



GREENSHIFT

ULI/SA Virtual Lunch & Learn: The Future for EV Infrastructure

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INTRODUCTION

Founded in 2015, Greenshift is an industry partner to vehicle OEMs, utilities, governments and companies focused on the convergence of **transportation, clean energy and infrastructure.**



EV infrastructure specialist since 2008



Focus on product strategy, program management, infrastructure installation and operations



Responsible for deployment of 3,000+ charging ports at 500+ sites



UCLA, Columbia University



GREENSHIFT





EV Adoption Snapshot

Proportion of global new passenger vehicle sales

- 6% currently
- 15% by ~2025
- Reaches majority (>50%) in mid 2030s

Regional diversity

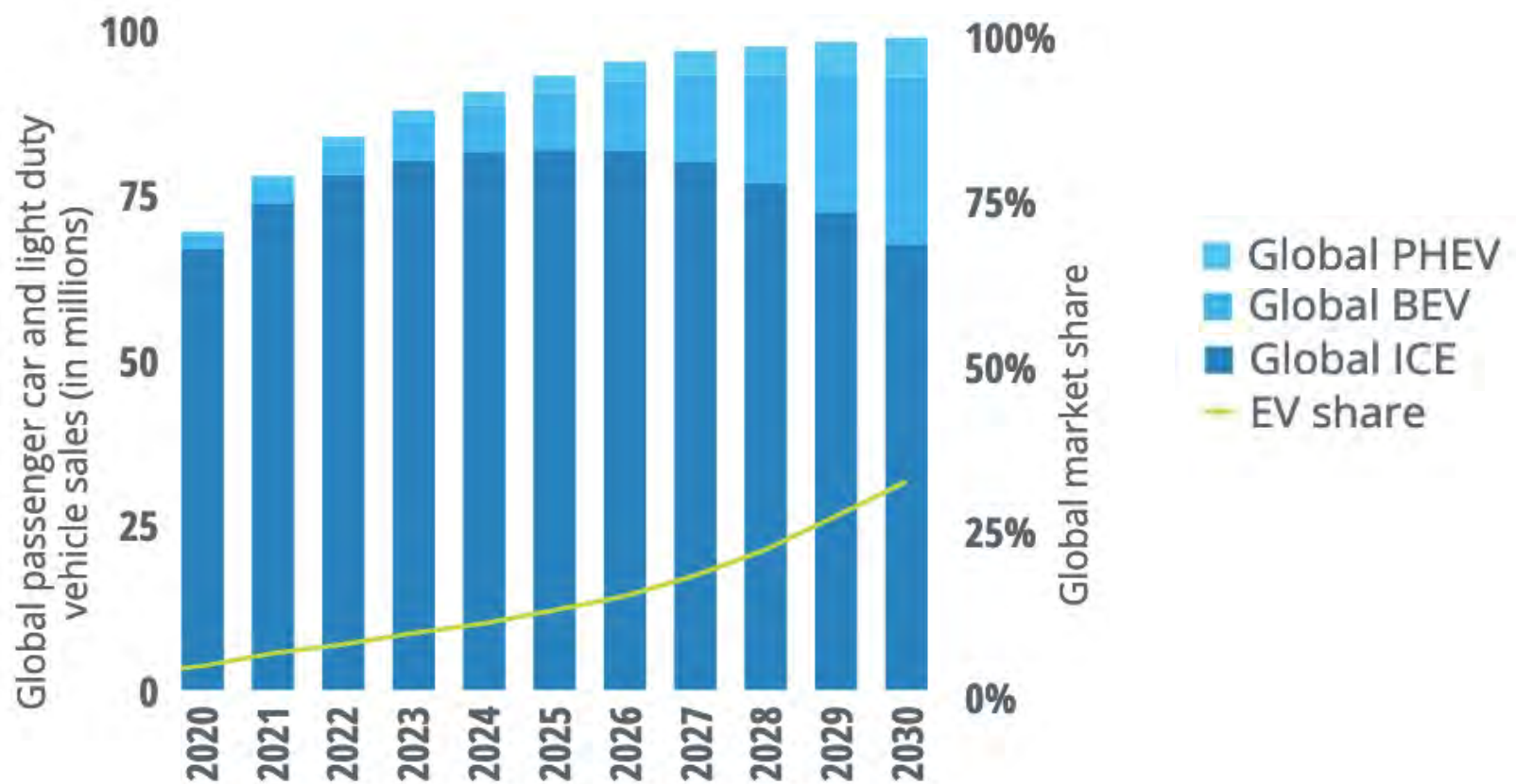
- 25% – 75% in Northern European countries
- >10% in California
- Only 2% – 3% US

Not just passenger EVs

- 39% of global bus sales
- 44% of global 2-and 3-wheeler sales

PROJECTED ADOPTION 2020 – 2030

Outlook for annual global passenger-car and light-duty vehicle sales, through 2030



Source: Deloitte analysis, IHS Markit, EV-Volumes.com

WHY NOW?



