

**SALES  
PRO**



**SP056**

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# **Vector™ Electric Fire Truck**

## **Charging Guidance**

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REV Fire Group**

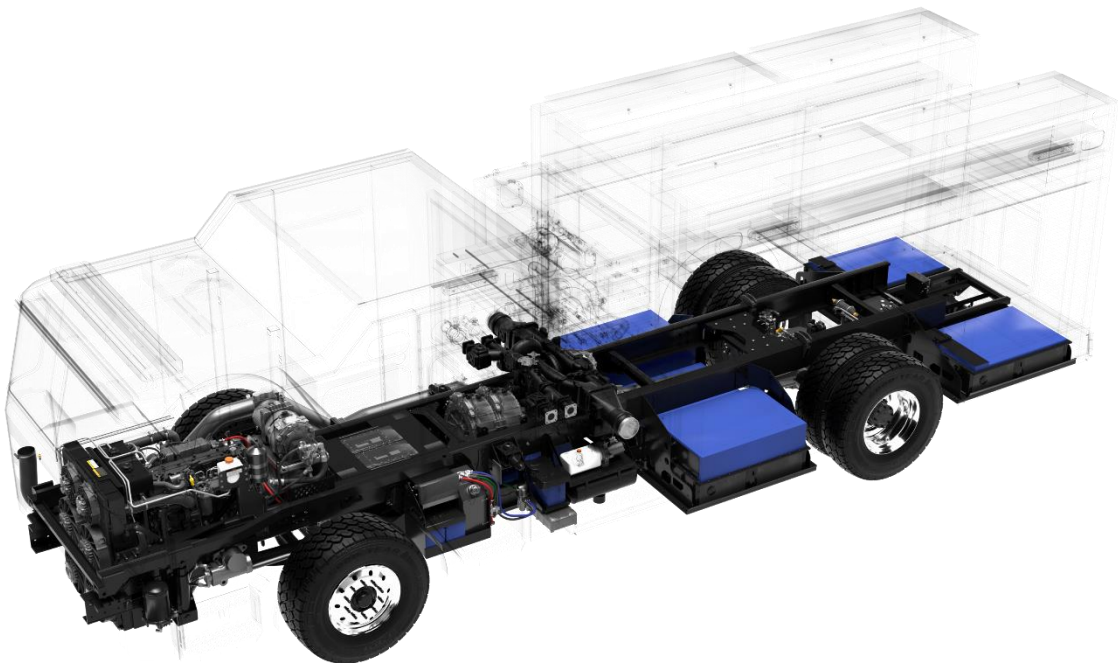




The Vector™ is a Plug-In Battery Electric Vehicle with Range Extender (BEV-X). It has enough battery storage to run in all-electric mode in most urban or suburban duty cycles without ever firing up the range extender. The range extender is on-board to provide battery charging in the event that the apparatus needs to pump for extended periods of time, or if the fire department connection to the electric grid is lost.

Your electric apparatus will only work well if you have invested in an adequate DC Fast-Charging system. The size, brand, and physical charger location are all important considerations.

We recommend engaging a company experienced in DC Fast Charging installations who can work through the details.





## Charging Socket

The Vector™ has a CCS1 charging socket compatible with both AC charging and DC Fast Charging. The internal AC charger can accept up to 7 KW using the J1772 protocol. This method would be appropriate for maintaining charge while parked at a public charging station. Departments may also wish to locate an AC charger at a training station or other location where the apparatus is expected to be staged for longer periods of time.



The charge socket will also accept a CCS1 plug for DC Fast Charging up to 150 KW. The department will need to install a DC Fast charger in the bay of the station to charge between calls. We strongly recommend a 120 KW or 150 KW charger. While the apparatus can be charged at lower power, the higher the power the quicker it will be topped off and ready to go after each run.



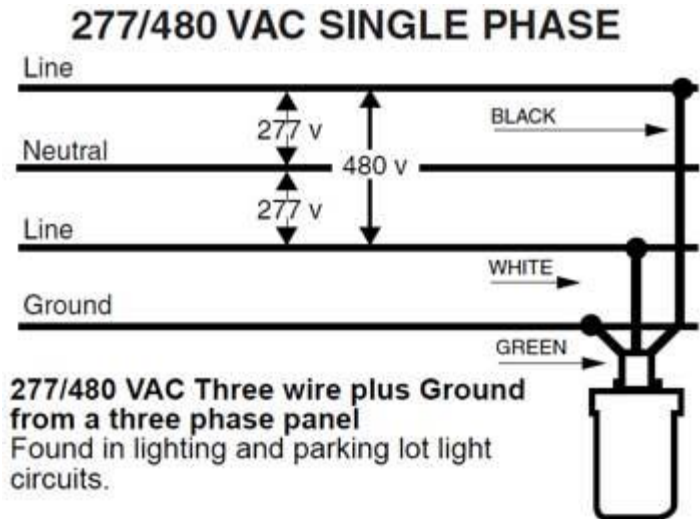
## Charger Sourcing

There are many brands, models and capacities of EV chargers on the market. While any CSS1 charger could theoretically charge the Vector™, we will only recommend brands and models where performance on our system has been validated. The validation testing must be completed on each brand and model to ensure that charging will be performed effectively and without battery damage.



