

# LOCAL ELECTRIC VEHICLE CHARGING STATION REGULATION

## *A Welcoming Approach to Electric Vehicle Plug-In Technology*

Agency of Commerce | Department of Housing & Community Development

Community Planning and Revitalization Division

September 2018, Last Updated January 2019

*Would it be difficult for your community to permit an electric vehicle charging station?*

YES

NO

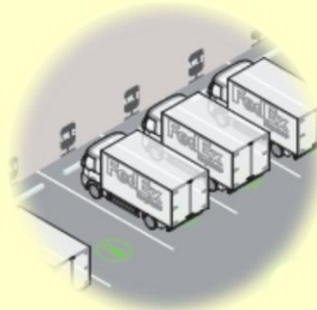
NOT SURE

MAYBE IN MUD SEASON

What if it's a fueling island?



What if it's only for fleet vehicles?



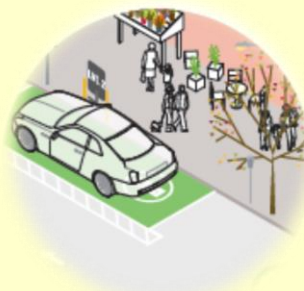
What if it's not publicly accessible?



What if it's in an existing parking space?



What if it's in the road's right-of-way?



What if it's inside a building?



What if it's a proposed parking lot?

Graphic Source: [New York State Siting and Design Guidelines, 2012](#)

What if it's ADA accessible?

**Get charged up! You got this.**

# Technological change can happen fast ... really fast!

*It's 1900 on 5<sup>th</sup> Avenue in New York City.  
Can you find the car?*



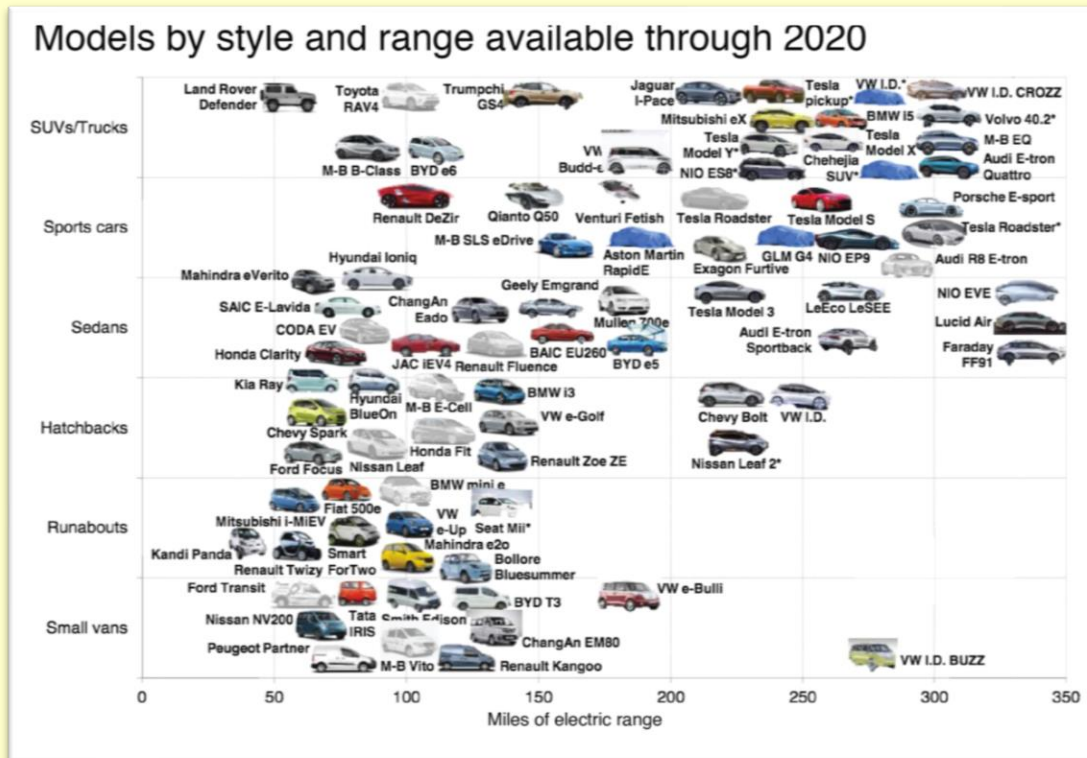
Source: US National Archives and Tony Seba via Dan Potter

