



How Arnhem's Public Transport sees its Future

UITP – Trolley-Motion
November 2018
Herman Wilmer

From 1910 Arnhem had a good running tram company



Trolley phase 0: tentative exploration to replace tram by trolley



1938: bus A replaces tram 2



Arnhem – Market Garden – world history:

**The total destruction of the tram company
in 1944 clears the way for the trolley**

Trolley phase 1 – from start to consolidation



Festive start of trolley service on 5 september 1949

Trolley phase 2 – starting from the 70^{ties}
“Europe” en “environment” give the trolley
new arguments





15 KM of separated public transport infrastructure helped to improve the trolley network since the 1980^{ies} and gave it a future

Trolley phase 3 – starting from the Treaty of Maastricht (1992) the trolley gets increasing attention of the European Commission and the European Parliament with various programs:

- Interreg
- ZEUSs
- Eliptic
- Assured



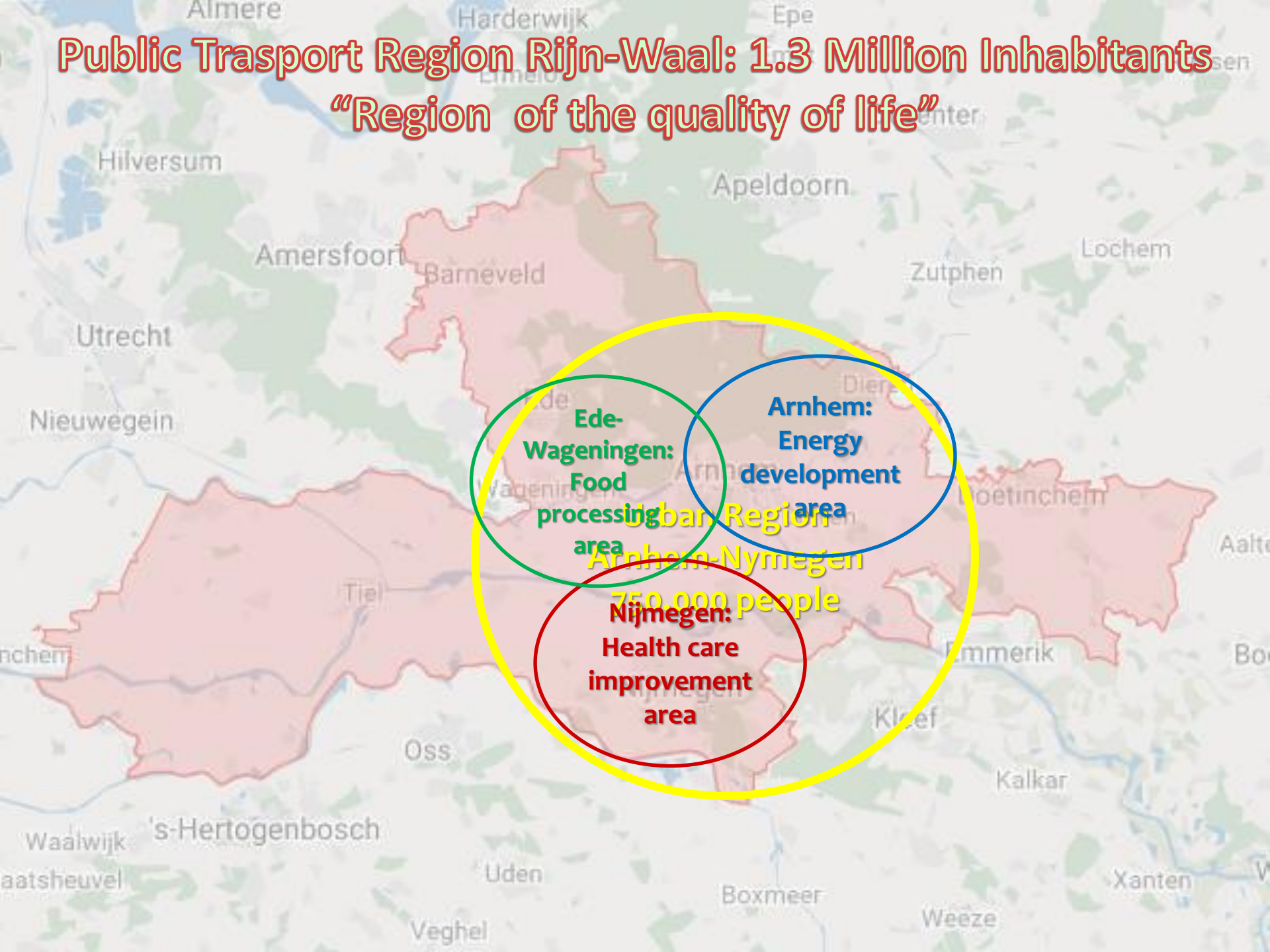
Public Transport Region Rijn-Waal: 1.3 Million Inhabitants

“Region of the quality of life”

