

OV-bureau Groningen Drenthe heading for zero emission



Erwin Stoker
Manager development



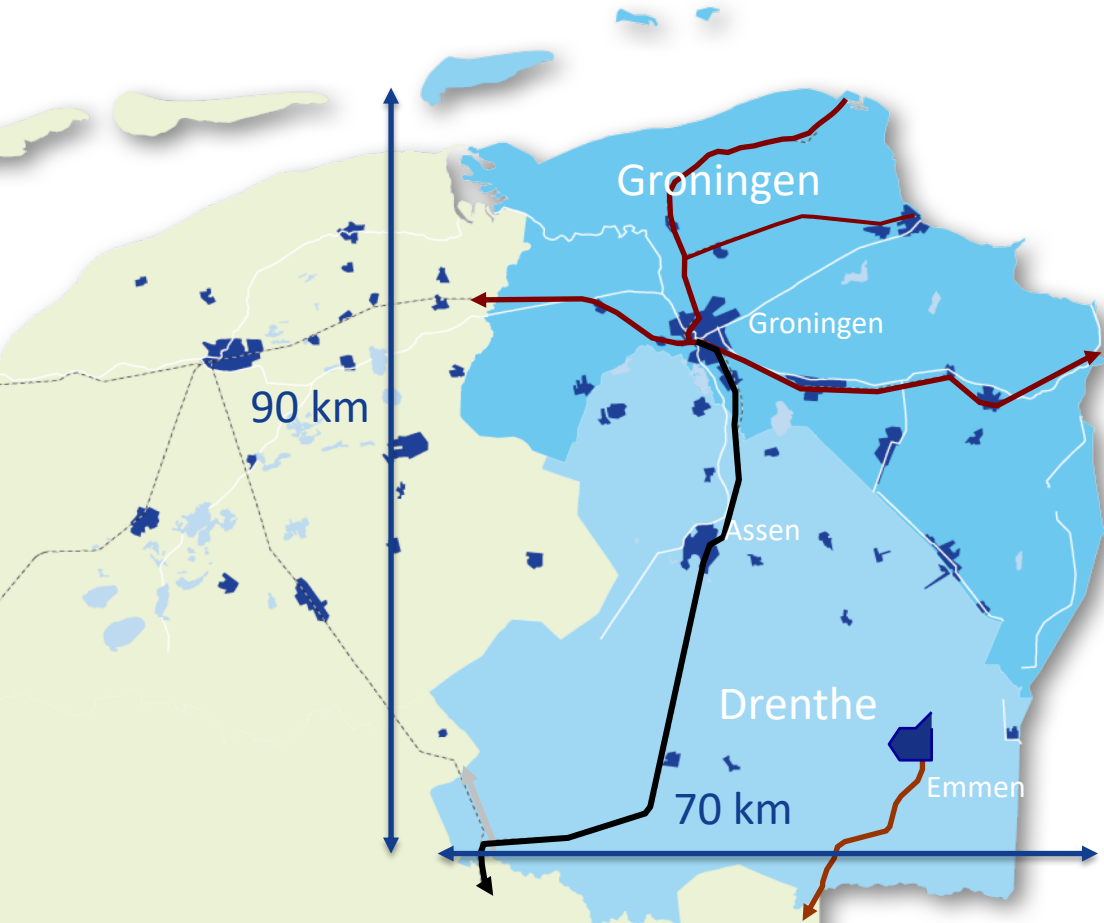
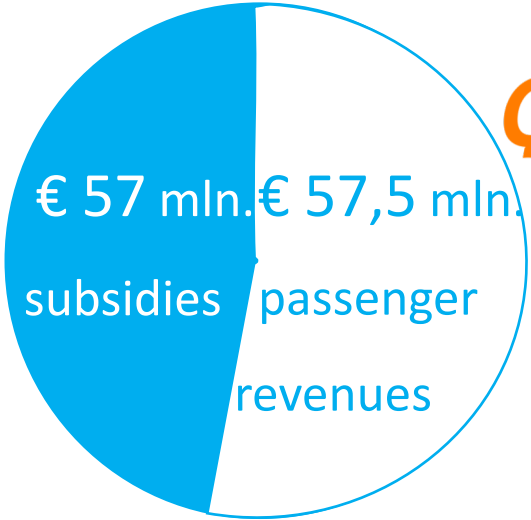
Bezoek West-Vlaanderen
2019, Nov 5th

