



August 18, 2014

Leslie Baroody
Heather Raitt
California Energy Commission

This letter and accompanying PowerPoint Presentation is submitted to the 2014 Integrated Energy Policy Report and focuses on comments relating to the Alternative and Renewable Fuels and Vehicle Technology Program, specifically in contributing to the understanding of the issues multifamily properties face when considering electric vehicle charging infrastructure on their properties.

EV Charging Pros has provided strategic and tactical consulting about EV charging infrastructure to commercial building owners, workplaces and multifamily properties since 2012.

Lessons learned that may contribute to the IPER Update include:

- Things take a long time to move through multifamily organizations, typically 7-12 months from awareness of the issues and having an understanding of site-specific scenarios to decisions being made and budgets allocated.
- CEC timelines for responses to Requests for Proposals frequently do not allow enough time for multifamily organizations to make decision before the response date.
- Many multifamily organizations are hesitant to invest in infrastructure based on what they perceive as inconsistent demand and use of charging stations.
- What do you want to incentivize; capacity upgrades, make ready infrastructure or the deployment of charging stations?
There is significant complexity at the intersection of these issues and multifamily organizations need to understand what they are undertaking and why prior to making decisions.
- Knowing the different value propositions that each multifamily segment will respond to is critical to success. Individuals and small groups who own properties as income generators are very different from a real estate corporation's focus on asset value.

- Properties that require retrofits to the capacity and power distribution infrastructure have different considerations from development-focused organizations building new properties.
- Financing programs will incentivize action, just not as much as a grant offering.
- There are frequently critical items in the decision process that financing does not solve such as parking availability, driver policies, pricing and program administration.

I recommend that a “EV Charging Design and Decision” program be considered, which would have two components a) a grant program designed to independently educate, train and certify individuals and organizations to assist multifamily properties to understand, plan and make commitments about potential EV charging projects and b) fund those certified to help organizations prepare for the CEC financing opportunities ahead of the submission cycles

The attached PowerPoint: Multifamily Realities, was presented July 28, 2014 at the Best Practices and Challenges Ahead for Bay Area EV Infrastructure Growth Roundtable, organized by ProspectSV

I am happy to provide further information and assistance.

John Kalb

Founder | EV Charging Pros
p - 415.209.6585 | c - 415.717.5241
johnk@evchargingpros.com
<http://www.evchargingpros.com>
Twitter [@evchargingpros](https://twitter.com/evchargingpros)



EV Charging Pros

EV Infrastructure Roundtable Multifamily Overview

July 28, 2014





Multifamily Realities



Bay Area Multifamily Snapshot

Bay Area Total

- 2,540 Properties
- 381,087 Units

4.75% of all multifamily owners control 31.3% of the properties and 40% of the units

