Diesel emissions in NSW - sources and trends

NSW EPA Diesel Emissions Management Workshop

Friday 13th June 2014

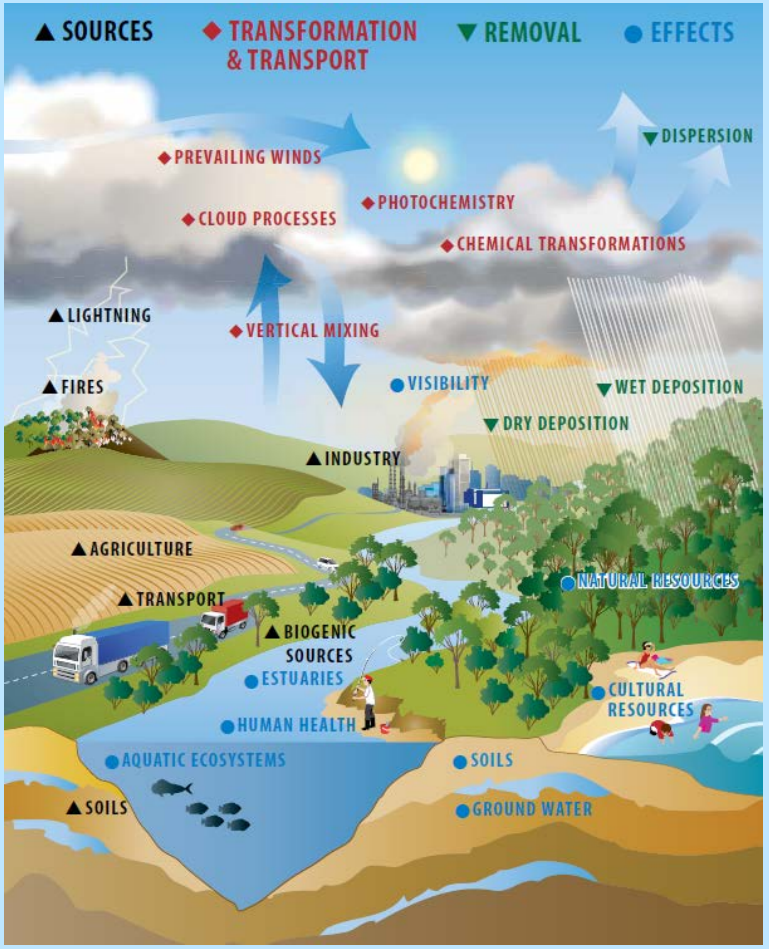
Nick Agapides, Manager Major Air Projects

Inventory provides sound evidence

- Greater metropolitan region including Sydney, Newcastle and Wollongong where 75% of NSW population lives

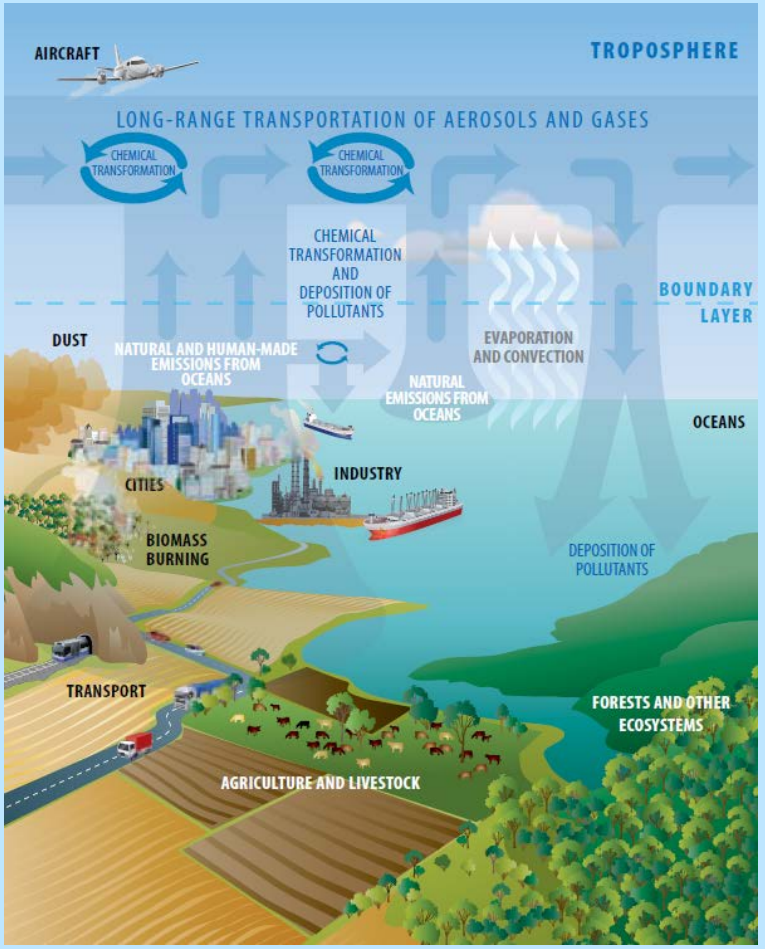
Inventory provides sound evidence

- Natural and human-made sources like commercial businesses, household activities, EPA-licensed industry, off-road transport and registered vehicles



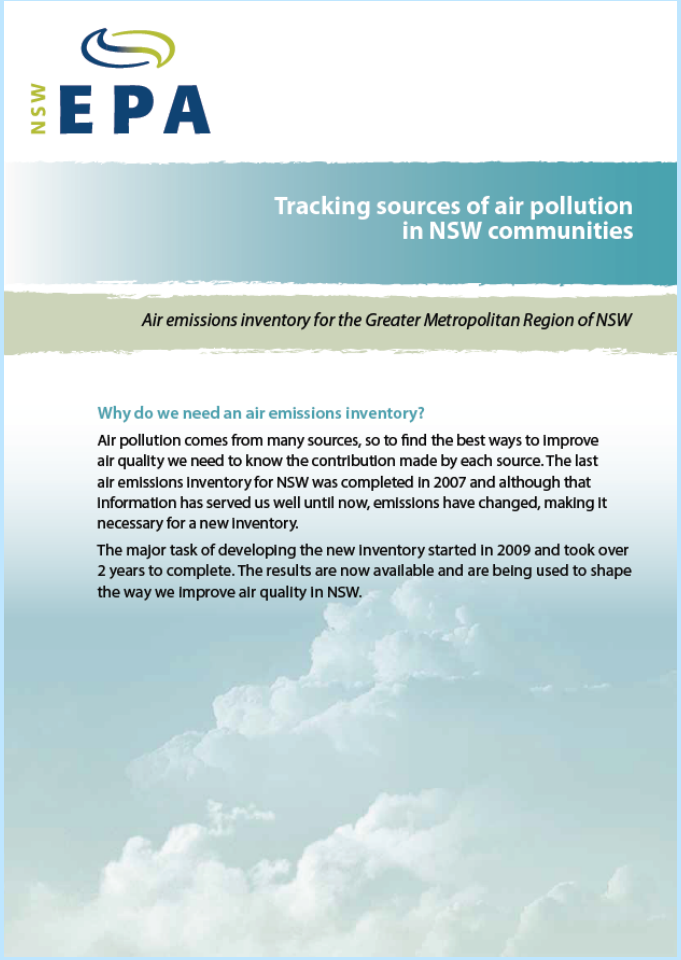
Inventory provides sound evidence

- Over 1000 substances, including criteria pollutants, organics, metals, PAH, PCDD/PCDF, ammonia and GHG



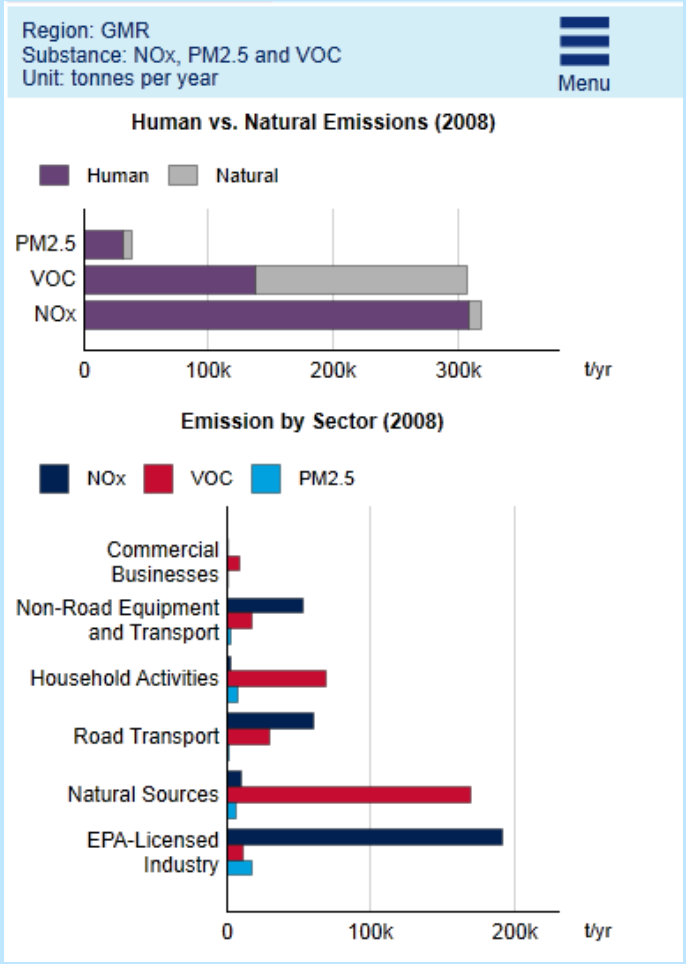
Inventory provides sound evidence

- Compiled in 1992, 2003 and 2008 to provide sound evidence for improving air quality



