Air Quality and the London Plan: Improving air quality in urban areas using the planning system

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15th October 2013

GREATER LONDON AUTHORITY

Transport for London

MAYOR OF LONDON

Purpose of today

Two key public and stakeholder consultations on:

- Sustainable Design and Construction SPG
- Control of Dust and Emissions during Construction SPG

1. Set out the context: air pollution in London and the need for action

2. Explain what the Mayor is proposing

3. Answer any questions you may have

4. Hear your views – working in partnership

London in 6 facts

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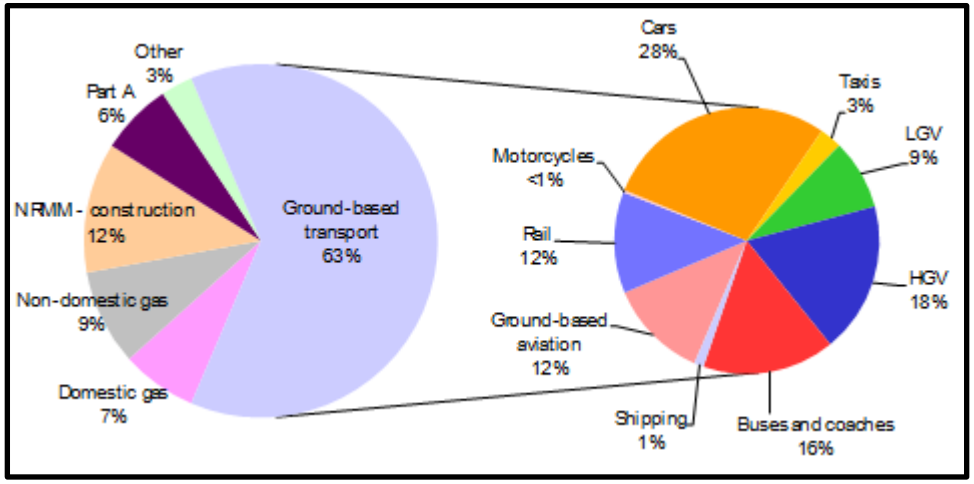
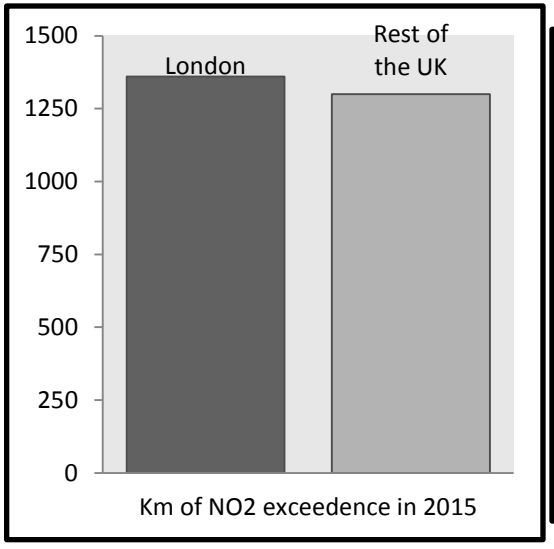
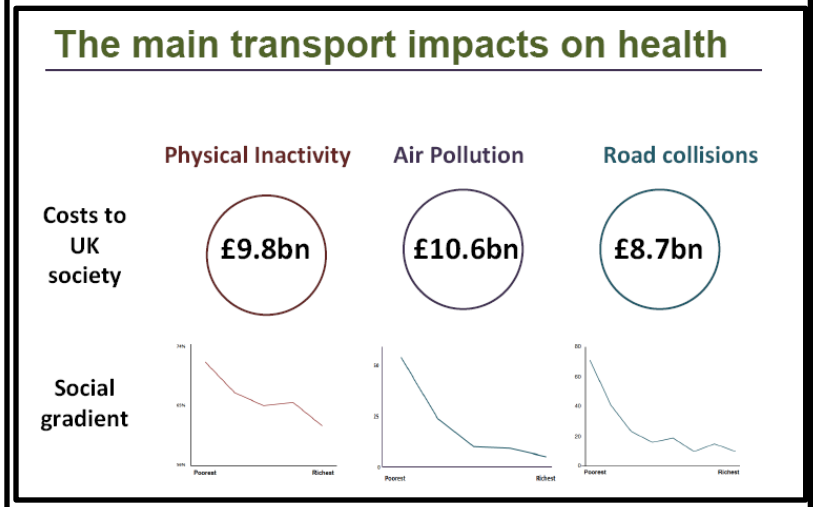
Global competition for jobs and growth

