



**Electric Vehicles and Kit Carson Electric Cooperative, Inc.
Taos, New Mexico**

– Perspectives on a New Market Opportunity –

June 2017

About This Report

This report is preliminary and subject to revision. The most current version is dated **June 2017** and supersedes all versions with an earlier date.

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Introduction – the Electric Vehicle Market is Growing Fast

2017 is the year that electric vehicles (EVs) are penetrating the transportation sector in a significant way. The category is broken into plug-in hybrid-electric vehicles (PHEVs) like the Chevrolet Volt and all-electric vehicles (EVs) like the Tesla Model S. In the U.S. sales for the entire category were up 84% in March and 74% for the 1st Quarter. EV sales were up 134% in March and 87% in the first quarter. EVs and PHEVs have grown to 1.2% of new car sales in the U.S. Sales increases for EVs were even more significant globally. It is expected that 2 million EVs will be on the road by year-end.

2017 is the first year that moderately priced EVs with ranges over 200 miles are available. The Chevrolet Bolt has a range of 240+ miles and its sales are picking up as word of mouth spreads. GM has marketed the Bolt as a “compliance car” meaning that they have kept production low and spent no money on mass marketing. But word of mouth and internet reviews of the vehicle have been so positive that sales are picking up rapidly. The Bolt is just the beginning.

The Tesla Model S and Model X are the best-selling luxury vehicles in their respective class in the U.S. and many European countries. But the real game changer is the Tesla Model 3, a moderately priced sedan with a range expected to be well over 200 miles. The Model 3 will hit the market in late summer, and every Model 3 produced will go to new owners eagerly awaiting the EV. It’s estimated that over 400,000 Model 3s have been reserved with deposits of \$1000, and that exceeds the maximum global sales for one year of the Toyota Prius in 2014 by 160,000 vehicles. It will take a while for Tesla to get 3s rolling off the production lines, but it seems likely that their sales will be in the 100s of thousands annually.

That is not the end. The popular Nissan Leaf has been redesigned to compete with the Bolt and the Model 3. It will be released in late summer or early fall and should have a range in excess of 200 miles. This is particularly significant because Nissan is more committed to EVs than any other traditional automaker. That means that they will produce as many as they can sell, and their dealers will be motivated to sell EVs.

The Hyundai IoniQ EV is called a Leaf killer in its current configuration, and it is sure to join the Leaf, Bolt, and Model S in the over 200 mile moderately priced group in early 2018. The IoniQ is also called the Prius killer because of its high-quality, low price, and superior battery-size.

Several other automakers are promising competitive all-electric vehicles, and the market for plug-in hybrids should also pick up this year as new vehicles are released.

It is difficult to project the pace of adoption of EVs, but EVs and PHEVs are projected for every segment of the automotive transportation market – semi-trucks, light and heavy pickups, fleet vehicles, SUVs, and every other class of auto. The cost of operating these vehicles will be a compelling advantage (roughly \$1 per gallon equivalent), and the cost of producing them should come down rapidly as well as battery prices fall and new production lines gear up. It is clear that *this is a once in a century opportunity for electric utilities.*

What Does This Mean for Rural Electric Cooperatives?

From the standpoint of all electric utilities EVs represent the opening of a market sector equivalent in size to the one we currently serve. Potentially the electricity sector of the economy can grow by 100% over the next couple decades simply by capturing market share in transportation.

Contrast the growth potential offered by EVs to the “Utility Death Spiral” resulting from continuous improvement in energy efficiency and the growth of behind the meter solar. For Kit Carson the Death Spiral has resulted in annual sales declines of a little under 1%. Most industries whose sales decline 10% each decade do not have rosy futures.

Then look at the potential for grabbing market share from gasoline and diesel in the transportation sector. Potential growth of 80 to 100% is a jaw-dropping development. *It's clearly in the interest of every electric utility to do everything in their power to promote and facilitate the adoption of EVs. The question is how to do this in the most cost-effective manner given each utility's specific circumstances.*

How Fast Will the EV Market Grow?

Estimates vary with some respected sources saying that all new vehicles will be electric by 2030. European governments have passed resolutions calling for all new vehicle production to transition to EVs by 2025. Governments that accept the conclusions of climate scientists and who import all their transportation fuel have a double motivation for spurring EV growth. That two-sided prod to the marketplace should not be underestimated.

Respected financial analysts from companies like Bloomberg predict a slower transition taking another decade. Then there are more conservative estimates. But Bloomberg New Energy Finance Division predicts that the purchase cost of EVs will be cheaper than comparable internal combustion engine vehicles by the end of 2022. Cheaper to buy and cheaper to operate plus cleaner generally means a rapid transition.

How Should Electric Utilities Respond to The Different Predictions for the Pace of EV Adoption?

Even the most conservative predictions would transform the electric sector and reverse the utility death spiral. Simply asking the question with numbers provides the answer. Will 100% of new vehicles be EVs by 2030? Or will 50% of new vehicles be EVs by 2030? How about 10% by 2030?