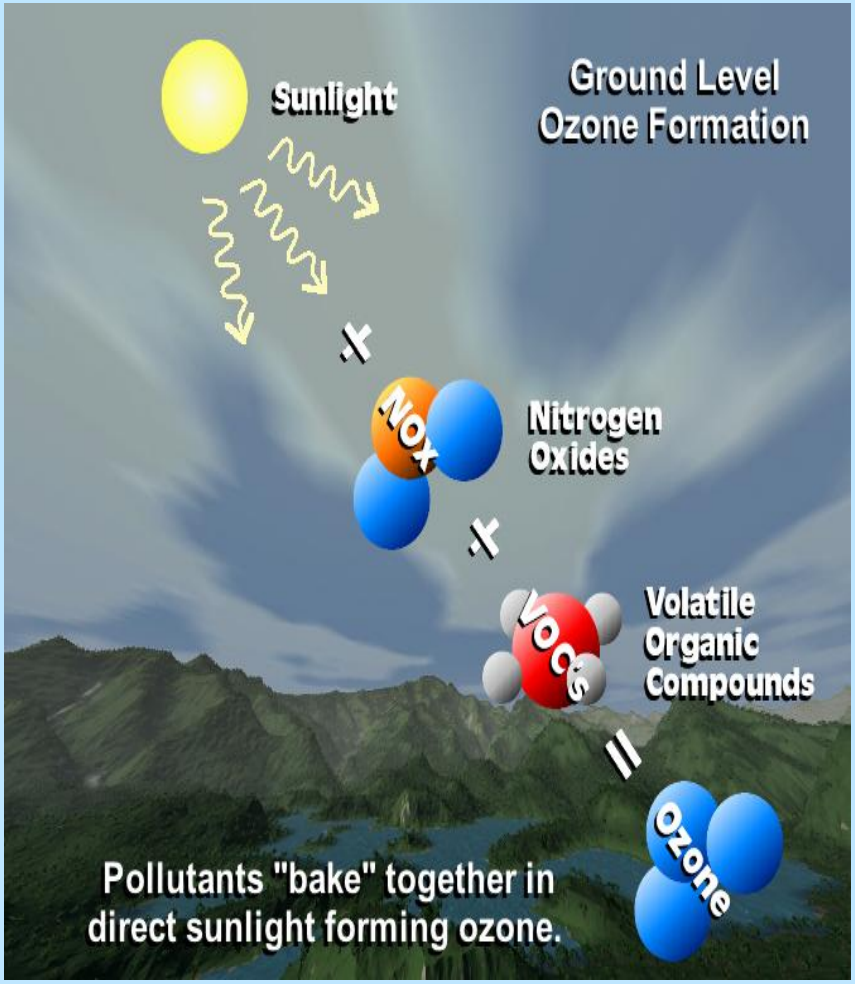
Inventory provides sound evidence

- Transport a significant source of PM and ozone precursors - 36% NOx, 17% PM2.5 & 35% VOC of total anthropogenic



