The Webinar will begin shortly

Submit your questions in the Q&A and we will answer them at the end of the presentation.

For tech support call (707) 382-7110

August 26th, 2020
Overview

• Introduction
• Financial incentives
• Fuel and maintenance savings
• Charging stations
• Other tips, tricks, and factoids
• Q&A
Disclaimer/Note

• Unless otherwise noted, information about vehicles was obtained from Kelly Blue Book, Edmunds, and/or EV Insider magazine.

• The electric vehicle market changes rapidly. Values/information listed herein are representative of the most recent information as of August 2020. Individuals are encouraged to use the resources described in these slides to verify the currency of this information.

• Individuals are encouraged to view these slides in tandem with the video recording. These information on these slides are not comprehensive; the audio in the video provides additional details on each slide.
What is a ZEV?
Battery Electric Vehicle (BEV)
Plug-in Hybrid Electric Vehicle (PHEV)

2019 Subaru Crosstrek Plug-In Hybrid
Standard Hybrid

2011 Toyota Prius

2019 Ram 1500
Humboldt County Emissions (2015)

- Transportation: 54%
- Stationary Combustion: 13%
- Livestock: 13%
- Electricity: 11%
- Industrial Sources: 5%
- Solid Waste: 4%
- Wastewater Treatment: <1%
- Leaked Refrigerants: <1%
Transportation Emissions Breakdown

- On-Road Passenger Vehicles: 48.1%
- Retail and Commercial Trucks: 34.8%
- Off-Road Vehicles and Equipment: 15.6%
- Air: 0.5%
- Marine: 0.9%
Zero Emissions Vehicle Executive Order

By 2030
5 million ZEVs on California roads

By 2025
240,000 L2 charging stations
10,000 L3 charging stations
200 hydrogen fueling stations
Zero Emission Vehicles in Humboldt County

Number of EVs in Humboldt County

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Electric Vehicles</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>68</td>
</tr>
<tr>
<td>2011</td>
<td>72</td>
</tr>
<tr>
<td>2012</td>
<td>74</td>
</tr>
<tr>
<td>2013</td>
<td>95</td>
</tr>
<tr>
<td>2014</td>
<td>195</td>
</tr>
<tr>
<td>2015</td>
<td>331</td>
</tr>
<tr>
<td>2016</td>
<td>493</td>
</tr>
<tr>
<td>2017</td>
<td>693</td>
</tr>
<tr>
<td>2018</td>
<td>729</td>
</tr>
<tr>
<td>2019</td>
<td>939</td>
</tr>
</tbody>
</table>

- BEV
- PHEV
## Battery Electric Vehicles (BEV)

<table>
<thead>
<tr>
<th>MSRP/Lease</th>
<th>Battery (kWh)</th>
<th>Range (miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Manufacturers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suggested Sale Price)</td>
<td>Battery</td>
<td></td>
</tr>
<tr>
<td>$9,030</td>
<td>30</td>
<td>107</td>
</tr>
<tr>
<td>$20,300</td>
<td>64</td>
<td>258</td>
</tr>
<tr>
<td>$28,464</td>
<td>60</td>
<td>238</td>
</tr>
</tbody>
</table>

- **2016 Nissan Leaf (used)**
- **2020 Hyundai Kona**
- **2019 Chevy Bolt (used)**
# Plug-in Hybrid Electric Vehicles (PHEV)

<table>
<thead>
<tr>
<th>Year</th>
<th>Model</th>
<th>MSRP</th>
<th>Battery Size</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>Kia Niro (Used)</td>
<td>$21,749</td>
<td>8.9 kWh</td>
<td>26 (electric)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>11.4 gallons</td>
<td>535 (total)</td>
</tr>
<tr>
<td>2019</td>
<td>Mitsubishi Outlander</td>
<td>$22,969</td>
<td>13.8 kWh</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>11.3 gal</td>
<td>288</td>
</tr>
<tr>
<td>2020</td>
<td>Subaru Crosstreek</td>
<td>$35,145</td>
<td>8.8 kWh</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>AWD</td>
<td></td>
<td>13.2 gal</td>
<td>480</td>
</tr>
<tr>
<td></td>
<td>MSRP</td>
<td>Battery</td>
<td>Range (miles)</td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td>-------</td>
<td>------------------</td>
<td>-----------------</td>
<td></td>
</tr>
<tr>
<td>2017 Chevy Volt (used)</td>
<td>$17,053</td>
<td>18.4 kWh, 8.9 gallons</td>
<td>53 (electric), 420 (total)</td>
<td></td>
</tr>
<tr>
<td>2018 Toyota Prius Prime</td>
<td>$23,811</td>
<td>9 kWh, 11.3 gal</td>
<td>25, 640</td>
<td></td>
</tr>
</tbody>
</table>
Financial Incentives
Federal Tax Credit Amount

• BEV/PHEV
• $2,500 - $7,500
• Amount changes depending on vehicle (additional $417 for every kWh of battery capacity above 5 kWh minimum)

