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FRESNO COUNCIL OF GOVERNMENTS **ELECTRIC** **VEHICLE** **PLAN**

WORKING GROUP MEETING
10.08.19

AGENDA

- 01** Introductions
- 02** Project Overview
- 03** RFI Process
- 04** Project Schedule
- 05** Stakeholder Roles
- 06** Public Engagement Efforts
- 07** Fleet Electrification
- 08** Next Steps



CONSULTING TEAM

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PROJECT NEED & OBJECTIVES

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- The Electric Vehicle Readiness Plan will:
 - Guide FCOG in reducing transportation-related greenhouse gas emissions to help meet state reduction targets
 - Conduct outreach with EV infrastructure providers, transit agencies, existing EV users, and the general public to determine need and location of chargers
 - Conduct assessment of existing EV charging programs and program funding goals
 - Conduct a gap assessment to identify deficiency in charging network for publicly accessible units
 - Recommend site locations to fill gaps of existing and planned charging network along with identified potential funding
 - Support greater use of PEVs in the region

PROJECT CHALLENGES

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- Fresno County is the second largest county in the San Joaquin Valley and the fifth largest in the state of California
- Fresno County contains four of the top ten disadvantaged communities in the State of California
- Deficiencies in public and transit electric vehicle charging infrastructure networks disproportionately impact disadvantaged communities



PROJECT OVERVIEW

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Develop an Electric Vehicle Readiness Plan for FCOG to meet anticipated growth and need for PEV infrastructure by:

1. Coordinating implementation and siting of PEV charging infrastructure for public use
2. Identifying PEV related best practices for FCOG member agencies, government entities, private businesses
3. Addressing region-specific challenges

RFI PROCESS: TYPE OF DATA BY ORGANIZATION



Utility

- EV adoption by location
- Charging infrastructure
- Feeder and substation spare capacity
- Electricity consumption by premise
- GIS shapefiles for feeders and substations



Transit Authority

- Vehicle fleet information
- Traffic and transportation
- Future EV and infrastructure plans
- EV charging infrastructure



Local Government

- EV charging infrastructure
- Electrical supply / EV ordinances
- EV incentives
- Energy storage and PV
- GIS parcel data

All needed data received

Some data received

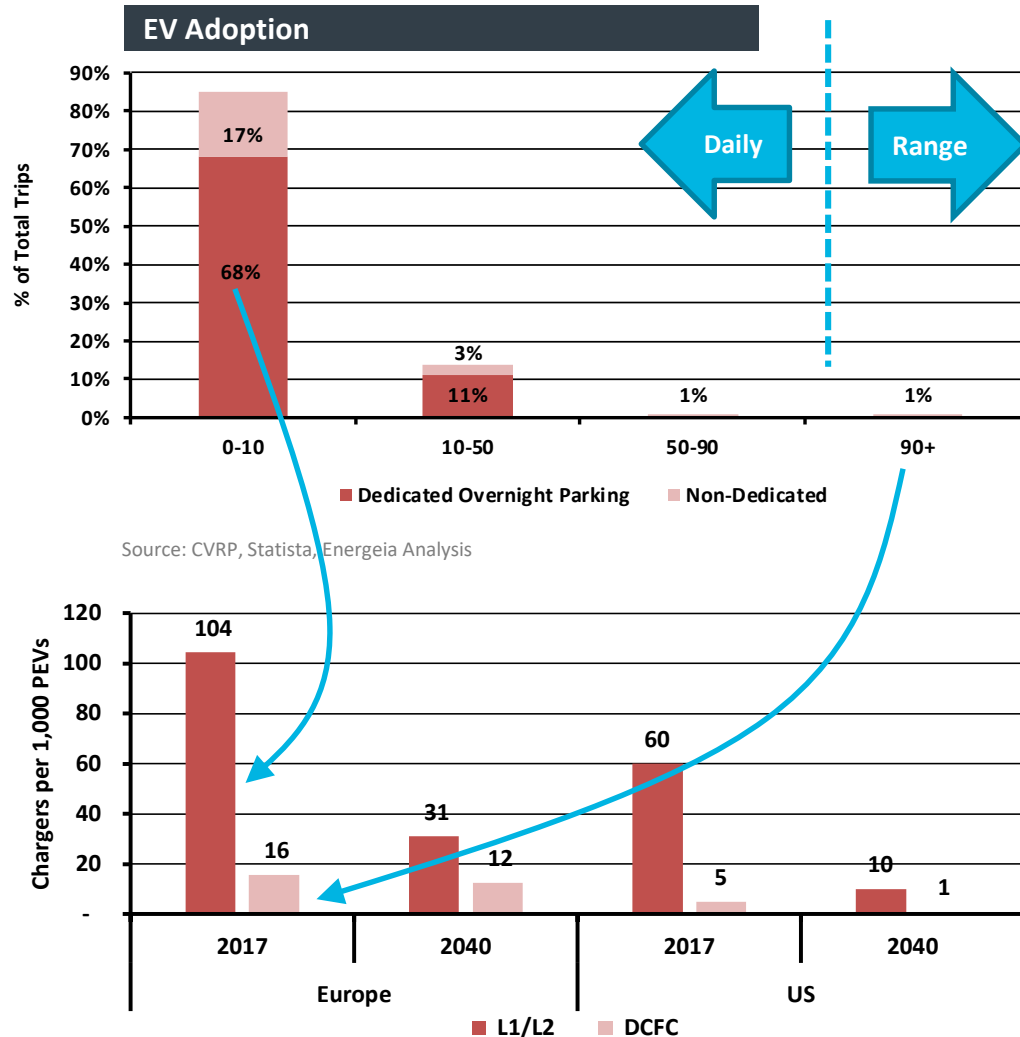
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RFI STATUS AND KEY PRIORITIES

