

# Attachment 1

# SELECT BASELINE SURVEY RESPONSES

## PACIFIC POWER GEN POP SURVEY

JULY 26, 2019

NAVIGANT

### SURVEY RESPONSES

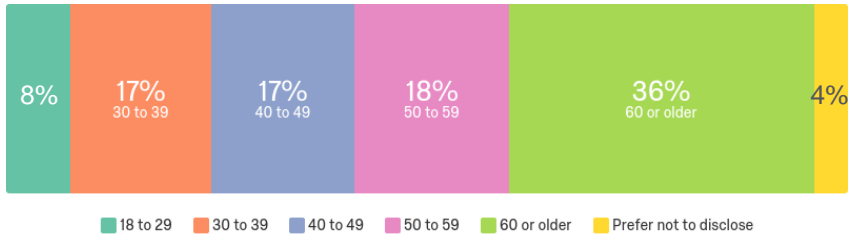
Number of Survey Responses\*

Answer	%	Count	Response Rate
Completed Survey	97%	1482	14.8%
Screened Out	3%	47	
Total	100%	1529	15.3%

\*A total of 10,000 customers were invited to take the survey.

## DEMOGRAPHICS: AGE

**Take Away:** More than 50% of respondents are over the age of 50



**Survey Question:** What is your age?

N=1422

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## CUSTOMER FEEDBACK FOR FIRST ROUND OF SURVEY

Several customers sent follow-up comments with feedback to Pacific Power using the email address provided in the survey invitation. Navigant identified a couple of themes from this customer feedback:

1. Three customers indicated they were not interested in electric vehicles and did not appreciate the survey on this topic
2. Three customers commented on the environmental impact or hazardous material concerns of EV batteries from manufacturing, end of vehicle life, and during crashes
3. Two customers commented that the survey should have included more questions about other forms of mobility options, including rideshare or car sharing
4. One customer commented that the survey did not explicitly point out the portion of Pacific Power's electricity generation that comes from fossil fuels, and how that impacts the cleanliness of EVs (the survey did ask a question about whether the GHG emissions from charging EVs is generally lower than the GHG emissions from conventional ICE vehicles)

Navigant will consider this feedback when making any modifications to the survey instrument for the second-round panel survey in 2020

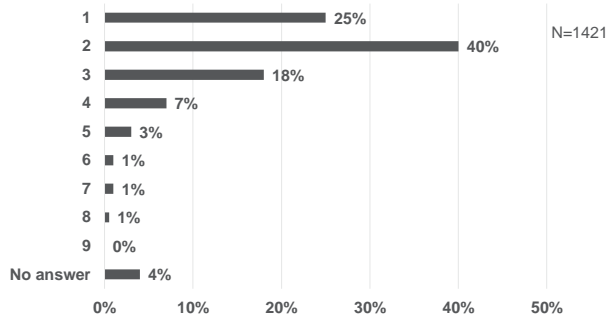
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## NUMBER OF HOUSEHOLD VEHICLES

### Take Away:

- 25% of households have 1 vehicle
- 40% of households have 2 vehicles
- 31% of households have 3 or more vehicles



Survey Question: Approximately how many vehicles does your household currently own or lease?

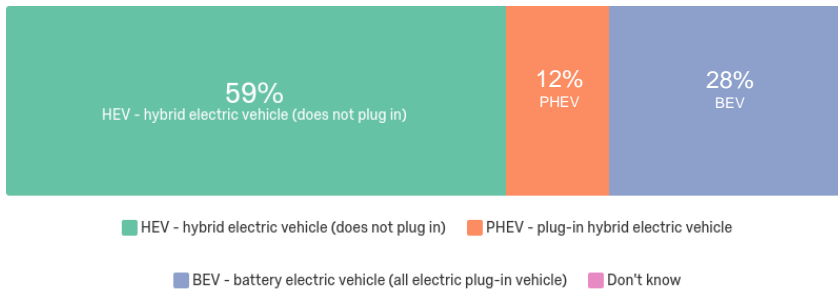
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## CURRENT EV OWNERSHIP

### Take Away:

- Nearly 8% (118) of \*all\* respondents own an electric vehicle
- *Of the 118 EV owners surveyed, most (59%) have a hybrid-electric vehicle without a plug*
- 47 respondents (40%) have an electric vehicle with a plug



Survey Question: Which type of electric vehicle do you currently own/lease?

