

# Equitable Electric Vehicle Planning in Central Oregon



Research funded through the generosity of



**Contributors:** Diane Hodiak, Study Lead, of 350Deschutes, wishes to thank the volunteers, community organizations, and participants who contributed to this work.

## ***Introduction***

The goal of this project was to determine the needs, opinions, and barriers to electric vehicle purchase and Electric Vehicle charging in Central Oregon, focusing on individuals rather than fleet use. It was made possible through the generosity of Pacific Power. There was a focused effort to ensure that historically marginalized communities were included in all outreach and engagement.

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## ***Executive Summary and Recommendations***

350 Deschutes used written surveys, in person, and ZOOM focus groups to determine the opinions and biases of people regarding electric vehicles and EV Charging. A special effort was made to outreach to underserved communities, rural participants, as well as a variety of income levels. At least 34%, and probably another 10% were from communities of color. Social media, radio, email, newsletters, and events provided a variety of ways to engage. Local organizations assisted with promoting the survey and focus groups. Incentives were provided for participation. A Spanish version of the written survey was provided. Madras area participants had access to an interpreter for their focus group.

About half of participants stated that they knew what a plug-in hybrid vehicle is, with slightly less knowing what a BEV, or battery electric vehicle is. 43% stated that they generally knew very little about electric vehicles. Most people expressed that they would consider obtaining an electric vehicle with about 20% already driving an EV, or hybrid. About 10% don't own a car.

### ***Barriers to purchasing an EV***

Among those who did not think that EV's would work for them, the following were the reasons cited:

- \*Affordability and incentives (51%)
- Range anxiety (22%)
- Charging concerns including availability of EV Charging and charging time
- Where and how to repair their vehicle. (14%)
- Winter driving concerns

*\*About 15% said that the current incentives were unworkable for them. (Note: At the time of this survey, the cash rebate incentives had been suspended, but the Federal Tax Credit remained in place.)*

*\*On a separate question, about 24% said that they did not know how to get the cash rebates and incentives.*

### ***Misconceptions***

Several participant concerns indicate general misperceptions about the characteristics of EV's as they pertain to charging options, battery power and winter driving performance. They include:

- Lack of EV Charging at home was frequently mentioned, even though home charging is quite common and easy from a standard electric outlet. Although this would not be the fastest method, it still provides an overnight charging option. It is true that some individuals do not have an outdoor outlet to use for charging. Still, another factor was at play: It appeared that some did not realize that charging at home or work would likely be cheaper per mile than fueling a traditional gas vehicle.
- The perception of being unable to drive or charge in cold weather makes them hesitant to purchase an EV. Some participants thought that EV batteries are non-functional in the winter. In actuality, even though the range of the battery charge decreases up to 20% in winter, the batteries still function and provide the ability to drive long distances.
- It also appeared that some did not understand how to locate the EV Charging that is available at multiple locations in Central Oregon, and elsewhere. Most were not aware of apps like PlugShare that help users map and drive to different types of EV Charging, (Level 1, 2, or 3 (DC Fast Charge) locations. These apps identify whether the EV Chargers are currently in use or available, working or out of service, and whether they are free or pay to use. Knowledge and use of these apps would greatly enhance the EV driving experience and minimize or even eliminate range anxiety.

When asked how to remove barriers, the most mentioned suggestions were greater incentives, more EV Charging opportunities - especially at work, cheaper cars, and quicker charging.

### ***EV Charging***

When it came to using EV Charging, 64% said they know how to find EV Charging when they need it. 31% have EV Charging at home or apartment, 20% have it at work. 10% said that they might be challenged with using EV Charging because of limited language proficiency.

When asked how they might pay for EV Charging, 74% of respondents indicated that if they had an electric vehicle, they would charge at home. Another 41% said that they would be able to use a debit or credit card, and 12% would need to use a prepaid cash card. This latter opinion aligns with the current thought that special provisions should be made for individuals to use prepaid cash cards to increase access for people who don't have a banking relationship or use credit cards.

Affordability to Charge an EV was also a factor that discouraged some. It appeared that many did not realize that there are currently affordable EV Charging options.