1 Vehicles
1.1 Table of transit fleet vehicles by type, fuel, age, organization, dept., location, annual miles
1.2 Current EV purchase plans by organization
1.3 Transportation miles per year by vehicle type by premise or area (via survey?)
1.4 Number of vehicles by premise or area (via survey?)
1.5 Avg. vehicle miles travelled by premise or area (via Survey?)
1.6 Number of EVs by premise or area (via PG&E or survey?)
1.7 Interest in purchasing an EV by parcel or area (via survey?)
2 Charging Infrastructure
2.1 Table of EV Chargers by Type, Location, Vendor, Installation Date, Organization and Dept. (PG&E?)
2.2 Current charging infrastructure plans by organization (including non-governmental)
3 Buildings
3.1 Relevant residential and commercial building ordinances covering parking, electrical supply for new construction
3.2 Table of owned buildings (esp. parking lots) by Type, Location, Organization, Dept. Annual Energy Usage by Fuel
3.3 Current solar PV, storage or charging plans by building (for FCOG governments)
3.4 Tax assessor data by premise, esp. building type and sub-type, land and building valuation
3.5 Rent vs. own by premise or area (via survey?)
3.6 Single family vs. multi-family premises by premise or area (via survey?)
4 Electrical Infrastructure
4.1 Table of medium voltage feeders and substations, including current and forecast spare capacity by year
4.2 Annual electricity consumption by premise
5 Graphical Information System (GIS)
5.1 Shape files for all roads, premises, permitting requirements, and other common land uses (e.g. parks) in Fresno County
5.2 Shape files for all low voltage (LV) and medium (MV) feeders and substations in Fresno County
5.3 GIS layers for available social indicators within the boundary (i.e. crime, mobility access, income, etc.)
6 Other Infrastructure
6.1 Traffic by road by time of day (via survey?)
6.2 PV adoption by premise (via survey or PG&E?)
6.3 Storage adoption by premise (via survey or PG&E?)
7 EV Programs
7.1 Current EV incentive programs by Fresno County organization and department
7.2 Current plans for future EV incentive programs by Fresno Country organization and department

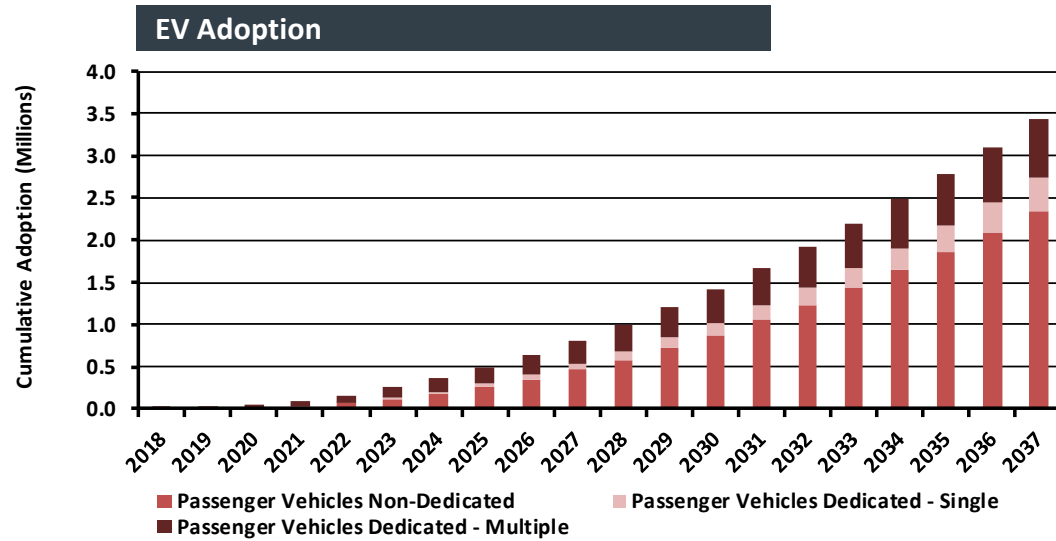
- Compiled information ‘wish-list’ into a single tool
- Sent the tool to all stakeholders for response
 - Yellow = Received
 - Green = Complete
 - Orange = Priority
- Incorporating available data into uptake and infrastructure optimization modelling
- Estimating any data gaps based on previous experience, substitute data or alternative estimation methods

