NESCAUM

Preparing Our Communities for Electric Vehicles

Facilitating Deployment of DC Fast Chargers

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September 2019

Preparing Our Communities for Electric Vehicles (EVs)

EVs offer many benefits and will become an increasing part of our communities.

- Forward-thinking jurisdictions are identifying and removing barriers to streamline processes to permit the charging stations that are needed to accelerate widespread adoption of EVs.

- This presentation will provide background on EV charging equipment and recommended actions to streamline the permitting process for the equipment.

An Introduction to Electric Vehicles

Types of Electric Vehicles (EVs)

Battery Electric Vehicles (BEVs) powered solely by an electric battery

Plug-in Hybrid Electric Vehicles (PHEVs) powered by a combination of an electric motor and a gasoline engine

Both BEVs and PHEVs are considered Plug-in Electric Vehicles (PEVs) and require electricity to charge (or “fuel”) the electric battery.

Benefits of EVs

Environmental Benefits

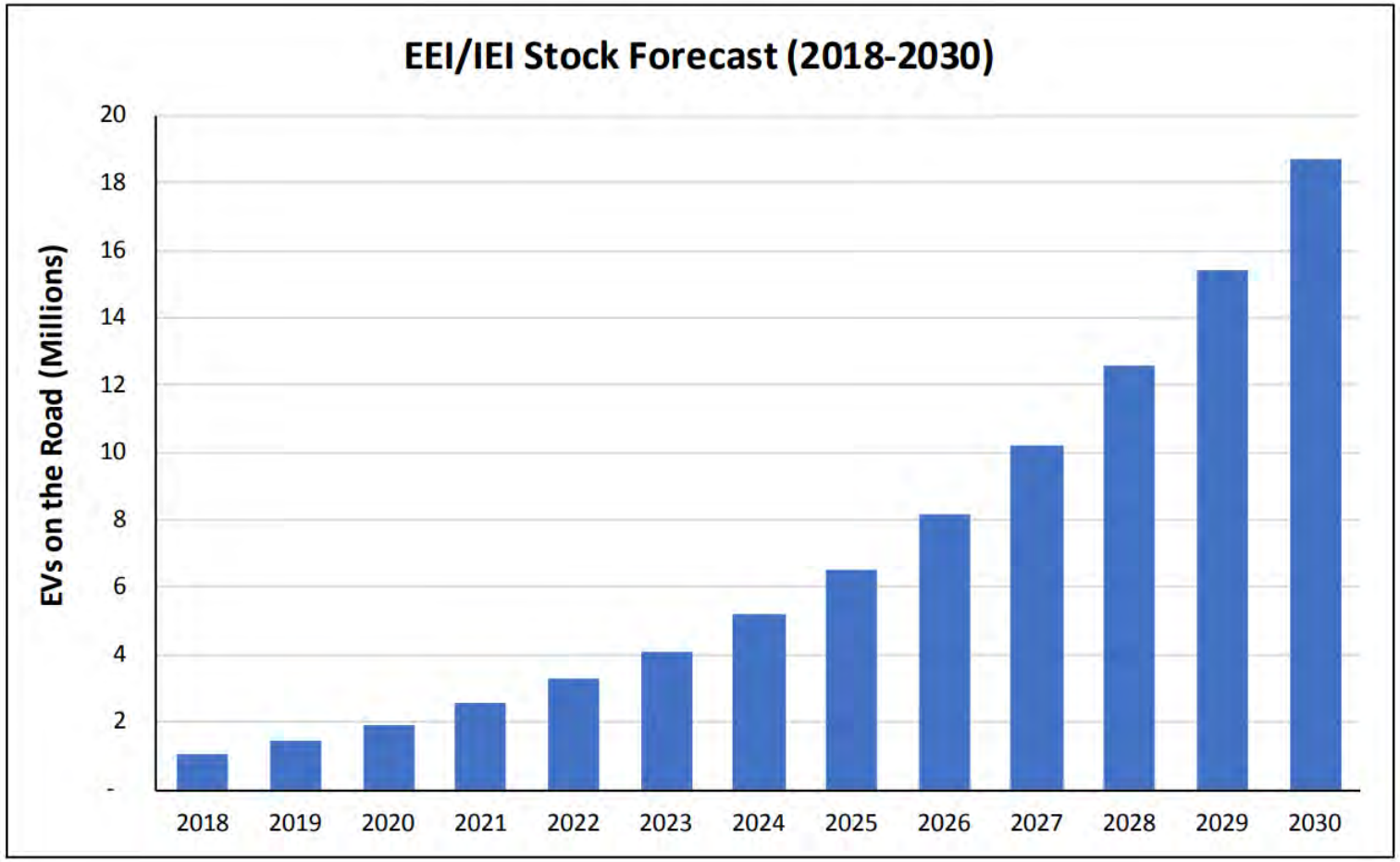
- Reduced emissions of greenhouse gases, NOx, and other pollutants
- Key strategy for integrating renewables into transportation
- EVs are quieter than gasoline-powered vehicles

