DOCKETED	
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Project Title:	SB 1000 Electric Vehicle Charging Infrastructure Deployment Assessment
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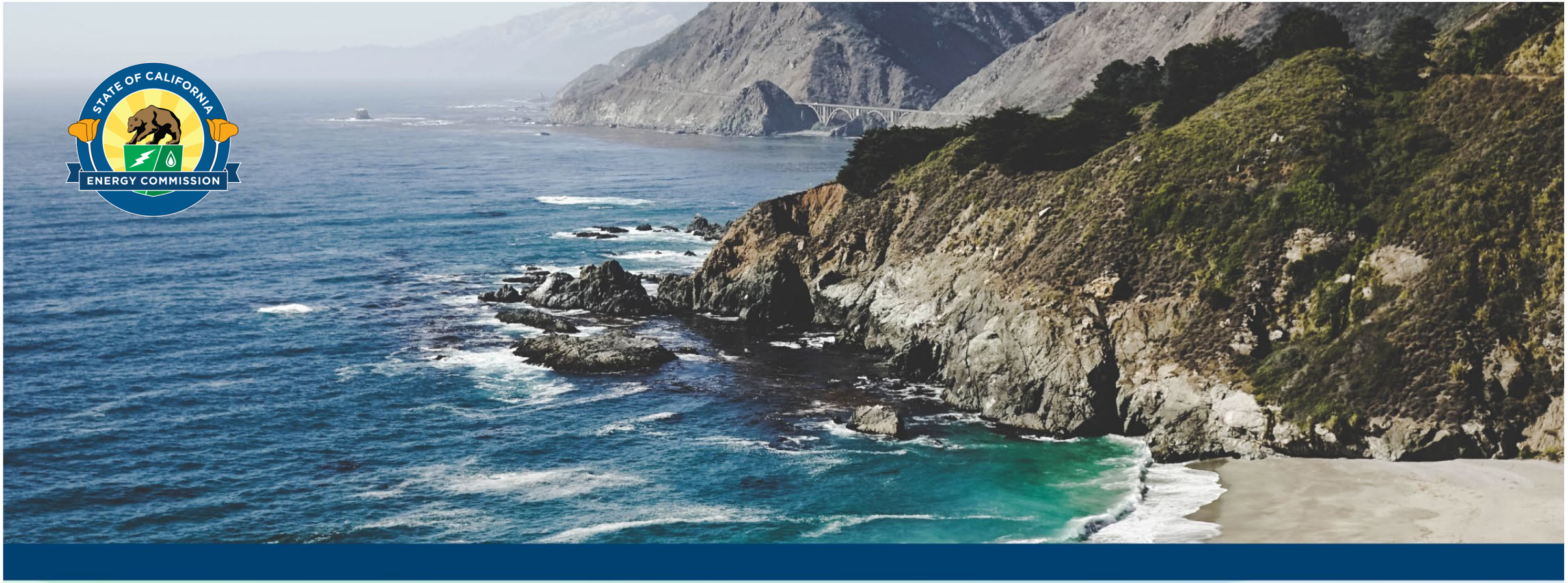


Senate Bill 1000 Workshop

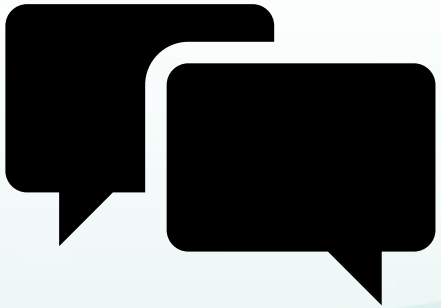
Electric Vehicle Charging Infrastructure Deployment Assessment

Fuels and Transportation Division
December 16, 2024

Workshop Purpose

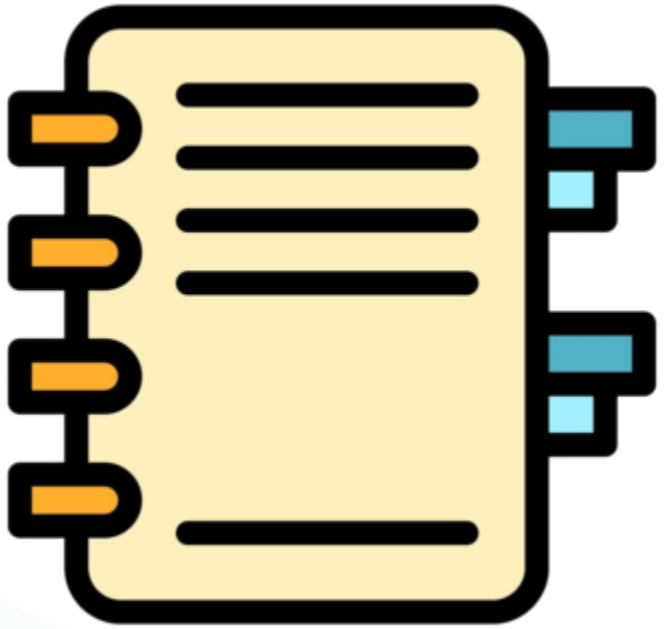
Obtain **public feedback** on:

SB 1000 Assessment 3 framework and preliminary results



Workshop Agenda

- Welcome and Introductions
  - Housekeeping
  - Commitment to Diversity
- Background
  - Clean Transportation Program
  - Senate Bill (SB) 1000 Overview
- Assessment 3
  - Objectives
  - Methodology
  - Preliminary Results
- Public Comments, Questions and Discussion
- Next Steps
- Adjourn



Housekeeping

- Workshop is recorded on Zoom
- Virtual participation via Zoom or telephone during the Q&A period
- This presentation is available online at the workshop webpage: (https://www.energy.ca.gov/event/workshop/2024-12/senate-bill-1000-staff-workshop)
- Docket location: https://efiling.energy.ca.gov/Ecomment/Ecomment.aspx?docketnumber=20-TRAN-02
- Submit written comments to Docket 20-TRAN-02

  Deadline for Comments: Monday, December 23, 2024
- SB 1000 webpage: https://www.energy.ca.gov/programs-and-topics/programs/clean-transportation-program/electric-vehicle-infrastructure

Commitment to Diversity

The CEC adopted a resolution strengthening its commitment to diversity in our funding programs. The CEC continues to encourage disadvantaged and underrepresented businesses and communities to engage in and benefit from our many programs.

To meet this comment, CEC staff conducts outreach efforts and activities to:

- Engage with disadvantaged and underrepresented groups throughout the state;
- Notify potential new applicants about the CEC's funding opportunities;
- Assist applicants in understanding how to apply for funding from the CEC's programs;
- Survey participants to measure progress in diversity outreach efforts

Clean Transportation Program

- Established in 2007 by Assembly Bill 118 (2007)
- Extended to July 1, 2035, by Assembly Bill 126 (2023)
- Provides approximately $100 million of funding per year through 2035
- Investment Plan determines funding allocations across various categories
- Supports workforce training and development

Senate Bill (SB) 1000 Overview

- Assessment of light-duty electric vehicle (EV) charging station infrastructure distribution and access
- Focus on equity
- Helps inform Clean Transportation Program investments in light-duty EV charging infrastructure to maximize charging availability for all Californians

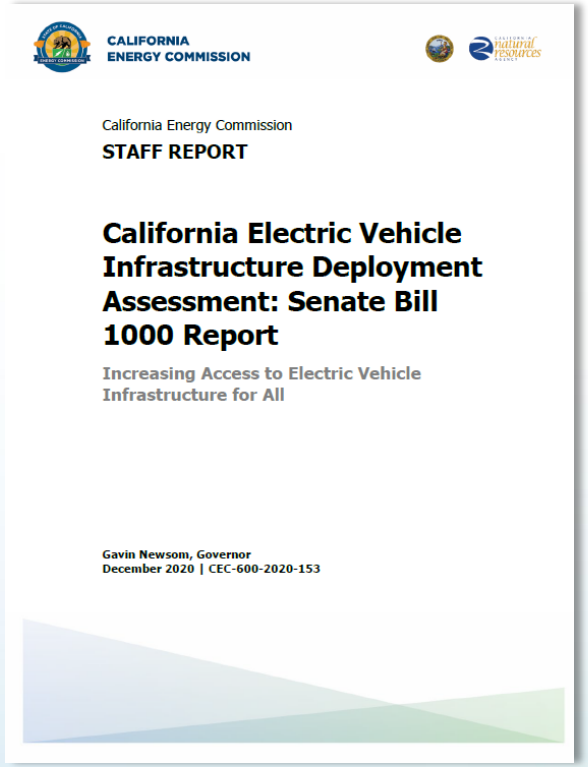
SB 1000 Metrics

2020 Assessment → **2022 Assessment** → **2024 Assessment**

Public chargers per capita

Drive times to public DC fast charging stations

Charging need due to home charging barriers

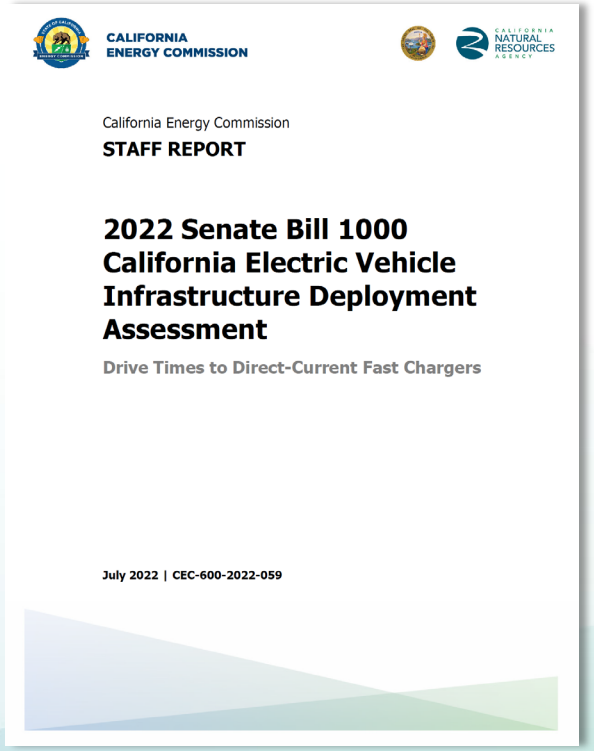

CALIFORNIA ENERGY COMMISSION

California Energy Commission
STAFF REPORT

California Electric Vehicle Infrastructure Deployment Assessment: Senate Bill 1000 Report

