



Rijkswaterstaat  
*Ministry of Infrastructure and the  
Environment*

## Industrial Emission Directive and BREF LCP

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# Contents

- Industrial Emission Directive 2010/75/EU (IED)
- BREF LCP review
- BREF LCP: BAT coal/lignite fired plants BREF LCP



# Industrial Emission Directive 2010/75/EU (IED)

## > General (1)

- Key instrument for minimizing consumption and the emissions of industrial activities in Europe
- General framework:
  - prevent and, if not feasible, reduce pollution
  - high level of protection for the environment as a whole
  - permit based on Best Available Techniques (BAT)



# Industrial Emission Directive 2010/75/EU (IED)

## > General (2)

- Environmental protection as a whole
  - Pollutants and odour emissions to air
  - Emissions to water
  - Waste prevention and recovery
  - Energy, materials and water use
  - Noise and vibration
  - Heat
  - Prevention and control of accidents



# Industrial Emission Directive 2010/75/EU (IED)

## > General (3)

- Definition of **BAT**
  - **Best** - Most effective in achieving a high general level of protection of the environment as a whole
  - **Available** - Development on a scale which allows implementation in the relevant industrial sector, under economically and technically viable conditions
  - **Techniques** – Both the technology used and the way in which the installation is designed, built, maintained, operated and decommissioned



# Industrial Emission Directive 2010/75/EU (IED)

## > Structure

- I. Common provisions (art 1-9)
- II. Provisions for Annex 1 activities (art 10-27)
- III. Special provisions for combustion plants (art 28-41)
- IV. Special provisions for waste incineration (art 42-55)
- V. Special provisions for installations and activities using organic solvents (art 56-65)
- VI. Special provisions for installations producing titanium dioxide (art 66-70)
- VII. Committee, transitional and final provisions (art 71-84)



# Industrial Emission Directive 2010/75/EU (IED)

## > Annex 1 activities

1. Energy industries
2. Production and processing of metals
3. Mineral industries
4. Production of chemicals
5. Waste management industries
6. Other industries

≈50000 installations in Europe



# Industrial Emission Directive 2010/75/EU (IED)

## > Exchange of information on BAT (1)

- Legal basis
  - Article 13(1) : *'In order to draw up, review and, where necessary, update BAT reference documents, the Commission shall organise an exchange of information between Member States, the industries concerned, non-governmental organisations promoting environmental protection and the Commission'*





# Industrial Emission Directive 2010/75/EU (IED)

## > Exchange of information on BAT (2)

- Exchange of information addresses:
  - the **performance of installations and techniques** in terms of emissions and consumptions, etc.
  - the techniques used, **associated monitoring, economic and technical viability**, etc.
  - best available techniques and emerging techniques identified after considering all the issues concerned



# Industrial Emission Directive 2010/75/EU (IED)

## > Exchange of information on BAT (3)

- Organization
  - a) 35 Technical working groups (TWGs)
    - Representatives of member states, industry, NGOs and commission
    - Research information, collect and verify of data
    - Peer review of draft BREFs
  - b) European IPPC Bureau (EIPPCB)
    - BREF authors team
    - Lead TWGs
    - Validate/check information and data
    - Draft BREFs
    - Present BREF to IED Art 13 Forum



# Industrial Emission Directive 2010/75/EU (IED)

## > Exchange of information on BAT (4)

### c) IED Art 13 Forum

- Lead by the commission
- Representatives of member states, industry and NGOs
- Nominate TWGs
- Formal opinion on BREF
- Guidance to Art 75 Committee

### d) IED Art 75 Committee

- EU member states
- Vote for BAT conclusions



# Industrial Emission Directive 2010/75/EU (IED)

## > BAT conclusions (1)

- Reference for setting permit conditions
- ELVs in permits within BAT-Associated Emission Levels (BAT-AELs)
- Derogation from BAT-AELs in specific and justified cases
  - Need to demonstrate that costs are disproportionately higher than benefits due to local/installation-specific situations
  - Member States report to the public/Commission on use of derogations



# Industrial Emission Directive 2010/75/EU (IED)

## > BAT conclusions (2)

- Within four years of publication of decisions on BAT conclusions relating to the main activity of an installation, the competent authority shall ensure that:
  - all the permit conditions for the installation concerned are reconsidered and, if necessary, updated to ensure compliance with the IED
  - the installation complies with those permit conditions



# Industrial Emission Directive 2010/75/EU (IED)

## > Chapter III - general

### Special provisions for combustion plants

- Origin
  - Large combustion plants directive (2001/80/EC)
- Role
  - Safety net for applying BAT according to chapter II
  - ELVs for new and existing LCPs
- Scope
  - Combustion plants of which the total rated thermal input is equal to or greater than 50 MW, irrespective of the type of fuel used
  - Different from activity 1.1 in IED Annex 1  
Combustion of fuels in installations with a total rated thermal input of 50 MW or more



# Industrial Emission Directive 2010/75/EU (IED)

## > Chapter III – ELVs (Annex V part 1 and 2)

Plants permitted from 7 January 2013

(and plants using the limited life time exemption in the LCP directive in the period 2008-2016)

- ELVs in Annex V part 2

Plants permitted before 7 January 2013

- ELVs in Annex V part 1 unless
  - Plant with limited life time, i.e. less than 17500 operating hours in the period from 1 January 2016 until 31 December 2023, but plant has to comply with ELVs in LCP directive, or
  - Plant permitted before 27 November 2002 included in a transitional national plan for the period from 1 January 2016 to 30 June 2020, or
  - District heating plant <200 MW permitted before 27 November 2002 and 50% of the useful heat is utilized in district heating; derogation until 31 December 2022



# Industrial Emission Directive 2010/75/EU (IED)

## > Chapter III – aggregation rule (1)

### Aggregation rule

- Waste gas of different combustion plants discharged through a common stack → summing up the thermal rated inputs of plants >15 MW
- Combustion plants after 1<sup>st</sup> July 1987 also summing up the thermal rated inputs of plants >15 MW if waste gas could be discharged through a common stack

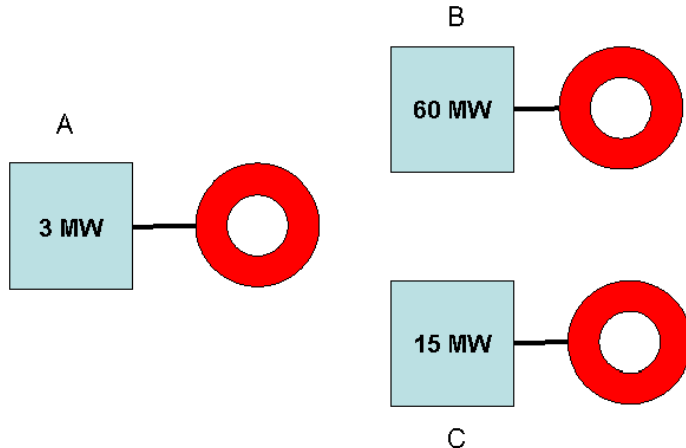




# Industrial Emission Directive 2010/75/EU (IED)

## > Chapter III – aggregation rule (2)

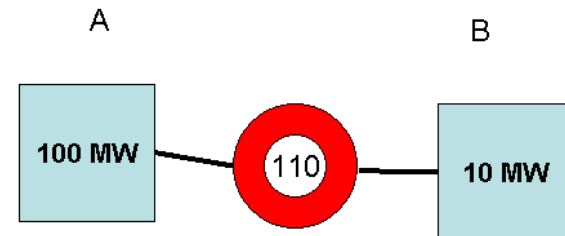
1. Plants discharging waste gas through different stacks which could not be combined



