CHARGE at HOME

FORTH

# ELECTRIC VEHICLE CHARGING TOOLKIT

## FOR NEW CONDOMINIUM DEVELOPMENTS

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# PURPOSE

This toolkit provides guidance to condominium (condo) developers and condo association Boards of Directors (Board) on how to plan long-term for light-duty electric vehicle (EV) charging infrastructure at their developments.[1] Other stakeholders, such as non-condo homeowner associations (HOAs), condo unit owners, condo property managers, facilities managers, general contractors, electricians, architects, and civil and electrical engineers, may also benefit from this toolkit.

This toolkit is designed to support developers with condominium properties in gaining a deeper understanding of EV charging, helping them prioritize long-term infrastructure during the early planning and construction phases, while also introducing less commonly known infrastructure options. This toolkit will help plan for when all vehicles are EVs, while providing strategic options for reducing costs but retaining value to the buyer. Installing this electrical infrastructure during initial construction avoids costly retrofits for buyers, reduces decision-making for Boards, and can help move units faster by providing a major differentiating amenity, especially when chargers are dedicated. When possible, developers should consider working with potential buyers to evaluate their willingness to pay for various charging infrastructure, as different charging configurations and wiring options will offer buyers different values. Developers that strategically consider the suggestions in this toolkit will be better positioned in the coming decade as mass adoption expands across the US.

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1. Members of an association overseen by a Condo Board collectively own the common areas of the property, whereas a Homeowners Association (HOA) directly owns and maintains the common areas of the property.
2. 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

# AUTHOR'S NOTE

## CONDO ASSOCIATION GOVERNANCE DOCUMENT REVIEW

**Background for non-developer readers: A condo association Board for a new condominium is formed and controlled by the developer until a specified percentage of units are sold or a set transition date is reached. Before units can be sold, the condo association must be created by submitting the condominium association incorporation documents to the relevant state agency. Units are often pre-sold during or even before construction, based on renderings and floor plans. While future owners may select finishes, they typically lack input on communal infrastructure, such as the electrical infrastructure for EV charging.**

Before governance documents are submitted to the state, the developer should review the bylaws for language that would constrain the future Board members in altering ownership and maintenance obligations for any EV charging or associated infrastructure. This is particularly important to limited common elements or unit-owned infrastructure that crosses through common elements such as dedicated, and particularly direct-to-meter, charging hardware running through the garage and inside an electrical room. Section 1.3 provides greater granularity for bylaw items to consider revising.

# EV CHARGING PRIMER

## TYPES OF EV CHARGING

This section covers EV charging concepts and methods that need to be understood before planning for charging infrastructure at a new condominium development. If the team's knowledge is thorough, feel free to skip this section and reference back to the Primer as needed.

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 (DCFC), as shown in the table below:

| Slowest → Fastest | | | |
|---|---|---|---|
| **Level** | **Level 1** | **Level 2** | **Level 3 (DC Fast Charging)** |
| **Use Case** | Home | Home/Work/Public | Public |
| **Power** | <2 kW | 2.4 - 19.2 kW *(Usually 6-10 kW)* | 25 - 350 kW *(New chargers are >150 kW)* |
| **Plug Shape** (Into Vehicle) |  J1772 |  NACS/ J3400* |  CCS →  NACS/J3400* |
| **Outlet Shape** |  120 V |  208 or 240 V ** | Hardwired only  |
| **Cost** | $ | $$ | $$$$ |

**Level 1** charging equipment uses 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** 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.

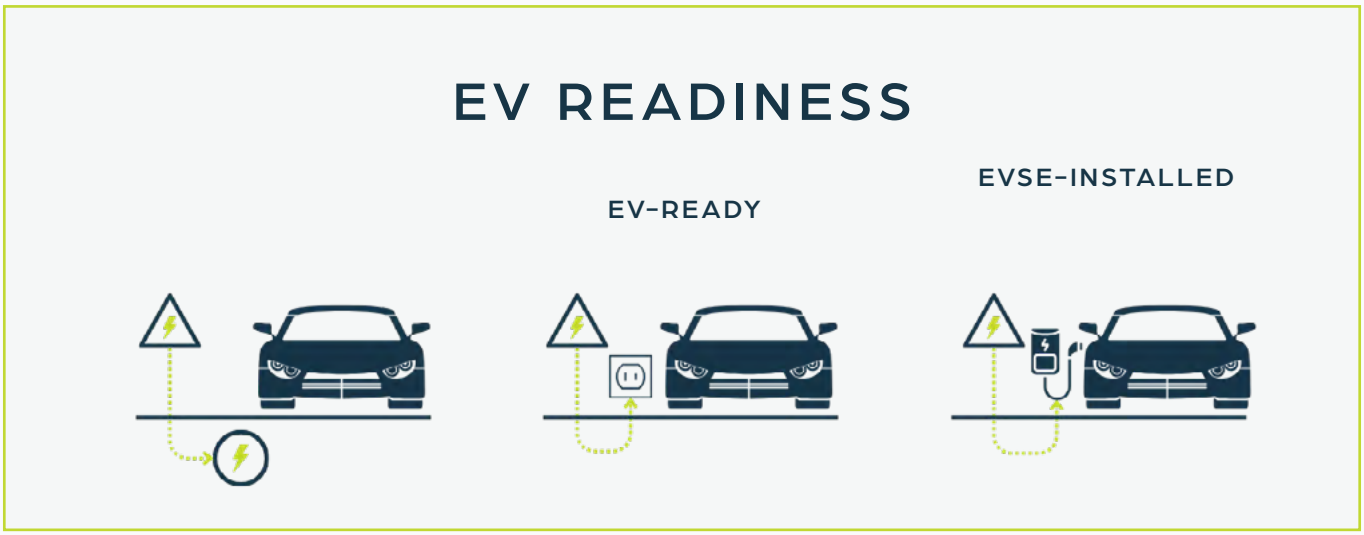
DCFC delivers rapid charging speeds. It is commonly found along busy highways or at charging stations in urban and suburban areas. With DCFC, EVs can gain up to 80% charge in as little as 20 minutes.

*The Society of Automotive Engineers' (SAE) J3400 standard is official and is being integrated into charging equipment and automotive manufacturing processes. J3400 allows for backwards compatibility with NACS/Tesla ports.
** Circuits greater than 50 amps must be hardwired.

# UNDERSTANDING EV-READY AND EV SUPPLY EQUIPMENT-INSTALLED PARKING SPACES

There are three different types of EV charging spaces: EV-capable, EV-ready, and EV Supply Equipment (EVSE)-installed, representing varying levels of preparedness for EVSE operation. In this document, EVSE will generally be referred to as an EV charger, with the term "port" used when the specific number of charging connections that can be powered simultaneously is required.

## READINESS LEVEL DEFINITIONS




(SOURCE: EV CHARGING FOR ALL COALITION, 2023)

### EV-CAPABLE

EV-capable parking spaces have panel capacity and conduit available for a circuit to be installed quickly. The parking space is "capable" of being easily upgraded with a circuit breaker, wiring, and outlet receptacle/junction box (J-box) or EVSE at a later time without panel upgrades. Deploying a charger in an EV-capable space can take less than a few hours, significantly reducing retrofit costs.