Increasing Access to Electric Vehicle Infrastructure for All

Gavin Newsom, Governor
December 2020 | CEC-600-2020-153


CALIFORNIA ENERGY COMMISSION

California Energy Commission
STAFF REPORT

2022 Senate Bill 1000 California Electric Vehicle Infrastructure Deployment Assessment

Drive Times to Direct-Current Fast Chargers

July 2022 | CEC-600-2022-059

Source: US News Cars via Electrify America

Data Sources

- **CoreLogic Property Data** – Property and parcel boundary data that includes information on parcel location, ownership, tax assessment, and property characteristics.*
- **Department of Motor Vehicles (DMV)** – Maintains public records about vehicle registration, driver's licenses, and more. The DMV provides the CEC with database snapshots that allow CEC staff to align vehicle sales and population counts with the calendar year.
- **National Renewable Energy Laboratory (NREL) No Place Like Home Study** – NREL is a national laboratory of the U.S. Department of Energy. NREL conducted a survey to examine residential parking availability, parking behavior, existing electrical access, and perceived potential for new electrical access by parking location.
- **Public Use Microdata Sample (PUMS)** – Tabulated records about individual people or housing units from the American Community Survey (ACS).
- **Zero Emission Vehicle (ZEV) and Infrastructure Statistics** – The CEC tracts the number of plug-in electric vehicle chargers and hydrogen fueling stations serving light-duty vehicles in California. These are available on the ZEV and Infrastructure Statistics Dashboard.

Definitions

- **Disadvantaged Communities (DACs)** – Areas throughout the state that suffer most from a combination of economic, health, and environmental burdens.
- **Low-Income Communities (LICs)** – Census tracts that are either at or below 80 percent of the statewide median income, or at or below the threshold designated as low-income by the California Department of Housing and Community Development Income Limits.
- **Rural** – Census tracts where less than 10 percent of the tract's land area is designated as urban by the Census Bureau using the 2020 urbanized area criteria.
- **Rural Center** – Contiguous census tracts where at least 10 percent of the tract's land area is designated as urban by the Census Bureau and with a population of less than 50,000.
- **Urban** – Contiguous census tracts where at least 10 percent of the tract's land area is designated as urban by the Census Bureau and with a population of 50,000 or greater.

2024 Assessment Overview

DATA INPUTS

Housing attributes

- Housing type
- Panel capacity (SFH only)
- Housing vintage (MFH only)
- Tenure
- On- or off-street parking

2024 EV counts

2024 charger counts

MODEL ASSUMPTIONS

Home charging access

- SFH and MFH home charging potential are estimated from housing attributes.
- About 72% of MFHs and 36% of SFHs may require public charging due to lack of any home charging.
- Households with Level 1 charging will need to do 20% of their charging in public.

Vehicle charging access

- Vehicles that park on street at homes with potential charging access will rotate parking and be able charge 70% of the time from home.

EV adoption

- Total EV adoption by census tract matches DMV 2024 counts, within each tract:
    - Vehicles at ***SFHs with potential access*** to home charging are 3 times more likely to adopt than vehicles at ***MFHs with potential access.***
    - Vehicles at ***SFHs with potential access*** are 7.5 times more likely to adopt that vehicles at ***SFHs without potential access.***
    - Vehicles at ***MFHs with potential access*** are 3 times more likely to adopt that vehicles at ***MFHs without potential access.***

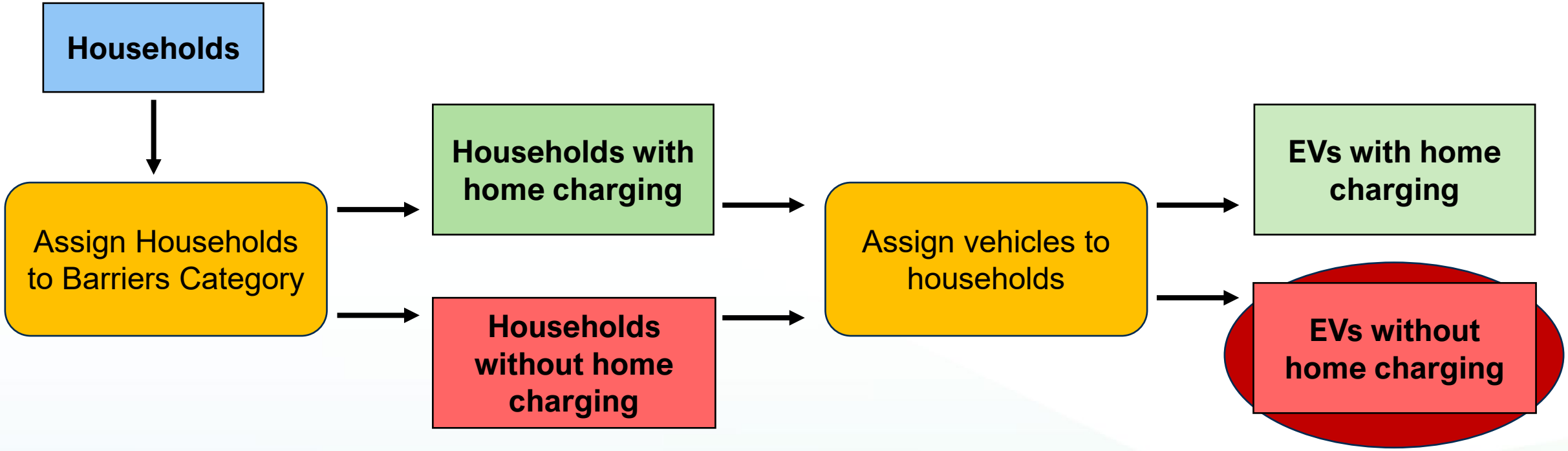
Public nearby charging capacity

- Public Level 2 chargers within 1/8th mile of home are convenient for overnight charging. Public Level 2 and DC fast chargers within 2 miles of home are convenient for daytime charging.
- 1 Public Level 2 can serve 3 EVs at night.
- 1 Public Level 2 can serve 2 EVs and 1 Public DC fast charger can serve 30 EVs during the day.

MODEL RESULTS

- # of EVs that have potential home charging access in 2024 and in the future
- # of EVs that have sufficient home charging access in 2024
- # of EVs in 2024 that have sufficient home or public walking-distance (1/8th mile) charging
- # of EVs in 2024 that have sufficient home, public walking-distance, or public nearby (2 miles) charging
- # of EVs in 2024 without sufficient home charging that are served by existing public chargers within walking distance
- # of EVs in 2024 without sufficient home charging that are served by existing public chargers nearby charging

From Household Attributes to EVs without Home Charging



Assign SFHs to Barrier Category

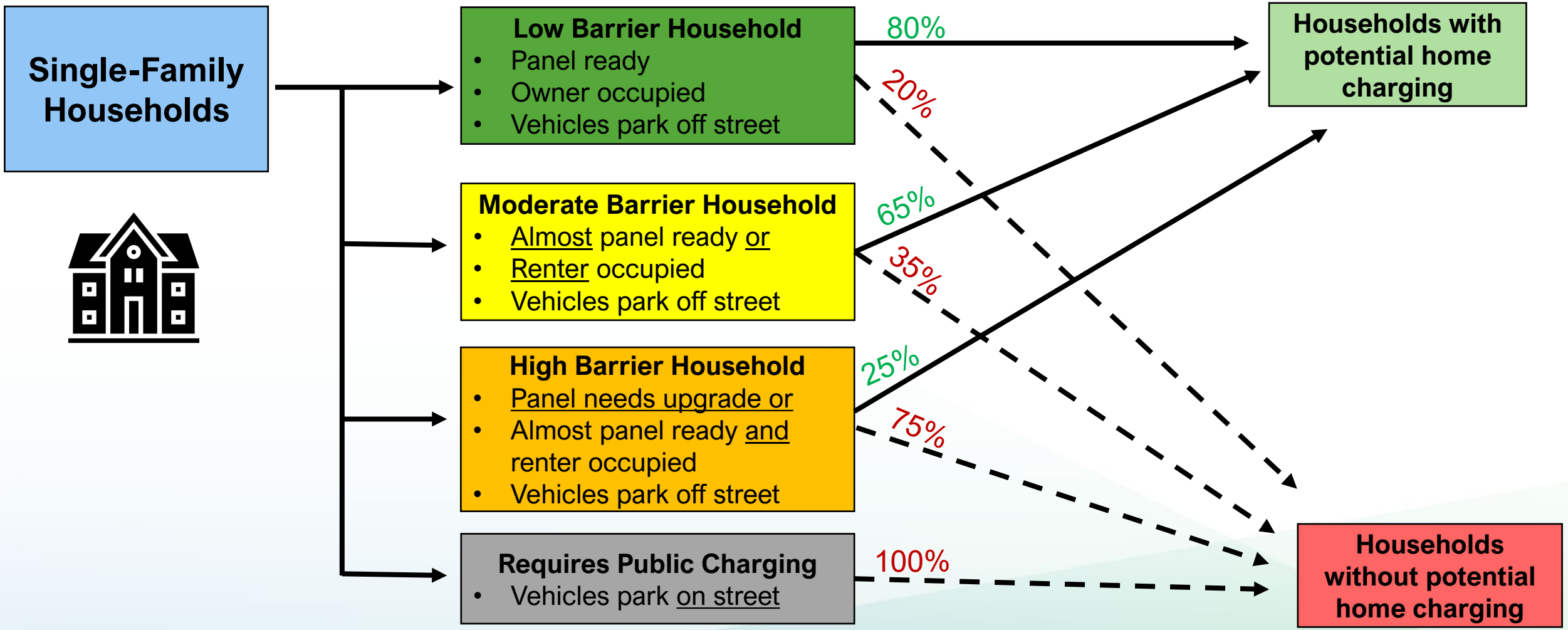
Potential Access | **Potentially Requires Public Charging**