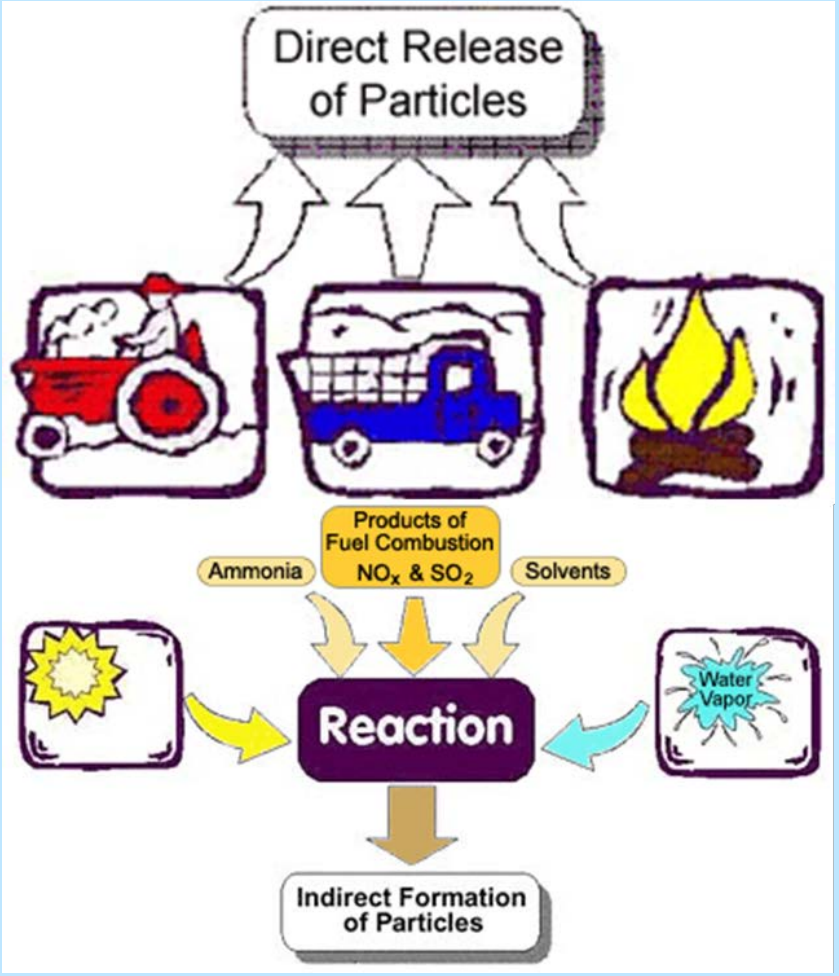
Formation of PM and ozone precursors

- Ozone is formed from NOx and VOC precursors

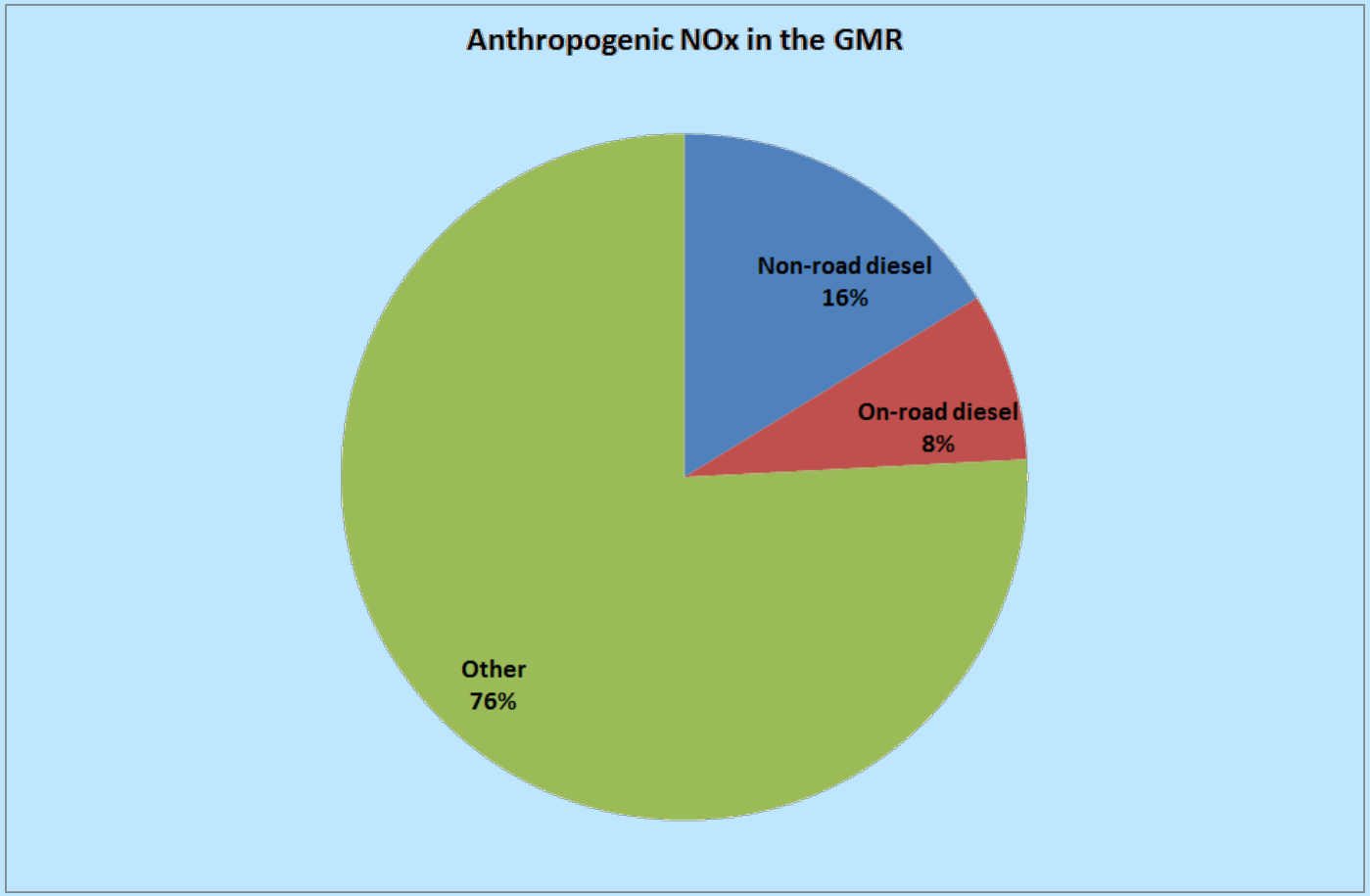


Formation of PM and ozone precursors

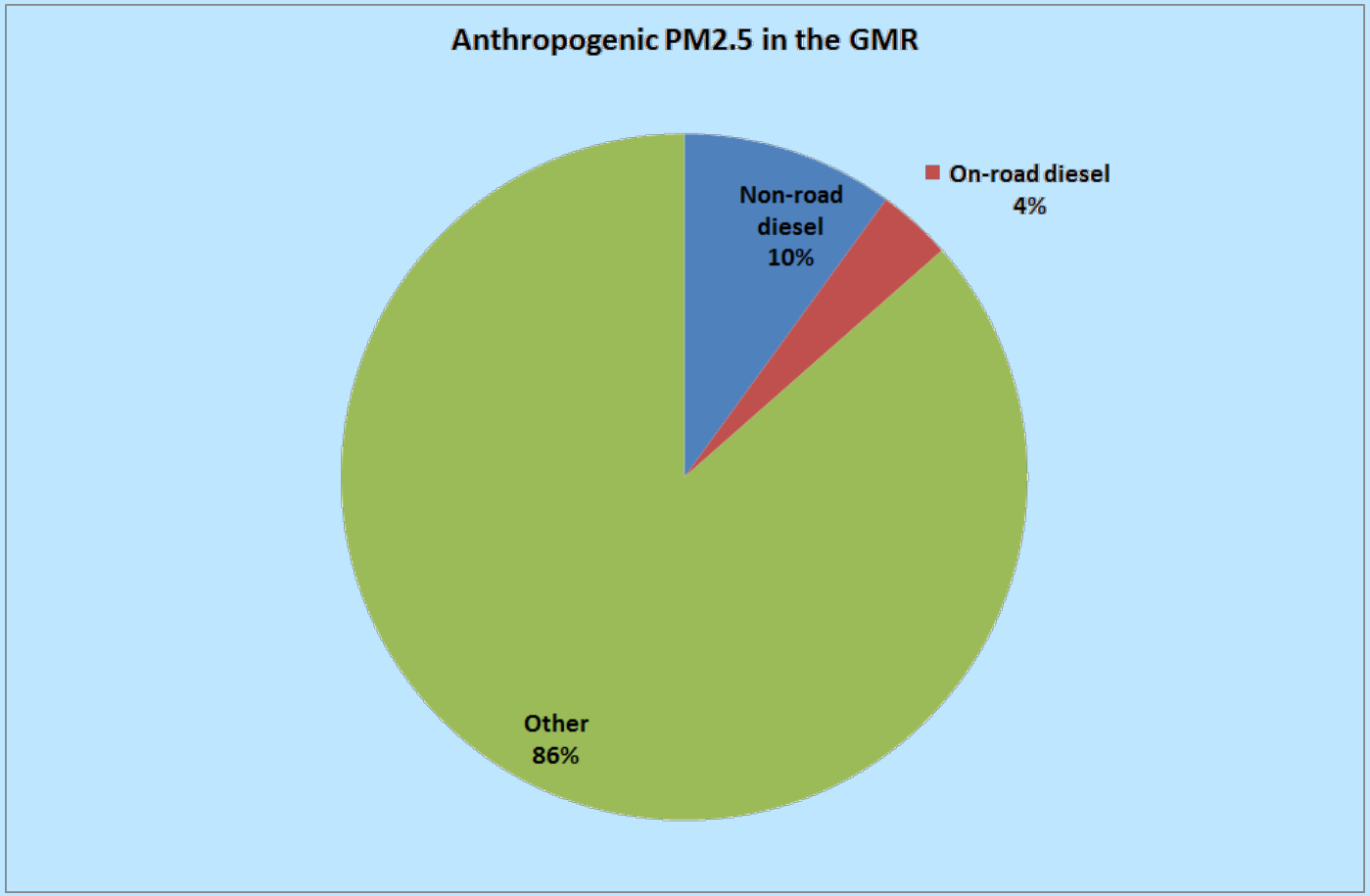
- PM includes:
