

Informal Document **GRB-43-6**  
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agenda item 6).

# **Scenario calculations on the effect of different source reduction on road vehicles using the TraNECam/Rotranomo calculation model, developed by H.Steven, TÜVNord.**

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## ***Calculation outline:***

Starting year is 1999, based on the Norwegian vehicle fleet and statistics. The basic trend, without any regulatory steps for vehicles or tyres is calculated for the years 2003, 2010, 2015 and 2020.

For all scenarios, the changes in  $L_{eq}$  (10 m).  $L_{tot}$ , are calculated, as well as the changes in rolling noise,  $L_{roll}$ , and engine noise,  $L_{prop}$ .

*All scenarios have the same levels in 2010, as the basic trend.*

The calculations are done for the following traffic conditions (all free flowing):

1. ADT= 10000

HDV= 10 %

Posted speed: 50 km/h

2. ADT= 20000

HDV= 15 %

Posted speed: 80 km/h

# Scenario 1: *GRB/Germany –proposal*

Assumptions - reductions in dB –  
compared to 1999:

Light Duty Vehicles:

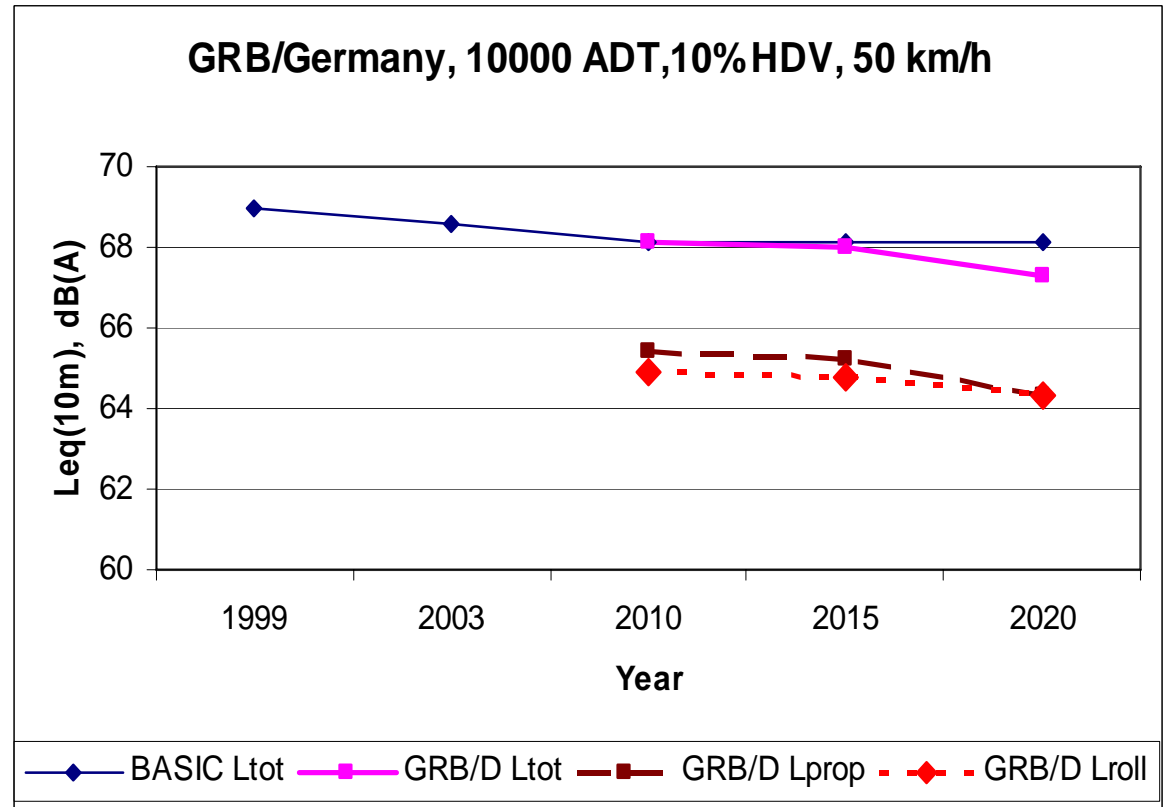
Year	Engine noise	Tyre noise
2011	- 1.5	-1.5
2015	- 0.75	- 0.75
Total	- 2.25	-2.25

Heavy Duty Vehicles:

Year	Engine noise	Tyre noise
2011	- 1.8	- 0.9
2015	- 0.9	- 0.5
Total	- 2.7	-1.4

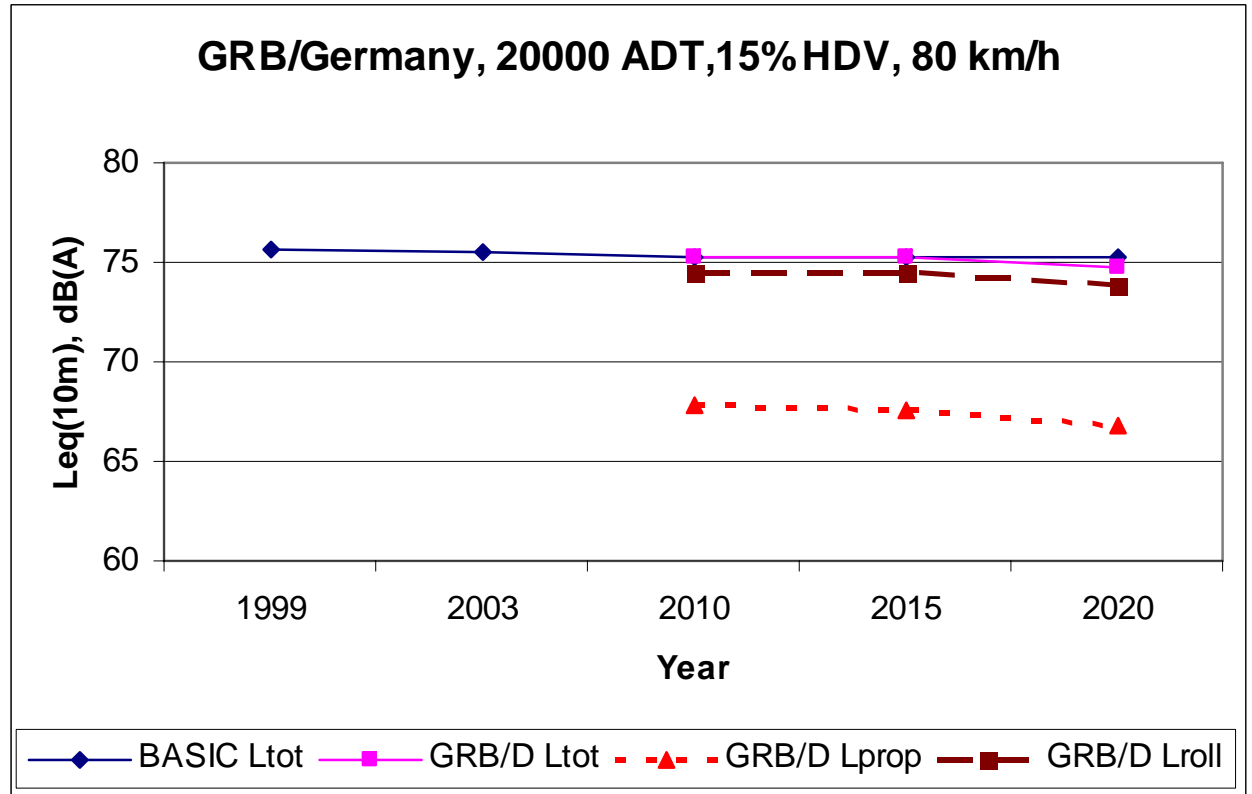
# Results: GRB/Germany-proposal Reduction in Leq, compared to 2010.

