



## National Monitoring Zero Emission Bus

Utrecht  
Wednesday March 30

# Introduction



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Knowledge developer CROW

(and bus driver)

# Introduction:



- CROW  
(Kennisplatform / knowledge platform)
- BAZEB  
(Bestuursakkoord Zero Emissie  
Busvervoer /  
Administrative Agreement Zero  
Emission Bus Transport)
- Monitoring Zero Emission bus

# CROW

The screenshot shows the CROW Academy website. At the top, there is a navigation bar with the CROW logo, a search bar, and links for 'THEMA'S', 'KENNIS', 'CURSUSSEN', 'COMMUNITY'S', 'AGENDA', and 'ONDERSTEUNING'. Below the navigation bar, there are social media icons and a breadcrumb trail 'Home / Cursussen'. The main content area features a featured article titled 'CROW Academie, dé opleider voor de inrichting van Nederland' with a video player and a link to 'crow.nl/academie'. To the right, there is a section titled 'Waarom CROW Academie' with a list of benefits: 'Online cursussen', 'Cursussen op locatie bij jou in de regio', 'Leren in kleine groepen', 'Combinatie van theorie & praktijk', 'Tijd voor eigen inbreng praktijksituaties', and 'Diverse incompany mogelijkheden'. At the bottom right, there is a 'Heb je een vraag?' section with a phone icon and contact information: 'Neem dan contact met ons op van ma t/m vrij tussen 08.00 uur tot 16.30 uur via 0318 - 69 98 88 of cursus@crow.nl'.

kennisplatform  
**CROW**

Zoek in cursussen en opl.   OVER CROW INLOGGEN

THEMA'S KENNIS CURSUSSEN COMMUNITY'S AGENDA ONDERSTEUNING

f t in Home / Cursussen

### CROW Academie, dé opleider voor de inrichting van Nederland

CROW Academie zorgt er voor dat jij kan leren wanneer en waar je wilt om de inrichting van Nederland elke dag weer een stuk mooier en veiliger te maken. Samen met de CROW Academie word jij dé expert in jouw vakgebied.

Welkom bij CROW Academie  
**CROW**  
Word dé expert in jouw vakgebied  
[crow.nl/academie](https://crow.nl/academie)

### CROW Academie Update: cursussen op locatie

CROW Academie geeft in 2022 zowel online als cursussen op locatie aanbieden. Zo kun jij je blijven ontwikkelen! De laatste richtlijnen en veiligheidsprotocollen die CROW Academie hanteert lees je hier.

### Waarom CROW Academie

- ✓ Online cursussen
- ✓ Cursussen op locatie bij jou in de regio
- ✓ Leren in kleine groepen
- ✓ Combinatie van theorie & praktijk
- ✓ Tijd voor eigen inbreng praktijksituaties
- ✓ Diverse incompany mogelijkheden

### Heb je een vraag?

Neem dan contact met ons op van ma t/m vrij tussen 08.00 uur tot 16.30 uur via 0318 - 69 98 88 of cursus@crow.nl

## Kennisplatform / knowledge platform

- (online) knowledge modules
- manuals
- measurement and design tools
- courses

“to make The Netherlands more beautiful, safer and better together with partners”

# BAZEB



The screenshot shows the homepage of the 'Zero Emission Bus' website. At the top left is the logo 'ZERO EMISSIE BUS' with a right-pointing arrow. To the right of the logo is a navigation menu with links for 'Home', 'Onderwerpen', 'Bestuursakkoord', 'Kennis', 'Nieuws', and 'Contact'. Below the navigation is a large banner image of a green bus at a stop. Overlaid on the banner is the text 'Zero Emissie Bus' in large white font, followed by a smaller line of text: 'Gesorteerd over vijf onderwerpen vind je hier actuele informatie en naslagpublicaties over zero-emissiebusvervoer.' Below the banner is a white box containing the text: 'Nederland is koploper binnen Europa met betrekking tot zero-emissiebusvervoer. Deze site is de plek voor organisaties en professionals die daar een bijdrage aan willen leveren. Vertrekpunten zijn de doelstellingen zoals' followed by a blue information icon (a lowercase 'i' in a square).

Bestuursakkoord Zero Emissie Busvervoer /  
Administrative Agreement Zero Emission Bus Transport

Dutch public transport authorities  
(PTA) have agreed that from 2025  
all new public transport buses will  
be zero emission and from 2030 all  
buses in operation.

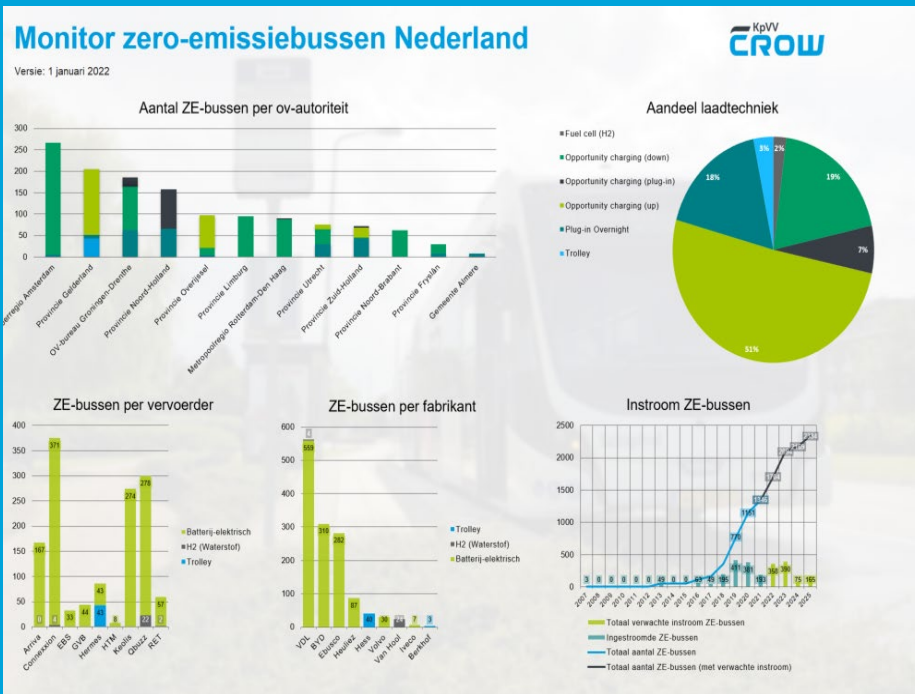
# BAZEB



Role of CROW:

