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A Department of the City and County of San Francisco

## MultiCharge SF

*An SFE Initiative, Bringing EV Charging to Multifamily Buildings in San Francisco*

Workshop to Introduce San Francisco Multifamily Buildings  
To

### ***ChargePoint California Demonstration Project***

(a project funded by California Energy Commission)

# EV Chargers In Multifamily Buildings

January 10, 2012



Coulomb  
Technologies



SAN FRANCISCO  
CLEAN CITIES COALITION



**SF Environment**



**Pacific Gas and  
Electric Company®**

# Program Introduction

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Robert Hayden

San Francisco Department of the Environment

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# You may have started seeing them around town...



Chevy Volt

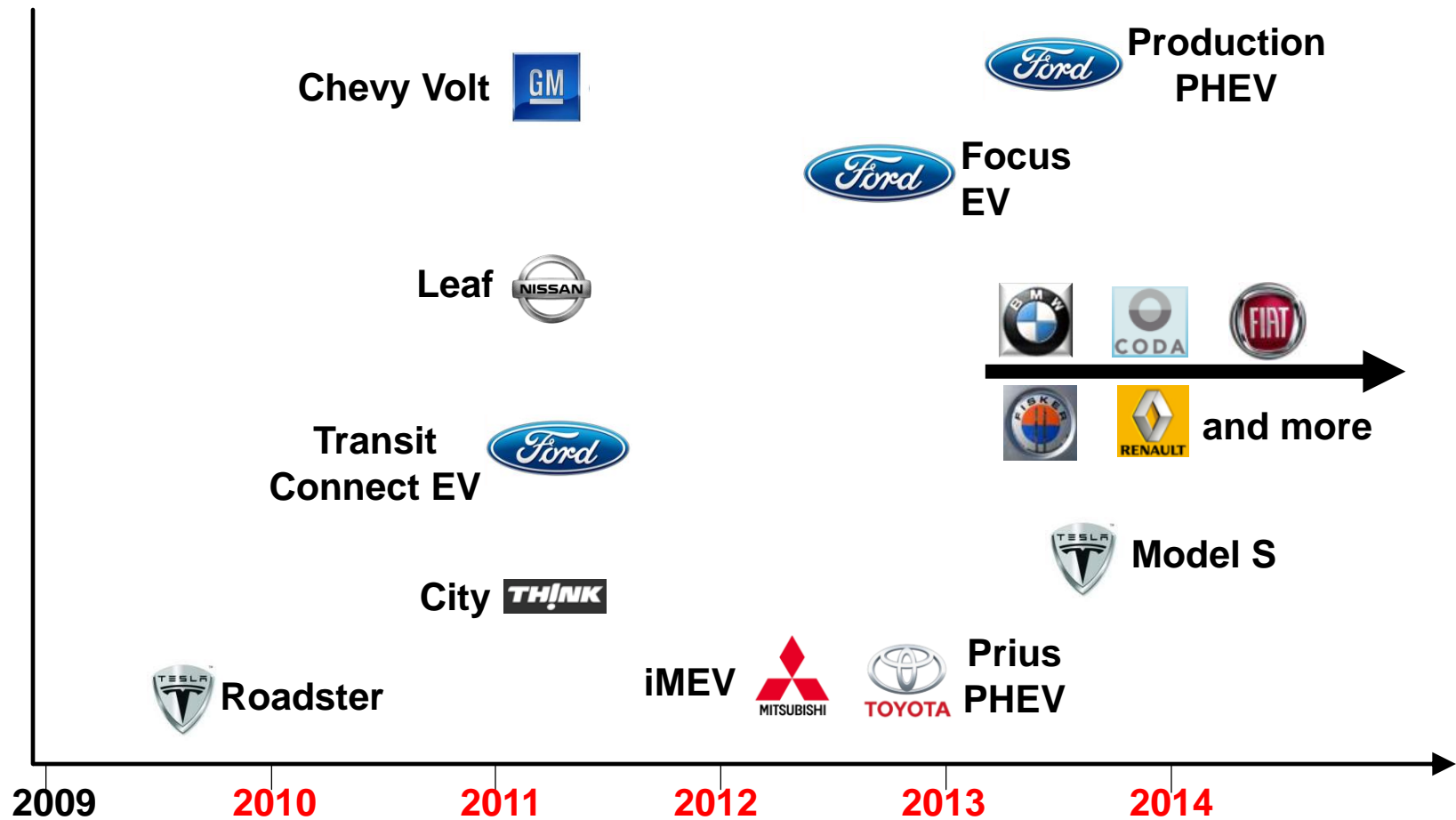
Nissan Leaf



Tesla Roadster

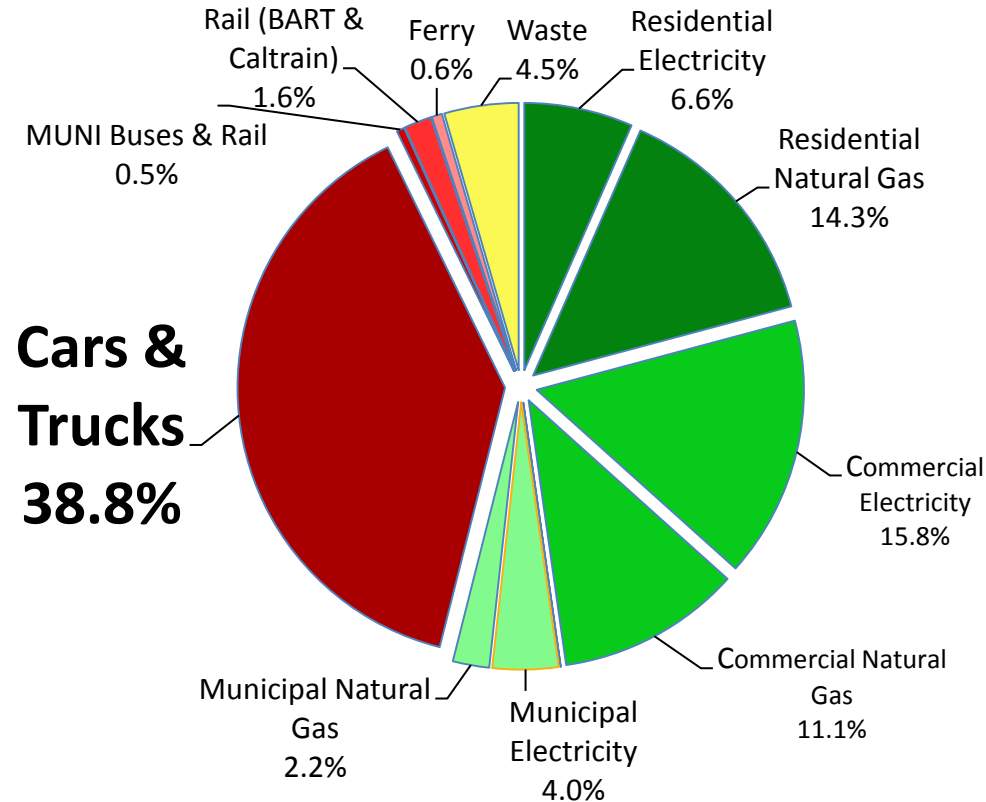


# EVs Are Here Today... *and more soon!*



# Greenhouse Gas Emissions in San Francisco

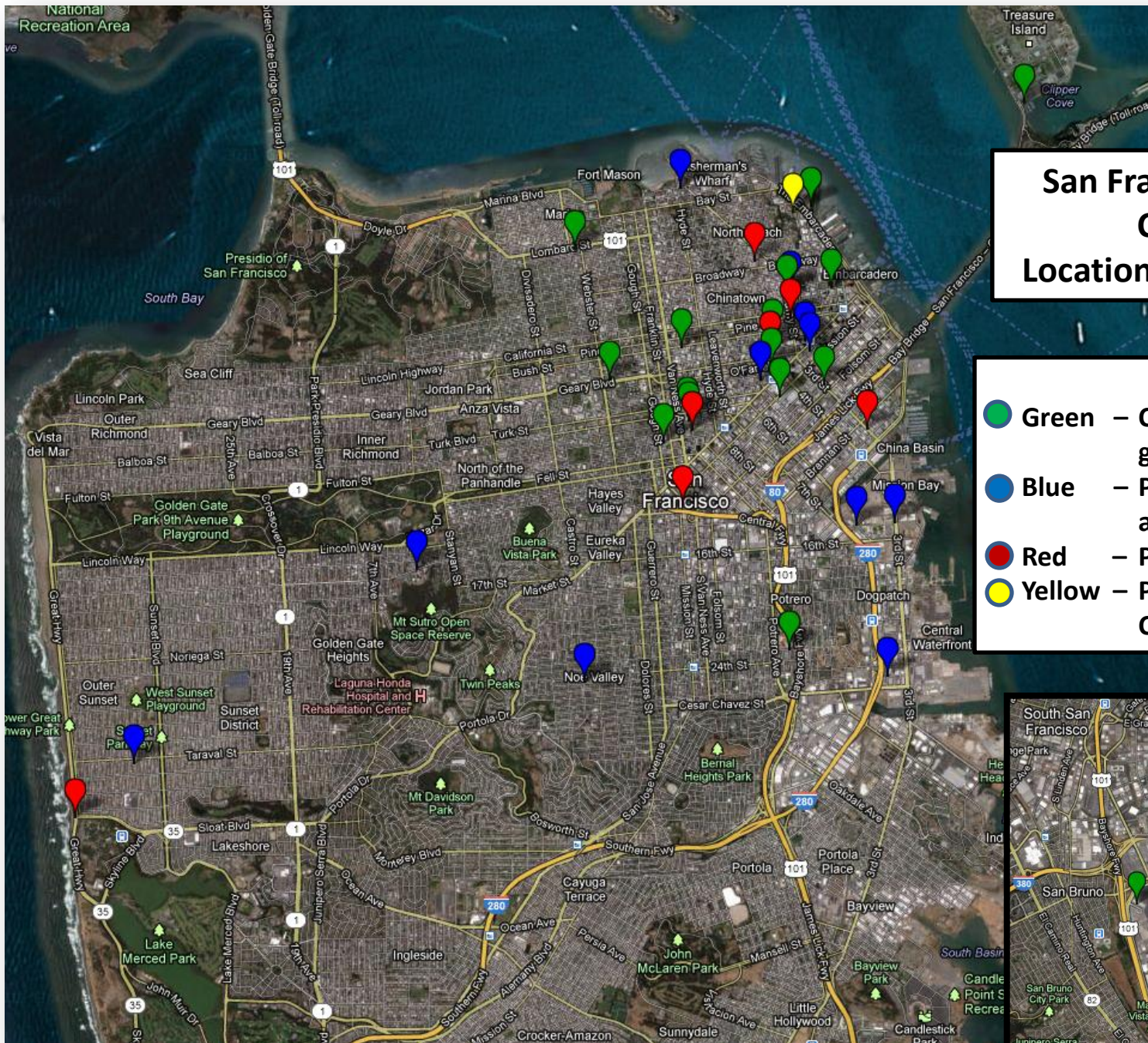
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# EVs in the market means EV infrastructure is needed

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## San Francisco Public Charger Locations as of 1.12.12