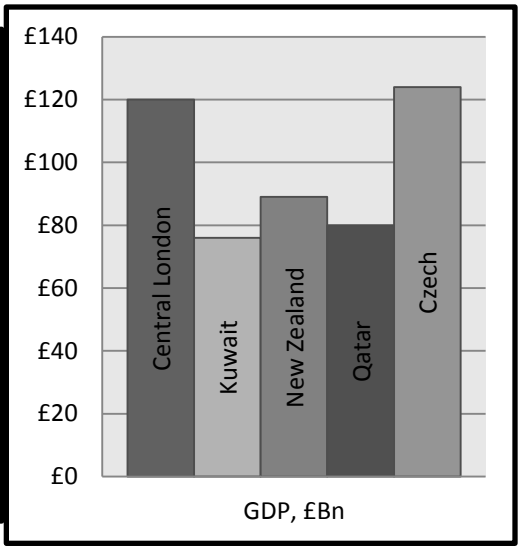
By 2030, London will have a population of 10m

That's nearly 2m extra people









Major sources of pollution in London – 2010 LAEI (PM10)

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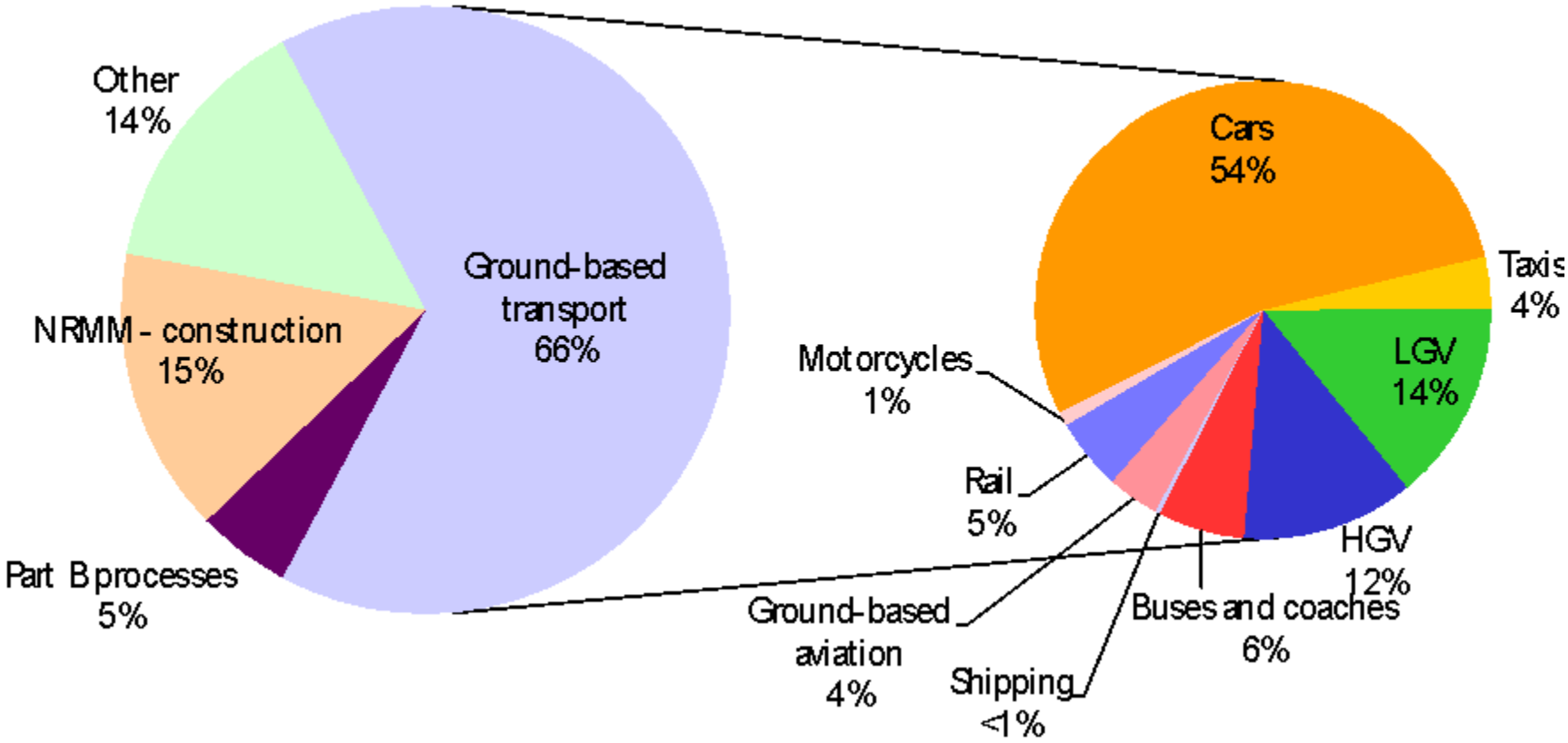
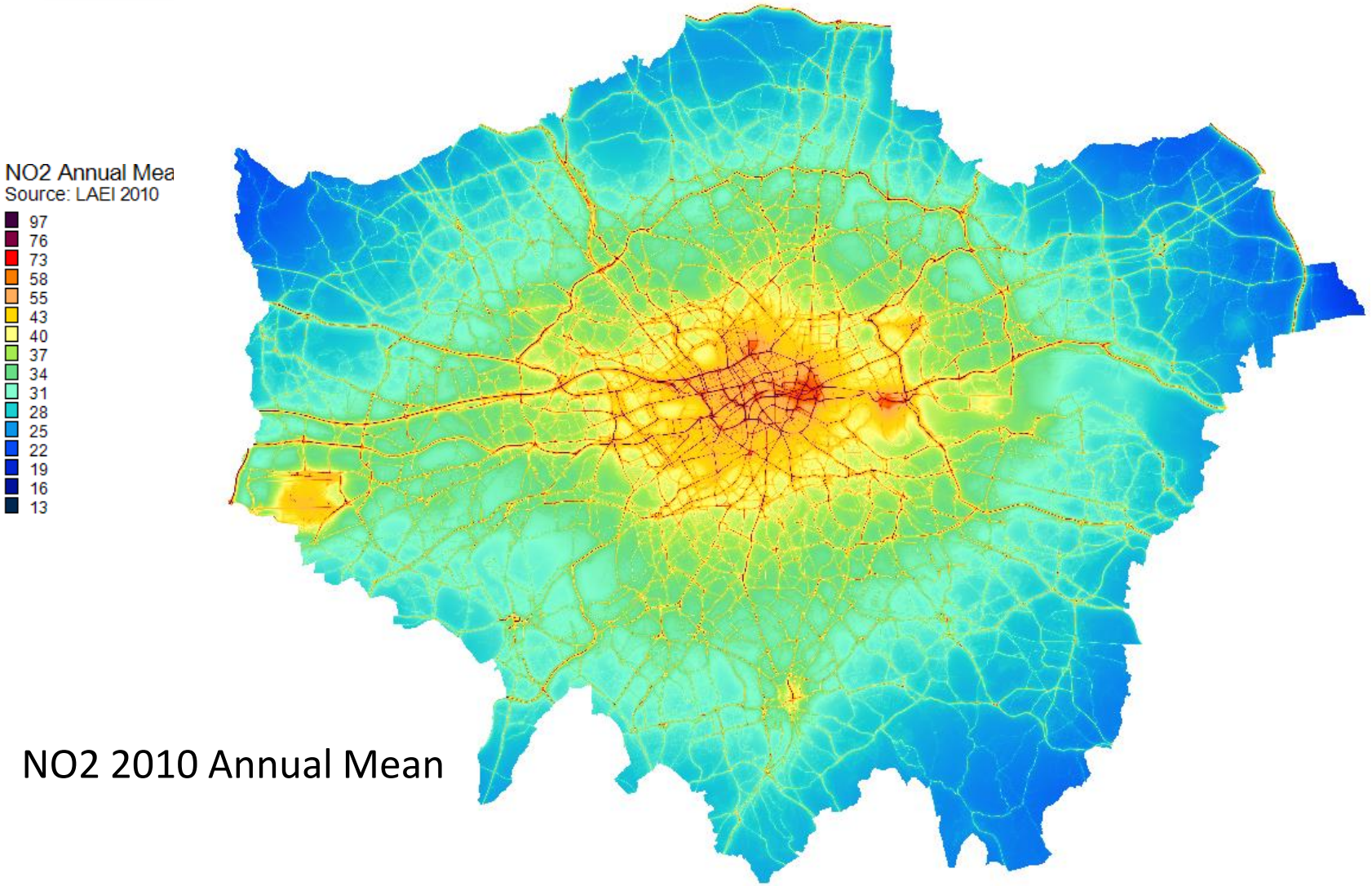