*It's 1913 on 5<sup>th</sup> Avenue in New York City.  
Can you find the horse?*

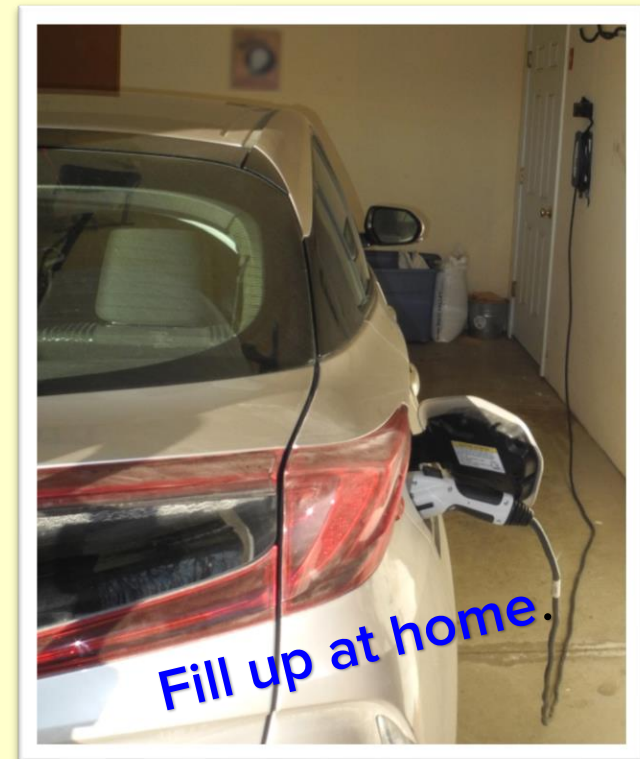


Source: Grantham Bain Collection and Tony Seba via Dan Potter

# Electric vehicle (EV) buyers have better choices, and EVs go much farther than they once did.



Source: Bloomberg News Energy Finance

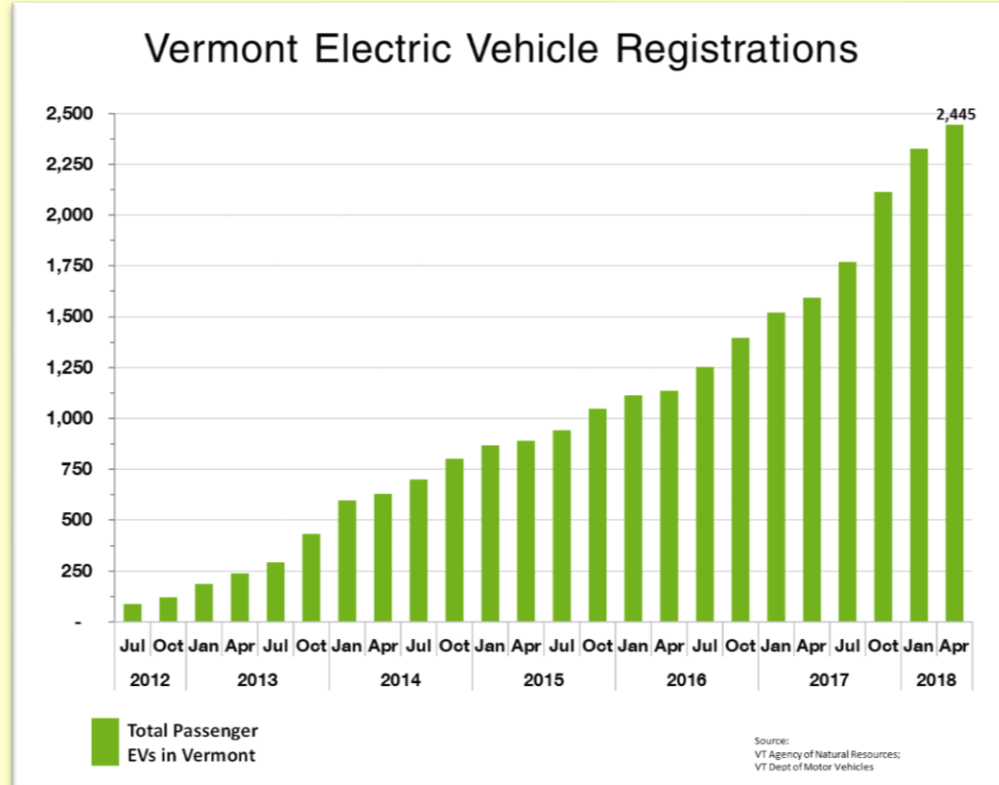


Source: Jim Sullivan

Plug-in electric vehicles (EVs) are fast, fun, and efficient. New models arrive into the US and Vermont market each year, and because there are fewer parts, maintenance is simpler and cheaper. EVs increase Vermont's energy independence and contribute to healthier air and lower carbon emissions. Re-fueling can be as simple as plugging into an electrical outlet at home or away, and you'll spend the equivalent of about a \$1.50 per gallon of gas to do so. Plus, purchase incentives are available to cover up to \$9,300 toward your EV purchase – so it's a good time to buy!

Source: [Drive Electric Vermont](https://driveelectricvermont.com/)

## Vermonters are steadily buying electric vehicles.



Source: VT ANR and VT DMV

The United States Department of Energy reported in November 2017 that Vermont had the highest rate of EV ownership of any state east of the Mississippi River and fifth highest rate of EV ownership nationwide.

