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# ENVIRONMENTAL Fact Sheet

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## Electric and Plug-in Hybrid-Electric Vehicles

Electric vehicles (EVs) and plug-in hybrid electric vehicles (PHEVs) can be seen on New Hampshire roads in increasing numbers. The deployment of these vehicles reduces air pollutants and carbon emissions as well as our nation's petroleum consumption and dependence on foreign oil.

EVs operate on an electric motor, while PHEVs use an electric motor *and* a gasoline (or diesel) engine to power the vehicle. Both vehicle types get power from an onboard battery that is recharged by connecting to an outside electrical source (plugging in) and through regenerative braking [link: [www.afdc.energy.gov/fueleconomy/animations/hybrids/hybrid/hybridbraking.html](http://www.afdc.energy.gov/fueleconomy/animations/hybrids/hybrid/hybridbraking.html)]. A PHEV's engine also charges the battery.

**EVs** A fully charged EV's battery's range is between 60 and 265 miles depending on the vehicle and driving conditions. Several models of EVs are available in our region including BMWi3, Ford Focus Electric, Mitsubishi IMiEV, and Nissan LEAF.

### Benefits:

- **EVs are cleaner.** EVs have no emissions (no tailpipe). Batteries are charged with electricity from the local power grid. Electricity in the northeast is among the cleanest in the country, relying heavily on natural gas and renewable energy.
- **Vehicles require less maintenance.** EVs have fewer moving parts than gasoline vehicles and require little-to-no regular maintenance.
- **EVs are fun to drive.** Unlike internal combustion engines, the electric motor's power is instantly available, producing strong and quiet acceleration.
- **Federal tax credit.** A tax credit of up to \$7,500 is available on the purchase of an EV.

### What to consider:

- **Range.** EVs have a range of 60 to 265 miles. Recharging can take hours. Longer trips require planning. Extreme temperatures and road conditions reduce range.
- **Infrastructure availability.** Vehicles may need charging away from home or the workplace and at this time, charging locations are limited. Charging an EV can take between four and twenty hours.
- **Utility.** Currently, there are no electric trucks or SUV models available.

**PHEVs** Unlike a conventional hybrid vehicle where the engine and electric motor always work together, a PHEV's larger battery pack is designed to drive the vehicle on the electric motor for 11 to 40 miles (depending on model), at which time the gasoline or diesel engine turns on and assists in operating the vehicle. PHEVs can be driven solely on electric power with the engine engaging on long trips or in extreme temperatures. Models of PHEVs sold locally include Chevy Volt, Ford C-Max Energi and Toyota Prius Plug-in.

### **Benefits:**

- **Increased fuel economy.** A PHEV can operate without gasoline or diesel for up to 40 miles, increasing overall fuel economy. Range is rarely an issue for PHEV owners as the engine onboard can be fueled at the nearest filling station.
- **Fewer emissions.** A PHEV's battery is designed to use an outside electrical source as its primary method of recharging. Electricity from local power plants are among the cleanest in the country.
- **Federal tax credit.** A credit of up to \$7,500 is available on the purchase of a PHEV.

### **What to consider:**

- **Price.** PHEVs are typically higher-priced than the gas or diesel versions.
- **Plugging in.** A smaller fuel tank discourages use of the gas or diesel engine as the primary method of operating the vehicle. PHEV owners must plug the vehicle in to maximize fuel economy.
- **Fuel economy.** Fuel economy benefits vary with different models. When purchasing a PHEV or any vehicle, check with the U.S. Department of Energy's [www.fueleconomy.gov](http://www.fueleconomy.gov) to determine the expected fuel savings.

**Fueling in the Granite State** Charging your EV and PHEV is easy. An onboard computer controls vehicle charging when plugged into a household outlet or charging station unit (a kiosk that provides electricity).

- Level 1 charging (120v) refers to a common household outlet. Vehicle owners charge overnight by plugging into an outlet at home.
- Level 2 charging (240v) uses a voltage similar to that of electric clothes dryers and outlets should be installed by licensed electricians. Charging time is considerably shorter.

While EV and PHEV owners can plug their vehicles in at home to charge overnight, residents without access to charging (apartment dwellers/condo owners) and those with longer commutes may rely on charging during working hours. Employers offering workplace charging reinforce their commitment to reducing greenhouse gases and promoting employee wellbeing.

**What's next** As battery technology evolves, EVs will drive farther between charges. The number of EV charging station sites is increasing, allowing for more charging options. Vehicle price should decrease as production volume increases and more EV models are offered.

DC fast charging stations (480v) are being installed at businesses and rest areas throughout the U.S. These quick chargers can provide an 80 percent charge to vehicles within 30 minutes.

Employers are learning about the benefits of vehicle charging at work. With community and employee encouragement, more employers will be offering this benefit.

**What You Can Do.**

- 1) Check with your employer about their plans for installing charging stations. Encourage your employer to sign the [EV Stakeholder Pledge](http://www.georgetownclimate.org/tci-states-release-stakeholder-pledge-to-demonstrate-deep-support-for-evs) (<http://www.georgetownclimate.org/tci-states-release-stakeholder-pledge-to-demonstrate-deep-support-for-evs>) and join the [Workplace Charging Challenge](http://energy.gov/eere/vehicles/ev-everywhere-workplace-charging-challenge) (<http://energy.gov/eere/vehicles/ev-everywhere-workplace-charging-challenge>).
- 2) Visit [www.fueleconomy.gov](http://www.fueleconomy.gov) to find and compare vehicles and features. Check with your local dealer for vehicle availability.
- 3) Purchase or lease a plug-in vehicle and take advantage of the [Federal tax credit](http://www.afdc.energy.gov/laws/409) (<http://www.afdc.energy.gov/laws/409>).

For more information on electric vehicles, contact the Granite State Clean Cities Coalition (603) 271-6751 or visit the website: [www.granitestatecleancities.nh.gov](http://www.granitestatecleancities.nh.gov).