Public Transport Authority Groningen and Drenthe

PT bus contracts
€ 114,5 mln
Per year

5.600 km²
> 1 mln inhabitants
(Groningen 220.000)

PT Operator
Qbuzz



Passengers
27 mln
per year

Passenger kilometers
290 mln
per year

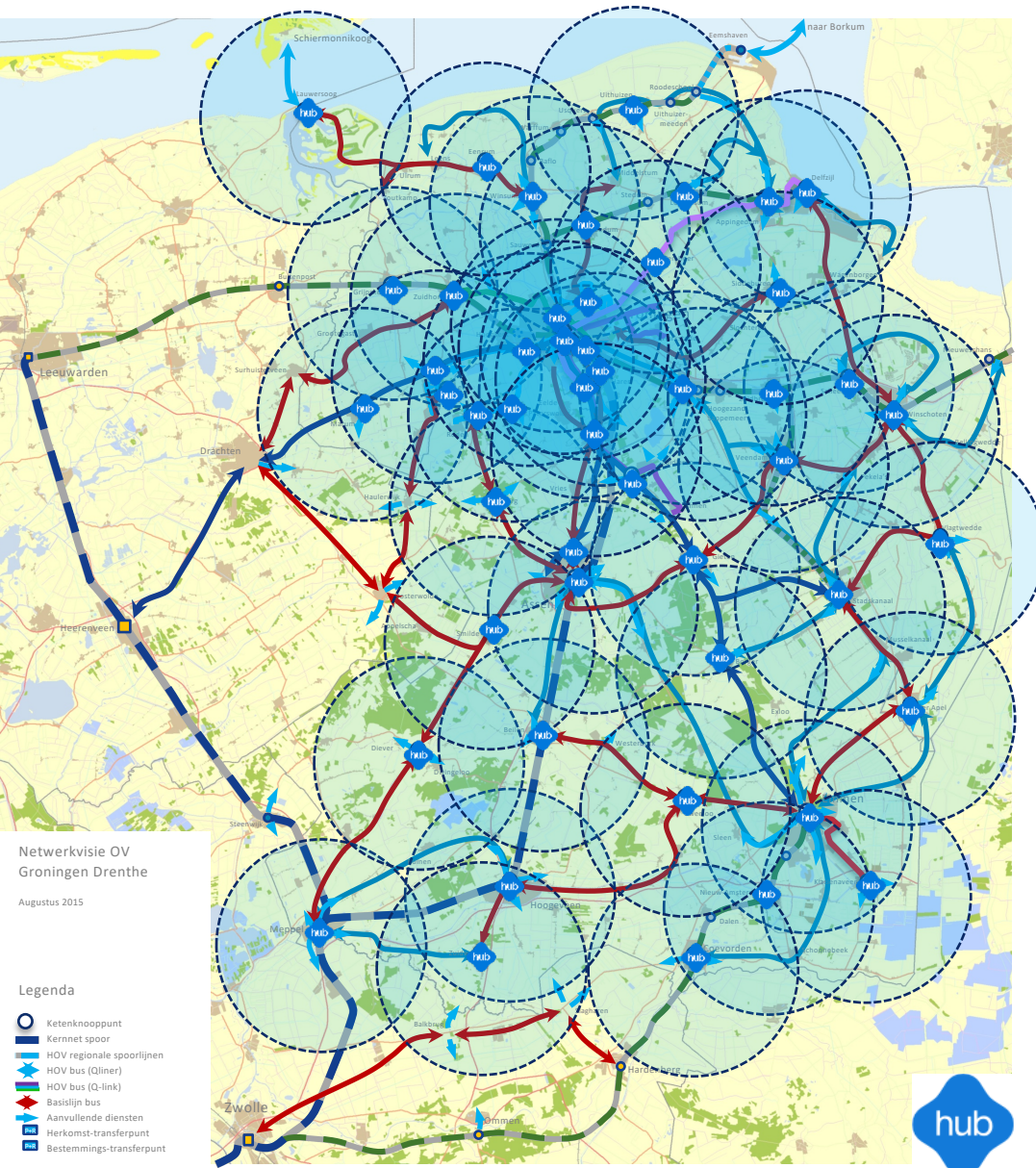
360
buses

CO2 emissions (2017)
113 grams
per passenger kilometer

2017
Algemene klanttevredenheid
GD-concessie



Netwerkopbouw



HOV



> 20 jaar
Route, Halte

Altijd, 7-24u
15/10/5 min
frequentie
Avond 30 min



60% reizigers

Basisnet



10 jaar
Verbinding

Altijd, 7-24u
Ieder uur



32% reizigers

Aanvullend



Vraagafhankelijk
8% reizigers



Philosophy: Invest in strong connections

2009: 2-4 p.h.