### EV-READY

EV-ready parking spaces have panel capacity, an installed breaker, wiring, and conduit, terminating in an outlet receptacle or J-box. Deploying a charger in an EV-ready space can take less than a couple of hours, dramatically reducing retrofit costs.

### EVSE-INSTALLED OR EV-CHARGER INSTALLED

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

# EV CHARGING CONFIGURATION DEFINITIONS

These are the two types of charging options available at Multi-Family Housing (MFH) properties. Communal charging can be public, private, or a combination of both. Each property determines the use case through site policies, physical access controls such as gates, and/or software authorization through the charging management platform, which may include criteria like time of day and user type.

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

First-come, first-served EV charging (AKA Communal) provides charging access for use by any EV driver authorized to use the chargers under the site policies. This is an unassigned parking space, but it is reserved for use while charging.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## DEDICATED EV CHARGING

Dedicated EV charging provides charging access for the sole use by residents of a specific unit, typically associated with a parking spot owned by, reserved for, or assigned to that unit.

3. Photo of some University of California San Francisco campus chargers.
4. Photo of EV chargers at the Madrone in San Francisco.

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# UNDERSTANDING CHARGING SOLUTIONS

## A. NETWORKED VS. NON-NETWORKED CHARGERS

Non-networked chargers do not connect to the internet and lack smart charging capabilities. Key use cases include gated (secure) parking lots with dedicated parking spaces and locations without internet availability. While non-networked chargers have significant limitations in terms of features, some charging vendors offer chargers with smart features even without a direct internet connection.[5]

Networked chargers connect to the internet via Wi-Fi, cellular, or Ethernet connections to enable features such as revenue generation, notifications, access control, load management, reservations, and idle fees. Networked chargers often require a monthly or annual subscription. For new condominiums, developers should consider networked chargers in communal and dedicated charging configurations where chargers are wired to condo association panels without an association submetering system to allow for association billing options.

## B. EV ENERGY MANAGEMENT SYSTEMS (EVEMS)

EVEMS are systems that monitor, control, and optimize the electricity flow used for charging EVs. These systems can be implemented through hardware and or software-integrated solutions (often termed load management features in this toolkit), and their main purpose is to:

- Prevent overloading electrical infrastructure.
- Enable more EV chargers to operate without requiring electrical upgrades.
- Distribute available power across multiple circuits or multiple chargers.
- Avoid peak demand charges.
- Enable access to power without available panel breaker space. (Direct-to-meter wiring)

> When using hardware or software-enabled EVEMS, post minimum and maximum charging speeds so users know what to expect.

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5. These vendors typically use users' phones to relay data to and from the cloud once the phone connects to the internet.
6. Intellimeter's EV Charging Management Controller and SPAN's Smart Panels provide two examples of EVEMS that control electricity flow at the panel level.
7. Siemen's Inhab PowerMod for MFH properties. The meterbase allows for two feeder wires, one to the unit's panel and the other for an EV charging circuit.

## C. EV CHARGING OUTLETS

Outlets come in two forms, smart or standard. EV smart charging outlets (smart outlets or EV charging outlets) may have all of the features of a full EVSE or only a few. All outlets require the EV owner to use a portable EVSE, which is a key difference from full chargers. Most new EVs come with a portable EVSE, but it may not be an L2 EVSE, so using a smart outlet will require most EV owners to purchase one. Typically, smart outlets use cellular chips for communication, but other communication methods are common. Smart outlets can provide up to 40 amps continuously on 208- or 240-volt circuits, depending on the product and its circuitry. 120-volt smart outlets are also available (L1 outlets) Different vendors provide different solutions.

## D. WIRING CONFIGURATIONS

EV chargers at condominiums are typically wired to utility meters in a manner where the utility bill is paid for by the condo association. The Board will typically either apply flat fees to users' accounts, submeter dedicated chargers and bill through internal systems, or contract with a charging network vendor that will accept payment from users and then markup their services to cover electricity, networking, and other costs.

Wiring an EV charging circuit directly to a resident's meter (direct-to-meter wiring) is the other option. There are multiple hardware products from different companies, with a few different physical wiring connection points, two of which are seen below. Direct-to-meter wiring can eliminate condo association administrative burden for billing and contracting, and put charging costs on the unit owner's utility bill. This wiring option can allow access to lower energy costs through TOU rate schedules and is typically far cheaper than a charging vendor's marked-up rates or public charging prices, thus likely saving owners thousands and even tens of thousands of dollars over the course of their ownership of the condo unit.

SMART OUTLETS

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8. "Plugzio | Affordable, Simple, Scalable EV Charging," Plugzio, n.d., https://www.plugzio.com/
9. "Why Orange | Orange," n.d., https://www.orangecharger.com/why-orange.
10. Pando Electric, n.d., https://www.pandoelectric.com/
11. GoPowerEV, n.d., https://gopowerev.com/news
12. Direct to meter hardware can be connected into the meterbase, between the meterbase and the meter, connected into the feeder wiring between the meter and the unit's panel, or connected directly to the unit's panel.
13. Costs are highly dependent on utility rate schedules, condo association policies, and vendor fees and markups. Contact the Charge at Home team for detailed calculations and assumptions that underlie this statement.

## DIRECT TO IN-UNIT RESIDENT ELECTRICAL PANEL

| CRITERION | STATUS |
|---|---|
| Works for deeded spaces | ✓ |
| Works for unassigned spaces | X |
| Billing system required | X |
| Electrical room or panel nearby | N/A |
| Parking spaces close to units | ✓ |

## DIRECT TO RESIDENT FEEDER WIRE OR METERBASE IN THE ELECTRICAL ROOM

| CRITERION | STATUS |
|---|---|
| Works for deeded spaces | ✓ |
| Works for unassigned spaces | X |
| Billing system required | X |
| Electrical room or panel nearby | ✓ |
| Parking spaces close to units | X |

## DEDICATED CHARGERS CONNECTED TO CONDO METER

| CRITERION | STATUS |
|---|---|
| Works for deeded spaces | ✓ |
| Works for unassigned spaces | X |
| Billing system required | ✓ |
| Electrical room or panel nearby | ✓ |
| Parking spaces close to units | X |

## COMMUNAL CHARGERS CONNECTED TO CONDO METER

| CRITERION | STATUS |
|---|---|
| Works for deeded spaces | ○ |
| Works for unassigned spaces | ✓ |
| Billing system required | ✓ |
| Electrical room or panel nearby | ✓ |
| Parking spaces close to units | X |

Notes: Conditionally works for deeded parking spaces if communal chargers are nearby in unassigned parking areas and residents move their car after charging.