ELECTRIC VEHICLE DRIVER SEGMENTATION METHODOLOGY

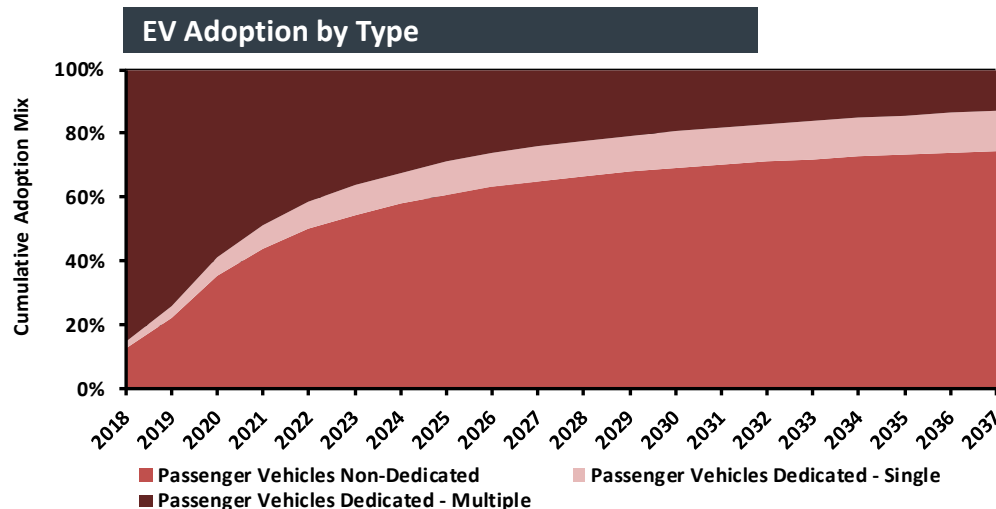


- Public infrastructure demand driven by EVs without dedicated overnight parking, and those travelling more than 90 miles
- <1% of trips are >90 miles, potentially requiring a recharge for range extension
- 20% of cars are parked on the street or elsewhere (non-dedicated parking)
- Data used to design public charging solutions (EU and US examples at left)

ELECTRIC VEHICLE UPTAKE MODELING



Source: CVRP, Statista, Energeia Analysis



Source: CVRP, Energeia Analysis

- An example of total EV adoption analysis by EV segment done by Energeia for another government agency
- Inputs are mostly our proprietary forecasts and some state-level characteristics
- Useful for determining system-level impacts, segmentation mix
- Can be made even more useful with tailored data, e.g. parcel/demographic data, EV uptake, vehicle fleet

