



BAY AREA  
AIR QUALITY  
MANAGEMENT  
DISTRICT

AGENDA: 3

# Projects and Contracts with Proposed Awards over \$100,000

**Mobile Source and Climate Impacts Committee Meeting**  
**October 28, 2021**

**Karen M. Schkolnick, Director**  
**Strategic Incentives Division**  
**[kschkolnick@baaqmd.gov](mailto:kschkolnick@baaqmd.gov)**

# Outcome



- Provide status update of grant funds awarded since July 1, 2021, and information about new recommended awards greater than \$100,000 and a proposed allocation increase to the *Charge!* program
- Obtain Committee's support and approval to forward the recommended projects and an increased allocation to the full Board of Directors for approval

# Outline



- Background
- Proposed projects with awards over \$100,000 & proposed allocation increase
- Status of incentive funding
  - Revenue sources
  - Community benefits & project locations
- Recommendations

# Requested Action



## Recommend that the Board of Directors:

1. Approve recommended projects with proposed grant awards over \$100,000 as shown in Attachment 1;
2. Authorize the Executive Officer/APCO to enter into all necessary agreements with applicants for the recommended projects; and
3. Allocate an additional \$2 million for the electric vehicle (EV) infrastructure, Charge! program, for projects serving multi-unit dwellings in AB617 communities.

# CMP/MSIF, CHP, and FARMER



Carl Moyer  
Program  
**(CMP)**

Funding Agricultural  
Replacement Measures  
for Emission  
Reductions **(FARMER)**

Community Health  
Protection Program  
**(CHP)**

Mobile Source  
Incentive  
Fund  
**(MSIF)**

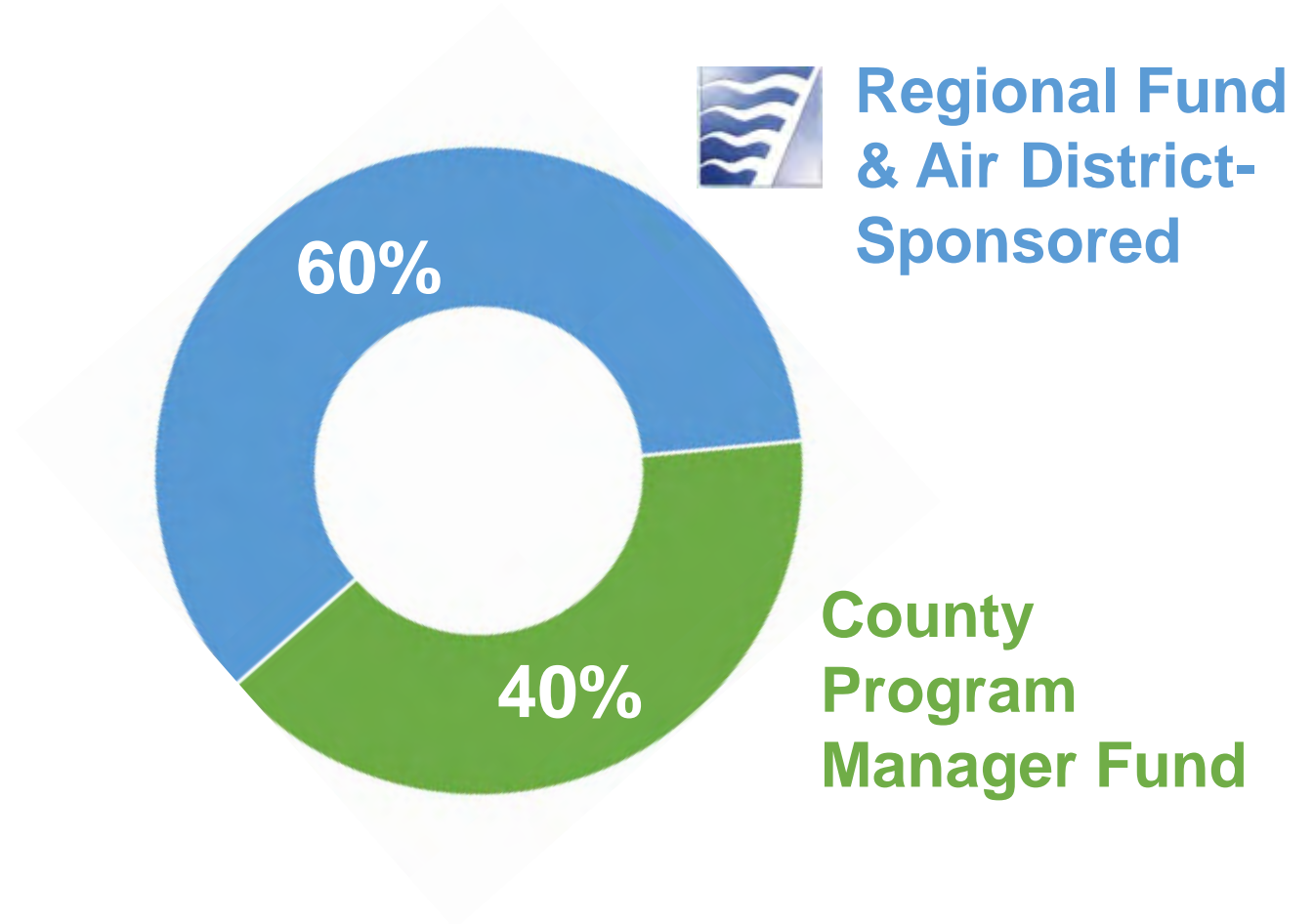
California Air Resources Board  
**\$34 million**

DMV Fees  
**\$12 million**

# Transportation Fund for Clean Air (TFCA)



- Statutory authority set forth in California Health and Safety Code Sections 44241 and 44242
- Funding provided by a \$4 surcharge on motor vehicles





# CMP/MSIF, CHP, and FARMER



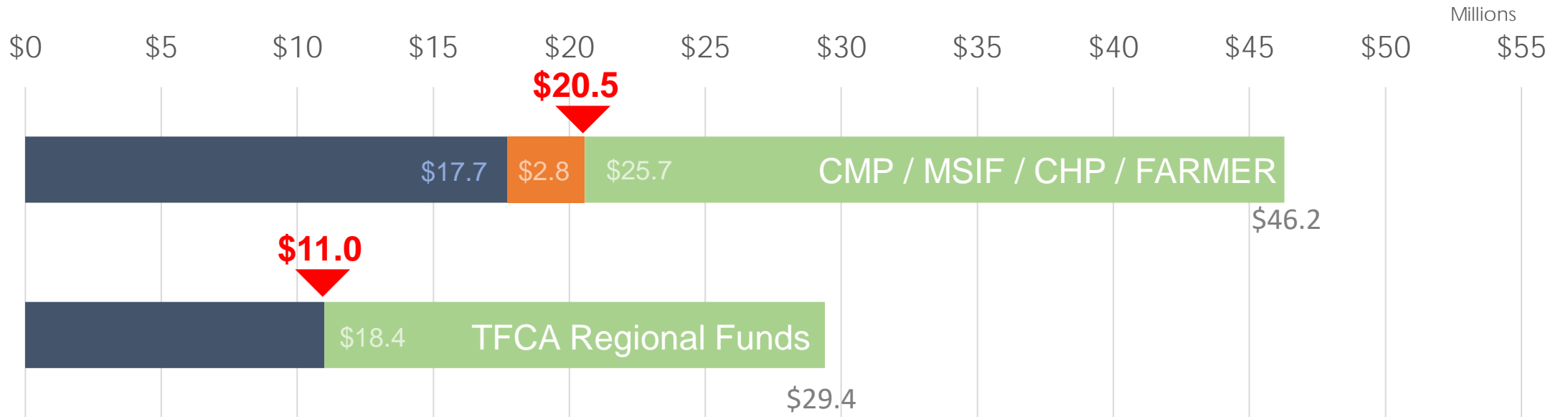
- **Recommend \$840,300 in awards for four projects to replace equipment:**
  - ✓ engines for one charter fishing vessel
  - ✓ three agricultural tractors/loaders
  - ✓ one excavator



## Emissions Reductions

- ❖ Over **2.9** tons per year of criteria pollutants
- **Recommend a \$2 million allocation increase to FYE 22 *Charge!* Program**

