



Electric Vehicle Purchasing 101

June 13th, 2019



REDWOOD COAST
EnergyAuthority

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 June 2019. 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.

The background image is a faded photograph of a car show taking place on a city street. In the foreground, a man in a white t-shirt and dark cap is looking at a silver car with its hood open. A young child stands next to him. To the left, a woman in a purple shirt is walking. Further back, other people are gathered around various cars, including a small blue car. The street is lined with trees and buildings, including a prominent light blue building with white trim. The overall scene is bright and sunny.

What is a ZEV?

2016 Kia Soul EV

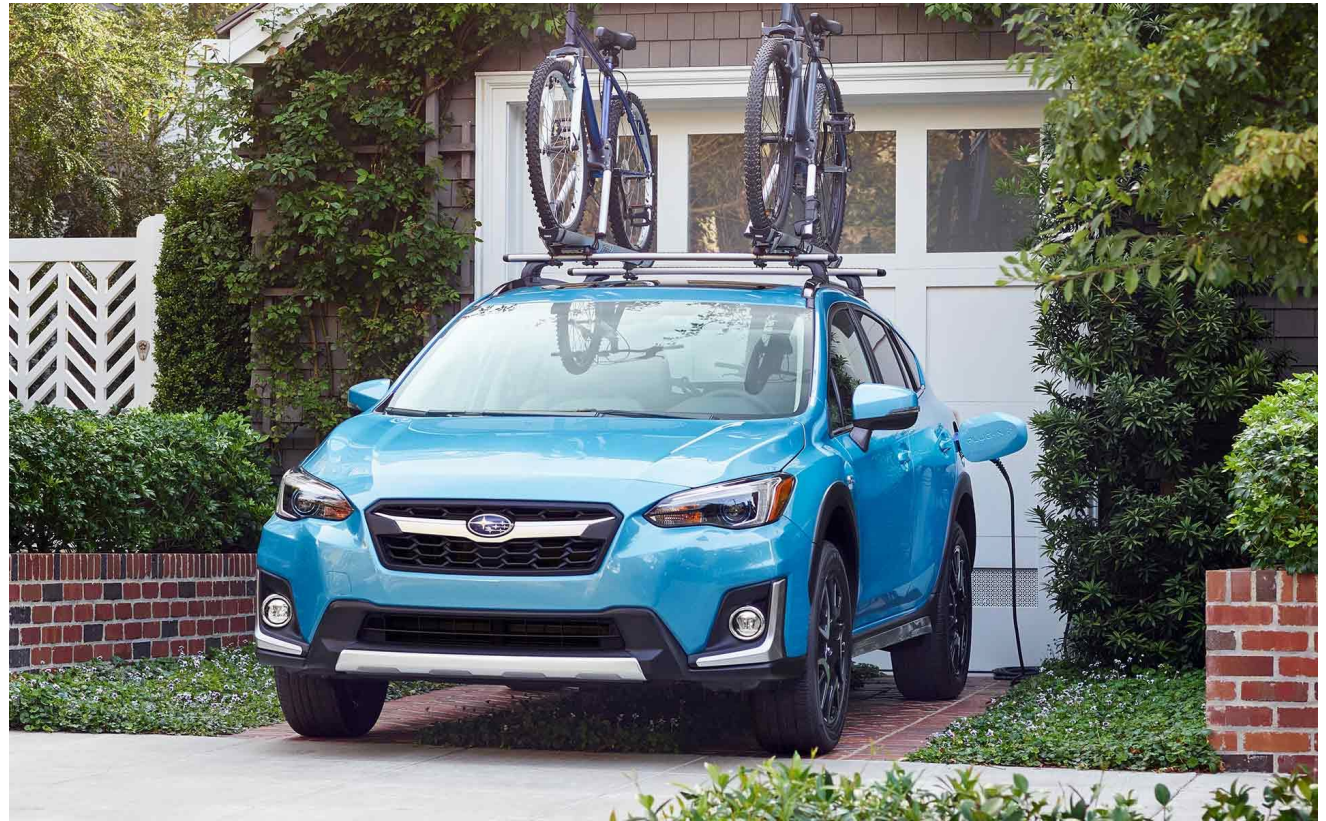


Battery Electric Vehicle (BEV)



2019 Hyundai Kona

Plug-in Hybrid Electric Vehicle (PHEV)



2019 Subaru Crosstrek Plug-In Hybrid

Standard Hybrid

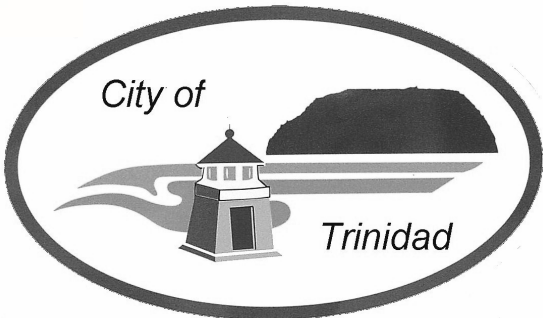
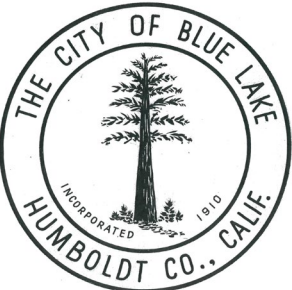


