

The future is green

Multi-brand electric fleet in practice
Groningen Drenthe

Michel van der Mark Qbuzz



Nov 25th, 2021

 ov bureau groningen drenthe

Qbuzz

Qbuzz = Public Transport Operator

Groningen Drenthe region:

- 100.000 commuters per day
- 1.000 employees
- 436 buses



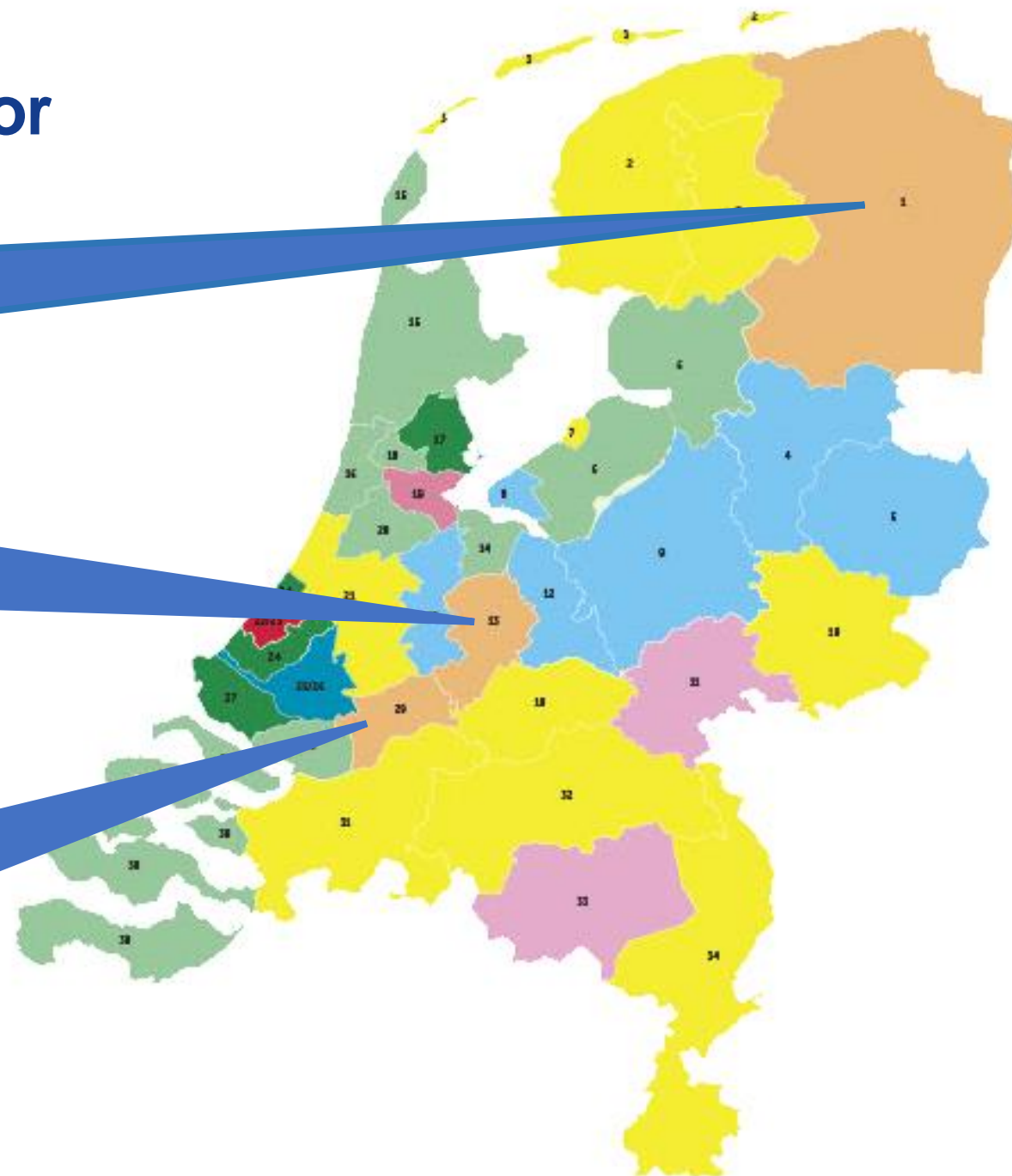
Utrecht region (U-OV):

