CHARGE at HOME

ELECTRIC VEHICLE CHARGING TOOLKIT

FOR NEW AFFORDABLE MULTIFAMILY HOUSING APARTMENT DEVELOPMENTS

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PURPOSE

This toolkit is designed to guide affordable housing owners and developers through the process of installing electric vehicle (EV) charging infrastructure at new deed-restricted, government-subsidized, affordable multifamily housing (MFH) properties. This guide focuses on properties in the planning phase or the early stages of construction. For existing properties refer to the Existing Affordable Housing Property Toolkit.

Much of the U.S. population will be driving EVs within the next thirty years. New affordable housing properties built today will still be operational throughout and beyond that timeframe, therefore this guide recommends planning to meet the EV charging needs of current and future residents. Because retrofitting parking spaces can be cost-prohibitive, installing infrastructure to support charging during initial construction is critical to ensuring low-income residents have access to reliable and affordable EV charging.

Without charging onsite, residents may overlook EVs entirely, assuming they are too expensive without reviewing the incentives that are available. EVs can provide a cost-effective transportation option that saves low-income families money, and it all starts with convenient and reliable charging where they park.

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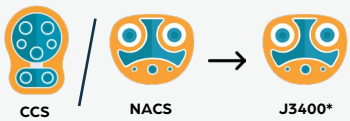
1. California Air Resources Board's (CARB) 2019 technical analysis report on CALGreen code costs and benefits indicates 86-89% cost savings when EV-capable spaces are installed compared to retrofitting costs. EV Charging Infrastructure: Nonresidential Building Standards
2. This 2016 modeling report shows a 64%–75% reduction in cost when EV charging infrastructure is installed during initial construction rather than retrofitted in existing buildings. Plug-In Electric Vehicle Infrastructure Cost-Effectiveness Report from July 20, 2016

EV CHARGING PRIMER

TYPES OF EV CHARGING

For general information about EVs, please see our resources here. EV charging is typically categorized as Level 1 (L1), Level 2 (L2), and Level 3 (L3) or Direct Current Fast Charging (DC fast charging), as shown in the table below:

SLOWEST — FASTEST

	LEVEL 1	LEVEL 2	LEVEL 3
USE CASE	HOME	HOME/WORK/ PUBLIC	PUBLIC
POWER	<2 KW (USUALLY 1.2 KW)	2.4–19.2 KW (USUALLY 6.7 KW)	25–350 KW (NEW CHARGERS ARE ≥ 150 KW)
PLUG SHAPE	 J1772	 J3400*	 CCS / NACS → J3400*
OUTLET SHAPE	 120 V	 208 or 240 V**	Hardwired only 
COST	$	$$	$$$$

Level 1 (L1) charging equipment provides charging through a common 120-volt (120V) alternating current (AC) wall outlet. A 20-amp circuit is standard. Charging an EV to 80% from empty on a L1 charger/outlet (120V) typically takes 30 to 50 hours, depending on battery size, vehicle settings, and circuit breaker components.

Level 2 (L2) charging equipment offers higher-power AC charging speeds through 208/240 volt AC circuitry. Charging an EV to 80% from empty on a L2 charger/outlet typically takes 4 to 10 hours, depending on battery size and charger power output. This is the most common charging level for apartments where EVs will be parked overnight.

Level 3 (L3), also known as Direct Current Fast Charging (DCFC), offers significantly higher speeds and is typically installed along heavy-traffic corridors, or at charging hubs in urban or suburban locations. DCFC equipment can charge EVs 80 percent in 20 minutes to one hour.