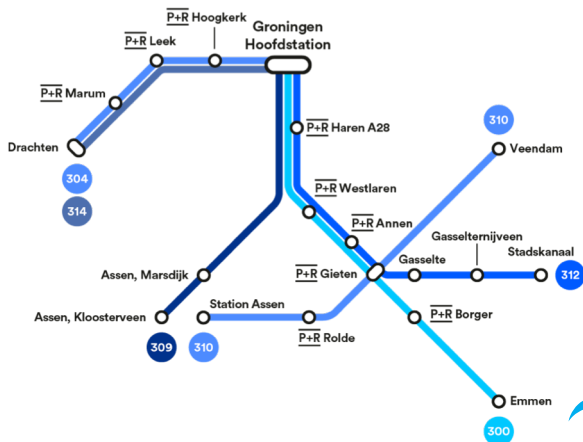


2014: longer, more frequent (4-6 p.h.)



10-15% growth per year

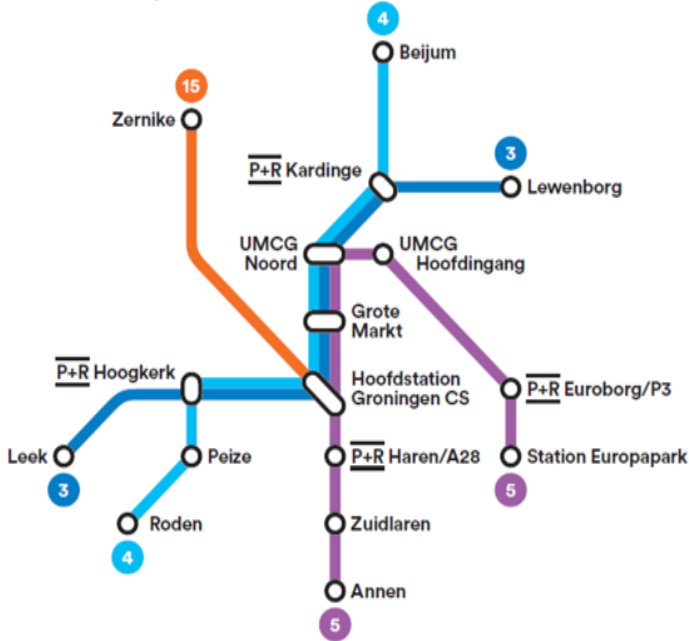
Qliner | 2020



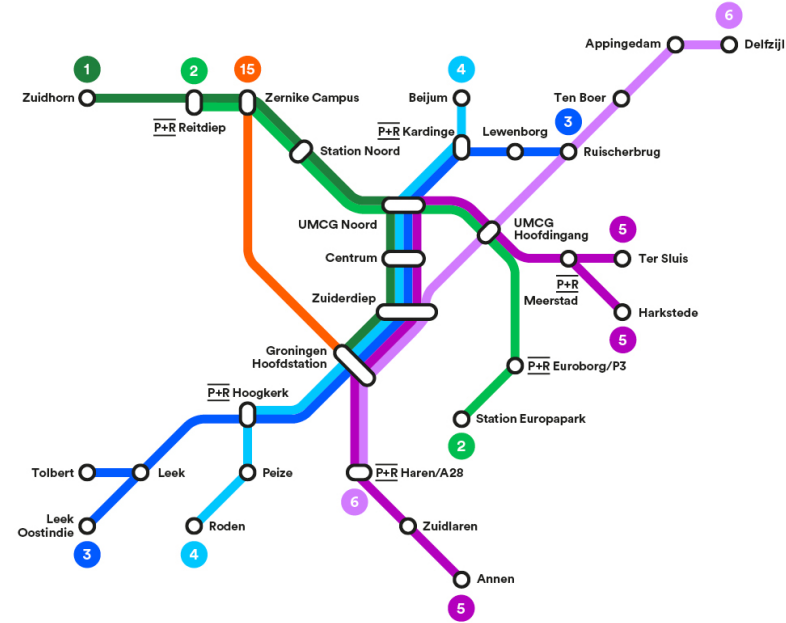
2017: Bigger and more frequent (6-8 p.h.)