- 200.000 commuters per day
- 1.200 employees
- 335 buses
- 49 trams



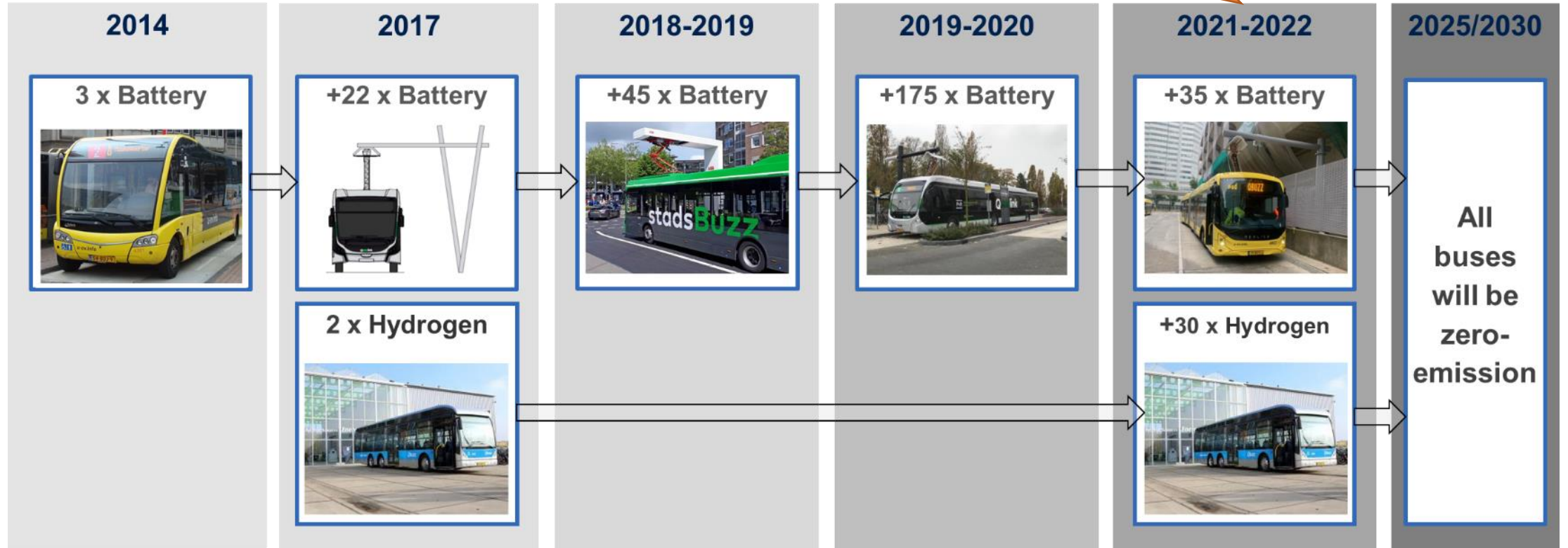
DMG region:

- 50.000 commuters per day
- 450 employees
- 166 buses
- 10 trains



Qbuzz zero emission roadmap

40% of the Qbuzz
fleet (800+ buses)
is ZE



OV-bureau = Public Transport Authority

5.600 km²
1,1 mln inhabitants
(Groningen 220.000)

PT contracts
€ 114,5 mln
Per year

Passenger revenue
€ 57 mln
Per year
(50%)

PTO
Qbuzz

Passengers
27 mln
per year (2019)

Passenger-km
290 mln
per year (2019)

Busses
360+



Algemene klanttevredenheid
GD-concessie



CO₂ emission (2020)
20 gram
per passengerkm

Busdrivers
900+

Just do it: small scale in start 2017

Battery electric city bus (2)

- Plug charging at depot (50 kW)
- Autonomy of 200-250 km
- TCO-neutral on a 10 year basis



Hydrogen regional bus (2)

- Green hydrogen
- Autonomy of 300+ km
- € 2,8 mln (FCHJU, ministry, province)

