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Clean Vehicle Retrofit Accreditation Scheme (CVRAS)

Clean Air Zone Roadshow - Birmingham

11th October 2018

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Compliance options for CAZs



- Avoid the zone

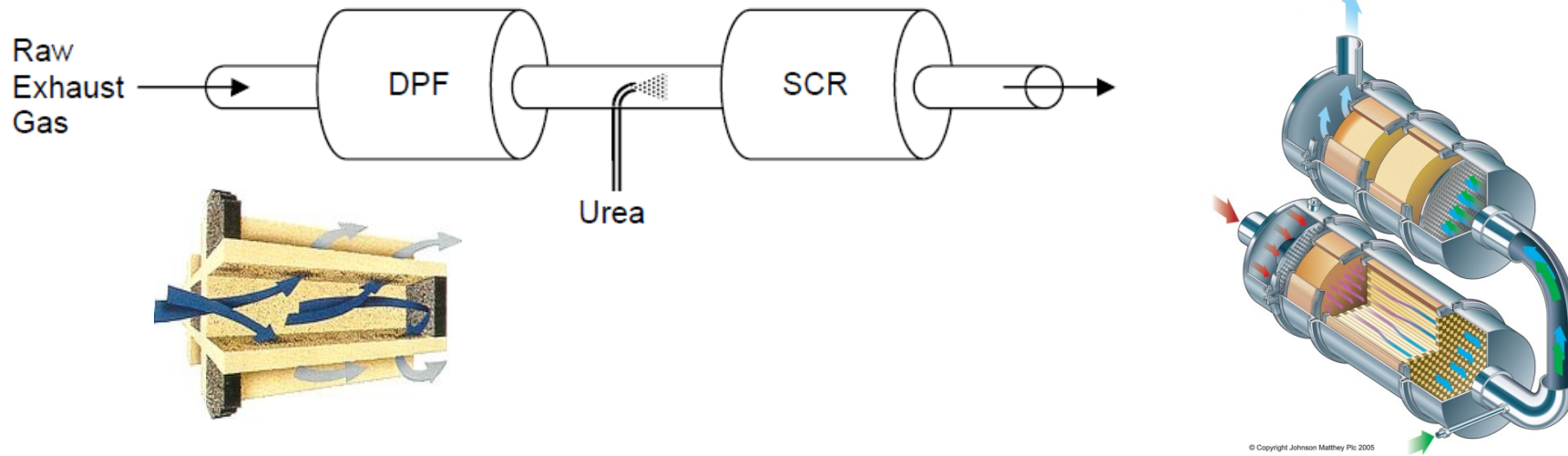
- Accept & pay the charge

- Re-arrange fleet

- Buy “new” compliant vehicles

- Retrofit

Now in London, Birmingham, Leeds PM and NO₂ are being tackled



PM and NO_x reduction – Diesel Particulate Filter (DPF) +
Selective Catalytic Reduction (SCR) – urea injection
Or
Alternative powertrains e.g. electrification



Reasons for a certification scheme

Trust

- in outputs or declarations

Decision making

- More informed and better

Comparability

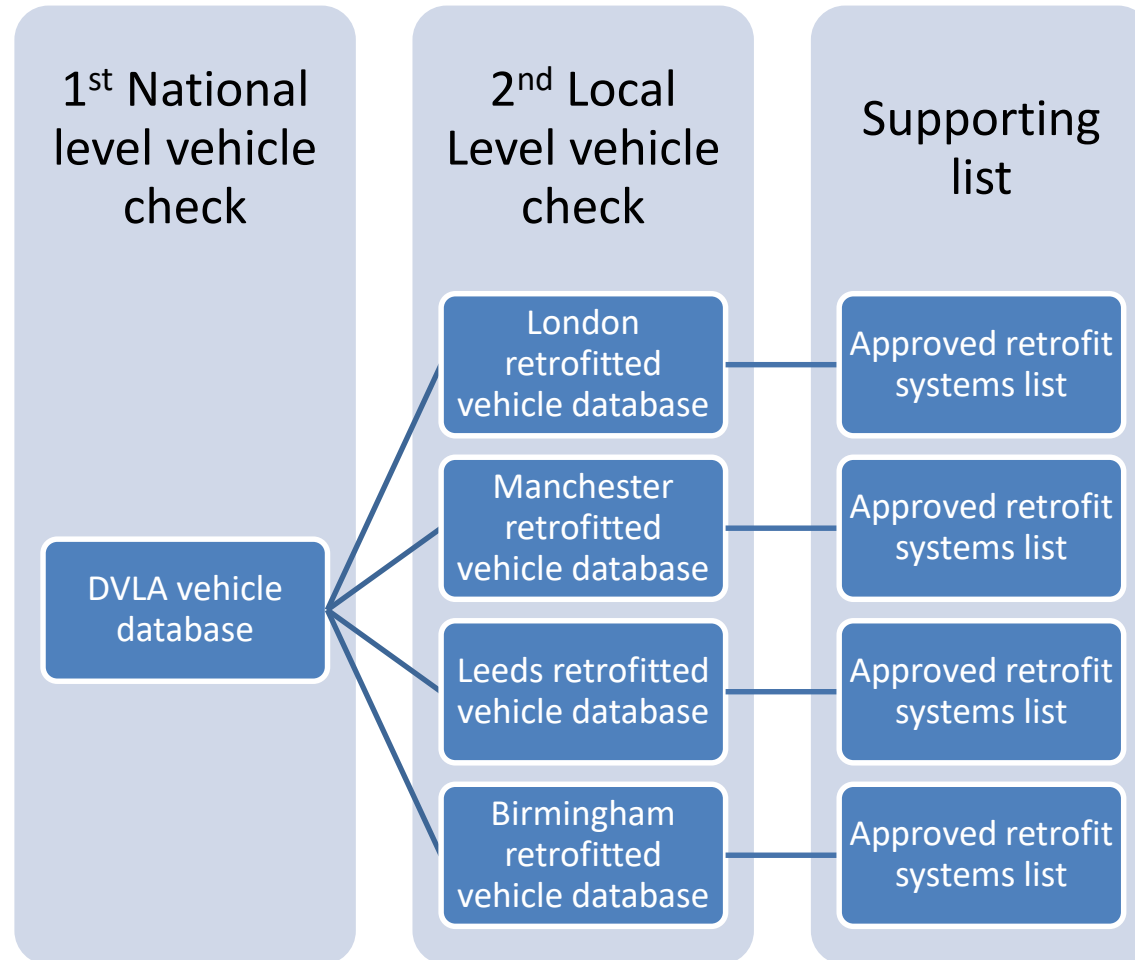
- “Apples to apples” - avoiding the “pears”

