On the Road to Driving an EV

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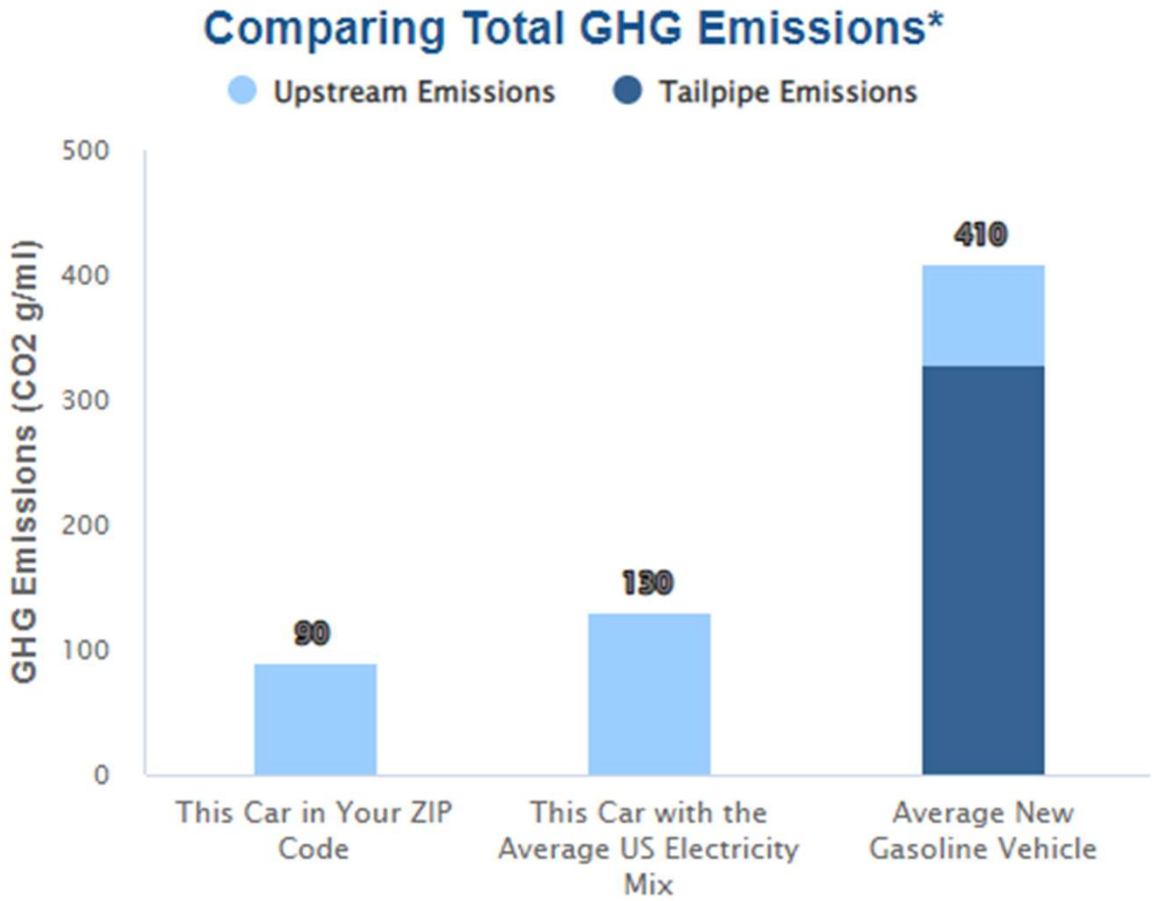
1) Why should you transition from a gasoline vehicle to an electric vehicle (EV)?

a) To stop burning gas in your car and reduce your personal Green House Gas (GHG) emissions: (Note: each gallon of gasoline burned releases 19.6lb of CO2)

The Nissan Leaf SV/SL (62 kW-hr battery pack) is an all-electric vehicle.

Credit:
US Dept of Energy



Note: as the New England grid becomes cleaner, your EV GHG emissions will become even smaller

1) continued

b) To reduce your cost to drive and be immune to gas price spikes:

Calculate Fuel Costs and Savings

Vehicle A x

Electric Vehicle

2022 Nissan Leaf SV/SL (62 kW-hr battery pack)
Automatic

Electricity

104 comb
MPGe 114 94 city hwy

Vehicle B

Select Vehicle
Or
Enter a value
25 MPG

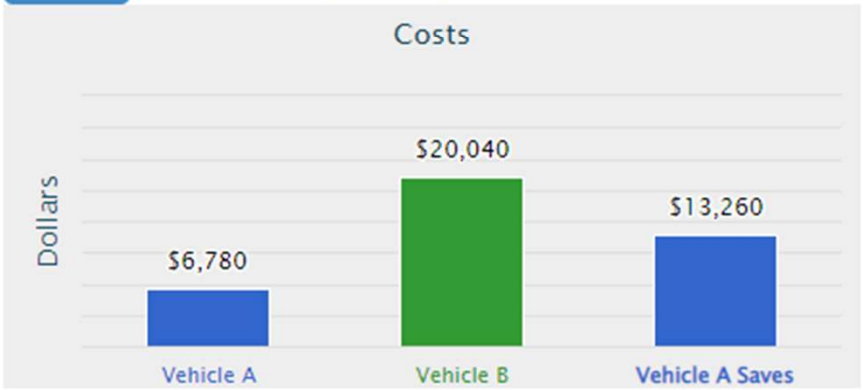
Credit:
US Dept of Energy

Personalize Fuel Prices and Drive Habits

Fuel Costs

	Vehicle A	Vehicle B	Veh. A Saves
10 Years	$6,780	$20,040	**$13,260**
Yearly	$678	$2,004	**$1,326**
Monthly	$57	$167	**$110**
Weekly	$13	$39	**$26**
Per Mile	4.5¢	13.4¢	**8.9¢**

10 Years | Yearly | Monthly | Weekly | Per Mile



2) Why now is a good time to purchase an EV:

a) There are many good EVs on the market, with more coming, and most with ranges between 200 and 300 miles

b) Due to the Bipartisan Infrastructure Law and the Inflation Reduction Act (IRA), federal investments and incentives are way up; see announcement

c) Due to the IRA, the federal government will be investing in a massive buildout of highway charging stations with the NEVI program; see description

d) What does Tim Sample say?

Go the Distance in an EV

Legendary Maine humorist, Tim Sample, helps Maine drivers understand how EVs work.

Credit:
Efficiency Maine

3) Start by deciding when and what you need in an EV:

a) Decide when to purchase your EV

A good time is when you are ready to retire your gasoline vehicle

Make sure you understand the incentives, particularly federal tax credits, as they are complicated and are changing; you should verify with IRS site

b) Decide what you need in an EV

Is this your 2nd vehicle? Will it be used primarily around town and for regional trips?

