



# Battery Energy Storage for Electric Vehicle Charging Stations

## Introduction

This help sheet provides information on how battery energy storage systems can support electric vehicle (EV) fast charging infrastructure. It is an informative resource that may help states, communities, and other stakeholders plan for EV infrastructure deployment, but it is not intended to be used as guidance, set policy, or establish or replace any standards under state or federal law.

Battery energy storage systems can enable EV fast charging build-out in areas with limited power grid capacity, reduce charging and utility costs through peak shaving, and boost energy storage capacity to allow for EV charging in the event of a power grid disruption or outage. Adding battery energy

storage systems will also increase capital costs for a deployment of EV charging stations, which should be weighed against potential benefits before implementation.

## What Is Battery-Buffered Fast Charging?

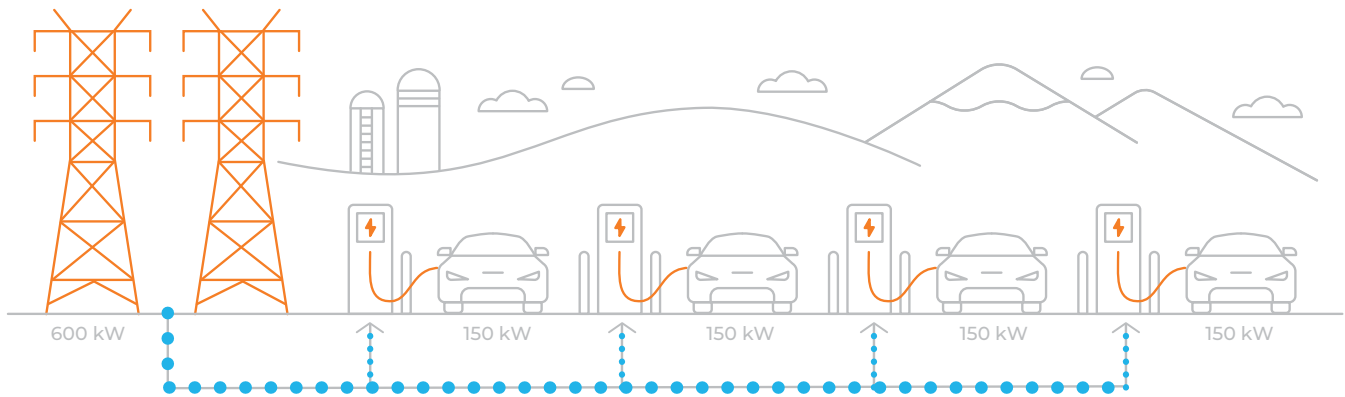
A battery energy storage system can store up electricity by drawing energy from the power grid at a continuous, moderate rate. When an EV requests power from a battery-buffered direct current fast charging (DCFC) station, the battery energy storage system can discharge stored energy rapidly, providing EV charging at a rate far greater than the rate at which it draws energy from the power grid.

## Standard Fast Charging

High-Capacity Infrastructure

Intermittent Vehicle Charging

Short Charging Times



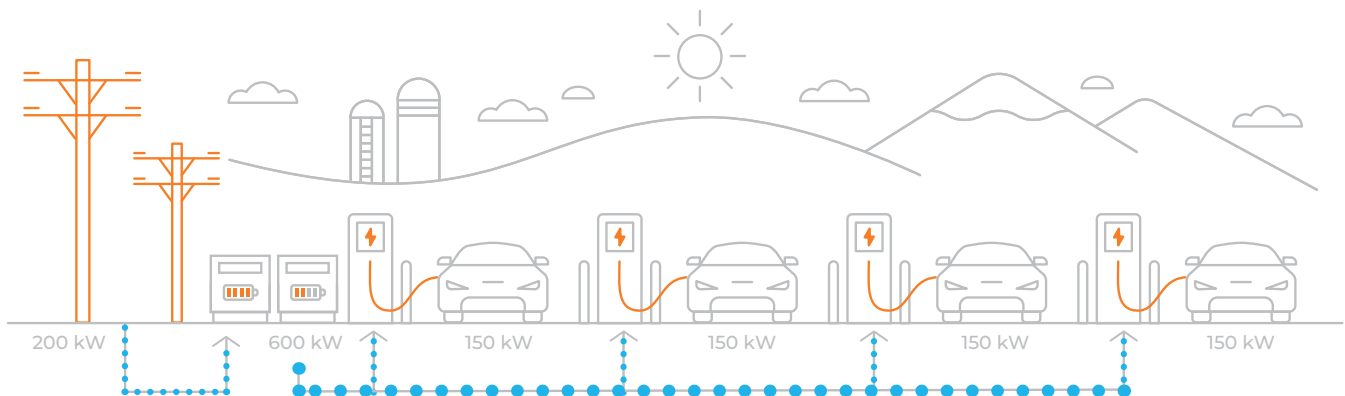
## Battery-Buffered Fast Charging

Low-Cost Infrastructure

Continuous Battery Charging

Intermittent Vehicle Charging

Short Charging Times



## Why Consider Battery Energy Storage?

Battery energy storage systems can enable EV charging in areas with limited power grid capacity and can also help reduce operating costs by reducing the peak power needed from the power grid each month. An analysis by the National Renewable Energy Laboratory (NREL) shows that appropriately sized battery-buffered systems can reduce power grid service capacity needs by approximately 50% to 80% compared to a charging station that is powered entirely by the power grid, while offering an identical charging experience for motorists.<sup>1</sup>

<sup>1</sup>NREL prepared a set of reference tables that provide recommended minimum energy storage (kWh) capacity for a 150kW battery-buffered corridor DCFC station at combinations of grid-supported power (kW) and Design Day charging demand (Appendix: Reference Tables). This approximation is derived from these output tables. Note that assumptions can be made available upon request at [driveelectric.gov/contact](https://driveelectric.gov/contact).