ELECTRIC VEHICLE UPTAKE + SPATIAL DATA INPUTS- ILLUSTRATIVE

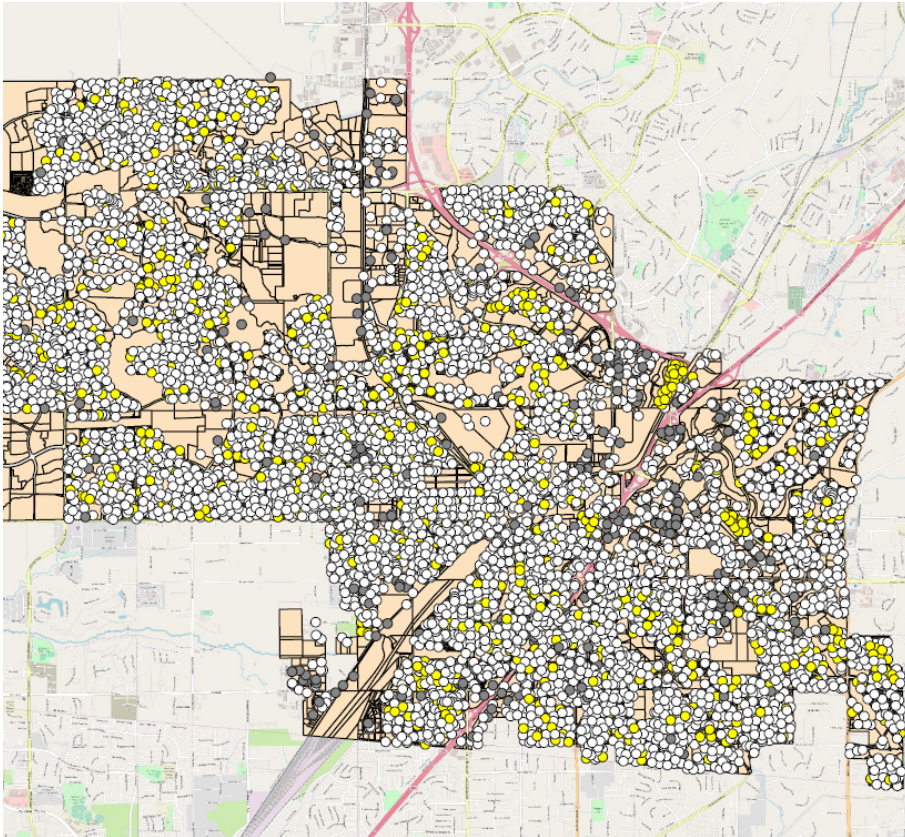
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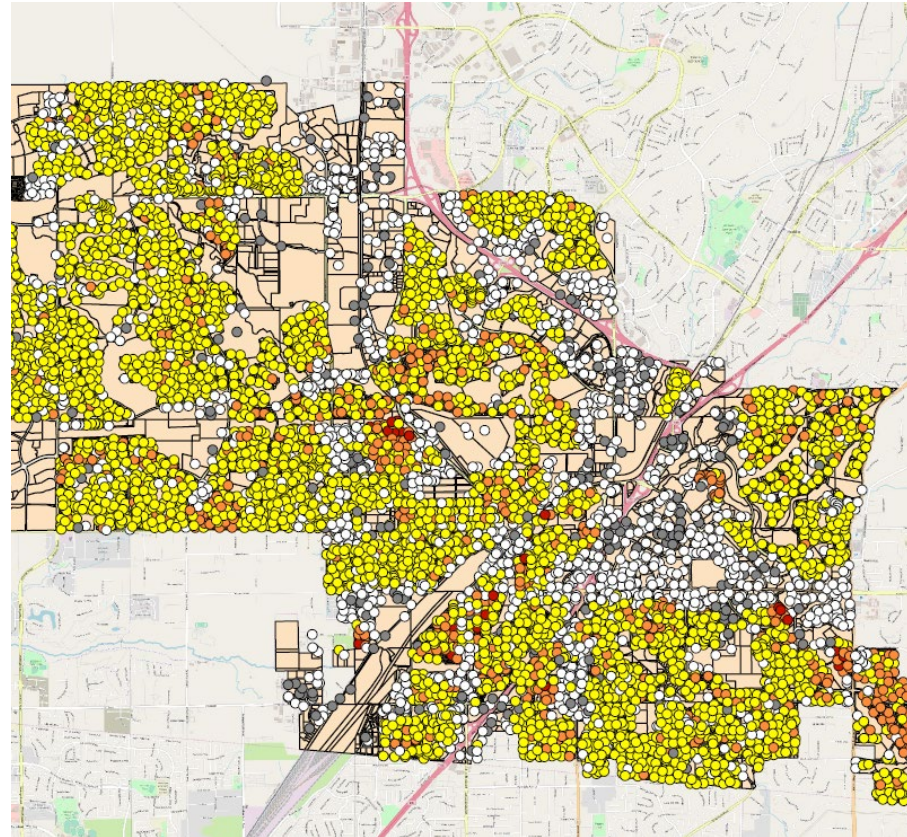
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EV Adoption (2017)



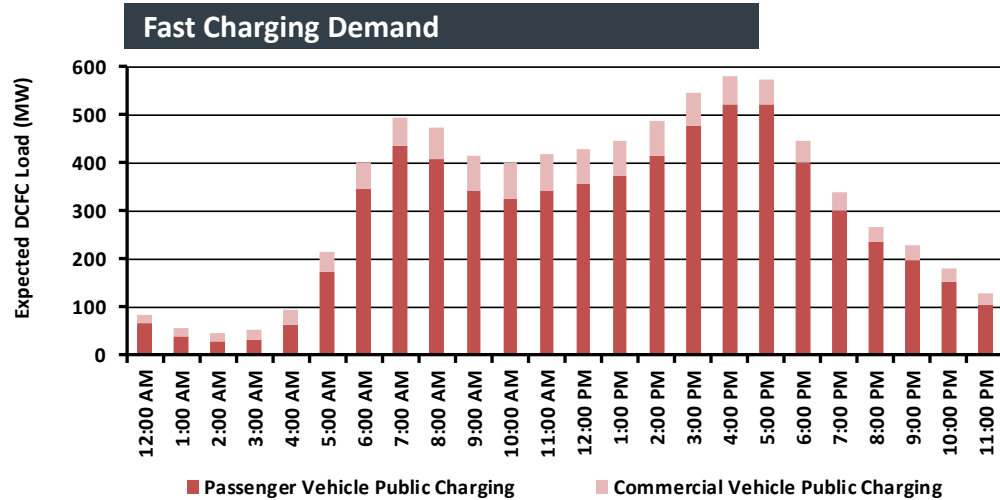
Source: Energeia Analysis

EV Adoption (2028)



