



ELECTRIC VEHICLE CHARGING TOOLKIT

**FOR EXISTING AFFORDABLE MULTIFAMILY HOUSING
APARTMENT PROPERTIES**



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PURPOSE



This toolkit is designed to guide affordable housing owners and managers through the process of installing electric vehicle (EV) charging infrastructure at existing deed-restricted, government-subsidized, affordable multifamily housing (MFH) properties. For new properties review the [New Affordable Housing Properties Toolkit](#).









While this guide primarily aims to prepare sites for resident charging, allowing non-residents to access onsite shared chargers, including property employees and guests, can maximize the utilization of chargers and justify charging infrastructure installations quicker.

Much of the U.S. population will be driving EVs within the next thirty years. Installing EV charging infrastructure to ensure equitable access is critical. The ability to charge at home will be an increasingly important element of transportation and upward mobility. 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 live and park.

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)

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 spaces 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

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 SURVEY RESIDENT DEMAND

Understanding the current resident demand is critical for planning EV charging infrastructure at MFH properties. Annual resident surveys help determine EV interest, driving habits, and desire for charging infrastructure. Use survey results to inform installation and pricing decisions. Utilize local resources, such as [Clean Cities and Communities](#), to further engage residents, find incentives, and optimize charging policies. Here is an [EV Charging Demand Survey template](#).

1.2 PROPERTY EVALUATION

Have property electrical equipment and layout evaluated by an electrician to determine how many EVSE-installed and EV-ready parking spaces can be created with the available infrastructure. An in-person walkthrough is necessary for final cost estimates, but virtual assessments can help with ballpark cost estimates. If a property evaluation is not performed early on, expectation setting will be difficult.

Ask the electrician evaluating the property how many L1 circuits could be installed without panel or service upgrades. L1 EV smart charging outlets or regular outlets provide access to charging and are usually the lowest-cost option to install. This can be a good baseline to compare to future charger deployment plans.

OPTION A: HIRE A CONSULTANT

Hire a consultant that specializes in EV charging projects to provide the following services:

- Guidance to develop a long-term deployment plan.
- Site assessment and rough estimates.
- Provide contracting recommendations.
- Design or advise on site plans.
- Vet EV charging vendors and advise on EV charging vendor contract negotiations.

Hiring a consultant may be particularly valuable for property owners looking to deploy charging infrastructure at multiple properties with differing needs or in different regions. The right consultant hired upfront can save time and money. For additional assistance or to find a company to support the property's planning, please contact us here.

OPTION B: HIRE AN ELECTRICIAN TO EVALUATE THE PROPERTY

Hire an electrician to evaluate the property's electrical infrastructure from transformers to panels, and even conduit runs, if possible. This information will be critical to understanding how many EV chargers can be installed quickly without panel upgrades or more costly upgrades. Ask for estimates to upgrade the panel or run conduit to the parking lot. If a service upgrade is necessary, contact the electric utility service provider to determine available transformer and service capacity, costs, and timelines. Utility upgrades can take well over a year in some cases. Review the load management details in Section 1.4 to determine if this charging feature could help avoid a service upgrade.

When using a contracted electrician, ask what charging vendors they have worked with and whether those vendors provide low-power Level 2 solutions, load managed chargers, and other smart chargers optimized for MFH properties.

Need an electrician? Talk with existing electrician connections or the following resources: [Minority-Owned EVSE Contractors/Installers database](#), [Qmerit's Charger installer locator and quote tool](#), [EVITP's Installers list](#), or when you start talking with EV charging vendors, ask them which electricians they work with in your area.

1.3 DETERMINE CHARGING CONFIGURATION

CHARGING CONFIGURATION DEFINITIONS:



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

First-come, first-served EV charging (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](#).

Wiring Directly to Resident Meters

Unassigned EV chargers connect to a house panel and meter, but assigned-dedicated chargers can be wired directly to a resident's submeter. Wiring 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.](#)

1.4 DETERMINE CHARGER LEVEL AND TYPE

If needed, review the EV charging primer at the top of this document and [other resources here](#).