Improvement

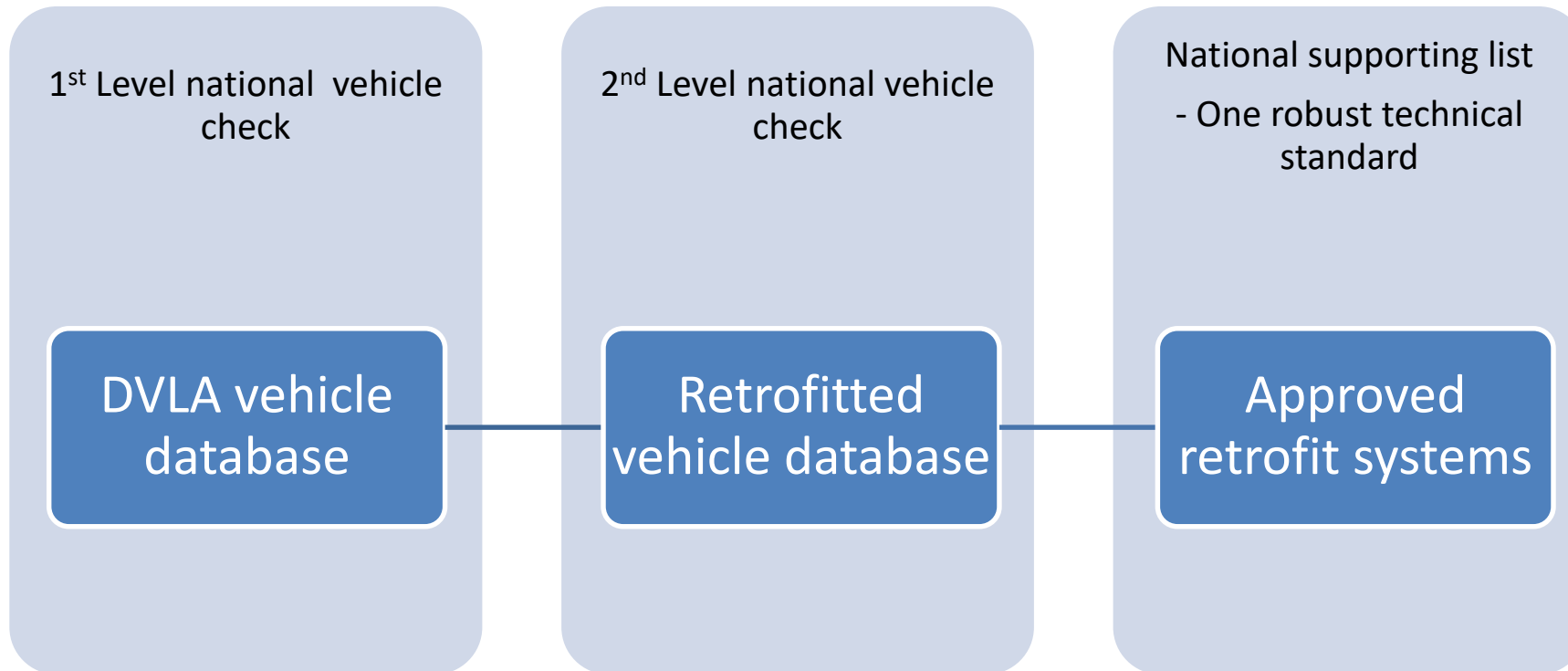
- Better quality and continual

Clean Vehicle Retrofit Accreditation Scheme

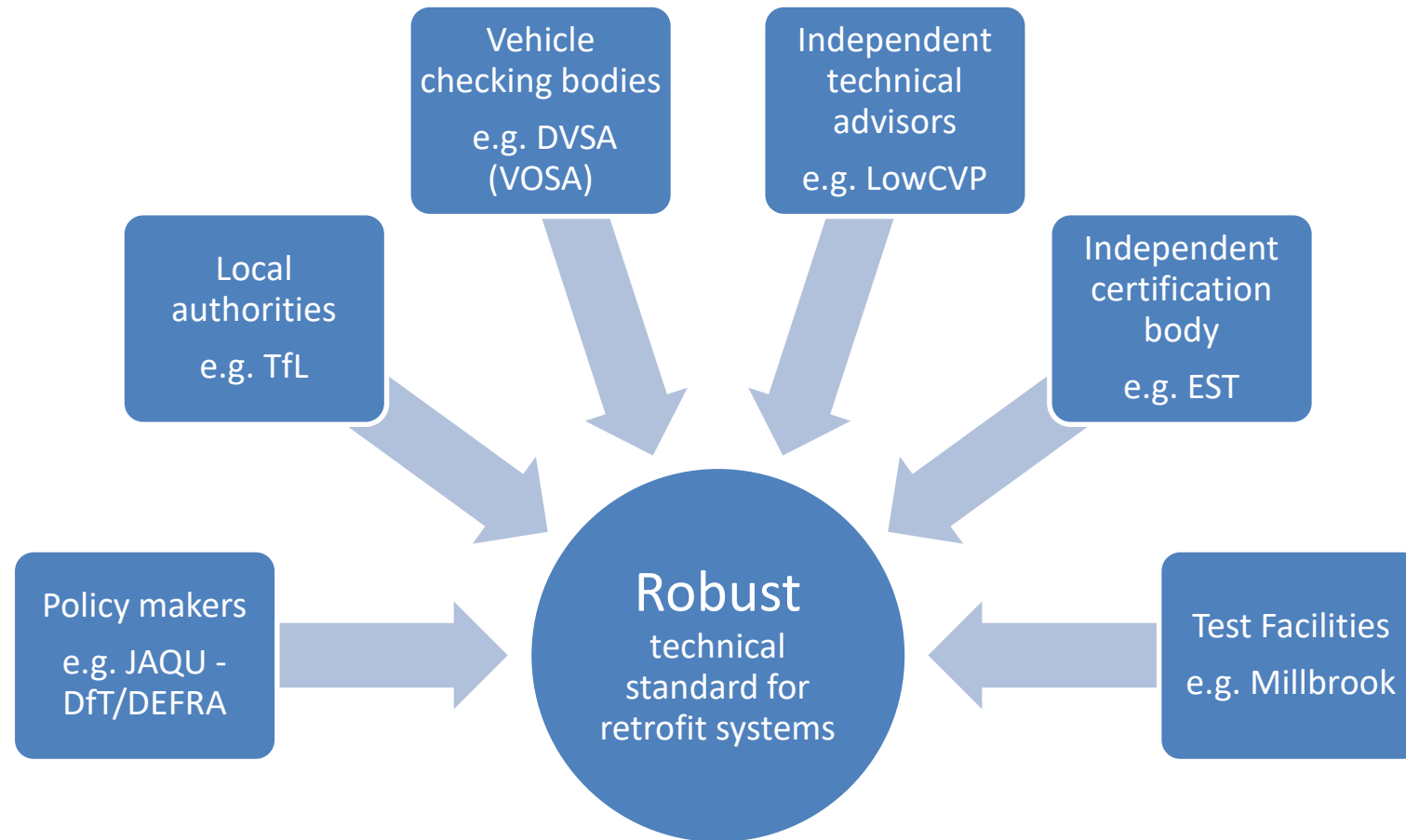
....avoiding this!