  - direct emissions (soot, crustal)
  - secondary organic and inorganic (sulfate and nitrate) aerosols



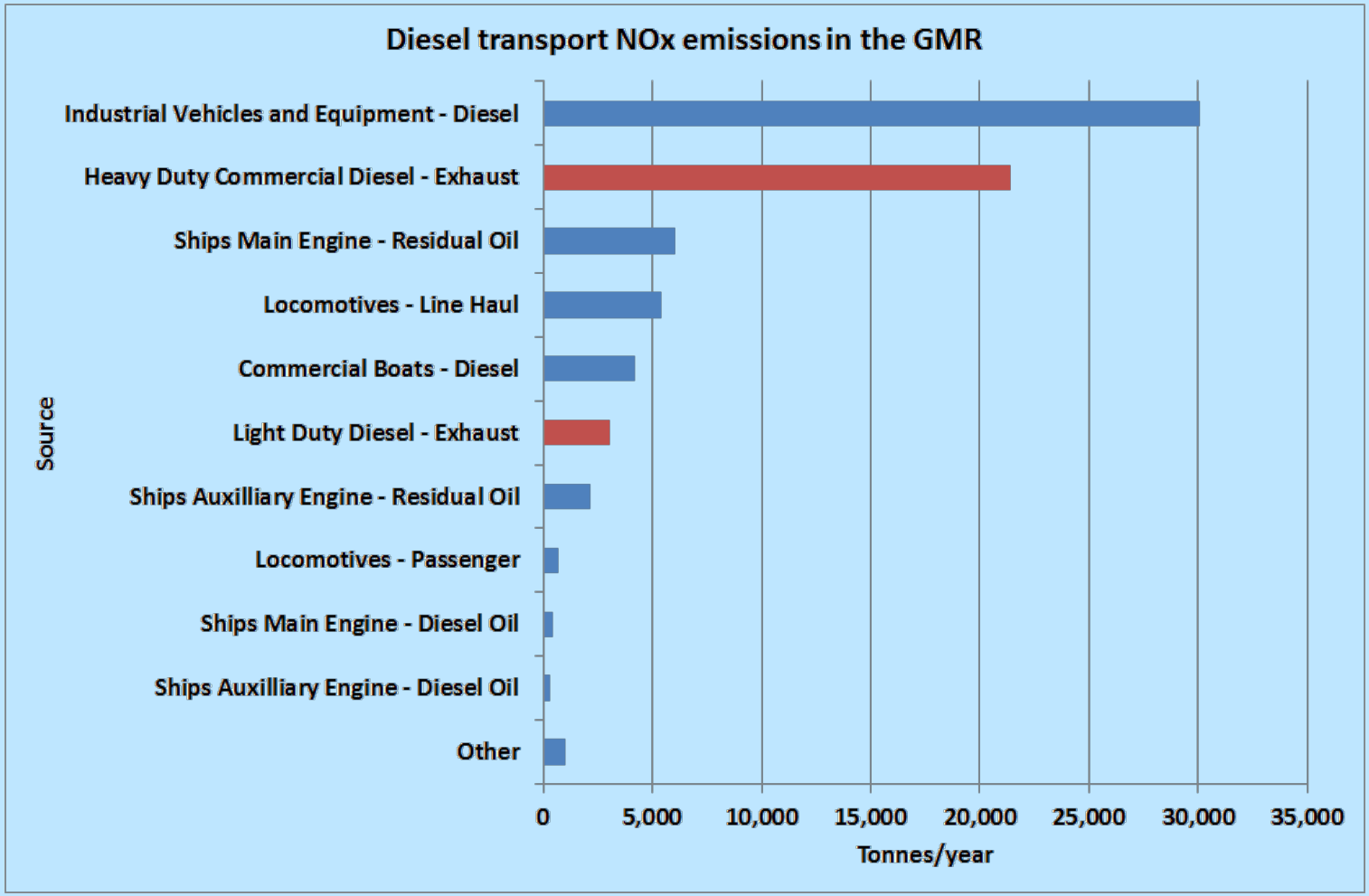
Diesel transport emissions are significant



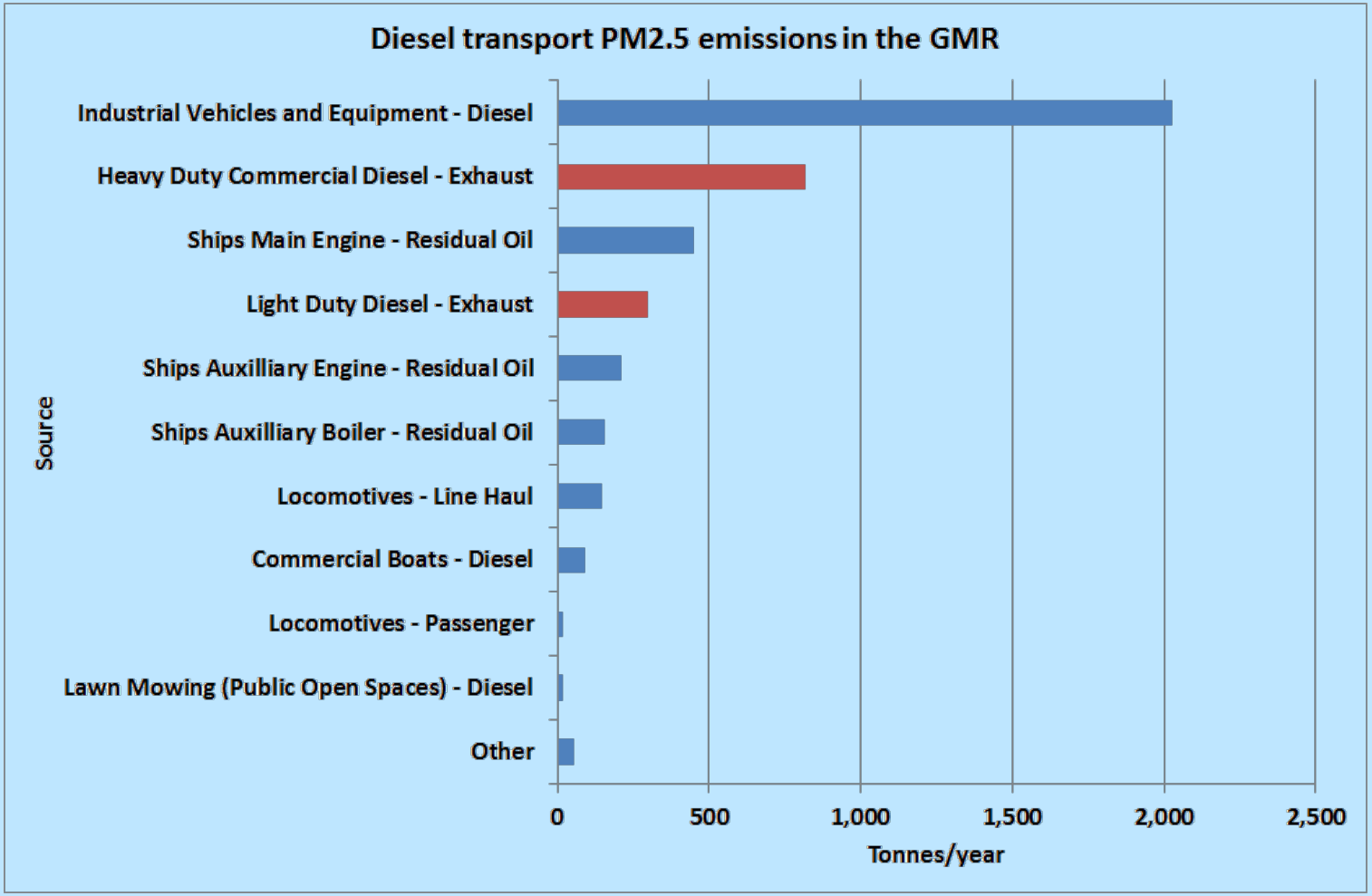
Diesel transport emissions are significant