A. NETWORKED OR NON-NETWORKED CHARGERS

Almost all existing apartments will want to use **networked chargers** to collect revenue from the chargers and utilize other features. Non-networked chargers can be used if property owners and managers are willing to increase rent or parking fees to cover charging costs. Non-networked outlets, (e.g. regular, dumb, or standard outlets), can be used in the same way as non-networked chargers, but are not common unless in secured parking structures.



B. FULL EVSE OR EV SMART CHARGING OUTLETS

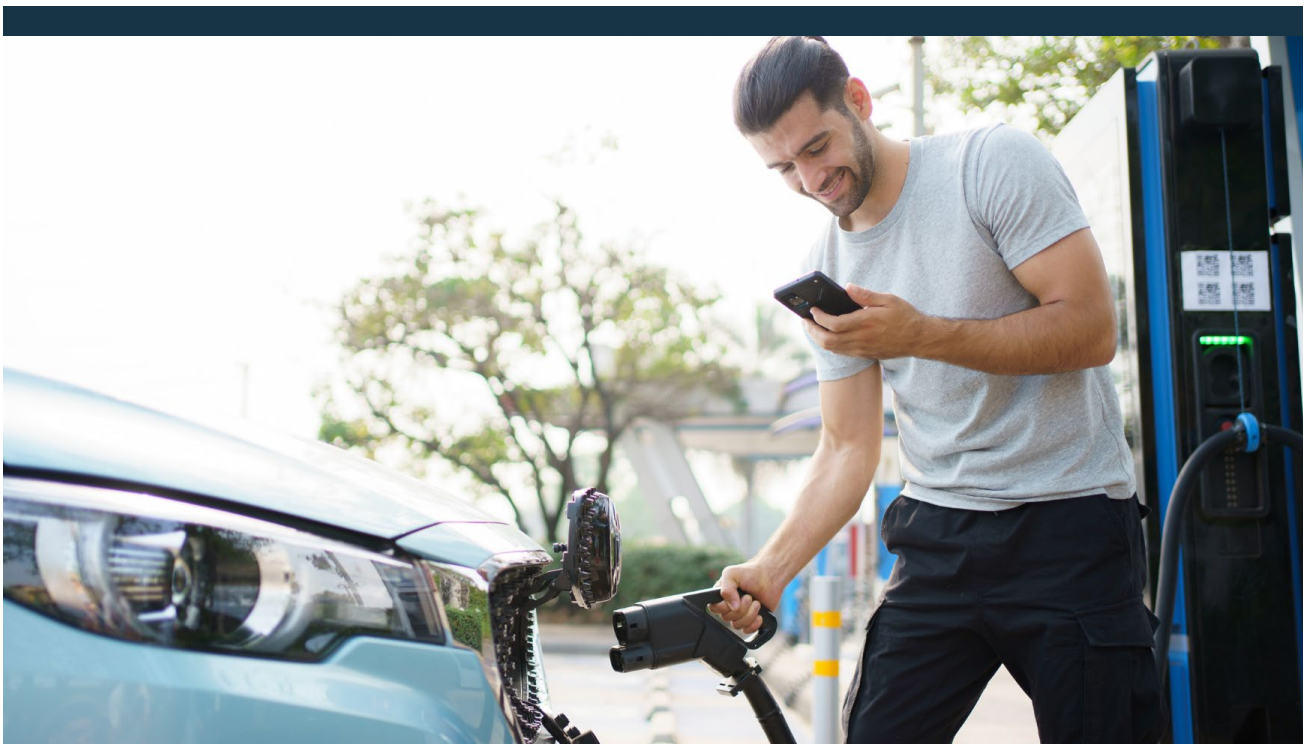
EV smart charging outlets are an important option for MFH properties to balance charging speed and capital expenditures (CapEx) while providing smart features like access controls, revenue generation, and notification systems. Ask your charging vendor for breaker sizes during Section 2.2. Full EVSE are typically deployed for “first-come, first-served” chargers, though smart charging outlets are capable of providing most if not all of the same features that full EVSE can provide.