Low barriers to electrify	Moderate barriers to electrify	High barriers to electrify	On Street parking
Panel ready Owner occupied Off street parking	**Almost** panel ready **or** **Renter** Occupied Off street parking	**Panel needs upgrade or** Almost panel ready **and** Renter Off street parking	**Separate panel** **On street parking** Owner or renter occupied

Housing type	**Panel capacity**	**Tenure**	**Parking type**
SFH	≥ 150A	Owner	Off street
SFH	≥ 150A	Renter	Off street
SFH	100A or 125A	Owner	Off street
SFH	100A or 125A	Renter	Off street
SFH	< 100 A	--	Off street
SFH	--	--	On street

*Model assumptions

Estimate Single-Family Households With and Without Potential Home Charging



*Model assumptions

Assign MFHs to Barrier Category

Potential Access **Potentially Requires Public Charging**

Low barriers to electrify	Moderate barriers to electrify	High barriers to electrify	Street parking
Panel ready Off street Owner occupied	Panel ready Off street **Renter occupied**	**Panel needs upgrade** Off street Owner or renter occupied	**Separate panel** **On street parking** Owner or renter occupied

Housing type	**Housing vintage**	**Tenure**	**Parking type**
MFH	≥ 1980	Owner	Off street
MFH	≥ 1980	Renter	Off street
MFH	< 1980	--	Off street
MFH	--	--	On street

*Model assumptions

Estimate Multi-Family Households With and Without Potential Home Charging

Multi-Family Households

Low Barrier Household
- Panel ready
- Owner occupied
- Vehicles park off street

60%

40%

Moderate Barrier Household
- Panel ready
- Renter occupied
- Vehicles park off street

40%

60%

High Barrier Household
- Panel needs upgrade
- Owner or Renter occupied
- Vehicles park off street

20%

80%

Requires Public Charging
- Vehicles park on street

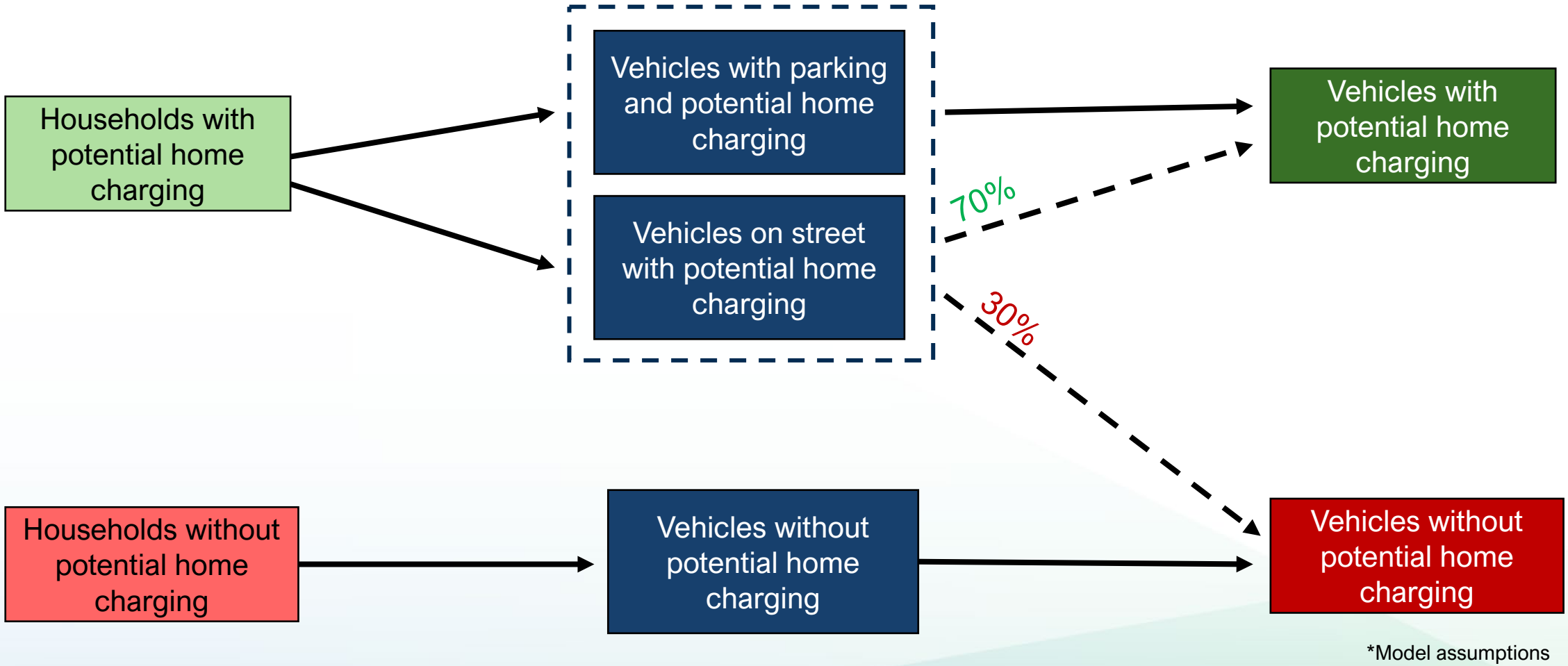
100%

Households with potential home charging

Households without potential home charging

*Model assumptions

Estimate Vehicles With and Without Potential Home Charging



*Model assumptions

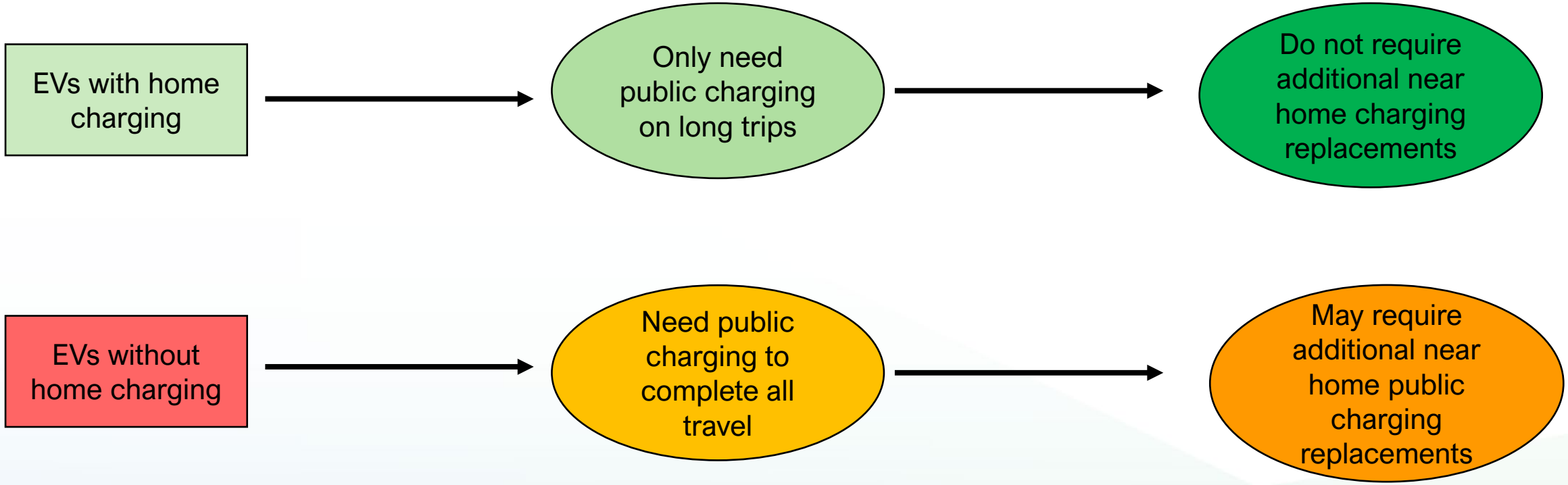
Estimate EVs Today With and Without Potential Home Charging

SFH With Potential Home Charging Access	EV Adoption Rate	# of Vehicles	# of EVs
Yes	15%	500	75
No	2%	100	2

MFHs With Potential Home Charging Access	EV Adoption Rate	# of Vehicles	# of EVs
Yes	5%	100	5
No	1.5%	400	6

This census tracts has a total of **80 EVs** with potential home charging access and **8 without**.