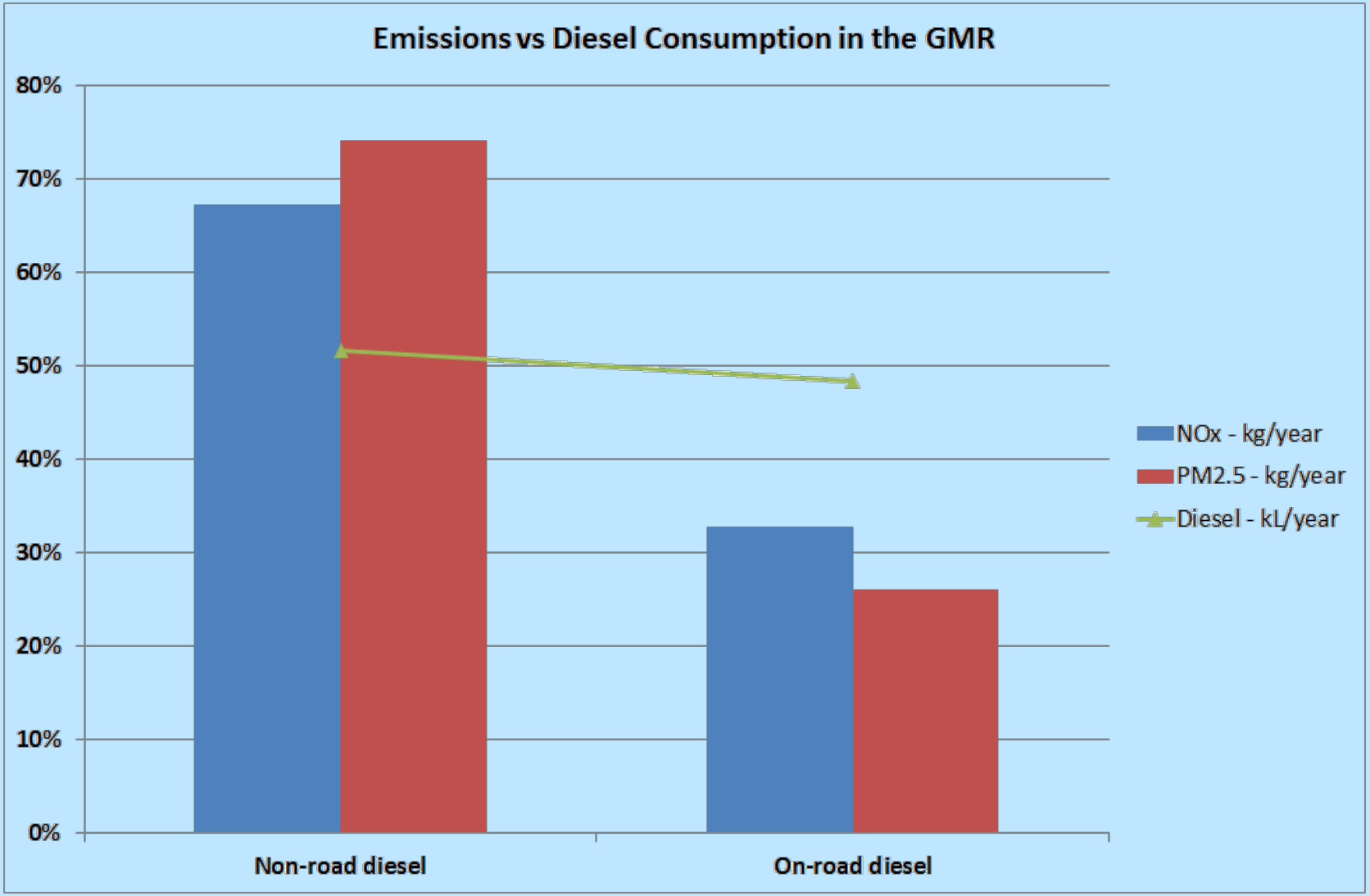
Major diesel transport emission sources



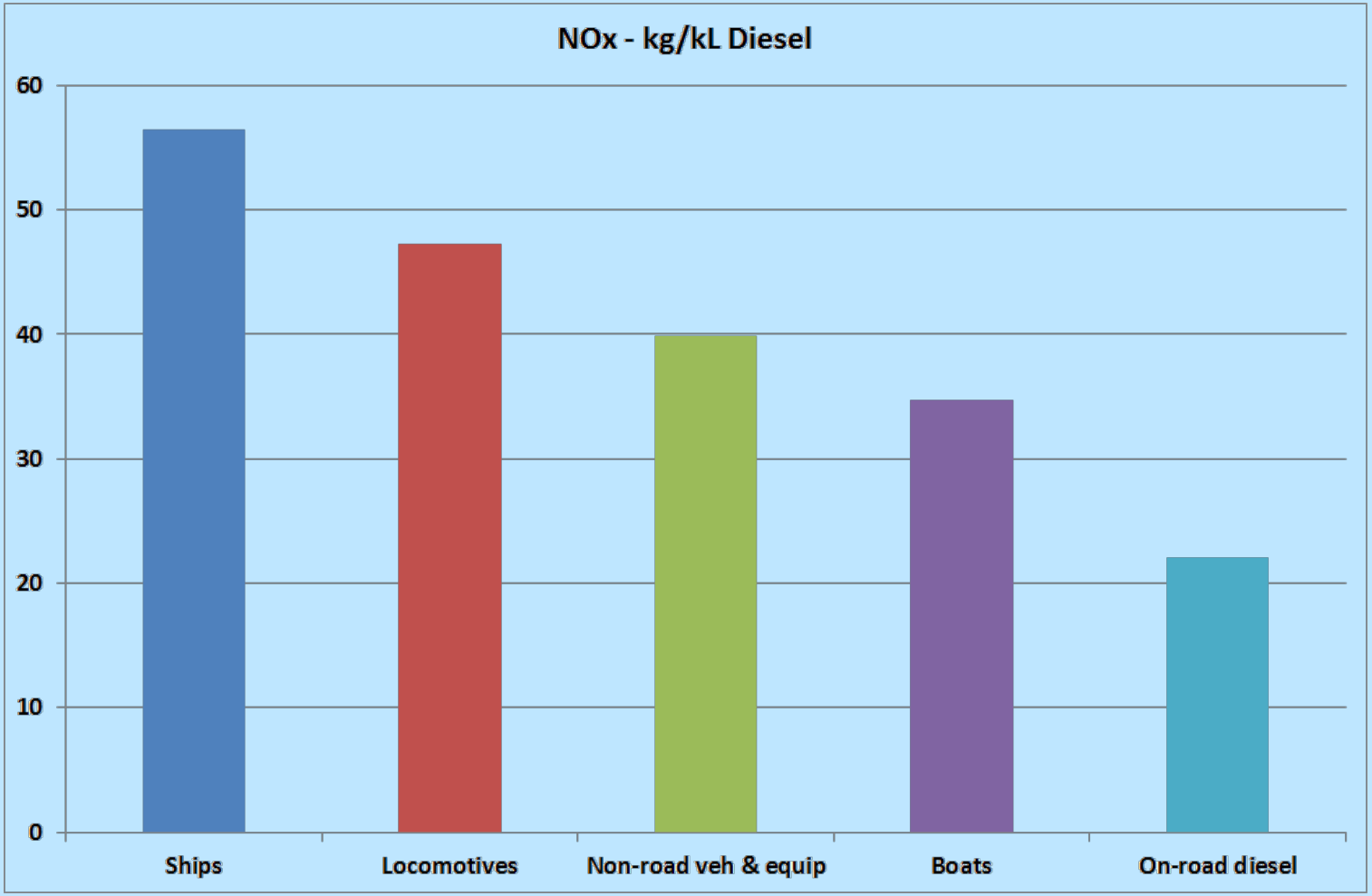
Major diesel transport emission sources



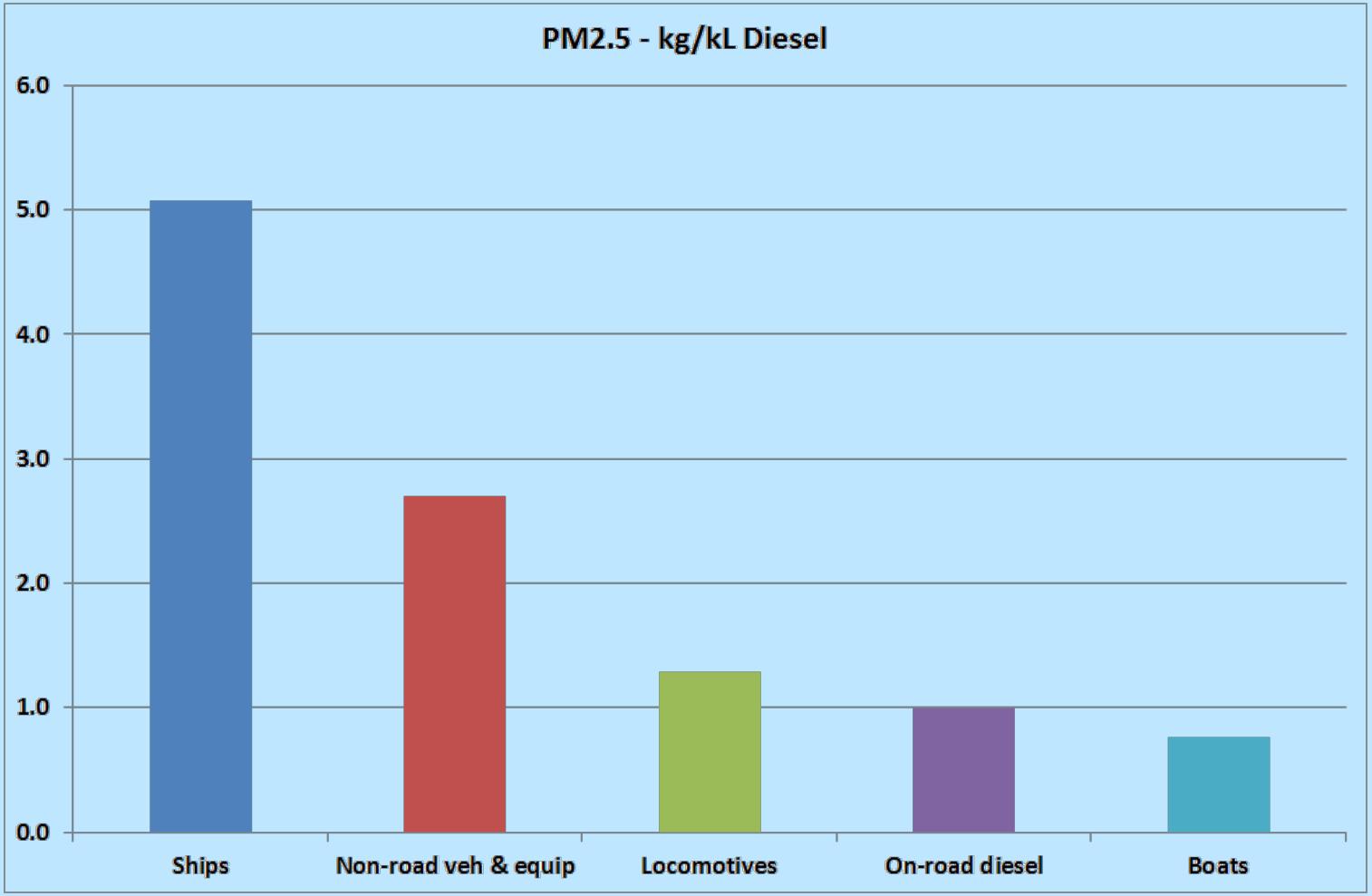
Non-road vs on-road diesel emissions



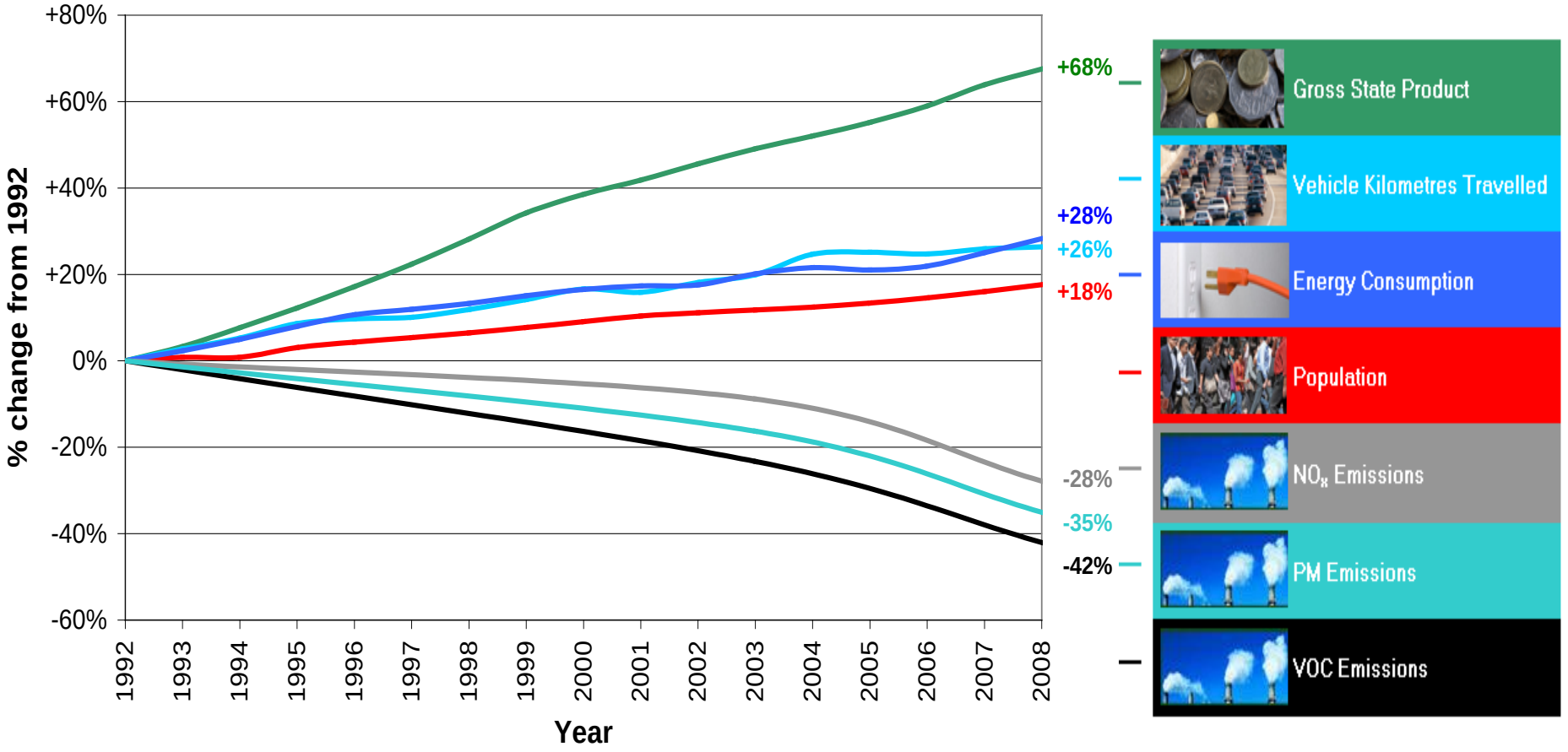
