

July 27, 2018

*Via Electronic Filing*

Daniel P. Wolf  
Executive Secretary  
Minnesota Public Utilities Commission  
121 7th Place E., Suite 350  
St. Paul, MN 55101

**Re: Comments of the Institute for Local Self-Reliance for the Inquiry into Electric Vehicle Charging and Infrastructure (Docket No. 17-879)**

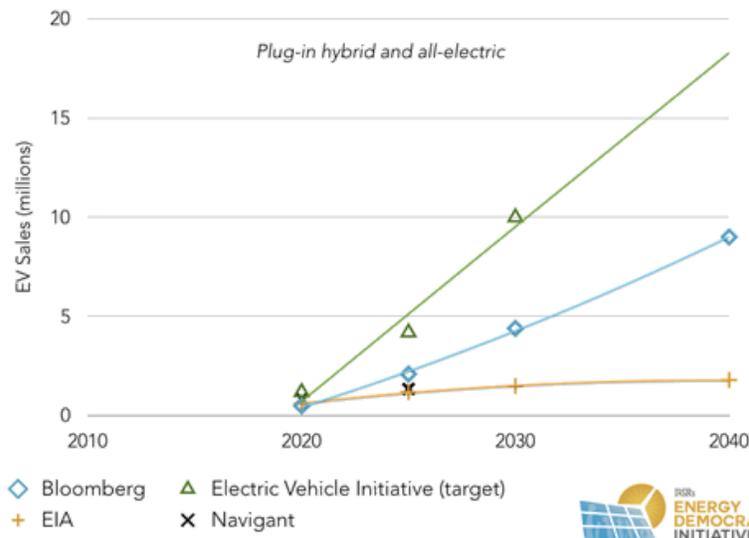
Dear Mr. Wolf:

The Institute for Local Self-Reliance (ILSR) respectfully submits these comments on the electric vehicle charging and infrastructure topics outlined by the Commission's notice (Docket No. 17-879). Our comments address local impacts and community benefits of electric vehicles, roles of both utilities and regulatory agencies in the state's growing electric vehicle market, and considerations for electric vehicle charging tariffs.

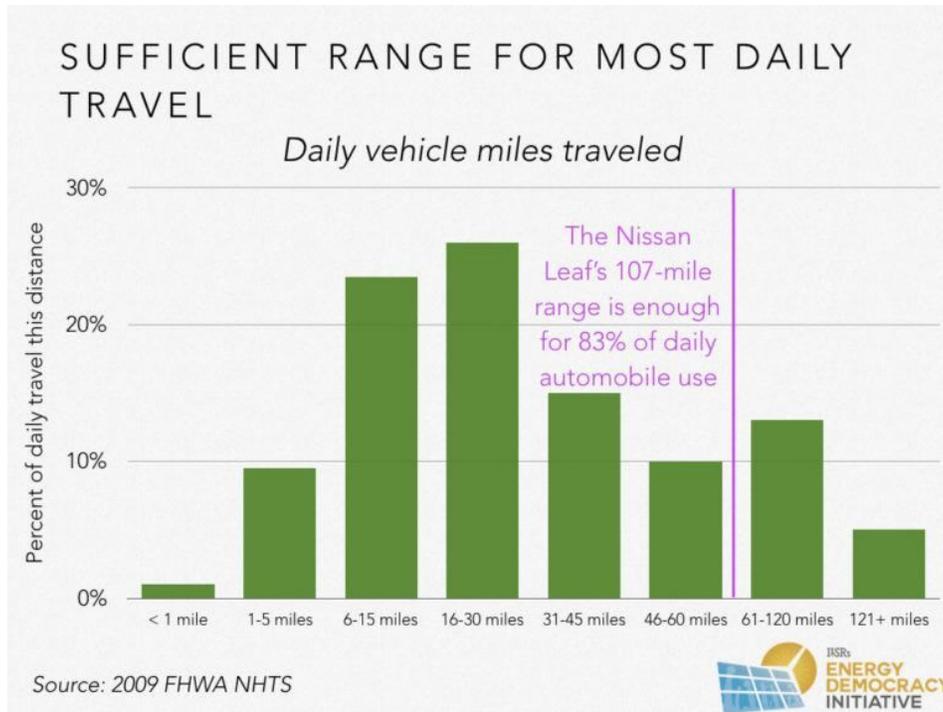
## Now is the Time to Plan

As summarized in the ILSR report [Choosing the Electric Avenue – Unlocking Savings, Emissions Reductions, and Community Benefits of Electric Vehicles](#) (2017) and illustrated in the image below from that report, electric vehicle sales continue to surge nationwide and are projected to continue to grow rapidly over the next two decades.