Respondents in the written survey were also asked to provide their opinion as to the top three places where public EV Charging Should be located. These choices were all fairly close, except for a smaller number identifying mobile home parks. In declining order, respondents identified work(businesses) most frequently, followed by grocery or convenience stores, apartments, hotels, restaurants, schools, and mobile homes.

### ***Car Share***

Questions about CarShare indicated that 54% would or might consider paying for hourly or daily use of a vehicle. 46% indicated they were not interested. It appeared that some individuals who do not own or cannot afford to own a vehicle would find car share appealing, if it were affordable.

Using a dollar amount currently being charged for CarShare in low to moderate income communities, the respondents were asked to rate the likelihood of paying this amount. About half stated that they would have an average to high likelihood of paying \$9 per hour or \$66 daily for use of CarShare. This may represent opportunities in both rural and urban areas for car share.

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## ***Recommendations for More Equitable EV Planning:***

**1)** The results of this research strongly suggest that expanding education and exposure to electric vehicles and EV Charging is still required if we want to enable more deployment. Most importantly, it is essential to help individuals overcome the myths about electric vehicles and charging. We expect that education and exposure would also help individuals to mitigate their fears about range, being stuck without power, and driving and performance during cold weather. Specifically, the content should include:

- A. How EV's drive and charge, particularly in winter weather.
- B. Purchasing Incentives that are available at the Federal, State, and Utility level.
- C. Where affordable electric vehicles can be purchased and serviced.
- D. The variety of EV's, including zero emission electric forklifts, tractors, vans, specialty trucks, motorcycles, and semi trucks like Freightliner and ECascadia. This information was unknown to many of the participants, some of whom doubted that an electric vehicle could even tow a certain weight.
- E. Information about where to find and how to use software programs that indicate where EV Chargers are located and how Level 1, 2, and DC Fast EV Chargers work.
- F. Guidance on how to find affordable EV Charging. A discussion of the choices for different types of EV Charging (Level 1, 2, or DC Fast) as well as their comparative costs. This would include how to save money when charging your vehicle, planning a trip, and how to increase your driving range through driving habits.
- G. Arrange Ride and Drives and/or vehicle demonstrations to help potential drivers learn the incredible speed, agility, and work functions that come with electric vehicles of all types, from cars, to trucks, utility vehicles, and semi trucks.

**2)** EV Charging equipment should be enhanced to allow the unbanked or underbanked population to use cash cards that are not necessarily connected to a bank account. Additionally, these chargers should have language options for those not proficient in English.

**3)** Oregon policy makers are already designing rebate programs that assist underserved populations but should consider a broad cash rebate program (as opposed to tax credits) along with support for affordable vehicle financing. Fortunately, The Federal tax credit is still in place for those who can use it. Oregon is expected to again offer the Charge Ahead Cash Rebate to low to moderate income individuals later in 2024.

**4)** The Cost of EV Charging should be considered when designing more equitable EV Charging Programs.

**5)** EV Charging at apartment buildings will encourage more equitable access, since 37% of low to moderate income individuals live in apartments. (Builders Patch:<https://www.builderspatch.com/housingcount/us-states/oregon>)

**In summary, there is great interest in electric vehicles and a clear majority of participants were interested in driving and/or buying one. But driving and charging an electric vehicle requires new knowledge and behaviors in order to appreciate and benefit from the experience. In order to increase uptake of EV's, traditional beliefs and behaviors need to be supplanted by new ways to drive, fuel, and pay for green mobility. We can support these changes by providing more detailed education, opportunities to model real life experience, and adapting infrastructure, payment and purchase programs to encourage equitable access.**

## ***Section 1: The Details: Methods used to Gather Opinions***

### ***Pretesting of the surveys.***

All surveys were shared with multiple individuals to determine appropriateness and content. Individuals from Hispanic and Black communities provided feedback as well as youth and adults.

### ***Outreach to Participants***

Multiple methods were used to try to reach potential survey takers in both rural and urban areas, from various occupations and income levels. This included social media, email, radio, newsletter, events, and collaboration with other organizations who shared the survey in their newsletters.