N=118

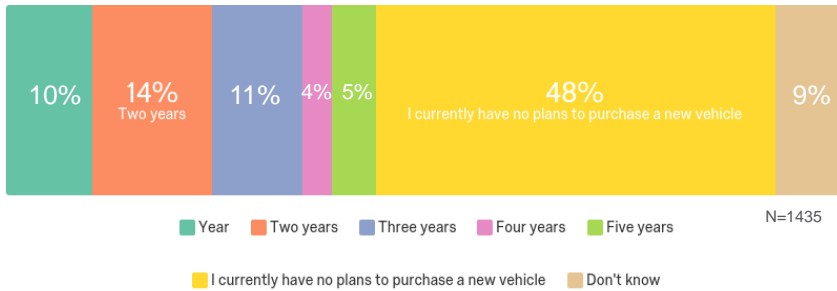
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## VEHICLE PURCHASE TIMEFRAME

### Take Away:

- 35% of respondents plan to purchase/lease a new/used vehicle in the next 1-3 years
- Nearly half of respondents (48%) do not currently have plans to purchase/lease a new/used vehicle



**Survey Question:** Please indicate whether you plan to purchase or lease a new or used vehicle in the next...

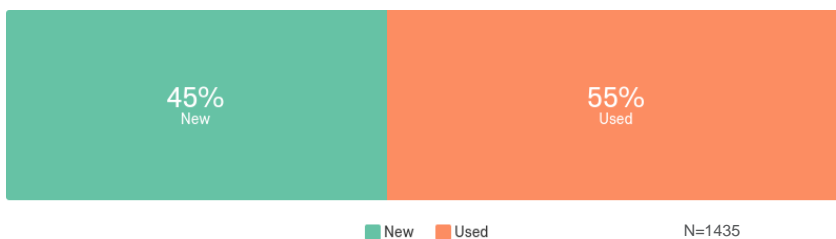
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## VEHICLE PURCHASE NEW/USED

### Take Away:

- Respondents are more likely to be in the market for a used vehicle (55%) than a new vehicle (45%).



**Survey Question:** Are you more likely to be in the market for a new or used vehicle?

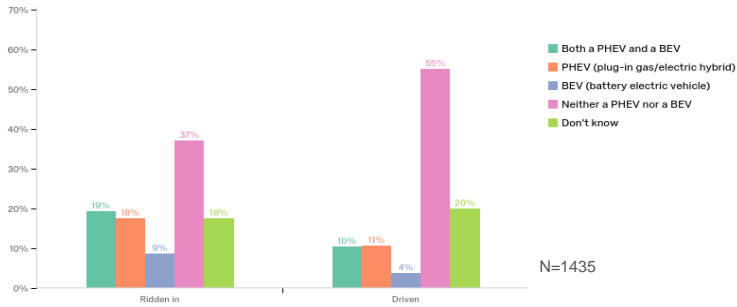
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## CUSTOMER EXPERIENCE: RIDDEN OR DRIVEN PEVS

### Take Away:

- More people have ridden in a PHEV than a BEV (37% vs 28%)
- 25% of respondents have driven either a PHEV, BEV or both
- Roughly 20% of respondents aren't sure if they have ridden in or driven an electric vehicle.

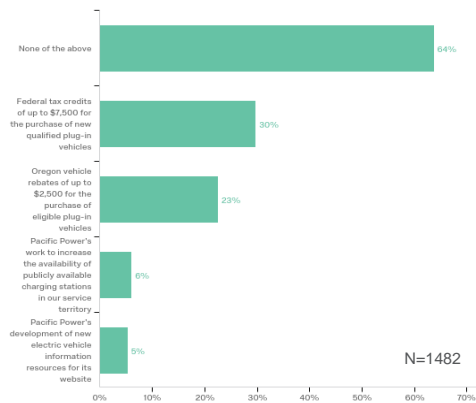


**Survey Question:** Which of the following vehicle types have you ridden in or driven? Select one response in each column.

