

Solving the Multi-Family EV Charging Challenge: Smart Load Management Without Costly Utility Upgrades

Executive Summary

Multi-family housing is emerging as one of the most critical frontiers for expanding equitable and accessible EV charging. Regulatory bodies, utilities, and state energy commissions increasingly view multi-family deployments as essential for closing adoption gaps among renters and underserved communities. Programs such as the California Energy Commission's CALeVIP 3.0, Communities in Charge (CIC), and numerous utility-funded rebate programs now prioritize apartments, condominiums, affordable housing, and mixed-use communities.

However, multi-family charging projects face a fundamental infrastructure challenge: most properties lack the electrical capacity needed to support multiple Level-2 chargers, and securing a utility-approved service upgrade can be slow, expensive, and unpredictable. Interconnection queues, transformer constraints, and permitting delays frequently create bottlenecks that stall deployments.

This white paper outlines how smart charging management—implemented through platforms such as DynaChrg EVES (Electric Vehicle Energy Solution)—allows multi-family sites to deploy EV charging rapidly and affordably without waiting for utility upgrades. By intelligently distributing available power, enforcing site-level demand limits, and balancing load across chargers and phases, properties can expand charging access while staying within existing electrical capacity.

Smart charging and effective load management isn't just a cost-saver; it's a fast track to regulatory compliance and EV equity.

1. Why Multi-Family EV Charging Matters

Nearly 40% of U.S. households live in multi-family dwellings. For these residents, home charging is not as simple as installing a private Level-2 unit. Lack of dedicated parking, limited electrical headroom, and shared building infrastructure create barriers that disproportionately affect renters and underserved communities. Furthermore, reliable on-site charging at multi-family dwellings, such as apartments and condominiums, is rapidly moving from an amenity to an expectation, directly impacting resident

satisfaction and a multi-family operator's ability to attract and retain high-value tenants.

As a result, utilities and state agencies increasingly view multi-family charging as a priority for advancing EV equity. Ensuring reliable access to home charging in apartments and condos is essential for meeting state electrification goals.

2. The Power Capacity Problem in Multi-Family Buildings

Most multi-family buildings were not designed with EV charging. Common capacity constraints include:

- Limited spare capacity on existing main service panels
- Transformer and feeder limitations
- Shared electrical infrastructure serving dozens or hundreds of units
- Long utility interconnection timelines for any service upgrade
- High costs associated with trenching, panel replacements, or transformer upsizing

These constraints often become the dominant cost driver for multi-family charging—sometimes exceeding the cost of the chargers and installation combined. For a typical 100-unit building, a main service upgrade to support new Level-2 chargers can range from \$40,000 to over \$200,000 and take 6-18 months, or more, due to permitting and interconnection queues. Even when grants cover hardware or labor, electrical upgrades can delay or entirely prevent deployments.

3. The Need for Smart, Flexible Load Management

To avoid costly and time-consuming upgrades, multi-family operators need charging solutions that:

- Operate within existing electrical constraints
- Dynamically allocate available power across multiple chargers
- Prevent overload on panels, feeders, and transformers
- Support shared, assigned, and mixed-use parking environments
- Ensure fair and reliable charging access for all residents
- Scale seamlessly as EV adoption grows

Smart charging platforms provide these capabilities through software rather than infrastructure expansion.

4. A Flexible Approach: Smart Charging that Works with Existing Capacity

Smart charging enables multi-family sites to operate multiple Level-2 chargers without exceeding the building's electrical limits. Key capabilities include:

- **Setting a site-wide demand limit** based on available capacity
- **Distributing power dynamically** as vehicles plug in
- **Using rotating, queued, or priority charging** when demand exceeds capacity
- **Balancing load across phases** to prevent unbalanced or overloaded circuits
- **Monitoring real-time usage** to enforce safe operating thresholds

With these controls in place, a property with as little as 40–60 amps dedicated to EV charging can support multiple chargers while staying safely within capacity.