10000 ADT, 10 % HDV, 50 km/h		
Year	2015	2020
Lprop	- 0.2	-1.1
Lroll	- 0.1	- 0.6
<b>Ltot</b>	<b>- 0.1</b>	<b>- 0.8</b>



# Results: GRB/Germany-proposal Reduction in Leq, compared to 2010.

20000 ADT, 15 % HDV, 80 km/h		
Year	2015	2020
Lprop	- 0.2	-1.0
Lroll	0	- 0.6
<b>Ltot</b>	<b>0</b>	<b>- 0.6</b>



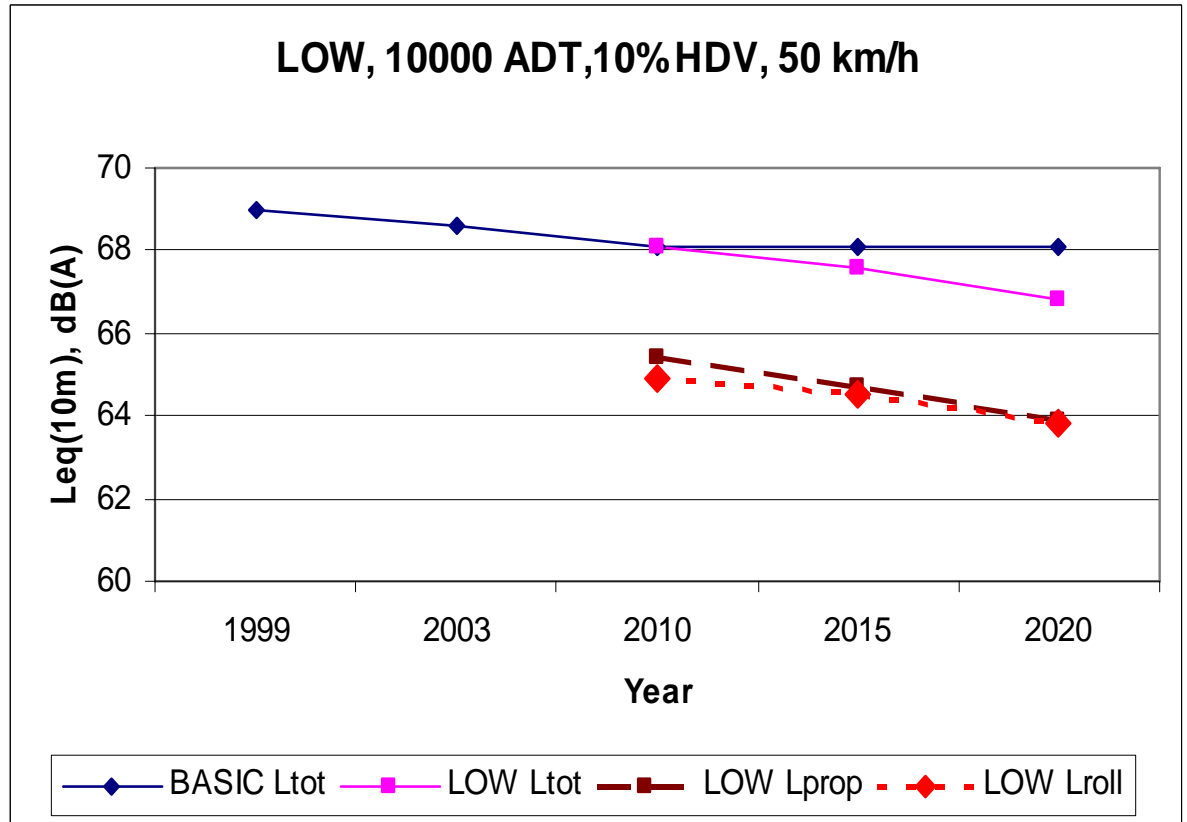
# Scenario 2: Low ambition

Assumptions - reductions in dB –  
both LDV and HDV, compared  
to 1999:

Year	Engine noise	Tyre noise
2011	- 1	- 1
2015	- 1	- 1
Total	- 2	- 2

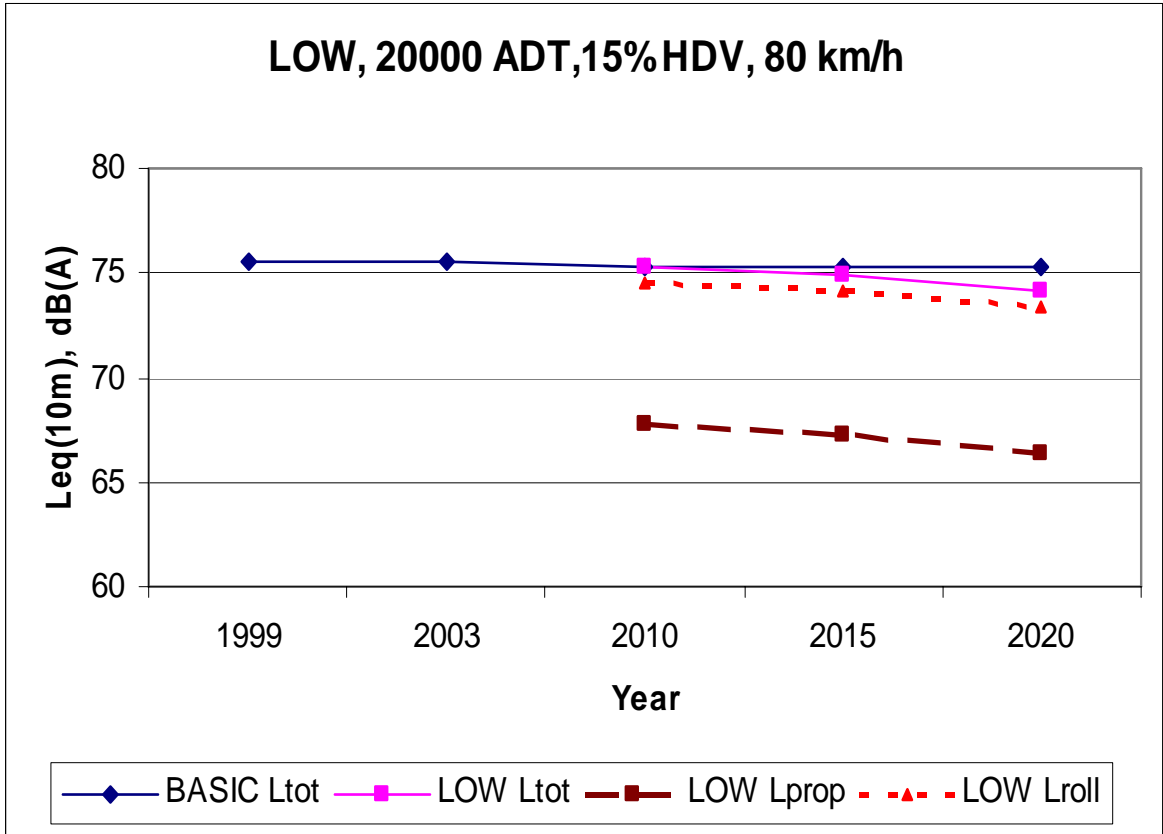
# Results: Low ambition; -2 dB engine and – 2 dB tyres Reduction in Leq, compared to 2010.