## AWARENESS OF EV INITIATIVES

### Take Away:

- Well over half of respondents (64%) are not aware of any EV initiatives
- 30% are aware of the federal tax incentive for EVs
- 23% are aware of the Oregon vehicle rebate

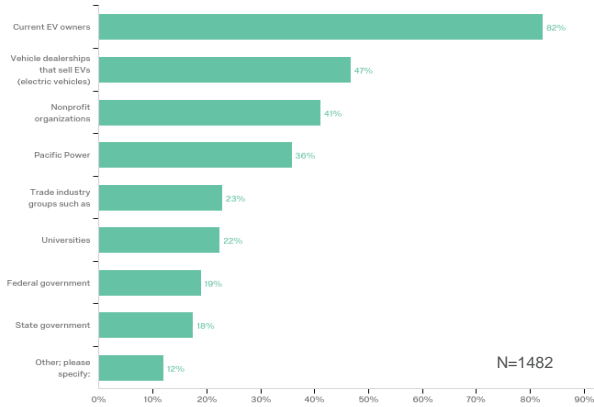


**Survey Question:** Which of the following electric vehicle initiatives were you aware of before taking this survey? Select all that apply.

## TRUSTED INFORMATION SOURCES FOR ELECTRIC VEHICLES

### Take Away:

- 82% of customers indicate current EV owners are the most trusted sources of EV information
- Dealerships, and nonprofit organizations are also seen as trusted sources by many customers.
- Pacific Power is the 4<sup>th</sup> most trusted source of EV information



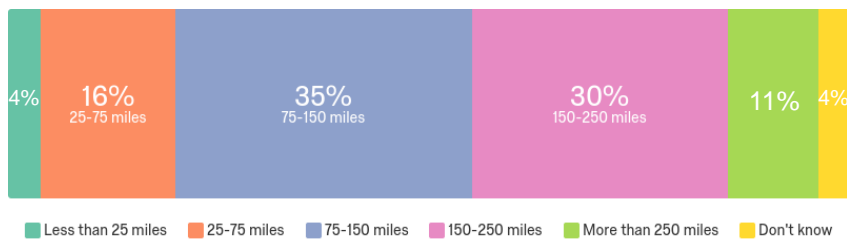
**Survey Question:** Which of the following do you consider to be the 3 most trusted sources of information about electric vehicles? Select three.

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## RANGE KNOWLEDGE (BEV)

**Take Away:** 30% of respondents correctly identify the typical range of a BEV, but more than half of respondents underestimate the drivable distance of a typical BEV.



**Survey Question:** Drawing on your current knowledge of BEVs (battery electric vehicles), what is the drivable distance per charge for a typical sedan-style BEV (battery electric vehicle)?

\*Correct Answer: 150-250 miles

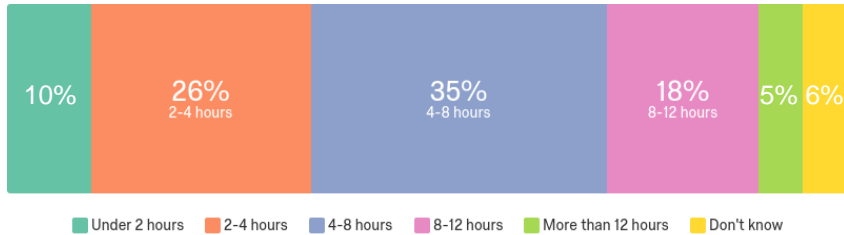
N=1379

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## CHARGING KNOWLEDGE-L2 (BEV)

**Take Away:** 35% of respondents correctly identify the charge time for a L2 charger, while 36% underestimate charge time, and 29% either overestimate or don't know.



**Survey Question:** How long would it typically take to fully charge a common BEV (battery electric vehicle) at your home using a 240-volt outlet similar to a clothes dryer outlet?

\*Correct Answer: 4-8 hours

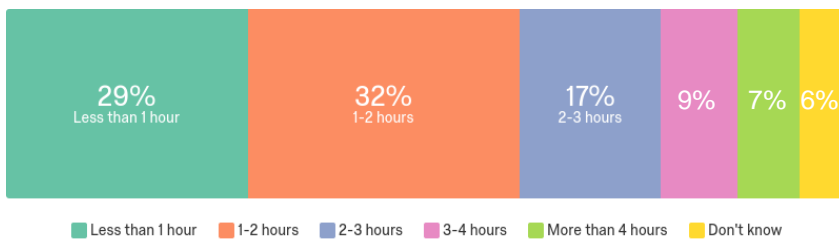
N=1353

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## CHARGING KNOWLEDGE-DCFC (BEV)

**Take Away:** 32% of respondents correctly identify the charge time for a DC fast charger, while nearly half (49%) of all respondents **overestimate** the charge time or don't know.