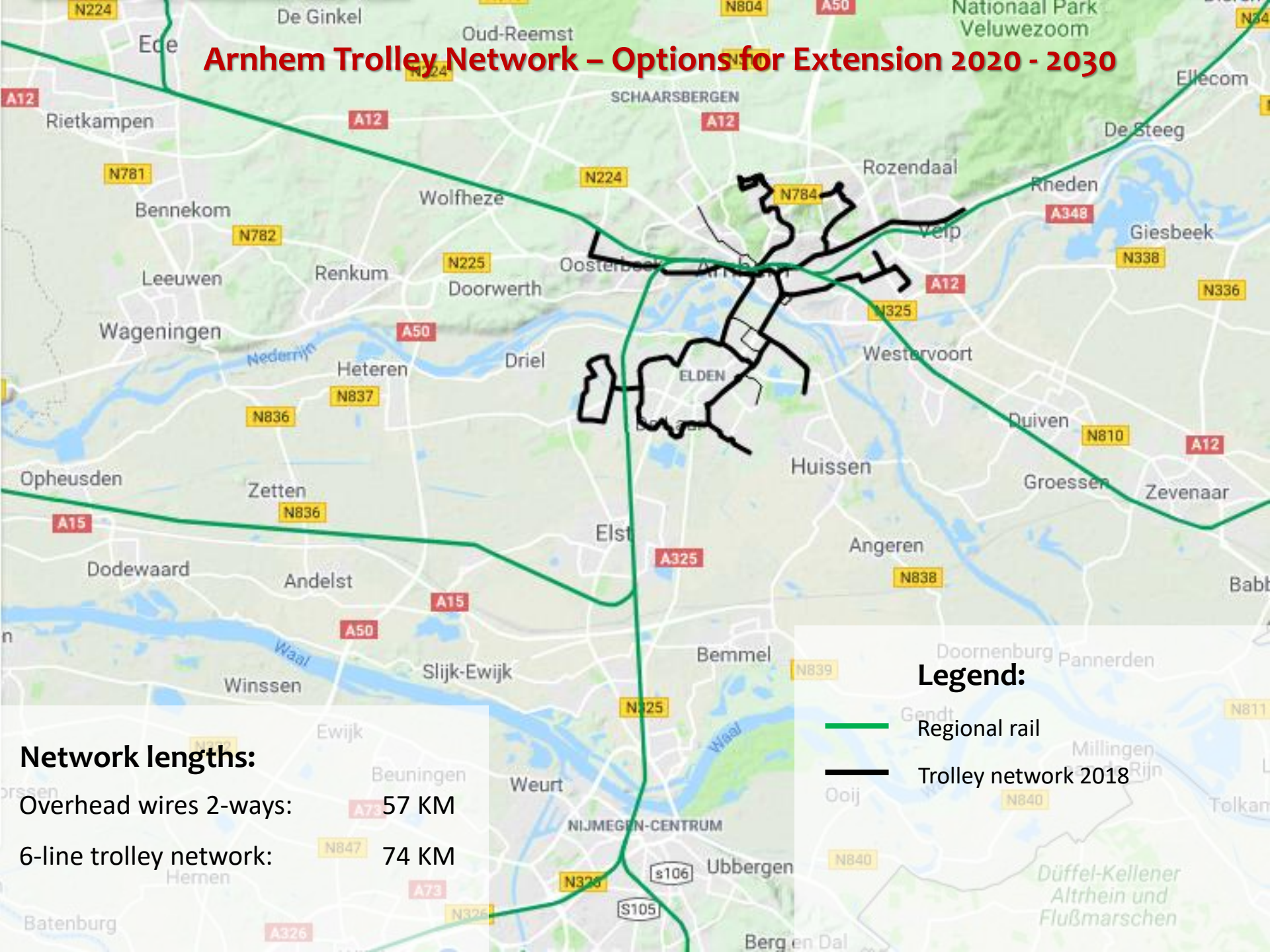


Public Transport Region Rijn-Waal: 1.3 Million Inhabitants

"Region of the quality of life"