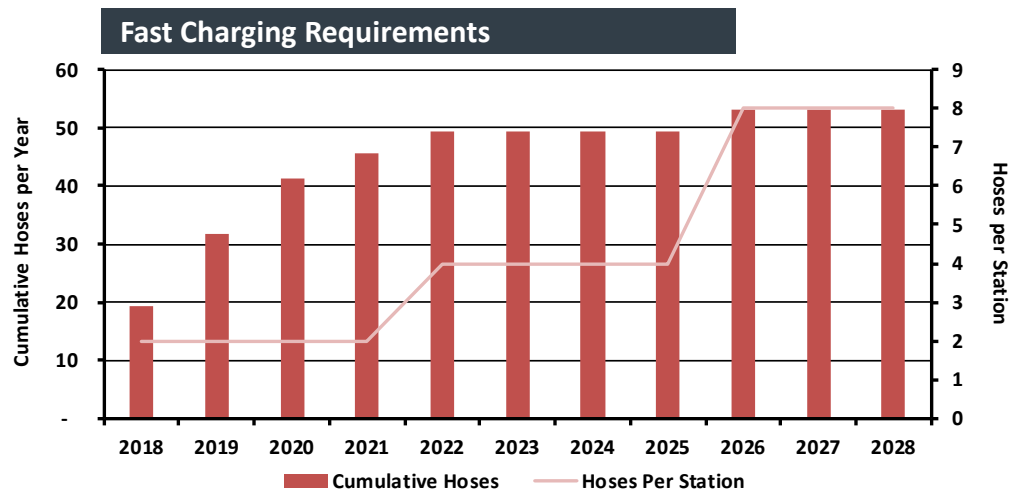
Source: Energeia Analysis

ELECTRIC VEHICLE PUBLIC CHARGING NEEDS - ILLUSTRATIVE



- Energeia will use forecasts of EV driver segmentation to develop public charging requirements by time of day
- Example of this type of modelling completed or another government agency shown at left

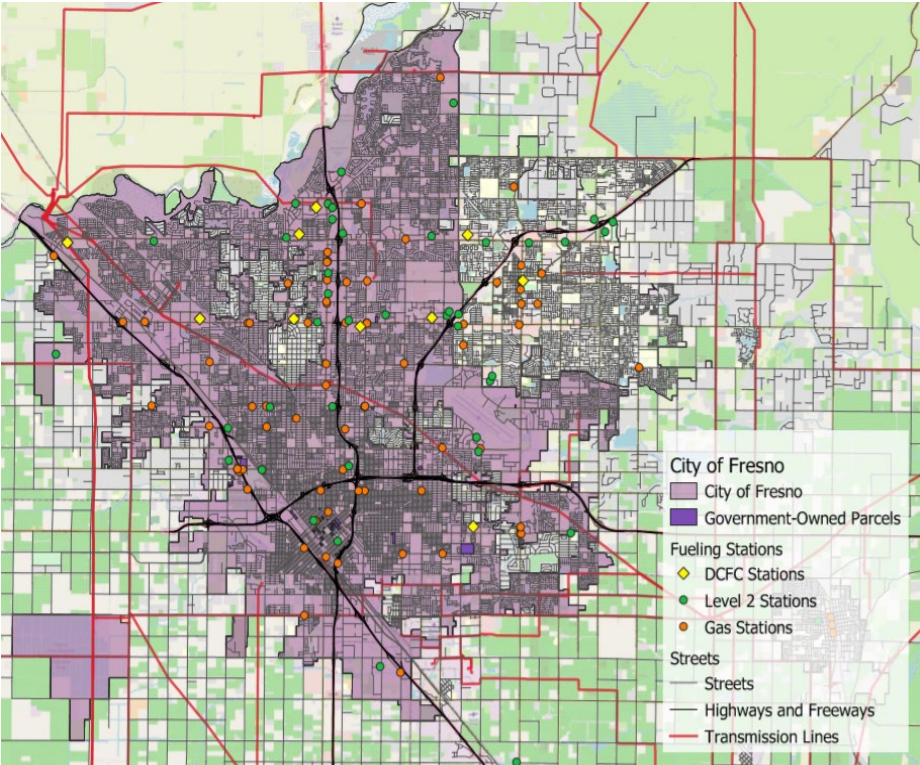
Source: CVRP, Statista, Energeia Analysis



- Data will be used to determine number of charging ports or hoses needed per year, and an estimate of stations needed
- The next step will be to determine the optimal locations for meeting these forecast needs at best value-for-money

