

# Our Approach to Cleaning Up Urban Freight

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JOHN LEWIS  
PARTNERSHIP

WAITROSE  
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- Largest UK co-owned business
- 83,000 Partners
- 3,600 commercial vehicles
- 290 Transport Operations



# THE FLEET

Tractors	600
Trailers	1,000
Rigids	400
Vans	1,600
Cars	1,500



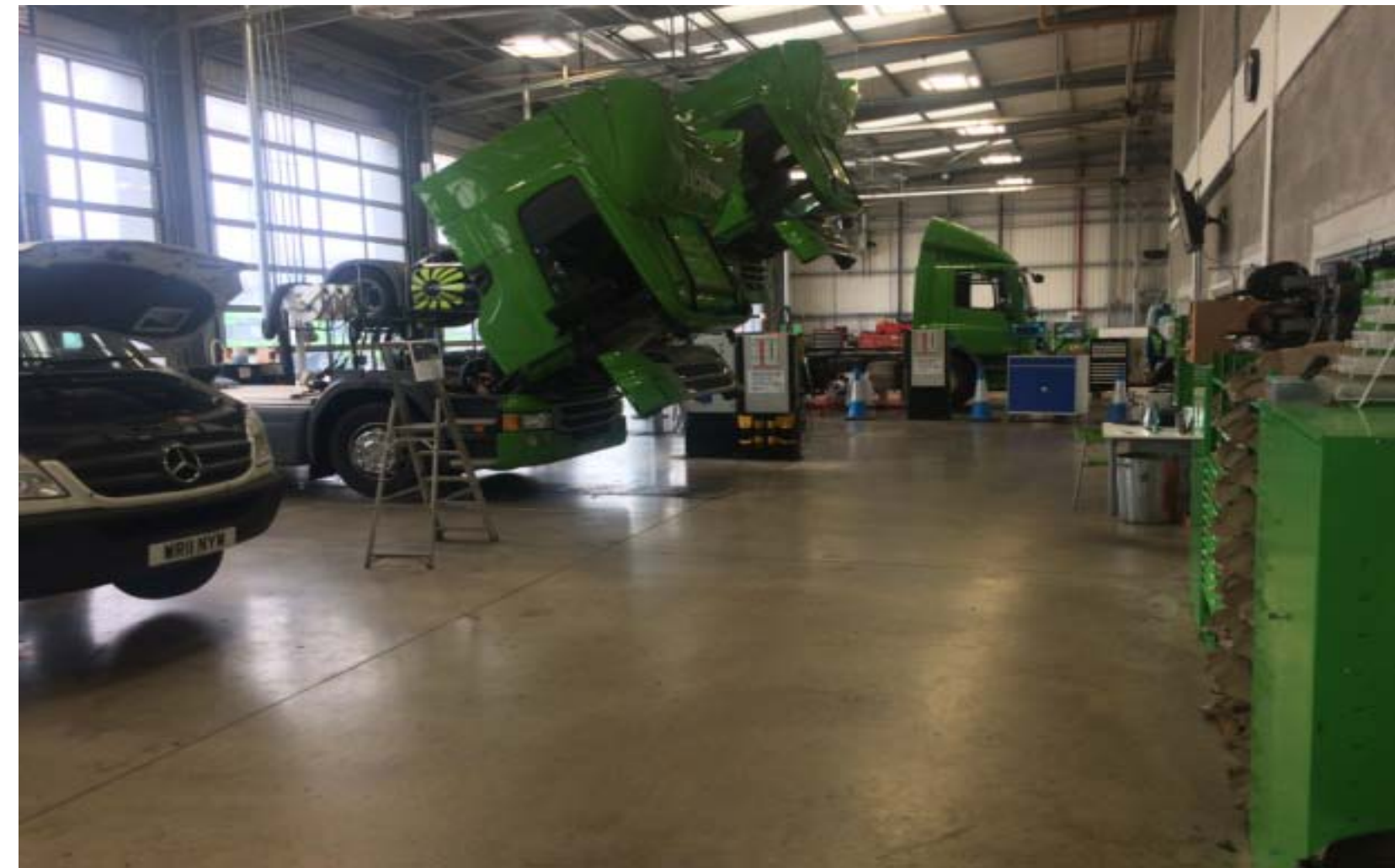


# HOW DO WE MANAGE OUR FLEET?



- Specified for lowest whole life cost
- Owned

- Long lifecycles
- In-house workshops



# PRINCIPLES

- Identify best practice
- Work with academics and industry peers
- Work with policymakers
- Robust trials



