



EV 3.0

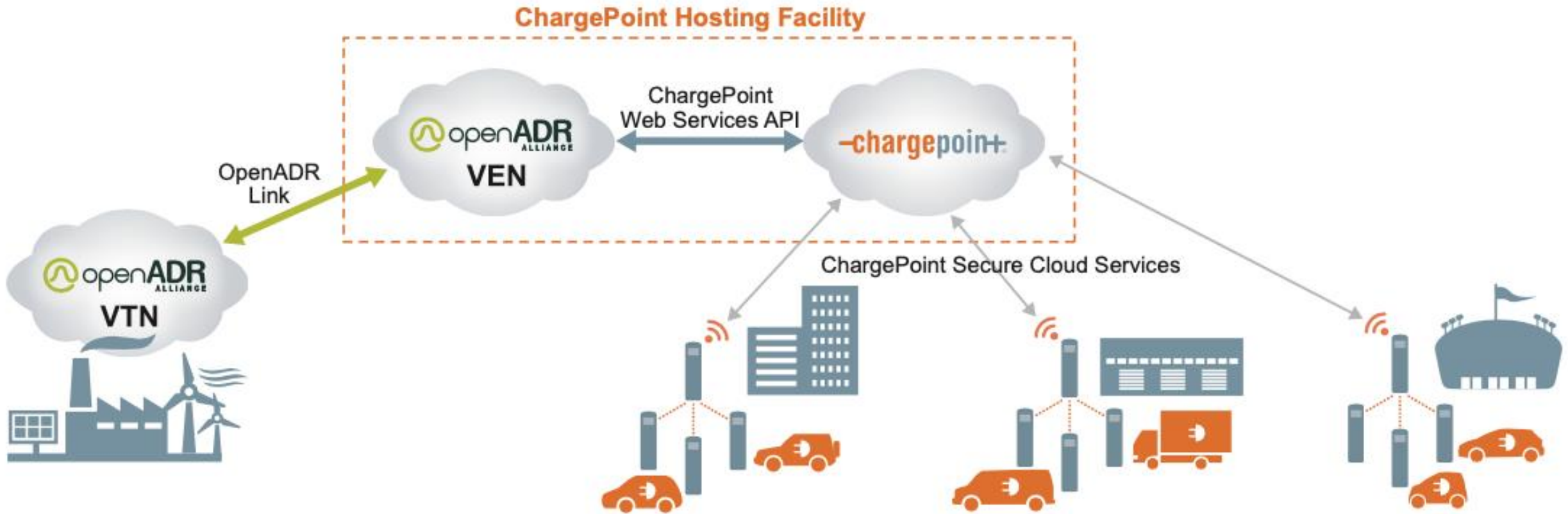
Don Dulchinos
OpenADR ++ Alliance
Users Conference
June 6, 2023



EV Evolution

- EV 1.0 - Charging stations
- EV 2.0 - Managed charging
- EV 3.0
 - The role of automotive OEMs
 - Utility engagement behind the meter
 - Electric vehicle corridors and fueling infrastructure

OPENADR AND EV - 2016



OpenADR Alliance – EV Interest Group Membership

Addenergie (FLO)

ads-tec Energy

Ampcontrol

AmpUp

AMPECO

AmpedUp

Atom Power

bp pulse

Blink

CarMediaLabs

ChargeLab

ChargePoint

Chargie Intelligent Energy

Delta Networks

Driivz

ElaadNL

eMotorwerksA

Energport

Epic Charging (EnerSys)

EVBox (Everon)

EV Connect

EV Gateway

EV Passport

EV Range

EverCharge

EvoCharge

Fermata Energy

Ford Pro Charging

FreeWire Technologies

Green Charge

GreenFlux

In-Charge Energy

Innogy eMobility

Kaluza

KIGT

Loop Inc.

Noodoe

MOEV Inc.