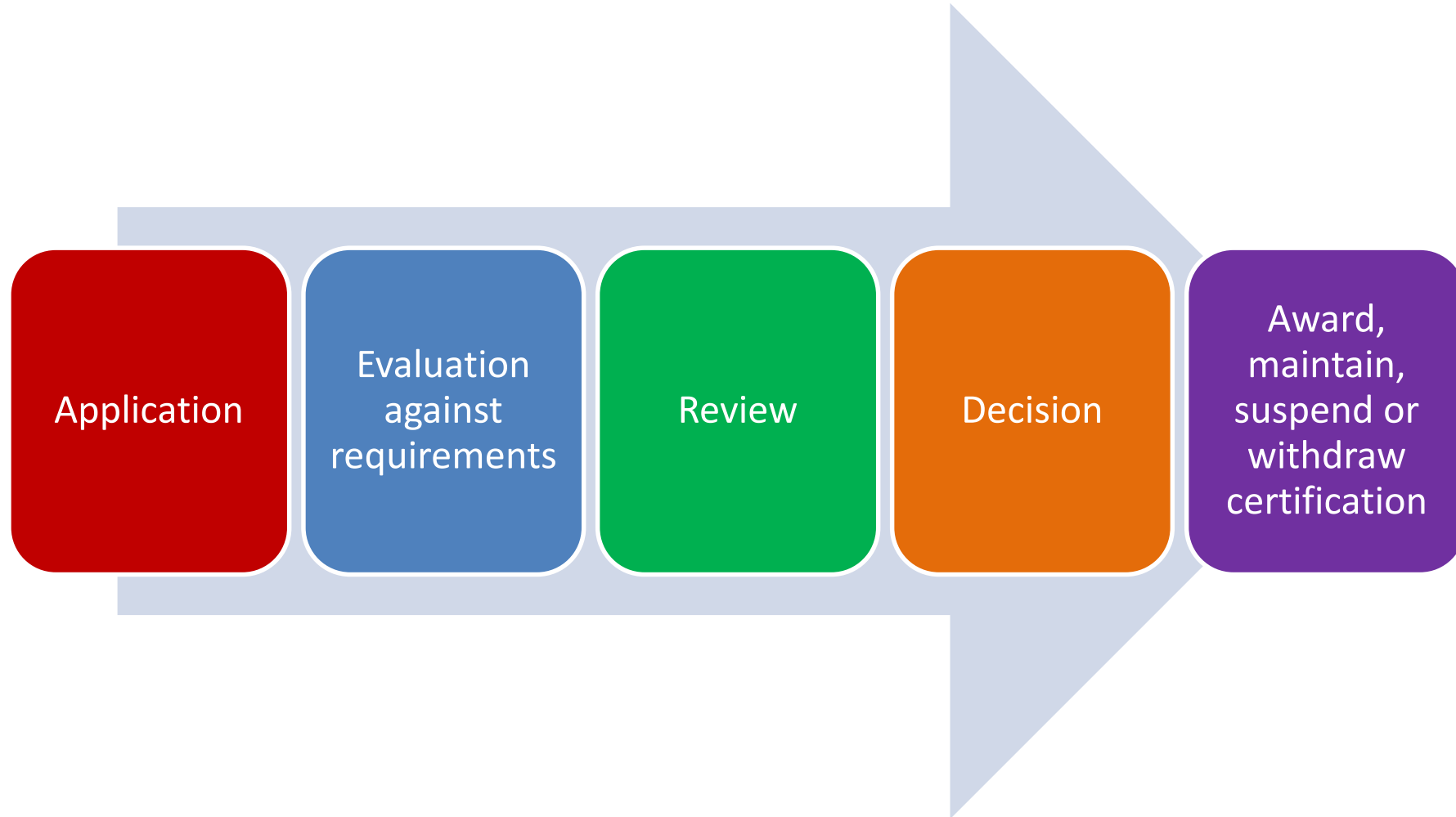
National Clean Vehicle Retrofit Accreditation Scheme