## What Are Potential Risks?

Battery-buffered DCFC stations come with new considerations—the addition of a battery energy storage system adds a potential equipment failure point, and if undersized, batteries may become fully depleted, leading to severely reduced charging power.

# Use Cases for Battery-Buffered Fast Charging

## 1. Increase EV charging capacity while avoiding power grid infrastructure upgrades

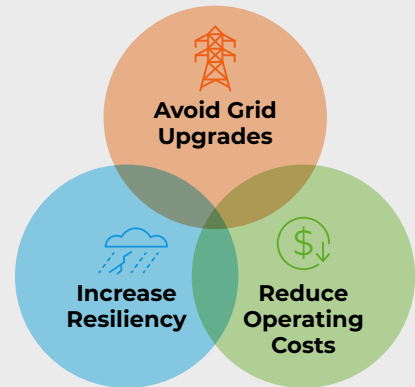
Supplemental power in areas with limited power grid capacity.

## 2. Reduce operating costs

Demand charge mitigation strategy to lessen peak demand.

## 3. Increase resiliency

Provides an emergency backup power supply during a power outage or other power grid disruptions.



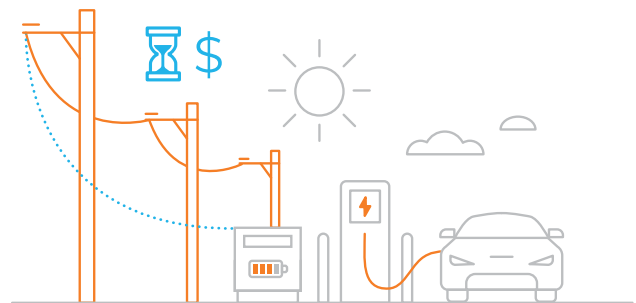
## Use Case 1

### Increase EV Charging Capacity While Avoiding Power Grid Infrastructure Upgrades

DCFC requires electricity to be dispensed at very high power to enable short vehicle charging times. Power grid infrastructure is usually built to accommodate the maximum power output of a DCFC station. However, DCFC stations only need maximum power intermittently. Placing a battery between the power grid and the DCFC station may reduce the scale of power grid infrastructure needed, thereby reducing costs and shortening construction timelines.

Battery-buffered fast charging can expand the availability of public fast charging for motorists traveling through power grid-constrained and low-utilization areas. In theory, battery energy storage systems could be paired with on-site power generation to help provide fast charging in fully off-grid areas, though the heavy energy needs of fast charging present challenges for this use case.

## Conventional vs. Battery: Avoid Grid Infrastructure Upgrades



## Considerations

- Can the proposed system provide 150 kWh from each port concurrently in 1 hour to be aligned with federal and industry benchmarks?
- Are the proposed system's battery capacity and power grid connection adequate to meet uptime requirements given the projected charging demand at the site?

### EXAMPLE

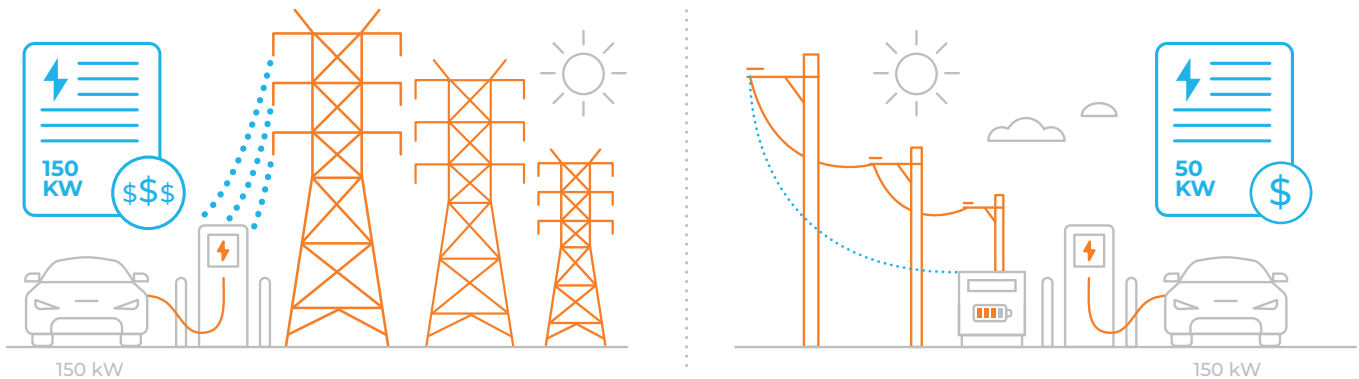
A remote, rural site is selected to host 600kW of DCFC. The site has only 100 kW available from the existing power grid, but charging station utilization there will never exceed 80 kW average over 24 hours. A 500-kWh battery-buffered DCFC can serve projected charging utilization and is also prepared for a one-hour surge in charging demand with capacity to charge four extended-range EV pickups to 80% state of charge (150kWh) concurrently in one hour.

For another example, review the Joint Office of Energy and Transportation's (Joint Office's) technical assistance case study [Grid-Constrained Electric Vehicle Fast Charging Sites: Battery-Buffered Options](#).