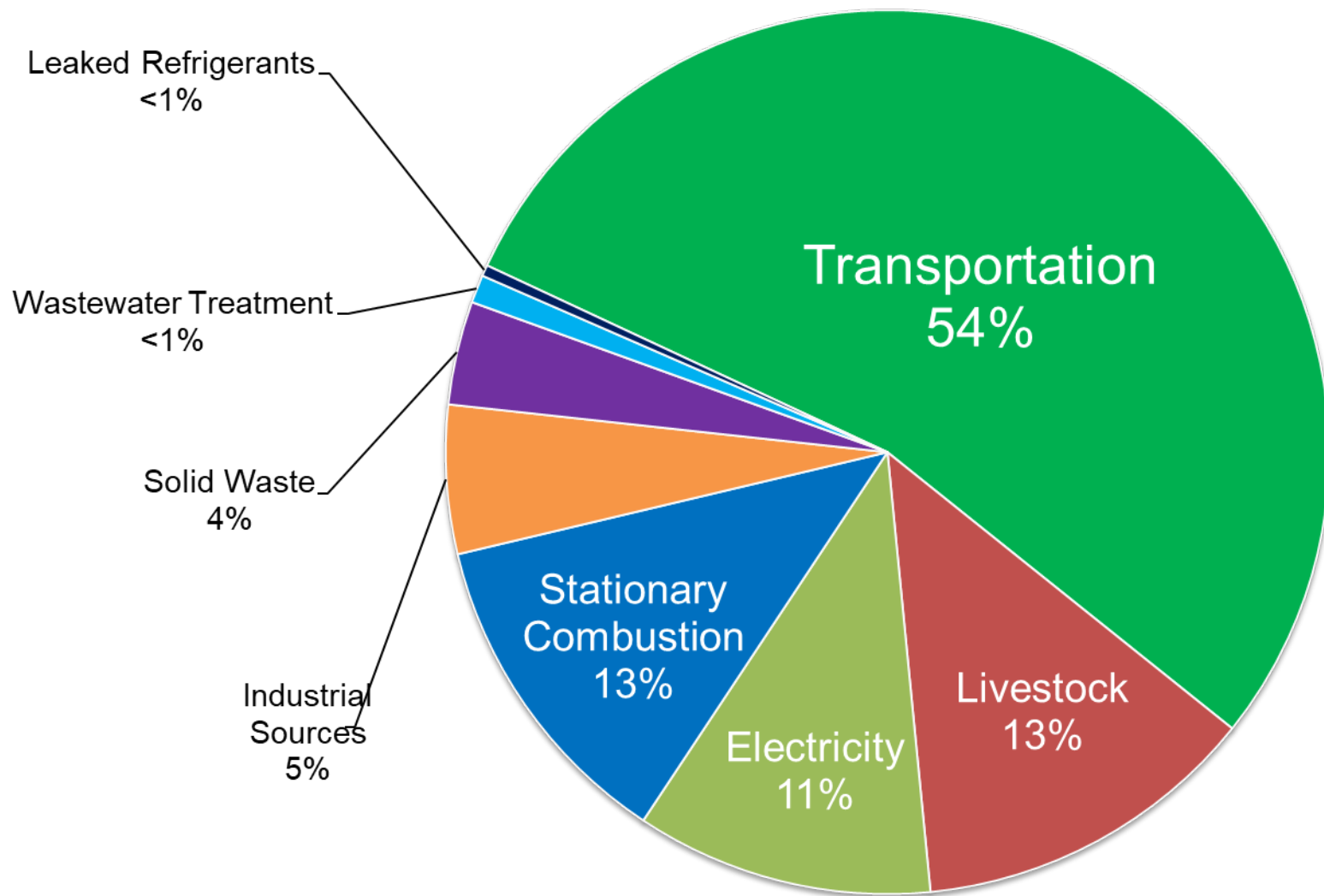
2011 Toyota Prius

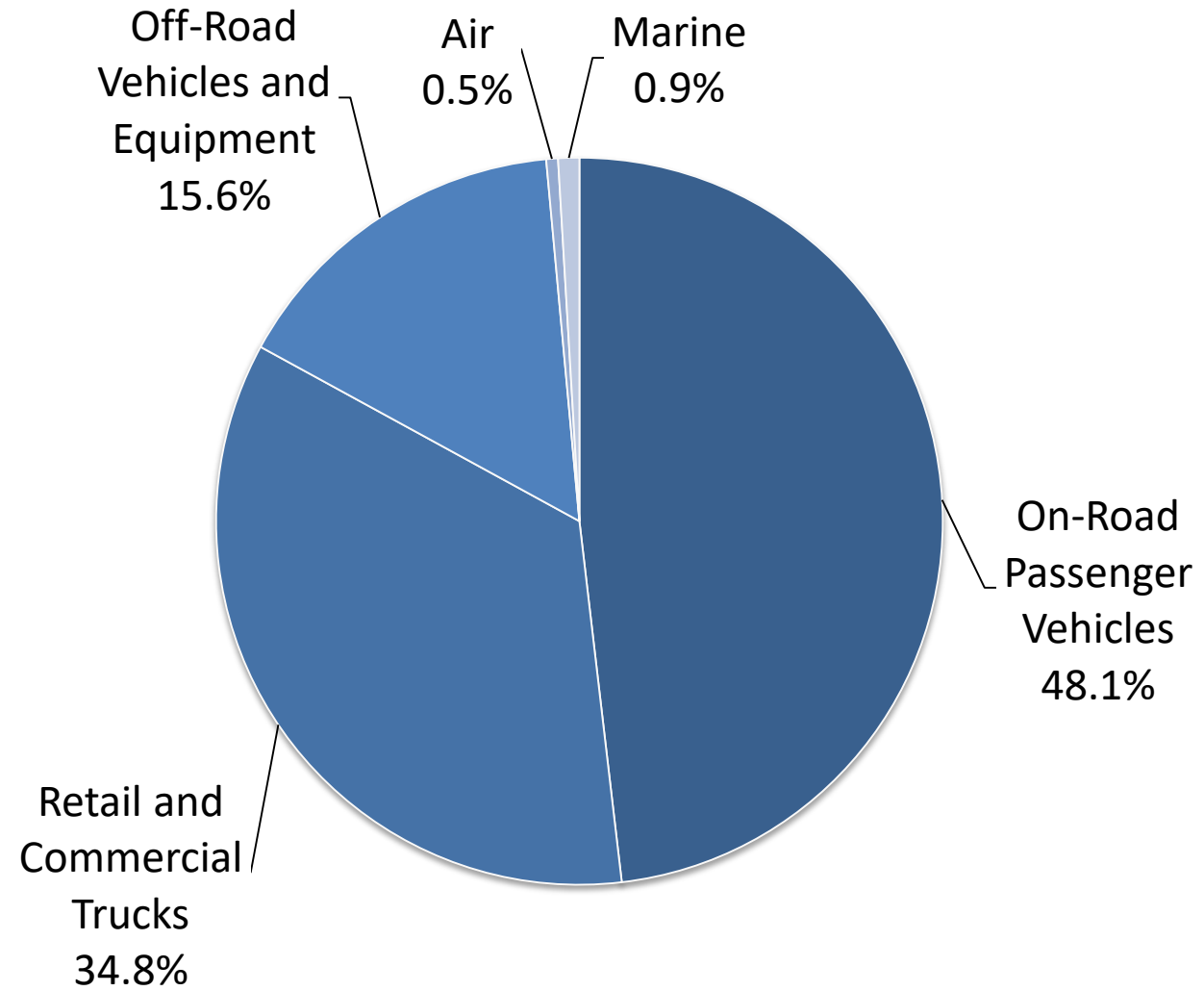


2019 Ram 1500

RCEA Advanced Fuels and Transportation Program







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



Office of Governor
Edmund G. Brown Jr.

Battery Electric Vehicles (BEV)



2015 Nissan
Leaf (used)



2019
Hyundai
Kona



2018 Chevy
Bolt (used)

MSRP/Lease (Manufacturers Suggested Sale Price)	Battery (kWh)	Range (miles)
\$10,459	24	84
\$37,495	64	258
\$28,867	60	238

Plug-in Hybrid Electric Vehicles (PHEV)



2018 Kia
Niro



2018
Mitsubishi
AWD



2019 Subaru
Crosstrek
AWD

MSRP	Battery Gas	Range (miles)
\$27,900- \$29,000	8.9 kWh 11.3 gallons	26 (electric) 535 (total)
\$34,595	12 kWh 11.3 gal	22 288
\$35,970	8.8 kWh 13.2 gal	17 480

PHEV Cont'd



2017 Chevy
Volt (used)



2018 Toyota
Prius Prime

MSRP	Battery Gas	Range (miles)
\$17,896	18.4 kWh 8.9 gallons	53 (electric) 420 (total)
\$27,077	9 kWh 11.3 gal	25 640

Financial Incentives





Federal Tax Credit Amount

- EV/PHEV
- \$2,500 - \$7,500
- Price changes depending on vehicle

Eligibility

- Minimum tax liability of
- \$2,500 - \$7,500



Rebate Amount

- EV: \$2,500 - \$3,500
- PHEV: \$1,500 - \$3,500

Eligibility

- New EV/PHEV
- Purchase or lease

Income Eligibility

Income Cap

- \$150,000 for single filers
- \$204,000 for head-of-household filers
- \$300,000 for joint filers

2018 Increased Rebate Income Limits

Household Size	Combined Household Income must be less than*:
1	\$36,420