## LEGEND

✓ **Yes:** Criterion is met by default

X **No:** Criterion is generally not met

N/A **Not Applicable**: Criterion does not apply to this method

○ **Conditional:** Works only with a stated condition or policy noted in the card

**COSTS CAN INCREASE DRAMATICALLY AS WIRE SIZE GROWS TO PREVENT VOLTAGE DROP WHEN RUNS ARE LONG.**

## AUTHOR'S NOTE

We understand developers may be cautious of the return on investment (ROI) proposition of this wiring approach. However, in the right properties and markets, direct-to-meter EV wiring can be both profitable and a major differentiator for knowledgeable EV-driving buyers. This approach brings condo EV charging extremely close to the convenience and cost of single-family homes, which is the charging experience all EV owners desire. Forward-looking developers who invest the time to understand this wiring method can gain a competitive edge- improving owner satisfaction, tapping into a powerful marketing appeal for EV-savvy buyers, and potentially reducing the time to sell all units. For property-specific questions, contact our team directly.

# USER EXPERIENCE

When evaluating EV charging vendors and solutions, consider the long-term user experience for both future residents and the condominium's Board of Directors. Successfully positioning a new development for EV adoption depends on establishing bylaws that support both immediate and future charging infrastructure installations. For any EV-related infrastructure installed during initial construction, ensure the condo bylaws clearly define responsibility for ongoing maintenance and management.

### UNIT OWNER CONSIDERATIONS, WHERE APPLICABLE:

- Cost to install
- Cost to charge
- Ability to pay for charging on their utility bill
- Requirement for specific hardware
- Level of certainty that charging is available when needed (Dedicated vs Communal)
- Ease of account setup and starting a charging session
- Real-time session monitoring and notifications

### CONDOMINIUM BOARD CONSIDERATIONS (AFTER DEVELOPER CONTROL IS RELINQUISHED):

- Insurance and indemnification concerns
- Parking and loitering violations (bylaw concerns)
- Allocation of added ongoing expenses for communal expenses
- Added administrative burden
- Reliability of communal charging amenities
- Integration with fee billing software

14. RVE's DCC9 direct to meter wiring solution.
15. ConnectDER's meter base adapter for EV charging use.

# CHARGING VENDORS

The following list describes the services and technological solutions available within the marketplace to assist decision-makers and provide solutions.

There are four types of charging vendors to consider:

1. **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. For more information on these vendors, review section 2.2.
2. **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, and more.
3. **EV Energy Management System hardware vendors** provide either a panel, breaker, or other hardware that can help manage power flow to EV charging circuits. These vendors typically will also help with system design.
4. **EV charging hardware manufacturers** are non-typical vendors for developers or Boards to interact with, given they provide non-networked, or "dumb" chargers (offline chargers with no smart features), which can be purchased as standalone hardware from many online sites and can be integrated into EVEMS systems. Bulk purchases may benefit from direct purchase from the manufacturer. Make sure to purchase UL or Intertek listed products to comply with insurance requirements.

# PLANNING AND DESIGN

## 1.1 IDENTIFY EV CHARGING REQUIREMENTS

During the project due diligence or early planning phases, identify any applicable building codes or ordinances (state and municipal) requiring EV charging infrastructure at new condominium developments. These will set the minimum standards for the minimum number of EV-Capable, EV-Ready, and EV-Installed parking spaces. Additionally, section 2.1 can help identify relevant incentive programs that may impact planning and potential ROI calculations.

# 1.2 DETERMINE BUILDOUT AND INFRASTRUCTURE STRATEGY

During the initial planning phase, condo developers make critical decisions about EV charging infrastructure that can significantly impact future retrofit options available. Thoughtful planning at this stage can avoid costly retrofits and considerable time and energy for future Board members and property management companies. Because EV charging infrastructure often affects core electrical systems and, in some cases, architectural design, development teams should be familiar with the different charging configurations and wiring approaches and conduct analysis to determine the buyer's willingness to pay for different infrastructure configurations. Ensure any market research done evaluates a potential buyer's willingness to pay for different charging infrastructure (communal, dedicated, direct-to-meter dedicated). Infrastructure can be designed for future expansion without full buildout and while planning for full buildout may seem like an added cost, providing the plan to the board of directors during turnover sets them up for success and offers immense value for buyers – even if only the initial phase is complete. This also elevates developer's reputation and profile for future audiences, including future buyers, investors, and potential development grantors.

**The following steps outline the potential strategies developers should consider:**

> This section involves many technical terms. Review the EV Charging Primer if any questions arise or contact the Charge at Home team here.

**General guidance:**

- If the condo will have deeded parking spaces, dedicated infrastructure provides certainty that owners can charge whenever they need.
- If the condo has some deeded or assigned parking spaces, but mostly unassigned spaces, attempt to provide dedicated charging infrastructure in the initial build-out to the deeded parking spaces and provide communal charging infrastructure for all vehicles without access to dedicated chargers. Challenges may arise if high-mileage drivers need communal chargers, if deeded parking spaces also have protection from weather (e.g. hail, snow, rain, sun), or if the power provided is too low to charge more than one car.

# Infrastructure and Buildout Strategy Flow Chart

**Step 1: Choose Infrastructure Model (for onsite, resident-only charging infrastructure)**

**Decision Point: Will dedicated EV charging infrastructure be installed at any deeded parking spaces?**

*If assigned parking spaces (not deeded) are planned, direct-to-meter wiring is not advised, though dedicated charging infrastructure may still be optimal.*

Yes → Step 2

No → Step 3

**Step 2: Dedicated Charging Infrastructure at Deeded Parking Spaces**

**What level of buildout is being pursued?**

- **Full buildout** | Install infrastructure at all deeded parking spaces, or at least 1 per unit
- **Partial buildout** | Install infrastructure at some deeded parking spaces based on panel capacity and distance to electrical room
- **Upon request buildout** | If allowing pre-sold buyers to pay for dedicated circuitry for their deeded parking, install a circuit that is connected either directly to the unit's meter or to a condo association panel
- **Minimum Code** | Install what local code requires

**Decide the level of readiness**

- **Full EVSE installed** | Not recommended for dedicated configurations at deeded parking spaces due to increased costs unless incentives are available
- **EV-ready** | Allows for quick charger installation in the future
- **EV-capable** | Good cost-saving mechanism

**Wiring method**

- **Direct-to-meter wiring** | Should be pursued when possible. EV-capable hardware may be available
- **Condo association panel-based wiring** | Ensure panels are appropriately sized

**Decision Point: Will communal chargers also be installed?**

Yes → Step 3

No → Step 4

**Step 3: Communal Charging Infrastructure**

**Buildout extent:**

- **Full buildout** | Provide charging infrastructure for 10-20% of parking spaces that do not have access to a dedicated charger. 10% for properties where most people do not drive every day. 20% if most people drive over 50 miles per day or drive trucks
- **Partial buildout** | Install infrastructure at parking spaces based on available panel capacity - EVEMS recommended
- **Minimum Code** | Install what local code requires

**Decide the level of readiness**

- **Full EVSE installed** | 2 ports recommended at move-in; increase based on demand
- **EV-ready** | Allows for quick charger installation in the future
- **EV-capable** | Good cost-saving mechanism

↓

**Step 4: Electrical Room & System Design**

**Ensure or determine the following:**

- Adequate space and routing for conduit runs
- Reevaluate service capacity load calculations
- Space in electrical room for direct-to-meter wiring hardware
- Load management/EVEMS strategies (if needed)

**Upon completion: Coordinate with engineers to integrate the charging strategy into the construction designs**

# 1.3 EVALUATE BYLAW LANGUAGE FOR EV CHARGING INFRASTRUCTURE

Reevaluate or develop bylaw language for EV charging infrastructure to specify ownership and maintenance responsibilities. Direct-to-meter wiring approaches, EV-ready or capable infrastructure, and outlet infrastructure may require the categorization of specific electrical equipment from feeder line, panel, or other connection points to chargers or outlets as **limited common element** or **unit-owned** infrastructure.