### U.S. ELECTRIC VEHICLE SALES FORECASTS



Minnesota is likely to follow this national trend in the growth of electric vehicles, as [more vehicle models become available](#) at lower price-points and are able to boast longer ranges due to more advanced battery technologies. For example, the 2017 Nissan Leaf, a popular and relatively affordable battery-powered vehicle, can travel up to 107 miles on a single charge in optimal conditions, enough to [satisfy most drivers' daily needs](#) (Americans cover an average of 29 miles per day and a median of just 10 miles), as illustrated in the image below.



In addition, new public programs, as [outlined by the Minnesota Pollution Control Agency](#) and funded by the recent Volkswagen settlement with U.S. EPA, states, and tribal governments, will facilitate investment in public charging infrastructure and heavy duty electric vehicles including electric transit buses across Minnesota. Increased sales of electric vehicles and further deployment of charging infrastructure can have local economic impacts and produce jobs in car sales, as well as building and maintaining infrastructure. As a result of these developments, there will certainly be more electric vehicles on the roads in Minnesota in the years ahead that will need to be considered in energy system planning.

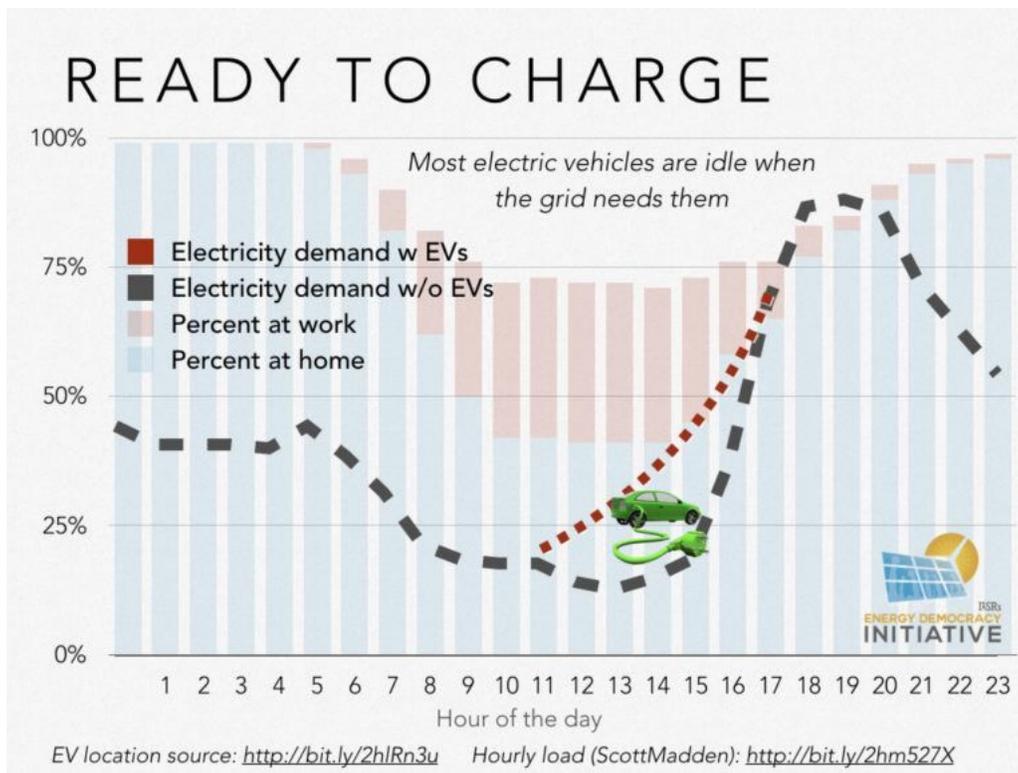
With the growth in sales of electric vehicles, there are a number of important, local impacts — experienced by individual customers, utilities, and the energy system as a whole — from the projected growth in the electrification of our transportation sector that the Commission should consider moving forward.