10000 ADT, 10 % HDV, 50 km/h		
Year	2015	2020
Lprop	- 0.7	-1.5
Lroll	- 0.4	- 1.1
<b>Ltot</b>	<b>- 0.5</b>	<b>- 1.3</b>



# Results: Low ambition; -2 dB engine and - 2 dB tyres Reduction in Leq, compared to 2010.

20000 ADT, 15 % HDV, 80 km/h		
Year	2015	2020
Lprop	- 0.6	-1.4
Lroll	- 0.4	- 1.1
<b>Ltot</b>	<b>- 0.4</b>	<b>- 1.2</b>





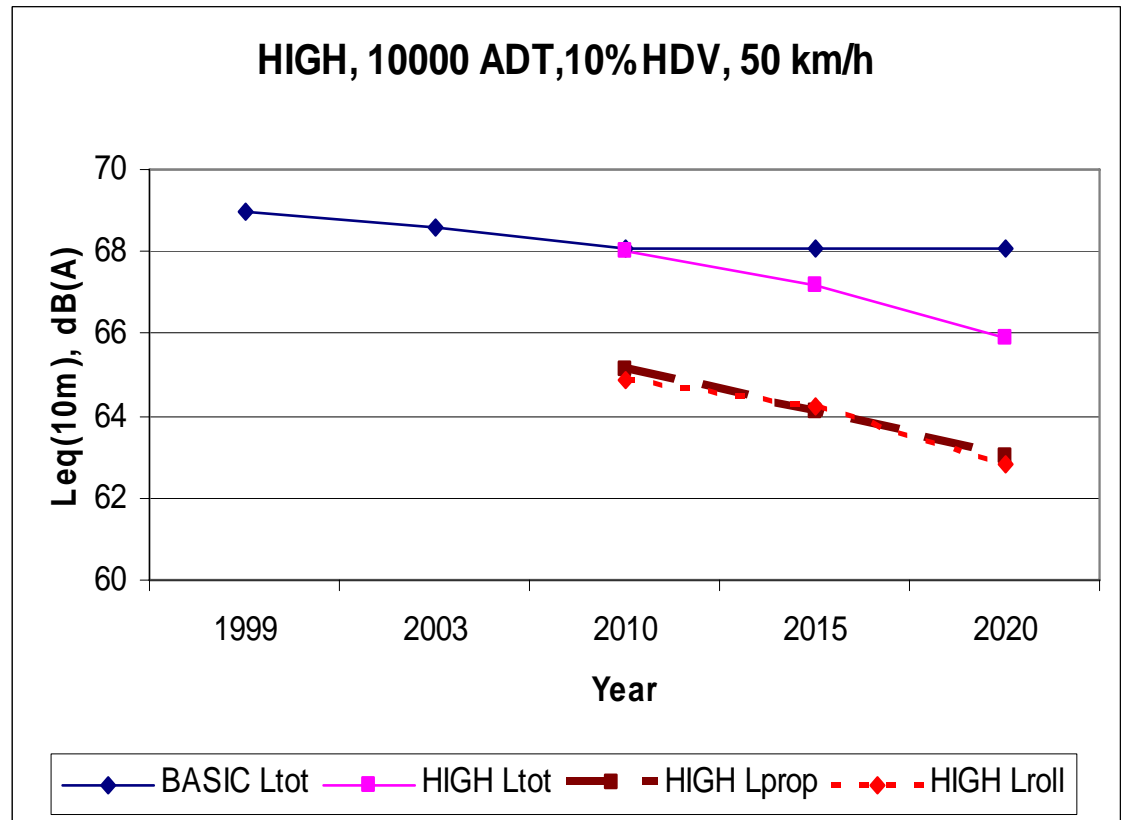
# Scenario 3: High ambition

Assumptions - reductions in dB –  
both LDV and HDV, compared  
to 1999:

Year	Engine noise	Tyre noise
2008	- 1	-
2011	- 1	- 2
2015	- 1	- 2
Total	- 3	- 4

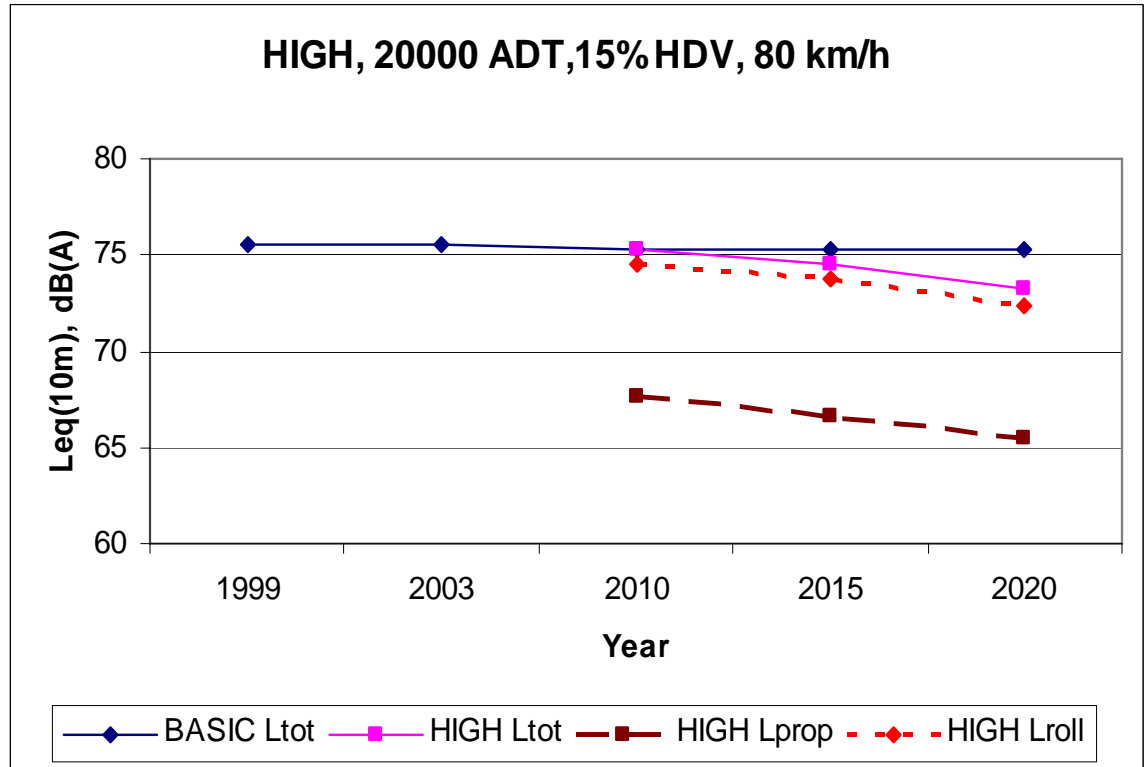
# Results: High ambition; -3 dB engine and – 4 dB tyres Reduction in Leq, compared to 2010.