If so, a smaller EV may be sufficient, and range will not be an issue

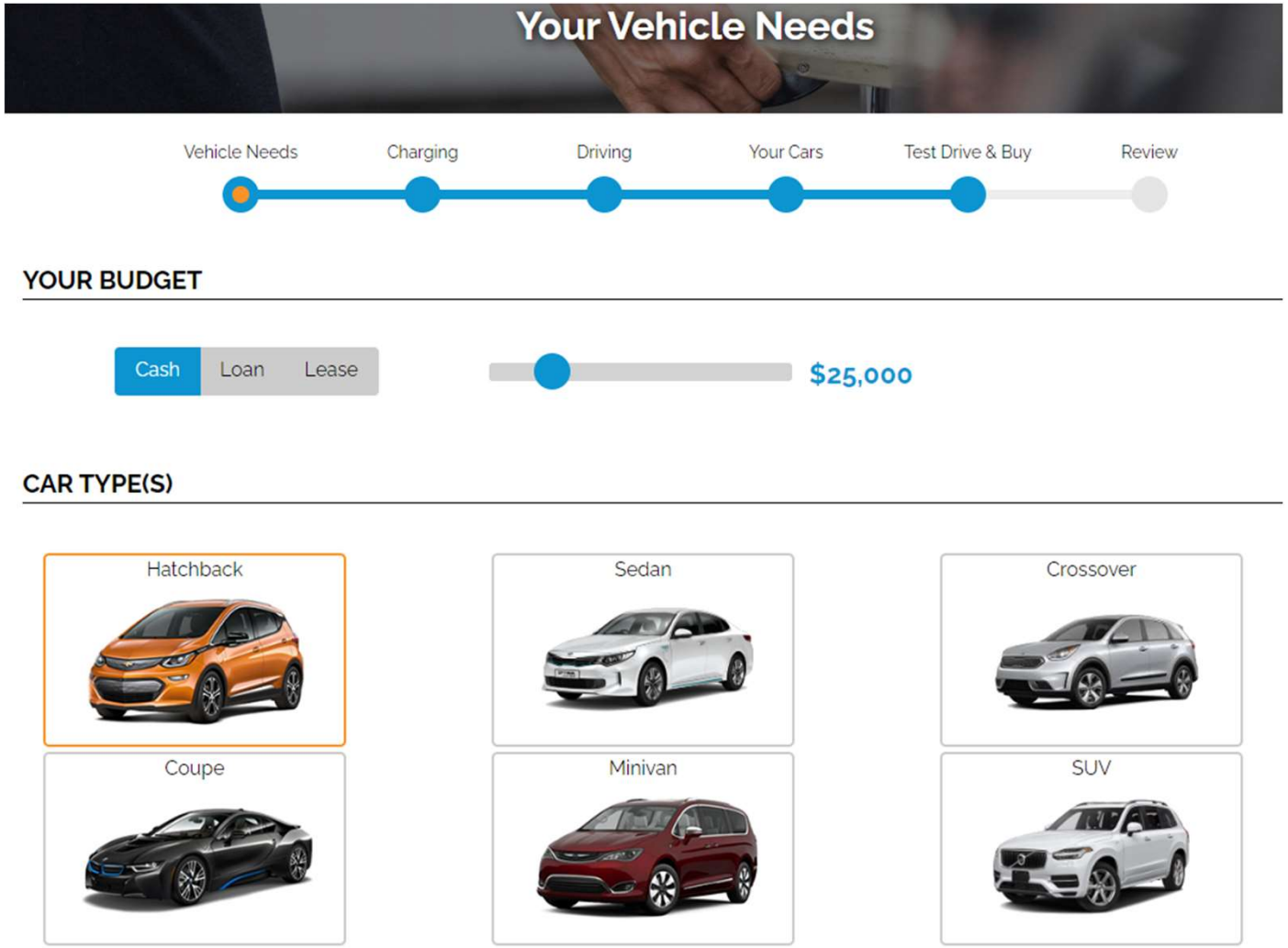
Is this your only vehicle? Do you need to take long-distance trips?

Then you will want an EV with good range, and that can be easily charged on the road

3) continued

c) Use PlugStar shopping assistant to sort through your options.

Credit: PlugStar



4) Here is a snapshot of popular EVs:

a) Small size, lower cost:
   Chevy Bolt EUV
   Nissan LEAF

b) Medium size:
   Tesla Model 3
   VW ID.4

c) Larger size
   Mustang Mach E
   Tesla Model Y

d) Pickup truck
   Ford F-150 Lightning
   (more coming 2024)