Philosophy: Q-link BRT system: connecting region and city

Q-link | vanaf jan 2014



Q-link | vanaf 10 dec 2017



Q  link

Q  link

Q  link



Philosophy: Park+Ride: since 1993

200 PARKEERPLAATSEN

35 min. 1, 39 elke 30 minuten	13 km
10 min. stoptrein Arriva Leeuwarden-Groningen elke 30 minuten	

300 PARKEERPLAATSEN

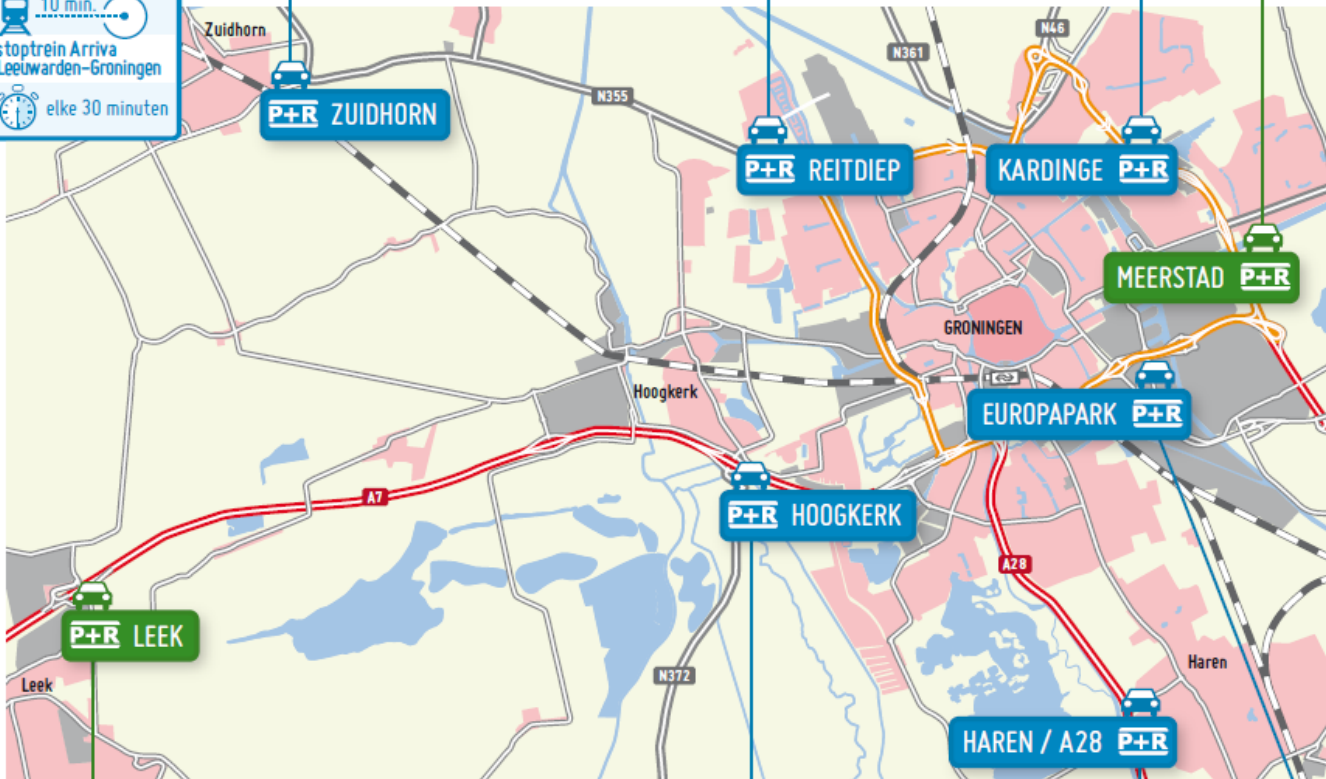
19 min. 1, 2, 9 elke 15 minuten	5 km
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800 PARKEERPLAATSEN