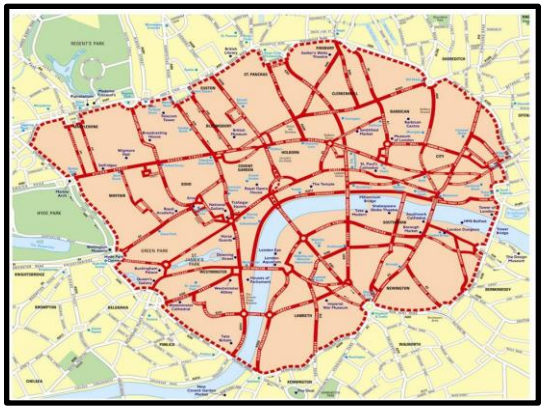
The Challenge - 2010



NO2 2010 Annual Mean

Solutions 1

Congestion charge



- Since 2003
- Central London
- Removed 70,000 vehicles
- Reduced PM and NOx emissions by 16%

Low Emission Zone

- Covers 98% of London
- Standards tightened in 2012 to Euro IV for HGVs, buses and coaches
- From 2012 large vans and minibuses included (Euro III)

Buses

- 450 hybrid buses
- 1,600 by 2016 (20% of fleet)
- Hydrogen and electric bus trials
- SCR retrofit programme for up to 1,000 older buses

Solutions 2

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Taxis

- From 2012 15 year age limit retiring 2,300 taxis (10% of fleet)
- Minimum Euro V standard
- Ultra Low Emission taxi from 2020

Buildings and planning

RE:FIT

RE:NEW

HOME ENERGY EFFICIENCY FOR TOMORROW

- Retrofit older buildings
- “Air quality neutral” for new developments
- CHP/biomass emission standards
- Construction machinery and dust

Cycling

- Barclays Cycle Hire
- Superhigways
- Record near £1bn investment over next 10 years

The London Plan

- Strategic 20 year vision for London
- Overarching policy of sustainable development
- Identifies growth and associated infrastructure needs
- Links partnerships and implementation
- Boroughs' plans are to be in conformity with the London Plan
- Guides and sets requirements for development in London

Policy 7.14
Strategic air quality

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A The Mayor recognises the importance of tackling air pollution and improving air quality to London's development and the health and well-being of its people. He will work with strategic partners to ensure that the spatial, climate change, transport and design policies of this plan support implementation of his Air Quality and Transport strategies to achieve reductions in pollutant emissions and minimise public exposure to pollution.

- Air quality strategy
- TfL – controls some roads, cycle hire, congestion charging, low emission zone

Policy 7.14 – Air quality LDF Preparation

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Boroughs should have policies that:

a seek reductions in levels of pollutants referred to in the Government's National Air Quality Strategy having regard to the Mayor's Air Quality Strategy

b take account of the findings of their Air Quality Review and Assessments and Action Plans, in particular where Air Quality Management Areas have been designated.