# Incentive Funding Awarded & Recommended Since July 2021 by Revenue Source (in Millions)





# Funds Awarded & Recommended Since July 2021 by Project Category (in Millions)



**Total = \$31.6M**

List of projects is shown in Attachments 2 & 3



**Light-duty  
Cars &  
Infrastructure**

**Trucks &  
Buses**

**School  
Buses**

**Off-road  
Equipment**

**Marine  
& Rail**

**Trip  
Reduction**

**\$7.4**

**\$0.1**

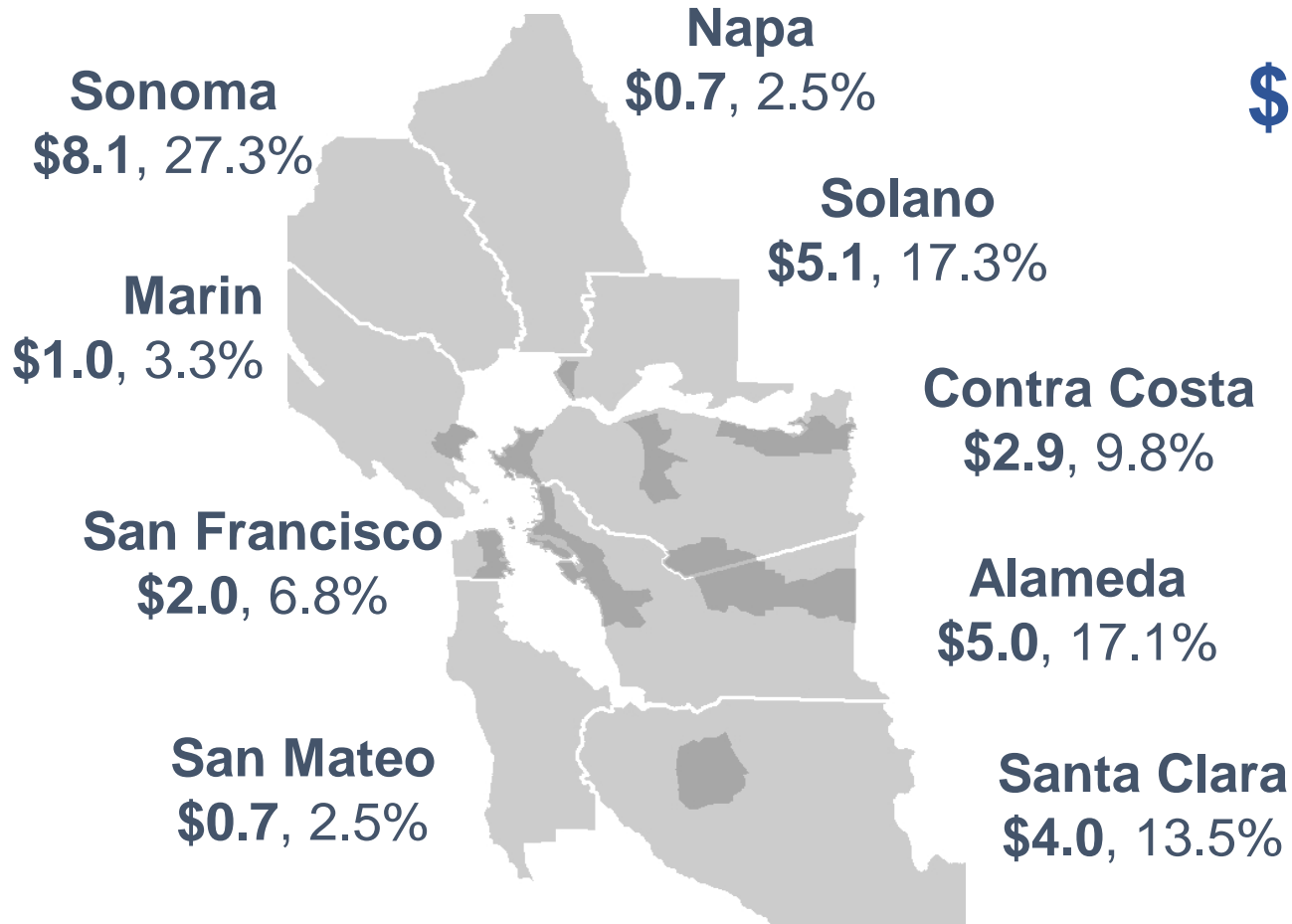
**\$11.3**

**\$2.3**

**\$8.0**

**\$2.5**

# Funds Awarded & Recommended Since July 2021 (in Millions)



**\$31.6 Million Awarded\***

\*\$2 million has not yet been attributed



**87% to CARE areas, disadvantaged and low-income communities, and low-income residents**

# Climate Protection from 2020 Incentives



Category	CO2 Reduced (tons/year)	Awards (in Millions)	# of Projects
Off-Road	279	\$5.33	19
On-Road	5,598	\$1.67	9
*Service or other	55,965	\$11.56	45
<b>Total</b>	<b>61,842</b>	<b>\$18.56**</b>	<b>73</b>



## Incentive projects have significant climate protection potential

However, CO<sub>2</sub> reductions typically not evaluated. Other GHG benefits not evaluated: black carbon, CH<sub>4</sub>, petroleum reduction, upstream emissions

\*Primarily trip reduction, signal timing projects

\*\* CO<sub>2</sub> reductions reported for ~\$18 out of \$75 million awarded

# Action Requested



## Recommend that the Board of Directors:

1. Approve recommended projects with proposed grant awards over \$100,000 as shown in Attachment 1;
2. Authorize the Executive Officer/APCO to enter into all necessary agreements with applicants for the recommended projects; and
3. Allocate an additional \$2 million for the electric vehicle (EV) infrastructure, Charge! program, for projects serving multi-unit dwellings in AB617 communities.



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**AGENDA: 4**

# **Proposed Updates to the Transportation Fund for Clean Air County Program Manager Fund Policies for Fiscal Year Ending 2023**

**Mobile Source and Climate Impacts Committee Meeting  
October 28, 2021**

**Ken Mak**  
**Supervising Staff Specialist**  
**[kmak@baaqmd.gov](mailto:kmak@baaqmd.gov)**

# Outcome



- Provide summary of process and proposed updates to the Transportation Fund for Clean Air County Program Manager Fund Policies for Fiscal Year Ending 2023.
- Obtain Committee's support and approval to forward the recommended policy updates to the full Board of Directors for approval.





- Background
- Proposed updates to County Program Manager (CPM) Policies for Fiscal Year Ending (FYE) 2023
  - Outreach & public input process
  - Summary of proposed updates
  - Next steps
- Recommendations

# Requested Action



## Recommend that the Board of Directors:

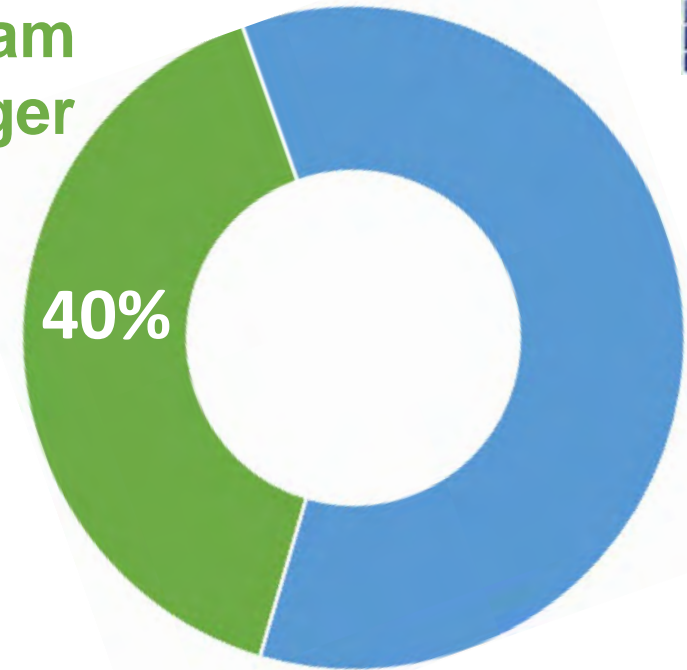
Approve recommended proposed updates to the Transportation Fund for Clean Air County Program Manager Fund Policies for Fiscal Year Ending 2023 as shown in Attachment A.

# Transportation Fund for Clean Air (TFCA)



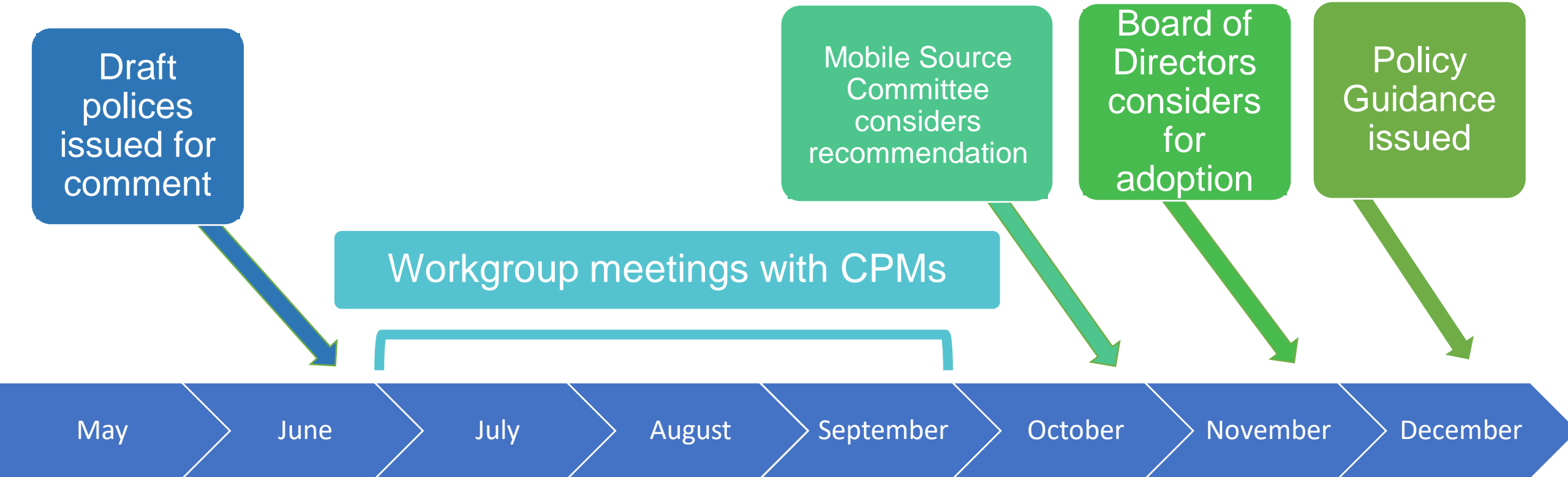
- ❖ TFCA funding authorized by State Legislature to help reduce on-road mobile source emissions
- ❖ \$4 motor vehicle registration surcharge fee with 40% of funds distributed to the 9 Bay Area congestion management agencies
- ❖ Staff brings updates to TFCA CPM policies to Air District Board annually for approval

County  
Program  
Manager  
Fund



Regional  
Fund

# Timeline for Update to FYE 2023 Policies



# Summary of Proposed Updates for FYE 2023 General Policies



- ❖ Increase cost-effectiveness threshold for Infrastructure Improvements for Trip Reduction (policy #2)
- ❖ Rename “Shuttle/Feeder Bus Service” to “First- and Last-Mile Connections” for clarification purposes (policy #28 and 29)
- ❖ Increase the percentage of project cost for School Bus projects that are eligible for reimbursement from 90% to 100% (policy #24)

# Next Steps for Future Cycles



Continue coordinating with CPMs on program refinements:

- ❖ Evaluate CE limit for select project categories
- ❖ Review mechanisms for project extension process
- ❖ Provide further guidance on evaluation of newer project categories



# Action Requested



## Recommend that the Board of Directors:

Approve the proposed updates to the Transportation Fund for Clean Air County Program Manager Fund Policies for Fiscal Year Ending 2023.



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AGENDA: 5

# Clean Cars for All Contractor Selection

Mobile Source and Climate Impacts Committee  
October 28, 2021

Tin Le  
Supervising Staff Specialist  
[tle@baaqmd.gov](mailto:tle@baaqmd.gov)



# CLEAN CARS FOR ALL

## Outcome



- Obtain Committee's support to forward the Clean Cars for All program contractor recommendation to the Board of Directors for approval



# CLEAN CARS FOR ALL

## Outline



- Background
- Request for Proposals (RFP) process
- RFP results
- Recommendations



### **Recommend the Board of Directors:**

1. Approve the selection of GRID Alternatives Bay Area (GRID) as Clean Cars for All (CCFA) program contractor;
2. Authorize the Executive Officer/APCO to execute contracts with GRID for the CCFA program for up to \$625,000 for a two-year term.
3. Authorize the Executive Officer/APCO to extend these services and budgets for an additional three years, at the Air District's discretion, based on contractor performance.