\$100K tenant income represents

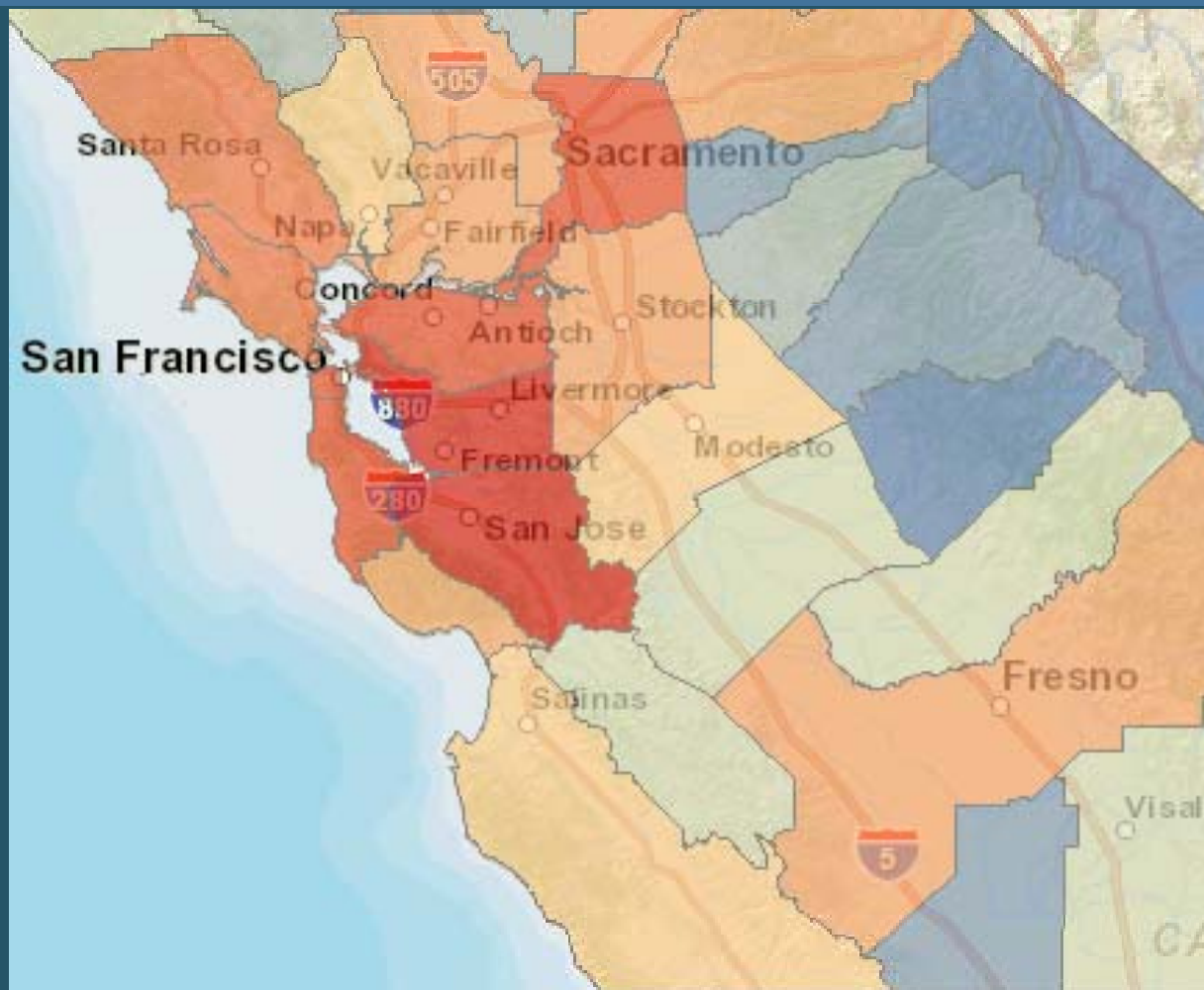
- 19.5% of all Units
- 13.5% of all Properties

Multifamily Properties with \$100,000 Median Household Income

County	Units	Properties
Alameda	11,637	60
Contra Costa	4678	34
Marin	1,251	11
Napa	361	2
San Francisco	17,432	85
San Mateo	5,703	31
Santa Clara	32,654	114
Sonoma	708	8
Total	74,424	345



Bay Area ZEV/PHEV Rebate Density



<http://energycenter.org/clean-vehicle-rebate-project/cvrp-rebate-map>



Who Owns the Nation's Apartments

	All Properties	2-4 Units	5-49 Units	50+ Units
Individual Investor	67%	83%	49%	7%
Limited Liability Partnership	7%	3%	10%	30%
LLC	13%	6%	22%	42%
Real Estate Investment Trust REIT	1%	1%	1%	4%
Real Estate Corporation	1%	0%	2%	3%
Other Corporation	1%	0%	2%	3%
Nonprofit	2%	1%	4%	9%
Other	7%	7%	11%	3%
Total	100%	100%	100%	100%

Source: NMHC tabulations of 2012 Rental Housing Finance Survey microdata, US Census Bureau. Updated 3/2013



Who Is In Charge Of The Project?

