

Storage Costs: Pipelines vs BESS and PHES

As non-dispatchable energy continues to grow over the next decade, affordable and reliable energy storage will become a key driver of energy cost and security in Australia. Australia's existing gas pipeline network contains significantly more energy storage capacity than

all electricity storage in Australia, delivering flexibility to gas customers. Connection to even greater energy storage in underground gas storage facilities enables the gas market to ebb and flow between summer and winter, absorbing the majority of seasonal energy demand variation.

Energy storage in gas pipelines costs a fraction of the cost of electricity storage [1]. To understand whether pipeline infrastructure could continue to deliver lower cost energy storage than battery energy storage systems (BESS) and pumped hydro energy storage (PHES) into the future, APGA commissioned the Pipelines vs Powerlines study to consider these options in like for like scenarios [2]. This study demonstrated that it cost less to store energy in new natural gas or hydrogen pipelines than it cost to store energy in new BESS or PHES. Finding significantly lower cost energy storage options, especially for potentially renewable forms of energy such as hydrogen and biomethane, will make a significant impact on Australia's transition to a net-zero future. By using low-cost pipeline energy transport and storage, these renewable gas technologies can both compete with renewable electricity and complement it. Much the same as Australia's dual electricity and gas energy infrastructure presently combine to deliver least cost, reliable energy, a dual renewable electricity and renewable gas energy infrastructure can combine to deliver least cost, reliable and renewable energy into the future.

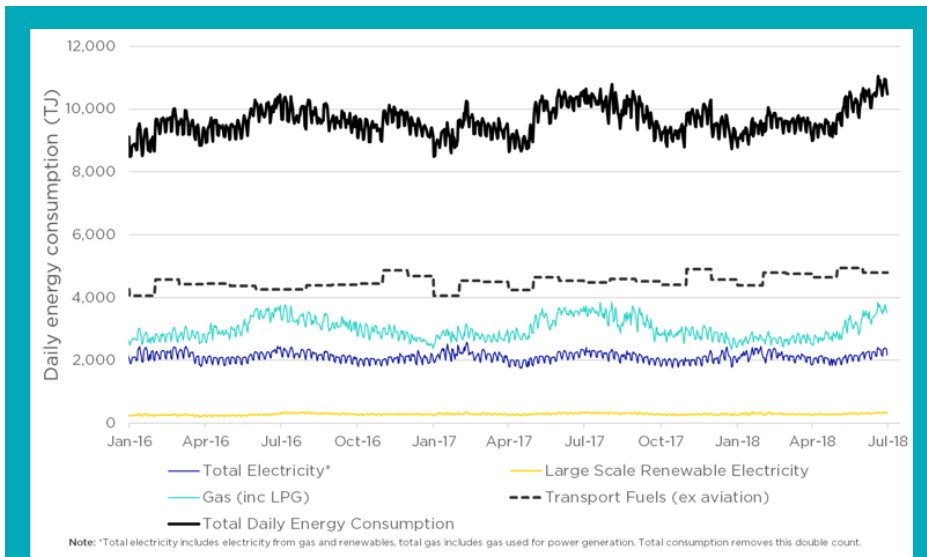


Figure 1: Australia's Daily Energy Consumption (2016 - 2018)

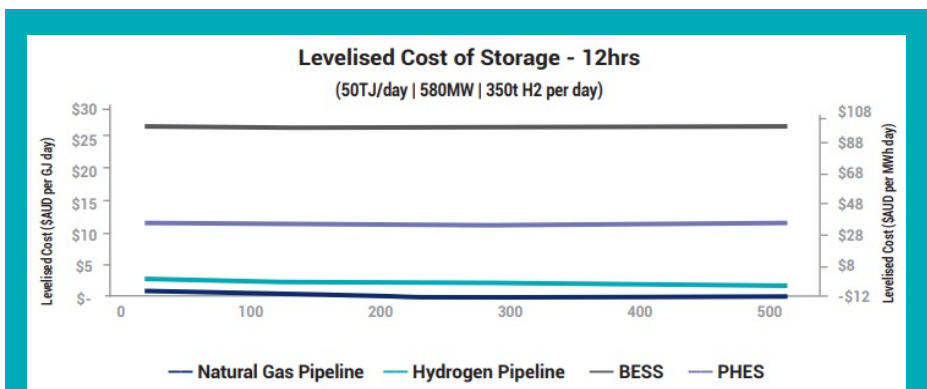


Figure 2: Levelised Cost of Storage - 12hrs (50TJ/day | 3350t H2 per day)

References:

- 1 Gas inquiry 2017-2025, Australian Competition & Consumer Commission 2022
<https://www.accc.gov.au/publications/serial-publications/gas-inquiry-2017-2025>
- 2 Pipelines vs Powerlines: a summary, Australian Pipelines and Gas Association 2022
https://www.apga.org.au/sites/default/files/uploaded-content/field_f_content_file/pipelines_vs_powerlines_-_a_summary.pdf

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