Sustainable Design and Construction SPG

- Provides additional guidance to the London Plan policies to support implementation
  - Air quality assessments
  - Minimising air quality emissions
  - Air quality neutral
  - Emission standards for combustion plant
- Set out with *Mayor's priorities* and *Mayor's best practice*

Policy 7.14
Air quality neutral

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> Development proposals should be at least 'air quality neutral' and not lead to further deterioration of existing poor air quality (such as areas designated as Air Quality Management Areas (AQMAs)).

- Major developments
- Covers PM10 & NOx
- Emission benchmarks for buildings (land uses) and transport
- Methodology provided
- Mitigation

Biomass and CHP emission standards

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- The emission standards below are target minimum standards.

Combustion Appliance	Pollutant	Emission Standard (mg Nm^{-3})	Indicative Emission Factor	Likely Technique Required to Meet Emission Standard
Spark ignition engine (natural gas/biogas)	NO_x	250[A]	0.7 g/kWh	Advanced lean burn operation (lean burn engines) NSCR (rich burn engines)
Compression ignition engine (diesel/bio-diesel)	NO_x	400[A]	1.1 g/kWh	SCR
Gas turbine	NO_x	50[B]	0.4 g/kWh	None above standard technology for modern turbines
Solid biomass boiler (including those involved in CHP applications)	NO_x	275[C]	100 g/GJ	Modern boiler with staged combustion and automatic control
	PM	50[C]	20 g/GJ	Cyclone/ multicyclone
All (stack heat release less than 1MW)[D]	Stack discharge velocity	10 ms^{-1}	N/A	Appropriate design of stack discharge diameter to achieve required velocity
All (stack heat release greater than or equal to 1MW)[D]	Stack discharge velocity	15 ms^{-1}	N/A	Appropriate design of stack discharge diameter to achieve required velocity

Control of dust and emissions during construction SPG

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- In 2010 construction activity is estimated to be responsible for 12% of NOx emissions in and 15% of PM10 emissions in Greater London.

- The number of construction sites in London varies, there are as many as 10,000 active construction sites at any one time

- Across London NRMM turnover is lower than for road vehicles

- Evidence suggests that major construction sites, particularly those located in Central London:
    - increase long term PM10 concentrations
    - increase the number of days when PM10 concentrations exceed 50µg/m3
    - give rise to annoyance due to the soiling of surfaces by dust
    - produce NOx and PM10 emissions through the use of non road mobile machinery (NRMM)

Background

- Current GLA/ London Councils Best Practice Guidance (BPG) published in 2006
- 2010 MAQS commits to review of GLA/ London Councils Best Practice Guidance (BPG) and implementation of NRMM standards
    - Consultation and review period 2010 - 2012
    - Informal GLA consultation
    - Working with IAQM on review
    - BRE conference
    - GLA working groups set up
- New SPG covers two main areas:
    - Construction and demolition activities
    - The use of construction machinery (Non Road Mobile Machinery – NRMM)

NRMM: Key issues

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- Pollutants
- Classes of machinery
- Enforcement
- Registering retrofit
- Exemptions
- Polluter pays option

Updates to the BPG

Feedback

- The BPG has been widely adopted and feedback has been provided from many stakeholders
- Based on this feedback the guidance has been revised in the following ways, in order to make it more flexible, pragmatic and clear:

Site evaluation

- Focuses upon 4 construction activities
- Risk categories identified through combination of size of development and distance to receptors

Mitigation

- Includes mitigation measure matrix which outlines compulsory and discretionary measures
- New measures added for site management and transport management

Enforcement

- New chapter added outlining Local Authorities' enforcement powers in terms of planning and regulatory powers
- This is also included in the Exemplar Boroughs scheme in order to get more uniform adoption across London

NRMM: Stages

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EU Non-Road Mobile Machinery (NRMM) (97/68/EC et seq)

This chart covers all NRMM CI applications except constant speed engines, engines for propulsion of inland waterway vessels and engines for locomotives & railcars