## Use Case 2 Reduce Operating Costs

A battery energy storage system can help manage DCFC energy use to reduce strain on the power grid during high-cost times of day. A properly managed battery energy storage system can reduce electric utility bills for the charging station owner if the local utility employs demand charges or time-of-use rates. With certain types of utility demand-response programs, the battery energy storage system can earn compensation for discharging energy to reduce strain on the power grid during high-cost times of day.

### Conventional vs. Battery: Reduce Operating Costs



## Considerations

- How much will the battery energy storage system reduce demand charges, given projected utilization?
- Do savings or revenue justify the added costs of the battery energy storage system?
- Does the battery energy storage system come with additional software or maintenance costs?

### EXAMPLE

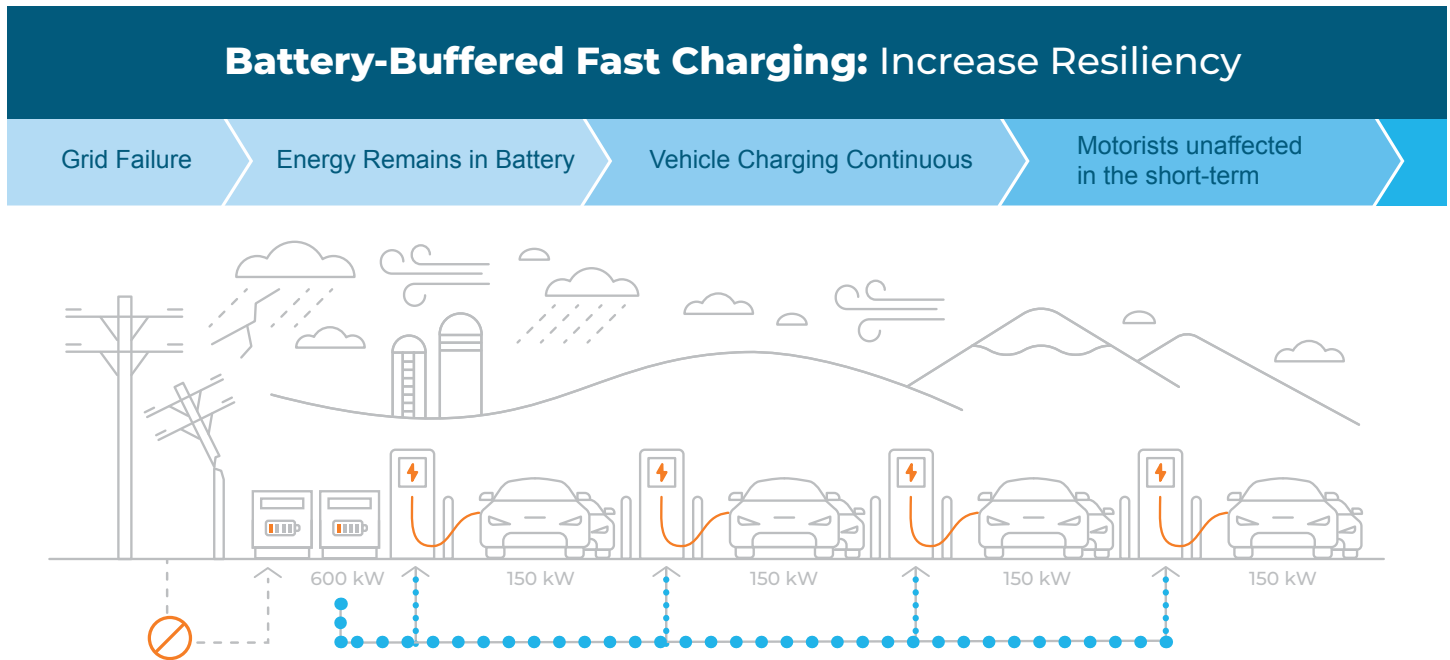
The hosts of the battery-buffered rural EV charging station will never incur a utility bill for more than 100 kW of demand charges. Without battery energy storage, a comparable 600-kW DCFC station could potentially incur 600 kW of demand charges, which would result in higher utility bills.

### Use Case 3

## Increase Resiliency

A battery energy storage system can potentially allow a DCFC station to operate for a short time even when there is a problem with the energy supply from the power grid.

If the battery energy storage system is configured to power the charging station when the power grid is unavailable, vehicle charging can continue as normal during a power grid disruption until the battery is depleted. The capacity of the battery will determine the number of charging sessions that can be supported before the system must shut down and wait for power grid service to be restored.



### Considerations

- A battery energy storage system alone does not guarantee that a DCFC will operate during a power grid disruption. Hardware and software must be configured for this use case.
- Are power grid outages expected to happen frequently enough to justify this use case?

### EXAMPLE

The equipment at the remote station is configured and designed such that if utility power fails, the battery-buffered DCFC will continue to dispense energy until the battery energy storage system is depleted. With a 500-kWh battery and average charging demand of 50 kW, the system might continue serving motorists for up to 10 hours without access to the power grid.