Arnhem Trolley Network – Options for Extension 2020 - 2030

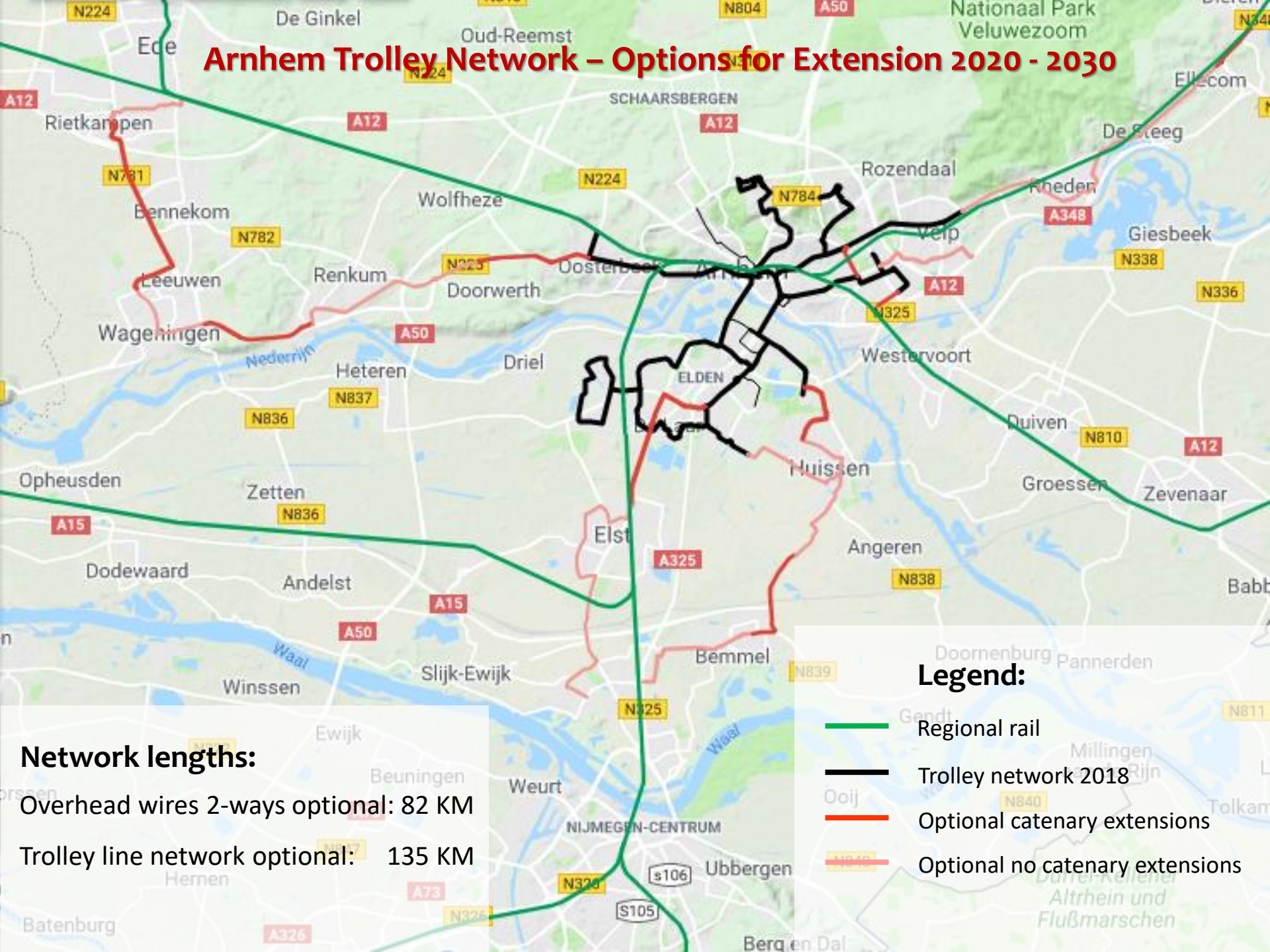


Network lengths:

Overhead wires 2-ways: 57 KM

6-line trolley network: 74 KM

Arnhem Trolley Network – Options for Extension 2020 - 2030



Network lengths:

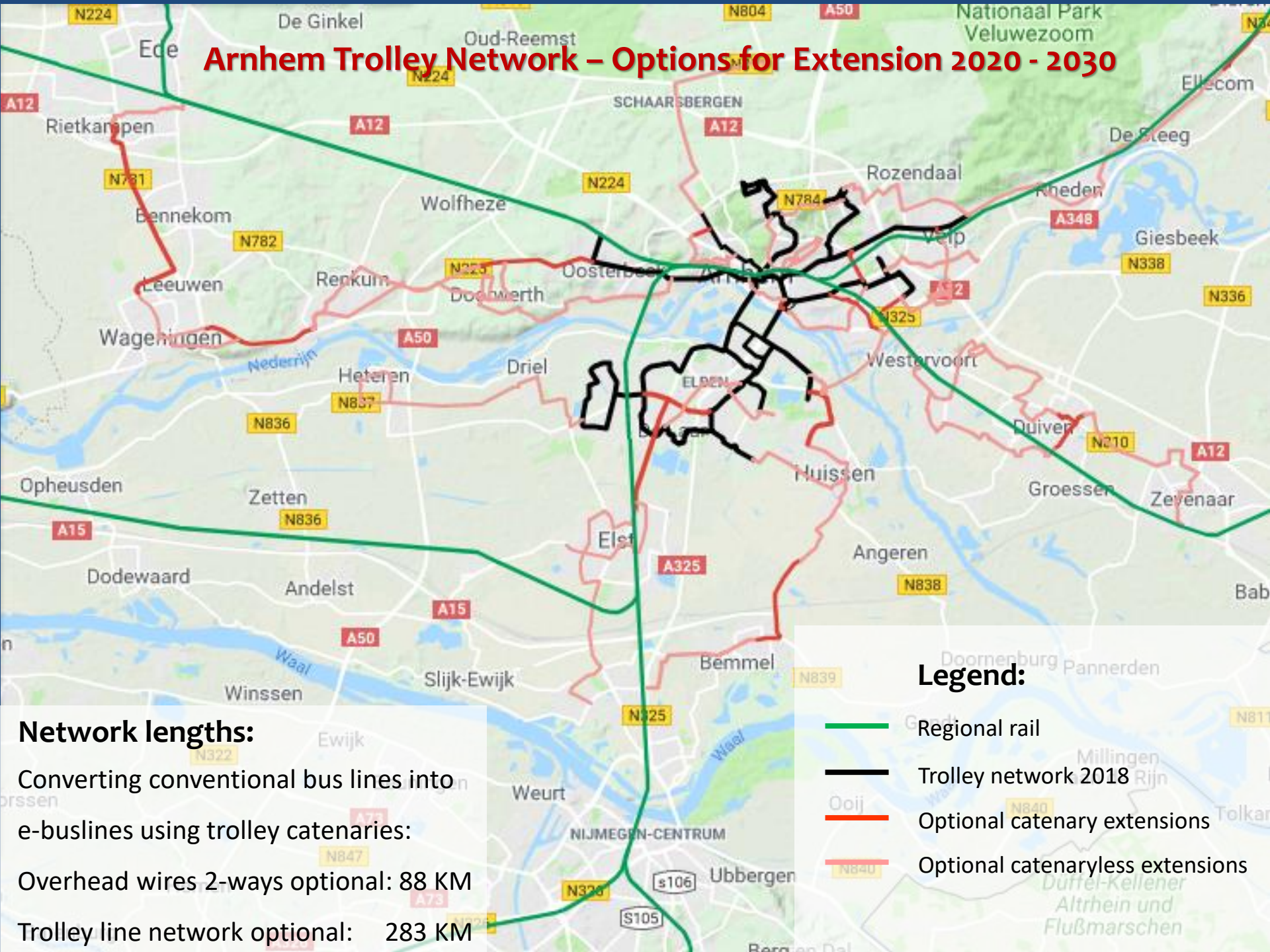
Overhead wires 2-ways optional: 82 KM

Trolley line network optional: 135 KM

Legend:

- Regional rail
- Trolley network 2018
- Optional catenary extensions
- Optional no catenary extensions

Arnhem Trolley Network – Options for Extension 2020 - 2030



Legend:

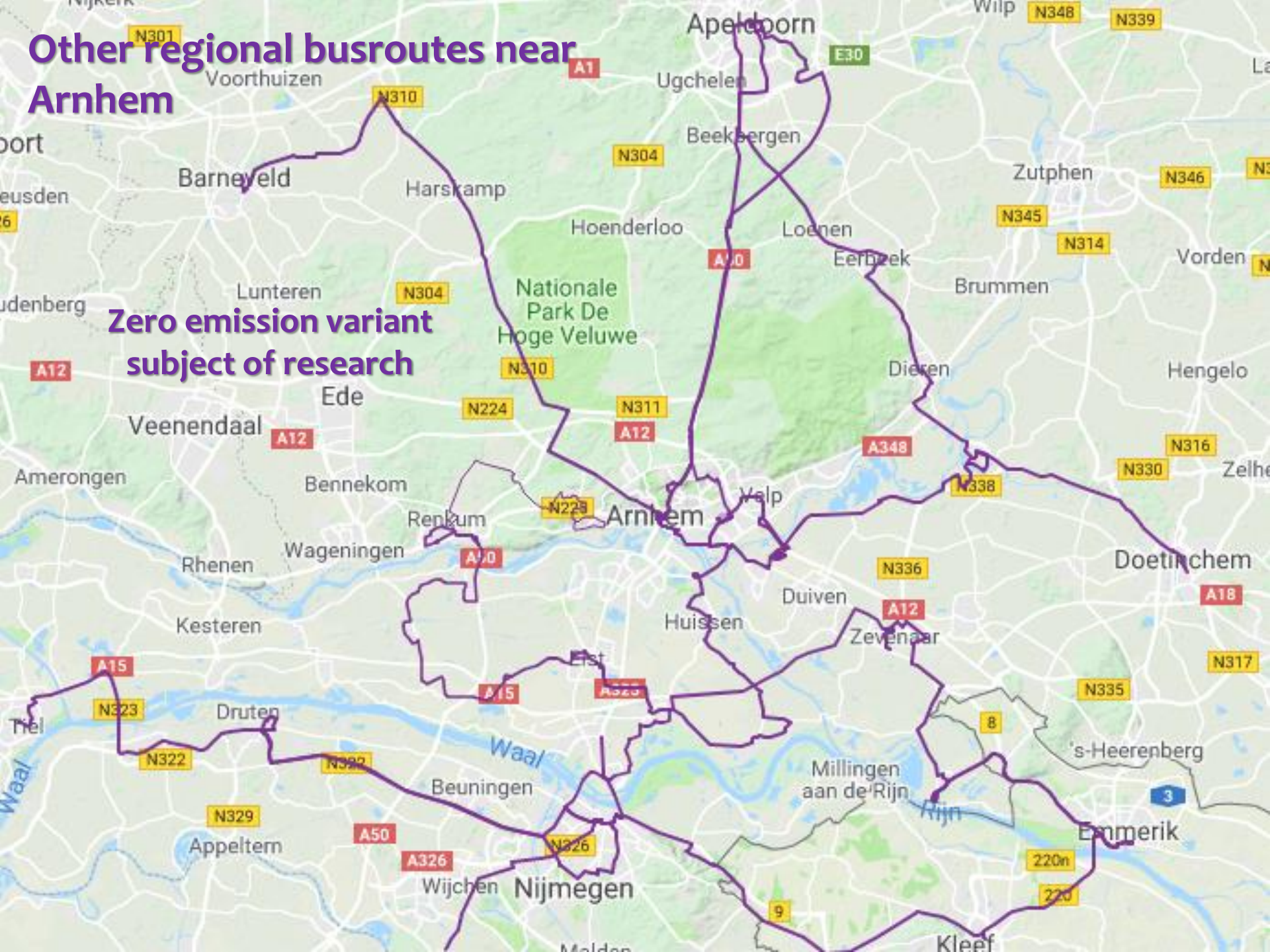
- Regional rail
- Trolley network 2018
- Optional catenary extensions
- Optional catenaryless extensions

Network lengths:

Converting conventional bus lines into e-buslines using trolley catenaries:
Overhead wires 2-ways optional: 88 KM
Trolley line network optional: 283 KM

