

BOARD MEETING DATE: August 7, 2026

AGENDA NO. 6

PROPOSAL: Execute Contract to Demonstrate Bi-Directional Charging and Grid Resiliency Through Mobile Battery Energy Storage Systems

SYNOPSIS: Mobile battery energy storage systems can provide flexible zero-emission power to reduce peak demand, provide power to areas with no grid power, or serve as temporary power solutions. This action is to execute a contract with the University of California, Riverside College of Engineering - Center for Environmental Research and Technology to demonstrate bi-directional charging and grid resiliency using a mobile battery energy storage system, in an amount not to exceed \$300,000 from the Clean Fuels Program Fund (31).

COMMITTEE: Technology, June 26, 2026; Recommended for Approval

RECOMMENDED ACTION:

Authorize the Executive Officer to execute a contract with the University of California, Riverside College of Engineering - Center for Environmental Research and Technology (UCR/CE-CERT) to demonstrate bi-directional charging and grid resiliency through mobile battery energy storage systems, in an amount not to exceed \$300,000 from the Clean Fuels Program Fund (31).

Wayne Natri.
Executive Officer

AK:MW:VP:SC:HL

Background

The transition to battery electric equipment and heavy-duty electric vehicles is increasingly constrained by inadequate charging infrastructure, utility interconnection delays, and limited electrical grid capacity. Commercial fleets are limited by insufficient depot charging capacity and the lack of widely available heavy-duty public charging stations. Similarly, battery electric equipment that

operates at temporary sites typically have no access to the electrical grid. To address these limitations, such sites sometimes rely on diesel generators for supplemental or off-grid charging, which can undermine the emissions benefits of zero-emission technologies. In addition, California's electrical grid is facing increasing strain from transportation electrification, data centers, and climate driven events such as wildfires and extreme heat. Localized, small-scale distributed energy storage solutions can enhance grid resiliency, better utilize onsite solar electricity, and help balance electrical demand.

Mobile battery energy storage systems (MBESS) may provide quick charging solutions by providing flexible onsite electrical loads. MBESS can provide off-grid charging capability while also enhancing microgrids and supporting distribution networks through energy storage, peak shaving, and vehicle-to-grid applications.

Proposal

UCR/CE-CERT proposes to leverage its existing microgrid and MBESS platform to further evaluate the capability, cost-effectiveness, and environmental impacts of an MBESS as both an alternative off-grid charging solution and a distributed energy resource integrated with UCR/CE-CERT's microgrid.

For the microgrid integration, UCR/CE-CERT was awarded \$292,736 through the CEC's EnergiIZE infrastructure incentive program to establish a new public EV charging station at its facility. The station will consist of two Level 3 bidirectional DC fast chargers and six Level 2 chargers capable of supporting Class 2b through Class 4 electric trucks. Funding from South Coast AQMD will support construction activities, Vehicle-to-Everything (V2X) energy management capabilities, and connection of the MBESS to the charging network to help facilitate charging utilizing onsite solar as much as possible.

To demonstrate the MBESS's V2X capabilities, UCR/CE-CERT will modify the existing MBESS with a universal EV charger controller and charging port, allowing the unit to mimic the electrical profile of a medium-duty electric vehicle, and recharge using existing DC fast charging infrastructure. This modification will enable V2X research by interfacing with UCR/CE-CERT's bi-directional chargers to test grid stabilization, peak shaving, and energy arbitrage strategies. In addition, UCR/CE-CERT will add two DC fast chargers to the MBESS, enabling it to serve as a mobile Level 3 DC fast charging station for off-grid charging research. UCR/CE-CERT is requesting \$300,000 from South Coast AQMD to accomplish the research goals in this proposal.

Sole Source Justification

Section VIII.B.2 of the Procurement Policy and Procedure identifies four major provisions under which a sole source award may be justified. This request for sole source award is made under provision B.2.d.: Other circumstances exist which in the determination of the Executive Officer require such waiver in the best interests of the South Coast AQMD. Specifically, these circumstances are B.2.d.(8): Research and development efforts with educational institutions or nonprofit organizations.

The request for sole source award is also made under provision B.2.d.(1): Project involving cost-sharing by multiple sponsors. The proposed project includes CEC awards contributed to the hardware of the MBESS and the bi-directional chargers which allows for this unique opportunity for the proposed research work.

Benefits to South Coast AQMD

Projects supporting the development and demonstration of Medium- and Heavy-Duty zero-emission vehicle technologies and supporting infrastructure are included in the Technology Advancement Office Clean Fuels Program 2026 Plan Update under the Zero Emission Infrastructure category, including the effort to “Develop and Demonstrate Innovative Charging Solutions for Grid Support.” This project will include a cost benefit analysis of an MBESS compared to alternative off-grid charging solutions. It will also demonstrate the dual-purpose capabilities of the modified BESS by conducting vehicle-to-grid experiments to support grid resiliency. Implementation of this project is consistent with the 2022 AQMP, which relies on the transition to Medium- and Heavy-Duty zero-emission vehicle technologies to help achieve the NAAQS for ozone and PM2.5 in the South Coast Air Basin.

Resource Impacts

South Coast AQMD’s support for advancing electrification and grid resiliency through MBESS with UCR/CE-CERT shall not exceed \$300,000 from the Clean Fuels Program Fund (31).

Sufficient funds are available from the Clean Fuels Program Fund (31), established as a special revenue fund resulting from the state-mandated Clean Fuels Program. The Clean Fuels Program, under Health and Safety Code Sections 40448.5 and 40512 and Vehicle Code Section 9250.11, establishes mechanisms to collect revenues from mobile sources to support projects to increase the utilization of clean fuels, including the development of the necessary advanced enabling technologies. Funds collected from motor vehicles are restricted, by statute, to be used for projects and program activities related to mobile sources that support the objectives of the Clean Fuels Program.