Use PlugStar vehicle guide to sort through the possibilities

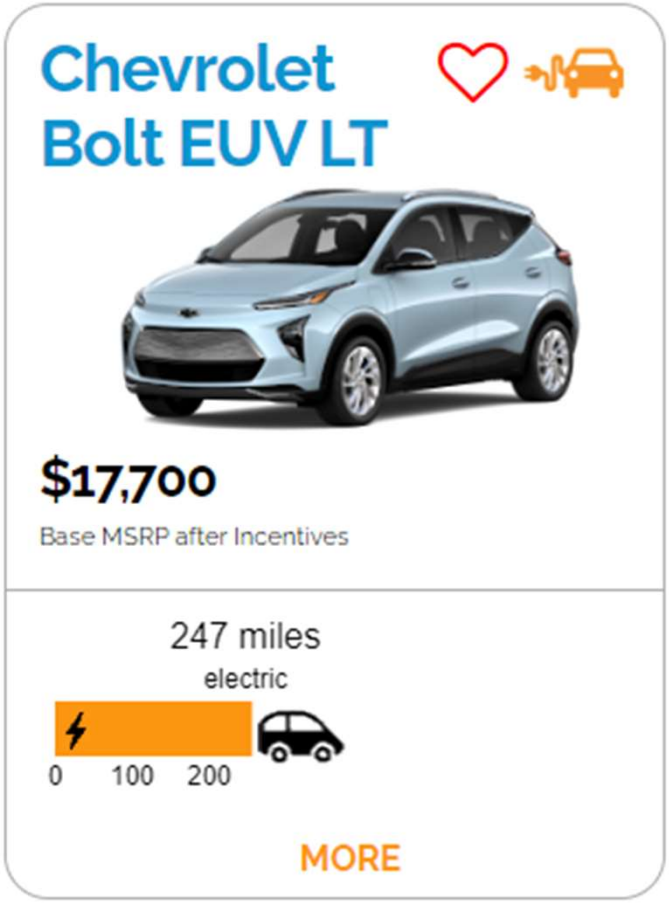
4) continued

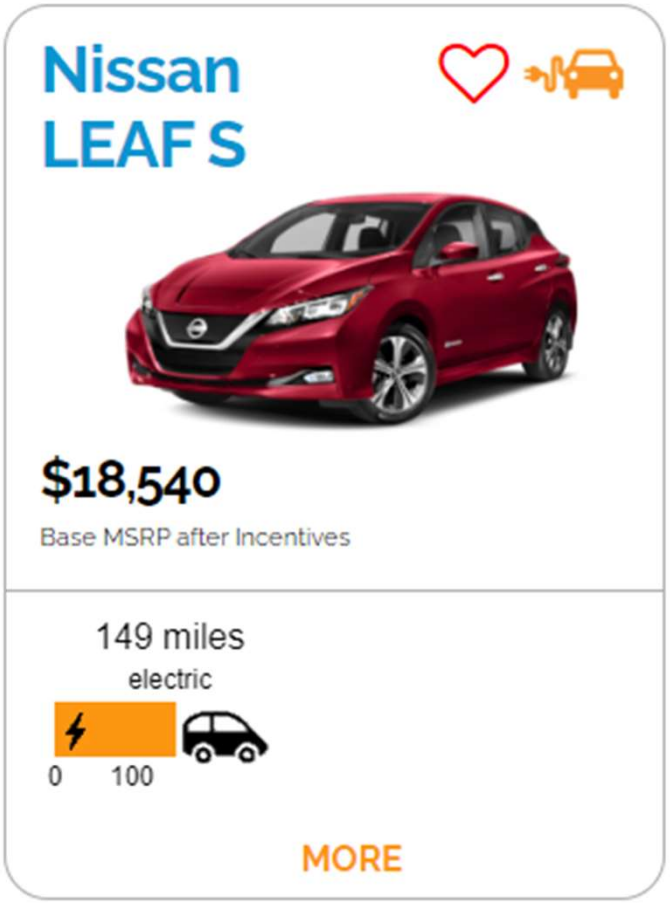
Credit:
PlugStar

a) Small size, lower cost:

Chevy Bolt EUV

Nissan LEAF





Chevrolet Bolt EUV LT 2023

Manufacturer website

Compare Favorites | Find Dealer

Credit: PlugStar

Overview | Photos | Popularity | Reviews | Build | Incentives | Charging | Cost

Basic Specs

Crossover

5
Seats

16.3-56.9
cu. ft. Cargo Space

Fuel Type & Range

All Electric

247
Electric Miles

65
Battery Size (kWh)

Acceleration

7 seconds
to 60 miles per hour

Safety

N/A
NHTSA Rating

N/A
IIHS Top Safety Pick

Recharge Speed

Home and Away

2% → Level 1 → **4 mi**

Range added in **60** minutes

17% → Level 2 → **39 mi***

At Fast Charge Stations

19% → Typical → **43 mi**

Range added in **15** minutes

21% → Max → **47 mi***

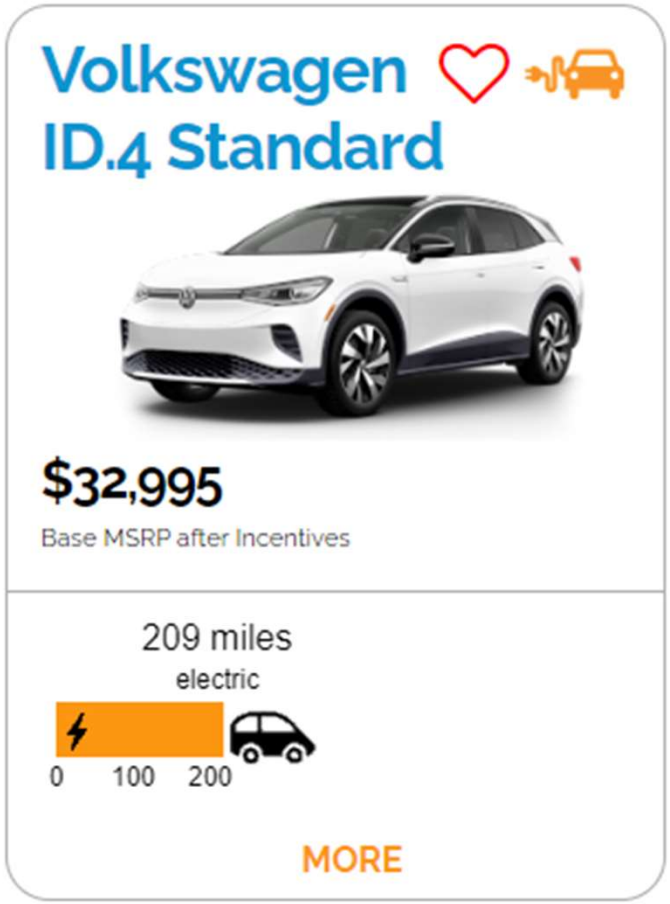
* Estimates only. Max rate accepted by the vehicle shown. Your experience may vary.