# PACE OF CHANGE - 1980s

- Safety
  - ABS
  - Asbestos free brakes
- Double deck trailers
- Consolidation





# 1990s

- Euro standards
- Efficiency
  - 'Mega' volumes
  - Tracking and route scheduling, JIT



# 2000s

- Carbon reduction, CAZs
- eCommerce
- Telematics, route optimisation, automation





# 2010s

- Alternative fuels
- Consolidation
- Data and data security, AI
- Short lead times
- Urban access



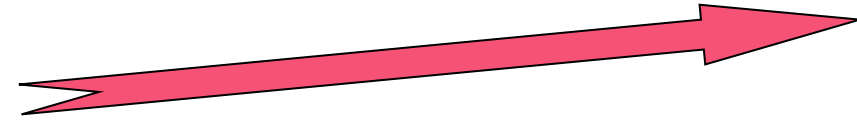
# WHAT NEXT?

- Autonomous vehicles
- Electrification
- Connectivity
- Big data



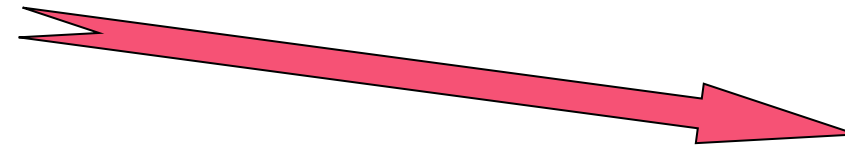
# WHAT ARE WE DOING?

Fewer miles



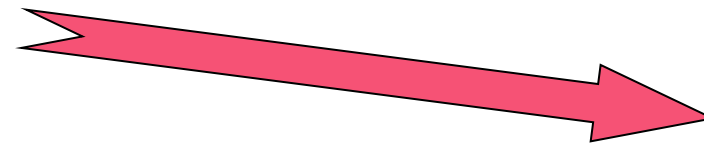
Scheduling, backhaul, forward haul, load utilisation, consolidation, collaboration

Reduce fuel burn per vehicle



Double deck trailers, high productivity eCom van

Alternative fuels



Telematics, drag reduction, engine spec, **fridge drive**



**Biomethane, electric vehicles**

**Includes Air Quality and Noise**





# Why diesel ?

- Its energy dense, cheap, stable, available...
- One litre will take 1 tonne a hundred miles
- 1 litre holds the same energy as 40 kg of Li-Ion batteries, costing £2000, or 8,500kCal



From ‘Assessing the Sustainability of HGV Fuel Options ‘– Daniel Kieve

# Biofuel Sustainability Scorecard

Biofuel Category	Biofuel Feedstock	Final Score	Biofuel Category	Biofuel Feedstock	Final Score	Biofuel Category	Biofuel Feedstock	Final Score
Biomethane	Landfill gas	5	Biodiesel	Soy	23	HVO	Oil seed rape 1 Meal as livestock feed	19
				Oilseed rape 1 Meal as livestock feed	21			
	Food waste 1	10		Oilseed rape 2 Meal as fuel	19		Oil seed rape 2 Meal as fuel	18
	Food waste 2	6		Sunflower	16		Sunflower 1	19
	Dry Manure	5		Oil Palm	20		Palm Oil 1	20
	Wet Manure	5					Palm oil 2	17
				Oil Palm (CH4 capture)	17			
	Chicken manure	6		UCO from unknown source, unaudited	14		UCO from unknown source, unaudited	13
	Sewage sludge	7		UCO from known source in UK or EU, audited	7		UCO from known source in UK or EU, audited	7
				Tallow	9		Tallow	9
	Maize silage	21		Tall oil	6		Tall oil	6
	Rye Grass	14	Bioethanol	Corn 1 (from outside EU)	24	Biobutanol	Corn	24
	Switch grass	11		Corn 2 (from UK)	22		Corn 2 (from UK)	23
	Hemp	13		Wheat 1 (DDGS as feed)	22		Wheat 1 (DDGS as feed)	23
	Miscanthus	12						
	Ley plants/ wild flowers	13		Wheat 2 (DDGS as fuel)	21		Wheat 2 (DDGS as fuel)	22
	Maize + barley double cropped	13		Sugar beet	18		Sugar beet	19
	Maize + ley crops double cropped	10		Sugar beet slops for biogas	14		Sugar beet slops for biogas	17
	Mixture 1 100% waste mix	8		Sugar cane 1 (irrigated)	20		Sugar cane 1 (irrigated)	21
	Mixture 2 80% waste / 20% PGCs	8		Sugar cane 2 (rain-fed)	14		Sugar cane 2 (rain-fed)	15
	Mixture 3 60% waste / 40% PGCs	10						
	Mixture 4 20% waste 80% PGCs	16						