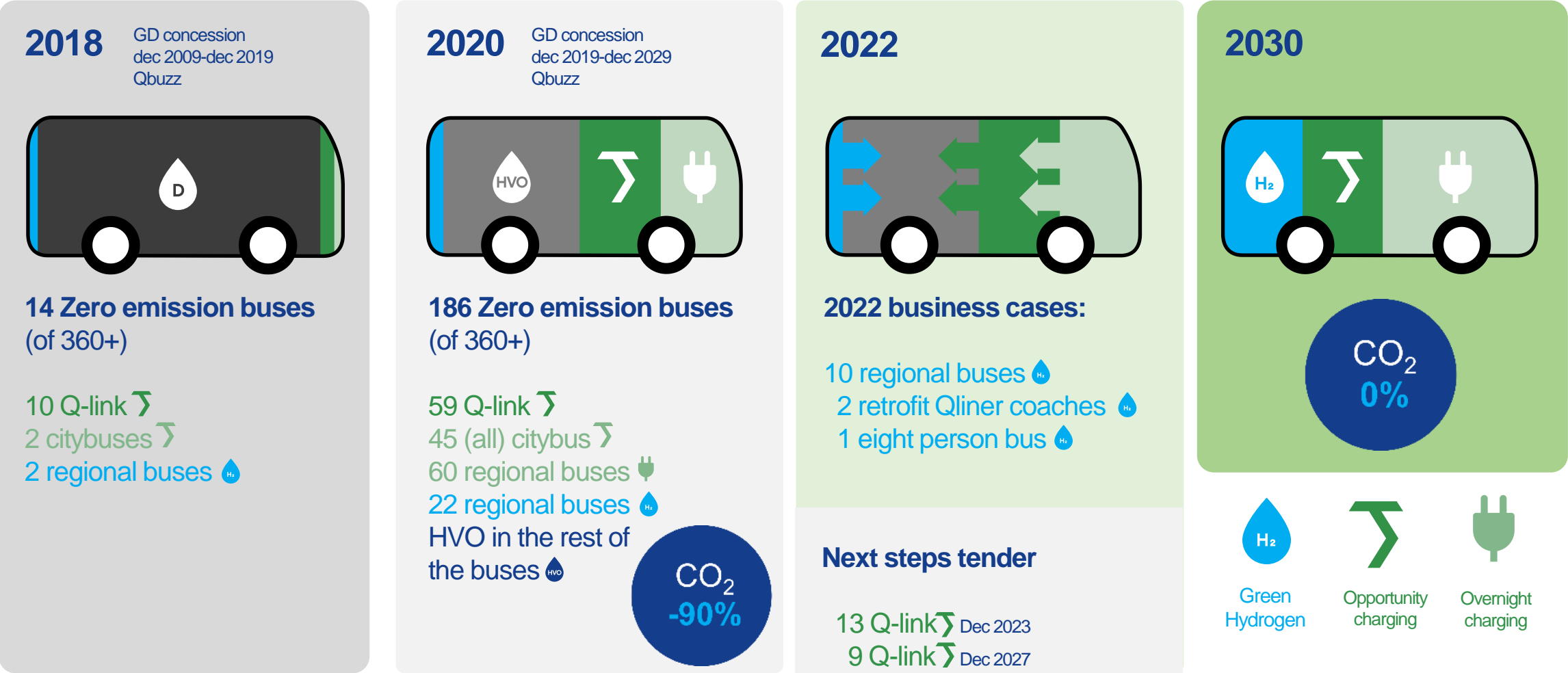


Battery electric Q-link (10)

- Depot and on-route charging (300 kW)
- Autonomy of 120 km
- € 1,5 mln charging infrastructure