10 min. 3, 4, 12, 61, 65, 163 elke 5 minuten	4,3 km
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400 PARKEERPLAATSEN

11 min. 5, 12 elke 10 minuten	4 km deels open vanaf oktober 2017
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LEGENDA

- bestaand
- in ontwikkeling
- reistijd bus tot centrum
- reistijd trein tot Hoofdstation
- afstand fiets tot centrum
- 4, 8, 133 enz. buslijnen
- frequentie richting centrum
- fietskluis aanwezig
- OV-fietskluis aanwezig

200 PARKEERPLAATSEN

22 min. 3, 85 elke 10 minuten	14,8 km open vanaf 2018
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1000 PARKEERPLAATSEN

10 min. 3, 4, 8, 17, 85, 86, 133, 189, 304 elke 5 minuten	4,6 km
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900 PARKEERPLAATSEN

13 min. 5, 6, 25, 26, 312 elke 10 minuten	6,6 km
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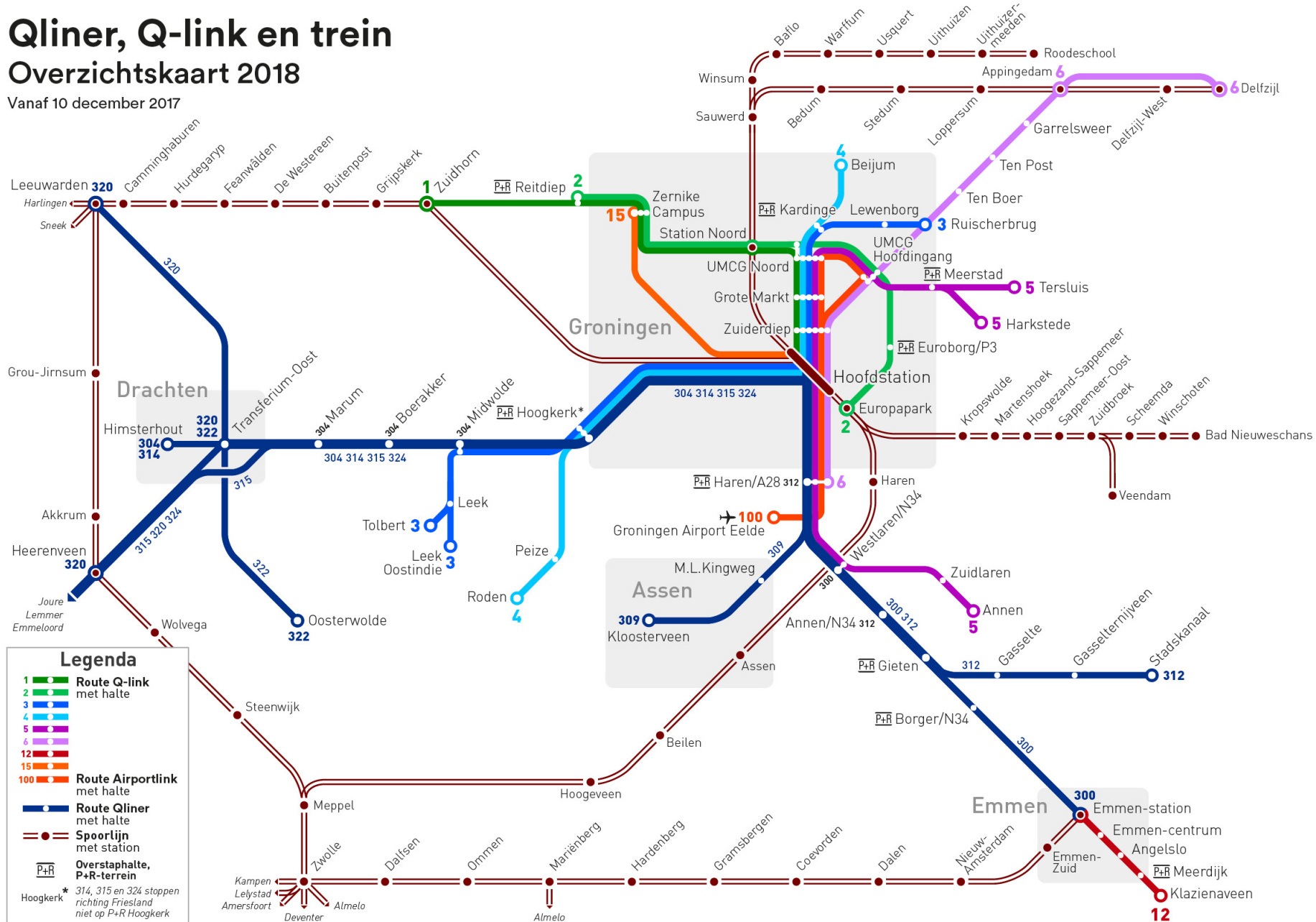
740 PARKEERPLAATSEN