2	\$49,380
3	\$62,340
4	\$75,300
5	\$88,260
6	\$101,220
7	\$114,180



clean vehicle
assistance program

Grant Amounts

- HEV: \$2500
- PHEV: \$5000
- BEV: \$5000

Financing

- \$1000 buyer contribution
- $< \text{ or } = 8\%$ interest rate
loans

Vehicle eligibility

- New
- If used, must have less than 75,000 miles or be at least 8 years old

Income Eligibility

Number of People	Annual Income
1	\$48,560
2	\$65,840
3	\$83,120
4	\$100,400
5	\$117,680
6	\$134,960
7	\$152,240
8	\$169,520



PG&E Rebate Amount

\$800

Income Eligibility

No income requirements

Vehicle Eligibility

New or used EV only

If used cannot be the third owner

Estimated Capital Savings



2015 Used Fiat 500e
(80-90 mile range)

\$8,315

-\$5000 (CVAP)

-\$800 (PG&E)

\$2515

Estimated Capital Savings



2017 Chevy Bolt
(238 mile range)

\$11,500

-\$2500 (CVRP)

-\$500 (PG&E)

\$8500

Insurance Incentives



HOV Access



Active: January 1, 2018 – 2022

Service For:

Residential CARE Customer
1234 Main Street
Anytown, CA 000000

Questions about your bill?

Monday-Friday 7 a.m.-9 p.m.
Saturday 8 a.m.-6 p.m.
Phone: 1-800-743-5000
www.pge.com/MyEnergy

Local Office Address

111 STONY CIR
SANTA ROSA, CA 95401

Your Enrolled Programs

CARE Discount, CA Climate Credit

Important Messages

Your Account Summary

Amount Due on Previous Statement	\$334.72
Payment(s) Received Since Last Statement	0.00
Previous Unpaid Balance	\$334.72
Current Electric Charges	\$197.74
Electric Adjustments	-39.42
Current Gas Charges	69.89

