

Genset Radiator Noise

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TECHNICAL COMMITTEE



SOUND & VIBRATION

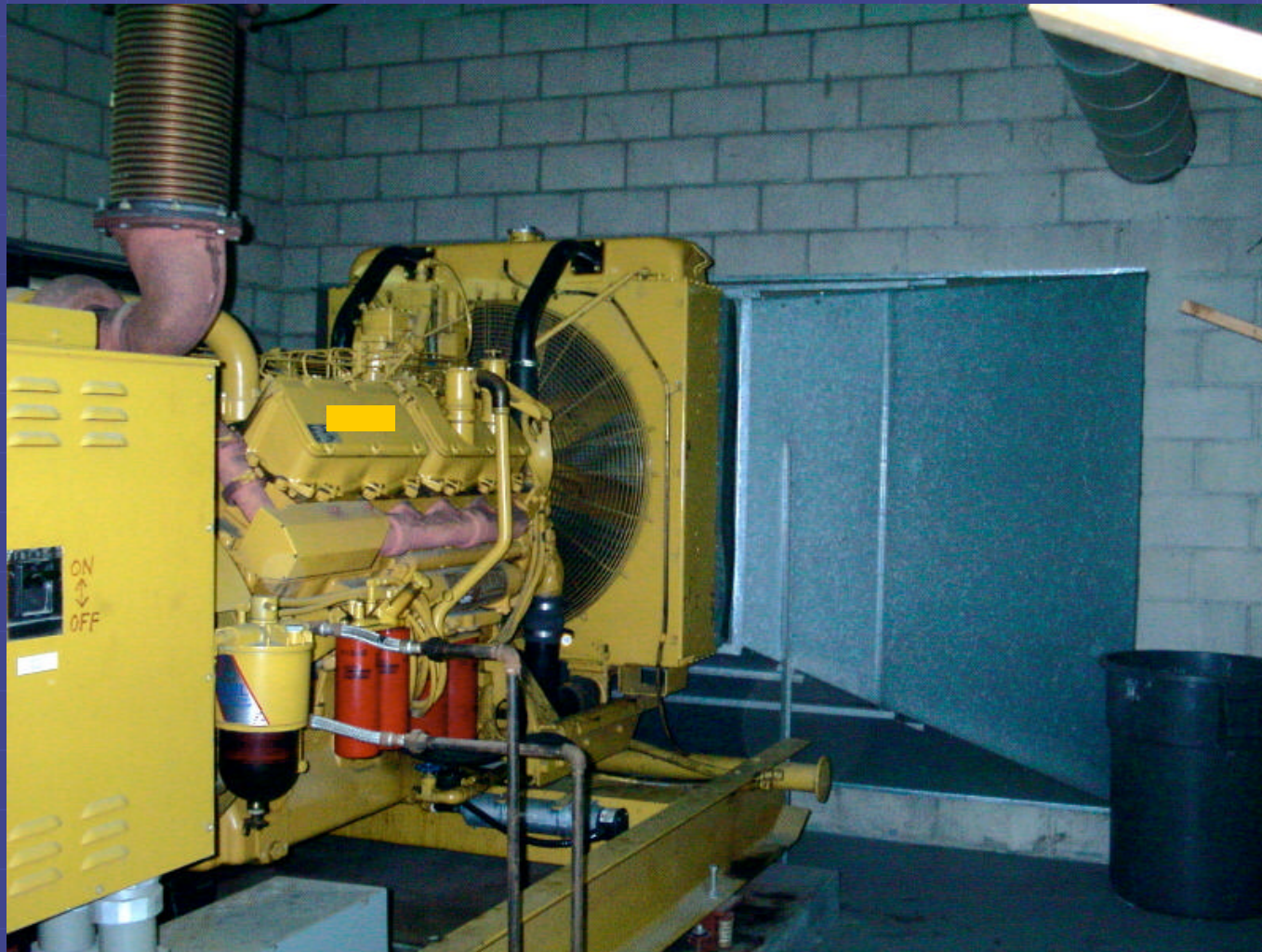
Sample Municipal Code Limits

<i>Land Use</i>	<i>Daytime</i>	<i>Nighttime</i>
<i>Residential</i>	<i>55 dBA</i>	<i>45 dBA</i>
<i>Commercial</i>	<i>65 dBA</i>	<i>60 dBA</i>
<i>Industrial</i>	<i>75 dBA</i>	<i>75 dBA</i>