EVs Without Home Charging Need Near-Home Public Charging



Level 1 and 2 Home Charging Access by Housing Type

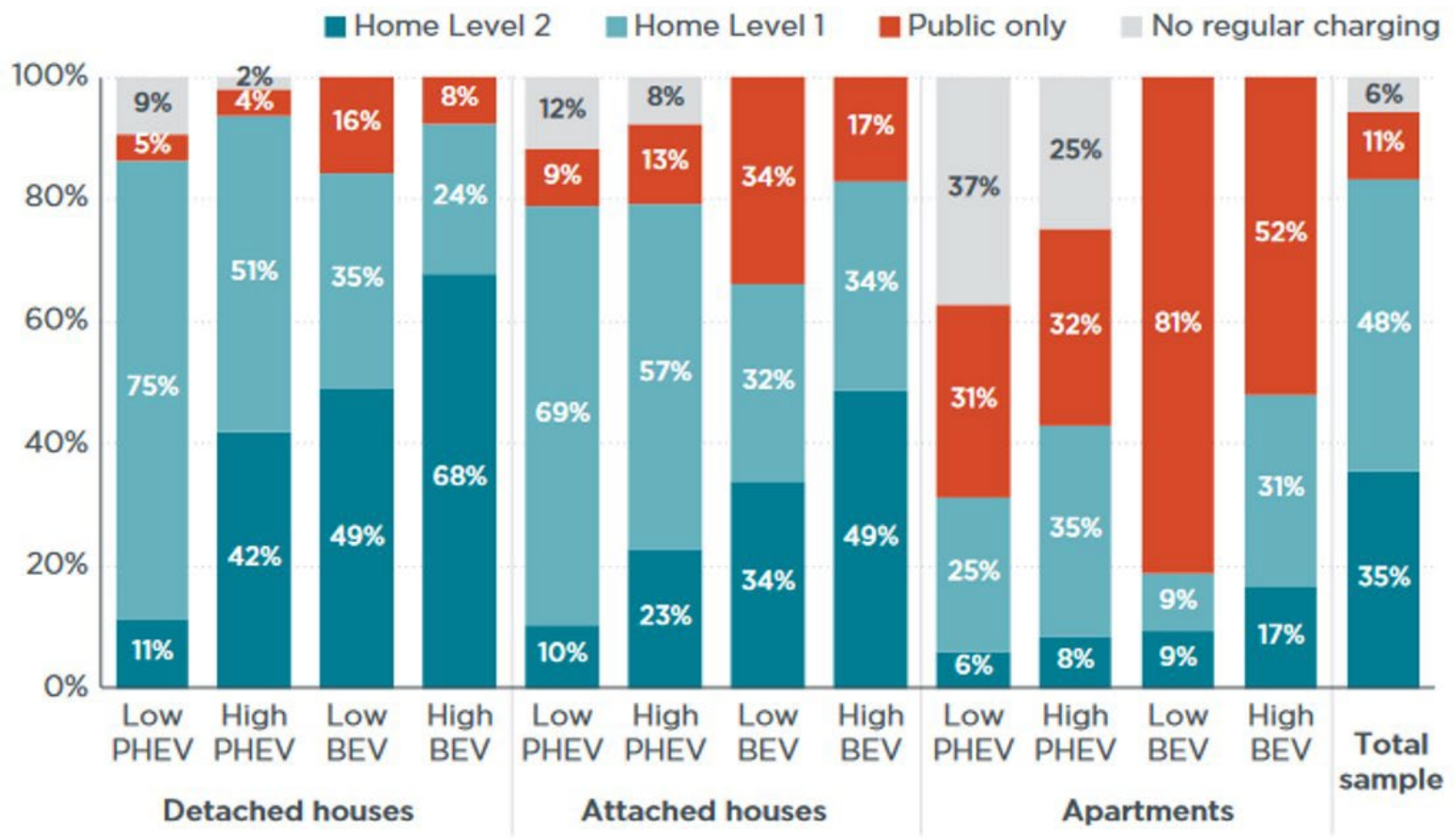
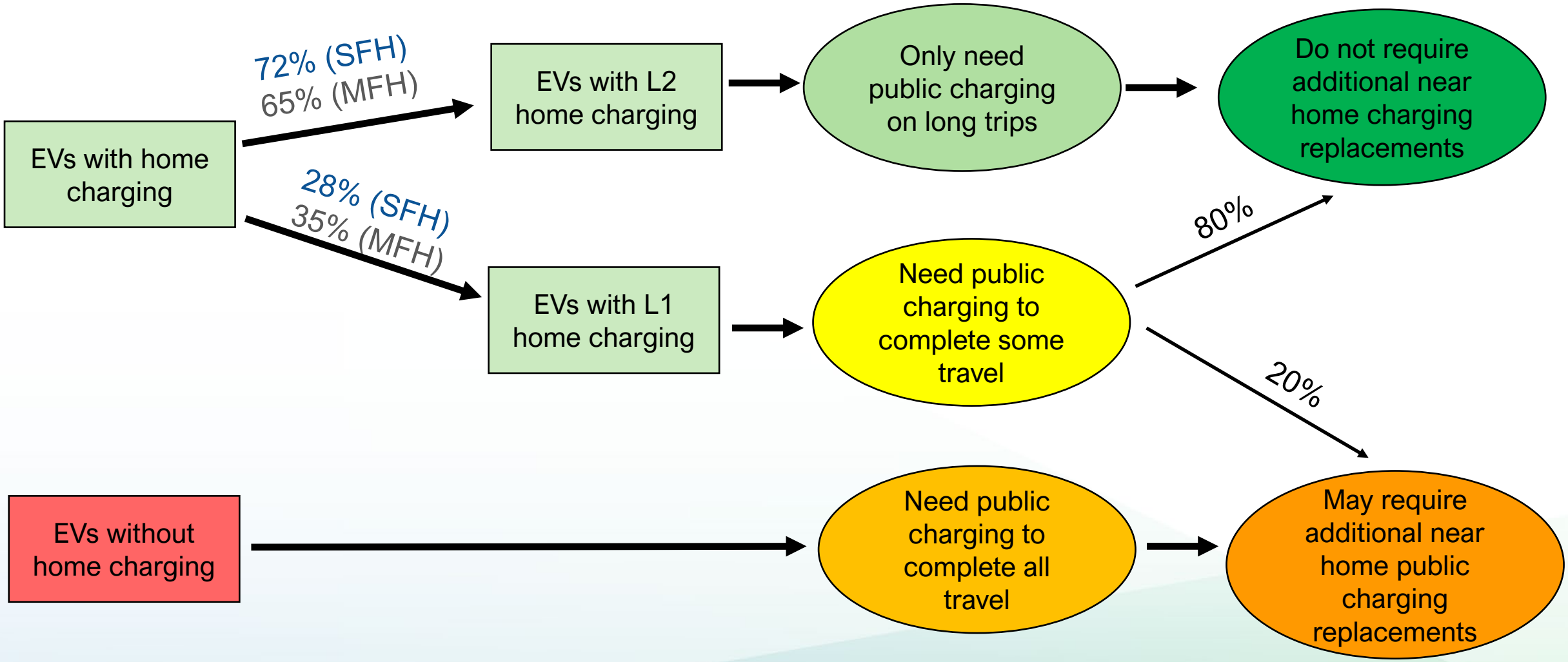


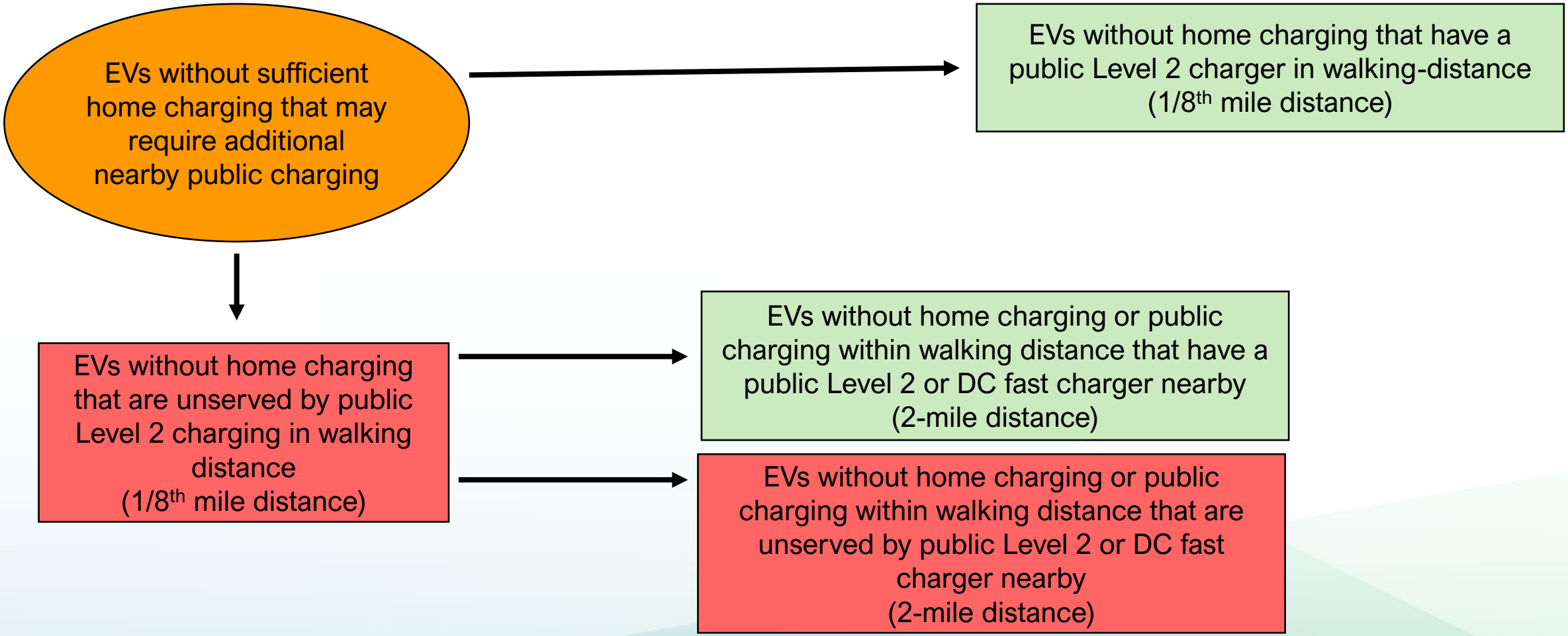
Figure 4. Percentage of electric vehicle households that use home and public charging in detached homes, attached homes, and apartments by vehicle type

Source: ICCT, 2019, Quantifying the Electric Vehicle Charging Infrastructure Gap Across U.S. Markets

EVs Without Home Charging or Only Level 1 Charging Need Near-Home Public Charging



There are 2 Near-Home Possibilities to Serve EVs Without Home Charging



Possibility 1: Public Level 2 Chargers within Walking Distance (1/8th Mile)

EVs without sufficient home charging
100 EVs

Public Level 2 chargers within walking distance (1/8th mile) from EVs without potential home charging
6 chargers

1 public Level 2 charger can serve 3 EVs without potential home charging overnight

EVs without home charging that have a public Level 2 charger in walking-distance (1/8th mile)
18 EVs served

EVs without home charging that are unserved by public Level 2 charger in walking-distance (1/8th mile)
82 EVs unserved

Possibility 2: Public Level 2 or DC Fast Chargers Nearby (2 Miles)

EVs without sufficient home charging that are unserved by public Level 2 charger in walking-distance (1/8th mile)
82 EVs unserved

Public Level 2 chargers near (2 miles) EVs without potential home charging
10 chargers

