

Can solar power be generated on the slopes of a highway?

The theoretical and actual power generation of the PV system on the slopes of the selected highway section. Table A7. The assessment results of the solar power generation on the slopes of different highway segments (kWh).

Can highway tunnel segments receive solar energy?

Furthermore, highway tunnel segments cannot receive solar radiation. When calculating the total solar energy potential of highways, the solar energy received by tunnel segments should be subtracted to achieve a more precise solar energy potential estimate.

How can the assessment method be used for Highway PV power generation?

The assessment method could help with the estimation of the solar energy utilization potential of highway slopes and facilitate decision making and scheme selection in the planning and design stages of highway PV power generation system projects.

How do shaded areas affect solar energy potentials of PV highways?

The solar energy potentials of PV highways are influenced by shadow areas on the highway surface created by the surrounding terrain. In this study, a total of 615 paired blocks of DEM and highway data were used to calculate the hourly shaded areas of highways throughout China, as described in Section 3.2.

How to calculate the annual solar energy potential of Chinese highways?

The annual solar energy potential of the entire Chinese highway is obtained by summing the annual solar radiation potential of the 615 blocks based on the above method. Fig. 9 shows the distribution of the annual solar energy potential of Chinese highways in cities at the prefecture-level. Fig. 9.

What is the power generation potential of the highway section?

The overall annual power generation potential of the highway section was found to be 3,896,061.68 kWh. Conceptualization, A.S. and L.H.; methodology, Z.H.; software, W.Z.; validation, Z.H., W.Z., and R.W.; formal analysis, Z.H.; investigation, W.Z.; resources, A.S. and L.H.; writing--original draft preparation, W.Z.; writing--review and editing, Z.H.

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