

# EVMS

## Electric Vehicle Management Solutions

We must all do our part to reduce the greenhouse gas emissions that negatively impact our environment and play a significant role in the catastrophic impact of climate change. Clever Devices helps transit agencies efficiently transition to the electric vehicles that will dramatically reduce air pollution and pave the way to a greener future and a healthier planet.

As you transition to electric vehicles, you likely already know that it's not quite as easy as swapping a diesel bus for an electric one. With so many complex considerations such as scheduling, vehicle range, charging requirements, and power management, the process can feel daunting. When you add that you'll be running a mixed fleet for the foreseeable future, the entire situation can be downright overwhelming. With **Electric Vehicle Management Solutions (EVMS)** from Clever Devices, we take the guesswork out of blocking, vehicle assignment, charge management and managing the service throughout the day. And, because we've built EVMS into the core of many of the solutions you're already using, your employees are already familiar with the tools, which makes getting up to speed quick and easy.

### Integrated into the Core of Our Solutions

In the future, all of your vehicles will be electric, but it's likely you'll be managing a mixed fleet until then. You shouldn't have to toggle between disparate ITS systems to manage your electric vehicles. We've embedded EVMS into the core of our fleet, yard and asset management solutions along with our business intelligence tools to provide your users with a familiar user experience. When you upgrade your Clever Devices ITS ecosystem to add EVMS, you are not only saving money, but you're up and running quickly and efficiently to manage all the vehicles in your fleet. No third party is needed.





## EVMS Does the Thinking for You and Gets Smarter as It Learns

When an electric vehicle rolls off the production line, it comes with the manufacturer's suggested energy per mile/km recommendation. But, that metric doesn't consider topography, climate, road conditions, passenger counts, or operator driving behavior, all of which impact battery performance. That's where **EVMS** comes in.

EVMS assesses these types of variables to generate its energy consumption predictions. The sophisticated algorithm processes all the information it obtains during a service day to continuously refine those predictions, essentially getting smarter as it learns. EVMS energy predictions are then utilized in each of Clever Devices' products, enabling users to assign the right vehicles to the proper work and manage service in real-time while assessing battery utilization trends to improve route, block, vehicle, and operator performance.

# Eliminate Range Anxiety for Operators and Dispatchers

EVMS considers your agency's schedule, fleet information and your unique operational variables to monitor energy consumption, making regular updates throughout the service day. This continuous monitoring helps to eliminate range anxiety for both operators and dispatchers.

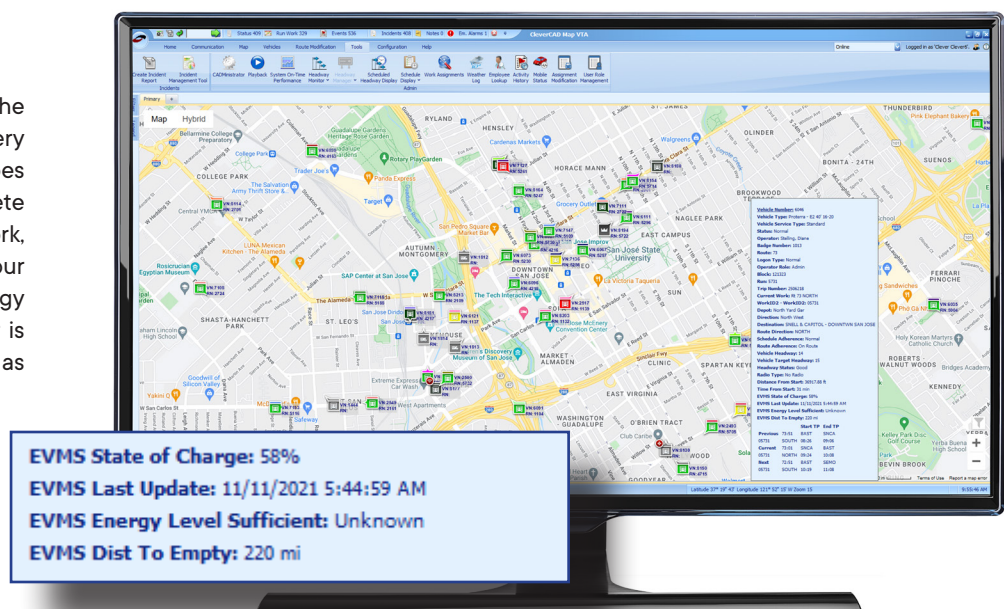


## For Operators

EVMS displays the state of charge, distance to complete block and distance to empty right on the mobile data terminal to give drivers the confidence that their assigned vehicle has enough energy to complete the work assigned. If EVMS determines that the vehicle doesn't have sufficient energy to complete its work, it sends an alert right to the Transit Control Head (TCH) to alert the driver.