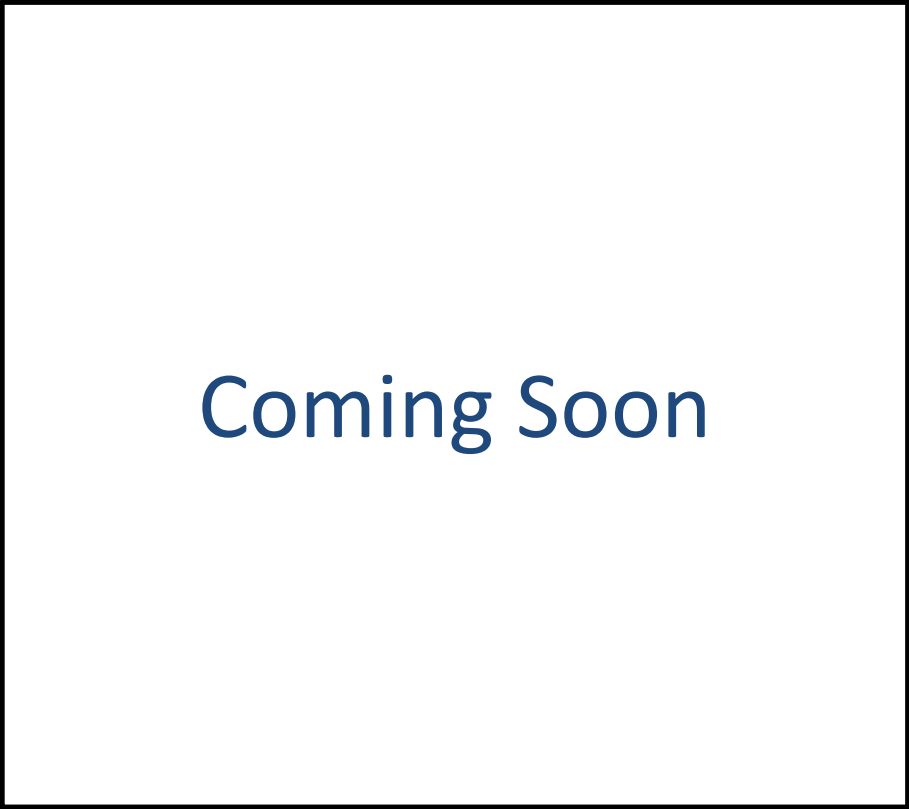
PUBLIC CHARGING INFRASTRUCTURE SOLUTION – PROJECT DELIVERABLE

Public Charging Infrastructure (2019)



Source: Energeia Analysis

Public Charging Infrastructure (2028)



Source: Energeia Analysis

SCHEDULE

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STAKEHOLDER ROLES

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Advise

Consult

Represent
Community

Inform
development
of EVRP

Review draft
deliverables

PUBLIC ENGAGEMENT EFFORTS

Working Groups

- Centered on involvement of the working group
- Feedback from property owners, local jurisdictions, and community stakeholders

Focus Groups

- Centered on both EV and non-EV drivers

One-on-One Meetings

- Stakeholders that include agencies and organizations currently funding and deploying EV charging within Fresno County

Meeting
Four (4) Working Group Meetings
Four (4) Focus Group Meetings
Eight (8) One-on-One Meetings

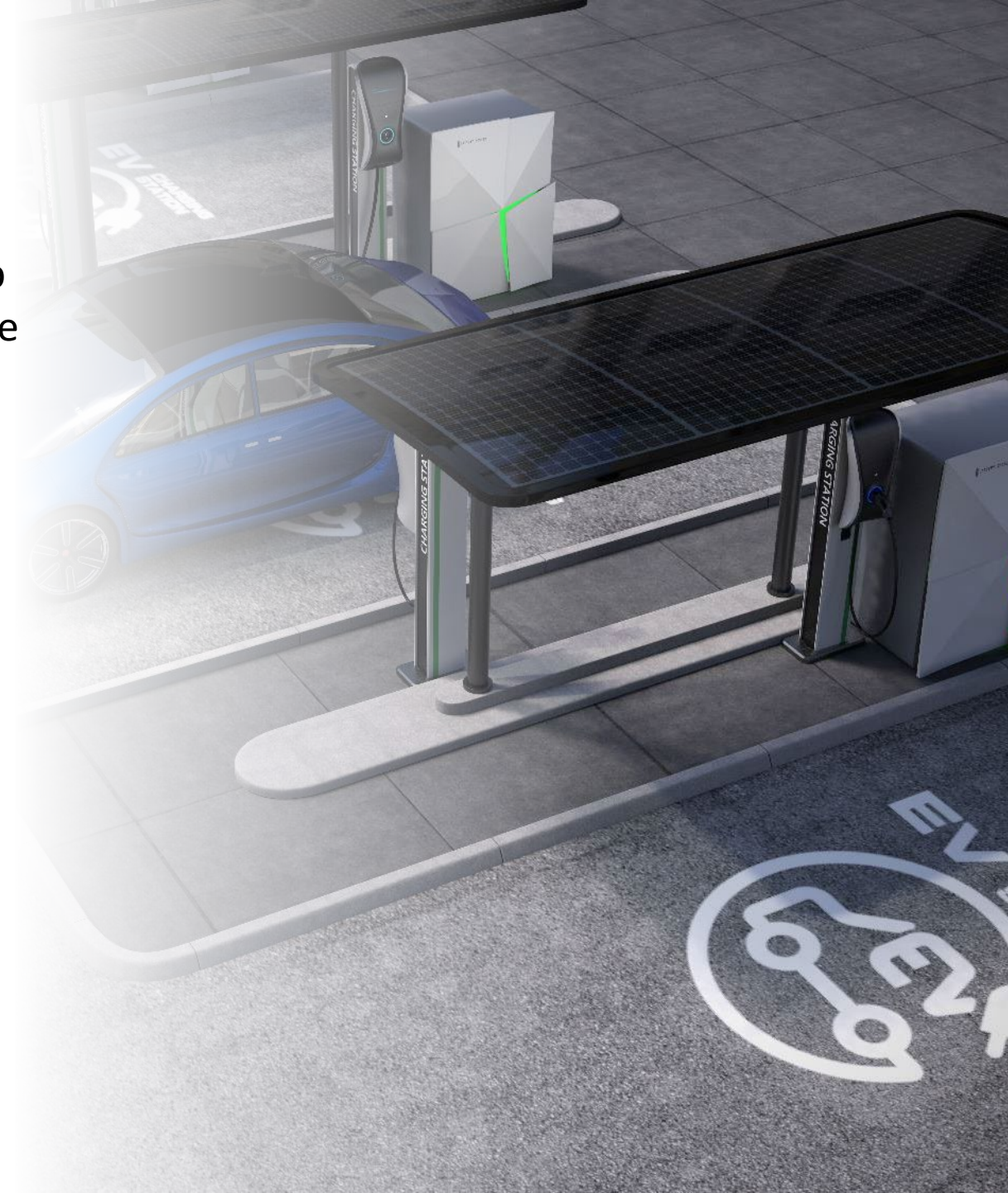
FLEET ELECTRIFICATION: A CHANGING MARKET