Ensure the following items are addressed:

- For direct-to-meter wiring solutions and dedicated charging configurations more broadly, bylaws should state what equipment is designated unit-owner owned, common element, and limited common element infrastructure. Communal charging infrastructure is typically common element equipment, but reservable common element status may be needed for some parking space classifications.
- Ensure that limited common elements pertaining to EV charging infrastructure are appropriately deeded or assigned to the parking space the charger is associated with, rather than the unit, in case of transfer of ownership of the parking space (even if the unit does not change owner).
- Beware of over-prescribing a solution that constrains future Board options based on the current infrastructure. An option available to developers is to craft the bylaws in a way that requires the future owner-controlled Board to develop an asset ownership and maintenance responsibility chart during initial meetings. This may be difficult if chargers are already installed on-site.

# 1.4 REVIEW 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

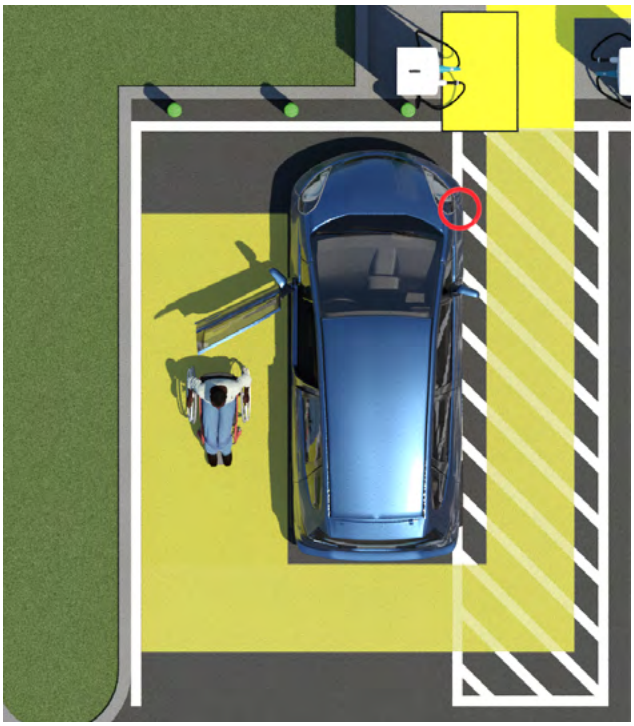
*The U.S. Access Board's Design Recommendations for Accessible Electric Vehicle Charging Stations are not definitive, and to avoid a lengthy permitting process, talk with the permitting authority early on in the process or consider hiring an accessibility consultant or risk fines or an extended permitting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

The US 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. Balancing EV charging and ADA siting needs can be difficult. If the property is particularly complex or there is uncertainty in design requirements, talk to the relevant permitting department or consider hiring an accessibility consultant that is familiar with parking regulations and design.

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

## 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.



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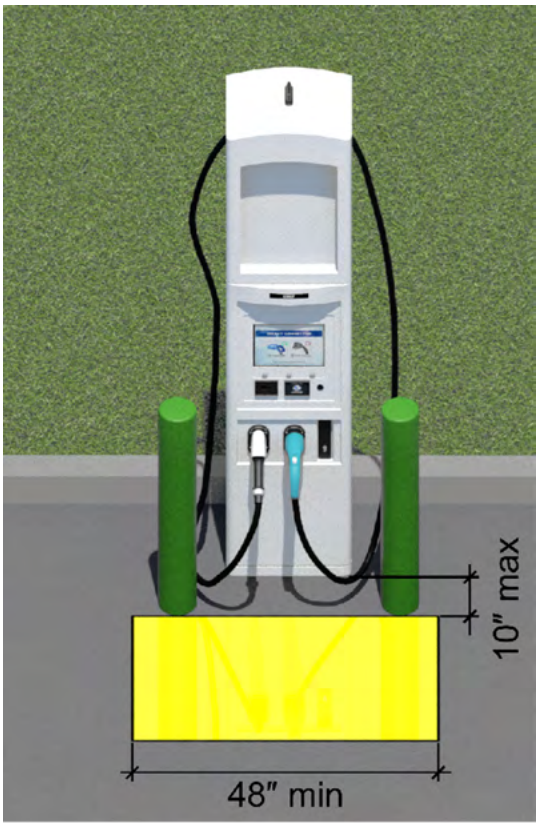


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## 2.

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 to allow for ramps, ADA-compliant widths, and CFS.
- The height of the charger screen and any interactive components must be located below 48" above grade level.

16. https://www.access-board.gov/tad/ev/#accessible-mobility-features-1
17. https://www.access-board.gov/tad/ev/#clear-floor-or-ground-space

**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), people of short stature, 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.**

Use long cables and cable management systems, including retractors and extenders, to ensure the charging cord can reach the charging port and 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 other factors.

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## DESIGN OF EV CHARGING SPACE DIMENSIONS

a. If possible, consider adding an extra 6 inches to parking space widths with charger access to accommodate charging cable maneuverability.
b. Avoid placing communal chargers directly in front of the center of parking spaces to allow each communal port to reach most or all of two parking spaces.[18]

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## EV CHARGING SPACE LOCATION GUIDANCE

Considerations for charger placement:

a. Distribute communal EV charging parking spaces throughout resident-only parking areas (For example, on each garage level or near different entrances).
b. Utilize scalable approaches like factoring in load management/EVEMS to panel sizing while building EV-capable or EV-ready parking spaces.[19]
c. Locate EV charging spaces behind gated areas, as ADA code applies more strictly to public parking spaces than resident-only, restricted parking.[20] Fair Housing Act laws still apply.[21]
d. For garden sites, locate EV charging parking spaces beside concrete or landscape medians to avoid sidewalk accessibility concerns.
e. Group multiple EV charging parking spaces together to save money through more efficient circuit installation.
f. Consider covered EV charging parking spaces to mitigate weather-related damage.[22]
g. Place chargers close to panels to ensure voltage loss code compliance and minimize wire costs.[23]

18. Long cables can also help reach all parts of two parking spaces.
19. When using EVEMS, ensure minimum charging speeds are well known and electricians installing the chargers thoroughly understand the system being installed.
20. ADA 216.5 Exception 2 – "In residential facilities, where parking spaces are assigned to specific residential dwelling units, identification of accessible parking spaces shall not be required."
21. Fair Housing Act – 24 CFR 100.204 – Reasonable Accommodations
22. This can also be an opportunity for solar power integration and a value-add amenity in certain regions.
23. This limitation is considerable and often prevents direct-to-meter wiring from working.