## Where to Start?

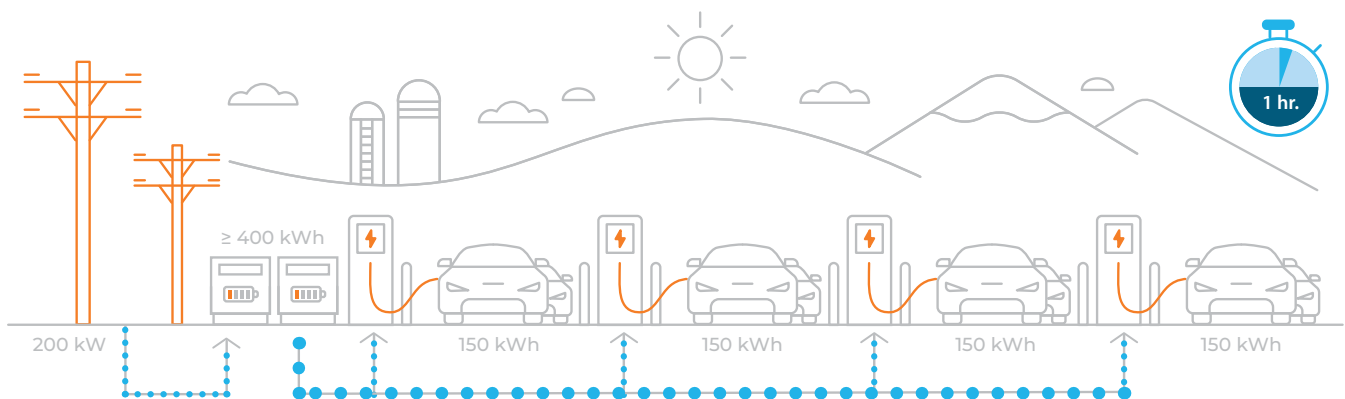
While it is challenging to precisely predict future EV adoption and technological change, NREL has developed criteria that provide a starting point for evaluating battery capacity at a battery-buffered corridor DCFC station—First Hour and Design Day. To ensure a high-quality user experience, the battery must be sized appropriately to avoid running out of energy.

For an example of how First Hour and Design Day were used to evaluate options for a specific site, review the Joint Office technical assistance case study [Grid-Constrained Electric Vehicle Fast Charging Sites: Battery-Buffered Options](#).

## First Hour

The First Hour criterion is intended to ensure that any station, no matter how lightly utilized, can serve a sudden surge in charging demand.

### Battery-Buffered Fast Charging: First Hour



**Question to ask:** *Can the proposed system provide 150 kWh from each port concurrently in 1 hour?*

#### EXAMPLE

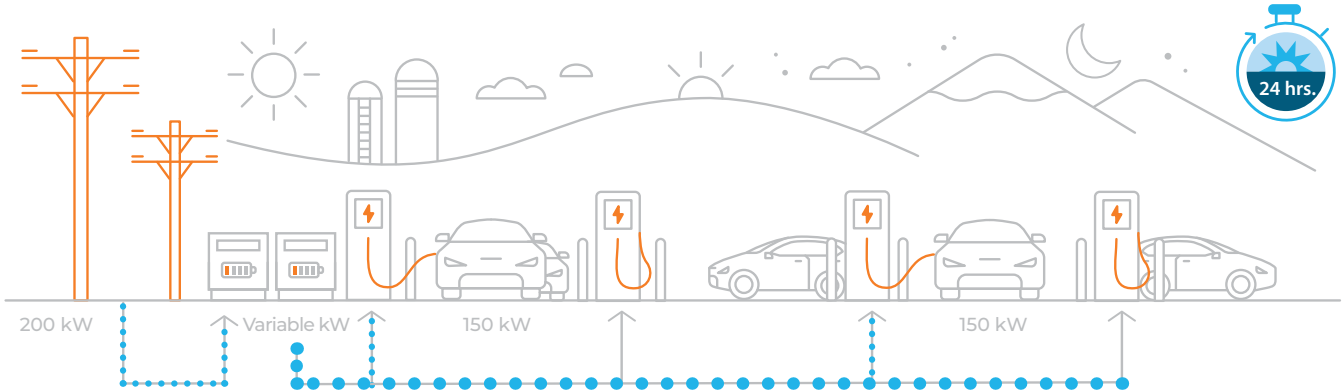
- A four-port charging station is supplied with 100 kW from the power grid, supporting 100 kWh in the first hour.
- The station would need at least 500 kWh of energy storage to provide 150 kWh from four ports concurrently (600 kWh) in the first hour of charging.

**Note to consider:** 150 kWh approximates the energy needed to charge a long-range EV pickup truck with a 200-kWh battery to 80% state of charge. This methodology therefore applies to any port with 150-kWh or greater capacity.

## Design Day

The Design Day criterion is meant to provide reasonable assurance that the battery-buffered DCFC will deliver energy to all motorists as requested on a busy day.

### Battery-Buffered Fast Charging: Design Day



**Design Day is the heaviest day of charging energy demand that the station is intended to serve without interruption to service due to a depleted battery (for example, the 99th percentile day in 2030).**

**Question to ask: Are the proposed system's battery and power grid connection adequate to meet uptime requirements given the projected charging demand at the charging station?**

- All ports should be able to meet charging demand on the Design Day without fully depleting the battery.
- The battery-buffered DCFC should have input power available equal to or greater than the 24-hour average Design Day charging demand.

Forecasting charging demand is complex, and there are a variety of methods to estimate demand. For help with estimating charging demand for a particular site or group of sites, **submit a request to the Joint Office to receive free technical assistance.**

## Checklist

Below is a checklist to help estimate if a battery-buffered DCFC is suitable for a proposed charging station.