Eligibility
• Models are phased out of eligibility after the manufacturer has sold 200,000 (ex. Tesla and Chevrolet EVs are no longer eligible)
• Only applies to new vehicles
Rebate Amount
• BEV: $2,000 - $4,500
• PHEV: $1,000 - $3,500

Eligibility
• New EV/PHEV
• Purchase or lease
• Must apply within 3 months of EV purchase
• See website for eligible vehicle list
Grant Amounts

- HEV: $2,500
- PHEV: $5,000
- BEV: $5,000
- Includes a Level 2 charger installed in your home OR $1,000 prepaid charge card

Financing

- $1000 buyer contribution (down payment or loan)
- Loans must have an interest rate ≤12%

Vehicle eligibility

- New (purchase or lease)
- If used, must have less than 75,000 miles and be ≤ 8 years old
- Must meet minimum MPG requirements

Income Eligibility

<table>
<thead>
<tr>
<th>Number of People*</th>
<th>Maximum Gross Annual Income**</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$51,040</td>
</tr>
<tr>
<td>2</td>
<td>$68,960</td>
</tr>
<tr>
<td>3</td>
<td>$86,880</td>
</tr>
<tr>
<td>4</td>
<td>$104,800</td>
</tr>
<tr>
<td>5</td>
<td>$122,720</td>
</tr>
<tr>
<td>6</td>
<td>$140,640</td>
</tr>
<tr>
<td>7</td>
<td>$158,560</td>
</tr>
<tr>
<td>8</td>
<td>$176,480</td>
</tr>
</tbody>
</table>
PG&E Clean Fuel Rebate
$800

Vehicle Eligibility
New or used EV (can only be claimed once per vehicle)

Funds can be used for charging or installing a home charger

Income Eligibility
No income requirements
Estimated Capital Savings

$7,716 (Estimated Price)
-$5000 (CVAP)

$2,716

2017 Used Fiat 500e
(84 mile range)
Estimated Capital Savings

2020 Nissan Leaf
(150 mile range)

$31,600 (MSRP)
-$2,000 (CVRP)
-$7,500 (Federal Tax Credit)
-$5,000 (CVAP)

$17,100
Insurance Incentives

Several insurance providers offer discounts to drivers of alternative fuel vehicles.
HOV Access

Active: January 1, 2018 – 2022
RCEA EV Rebate

• In October, RCEA will open an Electric Vehicle rebate for customers
• The rebate will be an add-on to the Clean Vehicle Rebate Project
  ▪ RCEA will match 50% of the amount customer received from the CVRP

Eligibility:

▪ Open to all commercial and residential customers
▪ Must submit application to RCEA within 3 months of receiving final approval from the CVRP
Maintenance and Fuel Savings
Maintenance Costs & Savings

Gas Car
~2,000 moving parts

Electric Car
~20 moving parts
### How Do Maintenance Costs Vary With Mileage?

<table>
<thead>
<tr>
<th>Mileage</th>
<th>Total Maintenance Costs per 25k Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-25,000</td>
<td>$1,400</td>
</tr>
<tr>
<td>25,000 - 50,000</td>
<td>$2,200</td>
</tr>
<tr>
<td>50,000 - 75,000</td>
<td>$3,000</td>
</tr>
<tr>
<td>75,000 - 100,000</td>
<td>$3,900</td>
</tr>
<tr>
<td>100,000 - 125,000</td>
<td>$4,100</td>
</tr>
<tr>
<td>125,000 - 150,000</td>
<td>$4,400</td>
</tr>
<tr>
<td>150,000 - 175,000</td>
<td>$4,800</td>
</tr>
<tr>
<td>175,000 - 200,000</td>
<td>$5,000</td>
</tr>
</tbody>
</table>

**Average New Car Maintenance and Repairs (AAA)**

- Gas: $1186/year
- Electric: $982/year
Battery Replacement

• Batteries degrade to about 80% of their capacity after 8 years
• Most EV manufacturers offer warranties of different lengths on their batteries (ex. 8 years, 100,000 miles)
Fuel Savings

Chevy 2017 Bolt

$0.18
1 kWh × 66 kWh × 15,000 miles = $688

$3.80
1 Gallon × 15.3 gallons × 15,000 miles = $1,900

64 % Savings = $1,212
Fuel Savings (cont.)

Chevy 2020 Bolt

- $0.18/kWh
- 66 kWh
- 15,000 miles

$688 Per year

60 % Savings = $1,040

2020 Chevy Malibu

- $3.80/Gallon
- 15.8 gallons
- 15,000 miles

$1,728 Per year
# Overall Savings

<table>
<thead>
<tr>
<th>Cost</th>
<th>Average 2019 EV</th>
<th>Average 2019 Gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Costs</td>
<td>$30,419</td>
<td>$16,485</td>
</tr>
<tr>
<td>Maintenance</td>
<td>$982</td>
<td>$1186</td>
</tr>
<tr>
<td>Fuel</td>
<td>$680</td>
<td>$1,728</td>
</tr>
<tr>
<td>One year</td>
<td>$32081</td>
<td>$19399</td>
</tr>
<tr>
<td>Incremental Cost (NPV, 8 years)</td>
<td></td>
<td>$4740</td>
</tr>
<tr>
<td>Incremental Cost (NPV, 10 years)</td>
<td></td>
<td>$2848</td>
</tr>
<tr>
<td>Incremental Cost (NPV, 14 years)</td>
<td></td>
<td>$615</td>
</tr>
</tbody>
</table>
## Overall Savings