Public DC fast chargers near (2 miles) EVs without potential home charging
2 chargers

EVs without home charging that have a public Level 2 charger or DCFC nearby (2 miles)
80 EVs served

EVs without home charging that are unserved by public Level 2 chargers or DCFCs nearby (2 miles)
2 EVs unserved

1 public Level 2 charger can serve 2 EVs without potential home charging during the day

1 public DC fast charger can serve 30 EVs without potential home charging during the day

Initial Results

In 2024, about 92% of EVs at SFHs have home charging but only 55% at MFHs have charging

% of EVs that have Potential Home Charging

2024 EVs

All Housing	MFH Only	SFH Only
87.6%	54.6%	92.2%

100% EV Future

All Housing	MFH Only	SFH Only
51.8%	25.7%	59.7%

*Results are based off model estimates

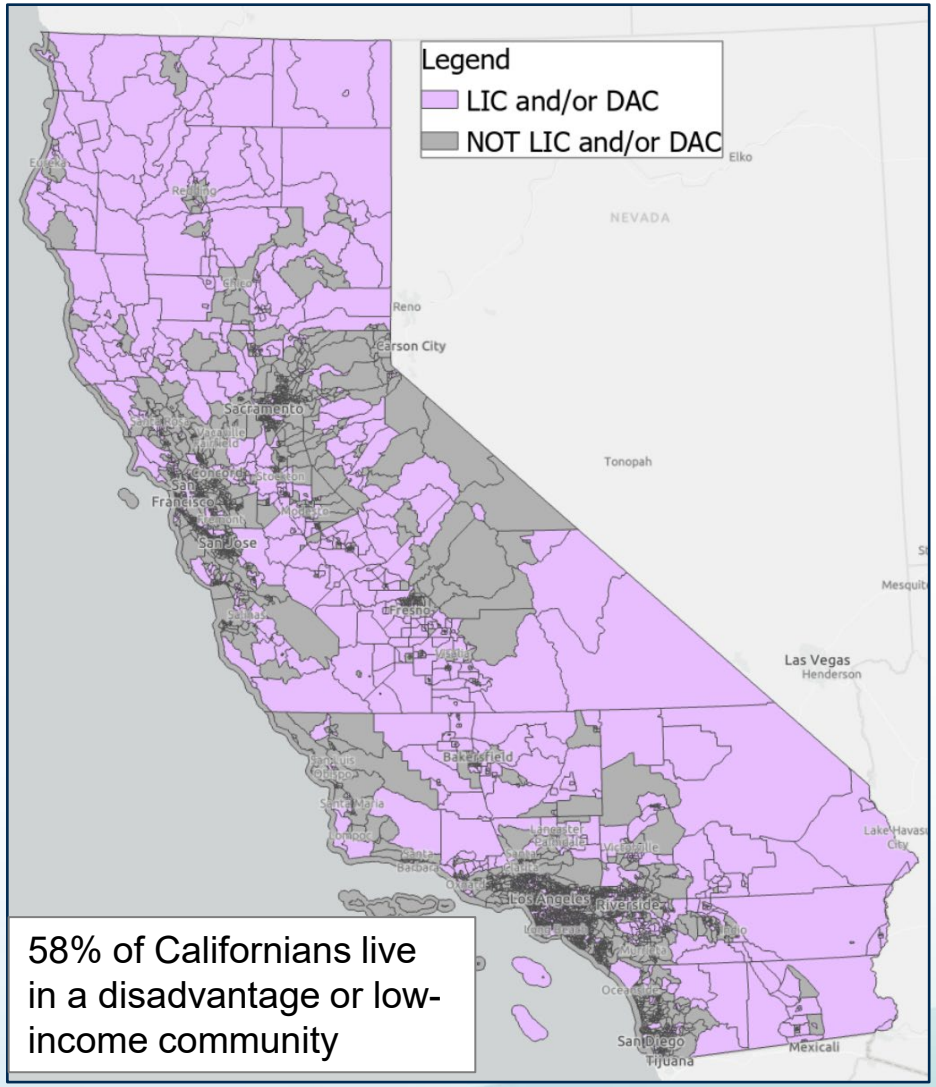
Of EVs statewide in 2024 without sufficient home charging, 79% have nearby public charging

Statewide Summary

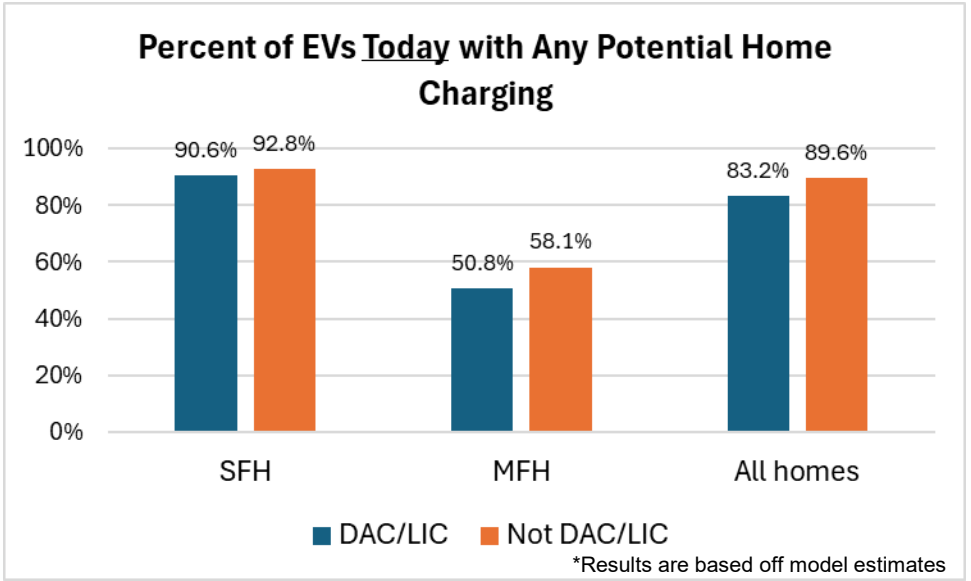
2024 EVs	All Housing	MFHs Only	SFHs Only
% of EVs that have **any potential** home charging	87.6%	54.6%	92.2%
% of EVs with sufficient home charging (80% Level 1 and 100% Level 2)	82.6%	50.8%	87.0%
% of EVs with sufficient home charging or public walking-distance (1/8th mile) charging	83.6%	57.1%	87.3%
% of EVs with sufficient home charging, public walking-distance (1/8th mile) , or public nearby (2 mile) charging	96.4%	92.6%	96.9%
% of EVs without sufficient home charging that are served by public walking-distance charging	5.8%	12.9%	2.1%
% of EVs without sufficient home charging that are served by public nearby charging	79.1%	85.0%	76.1%

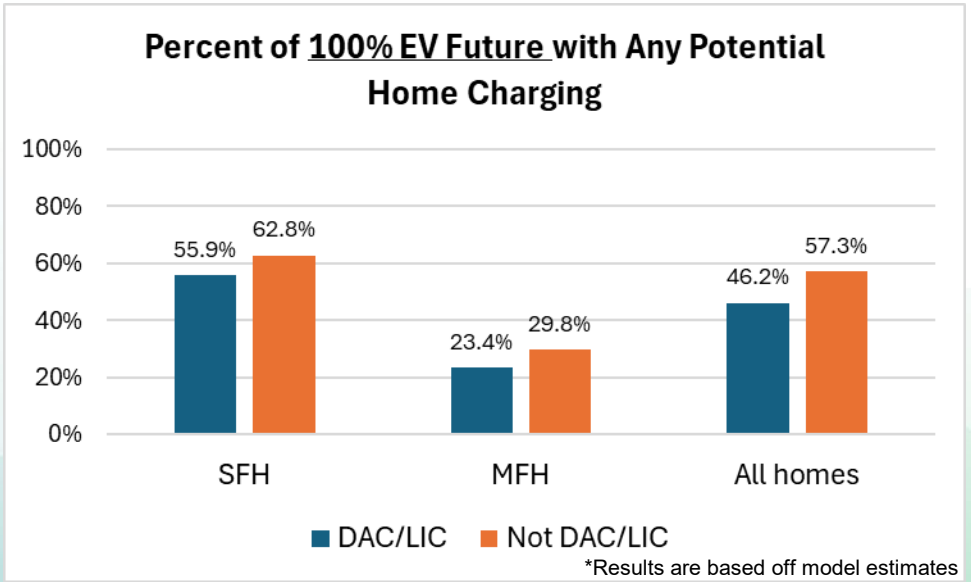
*Results are based off model estimates

EVs in DACs/LICs have less access to home charging in 2024 and in a 100% EV future