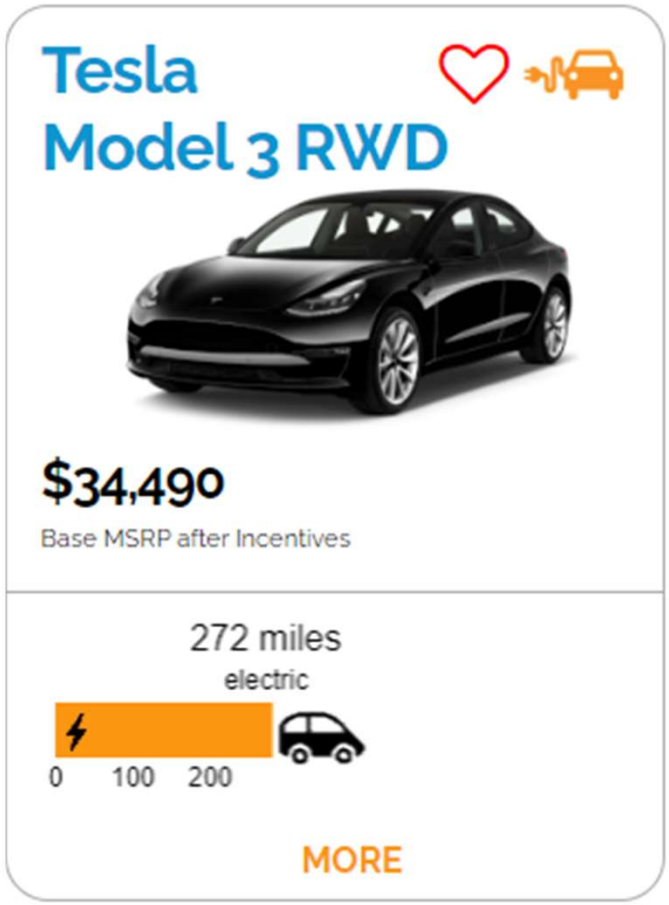
4) continued

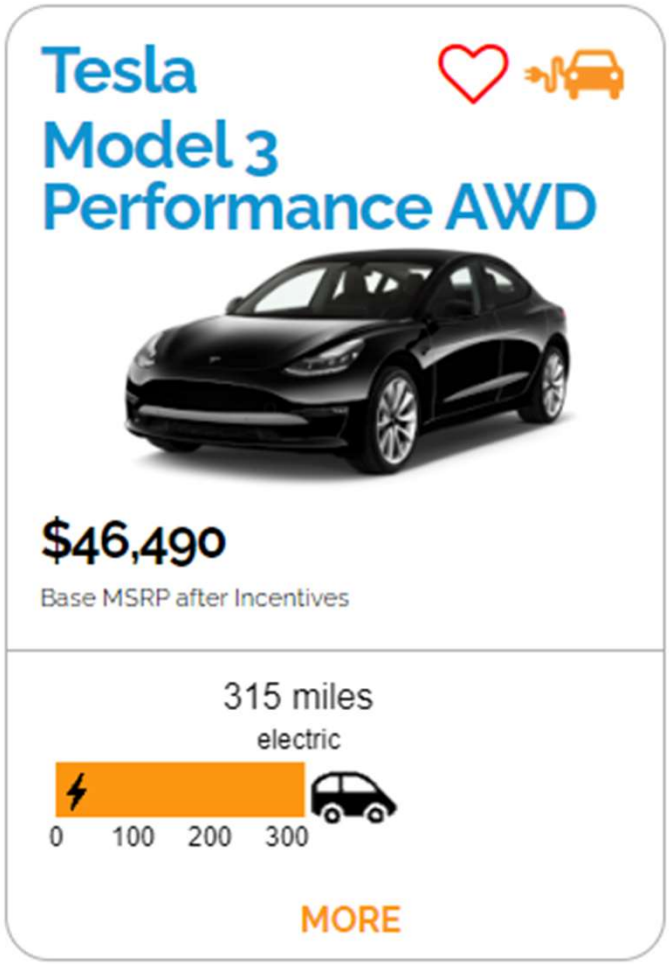
Credit:
PlugStar

b) Medium size:

Tesla Model 3
VW ID.4







4) continued

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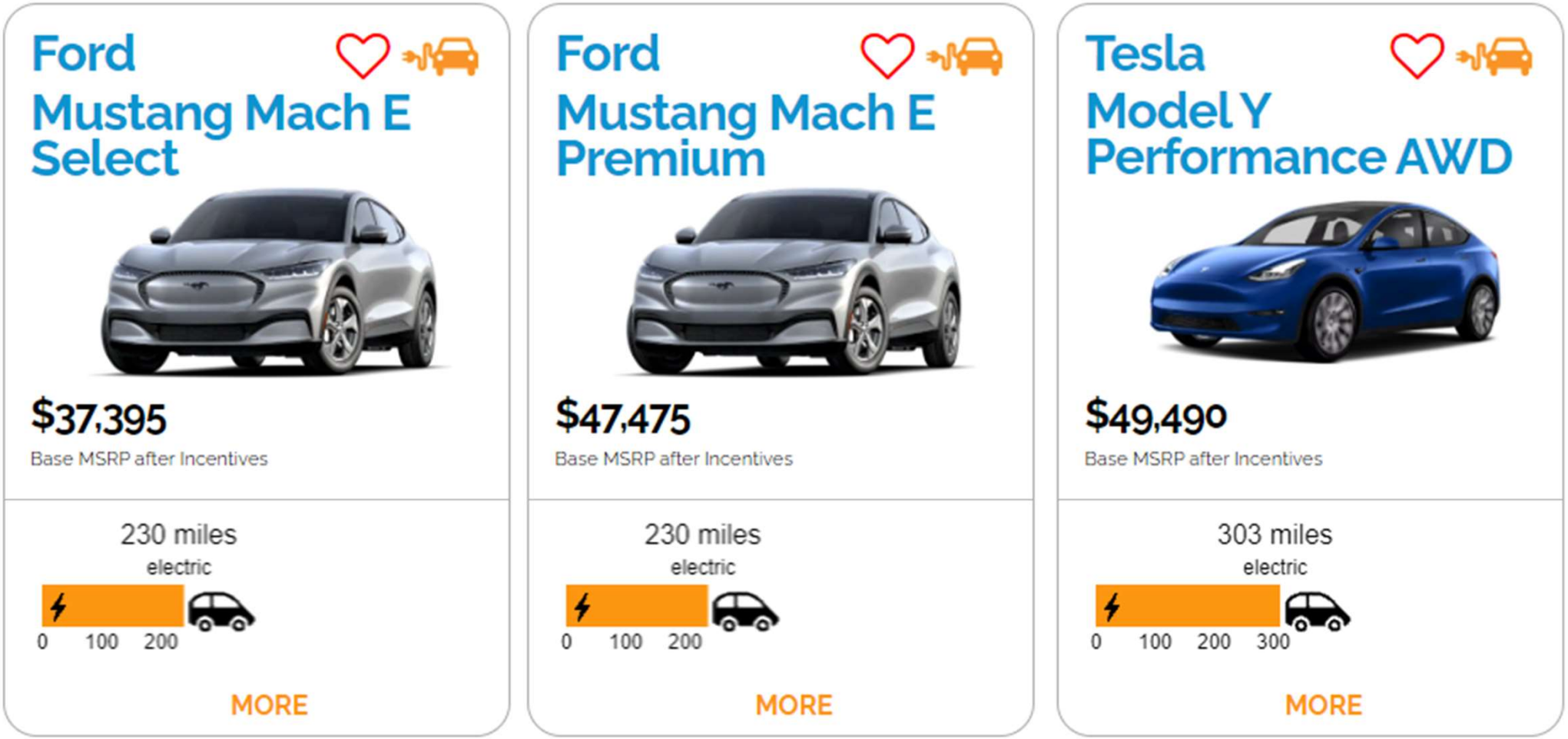
PlugStar

c) Larger size

Ford Mustang Mach E

Tesla Model Y



4) continued

d) Pickup truck

Ford F-150 Lightning
(Chevy, GMC, RAM and Tesla coming in 2024)