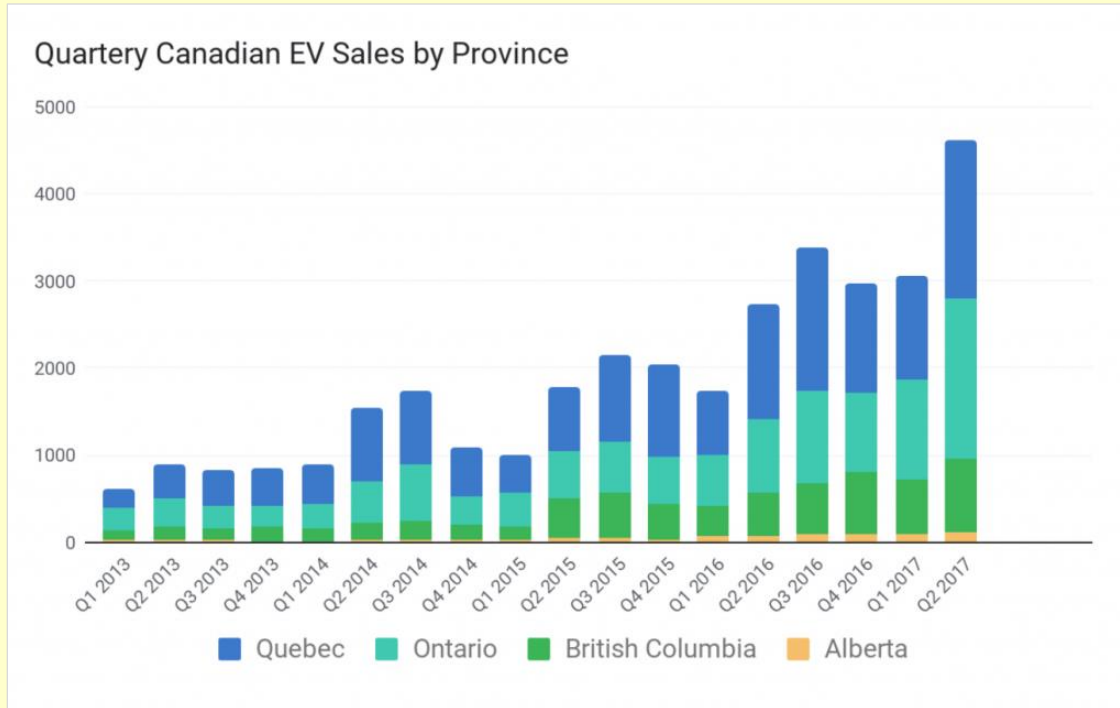
Source: US [Department of Energy](#)

Plug-in electric vehicles (EVs) come in a variety of shapes and sizes. There are also many super-efficient, low-speed electric options, like electric-assisted bicycles, neighborhood electric vehicles, and even e-motorcycles and scooters. Passenger cars and trucks used by most Vermonters come in two basic EV designs: all electric vehicles and plug-in hybrid electric vehicles. Plug-in hybrid (PHEV) vehicles can operate on gasoline and electric, which typically offers a greater range while doing most of the drive in electric mode.

Source: [Drive Electric Vermont](#)



# Vermont visitors are buying EVs too.



Source: FleetCarma. August 2017. Schmidt in EV Industry



Source: John Adams @ THISISVT on Twitter

**Did you know more Canadians (650,000) visit Vermont each year than residents who live in Vermont? What if your community got just 1% of those visitors (6,500 tourists), and each person spent \$5 on a maple creemee or Vermont cheese while charging an electric vehicle? That could mean \$32,500 for a small business in your community – not including any revenue from the charge.**

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*Most EV drivers will spend more than 30 minutes charging and prefer places with downtown amenities like shops, restaurants, restrooms, and greens. What could more people spending time at businesses in your community mean for the local economy?*

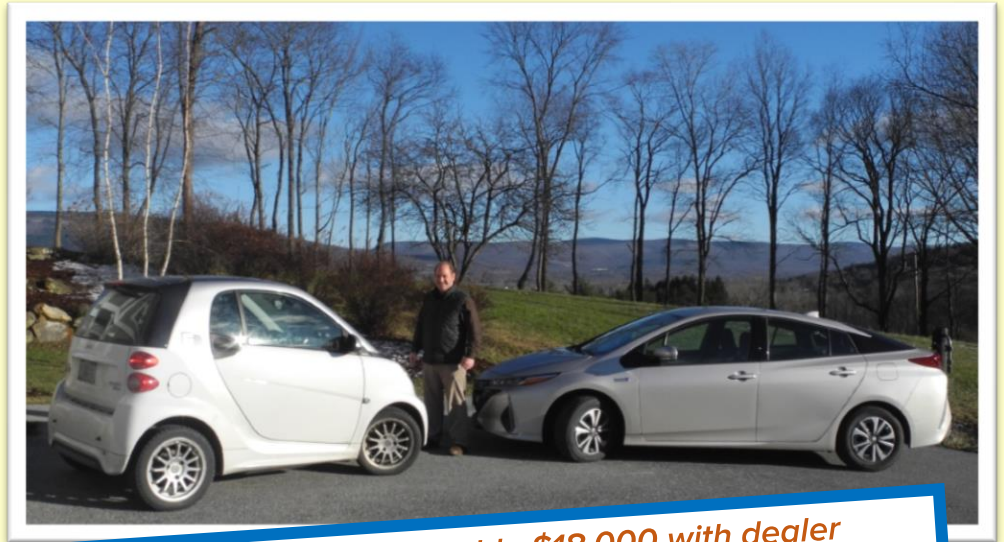
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Will your community provide visitors with a reason to stop and spend? You can learn more about the economic development benefits of electric vehicle charging, at the [Drive Electric Vermont](#) resources page.