10 min. 2, 12, 171, 174, 178 elke 10 minuten	2,6 km
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High Frequency network

Qliner, Q-link en trein Overzichtskaart 2018

Vanaf 10 december 2017



Legenda

- 1 Route Q-link met halte
- 2
- 3
- 4
- 5
- 6
- 12
- 15
- Route Airportlink met halte
- Route Qliner met halte
- Spoorlijn met station
- Overstaphalte, P+R-terrein

* 314, 315 en 324 stoppen richting Friesland niet op P+R Hoogkerk

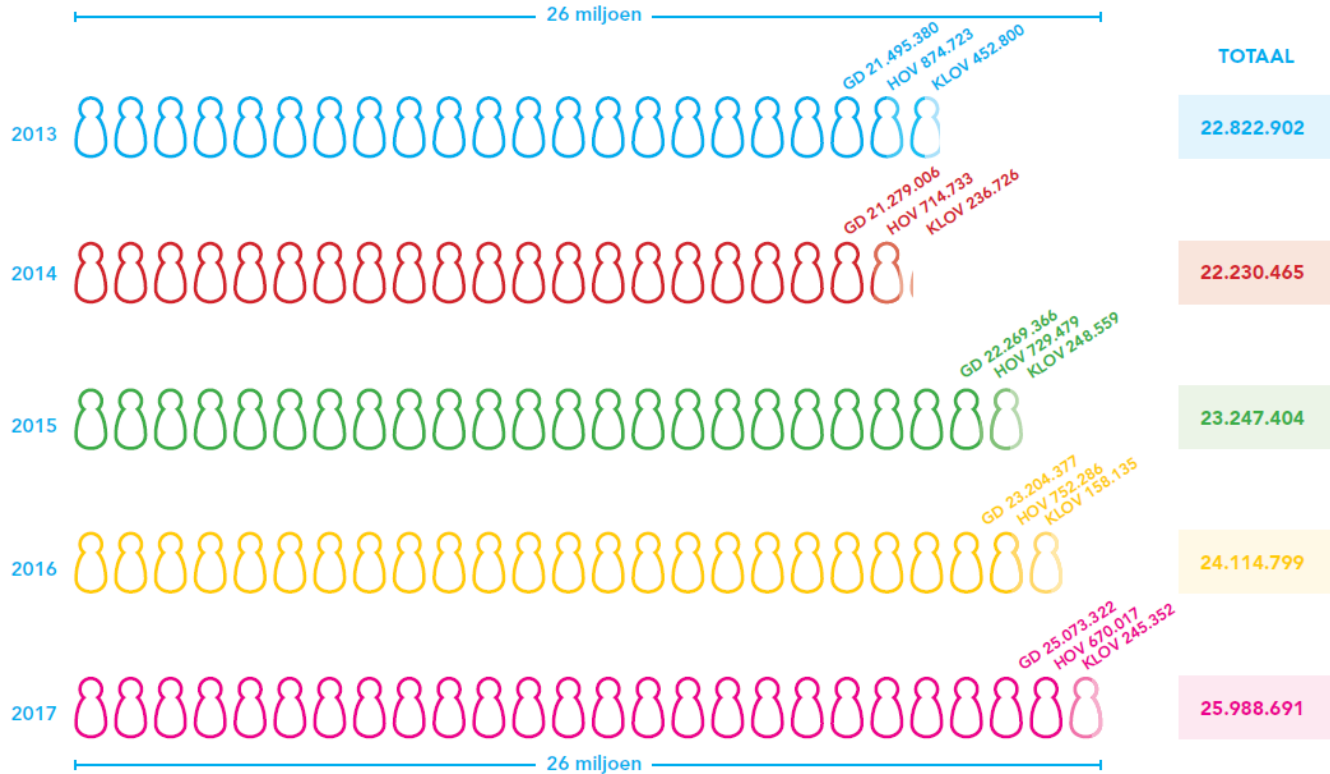
Philosophy: network of Hubs



Goal: Happy passengers !