## For Dispatchers

Within CleverCAD, dispatchers can see the real-time state of charge for each Battery Electric Vehicle (BEV). If a vehicle does not have sufficient energy to complete the assigned or actual (logged-in) work, the system sends a warning to alert your dispatchers. It can also send an energy alert email or text message to whoever is assigned to address the situation, such as maintenance, IT, operations control, etc.



EVMS works throughout the service day to keep both the operator and dispatchers informed and gives them all the information they need to manage their mixed fleet through one console. When both operators and dispatchers get the same information simultaneously, range anxiety becomes non-existent.



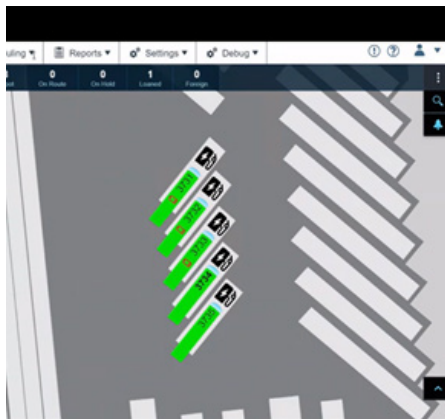
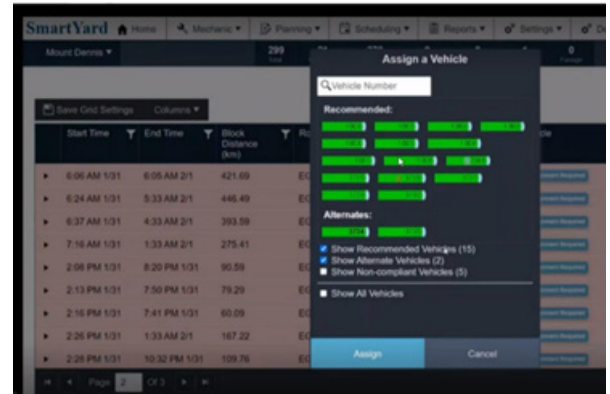
## Real-Time Dashboard

The EVMS real-time dashboard is a cloud-based tool that anyone in the organization with permission can access. Providing a high-level overview of all the electric vehicles in your fleet at any given moment in time, it is perfect for users in your organization who may not have access to other systems like CleverCAD or SmartYard.

The device-agnostic dashboard provides users with an efficient way to track the current state of charge for every vehicle in your electric fleet along with other factors such as electric vehicle work assignments, reporting status and the electric vehicle fleet configuration.

## Assigning Electric Vehicles in SmartYard

Use SmartYard to assign your electric vehicles to open work with confidence. EVMS provides SmartYard with updated energy requirements for each open block of work and only suggests vehicles for an assignment that it determines to have enough power to complete that work. This eliminates all the guesswork and ensures that the vehicles assigned can effectively complete the work assignment.



## Charge Management in the Depot

Within SmartYard, you can set your vehicle's minimum charge threshold. When an electric vehicle returns to the depot after the service day and is below that threshold, SmartYard can direct it to go directly to a charging station for charging to prepare it for its next work assignment adequately.

## Electric Vehicle Actionable Data Built into CleverReports

When the service day is complete, planners, schedulers and other stakeholders need to determine how well the service performed against established KPIs. EVMS works behind the scenes to provide actionable data for better planning, energy performance and even more efficient operator driving.

## Comprehensive Vehicle Health Monitoring

When electric vehicles are part of your fleet, you need to monitor the health of those vehicles in the same system you use for your diesel, CNG or hybrid vehicles. AVM, Clever Devices' health monitoring tool, let's you do just that. AVM can be configured to monitor all your electric vehicle subsystems without the need to add another telemetric solution into your ecosystem.

## Hosted Solution Lets You Start Small And Expand Over Time

Over the next two decades, your electric fleet will continue to grow. Our hosted solution lets you begin with a small pilot and expand as your electric fleet grows over time. EVMS provides you with an affordable way to start managing your fleet regardless of how many electric vehicles you currently have in service.

