Data-driven Procurement

The Colorado Energy Office (CEO) and the Department of Personnel and Administration (DPA) engaged Sawatch Labs in June 2018 to analyze state vehicles approved for replacement in the FY19 vehicle procurement cycle. The State wanted to identify which vehicles would be good candidates for replacement with electric vehicles (EVs) to achieve the goal of 200 EVs deployed in the state fleet by 2020 as established in the 2018 Colorado Electric Vehicle Plan.

ezEV Recommendations

13 Nissan Leafs

21 Chevy Bolts

Lifetime Savings Estimate
$100,000+

ezEV Analytics

Sawatch Labs used its ezEV analytics platform to assess the driving patterns of 57 vehicles across 7 state agencies using Geotab telematics — data collected using GPS and onboard diagnostics. The ezEV analysis allows Sawatch Labs to determine how an EV would perform following the same driving patterns as the existing vehicle. Each vehicle received an ezEV score based on its suitability to be replaced with an EV. The ezEV score is a composite score based on more than 170 attributes which are calculated from tens of thousands of data points per vehicle.

Enough Data	Energy	Overall	Parking	Economics
100	95	97	85	100
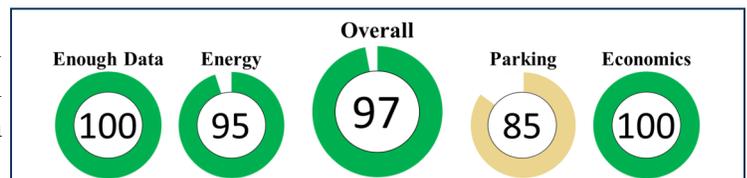
There were 34 good candidates for replacement with a battery electric vehicle (BEV) and 14 for replacement with a plug-in hybrid electric vehicle (PHEV). For each vehicle identified as a good BEV candidate, Sawatch Labs recommended the specific model that would be the best fit and provided the estimated financial and environmental impacts of replacing the vehicle. If the agencies implement the 34 BEV recommendations, they can expect to save more than $100,000 over the lifetime of those vehicles.

The remaining 9 vehicles were not good fits for EVs. Some vehicles looked like good candidates at a high-level but had too many days where their driving would exceed the battery capacity and require midday charging. Others were identified as fringe cases where shifting a few long trips to another vehicle would then make that vehicle a perfect candidate for an EV.

Dept. of Agriculture

Dept. of Corrections

Dept. of Human Services

Dept. of Public Health and Environment

Dept. of Revenue

Judicial Branch

Office of the Attorney General

EV Recommendations in Context

Telematics is just one component of understanding which vehicles are good use cases for EVs. Input from fleet managers and drivers is imperative to understand additional demands on the vehicle, including:

- Cargo needs
- Passenger capacity
- Towing demands

- Feasibility for installing chargers
- Unique operational requirements
- Other motor pool vehicle availability

After completing the ezEV Analysis, CEO, DPA, and Sawatch Labs staff met with representatives from each agency to discuss the results and learn from the agencies about any specific requirements for each of the vehicles. For example, Department of Corrections staff explained that a few of their vehicles identified as excellent EV candidates were designated as pursuit vehicles and must be available to respond to emergency events on a moment's notice. Due to this operational requirement, these vehicles were determined by agency staff as ineligible for replacement with EVs. There were vehicles that were excellent candidates in terms of energy use and economics but, because they parked at multiple locations at night, it was identified that it would be cost-prohibitive to install chargers at multiple locations to support these vehicles. Additionally, some of the agencies' offices are located in leased facilities which complicates the installation of charging infrastructure. In these instances, the agencies were encouraged by the CEO to discuss opportunities to install charging infrastructure with their landlords. Identifying which vehicles were not good candidates was as valuable as identifying those that were to ensure successful deployment of EVs in the State's fleet.

2019 Procurement

In late 2018, following the ezEV Analysis, the agencies made their requests for vehicles for the 2019 procurement cycle. Each agency has many priorities that influence their procurement requests beyond EV suitability. The state is projecting that these agencies will purchase 26 EVs (9 BEVs and 17 PHEVs) in 2019.

In February 2019, Sawatch Labs began the second round of analysis to support the State's 2020 procurement process.