Total 78 MW  $\geq$  50 MW  $\rightarrow$  Act. 1.1

- A en C  $\rightarrow$  BAT
- B  $\rightarrow$  BREF LCP + IED Ch. III

2. Plants discharging waste gas through a common stack



Total 110 MW  $\geq$  50 MW  $\rightarrow$  Act. 1.1

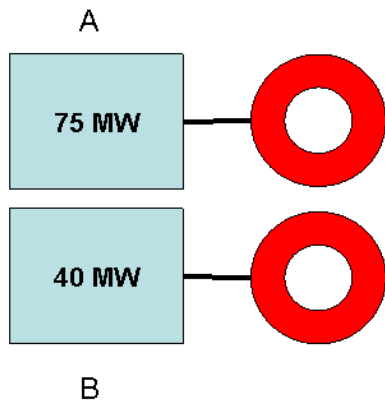
- Sum  $\geq$  15 MWth = 100 MWth  $\rightarrow$   
A+B=1 plant of 100 MWth  $\rightarrow$   
BREF LCP + IED Ch. III



# Industrial Emission Directive 2010/75/EU (IED)

## > Chapter III – aggregation rule (3)

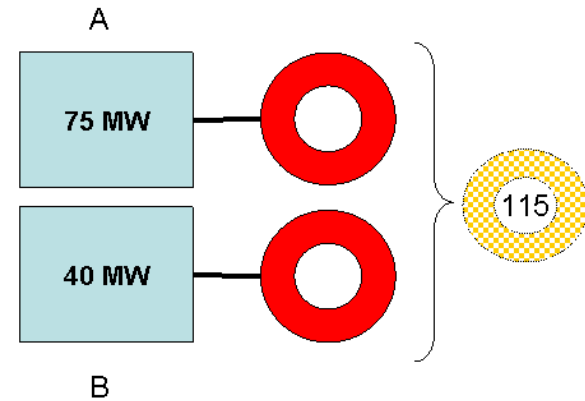
3. Plants discharging waste gas through different stacks which could not be combined



Total 115 MW  $\geq$  50 MW  $\rightarrow$  Act. 1.1

- A  $\geq$  50 MW  $\rightarrow$  BREF LCP + Ch. III
- B < 50 MW  $\rightarrow$  BAT

4. Plants discharging waste gas through different stacks which can be combined



Total 115 MW  $\geq$  50 MW  $\rightarrow$  Act. 1.1

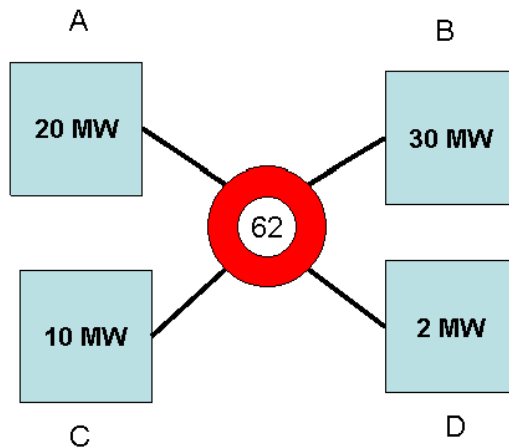
- Sum  $\geq$  15 MW = 115 MW  $\rightarrow$   
A+B=1 plant of 115 MWth  $\rightarrow$   
BREF LCP + Ch. III



# Industrial Emission Directive 2010/75/EU (IED)

## > Chapter III – aggregation rule (4)

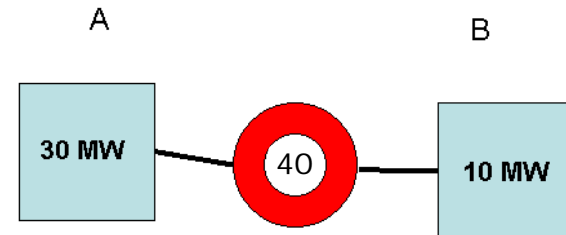
5. Plants discharging through one common stack



Total 62 MW  $\geq$  50 MW  $\rightarrow$  Act. 1.1

- Sum  $\geq$  15 MW = 50 MW  $\rightarrow$   
A+B+C+D=1 plant of 50 MW  $\rightarrow$   
BREF LCP + Ch. III

6. Plants discharging waste gas through a common stack



Total 40 MW  $<$  50 MW  $\rightarrow$

Not covered by IED unless integral part of another activity in Annex I



# Industrial Emission Directive 2010/75/EU (IED)

## > Chapter III – monitoring (Annex V part 3)

Coal or lignite fired plants

- Yearly measurement of mercury although there is no ELV

50-100 MW

- Periodic measurements of NO<sub>x</sub>, SO<sub>2</sub>, dust (and CO) every six months
- Standard Reference Method (SRM)
  - O<sub>2</sub>: EN 14789; NO<sub>x</sub>: EN 14792; SO<sub>2</sub>: 14791; CO: EN 15058;  
Dust: EN13284-1
- Sampling and reporting according to EN 15259



# Industrial Emission Directive 2010/75/EU (IED)

## > Chapter III – monitoring (Annex V part 3)

≥100 MW

- Continuous monitoring of NO<sub>x</sub>, SO<sub>2</sub>, dust (and CO)  
(or periodic measurements when proven ELV can not be exceeded)
- Requirement on measurement uncertainty
  - 95% Confidence Interval (CI) < 20% of ELV for NO<sub>x</sub> and SO<sub>2</sub>
  - 95% CI < 30% of ELV for dust
  - 95% CI < 10% of ELV for CO
- Availability
  - Max 10 days missing more than 3 hourly averages



# Industrial Emission Directive 2010/75/EU (IED)

## > Chapter III – monitoring (Annex V part 3)

≥100 MW (continued)

- Quality assurance according to EN 14181
  - QAL1 (Quality Assurance Level 1) → uncertainty requirement met
  - QAL2: 5-yearly calibration by at least 15 parallel measurements in three days with standard reference method (SRM)
  - QAL3: ongoing quality assurance using control gas
  - Annual surveillance test: yearly functional test and check on validity of calibration function by at least 5 parallel measurements on one day with SRM



# Industrial Emission Directive 2010/75/EU (IED)

## > Chapter III – compliance (Annex V part 4)

### 50-100 MW

- compliance if the results of the periodic measurements  $< \text{ELV}$   
*(after subtraction of confidence interval which is less than that for continuous measurements)*

### $\geq 100$ MW

- Compliance if
  - No validated monthly average exceeds ELV, and
  - No validated daily average exceeds 110% ELV, and
  - 95% validated hourly averages less than 200% ELV
- Validated averages calculated from valid hourly averages after subtraction of the confidence interval
- Valid hourly average: availability of analysers, operation conditions



# Industrial Emission Directive 2010/75/EU (IED)

## > Chapter III – Exercise

NO<sub>x</sub>-ELV for existing gasturbines: 50 mg/Nm<sup>3</sup> @15 vol% O<sub>2</sub>

Confidence interval: 20% of ELV for continuous measurements and 10% of observed concentration for periodic measurements

Which existing gasturbine is in compliance and which is not?