- Dropping EV battery costs and new charging technologies have created a more accessible market for various vehicles
- Advancements in vehicle technologies have created a market where growth is imminent.
- Emerging technologies are advancing how renewable energy, transportation, electrification, and distributed energy resources can all be harnessed to reinvent how we manage energy

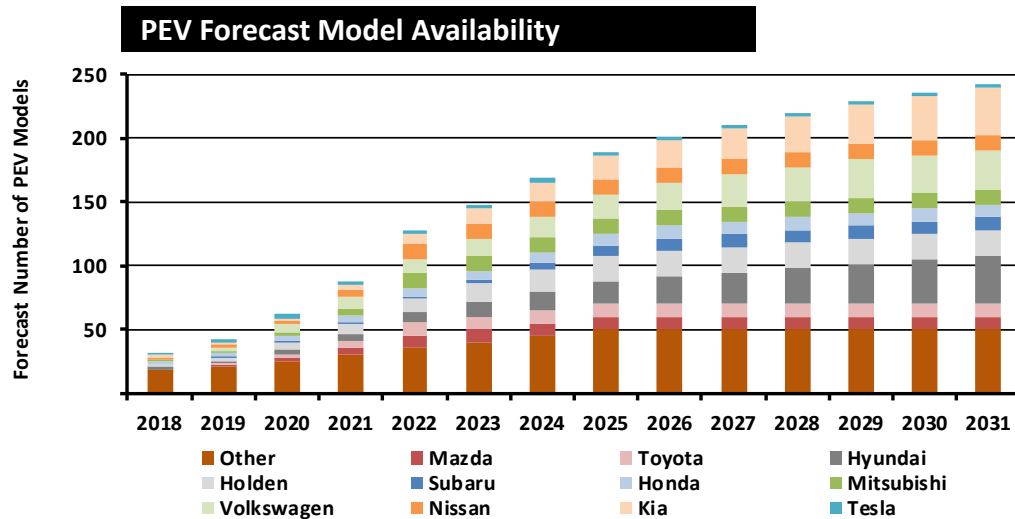
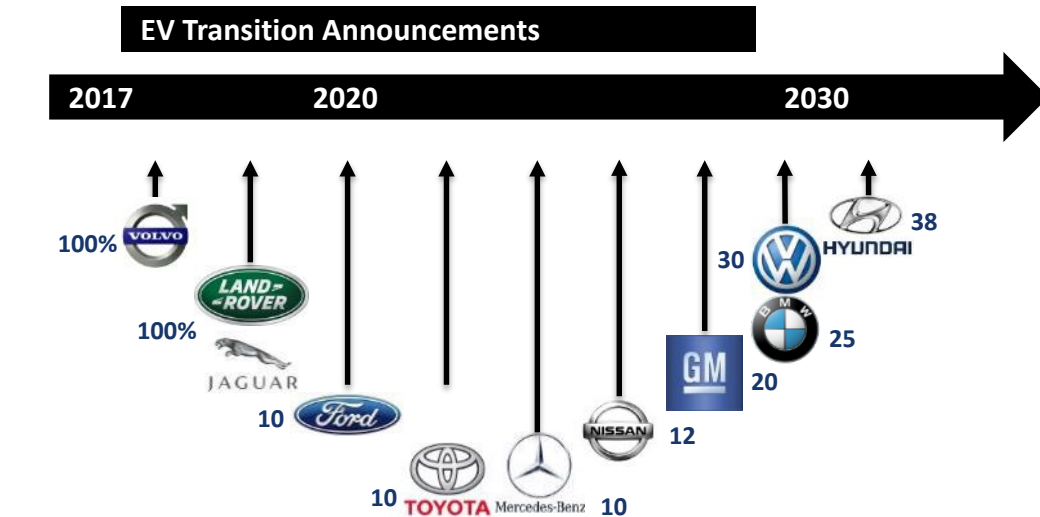


