## **Opinion**

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- Why electric vehicles hate Ithaca



Your Turn Ted Crane Guest columnist

If EVs (electric vehicles) could talk, they would tell you that Ithaca is a nightmare. It would be a loud chorus of misery, because there are so many EVs around here.

How many ways does Ithaca make life tough for an EV? In spite of everything, why are there so many around here, and why are they still less expensive to operate than a traditional fossil-fuel vehicle?

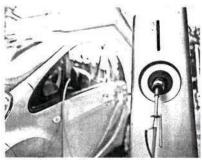
An EV — whether it's today's automobiles or tomorrow's pickup trucks and construction equipment
— is at its worst when the temperature is low; when
going up and down hills (mostly, going up); and when
stopping and starting for red lights, speed bumps and
traffic.

Cold batteries perform poorly. The smallish battery in a Prius Prime loses 20% or more of its travel range in the winter, down from 25-plus to a paltry 20 miles. Smaller EV batteries are emptied before they warm up, but empty batteries still work as storage devices for recovered energy. This is a big plus for hybrid vehicles. Sadly, traditional engines don't do too well, either, until they warm up.

Cold weather haters complain that it takes extra battery power — miles — to heat the steering wheel, seat and passenger compartment. They're forgetting that a traditional engine offers no creature comforts until it warms up, unless energy is stolen from gasoline to power heaters.

EV travelers coming downhill to Ithaca often observe little or no net loss of battery energy. The energy recovered while coming downhill offsets energy used to cross the rural flats. Traditional engines continue using gasoline even when the vehicle is coasting downhill.

Going uphill, battery energy is used rapidly. Every tenth of a mile, the "remaining mileage" meter seems to drop two or three-tenths of a mile. A safe rule of thumb is, "You can never recover the energy spent go-



An electric car charging on the street.
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ing uphill by going down the same hill." It's almost as frightening as watching the dashboard of a traditional engine when it says "5 MPG" while climbing Ithaca's steep slopes.

Starting and stopping is a lot like going up and down hills, only the ground is flat. Energy lost when speeding up is never fully recovered when you slow down. An EV has a small advantage here. Some energy, at least, is recovered by regenerative braking; a traditional engine can't turn exhaust fumes back into gasoline.

A high-MPG fossil-fuel vehicle might travel 40 miles on a \$3 gallon of gasoline, but the same \$3 could buy 20 kWh — and an efficient EV can go 80 miles on that electricity. Hills, red lights and traffic affect both kinds of vehicles. Cold weather takes its toll on batteries, but even 80% of a battery still propels an EV more than 60 miles for the cost of a gallon of gas. Even in wintry, hilly, traffic-y Ithaca.

Ask an EV, and it surely would rather be operated in sunny, flat, no-red-lights Nevada. It's going to hate Ithaca, but it's still going to be cheaper to operate than a fossil-fueled vehicle.

Ted Crane is a Spencer resident.