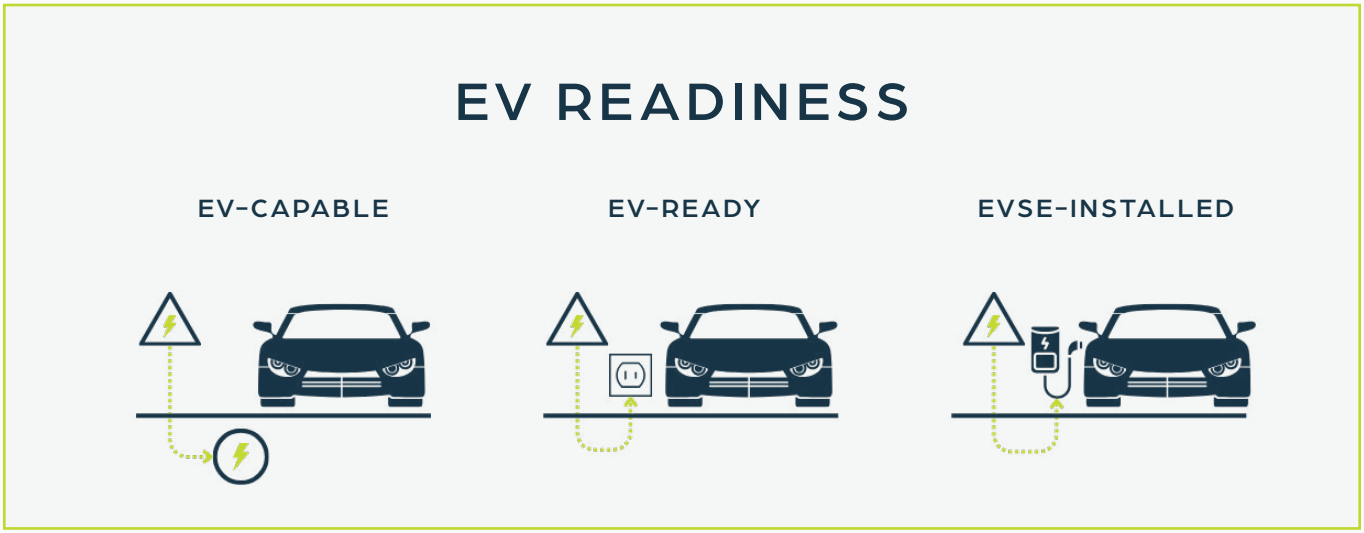
*The Society of Automotive Engineers' (SAE) J3400 standard will be launched in early 2025 and will be integrated into all new charging manufacturing in 2025. This will eventually become the universal standard for EV charging in the US and most automotive and charging manufacturers will adapt this standard for L1, L2, and L3 charging.
** Any chargers utilizing above 50-amp circuits must be hardwired. (NEC)

GLOSSARY OF TERMS

UNDERSTANDING EV-READY AND EVSE-INSTALLED PARKING SPACES

There are three different types of EV charging spaces: EV-capable, EV-ready, and EV supply equipment (EVSE)-installed.

READINESS LEVEL DEFINITIONS



(SOURCE: EV CHARGING FOR ALL COALITION, 2023)

EV-CAPABLE

EV-capable parking spaces have panel capacity and conduit to the parking space. The parking space is "capable" of being upgraded with circuit breaker, wiring, and receptacle/junction box (J-box) or EVSE at a later time without panel upgrades.

EV-READY

EV-ready parking spades have panel capacity, an installed breaker, wiring, and conduit, terminating in a receptacle or J-box.

EVSE-INSTALLED OR EV-CHARGER INSTALLED

EVSE-installed or EV-charger installed parking spaces have an EV charger or EV smart charging outlet installed.

UNDERSTANDING CHARGING SOLUTIONS

NETWORKED VS. NON-NETWORKED CHARGERS

EV chargers are either non-networked or networked. **Non-networked chargers** are typically not connected to the internet and do not provide smart charging capabilities. These chargers are particularly useful in locations without cellular access. Some charging vendors offer chargers with smart features that are not dependent on a direct internet connection.

Networked chargers are typically connected to the internet via wifi, cellular, or ethernet lines. Networked chargers enable features including payment, notifications, access control, load management, reservations, and idle fees. Almost always, networked chargers are better suited to meet both property owner and resident needs than non-networked chargers.

EV smart charging outlets are similar to regular wall outlets, but are networked. Residents must bring portable chargers to use these receptacles. EV smart charging outlets, commonly known as smart outlets, can dispense power up to 40 amps continuous at 240 volts depending on the product, wiring, and circuit hardware.

3. "Plugzio | Affordable, Simple, Scalable EV Charging," Plugzio, n.d., https://www.plugzio.com/
4. "Why Orange | Orange," n.d., https://www.orangecharger.com/why-orange.
5. Pando Electric, n.d., https://www.pandoelectric.com/
6. GoPowerEV, n.d., https://gopowerev.com/news

SMART OUTLETS

3

4

5

6

GLOSSARY OF TERMS

USER EXPERIENCE

While evaluating EV charging vendors, consider the user experience for residents, property owners, and managers.

RESIDENT CONSIDERATIONS

- Ease of account set up and starting a charging session
- Session monitoring and notifications
- Functionality without internet access

PROPERTY MANAGEMENT CONSIDERATIONS

- Ability to monitor charger status, revenue, and long-term usage
- Ability to generate reports and automatic reporting of broken/ inoperational chargers
- Ability to integrate with third-party accounting and utility management systems

EV CHARGING VENDORS

There are two types of charging vendors to consider:

EV CHARGING NETWORK

EV charging network providers provide networked chargers with smart charging features. Some of them may work with local electricians or have in-house electricians to provide installation services.