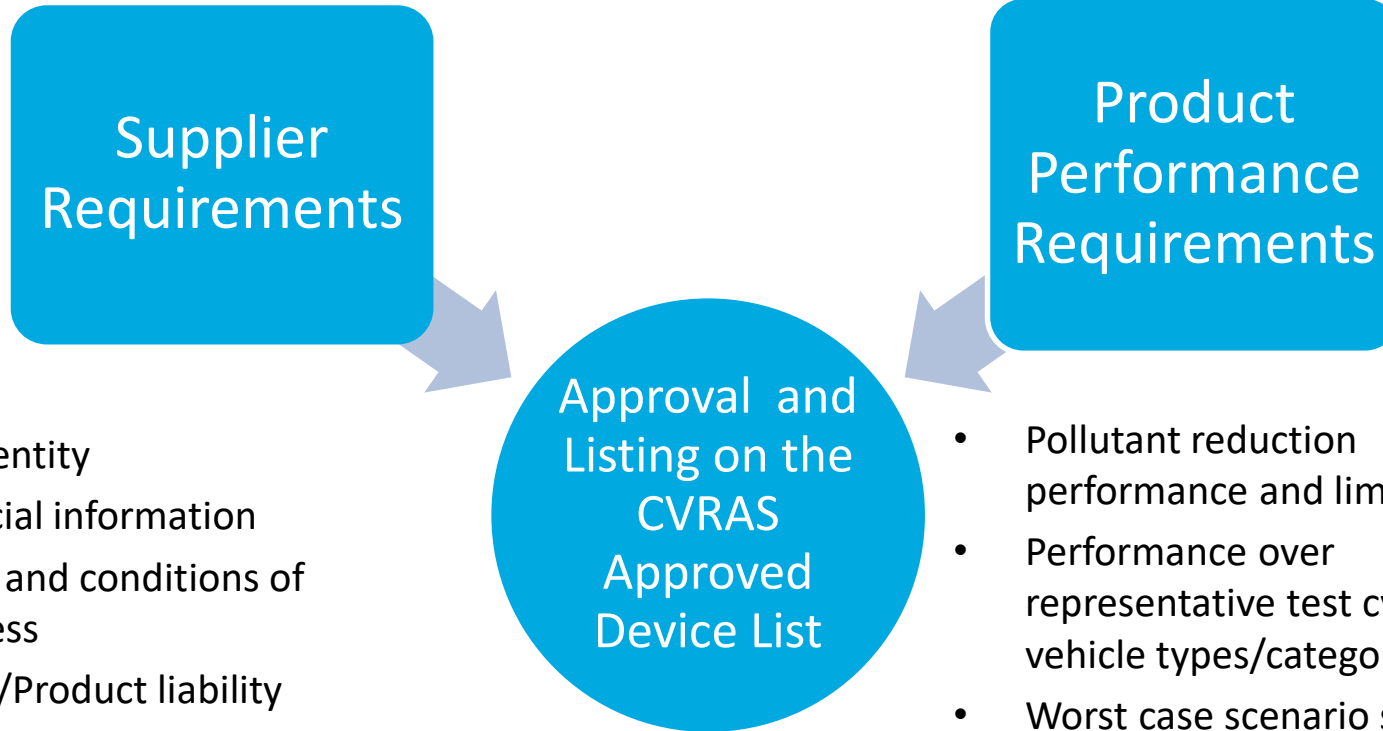
Setting a robust technical standard



Certification Process



Requirements overview



- Legal entity
- Financial information
- Terms and conditions of business
- Public/Product liability insurance cover
- Employer liability insurance
- Warranty provision
- Quality management system

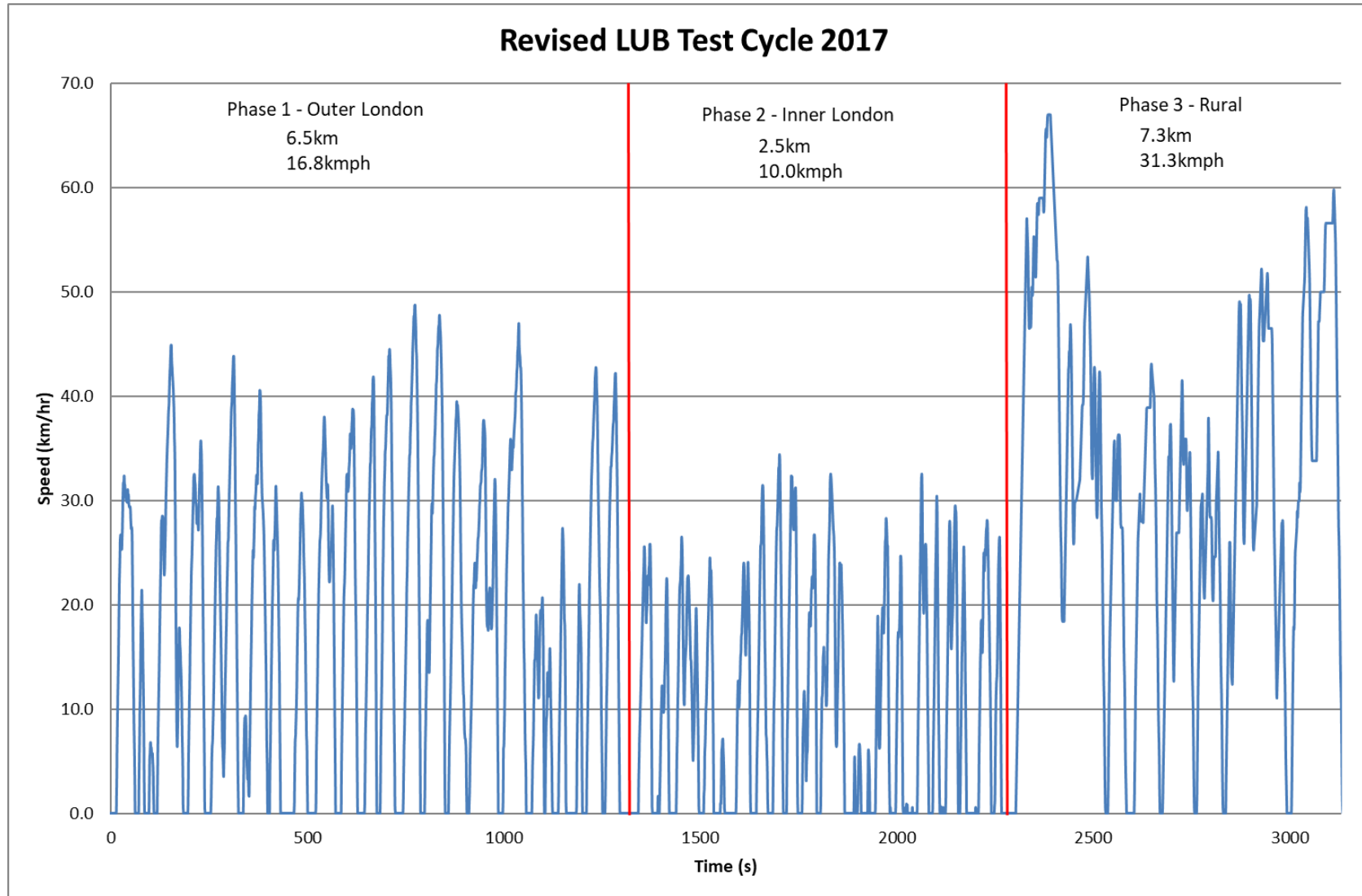
- Pollutant reduction performance and limits
- Performance over representative test cycles for vehicle types/categories
- Worst case scenario setting
- Installation and component conformance
- In-service performance and data capture
- In-service durability
- Conformity of production
- System information

