Levelized Cost of Energy for Wind and Solar

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1 NREL

The data in this section comes from the National Renewable Energy Laboratory reports. The report on wind energy is from 2022 and the one on solar energy is from 2023. The table below presents the costs for a representative utility-scale solar power plant (above 100MW) and for an utility-scale, onshore wind power plant in the United States.

Table 1: NREL (2023) Data for Wind and Solar Technologies

Technology	Installation costs (dollars/W)	O&M costs (dollar/kW/year)	Lifetime (years)
Wind	1.75	41	20-25
Solar	1.16	16	25-35

2 IRENA

The data in this section comes from the International Renewable Energy Agency report 'Renewable Power Generation Costs in 2022'. The exposition in this report is not very systematic, so the exact figures were constructed differently for each entry. Specifically, the figures are: for wind installation costs, the weighted average for the 'Other South America' region (that is, South America minus Brazil); for wind O&M costs, the average for Brazil; for solar installation costs, the global weighted average, which is close to the value reported for Chile (0.888) and not too far from Brazil (0.747); and for solar O&M costs, the weighted average for South America.

Table 2: IRENA (2022) Data for Wind and Solar Technologies

Technology	Installation costs (dollars/W)	O&M costs (dollar/kW/year)	Lifetime (years)
Wind	1.31	23.5	25-30
Solar	0.876	7.3	25-40

3 LCOE

The table below displays the highest and lowest figures for the levelized cost of energy for both technologies. The highest number was constructed with the NREL data, taking

the lower bound of the lifetime range reported above, and using a 10% interest rate. The lowest was constructed with the IRENA data, taking the upper bound of the lifetime range, and using a 5% interest rate. I considered an yearly production of 3,570 MWh/MW/year for wind and 1,810 MWh/MW/year for solar. These numbers comes from averaging out the production factors used in MOP.

Table 3: IRENA (2022) Data for Wind and Solar Technologies

Technology	Lowest LCOE (dollars/MWh)	Highest LCOE (dollars/MWh)
Wind	30.1	69.1
Solar	32.2	79.4