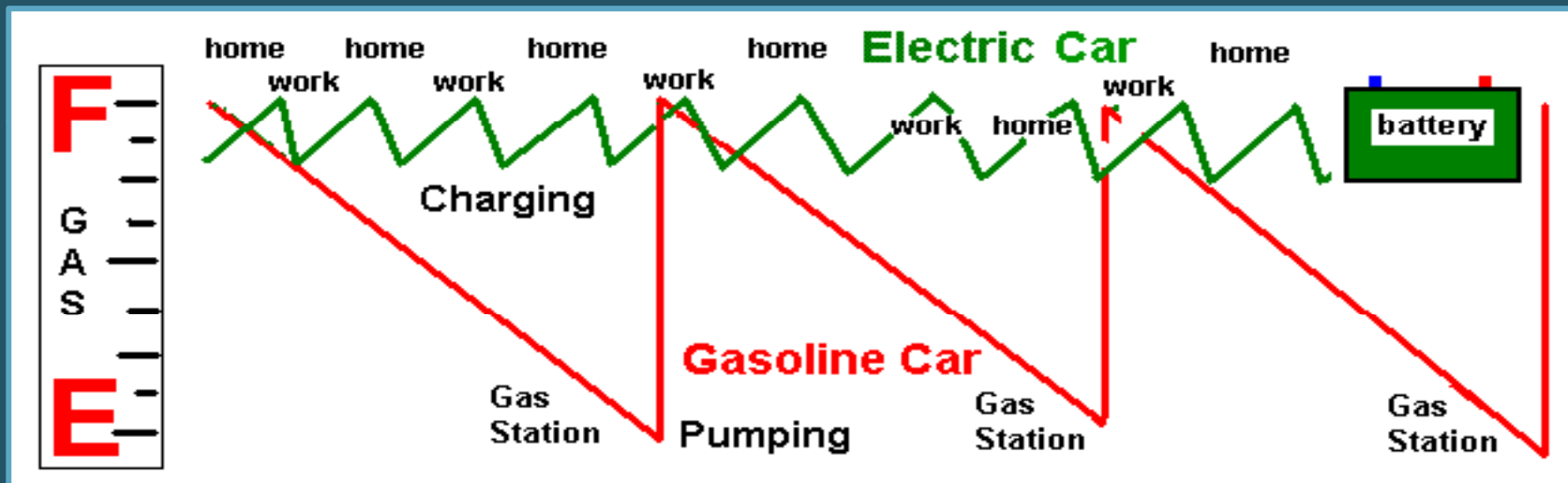
- CEO
 - A trend or fad, free or a service, differentiable advantage, increase asset value
- CFO
 - Business model, capital costs now and later, ROI
- Sustainability Director
 - Does this help our green profile and triple bottom line, LEED points, other green projects
- Facilities Manager
 - How many, where, power availability, scalability
- Chief Marketing Officer
 - How do we use this to drive occupancy rates, is it proven market differentiation
- Operations Management
 - How do we monitor, manage and financially reconcile



Decisions Require EV Education



A Battery Is Not A Gas Tank





Three Factors In Charging Times



The Availability of Power

- Level 1, 120V 2.4 KW, dedicated 10-20 amp
- Level 2 240V 7.2 KW dedicated 40 amps
- DC Fast Charging 480 KW dedicated