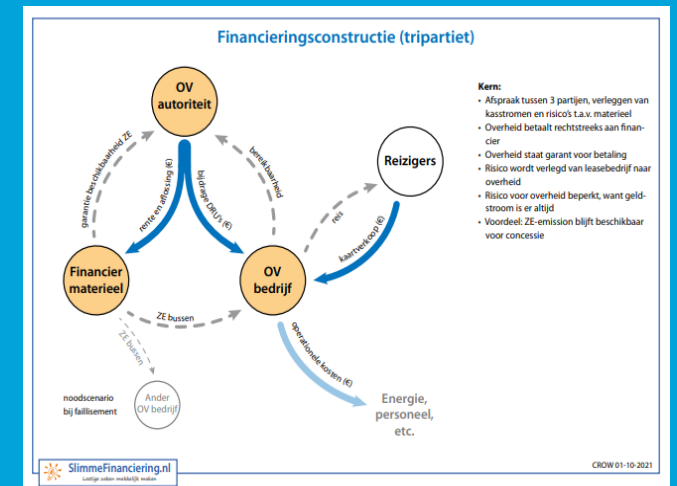
- bring knowledge together
- develop and manage knowledge publications
- monitor zero emission buses

# Monitoring



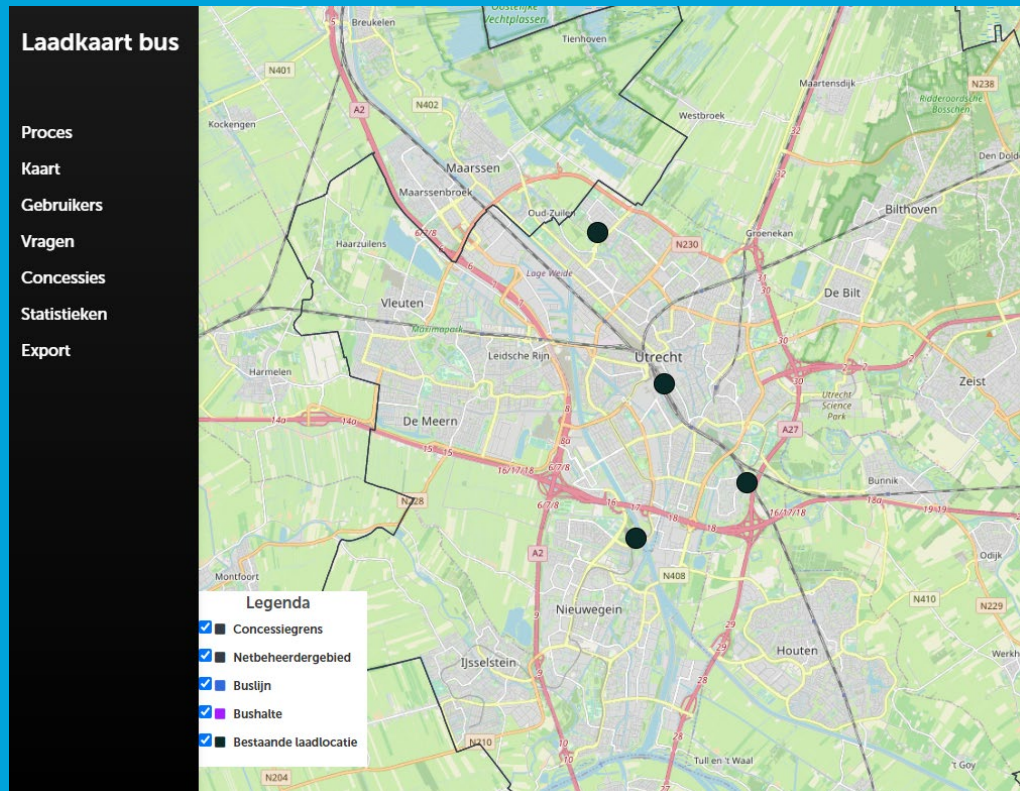
a new monitor every quarter

# BAZEB is also





# Charging map



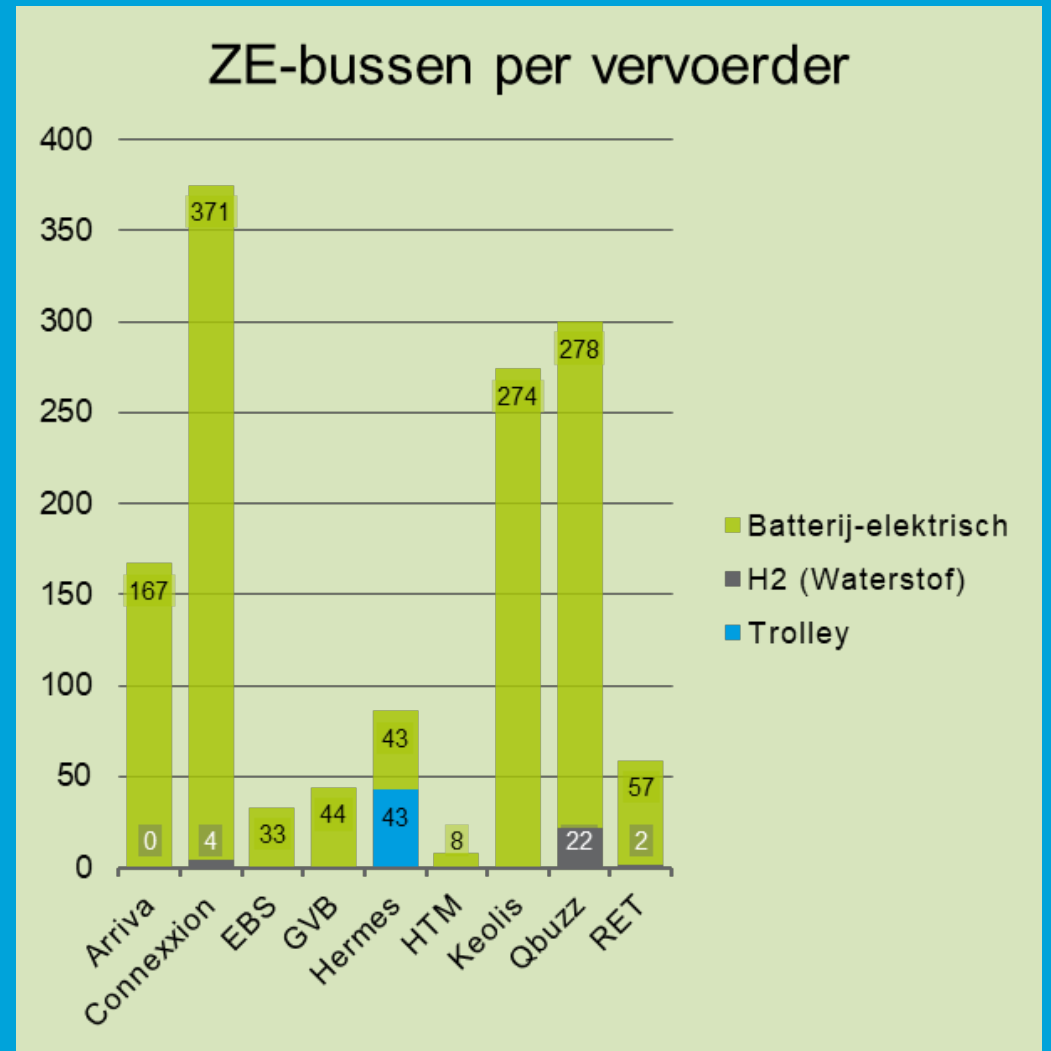
Map with open access information about:

- Concessions
- Grid manager electricity regions
- Actual charging locations
- more specific information for requesting new locations

# Monitoring

a new monitor every quarter:

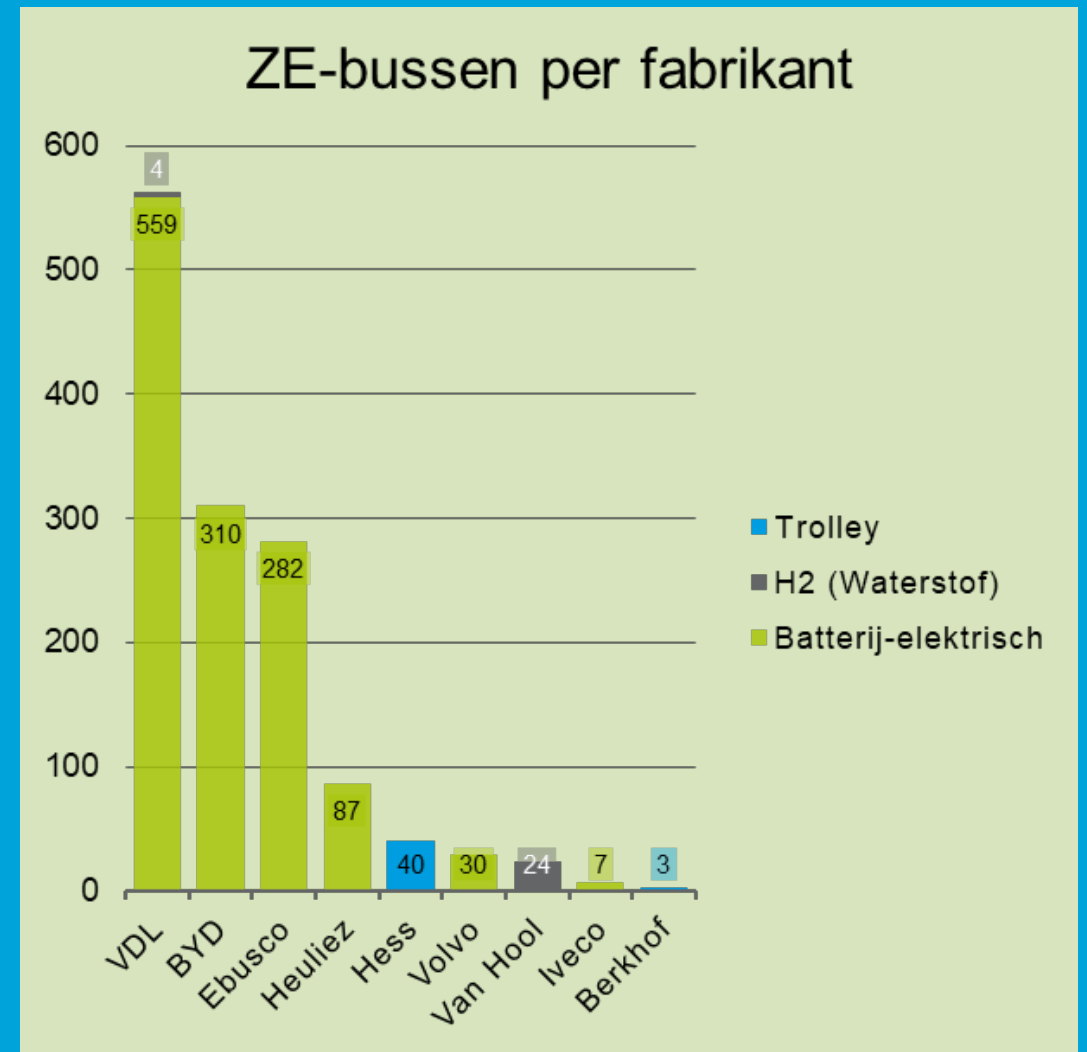
- Number of zero emission buses  
(per carrier, ...)