Powerley

PowerX

Shell Recharge

Synop

SWTCH Energy

Tellus Power Green

TrickleStar

Veloce Energy

Volta Charging

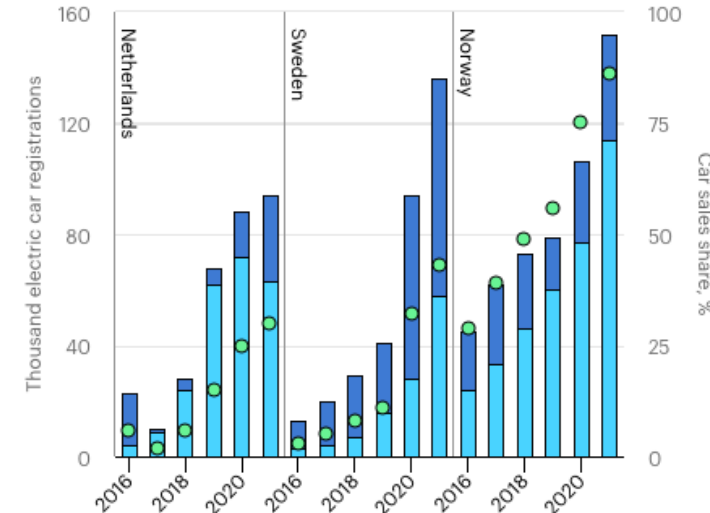
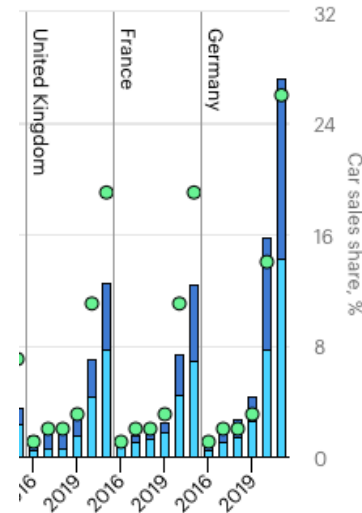
Zef Energy

Zerova Technologies

Zevtron

The role of automotive OEMs

- Growing customer attention to personal emissions reduction.
- Growing customer awareness – lower vehicle cost of ownership.
- U.S. policies – tax credits, emissions limits, jobs programs.
- European Commission - ALL vehicles must be zero emission by 2035



AUTOS

Auto executives say more than half of U.S. car sales will be EVs by 2030, KPMG survey shows

