Wind power potential of Baja California Sur, México

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Abstract

This work is an analysis of wind characteristics of Baja California Sur (BCS), México, during the period from February 1997 to February 1998. Fifteen wind stations located in the eastern coastal area recorded the wind speed and wind direction for this region. The wind resources of BCS were recorded and the annual average wind speed, power density, and annual energy density at 10 m above ground level are presented here.

We considered the wind data from El Cardón, BCS, as a case study. This location can be considered to be representative of the 15 wind stations that were installed in BCS. Using the Weibull probability density function, we estimated the wind energy output and the capacity factor for two different wind turbines during the year. The capacity factors for both wind turbines were estimated at close to 25%. Considering the wind energy output and the capacity factor, we estimated the levelized production costs for both wind turbines. Taking into account two different discount rates of 7% and 10%, we developed data for the levelized production cost of both wind turbines.

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