- |  |  |
|--|--|
| <input type="checkbox"/> <b>Step 1:</b> Determine the number of planned charging ports for the charging station.   | <input type="checkbox"/> <b>Step 4:</b> Forecast Design Day charging demand.   |
| <input type="checkbox"/> <b>Step 2:</b> Determine the continuous power available from the power grid to the battery-buffered DCFC, expressed in DC kilowatts. <b>To meet the First Hour criterion, usable battery kWh must be: <math>(\text{Battery kWh}) \geq 150\text{kWh} * (\#\text{Ports}) - [(\text{Grid kW}) * (1 \text{ hour})]</math></b> | Charging demand could be expressed as average charging kW over 24 hours, 24-hour total kWh dispensed, or 24-hour energy utilization percentage. NREL's <a href="#">EVI-RoadTrip tool</a> and other analytical tools or methodologies can help with the complex process of forecasting charging demand. |
| <input type="checkbox"/> <b>Step 3:</b> Determine the target Design Day. Plan for the busiest day at that the charging station will need to serve without curtailing power output. For example, the target Design Day might be the 99th percentile day in the fifth year of charging station operation.  | <input type="checkbox"/> <b>Step 5.</b> Use your Design Day charging demand estimate along with the available power grid capacity at the site (Step 2) to find recommended minimum battery-buffered DCFC energy storage capacity in the reference tables in the Appendix.                              |

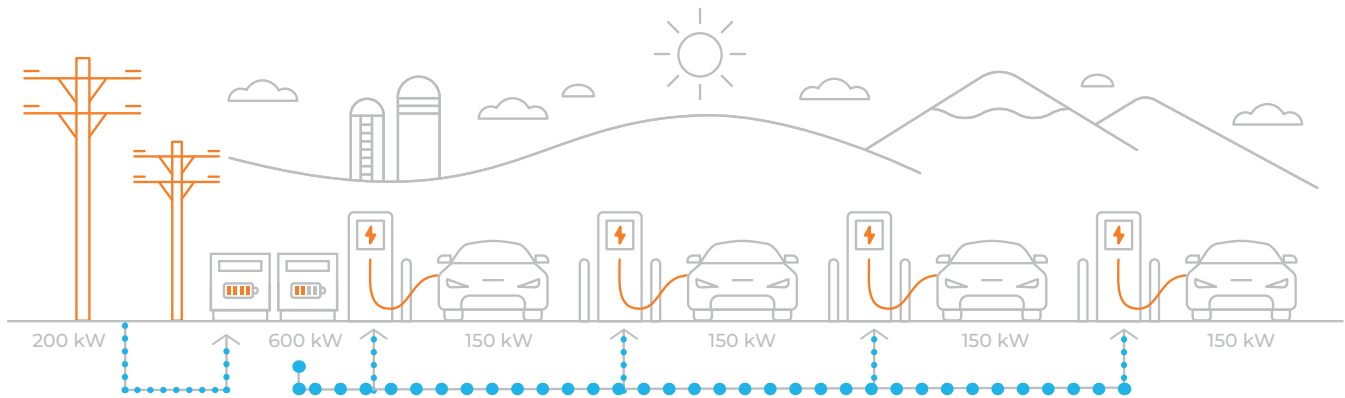
## Appendix: Reference Tables

The following tables provide recommended minimum energy storage (kWh) capacity for a corridor charging station with 150-kW DCFC at combinations of power grid-supported power (kW) and Design Day average demand (kW).

When all ports have access to a pool of stored energy, this pooling allows for the most efficient utilization of power grid capacity. This document refers to this scenario as a “pooled” system. In contrast, “separate” systems have a dedicated energy storage system for each port, requiring more energy per port to ensure that no individual port fully depletes its battery. Each table cell contains kilowatt-hour values for a pooled system (e.g., “80”) and separate systems (e.g., “20\*4”).

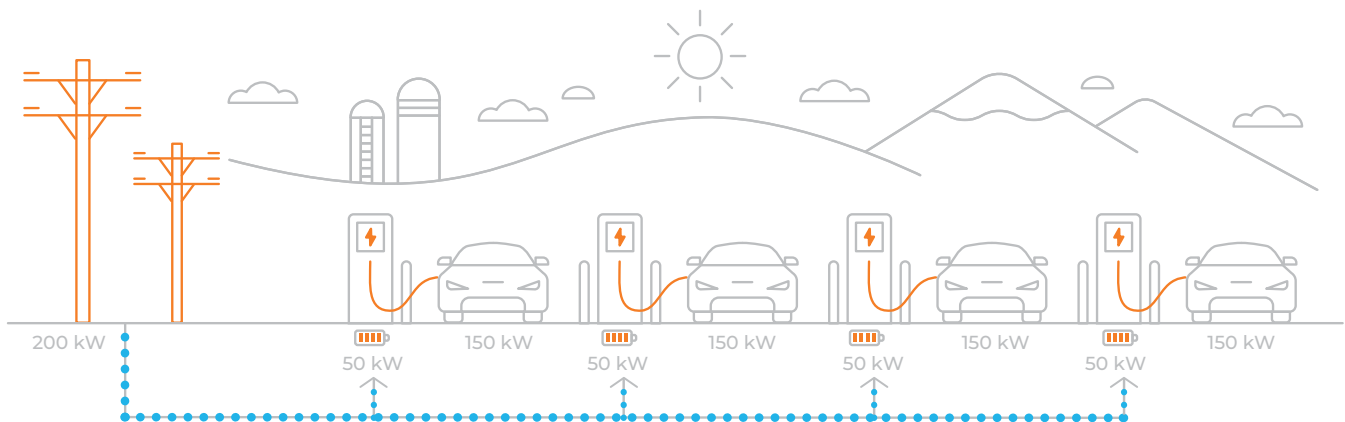
### Battery-Buffered Fast Charging: Pooled Systems

