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Filer:	Raquel Kravitz
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Presentation to
CEC Commissioner
Workshop on Plug-in
Electric Vehicle Charging
Infrastructure



Enid Joffe
President, Green Paradigm
Consulting

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Background

- Working on transportation electrification for over 25 years
 - Southern California Edison 1993-1996
 - Edison EV 1996-1999
 - Clean Fuel Connection 1999-2019
 - Green Paradigm Consulting 2020-
- Installed over 10,000 charging stations including many of the first generation public charging stations
- Currently contractor for SCAQMD Replace Your Ride Program



Infrastructure Hurdles for Disadvantaged Communities

- My comments are informed by my experience with Replace Your Ride(RYR), as well as hundreds of site walks and installations at multi-family housing units
- Replace Your Ride is a program that allows low income drivers to replace an older high emission vehicle with a new or used cleaner vehicle
- The incentive amount depends on:
 - Family income (using tax return)
 - Residential address
 - Type of vehicle leased or purchased



Replace Your Ride Has the Potential to Help Low Income Drivers Get Charging Infrastructure

- Replace Your Ride is currently available in San Joaquin Air District, Bay Area and South Coast Air Districts.
- Very popular program—has funded thousands of replacement vehicles. The SCAQMD program is currently getting new applications at the rate of around 20 to 30 a day.
- The program is well structured to encourage plug-in hybrid, BEV and vehicles by offering larger incentives. Many participants purchase used vehicles.
- Quality of used plug-in vehicles is very uneven—battery range might not be good.



Ways to Increase BEV Purchases (and Infrastructure) in RYR

- RYR, as currently structured, is for the vehicle only.
- There are separate infrastructure incentives from AQMD and SCE but they are difficult to apply for within the program timeframe. Customer would need to know that they can install a charger *before* they go to the dealer.
- The RYR is bewildering for applicants and (to our chagrin) at least one organization is charging people to guide them through the process.
- Many applicants are not familiar with BEV options and the economic benefits of owning a BEV (lower total cost of ownership).
- Dealers often don't encourage buyers to look at BEVs.
- *The good news is we have a great opportunity to inform applicants about their zero emission vehicle choices during the application process!*



Recommendation #1: Add Education and Infrastructure Component to RYR Program

- Add funding to educate RYR consumers about BEVs
 - Make consumer education part of case manager role
 - Provide easy access to available tools by making these tools part of the application process we walk through with the customers:
 - Incentive calculator
 - Clean Vehicles website
 - Utility cost of ownership calculators
 - Create a website that designates which clean vehicles meet the requirements for RYR and other incentive programs (qualifying vehicles vary from program to program).
 - One Stop Shop tool



Recommendation #2: Create an RYR Infrastructure Pilot Program

- Create a pilot program to solve the chicken and egg conundrum for charging infrastructure.
- Follow the Car Buyer
 - Using a sample of willing RYR applicants (100 to 200?), set up a team to explore all infrastructure options:
 - Ask applicants to rank their charging preferences and locations
 - Provide personalized map of nearby charging locations
 - Use modeling tools to map driving routines to find potential locations (Note: a prime location does not guarantee that the property owner will agree)
 - Explore all options for each pilot project participant: single family home charging, multi-unit dwelling charging, public charging, workplace charging, community charging, curbside charging
 - Explore all levels of charging: Level 1 is surprisingly popular with homeowners and would certainly help spread charging in MUDs—however it is still about 80% of the cost of Level 2
 - Find one or more options that work for each applicant and subsidize the solution
 - Analyze the results to inform future policies—what works most often, what tips the scale in favor of the various options
- Follow the charger manufacturers and automakers—they have a lot of data!
 - Regulations being developed for sharing of charging info



Recommendation #3 Targeted Marketing to Impacted Communities

- There is much more that could be done to market Replace Your Ride but we are already getting more applications than we can handle based on word of mouth alone.
- Analysis and targeted outreach in communities that are less active in RYR would be useful ie.,
 - EJ activist groups
 - Social service agencies
 - Unions
 - Homeless support organizations



Multi-unit Dwellings

- Very complex and difficult problem—have walked hundreds of properties
- Some success with middle and upper income properties that see charging as an amenity but low income is still very challenging
- Obstacles include:
 - Lack of electrical capacity—due to cost concerns, MUDs are not built with excess capacity
 - Older buildings are max'd out by added load for electronics that didn't exist when the building was constructed
 - Lack of physical space in the electric room (meters already installed for each unit)
 - Individual units may have electrical panel and meter in the unit—run an extension cord from the third floor????
 - Lack of parking space—rarely even have guest parking
 - Parking spaces are assigned—cannot be easily moved around
 - Old panels and wiring
 - Out of code compliance
 - Uncertainty about which apts will need chargers when
 - Power upgrades are costly and time-consuming



Specific Issue: Installation of Charging Can Trigger a Costly Electrical Upgrade

- A number of years ago in Santa Monica, the City and utility and providers met with a group of apt owners and managers about installing charging.
- They raised a number of concerns:
 - Small older buildings of the type in Santa Monica or other parts of LA are often owned by families or family trusts and are the primary source of income for the owner. These are not rich landowners or corporations.
 - Older buildings are often already over their electrical capacity and out of code compliance—in one case the electrical panel was in the public right of way!
 - Any change to the electrical to accommodate charging would trigger a full upgrade requirement to meet current code—a \$10,000 charging installation could easily turn into a \$100,000 full electrical upgrade.
 - Some owners did not want a city inspector to come on their property for fear of what other violations they might have
 - With rental vacancies low and prices high, there is no motivation to spend more money on amenities like charging



Recommendation #4: Explore Ways to Remove Obstacles to Install Charging in MUDs

- Some solutions that are being talked about or tried:
 - Install chargers paid for by property owner (partially funded by incentives)
 - When EV driver moves in they sign up for charger directly with EVSP and pay monthly costs
 - Build capacity for a backbone infrastructure where you can add or subtract chargers as needed (physically challenging to cover all parking areas)
 - Combine charging with solar and energy storage to reduce energy demand and consumption (under current electrical could still need to have back up for maximum electrical demand)
 - Connect to main power source and use real-time excess capacity available from any building load to power chargers. Powerflex model—could have issues as charging demand grows.



Recommendation #4: continued

- Curbside charging on public streets—DWP has done these
- BEV Carsharing solutions—RYR already subsidizes transit passes and some car sharing. Some Public Housing Authorities are experimenting with various models.
 - Add BEV carsharing options to RYR
 - Volunteer driver model
 - Carpool/vanpool model
- Expand subsidies of public charging costs under RYR (can use transit option debit card approach)



Recommendation #4 continued

- New Ideas:

- Explore local government policies and best practices--since local government controls land use
- New Developments
 - Density bonuses—more dwelling space with less parking if charging is installed
 - Require charging as condition of building approval (could be part of sustainability and social justice General Plan elements)
- Older MUD Buildings
 - Waiver from bringing building up to code if renovation is for charging (raises safety concerns)
 - Fund to subsidize code upgrades for charging installations
- Incentives for centralized community charging in parks, community facilities etc.
- Figure out whether it is possible to change electrical code to allow solar and storage to replace part of the utility load on a permanent basis (eliminate double whammy)
- Allow customers to contract for a fixed amount of electricity and use load management



THANK YOU!!

Enid Joffe

President, Green Paradigm Consulting

Enid.Joffe@greenparadigmconsulting.com