Emission limits on test

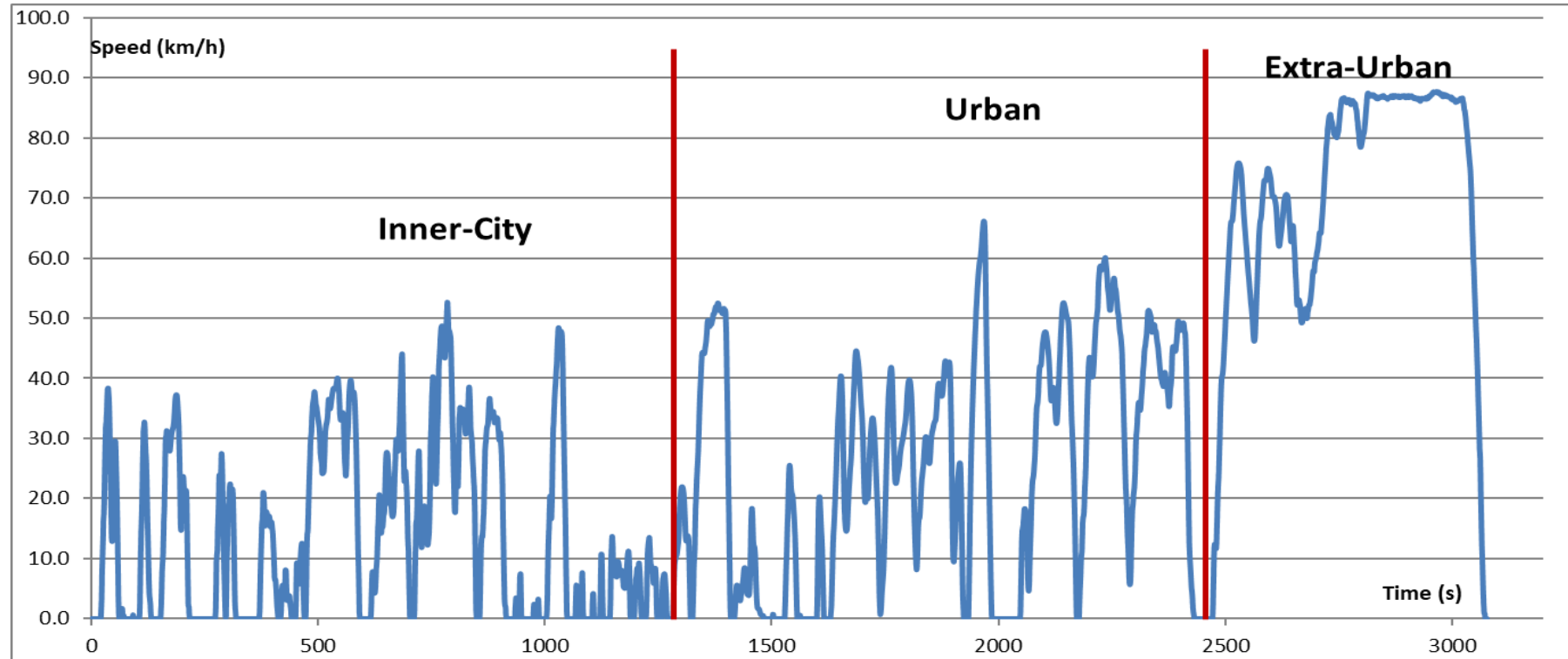
Exhaust Emission Parameter		Limits For bus, coach and HGV	Reduction performance
<p>Primary emissions</p> <p>Mixed oxides of nitrogen</p> <p>Nitrogen dioxide</p> <p>Particulate Matter (mass)</p> <p>Particulate Matter (count)</p> <p>Secondary Emissions</p> <p>Nitrous oxide/Methane</p> <p>Carbon dioxide</p> <p>Ammonia</p>	<p>NO_x</p> <p>NO₂</p> <p>PM</p> <p>PN</p> <p>N₂O/CH₄ as CO₂e</p> <p>CO₂</p> <p>NH₃</p>	<p>500mg/km</p> <p>100mg/km</p> <p>10mg/km</p> <p>6x10¹¹ /km</p> <p><5% of total CO₂</p> <p>< 1%</p> <p>10ppm</p> <p>25ppm</p>	<p>>80% reduction</p> <p>Average Peak</p>