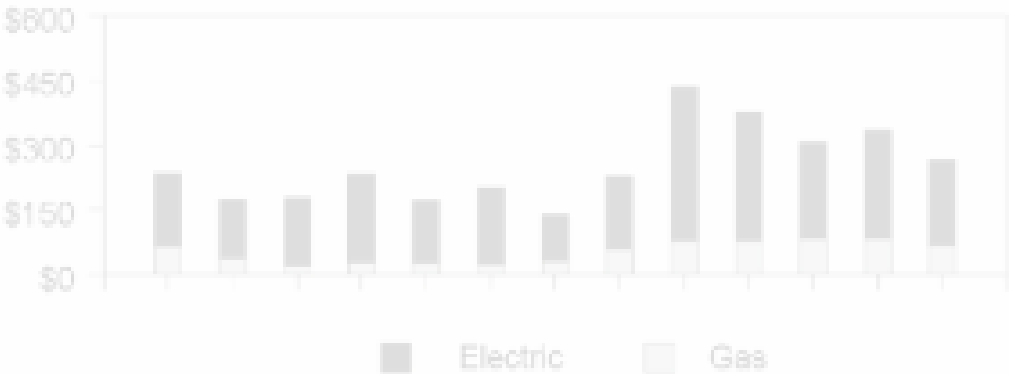
Total Amount Due by \$562.93



Current charges include discounts of \$169.58 for CARE and CA Climate Credit.

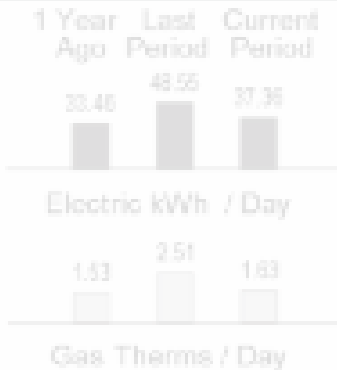
Maintenance and Fuel Savings

Monthly Billing History



Visit www.pge.com/MyEnergy for a detailed bill comparison

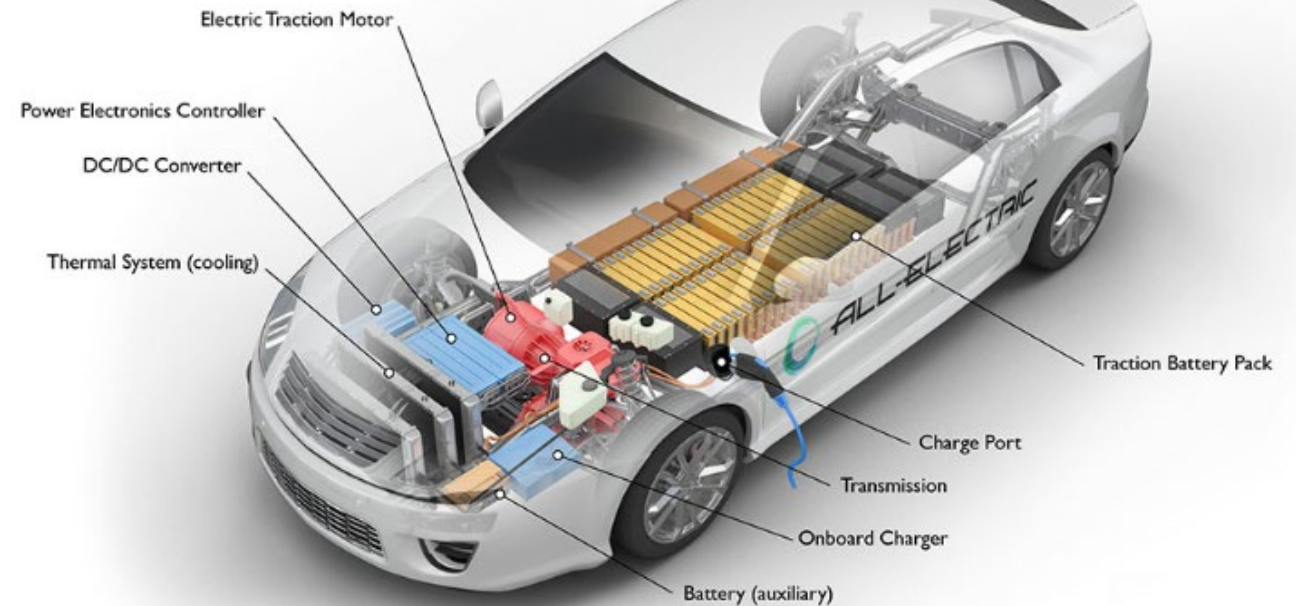
Daily Usage Comparison



Maintenance Costs & Savings



Gas Car
~2,000 moving parts



afdc.energy.gov

Electric Car
~20 moving parts

How Do Maintenance Costs Vary With Mileage?

Based on Maintenance Performed by YourMechanic

Mileage	Total Maintenance Costs per 25k Miles
0- 25,000	\$1,400
25,000 - 50,000	\$2,200
50,000 - 75,000	\$3,000
75,000 - 100,000	\$3,900
100,000 - 125,000	\$4,100
125,000 - 150,000	\$4,400
150,000 - 175,000	\$4,800
175,000 - 200,000	\$5,000

Average New Car Maintenance and Repairs (AAA)

Gas: \$1186/year

Electric: \$982/year

Battery Replacement???