10000 ADT, 10 % HDV, 50 km/h		
Year	2015	2020
Lprop	-1.0	-2.1
Lroll	-0.7	-2.1
<b>Ltot</b>	<b>-0.8</b>	<b>-2.1</b>



# Results: High ambition; -3 dB engine and – 4 dB tyres Reduction in Leq, compared to 2010.

20000 ADT, 15 % HDV, 80 km/h		
Year	2015	2020
Lprop	- 1.0	-2.1
Lroll	- 0.7	- 2.2
<b>Ltot</b>	<b>- 0.8</b>	<b>- 2.1</b>



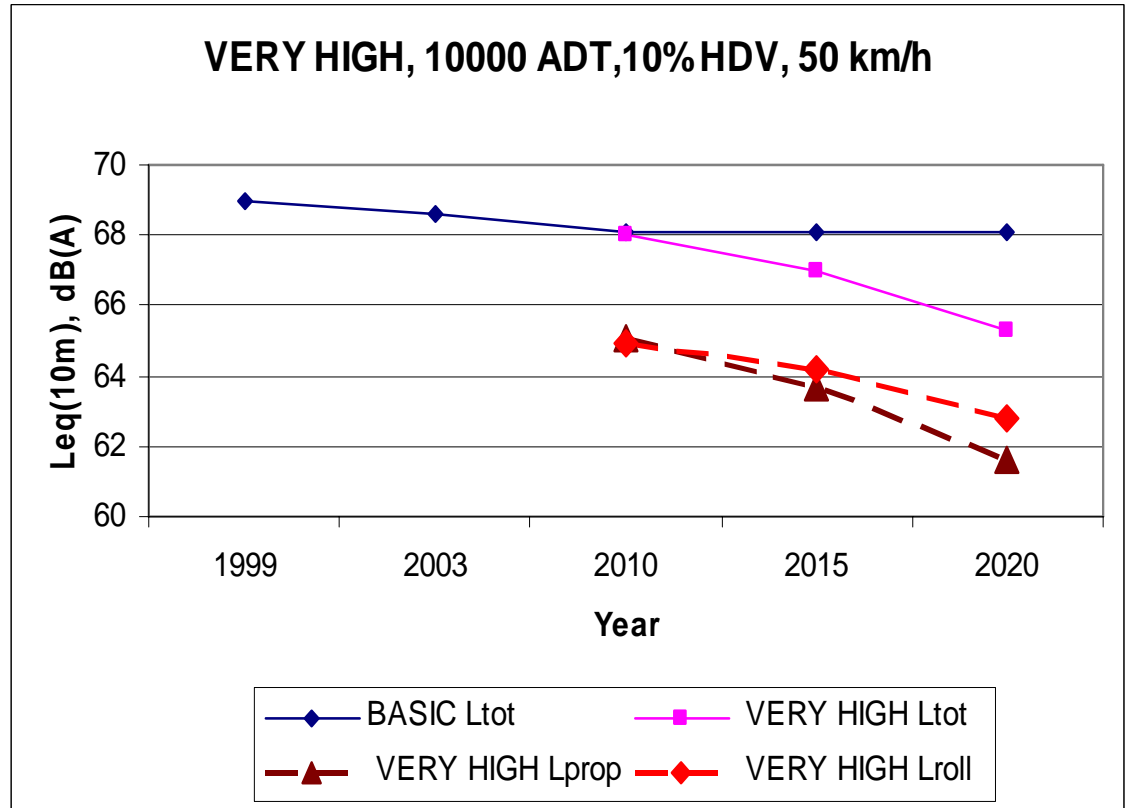
# Scenario 4: Very high ambition

Assumptions - reductions in dB  
– both LDV and HDV, compared  
to 1999:

Year	Engine noise	Tyre noise
2008	- 2	-
2011	- 2	- 2
2015	- 2	- 2
Total	- 6	- 4

**Results: Very high ambition; - 6 dB engine and – 4 dB tyres  
Reduction in Leq, compared to 2010.**

10000 ADT, 10 % HDV, 50 km/h		
Year	2015	2020
Lprop	- 1.4	-3.5
Lroll	- 0.7	- 2.1
<b>Ltot</b>	<b>- 1.0</b>	<b>- 2.7</b>



**Results: Very high ambition; - 6 dB engine and – 4 dB tyres  
Reduction in Leq, compared to 2010.**

20000 ADT, 15 % HDV, 80 km/h		
Year	2015	2020
Lprop	- 1.4	-3.5
Lroll	- 0.7	- 2.2
<b>Ltot</b>	<b>- 0.8</b>	<b>- 2.4</b>