**Survey Question:** How long would it typically take to fully charge a BEV (battery electric vehicle) using a high-powered charging station that you might find at a location such as a library, grocery store, or curbside?

\*Correct Answer: 1-2 hours

N=1350

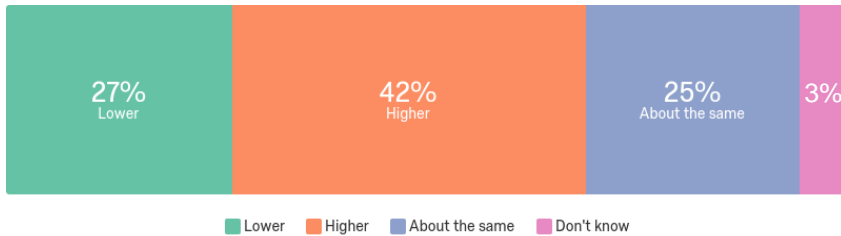
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## MAINTENANCE COSTS KNOWLEDGE (BEV)

**Take Away:** Only 27% of respondents are aware that BEV maintenance costs are lower than those of an ICEV, while 42% believe BEV maintenance costs are higher.



**Survey Question:** When compared to a traditional gas or diesel-powered vehicle (of similar size and with similar features), are the maintenance costs of a BEV (battery electric vehicle) typically...

\*Correct Answer: Lower

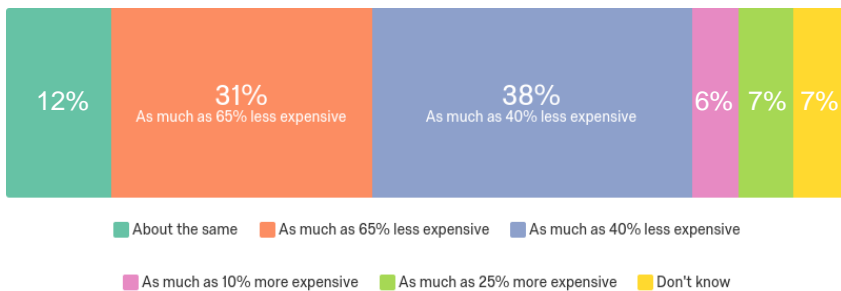
N=1349

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## FUEL COSTS KNOWLEDGE (BEV)

**Take Away:** Most respondents are aware that fuel prices for BEVs are less than ICEVs, although many respondents are not aware of the extent of the cost difference.



**Survey Question:** When compared to a traditional gas or diesel-power vehicle, are the fuel costs (i.e., charging costs) for a BEV (battery electric vehicle) typically...

\*Correct Answer: As much as 65% less expensive

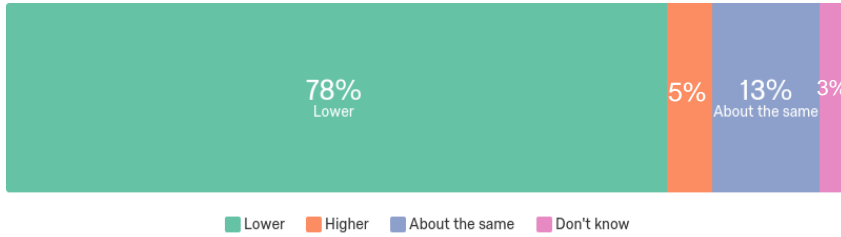
N=1339

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## GREENHOUSE GAS EMISSION KNOWLEDGE (BEV)

**Take Away:** Nearly 80% of respondents are aware that BEVs emit fewer GHGs than ICEVs.



**Survey Question:** When compared to gasoline or diesel fuel, are the greenhouse gas emissions associated with the electricity used to fuel a BEV (battery electric vehicle) typically...