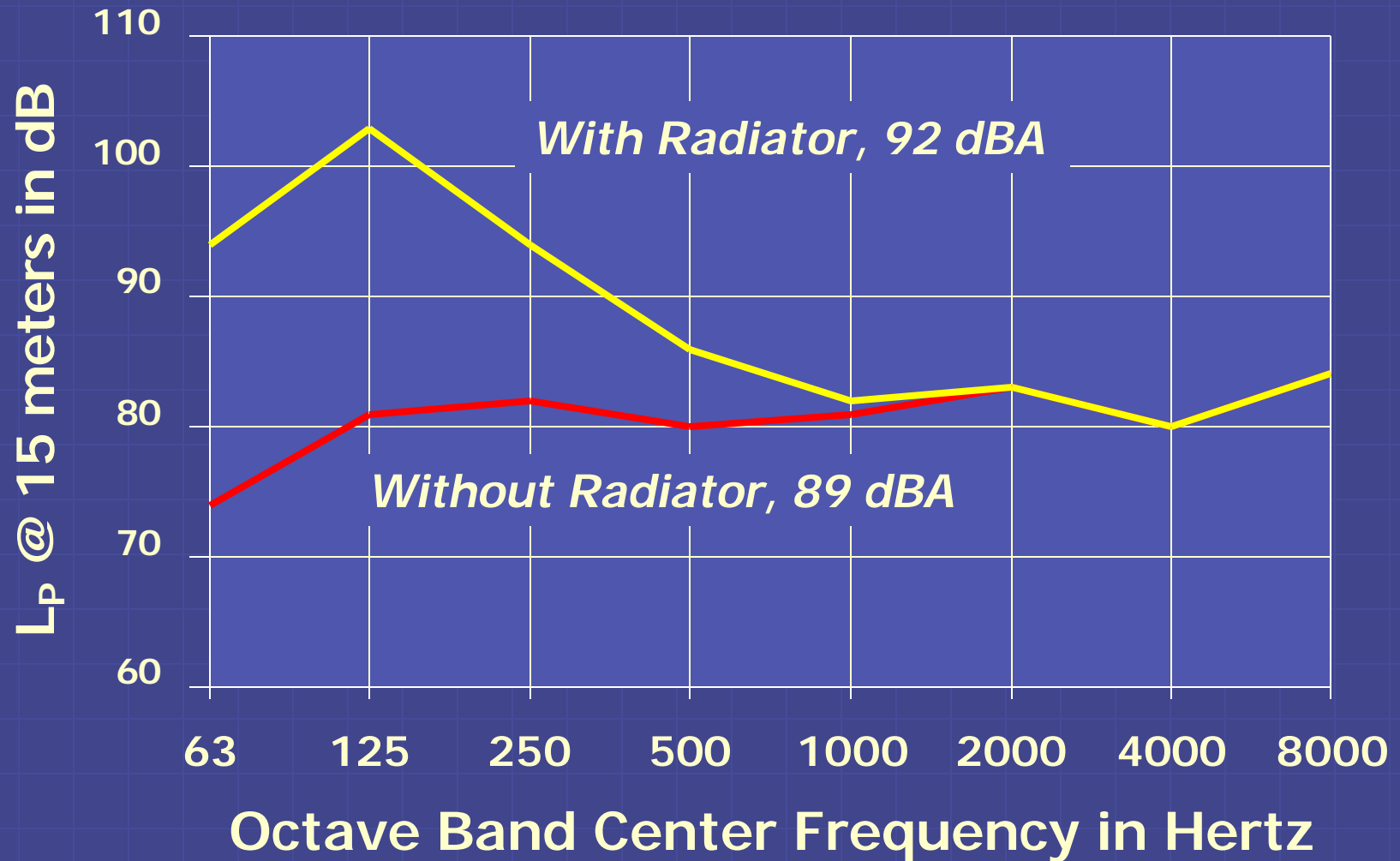
Codes usually require compliance during testing, but not during emergency operation

ASHRAE TC 2.6

Skid-Mounted Radiator



1500 KW Genset Mechanical Noise



Acoustical Louver

Length
4" – 12"

Insertion Loss
3 – 10 dBA

Pressure Drop
~0.25" w.g.
@ 500 FPM



Lined Duct Transition

Length

30" – 120"

Insertion Loss

1 to 5 dBA

Pressure Drop

0.0" w.g.