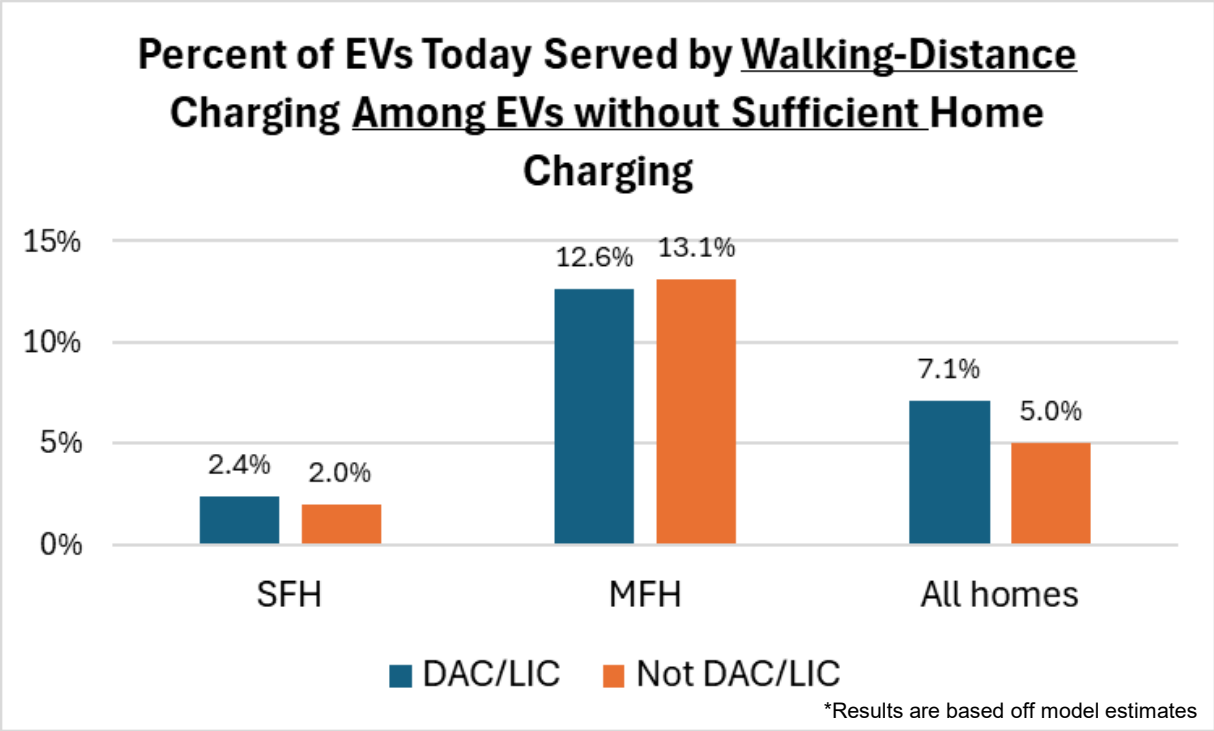


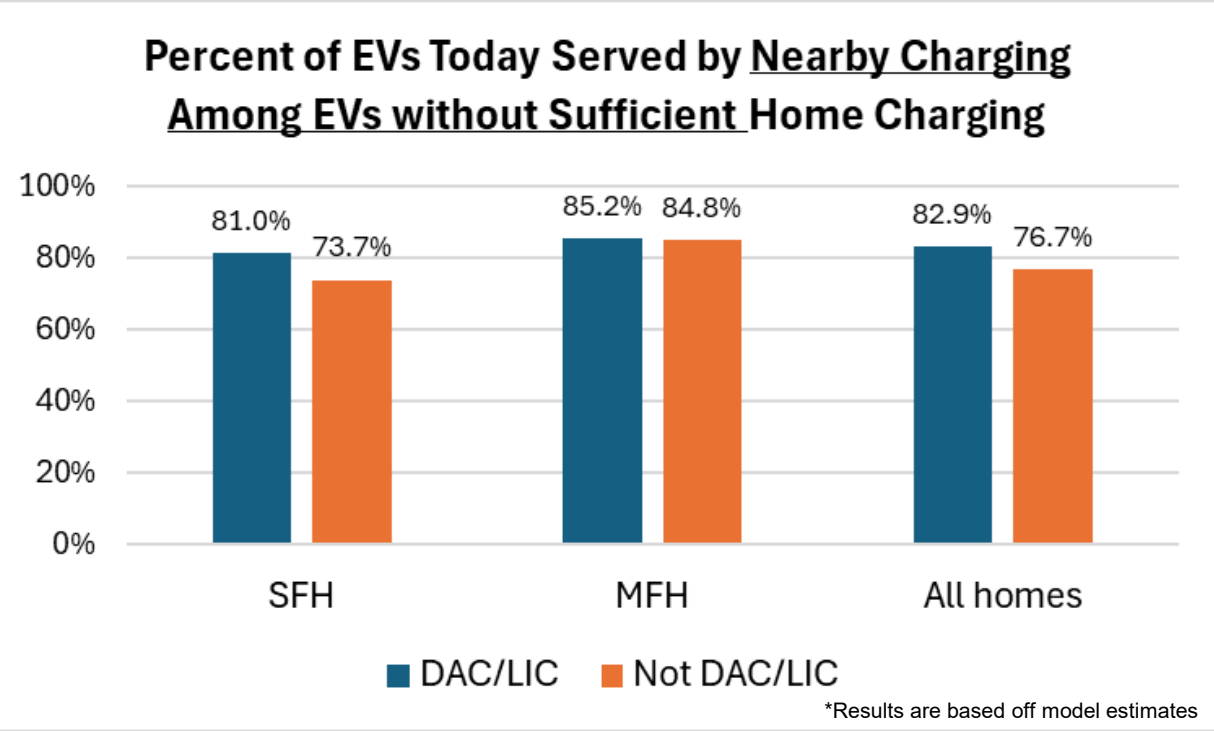
58% of Californians live in a disadvantage or low-income community



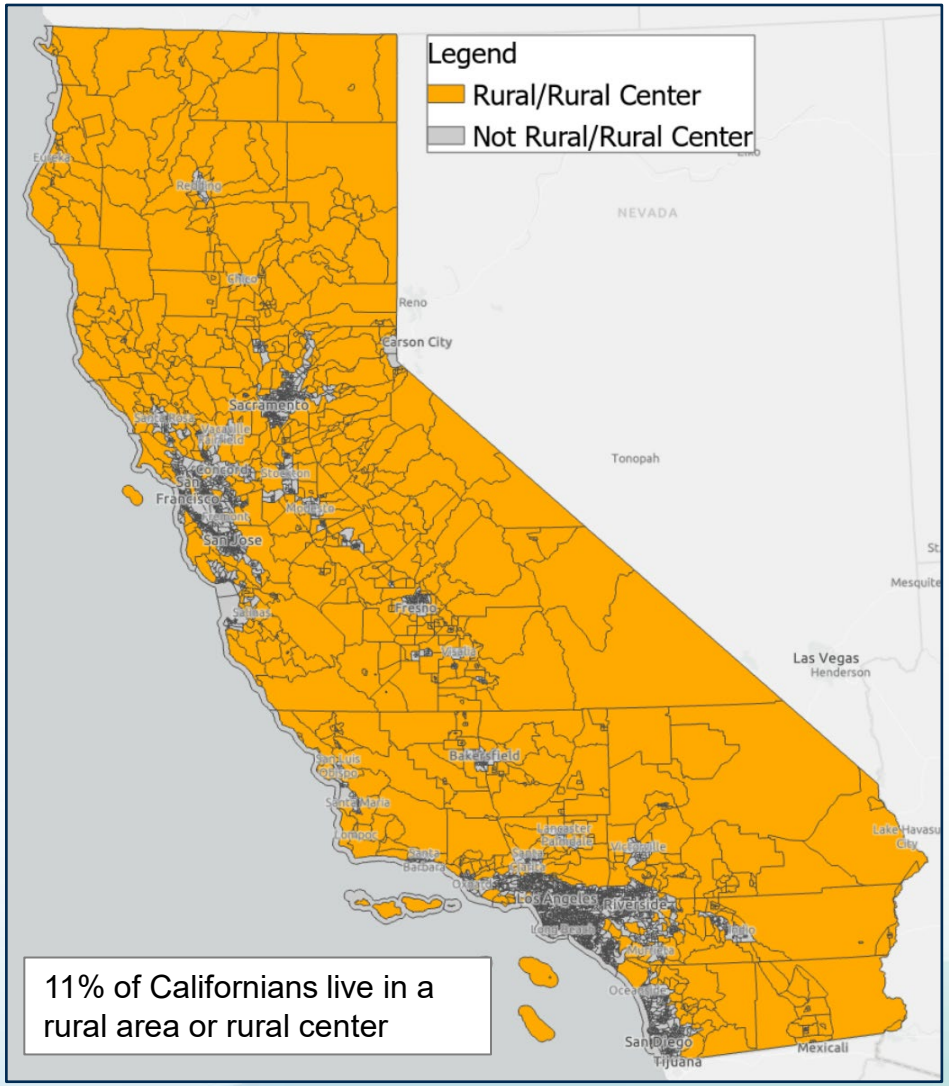


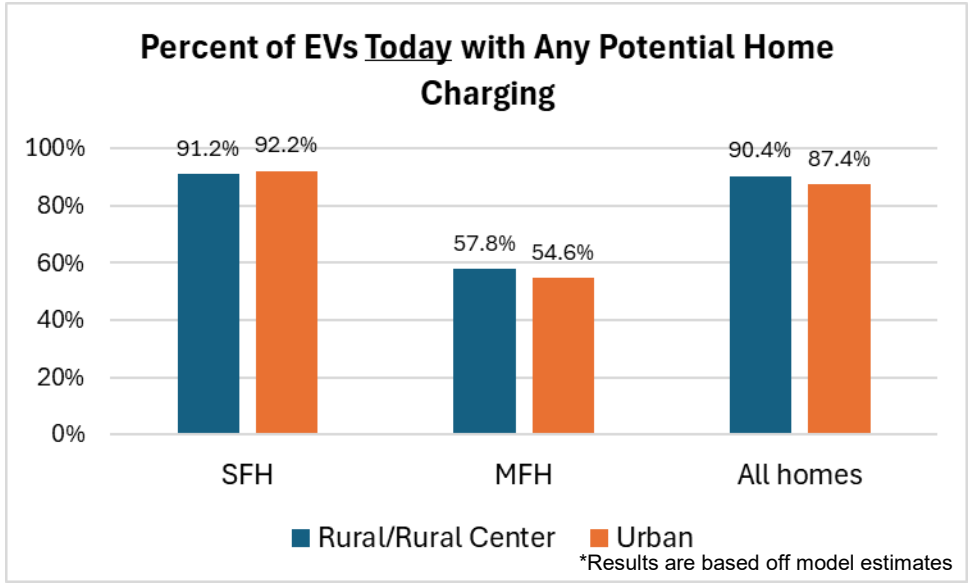
In 2024, there is slightly better access to nearby public charging in DACs/LICs among EVs without sufficient home charging

