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eHighway

Sustainable road freight transport

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Highway electrification for trucks has already started

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VIDEO

available at www.siemens.com/eHighway

eHighway truck technology – from proof-of-concept to field trials

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Development of the eHighway vehicle technology

2010 — 2019

1. Generation
Proof of concept

2. Generation
Swedish and US
Demonstration projects

3. Generation
Field trials

Operations up to 100 km/h possible

Connection and dis-connection to catenary in motion

Recharging of onboard energy storage while driving

No limitations for first and last mile

Catenary electrification is compatible with and complementary to other alternative fuel technologies

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The eHighway hybrid truck can be configured to suit specific applications

Truck types	Drive system	On-board source of electricity	Combustion engine	Non-electrical source of energy
Tractor truck (2 axles)	Parallel-hybrid	Battery (small)	Engine (small)	Diesel
Tractor truck (3 axles)	Serial-hybrid	Battery (medium)	Engine (medium)	Bio-fuel
Rigid truck (2 axles)	Full electric	Battery (large)	Engine (large)	CNG/LNG
Rigid truck (3 axles)		Fuel cell		H_2
Rigid truck (4 axles)				

Commercialization of zero emission trucking starts with shuttles, which are then linked up to form a larger network

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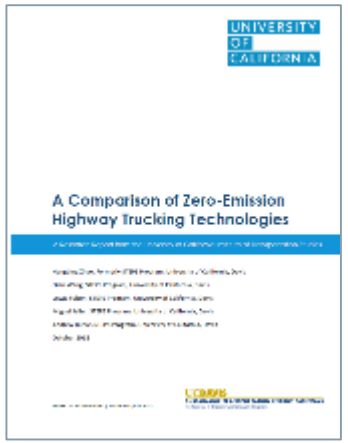
Shuttle applications (ca 20-100 km)

- The next steps should be pilot projects **proving that zero-emission heavy road freight is both economical and practical**[1]
- Experts on highway trucking recommend local or regional catenary trucking projects „**the most feasible approach for the zero-emission technologies"**[2]

CEO of Scania & CTO Volvo Group

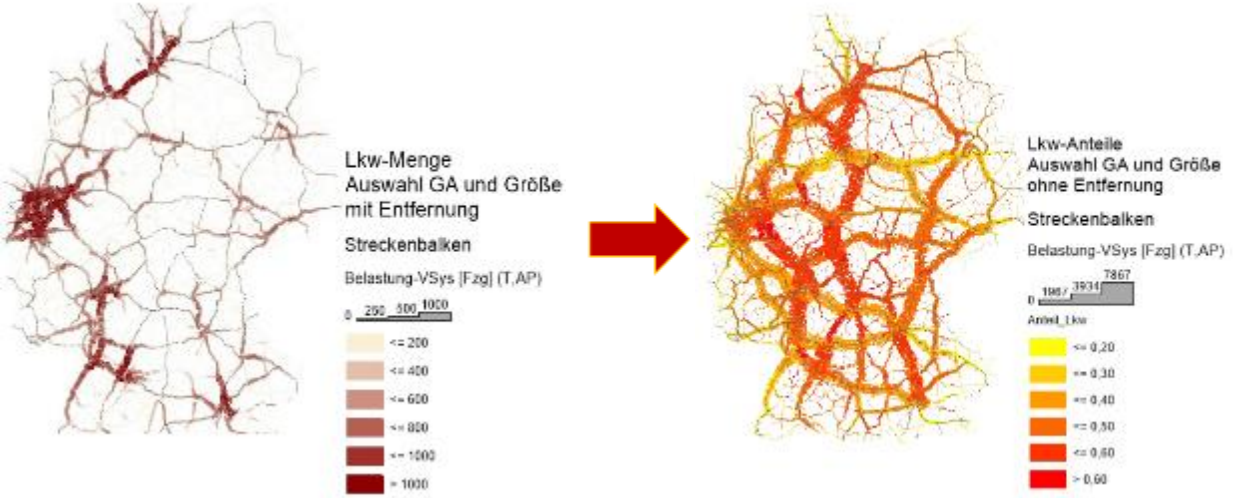


Source 1: https://www.di.se/debatt/volvo-scania-mfl-sverige-ska-bli-en-fossilfri-varldsutstallning/ (April 2018)

Source 2: A Comparison of Zero-Emission Highway Trucking Technologies (Oct 2018)

Network roll-out

- The systemic transition to zero emission road freight requires breaking out from early shuttles to large scale network
- Possible **important role of hybrids** (driving a very high share on electricity) as users of partial infrastructure network
- Nearly completed network will **facilitate transition to fully zero-emission mobility**



→ Providing the **right infrastructure is a necessary precondition for zero emission long-haul trucking**

German Transport Ministry is supporting overhead contact line shuttles as part of their climate action plan

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- The German federal transport ministry (BMVI) support was listed among recently announced measures for transport decarbonization.

- Road freight is the area where 1/3 of the CO_2 savings are expected to be achieved, making it biggest contributing segment to the overall reductions from transport

5 Nutzfahrzeuge	CO_2-arme Lkw auf die Straße bringen	CO_2-Flottenregulierung (auf EU-Ebene)	**17-18 Mio. Tonnen**
		Kaufprämie für Nutzfahrzeuge mit alternativen Antrieben	
		CO_2-Differenzierung der Lkw-Maut	
	Tank- und Lade-infrastruktur ausbauen	Infrastrukturaufbau und -förderung (z.B. Wasserstofftankstellen, Mega-Charger, Oberleitungen auf Pendelstrecken)	

- German government's climate action plan calls for 1/3 of truck traffic to be electric or using eFuels by 2030. Supporting this goal is an infrastructure plan including for catenary systems

Source: BMVI website and Government plans (announced on Oct 09, 2019)