

**Senate Select Committee on Electric Vehicles**  
**Questions on Notice**  
**Adelaide public hearing (Friday 10 August 2018)**

**Questions from Hansard – Hydrogen Mobility Australia**

Question No.	Asked by	Question
1.	Senator Kim Carr (p. 27)	<p><b>Senator KIM CARR:</b> Do you have any advice that you can give to the committee as to what the differences are that you just mentioned? Do you have any more specific information that you can provide us, even if it is on notice?</p> <p><b>Ms Johnson:</b> Sure. The efficiency of a fuel cell electric vehicle is about 40 to 60 per cent, through the fuel cell, which is far higher. We just mentioned that it is about double that of an internal combustion engine.</p> <p><b>Senator KIM CARR:</b> No, in terms of the difference between the hydrogen fuel cell and the lithium battery technology.</p> <p><b>Ms Johnson:</b> I'll take that on notice, as to the variances.</p>
2.	Senator Bushby (p. 30)	<p><b>Senator BUSHBY:</b> I guess what I'm really asking there is: is that the cost to the consumer, or does it reflect the cost of production? Are those few who will put in a facility to be able to supply hydrogen making good money out of that, or are they making a loss?</p> <p><b>Ms Johnson:</b> I probably couldn't comment on that directly. I'll have to take that on notice.</p>

Response to question 1:

Well to Wheel efficiency is the key measure of energy consumption; it is broken down into two key stages, Well to Tank, covering extraction of energy, refinement and distribution to vehicles, and Tank to Wheel, covering fuel consumption in the car. In the context of HMA's position that we will need a mix of fuels and powertrains in the future, chosen for different needs, the tank to wheel efficiency of a hydrogen fuel cell vehicle is less efficient however the characteristics of battery electric and fuel cell vehicles are very different meaning a comparison is ineffective.

Further, as the use of hydrogen releases no harmful emissions, any efficiency losses will not pollute the atmosphere. Therefore, the most important factor in the consideration of efficiencies is cost. If costs are price equivalent to comparable power sources, then the efficiency losses become irrelevant in the context of hydrogen use.

Response to question 2:

The deployment of hydrogen refuelling infrastructure is still an early developing market and in recognition of the important role hydrogen-powered transport can play in decarbonisation and fuel security, governments around the world are providing funding support to stimulate the growth of the sector initially. California, the leading market in this space, has committed up to \$20 million per year until 2023 to fund the first 100 refuelling stations. Currently, 36 stations are in operation and 28 additional stations have been funded.

In its 2018 annual evaluation of infrastructure deployment, the Government of California notes that the industry anticipates a transition away from government support and towards industry financial self-reliance indicating that the sector can be economically sustainable however public sector support is needed initially. This is also consistent with the findings of the CSIRO National Hydrogen Roadmap.