Fuel Savings



Chevy 2017 Bolt

$$\frac{\$0.18}{1 \text{ kWh}} \times \frac{60 \text{ kWh}}{238 \text{ miles}} \times \frac{15,000 \text{ miles}}{1 \text{ year}} = \$680.67 \text{ Per year}$$

64 % Savings = \$1,219



2006 Honda Accord

$$\frac{\$3.80}{1 \text{ Gallon}} \times \frac{15.3 \text{ gallons}}{459 \text{ miles}} \times \frac{15,000 \text{ miles}}{1 \text{ year}} = \$1,900 \text{ Per year}$$



Chevy 2018 Bolt

$$\frac{\$0.18}{1 \text{ kWh}} \times \frac{60 \text{ kWh}}{238 \text{ miles}} \times \frac{15,000 \text{ miles}}{1 \text{ year}} = \$680 \text{ Per year}$$

60 % Savings = \$1,048



2018 Chevy Malibu

$$\frac{\$3.80}{1 \text{ Gallon}} \times \frac{15.8 \text{ gallons}}{521 \text{ miles}} \times \frac{15,000 \text{ miles}}{1 \text{ year}} = \$1,728 \text{ Per year}$$

Overall Savings

Cost	Average 2019 EV	Average 2019 Gas
Capital Costs	\$30,419	\$16,485
Maintenance	\$982	\$1186
Fuel	\$680	\$1,728
One year	\$32081	\$19399
Incremental Cost (NPV, 8 years)	\$4740	
Incremental Cost (NPV, 10 years)	\$2848	
Incremental Cost (NPV, 14 years)	\$615	

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Overall Savings

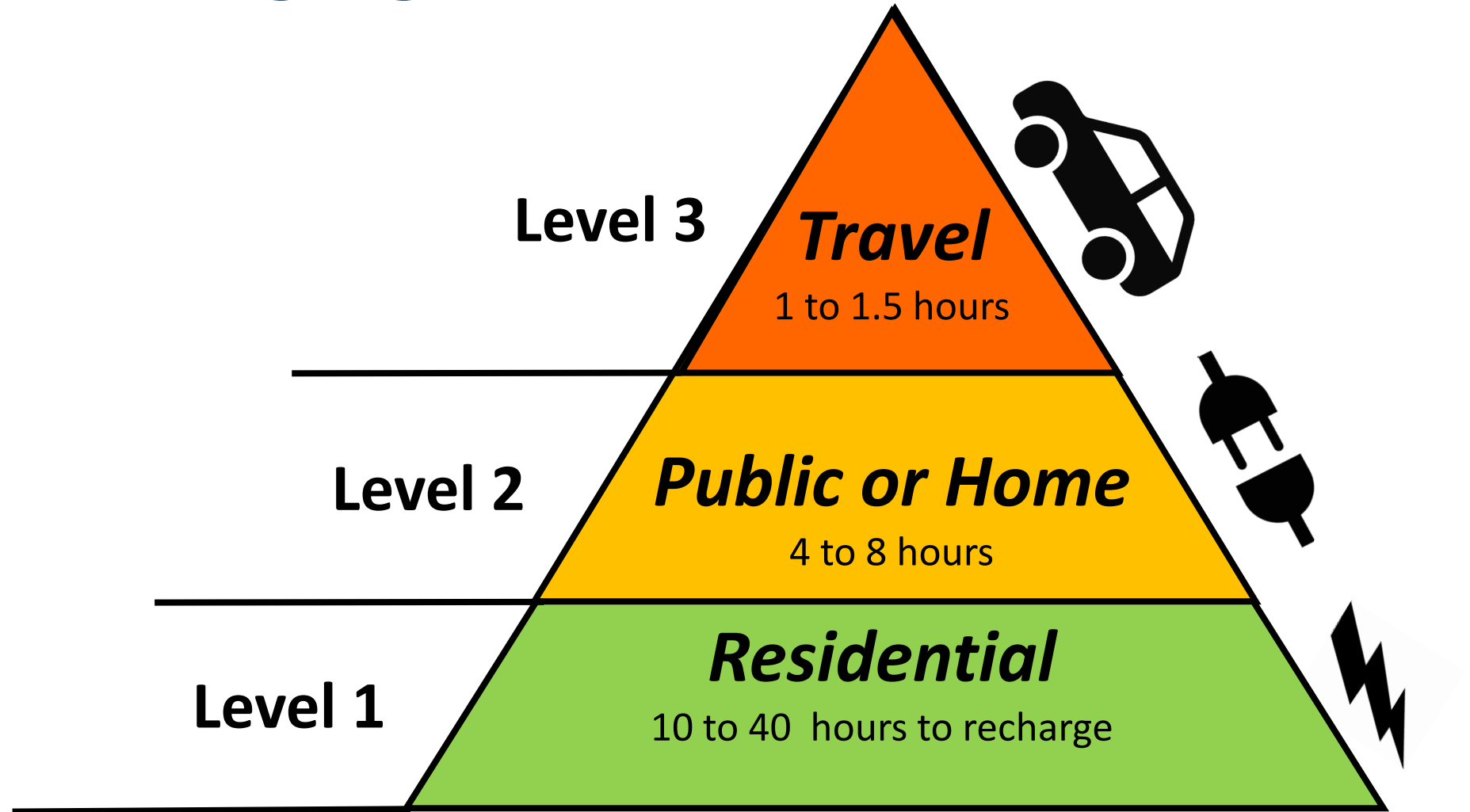
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Average used car price
(December 2018)