Emissions vs diesel consumption



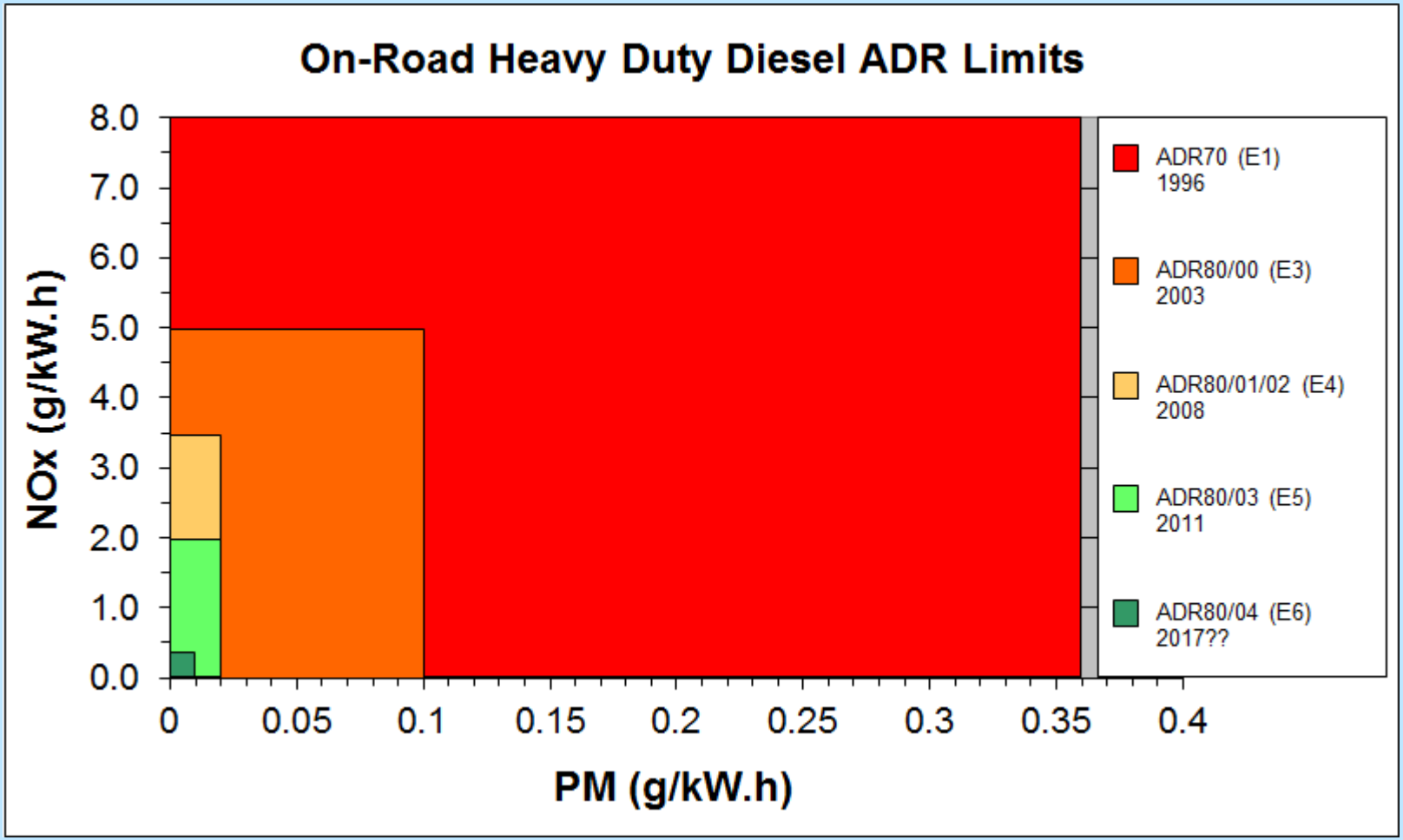
Emissions vs diesel consumption



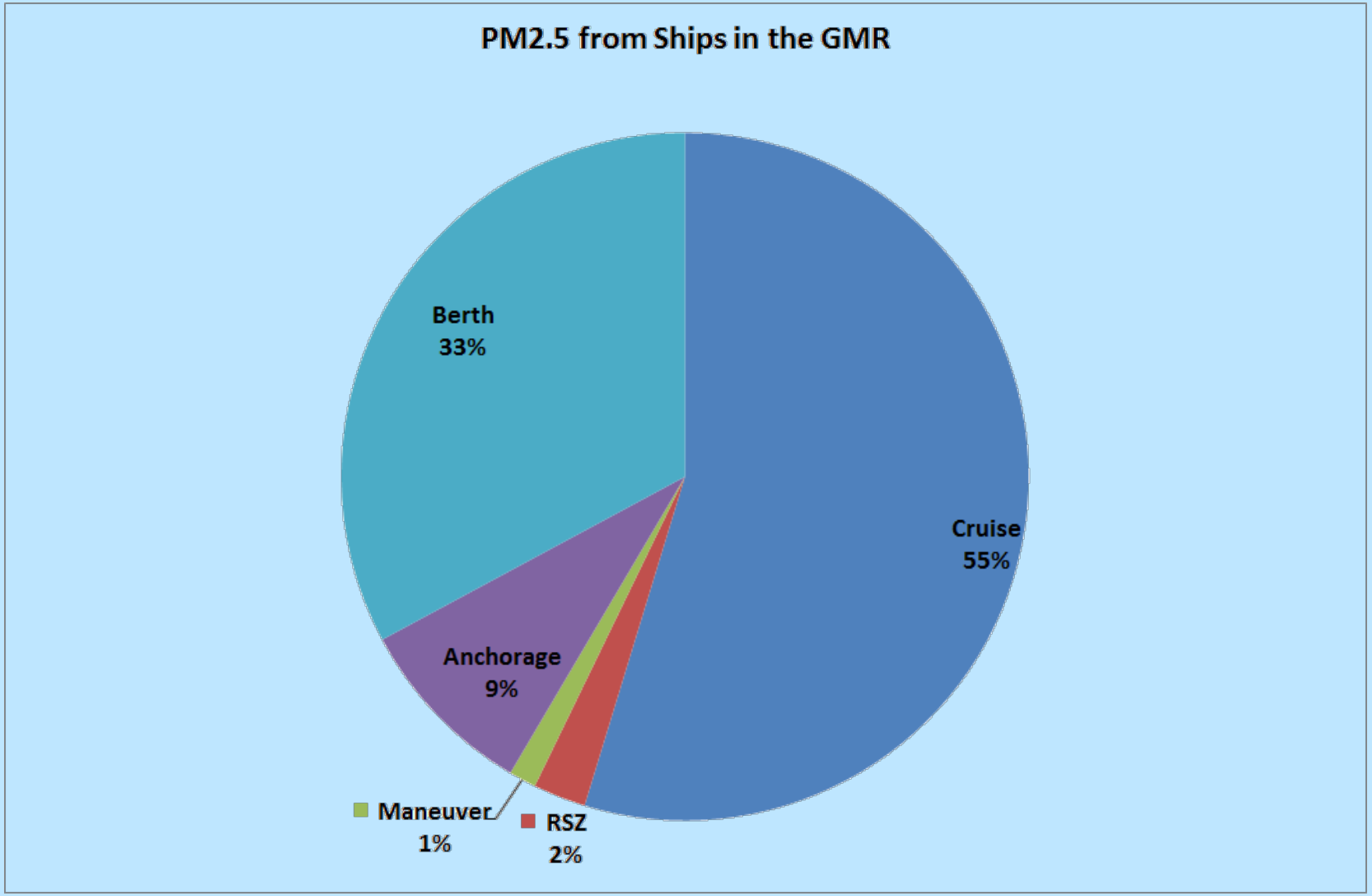
Anthropogenic emissions declining in Sydney



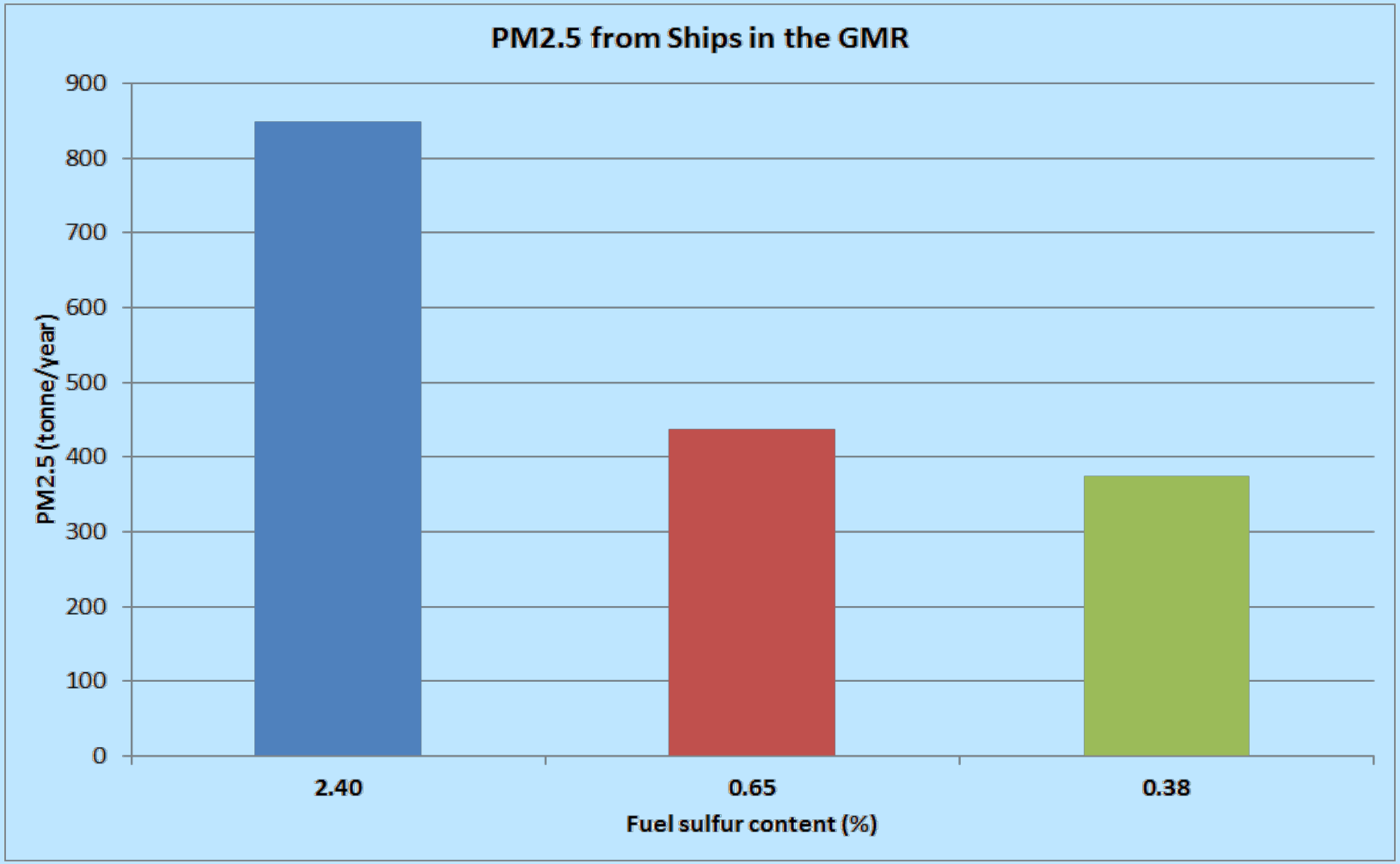
ADRs for on-road diesels getting tighter