# CLEAN CARS FOR ALL

# Program Overview



Income qualified residents\* who turn in an older vehicle



## Advanced Technology

- Purchase (new or used) or lease
- Hybrid, plug-in hybrid, electric vehicle, fuel cell electric vehicle
- Home charger or portable charger & public charging for plug-in and electric vehicles



## Mobility Options

- Public Transit Card (PEX Visa)
  - Clipper, bike sharing
- Electric bicycles

\* ≤400% Federal Poverty Level





# CLEAN CARS FOR ALL

## Program Funding

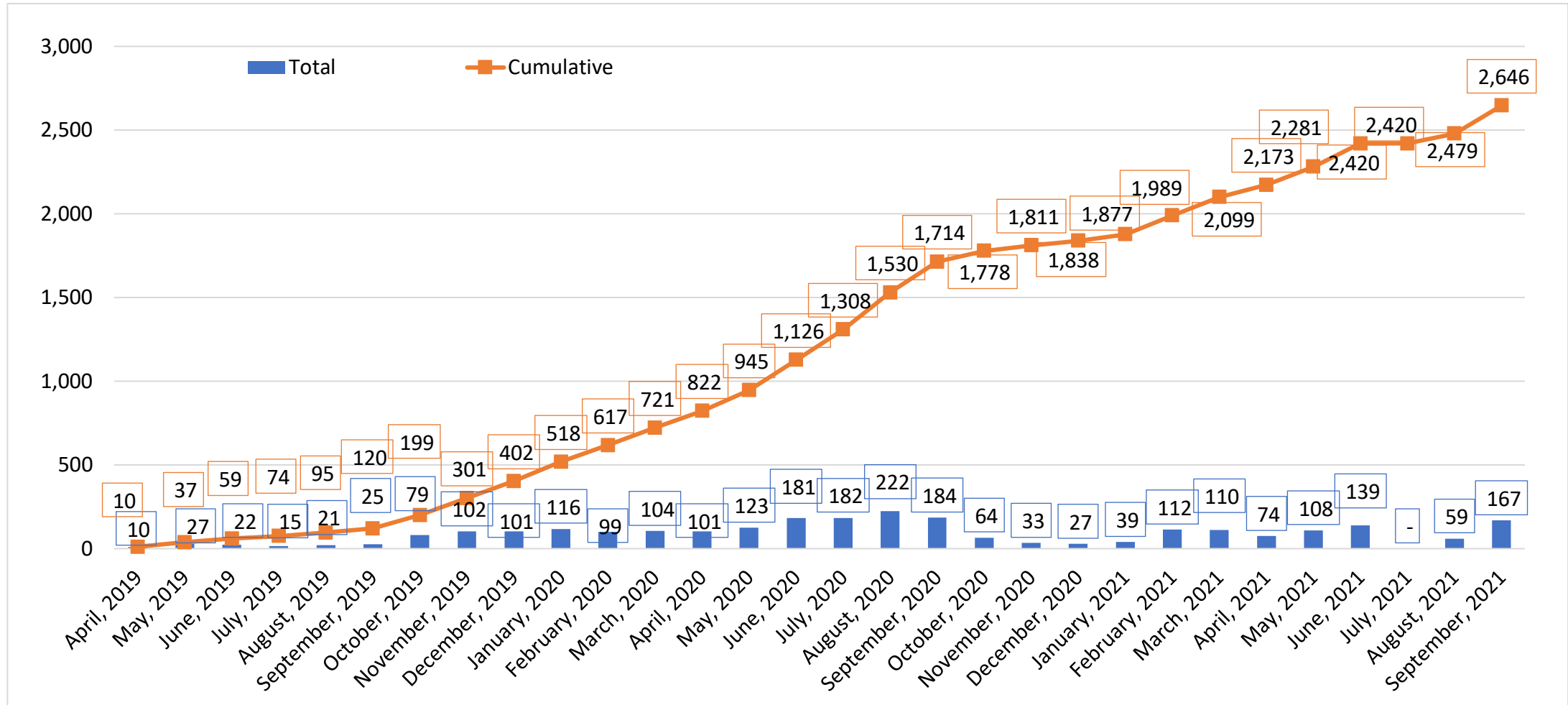


- **2018**
  - \$5M in CA Climate Investment (CCI) funds
- **2019**
  - \$5M in Volkswagen Mitigation funding
- **2020**
  - \$4M in CCI funds
  - \$10M in Transportation Fund for Clean Air (TFCA) funds
- **2021**
  - \$3M in AQIP funding
  - \$8.33M in CCI funding



# CLEAN CARS FOR ALL

# Application Trends





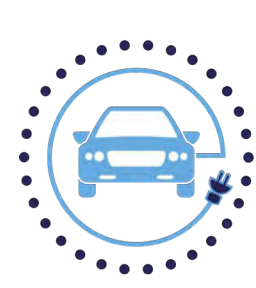
**CLEAN CARS  
FOR ALL**

**CCFA Contractor**



CCFA contractor provides case management and applicant support:

- Multi-lingual and multi-cultural applicant assistance
- Case management
- Targeted outreach & marketing
- EV charging outreach & support
- Consumer education & support

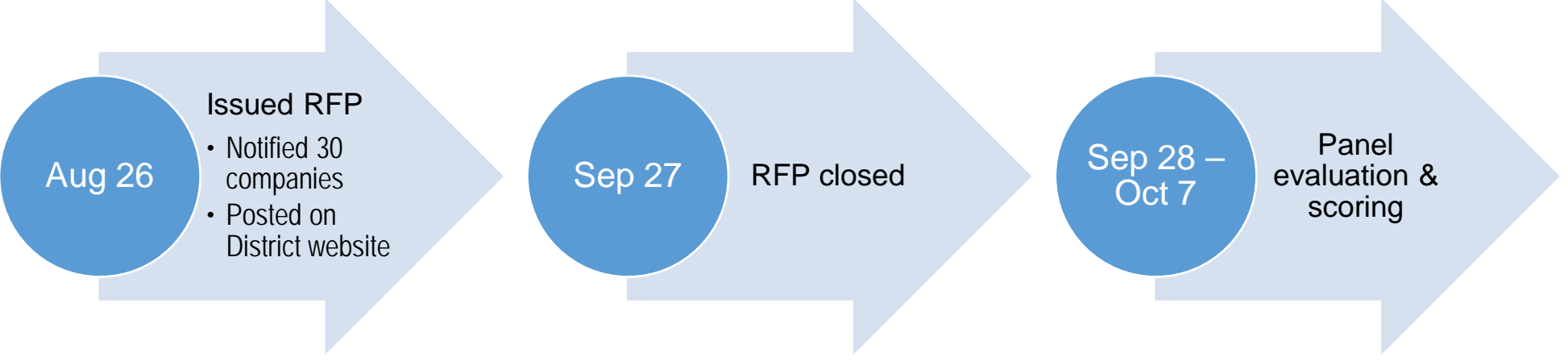


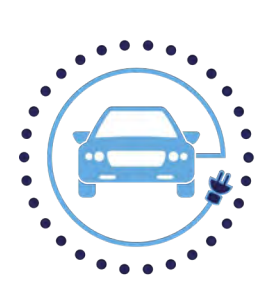
# CLEAN CARS FOR ALL

# RFP Process



**CCFA Contractor**  
up to 1,500 vehicle replacements per year





# CLEAN CARS FOR ALL

## RFP Results



- Two proposals were submitted
- Proposals evaluated by:
  - Expertise
  - Experience
  - Approach
  - Cost
  - Conflict of interest
- Panel evaluation/ scoring results:

Name	Points (100 possible points)
GRID Alternatives Bay Area	93.67
Center for Sustainable Energy	84.33



### Recommend the Board of Directors:

1. Approve the selection of GRID Alternatives Bay Area as Clean Cars for All (CCFA) program contractor;
2. Authorize the Executive Officer/APCO to execute contracts with GRID Alternatives Bay Area for the CCFA program for up to \$625,000 for an initial two-year term.
3. Authorize the Executive Officer/APCO to extend these services and budgets for an additional three years, at the Air District's discretion, based on contractor performance.

# AGENDA: 6

## Electric Transportation

State of the market and preparing for the future

Dan Bowermaster  
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October 28, 2021  
Air District Mobile Source & Climate Impacts Committee  
Bay Area Air Quality Management District