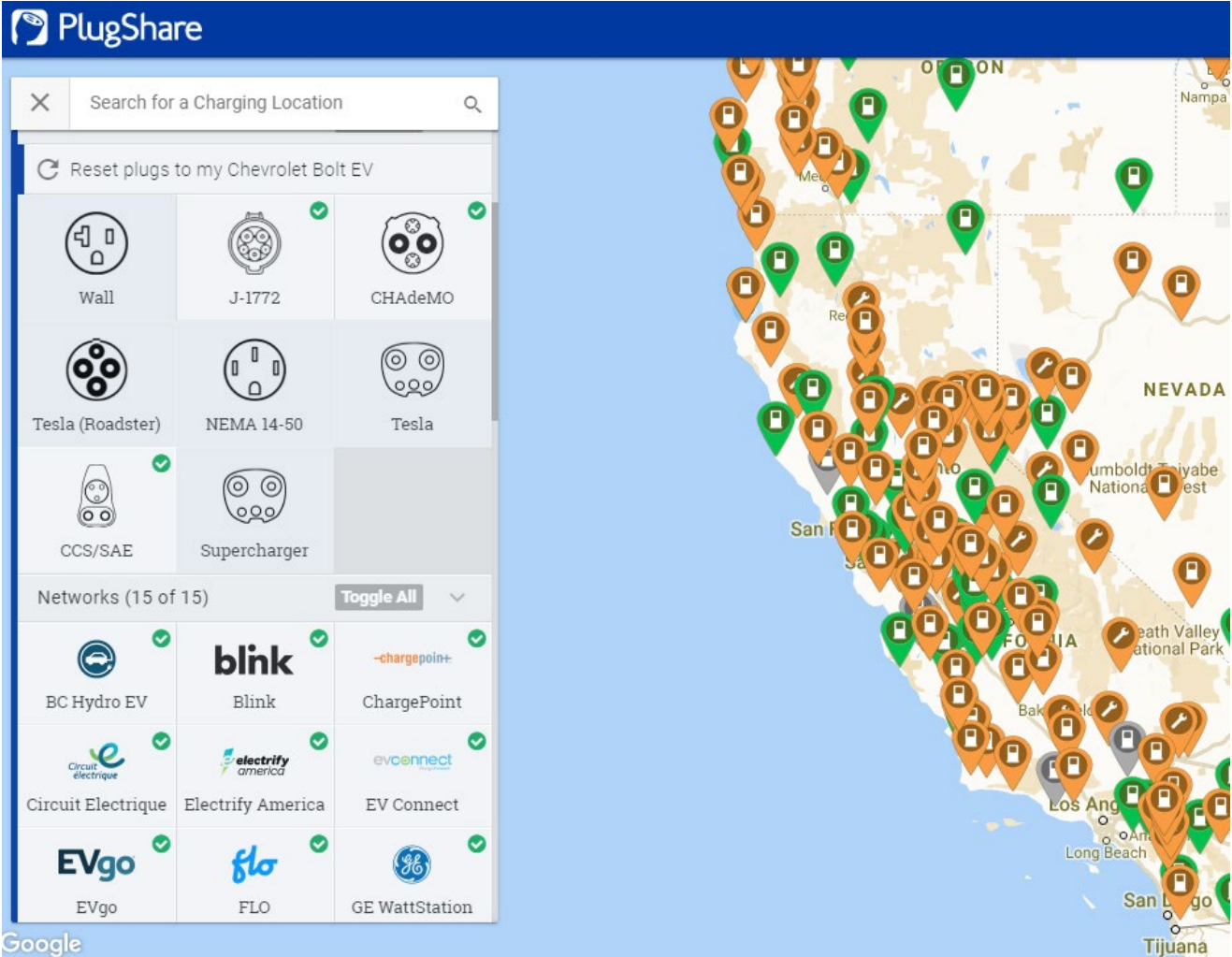
Charging Stations



Types of Charging Stations



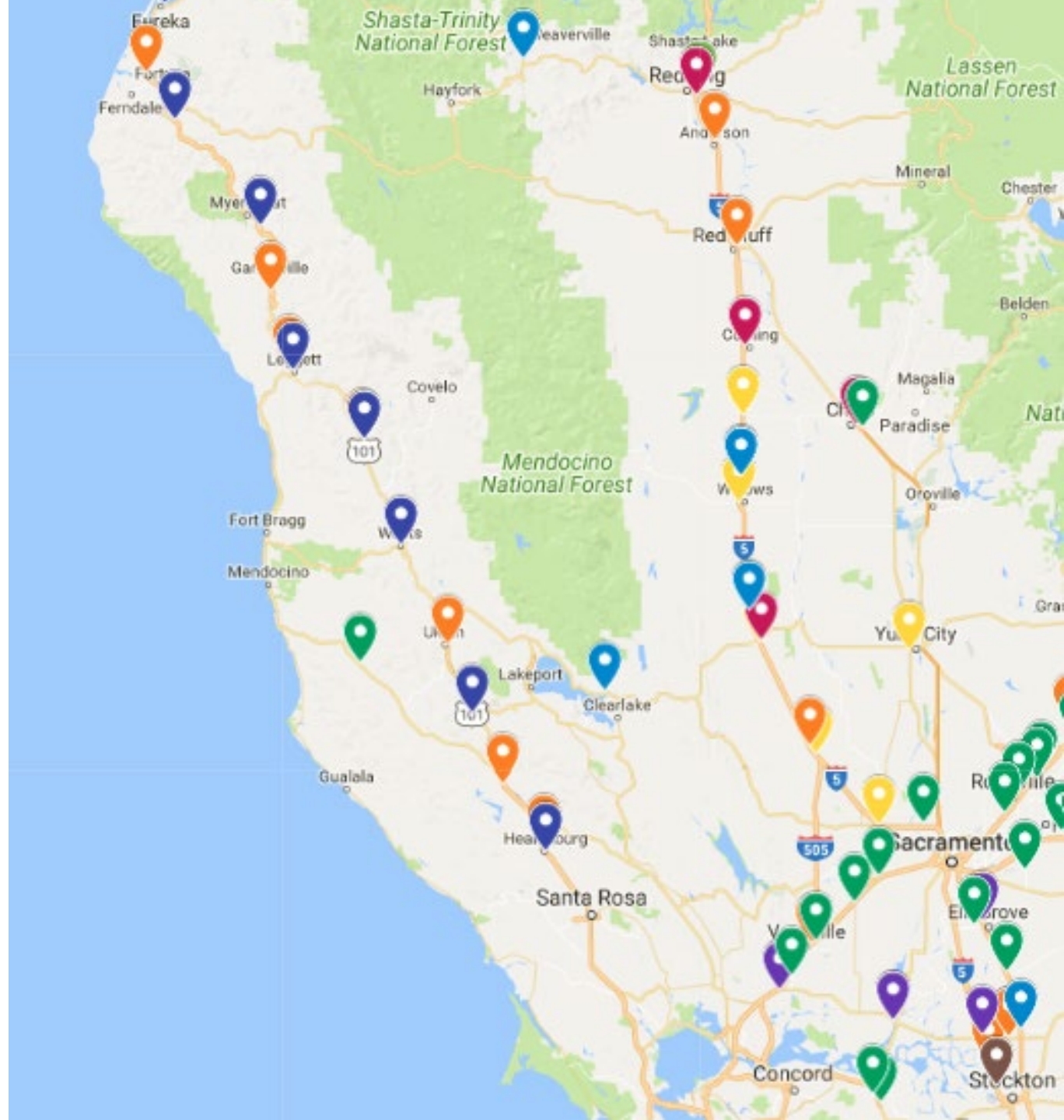
EV Charging Stations in Our Region





Future Fast Charge Network:

Leaf the range
anxiety behind!



A map of Northern California is shown in the background. A red line segment is drawn on the map, starting from a location near Arcata and extending towards the northeast. A white cloud-shaped callout with a black outline is positioned above the red line, containing the text "149 miles" in red. A large blue oval is superimposed over the center of the map, containing the text "Average daily trip is 30 miles!" in white. The map includes labels for various locations such as Trinidad, McKinleyville, Willow, Arcata, Shasta-Trinity National Forest, McArthur, Fall River Mills, Burney, Lassen National Forest, Gualala, Healdsburg, Vacaville, and Eureka. There are also several orange location pins with white icons on the map.

149 miles

Average daily trip
is 30 miles!

The background image shows an outdoor event, possibly a car show or a community fair. In the foreground, a woman with short blonde hair and glasses, wearing a pinkish-brown cardigan, is leaning over a table and writing on a clipboard. The table is covered