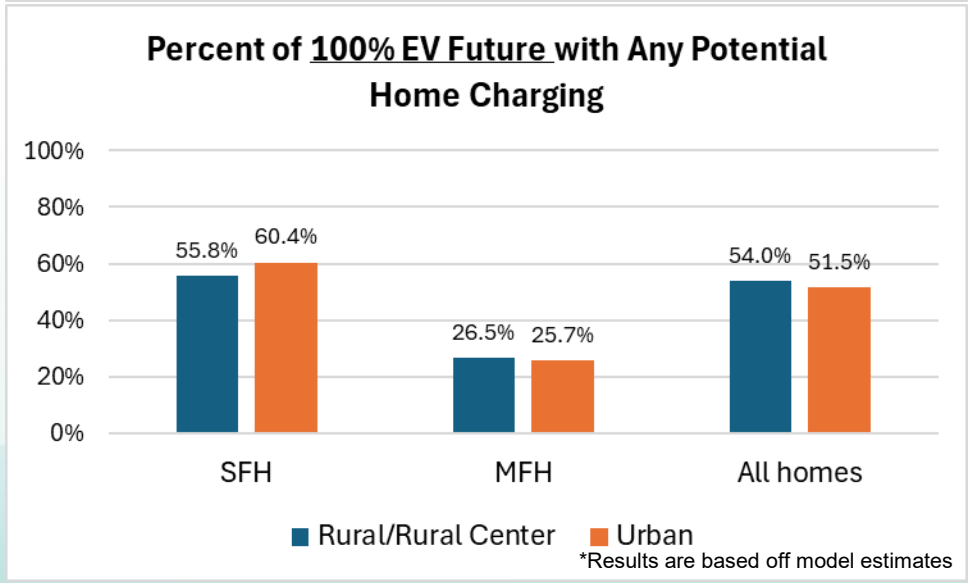




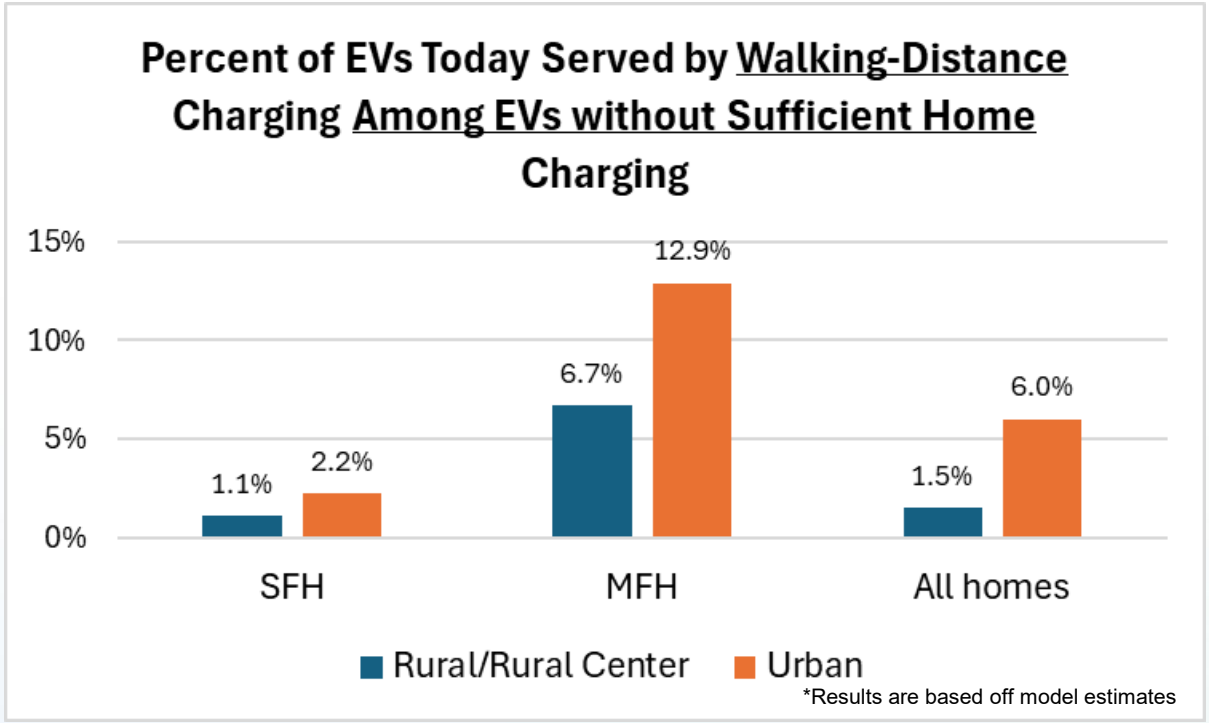
Between urban and rural areas, there is little difference in access to home charging in 2024 and in a 100% EV future

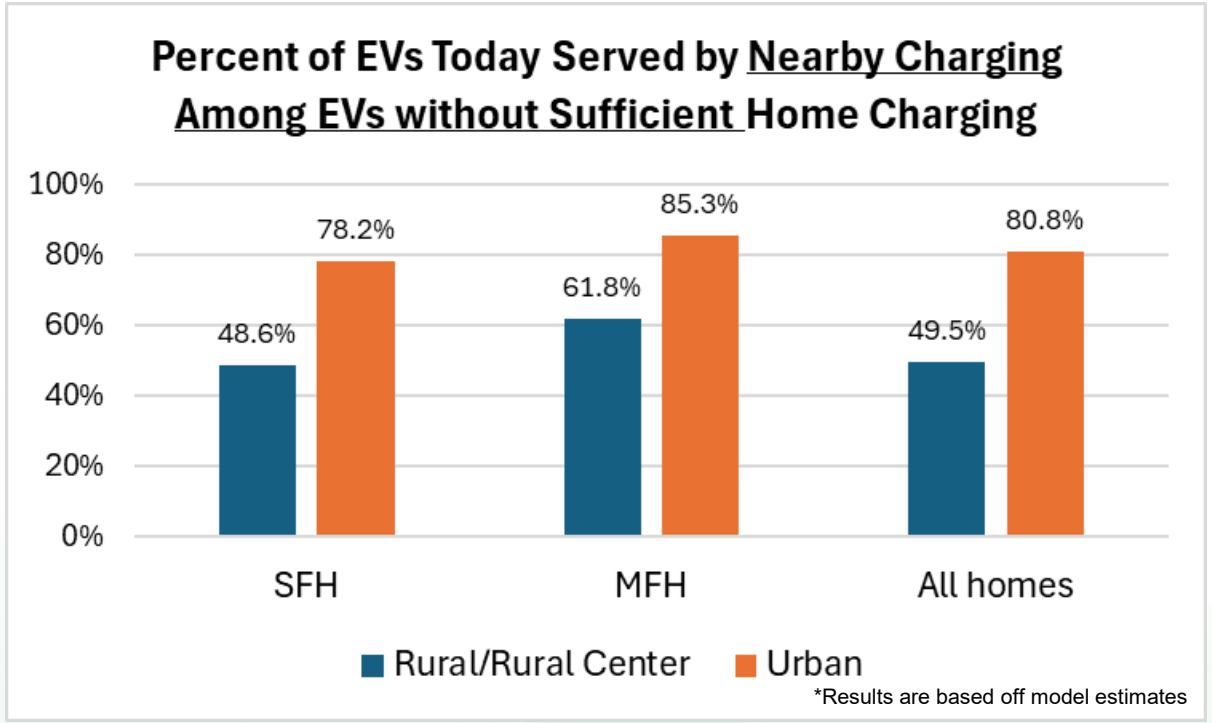




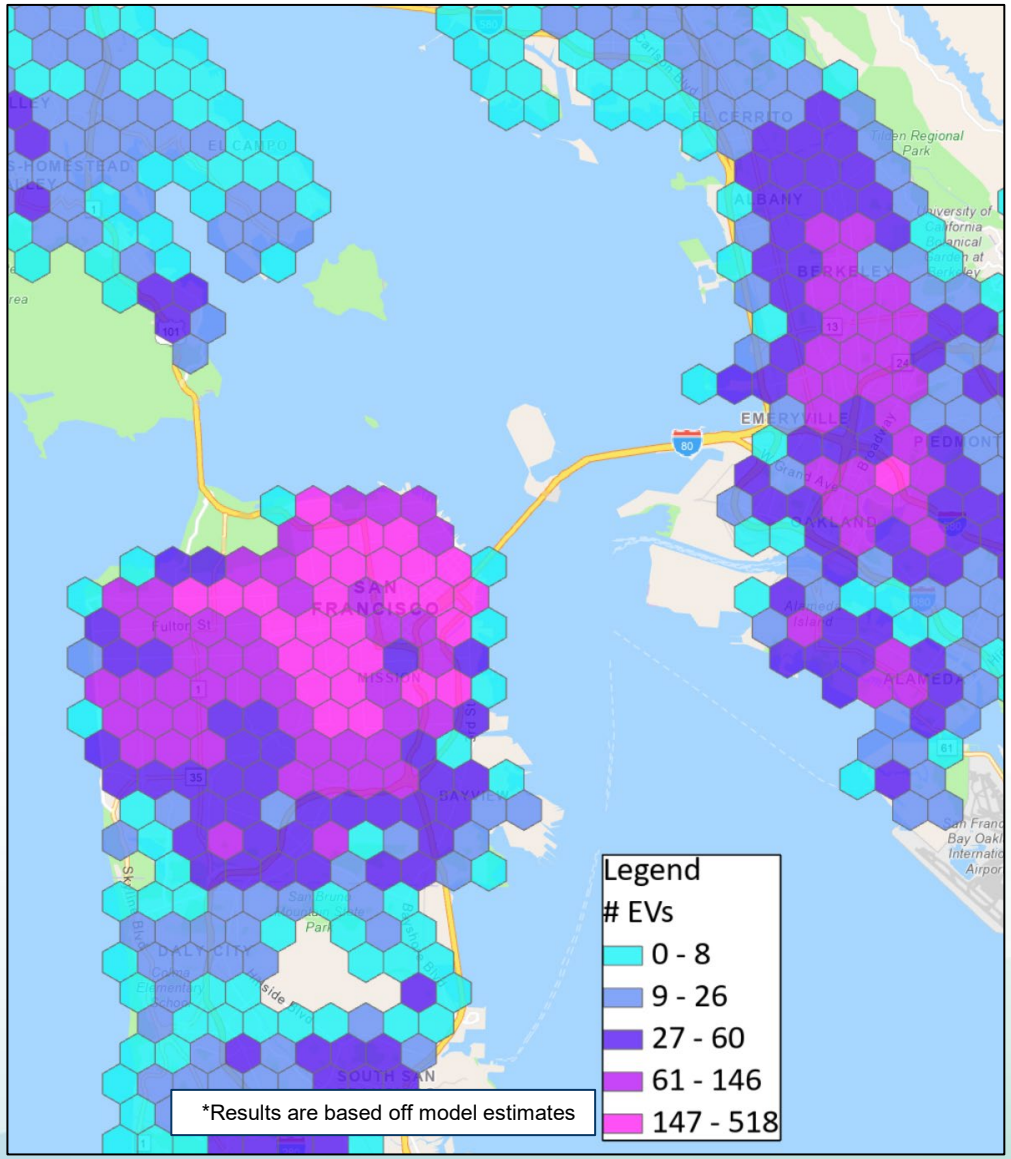


In 2024, EVs in urban areas without sufficient home charging are twice as likely to have access to nearby public charging as rural areas