- a) GT 120 MW – monthly average 60 mg/Nm<sup>3</sup> @15 vol% O<sub>2</sub>
- b) GT 55 MW – hourly average 90 mg/Nm<sup>3</sup> @15 vol% O<sub>2</sub>
- c) GT 40 MW + GT 15 MW on one stack – periodic measurement result as hourly average 60 mg/Nm<sup>3</sup> @15 vol% O<sub>2</sub>
- d) GT 80 MW + GT 40 MW on one stack - daily average 65 mg/Nm<sup>3</sup> @15 vol% O<sub>2</sub>

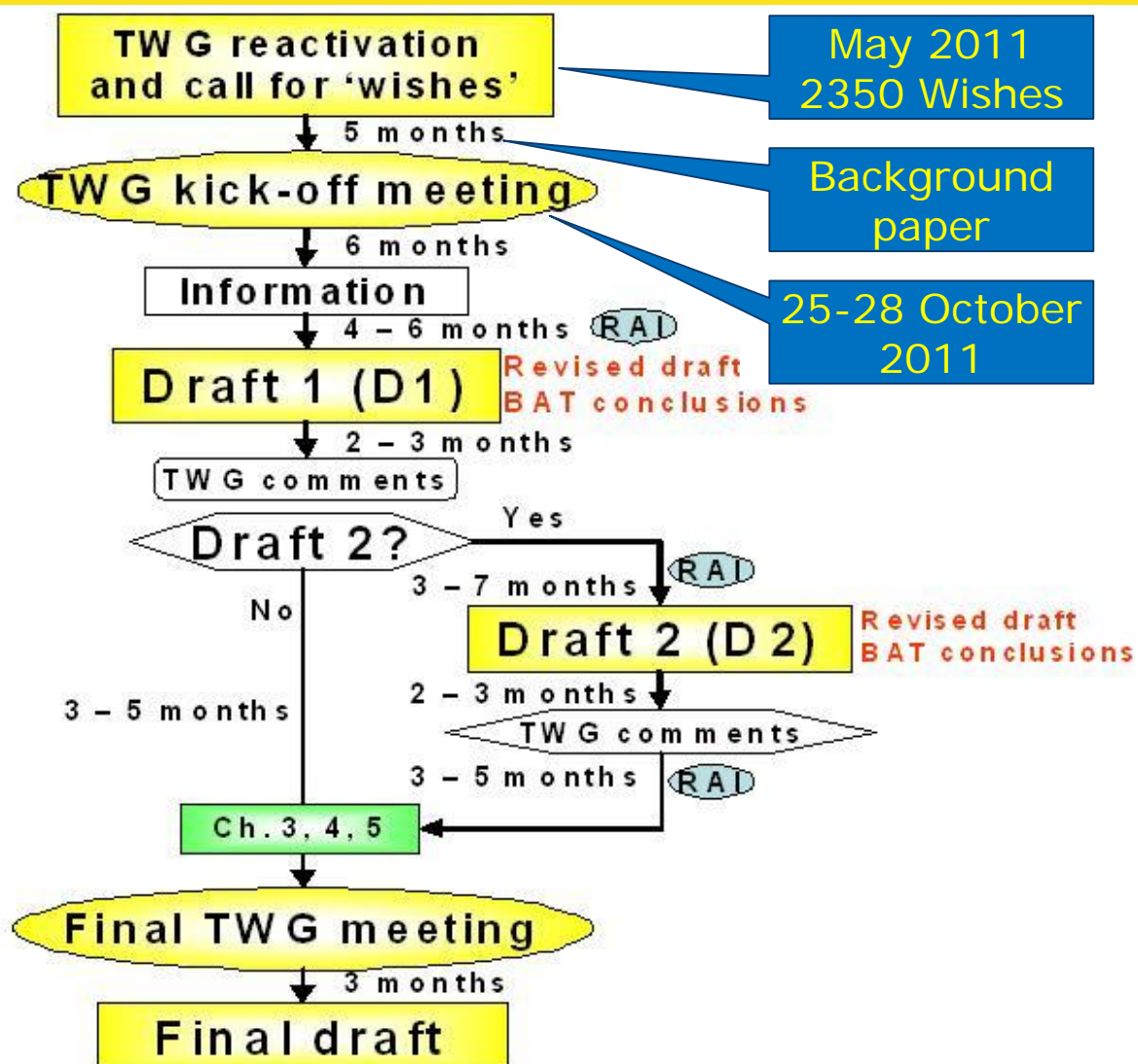
*Exercise 5 min*





# BREF LCP review

## > Time schedule





# BREF LCP review

## > Kick-off meeting

Most important of over 100 decisions:

1. Develop new sections on 'Combustion techniques for non conventional fuels' for power plants using:
  - Process gases from the iron and steel sector
  - Non-commercial fuels in the chemical, pulp and paper sector if not covered by other BREFs
2. Add a new chapter on 'Gasification / pyrolysis / liquefaction of fuels' linked to the combustion processes
3. Identify other-than-normal operating conditions for which BAT-AELs will not apply



# BREF LCP review

## > Kick-off meeting

4. Criteria taken into account for the BAT assessment of data:
- age of the plant, retrofits and fuels
  - plant size
    - 15 – 50 MWth
    - 50 – 100 MWth
    - 100 – 300 MWth
    - > 300 MWth
  - provisional load factors
    - Nominal Load (> 70 % of nominal capacity)
    - Lower Load (from technical minimum load to 70 % of nominal capacity)
  - provisional load modes
    - Emergency: < 500 operating hours/year
    - Peak: 500-1500 operating hours/year
    - Mid merit: 1500-4000 operating hours/year
    - Base: > 4000 operating hours/year



# BREF LCP review

## > Kick-off meeting

5. Assess NH<sub>3</sub> slip from SCR and SNCR
6. (Re)assess the following emissions:
  - Mercury to air and water and related abatement techniques, also taking into account the mercury contents in by-products and residues;
  - Emissions of dioxins and furans (especially for biomass combustion);
  - VOC and PAH emissions (especially from biomass combustion);
  - Control of HCl and HF emissions when not using a FGD;
  - Emissions of other heavy metals: Cd, Tl, Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V (in relation to fuel characteristics).

