





# Achieving Net-zero with Hydrogen-Powered Trucks in Western Australia

## Diesel Demand and Emission in WA Excluding Passenger Vehicles

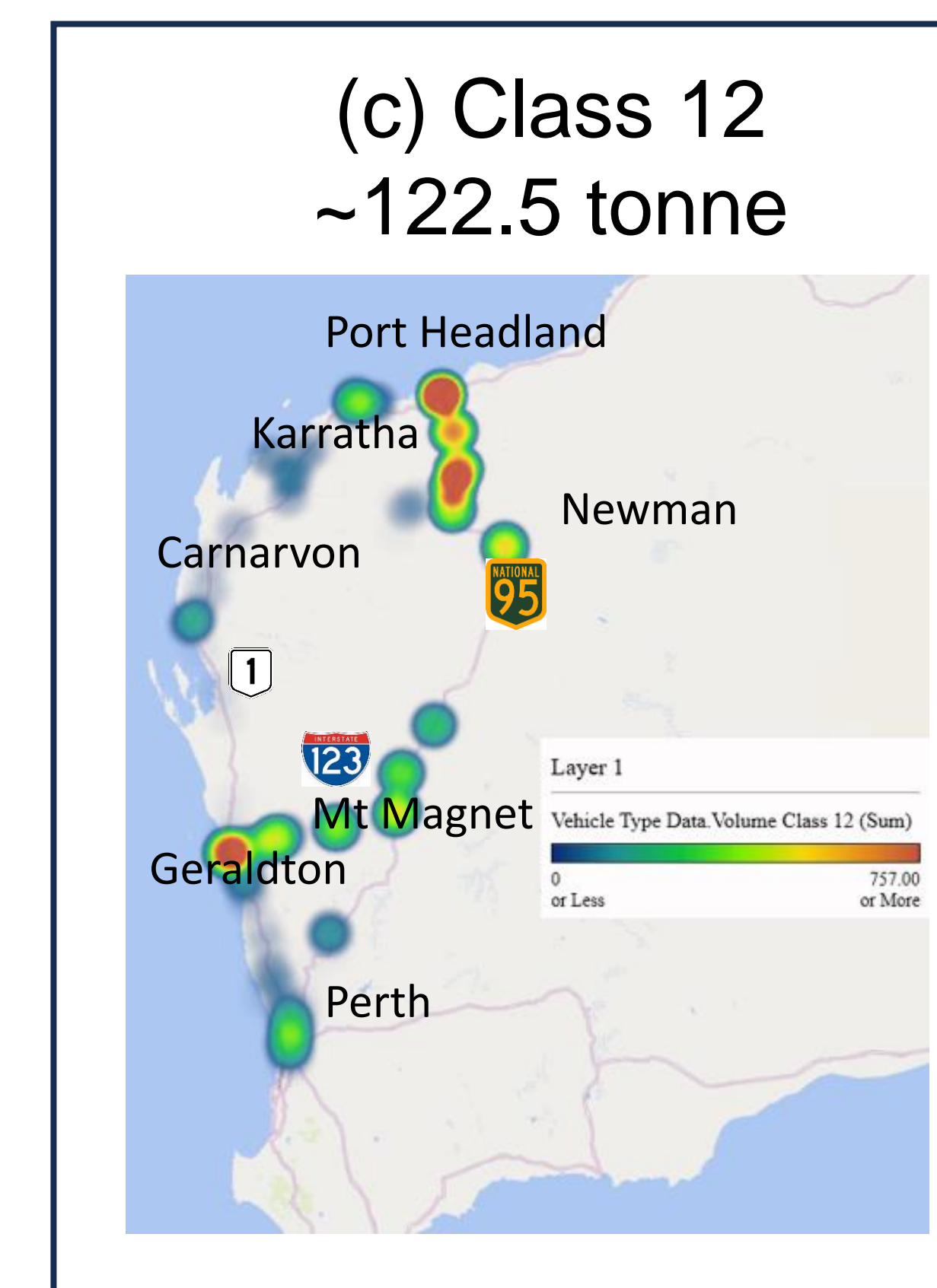
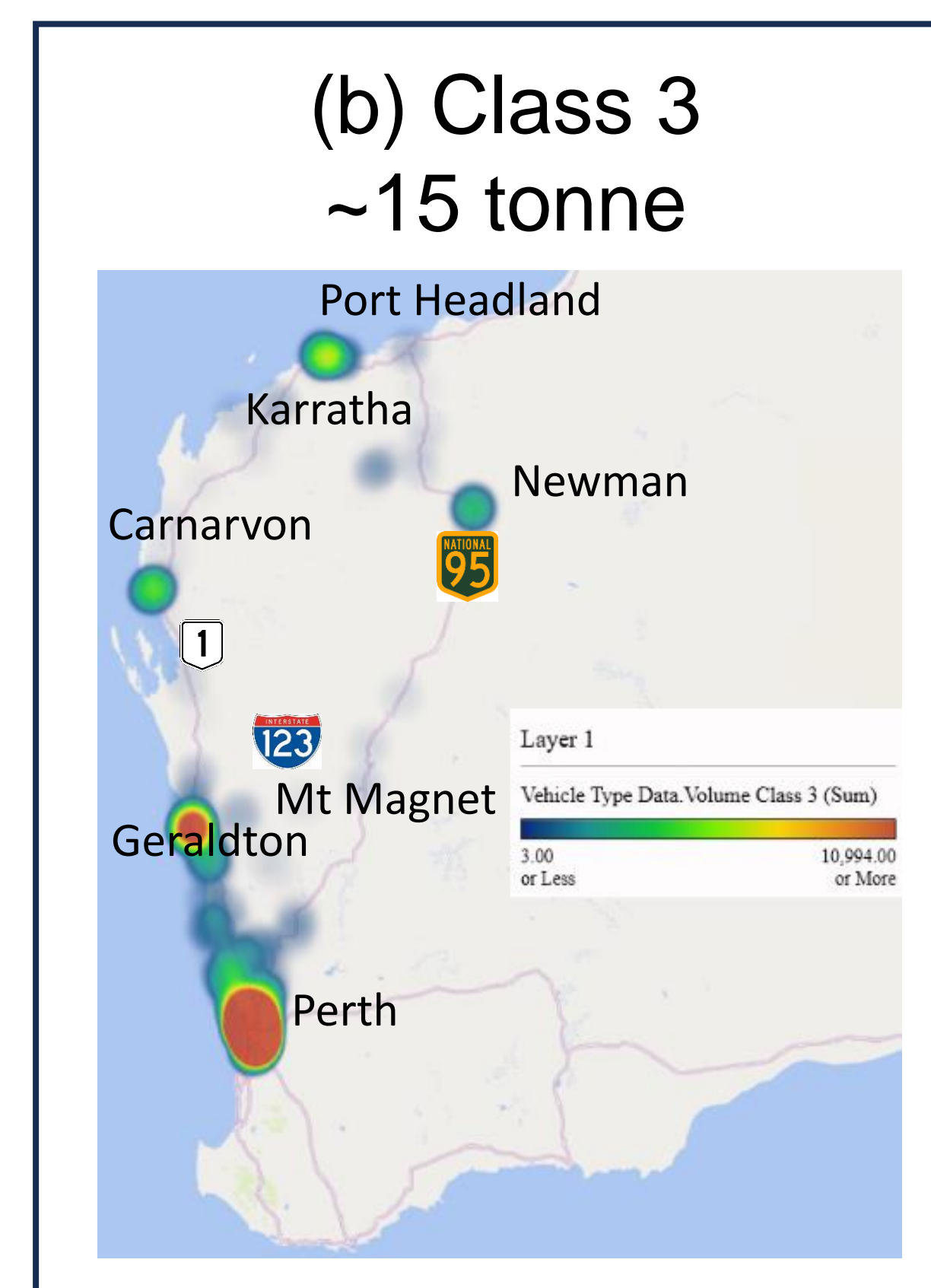
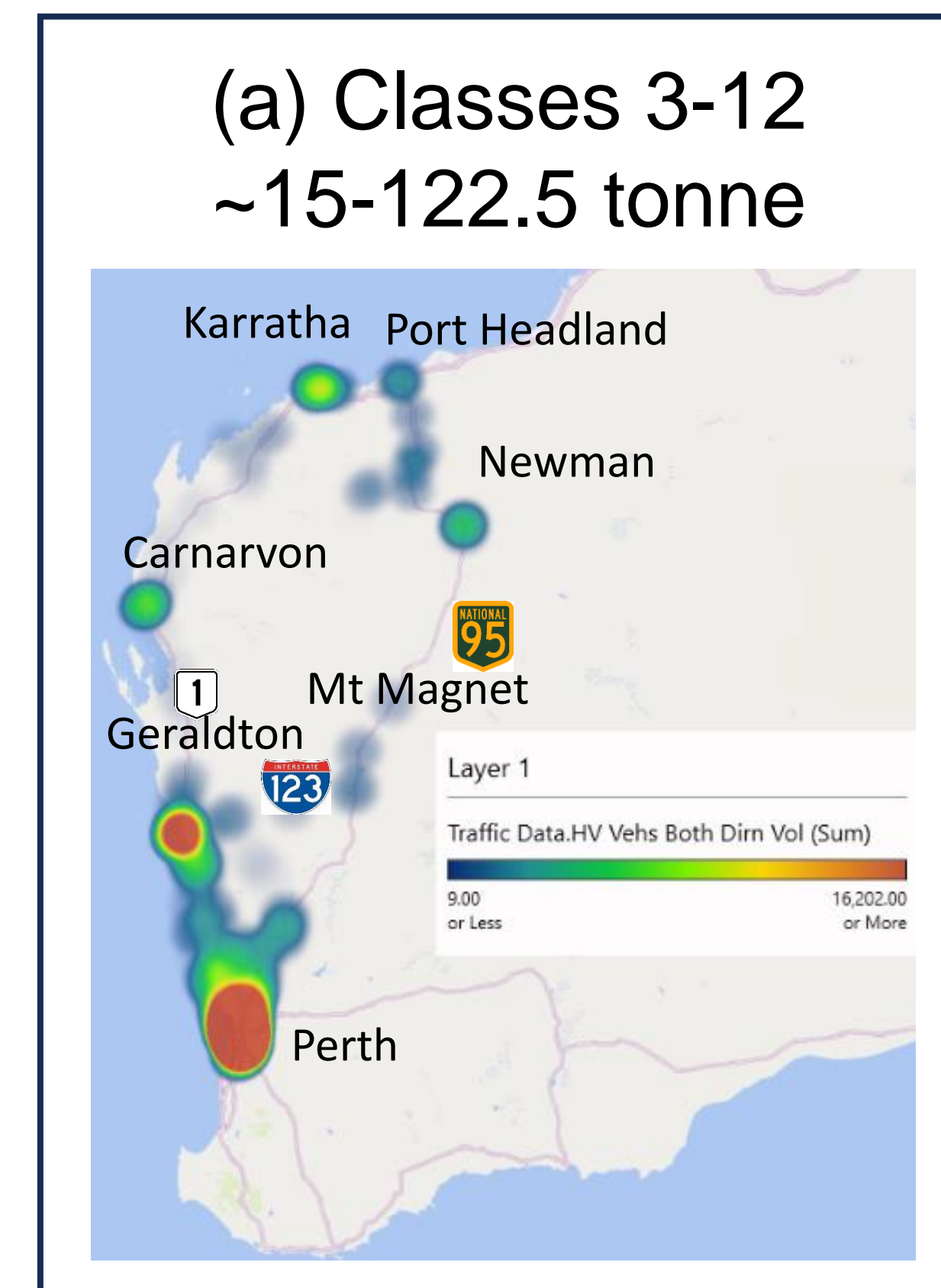
In WA diesel transport, excluding diesel cars, contributes to 4.7 M-tonne of greenhouse gas emissions annually:

