

Solar power generation and highways



Overview

Roadside solar farms are an innovative approach to renewable energy deployment that utilizes the network of highway medians, shoulders, embankments, and adjacent right-of-way lands to generate clean electricity. The United States maintains over 4 million miles of roadways, with approximately 223,000 miles dedicated to interstate and national highways. These corridors include thousands of square miles of medians, shoulders, and adjacent land that currently serve little purpose beyond separating traffic and . Covering the world's highways with solar panels would reduce carbon emissions, bolster energy production, and improve safety for drivers. (Image courtesy of Alex Kalinin, Unsplash) By Kayt Sukel While taking the bus home from work one day, Hou Jiang, Ph. Solar installation at Exit 14 of Interstate 85 in LaGrange, GA. Solar-powered highways represent one of the most ambitious innovations in sustainable transportation infrastructure, transforming our vast network of roads into clean energy . The solar photovoltaic (PV) power generation system (PGS) is a viable alternative to fossil fuels for the provision of power for infrastructure and vehicles, reducing greenhouse gas emissions and enhancing the sustainability of road transport systems. A highway slope is generally an idle public . California could generate enough electricity to power 270,000 homes by putting solar panels in the empty land next to highway interchanges in just 3 Southern California counties, according to a new report released today by Environment California and The Ray.

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Why putting solar panels beside highways is a no-brainer

California could generate enough electricity to power 270,000 homes by putting solar panels in the empty land next to highway interchanges in just 3 Southern California counties,

Solar power alongside California's highways

A 2020 research report commissioned by Caltrans provides guidance for installing solar generation facilities in its right-of-way and analyzes best practices, which can help California take



Turning Roadsides into Solar Farms (2026) , 8MSolar

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The Potential of Solar Roadways

Through energy generation, improved infrastructure sustainability, and technological innovation, solar roadways offer a viable solution for addressing energy and transportation challenges.





[Assessing the Photovoltaic Power Generation Potential of Highway](#)

To address these problems, this study aims to establish an assessment method for the PV generation potential of highway slopes based on the design or measured geometric parameters of

[Solar Highways Are Transforming Transportation: Here's What You](#)

Solar-powered highways utilize advanced collection and energy storage systems to harness and distribute solar power effectively. The collection process begins with specially designed



Solar-Powered Smart Roads: Revolutionizing Transportation

This section examines how solar highways generate electricity by using solar energy, as well as how they assist electric vehicles and feed energy into the grid.

Solar Roads: Turning Highways into Power Generators - Damien

By embedding solar panels into highways, we could transform our road networks into sprawling power plants. This concept offers a dual benefit: supporting traffic while generating clean



Solar panels atop highways could redefine the word 'sunroof'

Covering highways with solar panel roofs could offer significant benefits in terms of safety and

carbon emission reductions, a new analysis suggests.

Enhancing solar energy generation utilization along highways

Utilizing solar energy resources to replenish electricity in electric vehicles (EVs) is gaining increasing attention on low-carbon highways. Currently, the primary methods for EV power



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