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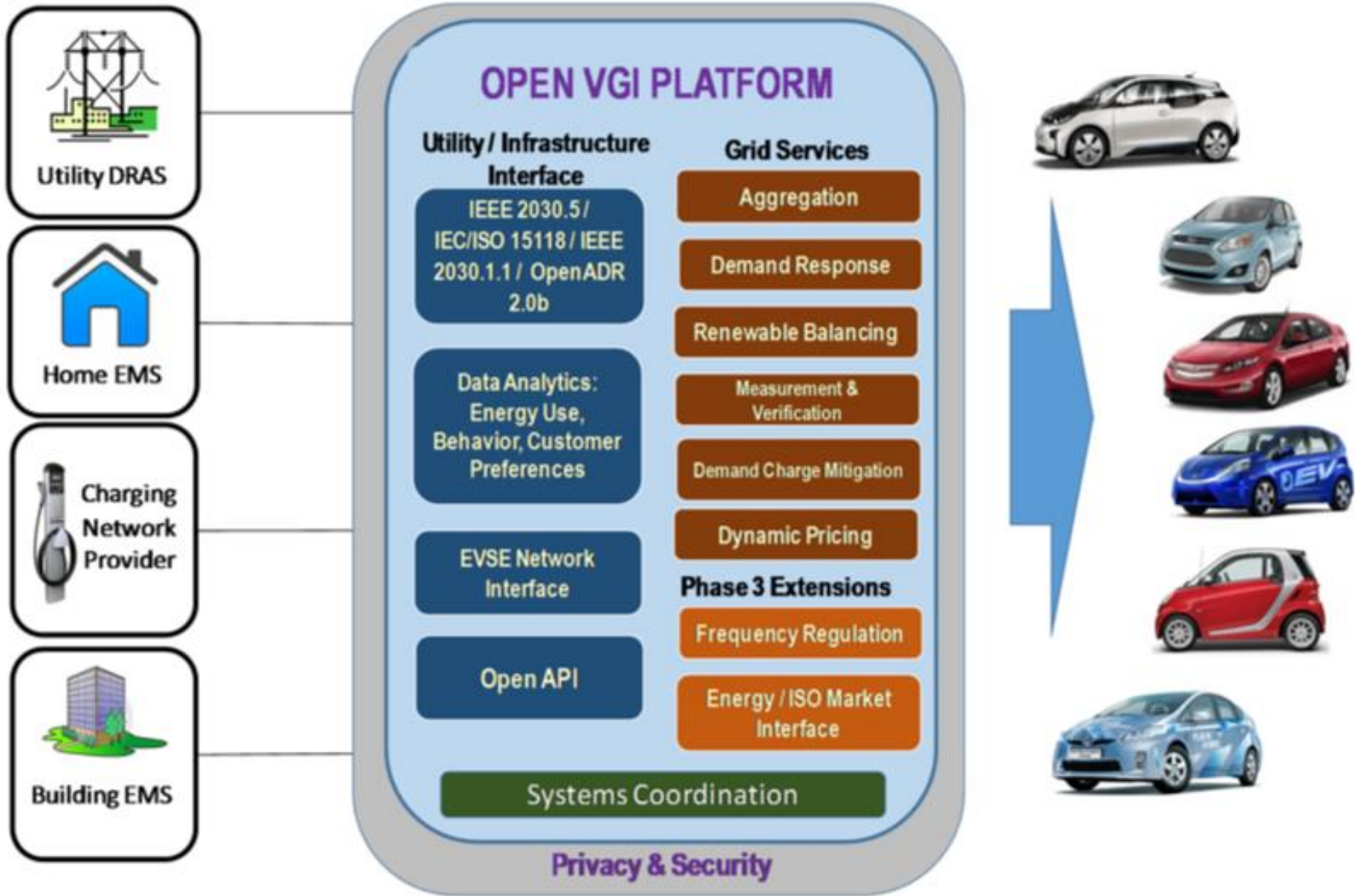
The role of automotive OEMs

- Acquiring managed charging start-ups.
- Building their own charging infrastructure.
- Ford represented on OpenADR Alliance Board of Directors
- Partnering directly with utilities on terms of interconnection – Ford Smart Grid Rewards program.



**Blink Charging to Supply Electric Vehicle
Chargers to GM Car Dealerships in U.S. and
Canada**





Transportation Electrification as Generational Opportunity for Utilities

- Self-interest – first major growth in load since 1950's-1960's with lighting, home appliances, etc.
- This can be a 10% - 20% lift in kwh per household.
- Regulation
 - State based regulation
 - Renewables portfolios

Leveraging Utility Engagement Behind the Meter

- Vehicles are sources of battery storage, individually, aggregated, or in commercial fleets.
- Utilities have spent last 10 years or more learning to deal with distributed loads, migrating from large commercial/industrial customers, to aggregated IOT devices such as smart thermostats, and most recently EV charging stations/clouds.
- Utilities have also been moving to incorporate interconnection with renewable sources of generation, both large scale and distributed (Virtual Power Plant)
- Utility unregulated businesses are making investments – Centrica/Driivz, Enel X/eMotorWerks, AES Corporation/Motor, et al



rollment for this program is currently closed.

Take Charge of Charging

Now, Ford plug-in hybrid and battery electric vehicle owners in Michigan can unlock rewards with every plug in.

Apply Now

INTRODUCING DTE Smart Charge



Take Charge of Charging

Now, Ford plug-in hybrid and battery electric vehicle owners in California's Sacramento-area can unlock rewards with every plug in.

Apply Now

INTRODUCING SMUD's Managed EV Charging Pilot



Take Charge of Charging

Now, Ford plug-in hybrid and battery electric vehicle owners in Colorado can unlock rewards with every plug in.