# 1.5 COORDINATE STANDARDS WITH THE DESIGN TEAM

## COORDINATE CONTRACTORS

EV charging infrastructure design requires careful coordination across the development team. Once initial design drafts or revised drafts are completed, it's important to share them with other design contractors, such as the full general contractor team, electrician subcontractors, and even the future property management team, to gather feedback and identify potential conflicts early. Engaging an EV charging consultant at this stage can accelerate the design process, help spot technical or logistical issues, and guide vendor selection, if relevant.

## DETERMINE CHARGING CIRCUIT BREAKER AND PANEL SIZE

**This section is intended for electrical engineers and electricians on the development team.**

EV charging circuits can be configured in multiple ways, but they always have a circuit breaker, even when using direct-to-meter wiring or wiring multiple chargers to a single circuit. Not all panels will need to be installed during initial construction if stub-ups and conduit are appropriately designed and installed.

**Direct-to-Meter Wiring (Dedicated chargers wired to unit meters)**

- A direct-to-meter circuit does not directly connect to an electric panel, so breaker size is dependent on the hardware vendor selected.[24] Breakers are housed within the hardware unless wired to the unit's panel directly.
- Depending on the unit's panel size and the resident's charging needs, a 30, 40, or 50 amp breaker may be appropriate. The circuit will only be powered when the unit's panel has available power, so higher amperage circuits may result in less available charging time. [25]
- If direct-to-meter wiring is being considered, ensure the plans account for voltage specifications to maintain system performance and safety in extreme temperatures.[26]

24. Contact the Charge at Home team to connect with relevant vendors.
25. See page 16 – section 3.5.5 (Power Managed Devices) of PCE's EV Ready Program Design Guidance document for more detail of how a direct-to-meter wiring approach works.
26. National Electrical Code (NEC) Section 110-3(b) requires equipment to be installed in accordance with the equipment instructions. Therefore, electrical equipment must be installed so that it operates within its voltage rating as specified by the manufacturer.

### Dedicated Chargers Wired to Condo Association–Metered Panels

A. For dedicated chargers **without load management/EVEMS:**

- Install 20– to 50–amp circuits, depending on the types of vehicles typically owned, budget for house panels, and the average driving distances of future unit owners.
- 20–amp circuits should only be considered if most every parking space will be wired for EV charging or there are fewer parking spaces than units on the property. 30, 40, or 50–amp circuits should be considered if only one charger will be available per unit, with higher powered circuits offering a higher quality charging experience, particularly for units with multiple vehicles relying on a single circuit.
- 20–amp L1 circuits at every parking space may be advantageous, given panel capacity due to L1 circuits needing only one panel pole per breaker. This setup may be particularly optimal if the condo association is able to submeter each circuit to bill usage through an existing association billing system.
- This approach may require low power L2 circuits, L1 circuits, or multiple panels to serve charging demand adequately.

B. For dedicated chargers **with load management/EVEMS capabilities**[27]:

- 50–amp breakers are recommended as they take up the same amount of breaker space as any other dual–pole breaker, allow for outlets or hardwired chargers to be installed, and will provide high–quality charging speeds when full power is available. 30– or 40–amp breakers work well too, but reduce load management value when full power is available.
- If multiple dedicated chargers share a circuit, the power dispensed will depend on the circuit's breaker size and the number of chargers in use. The minimum power dispensed via each charger should be set according to the worst charging experience the development team is willing to provide their residents and state code, if relevant.
  - 3.3 kW is a good starting design standard.
  - Above 3.3 kW will provide a better charging experience when all chargers are in use, but will cost more and may require additional or larger panels and even service capacity.
  - Below 3.3 kW can help avoid upsizing utility service, increasing panel sizes, and/or adding panels, but charging experience will suffer as the set point drops below 2kW, especially for high–mileage drivers.
- Panel size depends on breaker ratings and whether circuit–sharing is used. Charging consultants and or vendors can assist with final sizing, especially when using EVEMS (particularly software–based systems).

27. An EVEMS is required to allow for standard load calculations to be ignored in place of what the EVEMS can allow. Review NEC 625.42A and 750.30 for more information.

### Communal Chargers

- Communal chargers require fast enough charging speeds that most cars can fully charge or receive a significant charge overnight. Therefore, do not allow communal chargers to charge much slower than 5kW even while using EVEMS, as 50kWh in 10 hours is not a full charge for most decent ranged EVs near empty.[28] To provide 5kW per port via a dual-port power-sharing circuit–a very common wiring option for communal chargers – circuits with no less than 60-amp breakers should be used. 80 or 100-amp breakers are even better, particularly where few parking spaces are available or in small condo developments where less than 20 vehicles will be parked.[29] Higher powered communal chargers are also a good method to future proof to delay retrofits.
- Panels should be sized appropriately to accommodate adequate communal charging to reach buildout percentage determined in section 1.2. Do not try to serve EVs with communal chargers that have access to dedicated chargers.


30

**Consult with EV charging vendors to identify an optimal circuit breaker size for your property's situation or alternatively, contact us here.**

28. The main exception to this is when far more than 20% of parking spaces have charging access.
29. A 60-amp breaker enables 48 amps of continuous power flow, which if split in half on a 208-volt circuit allows for just under 5kW for power per port and double that if only one car is charging. 48 amps * 208 volts * ½ = 4992 Watts.
30. Picture of a dual-port power-sharing Charger by PowerCharge.

## COORDINATE WITH THE MECHANICAL, ELECTRICAL, AND PLUMBING (MEP) CONTRACTOR

Coordinate with the MEP Contractor on the following two critical aspects:

1. EV location plan: Share the EV parking space locations with the MEP after the civil and or architectural plans have been reviewed by the relevant contractors. Require the MEP to label each charger location with the association-metered 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.
2. Power requirements: Share the breaker requirements and wiring configurations with the MEP based on the number of EV-ready, EV-capable, or EVSE planned to be installed. If circuits will have load management/EVEMS capabilities through software or hardware solutions, ensure the charging vendor or vendors collaborate with the MEP.

# ESTIMATE COSTS

## 2.1 IDENTIFY INCENTIVES

**Many charging incentives are only applicable to commercial buildings and may not apply to condominiums, depending on installation configuration and other factors. It is best to read the eligibility criteria directly from the incentive's webpage or contact the utility directly.**

**FEDERAL INCENTIVES:** Alternative Fuel Vehicle Refueling Property Tax Credit, (§ 30C, or IRS form 8911 through June 30, 2026).

**STATE INCENTIVES:** Alternative Fuels Data Center

**UTILITY INCENTIVES:** Some utilities offer make-ready programs that cover significant panel, transformer, and other service upgrade costs.[31] Some utility programs require a new meter to be installed to use EV-specific rate schedules. Talk to the utility if a relevant program exists.