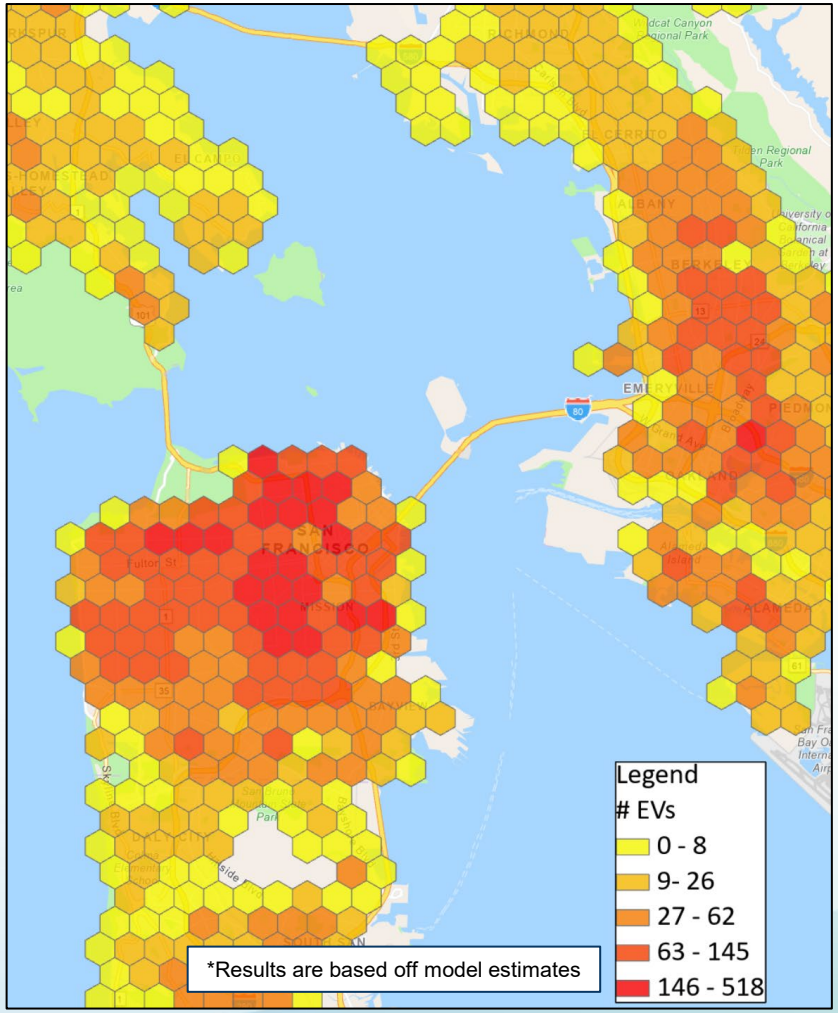


Geographical Distribution of EVs in 2024 without Potential Home Charging

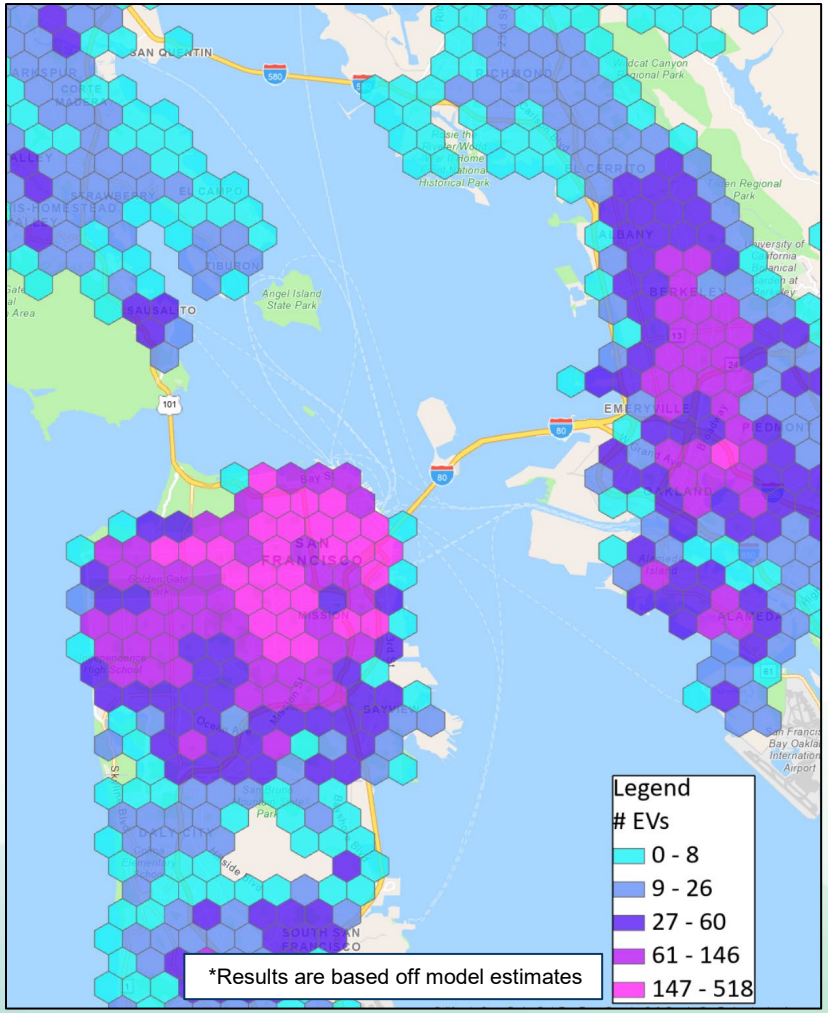


Geographical Distribution of Nearby Public Charging for EVs in 2024 without Potential Home Charging

Need for Walking-Distance Charging
(1/8th mile)



Need for Neighborhood Charging
(2 miles)



Takeaways

- Among EVs in 2024 that are estimated to not have sufficient home charging:
  - Most (79%) have nearby public chargers (within 2 miles) with sufficient charging capacity
  - Public chargers within walking distance (within 1/8th mile) is sparse but sufficient in some areas
- Between DACs/LICs and non-DACs/LICs:
  - Small differences in SFH charging and public charging within walking distance (1/8th mile) and nearby (2 miles)
  - Home charging access is better at MFHs in non-DACs/LICs
  - In a 100% EV future, DACs/LICs will have even less access to home charging than today
- Between urban and rural areas:
  - Little difference in SFH and MFH charging
  - EVs without sufficient home charging in urban areas have more public chargers in walking distance (1/8th mile) and nearby (2 miles) than in rural areas

Discussion

Questions

1. Any feedback on our modeling assumptions? Are these the right cutoffs?
    a) We are using building vintage to estimate panel capacity and service upgrades for MFHs and assuming that MFHs built before 1980 will have high barriers to electrify.
    b) For households with potential home charging and both on- and off-street parking, we assume that EV drivers would rotate their vehicles to enable charging from home 70% of the time.
    c) We are aligning with NREL's No Place Like Home Study, which finds that about 72% of MFHs and 36% of SFHs in CA lack potential access to home charging.
    d) We are assuming that EVs with only Level 1 home charging will require public charging 20% of the time.
    e) We are assuming that a public Level 2 charger can serve 3 EVs without home charging overnight and 2 during the day and that a public DCFC can serve 30 EVs.

Two ways to comment or ask questions:

1. **Use the raise hand function in Zoom**

   Zoom Phone Controls:

   - *6 – Toggle mute/unmute
   - *9 – Raise hand

2. **Type question in the Zoom Q&A Box**

Please state your name and affiliation. Keep question sunder 3 minutes to allow time for others.

Discussion Cont'd

Questions

2. Are there other inputs or assumptions we should consider for our model?
3. Are there other breakouts you would like to see to better understand whether access to chargers is equitable?
4. What other ways of looking at charging access and distribution would you like to see for future SB 1000 assessments?

Two ways to comment or ask questions:

1. **Use the raise hand function in Zoom**

   Zoom Phone Controls:

   - *6 – Toggle mute/unmute
   - *9 – Raise hand

2. **Type question in the Zoom Q&A Box**

Please state your name and affiliation. Keep question sunder 3 minutes to allow time for others.

Submit Comments

Docket Name:
Senate Bill 1000 Electric Vehicle Charging Infrastructure Deployment Assessment

Docket Number:
20-TRAN-02

Link:
e-Commenting Page for Docket 20-TRAN-05
(https://efiling.energy.ca.gov/Ecomment/Ecomment.aspx?docketnumber=20-TRAN-02)

Email: docket@energy.ca.gov
Subject Line: “20-TRAN-02 SB 1000”

Comments are due by Monday, December 23, 2024

Next Steps

Activity	Anticipated Date
Deadline for Written Comments	December 23, 2024
Publish Final Report	Q2 2025
Develop Scope for 4th SB 1000 Assessment	Q3 2025

Thank You!