# Monitoring

a new monitor every quarter:

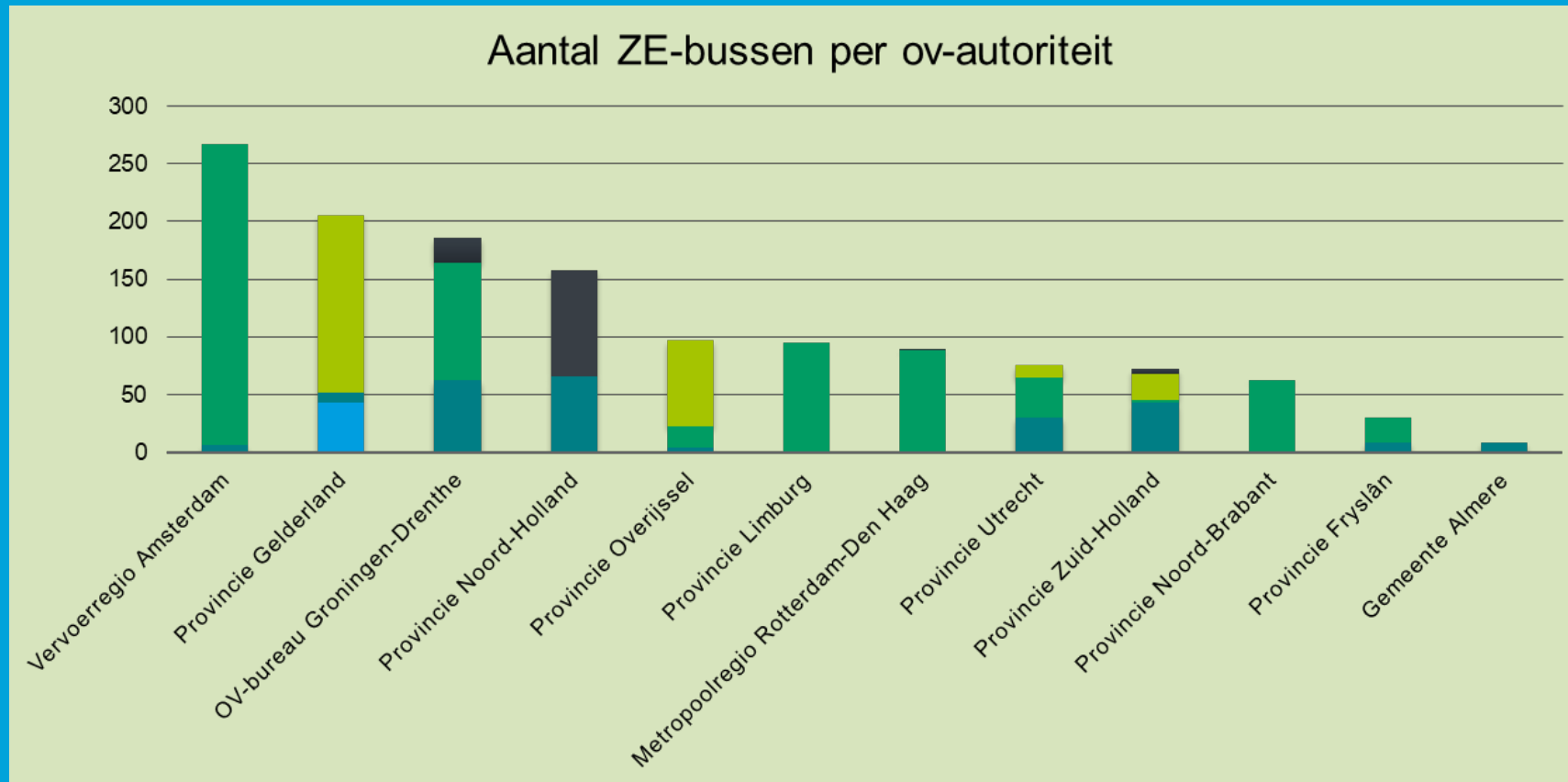
- Number of zero emission buses  
(per carrier, manufacturer ...)



# Monitoring

a new monitor every quarter:

- Number of zero emission buses (per carrier, manufacturer and public transport authority)