# STRATEGY

- All our heavy trucks powered by biomethane by 2028
- Biomethane to play a key role right up to 2045
- Methane and bio-methane to play an important role in freight transport beyond 2045
- Zero carbon John Lewis Partnership fleet by 2045

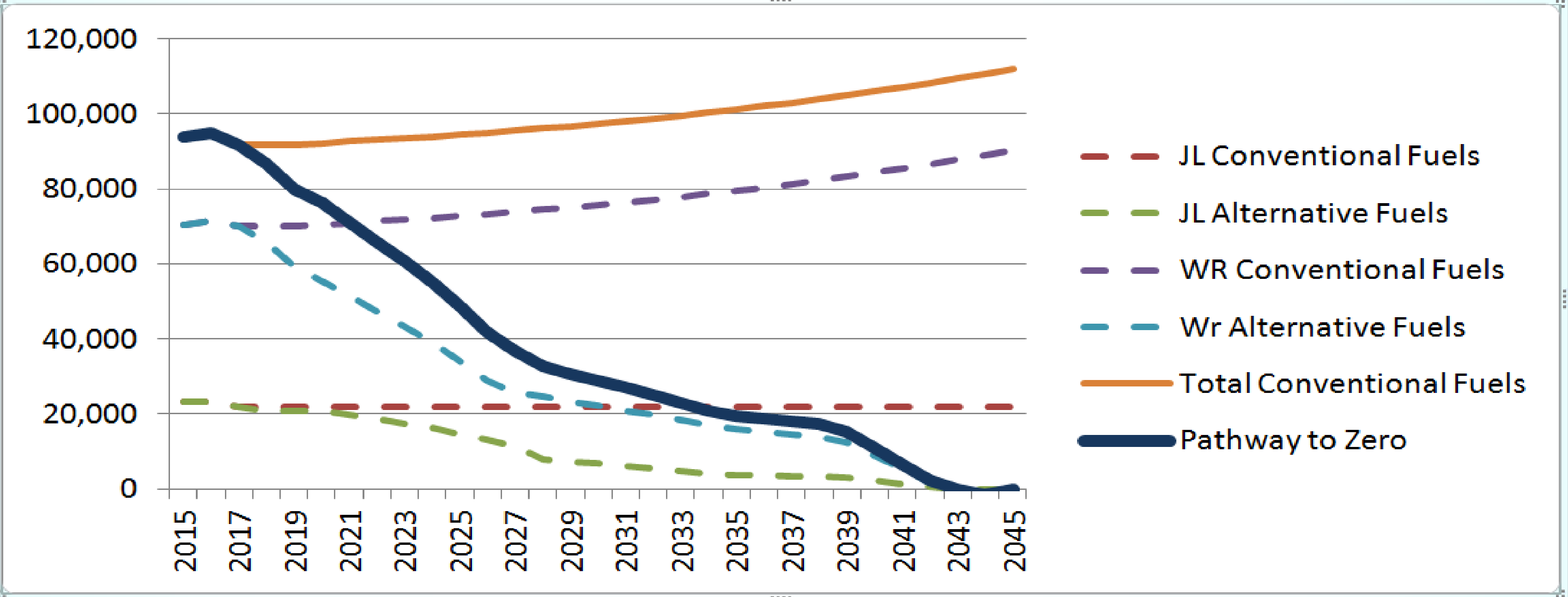
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TIMELINES

Category	2018-2020	2021-2025	2026-2030	2031-2035	2035-2040	2041-2045
Cars/small vans	Trial	Roll-out			Electric	
WR home delivery vans	Trial	Roll-out			Electric	
JL home delivery trucks	Trial	Roll-out			Electric	
Heavy trucks		Roll-out		Biomethane		Electric
WR fridge trailers	Trial		Roll-out		Electric drive from tractor/dock	
Autonomous Drive			Trial	Roll-out		Autonomous