Opportunities to reduce ship emissions



Opportunities to reduce ship emissions



Opportunities to reduce ship emissions

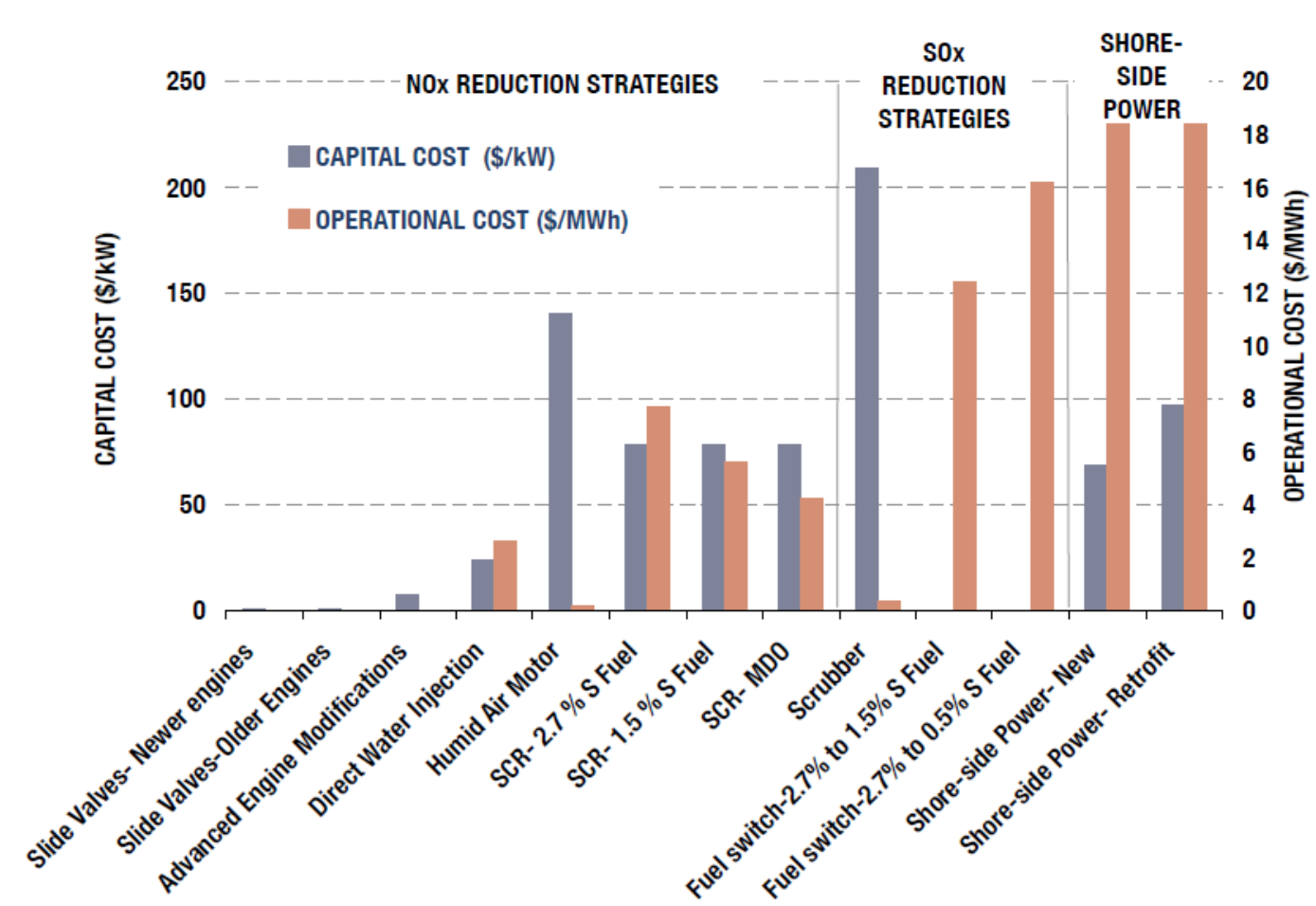
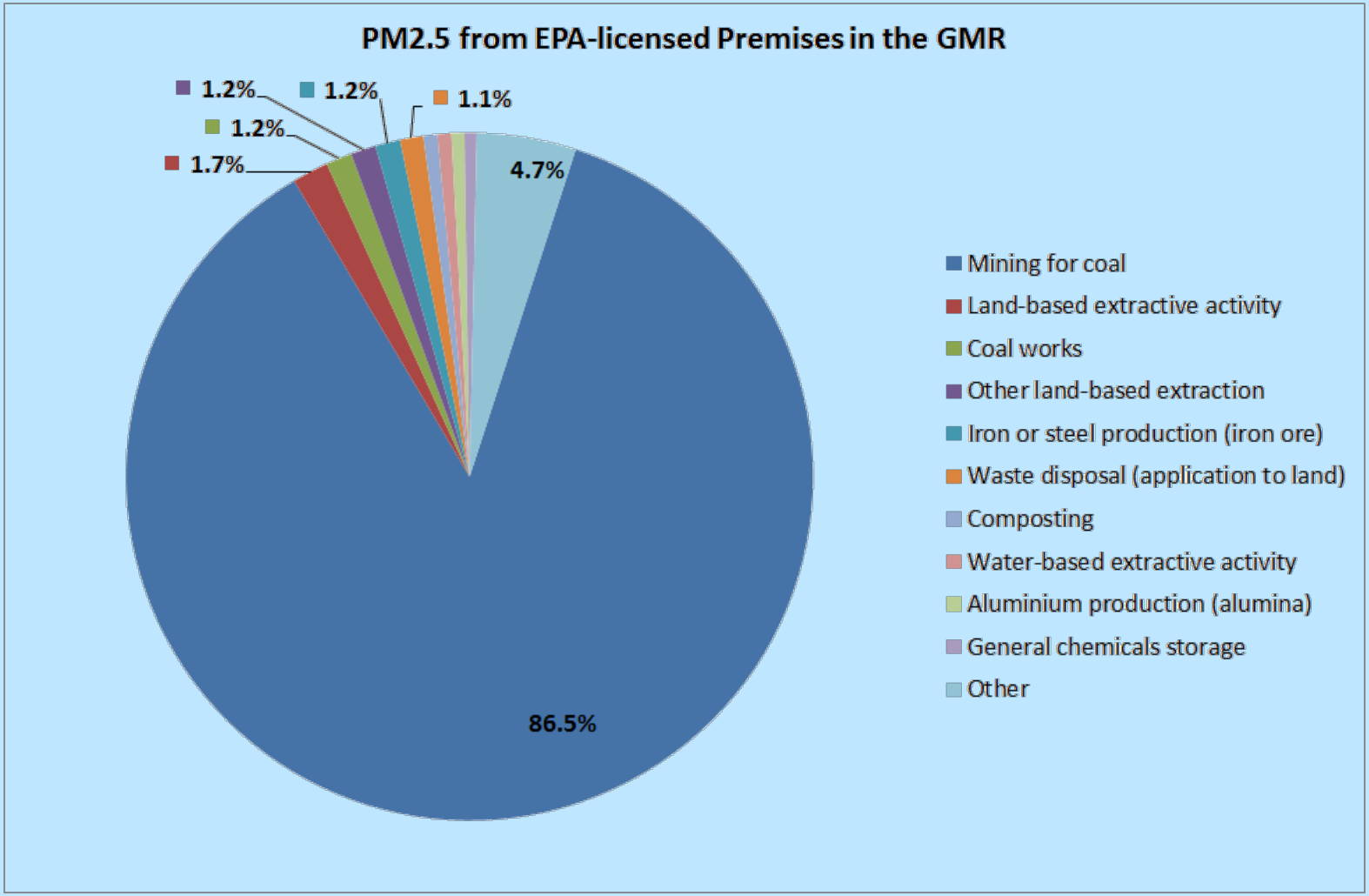
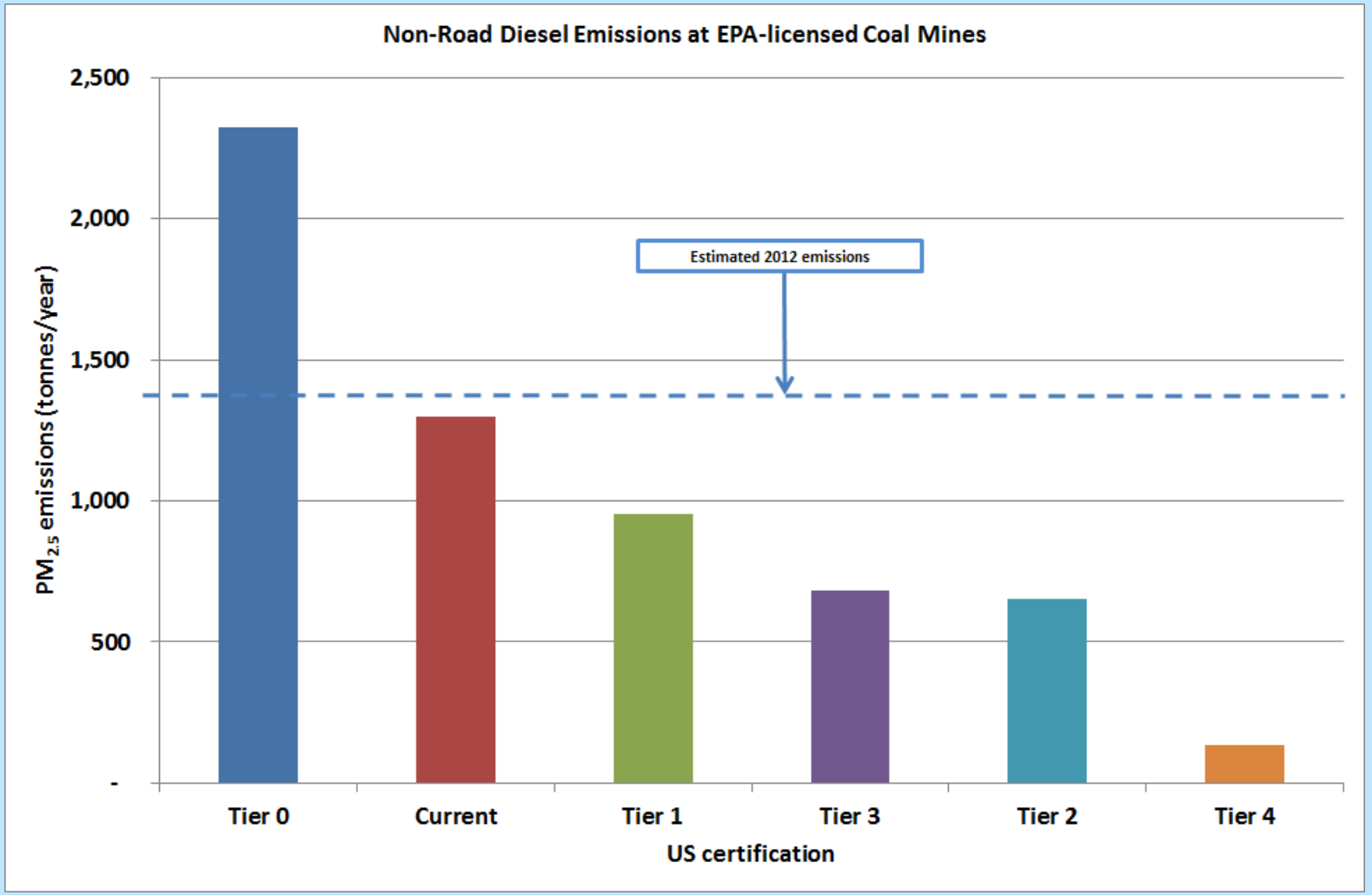


FIGURE 16. Incremental Capital and Operating Costs for Different Control Technologies (Entec 2005a, 2005b, 2005c)

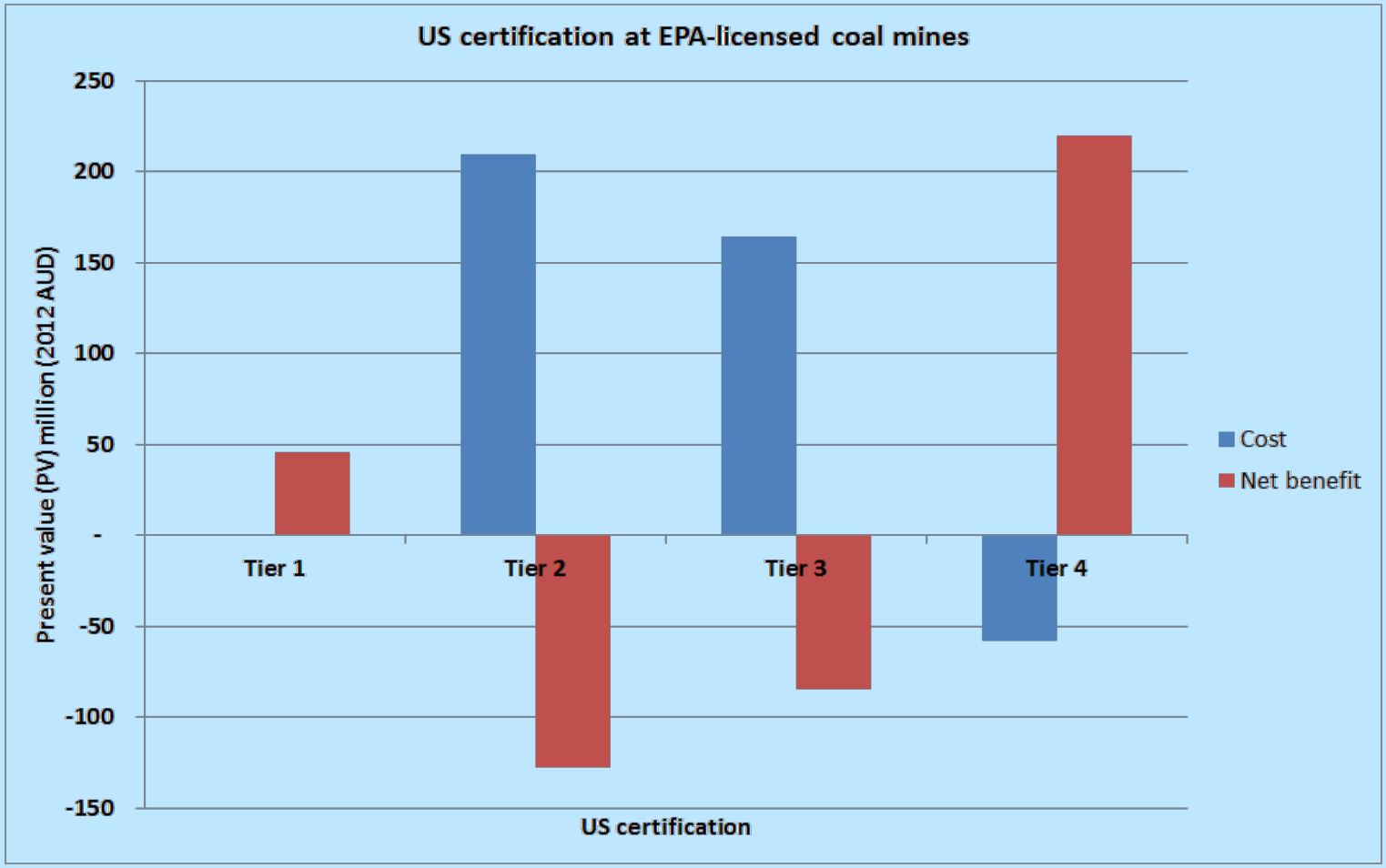
US certification and non-road diesel emissions at EPA-licensed premises