\*Correct Answer: Lower

N=1386

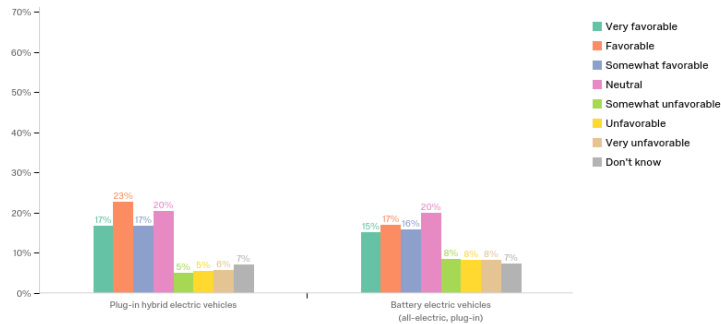
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## GENERAL IMPRESSION OF PEVS

**Take Away:**

- 57% of respondents have favorable impressions of PHEVs
- 48% of respondents have favorable impressions of BEVs



**Survey Question:** What is your general impression of these vehicle types?

N=1435

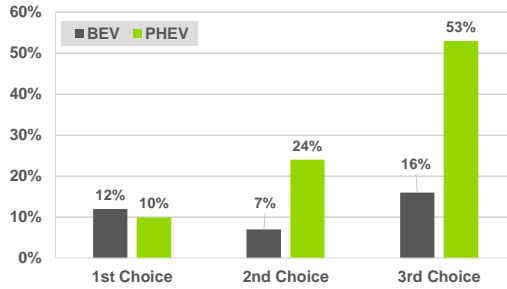
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## FUEL TYPE PREFERENCES

### Take Away:

- 34% of respondents indicate PHEVs are among their first or second vehicle choice by fuel type
- 19% of respondents indicate that BEVs are among their first or second vehicle choice by fuel type



**Survey Question:** Please rank your preference for each of the following fuel types.

N=1435

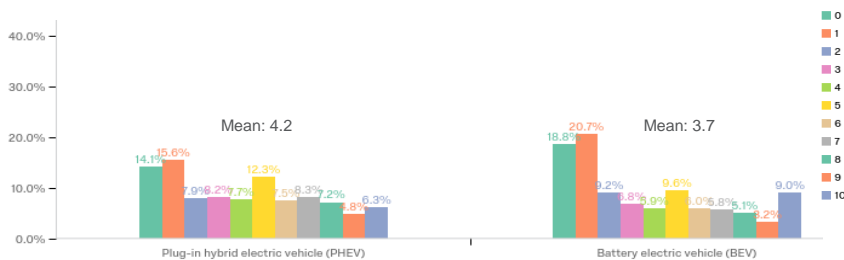
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## LIKELIHOOD OF PURCHASING A PHEV OR BEV

### Take Away:

- 34% of respondents are more likely than not to select a PHEV for their next vehicle
- 29% of respondents are more likely than not to select a BEV



**Survey Question:** Please indicate how likely or unlikely you are to select each of the following vehicle types as your next vehicle (0=very unlikely, 10=very likely).

N=1435

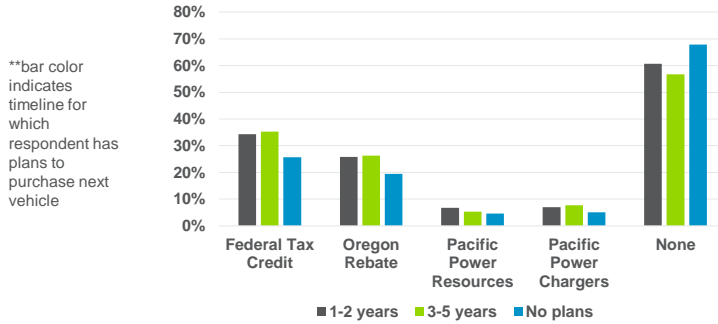
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## EV INITIATIVE AWARENESS BY VEHICLE PURCHASE TIMEFRAME

### Take Away:

- Overall, respondents lack awareness of EV initiatives
- Respondents who are in the car market have slightly higher awareness of all initiatives than those who are not in the market.



Survey Question: Which of the following electric vehicle initiatives were you aware of before taking this survey? Select all that apply.

