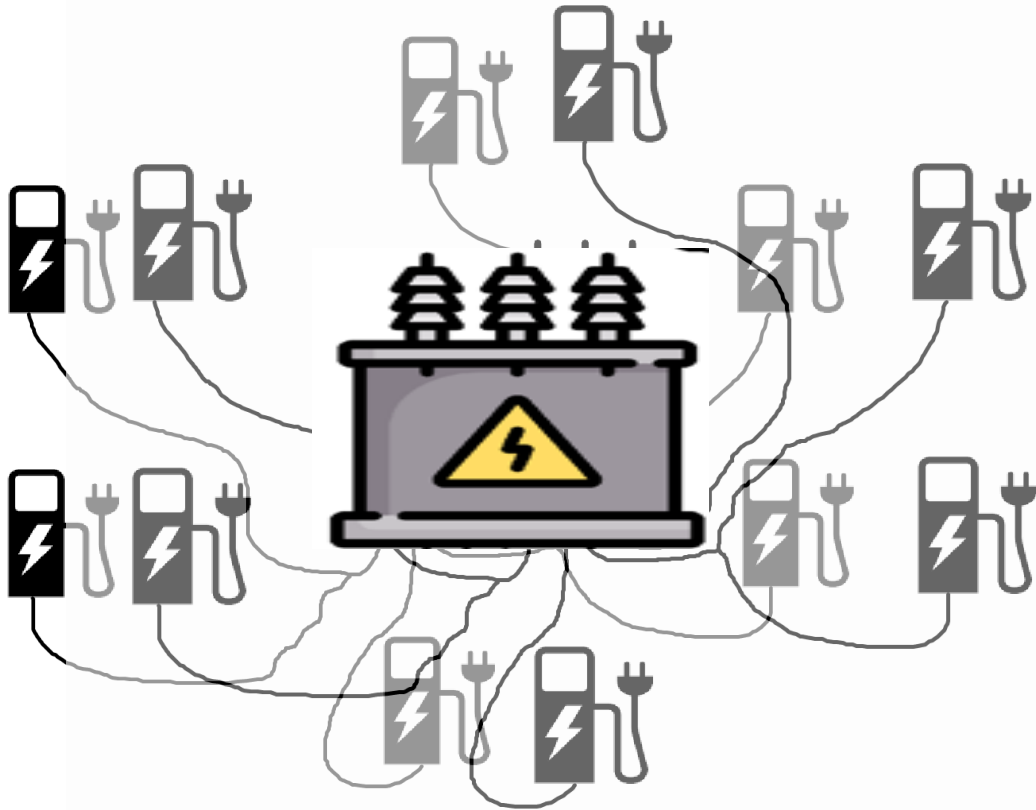


***Flexpower*3**

Charging more when the grid is full

