



May 11th, 2017

Valley Transportation Authority to Pilot Advanced Electric Bus Systems
Project funded by \$2M California Energy Commission grant will integrate electric buses with grid services to reduce grid impacts and generate revenue

San Jose, CA – The California Energy Commission awarded nearly \$2 million to Prospect Silicon Valley and an innovative Silicon Valley collaborative including the [Santa Clara Valley Transportation Authority \(VTA\)](#) to research, develop and demonstrate an advanced energy management and grid services system for electric transit bus fleets. As public transit agencies across the country move toward adoption of Zero Emission vehicles this project will optimize performance of the new technology and minimize stress on the state electric grid. Developing vehicle-grid integration (VGI) strategies will advance the state’s goal of reaching 1.5 million zero emission vehicles (ZEVs) on California’s roadways by 2025, as well as its goal of having 50 percent of state electricity generated from renewable resources by 2030. The advanced energy management system that will be developed with this funding will reduce costs for charging electric buses, minimize the impact of bus charging on the grid, and provide valuable services that assist the integration of intermittent renewables like solar and wind. The project will serve as a major case study for transit agencies throughout the country.

[Prospect Silicon Valley](#) and VTA are partnering on this project with national and regional leaders in advanced electric bus, vehicle charging, and energy management systems including Proterra, KisenSum, The U.S. Department of Energy’s Renewable Energy Lab (NREL), Cisco Systems, CALSTART, Energy Solutions, EV Alliance, and NOVA Workforce Development. The four-year “Advanced Transit Bus VGI” project will be closely followed by transit industry and other transportation providers, as they begin planning for their own fleet transitions. The project will apply integrated systems to reduce charging costs through demand management, demand response, and wholesale ancillary services such as frequency regulation through unidirectional charging control. These features will be integrated with commercial fleet management tools for the first fully integrated energy management in a heavy-duty fleet.

Currently, VTA plans to start using 5 electric buses in revenue service in late 2017, expanding the fleet to 35 over the next 2 years. VTA has acquired innovative smart networked charging stations, which will provide the foundation for the Advanced Transit Bus VGI project. VTA will provide engineering services, fleet management requirements, in field testing, and collection of charging/energy usage data from the fleet. Working with its Cleaver Devices VTA dispatch software provider, VTA will be updating the dispatch software to improve EV fleet management, and coordinating with PG&E on rate usage and interaction with the VTA one megawatt solar installation. “This project will provide a critical cornerstone towards moving our entire fleet to zero emission vehicles,” says Nuria Fernandez, CEO for VTA, “and we are excited to be partnering with nationally recognized industry experts on this important project that will advance the state’s strategic electrification goals.”

Specific project benefits include:

- **Lower costs:** The project will lower costs for transit agencies and utilities by shifting power demand and providing revenue from grid services.
- **Environmental and health benefits:** Supporting the transition to cleaner transportation, reducing greenhouse gases and criteria pollutants, including in underserved communities.
- **Energy security:** Reducing exposure to the volatile price fluctuations of petroleum and allowing for domestic production of the vehicle feedstock (i.e., electricity).

ProspectSV is leading the project, providing strategic management, partnership development and knowledge transfer activities. "Through our expertise supporting innovators in electric vehicle and advanced energy systems, we will introduce innovative technologies for achieving the project goals and bring the best-practices to the transit community," says Ruth Cox, CEO of ProspectSV.

Kisensum will enhance their existing electric vehicle energy services management software to support VTA's needs. "This project is exciting on several levels. As a demonstration project it will show that electric bus VGI can be a reality at scale. This project will build on the existing rich feature set of Kisensum's software," says Clay Collier, CEO.

Additionally, the Principal Engineer from Cisco, Ashok Moghe, says, "Reliable and secure communication is crucial to many IoT applications, including Advanced Vehicle Grid Integration. We look forward to participating and contributing the networking technology for multi-cloud connectivity, supporting smart grid and analytics applications in the cloud."

NREL will apply their deep expertise spearheading the research, development and deployment needed to put sustainable transportation solutions on the road by providing advanced analytics on the optimal energy services to target and potential revenues for VTA based on VTA bus utilization. In addition, NREL will provide an analysis of the opportunity of VGI for transit agencies across the state. "This project presents a great opportunity to develop deep analytics on the opportunities for VGI across the state, and the value they can provide to the California grid as it seeks to accommodate more wind and solar energy in the future." says Bryan Hannegan, NREL Associate Laboratory Director for Energy Systems Integration.

Transit buses provide a unique opportunity to address key challenges in California's energy and grid goals. Electric transit buses prospectively provide unusually large, unified and aggregated distributed energy resource. Currently single commercial electric bus batteries have a capacity of as much as 660 kWh and are charged at least 100 kW with capacities increasing for both. California has over 21,000 public transit buses and full electrification of the public transit bus fleet could yield 10 GWh of capacity and over 2 GW of rapid grid serving power.

###

About ProspectSV

ProspectSV is a non-profit urbantech innovation hub focused on solutions for smarter, cleaner communities. We bring government, corporations and academia together with start-ups, product teams and expert staff to accelerate innovations in transportation, energy and the built environment. ProspectSV provides a full spectrum of commercialization support including market and technical insight, connections to partners and investors, pilot opportunities as well as access to a \$12 million, 23,000 sq. ft. Technology Demonstration Center with working and industrial space, lab facilities and specialized equipment. In partnership with state and local governments, ProspectSV demonstrates and scales leading edge solutions. With projects in over 50 cities, leveraging over \$90

million in funding and financing, and with more than 25 corporate sponsors, ProspectSV is the only organization with the ability to both prove and apply solutions for next generation cities. For more information visit prospectsv.org.

About Valley Transportation Authority

Santa Clara Valley Transportation Authority (VTA) is an independent special district that provides sustainable, accessible, community-focused transportation options that are innovative, environmentally responsible, and promote the vitality of our region. VTA is responsible for bus, light rail and paratransit operations and also serves as the county's congestion management agency. As such, VTA is responsible for countywide transportation planning, including congestion management issues, specific highway improvement projects, pedestrian and bicycle improvement projects, and provides these services throughout the county, including the municipalities of Campbell, Cupertino, Gilroy, Los Altos, Los Altos Hills, Los Gatos, Milpitas, Monte Sereno, Morgan Hill, Mountain View, Palo Alto, San Jose, Santa Clara, Saratoga and Sunnyvale. VTA continually builds partnerships to deliver transportation solutions that meet the evolving mobility needs of Santa Clara County. For more information, visit www.vta.org.

About Kisensum

Kisensum develops software solutions for stationary energy storage systems, microgrids and electric vehicle charging systems. Leveraging their innovative work at the Los Angeles Air Force Base's Vehicle to Grid project, Kisensum has implemented a number of projects optimizing storage, grid services and controllable loads. Current customers include, EVgo, LA Air Force Base, Andrews Air Force Base, Stanford Linear Accelerator, Pacific Northwest Laboratory and Alameda County Clean Fleet. To learn more, please visit www.kisensum.com.