- Articulated trucks make up only 4% of diesel vehicles, but they produce 38% of emissions. 95% of their distribution number has a gross vehicle mass between 40 and 60 tonne.
- Although Light Commercial Vehicles make up over 70% of diesel vehicles, they contribute to less than 40% of diesel emissions.

Major Diesel Vehicle Type				
	Light Commercial Vehicles	Rigid Trucks (Light + Heavy)	Articulated Trucks	Buses
Gross Vehicle Mass (tonne)	≤ 3.5	3.5-30	3.5-122.5	5.2-25
Class	1-2	2-7	2-12	2-4
Number Distribution	72%	18%	4%	3%
Emission (M-tonne/a)	2.2	0.9	1.8	0.2

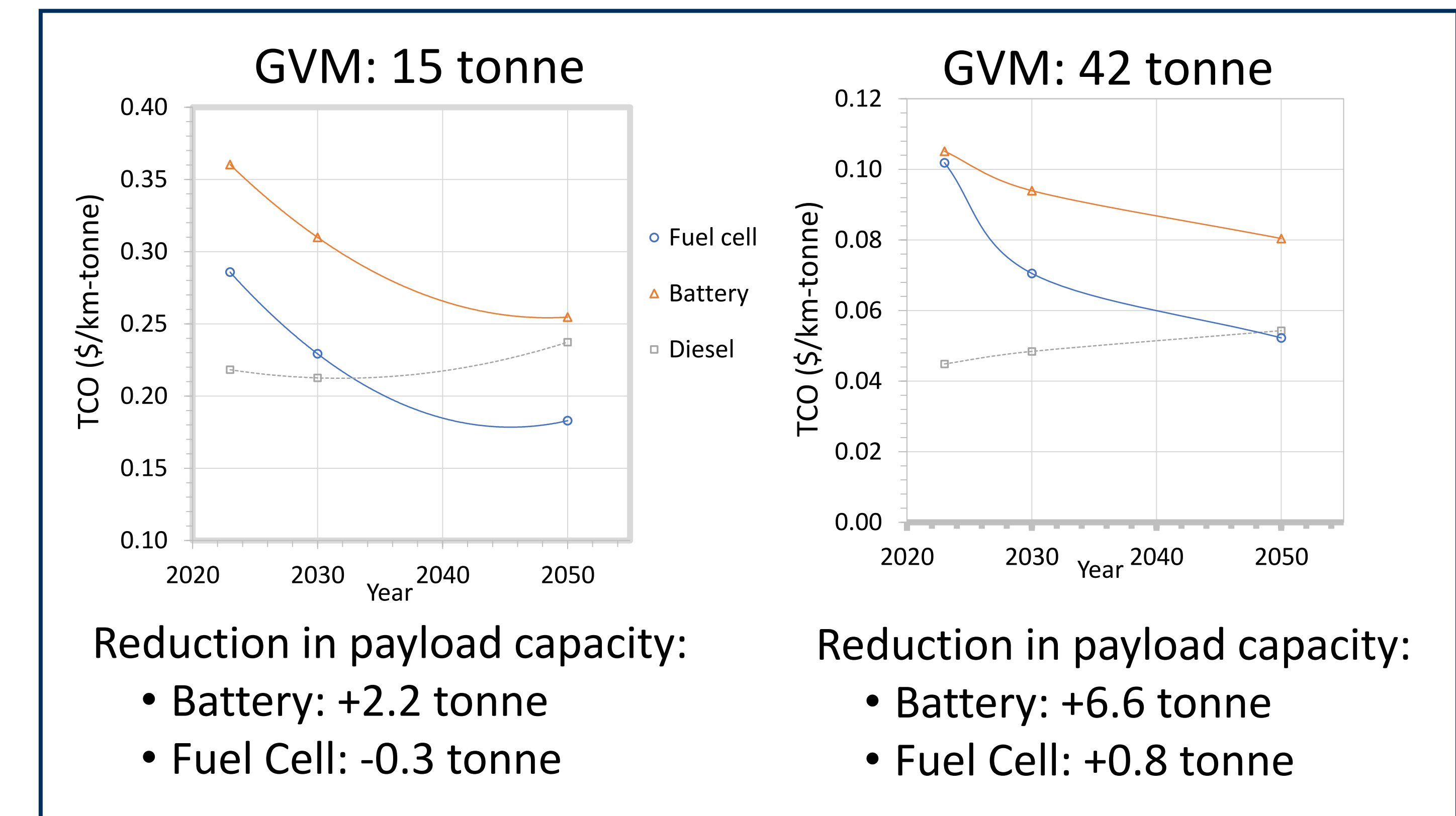
- A targeted approach according to vehicle class traffic could be used for estimating the most cost-effective way of refuelling or recharging locations and their capacity.
- Heavy Duty Vehicles range includes Class 3 to 12.

## Refuelling or Recharging Locations Demand Using Traffic Data



- High demand for hydrogen refuelling stations in Perth and Geraldton across all the truck classes.
- Class 3 trucks mainly commute around Perth and Geraldton on the southern part of Route 1.
- Class 12 trucks mainly travel on Route 123 and on the Pilbara region of Route 95.

## Hydrogen Trucks Are More Economical Compared to Electric Trucks



Forecast of the Total Cost of Ownership (TCO) for trucks with a weight of over 15 tonne, considering the reduction of payload by battery weight, shows that:

- Hydrogen trucks have a significantly lower TCO compared to electrical trucks.
- By 2050, hydrogen trucks will become cost-competitive with diesel.



Dr Pourandokht N Hudson | Dr Mauricio Di Lorenzo | Mr James Crisp | Prof. Craig Buckley