Result: continuous growth and happy passengers



TOTAAL

22.822.902

22.230.465

23.247.404

24.114.799

25.988.691

2017

Algemene klanttevredenheid
GD-concessie

7,7

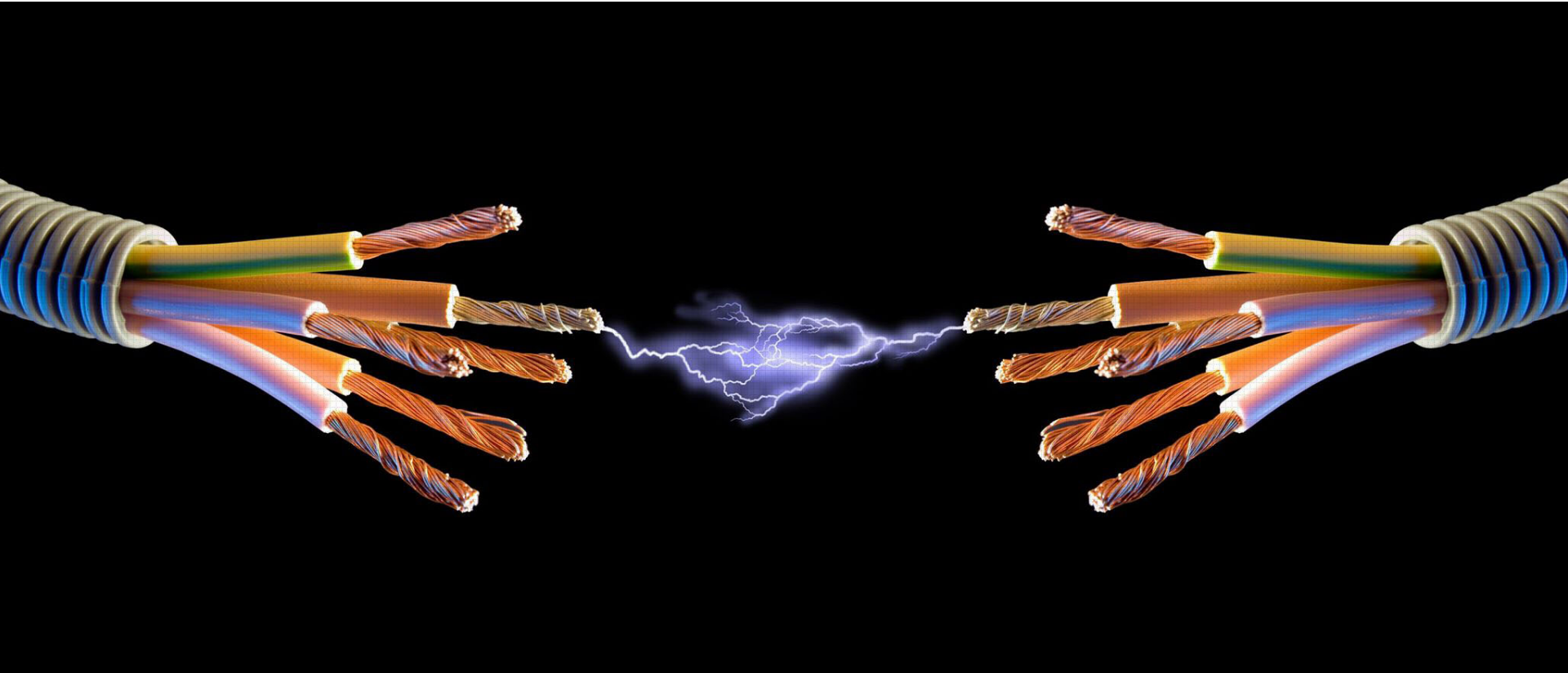


Towards zero emission: System approach



Step 1: energy efficiency

Step 2: Zero-emission bus: the future is electric



Just do it: May 2017: Battery electric city bus (2)



Just do it: Dec 2017 Q-link (BRT) – Groningen-Zuidhorn (10)



A hydrogen hub in the North Netherlands

A solution for huge fluctuations between supply and demand



From 2019: cable for surplus Danish wind energy

Green power from Germany

Solar farms

From electricity...