N=1435

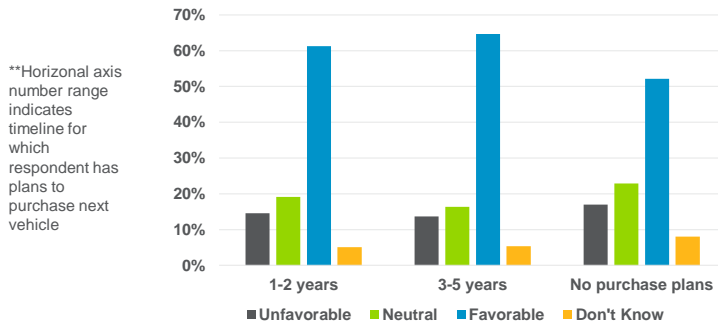
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## GENERAL IMPRESSIONS OF PHEVS BY VEHICLE PURCHASE TIMEFRAME

### Take Away:

- Respondents views toward PHEVs are generally favorable.
- Respondents who are in the market for a new or used vehicle have more favorable impressions of PHEVs than those who are not in the market.



N=1435

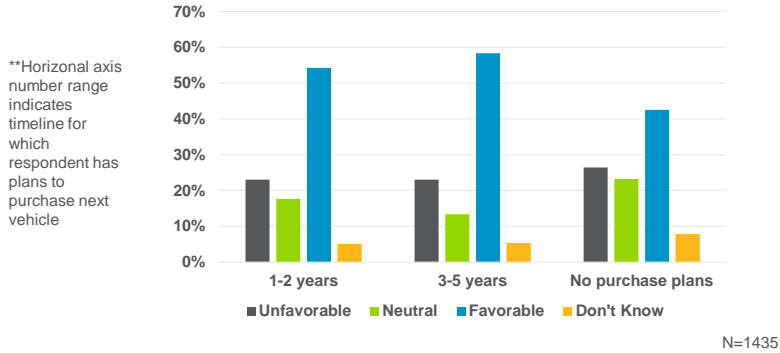
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## GENERAL IMPRESSIONS OF BEVS BY VEHICLE PURCHASE TIMEFRAME

### Take Away:

- Respondents views toward BEVs are generally favorable
- Those who are in the market for a new/used vehicle have more favorable views of BEVs than those who are not in the market.



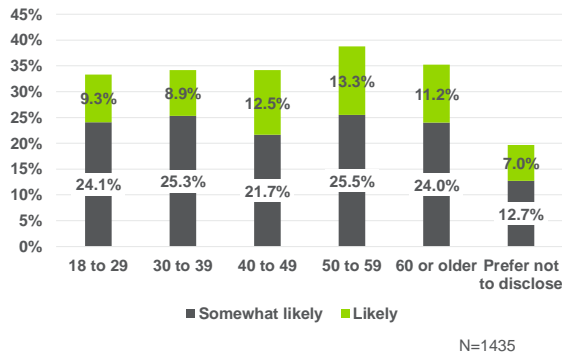
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## LIKELIHOOD OF PURCHASING A PHEV BY AGE

### Take Away:

- Roughly one-third of all customers indicate they are “somewhat likely” or “likely” to purchase a PHEV.
- Customers between the ages of 50 and 59 may be somewhat more likely to purchase a PHEV.



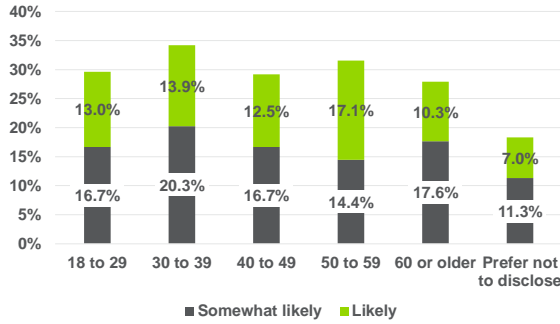
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## LIKELIHOOD OF PURCHASING A BEV BY AGE

### Take Away:

- Roughly one-third of all customers indicate they are “somewhat likely” or “likely” to purchase a BEV.
- Customers between the ages of 30 and 39 may be slightly more likely to purchase a BEV.



N=1435

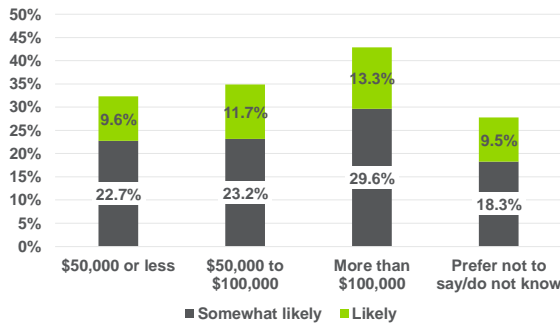
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## LIKELIHOOD OF PURCHASING A PHEV BY INCOME

### Take Away:

- Respondents from higher income brackets are slightly more likely to plan on purchasing a PHEV, although the differences between groups is subtle.