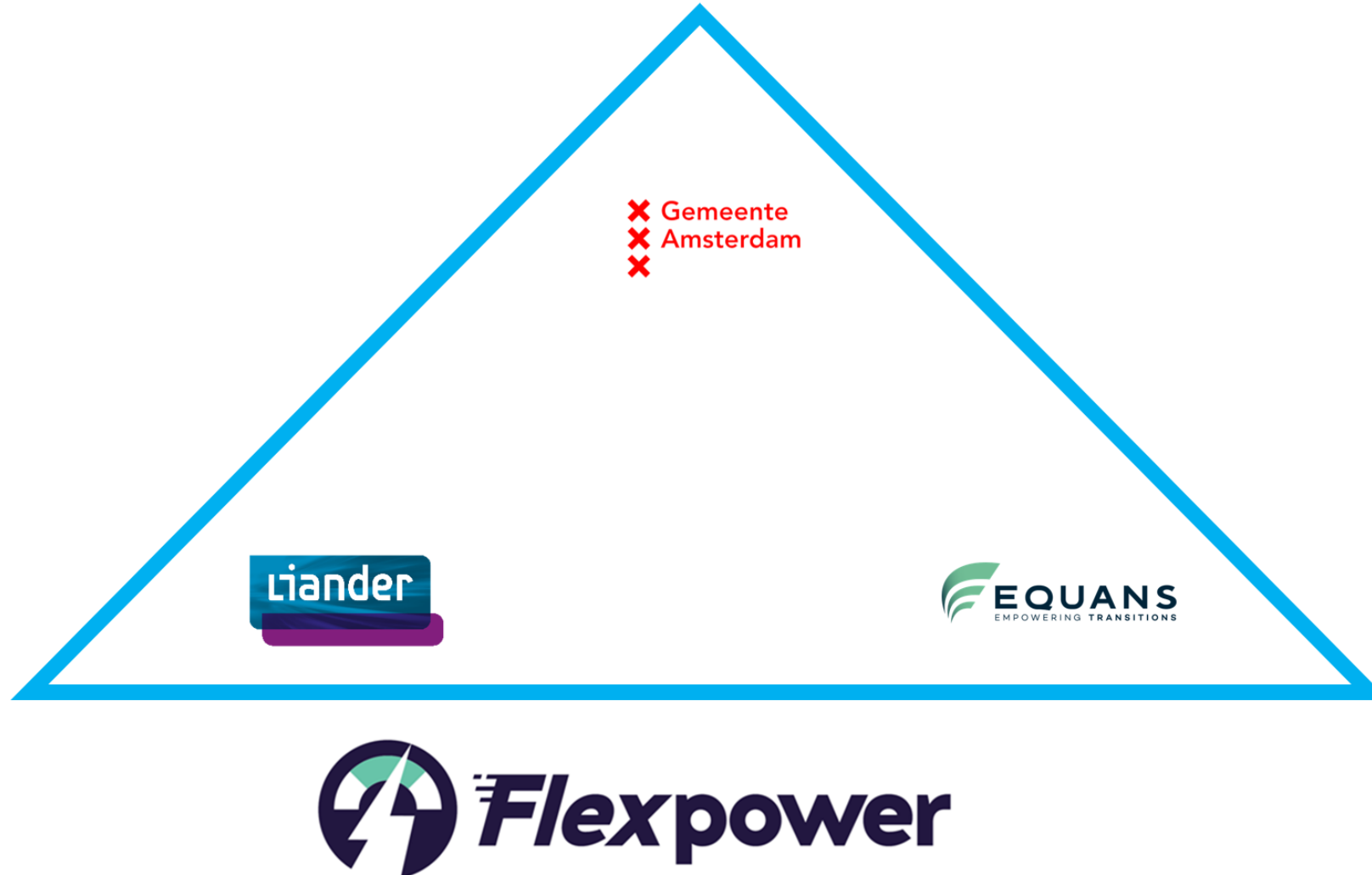


Approach Clustering, Data, Data & Data analysis





Now upscaling !