EV CHARGING CONSULTANTS

EV charging consultants and management providers can provide a variety of services including long- and short-term planning recommendations, virtual cost estimates, full service installation, charger management, maintenance, identifying and vetting charging vendors, etc.

Non-networked chargers (offline chargers with no smart features) can be purchased as standalone hardware from EV charging hardware manufacturers. However, incentive programs often require networked chargers. For more information on incentives, please see Section 2.1.

PLANNING AND DESIGN

1.1 IDENTIFY GUIDANCE AND EV MANDATES

Consult with the tax credit experts to identify relevant EV charging guidelines in the subsidization program. For example, review the relevant state Qualified Allocation Plan (QAP) for Low Income Housing Tax Credit (LIHTC) guidance.

Identify any applicable building codes or ordinances (state and municipal) mandating EV charging at new buildings. These typically mandate a minimum number of a) EVSE–installed or EV–ready parking spaces and b) a minimum number of accessible EV charging parking spaces.
Follow this guide to optimize planning and build–out of EV chargers and EV–ready and capable infrastructure to avoid costly retrofits as EV charging demand increases.

To learn more about incentives and rebates that may subsidize EV charging infrastructure costs, see Section 2.1 and check out the Charge at Home Project Builder Tool.

1.2 DETERMINE CHARGING CONFIGURATION

CHARGING CONFIGURATION DEFINITIONS:

FIRST-COME, FIRST-SERVED EV CHARGING (AKA COMMUNAL)

First-come, first-served EV charing (aka communal) is available for use by any EV driver with access to the parking lot. This is an unassigned parking space.

DEDICATED EV CHARGING

Dedicated EV charging is when an EV charger is available for a specific parking space and the associated resident that has been assigned that space.

For first-come, first-served charging, residents may have to move their cars after charging, depending on the supply of chargers and demand from EV driving residents.

Review our Resources section or send us a question here.

1.3 DETERMINE THE QUANTITY OF EV-READY AND EVSE-INSTALLED SPACES

After identifying which charging configuration makes the most sense for the property, determine how many EV-ready and EVSE-installed parking spaces will be constructed.

Use the Charge at Home Project Builder Tool to identify the cost estimates and ROI for different build-out scenarios.

Options to consider (arranged incrementally in terms of level of effort and futureproofing):

OPTION 01 – BUILD TO CODE

Build charging infrastructure to minimum code requirements and to optimize basis points for the subsidization program being pursued.

Building codes and ordinances (both state and municipal) may mandate a specific number or percentage of parking spaces to be EV-ready and/or EVSE-installed.

PROS

- Cost Savings Upfront
- Code Compliance

CONS

- Unmet Charging Demand if No Requirement
- Lost Revenue Opportunity
- Deferred Retrofitting Costs

OPTION 02 – BUILD BEYOND CODE

In addition to meeting the legal mandates, plan for more parking spaces to be EV-ready, EV-capable, and/or EVSE-installed, depending on projected EV adoption rates in the next 5–10 years. Most state Departments of Transportation (DOT) or Departments of Motor Vehicle (DMV) show current EV registrations to help track, and some show historical and projected increases. The best way to gauge resident interest is always by surveying residents regularly.

Many states have mandated 100 percent of sales of new cars to be electric by 2035 (see list here). Future-proof the buildout by planning for EV-capable, EV-ready, and/or EVSE-installed parking spaces based on projected demands.

See Section 2.4 to understand how value engineering can help reduce costs while maximizing charging buildout.

PROS

- Optimizes For Current and Near-Future Demand
- Code Compliance

CONS

- Deferred Retrofitting Costs
- Higher Upfront Costs than Code Compliance

OPTION 03 – FULL BUILDOUT

Full buildout entails designing property parking for when all vehicles onsite are EVs. This option future-proofs parking spaces by having them be made EV-capable or EV-ready. Deploying a charger in an EV-ready space can take less than a couple hours, and in an EV-capable parking space in only a few hours, reducing the cost and property management burden.

Recommendations:

- Provide one assigned EV-ready parking space per unit.
- Install several first-come, first-served chargers to entice EV-driving residents during the initial lease-up.
- Trunk conduit (feeder) lines with no stub-ups in parking areas for future charging infrastructure build-out.

