Charging Solutions for Off-Road Equipment

Background

Moving toward using zero-emission off-road equipment (ZE ORE) can help reduce emissions and improve air quality in California. The lack of charging infrastructure in remote locations is currently making the adoption of ZE OREs for off-road activities complicated.

Manufacturers have developed alternative charging solutions (ACS) like batteries and solar-powered systems to charge ZE ORE anywhere. It is still unclear if ACS can meet charging demand and be made affordable.

Main Question: Are there cost-effective and available ACS for ZE ORE used in rural areas?

Key Research Plans

Researchers will examine several parameters of using ACS, such as the amount of energy required, the potential for reducing emissions, and how much it costs to operate. They will address challenges to using ZE ORE in remote locations that lack permanent charging stations. Researchers will collect ORE and ACS operational data, develop a model for ACS costs and benefits using multiple scenarios, and evaluate the electrification potential of ORE in disadvantaged communities.

Expected Impacts

Results will be used to develop electrification strategies for the off-road sector, which will help guide California's transition to using cleaner equipment and achieve the state's emission reduction goals.

More Information

This project is led by Kanok Boriboonsomsin from the University of California, Riverside. Contract 24RD009. Please visit our website or contact us by e-mail.

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