## Even frugal Vermonters know when it makes sense to upgrade.



Photo Source: Wikimedia Commons



*“Our 2018 Prius Prime hybrid cost a very reasonable \$18,000 with dealer incentives and tax credits. It consistently gets up to 55 mpg in hybrid mode – better than any hybrid I’ve ever driven -- and we can go 35+ miles on its 8.9 kWh battery during warm weather. In our all-electric E Smart Car, we typically get 85-95 miles of summer range on a 17.6 kWh battery.”*

Jim Sullivan, Bennington County Regional Planning Commission Director

While EVs might not be ready for every situation, the American Automobile Association estimates that EVs can save individual Vermonters up to \$985 per year – including fuel, maintenance, repairs and tires! This assumes 12,000 miles/year, 22MPG, \$2.60 gallon gasoline, 3 miles/kWh, and \$.15/kWh. Re-fueling can be as simple as plugging into an electrical outlet, and you'll spend the equivalent of about a \$1.50 per gallon of gas to do so. Unlike gasoline, electricity prices in Vermont have been very stable, and EV drivers have the convenient option to fill up at home.

Source: [Drive Electric Vermont](#)

# EVs are good for the Vermont economy and good for the planet!

Vermonters spend about half of their energy budget on transportation petroleum, totaling one billion dollars each year. That's money households could save or spend supporting Vermont's local renewable energy economy. Local energy production advances the Vermont Comprehensive Energy Plan's path to a renewable energy future, making the Green Mountain State even greener.

Source: US EIA and VEIC, 2015

Did you know Vermont's regional planning commissions updated the Regional Plans in 2018 to advance statewide energy goals under Act 174. Locally, you can plan for electric vehicle charging stations as part of new development or redevelopment.



## ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE) GRANT PROGRAM

### Overview

Approximately \$2.4 million in grants are available to expand Vermont's network of electric vehicle charging stations (also called Electric Vehicle Supply Equipment, or EVSE). Grant proceeds result from settlements to partially resolve Volkswagen's violations of the Clean Air Act.

Funds are available until they are fully invested and may be disbursed until October 2027. The availability of this funding is contingent upon the Trustee's approval of funding requests made by the Agency of Natural Resources and the subsequent transfer of funds. For more information visit the [VW Environmental Mitigation Funds web page](#).

### Applying for a Grant

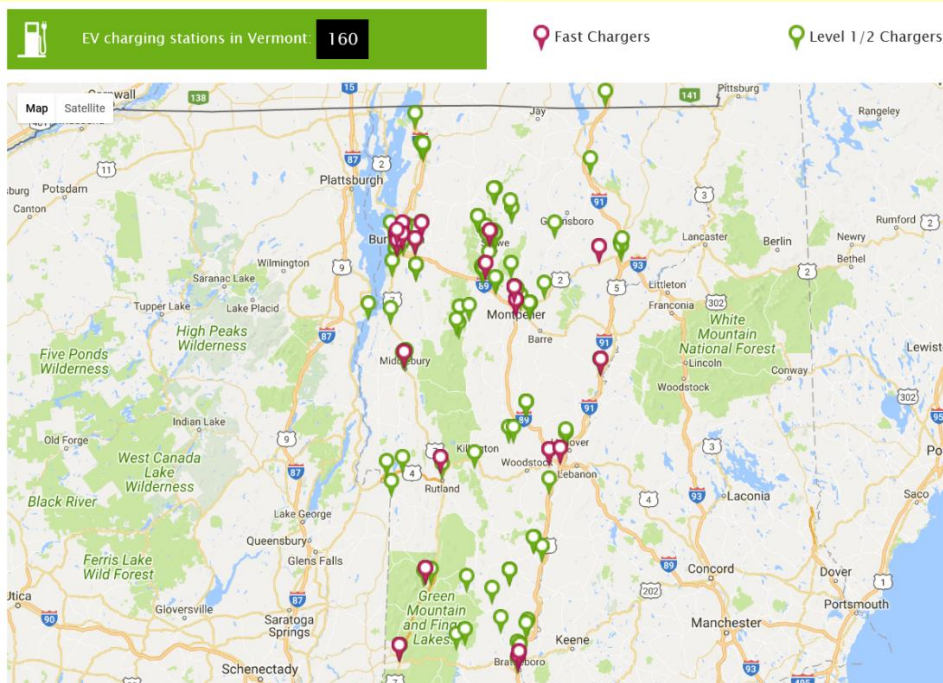
Applications are due November 30, 2018. For information about eligibility, funding priorities, and competitive criteria please review the [EVSE Program Guidelines and Application](#).