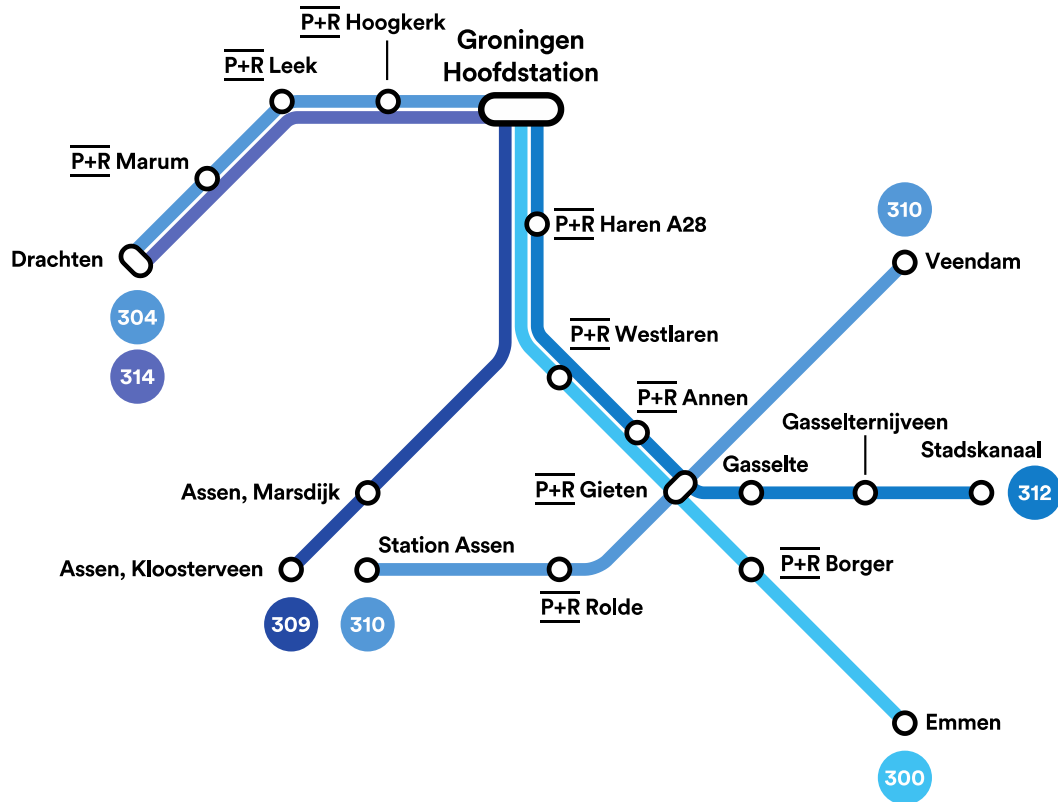


Zero emission roadmap Groningen Drenthe 2018 - 2030



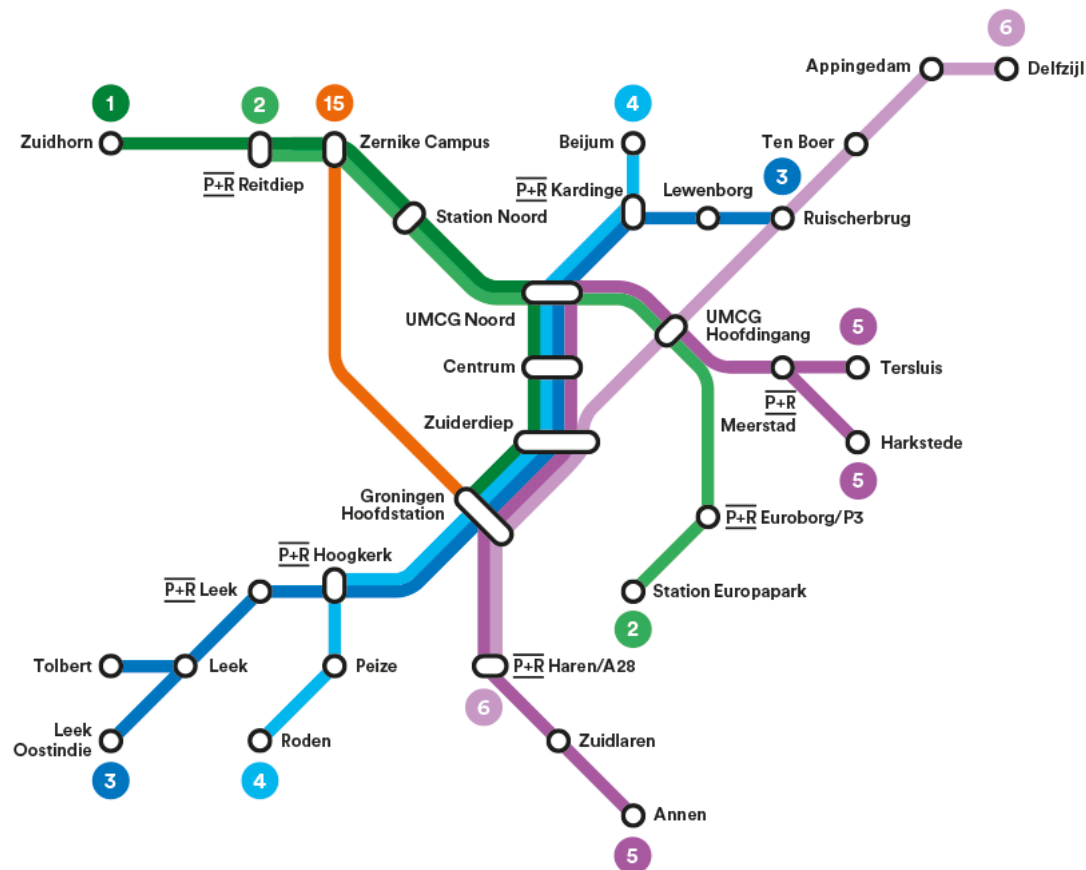
1. Qliner: 'motorwaybus' between bigger cities