PROS

- Optimizes For Current and Near-Future Demand
- Mitigates Retrofit Costs

CONS

- Higher Upfront Costs

1.4 DESIGN STANDARDS

ACCESSIBILITY DESIGN STANDARDS

NUMBER OF ACCESSIBLE PARKING SPACES

Based on local, state, and federal regulations, determine how many ADA-accessible EV charging spaces are required, if any. Typically, specific site factors, local ordinances, and parking lot size determine the number of accessible parking spaces needed.

DESIGNING ACCESSIBLE PARKING SPACES

The U.S. Access Board Design Recommendations for Accessible Electric Vehicle Charging provides guidelines for designing accessible EV parking spaces based on specific Americans with Disabilities Act (ADA) sections. An accessibility consultant can help with where to site accessible parking spaces and design specifications.

The following are suggested guidelines for designing accessible parking spaces adapted from the Access Board Design Recommendations.

The U.S. Access Board's Design Recommendations for Accessible Electric Vehicle Charging Stations are not definitive and to avoid a lengthy permitting process talk with the permitting authority early on in the process or consider hiring an accessibility consultant or risk fines or an extended permitting process.

1.

Accessible vehicle charging spaces should be identified as parking spaces connected to accessible routes. Both width and length will be determined by the ADA sections that apply to the property and any state or local ordinances that guide accessible parking space dimensions. Typically, a 9–foot ADA space, with a 5–foot wide hash–marked accessible aisle on one side, or potentially both sides, when multiple accessible parking spaces are required. The space should be positioned for unobstructed access to both vehicle sides to ensure charging cords can reach all vehicle parts.

2.

Positioning chargers in relation to accessible parking spaces:

- Nothing can be placed in the 5–foot accessible aisle.
- The placement of a charger for an accessible space must maintain the accessible *Clear Floor Space (CFS)*.
- A 48″ by 24″ CFS is required in front of the charger, and chargers must face the CFS.
- Bollards must be outside of the CFS in front of the charger.
- The sidewalk and curb width may need to be altered if chargers for accessible parking spaces are placed on the sidewalk
- The height of the charger screen and any interactive components must be located below 48″ above grade level.

3.

EV chargers should have accessible communication features to enable people who are deaf or hard of hearing, people with vision impairments (but who drive), little people, and others with disabilities who might not need accessible mobility features (like access aisles) to use an EV charger. The need for this may be mitigated in some cases if the connected phone app has such accessible communication features.

4.

Cable management systems, including retractors and extenders, may be required to ensure the area around the vehicle remains clear when charging cables are not extended.

DEVELOPER DESIGN STANDARDS

Developer design standards may vary depending on developer type, property location, EV adoption rate forecasts, property type (garden, mid-rise apartments, etc.), and property class.

1

DESIGN OF EV CHARGING SPACE DIMENSIONS

If possible, consider adding an extra 6-inches to parking space widths to accommodate the maneuverability of the charging cable.

2

EV CHARGING SPACE LOCATION GUIDANCE

Considerations for charger placement:

- Distribute EV charging parking spaces evenly throughout the site plan (or on each garage level) in resident-only areas.
- Locate EV charging spaces behind gated areas as ADA code applies more strictly to public parking spaces than resident-only, restricted parking.
- For garden sites, locate EV charging parking spaces beside concrete or landscape medians to avoid sidewalk accessibility concerns.
- Group multiple EV charging parking spaces together to save on equipment and wiring/conduit costs.
- Consider covered EV charging parking spaces to mitigate weather-related damage.
- Place chargers within 150 feet of house panels to minimize equipment costs and voltage loss.

3

WIRING DIRECTLY TO RESIDENT METERS

Unassigned EV chargers will connect to a house panel and meter, but assigned-dedicated chargers can be wired directly to a resident's submeter. Wiring directly to a resident's submeter can be cost-prohibitive due to wiring distance, however, it provides the resident access to preferential utility rates and a better charging experience. Wiring directly to a resident's submeter is only an option when the resident has an assigned parking space and dedicated charger and typically only in secured parking lots. Learn more about direct-to-meter wiring here.

1.5 COORDINATE STANDARDS WITH THE DESIGN TEAM

COORDINATION WITH CIVIL ENGINEERING AND ARCHITECTURAL CONTRACTORS

For garden sites, coordinate decisions regarding EV charging parking spaces with the civil engineering contract lead. For parking garages (e.g., wraps or podiums), coordinate with the architect on their garage plan. Share civil paving and architectural garage plans with the design team for feedback on any conflicts. Consider hiring an EV charging consultant equipped to identify issues and help identify and vet charging vendors.