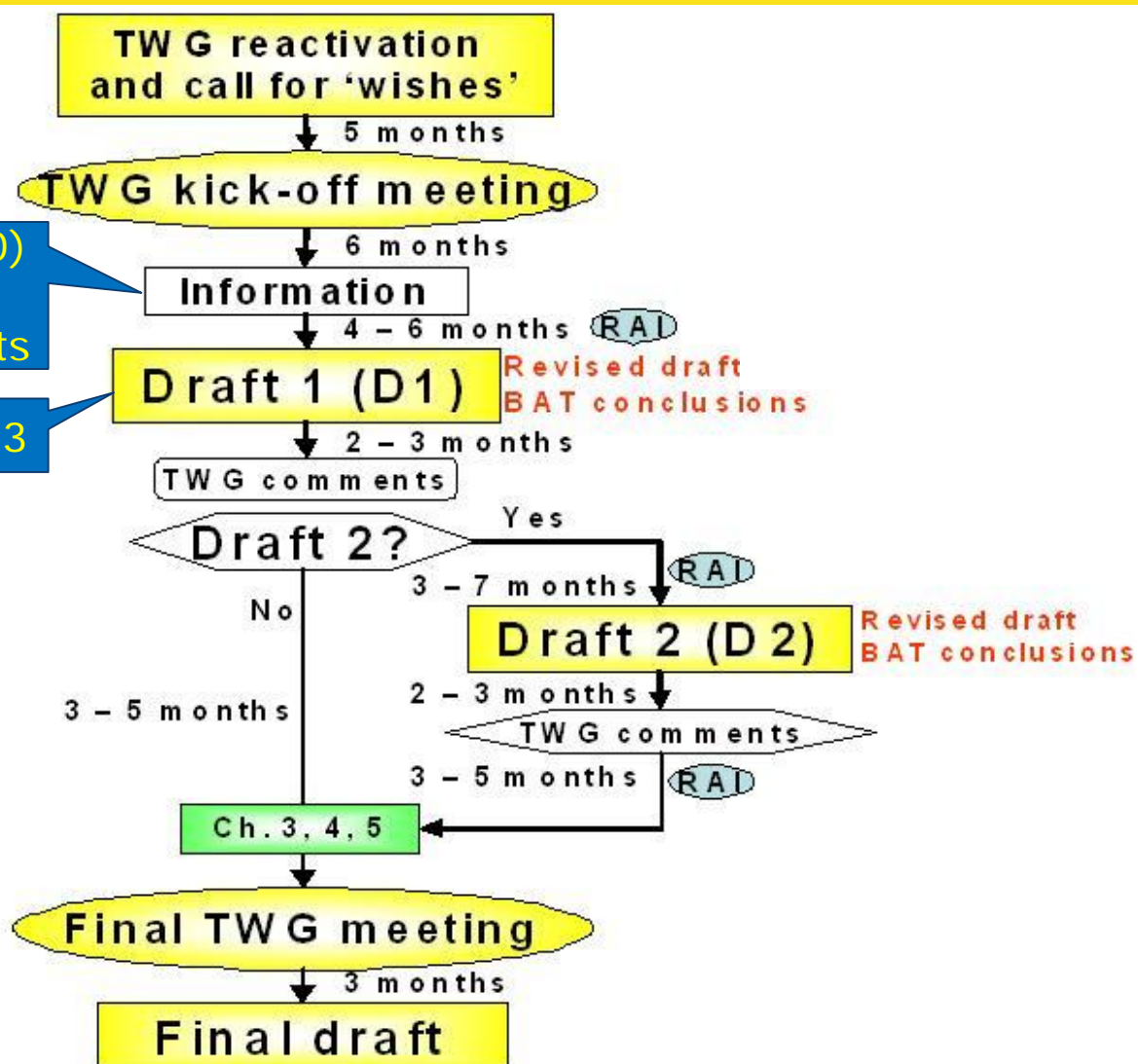


# BREF LCP review

## > Time schedule

Identifying reference plants (650)  
Set up of the questionnaire  
Data collection of reference plants

27 June 2013

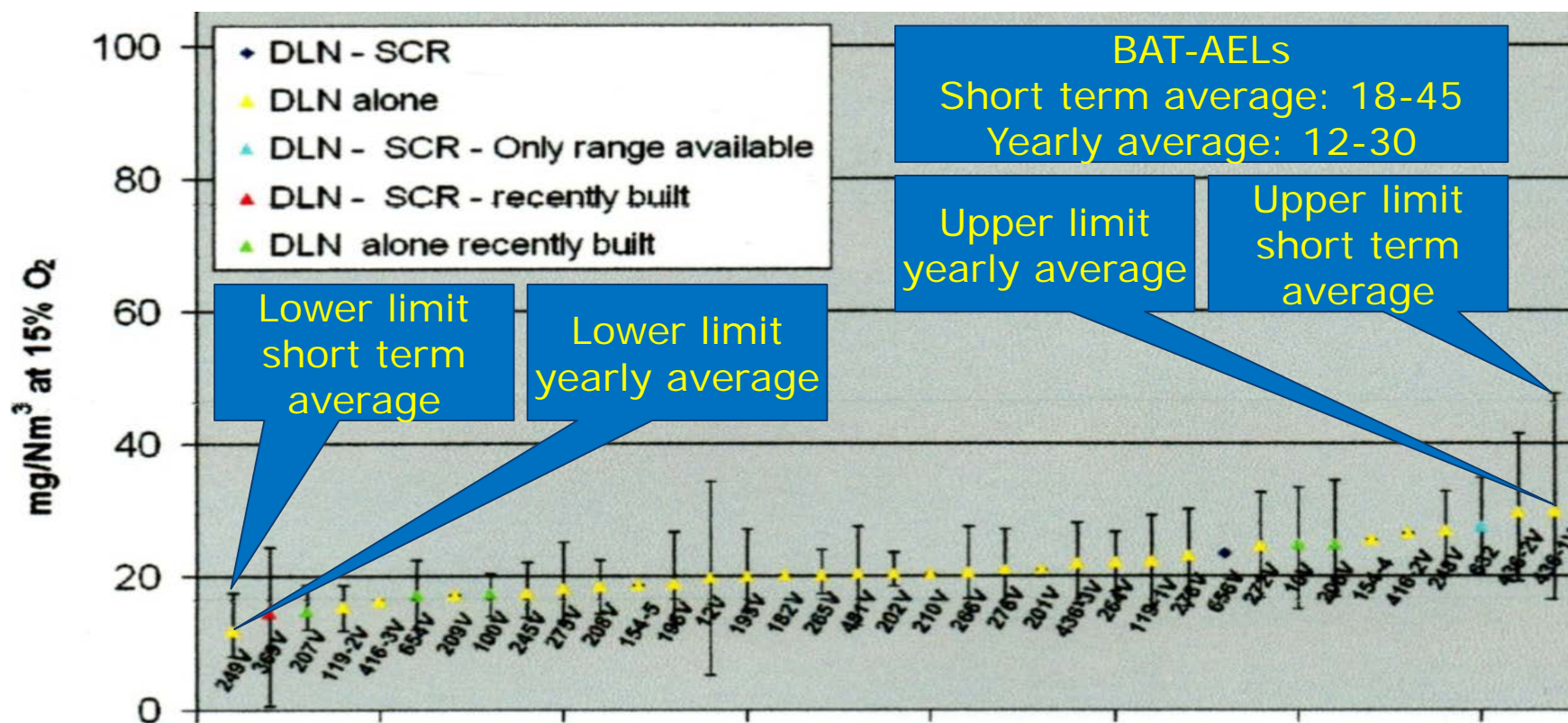




# BREF LCP review

## > D1

### Determination of BAT-AELs





## BREF LCP review

### > D1

Application for a gasturbine equipped with SCR  
Short term average: 45 mg/Nm<sup>3</sup> @15 vol% O<sub>2</sub>  
Yearly average: 15 mg/Nm<sup>3</sup> @15 vol% O<sub>2</sub>

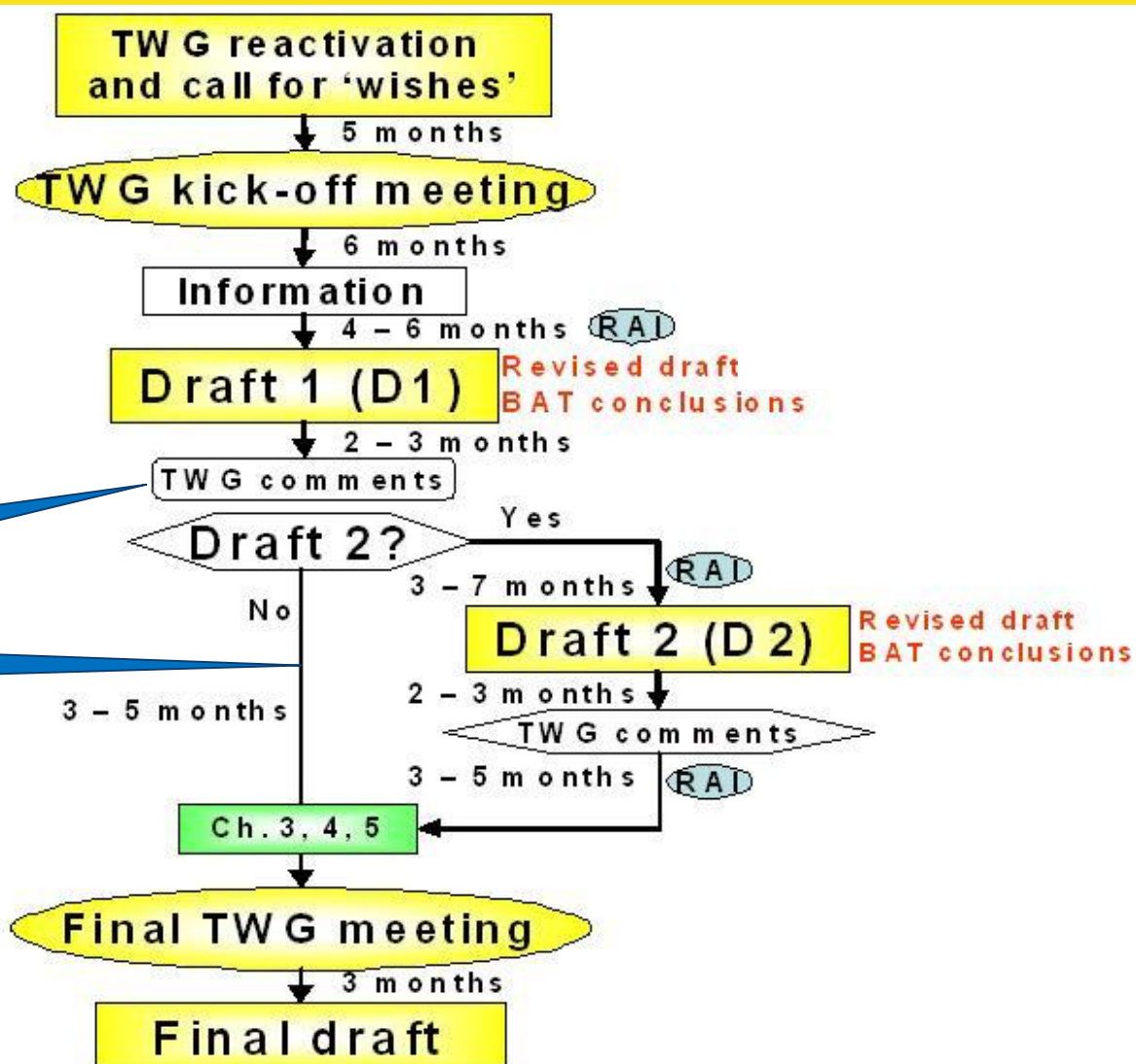
What's your opinion about this application?