Qliner | 2021



51 Qliner buses 15 meter
9 doubledecker buses
High floor, 100 km/h max, average 60 km/h

2. Q-link: frequent semi-urban, fixed route and colour



3. Citybus (12 and 18m)













45 buses
Innercity (150-250 km/day)

4. Regional bus (12 and 18m)



200 buses
Longer distances (300-600 km/day)
Partly motorway, partly innercity, 80 km/h max

Multi-vendor strategy Groningen Drenthe

	Regular citybus	Regional bus	Q-link	Qliner	Overhead charging	Plug charging
Electric						
Hydrogen						
HVO (Biodiesel)		 Mercedes-Benz	 Mercedes-Benz			

ZE buses battery electric

33 city and 10 Q-link buses VDL

- 10 VDL Citea's SLFA-181 Electric / 180 kWh (2018)
- 11 VDL Citea's SLFA-180 Electric / 288 kWh (2020)
- 32 VDL Citea's SLF-120 Electric / 216 kWh (2020)
- Charging with a pantograph and charging station.
- Fast recharging on the road, slower recharging at the depot and full recharging overnight.
- Range between 120 and 170 kilometers.

62 regional buses Ebusco

- 12 meter
- 363kWh battery
- 105 kWh per 100 km
- Charging with a plug, at the depot.
- Range between 220 and 280 kilometers.

49 Heuliez GX 437 Q-link

18 meter.

- Charging with a pantograph and charging station.
- Fast recharging on the road, slower recharging at the depot and full recharging overnight.
- Range between 105 and 125 kilometers.