Credit:
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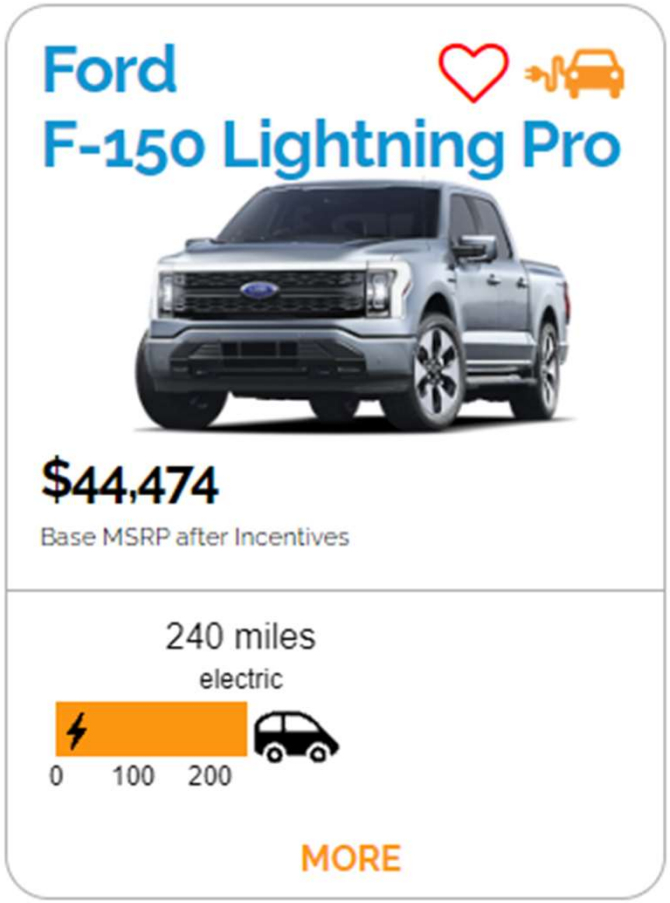
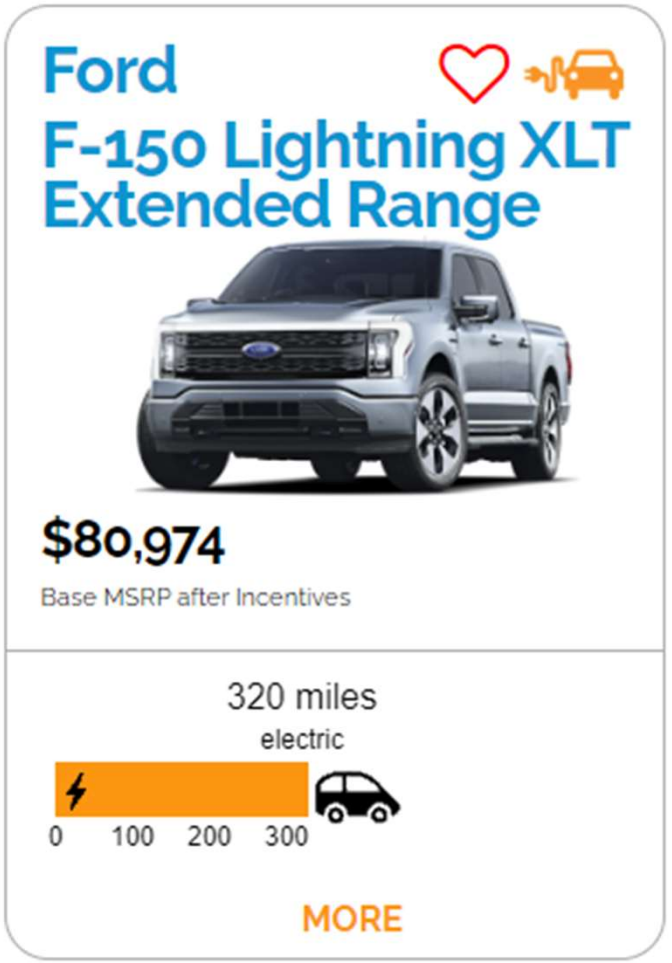




5) Pick out your EVs of interest, evaluate availability and cost

a) Pick a participating dealer in Maine to get rebate from Efficiency Maine, paid directly to dealer

Credit:
Efficiency Maine

— Individuals ($500 to $7,500 rebate)

Type of Vehicle	Any Income	Moderate Income	Low Income
NEW Battery Electric Vehicle (BEV)	$1,000	$3,500	$7,500
NEW Plug-in Hybrid Electric Vehicle (PHEV)	$500	$2,000	$3,000
USED BEV or PHEV	N/A	N/A	$2,500

5) continued

b) Carefully consider available federal tax credits, and verify with IRS website

Tax Incentives

New Plug-in and Fuel Cell Electric Vehicles Purchased in or after 2023

Get a tax credit of up to $7,500 for new vehicles purchased in or after 2023!

Pre-Owned Plug-in and Fuel Cell Electric Vehicles Purchased in or after 2023

Get a credit of up to $4,000 for used vehicles purchased from a dealer for $25,000 or less! The amount equals 30% of purchased price, with a maximum credit of $4,000. Other requirements apply.

New Plug-in and Fuel Cell Electric Vehicles Purchased Before 2023

Get a tax credit of up to $7,500 for new vehicles purchased before 2023! The amount varies based on battery capacity and manufacturer phase-out.

Credit:
US Dept of Energy

5) continued

c) Contact dealer(s) to check availability and schedule a test drive

d) Calculate final cost including incentives

e) Make the purchase, and drive it home!

6) You can get started with a relatively low-cost new or used EV

a) In 2017 I purchased a used 2013 Nissan LEAF
   limited range (100- miles), but sufficient for my local trips
   cost approximately $11k

b) In 2022, I purchased a new Nissan LEAF
   for extended range (200+ miles), and new safety features
   cost $39k
   -$2k Maine incentive
   -$7k trade-in
   –$7.5k federal tax credit
   = $22.5k net

c) Starting in 2023, some incentives can apply to a used EV

7) Extra Credit: install roof-top solar and begin “driving on sunlight”

a) In 2017, I installed roof-top solar, with a total cost of approximately $20k for solar (with tax credit), charger and EV

b) Since then, my GHG emissions from driving have been zero!

8) Setting up charging for your EV

a) Most of your charging will be done at home, overnight, whenever plugged in

Or you may be able to plug in where you work (not yet in York)

b) Can start with a "Level 1" charger, a special cord from a standard 120v outlet to your EV

Slowest, adds approximately 5 miles per hour, 40 miles in 8 hours, but this may be adequate for you

c) For faster charging, use "Level 2" charger, a special cord from a 240v "dryer" outlet to your EV, or from a box on the wall that is wired to your electrical panel