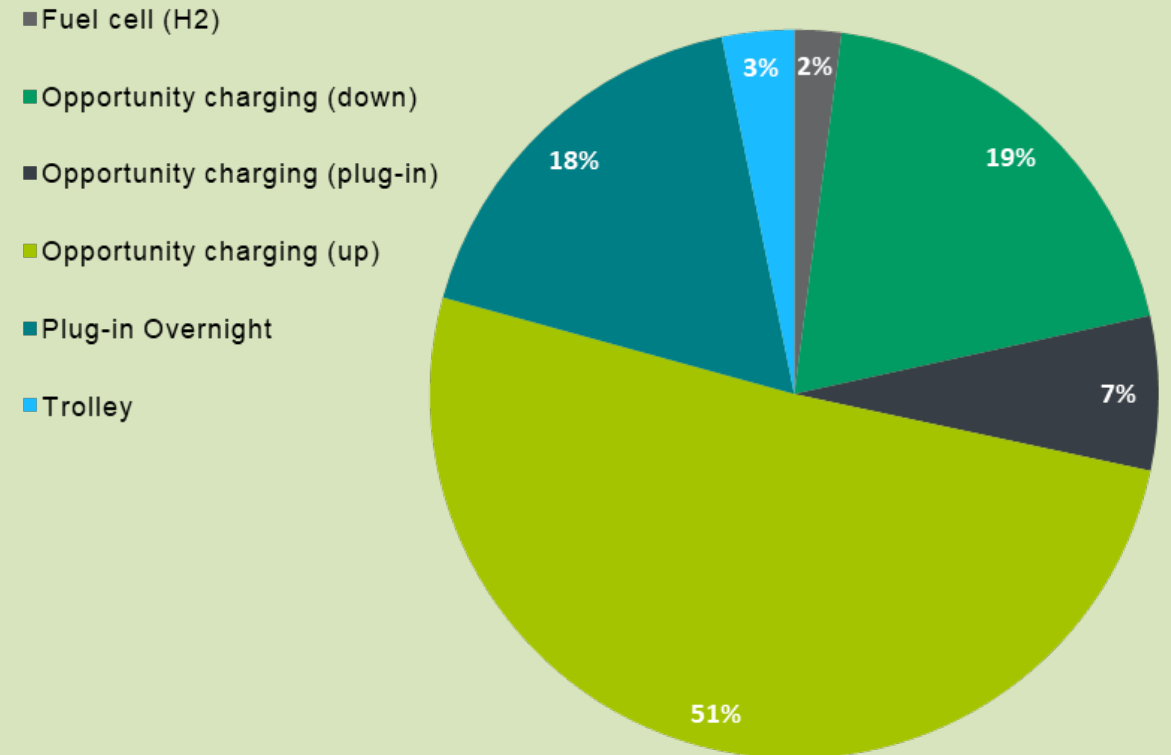


# Monitoring

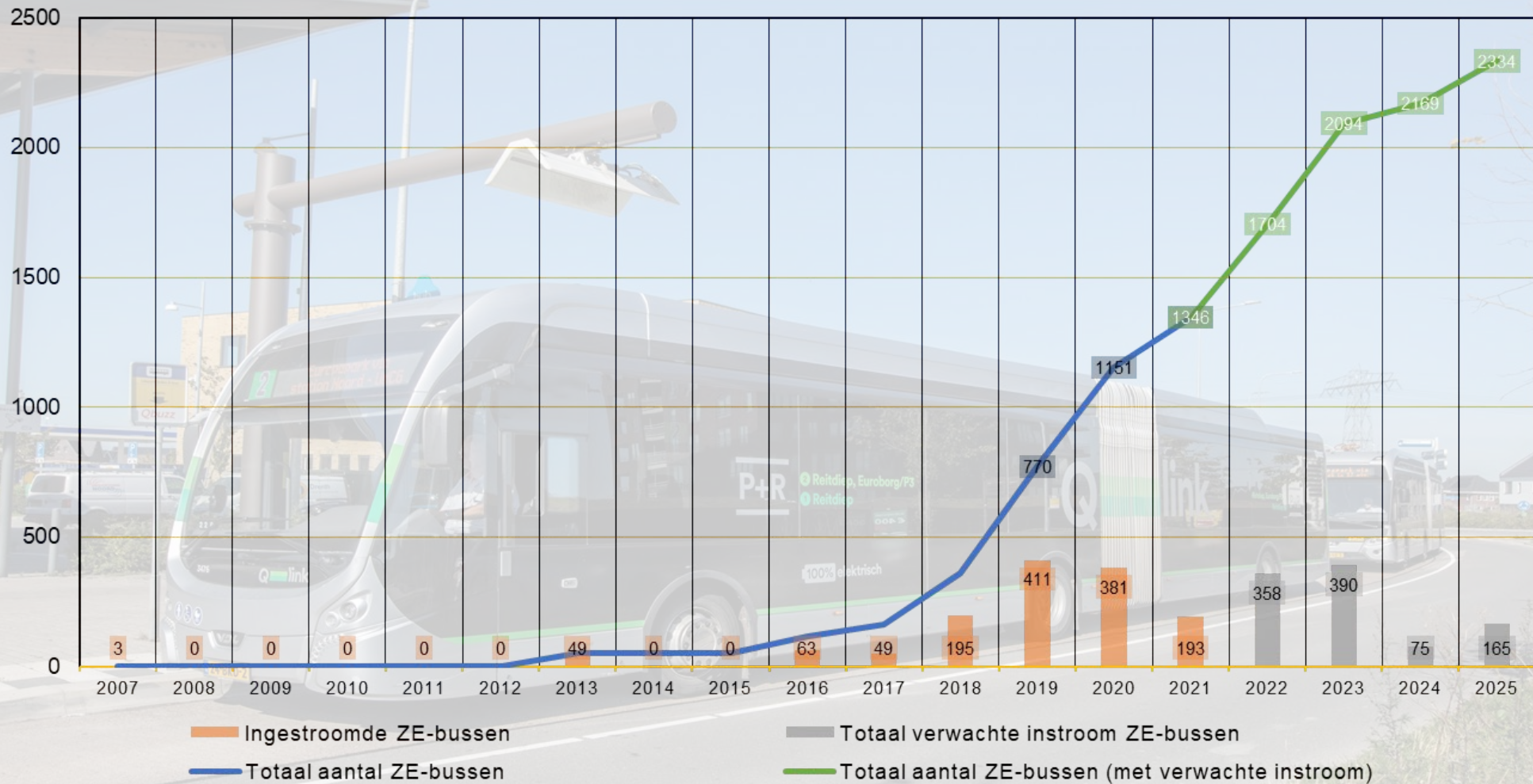
a new monitor every quarter:

- Number of zero emission buses (per carrier, manufacturer and public transport authority)
- Percentage of charging technology