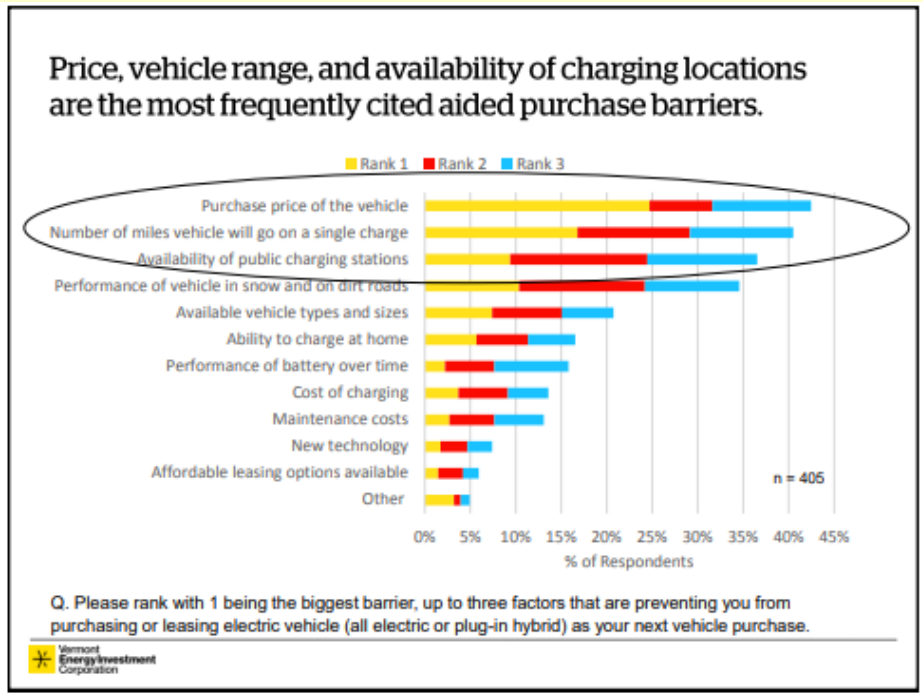
Governor Scott launches Vermont's EVSE Grant Program in Middlebury. September 2018. Photo Source: VT ACCD



# Vermont's network of charging stations is growing, but more are needed.



EV Charging Stations in Vermont  
Source: Drive Electric Vermont Charging [Map](#).



Drivers seek accessible re-fueling options to make EVs a convenient household choice. Most EV drivers charge at home with easy-to-install level 1 and 2 chargers. Some power companies even offer package incentives for home fill-ups. While the network of charging stations and vehicle mileage range has increased dramatically, buyers want to be confident they can get there from here, even on long trips. Building out Vermont's network of charging stations is good for Vermonters and good for Vermont's visitors. We all need a little less to worry about, climate change included!

Did you know that the State's Agency of Commerce has reimbursement grant funding available in FY19 to purchase and install publicly accessible EVSE on government property in qualified locations? [Learn more here.](#)



# Are your local investments, plans, & development regulations ready to welcome electric vehicles?

Vermont knows local leadership!

Schools and municipalities can host charging stations on municipal property and add EVs to their vehicle fleet for potential transportation savings.

In addition to the Agency of Commerce and Community Development's [grant program](#), schools and municipalities are also eligible to participate in Vermont's Building and General Services (BGS) contract with EVSE providers to offer customized support with siting, equipment selection, and installation. For technical assistance, contact BGS's Dan Edson at [Daniel.Edson@vermont.gov](mailto:Daniel.Edson@vermont.gov) or 802-505-3386.

Low-interest loans up to \$100,000 are available to support match and reimbursement costs for publicly accessible EVSE through the Vermont Economic Development Authority. [Learn more here.](#)

Finally, local plans and zoning/development regulations (also known as bylaws) can obstruct or support the ongoing development of electric vehicle charging stations. Many of Vermont's communities will want to consider bylaw updates to make EV charging possible in their community. Bylaw structures vary greatly from jurisdiction to jurisdiction, so there's rarely a one-size-fits all solution. This guide provides some common approaches to adapt for your community's needs.

A quick amendment to support charging stations doesn't have to be a big lift and can help you avoid problems "down the road", pun *fully* intended.

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*Bylaw structures vary greatly from place to place. The next section of this guide provides some regulatory approaches you can use to prepare municipal regulations for this new technology.*

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## 7 easy ways to support electric charging in your regulations

1. Define it
2. Allow charging stations as an accessory use (and structure) wherever there is parking
3. Allow charging stations as a principal fueling station, use only in specific cases
4. Keep the permit review process simple by allowing permit exemptions and administrative (staff) review
5. Prepare your parking standards
6. Update your sign standards
7. Check your performance standards



# 1. DEFINE IT

Bylaws that define frequently used terms or technical terms allow users to understand what you mean when you say \_\_\_\_\_ ?

