

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

Answers to questions on notice
Environment and Energy portfolio

Question No: 227
Hearing: Additional Estimates
Outcome: Agency
Program: ARENA
Topic: Cost of various technologies
Hansard Page: 49
Question Date: 27 February 2017
Question Type: Spoken

Senator Chisholm asked:

Senator CHISHOLM: In terms of renewable energy, I am trying to get an understanding of the cost of the various technologies. This might be something that you want to take on notice, but would you be able to provide the best estimates of costs per technology basis?

Mr Frischknecht: The ones that are currently getting built are the ones that we have the best estimates of because we are in the marketplace and we see the wind and the solar projects getting built. To give you a sense, wind projects would be in the high \$60 range per megawatt hour and solar would be in the low to high \$80 range. That is what we are currently seeing. Other technologies are, of course, not getting built at commercial scale. We would be happy to provide you with estimates on notice if you would like to see, say, wave or geothermal technology estimates.

Answer:

Technology	2015 LCOE, \$/MWh	Source
Bio-Direct Injection Carbon Engine	70-85	CSIRO estimate
Wind	80-100	CO2CRC, 2015
Large-scale solar PV	80-120	ARENA 2016
Biomass direct combustion	110-140	BREE, 2013
Rooftop solar PV	120-150	CO2CRC, 2015
Biogas combustion	130-160	CO2CRC, 2015; Braun, Weiland & Wellinger
Geothermal	180-220	BREE, 2013; ARENA, 2014
CST tower	200-250	CO2CRC, 2015
Biomass gasification	200-250	CO2CRC, 2015; BREE, 2013
CST trough	290-350	BREE, 2013
CST linear Fresnel	300-370	BREE, 2013