Submission to the Productivity Commission

Inquiry into Investing in Cheaper, Cleaner Energy and the Net Zero Transformation

Introduction

I welcome the opportunity to contribute to the Commission's interim report on cheaper, cleaner energy and the net zero transformation. I support the Commission's emphasis on ensuring that emissions targets are achieved at least cost to households and businesses.

However, I submit that the Commission's current framing of "emissions" only in terms of greenhouse gases (GHG) risks understating both the costs of continuing fossil fuel use and the productivity benefits of accelerating the shift to zero-emission vehicles (ZEVs).

Particulate matter ($PM_{2.5}$, PM_{10}), nitrogen oxides (NO_x), sulphur oxides (SO_x), and other tailpipe pollutants are emissions in the ordinary meaning of the term. Their impacts on public health, labour productivity, and healthcare expenditure are substantial, well-documented, and relevant to the Commission's mandate.

The Case for Including Non-GHG Emissions

1. Productivity and Labour Force Impacts

- Urban air pollution contributes to respiratory and cardiovascular disease, increasing absenteeism, reducing workforce participation, and lowering productivity.
    - In the Sydney–Newcastle–Wollongong region, NSW DEC estimates ambient PM_{10}-related mortality of 929–2,089 deaths/year (midpoint ~1,509). Applying an estimated ~43% motor-vehicle share of population PM_{10} exposure in Sydney and the NSW on-road inventory split showing ~48% of on-road PM_{10} is exhaust implies ~300–320 deaths/year from vehicle exhaust in the region.[1]
    - Using DEC's GMR annual health-cost range of $1.01–8.44 b (2003$) and inflating to 2025 A$, then applying the same 43% × 48% shares, implies ~$1.75 b/year in

[1] Exhaust-mortality derivation (~300–320 deaths/year)
Start with NSW DEC (2005) PM_{10} mortality at mean pollution for the Greater Metropolitan Region (GMR): 929–2,089 (midpoint 1,509) deaths/year. Multiply by ~43% (motor-vehicle share of population exposure to PM_{10} in Sydney) and by ~48% (exhaust share of on-road PM_{10}; balance is non-exhaust: tyre, brake, road wear, resuspension).
Calculation: 1,509 × 0.43 × 0.48 ≈ 312 (range ≈192–431 using the DEC low/high).
Sources: NSW Department of Environment and Conservation (DEC) 2005, *Air Pollution Economics* (Table A.2 for mortality; discussion of exposure shares); NSW Environment Protection Authority 2012, *Air Emissions Inventory for the Greater Metropolitan Region in NSW—2008, Technical Report 7: On-Road Mobile Emissions* (Executive Summary tables show PM_{10} totals and non-exhaust vs exhaust split).

health costs due to vehicle exhaust PM_{10} in the region (illustrative range ~$0.38–3.12 b).[2]
    - Nationally, the latest peer-reviewed estimate attributes ~1,864 (95% CI 648–2,988) premature deaths per year in Australia to traffic-related air pollution (TRAP: $PM_{2·5}$ and NO_2).[3]
- Reductions in these emissions should be seen as productivity-enhancing reforms, squarely within the Commission's remit.

2. Fiscal Impacts

- Hospitalisations, medication, and chronic disease management attributable to vehicle emissions impose direct costs on public health budgets.
- Reducing tailpipe emissions lowers these costs, freeing fiscal space for more productive uses.