C. POWER LEVELS - LEVEL 1 VS LEVEL 2

In cases where panel and service upgrades are cost prohibitive, Level 1 outlets can provide basic charging access to residents. Alternatively, load managed Level 2 EVSE or smart outlets should be considered.

If Level 1 outlets are the only viable option they should be pursued as any access to charging at home is valuable.



1.4 DETERMINE THE NUMBER OF EV CHARGERS

After identifying which charging configuration and level best suits the property, determine the number of chargers to install. Load management can substantially impact the number of chargers deployed.

LOAD MANAGEMENT

Many chargers utilize automated load management systems⁵ (i.e. load management features), which enable power modulation based on:

- Max circuit or panel power available
- Number of chargers connected to the panel or on the circuit
- Utility rate pricing
- Vehicle charge level

If an electrical evaluation (site assessment) has not been performed already, that will need to happen before picking an option below.

5. For more information on load management review [SWTCH's blog post on the subject](#)

OPTION 02 – OPTIMIZE EXISTING INFRASTRUCTURE

Conduct a site walk with both the EV charging vendor and an electrician to determine the best conduit route while also obtaining an accurate quote.

PROS

- Cost Savings upfront
- Future proofing still possible

CONS

- Limited impact by existing panel capacity

OPTION 02 – OPTIMIZE EXISTING SERVICE CAPACITY

This option will typically require a property evaluation and contacting the property's electric utility to determine available service capacity. Establish (during Section 2.3 and 2.4) whether full buildout is possible (see Section 1.6) and how to optimize the panels available.

PROS

- Cost Savings upfront compared to full buildout
- Substantial future proofing is possible

CONS

- Impact limited by available service capacity
- Higher upfront cost than optimizing existing capacity

OPTION 03 – OPTIMIZE FOR SERVICE UPGRADE

Following a site evaluation, request a utility service upgrade. Some utilities offer site assessments if charging infrastructure is being considered. This option is only feasible if the property will be redeveloping the site or doing major renovation work.

PROS

- Most capable of serving significant and long-term EV charging load
- Future proofing at least panel capacity

CONS

- Highest costs

1.6 PLAN FOR FUTURE PROOFING

After the number of chargers to be installed is determined, consider future proofing. EV-ready and EV-capable parking spaces dramatically reduce future costs when deploying chargers. Utilize existing resident surveys to help judge how fast EV adoption will take place at the property.



OPTION 01- OPTIMIZE FOR BUDGET

If the budget and panel capacity allows for it, consider making as many EV-ready or EV-capable spaces as possible. To determine future demand, survey residents, talk with local EV charging vendors and electricians, and check the state's Department of Motor Vehicle (DMV) EV registration data.

PROS

- Optimizing for current and near-future demand
- Code Compliance

CONS

- Deferred retrofitting costs
- Higher upfront costs than code compliance

OPTION 02 – FULL BUILDOUT

Preparing a parking lot for full buildout means installing EV chargers and infrastructure to support EV-ready or EV-capable parking spaces for when all vehicles onsite are EVs. An EV charger can be installed in an EV-capable or EV-ready space in a few hours, so making as many of these spaces as possible will enable rapid deployment when resident charging demand justifies it.

Guidelines for full buildout conditions depending on charging configurations:

For assigned parking spaces with dedicated chargers, provide one EV-ready parking space per rental unit with parking. If residents in a unit have more than one car, they can move their cars back and forth and share the charger in their assigned space (or spaces).

For parking lots that use “first-come, first-served” charging spaces, typically 10–20% of the parking lot should be made EV-ready or EV-capable. Assume each charger can serve 5–10 EVs.