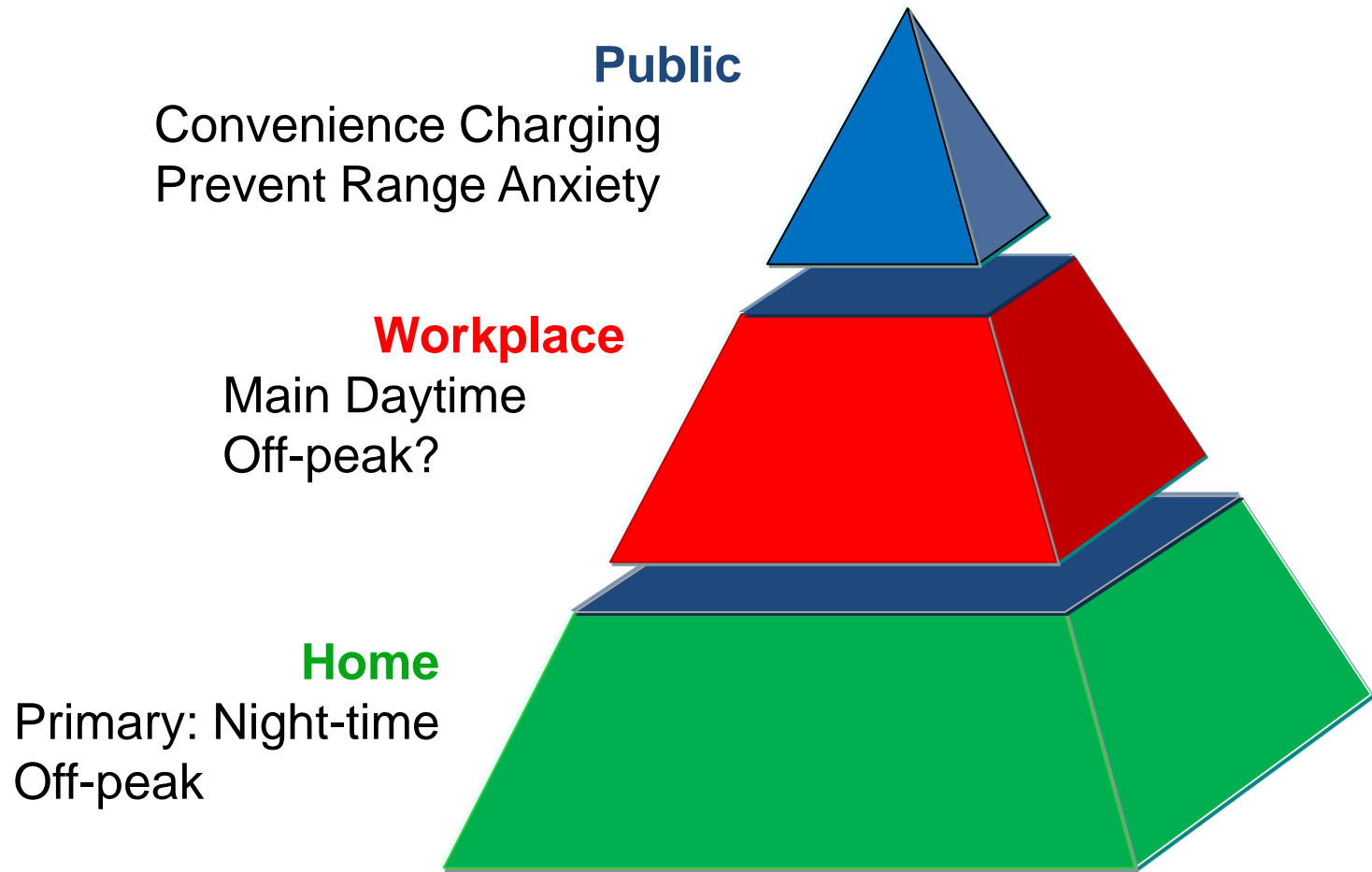
- Green – City Chargers (public garages & SFO)
- Blue – Private Chargers available to public
- Red – Planned City Chargers
- Yellow – Planned Private Chargers