All ports have access to a pool of stored energy



### Battery-Buffered Fast Charging: Separate Systems

Separate systems have a dedicated energy storage system for each port





# Four-Port Corridor Site

Minimum Recommended Energy Storage Capacity (kWh) [Pooled System or Separate Systems]

Design Day Utilization (%)	10%	13%	17%	20%	23%	27%	33%	40%
Design Day Energy Need (kWh)	1,440	1,920	2,400	2,880	3,360	3,840	4,800	5,760
Design Day Average Charging Demand (kW)	60	80	100	120	140	160	200	240

<b>Existing Grid Capacity at Site (kW DC)</b>	<b>520 or 130x4</b>	<b>80 or 20x4</b>	<b>80 or 20x4</b>	<b>80 or 20x4</b>	<b>80 or 20x4</b>	<b>80 or 20x4</b>	<b>80 or 20x4</b>	<b>80 or 20x4</b>	<b>80 or 20x4</b>
	<b>480 or 120x4</b>	<b>120 or 30x4</b>	<b>120 or 30x4</b>	<b>120 or 30x4</b>	<b>120 or 30x4</b>	<b>120 or 30x4</b>	<b>120 or 30x4</b>	<b>120 or 30x4</b>	<b>120 or 30x4</b>
	<b>440 or 110x4</b>	<b>160 or 40x4</b>	<b>160 or 40x4</b>	<b>160 or 40x4</b>	<b>160 or 40x4</b>	<b>160 or 40x4</b>	<b>160 or 40x4</b>	<b>160 or 50x4</b>	<b>160 or 55x4</b>
	<b>400 or 100x4</b>	<b>200 or 50x4</b>	<b>200 or 50x4</b>	<b>200 or 50x4</b>	<b>200 or 50x4</b>	<b>200 or 50x4</b>	<b>200 or 50x4</b>	<b>200 or 70x4</b>	<b>200 or 95x4</b>
	<b>360 or 90x4</b>	<b>240 or 60x4</b>	<b>240 or 60x4</b>	<b>240 or 60x4</b>	<b>240 or 60x4</b>	<b>240 or 60x4</b>	<b>240 or 65x4</b>	<b>240 or 90x4</b>	<b>360 or 135x4</b>
	<b>320 or 80x4</b>	<b>280 or 70x4</b>	<b>280 or 70x4</b>	<b>280 or 70x4</b>	<b>280 or 70x4</b>	<b>280 or 70x4</b>	<b>280 or 95x4</b>	<b>280 or 135x4</b>	<b>580 or 200x4</b>
	<b>280 or 70x4</b>	<b>320 or 80x4</b>	<b>320 or 80x4</b>	<b>320 or 80x4</b>	<b>320 or 80x4</b>	<b>320 or 100x4</b>	<b>320 or 130x4</b>	<b>460 or 190x4</b>	<b>880 or 280x4</b>
	<b>240 or 60x4</b>	<b>360 or 90x4</b>	<b>360 or 90x4</b>	<b>360 or 90x4</b>	<b>360 or 105x4</b>	<b>360 or 135x4</b>	<b>360 or 170x4</b>	<b>740 or 270x4</b>	<b>1,280 or 385x4</b>
	<b>200 or 50x4</b>	<b>400 or 100x4</b>	<b>400 or 100x4</b>	<b>400 or 110x4</b>	<b>400 or 145x4</b>	<b>400 or 185x4</b>	<b>560 or 240x4</b>	<b>1,120 or 365x4</b>	
	<b>160 or 40x4</b>	<b>440 or 110x4</b>	<b>440 or 110x4</b>	<b>440 or 150x4</b>	<b>440 or 200x4</b>	<b>640 or 265x4</b>	<b>940 or 340x4</b>		
	<b>140 or 35x4</b>	<b>460 or 115x4</b>	<b>460 or 130x4</b>	<b>460 or 180x4</b>	<b>560 or 240x4</b>	<b>840 or 315x4</b>			
	<b>120 or 30x4</b>	<b>480 or 120x4</b>	<b>480 or 155x4</b>	<b>480 or 220x4</b>	<b>760 or 295x4</b>				
	<b>100 or 25x4</b>	<b>500 or 130x4</b>	<b>500 or 190x4</b>	<b>660 or 265x4</b>					
	<b>80 or 20x4</b>	<b>520 or 160x4</b>	<b>560 or 235x4</b>						
<b>60 or 15x4</b>	<b>540 or 205x4</b>								

Transportation Demand Scenarios ■

Existing Grid Capacity at Site (kW DC) ■

Minimum Recommended Capacity (kWh) ■

# Five-Port Corridor Site

Minimum Recommended Energy Storage Capacity (kWh) [Pooled System or Separate Systems]