Qbuzz



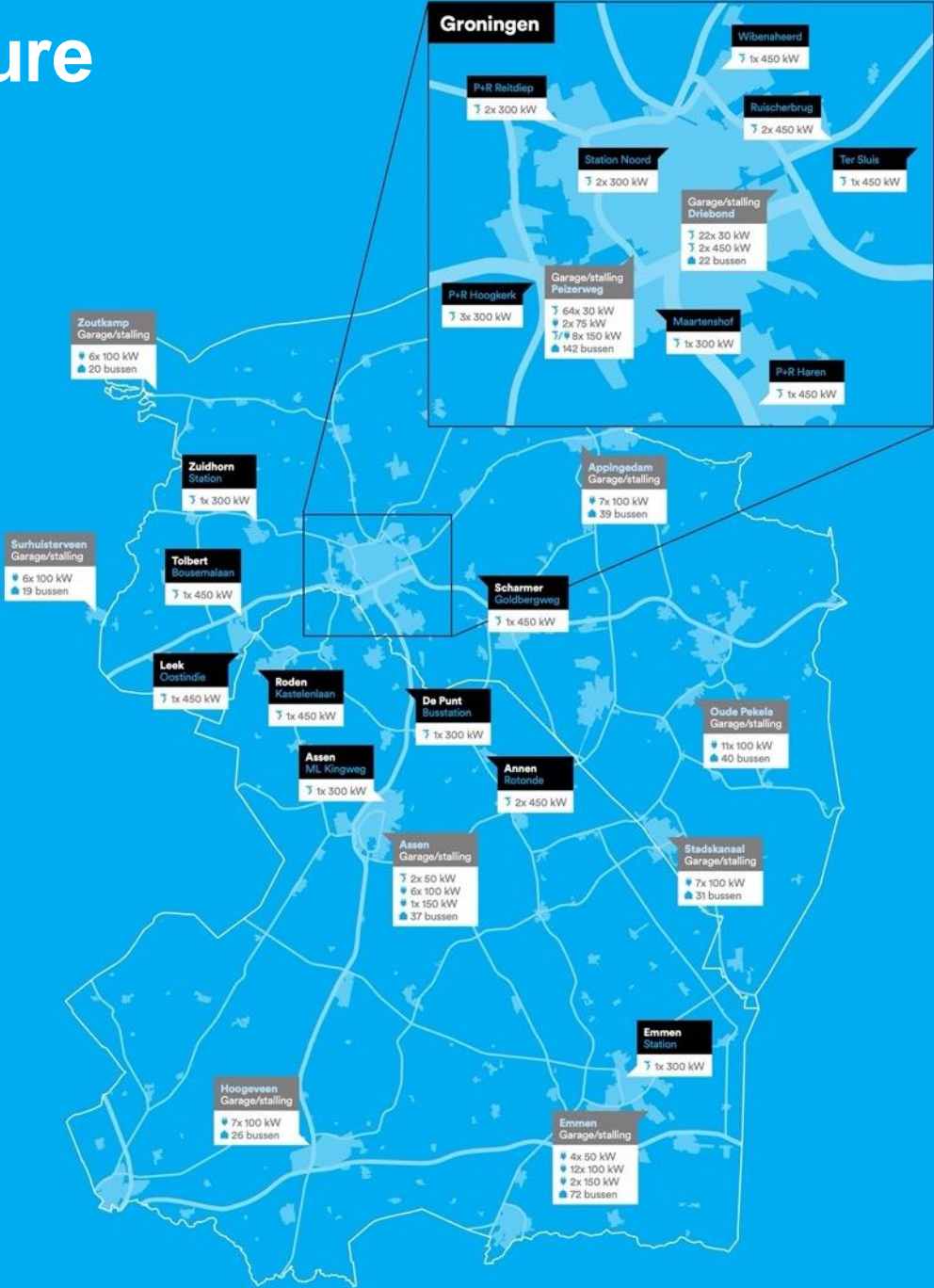
Charge infrastructure



25 'end of line' opportunity chargers (fast, 300-450 kW)



Qbuzz



100 depot overhead chargers (50-150kW)



65 depot plug-in chargers (slow)

The future is green and data driven

Buy the bus and chargers, own the data

Qbuzz

 ov bureau groningen drenthe






Fleet monitoring



Charger monitoring

Charging station position and status



CHARGING STATION ID	VENDOR ID	CONNECTORS	POWER	SOC	TIME TILL 100%	REMAINING RANGE	VEHICLE NAME
D.APM.7	ABB	#1  150 Charging	99 kW	<div><div>40%</div></div>	Unavailable	Unavailable	bus 6151 - 6156
D.ASN.1D	ABB	#1  150 Charging	99 kW	<div><div>67%</div></div>	2h 18m	326 km	7318
D.ASN.2B	HLX	#1  50 Charging	50 kW	<div><div>98%</div></div>	35m 58s	Unavailable	bus 6151 - 6156

ovbureau.nl/zero-emissie

Come see for yourselves
in Groningen and Drenthe !

Drenthe

ER GAAT NIETS BOVEN [®]
GRONINGEN

 ov bureau groningen drenthe

Qbuzz