2



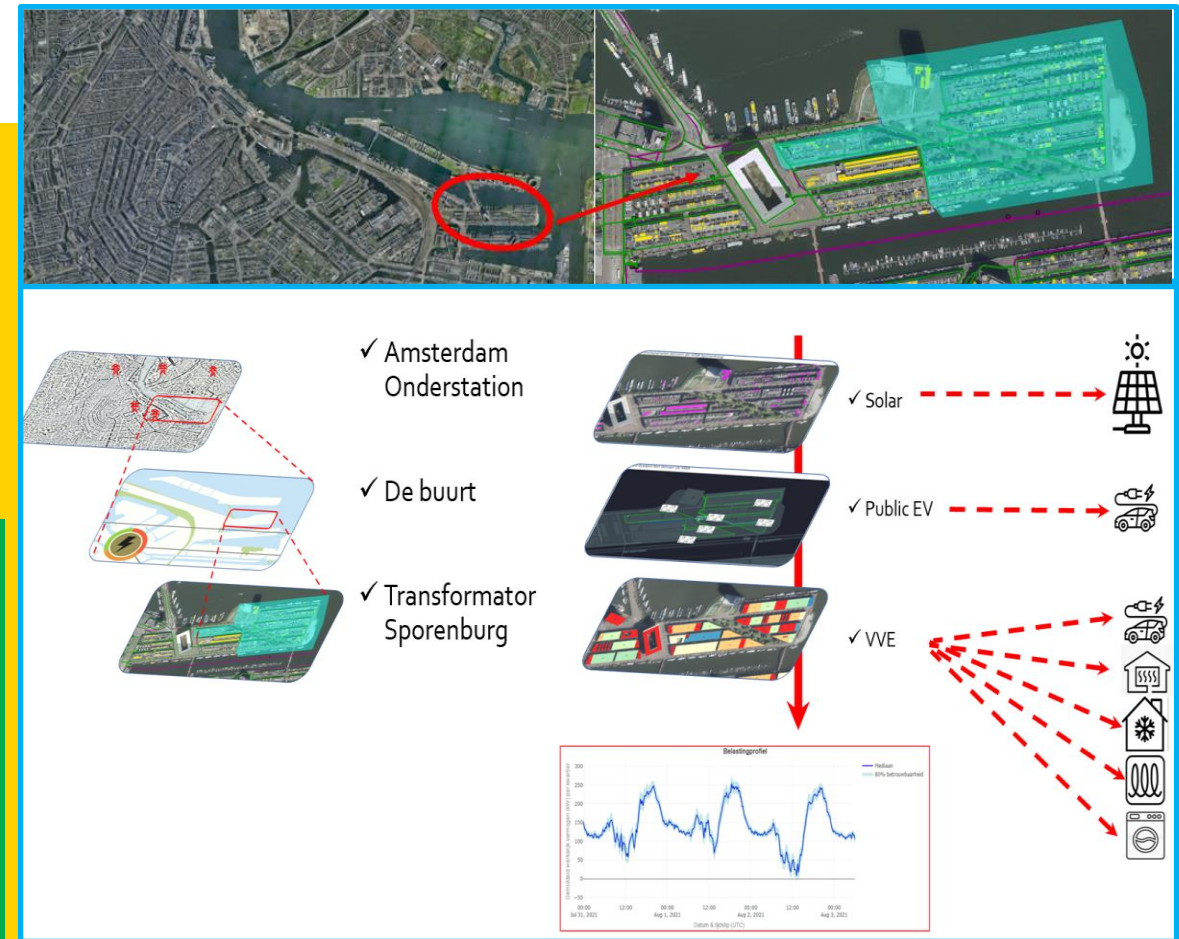
FlexCitizen





Information at different levels in pilot FlexCitizen EU-project

Geografische schaal	Wat te doen	Met en voor wie
Op wijkniveau 	- Analyse wijk en advisering integrale Scenario's en visie ontwikkeling stimuleren ontwikkeling & gedrag.	Voor gemeentes, netbeheerder en Wijk duurzaamheid commissie , wijkoverzicht veranderingen, verschillen per buurt in kaart en wat waar te doen....
Buurtniveau 	- Analyse buurt scenario ontwikkeling en advisering van gas naar duurzaam	Voor VvE's, netbeheerder en Wijk Uitvoeringsplan buurtverwarming, planning voor elektrische mobiliteit & laadinfra zonnepanelen, scenario's, specifiek op buurt niveau
Gebouwniveau 	- Analyse en advies individuele gebouwen, waarbinnen meerdere bewoners/gebruikers Buurtscenario's worden gebouw-specifiek gemaakt.	Woningcorporaties, VvE's, de gebouwbeheerders, individuele gebruikers, bedrijven en bewoners.
Huis, appartement niveau 	- Concreet advies e.g. zonnepanelen, warmtepomp E-mobiliteit, laadinfra, warmtescan (isolatie)	Bewoner, eigenaar en of gebruiker.





FlexCitizen

1. Reduce **congestion**
2. Use **Flexibility** potential;
3. **'Citizen engagement'**
4. Energy-independence;
5. **Growth of local renewables & e-mobility;**
6. Cost price **'own energy'** mobilising;
7. **Energy cooperation;**
8. Replication Potential.