5. Optional Utility Integration for Demand Response

Where utilities offer load management or demand response (DR) programs, smart charging platforms can:

- Respond to DR events
- Temporarily reduce site load during critical grid hours
- Adjust charging behavior based on utility signals

These capabilities enhance grid stability but are not required for smart charging to function effectively at multi-family properties. EV charging can be fully operational even without utility integration.

6. How DynaChrg EVES Enables Scalable Multi-Family Charging

The DynaChrg EVES platform provides a complete suite of tools for managing multi-family charging within existing capacity. Key features include:

- **Dynamic load distribution across chargers and users.**
 - Without smart load management, 60 amps might only safely support two dedicated Level-2 chargers. DynaChrg EVES, by dynamically throttling and queuing power can effectively support four to six chargers using the same 60 amps of existing capacity.
- **Configurable site-level demand limits for constrained buildings.**
 - Setting a **hard electrical cap** on total power draw to prevent overloads and ensure charging stays within the existing building capacity.
- **Phase balancing to prevent circuit overloads.**
 - Phase balancing is crucial because Level-2 charging typically uses 208V or 240V, drawing power unevenly from the three phases of the main panel. EVES actively shifts power draw to prevent any single phase from becoming overloaded and tripping the building's main breaker.
- **Real-time chargers monitoring and visibility.**

- Provides live data on charger status and power usage to enforce safe operating thresholds and allows for immediate adjustments.
- **Hardware-agnostic control via OCPP 1.6/2.0.1 compatibility.**
 - Enables the EVES software to manage chargers from any manufacturer that uses the Open Charge Point Protocol (OCPP) standards.
- **Fair-use and access policies tailored to resident charging.**
 - Allows configuration of rules (like rotating or queued charging) to ensure equitable access to shared charging infrastructure for all residents.
- **Optional utility integration for demand-response participation.**
 - Allows the platform to temporarily reduce the charging load during critical grid hours when signaled by the utility, often in exchange for incentives.

With EVES, multi-family properties can deploy EV charging quickly, cost-effectively, and with minimal electrical modification, while retaining the flexibility to expand as adoption increases.

7. Implementation Framework for Multi-Family Operators

A practical deployment pathway includes:

1. **Assess site capacity** and determine an EV-only demand limit
2. **Install OCPP-compliant chargers** compatible with EVES
3. **Configure EVES site policies** for demand limits, charging schedules, or rotations
4. **Enable automatic load balancing and throttling**
5. **Monitor site performance** and adjust settings as adoption grows
6. **Scale charger count gradually** without requiring additional electrical work

Conclusion

Multi-family housing is essential to creating an equitable EV future, yet electrical capacity constraints remain a persistent barrier. Smart charging management offers a scalable, software-first alternative to costly utility upgrades. By intelligently controlling load within existing capacity, properties can deliver reliable charging access, reduce deployment costs, and accelerate timelines.

Property owners and developers can no longer afford to wait for costly utility upgrades. Adopting a software-first approach is the fastest, most affordable way to meet resident demand and regulatory mandates.



Contact DynaChrg today to learn how EVES can enable your deployment within weeks, not months. DynaChrg EVES provides the tools and flexibility needed to support this transformation for communities, property owners, and utilities alike.



About DynaChrg

DynaChrg is a technology-driven provider of EV charging hardware, software, and managed services focused on enabling scalable, reliable, and community-first charging infrastructure. Built on nearly two decades of utility integration and energy management expertise from our parent company, 3Insys, DynaChrg offers solutions across residential, multi-family, commercial, fleet, and municipal use cases.

EVES — the Electric Vehicle Energy Solution — provides advanced charger visibility, smart load management, dynamic power throttling, OCPP-based orchestration, payment processing, and demand-response compatibility. EVES enables site hosts, operators, and utilities to deploy EV charging with greater flexibility, lower cost, and higher uptime.

Learn More

EVES Product Overview:

<https://dynachrg.ai/platform/eves>

DynaChrg Website:

<https://dynachrg.ai/>

Contact Us

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