*Exercise 5 min*





## BREF LCP review > Time schedule



30 September 2013  
>8500 comments!

17-18 June 2014  
Intermediate TWG meeting





# BREF LCP review

## > Intermediate TWG meeting

### 1. Averaging periods

- Guidelines for BREF → short and long term BAT-AELs
- Questionnaire: 95% and 97% hourly averages and yearly averages
- D1: daily and yearly average
- Unrealistic assumption: daily average = 95% hourly average
- EIPPCB proposal 95% hourly and yearly BAT-AELs
- Request TWG: BAT-AELs in line with IED chapter III and Annex V
- In-depth analysis of additional data is not feasible within time limits and available budgets of EIPPCB
- Netherlands and Eurelectric developed a statistical method



# BREF LCP review

## > Intermediate TWG meeting

2. Combustion of process gas from iron and steel industry
  - 95% hourly average  $\neq$  daily average
  - No reference plants identified → unclear criteria for BAT
  - BAT-AELs not related to abatement techniques or process control
3. Partial load operation
  - Energy market changed since 2011 (reference year)
  - Not covered by data collection
4. Combustion of low quality fuels (lignite)
  - Desulphurization rate not included in D1



# BREF LCP review

## > Intermediate TWG meeting

### 5. Energy efficiency

- BAT-APL as yearly average not feasible
- TWG requests for BAT-APL based on design values
- Creation of 'Task force' to deliver data / information on energy efficiency according to the design values
  - Coordination: Eurelectric and EPPSA
  - Participants: UK, DK, EL, DE, IT, EUTurbines, Euracoal
  - Deadline: final result by end of September 2014
  - Main tasks: include design definition and format of the data to be collected for new and existing plants, data collection considering the list of reference plants and other available information on the achieved performances and implemented techniques, and analysis



# BREF LCP review

## > Time schedule

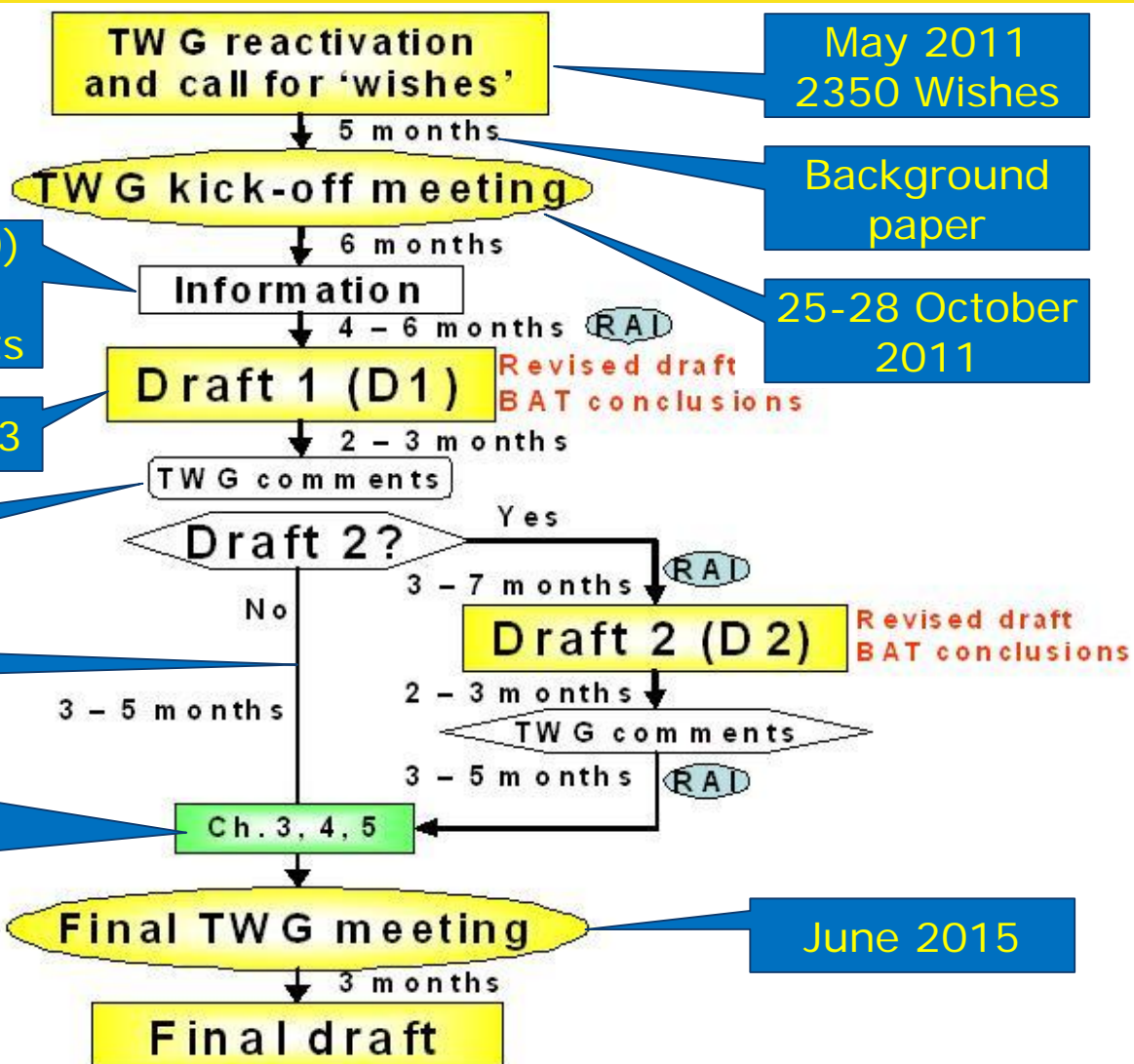
Identifying reference plants (650)  
Set up of the questionnaire  
Data collection of reference plants

27 June 2013

30 September 2013  
>8500 comments!

17-18 June 2014  
Intermediate TWG meeting

1<sup>st</sup> April 2015  
Background paper >300 pages  
BAT conclusions > 100 pages





# BREF LCP review

## > Statistical method

Why a statistical method?