The Rating of the In-car Charger

- 3.3 kWh to 6.6 kWh



The Size of the EV Battery

- Chevy Volt 16 kWh
- Nissan Leaf 24 kWh
- BMW ActiveE 33 kWh



Plug in Where You Are Spending Time

L1 Wall Outlets

5 miles per hour

L2 Charging Stations

20 miles per hour

DC Fast Charging

40 miles in 20 minutes



30 mins. to grab a bite

10 miles at L2 or 60 miles at DCFC



1 hr. grocery shopping

20 miles at L2



2 hrs. between meetings

40 miles at L2



3 hrs. at a ballgame

60 miles at L2



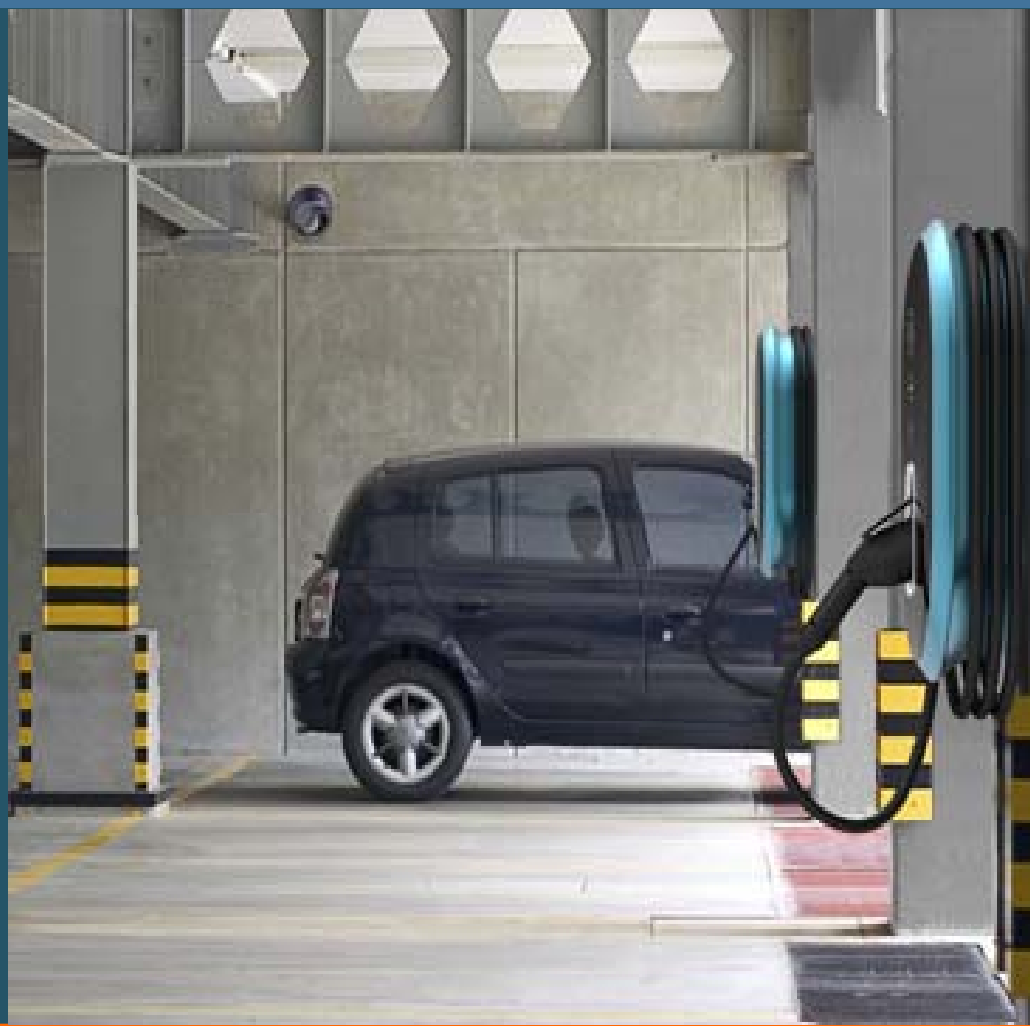
8 hrs. overnight

40+ miles at L1



Charging Business Models

- Access Control
 - RFID
 - HOA Card
 - Other
- Flexible pricing models
 - Free as an amenity
 - By kWh (.49)
 - By hour/session (\$2 per)
 - Set monthly fee/subscription
- Transaction Processing and Reconciliation