Design Day Utilization (%)		10%	13%	17%	20%	23%	27%	33%	40%
Design Day Energy Need (kWh)		1,800	2,400	3,000	3,600	4,200	4,800	6,000	7,200
Design Day Average Charging Demand (kW)		75	100	125	150	175	200	250	300
<b>Existing Grid Capacity at Site (kW DC)</b>	<b>650 or 130×5</b>	<b>100 or 20×5</b>	<b>100 or 20×5</b>	<b>100 or 20×5</b>	<b>100 or 20×5</b>	<b>100 or 20×5</b>	<b>100 or 20×5</b>	<b>100 or 20×5</b>	<b>100 or 20×5</b>
	<b>600 or 120×5</b>	<b>150 or 30×5</b>	<b>150 or 30×5</b>	<b>150 or 30×5</b>	<b>150 or 30×5</b>	<b>150 or 30×5</b>	<b>150 or 30×5</b>	<b>150 or 30×5</b>	<b>150 or 30×5</b>
	<b>550 or 110×5</b>	<b>200 or 40×5</b>	<b>200 or 40×5</b>	<b>200 or 40×5</b>	<b>200 or 40×5</b>	<b>200 or 40×5</b>	<b>200 or 40×5</b>	<b>200 or 50×5</b>	<b>200 or 55×5</b>
	<b>500 or 100×5</b>	<b>250 or 50×5</b>	<b>250 or 50×5</b>	<b>250 or 50×5</b>	<b>250 or 50×5</b>	<b>250 or 50×5</b>	<b>250 or 50×5</b>	<b>250 or 70×5</b>	<b>250 or 95×5</b>
	<b>450 or 90×5</b>	<b>300 or 60×5</b>	<b>300 or 60×5</b>	<b>300 or 60×5</b>	<b>300 or 60×5</b>	<b>300 or 60×5</b>	<b>300 or 65×5</b>	<b>300 or 90×5</b>	<b>450 or 135×5</b>
	<b>400 or 80×5</b>	<b>350 or 70×5</b>	<b>350 or 70×5</b>	<b>350 or 70×5</b>	<b>350 or 70×5</b>	<b>350 or 70×5</b>	<b>350 or 95×5</b>	<b>350 or 135×5</b>	<b>725 or 200×5</b>
	<b>350 or 70×5</b>	<b>400 or 80×5</b>	<b>400 or 80×5</b>	<b>400 or 80×5</b>	<b>400 or 80×5</b>	<b>400 or 100×5</b>	<b>400 or 130×5</b>	<b>575 or 190×5</b>	<b>1,100 or 280×5</b>
	<b>300 or 60×5</b>	<b>450 or 90×5</b>	<b>450 or 90×5</b>	<b>450 or 90×5</b>	<b>450 or 105×5</b>	<b>450 or 135×5</b>	<b>450 or 170×5</b>	<b>925 or 270×5</b>	<b>1,600 or 385×5</b>
	<b>250 or 50×5</b>	<b>500 or 100×5</b>	<b>500 or 100×5</b>	<b>500 or 110×5</b>	<b>500 or 145×5</b>	<b>500 or 185×5</b>	<b>700 or 240×5</b>	<b>1,400 or 365×5</b>	
	<b>200 or 40×5</b>	<b>550 or 110×5</b>	<b>550 or 110×5</b>	<b>550 or 150×5</b>	<b>550 or 200×5</b>	<b>800 or 265×5</b>	<b>1,175 or 340×5</b>		
	<b>175 or 35×5</b>	<b>575 or 115×5</b>	<b>575 or 130×5</b>	<b>575 or 180×5</b>	<b>700 or 240×5</b>	<b>1,050 or 315×5</b>			
	<b>150 or 30×5</b>	<b>600 or 120×5</b>	<b>600 or 155×5</b>	<b>600 or 220×5</b>	<b>950 or 295×5</b>				
	<b>125 or 25×5</b>	<b>625 or 130×5</b>	<b>625 or 190×5</b>	<b>825 or 265×5</b>					
	<b>100 or 20×5</b>	<b>650 or 160×5</b>	<b>700 or 235×5</b>						
<b>75 or 15×5</b>	<b>675 or 205×5</b>								

Transportation Demand Scenarios ■

Existing Grid Capacity at Site (kW DC) ■

Minimum Recommended Capacity (kWh) ■

# Six-Port Corridor Site

Minimum Recommended Energy Storage Capacity (kWh) [Pooled System or Separate Systems]

Design Day Utilization (%)	10%	13%	17%	20%	23%	27%	33%	40%
Design Day Energy Need (kWh)	2,160	2,880	3,600	4,320	5,040	5,760	7,200	8,640
Design Day Average Charging Demand (kW)	90	120	150	180	210	240	300	360
Existing Grid Capacity at Site (kW DC)	780 or 130×6	120 or 20×6	120 or 20×6	120 or 20×6	120 or 20×6	120 or 20×6	120 or 20×6	120 or 20×6
	720 or 120×6	180 or 30×6	180 or 30×6	180 or 30×6	180 or 30×6	180 or 30×6	180 or 30×6	180 or 30×6
	660 or 110×6	240 or 40×6	240 or 40×6	240 or 40×6	240 or 40×6	240 or 40×6	240 or 50×6	240 or 55×6
	600 or 100×6	300 or 50×6	300 or 50×6	300 or 50×6	300 or 50×6	300 or 50×6	300 or 50×6	300 or 70×6
	540 or 90×6	360 or 60×6	360 or 60×6	360 or 60×6	360 or 60×6	360 or 60×6	360 or 65×6	360 or 90×6
	480 or 80×6	420 or 70×6	420 or 70×6	420 or 70×6	420 or 70×6	420 or 70×6	420 or 95×6	420 or 135×6
	420 or 70×6	480 or 80×6	480 or 80×6	480 or 80×6	480 or 80×6	480 or 100×6	480 or 130×6	690 or 190×6
	360 or 60×6	540 or 90×6	540 or 90×6	540 or 90×6	540 or 105×6	540 or 135×6	540 or 170×6	1,110 or 270×6
	300 or 50×6	600 or 100×6	600 or 100×6	600 or 110×6	600 or 145×6	600 or 185×6	840 or 240×6	1,680 or 365×6
	240 or 40×6	660 or 110×6	660 or 110×6	660 or 150×6	660 or 200×6	960 or 265×6	1,410 or 340×6	
	210 or 35×6	690 or 115×6	690 or 130×6	690 or 180×6	840 or 240×6	1,260 or 315×6		
	180 or 30×6	720 or 120×6	720 or 155×6	720 or 220×6	1,140 or 295×6			
	150 or 25×6	750 or 130×6	750 or 190×6	990 or 265×6				
	120 or 20×6	780 or 160×6	840 or 235×6					
90 or 15×6	810 or 205×6							