Representative Test Drive Cycles

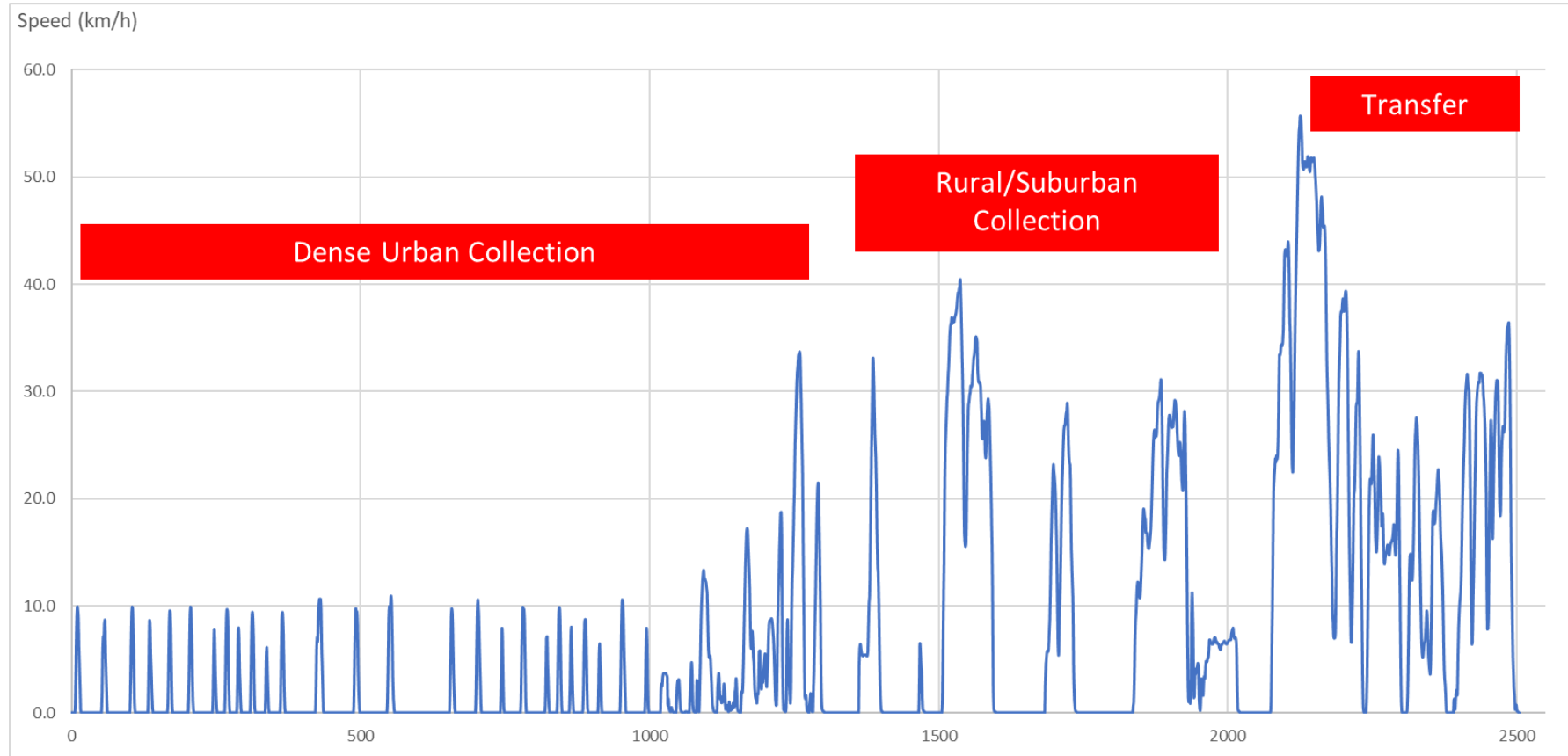
Bus



Representative Test Drive Cycles HGV

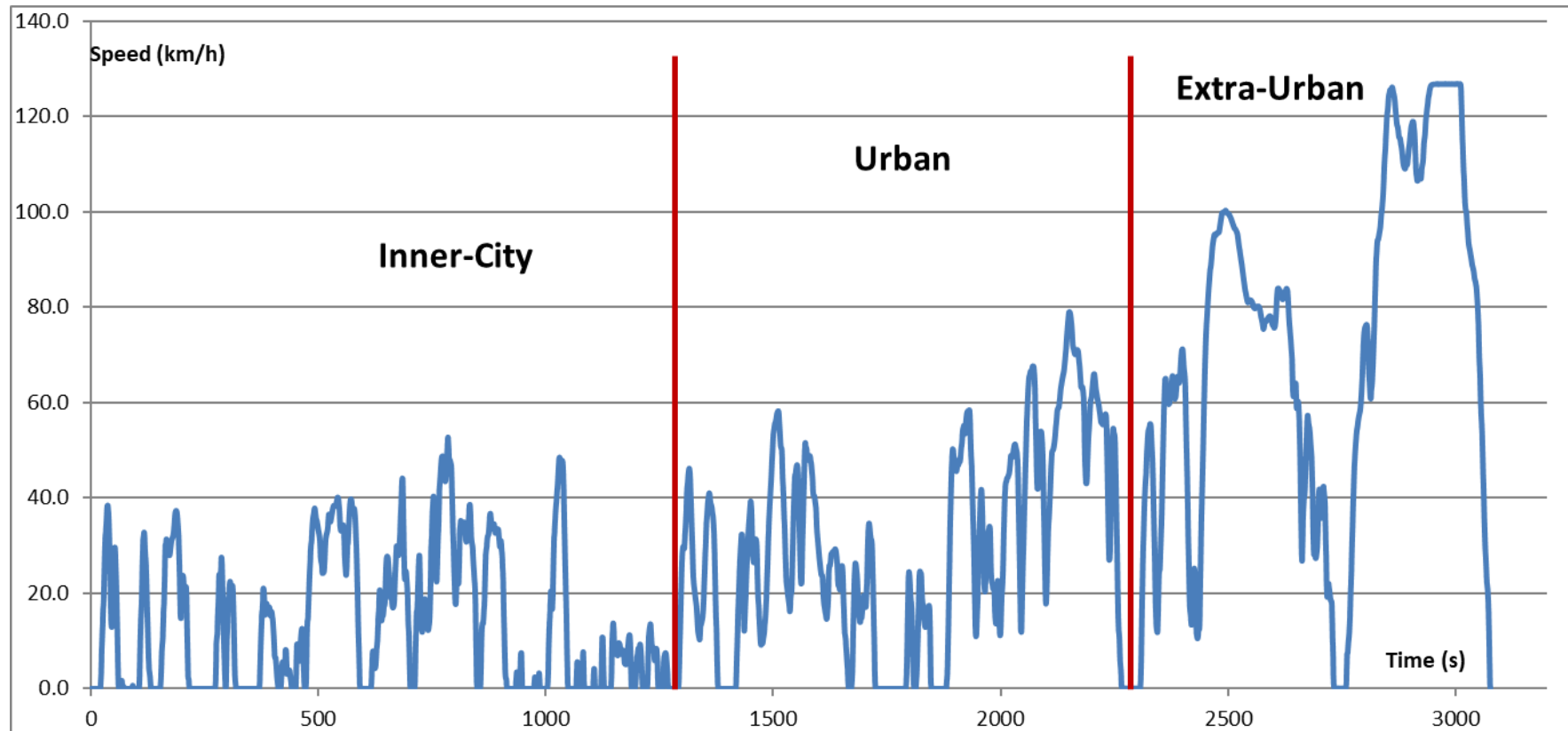


Representative Test Drive Cycles Refuse Collection Vehicle (RCV)