Typically requires installation by an electrician

Faster, adds approximately 25 miles per hour, 200 miles in 8 hours

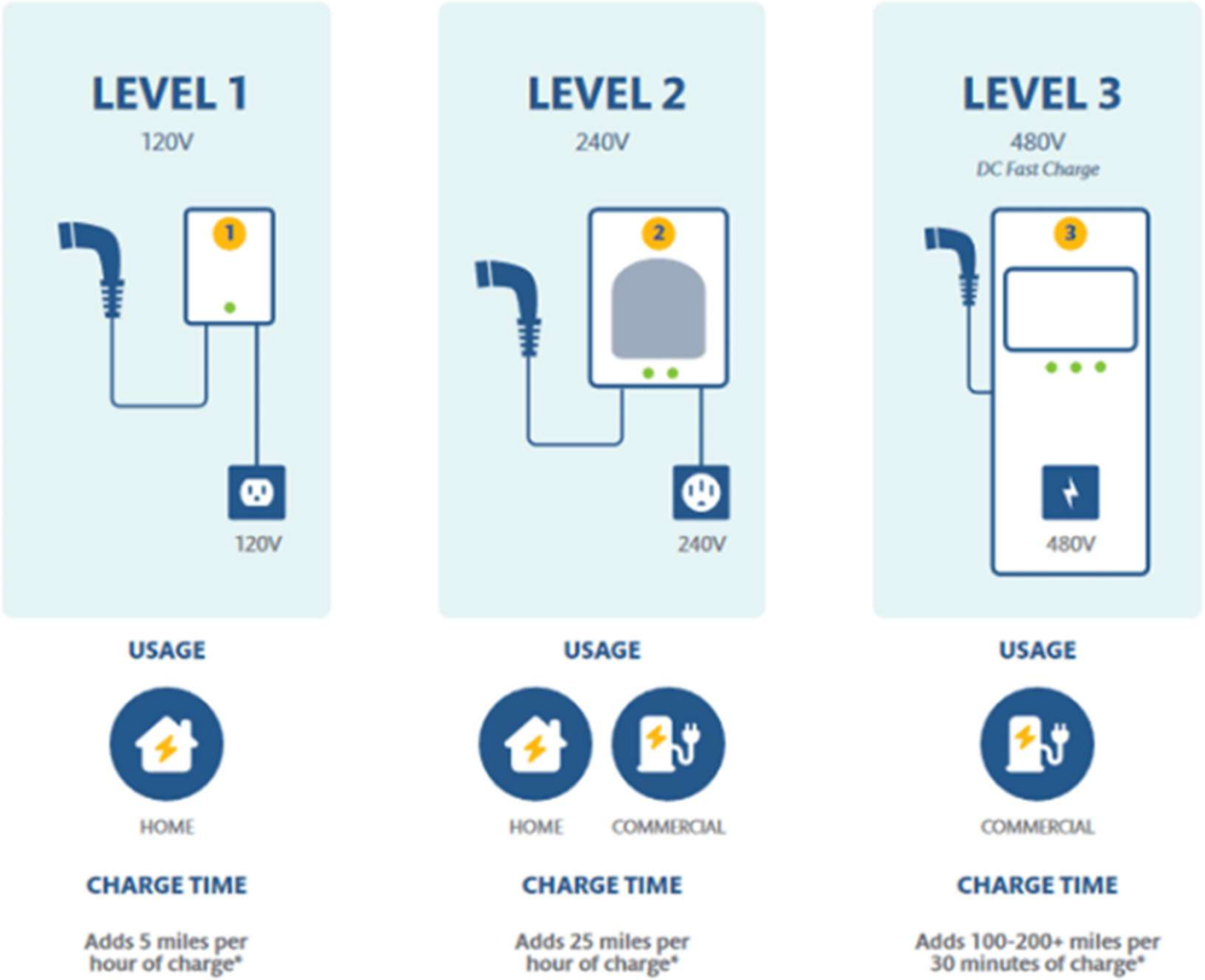
Can charge in your garage, or outside

May be eligible for a tax credit

d) See Efficiency Maine booklets on "How to Select and Install a Home Electric Vehicle Charger" and "How to Charge Your Electric Vehicle at Home and Away"

8) continued

Credit:
Efficiency Maine



9) Taking a trip in your EV

a) You may be able to complete your trip without charging, say a 200-mile round trip using an EV with a 300-mile range

b) You may be able to plug-in to a Level 2 charger at your destination, a hotel or resort, etc. (some in York, most for Tesla vehicles)

c) But, you will typically need to stop at a DC Fast Charging station(s) to top-off on the road (commonly called “Level 3” charging stations)

Best coverage to date are from Tesla Supercharger stations, which can (currently) only be used for Tesla vehicles.

Most other EVs use “CCS compatible” charging stations

The speed of charging depends greatly on the capability of the station, and of your EV (note PlugStar info on charging speed)

d) Note that your EV range will be reduced if you drive at high speeds, or need to heat the vehicle on a cold day: reductions of 20-30% are possible.

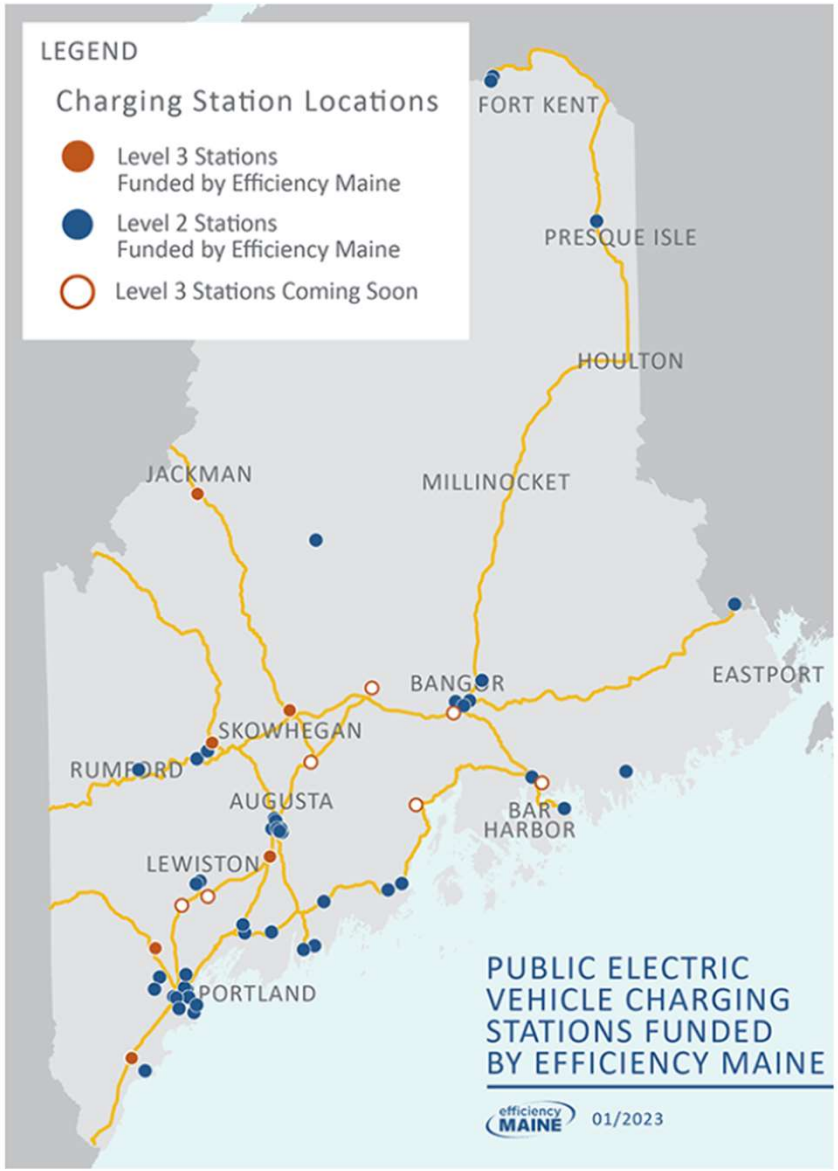
9) continued

e) Efficiency Maine has begun expanding Level 3 charging stations on major highways in Maine

f) Due to the Bipartisan Infrastructure Law and the IRA, the federal government will be investing in a massive buildout of highway charging stations across the US; stations to be installed must be “universal” and “easy to use”

g) Goal of $5B NEVI program is funding to states for 500k EV chargers over 75,000 miles of highway by 2030