Consumer Benefits

- EVs are fun to drive
- Cheaper to fuel and maintain
- Convenience of charging overnight at home

EV Forecast

There are currently over one million EVs on the road in the US. That number will grow to over 18 million by 2030.



Source: Electric Vehicle Sales Forecast and the Charging Infrastructure Required Through 2030. The Edison Foundation and Edison Electric Institute. November 2018. Available at: http://www.edisonfoundation.net/iei/publications/Documents/IEI_EEI%20EV%20Forecast%20Report_Nov2018.pdf

In 2018, there were over 40 different models of EVs available in the US

Including SUVs, minivans, sports cars, vehicles with four-wheel drive, and others.

Slide Credit:
CARB

Heavy-duty Electric Market Growing - 2016

	2B-3	4-5	6-7	8
Commercial			   	
Demonstrations				

*Excludes transit buses, not all models shown

Slide Credit: CARB

Heavy-duty Electric Market Growing - Today

Electric Vehicle Charging Equipment

Types of Charging

Level 1

2 to 5 miles of range per hour of charging

Standard 120v AC Wall Outlet

Level 2

10 to 20 miles of range per hour of charging

Requires 208v electrical service and dedicated 40 amp circuit – the same kind used by a clothes drier or stove

DCFC

60 to 80 miles of range per 20 minutes of charging*

Requires three-phase 480V AC electric circuit

Needs to be mounted on an equipment pad

***Note**: Most existing DCFC stations are 50kW, however, new 350kW DCFC are capable of delivering 200 miles of range in 10 minutes.

DC Fast Chargers

DCFCs range from 50 to 350 kilowatts

There are three different plug types that are used by different vehicle manufacturers:


SAE Combined Charging System (e.g., BMW, GM, VW)