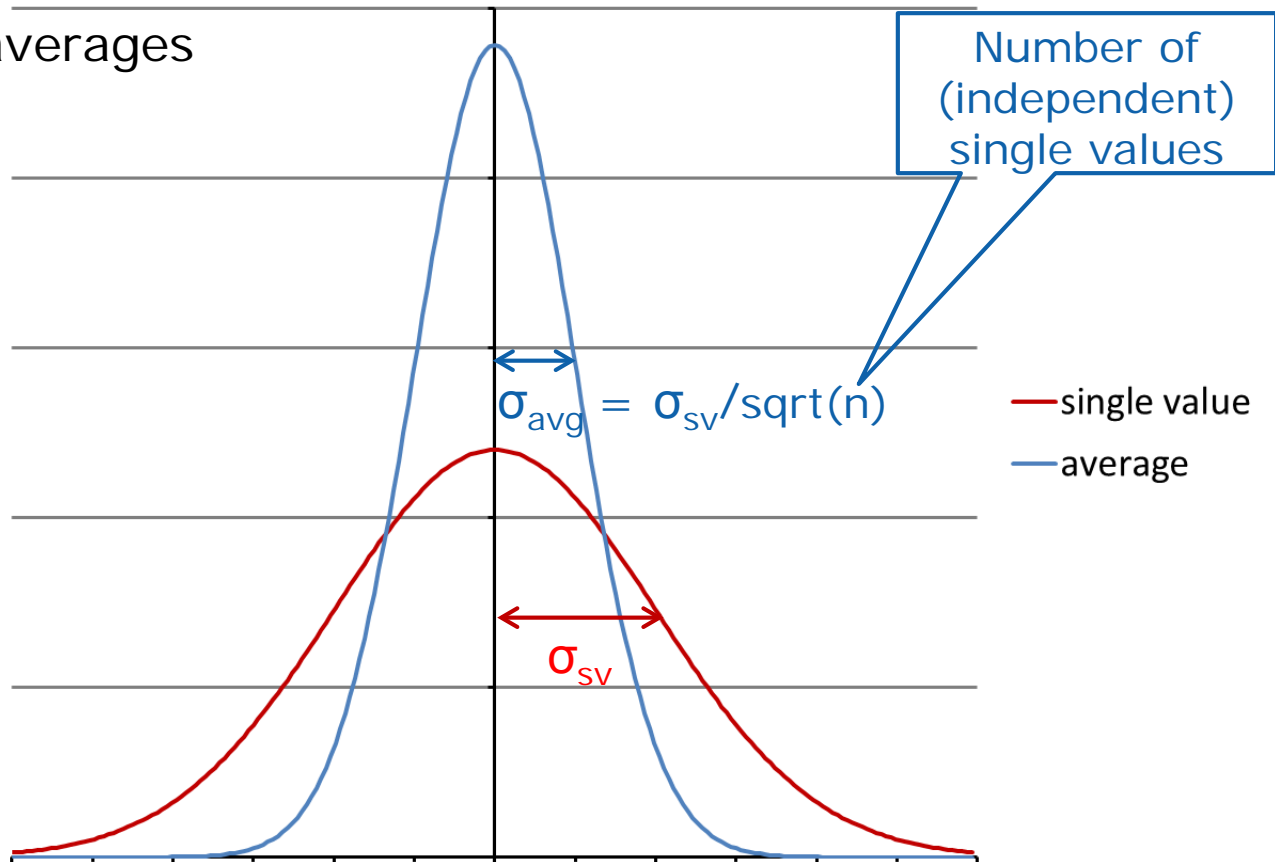
- D1 BAT-AEL's expressed as 95% hourly averages and yearly averages
  - Unrealistic assumption: 95% hourly average = max daily average
- Time basis D1 BAT-AEL's are different from IED Annex V ELV's
- Permitting requires the same time basis (daily and monthly averages) in order:
  - to prove permitted ELV = BAT
  - to prove permitted ELV in compliance with IED Annex V ELV's
- In-depth analysis of additional data is not feasible within time limits and available budgets of EIPPCB
- In principle statistical method should be applicable



# BREF LCP review

## > Statistical method

Statistics of averages

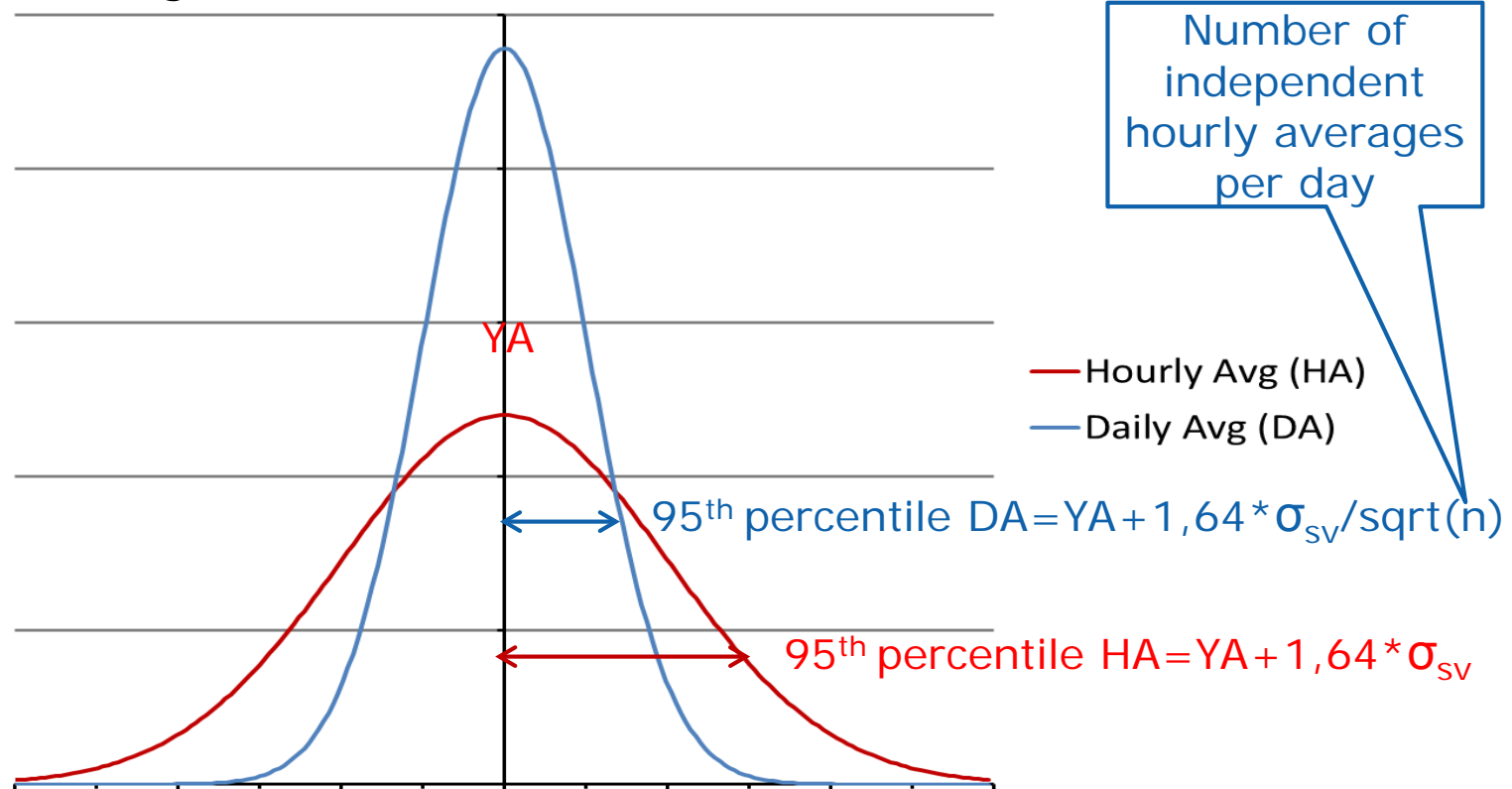




# BREF LCP review

## > Statistical method

Statistics of averages – D1, ADC and EDC data





# BREF LCP review

## > Statistical method

Nivd: Simplified example of a boiler

- 95% of operation time process gas → 80 mg/Nm<sup>3</sup>
- 5% of operation time natural gas → 200 mg/Nm<sup>3</sup>