Representative Test Drive Cycles

Van



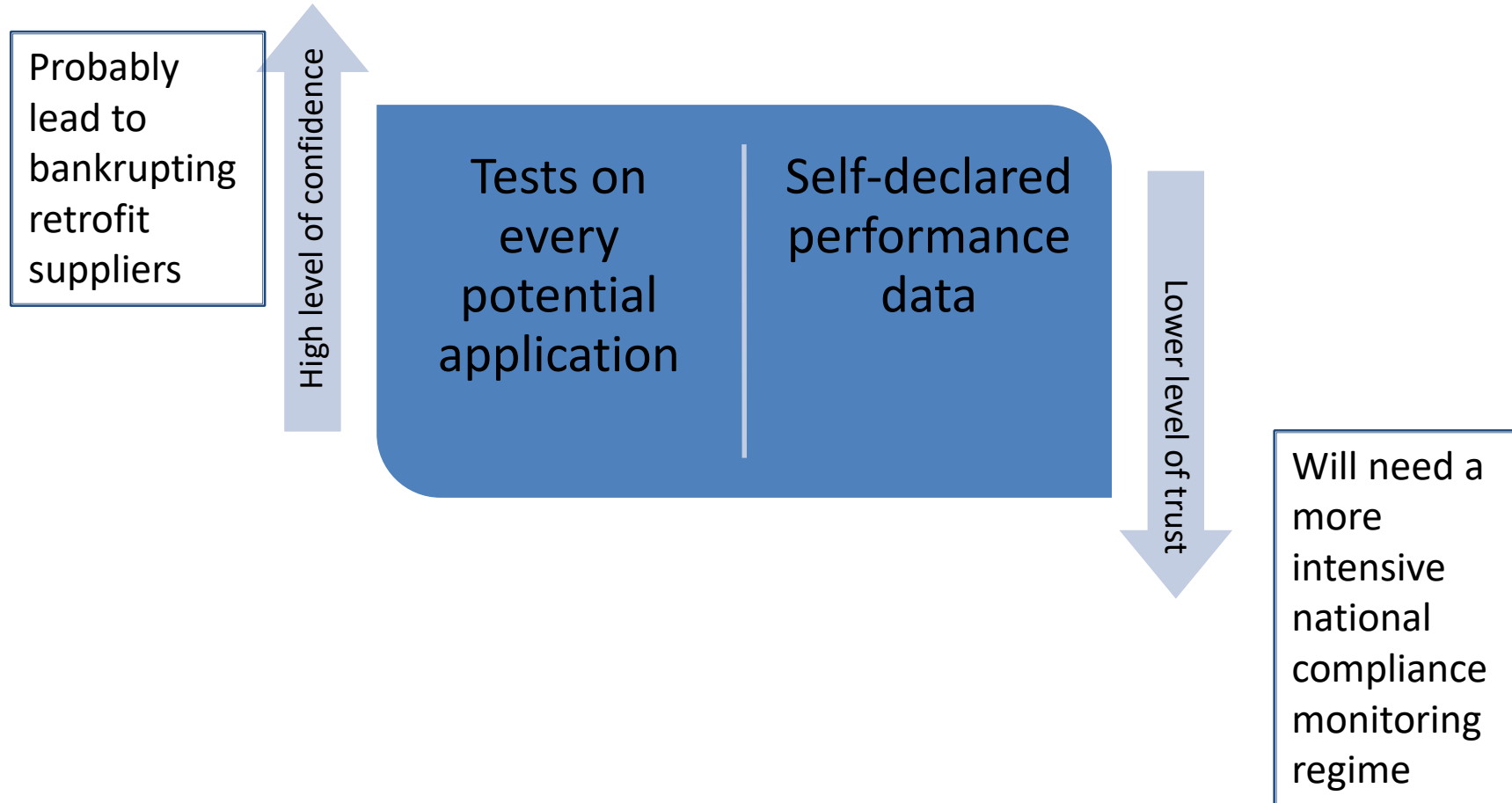
Approved devices list

<http://www.energysavingtrust.org.uk/transport-travel/transport/clean-vehicle-retrofit-accreditation-scheme-cvras>

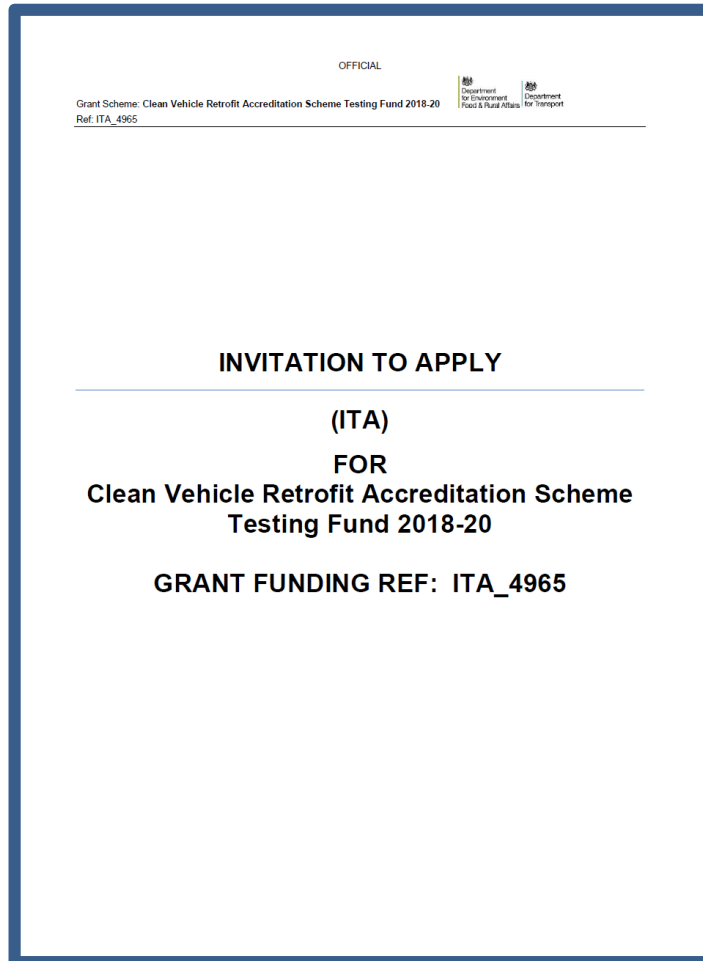
CVRAS Approved Supplier	Technology
    	<p>SCRT systems (Urea/NH₃ SCR+DPF)</p> <p>Buses – many approved Refuse collection vehicles – approval for Dennis Eagle Elite and MB Eonic</p> <p>Coaches – in progress with a number of suppliers</p>
	<p>Electric drivetrain re-power (tbc)</p>
	<p>Engine re-power (tbc) Engine re-power plus hybrid drive system (tbc)</p>
 	<p>Engine re-power and alternative fuel conversion (tbc)</p>