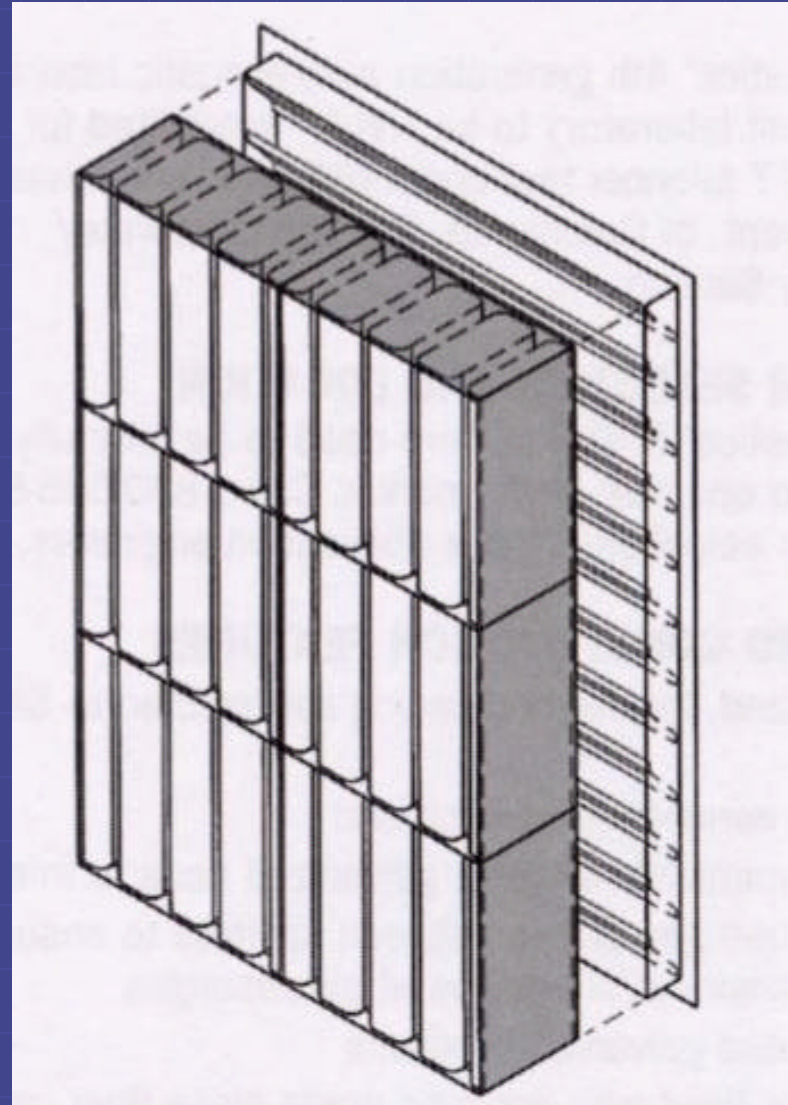


Sound Traps

Length
30" – 120"