Statistics

- 95<sup>th</sup> percentile HA = 80 mg/Nm<sup>3</sup>
- YA =  $0,95 \cdot 80 + 0,05 \cdot 200 = 86$  mg/Nm<sup>3</sup>

Nivd	Hours elevated emissions	Max Daily Average
24	1	85
12	2	90
4	6	110
3	8	120
2	12	140
1	24	200





# BREF LCP review

## > Statistical method

- Nivd determined from over 100 plants and 700 data sets

Pollutant	Plants	Data sets
NOx	94	251
SO2	44	96
Dust	42	91
CO	87	230
All	103	706

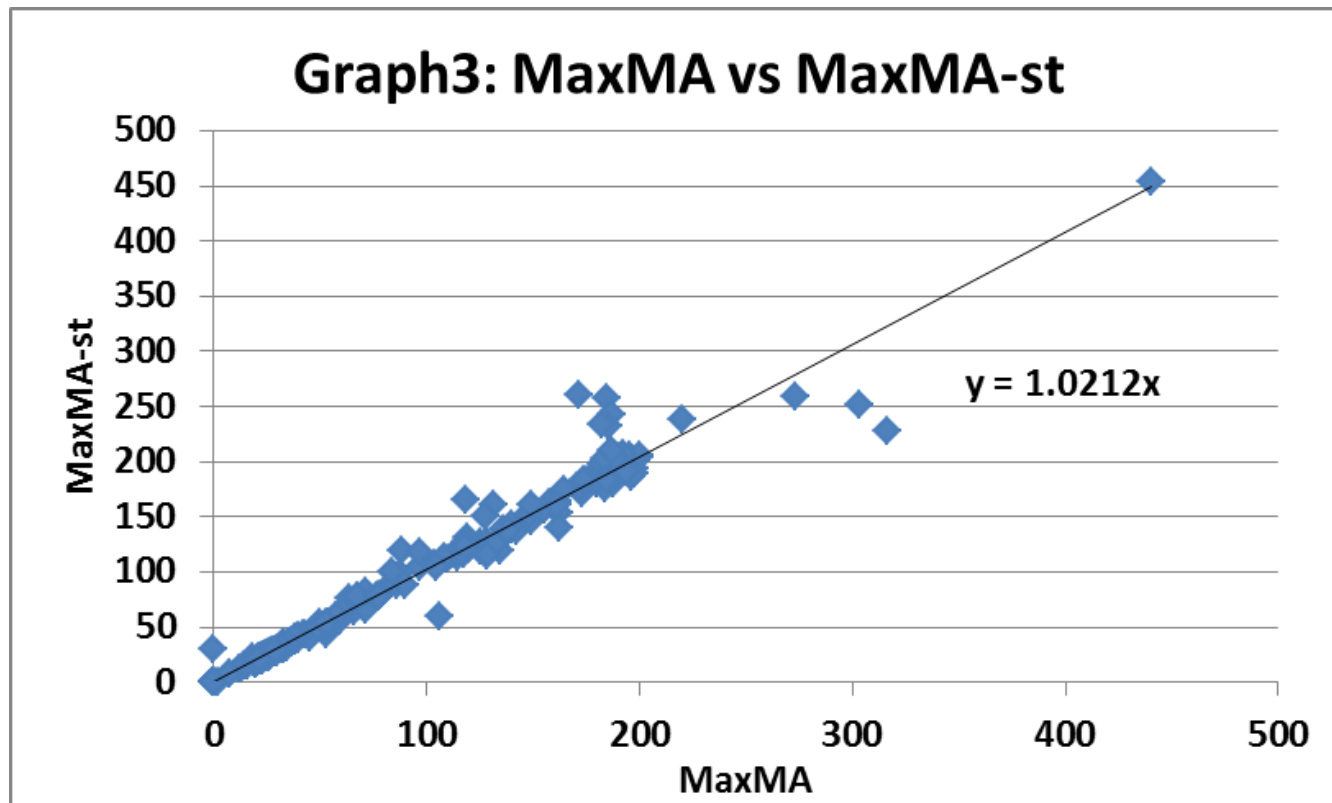
- MaxDA proves to be less reliable due to artefacts, outliers and OTNOC
- 95%DA used for determination of Nivd
- Good fit between observed and statistical averages:
  - For NOx, SOx and dust when Nivd=2.5
  - For CO when Nivd=1.0



# BREF LCP review

## > Statistical method

- Monthly average NO<sub>x</sub>





# BREF LCP review

## > Statistical method

- Using the statistical method the D1 BAT-AELs can easily be converted to daily and monthly BAT-AELs using the next equations:
  - NO<sub>x</sub>, SO<sub>x</sub> and dust
    - $DA = YA + 1.25 * (95\%HA - YA)$
    - $MA = YA + 0.56 * (95\%HA - YA)$
  - CO
    - $DA = YA + 1.98 * (95\%HA - YA)$
    - $MA = YA + 0.89 * (95\%HA - YA)$



# BREF LCP review

## > Statistical method

- D1 BAT-AELs and calculated daily and monthly BAT-AELs for new plants

NOx		D1 daily		D1 Yearly		Calc daily		Calc monthly	
		min	max	min	max	min	max	min	max
PC	1.5	80	125	65	100	89	140	76	118
<b>PC</b>	<b>2.5</b>	<b>80</b>	<b>125</b>	<b>65</b>	<b>100</b>	<b>84</b>	<b>131</b>	<b>73</b>	<b>114</b>
PC	3.5	80	125	65	100	81	126	72	112
CCGT	1.5	18	35	10	25	23	41	16	32
<b>CCGT</b>	<b>2.5</b>	<b>18</b>	<b>35</b>	<b>10</b>	<b>25</b>	<b>20</b>	<b>38</b>	<b>15</b>	<b>31</b>
CCGT	3.5	18	35	10	25	18	36	14	30



## BREF LCP: BAT coal/lignite fired plants > Dust

BAT current BREF

- Electrostatic precipitator: removal efficiency >99,5%
- Fabric filter: removal efficiency >99,95%
- Co-benefit of FGD
- Cyclones & mechanical collectors are not BAT



# BREF LCP: BAT coal/lignite fired plants

## > Dust

### BAT-AELs and ELVs

	>300 MWth	Daily	Monthly	Yearly
BAT-AEL BREF	existing	5-20		
	new	5-10		
BAT-AEL D1	existing	4-20		1-15
	new	4-10		<5
IED Annex V	Part 1 (existing)	22	20	
	Part 2 (new)	11	10	
	Part 2 (new, biomass/peat)	22	20	
LCPD	Existing (>500 MWth)		50	
	New	30		

TPP Pljevlja

30 mg/m<sup>3</sup>





## BREF LCP: BAT coal/lignite fired plants > Heavy metals including mercury

### BAT

- Combination of techniques
  - Bituminous coal: SCR (60%) + ESP (50%) + FGD (50%) → 90%
  - Sub-bituminous coal and lignite: ESP (50%) + FGD (50%) → 75%



## BREF LCP: BAT coal/lignite fired plants > SO<sub>2</sub>

BAT for pulverised combustion of coal/lignite

- Low sulphur fuel in combination with:
  - Wet scrubber (>100 MWth) 85-98% removal efficiency, co-benefit:
    - HCl/HF removal (98-99%) and dust/heavy metal removal
    - Saleable gypsum as by-product
  - Spray dry scrubber 80-92% removal
  - Dry sorbent injection(<250 MWth) 70-90% removal
  - Seawater scrubber
  - Other techniques e.g. activated carbon + DESONOX
  - Natural desulphurisation for low quality lignites with low sulphur and high alkaline ash content (removal efficiency up to 90%)





# BREF LCP: BAT coal/lignite fired plants > SO<sub>2</sub>

BAT-AELs and ELVs for pulverised combustion coal and lignite

	>300 MWth	Daily	Monthly	Yearly
BAT-AEL BREF	Existing	20-200		
	New	20-150		
BAT-AEL D1	Existing	25-220		10-130
	New	25-110		10-75
IED Annex V	Part 1 (existing)	220	200	
	Part 2 (new)	165	150	
LCPD	Existing (>500 MWth)		400	
	New	200		