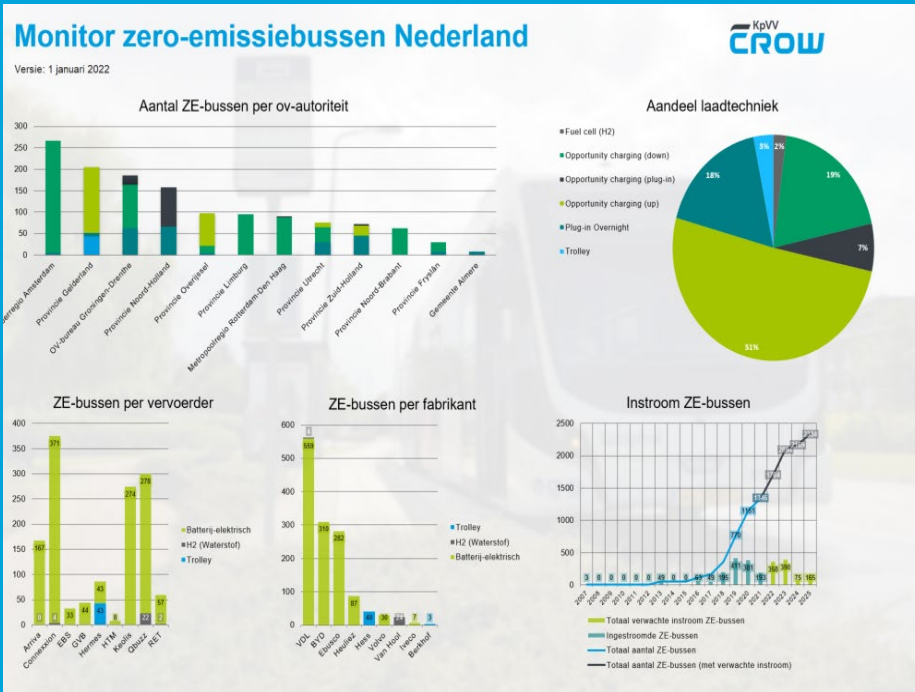
Aandeel laadtechniek



## Instroom ZE-bussen



# Monitoring

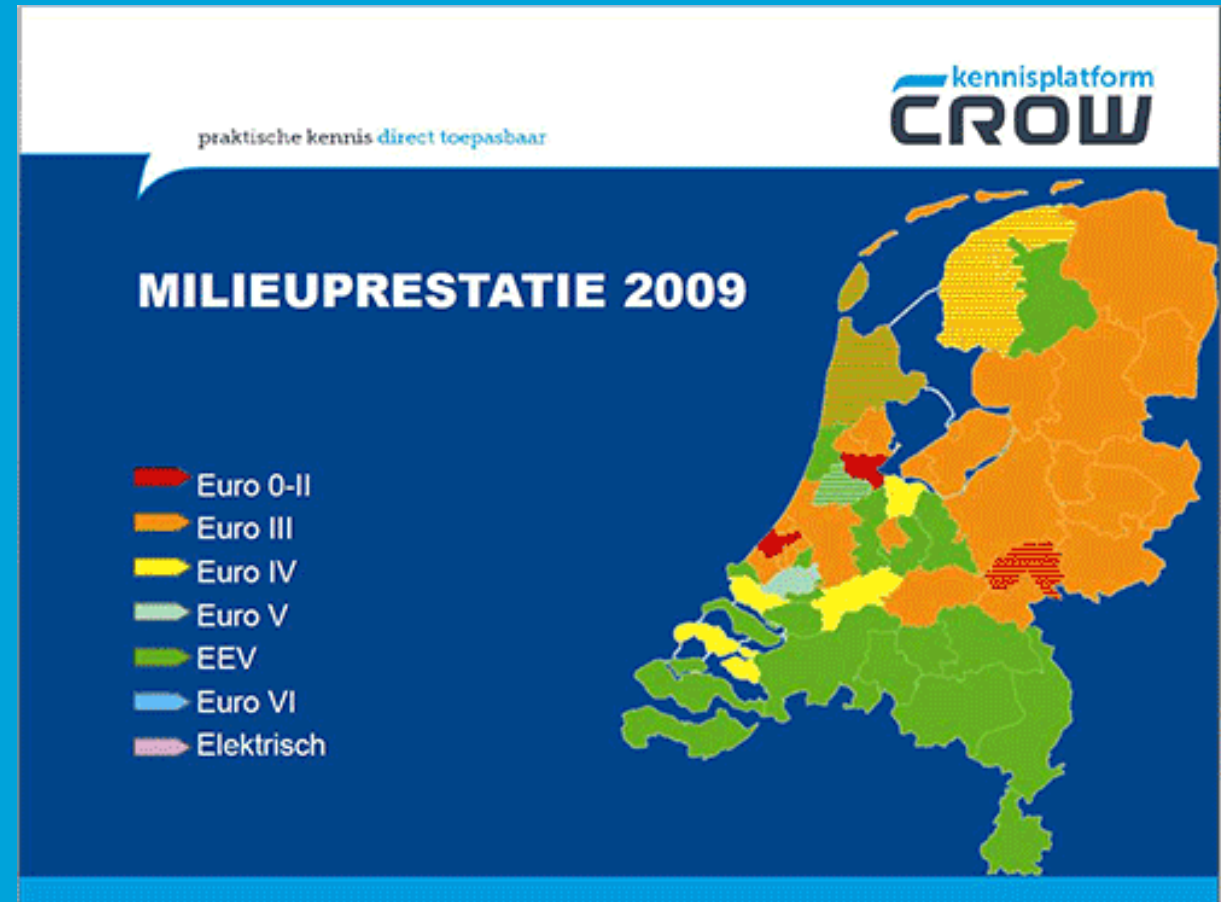


a new monitor every quarter:

- Number of ZE buses (per carrier, manufacturer and public transport authority)
- Percentage of ZE buses charging technology
- Expected influx of ZE buses

# Monitoring

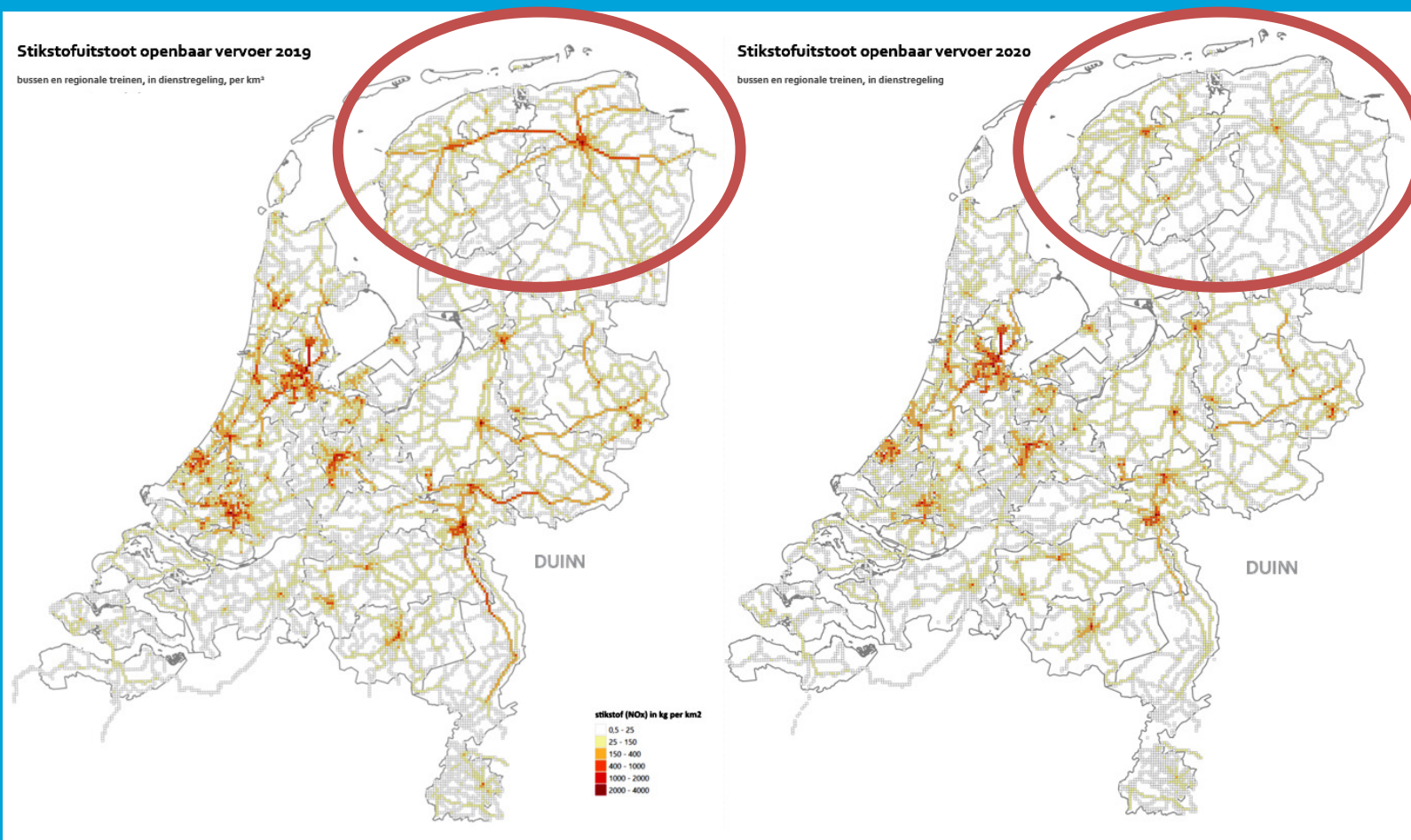
Most common emission class per concession since 2009