Other regional busroutes near Arnhem

Zero emission variant
subject of research

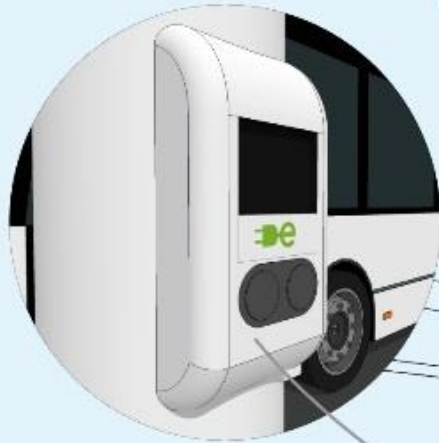




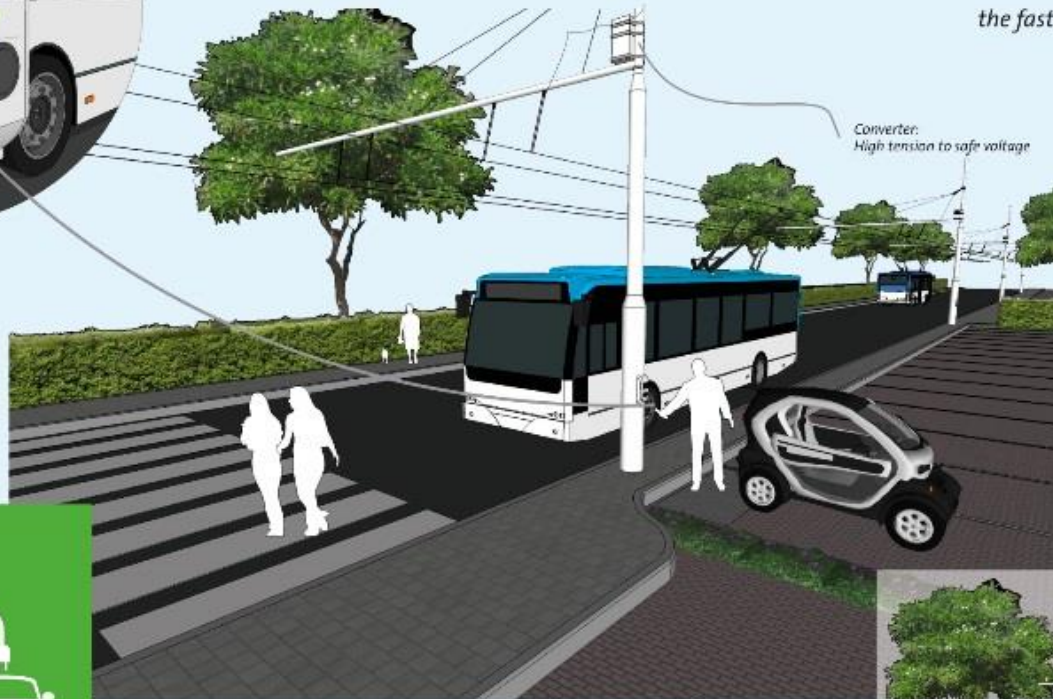
**Experimentation with Trolley 2.0 starting
in december 2018**