**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 specific EV charging service and hardware 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 more in-depth applications. Look to EV charging vendors and installers to support these applications.

Carefully review the incentive language to ensure that all applicable requirements, as well as any compromises to construction designs made to secure incentive funds, are acceptable.

31. Make-ready incentives are often only for retrofits. Applicability will vary by utility territory.

# 2.2 EVALUATE EV CHARGING VENDORS

Networked solutions may not be necessary for condominiums that have gated parking lots; however, many will. Given the uncertainty around whether a unit owner will want an EV charger installed, prioritizing EV-ready and capable infrastructure is recommended for dedicated infrastructure, and for any communal infrastructure beyond what is incentivized by utility or state programs and what market analysis indicates.

## DIRECT-TO-METER WIRING SOLUTIONS

For charging solutions that utilize direct-to-meter wiring, specific hardware is needed for installation. While there are only a few hardware vendors that provide such equipment, the installation of the hardware can be done easily by any electrician educated on the specific hardware.[32] Direct-to-meter wiring in unsecured parking lots will likely require access controls, either through smart charging solutions or lockable outlet covers.[33] Discuss with electricians and charging vendors what options are recommended.

Contact the Charge at Home team for introductions to direct-to-meter hardware vendors.

## NON-NETWORKED CHARGING SOLUTIONS

Charging solutions that utilize non-networked chargers with and without EVEMS can be effective solutions for condos, but require careful design and consideration for long-term administrative burdens placed on the condo association or high costs to set up submetering and an appropriate billing process. When looking for non-networked chargers or outlets, make sure to only buy listed charging equipment. UL or Intertek are the typical nationally recognized testing laboratories (NRTLs) that certify this type of equipment.[34] Any standard outlets used should be of industrial quality or will become a fire risk.[35]

## NETWORKED CHARGING SOLUTIONS

For charging solutions that require a 3rd party software provider, there are two primary vendor business models:

- Full Capital Expenditure (CapEx) Option: The condo association or unit owner pays all costs for the equipment, installation, and maintenance of EV chargers. The association sets charging session pricing and receives the complete revenue from charging sessions, subject to any markups agreed upon in the vendor service agreement.

32. Section 3.1 recommends coordination between electricians and any relevant charging vendors.
33. Smart charging solutions in this case may not necessitate commercial networked chargers, but rather residential chargers with some smart features. Lockable outlet covers may require additional hardware.
34. Having a NRTL certify that a product meets various industry standards is how equipment obtains "listed" status.
35. Typical standard outlets are NEMA 14-50, 14-30R, 6-50, but others exist. Adapters are available for purchase at most hardware stores or online.

- No CapEx Option – often known as Charging-as-a-Service (CaaS): CaaS involves a service agreement offered by EV charging vendors with no CapEx needed from the association or unit owners. CaaS provides EV charging equipment, installation, software, maintenance, and support within a predictable monthly payment by residents paying markedup 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 operating expenditures (OpEx) to the association. Turn-key CaaS solutions typically require long contracts (8+ years) and may result in high charging costs for users. Learn more about vendor business models here.

## THE FOLLOWING QUESTIONS SHOULD BE USED TO HELP SELECT NETWORKED CHARGING VENDORS:

### 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.)
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. If the selected charging service provider goes out of business, can another charging service provider's software be installed on the hardware?

### 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 for applying for incentives?
9. Would both the software and hardware components that the vendor offers be eligible for incentives? 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: the vendor or the property owner.
11. What are the ongoing costs associated with this charging solution, 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. What service-level agreements are offered?
    a. Please provide documentation on repair time frames for standard wear parts, any uptime guarantees made, and support time terms and conditions.
14. Does the vendor offer training or support resources for the operations and facilities management team?
15. If the team is unsatisfied with the product, will the vendor need to be involved in order for the property owner or manager to move to a different software vendor?

## ONBOARDING PROCESS QUESTIONS

16. What does the onboarding process entail?
    a. Are there resources available for residents to understand the new system and for property managers or the Board to monitor use?
17. What is the user experience for both residents as well as property owners and managers?
    a. Ask for a demonstration of both the driver app and the management portal.

# 2.3 DETERMINE ROUGH CONSTRUCTION COSTS

The general contractor (GC) and development team should work with the electrician and other subcontractors to estimate construction costs and integrate them into the budget and timeline. The clearer the design plans are, the more accurately contractors will be able to estimate costs. Ensure all transformers serving the property are large enough to support current and future load. Evaluate the costs of providing L1 or low-power L2 dedicated circuits for each deeded parking space to compare against the cost of other solutions.

# 2.4 VALUE ENGINEERING

This section is intended for the electrical engineering and general contractor teams.

Cost-reduction recommendations for condominium developers::

1. Compare the cost of direct-to-meter wiring to a condo association-metered panel. In some cases, direct-to-meter wiring approaches may save money without a panel needed, but for projects with many deeded parking spaces, this will typically not be the case. Contact the Charge at Home team to connect with relevant vendors.
2. Make circuits EV-capable rather than EV-ready. Check code compliance before altering plans.
3. Work with potential vendors to discuss cost-optimization options for installing multiple chargers per circuit with power-sharing circuits and EVEMS solutions.
4. Reduce panel capacities by using an EVEMS and lowering the minimum power threshold per circuit.[36] This will not necessarily reduce the wiring gauge sizes or conduit run lengths. Below 5kW, communal chargers should no longer be considered. Below 2kW, and user experience will suffer.
5. Consider building out standard L1 or L2 outlets and physical locking enclosures rather than installing networked chargers for dedicated configurations.
6. Do not provide dedicated chargers for all units that have deeded parking spaces.[37]
7. Consider using a partial or fully communal charging configuration.[38]
8. Consider lower-cost chargers or engage more charging vendors to obtain more competitive quotes.
9. Consider installing panel capacity closer to where it will be used or shifting which parking spaces will be made EV-capable or EV-ready.
10. Consider running a trunk conduit to where future panels will be installed – if along a route easily or already trenched during construction – for communal approaches. Installation of those panels may not be necessary during initial construction. Ensure any infrastructure is physically marked and flagged so future property owners understand what it is and where it is.
11. Consider using some of the parking spaces as communal charging spaces that will not be assigned/deeded to any residents.

36. 2kW will provide between 16-20kWh (32-100 miles) overnight, in 8-10 hours. Given load management is used in this situation actual energy dispensed will almost always be greater than expected as power levels rise as vehicles finish charging. California CALGreen code requires a minimum 3.3 kW (Section 5.106.5.3.3). For new condos, 3.3 kW is a great threshold to set for load managed systems to ensure excellent charging experiences.
37. This will create a disparity between different units both with deeded parking spaces, but may be surprisingly advantageous if future owners do not own a car.
38. Fewer circuits usually means lower costs. Fewer larger amperage circuits can serve more drivers if designed in an appropriate communal charging configuration. There are limitations to this approach as EV adoption increases.