Power Bands at Stage II	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Power Bands From Stage IV
130 ≤ kW ≤ 560		**9.2 / 1.3 / 5.0 / 0.54			**6.0 / 1.0 / 3.5 / 0.2				*4.0 / 3.5 / 0.2					** 2.0 / 0.19 / 3.5 / 0.025			**0.4 / 0.19 / 3.5 / 0.025			130 ≤ kW ≤ 560
75 ≤ kW < 130		**9.2 / 1.3 / 5.0 / 0.70				**6.0 / 1.0 / 5.0 / 0.3				*4.0 / 5.0 / 0.3					**3.3 / 0.19 / 5.0 / 0.025			**0.4 / 0.19 / 5.0 / 0.025			56 ≤ kW < 130
37 ≤ kW < 75			**9.2 / 1.3 / 6.5 / 0.85				**7.0 / 1.3 / 5.0 / 0.4			*4.7 / 5.0 / 0.4					**3.3 / 0.19 / 5.0 / 0.025						
																	*4.7 / 5.0 / 0.025			37 ≤ kW < 56
18 ≤ kW < 37					**8.0 / 1.5 / 5.5 / 0.8					*7.5 / 5.5 / 0.6										19 ≤ kW < 37

EU Non-Road Mobile Machinery (NRMM) (97/68/EC et seq)

This chart covers only constant speed CI engines

Power Bands at Stage II	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Power Bands at Stage IIIA
130 ≤ kW ≤ 560		**6.0 / 1.0 / 3.5 / 0.2				*4.0 / 3.5 / 0.2						130 ≤ kW ≤ 560
75 ≤ kW < 130		**6.0 / 1.0 / 5.0 / 0.3				*4.0 / 5.0 / 0.3						75 ≤ kW < 130
37 ≤ kW < 75		**7.0 / 1.3 / 5.0 / 0.4				*4.7 / 5.0 / 0.4						37 ≤ kW < 75
18 ≤ kW < 37		**8.0 / 1.5 / 5.5 / 0.8				*7.5 / 5.5 / 0.6						19 ≤ kW < 37

EU Emission Stages		Stage I
		Stage II
		Stage IIIA
		Stage IIIB
		Stage IV
Limit Values	*	NOx+HC / CO / PM in g/kWh
	**	NOx / HC /CO / PM in g/kWh

[PAW 12 Sept 2012]

TRANSITIONAL PROVISIONS (current as of September 2012)

The above dates typically represent the commencement of phase-in of the new emission category
Manufacturers will normally phase-in new products using the following transitional provisions:

1. Engines manufactured before the end of a stage may continue to be placed on market for 2 years after stage ends
2. Machine OEMs may apply for flexibility to continue to purchase new prior stage engines in strictly limited quantities (max 3 years during stage IIIB)

NRMM: scenarios

	Scenario	Description
Group 1 – London wide	Scenario 1A	Stage IIIA from 1st July 2013
	Scenario 1B	Stage IIIA from 1st July 2014
	Scenario 1C	Stage IIIA from 1st July 2015
	Scenario 1D	Stage IIIA from 1st July 2014, moving to IIIB in 2015
Group 2 – Central London and Canary Wharf only	Scenario 2A	Stage IIIB from 1st July 2013
	Scenario 2B	Stage IIIB from 1st July 2014
	Scenario 2C	Stage IIIB from 1st July 2015
Group 3 – Combination of Group 1 and Group 2	Scenario 3A	1st July 2014, Stage IIIA Greater London, IIIB in Central London and Canary Wharf
	Scenario 3B	1st July 2015, Stage IIIA Greater London, IIIB in Central London and Canary Wharf
	Scenario 3C	1st July 2014 Stage IIIB Central London and Canary Wharf, 1st July 2015 Stage IIIA in Greater London