with a dark blue cloth and has various items on it, including a clipboard, pens, and several brochures. One of the brochures prominently features the word "Electric" and an image of a red car. To the right of the woman, a man in a green and grey jacket and a black cap is standing and talking to two women. One woman is smiling and looking at the man, while the other is looking down at something in her hands. In the background, there are other people, a white car with its door open, and a building with a "Jack" sign. The overall scene is bright and sunny.

Other Tips and Tricks

Dealer Tips

- Sometimes its better to lease than buy, due to obsolescence and faster-than-usual depreciation
- If 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%

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2)Charge to 80%

3)Park in the shade

Get the Most Out of Your Battery

1)Speed

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4)Heating and AC

Get the Most Out of Your Battery

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5)Tires

Get the Most Out of Your Battery

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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

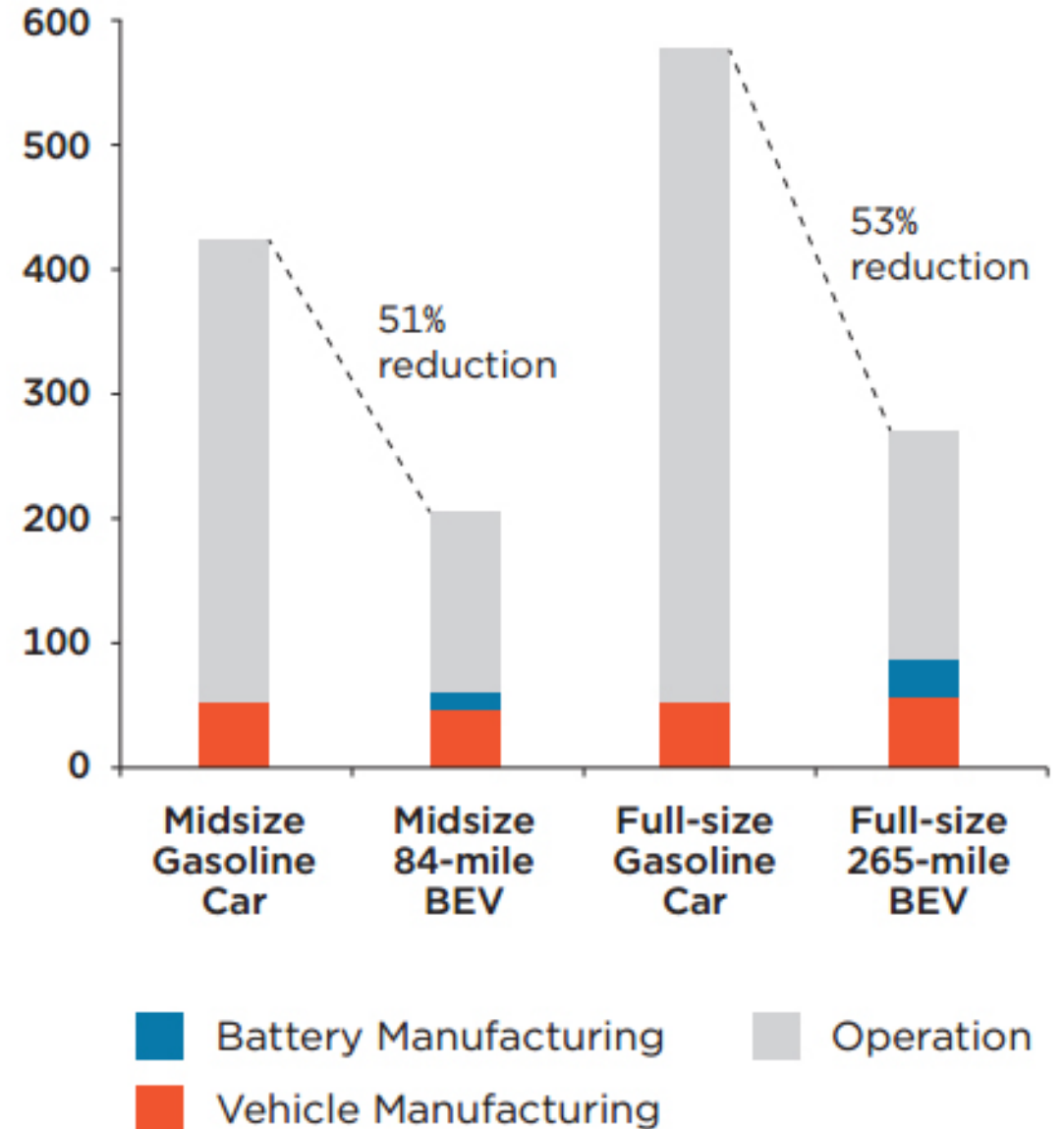
EV long-range (265 miles)