**SFO**

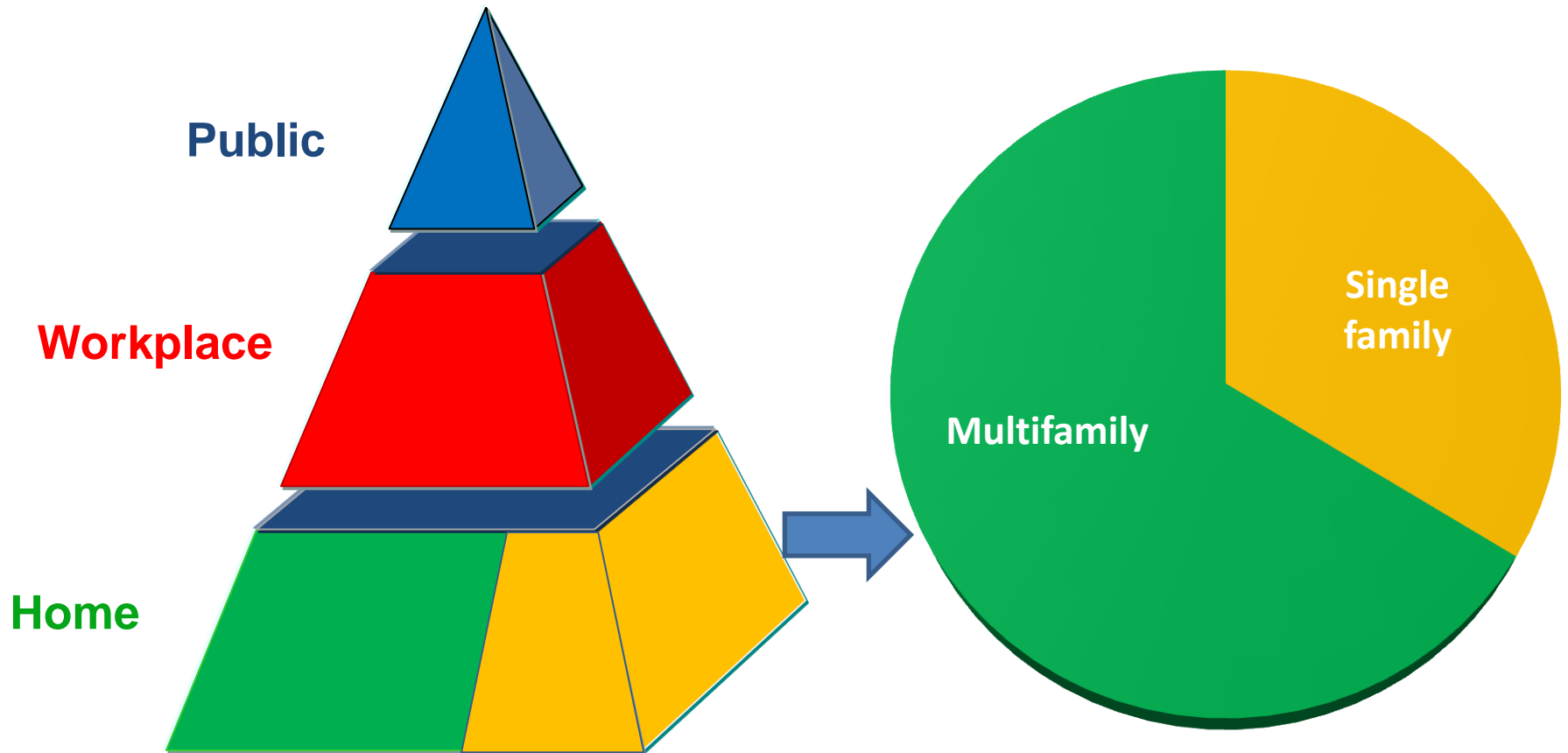
# EV Infrastructure: Where Does It Go?

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# Two-thirds of residences in