<table>
<thead>
<tr>
<th>Cost</th>
<th>Average 2019 EV</th>
<th>Average 2019 Gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Costs</td>
<td>$30,419</td>
<td>$37,577</td>
</tr>
<tr>
<td>Maintenance</td>
<td>$982</td>
<td>$1186</td>
</tr>
<tr>
<td>Fuel</td>
<td>$680</td>
<td>$1,728</td>
</tr>
<tr>
<td>One year</td>
<td>$32081</td>
<td>$19399</td>
</tr>
<tr>
<td>Incremental Cost (NPV, 8 years)</td>
<td></td>
<td>$4740</td>
</tr>
<tr>
<td>Incremental Cost (NPV, 10 years)</td>
<td></td>
<td>$2848</td>
</tr>
<tr>
<td>Incremental Cost (NPV, 14 years)</td>
<td></td>
<td>$615</td>
</tr>
</tbody>
</table>

Average new light-duty car price (December 2018)
<table>
<thead>
<tr>
<th>Cost</th>
<th>Average 2019 EV</th>
<th>Average 2019 Gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Costs</td>
<td>$30,419</td>
<td>$16,485</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Average used car price (December 2018) $37,577 $19,400</td>
</tr>
<tr>
<td>Maintenance</td>
<td>$982</td>
<td>$1186</td>
</tr>
<tr>
<td>Fuel</td>
<td>$680</td>
<td>$1,728</td>
</tr>
<tr>
<td>One year</td>
<td>$32081</td>
<td>$19399</td>
</tr>
<tr>
<td>Incremental Cost (NPV, 8 years)</td>
<td></td>
<td>$4740</td>
</tr>
<tr>
<td>Incremental Cost (NPV, 10 years)</td>
<td></td>
<td>$2848</td>
</tr>
<tr>
<td>Incremental Cost (NPV, 14 years)</td>
<td></td>
<td>$615</td>
</tr>
</tbody>
</table>
Charging Stations
Types of Charging Stations

Level 3
- *Travel*
  - 1 to 1.5 hours

Level 2
- *Public or Home*
  - 4 to 8 hours

Level 1
- *Residential*
  - 10 to 40 hours to recharge
EV Charging Stations in Our Region
70 miles

139 miles

149 miles
Future Fast Charge Network:

Leave the range anxiety behind!
Average daily trip is 30 miles!
Other Tips and Tricks
Dealer Tips

• Sometimes it’s better to lease EVs than buy, due to obsolescence and faster-than-usual depreciation
• If the EV is a secondary car, buying may be more feasible
• Check for overall battery capacity when buying used (dealers often won’t know)
• Single pay up front for lease is cheaper
Dealer Tips Cont’d

- Get quotes via e-mail from out of area first, then use to negotiate with local dealers
- **Tips for getting the best deal on a lease** (for all cars and includes math that will be the key to great negotiation skills; especially relevant to an EV)
- **Tips from a Driver Who has Leased 4 Evs**
- **Consumer Reports Tips**
Get the Most Out of Your Battery

1) Speed
Get the Most Out of Your Battery

1) Speed
2) Charge to 80%
Get the Most Out of Your Battery

1) Speed
2) Charge to 80%
3) Park in the shade
Get the Most Out of Your Battery

1) Speed
2) Charge to 80%
3) Park in the shade
4) Heating and AC
Get the Most Out of Your Battery

1) Speed
2) Charge to 80%
3) Park in the shade
4) Heating and AC
5) Tires
Get the Most Out of Your Battery

1) Speed
2) Charge to 80%
3) Park in the shade
4) Heating and AC
5) Tires
6) Travel light
Get the Most Out of Your Battery

1) Speed
2) Charge to 80%
3) Park in the shade
4) Heating and AC
5) Tires
6) Travel light
7) Recharge at 30%
Get the Most Out of Your Battery

1) Speed
2) Charge to 80%
3) Park in the shade
4) Heating and AC
5) Tires
6) Travel light
7) Recharge at 30%
8) Use a charging timer
Get the Most Out of Your Battery

1) Speed
2) Charge to 80%
3) Park in the shade
4) Heating and AC
5) Tires
6) Travel light
7) Recharge at 30%
8) Use a charging timer
9) Temper fast charging
Greenhouse Gas Emissions

EV long-range (265 miles)
- Manufacturing emissions ↑ 68%
- Overall emissions ↓ 53%

Pay back = 19,000 miles

Extra emissions during production are rapidly negated by reduced emissions from driving.
EV Midrange (84 miles)
Manufacturing emissions ↑ 15 %
Overall emissions ↓ 51 %

Pay back = 4,900 miles
Thank You

Sophia Valenzuela
svalenzuela@redwoodenergy.org
Q&A