For electricians determining panel capacity, optimize the number of breaker spaces based on parking spaces to be made Ev-ready while ensuring that each vehicle charging will receive no less than 10 amps of panel capacity (at 208/240 volts). Each circuit will still be a 40 amp circuit so that when power is available, cars can charge faster than 2 kW (10 amps at 208 volts).

PROS

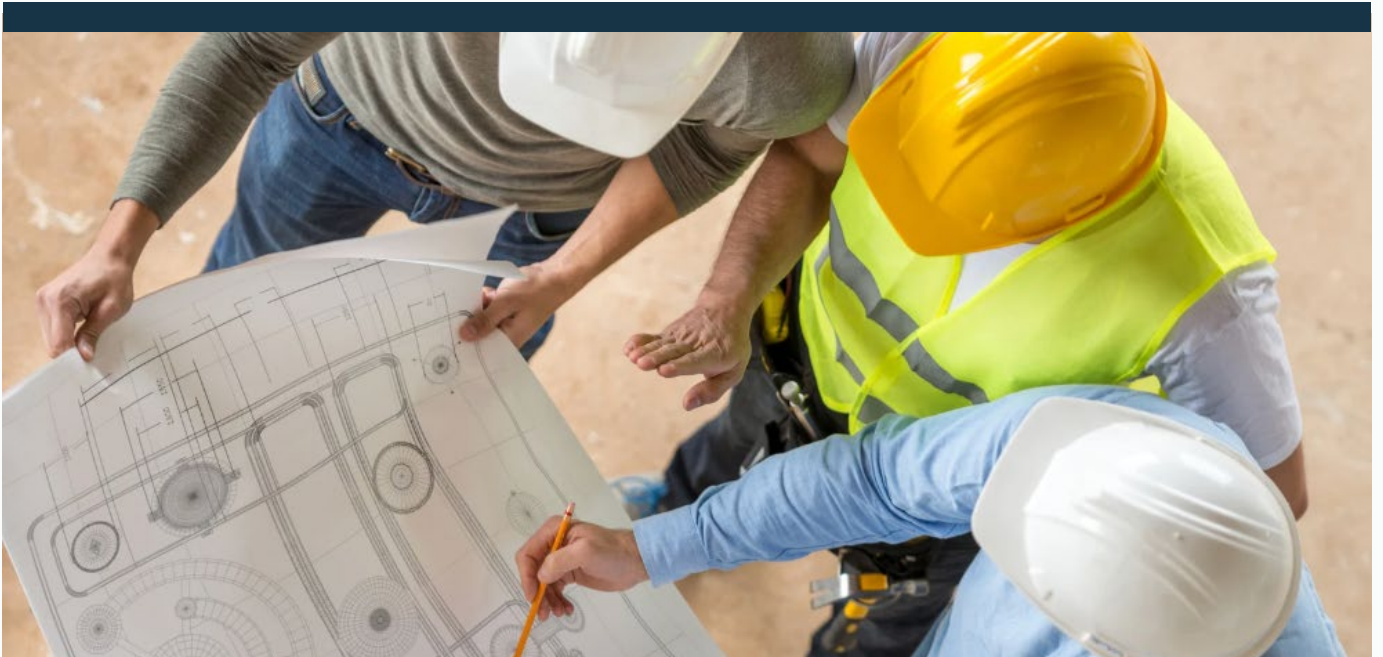
- Optimizes future demand
- Minimizes future charger deployment time and costs

CONS

- Higher upfront costs

1.7 DESIGN EV CHARGING SPACES

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.

ESTIMATE COSTS

2.1 IDENTIFY INCENTIVES

If applying for subsidization funding to rehabilitate a property, consult with the team's financial advisors to determine if EV charging infrastructure expenses can serve as eligible basis costs for funding (e.g. Low Income Housing Tax Credit - LIHTC). Consult tax credit advisors to determine if LIHTC and the EV charging tax credit can be combined (see below) into a single tax equity transition.