Tactical Site Considerations Impact Strategies

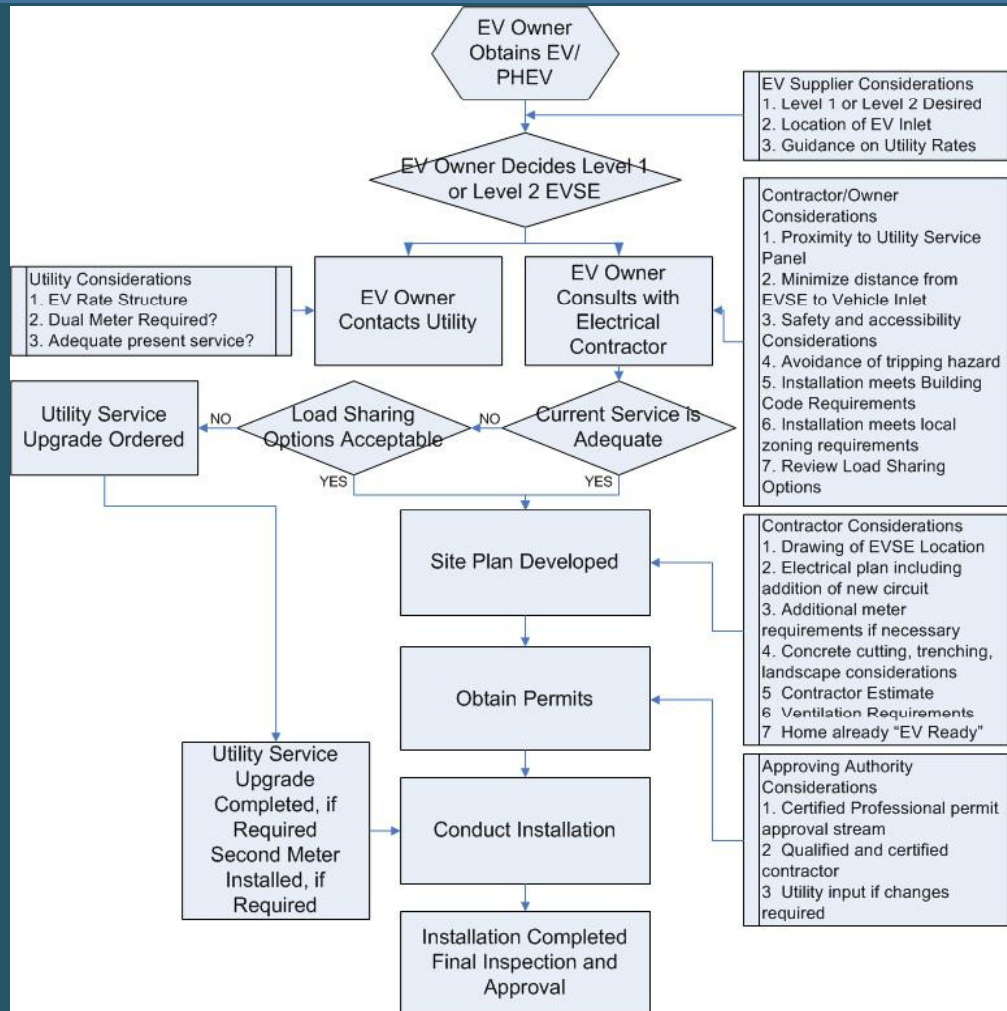


Multifamily Environment





EVSE Is a Business and Construction Project





California Title 24 Does Not Meet Demand

A406.1.5.1 Designated Parking

Total # of Parking Spaces	# of Required Spaces
10-25	2
26-50	4
51-75	6
76-100	8
101-150	11
151-200	16
201 and over	At least 8% of total

A406.1.5.2.1 Electric Vehicle Supply Wiring

Total # of Parking Spaces	# of Required Wired Spaces
1-50	1
51-200	2
201 and over	4

As of June 2014 Palo Alto requires new MUD properties to include:

- One charging outlet or one actual charger for each housing unit.
- Install outlets, chargers or circuitry to enable future outlet installation for at least 25 percent of guest parking spots.