DETERMINE CHARGING CIRCUIT BREAKER SIZE

Most multifamily new construction builders install Level-2 EV chargers, which typically use a 40-amp breaker. The National Electrical Code (NEC) mandates that a circuit breaker should be rated for at least 25% more amperage than the charger's output. (NEC 625.41)

If power-sharing circuits or dual-port power-sharing chargers are used, breaker sizes may need to be increased. Power-sharing involves two chargers on one breaker. Consult with EV charging vendors to identify an optimal circuit breaker size. See Section 2.4. to learn more about value engineering.

COORDINATION WITH MECHANICAL ELECTRICAL PLUMBING (MEP) CONTRACTOR

Coordinate with the MEP Contractor on two critical aspects:

- EV location plan: Share the EV parking space locations with the MEP as identified in the civil or architectural plan. When wiring from house panels, keep the wiring length under 150 feet. Require the MEP to label each charger location with the associated house panel so the electrician can better plan the electrical capacity and place J-box symbols on the plan at the precise stub-up location for the conduit.
- Power requirements: Share the breaker requirements with the MEP based on the number of EV-ready, EV-capable, or EVSE installed.

ESTIMATE COSTS

2.1 IDENTIFY INCENTIVES

Consult with the team's tax credit advisors to determine whether charging equipment and other associated installation expenses qualify as eligible basis costs under the project's funding program. For tax credit projects, consult tax credit advisors on combining LIHTC with the Federal EV Charging Tax Credit (see below) in a single tax equity transaction and assess cost differences between installation expenses and tax credits to be earned. Look to the incentive programs below to cover as much of the remaining costs as possible. Ask EV charging service providers if the equipment and software are approved for any relevant incentive programs and if the charging vendor can assist in applying for incentives (see 2.2 and 3.2).

Use the Charge at Home Project Builder Tool to help identify applicable incentives.

FEDERAL INCENTIVES: Alternative Fuel Vehicle Refueling Property Tax Credit, (§ 30C, or IRS form 8911)
STATE INCENTIVES: Alternative Fuels Data Center
UTILITY INCENTIVES: Some utilities offer make-ready programs that cover significant panel, transformer, and other service upgrade costs.
CITY INCENTIVES: Incentivize LEED and other green certification programs with FAR and height bonuses, site variances, permit streamlining and other property design-based incentives.

Many incentive programs restrict incentive funds to chargers or smart outlets from specific service providers for data reporting and demand response program purposes.

Some utilities and states have grant programs that must be applied for in a different manner than rebate programs. These incentives can provide significantly greater funding for EV charging and associated infrastructure costs, but often require lengthy applications. Look to EV charging vendors and installers to support these applications as well as grant writing help from the programs themselves.

2.2 EVALUATE EV CHARGING VENDORS

THERE ARE TWO PRIMARY VENDOR BUSINESS MODELS

1. **Full Capital Expenditure (CapEx) Option:** The property owner pays all costs for the equipment, installation, and maintenance of EV chargers. The property owner receives the complete revenue from charging sessions subject to the vendor service agreement. The property owner determines charging session prices.
2. **No CapEx Option (Charging-as-a-Service):** Charging-as-a-service (CaaS) involves a service agreement offered by EV charging vendors with no CapEx from the property owner. CaaS provides EV charging equipment, installation, software, maintenance, and support within a predictable monthly payment by residents paying marked prices or, most commonly, by utilizing a revenue-sharing split between the service provider and the MFH property. Charging as a service business model can also be configured to eliminate operational expenditures (OpEx) as well, but typically requires long contracts. Learn more about vendor business models here.

WHEN CHOOSING A VENDOR, ASK THEM THE FOLLOWING HARDWARE-SOFTWARE RELATED QUESTIONS

1. What hardware and software options are available, and what are their respective costs? What features are offered by each of these options? (e.g., load management, dual-port power-sharing integrated units, and other smart features. See the Glossary for more information)
2. What are the additional hardware costs, such as pedestals and cable management systems – extenders and retractors?
3. Are there bulk order discounts available?
4. What are the hardware warranties? Are extended warranties available, and at what cost?
5. Does the service provider integrate with property management software?
6. Can another charging service provider's software be installed on the hardware? Even if the charging service provider were to go out of business?

INSTALLATION AND INCENTIVE-RELATED QUESTIONS

7. Does the vendor provide full turnkey solutions with installations, or will an electrician manage installations?
8. Does the vendor provide support applying for incentives?
9. Would the software and hardware components the vendor offers be eligible for incentives? Please seek confirmation from the vendor.

