

**Senate Standing Committee on Environment and Communications
Legislation Committee**

Answers to questions on notice
Environment and Energy portfolio

Question No: 187
Hearing: Budget Estimates
Outcome: Outcome 2
Program: Energy Division (ED)
Topic: Battery storage costs
Hansard Page: 88
Question Date: 23 May 2017
Question Type: Spoken

Senator Moore asked:

Senator MOORE: I will go through my questions and see if they are relevant. We will certainly put questions to ARENA and CSIRO as well on the basis of the answer that you gave to that one. Can you provide estimates or ranges of estimates of battery storage costs, including projections into the future? Is that the kind of question that can be directed to you?

Mr Archer: Yes it is, but we will have to take it on notice.

Answer:

The June 2017 CSIRO Low Emissions Technology Roadmap estimates the Levelised Cost of Electricity (LCOE*) for utility-scale battery storage:

BATTERY (\$AUD/Megawatt hour)	2015	2020	2030
Lithium ion	230-280	160-200	120-140
Advanced lead-acid battery	960-1180	720-880	480-590
Flow Battery	590-720	390-480	180-210

The June 2017 CSIRO Low Emissions Technology Roadmap estimates the LCOE for behind-the-meter (e.g. household) battery storage:

BATTERY (\$AUD/Megawatt hour)	2015	2020	2030
Lithium ion	340-410	280-340	230-280
Advanced lead-acid battery	1160-1410	940-1150	710-870
Flow Battery	660-810	480-590	280-350

The CSIRO Low Emissions Technology Roadmap can be found at: www.csiro.au/letr.

* LCOE represents the cost of producing a quantity of energy without profit or other financial considerations and allows estimated comparison of the economics of energy generation technologies. However, LCOEs are limited in that they do not consider the value of the electricity provided. In the case of batteries, their value lies in being able to store energy and provide it to the market when required to match supply with demand.