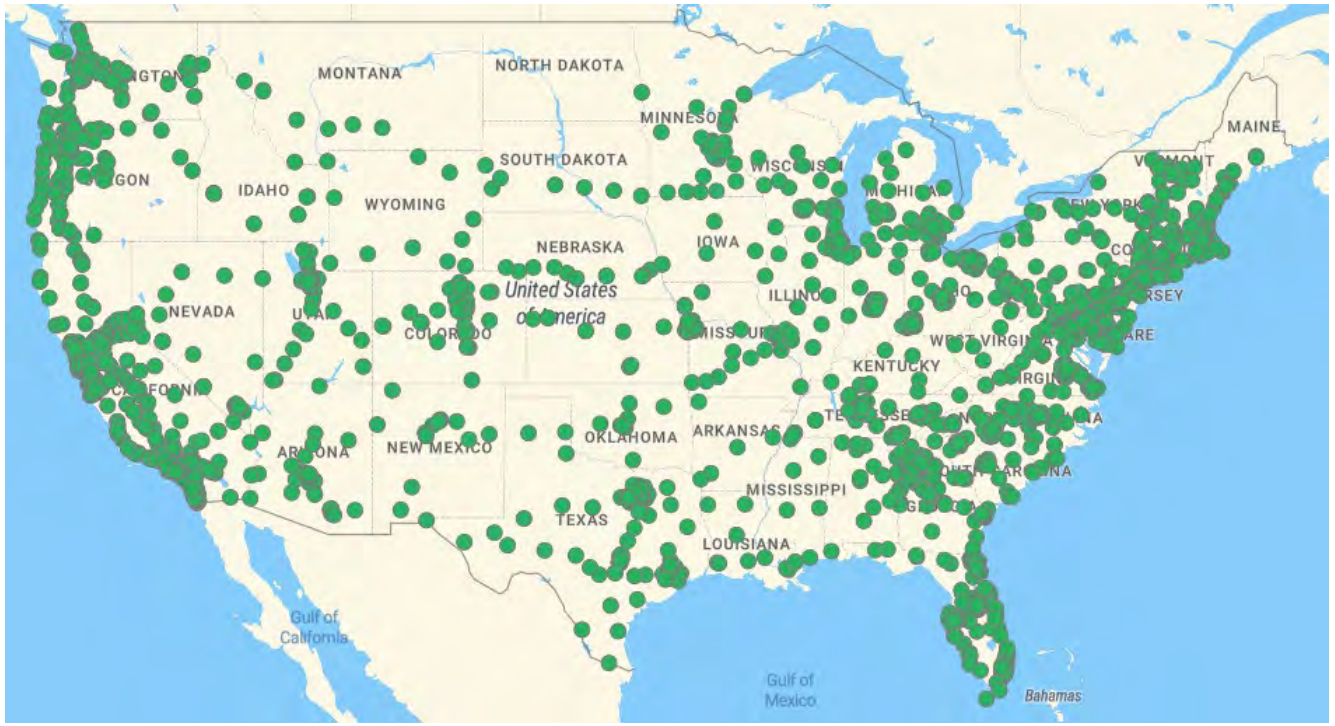

CHAdeMO (e.g., Nissan, Mitsubishi)


Tesla (used exclusively by Tesla)

Most new non-Tesla chargers come equipped with both SAE CCS and CHAdeMO plugs.

More on DCFC

DCFC Locations in the United States



Source: Alternative Fuel Data Center

DCFC is a safe technology that is built to code and follows rigorous safety standards.

DCFC is an essential component of the EV charging ecosystem, because it delivers the fastest charge for EV drivers, which:

- facilitates long distance travel,
- provides an alternative to home charging, and
- allows drivers to “top off”.

There are currently over 2,700 DCFC locations in the United States, with billions of dollars of planned investment by states, utilities, and EVSE companies.

DCFCs are Not Comparable to Gas Stations

Gas stations should not be used as a blueprint for how to permit DCFC.

Gas station's permits need to account for several features that DCFC do not, including that gasoline is a toxic substance that, if spilled or leaked, can get into waterways, groundwater, etc.

Gas stations are typically accompanied by a storefront, which requires HVAC and plumbing equipment, and gas pumps that require canopies and underground storage tanks.

DCFC are also typically added to existing developments, as an accessory use, whereas gas stations and their associated stores are typically stand-alone enterprises.

Siting Charging Equipment

Choosing a Site for DCFC is Resource Intensive

Station developers consider many factors when selecting charging sites, such as:

- Traffic patterns;
- Proximity to major roadways;
- Safety;
- Nearby services (i.e. stores, coffee shops, etc.); and
- Appropriate lighting (i.e. well-lit at night).

Station developers also work with utilities to ensure adequate electrical infrastructure and an ability to connect the station to the grid. Electrical capacity and easements may limit charger placement at a site.

Once a site is selected, the station developer and site host enter into a contract, which often restricts or dictates the specific on-site location of the chargers.

All of this is done before an EVSE company applies for a permit.