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

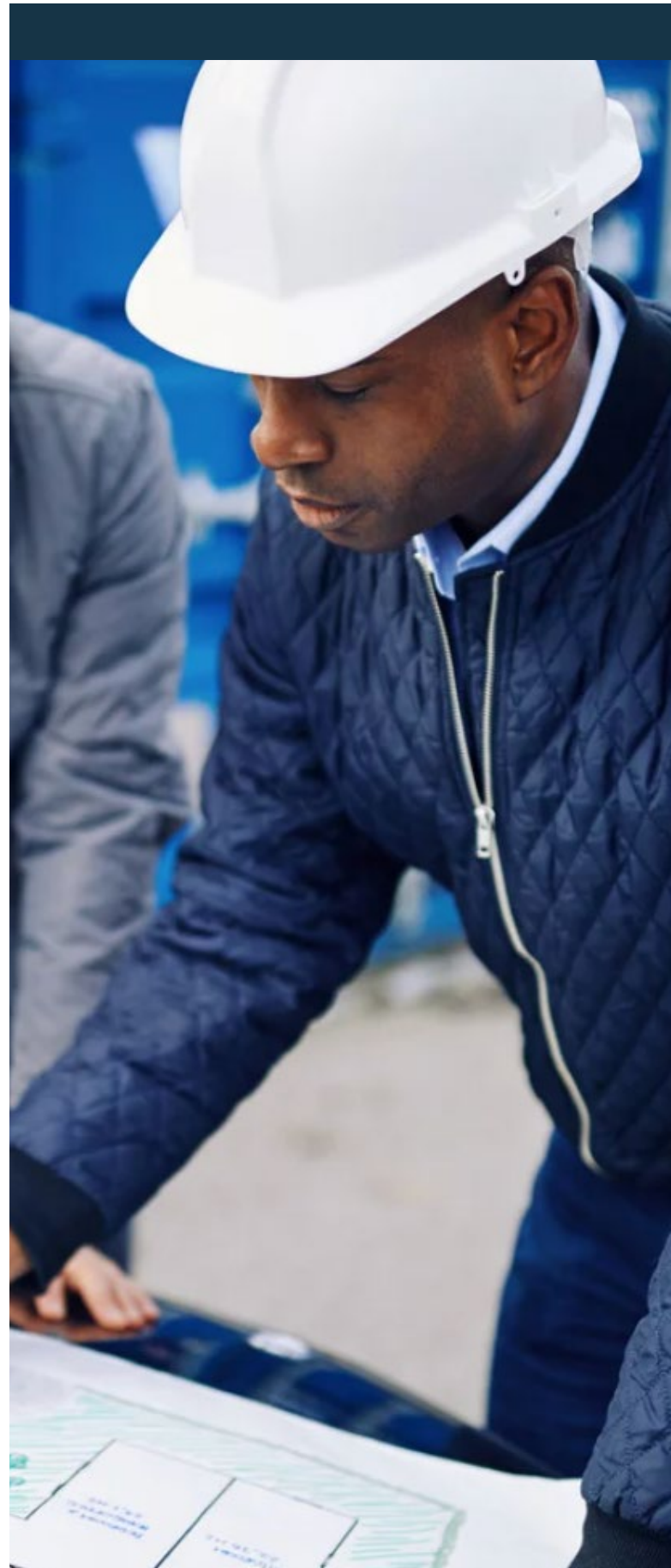
14. What does the onboarding process entail?
 - a. Are there resources available for residents as well as property owners and managers?
15. What would be the user experience journey for both residents and property owners and managers?
 - b. Ask for a demonstration of both the driver app and the management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

2.3 SITE WALKS AND OBTAIN BIDS

A site walk is fundamental to receiving an accurate cost estimate.

Assessing connectivity may be needed if chargers will be in a garage where cell signal is diminished. Typically electricians have 4G cell signal meters, but if they do not, a connectivity assessment may be needed. Many EV charging vendors bring signal meters as well for sidewalks.