## Local Impacts of Electric Vehicles

First, as mentioned above, electric vehicles provide end-users with cost savings and lowered mobility costs. In part because electric models have fewer drivetrain components than their gas-powered counterparts, they tend to require less maintenance. Combining reduced maintenance obligations with fuel savings, electric vehicles [save drivers an estimated \\$1,000 per year](#).

Second, for communities across Minnesota, a major benefit of the switch from gasoline-powered to electric vehicles is the reduction in the pollution impacts of driving. The shift to electric vehicles will decrease [greenhouse gas emissions associated with our transportation system](#). Without exhaust fumes, electric vehicles also [reduce a significant source of local air pollution](#), historically and disproportionately impacting [communities living closest to busy roadways](#).

Electric vehicles, often factory-made with programmable charging schedules, can also provide substantial grid benefits even as they increase total consumption. Timed charging of electric vehicles has the potential to allow afternoon surges in electricity demand to be smoothed out (shown below, in a chart from ILSR's *Choosing the Electric Avenue*, 2017) by charging vehicles when solar energy has reduced net system load (in this example) or when wind energy is prevalent (a policy already implemented by Great River Energy).



The cumulative power of electric vehicles goes beyond stabilizing the larger electricity system; it offers an opportunity to draw more power from the local economy. Electric vehicles operate in a distinct geography (near the owner), and, therefore, their benefits can be localized. For example, a nexus of electric vehicles in a single neighborhood along a particular distribution feeder could increase the capacity for local solar on the feeder. With as many as 40 percent of electric vehicles home even during midday hours, this additional demand could prevent backfeeding of solar energy from the distribution grid through substations. Electric vehicles are another non-wires opportunity for increasing the hosting capacity of distribution feeders, not only systemwide, but they also present an opportunity for individual customers to capture more of the energy they produce.

The local benefits make electric vehicles part of a larger transition from energy monopoly to energy democracy, as distributed technology from solar to smartphones localizes everything — production, consumption, and decision making — on the electric grid.

## Getting the Right Rules: Utility and Regulatory Roles in Minnesota's Electric Vehicle Market

There are several opportunities for utilities and regulators to increase the adoption of electric vehicles nationally and in Minnesota.

Widespread availability of vehicle chargers will be key to capturing electric vehicle benefits, as discussed in more detail in the “Rules to Maximize the Electric Vehicle Opportunity” section of ILSR’s [Choosing the Electric Avenue](#) report. For many individual vehicle or even fleet vehicle owners, charging while parked overnight will replace today’s regular visits to the gas station. This means incentives and financing for home or fleet station charging infrastructure is crucial to ease the transition from gasoline-powered vehicles. Inclusive energy financing, allowing utilities to cover the upfront cost of chargers to be recovered through customer bills (similar to Xcel’s EV Pilot) could cut down high upfront costs for customers into manageable monthly ones. Utilities and regulators should also look for opportunities to pitch solar customers (as they apply for incentives or interconnection) to install the wiring and charging hardware for an electric vehicle simultaneously. Both the financing or incentive costs of charging infrastructure can be recovered over increased electricity sales.

Infrastructure investments will have to be made outside of garage stalls and parking stations, however. In comments to the California Energy Commission, Nissan noted that fewer than half of the nation’s light-duty vehicle fleet have a garage stall available for charging. Regulators in California recently allowed utilities to get cost recovery for public charging infrastructure investments. While a logical move, it is crucial that utility-run infrastructure investments allow for a [competitive process](#) to test out a variety of charging hardware. Another key element is “rolling qualifications,” or flexible purchasing standards that allow new charging hardware to qualify for

build-outs that have already received approval, without having a second comprehensive regulatory review.