COMPETITIVE COSTS

- Fuel and maintenance savings create competitive Total Cost of Ownership (TCO) opportunities
- EV upfront costs continue to fall with battery prices (90% drop in the past decade)



VEHICLE OEM COMMITMENTS

- Vehicles being brought to market by major automakers which meet US consumer preferences
- In August 2021, Ford, GM and Stellantis announced aspiration to 40-50% of annual U.S. sales volumes of electric vehicles



POLICY SUPPORT

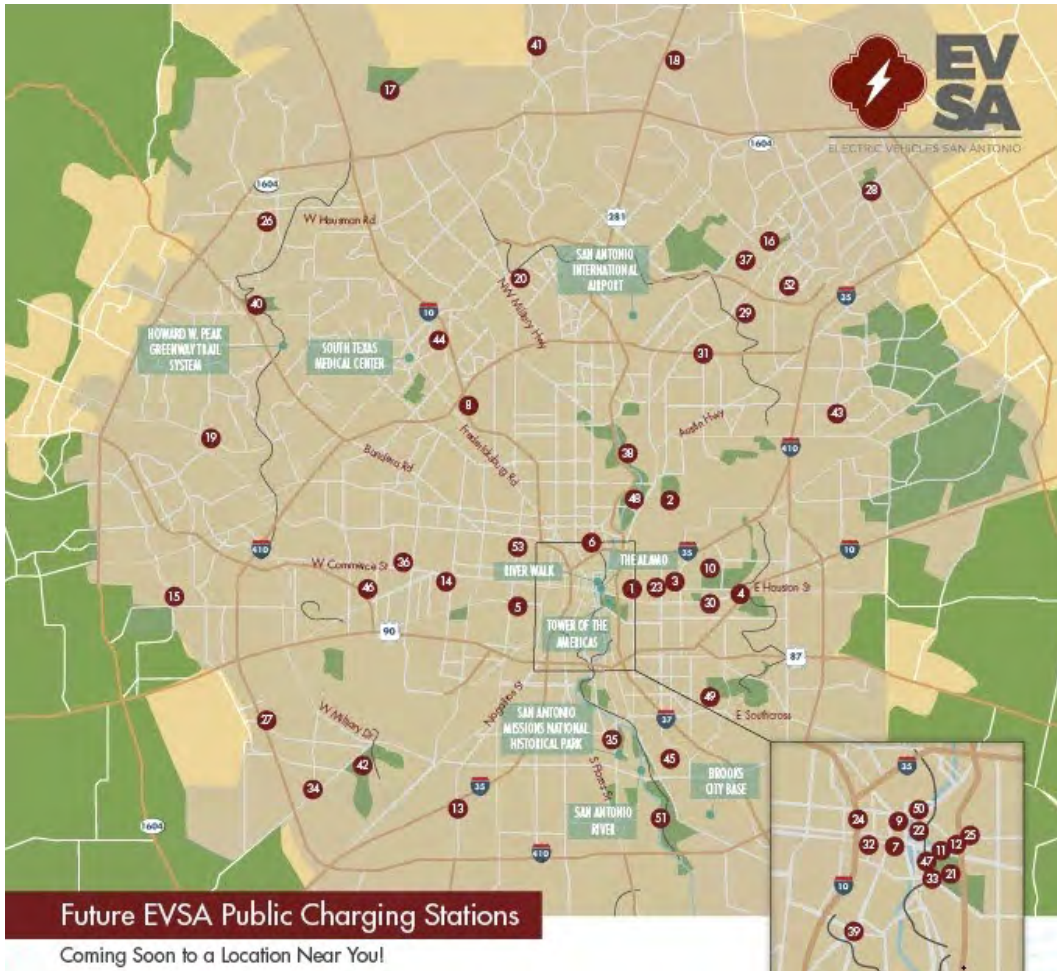
- ZEV mandates and vehicle efficiency standards
- Federal, state and municipal fleet purchases
- Federal and state tax incentives
- Local regulations and policies
 - Building codes
 - Rebates (utilities)
 - Low and zero-emission zones
 - EV charging investments



VEHICLES NOW BEING BUILT FOR US PREFERENCES



SAN ANTONIO INITIATIVES



Planned public charging stations



19 Chevy Bolts for the SA municipal fleet

CHARGING BASICS

EV energy requirements for average driver = 34% of annual household electrical use

Level 1

- 120 volt household outlet
- 4 – 5 miles per hour of charge
- 48 – 60 miles per overnight charge