TPP Pljevlja  
6000 mg/m<sup>3</sup>





# BREF LCP: BAT coal/lignite fired plants

## > SO<sub>2</sub>

BAT fluidised bed combustion

- Low sulphur fuel in combination with boiler limestone injection:
  - CFCB 1-3% S: 80-95% removal efficiency
  - CFCB 4-6% S: additional FGD required
  - BFCB: 55-65% removal efficiency additional FGD required



# BREF LCP: BAT coal/lignite fired plants

## > SO<sub>2</sub>

BAT-AELs and ELVs for fluidised bed combustion

	>300 MWth	Daily	Monthly	Yearly
BAT-AEL BREF	CFCB/PFBC	100-200		
BAT-AEL D1	existing			25-220
	new			25-110
IED Annex V	Part 1 (existing)	220	200	
	Part 2 (new)	220	200	
LCPD	Existing (>500 MWth)		400	
	New	200		



# BREF LCP: BAT coal/lignite fired plants

## > NO<sub>x</sub>

BAT pulverised coal combustion

- Combination of primary and secondary measures
- SCR 80-95% removal efficiency



## BREF LCP: BAT coal/lignite fired plants > NO<sub>x</sub>

BAT-AELs and ELVs for pulverised coal combustion

	>300 MWth	Daily	Monthly	Yearly
BAT-AEL BREF	Existing	90-200		
	New	90-150		
BAT-AEL D1	Existing	80-220		65-180
	New	80-125		65-100
IED Annex V	Part 1 (existing)	220	200	
	Part 2 (new)	165	150	
LCPD	Existing >500 MWth		500	
	New	200		



## BREF LCP: BREF LCP: BAT coal/lignite fired plants > NO<sub>x</sub>

BAT pulverised lignite combustion

- Primary measures: Low No<sub>x</sub> burners, air staging, flue gas recirculation, etc.
- SCR may be required;
- SNCR additional technique for small boilers with stable load and fuel quality

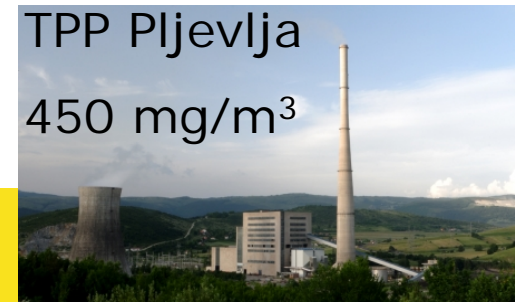


# BREF LCP: BAT coal/lignite fired plants > NO<sub>x</sub>

BAT-AELs and ELVs for pulverised lignite combustion

	>300 MWth	Daily	Monthly	Yearly
BAT-AEL BREF	Existing	50-200		
	New	50-200		
BAT-AEL D1	Existing	140-220		50-180
	New	140-220		50-150
IED Annex V	Part 1 (existing)	220	200	
	Part 2 (new)	220	200	
LCPD	Existing >500 MWth		500	
	New	200		

TPP Pljevlja  
450 mg/m<sup>3</sup>





## BREF LCP: BAT coal/lignite fired plants > NO<sub>x</sub>

BAT fluidised bed combustion

- Air/fuel staging
- Combustion temperature <900 °C





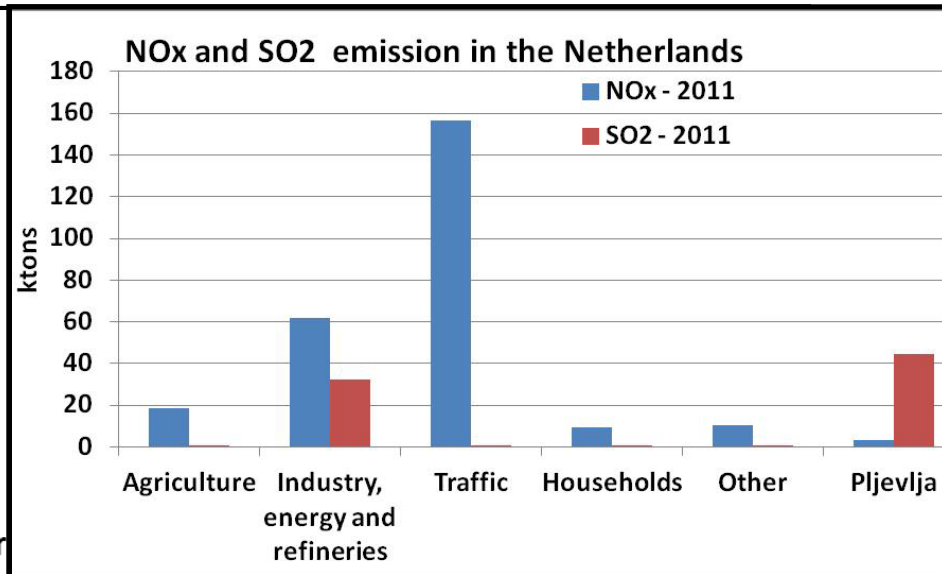
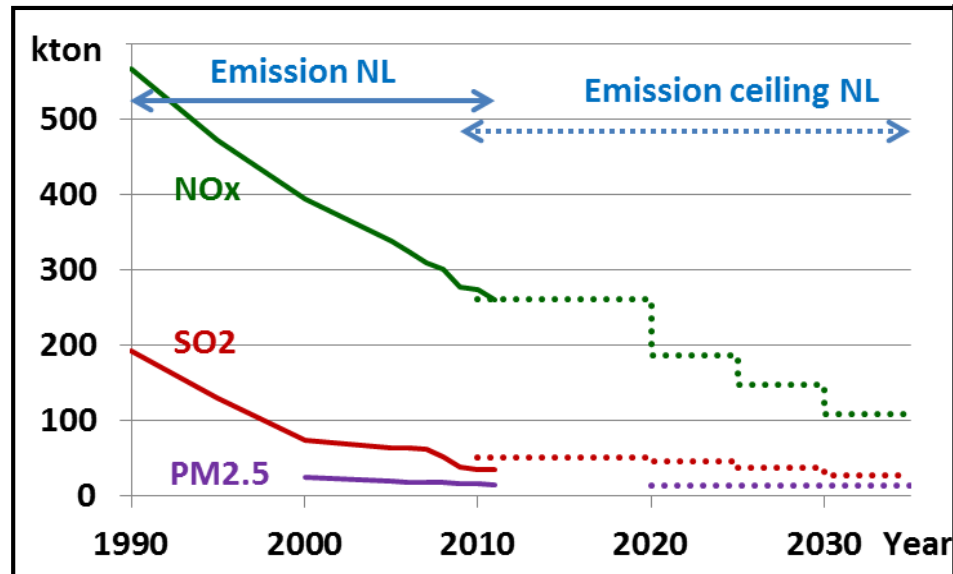
# BREF LCP: BAT coal/lignite fired plants > NO<sub>x</sub>

BAT-AELs and ELVs for fluidised bed combustion

	>300 MWth	Daily	Monthly	Yearly
BAT-AEL BREF	Existing CFBC, BFBC, PFBC	50-200		
	New CFBC, BFBC, PFBC	50-150		
BAT-AEL D1	Existing	140-220		50-180
	New	140-220		50-150
IED Annex V	Part 1 (existing)	220	200	
	Part 2 (new, coal)	165	150	
	Part 2 (new, lignite)	220	200	
LCPD	Existing >500 MWth		500	
	New	200		



# Dutch emissions and ceilings



200 LCP's

62 kton NO<sub>x</sub>  
33 kton SO<sub>2</sub>

7 coal plants and  
5 refineries





## Site visit Pljevlja

Which issues shall be checked during an inspection with respect to the emissions to air?

*Exercise 5 min*