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## **SAMPLE LANGUAGE: Definitions**

### **Electric Vehicle Charging Station (EVCS)**

*Electric Vehicle Charging Station (EVCS) means the public or private parking space(s) served by electric vehicle supply equipment (EVSE), including all signs, information, pavement, surfaces, surface markings, fee collections systems, and protective equipment in which a vehicle is recharged.*

### **Electric Vehicle Supply Equipment (EVSE)**

*Electric Vehicle Supply Equipment (EVSE) means the protective system which communicates with electric vehicles and monitors electrical activity to ensure safe charging, inclusive of all components: the conductors; the underground, grounded, and equipment grounding conductors; electrical vehicle connectors; attachment plugs; and all other fittings devices, power outlets, or apparatus installed specifically for the purposes of delivering energy from the grid to an electric vehicle.*

### **Electric Vehicle (EV)**

*Electric Vehicle means a class of automobiles that use electric motors powered by energy drawn from the grid or off-grid electric sources into a battery system for propulsion. This definition includes all battery electric (BEV) and plug-in hybrid electric vehicles (PHEV).*

### **Charging Levels**

*Standardized indicators of electrical force, or voltage, at which an EV's battery is recharged. EVSE is classified into categories by the rate at which batteries are charged: Alternating Current (AC) Level 1; AC Level 2; and Direct Current Fast Charging (DCFC).*



**Level 1**



**Level 2**



**Level 2**

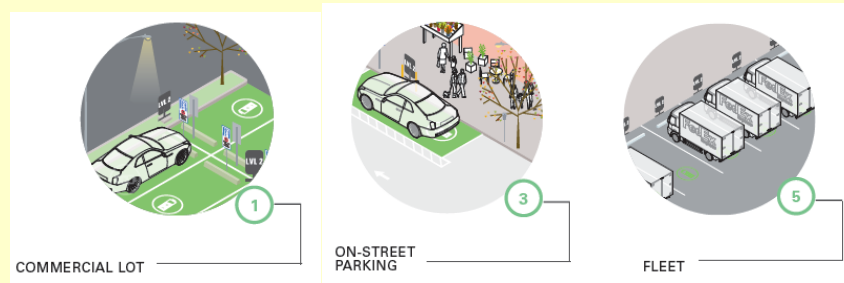


**Direct Current Fast Charge**

Graphic Source: CCRPC. Electric Vehicle Charging Station Guidebook. 2014



## 2. ALLOW CHARGING STATIONS AS AN ACCESSORY USE (AND STRUCTURE) WHEREVER THERE IS PARKING



Graphic Source: [New York State Siting and Design Guidelines. 2012](#)

Charging stations can be a good fit almost anywhere there is parking. That is why we do not recommend only allowing charging stations as a principal use -- or as an accessory use tied to specific principal uses, such as: fueling stations, restaurants, grocery stores, paid parking, and offices.

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*Most electric vehicle charging stations operate more like a vending machine or parking meter (accessory uses/structure) than a stand-alone fueling station (a typical principal use). How does your community classify a charging station?*

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Allowing charging stations as an accessory use is often the easiest permitting process for a new installation. If your bylaws also address accessory structures, you'll want to double check this language to ensure that EVSE will not snag. Consider this option if your bylaws regulate accessory uses and/or structures.

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### **SAMPLE LANGUAGE: Accessory Uses & Structures**

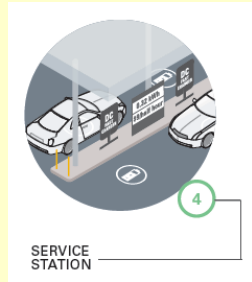
#### **Accessory Use Standards**

*Electric vehicle charging stations are permitted as an accessory residential and non-residential use within an approved parking area or approved fueling station service area in any zoning district and will not be subject to the provisions of this section.*

#### **Accessory Structure Standards**

*Electric vehicle charging stations and above-ground electric vehicle supply equipment are permitted as an accessory structure in any zoning district subject to the provisions of this section. (Typical accessory structure provisions include footprint maximums, modest setbacks, and height limitations.)*

### 3. ALLOW CHARGING STATIONS AS A PRINCIPAL FUELING STATION USE, ONLY IN SPECIFIC CASES



Graphic Source: [New York State Siting and Design Guidelines. 2012](#)

In rare cases, a site that offers electric vehicle charging as its primary purpose would function as a principal fueling station use, or service station. Here, you'll want to make sure your local definition for a fueling station and any associated performance standards would allow fueling for internal combustion and electric vehicles.

As EV markets and technologies progress, fast-charge electric fueling stations may function like today's typical through-travel gas stations, where vehicles re-fuel within minutes at a service area or bay instead of an approved parking space.

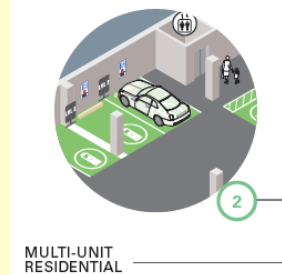
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#### **SAMPLE LANGUAGE:** Principal Uses & Defined Uses

##### **Fueling station**

*Fueling station means a specialized establishment for selling gasoline or other vehicle fuels. (Fueling station definitions often allow this use to be combined with a carwash or convenience store use.)*

## 4. KEEP THE PERMIT REVIEW PROCESS SIMPLE BY ALLOWING PERMIT EXEMPTIONS OR ADMINISTRATIVE (STAFF) REVIEW



Graphic Source: [New York State Siting and Design Guidelines. 2012](#)

Regulations that work well for permit applicants and reviewers alike consider the review process in relation to a project's impacts. Always consider what amount of review is right for different development scenarios to ensure that developer and municipal resources are spent wisely. Here are a few scenarios to think about:

**Existing Parking.** To install charging stations within existing parking spaces, consider permit exemptions or administrative review by the zoning administrator instead of review at a hearing before the planning commission, development review board, or zoning board of adjustment. Permits issued by the zoning administrator using clearly defined standards can address everything a typical hearing would without the time, expense, and unpredictability.