# 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 in the project's regional or municipal area. 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 or utilization data needs to be tracked for any rebate processing after the chargers are installed.

# CONSTRUCTION

*This checklist is intended for developers.*

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

## DEVELOPER GOVERNANCE DOCUMENT REVIEW

- [ ] Review governance documents for language that would unnecessarily constrain future Boards from altering ownership of EV charging infrastructure.

## 1. PLAN, DESIGN, COORDINATE

- [ ] Identify EV charger and EV-readiness requirements and possibly incentives.
- [ ] Determine buildout pathway and readiness levels.
- [ ] Reevaluate bylaws.
- [ ] Ensure accessibility and plan charger locations to minimize cost.
- [ ] Determine placement of panels, trenching, conduit runs, and stub-ups.
- [ ] Integrate EV charging infrastructure into the construction schedule and engage contractors (MEP, architect, etc.).

## 2. ESTIMATE COSTS

- [ ] Identify relevant incentives, if applicable.
- [ ] If applicable, evaluate networked EV charging vendors.
- [ ] If applicable, reassess incentives with the charging vendor.
- [ ] Determine Rough Construction Costs and explore cost-saving options.
- [ ] Finalize budget.

## 3. PRE-CONSTRUCTION

- [ ] If applicable, ensure EVEMS and or EV charging hardware vendors and electrician contractors coordinate to confirm installation details.
- [ ] Apply for rebates and order materials.

## 4. CONSTRUCTION

- [ ] Install charging infrastructure equipment aligned with the construction schedule.
- [ ] If applicable, commission chargers.

## 5. POST-CONSTRUCTION

- [ ] Developer determines initial Board policies for EV charging.
- [ ] Turnover and owner-controlled Board reviews infrastructure and contracts.
- [ ] Board begins to vote on policies and potential vendor contracts (new contracts, extending existing contracts, etc).
    - [ ] If applicable, charging vendor(s) onboards Board or representatives to its online management platform.
    - [ ] If applicable, charging vendor integrates their billing system with the association's billing system.
- [ ] Confirm maintenance procedures with any vendors and management staff.
- [ ] Communicate charger availability and policies with new and potential residents.
- [ ] Board refines charging policies as needed.

# POST-CONSTRUCTION

## 5.1 DEVELOPER-CONTROLLED BOARD SETS INITIAL POLICIES

Before turnover and occupancy, the developer must set policies that dictate the use of any communal chargers and installation guidelines for dedicated chargers if outlets or full-EVSE are not installed already. Some policies to consider are listed in section 5.3. Policies may need to be adjusted multiple times between occupancy and turnover.

*The remainder of section 5 is intended for Boards after they have been turned over from developers to unit owners. There are sections that may benefit developer-controlled Boards depending on what infrastructure has been installed.*

*After a defined percentage of units are sold—or a statutory time period passes—the developer is required to call a turnover meeting, during which unit owners elect the condo association board of directors. At this stage, the developer must also hand over key documents, including financial records, contracts, warranties, and building plans. The developer must also ensure the owner-controlled Board has full access to and control over any agreements the developer made with service providers, such as EV charging vendors. The owner-controlled board then assumes responsibility for governance, conducts reviews and audits, and oversees property management.*

## 5.2 EVALUATION OF CHARGING INFRASTRUCTURE AND CONTRACTS

The Board, now owner-controlled, will review the electrical equipment and determine how it may be used in the future, how it is classified, and if it should be reclassified (common element, limited common element, or otherwise), and if there are any governance documents that need clarification.

If there are any charging service contracts:

- Use sites like Plugshare, Chargeway, and others to look at public DC and L2 charging prices per kWh nearby and confirm prices are cheaper for members than at public charging options.
- Determine if there are any exclusive charging service agreements and evaluate whether they are beneficial to the members.

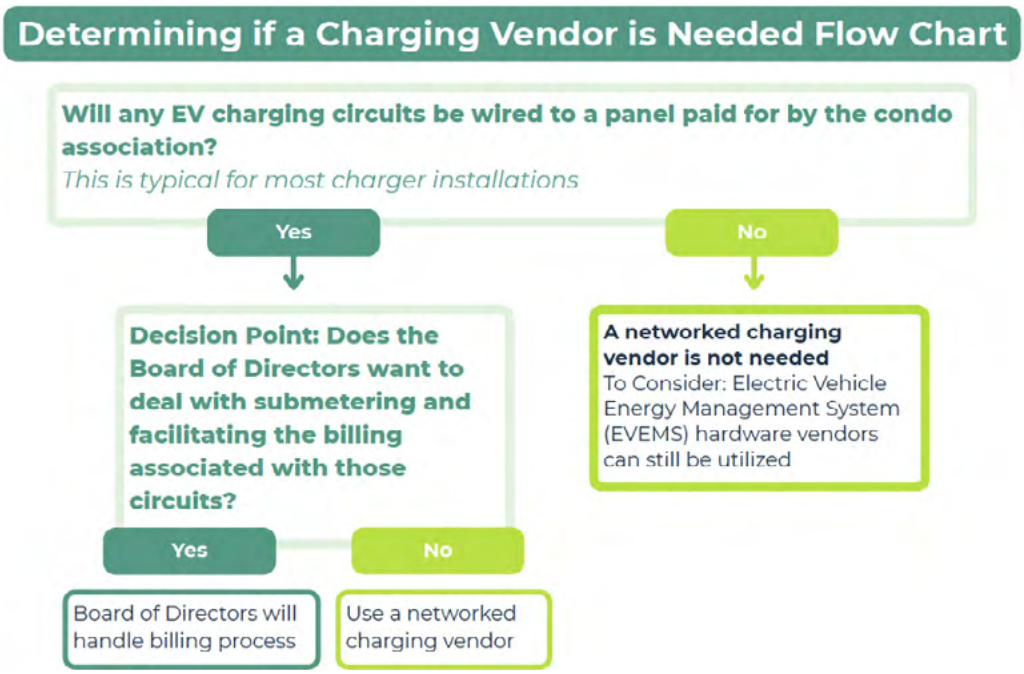
If there is any direct-to-meter wiring hardware:

- Ensure ownership and maintenance responsibilities are clearly determined by association policies.

## 5.3 BOARD DETERMINES IF A CHARGING VENDOR IS NEEDED

*If a charging vendor is already contracted, skip this step.*

If a charging vendor is not yet contracted, the Board should review sections 1.2, 1.5, 2.1, and 2.2 to determine whether a charging service provider is appropriate, if there are any incentive funds, and what questions to ask networked charging vendors. Use the following questions to determine the best pathway forward:



After the Board contracts with a charging vendor, reapproves or extends an existing contract, or decides to end an existing contract or avoid an ongoing charging service contract entirely, the Board will need to evaluate the policies in place. Given that the charging configuration, wiring mechanism, and specific charging vendor will have a significant impact on policy decision considerations. While section 5.2 is placed before 5.3, there may be times when the two sections overlap or merge.

If a charging service vendor is contracted, make sure the Board, property management, and any other relevant stakeholders are educated on how the charging system works and how to access any online web platforms.