ONGOING COSTS RELATED QUESTIONS

10. What different business models does the vendor offer?
    a. Sometimes, vendors may offer no CapEx/OpEx business models. Establish who has the authority to set rates, (I.E. the vendor or property owner.)
11. What are the ongoing costs associated with EV charging and how are the costs bundled? (licensing, service, software, transaction, networking, and management).
    a. Vendors may term ongoing costs differently. Sometimes, costs are applied to residents when residents pay for charging sessions. In other cases, property owners are responsible for paying these costs monthly or annually.
12. What are the expected maintenance costs for the chargers?
    a. Does the vendor offer the option of purchasing an operations and maintenance service contract, and if so, what does it cost?
13. Does the vendor offer training or support resources for the operations and facilities management team?

ONBOARDING PROCESS QUESTIONS

14. What does the onboarding process entail?
    a. Are there resources available for residents as well as property owners and managers?
15. What would be the user experience journey for both residents and property owners and managers?
    b. Ask for a demonstration of both the driver app and the management portal.

2.3 DETERMINE ROUGH CONSTRUCTION COSTS

If EV charging costs are not being analyzed separately from the total property construction cost, skip 2.3 and 2.4.

The general contractor (GC) team or development manager should work with the electrician and other subcontractors to estimate construction costs and integrate them into the budget. The clearer the design plans and standards are, the better electricians will be able to estimate costs.

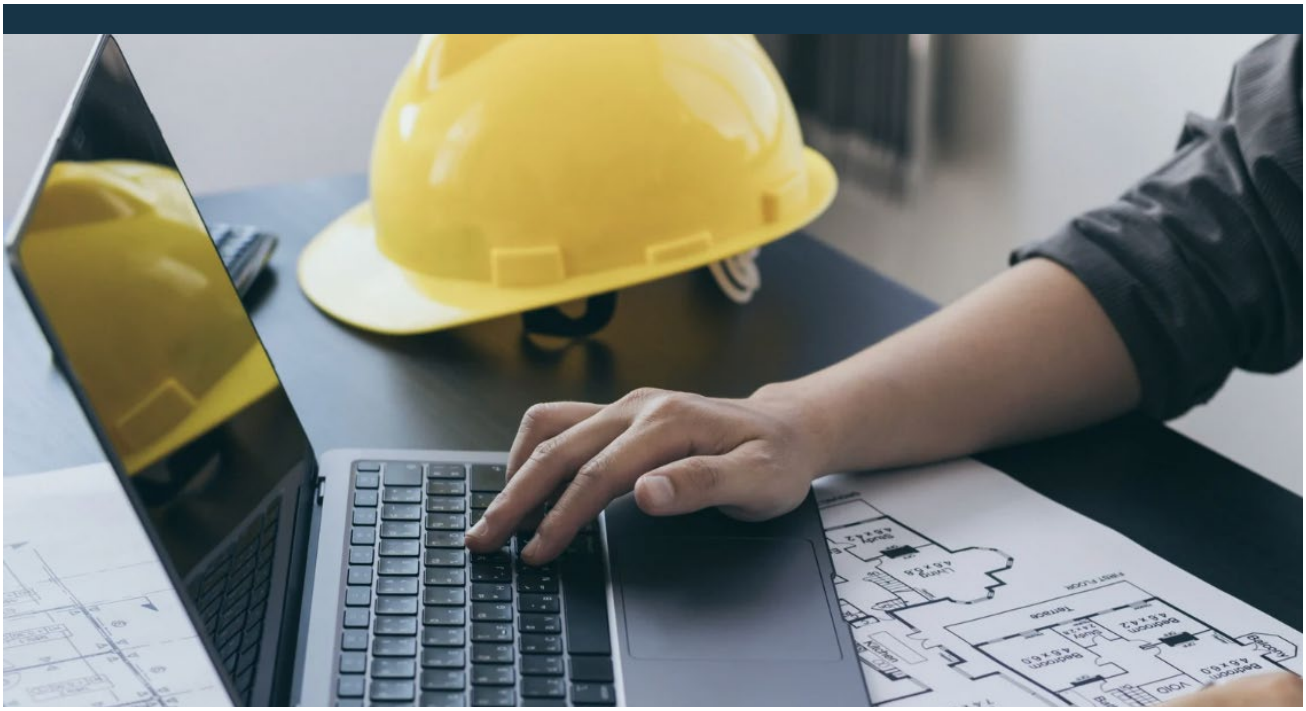
2.4 VALUE ENGINEERING

Value engineering can help reduce costs, particularly during the planning and design stages of the project.