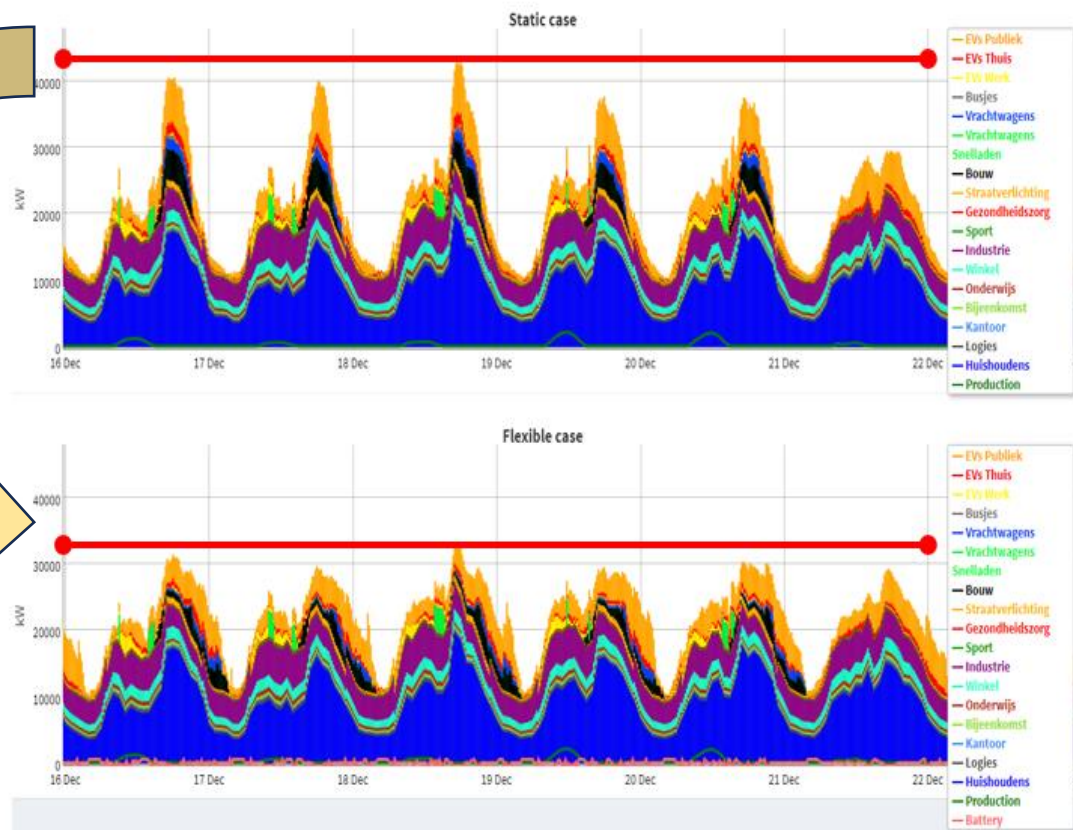


FlexCitizen

1. Reduce **congestion**
2. Use **Flexibility** potential;
3. **'Citizen engagement'**
4. Energy-independence;
5. **Growth of local renewables & e-mobility;**
6. Cost price **'own energy'** mobilising;
7. **Energy cooperation;**
8. Replication Potential.

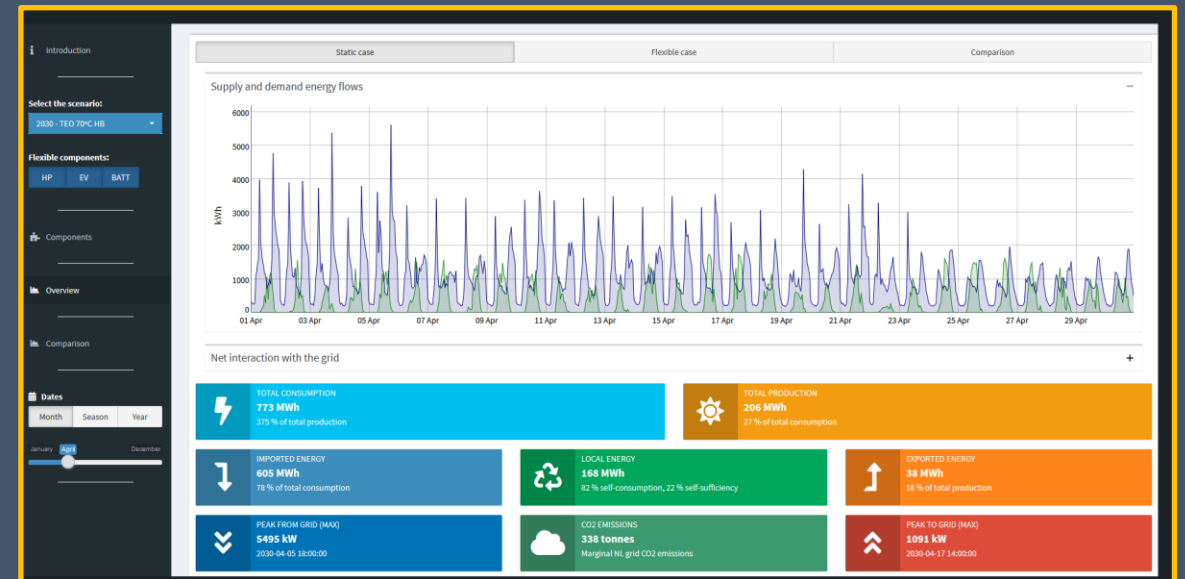


Congestion reduction in Substation Vliegenbos



Results :
scalable ?
replicable ?

- Clear information
- Change in behaviour
- City development
- Company transition
- Applied innovation in Europe
- Open technology



Thank you!

h.niesing@amsterdam.nl

Hugo Niesing

Energy Charging Strategy
Team Emissionfree Mobility
City of Amsterdam

Datagedreven energie-advies