...to hydrogen...

Electrolysis: separating water into hydrogen and oxygen

...to storage...

Underground gas storage Zuidwending
Hydrogen storage in salt caverns

...to consumers

Methanation: CO_2 from the air reacts with hydrogen to form syngas which can be injected into the natural gas network

Blending H_2 into the natural gas network

Conversion into electricity

Hydrogen fueling stations

Houses

Transport

Industry

Just do it: Hydrogen bus 'the other electric bus'

Pilot on regional busroutes

Dec 2017-dec 2022

Green hydrogen

(waste product from chlorine
factory Nouryon Delfzijl)

- 150 tons CO2/year







Deze pilot is onderdeel van het Europees project HighVLOCity. Partners:



ZE strategy GD 2020 tender (dec 2019-dec 2029)

Tender requirements

HOV	 <p>Qliner</p>	<p>'motorwaybus' 600-800 km/day 60 km/h</p>	<p>70 buses (15m and DD)</p>	<p>Stimulus CO2 reduction</p>
	 <p>Q-link</p>	<p>'BRT' Motorway and city 400-600 km/day 35 km/h</p>	<p>80 buses (18m)</p>	<p>Full electric (Opportunity Charging, estimated + € 10 mln e-infra)</p>
City and Regional	 <p>Regional</p>	<p>Regional bus 250-500 km/day 30km/h</p>	<p>180 buses (12m and 18m)</p>	<p>Stimulus CO2 reduction (and 22 H2 buses)</p>
	 <p>city</p>	<p>City bus Groningen, Assen, Emmen 18 km/h</p>	<p>30 buses (12m and 18m)</p>	<p>Full electric (estimated 0 extra cost)</p>

Hydrogen buses in GD-tender



Requirement:
2 hydrogenbuses
HighVLOCity keep
running

- Requirement:
- 20 hydrogen buses extra
 - From dec 2020
 - Depot Groningen
 - H2 will be provided
€ 3,5/kg
 - + € 9 mln

Seperate H2 tender by
OV-bureau

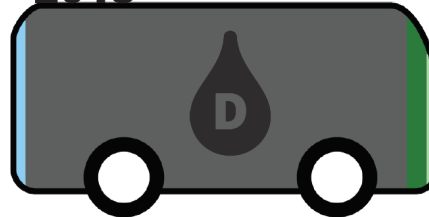


Results of PT tender GD dec 2019-dec 2029

GD concession dec 2009-dec 2019

Qbuzz

2018 32.000 tons CO₂



14 Zero emission buses (of 360)

- 10 Q-link (e)
- 2 citybuses (e)
- 2 regional buses (H2)

GD concession dec 2019-dec 2029

Qbuzz

- 90% CO₂
in 2020

2020 3.200 tons CO₂



186 Zero emission buses (of 360)

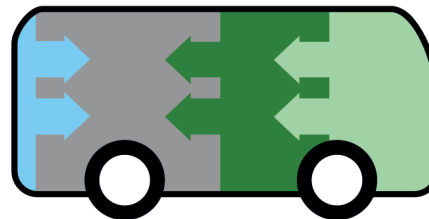
- 59 Q-link (e)
- 45 (all) citybus (e)
- 60 regional buses (e)
- 22 regional buses (H2)
- HVO in the rest of the buses

In planning:

- 10 regional buses (H2) Emmen

From 2020 to 2030
Transition to
all ZEB

0 % CO₂
in 2030



Next steps (already contracted)

- ⊕ Dec 2022 4 Q-link 12 (Emmen) (e)
- ⊕ Dec 2023 13 Q-link 6 (Delfzijl-Gn) (e)
- ⊕ Dec 2027 9 Q-link 15 (Zernike) (e)

2030



Next step: hydrogen in taxi and other vehicles



Next step: H2 in 'coach' Qliner



1

The future is green

Moving towards a zero-emission bus fleet

2

The future is data-driven

Measure more. Drive smarter.

3

The future is easier

People will travel by bus even more quickly and easily.

visit: www.ovbureau.nl/ambitie2030



Blijfe reizigers



Come see for yourselves
In Groningen/Drenthe !