Regardless of whether the pace of adoption turns out to be fast or slow, it is clear that it is picking up momentum. *And every small increase in EV penetration is vitally important for Electric Utilities.*

So, what should we do? The answer is clear. We should do everything we can to promote adoption of EVs. It's the best available way to expand sales and our share of the energy market. And, we should prepare policies and infrastructure that will hasten the change.

What Are the Obstacles That Will Slow EV Adoption in Our Area?

The obstacles in North Central New Mexico include the relatively vast and sparsely populated area we serve, the current lack of EVs in the SUV and Pickup categories and the reluctance of traditional automakers to offer EVs, and our relatively high poverty rate. Drivers have to cover large distances to access essential services in health care and air transport. That can mean a round trip of over 300 miles. Pickups and SUVs probably make up the majority of the fleet in our area, and EVs in these categories are two to three years away. Our roads are frequently unpaved or in poor repair, so the appeal of SUVs for normal passenger travel will remain high.

Margins on EVs for the manufacturers are low, but that will change as batteries improve and volumes grow. Parity on purchase will be reached in the early 2020s. But, it is unclear how dealers will accommodate the low maintenance costs of EVs. Their margins come from the high maintenance costs of ICEs. This adds up to mixed feelings about EVs among manufacturers of traditional vehicles.

Poorer families will not be acquiring EVs until they begin appearing on the used car market delaying their access to these more efficient transportation for several years. But, EVs with ranges around 80 miles already entering the used car market at prices under \$10,000. These vehicles will be much cheaper to operate for poor families, but they will be limited by their range until the Bolts and Model 3s start to appear in the used car market.

How Kit Carson Electric Cooperative (KCEC) Should Promote EV Adoption

Electric Utilities around the country are doing everything from offering rebates of thousands of dollars to EV buyers to providing rebates on electricity to new EV purchasers. We are not a rich utility and there are obstacles to EV penetration in our area. So, we should proceed **decisively** but be careful to not get too far ahead of the pace of change.

A Four Point Program seems appropriate.

- 1) Establish a Charging Infrastructure. Consider partnering with PPC Solar (Taos, NM) on equipment and installations.
 - Install public charging stations near the Taos Plaza and in the village centers of Red River and Angel Fire. The program can be marketed to local governments, the ski valleys, and the Ojo Caliente Hot Springs.
 - Make sure all local charging stations show up on apps mapping the availability of charging.
 - Investigate the Tesla destination program.
 - Develop a home charging product and installation service. Select quality equipment and consider selling at cost. This should be done now and can involve local installation companies.
 - Develop a plan for installing charging stations at major employers including Holy Cross Hospital, Taos County, the Town of Taos, Kit Carson Electric Cooperative, and the ski valleys. As adoption picks up we want to encourage EV owners to charge at work.
- 2) Promote EV Adoption among KCEC Members.
 - Select the EVs and Plug-hybrids we want members to consider.
 - Contact dealers in Taos, Espanola, and Santa Fe to discuss discounts for KCEC members.

- Develop an incentive program for EV buyers. Possible incentives include – a cash rebate up to \$1000, discounts on home charging stations, 200 kilowatt-hours (kWhs) of free electricity or a half-year of “fuel” for new owners, a Buyers club.
- Coordinate incentive program with NMRECA and local governments.
- Develop communications program for members that itemizes the incentives we offer, and the advantages offered by EVs. We could start this with a letter to behind-the-meter customers who might be incented to purchase EVs by environmental concerns.
- Refine the communications to members based on new entries to the EV/Hybrid market.

3) Understand the Impact of EV Adoption for Our Supply and Distribution Grid.

- Coordinate with Guzman to prepare for anticipate growth of demand. This needs to be monitored carefully as the rate of adoption increases.
- Develop programs to encourage charging during the day to offset excess solar and off-peak charging at night to prevent demand surges after work. A growing charging infrastructure in public and work places is needed. Reduced pricing for off-peak charging should be offered.
- Analyze the opportunity of drawing on car batteries for peak shaving on the grid. This will require equipment and software investments but can yield very significant savings. Begin investigating now for roll-out of a program in the early 2020s,

4) Walk the Talk. We can be our own best marketers by acquiring EVs and Plug-in Hybrids for appropriate functions.

- Begin to acquire EVs for KCEC. Plug-hybrids can be used for passenger vehicles. Small to mid-size SUVs will come on the market in 2018.
- Look into Workhorse for fleet heavy duty pickups. If these vehicles are available in small-scale lots, we should market them where appropriate to reach the minimum purchase volumes. On paper the Workhorse appears ideal for use by Rural Electric cooperatives (RECs), Counties, and the small towns and villages in New Mexico.
- Clearly define the cost-of-ownership for EV fleet vehicles. Always remember that EV adoption means purchasing our product for operation.
- Work with the Towns, Villages, and Counties to increase adoption of EVs. Marketing and incentives can be offered.
- Investigate arrangements to capture tax credits while they are available.
- Encourage other RECs to adopt similar programs. The more EVs sold the better for us all.

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