SF are multifamily buildings

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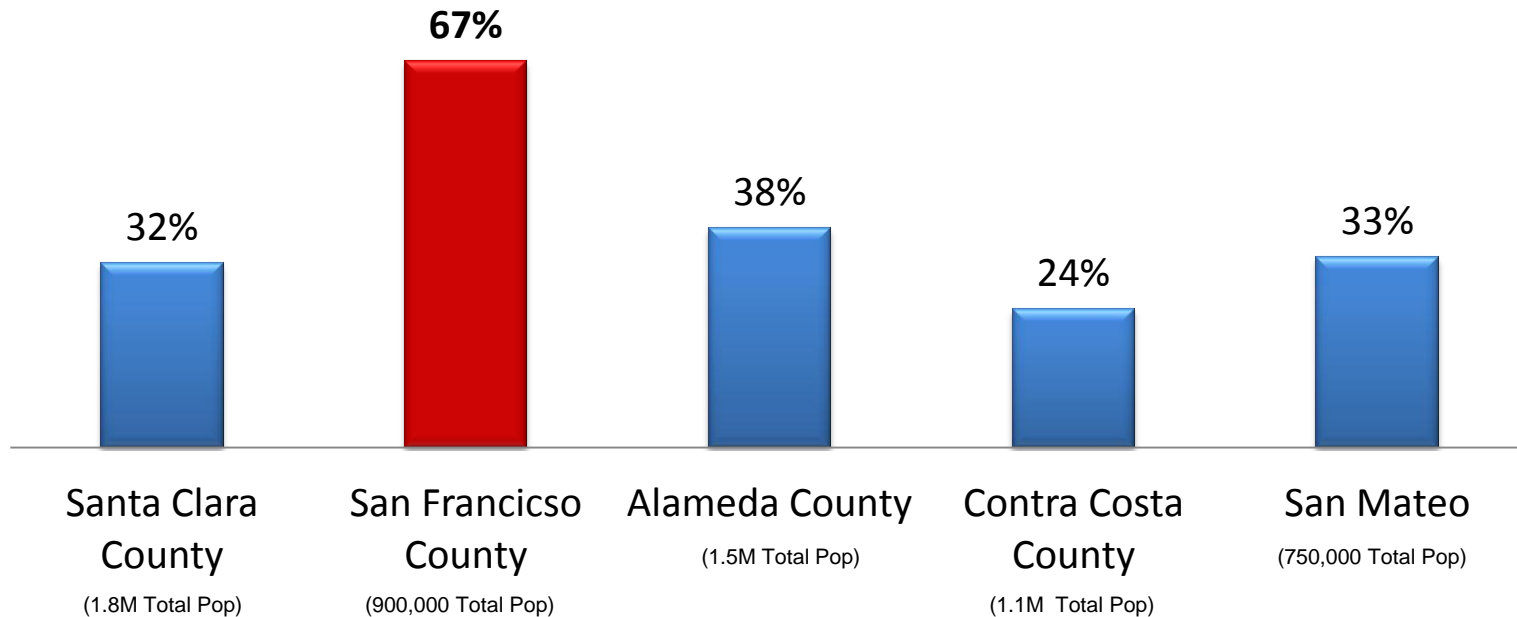
*Source: San Francisco County, Census.gov, 2009*