DC Fast Charging Stations: An Emerging Issue for Authorities Having Jurisdiction (AHJs)

Photo credit: Steve Brady

Most AHJs have <u>never</u> permitted DCFC stations

As a result, the permitting process for DCFC stations is often:

- Undefined
- Resource intensive
- Lengthy
- Variable from place to place

Best-Practices for Streamlining DCFC Permitting

Standardize the permit review and inspection process

- Classify DCFC stations as an accessory use that do not trigger zoning review and clearly identify any exceptions.
- Provide concurrent reviews for building, electrical, etc.
- Clearly establish the grounds for denying a building permit (e.g., California limits permit reviews to health and safety issues).
- Develop inspection checklists specifying what needs to be inspected and when, that the project will be inspected to ensure consistency with issued permits, documents to bring, and who should be present.

Make the permitting process transparent

- Create facts sheets to clearly identify required application materials, where to find applications, timelines, fees, and points-of-contact.
- Feature this information prominently on website.

Offer options to submit permit applications electronically

- Provide forms, ideally fillable PDF applications that accept electronic signatures, online; or
- Provide application forms on website and allow applications to be submitted via email.

Count EV charging spaces as parking spaces

- Update ordinances to clarify that spaces for charging stations count toward minimum parking requirements.
- To incentivize the deployment of charging stations, some jurisdictions count EV charging spaces as more than one parking space for zoning purposes.

Develop expertise and share knowledge

- Offer pre-permitting meetings during the siting phase.
- In larger jurisdictions, designate an “EVSE Expert,” who is the point person on EV charging applications.
- Coordinate with other AHJs in your region to share best practices and create consistency.

Appendix

RESOURCES

Guides

Electric Vehicle Charging Station Permitting Guidebook (GO-Biz):
Link TBD, publication expected June 2019.

Promoting Electric Vehicle Charging Station Installations: Increasing Planners' & Municipal Planning Boards' Involvement (NYSERDA):
https://static1.squarespace.com/static/53b2d171e4b058cbcb895ac5/t/5a956bac24a694ce121a5ce3/1519741891764/Revised_Planning_Board_EVSE_Implementation_FINAL.pdf

Electric Vehicle Charging Station Permitting and Inspection Best Practices: A Guide for San Diego Region Local Governments (Center for Sustainable Energy):
https://energycenter.org/sites/default/files/docs/nav/transportation/plug-in_sd/Plug-in%20SD%20Permitting%20and%20Inspection%20Report.pdf

Montclair Township Alternative Fuel Vehicle Readiness Plan (North Jersey Transportation Planning Authority):
https://www.njtpa.org/getmedia/356e2cb2-7d58-4066-8970-b23f3612f405/Montclair-AFV-Infrastructure-Readiness-Plan_FINAL_Dec17.pdf.aspx

Recommended Bylaw Updates for Electric Vehicle Charging (Chittenden County Regional Planning Council):
https://www.ccrpcvt.org/wp-content/uploads/2016/01/20140625_CCRPC_EV_zoning_model_language_clean.pdf

Model Fact Sheets

Electric Vehicle Charging Stations (Fairfax County, Virginia)
https://www.fairfaxcounty.gov/landdevelopment/sites/landdevelopment/files/assets/documents/pdf/publications/electric-vehicle-station.pdf

Websites

Alternative Fuels Data Center
https://afdc.energy.gov/fuels/electricity.html

Clean Cities Coalitions
https://cleancities.energy.gov/coalitions/

ACCESSORY USE EXAMPLES

Atlanta, GA

"**Permitted accessory uses and structures**
Uses and structures which are customarily accessory and clearly incidental to permitted principal uses and structures shall be permitted in this district. Devices for the generation of energy, such as solar panels, wind generators and similar devices, as well as electric vehicle charging stations equipped with Level 1, Level 2, and/or DC Fast Charge EVSE are allowed."

"Electric vehicle charging stations equipped with Level 1 or Level 2 are allowed as a permitted accessory use and structure in all zoning districts, and charging stations equipped with DC Fast Charging are allowed as a permitted accessory use and structure in the following zoning districts: Commercial; Industrial; SPI -11, -15, -16, -18, -20; PD-MU, -OC, and – BP; Martin Luther King, Jr. Landmark; Neighborhood Commercial; Live Work; and Mixed Residential Commercial."