### ***Participants***

209 individuals completed a **written survey** of 16 questions including yes/no/maybe, multiple choice, and write in answers.

- 23 additional individuals completed a separate but different **written survey** at a Madras High School Family Night. Some of these individuals received support from a Spanish language interpreter in the completion of the answers to questions. This survey was adapted and simplified to encourage participation so we were able to gain a deeper dive into their opinions.
- Because these written surveys were different, the results from each will be discussed separately.
- 35 individuals in **3 Focus Groups** were completed to gain qualitative information from participants. These were small groups that participated in a discussion during a ZOOM meeting. These groups were started with a brief 12 minute presentation about electric vehicles and charging to provide basic knowledge. No questions or answers were allowed during the presentation to avoid influencing the results. The findings from these groups will be discussed separately from the results of the written surveys.

### ***Incentives for participation***

Multiple incentives were offered during the course of the project. Hats were provided to encourage signup and/or completion of the written survey. Cash incentives of \$40 - \$50 were provided upon completion of the focus group. Lastly, a drawing for \$100 was an additional promotion that was distributed to a single individual after a random draw. Everyone completing the primary written survey was entered as a possible winner.

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## Section 2: Results of Focus Groups

### In-person focus group

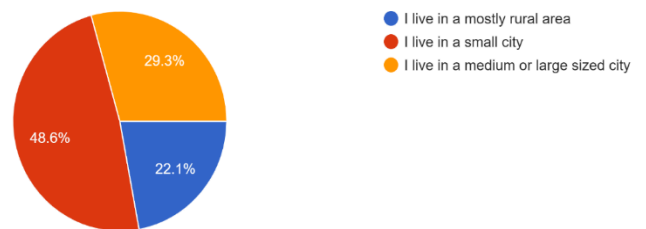
#### 24 Adult Participants at Madras High School: Combination Focus Group with Written Answers, Assisted with a Spanish Translator

This focus group was completed in conjunction with an event designed to gain participation by Tribal, Hispanic and other individuals from communities of color. Demographic information was omitted in the simplified survey, but these participants live in Madras Oregon, a rural area that is considered to be of lower income according to the US Census, with per capita income of \$23,764. Students at this school are predominantly from communities of color (80+%). The participants were adult parents and other family members aged 18+.

#### Would driving an electric vehicle work for you?

- 2 maybe, 3 no, 19 yes
- Those stating “no” or “maybe” gave the following reasons: Safety concerns, Cost (not affordable), no home charging, winter use problems, and high cost to fix and difficulty with charging stations not working.
- Those stating “yes” understood that EV’s are more cost effective to drive, that they were appropriate for rural use, and that they were better for the planet.
- None of these participants mentioned that they own or lease an electric vehicle. One person stated they drove a hybrid vehicle.

1b. Do you live in a mostly rural or city area?  
208 responses



#### What are barriers to you driving an electric vehicle? Breakdown on how many times a barrier was mentioned in declining order of mention:

- Financial ability to buy or affordability 9
- Lack of EV Charging 5
- Winter driving in cold and snow, and weather 5
- Charging time too long 2
- Drive long road trips 1
- Worried about lack of ability for towing 1
- Price to repair 1
- 4-wheel drive don't look very strong 1

#### What should be done to remove barriers to help people get EV's, in declining order of mention?

- Make them cheaper, 5 and or cheaper to maintain, EV purchase discounts 1
- More vocal about incentives, more incentives 4
- Faster charging time 2

- Install Charging stations at work, or more charging stations 2
- Invent better, cheaper, more effective batteries for cold 2
- Manufacturers should put more stock into them. Too many don't believe in them. 1
- Larger tax credit and access for lower income people to obtain an EV 1
- Encourage 4x4 EV's and demonstrate their workload/capacity 1
- Better safety ratings 1
- Available financing 1
- Protect the water in Lithium mines 1
- Happy with my hybrid vehicle 1

### ***Focus Groups Conducted Virtually on ZOOM***

These two focus groups, because they were on ZOOM, were harder to get participants to share their opinions. As with any group, participants were hesitant to share even though we introduced the group stating that all responses were respected and that there were no right or wrong answers.