Cost-reduction recommendations:

1. Consider finding lower-cost chargers, including EV smart charging outlets by talking to more vendors to obtain more competitive quotes.
2. Utilize power-sharing to reduce the number of circuits.
3. Consider No-CapEx options.
4. Change EVSE-installed or EV-ready parking spaces into EV-ready or EV-capable spaces (subject to incentives and code compliance).
5. Utilize EV chargers with slower charging speeds and smaller breaker sizes to reduce infrastructure costs.

PRE-CONSTRUCTION



3.1 EXECUTING CONTRACTS AND ORDERING MATERIALS

Finalize the selection and coordination of an EV charging vendor and electrician. See section 2.2 for more information on questions to ask EV charging vendors.

3.2 APPLY FOR INCENTIVE FUNDING

As outlined in section 2.1, identify relevant incentives. The incentive application guidelines will provide more information on what is needed to obtain the funding and when to apply. Make sure to review incentive requirements thoroughly with the selected charging vendor. If questions arise, contact the incentive provider team by visiting their webpage. Often, local electricians and vendors who work in the area will know of the rebates and grants. Note what installation paperwork needs to be tracked for any rebate processing after the chargers are installed.

CONSTRUCTION

Review this checklist prior to construction to ensure no steps were skipped accidentally.

1. PLAN, DESIGN, COORDINATE

- [ ] Identify EV charger and EV-readiness mandates and guidance from QAPs or other housing subsidization program guidelines.
- [ ] Evaluate federal, state, and utility incentives and identify which will be pursued.
- [ ] Decide on first-come, first-served or assigned chargers for parking spaces.
- [ ] Integrate EV charging infrastructure into the construction schedule and engage contractors (MEP, architect, etc.)
- [ ] Determine the number of EVSE-installed, EV-ready, and EV-capable parking spaces needed now and in the future.
- [ ] Ensure accessibility and plan charger locations to optimize revenue and minimize cost.
- [ ] Determine placement of panels, trenching, stub-ups.

2. ESTIMATE COSTS

- [ ] Work with contractors to determine installation costs and explore cost-saving options (e.g. value engineering).
- [ ] Reassess incentives and determine which will be pursued.
- [ ] Contract an EV charging vendor.
- [ ] Finalize budget.

3. PRE-CONSTRUCTION

- [ ] Ensure EV charging vendor and electrician contractor coordinate to finalize installation details.
- [ ] Apply for rebates and order materials.