Atlanta, Code of Ordinances, Part 16 (Zoning), see e.g., §16-19B.004. - Permitted accessory uses and structures.

Montpelier, VT

"Electric vehicle charging stations may be provided within parking areas as an allowed accessory use in any zoning district."

City of Montpelier Zoning and Subdivision Regulations §3011.I(6)

Baltimore, MD

"Notwithstanding § 2-201 {"Application of Code"} of this subtitle, this Code does not apply to the following uses and structures, unless otherwise specifically provided in this Code: . . . (8) automobile charging stations, whether electric or solar."

Baltimore City Code, Zoning §2-202. Exempt utility and governmental uses.

EXPEDITED PERMIT PROCESS EXAMPLES

Otto, NY

"The permitting process for EVSE will be streamlined by:

1. Providing a single permit for EVSE's
2. Shall have a two day turn around time for permits
3. Shall eliminate reviews that do little to validate the safe and efficient operation of a proposed EVSE system. Only one initial inspection shall be required for this facility."

Town of Otto Zoning Ordinance, §6.6 Electric Vehicle Supply Equipment (EVSE).

Sacramento, CA

"A. Applicability. This section applies to applications for expedited building permits for electric vehicle charging stations pursuant to California Government Code Section 65850.7.

B. Process.

1. The building official shall adopt a checklist of all requirements for an application for an expedited building permit for electric vehicle charging stations. The checklist shall substantially conform to the checklist and standard plans contained in the most current version of the "Plug-In Electric Vehicle Infrastructure Permitting Checklist" of the "Zero-Emission Vehicles in California: Community Readiness Guidebook" published by the Governor's Office of Planning and Research.
2. If the building official determines that the application for an expedited building permit is complete and meets the requirements of the checklist, the building official shall issue the expedited building permit.
3. If the application for an expedited building permit is incomplete, the building official shall provide a written correction notice of the deficiencies and the additional information required to be eligible for expedited building permit issuance.
4. The checklist, application form, and any other documents required by the building official shall be published on the city's website.
5. An application for an expedited building permit for electric vehicle charging stations may be filed by email.
6. If the chief building official finds, based on substantial evidence, that an electric vehicle charging station could have a specific adverse impact upon the public health or safety, the city may require the applicant to apply for a conditional use permit pursuant to Title 17."

Sacramento City Code §15.08.190 Expedited building permit process for electric vehicle charging stations.

EV PARKING EXAMPLES

Montgomery County, MD

"A parking space that provides an electric charging station must count toward the minimum number of parking spaces required."

Montgomery County Zoning Ordinance, Article 59-6, §6.2.3. Calculation of Required Parking

Montpelier, VT

"Additional parking shall not be required when parking is converted and reserved for charging vehicles and such spaces shall count towards the minimum parking required under this section."

City of Montpelier Zoning and Subdivision Regulations §3011.I(6)

Stockton, CA

"Electric vehicle charging stations are permitted in all required and non-required off-street parking spaces. As an incentive for the provision of electric vehicle charging stations, a reduction in required parking is permitted up to two required parking spaces for each electric vehicle charging space provided, up to a maximum reduction of 10 percent of the total required parking."

Stockton Municipal Code §16.64.030

Sacramento County, CA

"Parking spaces designated for electric vehicle charging stations shall be counted toward meeting the minimum parking requirement."

Sacramento County Zoning Code §5.9.3.A.8.

"Each electric vehicle charging station shall be permitted to substitute for two (2) vehicular parking spaces. The area needed for charging equipment shall count toward meeting the parking space requirements."

Sacramento County Zoning Code §5.9.5.C.1.f.

Example of Streamlined Permitting Process: City of Sacramento

1. City Planning Director reviews Site Plan with PDM and provides feedback in 24 hours

1 work day

2. City receives permit application. Planning reviews drawings for adherence to approved Site Plan

1 work day

3. Planning Department provides approval with same day turnaround

1 work day

4. Building and Fire Department review concurrently.

10 work days

TOTAL PERMITING TIME: MAX 3 WEEKS