ADDITIONAL MARKET DRIVERS

- Communities want the benefits PEVs can bring to help them meet sustainability and air quality goals, improve the health of their communities, and even potentially reduce the life cycle cost of their own fleets.
- Transportation agencies are trying to develop best practices for planning and design of infrastructure
- States and regulatory agencies are passing mandates and proposals to support these efforts



TRANSITION TO ELECTRIC VEHICLES



- / In the next five years, the automotive industry is expecting 127 battery-electric models to be introduced.
- / Total EV sales increased by 40% from 2017 to 2018.
- / EVs are forecast to reach price parity with their gasoline counterparts by 2023.

AN ELECTRIFIED FUTURE

Transportation electrification is more than just vehicles, it will impact our entire built environment.

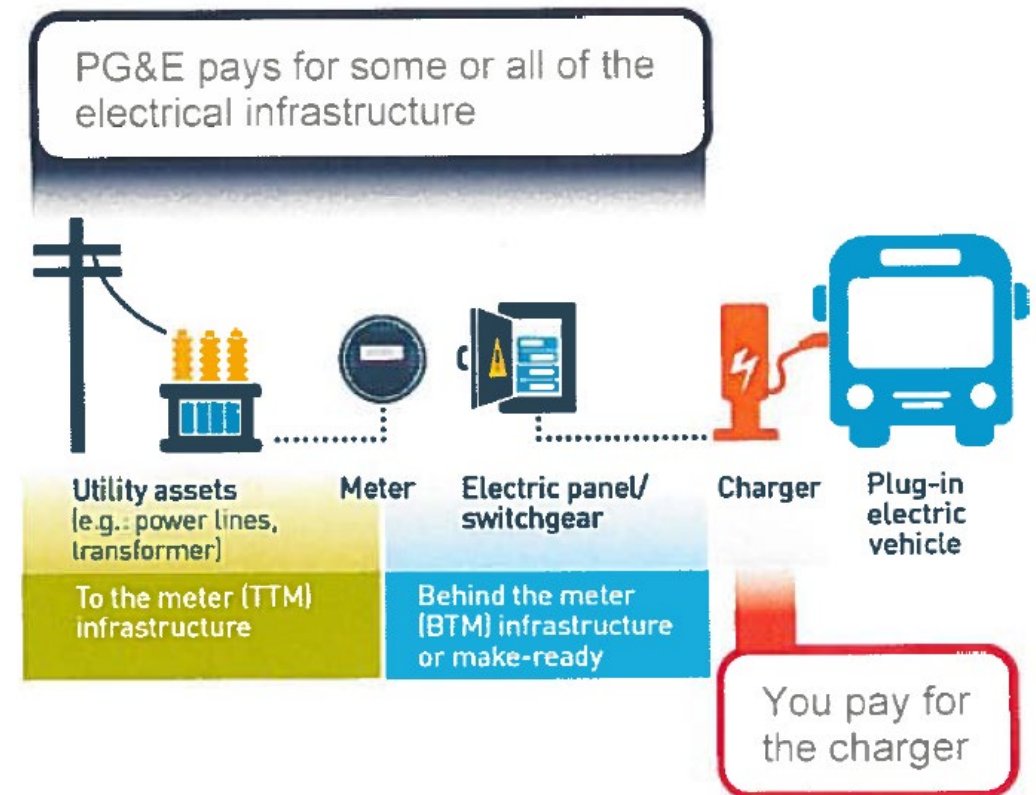


ADDITIONAL MARKET DRIVERS

- Many funding sources and incentives are available for charging infrastructure and electric vehicles/fleet electrification initiatives
- Agencies include: California Air Resources Board, California Energy Commission, PG&E, California Public Utilities Commission, California Electric Vehicle Infrastructure Project (CALeVIP), San Joaquin Valley Air Pollution Control District, and others
- Support in the form of grants, rebates, utility rate programs, and incentives

PG&E EV FLEET PROGRAM

How it works



DISCUSSION: FLEETS IN FCOG

- What public fleets operate within Fresno County?
 - Light-duty
 - Pool vehicles
 - Public works, light pickups
 - Heavy-duty
 - Buses
 - Cargo vans
 - Garbage trucks
 - Public works, heavy pickups
- For those that have begun transition, what have been the lessons learned?
 - Maintenance changes
 - Capital planning considerations

NEXT STEPS

Existing PEV condition research

Assessment of technology

RFI data analysis

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THANK YOU.

LET'S BUILD THE FUTURE TOGETHER

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