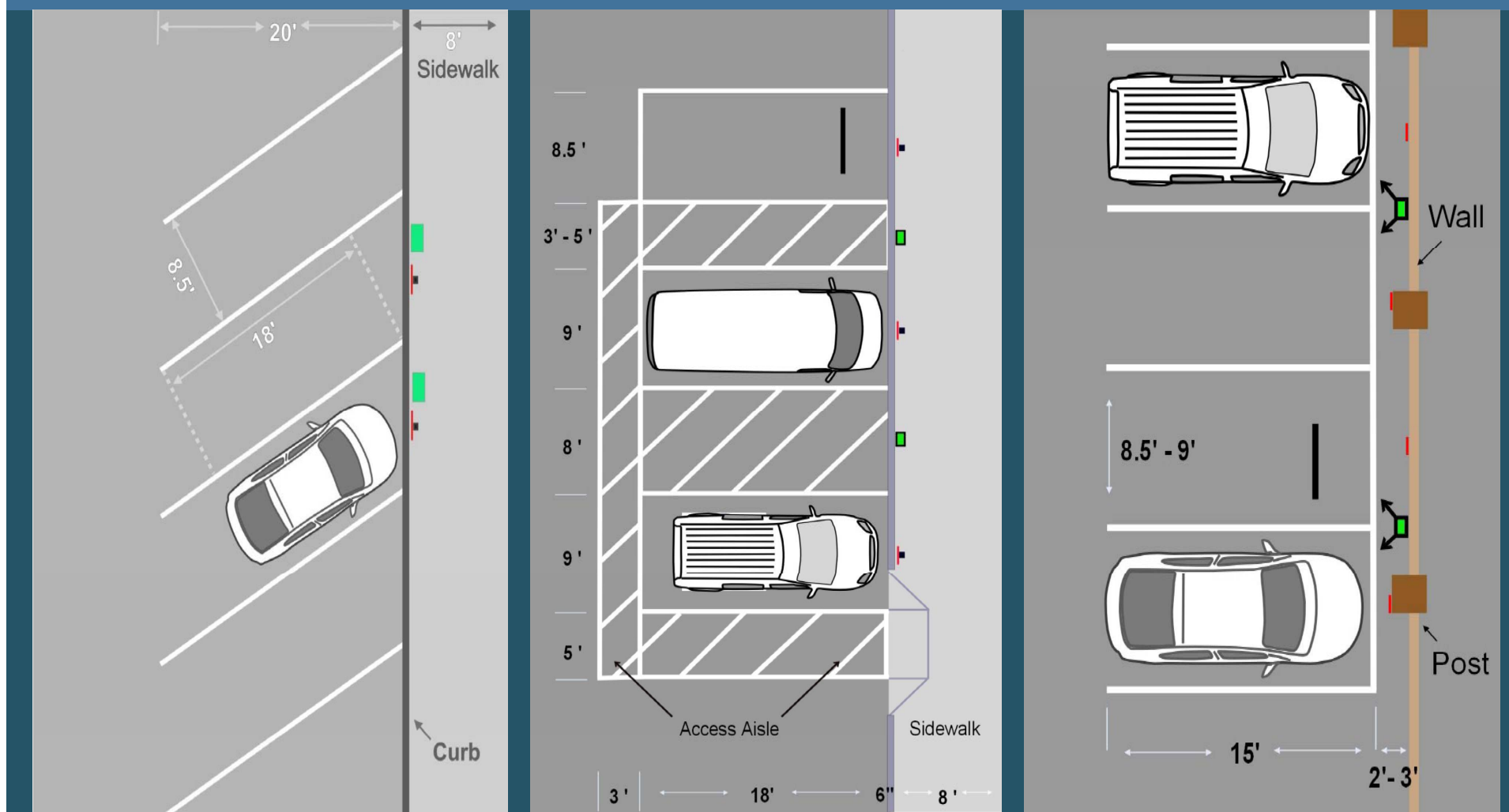


Power Availability Requires Detective Work





Selecting Spots Requires Consideration





EVSE Project Pricing

Charger Type	Charger Hardware Cost	Installation Cost (From Panel to Site)	Estimated Total Cost
AC Level 1 1+ KW 120 VAC	\$500-\$1,000	\$250-\$1,000	\$750-\$2,000
AC Level 2 3.3+ kw 240VAC	\$2,000-\$7,500	\$2,000 - \$5,000	\$4,000 - \$12,500
DC Fast 50+ kw 100-600VDC	\$10,000 - \$50,000	\$20,000 - \$50,000	\$30,000 - \$100,000



Can Charging Be A “Coin-op” Opportunity



Site Specific Issues to Resolve

- Demand Issues
 - Proof EVSE drives Behavior
 - Current vs. Projected Demand
- Parking Issues
 - Deeded vs Common Area Sharing and Parking Police
- Infrastructure
 - Do We Have Enough Power
 - How Do We Scale?
- Business Issues
 - Is HOA Subsidizing EV's
 - How Do We Price Energy
 - Don't Tie Into House Meter
 - Liabilities (CA SB 209)
 - Cost vs. Other Capital Project
 - Must Be Sold to Corporate



Multifamily Property Baseline

- Now is the time to reap benefits, later it is a basic amenity
- Be prepared for tenant demand, if you build it they will come
- Parking lots weren't designed for spare power
- Be prepared to scale power infrastructure
- Everything is site-specific, no assumptions on a "typical" installation
- The "best" space is not always a "cheap" space
- Deciding on the right spots is challenging
- Start small but plan for expansion



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John Kalb
Founder, EV Charging Pros
415 209-6585
johnk@evchargingpros.com
www.evchargingpros.com
Twitter [@evchargingpros](https://twitter.com/evchargingpros)