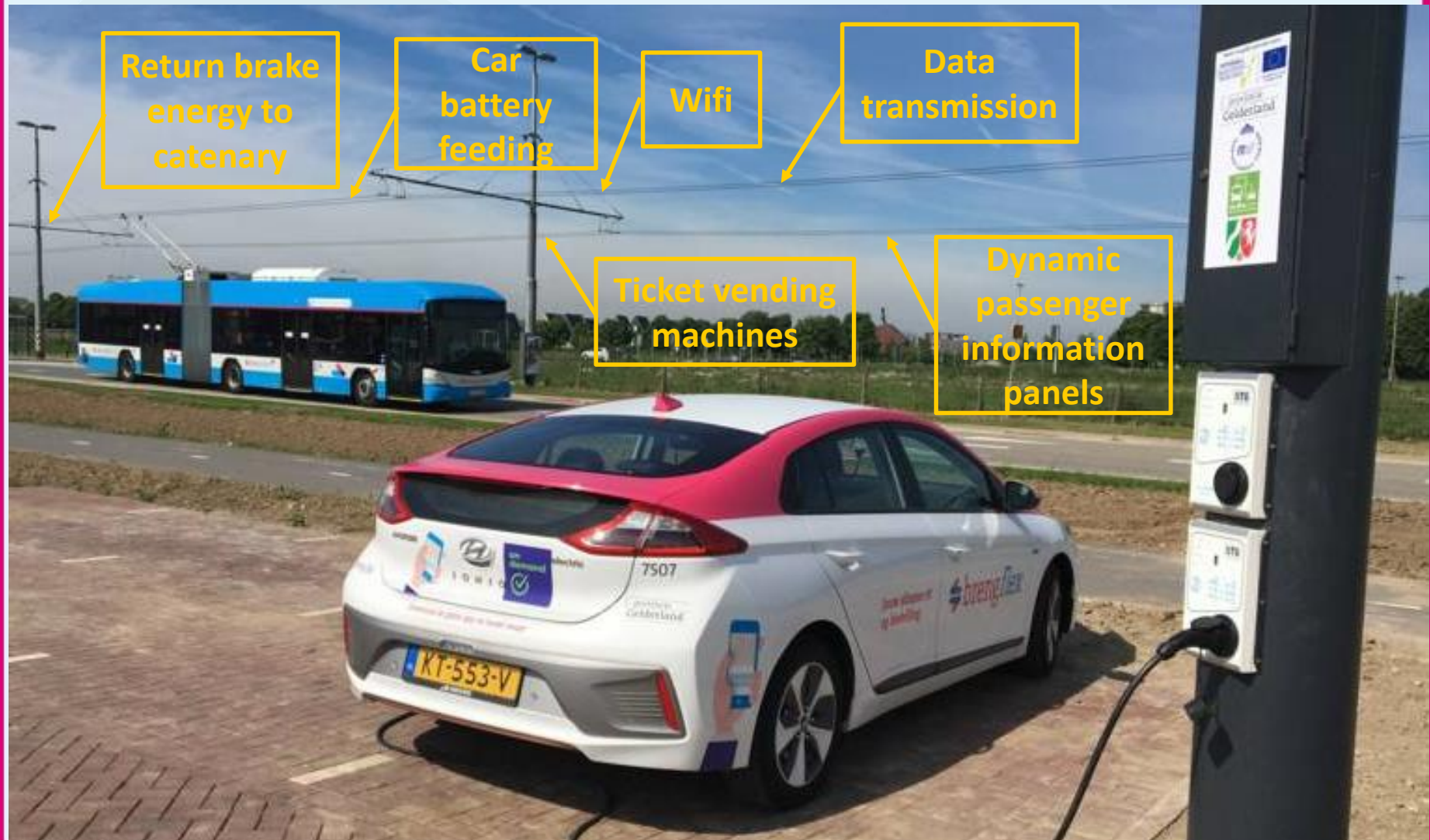
Smart Grid



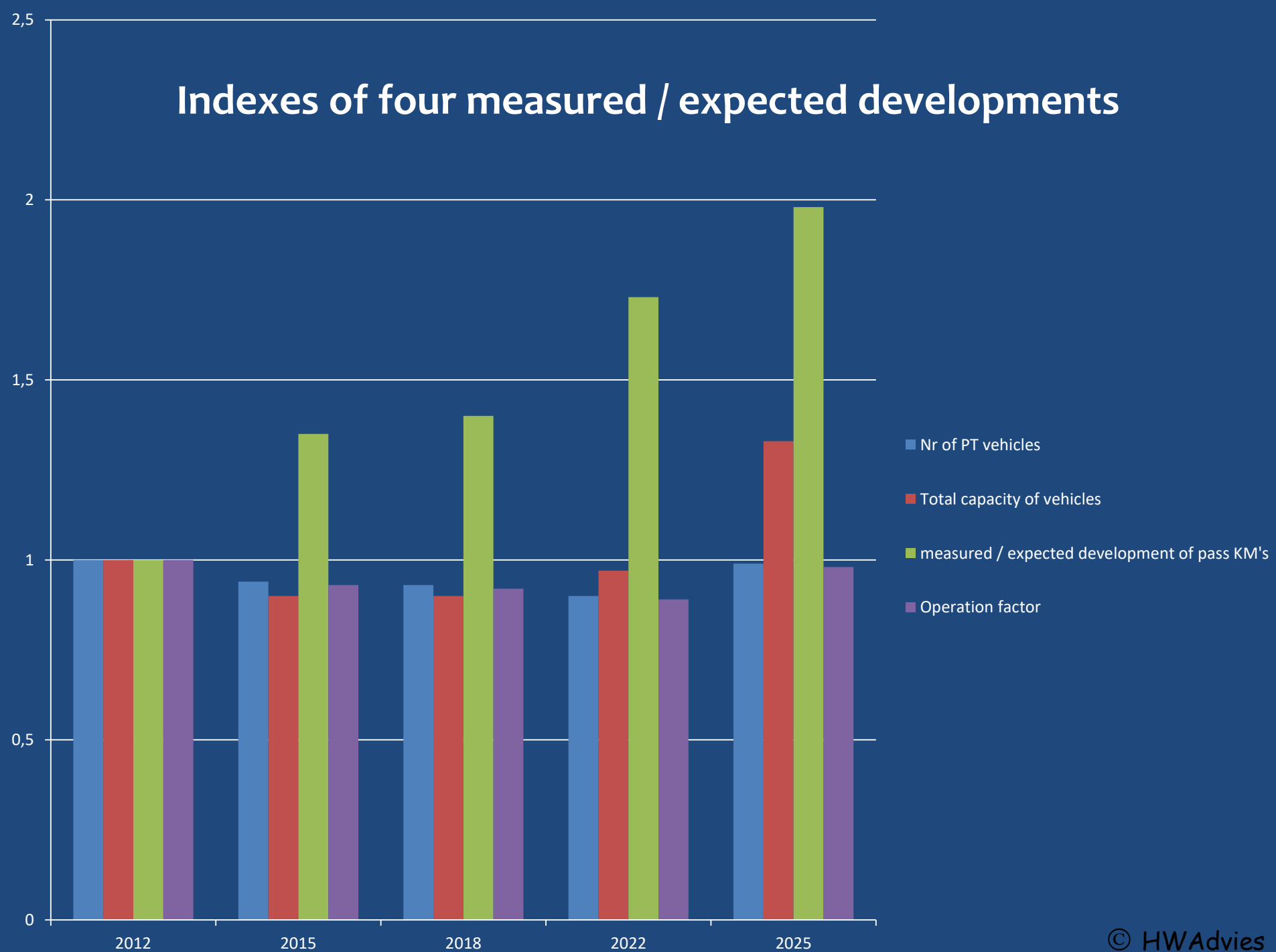
"with the release of energy during braking of the bus the underground batteries will be recharged, which at their turn provide the fast charging points with energy."