3. Alignment with 'Least Cost' Principle

- By excluding air pollution benefits, the Commission risks overstating the marginal cost of ZEV incentives.
- Using Australian Government valuation settings:
    - Climate benefit from replacing a typical petrol passenger vehicle over 200,000 km is ~30 t CO_2-e avoided, worth ~$2,100 at a $70/t VER or $3,000 at $100/t.[4]
    - Urban air-pollution benefit (tailpipe noxious emissions only) from switching petrol → ZEV is ~A$2,280 per vehicle in June-2020 dollars; in June-2025 dollars this is ~A$2,820.[5]

---

[2] Exhaust health-cost derivation (~$1.75 b/year; range ~$0.38–3.12 b, 2025 A$)
Take DEC (2005) GMR annual health-cost range $1.01–8.44 b (2003$), inflate to 2025 A$ (ABS CPI), then apply 0.43 (vehicle share of exposure) × 0.48 (exhaust share) to obtain the exhaust-only portion. Midpoint illustration (following the approach used in subsequent summaries of DEC's figures): midpoint ~$4.7 b (2003$) → ~$8.48 b (2025 A$); then 8.48 × 0.43 × 0.48 ≈ $1.75 b. Proportional low/high give ~$0.38–3.12 b (2025 A$).
Sources: NSW DEC 2005, *Air Pollution Economics* (Table 6.3.1 for costs); ABS CPI (to convert 2003$ to 2025$); NSW EPA 2012 *AEI 2008 Technical Report 7* (exhaust vs non-exhaust split).

[3] National transport-related burden (~1,864 deaths/year)
Peer-reviewed: *Environmental Research* (2025) estimates 1,864 (95% CI 648–2,988) Australian deaths/year from traffic-related air pollution ($PM_{2·5}$ + NO_2), 2015 baseline.
Source: *Environmental Research* (2025), "The mortality burden attributable to $PM_{2·5}$ and NO_2 from all sources and traffic-related air pollution in Australia."

[4] Climate benefit calculation (CO_2 only): Average new passenger & SUV emissions intensity in Australia in 2023 was ~150 g CO_2/km. Using 200,000 km implies ~30 t. Using the AER's interim Value of Emissions Reduction (VER) gives $2,100 at $70/t (2024) and $3,000 at $100/t (≈ 2030 level $105/t). Sources: NTC emissions intensities (new = 150 g/km; fleet = 193.7 g/km) and AER VER table ($70/t in 2024; $75/t in 2025; $105/t in 2030; $420/t in 2050, all 2023 A$).

[5] Urban air-pollution benefit (noxious emissions): ATAP PV5 Table 5-22 (Australian data; June-2020 dollars) gives per-1,000 km parameter values for medium petrol car vs electric car in urban conditions: Air pollution (tailpipe only): Petrol A$12.4/1000 km vs Electric A$1.0/1000 km → Δ = A$11.4/1000 km. Over 200,000 km → A$2,280. The table also notes these are urban, noxious tailpipe emissions, and that climate change costs are reported separately. For provenance of the $/t link, PV5 explains climate costs are anchored to $60/t in the tables; the air-pollution figures are directly in A$ per 1000 km. 2025 indexation: CPI June-2020 = 114.4 (ABS) and June-2025 = 141.7 (ABS-sourced compilation), implying a factor ~1.24 → A$2,280 × 1.24 ≈ A$2,820.

- Together (petrol → ZEV): ~A$4.4k–$5.3k per vehicle (2020 A$) or ~A$4.9k–$5.8k (2025 A$).

Recommendations

1. Expand the definition of "emissions" in the Commission's final framework to explicitly include particulate matter, NO_x, SO_x, and other non-GHG pollutants from vehicles.
2. Quantify health and productivity benefits of reduced non-GHG emissions when assessing the cost-effectiveness of policies, including:
   - avoided mortality and morbidity,
   - reduced healthcare expenditure, and
   - productivity gains from a healthier workforce.
3. Integrate broader benefits into carbon value benchmarks by either:
   - upwardly adjusting the national carbon values to reflect ancillary benefits of ZEV adoption, or
   - developing a parallel "all-emissions abatement cost" metric that accounts for both GHG and non-GHG benefits.
4. Retain or restructure (rather than phase out) light vehicle incentives (FBT exemption, stamp duty/rego relief) as time-limited, technology-neutral mechanisms (e.g., feebates) until New Vehicle Efficiency Standard (NVES) trajectories are sufficiently stringent to deliver comparable outcomes and benefits are properly internalised.