



2012 US BEV Market Study— BEV Challenge

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Table of Contents

BEVs: Misaligned, Misunderstood, and Missed Marketing 1

Little Interest in Purchasing a BEV 1

Does Anyone Want a BEV? 2

Range Anxiety and Limited Charge Station Availability Concerns Persist. 2

It Costs Too Much to Save Money 3

What Is the BEV Benefit? 4

Green Marketing: Not Buying It 4

Green Yes, Good Value No 5

I’m Not Like a BEV Owner 5

Green, as in Money. 7

Upcoming Electric Vehicle Study 7

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BEVs: Misaligned, Misunderstood, and Missed Marketing

Vehicle owners’ intent to make their next vehicle purchase a battery electric vehicle (BEV) is currently very low, yet 36% of owners indicate they will at least consider purchasing a BEV in the future. To capitalize on this interest in the BEV market, OEMs must address consumer concerns, understand misperceptions, and better align their marketing with consumer expectations, preferences, and finances.

To get a snapshot of vehicle owners’ perceptions of and intentions for the BEV market, J.D. Power and Associates conducted a survey of 1,001 current vehicle owners in July 2012. This special report provides topline results of the *J.D. Power and Associates 2012 US BEV Market Study*.SM The findings indicate some sizeable challenges in marketing BEVs to today’s consumers.

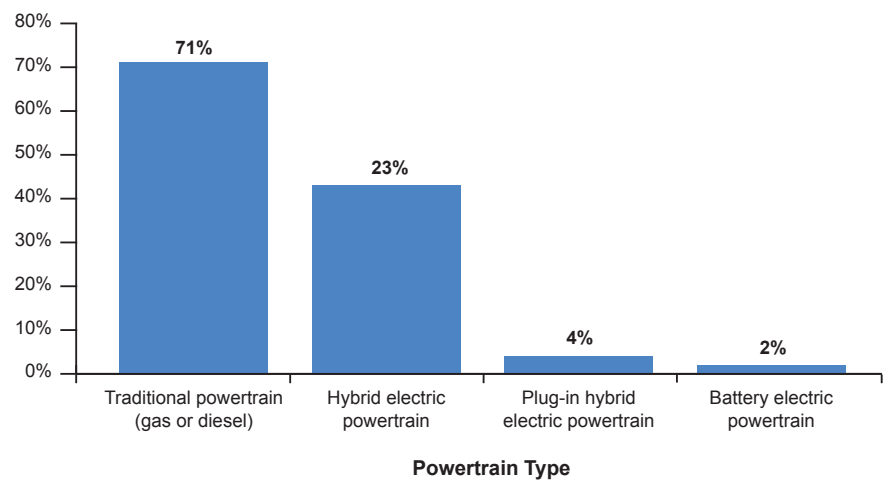
BEV expected share of US auto sales is 0.47% by 2015.

Little Interest in Purchasing a BEV

While awareness of BEV models such as the Nissan Leaf, Ford Focus EV, Toyota RAV4-EV, and Honda Fit-EV is relatively high, just 2% of vehicle owners say their next purchase or lease would most likely include a battery electric powertrain. According to industry analysts at LMC Automotive, this estimate of intent is actually higher than the forecasted BEV share of US auto sales of 0.08% in 2012. LMC doesn’t expect this share to grow much during the next few years, and projects only 0.47% share by 2015.

In contrast, 71% of owners indicate their next purchase or lease will most likely be a traditional gas or diesel vehicle. Intent to purchase a hybrid electric vehicle is second, at 23%.

% Powertrain Purchase Intent of Next Vehicle



Source: J.D. Power and Associates 2012 US BEV Market StudySM Figure 1

Does Anyone Want a BEV?