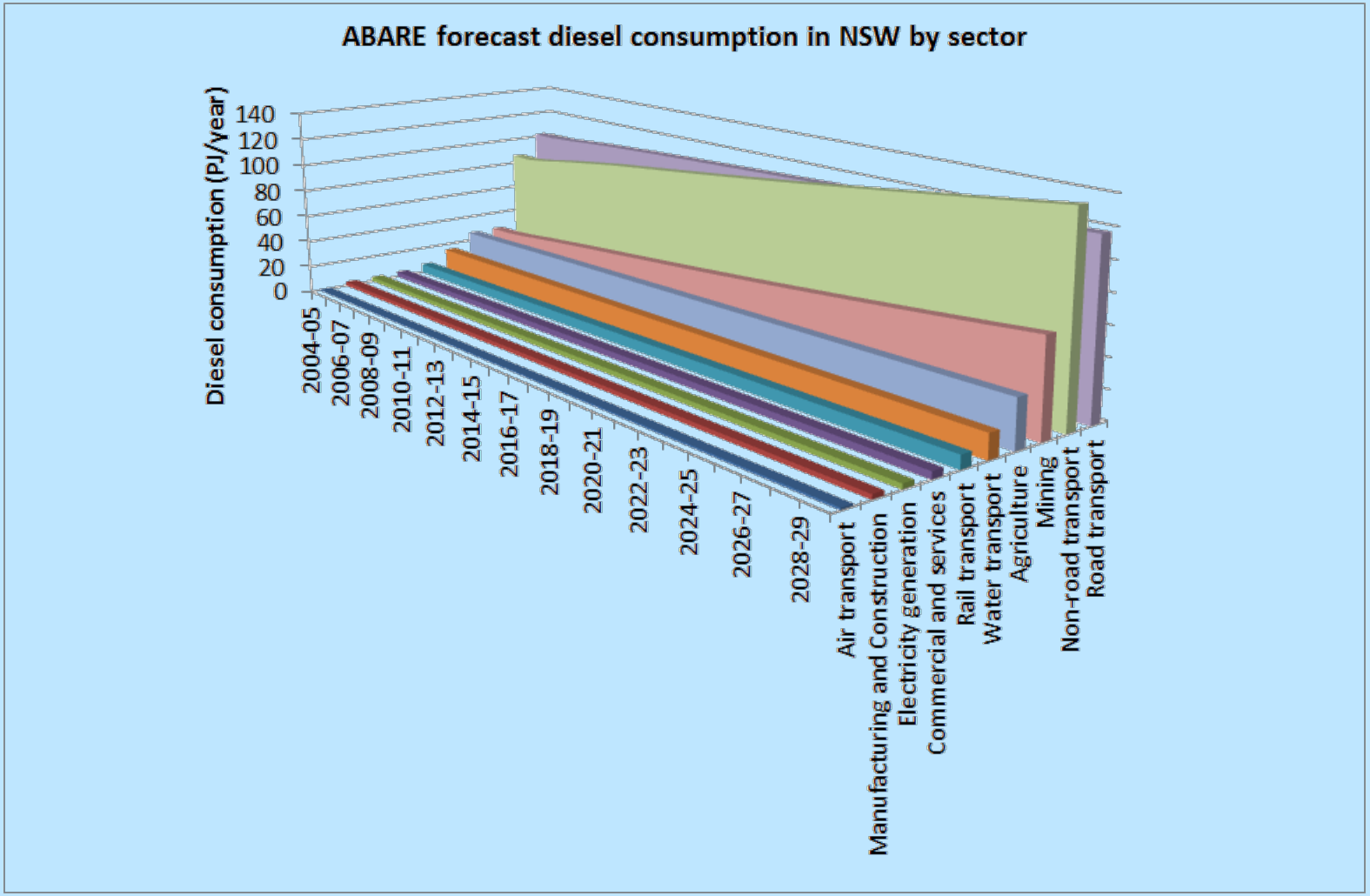
US certification and non-road diesel emissions at EPA-licensed premises



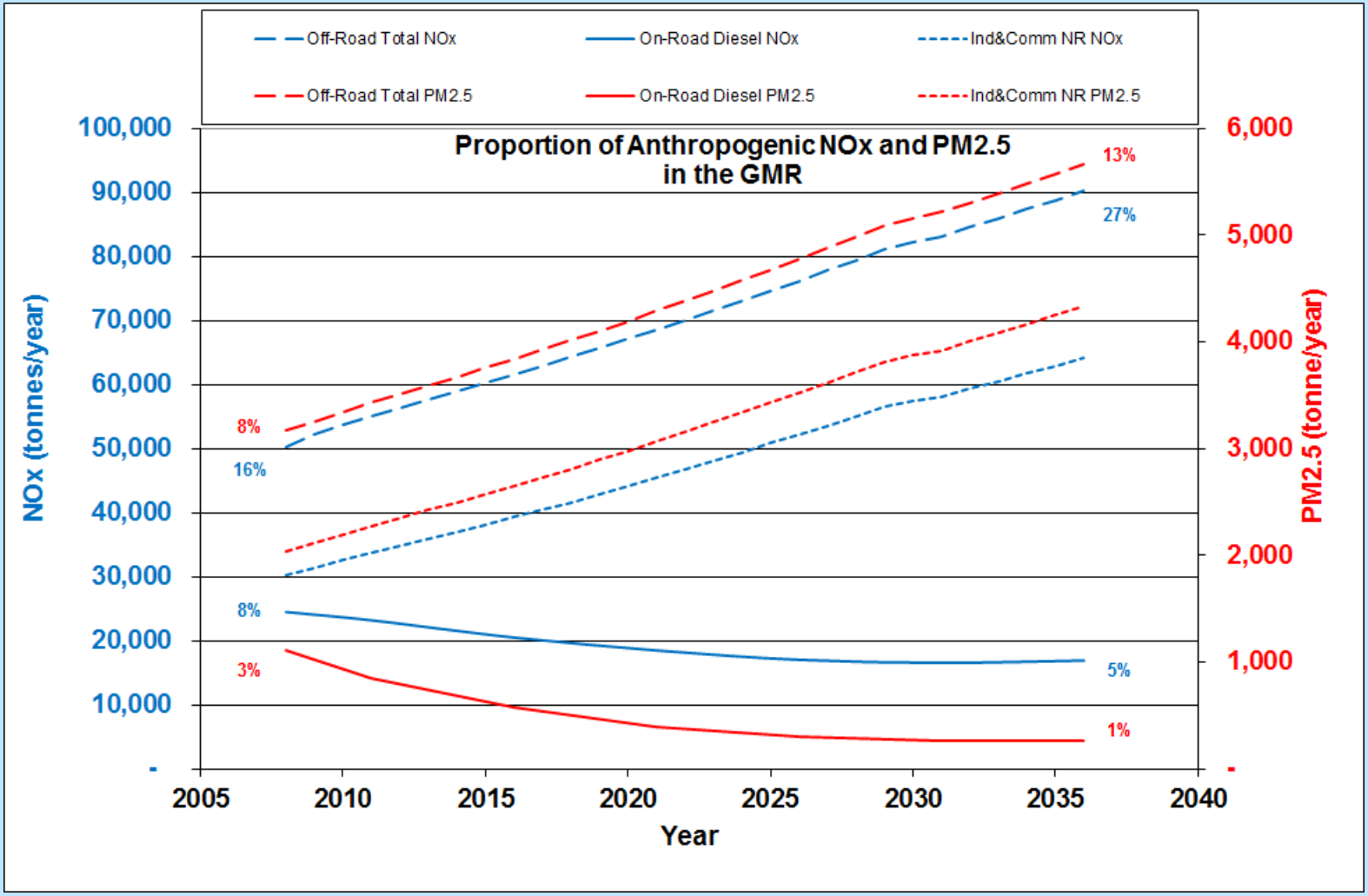
US certification and non-road diesel emissions at EPA-licensed premises



Future diesel transport fuel consumption



Future diesel transport emissions



Conclusions

- Non-road diesel a significant source of PM and ozone precursor emissions
- Non-road diesel consumption similar to on-road but likely to increase
- ADRs have been successful at reducing on-road diesel emissions
- US and EU introduced non-road diesel standards in mid to late 1990s and several other countries have adopted these standards in some form
- Technologies and cleaner fuels are available to reduce non-road diesel emissions but cost is likely to be an issue
- A significant health and economic benefit can be achieved by reducing non-road diesel emissions

Questions?