Evaluate ROI expectations based on bids, internal company requirements, and estimated demand from residents from surveys (see Section 1.1).



2.4 VALUE ENGINEERING

After reevaluating ROI expectations based on installation bids, resident demand surveys, and other factors, if project costs exceed any budget constraints that were set, consider these guidelines to reduce costs:

1. Consider power-sharing chargers to reduce the number of circuits. This is often the default for many EV charging vendors to save costs while providing equivalent or superior charger performance depending on utilization rates.
2. Consider lower-cost chargers and EV smart charging outlets.
3. Engage more charging vendors to obtain more competitive quotes.
4. Consider Lease or No-CapEx Options.
5. Consider installing panel capacity closer to where it will be used.
6. Consider EV chargers or outlets with slower charging speeds, which will require smaller breaker sizes and reduce infrastructure costs.
7. Change EVSE-installed or EV-ready parking spaces to EV-ready or EV-capable spaces (subject to incentives and code compliance).
8. Remove EV-capable parking spaces from the plan.
9. Reduce panel amperage sizes by using EV chargers with automated load management system capabilities. This will also enable greater scalability.
10. Consider reducing the number of chargers while increasing the speed of the charger.
11. Consider running trunk conduit from where future panels will be installed if along a route easily trenched during construction. Do not install those panels.

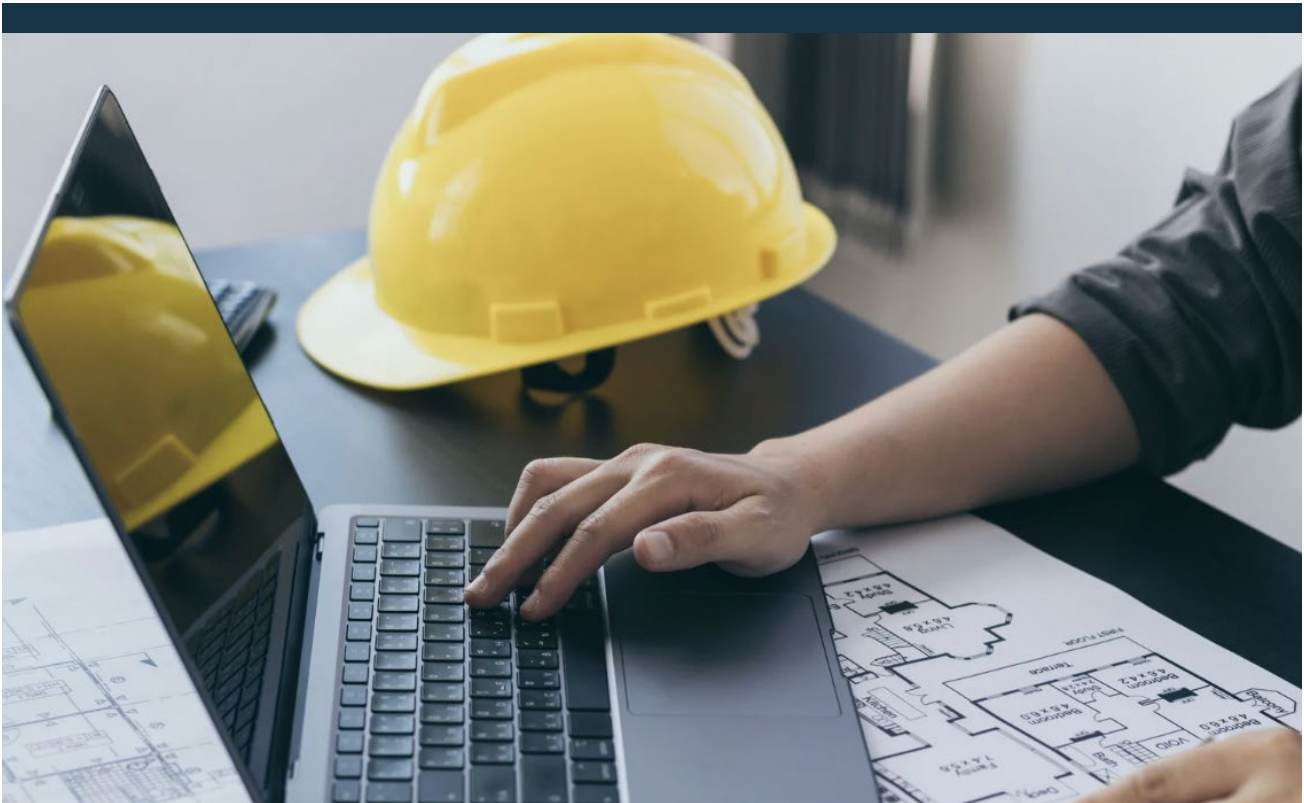
Use the [Charge at Home Project Builder Tool](#) to help determine the project's ROI.