Apply Now

INTRODUCING Xcel Energy Charging Perks



Electric Vehicle Corridors and Fueling Infrastructure

- Tesla pioneered nationwide fast charging network in U.S.
- Electrify America (Volkswagen and Siemens)
- Automotive Buildout
- Oil Company Investments
- Utility Buildout
- National Electric Vehicle Infrastructure

Electrify America Reaches 30 Megawatts in Installed Battery Energy Storage at 140 DC Fast Charging Stations Across the US and Initiates Virtual Power Plant (VPP) Services

- Electrify America operates 30 MW of installed behind-the-meter energy storage coupled with DC Fast Charging (DCFC) at over 140 locations.
- These assets provide utility rate/tariff savings from demand charges and support the wider system through grid services.
- Participated in nearly 200 demand response events to date to support vehicle-grid integration (VGI) - shifting over 125 MWh of on-peak energy to lower carbon intensity off-peak hours
- This is the largest VPP offering of its kind in CAISO pairing DCFC + storage.

GM and Pilot Company to build a coast-to-coast fast charging network.



2,000 EV charging stalls will be installed at up to 500 Pilot and Flying J travel centers



Will help enable coast-to-coast EV travel and connect communities across America



Initial Phase 1 EV charging stalls (shown in reference map) expected to be operational in 2023