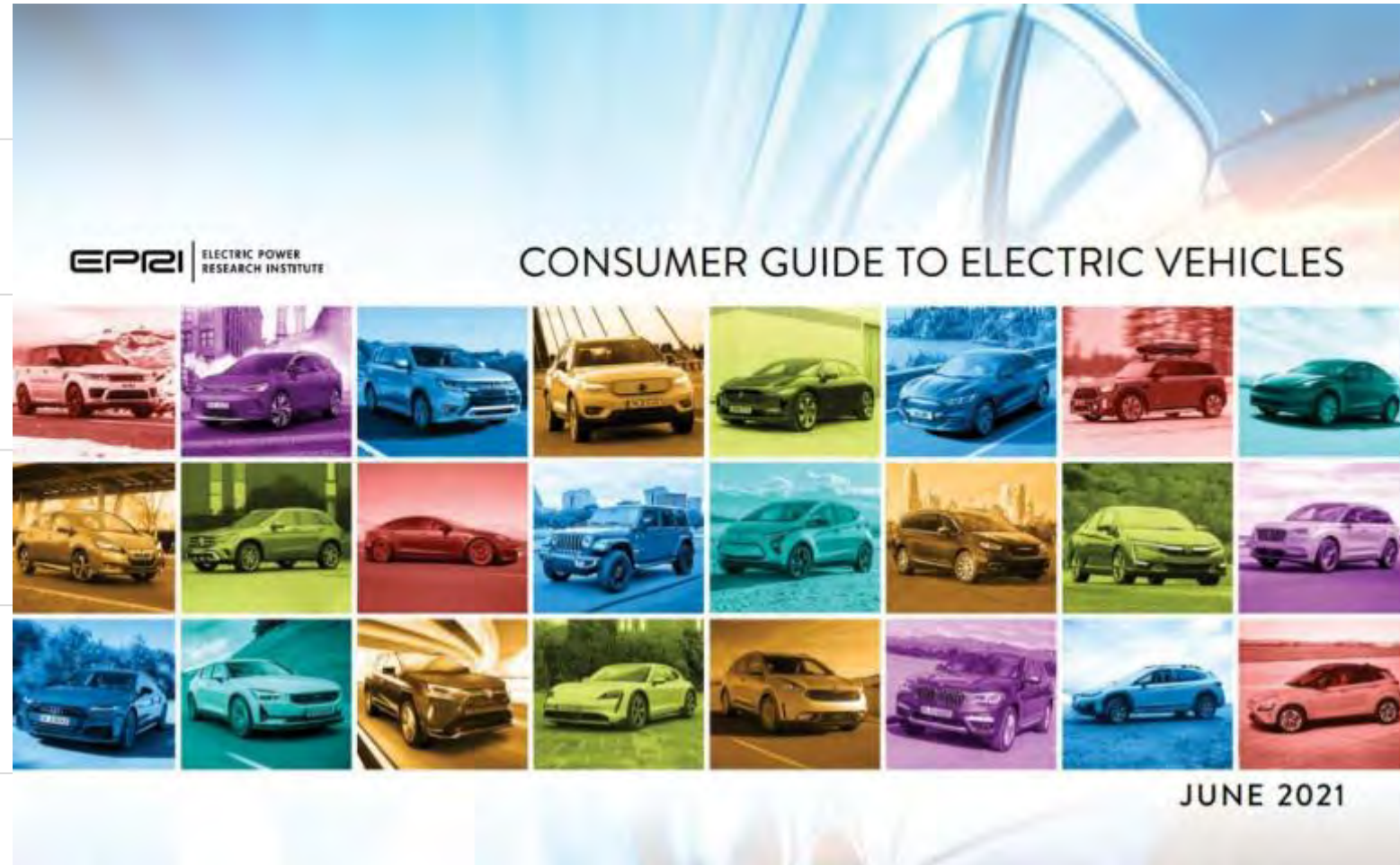




# 2021 EV Market Highlights

EV sales increase exceeded overall automotive market

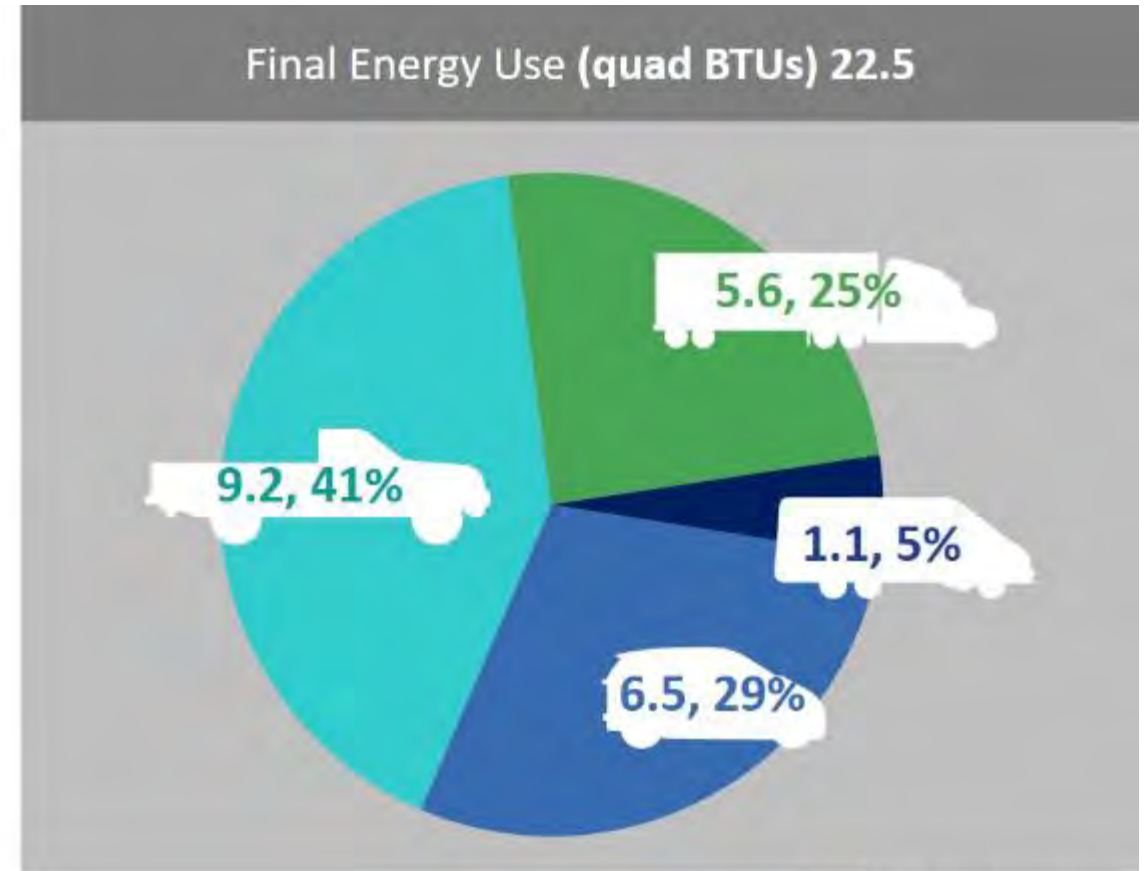
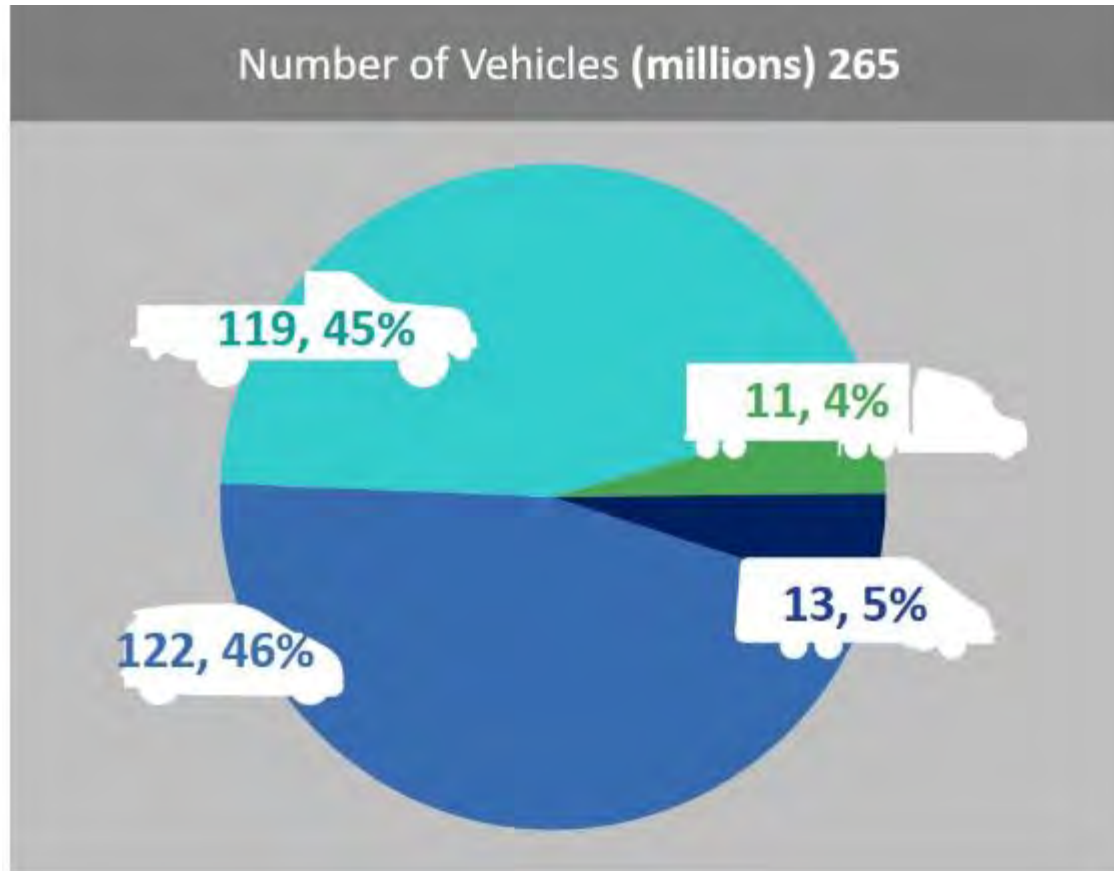
- 1 EV goals increasing
- 2 Electric pickups coming
- 3 Electrifying fleets
- 4 Customer experience
- 5 Hype versus reality
- 6 Major federal ET push





# EVs are a huge opportunity for new load and customer interaction

What segment of transportation uses the most energy and pollutes the most?



Source: 2015 US highway transportation data

- SUV and Pickup Trucks
- Passenger Cars
- Heavy and Medium Freight
- Others (light commercial/school/transit)