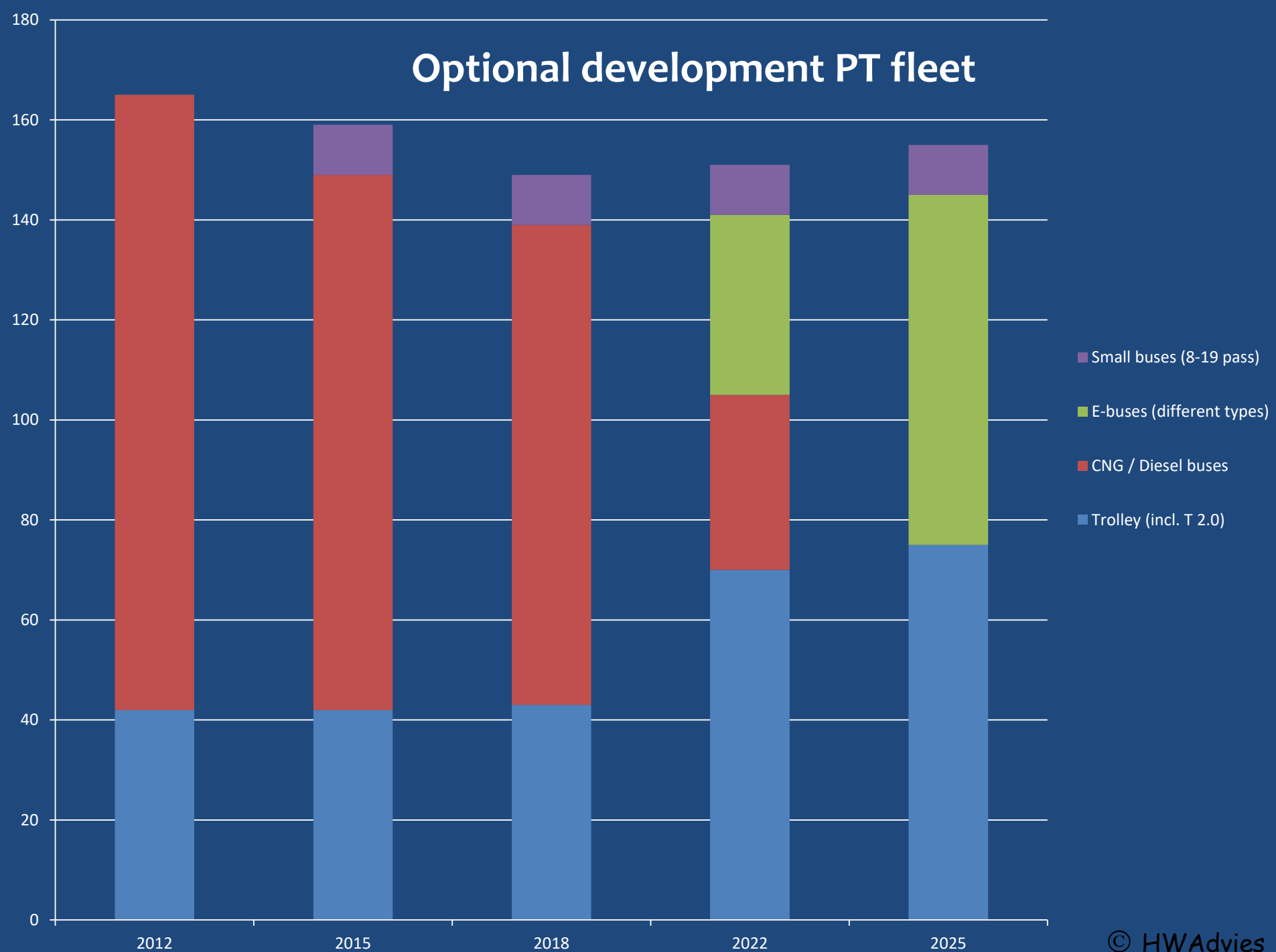
Smart Grid

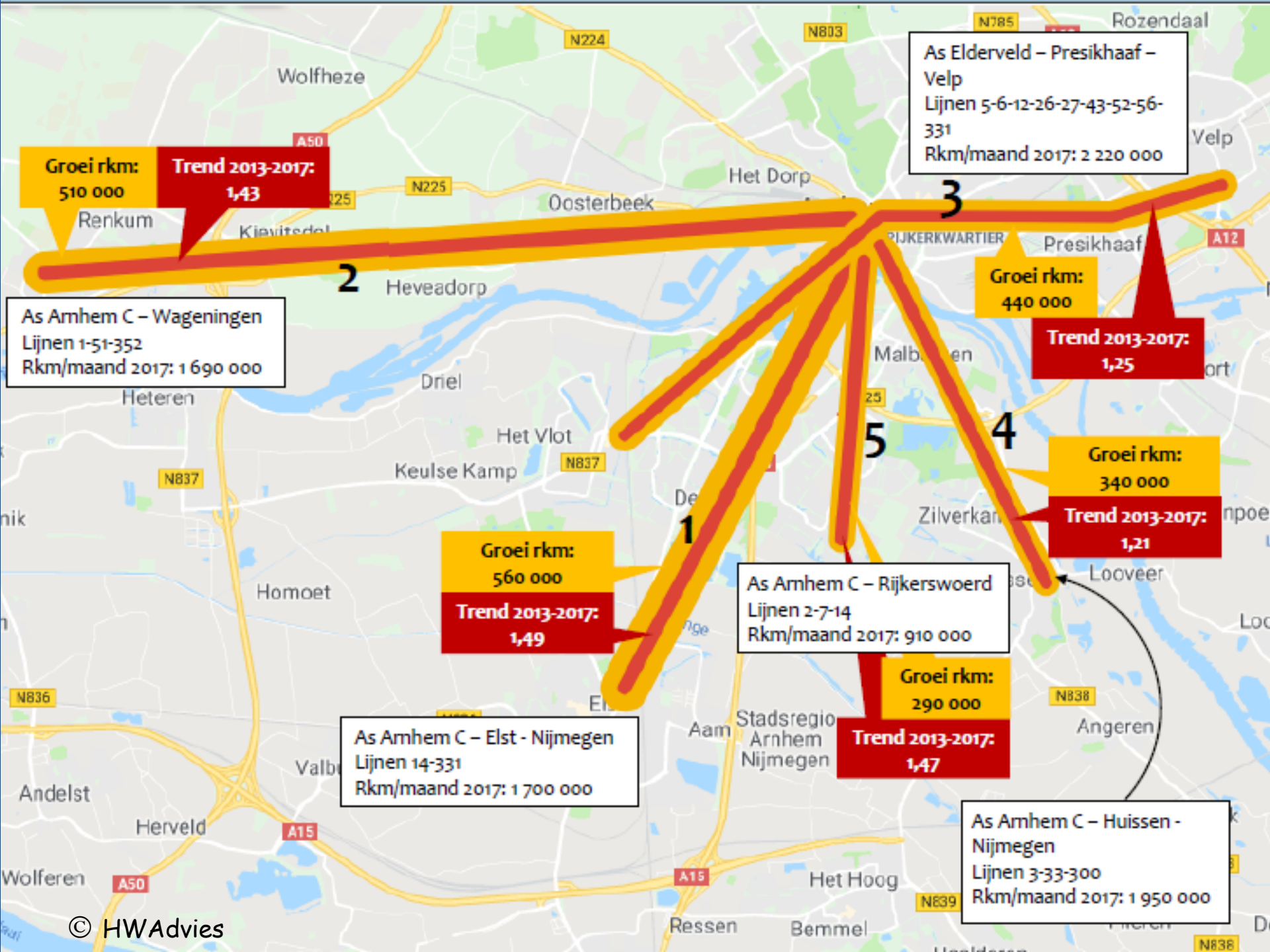


Indexes of four measured / expected developments



Optional development PT fleet





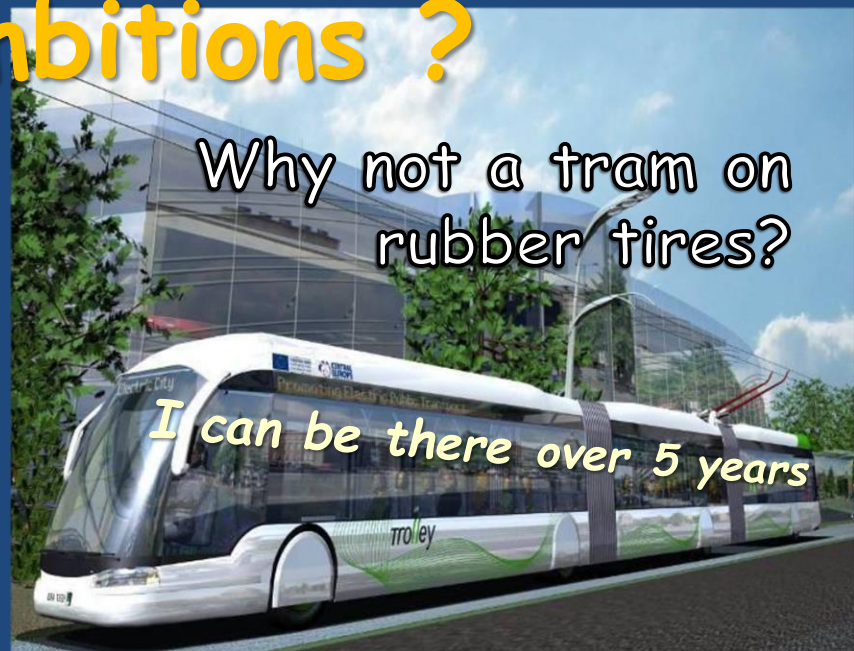


Breng 8647 op donderdag 5 mei 2011 te Wageningen, Ritzema Bosweg