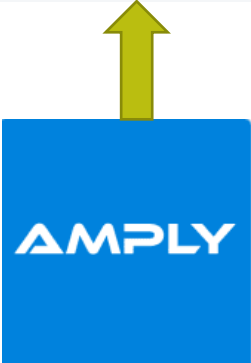


Chargers will be capable of delivering up to 350kW*

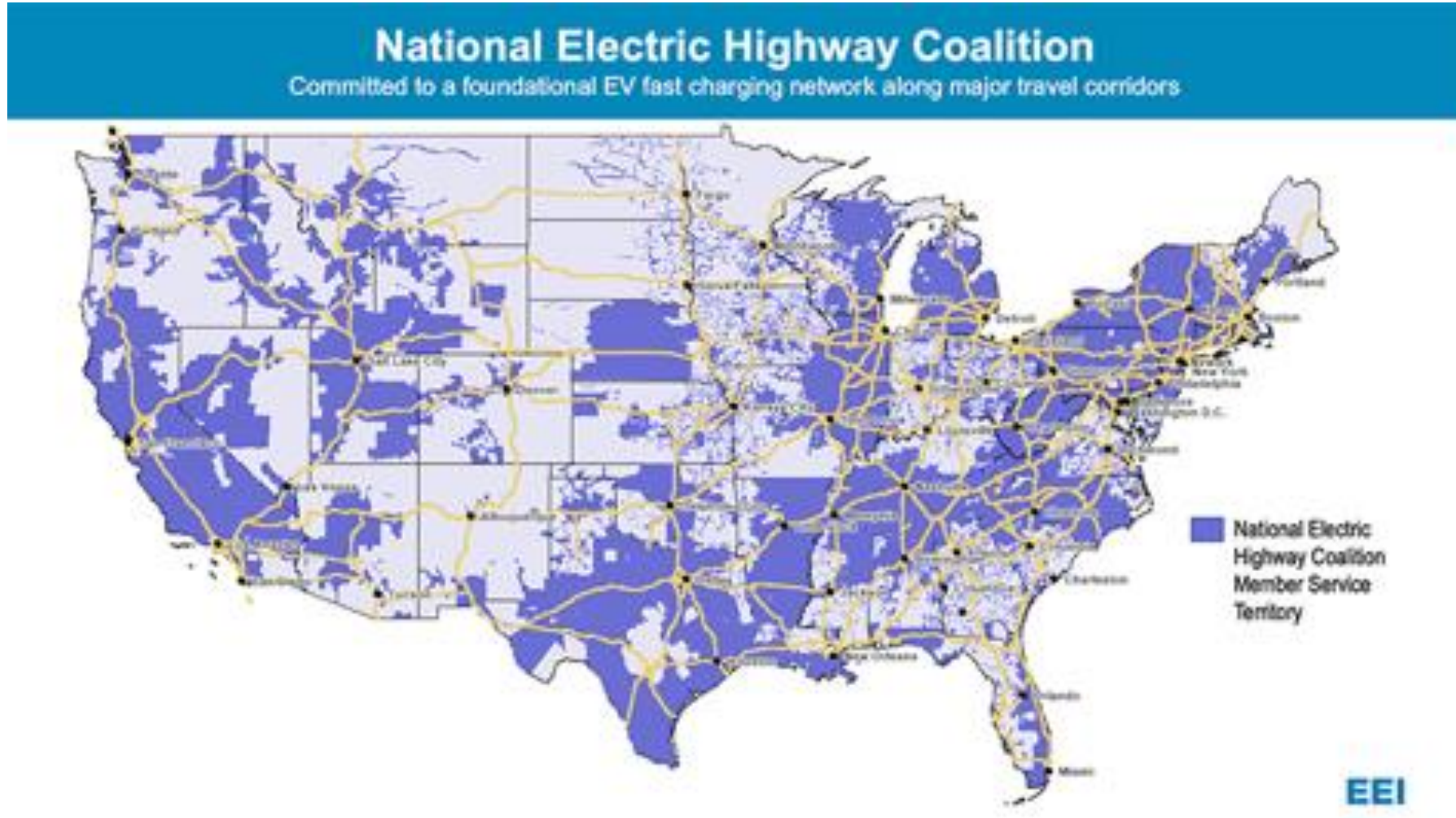


*Actual charge times will vary based on vehicle capabilities and settings. Locations intended to provide an approximation of future charging sites.

Oil Companies



Utility Buildout





BIPARTISAN INFRASTRUCTURE LAW



FHWA Home / Bipartisan Infrastructure Law / Fact Sheets / National Electric Vehicle Infrastructure (NEVI) Formula Program

Home

Overview

Funding

Assistance / Local Support

Fact Sheets

Guidance



\$7.5 BILLION DOLLARS

National Electric Vehicle Infrastructure Formula Program

	FAST Act (extension)	Bipartisan Infrastructure Law (BIL)				
Fiscal year (FY)	2021	2022	2023	2024	2025	2026
Advance appropriation (General Fund)	---	\$1.000 B	\$1.000 B	\$1.000 B	\$1.000 B	\$1.000 B

EV's and Equity

- Goal – bring charging to lower income, typically multiple dwelling units
- U.S. – state-by-state regulation provides voice for lower income communities.
- Grid services programs reduce overall costs to consumers.

- Believ (formerly Liberty Charge) curbside charging formultiple dwelling units.
- Con Edison and New York City have launched curbside charging pilot project.
- Southern California Edison

We're charging up to
provide publicly
accessible EV
charging for all

Brentwood, Ealing, Gosport, North Northamptonshire, Croydon, Waltham Forest

Coming Soon: Charge Your Car at a Power Pole

An innovative pilot project seeks to unlock SCE's existing infrastructure and make EV charging more convenient.



Eliza Gano
ENERGIZED by Edison Writer

STORY IMAGES

Published on June 07, 2022



SUBSCRIBE

Soon, ordinary streetlights, street poles and transformers along Southern California roads will have an extraordinary role to play in the **electric transportation revolution**, thanks to an innovative pilot program. These standard street fixtures will soon be retrofitted with electric vehicle public charging stations.

RELATED STORIES



Curbside Level 2 Charging Pilot



In New York City, where many people park their cars at the curb and don't have access to a home charger, charging an EV can be a challenge. To address this gap, NYC DOT and the Mayor's Office of Sustainability (MOS) are working with partners to expand access to public EV charging across the five boroughs.

In partnership with [Con Edison](#), NYC is installing 120 Level 2 charging ports at curbside locations across the five boroughs. The chargers will be in place for four years as part of a demonstration project, which will include an evaluation period. Installation of the Level 2 chargers began in June 2021. Use of the chargers will be managed by [FLO](#).

Itselectric's chargers can be easily installed on curbs, making EVs more realistic for dense urban areas.



OpenADR Alliance EV Interest Group

- Quarterly Webinar – guest speakers (Ford, SoCal Edison)
 - Event Planning – exhibit participation
 - Automotive Engagement – pilots using OpenADR are ramping up.
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