# Lessons learned from the past two decades of EVs

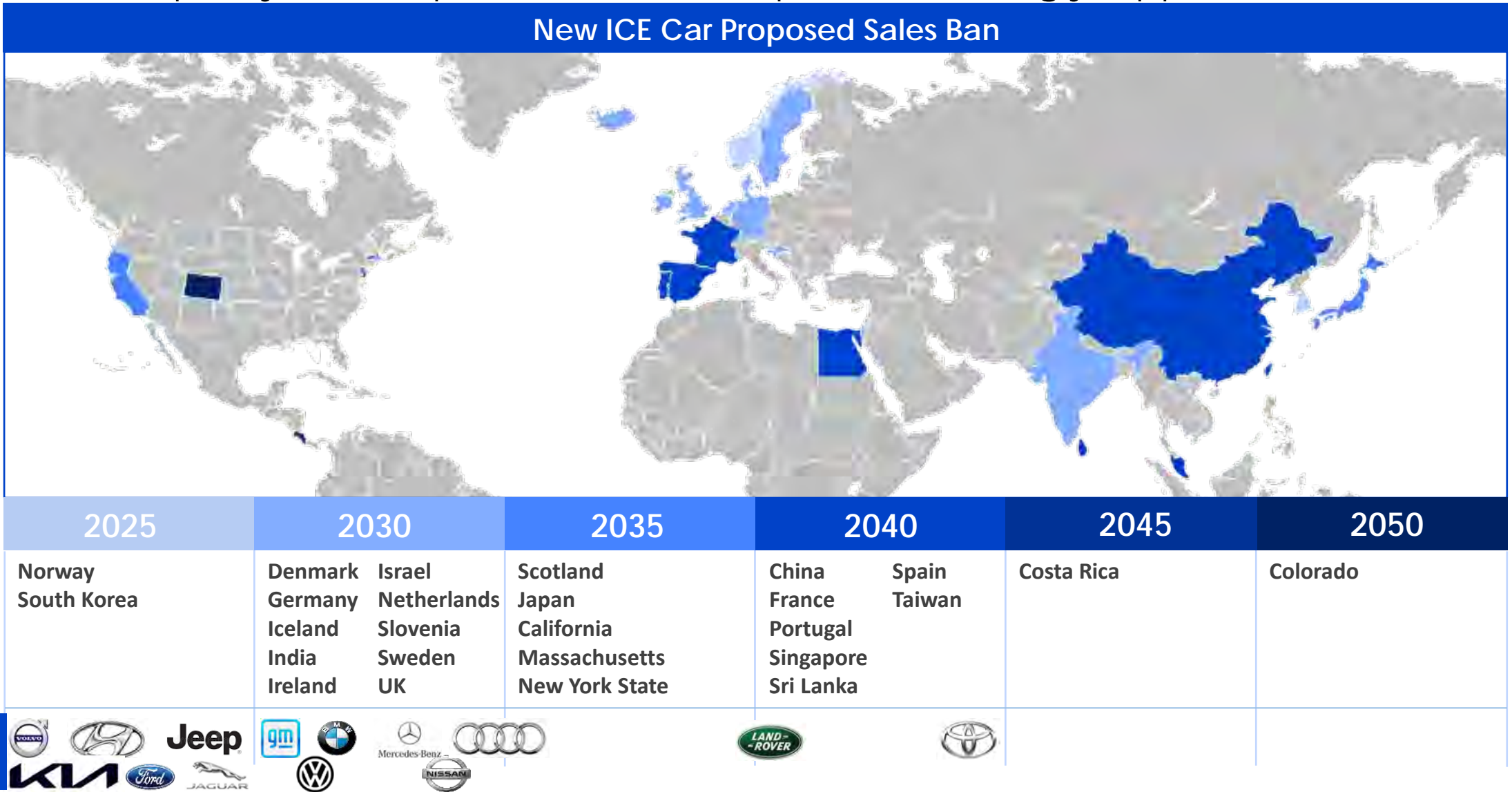
## EVs and charging

- ✓ EV technology improvements
- ✓ Decreased battery costs
- ✓ Impact of policy and incentives
- ✓ Importance of customer choice
- ✓ Compelling emotional reasons to drive an EV
- ✓ Charging can be as easy as a 120V wall outlet
- ✓ Grid impact is minimal, but further work is required



# Global trends today

Government policy and corporate EV business plans increasingly support EVs

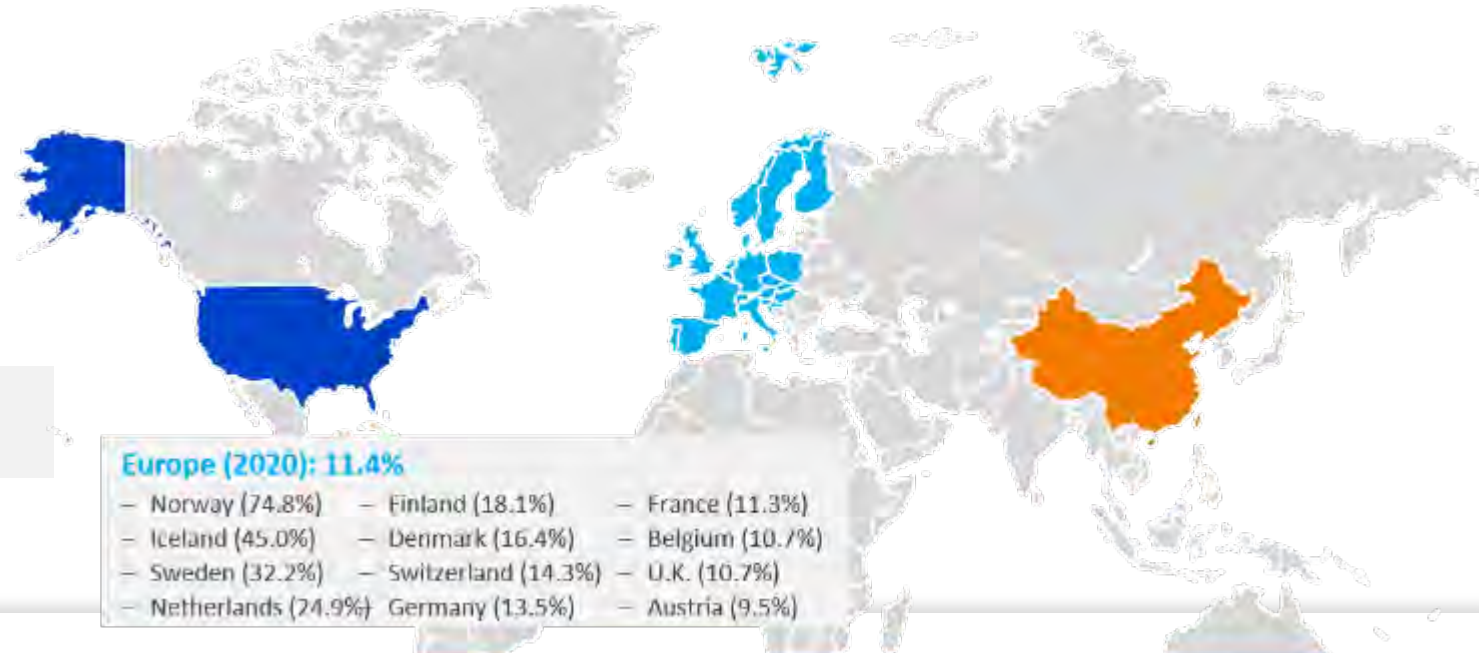


Source: EPRI research; <https://www.caranddriver.com/news/g35562831/ev-plans-automakers-timeline/>

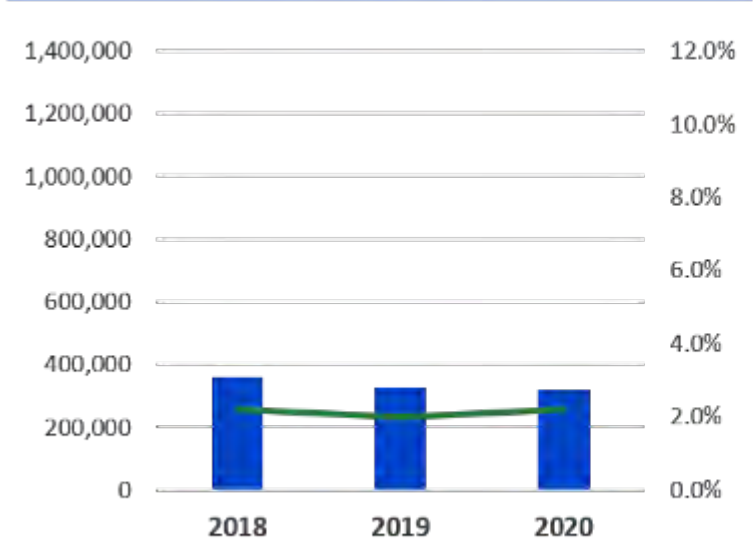


# Electric transportation is a global market

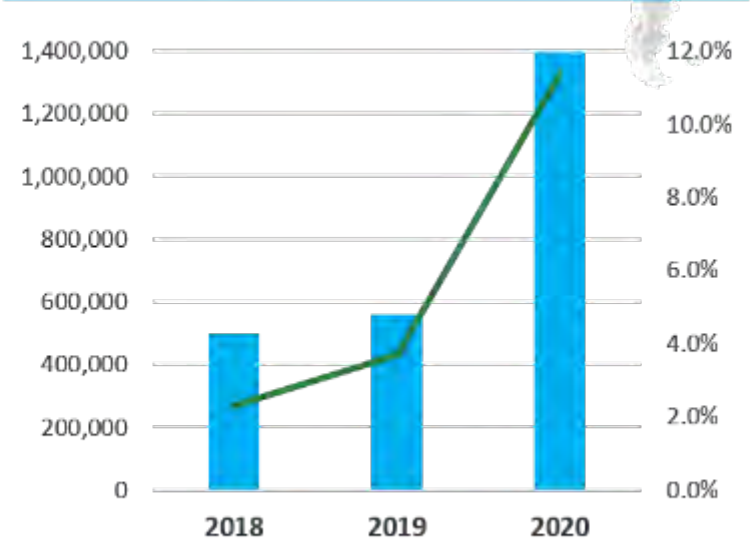
Despite global pandemic, EV sales grew especially where supported by strong policy and EV supply



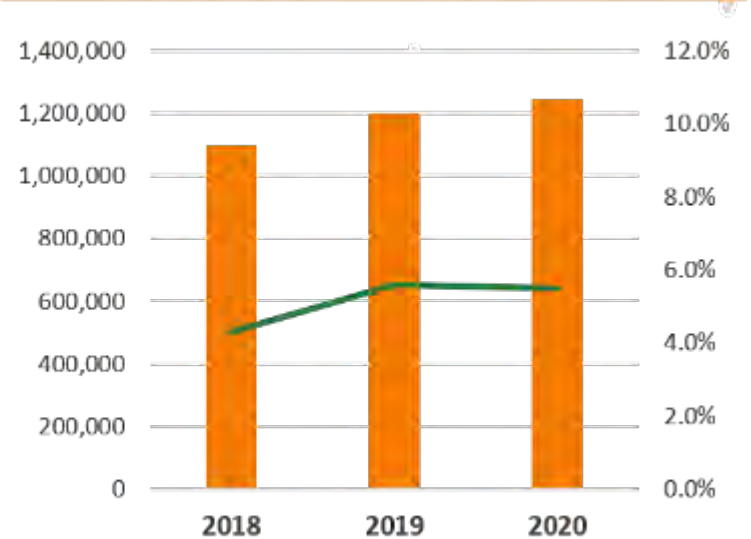
**US EV Sales 2018–2020**



**Europe EV Sales 2018–2020**



**China EV Sales 2018–2020**



Source: EPRI analysis, February 2021; <https://cleantechnica.com/2021/02/08/global-plugin-vehicle-sales-up-43-in-2020-european-sales-up-137/>; <https://insideevs.com/news/489169/european-countries-plugin-market-share-q1q4-2020/>; <https://www.spglobal.com/platts/en/market-insights/latest-news/metals/121720-chinas-ev-sales-to-reach-more-than-13-mil-units-in-2020-caam>; <http://www.ev-volumes.com/>

# But purchasing decisions are made locally

Adoption — What does it take for a customer to buy an EV?



**Automotive OEMs**



**Car Dealers**



**Customers**

- Does it meet my needs?
- Do I like it?
- Can I afford it today?
- How do I fuel it?

