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Possible Scenarios of Energy Sources and Demand for the next 20 years.

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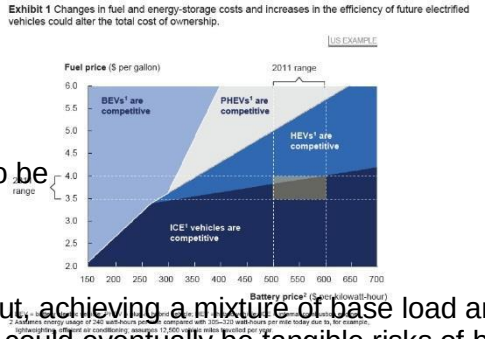
Abstract

This paper outlines some possible and likely events that could change the way Australia uses and supplies its energy, and government and organizational approaches required to achieve this. Also, some unique windows of opportunities also appear if we plan this transition properly. Our response to climate change, our increased air conditioning, ageing population, and increasing technology in transportation could all bring about profound shifts in our energy usage patterns. Solar and wind power costs are examined, in conjunction with developing battery and associated machine learning and artificial intelligence technology, along with the likely transition to autonomous and electric powered vehicles.

There is likely to be at least about 10-15 GW of installed capacity of PV solar cells on our grids by 2025, including the economics of western facing roof space. Wind power looks likely to add at least another 8-10 GW of installed capacity. Large scale energy storage economics looks to be a reality somewhere over the next 10 year period. Coal seam gas could play a very good flexible interim power role with lower carbon dioxide output, achieving a mixture of base load and second tier dynamic load. If not managed properly, there could eventually be tangible risks of being tempted to go "off the grid". This could occur just when we will need the diversity on the grid to provide power for a new age characterized by technology development. Our urban development will be affected by the way in which governments take the lead in this future.



Given the increasing trend in dynamics of supply and demand on our energy grid, it is time for governments and companies to make a workable energy policy and plan for three key areas. The first is a cohesive set of policies for CSG, renewables power levels, reliability, and reactive energy equivalent levels. The second is for development of a grid capacity suitable for renewables for the next fifty years. The third is to form a modern, modern technology energy storage equivalent of seven times the size of the Snowy Hydro project. It would need to be safe, able to add power in seconds, and be able to recharge more dynamically at different times in complement to using battery storage in homes, vehicles and dedicated locations. It will take international cooperation to achieve the basis of technology that will serve this vision. Social and urban planning strategies are outlined as well.

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