N=1435

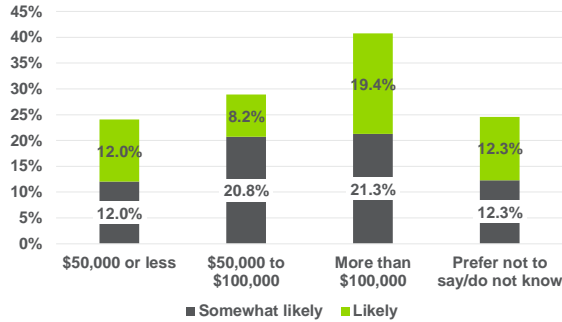
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## LIKELIHOOD OF PURCHASING A BEV BY INCOME

### Take Away:

- Respondents in higher income brackets are more likely to plan on purchasing a BEV than those in lower income brackets.



N=1435

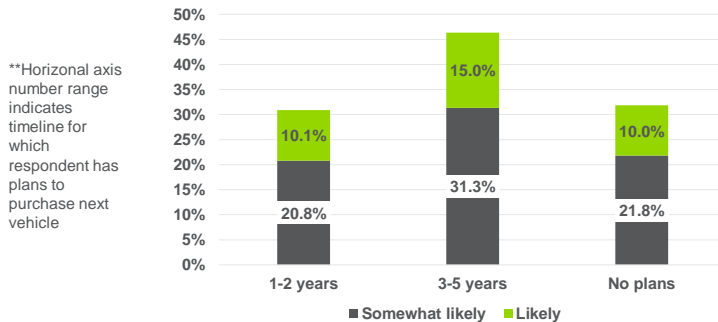
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## LIKELIHOOD OF PURCHASING A PHEV BY PURCHASE TIMEFRAME

### Take Away:

- Respondents who plan to purchase a vehicle in 1-2 years are less likely to plan on purchasing a PHEV than customers who plan to purchase a vehicle in 3-5 years.



N=1435

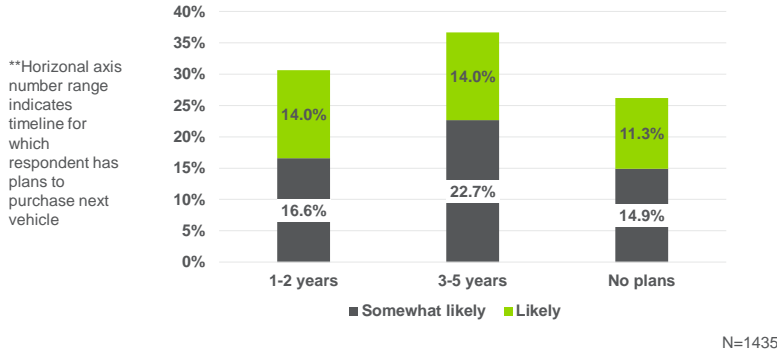
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## LIKELIHOOD OF PURCHASING A BEV BY PURCHASE TIMEFRAME

### Take Away:

- Respondents who plan to purchase a vehicle in 1-2 years are less likely to plan on purchasing a BEV than those who plan to purchase a vehicle in 3-5 years.



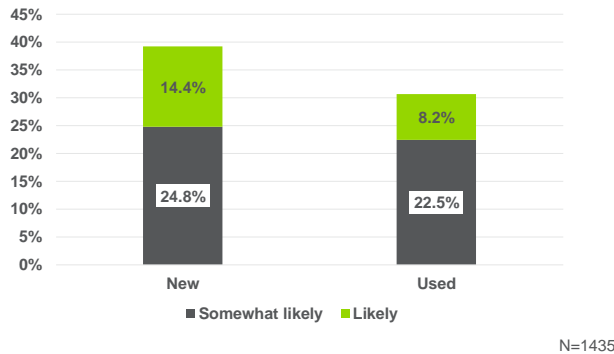
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## LIKELIHOOD OF PURCHASING A PHEV BY INTENTION TO PURCHASE A NEW/USED VEHICLE

### Take Away:

- Respondents who plan to purchase a **new vehicle** are more likely to plan on purchasing a PHEV than those in the used vehicle market.