DC Fast charging requires 480 volt 3-phase service. Most US industrial facilities use 480V 3 Phase instead because it provides twice the power with the same current. The same power with less current means:

- Reduced construction costs with smaller electrical service, wiring, conduits, and electrical devices.
- Reduced energy costs
- Less energy lost to heat in the form of electrical resistance.

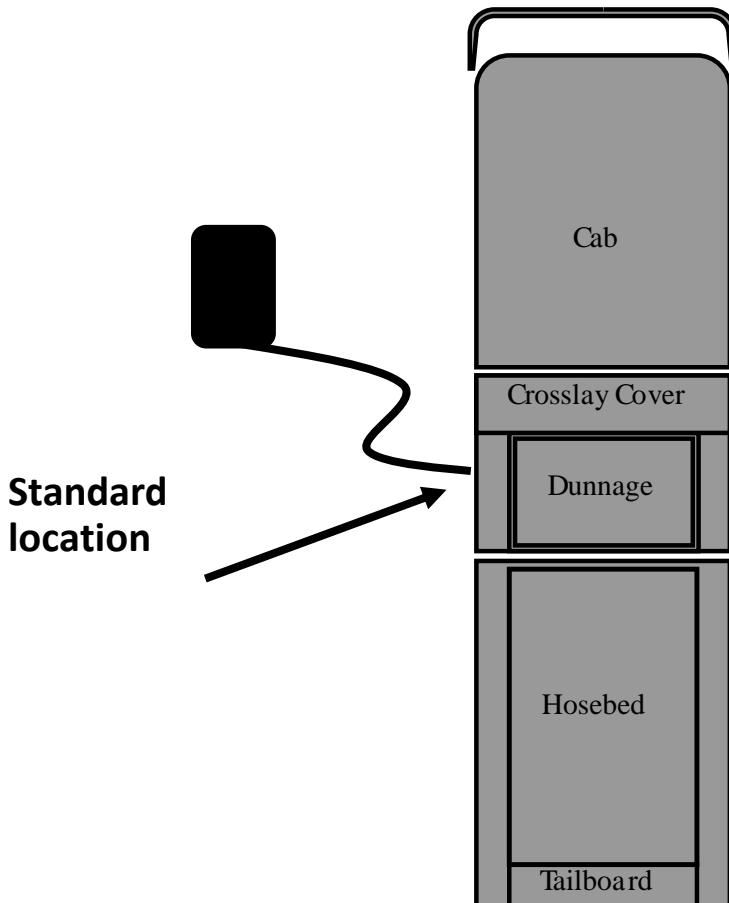


If your local utility does not offer 480 V 3-Phase service in your area, it is possible to use a transformer to step-up the power from 240 V 3-phase.



## Charge Socket Location

The standard location for the charge socket is on the driver's side pump panel.



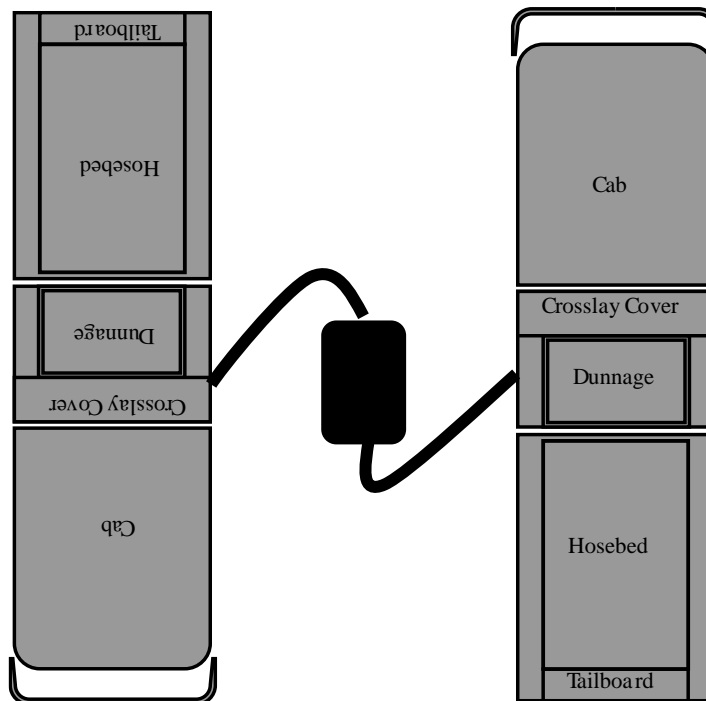


## Two Sockets on the Same Apparatus

It is not practical to consider specifying two sockets on the same apparatus. Two sockets that are live all the time would require extra electronic control and software because you can't have two sockets feeding power at the same time.