Generally, many of the same responses shared from the Madras Group were heard. The top repeated comments on barriers to driving electric vehicles, in declining order, were affordability, lack of available charging, and cost of charging. Also repeated from the Madras focus group was the belief that vehicle batteries were not seen as able to withstand winter weather and driving in snow and ice conditions. Also mentioned was the concern about mineral mining and its effects on people of color.

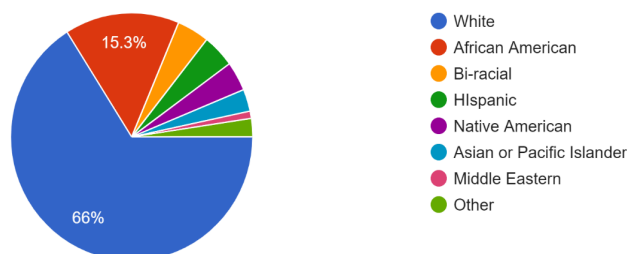
## ***Section 3: Results of Written Survey: 209 Participants***

### ***Participant Demographics and EV Knowledge***

#### **Ethnicity**

- 66% White, Caucasian
- 15% African American
- 19% Hispanic, Native American, Asian Pacific Islander, Biracial, Middle eastern, or other.

14. Please tell us your ethnicity.  
209 responses





## Where do they live?

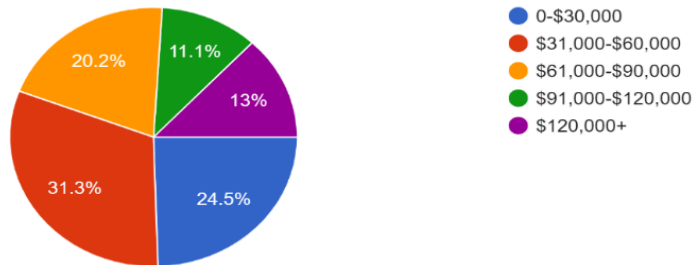
Most, 49% live in a small city, followed by 29% in a medium or large city, and 22% in a rural area.

## What is their Income Level?

56% of participants were near or below the average (Average household income in Central Oregon is \$33,000-\$82,000 depending on ethnicity. 24% were of below average income.

1a. What is your total household income? We need this question to ensure that we consider responses at all income levels. Also, with your perm...ll email you about cash rebates available to you.

208 responses



## Type of Dwelling, if any

- 34% rent an apartment or townhome
- 33% own a house
- 22% rent a house
- 11% rent or own a mobile home, or don't have a place to call home (they are homeless).

## How many miles do they drive per week?

1. 49% drive less than 100 miles weekly
2. 31% drive 101-200 miles weekly
3. 13% drive 201-300 miles weekly
4. 7% drive more than 300 miles weekly.

## General Knowledge About Types of Electric Vehicles

- 50.5% (105) know what a PHEV, plug-in hybrid vehicle is
- 47.6% (99) know what a BEV, or battery electric vehicle is
- 43.3% (90) felt that they know very little about electric vehicles

## Attitudes Towards Electric Vehicles and EV Charging

- 78% said they understood the benefits of driving electric.
- 20% said they were driving an electric or plug in hybrid vehicle With 11% who said they liked their gas vehicle and didn't want to switch
- 15% said they thought that the existing incentives to buy an electric vehicle don't work for them.
- 10% Don't own a car

## Additional comments, each by one person, were:

- "If I had an electric vehicle I would prefer not to charge at home at all"
- "I don't know of any EV Charging near me that I can use."