Also looked at rolling age-based standards

NRMM: costs & benefits

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	Emissions reduction (Tonnes)			Cost to plant hire industry	Cost to equipment owner/users	Total overall cost £ NPV(2014)
Scenario	NOx	PM_{10}	$PM_{2.5}$			
1A	609.7	4.5	4.2	£8,940,844	£13,985,900	£22,926,744
1B	268.4	2.1	2.0	£5,457,310	£5,641,531	£11,098,842
1C	83.0	1.0	0.9	£1,210,092	£1,104,630	£2,314,722
1D	344.5	36.5	34.7	£15,176,732	£12,502,061	£27,678,793
2A	150.4	30.9	29.3	£9,720,769	£7,293,144	£17,013,913
2B	88.8	22.3	21.1	£7,286,083	£4,959,386	£12,245,469
2C	50.2	15.2	14.4	£6,007,326	£4,026,570	£10,033,896
3A	241.8	23.5	22.3	£10,394,868	£8,173,114	£18,567,981
3B	185.5	22.8	21.7	£6,931,044	£4,818,783	£11,749,826
3C	136.1	22.8	21.7	£7,999,545	£5,610,668	£13,610,213

NRMM: additional scenarios

Age limit	Emissions reduction	Cost to plant hire industry	Cost to equipment owner/users	Total overall annual cost
5 years	Not calculated	£72,138,000	£29,192,000	£101,330,000
7 years		£31,483,000	£10,207,000	£41,690,000
10 years		£5,544,000	£1,361,000	£6,905,000

NRMM

(Applies to NRMM of net power between 37kW and 560kW)

From 1 September 2015

- NRMM used on the site of any Major development, as defined in the London Plan, within Greater London will be required to meet Stage IIIA of the Directive as a minimum.
- NRMM used on any site within the Central Activity Zone or Canary Wharf will be required to meet Stage IIIB of the Directive as a minimum.

From 1 September 2020 (consistency with ULEZ)

- NRMM used on any site within Greater London will be required to meet Stage IIIB of the Directive as a minimum.
- NRMM used on any site within the Central Activity Zone or Canary Wharf will be required to meet Stage IV of the Directive as a minimum.

Considerations

- These requirements may be met using the following techniques:
  - Reorganisation of NRMM fleet
  - Replacing equipment (with new or second hand equipment which meets the policy)
  - Retrofit abatement technologies
  - Re-engining

- All eligible NRMM should meet the policy above unless it can be demonstrated that the machinery is not available or that a comprehensive retrofit for both PM and NOx is not feasible. In this situation every effort should be made to use the least polluting equipment available including retrofitting technologies to reduce particulate matter.

Exemptions

- It is recognised that some NRMM plant is not yet widely available in the numbers required to meet the policy above and that the options for retrofitting or re-engining are currently cost prohibitive.

- Learning from Crossrail GLA is adopting a pragmatic approach

- As such the GLA will publish a list of NRMM that is exempt from this policy. This list will be reviewed every two years.

- Once policy is confirmed the GLA will consult on new emission standards early next year. Separate process.

Enforcement

- London Boroughs will be responsible for the enforcement through their planning powers. Penalties for not meeting the policy will be in line with existing borough policies.

- The policy should be implemented by the London Boroughs as a planning condition.

- Developers will be required to provide a written statement of their commitment and ability to meet the policy within their Construction and Demolition Method Statement and Environment Management plans. This statement can be used by the Boroughs for the purposes of monitoring and enforcement.

- An inventory of all NRMM must be kept on site and all machinery should be regularly serviced and service logs kept on site for inspection. Records should be kept on site which details proof of emission limits for all equipment.

- The Considerate Constructors Scheme will play a role in reviewing the levels of compliance with this policy across Greater London as part of their audit activities at the construction sites of their members.

Consultations

- **Sustainable Design and Construction SPG** (AQ neutral, CHP/biomass emission standards). Please send in your written response by **6pm 21st October 2013**

SD&C@london.gov.uk with 'Sustainable Design and Construction SPG' in the subject box.

- **Control of Dust and Emissions during Construction and Demolition SPG** (including NRMM emission standards). Please send in your written response by **6pm 25th November 2013**

DustandEmissions@london.gov.uk with 'The Control of Dust and Emissions during Construction and Demolition' in the subject box.

Consultations documents available at www.london.gov.uk

Questions

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