# EMISSIONS REDUCTION





# AERODYNAMICS

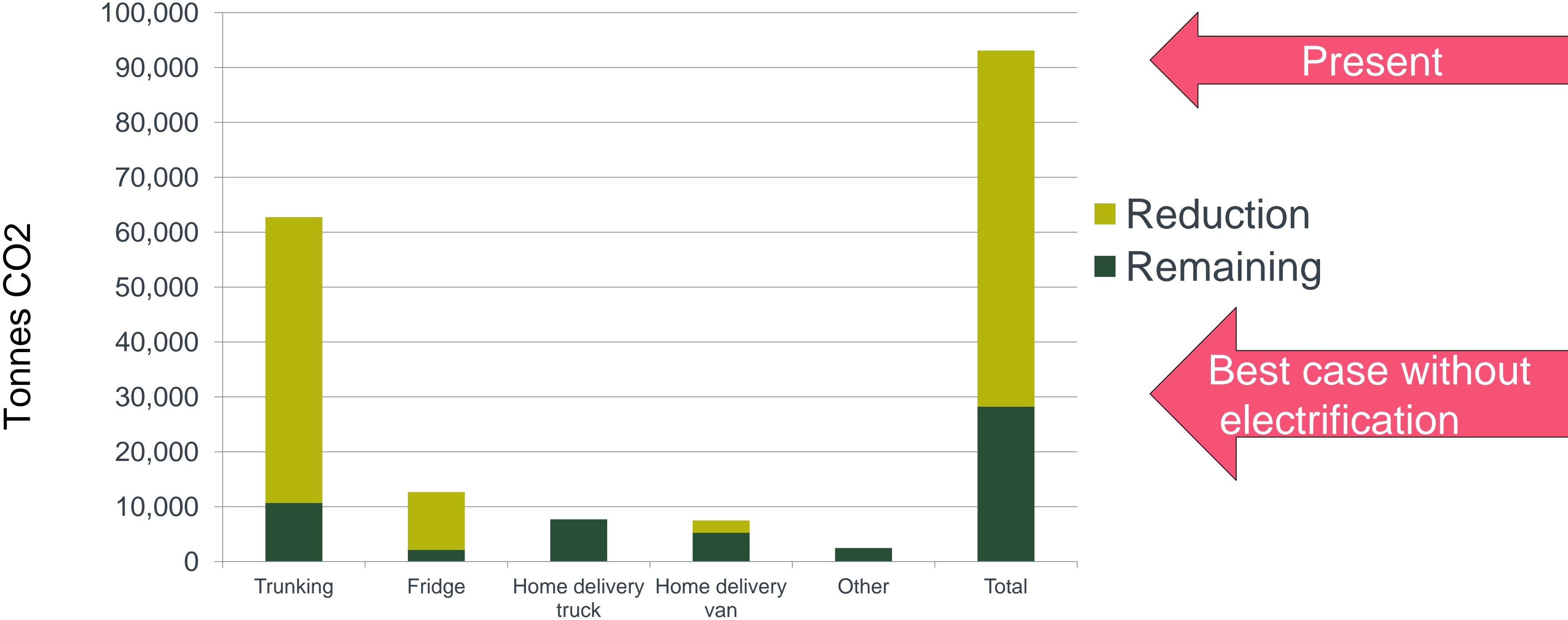


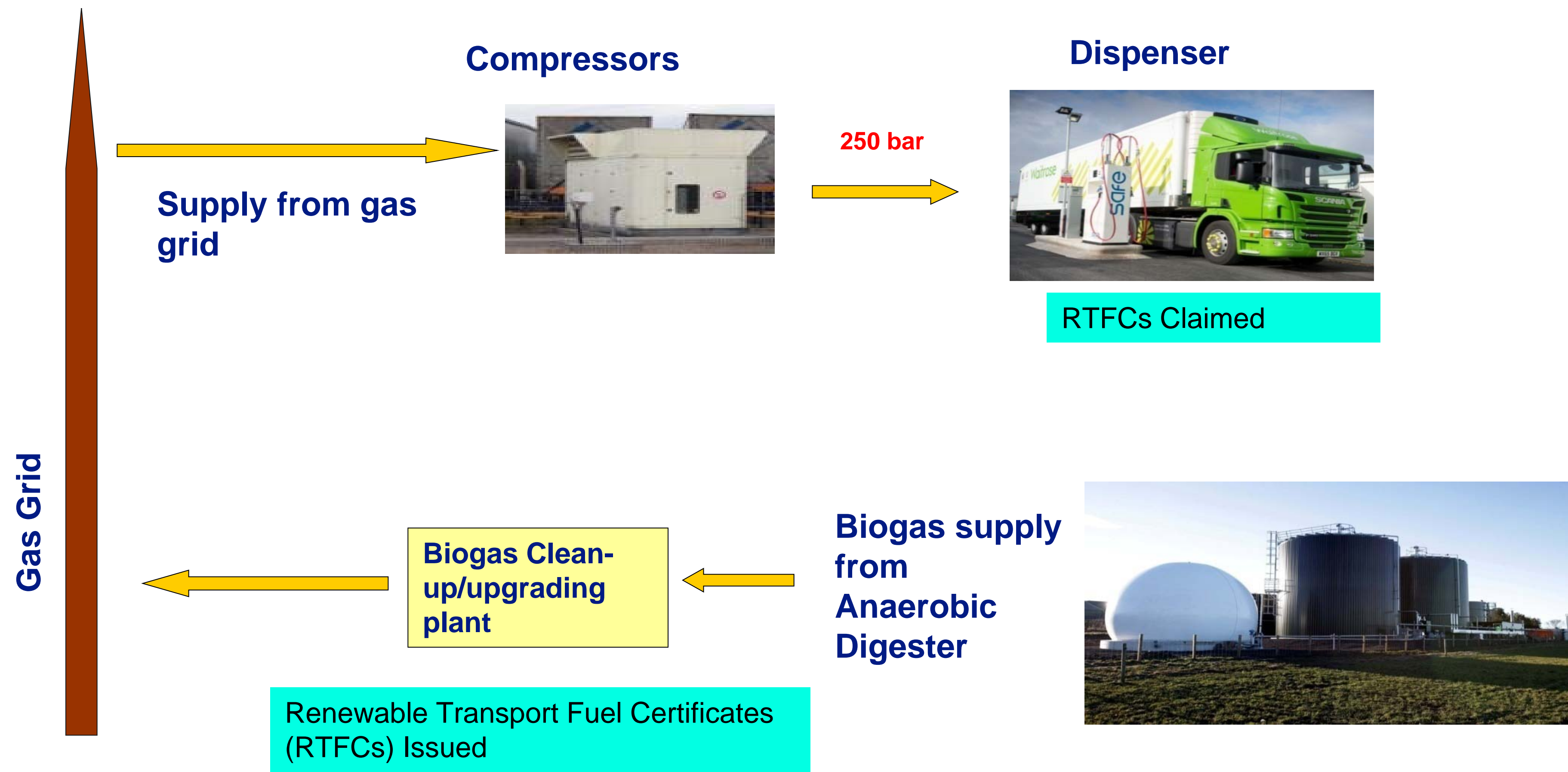
7% Fuel Saving





# INITIAL FOCUS















# BIO METHANE

- 83% reduction in WTW CO<sub>2</sub>
- 35% reduction in fuel cost (payback at 360,000 km)
- 50% (approx.) reduction in noise
- Good driver reaction

60 dedicated gas trucks

200 more by end 2020



# CLEAN REFRIGERATION

- Typical trailer fridge units engines need to be:
  - More efficient
  - Cleaner (currently cEuro I (1992), Euro II (1996) from 2019
  - Quieter





# HEAVY DUTY TRUCKS

- Gas engine, clean fridge
- Low noise
- Enhanced safety

Lobbying for enhanced access to provide business case

- Re-timed deliveries ?
- Exemption from London control scheme





# EVs

- Urban specialist vehicles – van and light truck
- 4.25 tonne derogation
- Business model will change
- Currently no suitable vehicle





# NEXT STEPS

- Map energy use
- Map charging capacity
- Seek shared charging opportunities
- Engage with OEs and policymakers