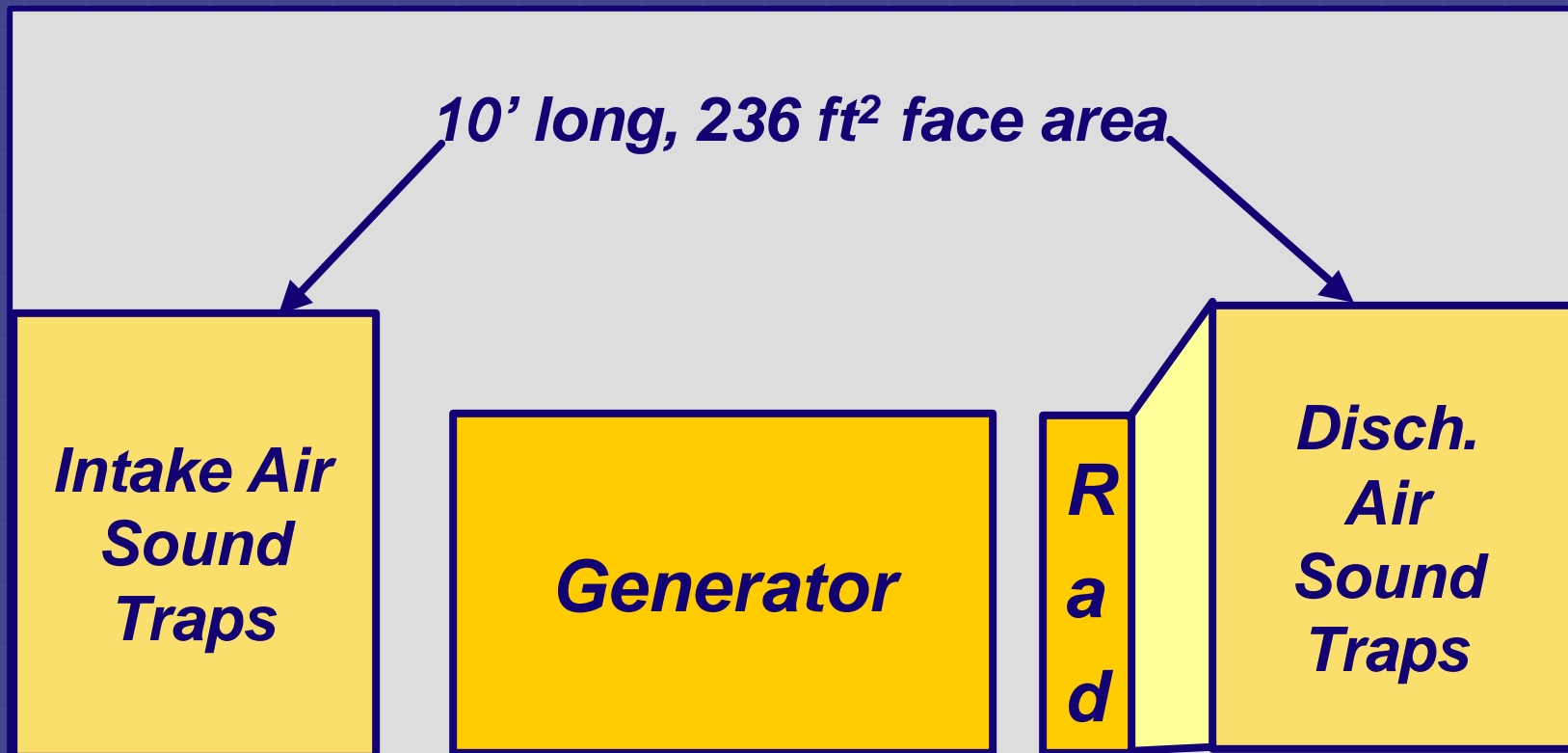
Insertion Loss
10 to 40 dBA

Pressure Drop
0.05" to 0.30" w.g.
@ 500 FPM



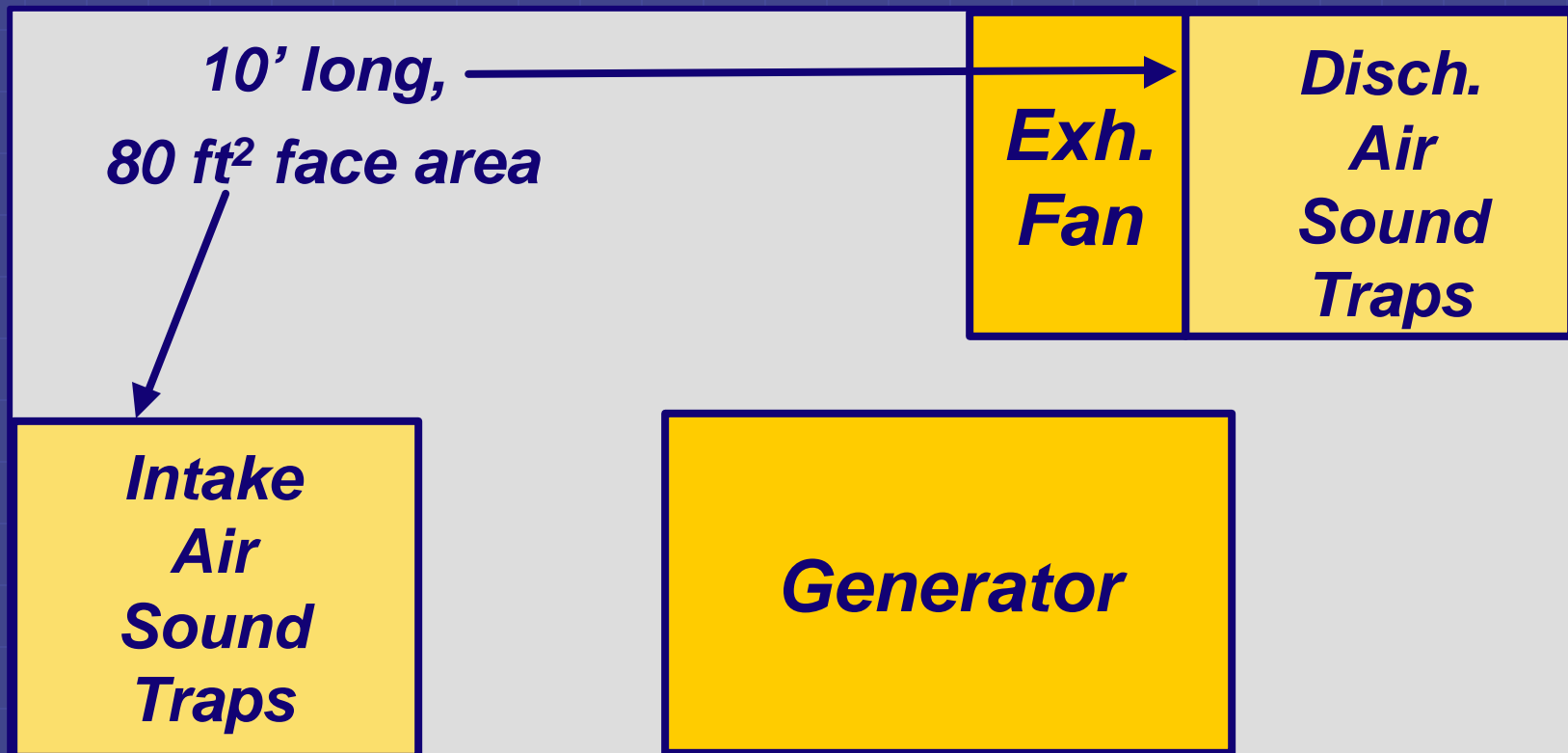
Typical Low Noise 1.5 MW Genset Installation

118,000 CFM



Low Noise Genset Installation with Remote Radiator

40,000 CFM



***Vertical Core
Remote
Radiator***

*Note narrow
fan blades*



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Horizontal Core Remote Radiator



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Remote Radiator Installation



