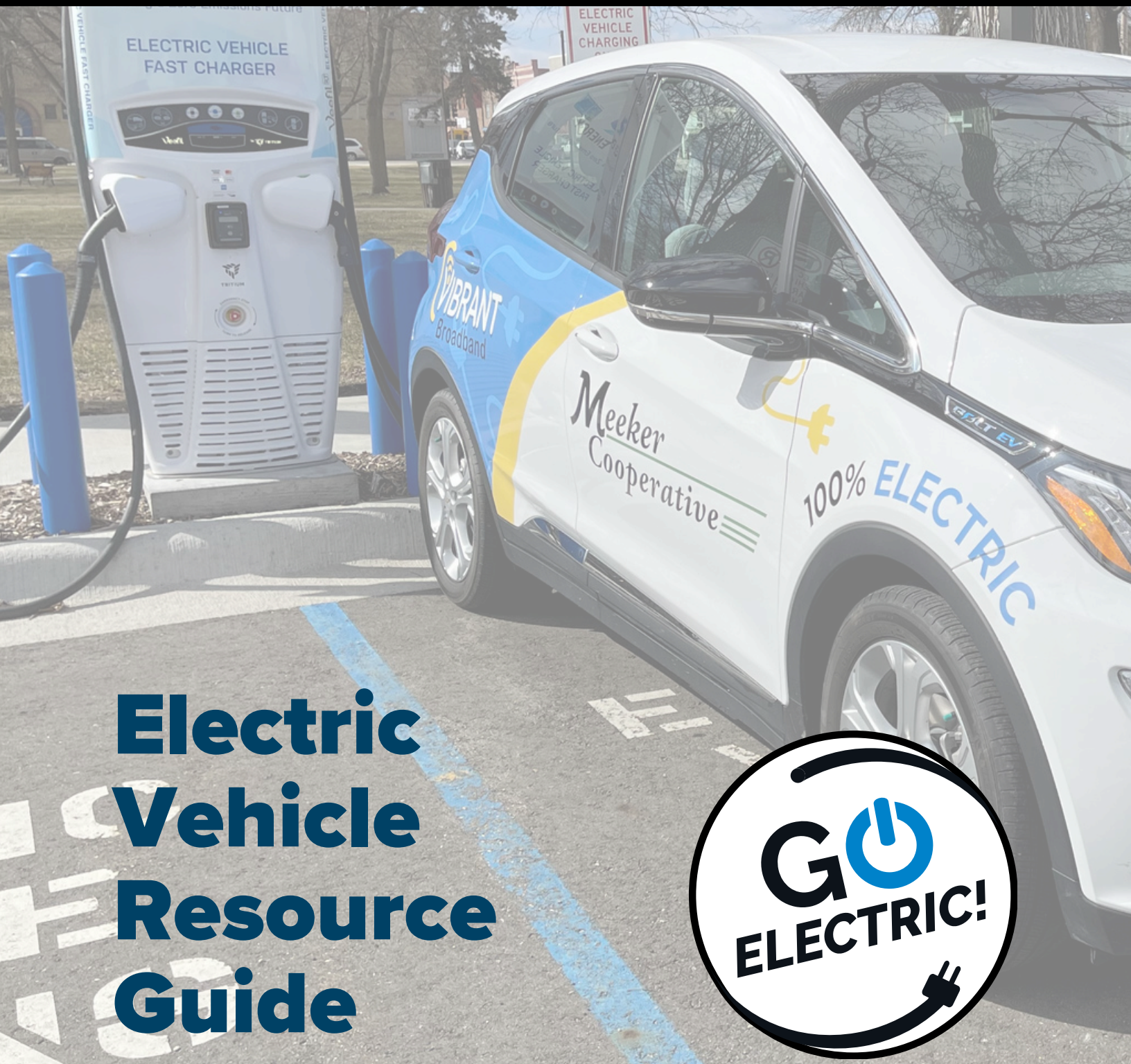
Meeker ENERGY



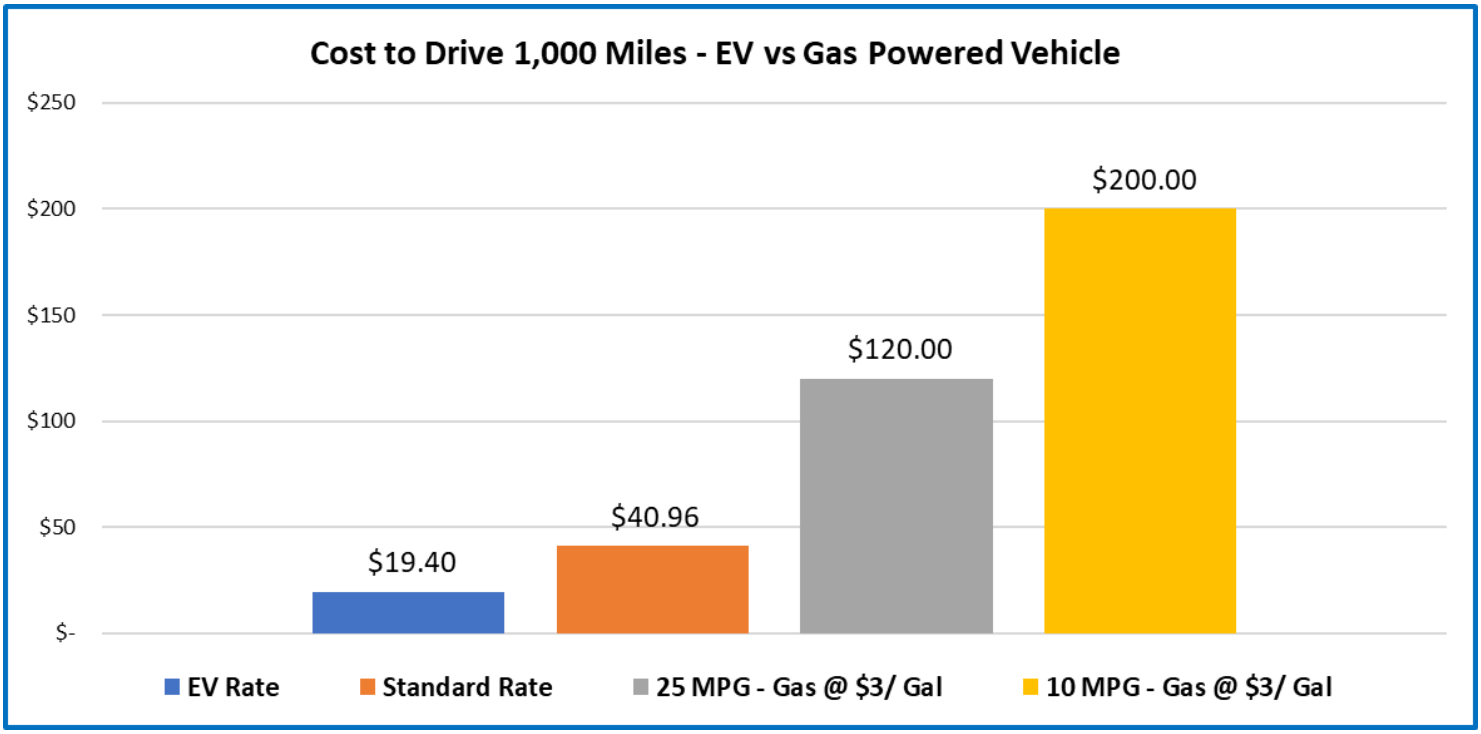
Electric Vehicle Resource Guide

GO ELECTRIC!

ELECTRIC VEHICLES, IS ONE IN YOUR FUTURE?

HOW MUCH DOES IT COST TO DRIVE AN EV?
On average, EV's get 3 miles per kilowatt-hour (kWh), which is equivalent to 100 miles per gallon (mpg) in a gas-powered car. This means if you drive 1,000 miles per month (12,000 miles per year), you use about 333 kWh's of electricity. The average electricity cost in the U.S. is $0.123/kWh so your electricity costs for driving are about $40 per month. If you enroll on Meeker Cooperative's interruptible EV Charge program, you could cut that cost in half.

Type of Vehicle	Miles/Month	Cost/Gal of gas Cost/kWh of electricity	Miles/Gal Miles/kWh	Gallons/Month kWh's/Month	Monthly Cost
Internal Combustion	1,000	$3.00	25/mpg	40 Gals.	$120
Internal Combustion	1,000	$3.00	15/mpg	100 Gals.	$200
Electric	1,000	$0.123	3 miles per kWh	333 kWh	$41
Meeker's EV Charge Rate	1,000	$0.0583 (avg)	3 miles per kWh	333 kWh	$19



MAINTENANCE SAVINGS
You will also see savings on the maintenance side. Since EV's, especially battery electric vehicles, have less wearing parts they also have lower maintenance costs. Even plug-in hybrids, which still have an internal combustion engine, have lower maintenance costs than traditional gas cards because the internal combustion engine will be running less. All EVs also have regenerative braking where the electric motors turn into generators and store a majority of the deceleration energy back to the battery to be used in the next acceleration. This

increases the overall efficiency, but it also reduces the traditional brake wear since electric motors do the heavy lifting.