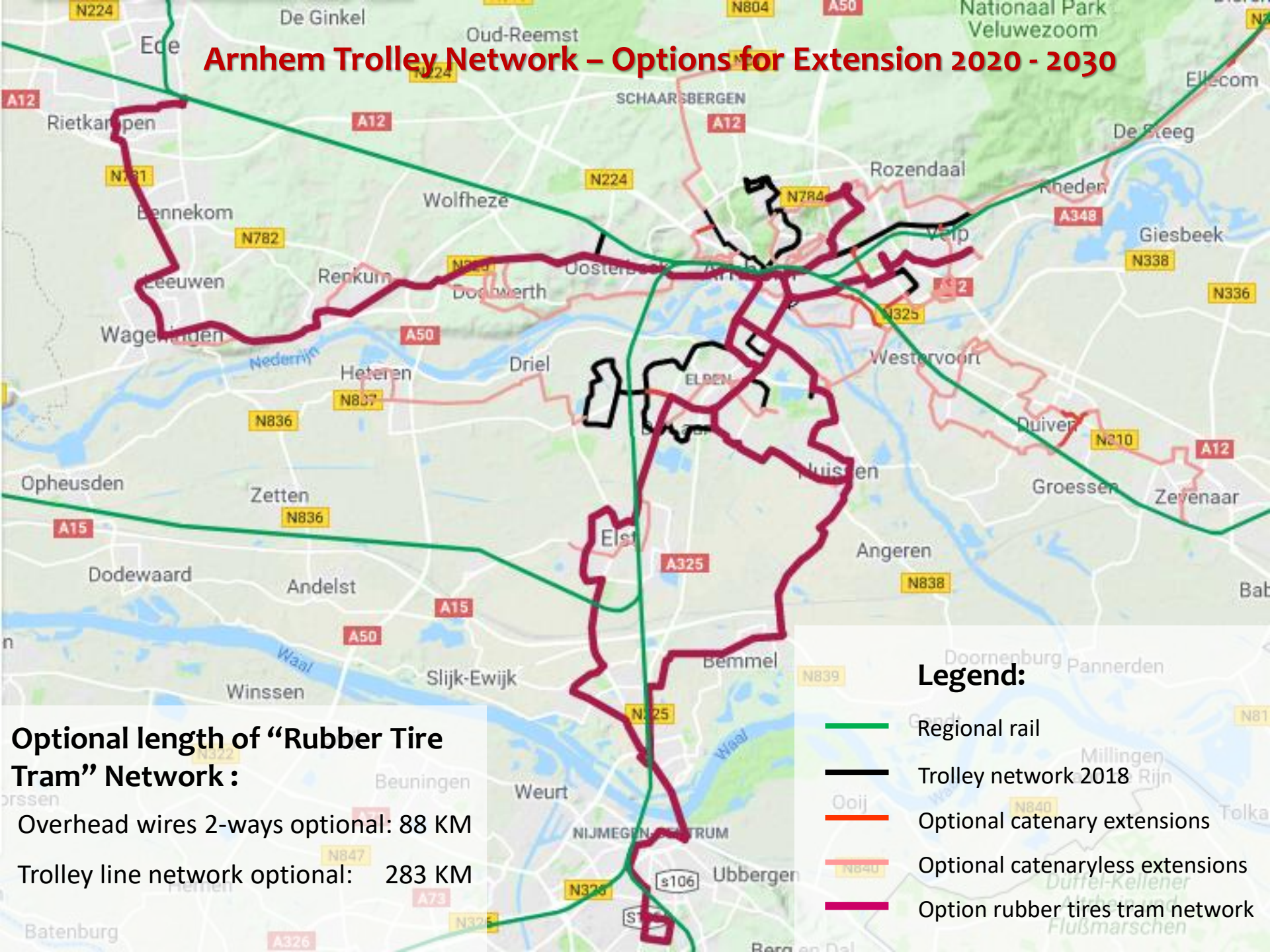
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Which vehicle technology fits the ambitions ?



Arnhem Trolley Network – Options for Extension 2020 - 2030



Thank you for your
attention !



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