Photo credit: Dan Bowermaster, EPRI

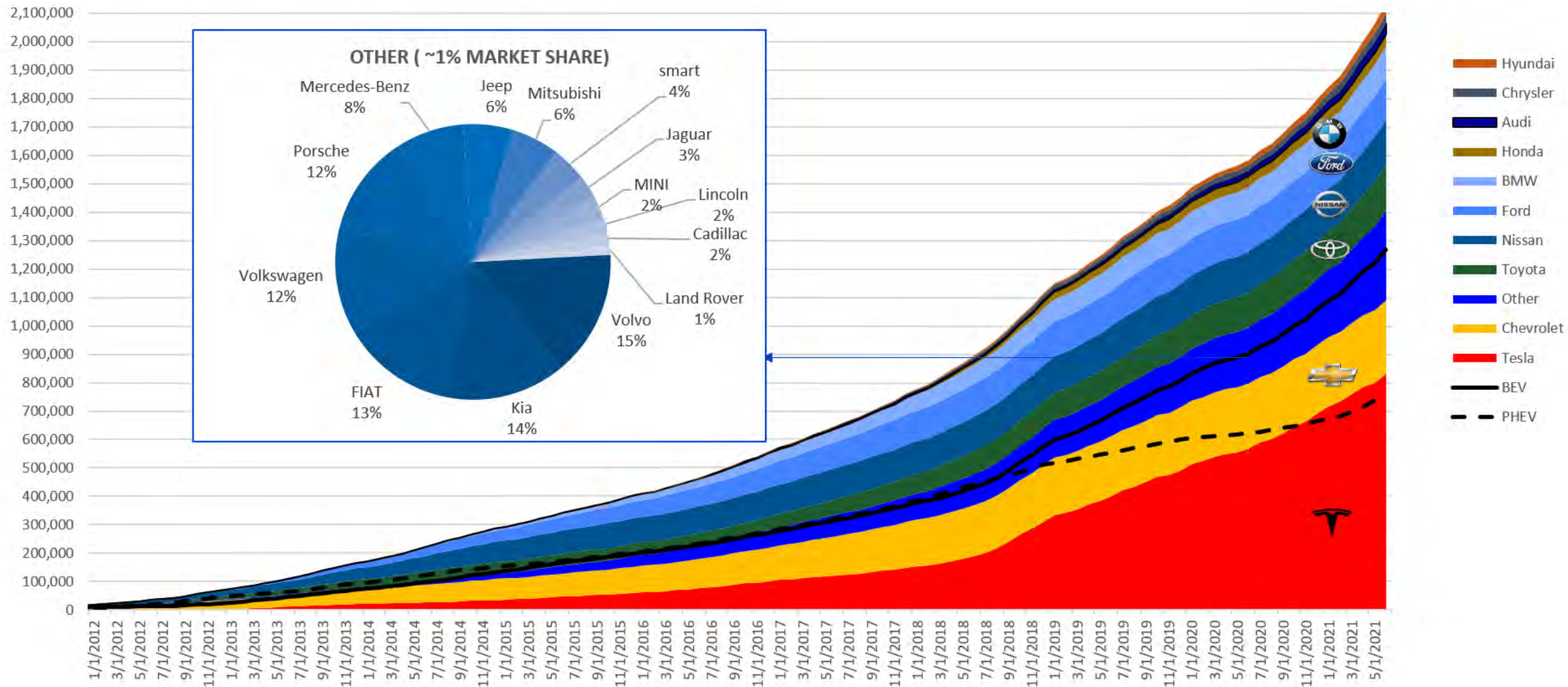


**Wild Card**

Impact of COVID 19 and supply issues

# Over 2.1M EVs have been sold since December 2010

U.S. EV sales through June 2021



This is ~5.25 TWh of largely moveable, new load

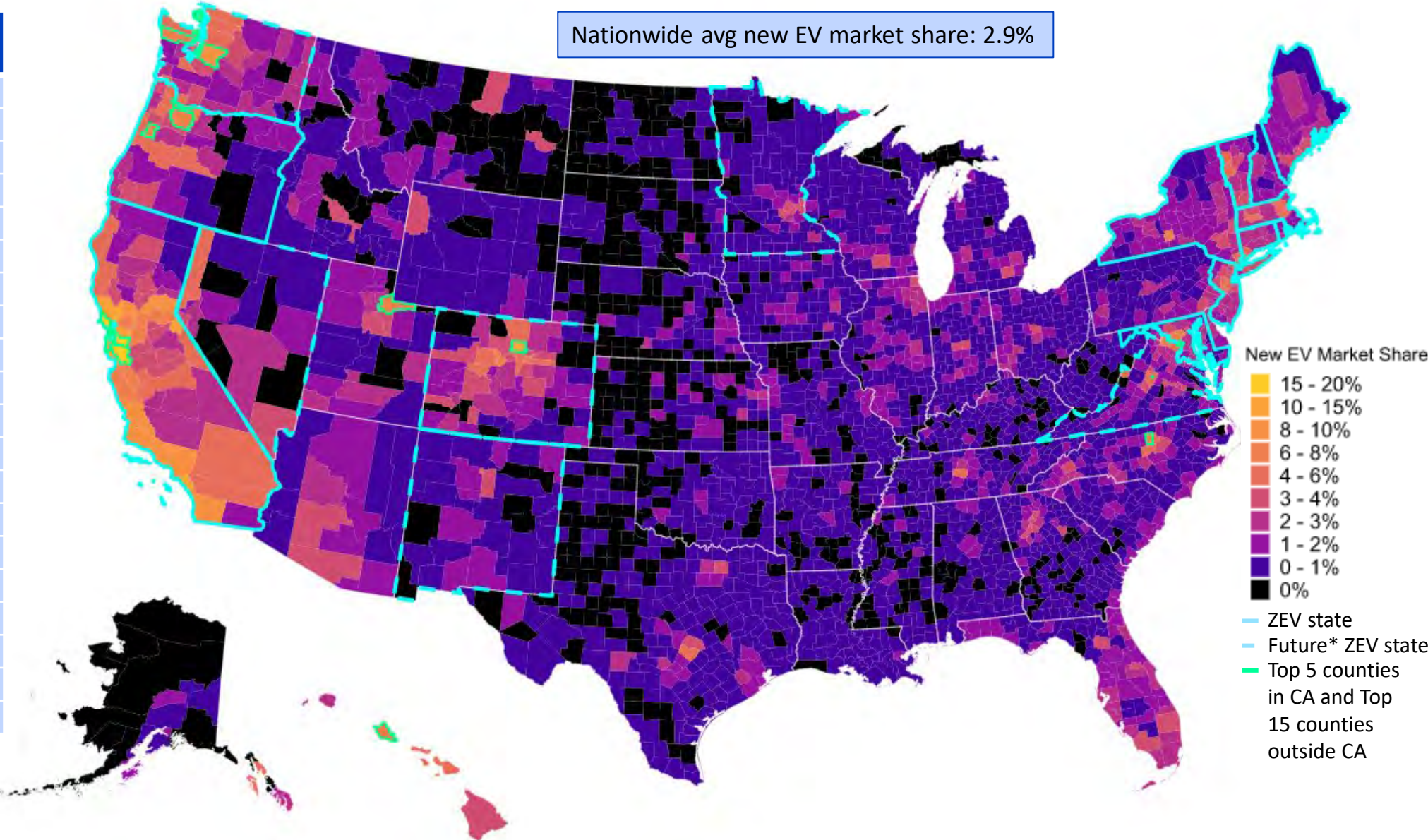
Source: EPRI analysis of IHS data, August 2021



# US Nationwide New EV Market Share July 2020 – June 2021

Top 5 counties in CA and Top 15 counties outside CA	
Santa Clara, CA	19.5%
Marin, CA	19.2%
San Francisco, CA	17.3%
Alameda, CA	15.8%
San Mateo, CA	13.5%
Boulder, CO	11.8%
San Juan, WA	11%
King, WA	8.9%
Jefferson, WA	8%
Benton, OR	7.8%
Summit, UT	7.8%
Multnomah, OR	7.7%
Washington, DC	7.3%
Falls Church City, VA	7.3%
Orange, NC	7.2%
Broomfield, CO	7.1%
Honolulu, HI	7.1%
Arlington, VA	6.8%
Clackamas, OR	6.7%
Charlottesville City, VA	6.4%

Nationwide avg new EV market share: 2.9%



\*CO will become a ZEV states in 2022. WA and MN will become ZEV states in 2024. NM, NV, and VA have announced that they intend to become ZEV states in the future.



# U.S. EV launches (at dealers) and what's expected for 2021

- Here at dealers now:

- Ford Mach-E BEV, VW ID.4 BEV, Jeep Wrangler 4xe, Volvo XC40 Recharge BEV, Polestar 2 BEV



- Coming in 2021 to a dealer near you:

- Ford Escape, Lincoln Corsair Grand Touring, Rivian R1T, Rivian R1S, Audi Q4 etron, Audi Q4 Sportback, Hyundai Ioniq 5, Kia EV6, GMC Hummer EV, Ford eTransit, Kia Sorrento PHEV, Hyundai Santa Fe PHEV, Jeep Grand Cherokee 4xe