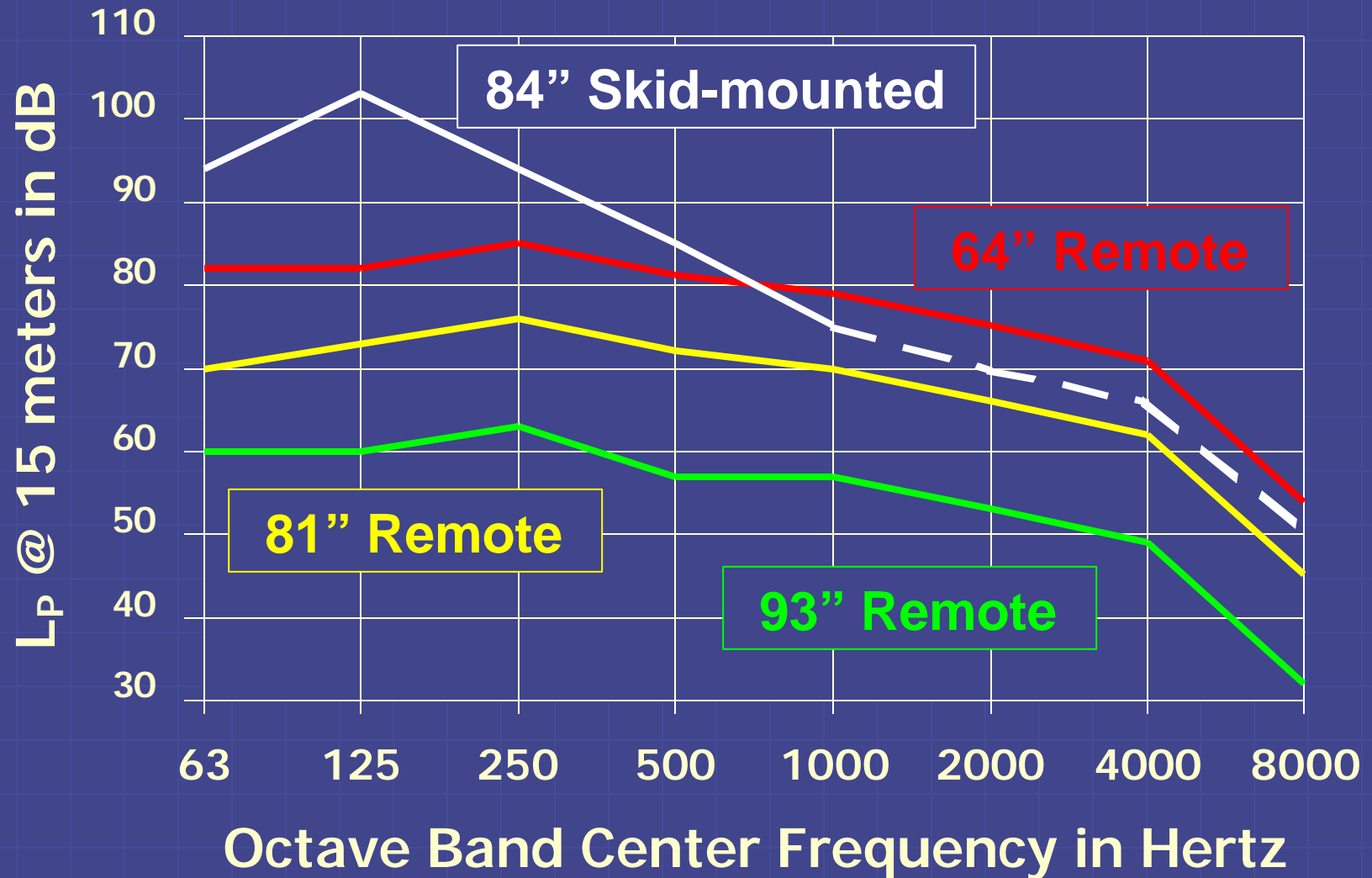
*Remote
Radiator*

*Air Inlet
View*

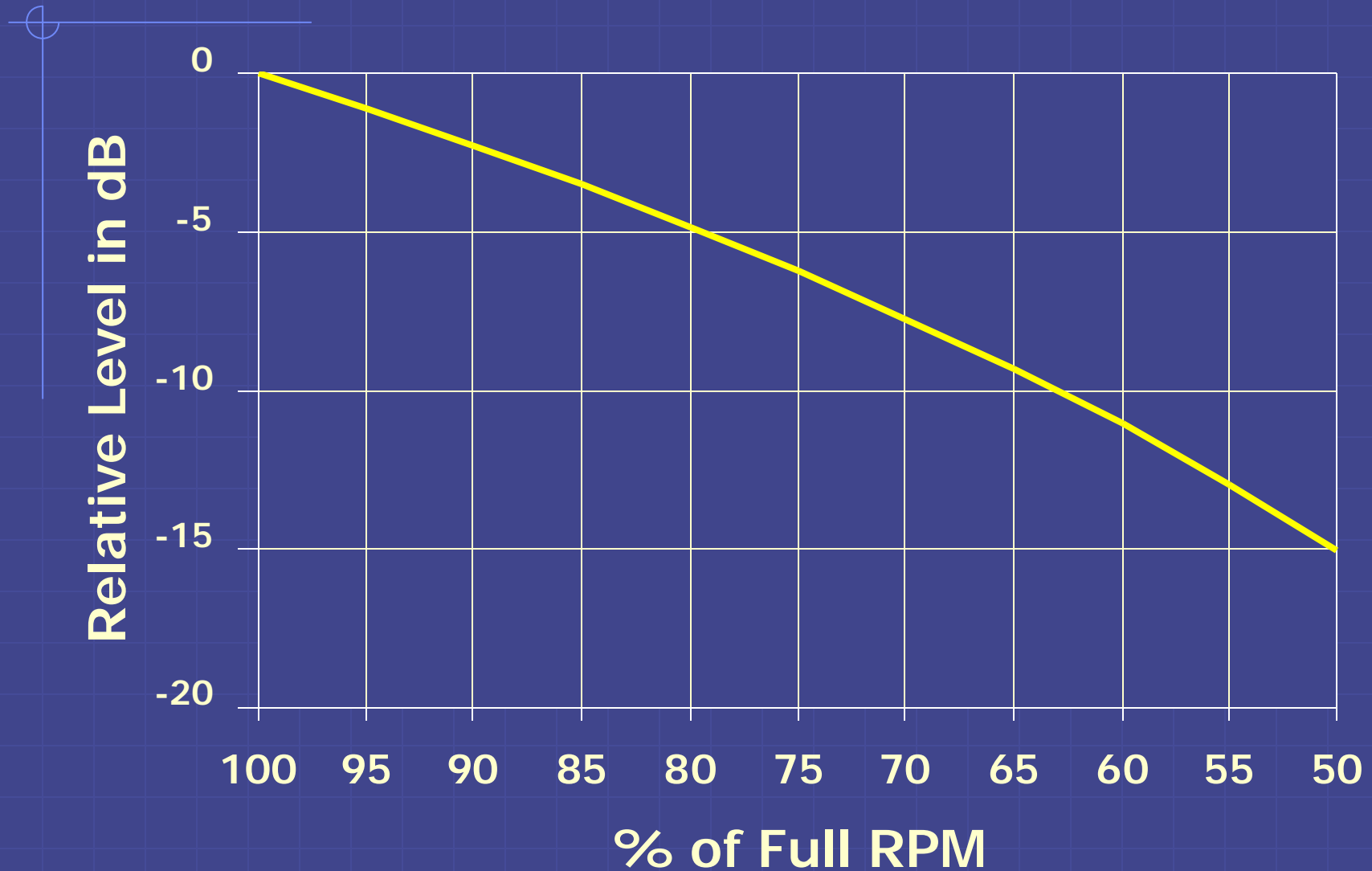
*Note wide
fan blades*



Radiator Noise Levels



Fan Noise Level vs RPM



Differential Costs of Remote Radiator for 1500 KW

	<i>Skid-Mounted Radiator</i>	<i>Remote Radiator</i>
<i>Sound traps</i>	<i>\$94,400</i>	<i>\$32,000</i>
<i>Radiator</i>	<i>(\$25,000)</i>	<i>(\$25,000)</i>
<i>Room Ventilation</i>	<i>\$5000</i>	<i>\$20,000</i>
<i>Radiator Piping</i>	<i>---</i>	<i>\$10,000+</i>
<i>Total</i>	<i>\$99,400</i>	<i>\$62,000+</i>

Remote Radiator Benefits

- *Smaller ventilation opening
(1/2 to 2/3 smaller)*
- *Fewer or shorter sound traps
(1/2 to 2/3 reduction)*
- *More space in generator room*
- *Option to select quiet radiator*
- *Option to locate radiator for lowest noise exposure to noise-sensitive areas*

Radiator Noise Control Summary

- *Use acoustical louvers or sound traps for a skid-mounted radiator, if space is available.*
- *Consider remote radiator if space precludes sound traps for skid-mounted radiator.*
- *Consider several remote radiator fan selections, weighing cost, location and size.*
- *Consider VFD fan motor for lower speed & lower noise during cooler nighttime ambient air conditions.*