Technical requirements – Worst case scenario setting



DEFRA Funding for CVRAS approval tests



- To help support retrofit suppliers with costs of CVRAS approval tests
- To expand applications with HGV, Coach, RCV and Van sectors
- Test data will be open access

Timetable	
Invitation to Apply	28 September 2018
Deadline for applications	23 November 2018
Evaluation of applications	21 December 2018
Funding award notification	18 January 2019
Funding start date	01 February 2019

Technical requirements – Proposal to accept track based tests with PEMS

In order to unblock the test facility bottleneck

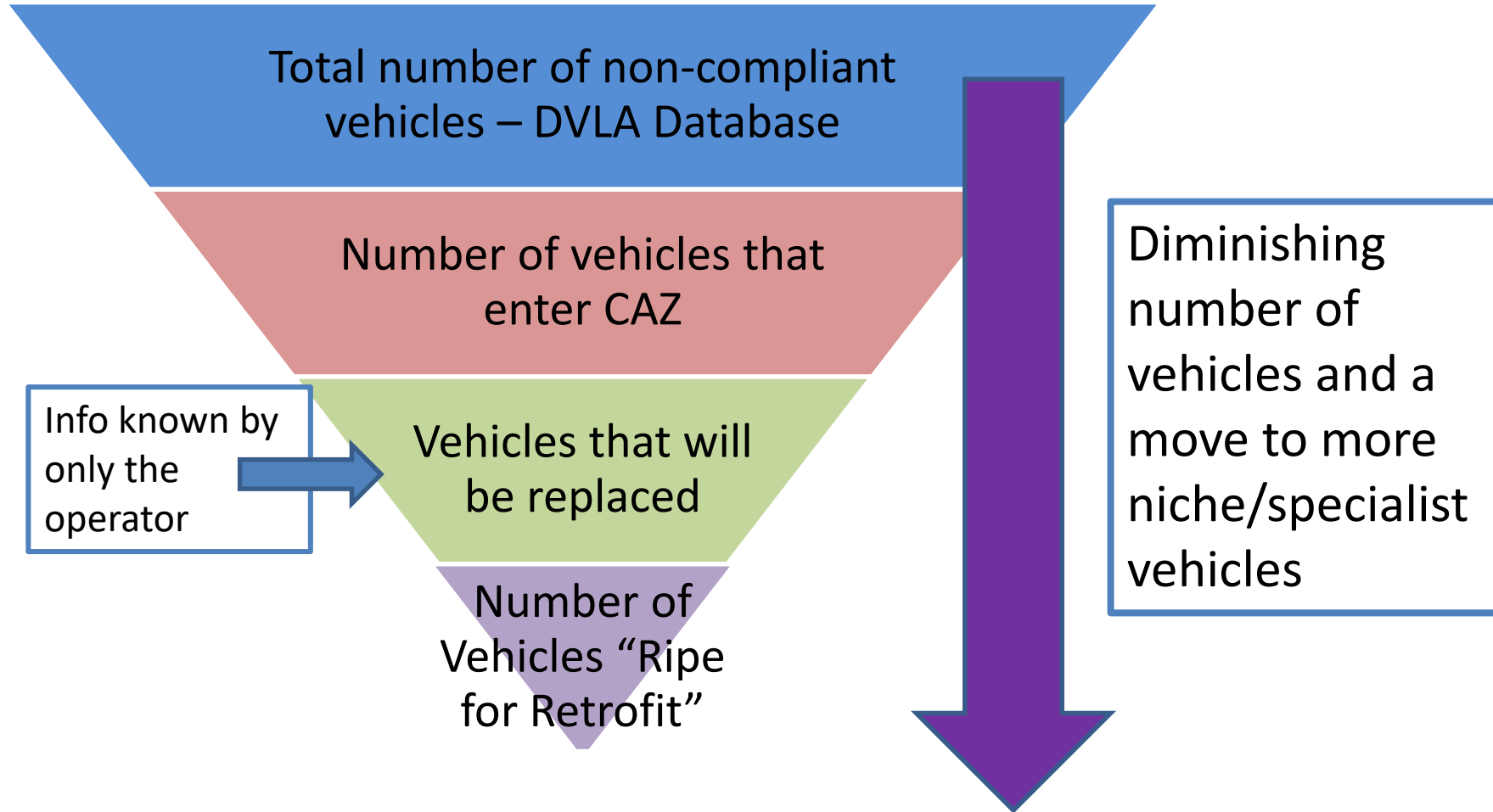


- PEMS is OK for NO_x less reliable for PM/PN and N₂O
- Will not totally replace chassis dynamometer testing
- Provides opportunity for approval extensions with magnitude of HGV variants on the market

Issues on retrofit certification

- Focus has been on bus retrofit systems but moving towards coach and HGV applications
- Test facility availability
- Lack of market information regarding “ripe for retrofit” vehicles
- Surveys on operators fleets and attitudes to retrofit – please participate fully
- Enforcement regime and vehicle database development/operation still to be formulated

Retrofit Market



“Ripe for Retrofit”

