# Sustainable Acquisition Success Story

## Operations Spotlight on Lawrence Livermore National Lab

## LLNL Vehicles Go Electric

In December 2021, President Joe Biden issued Executive Order (E.O.) 14057 mandating that all Federal fleet vehicle acquisitions be comprised of 100% zero emission vehicles by 2035. Even though 14 years seems like a long time for Federal sites to make this transition, there are numerous hurdles to overcome to meet this goal. Lawrence Livermore National Lab (LLNL), located in Livermore, California, has a proven program that other Federal fleets can learn from during this period of transition.

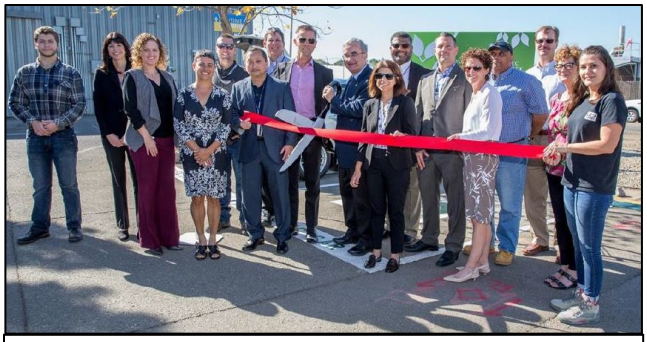
LLNL – New Charging Station

LLNL is well positioned to meet the E.O.'s goal of 100% zero emission vehicle acquisitions by 2035 based on the existing electric vehicle (EV) program it established over eight years ago. LLNL began an EV program in 2014, in the form of a personal electric vehicle (PEV) charging program, in response to an increase in employees driving EVs to and from work. This phase involved the installation of 37 Level I EV Charge Stations which allowed EV users to recharge their vehicle for a fee.

The Department of Energy (DOE) recognized LLNL's successful PEV charging program and determined that LLNL would be a perfect site to pilot an Electric Fleet program. The proposal was to introduce a fleet of 10 government owned EVs, replacing 10 gas-powered vehicles, with a commitment to incrementally replace its fleet of 80 sedans with EVs. DOE Headquarters Fleet Manager, Dante Tan, announced that DOE would continue to provide the laboratory with an additional 10 EV vehicles per year, along with a commitment to build more Level II chargers, which are faster and more efficient than Level I chargers.

In October 2017, LLNL completed construction of a new ChargePoint charging station that can recharge vehicles in half the time as standard Level I chargers. In addition, the Lab purchased two Envision Solar portable innovator charging stations. These units provide a clean, green, impact-free charging system for both government owned and employee personal vehicles in LLNL's EV program. By June 2018, the site had acquired 20 additional EVs for its fleet, were in the process of adding four Level II charging stations and had 54 employees enrolled in the PEV program.

LLNL is leveraging the data collection capabilities of its EV technologies to measure and improve performance. The ChargePoint Level II charging stations collect data while charging, including energy



LLNL – Celebration of new charging stations in 2019

use, avoided GHG emissions, station utilization, session duration, and more. The Envision Solar portable charging stations provide real time data as well as a monthly breakdown of energy produced and energy output for vehicle charging. In addition, the government-owned Ford Focus EVs allow the fleet division to have real time access to vehicle information to help manage charging, locate vehicles, track kilowatt hours used, EV miles, fuel economy, pounds of carbon dioxide and gallons of gasoline reduced. By the end of 2018, LLNL had reduced 1.3 metric tons of GHGs per year from its EV Fleet and PEV programs and achieved over $1,500 in fuel cost savings for its government owned fleet vehicles. LLNL's personal and fleet EV programs have led to a reduction of an estimated 345 metric tons of carbon dioxide equivalent of greenhouse gases (GHG) per year, which will only increase as the program expands.

As of 2022, LLNL has 30 EVs and 6 plug in hybrid electric vehicles (PHEVs) in use, which means it has replaced 45% of its original fleet of 80 gas powered sedans. LLNL is committed to replacing the remaining 55% of the gas-powered sedan fleet with zero emission vehicles to the extent the market availability allows.

The continued expansion of LLNL's EV charging capacity helps reduce the site's Scope 3 GHG emissions, over half of which are from employee PEVs. The 88 charging stations, a mix of Level I, Level II, and solar charging stations, allow more employees to join the PEV program, which in turn incentivizes them to switch to PHEVs or EVs. As more employees make the switch, they in turn reduce LLNL's Scope 3 GHG emissions attributable to employee commuting.

LLNL – Envision Solar Portable Solar charging stations

Today, there are over 100 employees enrolled in the LLNL's PEV program and close to 300 employees on the PEV program waitlist, as demand has scaled faster than the program has been able to accommodate. Currently, a working group is addressing this challenge. Over the next 6-12 months, the group's mission is to determine the true demand of the program and how to best meet the projected increase.

Challenges LLNL faces for its fleet include a limited supply of EVs and PHEVs on the market. Another challenge, faced by most sites responding to E.O. 14057, is the capacity of its infrastructure and power grid. To have a successful and robust EV fleet program, sites need to have the appropriate infrastructure in place to accommodate it. LLNL completed a 5-year EV infrastructure plan in Fiscal Year 2022 that identified over 1200 possible charging spaces. This plan will provide LLNL with a better understanding of how many charging stations the site needs, costs associated with installing new charging stations, and the impact to LLNLs power demands to support this infrastructure. By addressing these issues, LLNL will be well on its way to not only meeting the Federal goal of 100% EV acquisitions by 2035, but also in supporting staff who want to transition to EVs.

## Keys to Success

**Challenge**

- How to comply with Executive Order 14057 by 2035
- How to support the growing population of employees switching to electric vehicles

**Solution**

- Install charging stations
- Incrementally replace current gas-powered fleet vehicles with electric vehicles
- Evaluate site power grid capabilities and potential growth to accommodate charging the growing government owned and personal electric vehicles

**Results/Benefits**

- 36 electric vehicles in the Fleet
- 88 onsite charging stations
- Over 100 employees in the personal electric vehicles program and over 300 more on the program waiting list
- Estimated over 345 MTCO2e saved per year
- Over $1,500 in cost savings per year

**Key Stakeholders**

Lawrence Livermore National Laboratory (LLNL), LLNL Employees, DOE Headquarters Fleet Management Department.

**Site Contact**

Asset Management Department

Christa Ormonde (ormonde1@llnl.gov)

Heather Ottaway (ottaway1@llnl.gov)