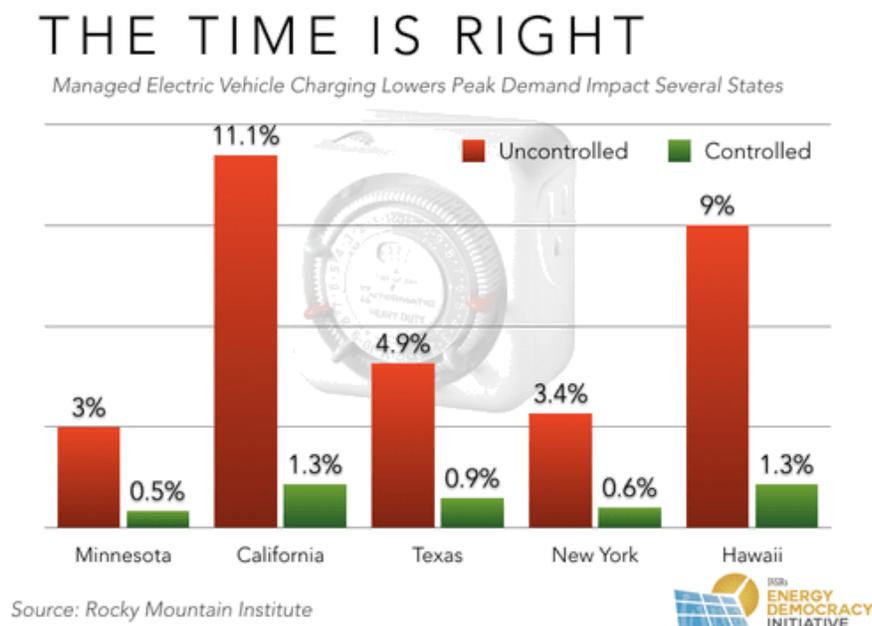
There may be additional opportunities for Minnesota to pilot and become a leader in making innovative links between local energy production and electric vehicle charging, as illustrated by a new [Minnesota-based collaboration](#).

We also recommend utilities engage in [distribution system planning](#) to accommodate electric vehicles by doing a full value analysis of distributed energy resources, modeling to optimize distributed energy deployment, and designing appropriate policies, with additional [ideas outlined in this Clean Coalition resource](#).

## Considerations for Electric Vehicle Charging Tariffs

Low-cost charging rates represent a major policy initiative for expanding electric vehicles. There is ample evidence that utilities can use low rates to enhance grid benefits of, and customer savings from, electric vehicle charging.

When utilities raise electricity prices at times of peak energy use (and reduce them elsewhere), they can largely minimize electric cars' contribution to peak energy demand. [Recent modeling by the Rocky Mountain Institute](#) suggests optimized charging rates would limit Minnesota's peak demand increase, for example, to just 0.5 percent when electric vehicles hit 23 percent penetration, compared with an increase of more than three percent without charging controls. Minnesota wasn't alone. In the four other states modeled, the Rocky Mountain Institute [found](#) peak demand impacts of widespread electric vehicle adoption could be significantly reduced with controlled charging. The following graphic illustrates.



Xcel Energy's recently approved [home charging pilot program](#) illustrates best practices of electric vehicle charging rate design.

However, as we outlined in [earlier comments on Xcel Energy's electric vehicle charging programs](#), tariffs or incentives must save participants money, or else such programs may fail by not attracting enough participants or not being more widely adopted. It is important to keep in mind that charging incentives do not necessarily correspond with financial savings for participants, if these participants are burdened by the costs of additional metering technologies or [maintenance charges](#).

## Summary

We urge the Commission to weigh the local impacts and community benefits of electric vehicles, roles of both utilities and regulatory agencies in the state's growing electric vehicle market, and considerations for electric vehicle charging tariffs, outlined in these comments, when making further decisions regarding electric vehicle and charging infrastructure. Doing so will help ensure benefits from the rapid growth in electric vehicles and charging infrastructure are accessible to all Minnesotans and that the transformation and electrification of our transportation system builds local power and promotes energy democracy in communities across the state.

Thank you for the opportunity to comment. We look forward to participating further in this docket and appreciate that there has been no legislative preemption of this regulatory process.

Sincerely,

/s/

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