Credit:
Efficiency Maine



10) Finding public charging stations

a) Providers of public charging stations include:

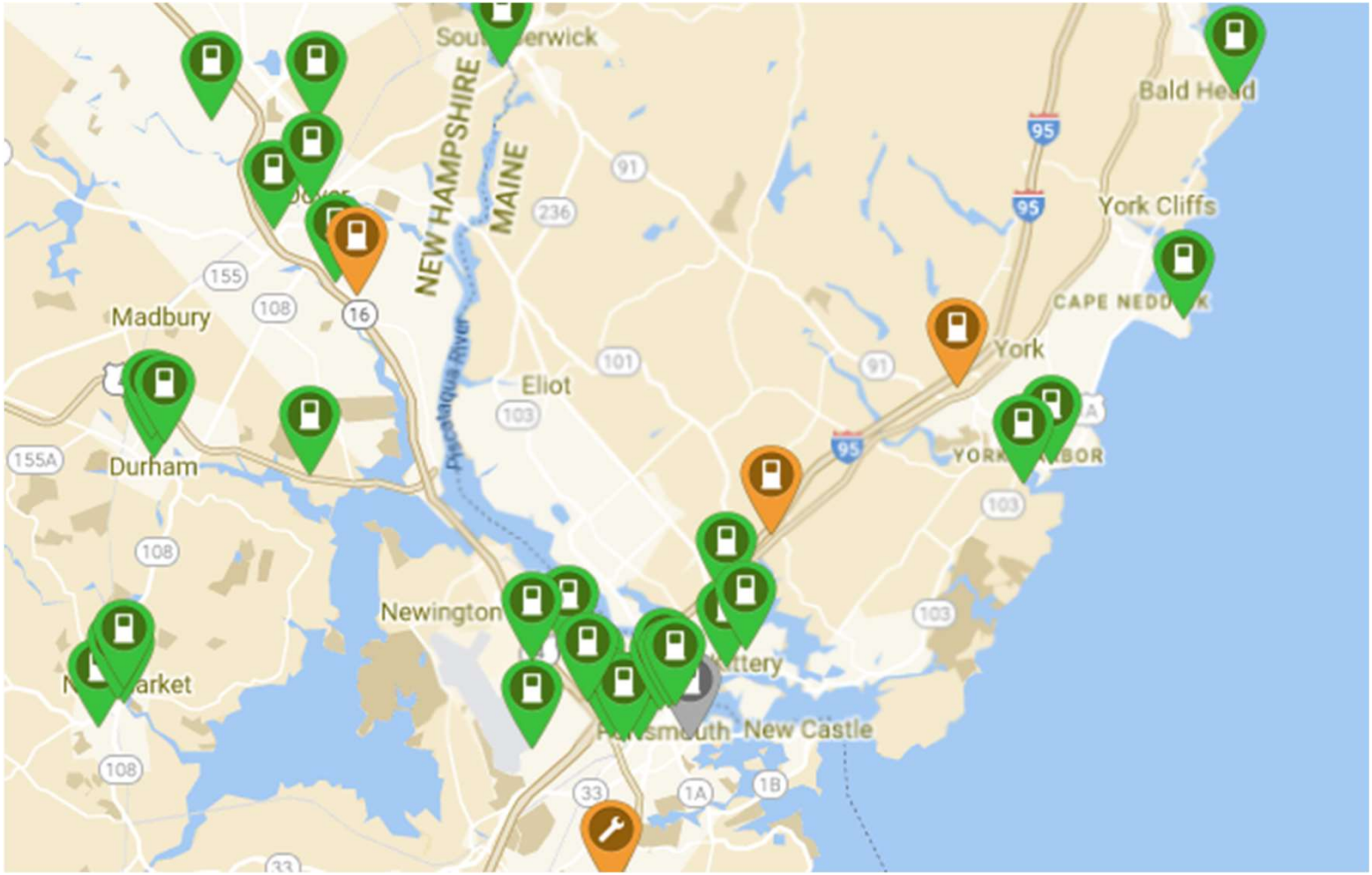
Tesla
ChargePoint
EVGo

All currently require an account

b) Most EVs have on-board apps to help you find available charging stations

10) continued

c) You can use PlugShare to find public parking stations of all types, their capabilities and their current availability



Credit:
PlugShare

11) If you need to take trips, but do not want to deal with on-the-road charging, consider purchasing a Plug-in Hybrid EV (PHEV) instead of a full EV

a) EV purists reject PHEVs, but they are a pragmatic way to avoid “range anxiety” on trips

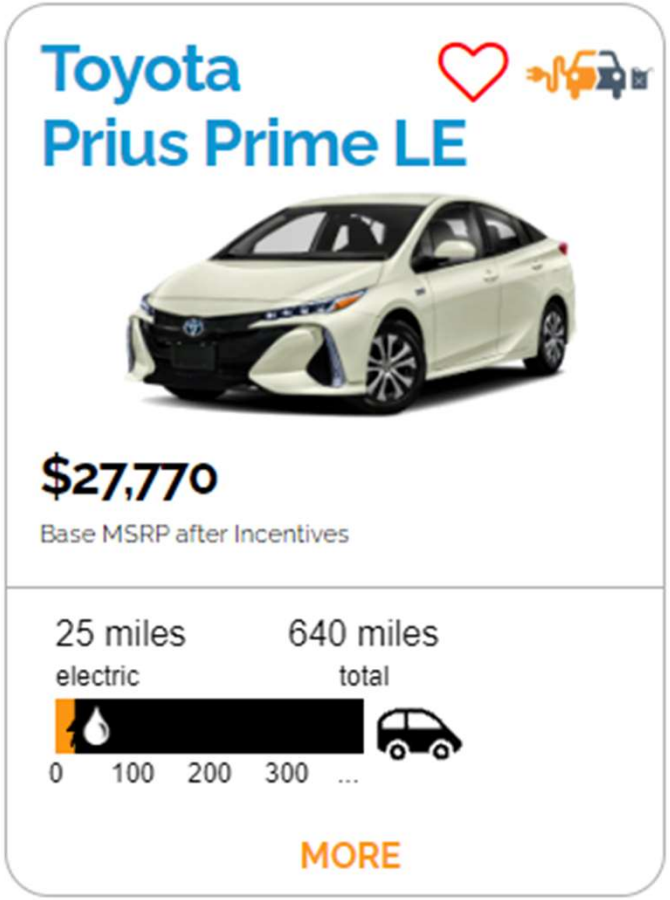
b) PHEVs drive on the battery as EVs for a limited range, e.g, 25 -40miles, and then switch to hybrid mode, running on gasoline at 50mpg+-.