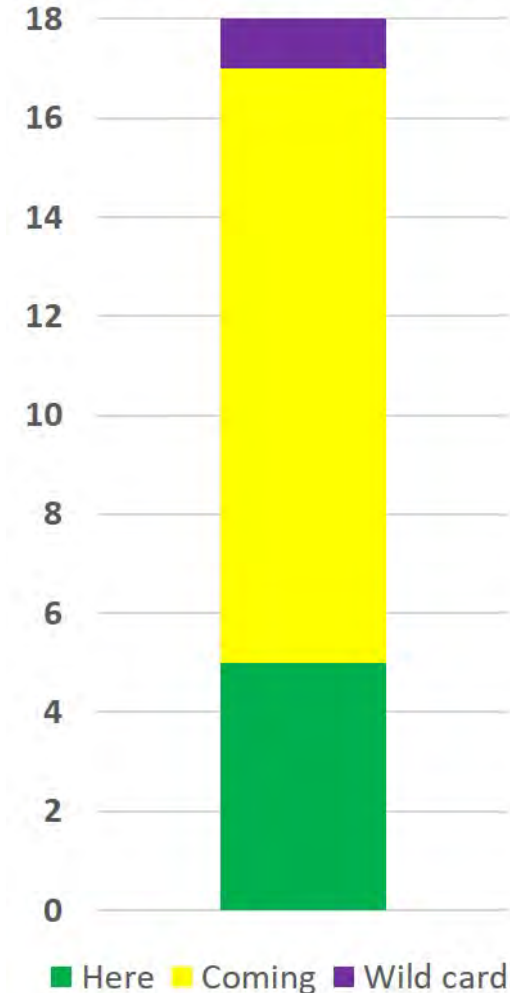


- Delayed until 2022

- Nissan Ariya



2021 U.S. EV Launches





# Trend: bigger EVs

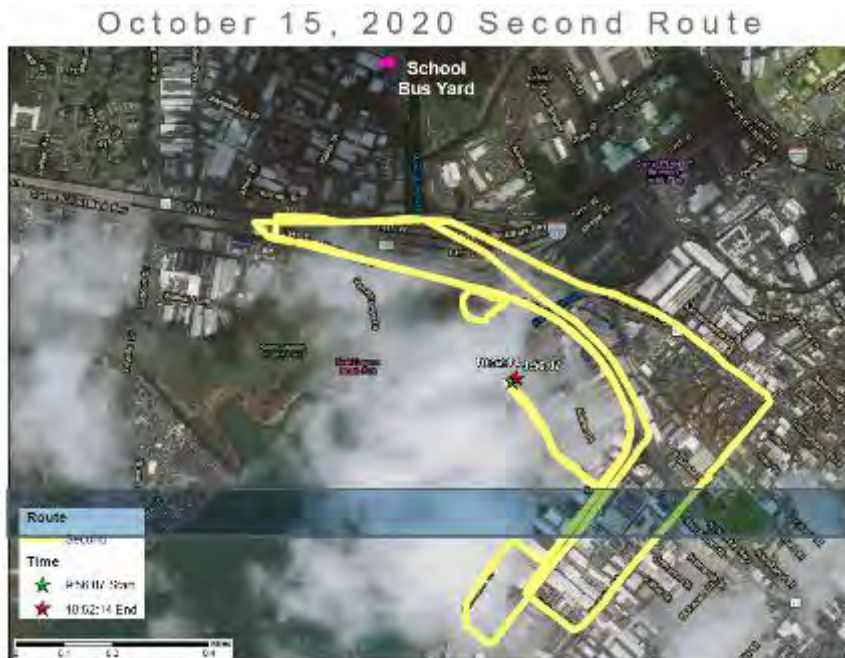


Photo credits: Mark Kosowski, Dan Bowermaster



# Electric School Buses being deployed across the U.S.

- Successfully demonstrated in Massachusetts, Minnesota, Virginia, California, etc.
- Federal EPA offering [\\$7M in grants to school districts](#)
- Can charge at 240V AC
- Hawaii example:

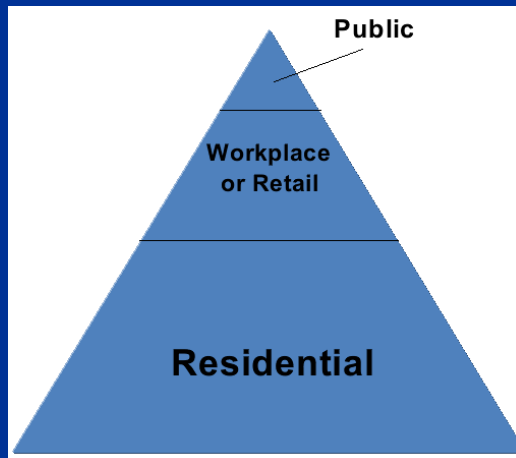


# How can data help support electrified transportation?

....when fully electrified, electric transportation will demand 25% of all energy needed in the USA

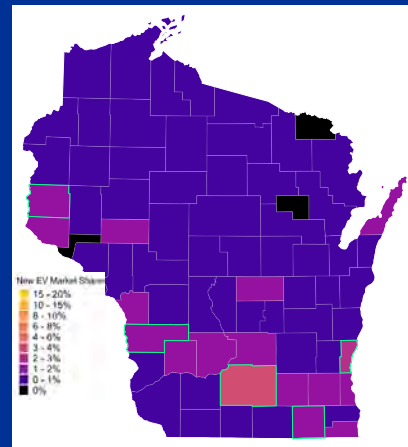
## Vehicle Behavior

- Miles driven
- Charging locations (H,W,P)
- Charging power
- Timing
- Coincident charging



## Adoption Patterns

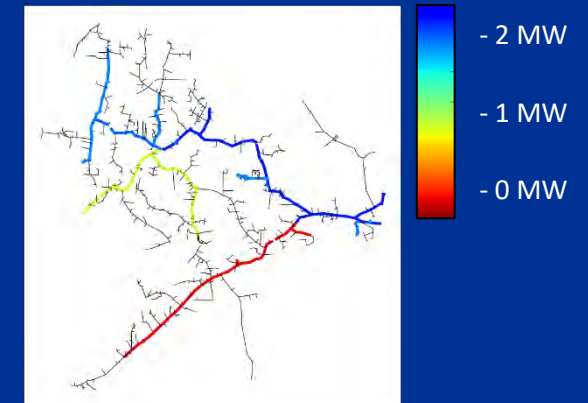
- Regional differences
- Demographic differences
- Reactions to incentives/actions



Wisconsin example

## Grid Capacity

- What is the grid capacity (local/distribution)
- What is the current load?
- How does this vary with climate variations and technology shifts?



# What are utilities doing today to support?



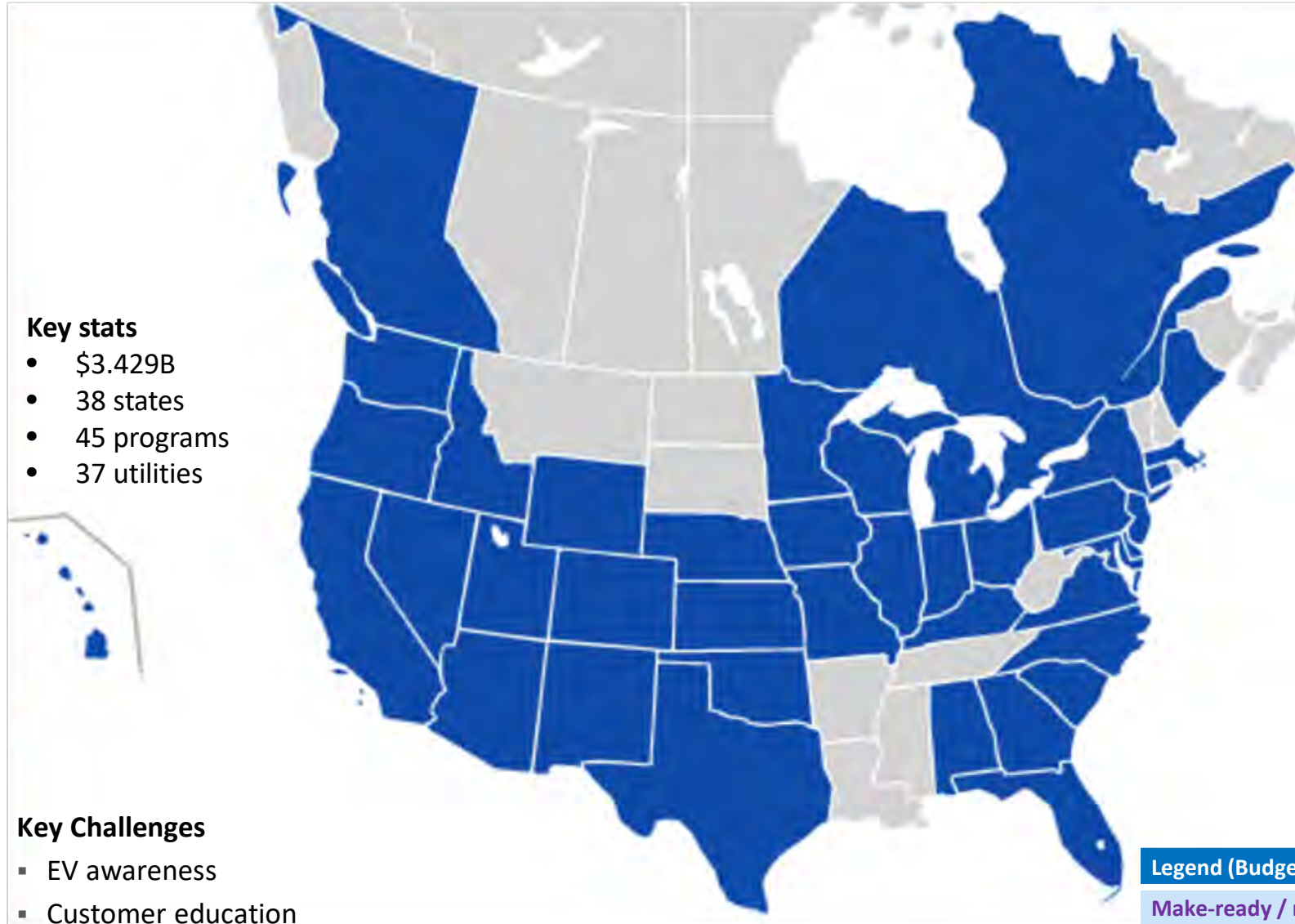
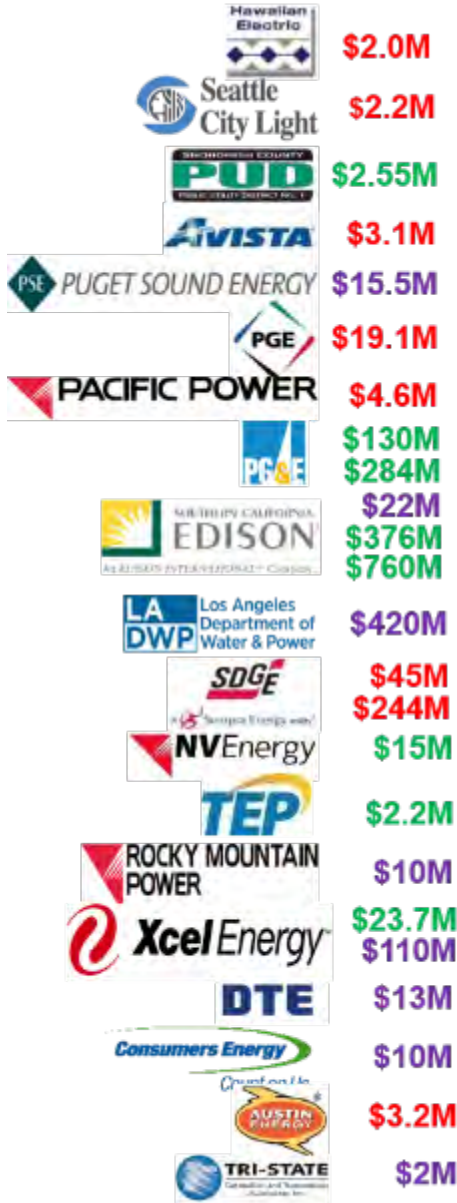
1. Staffing up Electric Transportation teams
2. Reviewing service planning processes for residential and fleet customers
3. Reviewing EV rate options for residential and fleet customers
4. Ensuring forecasted ET load is incorporated into:
  - Short- and long-term procurement
  - Distribution planning
  - Transmission planning
5. Reviewing the cost allocation for grid upgrades for ET fleets
6. Evaluating role in supporting or providing charging infrastructure



Utilities play a key role in helping the EV market grow



# North American utilities proposing ~\$3.4B in EV infrastructure



### Key stats

- \$3.429B
- 38 states
- 45 programs
- 37 utilities

### Key Challenges

- EV awareness
- Customer education
- Easy and reliable public charging infrastructure (to find, access, use, and pay)



Legend (Budget \$)	
Make-ready / rebate	\$0.4M
Utility-owned	\$8M
Hybrid	\$72M

Updated: 9/13/2021, Source: [North American Utility Electric Transportation Charging Infrastructure: Program Overview, EPRI, March 2021](#); individual utility interviews

# Conclusion: where is the EV market in the U.S.?

## Facts and challenges



- EV ownership is rising in almost every region of the U.S., even states with cold/snowy winters
- Medium-duty and heavy-duty electrification is still at the very early stage, but has the potential to increase quickly.