If additional assistance with saving costs and optimizing the project budget, [please contact us here](#).

2.5 FINALIZE PROJECT DESIGN AND BUDGET

Select an electrician and enter contract negotiations with an EV charging vendor (Section 2.2). If an EV consultant/management firm was hired earlier in the process, depending on the services provided, they will vet charging vendors and electricians on behalf of the project.

PRE-CONSTRUCTION



3.1 APPLY FOR INCENTIVES

As outlined in Section 2.1, identify relevant incentives. Review incentive requirements thoroughly with the selected charging vendor. If questions arise, contact the incentive provider team. Local electricians and vendors may know of rebates and grants.

3.2 EV CHARGING VENDOR AND ELECTRICIAN COORDINATION

The EV charging vendor and the electrician will need to coordinate to ensure installation goes smoothly.

CONSTRUCTION

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

1. PLAN, DESIGN, AND COORDINATE

- Survey Residents
- Hire a Consultant (Optional)
 - Hire a Short-Term Adviser
 - Hire a Long-Term Project Manager/Consultant
- Evaluate Property
 - Hire an Electrician
 - Virtual Evaluation
 - Receive Rough Estimate From Initial Evaluation
 - Estimate for L1s With Existing Capacity
 - Wait to Evaluate Until Receiving Bids (Requires Knowledge of What Level of Buildout is Possible)
- Decide on First-Come, First-Served or Assigned Chargers for Parking Spaces
- Determine Charger Level and Type
- Determine the Number of EVSE to Install
 - Review Incentives to Determine if there are Limits or Constraints
- Determine the Number of EV-Ready, and EV-Capable Parking Spaces to be Built
 - Determine if There are Incentives for EV-Ready/EV-Capable Parking Spaces
- Ensure Accessibility and Plan Charger Locations

2. ESTIMATE COSTS

- Consult Tax Credit Advisors for Incentives and LIHTC/EV Charging Tax Credits
- Evaluate EV Charging Vendors
- Site Walks and Electrician Bids
 - Possible Option of Co-Bids (Electrician and EV Charging Vendor Working Together)
- Reassess Incentives and Determine Which Incentives Will be Pursued
- Finalize Project Scope and Budget and Ask for Updated Bids, if Necessary
- Contract with EV Charging Vendor and Electrician

CONSTRUCTION

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

3. PRE-CONSTRUCTION (BOTH ITEMS CAN HAPPEN SIMULTANEOUSLY)

- Ensure EV Charging Vendor and Electrician Contractor Coordinate to Finalize Installation Details
- Apply for Rebates
- Order Materials

4. CONSTRUCTION

- Install Charging Equipment
- Commission Chargers

5. POST-CONSTRUCTION (INCLUDED AS A PREVIEW TO NEXT STEPS)

- Onboard Management Team with EV Charging Vendor and Determine 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, 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.
 - a. [Click here for more information on idle fees](#)

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.

[Click here for more details on business models.](#)

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, AND INSURANCE

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.



THANK YOU