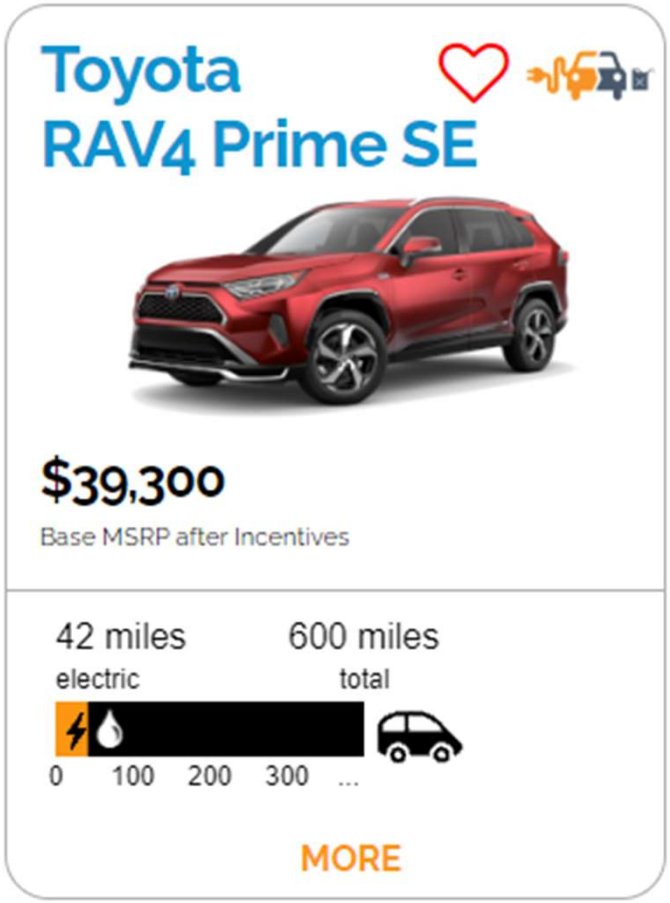
c) Can plug in at home with a Level 1 or Level 2 charger,
but a Level 1 charger is often sufficient

11) continued

Credit:
PlugStar

d) Examples:

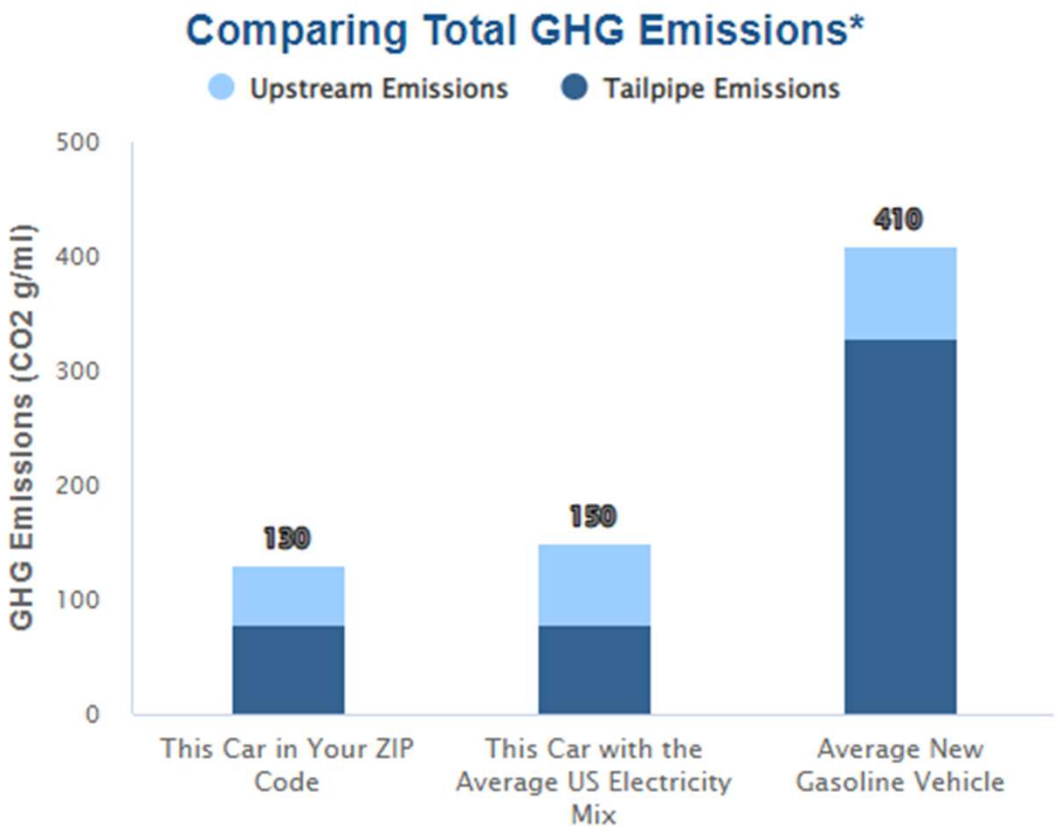




11) continued

e) As long as you plug in, these can still dramatically reduce your GHG emissions

The Toyota Prius Prime is a plug-in hybrid.



Credit:
US Dept of Energy

Assumes approx. 50% electric driving

f) My experience with a 2020 Toyota Prius Prime:
90% electric driving, add gasoline only for trips

14) When you begin driving your EV, you will find:

a) You are part of a new era in transportation!

b) It is fun to drive: instant torque easy to merge into traffic quiet

c) You know that you are actually reducing your GHG emissions!

d) A great feeling every time you pass a gas station!

e) Little maintenance, only tires: no need to drop vehicle at dealer anymore

f) A warm car is waiting for you: preheat the EV in the winter while plugged in

g) You realize that you can now be "driving on sunlight"

Thank you!

Questions?

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https://www.fueleconomy.gov/feg/savemoney.jsp

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Efficiency Maine: "EV Home Charger Guide"
Efficiency Maine: "How to Charge Your Electric Vehicle at Home and "Away"

9) On-the-road charging initiatives
https://www.efficiencymaine.com/at-work/electric-vehicle-supply-equipment-initiative/

10) Public charger locator
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