**Indoor Charging.** Communities without building codes may opt to exempt electric vehicle charging equipment from permitting when located indoors, such as a garage or under-building parking -- particularly if the equipment is dedicated to specific users and is not publicly accessible.

**On-Street Charging.** It's also common for a community to exempt work within the right-of-way from development regulation since this is often addressed by local highway access permits. On-street parking electric charging is highly visible and frequently benefits multiple establishments. With coordinated standards in place, one permit can work just as well as two – saving everyone time and expense.

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### **SAMPLE LANGUAGE: Exemptions & Limitations**

*Landowners do not need to obtain a zoning permit for:*

- *Interior alterations to an existing structure for electric vehicle charging stations that do not change any of the structure's exterior dimensions;*
- *The installation of Electric Vehicle Charging Stations within a public right-of-way.*



## 5. PREPARE YOUR PARKING STANDARDS

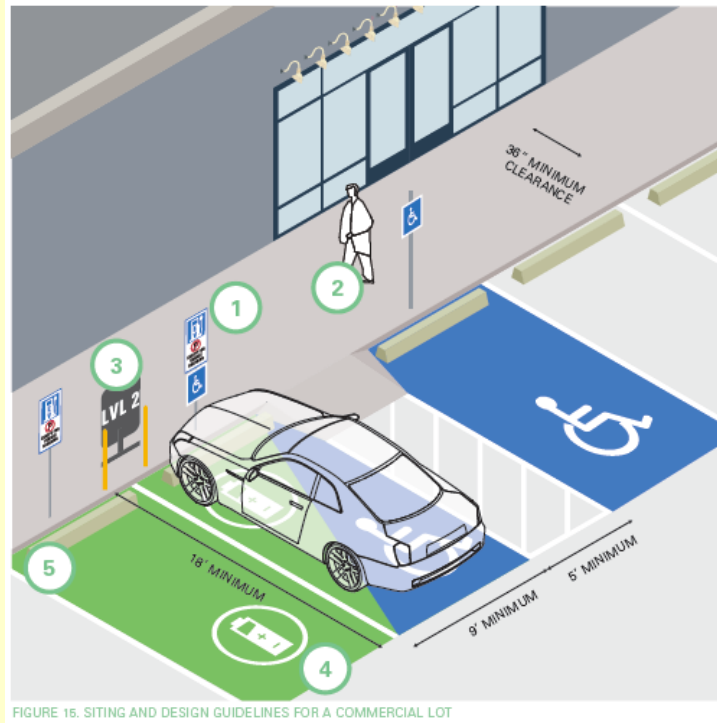


FIGURE 16. SITING AND DESIGN GUIDELINES FOR A COMMERCIAL LOT

### *Site Design Considerations*

1. clear signage
2. safe pedestrian pathways
3. convenient location
4. special striping
5. equipment protection

Graphic Source: [New York State Siting and Design Guidelines, 2012](#)

**Parking Requirements.** Parking spaces are expensive to build and maintain, and many Vermont municipalities have bylaws written in the 1960s and 70s that require auto-oriented development with excessive amounts of parking. This results in underutilized parking and additional stormwater runoff from unnecessary pavement or gravel. We recommend that municipalities support walkable development patterns by not requiring additional parking spaces to serve electric vehicles over and above what is normally required.

**Charging Station Requirements.** As communities re-think their parking strategies, many are eliminating parking requirements for downtowns, establishing parking maximums, and requiring that major developments and redevelopments set aside a certain percentage of spaces for EV charging. The Vermont Energy Stretch Code offers an approach communities can use as a model and already applies to developments subject to Act to 250 (Stretch Code §C708.1). Don't forget that electric vehicles can include electric-assisted bicycles, e-scooters, and e-

motorcycles now hitting the Vermont market, so make sure your language is open to all types of parking and recharging needs in your community.

**Use Requirements.** To avoid conflicts between drivers over time, communities will need to periodically balance access to and demand for electric vehicle parking with the parking needs and demand of other vehicles. In most current situations, we recommend that EV parking be set aside exclusively for EV users – *who may depend on it to reach their destination* – but at certain sites, communities may need to maintain flexibility for open access to reduce EV/internal combustion vehicle conflicts and meet site-specific demands. An example could be a site where all parking spaces are served by EVSE. In this case, it may not make sense to prohibit access to internal combustion vehicles. Finally, development regulations have their limits and are not the right tool to enforce parking use restrictions, which usually requires a stand-alone ordinance or other private tools that police parking abuse.

**Universal Accessibility & ADA Compliance.** Neither the federal government nor Vermont has set specific standards for EVSE accessibility requirements, but federal guidance is [available here](#). The language below encourages one, accessible EVSE space, even if it will not count toward the minimum number of accessible car and van parking spaces required at the establishment. Projects applying for [Vermont's EVSE grant-funding](#) will be expected to provide one ADA-accessible EVSE near the site's main entrance with maintained and level pathways between the parking and the building entrance unless otherwise approved to address site-specific constraints.