If you plan to have more than one apparatus using the same charger, consider how they will be parked in your bays.

Two sockets on one apparatus is not currently available on Vector apparatus.





The style and type of EV charging equipment needs to be reviewed with each installation site considering the space and electrical infrastructure capacity of the facility.

We recommend the 150 KW model HVC charger provided by ABB



HOME > OFFERINGS > EV CHARGING INFRASTRUCTURE

GLOBAL SITE

## Connector charging solutions for electric buses and e-trucks

ABB offers a complete portfolio for charging heavy electric vehicles such as buses and trucks with a CCS connector. Due their large voltage range, the DC wallbox (24 kW) and Terra 54HV (50 kW) are perfectly suited to charge electric buses and trucks. For higher power, the products with 100 kW and 150 kW including sequential charging, are especially designed to charge larger fleets of electric vehicles in its most optimized way.

### Main benefits:

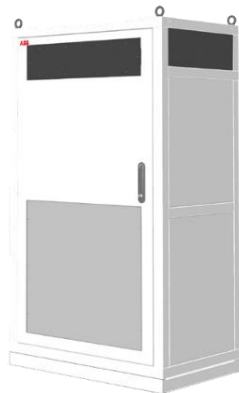
- Fast charging with a wide range of power levels to meet the charging needs that best fit your operating schedule.
- Enabling high uptime, thanks to robust design, remote diagnostics and management tools.
- Charge buses from different brands with the same charger, following the international standards and comprehensive interop testing.

### Main features:

- Power range of 24 kW, 50 kW with Voltage range from 150-920 V DC
- Power range of 100kW, 150kW with Voltage range from 150-850VDC
- Sequential charging with up to 3 outlets with 100 kW and 150 kW per vehicle
- Small footprint with remote depot control box



HVC Depot box offers a 150 KW charger that can be suspended from the ceiling to provide a drop cord next to the Vehicle charging port on a tool retractor while maintaining the areas around the vehicle clear.





REV Fire is partnering with a turnkey provider who will be able to perform site visits, quote on utility upgrades, install the charger, and propose a charger maintenance plan.



## Is your facility ready to meet demand for EV charging?

EV charging stations can provide a new revenue stream for your facility, improve sustainability metrics, and deliver a key differentiator for tenants and customers. To navigate the intersection of evolving technology, power infrastructure, and operations that impact a successful EV charger installation, turn to ABM. Our teams self-perform installation, supporting power distribution upgrades, and cost-effective preventive maintenance. With our extensive experience in parking management and energy-saving solutions, ABM is also uniquely positioned to help clients design and implement custom, innovative EV charging projects. Our teams fit EV charger installations to your operations and can include solar power and high-capacity power storage options for even more energy independence and sustainability.

To learn more call our EV Charging specialist at  
**866-448-4979**

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# Information required for ABM Site Assessment



**Gathering your information is key to a successful EV infrastructure project: The following documents can help ABM determine what charging solution (Equipment and installation) is right for your facility.**

## Documentation Requirements

### 12 MONTHS ELECTRICAL BILLS

- Avoid permitting delays & additional cost of 30-day electrical load study
- Determine current peak usage on existing electrical service
- Project future demand from EV charging
- Develop energy rate structure to evaluate future overhead
- Providing the entire 12 months of electrical bills is of most value

### ELECTRICAL ONE-LINE DRAWING

- Avoid permitting delays & additional engineering cost for electrical system layout
- Understand your installed system design & overall capacity
- Provide basis for permitting & engineering
- If not available, additional site investigation may be required for permitting & application

### SITE PLAN DRAWING

- Avoid delays & provide basis for permitting
- Avoid additional engineering cost
- Optimize charging locations
- Identify easements and right-of-way
- Balance customer experience with logistical constraints

## Charger Ownership Considerations

### EQUIPMENT

- Customers expect to add noticeable range when charging in public
- There are a wide range of DC fast chargers, ranging from 50 kW to 350 kW that pair well for public use

### NETWORK SERVICES

- Connect to various providers within the charge point operator (CPO) public network
- Helps EV owners find your charging location
- CPOs usually charge a fee (~\$120-300 per plug, per year)

### ONGOING MAINTENANCE

- Requires preventative, and sometimes corrective, maintenance
- Assume that units used more often will typically require more maintenance and may need to be replaced sooner
- CPOs usually offer a maintenance package for a fixed price (~\$60-\$100 per charger, per year)



An alternate method of charging EV apparatus is to install a micro-grid. This is a dedicated renewable energy source (solar, wind, etc.) that produces direct current. This power is used to charge a bank of batteries. The battery bank is then used to recharge the EV apparatus. This method has the advantage of using renewable energy as well as being very efficient with the power. For the solar case, the cell output is DC, the battery storage is DC, and the recharging current is DC, so there is no conversion loss to consider. If your department wishes to consider a micro-grid you can learn more by contacting Command Consulting LLC.



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