- “work or other places would not want to foot the bill”
- “I charge at home or a local free destination charger. Only use superchargers on vacation” That is the proper use”
- “Charging at work costs money?”
- “Level 3 (DC Fast Chargers) are not a reliable way for people to charge long term. Frequent Level 3 (DC Fast) charging leads to battery disintegration”
- “I have an EV Charger at home”
- “I have a smartphone with Charging Apps linked to my credit card”
- “I think we’re automatically charged with our App.”
- “I want to pay cash due to convenience fees”
- “State should help to pay

### **Participant Responses**

**Note: At the time of this survey, Oregon had suspended its cash rebates and the only incentive was a Federal Tax Credit of \$7,500.**

#### **Barriers to buying or leasing an electric vehicle**

- 51.2% felt that even with cash rebates, it is too expensive to buy or lease electric vehicles
- 22.5% drive too many miles daily and feared running out of charge. (range anxiety)
- 10% don’t know where to buy or lease an electric vehicle
- 14.4% didn’t know where they would repair their vehicle
- 13.9% don’t know where they would charge their vehicle
- 24% don’t know where to get cash rebates or tax credits.

#### **Overcoming Range Anxiety: Opinions about driving electric if more EV Charging was available**

Participants were asked if they would buy or lease if EV Charging was installed every 50 miles on major highways. (A directive from the Biden Administration through USDOT and Oregon Department of Transportation.)

- 56.5% YES
- 34.8% MAYBE
- 8.7% NO

#### **Opinions about finding and using EV Charging**

- 63.6% (133) know how to find EV Charging when they need it.
- 31% (65) have EV charging at home or at their apartment.
- 20% (42) have EV Charging at work
- 10% (21) felt that charging might be challenging because of their limited English Proficiency.

#### **What type of EV Charging are they most likely to use**

The current approximate cost for Level 1, Level2, and Level 3 (DC Fast Charger) was explained.

- 74.3% (153) would charge at home
- 41.3% (85) have a debit and/or credit card to use
- 11.7% (24) said they would be able to use a prepaid cash card.

## Cost of EV Charging

Participants were asked what level of cost was affordable for them.

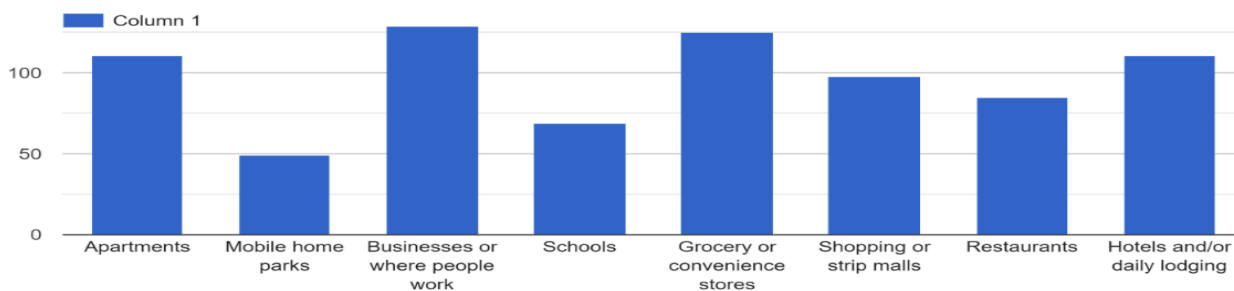
Check all boxes that are affordable for you.

- 47.8% (100) Fast charge - Pay \$60 for 2-one hour charges (800 miles of range total)
- 40.7% (85) Mid level charge - Pay \$\$8 for 2 hours charge (55 miles range)
- 43.5% (91) I need to use PUBLIC charging in limited locations
- 0.5% (1) I need to use free PUBLIC charging

## Where Should EV Charging be Installed?

Participants were asked to check priority places they felt were the best locations for installations

9. A lot of EV charging stations will be installed in Oregon in the next 2-5 years. Thinking about your own needs, where are the BEST PLACES to put them? Mark the top THREE places please.



Written in comments included:

- "Neighborhood parking with charger and (car?) available for borrowing and sharing."
- "Support for home or apartment"

## Questions About Car Share

Participants were asked whether they would consider paying for car share, hourly, or daily use.

- 46% No
- 37% Yes
- 17% Maybe

13b. How likely are you to use a car share costing \$9 hour, 200 miles max, \$66 daily max? Please enter a number between 1 and 5.

194 responses