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# San Francisco Compared to Others

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## Population Living in Multifamily Buildings



# Multifamily Buildings in San Francisco Vary Widely

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# Different Buildings, Different Questions

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*Distinct questions* compared to installing chargers in Single Family garages

- How to allocate chargers to residents?
- Deeded parking?
- Who pays for electricity, and how?
- And more...

We'll address these questions  
in this workshop

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*ChargePoint California*  
Demonstration Project  
EV Chargers in Multifamily Buildings

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Funded by California Energy Commission,  
awarded to Coulomb Technologies, Inc

**Purpose**

- Develop knowledge base and best practices for EV charging solutions in multifamily buildings

**Where**

- *Only* in San Francisco

**What**

- Pays for charging equipment *and* much of the installation cost
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### Outreach

- Contacted ~400 building representatives
- Worked with SF Apartment Assoc, Small Property Owners Assoc, and HOA management organizations
- Held two workshops

### Applications

- Approved electrician's estimate required with application
- 68 applications: 35 apartments, 27 condos, 1 co-op, 5 TICs
- 159 chargers requested
- Installation cost range per EVSE: \$1800 - \$16,800, most \$3,000 - \$5,000

### Selections

- 41 buildings selected, 99 chargers awarded
- Decision Factors: ★ installation cost ★ mix of building type...age...size  
★ economic diversity ★ geographic distribution.



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### Program Statistics

<b>Unit Type</b>	<b>#</b>
Apartment	20
Condo	17
TIC	4

<b># Units</b>	<b>#</b>
Up to 10	8
11 - 20	5
21 - 99	5
100 +	23

<b>Cost/Charger</b>	<b>#</b>
Up to \$2,000	2
\$2,001 - \$3,000	4
\$3,001 to \$4,000	16
\$4,001 to \$5,000	12
\$5,001 to \$6,000	2
\$6,001 to \$7,000	4
Over \$7,000	1

<b>Date Built</b>	<b>#</b>
Through 1925	11
1926 - 1960	3
1961 - 1980	4
1981 - 2012	23



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# Challenges

## Allocation of Costs & Access

- Who pays?: ★ installation      ★ electricity  
   ★ maintenance      ★ service fees
- How are costs assigned and recouped?
- Maintaining fair access as EV #s increase

## Building “Politics” and Legal Issues

- Deeded & assigned parking: ★ Proximity to panel  
   ★ EVSE ownership
- Common-area placement...but limited, individual use
- Liability concerns of building or HOA



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### Technical Challenges

- Electrical Capacity
- Panel location vis-à-vis parking
- Explaining rate structures: peak/off-peak commercial, residential
- Older buildings – Inspection phobia
- NEC: Need multiple EVSE phasing?
- Level 1: Solution for some, cost allocation still an issue