Manufacturing emissions ↑ 68 %

Overall emissions ↓ 53 %

Pay back = 19,000 miles

Life Cycle Emissions



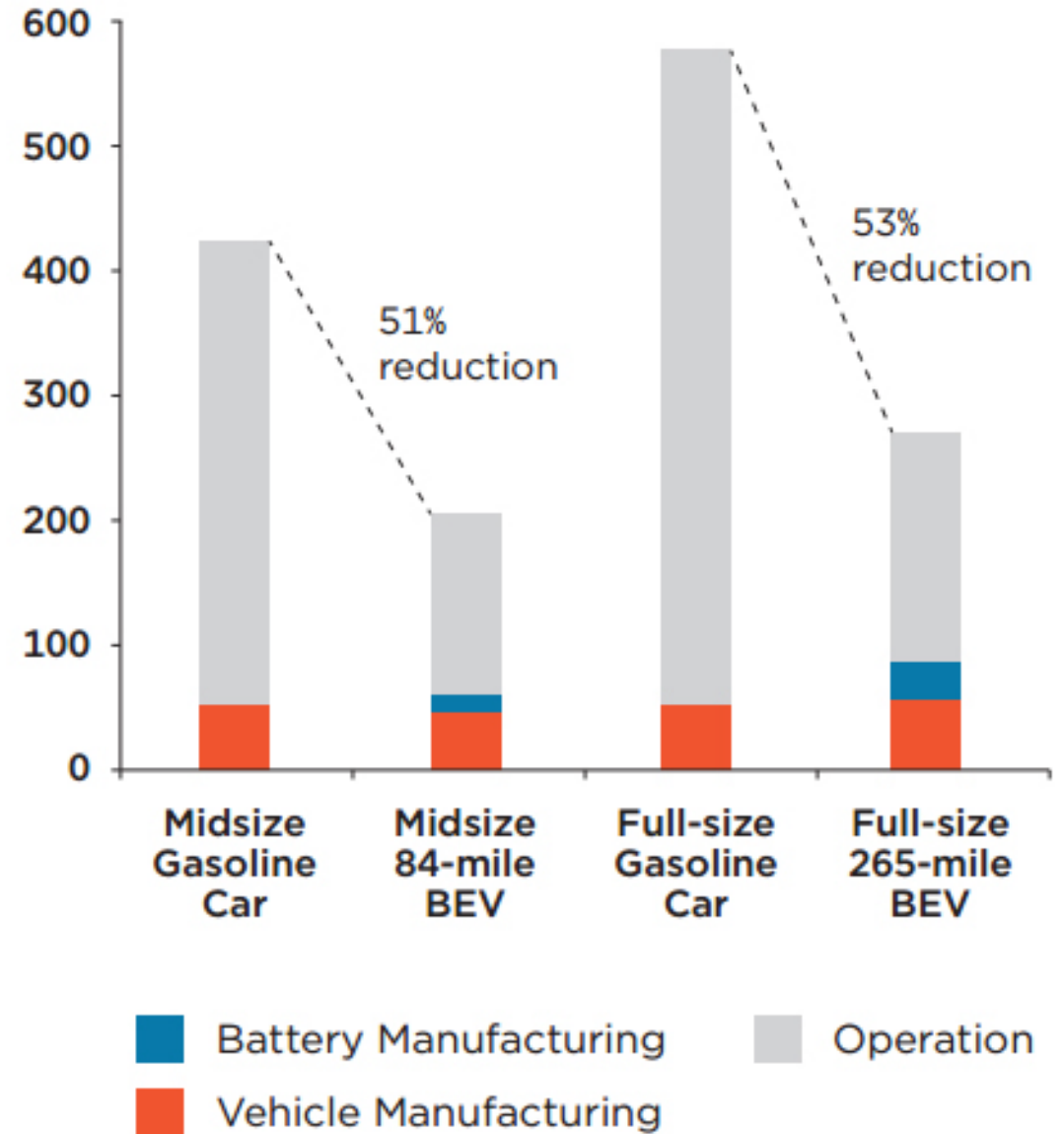
EV Midrange (84 miles)

Manufacturing emissions ↑ 15 %

Overall emissions ↓ 51 %

pay back = 4,900 miles

Life Cycle Emissions



Thank You



Aisha Cissna
acissna@redwoodenergy.org

Q&A

Extra Slides

Performance



Instant peak
torque

GREAT
handling

Types of Zero Emission Vehicles (ZEV)



Fuel Cell Electric Vehicle

A hydrogen fuel cell (FCEV) runs on an electric motor that is powered through a chemical reaction between hydrogen and oxygen. This car must be refueled with liquid hydrogen.