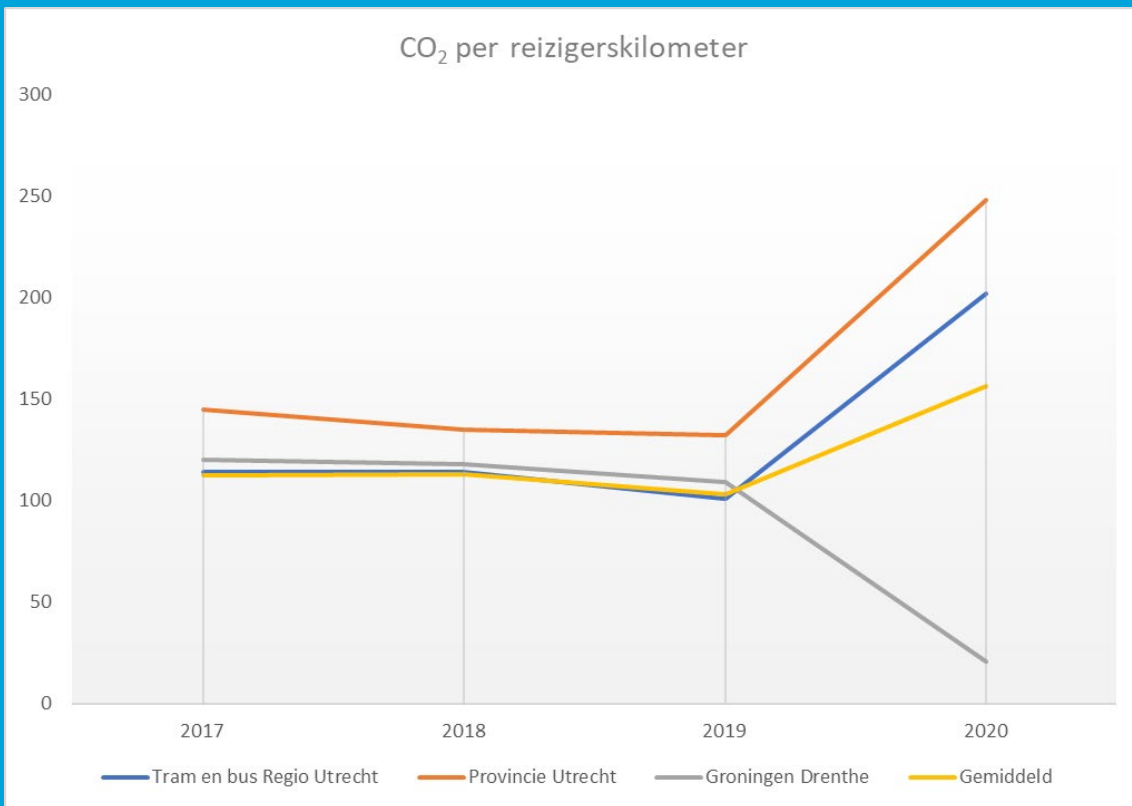


# Monitoring

NOx for total of public transport

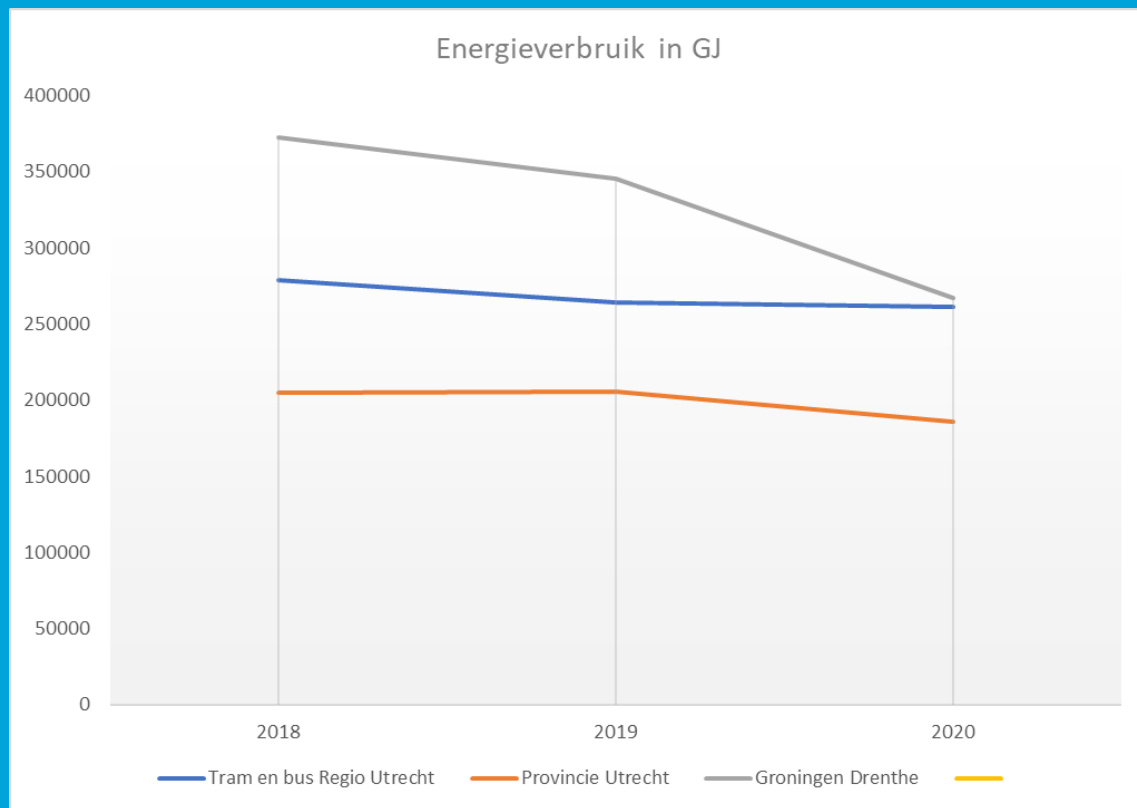


# Monitoring



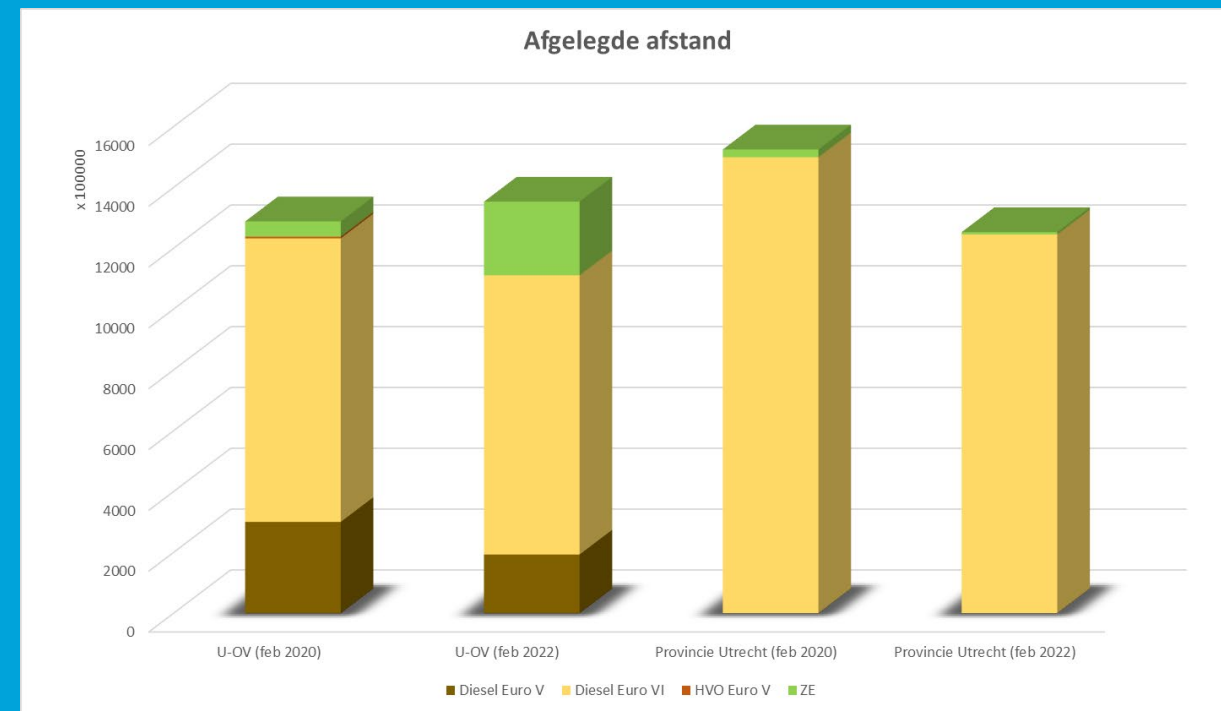
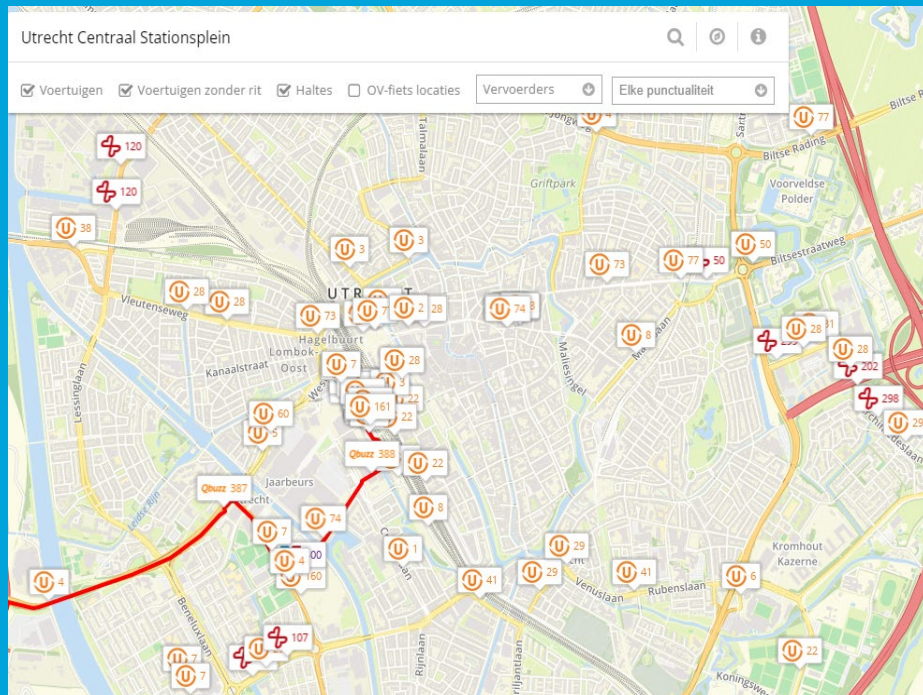
CO<sub>2</sub> per passenger kilometer per concession

# Monitoring



Total Energy use per concession

# Monitoring (future)



from intake to operation  
(realtime)

# Questions / discussion



Thanks for the attention.

More info at [www.zeromissiebus.nl](http://www.zeromissiebus.nl)

# Shall we work together tomorrow?

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 <https://www.crow.nl/thema-s/collectief-vervoer>