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**SAMPLE LANGUAGE: Electric Vehicle Parking**

*The applicant:*

- *May provide electric vehicle charging stations within parking areas as an allowed accessory use in any zoning district;*
- *Will not have to provide additional parking when spaces are converted and/or reserved for charging vehicles;*
- *Must provide a cord of sufficient length to accommodate port variations in passenger vehicles or otherwise allow vehicles to park front-to-back or back-to-front;*
- *Must protect and place ground and wall-mounted equipment to prevent physical damage to the control device by vehicles and snow plows (e.g. bollards and/or curbing);*
- *Must count electric vehicle charging station parking spaces toward the minimum amount of parking requirements (if any) under this section;*
- *May/Must provide a minimum of one accessible electric vehicle charging station parking space in close proximity to the building entrance with a maintained and barrier-free route of travel (It is not necessary to designate the accessible EV Charging Station exclusively for disabled users; however, the Americans with Disabilities Act (ADA) may require EV Charging Stations to meet accessibility requirements separate from these regulations.);*
- *May/Must provide a minimum of 1 charging station for every 10 parking spaces required.*

## 6. UPDATE YOUR SIGN STANDARDS



Source: CCRPC. Electric Vehicle Charging Station Guidebook. 2014

While Vermont has a valued tradition of discourages excessive roadside signage, EV charging is new to many and basic signage can assist travelers and reduce user conflicts. We recommend that on-site wayfinding, EV identification, and parking restriction signage be treated like other small traffic control signs, such as signage for Americans with Disabilities (ADA) required parking spaces.

Projects may also be eligible for off-site directional signs according to the VTrans installation policy. For more information contact Christopher Mercon from VTrans at [Christopher.Mercon@vermont.gov](mailto:Christopher.Mercon@vermont.gov) or 802-498-8774. Consider the following for EV sign provisions.

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### **SAMPLE LANGUAGE:** Electric Vehicle Charging Station Identification Signs

*The applicant:*

- *Must provide each electric vehicle charging station with on-site signs approved by the Manual Uniform Traffic Control Devices to identify electric vehicle parking (general service signs) and restrict access (regulatory signs) by stating, “no parking except while charging, vacate when complete” unless waived by the appropriate municipal panel or zoning administrator (see example signage above). For purposes of this section, “charging” means that an electric vehicle is parked at an electric vehicle charging station and is connected to the electric vehicle supply equipment port. If time limits or vehicle removal provisions are to be enforced, regulatory signage including parking restrictions shall be installed immediately adjacent to, and visible from the electric vehicle charging station.*



## 7. CHECK YOUR PERFORMANCE STANDARDS



Source: CCRPC. Electric Vehicle Charging Station Guidebook. 2014

Performance standards can communicate what your community values and expects to support the health, safety and welfare of residents and visitors. Charging stations are designed to be safe and convenient. Below are a few examples to consider. When in doubt about a standard, tread lightly; you can always adjust along the way.

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### **SAMPLE LANGUAGE:** Electric Vehicle Charging Station Performance Standards

*The applicant:*

- *Must demonstrate that the proposed development has been designed to facilitate use of energy-efficient modes of transportation such as walking, biking, transit, and electric vehicles as feasible and appropriate given the location and use (If subject to site plan or conditional use review).*
- *May establish and collect a service fee for the use of an approved electric vehicle charging station without affecting the land use classification of the property;*
- *Must construct with equipment and service facilities that are designed and/or located to prevent water from entering or accumulating within the components in river corridor areas;*
- *Must place charging equipment and manage cords to avoid tripping hazards in public locations;*
- *Must locate ancillary mechanical equipment and components (but not the charging station itself) so that they will be screened from view to the maximum extent feasible, and if adequate screening is not possible use materials and colors that will camouflage the ancillary equipment.*

## Other Permits

Keep in mind that other State permits could apply to your project. For example, the Vermont Department of Public Safety, Division of Fire Safety (<http://firesafety.vermont.gov/professions/electrical>) administers the State Electrical Safety Program, which includes permit requirements for EV charging equipment located on commercial or residential multifamily properties. Single family residential installations are exempted.

To determine what permits could apply, you can request a project review sheet from your region's permit specialist. Learn more [here](#).

## Additional Resources

Several online resources are linked below to help you learn more about this emerging technology and regulatory approaches.

- [Siting and Design Guidelines for Electric Vehicle Supply Equipment](#). New York State Energy Research and Development Authority and the Transportation and Climate Initiative. November 2012.
- [Electric Vehicle Charging Station Guidebook: Planning for Installation and Operation](#). Chittenden County Regional Planning Commission. June 2014
- [Recommended Bylaw Updates for Electric Vehicle Charging](#). Chittenden County Regional Planning Commission. June 2014
- [\[EVSE\] Installation Guide](#). April 25, 2018. Drive Electric Vermont
- [Plug-In Electric Vehicle Handbook for Workplace Charging Hosts](#). US Department of Energy. August 2013