Level 2

- 240 volt “dryer plug”
- 20 – 25 miles per hour of charge
- 240 – 300 miles per overnight charge

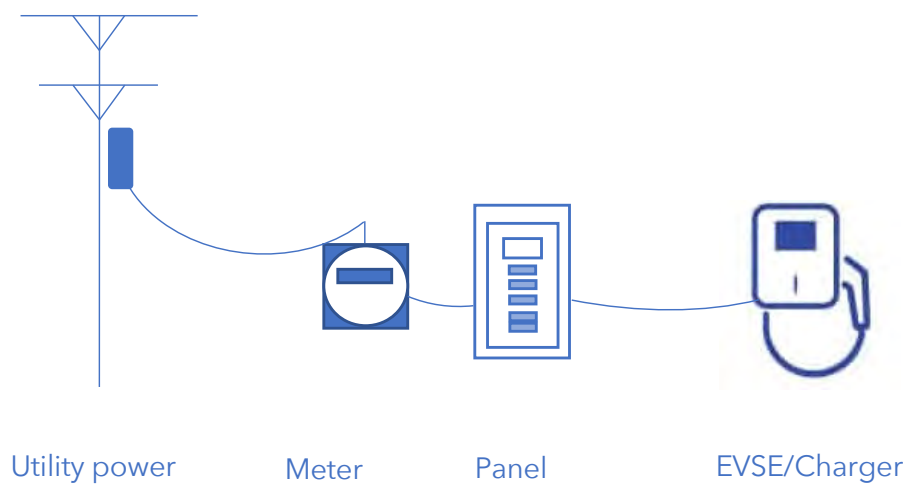


DC Fast Charging

- 7 to 50X Level 2 charging power (50 – 350kW)
- ~20 miles per minute at peak power
- Generally 20 – 30 minute recharge



HOME CHARGING

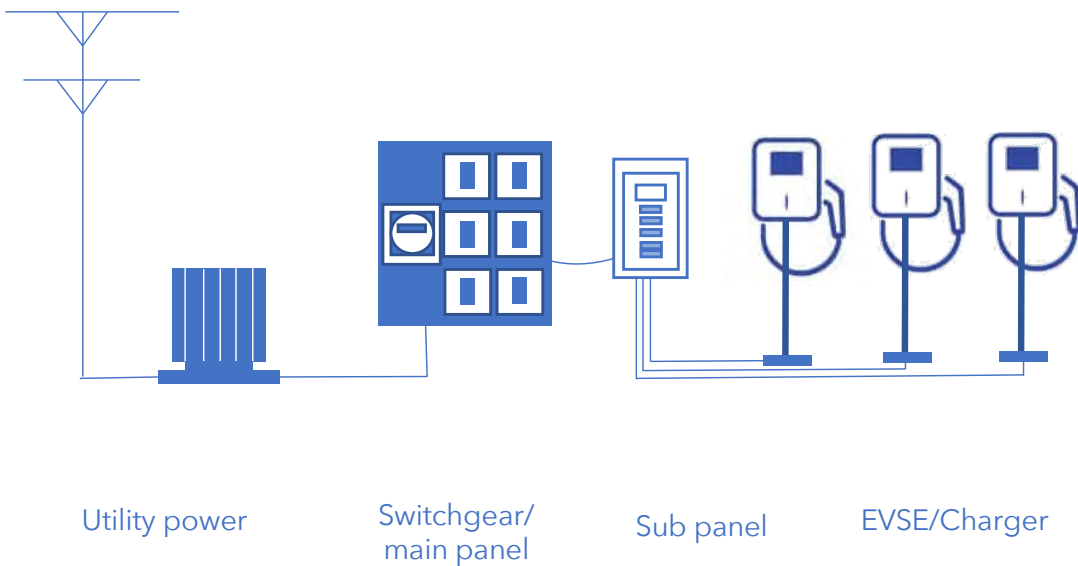


Single 240V circuit (Level 2)

May require panel upgrade depending on existing capacity

Can be pre-wired ("make-ready")

MULTI-FAMILY & WORKPLACE CHARGING



Multiple 240V circuits (Level 2)

Often requires panel upgrades, step-down transformers, etc. if installing more than 2 or 3

Usually requires cellular connectivity

Can also be pre-wired ("make-ready")



RETAIL CHARGING



Multiple DCFC circuits (480V input)

Requires new utility service in most cases

Additional space needed for transformers, switchgear, power cabinets, and stationary batteries (if used)

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Thank you

A photograph of a white electric car being charged at a station. A charging cable is plugged into the car's port, and a green light is visible on the cable. The background shows a row of similar cars in a parking lot, slightly out of focus.