HOW ABOUT THE BATTERY REPLACEMENT COSTS?
There has been a lot of discussion about battery replacement costs. People know that their cell phone batteries last an average of three to four years, so they are concerned with the same degradation on EV batteries. Fortunately, that is not the case. All manufactures provide eight years and a minimum of 100,000 miles as a warranty on EV traction batteries. Present-day EV's has been in the market since 2011 so we are starting to see data on how batteries perform overtime. Batteries have improved since 2011, too, and data from multiple sources suggest EV batteries will last 12-15 years with normal use. Batteries do lose their capacity slowly overtime and, if the battery has 70% of the capacity left after 12 years of service, it might be time to upgrade to a new battery. Current EV batteries cost between $6,000 and $12,000 but the good news is that since battery technology keeps advancing battery cost are expected to be much lower than what they are today. And what happens to those old batteries? They are still very valuable energy storage units and will get a second life as the stationary storage units for a home or grid. Our estimate is that EV batteries will easily have a least a 30-year life before they need to be replaced.

READY TO PURCHASE AN EV?
Start by looking at what makes and models are available in Minnesota right now. You can review a list of vehicles at http://www.evinfolist.com/ which provides pricing and technical specs information as well as how many units were at dealer lots recently. You can find more detailed up-to-date vehicle availability information by going to Cars.com and searching EVs near you. Cars.com seems so show the vehicles available at the major dealers as well.

WHAT YOU SHOULD KNOW
Before you go kick the tires on an all-electric vehicle know how you intend to use it, where you'll put it and how you'll charge it?

HOW WILL YOU USE IT?
An all-electric vehicle is perfect for an everyday commuter, running to the store or shuffling kids around. Most people drive less than 100 miles a day. A vehicle with 200 plus miles in range should handle that even in cold weather. If you are looking for a car to take across the country an all-electric vehicle probably isn't for you. Even if you purchase one with 200 plus miles of range traveling long distances will take a lot longer when stopping to charge.

WHERE WILL YOU PUT IT?
Most people don't think about a special place to put a new car, but with an electric vehicle you'll need a dedicated place to park and plug in each night. A location that's easy to run a dedicated 240-volt electric line will cut down on charger installation costs. During extreme cold a place inside a garage or shop would be ideal.

HOW WILL YOU CHARGE IT?
An all-electric vehicle will need a Level 2 charger. You'll need to plan on purchasing the charger and having an electrician install it. You will need a 240 volt 40- or 50-amp dedicated breaker. Costs for the charging equipment could be $500 and up, plus the cost of the electrical work.

Electric vehicles aren't for everyone. If you are a two-vehicle household it's very likely an electric vehicle would work well as one of the two. Most of the driving you do every day can be done with an all-electric vehicle.

EV CHARGERS

3 Charging Levels	Level 1 Charging	Level 2 Charging	Level 3 Charging
	The slowest Charge rate 45-50 hours	Charges at a rate of 4-10 hours	Can charge most depleted EV batteries in 80% in about 20-60 minutes.
	Charges 2-5 miles per hour	Charges 10-20 miles per hour.	Charges 180-240 miles per hour
	Most commonly found in homes	Can be found in public locations and at homes.	Typically located in high-traffic public areas.
	Can typically use a standard 120-volt household outlet	Must be hardwired into a 240-volt outlet with a dedicated circuit by an electrician	Public or commercial typically at 480-volts

BENEFITS OF AN ELECTRIC VEHICLE
 No more stopping for gas. Plug it in at night and its ready every morning.

 Pre-condition your vehicle with the garage doors closed. No combustion engine means you can pre-heat or cool your car while it's plugged in and leave the garage doors closed.

 No more oil changes. Electric vehicles have very little scheduled maintenance.

 They are fun to drive and quiet. You won't know it is running. No clunky gear shifting. They just go.

 They're efficient. You will get over 100 MPGe (e = equivalent)

BE PREPARED
 Battery range does decrease in cold weather because more energy is needed for the heater and defroster. Depending on the weather and how you drive, it could be 50%.

 Not all car dealerships can work on electric vehicles. Know where you can take it if it needs work.

 Not all public charging stations are the same. If driving outside your charge range, plan where you'll be stopping for a few hours or so to charge. You can only charge Tesla's at Tesla charging stations.

Meeker Energy EV Charger Rebate
Level-2 hard-wired charger.....$500 Rebate
Plug-In hybrid and battery EV's are controlled and metered separately at the energy management rate ($.057/kWh Sept-May, $.062/kWh Jun-Aug)

Resources for Electric Vehicles

- Which EVs are available in Minnesota? www.EVInfolist.com
- I could consider an EV but I need more information: www.MNEVBuyer.com
- I'm ready to buy an EV, who should I talk to? www.EVSalesSavvy.com
- I would like to talk with existing owners: MNEVOwners.org
- I live in an apartment building or a condominium: www.MUDCharging.com
- How could I get charging at my workplace? www.WorkplaceCharging.com
- How can I find public charging? www.PlugShare.com
- Shift2Electric https://www.shift2electric.com/evowners

- Money saving energy management programs offered by Meeker Energy https://www.meeker.coop/programs/

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