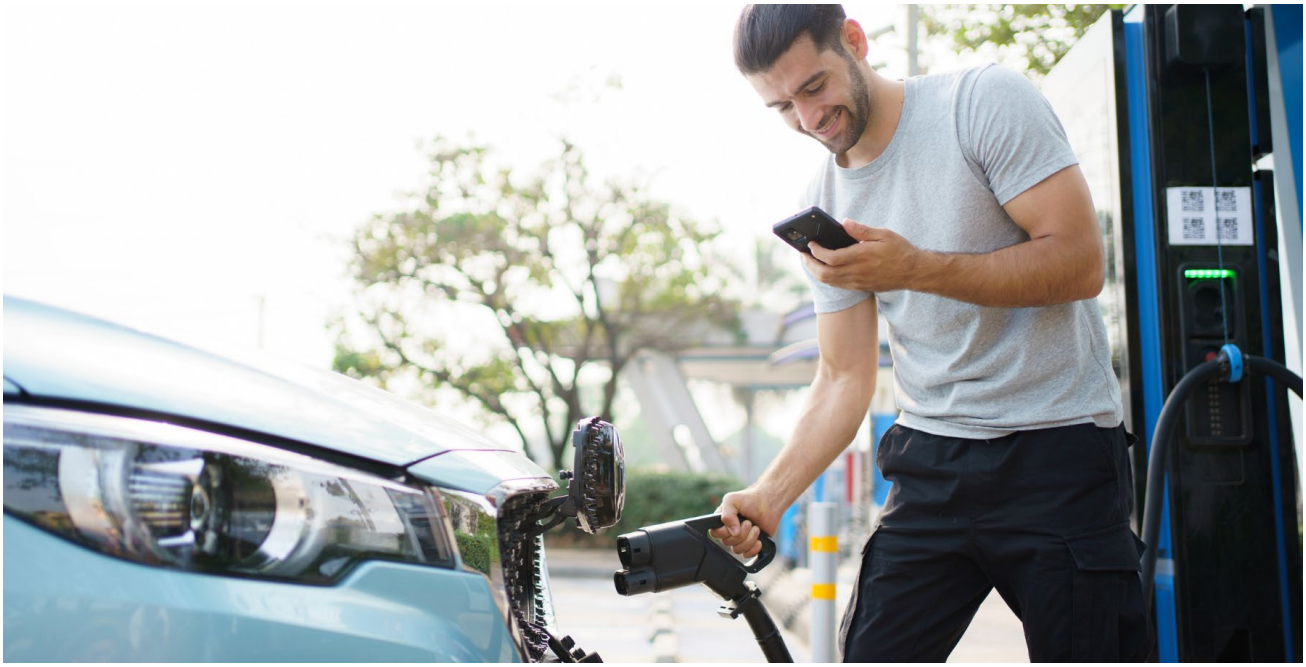
4. CONSTRUCTION

- [ ] Install charging equipment in line with the construction schedule.
- [ ] Commission chargers.

5. POST-CONSTRUCTION

- [ ] Onboard management team with EV charging vendor and finalize charging session prices and policies.
- [ ] Confirm maintenance procedures with the EV charging vendor.
- [ ] Communicate charger availability and policies with new and potential residents.

POST-CONSTRUCTION



5.1 SET POLICIES, PRICING, AND BILLING METHODS

The Charge at Home Project Builder Tool can help set the pricing of electricity at the chargers to deliver the desired ROI considering installation and ongoing expenses.

Pricing considerations:

1. Set the price per kWh to be between the property's cost of electricity and the market-rate public DC charging price per kWh.
2. In the case of first-come, first-serve charging stations, consider imposing idle fees if chargers are busy.

Need an installer? Talk with your existing contractor and/or electrical subcontractor if they can install the equipment or ask the charging vendor which installers they recommend. Additional information can be found at the following sites: Minority-Owned EVSE Contractors/Installers database, Qmerit's Charger installer locator and quote tool, EVITP's Installers list, or ask charging vendors which installers they work with within your area.

RECOMMENDED REVENUE GENERATION METHOD BY CHARGING CONFIGURATION

CHARGING CONFIGURATION	RECOMMENDED METHOD FOR REVENUE GENERATION
First-come, first-served and available only to residents	Increase parking fees, rent, or add a "charging fee" similar to a parking fee as separate from rent. Set the price per kWh dispensed at a few cents more than the average cost per kWh paid to the utility.
First-come, first-served and available to the public	Price cost per kWh dispensed with a small markup. Set the price to just below the local market rate per kWh. Idle fees may be needed.
Dedicated and wired to resident unit meter	Factor the value to residents into their rent.
Dedicated and wired to property/ house meter	Factor the value to residents into their rent or parking fees and if utilizing a networked charger, set the price per kWh dispensed at or just a few cents above the cost per kWh paid to the utility.

In some Charging-as-a-Service (CaaS) agreements, charging service providers may pay the utility bill.

Local market rates per kWh can be found by following the steps here.

5.2 COMMUNICATE PLAN CLEARLY TO RESIDENTS

A communication template can be downloaded here.

Here are some recommendations for communication to residents:

1. Communicate EV charging policies to new residents on or before their move-in date.
2. Provide timely updates if chargers are out of order or if pricing or other policies are changed.
3. Utilize text notifications for time-sensitive issues, e.g., when gasoline cars are parked in EV charging-only spaces.
4. Notify residents before imposing idle fees.
5. Use the internal capacity of networked chargers to notify EV drivers when idle fees will be applied to their accounts.
6. Provide proper signage onsite to ensure that residents know where EV chargers are located.

Consider adding chargers available for public use to online or phone apps like Plugshare and Chargeway.

5.3 OPERATION, MAINTENANCE, WARRANTY

OPERATION AND MAINTENANCE

- Check EV charger utilization rates periodically.
- Maintain reliable uptime of chargers with maintenance contracts or trusted electricians that can service the chargers.

See the Alternative Fuels Data Center's guidance on Operation and Maintenance for Electric Vehicle Charging Infrastructure here.

WARRANTY

- While chargers are under warranty, and if repairs do not resolve charger issues, contact the EV charging vendor to discuss warranty conditions and next steps with the hardware manufacturer.
- Most chargers have three or more year warranties and do not cover standard maintenance items.

INSURANCE

- Chargers should be added to property insurance policies.

Review state laws and regulations regarding operation, maintenance, warranty, and insurance here.

5.4 ASSESS DEMAND AND MEET THE GROWING NEEDS OF RESIDENTS

As resident demand increases, consider installing more chargers. The best way to gauge EV charging demand is surveying residents every 6 – 12 months to enhance user experience and troubleshoot potential issues. Testimonials from current and past residents can make excellent promotional material to attract new EV-driving residents.

CHARGE at HOME

THANK YOU