## 5.4 CHARGING POLICIES TO CONSIDER ADOPTING

*While this section is intended for owner-controlled Boards, developers looking to draft initial charging policies for the Board may find it helpful.*

The Board will need to either set policies directly or establish a committee to draft policy recommendations for board approval. While some of these policies may already exist from the developer-controlled period, many of the following areas will still require consideration. Policies should be tailored to the existing infrastructure and any contracted charging vendors.

It is important to recognize that not every policy will work perfectly at first. What matters is building in processes that allow for timely adjustments and improvements.

The following guiding principles should steer policy decisions:

- Fair allocation of upfront costs
- Encourage turnover and prevent hoarding
- Cover both current and future costs
- Ensuring equivalent access based on charging configuration and ownership of parking spaces[39]

### BOARD ADMINISTRATIVE POLICIES

A. Insurance and Cost Responsibility
    - Determine whose insurance covers dedicated charging infrastructure.
    - Specify the minimum insurance requirements.

39. Owners and residents with dedicated charging should all experience the same costs and charging speed potential unless there were reasons that required different power levels or wiring mechanisms. Owners and residents without dedicated charging should all have access to the same power levels and charging price schedules as one another.

B. Access and Activation Procedures
    - Establish a clear process for unit owners to request contractor access to restricted areas (gated parking lots, electrical rooms), especially for direct-to-meter (EVEMS) installations and evaluations. Include defined timelines and specify whether access requires only notification or Board approval.
    - Provide a procedure for unit owners to request installation of a new charger or activation of an existing dedicated charger, if applicable.
    - Define the process for residents to request addition to an authorized user list, if applicable.
C. Infrastructure Expansion and Usage Management
    - Define utilization thresholds or other conditions that trigger a vote to allocate funds for additional communal charging ports. Consider automating this process if it is likely to happen repeatedly over many years with communal charging infrastructure.
    - Establish a process to determine when to reevaluate charging vendor contracts or take chargers offline due to low utilization or other reasons. As long as the electrical infrastructure is installed, the end charging hardware can be replaced fairly easily.
D. Utility Considerations
    - Evaluate the condo association's utility bill and rate schedule to prevent unexpected cost impacts (e.g., demand charges, tiered energy blocks, usage caps).
    - Determine whether qualifying chargers can participate in utility demand response programs. This may impact incentive eligibility.
E. Policy Governance
    - Determine the procedure for amending charging-related policies, ensuring compliance with bylaws.

## PRICING POLICIES

A. Pricing Structure
    - Prioritize per kWh pricing over flat fees whenever feasible.
    - Implement grace periods and idle fees as needed; consider overnight grace periods and session time limits.
    - Design idle fees to be either immediate or gradually increase over time.
    - Ensure policies are well understood by all users.
    - Review state laws if chargers will also be available to the public[40]
B. Price Markups
    - Evaluate markups to fairly cover maintenance and administrative overhead.
    - Ensure pricing covers all ongoing expenses, electricity costs from the condo utility bill, networking, transaction, or service fees from 3rd-party vendors, and any payments to maintenance funds or a capital expenditure reserve.
    - Acknowledge that full costs may be higher than anticipated.
C. Reservation Systems
    - Design reservation systems to discourage hoarding and ensure reservations are used only when needed.
    - Recognize that reservation systems cannot compensate for charger supply shortages.

D. Expense Allocation
    - Allocate ongoing expenses for infrastructure benefiting a specific charging configuration to the benefiting unit owners and residents.
    - Allocate ongoing expenses for communal chargers to all potential users. Authorized user lists will specify which owners are using the equipment.

E. Competitive Pricing
    - Set prices as low as possible while covering all current and future costs to avoid pushing residents to use public charging, which eliminates the benefits of on-site charging access.

## BILLING POLICIES

- Specify how charging sessions at communal chargers will be tracked and billed. Typically, this will be done by a charging vendor's system, sub-metering system integrated into existing condo billing software, or direct wiring to a unit's meter.
- Identify any billing steps that require administrative action and define which components, if any, are automated or managed externally.
- Determine whether HOA fees will subsidize non-networked communal chargers if they are installed or being considered.[41]

## PARKING POLICIES

- Determine enforcement protocols for vehicles that are parked in communal charging spaces but that are not charging, including whether to allow grace periods and how to handle situations when no alternate parking is available.
- Close loopholes that allow avoidance of fixed or monthly parking fees. A specific loophole to watch out for is when users reduce their charging rate to actively charge all night, every night.
- Enforcement procedures, including towing and violations, must be clearly defined and consistently applied.
- In cases where a parking space is transferred and the associated unit owner no longer owns the spot, a policy must specify who pays for any electrical work related to direct-to-meter equipment. The Board must also establish a formal process for transferring charger ownership or access rights during a sale or transfer.

## COMMUNITY USE POLICIES

- Define whether residents are allowed to unplug other users after charging has completed, and how to regulate that behavior appropriately.
- Guest access to communal EV chargers must be governed by policy, with consideration driven by liability and insurance coverage.

40. California requires commercial chargers to undergo regular inspections from the Department of Measurement Standards within the Department of Food and Agriculture.
41. The term "HOA fees" is used by the industry to refer to condo association fees although the two terms are technically different.

- Determine the process and timeline for complaints to be handled.
- Determine how non-EVs parking or blocking access to chargers will be handled.

### MAINTENANCE OBLIGATIONS

- Set a process for reporting broken chargers and defined financial responsibilities.
- Assign maintenance responsibilities for dedicated chargers and supporting circuitry, considering whether the setup uses direct-to-meter wiring.
- Require unit-owned infrastructure to be evaluated at regular intervals.
- Set a regular evaluation cycle for all condo-owned charging infrastructure.

## 5.5 COMMUNICATION WITH CONDO ASSOCIATION MEMBERS

Ensure policy decisions made by the Board are shared with all members and available for review in a common space or online at any time. It is recommended that any pricing, enforcement, and community use guidelines be posted at or near EV chargers, if feasible.

The following are additional recommendations to consider:

1. **Communicate proactively:** Share EV charging policies with new owners before their move-in date, or even before they purchase the unit, especially if they may need to pay for a circuit or charger installation.
2. **Keep residents informed:** Provide timely updates whenever chargers are out of order or when pricing or other policies change.
3. **Leverage notification systems:** Use text alerts for time-sensitive issues, such as gasoline vehicles parked in EV-only spaces, or automated messages when a car has finished charging at communal stations.
4. **Manage idle fees effectively:** Utilize networked charger capabilities to notify EV drivers when idle fees will be applied.
5. **Provide clear on-site guidance:** Install signage to clearly indicate the location of chargers and outline what residents can expect when using them—essential for setting proper expectations.

Unless expressly prohibited by the master insurance or other constraints, consider adding chargers available for public use to online or phone apps like Plugshare and Chargeway; otherwise, adding restricted access chargers to those apps and websites should be avoided.

CHARGE at HOME

FORTH

# THANK YOU