- Reports on demonstration and pilots lag currently available generation of EVs
- Gasoline refueling has 100+ years; EV charging has 10 years
- EV charging has minimal to no



- grid impact, but service can be lengthy and expensive
- Smart charging and V2G is being pushed by grid outages (V2H), but awareness, commercialization, codes and standards, and the market all lag

EVs face a variety of solvable challenges while the market continues to grow



A blue-tinted photograph of four people standing in a row. From left to right: a woman with curly hair and glasses wearing a white lab coat with 'EPRi' on the pocket; a man with glasses wearing a white lab coat with 'EPRi' on the chest; a woman wearing a white hard hat and a dark polo shirt with 'EPRi' on the chest; and a man with glasses and a beard wearing a light blue button-down shirt. They are all smiling and looking towards the right. The background is a solid blue color.

Together...Shaping the Future of Energy™

# Electric pickup trucks soon to be an option for customers

Update: Rivian receives EPA range; Tesla Cybertruck delayed to 2023

2021 (range in miles)	2022 (range in miles)	2023 (range in miles)	2024 (range in miles)
Rivian R1T (314)	Ford F-150 Lightning (300*)	Chevrolet Silverado EV (300*)	Ram 1500 Electric (500*)
GMC Hummer EV (300*)		Tesla Cybertruck (250*-500*)	



150K+ reservations



\* = estimated

Photos: Dan Bowermaster, EPRI; <https://media.gm.com/media/us/en/gm/photos.html>; <https://media.ford.com/content/fordmedia/fna/us/en/products/evs/all-electric-f-150-lightning/all-electric-f-150-lightning.html>

# Hot Topic: Vehicle-Grid Integration

## V2H Issues To Be Considered

In case of outage how will you sectionalize & transfer power from vehicle?

- Tie-in with home energy management systems
- Use in multi-family dwelling situations



Outage/Restoration Sensing



Need for Additional Controls or Interlocks on Vehicle



CHAdeMO vs. Combo



Power Quality



Duty Cycle Issues for Vehicle Systems

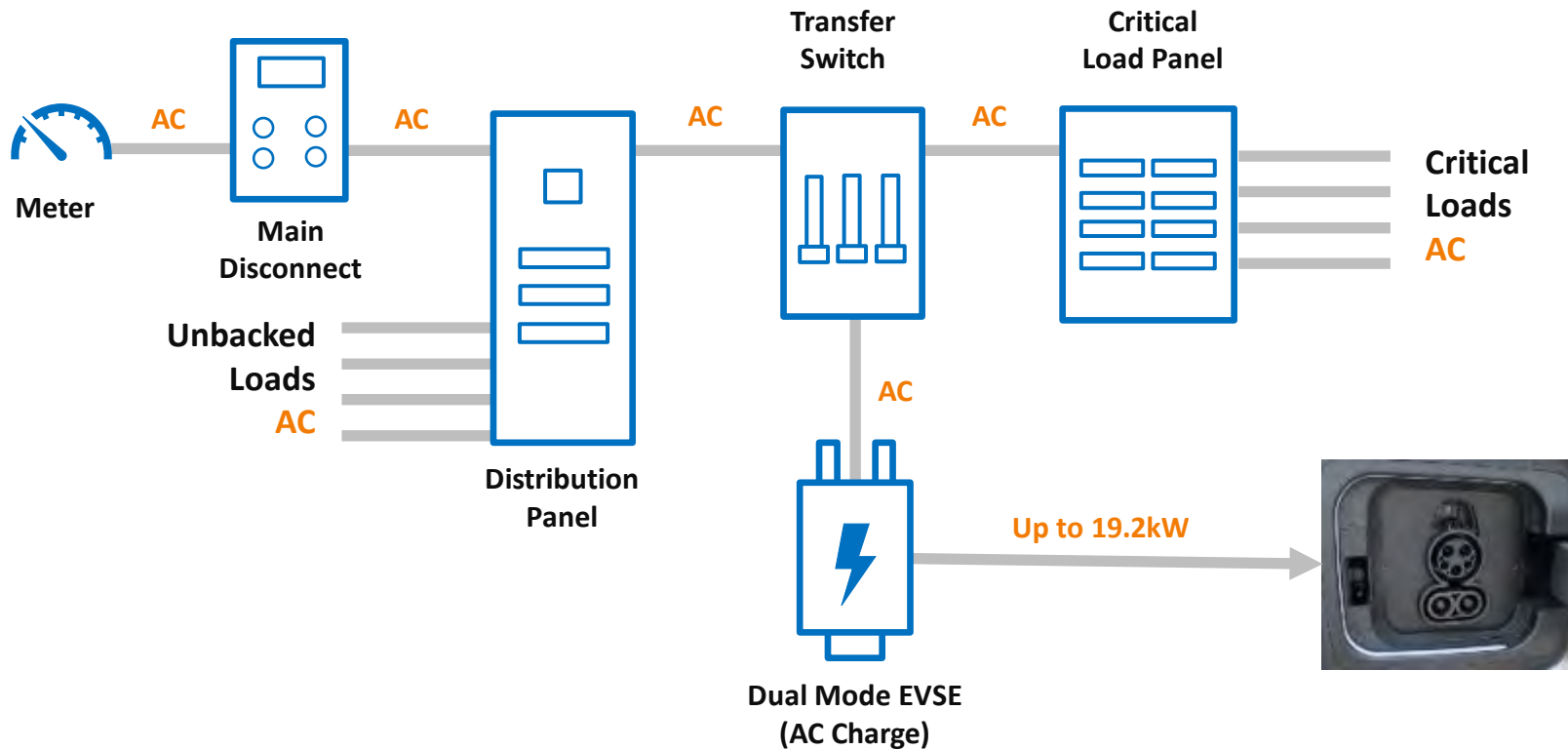


Electric safety (NEC Article 702) for standby generators



# Insight From Ford for V2H

The grid charges the F-150 Lightning at up to 19.2 kW AC

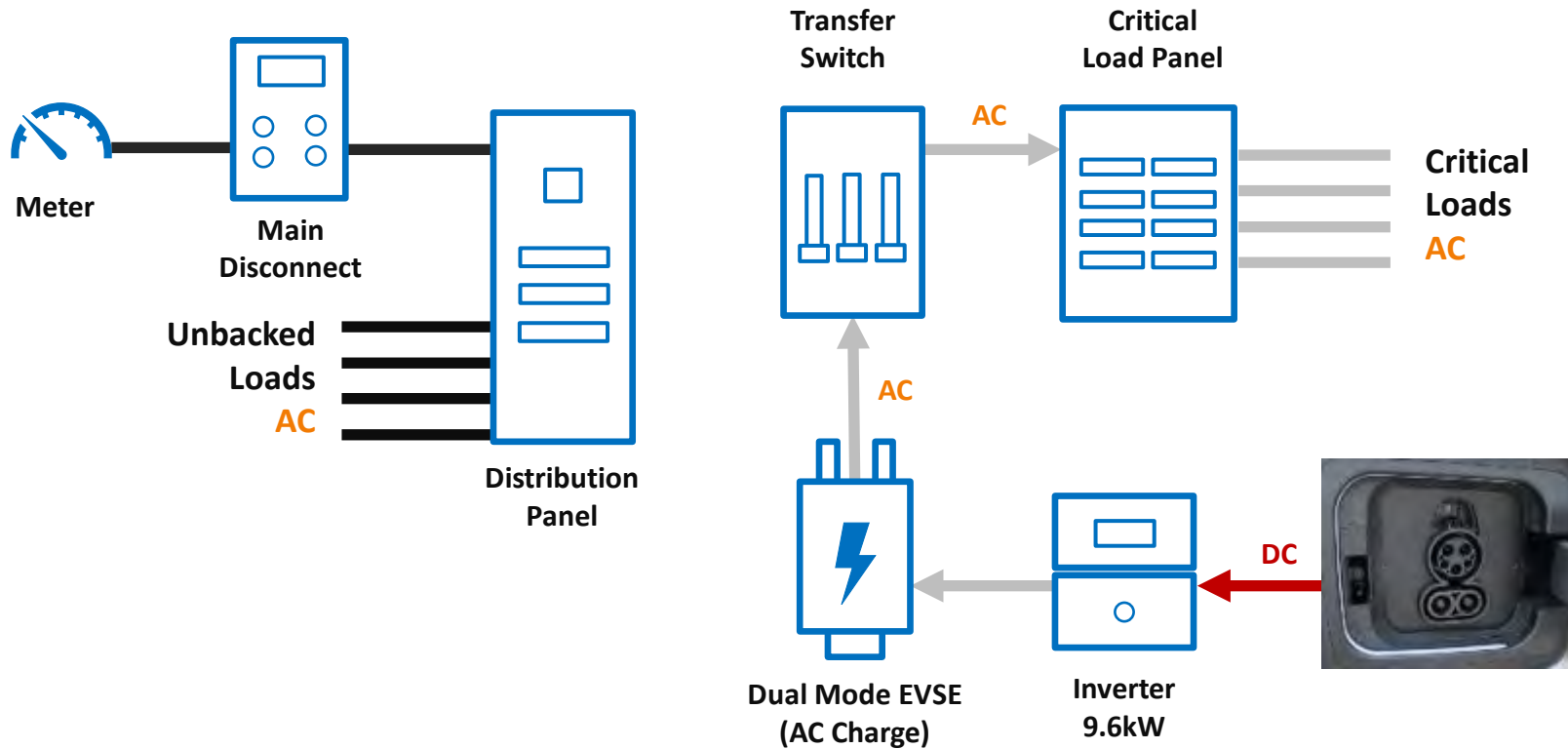


Photos: [Ford.com \(media\)](https://www.ford.com/media), accessed 7/15/2021



# Insight From Ford for V2H

F-150 Lightning exports up to 9.6 kW DC to house



Photos: [Ford.com \(media\)](https://www.ford.com), accessed 7/15/2021