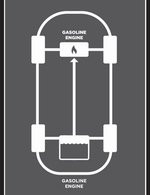
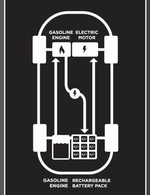
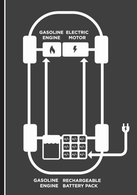
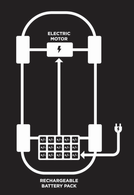
SMART COLUMBUS

ELECTRIC VEHICLES 101

Powered by a rechargeable battery instead of a traditional, gas-burning engine, Electric Vehicles are simply a better way to drive. The dashboard display includes speed and mileage like a gas-powered car, but instead of a gas gauge, a range monitor lets you know how far you can drive before needing a new charge.

	INTERNAL COMBUSTION ENGINE CONVENTIONAL	REGULAR HYBRID	PLUG-IN HYBRID	BATTERY ELECTRIC VEHICLES (BEV)
ENGINE				
FUEL TYPE	LIQUID FUEL	GAS + ELECTRIC	BATTERY PACK + GAS RESERVE	100% ELECTRIC
REFUELED AT GAS STATION	✓	✓	✓	✗
REFUELED AT HOME	✗	✗	✓	✓
TAILPIPE EMISSIONS	YES	YES	SOMETIMES	NO
TAX INCENTIVES	✗	✗	Up to a $7,500 federal tax credit with a battery size of up to 5 kWh	Up to a $7,500 federal tax credit with a battery size of up to 5 kWh
ADVANCES SMART COLUMBUS	✗	✗	✓	✓

A BETTER WAY TO DRIVE

With Electric Vehicles, you get incredible performance that's whisper quiet. The newest technology with little maintenance. No more gas stations, no more oil changes. Charge from the comfort of your own home, while you work, or during a quick pit stop along your way.

EASIER TO MAINTAIN

Electric Vehicles have
1/100TH THE MOVING PARTS
of an internal combustion vehicle. That means there's
LESS TO BREAK DOWN.
Just rotate the tires, top off the wiper fluid, and go!

THERE'S NO:
- Transmission
- Engine oil
- Catalytic converter
- Oil changes

MORE AFFORDABLE

Electric Vehicle drivers can save
36% — ABOUT $10,538 —
on car ownership costs over 5 years, compared to internal combustion engine vehicles

GREATER FUEL ECONOMY

An Electric Vehicle can travel more than
TWICE AS FAR ON $1 OF FUEL
than an internal combustion engine

2X

CHEAPER THAN GAS

An Ohioan who drives **12,000 MILES A YEAR** and charges exclusively at home would spend approximately
$30 PER MONTH ON ELECTRICITY

TAX INCENTIVES

By purchasing an Electric Vehicle, you'll qualify for a
FEDERAL TAX CREDIT OF UP TO $7,500

HIGHER PERFORMANCE

No transmission means
NO SHIFTING & FAST ACCELERATION
You **OUT-ACCELERATE** comparable gas engines

JUST AS SAFE

Electric Vehicles undergo the same
RIGOROUS TESTING & SAFETY PROCEDURES
as any other vehicle, in addition to **EV-SPECIFIC REQUIREMENTS,** like special protections around the battery and electrical system

LESS POLLUTION

Electric Vehicles emit
0 TAILPIPE EMISSIONS

CLEANER ENERGY

As the grid gets **CLEANER OVER TIME**, so does your Electric Vehicle, which can be powered by
SOLAR AND WIND

Think of refueling your electric car like recharging your smartphone.

- Plug it in at night to charge the battery to full.
- Maintain the charge you need by plugging in while you're at the office.
- Stop by a publicly-available station should your charge run low while you're out and about.

LEVEL 1

120V

If you drive 40 miles per day and charge overnight, you can be back to full in 9 hours. Most Electric Vehicles come standard with an "onboard charger" compatible with a conventional 120V (Level 1) outlet.

→ 2-4 miles of range per hour of charging

ADVANTAGES
- Low to no installation costs
- Low impact on peak demand charges
- Charge at home or the office — anywhere there's an electrical outlet

DISADVANTAGES
- Charge time is slow compared to other charging options

LEVEL 2

208-240V

These chargers supply 240V of electricity, like an electric dryer or oven uses. Workplace charging typically uses Level 2 equipment. Homeowners interested in Level 2 chargers should have a qualified electrician install the charging equipment.

→ 25-38 miles of range per hour of charging

ADVANTAGES
- Charge time is significantly faster than Level 1
- Up to 13% more efficient than Level 1 for short charge events

DISADVANTAGES
- Installation costs are higher than Level 1

DC FAST CHARGING

Up to 50 kW today

Direct-current (DC) fast charging equipment, sometimes called DC Level 2, typically enables rapid charging along heavy traffic corridors at installed stations. There are three types of DC fast charging systems, depending on the type of charge port on the vehicle: a J1772 combo, CHAdeMO or Tesla.

→ 60 to 80 miles of range per 20 minutes of charging

ADVANTAGES
- Shortest charge time— 20-40 minutes for a full charge

DISDVANTAGES
- Equipment and installation costs are much higher than Level 1 or Level 2 charging, meaning they're nearly always public, rather than at-home, options
- Increased peak demand charges

NEXT GENERATION DC FAST CHARGERS

350-400V

New and faster charging systems are being researched and tested every day.

→ 200 miles of range per 10 minutes of charging

ADVANTAGES
- Brings charging time on par with refueling a gasoline vehicle
- Can make larger regions accessible via Electric Vehicle travel

DISDVANTAGES
- High cost at current state of market
- Not all vehicles are currently able to accept this level of charging

AT HOME

Up to 95% of Electric Vehicle charging is done at home. Charging can even be programmed to utilize electricity at the lowest price.
We want everyone to be able to charge at home, so Smart Columbus is working with condominium and apartment developers to make charging more accessible for residents who do not control their own power source.

AT WORK

Smart Columbus is partnering with the private sector to greatly expand the availability of charging on corporate campuses. Reach out to your employer to learn about your company's plans encourage Electric Vehicle adoption.

ON THE GO

Thanks to commitments by AEP and the City of Columbus, the number of public charging stations at shopping centers, city parking lots and garages, airports, hotels government offices and private businesses will significantly increase by 2020.

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