# CHALLENGES - INFRASTRUCTURE

- Timing

- Contingency



# CHALLENGES – SAFETY

- Methane
- 250 Bar
- 400V DC
- Cryogenic gas



# CHALLENGES - SUSTAINABILITY

- Efficiency
- Venting methane
- Fuel sourcing
- Lifecycle
- Last mile





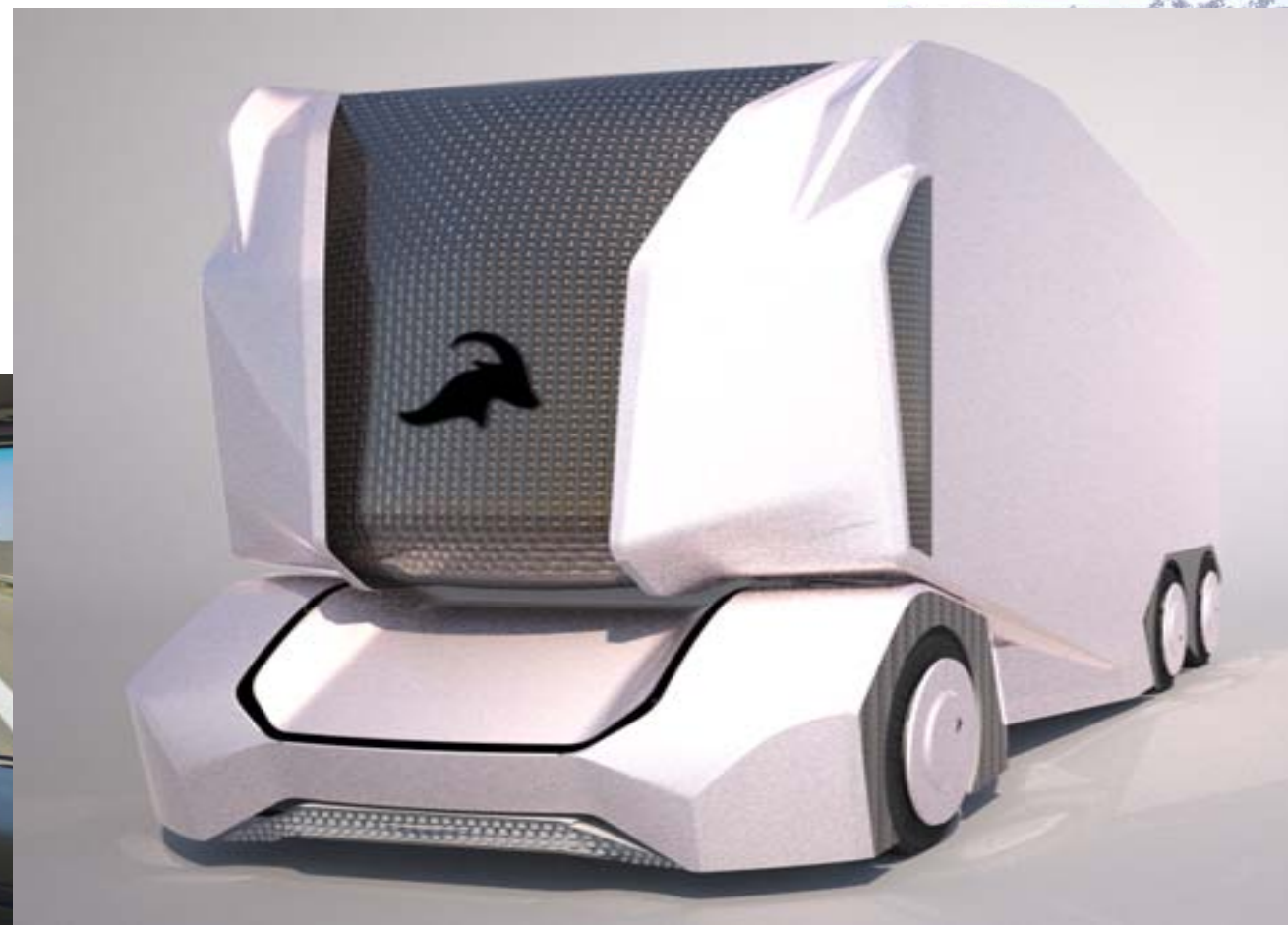
# CHALLENGES – FINANCIAL

- Residual values and obsolescence
- Fuel price
- System cost
- Skills



# AUTONOMOUS DRIVING

- Suits electrification
- Changes business case
- Changes car ownership model
- Changes car charging needs





# WHAT NEXT?

- Autonomous vehicles
- Catenary
- Urban Access





1900



1913



# WHATS IT MEAN?

- Disruptive competition
  - Logistics
  - Retail
- Regulatory uncertainty



# Q U E S T I O N S ?