Transportation Demand Scenarios ■

Existing Grid Capacity at Site (kW DC) ■

Minimum Recommended Capacity (kWh) ■

# Eight-Port Corridor Site

Minimum Recommended Energy Storage Capacity (kWh) [Pooled System or Separate Systems]

Design Day Utilization (%)		10%	13%	17%	20%	23%	27%	33%	40%
Design Day Energy Need (kWh)		2,880	3,840	4,800	5,760	6,720	7,680	9,600	11,520
Design Day Average Charging Demand (kW)		120	160	200	240	280	320	400	480
<b>Existing Grid Capacity at Site (kW DC)</b>	<b>1,040 or 130×8</b>	<b>160 or 20×8</b>	<b>160 or 20×8</b>	<b>160 or 20×8</b>	<b>160 or 20×8</b>	<b>160 or 20×8</b>	<b>160 or 20×8</b>	<b>160 or 20×8</b>	<b>160 or 20×8</b>
	<b>960 or 120×8</b>	<b>240 or 30×8</b>	<b>240 or 30×8</b>	<b>240 or 30×8</b>	<b>240 or 30×8</b>	<b>240 or 30×8</b>	<b>240 or 30×8</b>	<b>240 or 30×8</b>	<b>240 or 30×8</b>
	<b>880 or 110×8</b>	<b>320 or 40×8</b>	<b>320 or 40×8</b>	<b>320 or 40×8</b>	<b>320 or 40×8</b>	<b>320 or 40×8</b>	<b>320 or 40×8</b>	<b>320 or 50×8</b>	<b>320 or 55×8</b>
	<b>800 or 100×8</b>	<b>400 or 50×8</b>	<b>400 or 50×8</b>	<b>400 or 50×8</b>	<b>400 or 50×8</b>	<b>400 or 50×8</b>	<b>400 or 50×8</b>	<b>400 or 70×8</b>	<b>400 or 95×8</b>
	<b>720 or 90×8</b>	<b>480 or 60×8</b>	<b>480 or 60×8</b>	<b>480 or 60×8</b>	<b>480 or 60×8</b>	<b>480 or 60×8</b>	<b>480 or 65×8</b>	<b>480 or 90×8</b>	<b>720 or 135×8</b>
	<b>640 or 80×8</b>	<b>560 or 70×8</b>	<b>560 or 70×8</b>	<b>560 or 70×8</b>	<b>560 or 70×8</b>	<b>560 or 70×8</b>	<b>560 or 95×8</b>	<b>560 or 135×8</b>	<b>1,160 or 200×8</b>
	<b>560 or 70×8</b>	<b>640 or 80×8</b>	<b>640 or 80×8</b>	<b>640 or 80×8</b>	<b>640 or 80×8</b>	<b>640 or 100×8</b>	<b>640 or 130×8</b>	<b>920 or 190×8</b>	<b>1,760 or 280×8</b>
	<b>480 or 60×8</b>	<b>720 or 90×8</b>	<b>720 or 90×8</b>	<b>720 or 90×8</b>	<b>720 or 105×8</b>	<b>720 or 135×8</b>	<b>720 or 170×8</b>	<b>1,480 or 270×8</b>	<b>2,560 or 385×8</b>
	<b>400 or 50×8</b>	<b>800 or 100×8</b>	<b>800 or 100×8</b>	<b>800 or 110×8</b>	<b>800 or 145×8</b>	<b>800 or 185×8</b>	<b>1,120 or 240×8</b>	<b>2,240 or 365×8</b>	
	<b>320 or 40×8</b>	<b>880 or 110×8</b>	<b>880 or 110×8</b>	<b>880 or 150×8</b>	<b>880 or 200×8</b>	<b>1,280 or 265×8</b>	<b>1,880 or 340×8</b>		
	<b>280 or 35×8</b>	<b>920 or 115×8</b>	<b>920 or 130×8</b>	<b>920 or 180×8</b>	<b>1,120 or 240×8</b>	<b>1,680 or 315×8</b>			
	<b>240 or 30×8</b>	<b>960 or 120×8</b>	<b>960 or 155×8</b>	<b>960 or 220×8</b>	<b>1,520 or 295×8</b>				
	<b>200 or 25×8</b>	<b>1,000 or 130×8</b>	<b>1,000 or 190×8</b>	<b>1,320 or 265×8</b>					
	<b>160 or 20×8</b>	<b>1,040 or 160×8</b>	<b>1,120 or 235×8</b>						
<b>120 or 15×8</b>	<b>1,080 or 205×8</b>								

Transportation Demand Scenarios ■

Existing Grid Capacity at Site (kW DC) ■

Minimum Recommended Capacity (kWh) ■



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## How Can Joint Office Technical Assistance Help?

The Joint Office provides [technical assistance](#) to a multitude of stakeholders and programs that seek to deploy a network of EV chargers, zero-emission fueling infrastructure, and zero-emission transit and school buses. Joint Office technical assistance can help evaluate whether a battery energy storage system is appropriate. Contact us at [DriveElectric.gov/contact](https://driveelectric.gov/contact) and review the Joint Office technical assistance case study [Grid-Constrained Electric Vehicle Fast Charging Sites: Battery-Buffered Options](#) to learn more.