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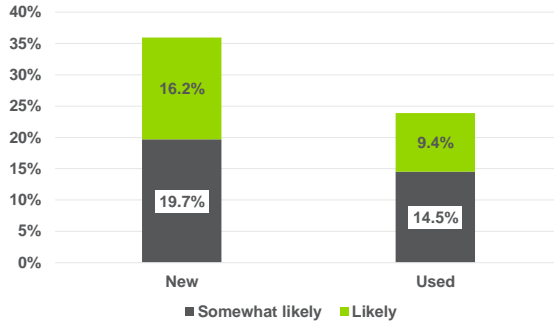
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## LIKELIHOOD OF PURCHASING A BEV BY INTENTION TO PURCHASE A NEW/USED VEHICLE

### Take Away:

- Respondents who plan to purchase a **new vehicle** are more likely to plan on purchasing a BEV than those in the used vehicle market



N=1435

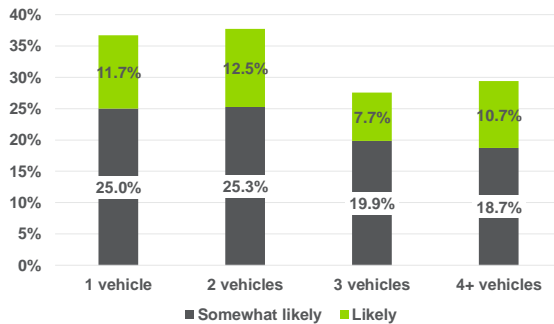
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## LIKELIHOOD OF PURCHASING A PHEV BY NUMBER OF CURRENT HOUSEHOLD VEHICLES

### Take Away:

- Respondents with a larger number of household vehicles are less likely to plan on purchasing a PHEV.



N=1421

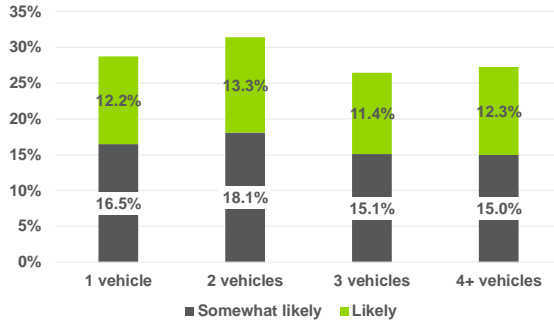
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## LIKELIHOOD OF PURCHASING A BEV BY NUMBER OF CURRENT HOUSEHOLD VEHICLES

### Take Away:

- Respondents with 2 household vehicles are slightly more likely to plan on purchasing a BEV than respondents with fewer or more vehicles.



N=1421

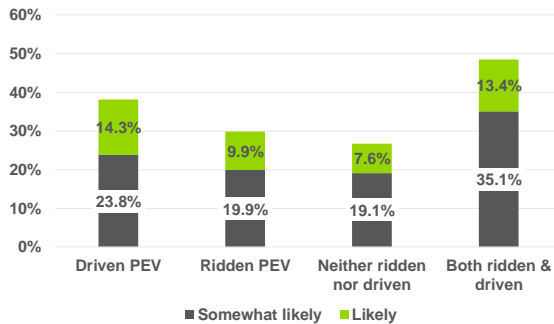
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## LIKELIHOOD OF PURCHASING A PHEV BY PAST EXPERIENCE WITH PEVS

### Take Away:

- Respondents who have both ridden in and driven a PEV are more likely to purchase a PHEV than those who have only ridden or driven.



N=1435

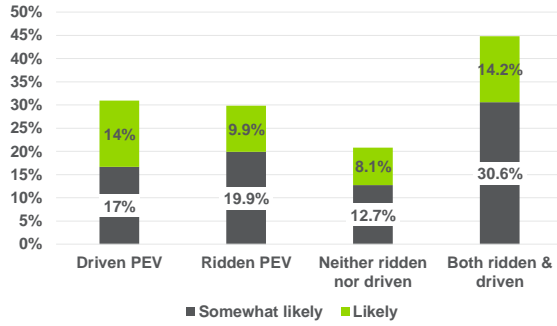
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## LIKELIHOOD OF PURCHASING A BEV BY PAST EXPERIENCE WITH PEVS

### Take Away:

- Respondents who have both ridden in and driven a PEV are more likely to purchase a BEV than those who have only ridden or driven.



N=1435