The length of a daily commute has a notable impact on whether or not a vehicle owner will even consider a BEV when shopping for their next vehicle. On average, owners commute 21 miles per day. Nearly half (47%) of owners with a moderate length commute (between 21 and 30 miles) are significantly more likely to consider a BEV for their next vehicle than the industry average (36%). Similarly, among owners with a particularly long commute (51 miles or more per day), 47% indicate they are likely to consider a BEV for their next vehicle. Owners who have an above-average commute length give BEVs at least some consideration as a viable option, given current fuel costs and advertised BEV driving ranges. It is worth noting that just 22% of vehicle owners who do not commute at all indicate they will consider a BEV for their next vehicle.

BEV consideration is much higher among vehicle owners in urban locations. Nearly half (46%) of these owners are likely to consider purchasing a BEV, compared with 35% of owners who live in rural areas and 34% who live in suburban areas. To some extent, the lack of interest among rural and suburban vehicle owners is likely related to concerns regarding the availability of plug-in stations to recharge the battery.

Range Anxiety and Limited Charge Station Availability Concerns Persist

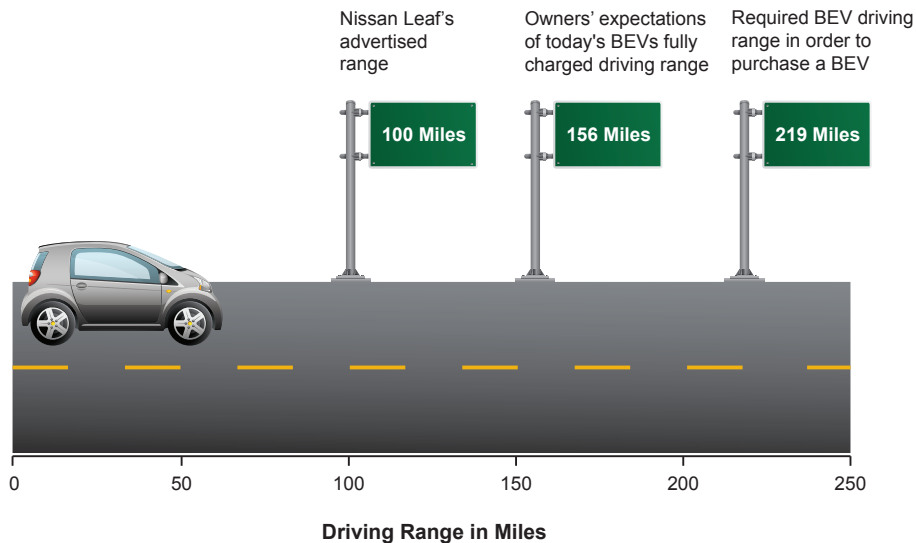
Vehicle owners' confidence in alternative powertrain technology is certainly healthier today than in the past, but despite growing consumer awareness about alternative powertrain technology, as well as a heightened focus on fuel price fluctuations, concerns regarding BEVs persist. It is evident that vehicle owners continue to experience anxiety about relying solely on a battery electric powertrain, as opposed to the more trusted internal combustion engine or hybrid powertrain technology. Nearly one-fourth (24%) of vehicle owners cite availability of plug-in sites while away from home as the most important concern of owning a BEV, followed by driving range (17%).

There remains a disconnect between the perception and reality of how far a fully charged BEV battery will allow vehicle owners to travel. Owners indicate they expect a fully charged BEV to travel an average of 156 miles, which is significantly more than the Nissan Leaf's advertised 100 mile range. Further, owners indicate that to consider purchasing a BEV, it would need to have a driving range of 219 miles, on average. This is more than double the current OEM-advertised capability. This is a substantial hurdle for OEMs to overcome in order to meet vehicle owners' current expectations.

Owners indicate that to consider purchasing a BEV, it would need to have a driving range of 219 miles.

2012 US BEV Market Study–BEV Challenge

BEV Driving Range Expectations of a Fully Charge Battery



Source: J.D. Power and Associates 2012 US BEV Market StudySM
<http://www.nissanusa.com/leaf-electric-car/index>

Figure 2

It Costs Too Much to Save Money

Additionally, OEMs are challenged by the need to create a level of comfort with the financial and lifestyle investment associated with BEV powertrains. Along with concerns related to the location of plug-in charging stations and the driving range of BEVs, numerous other drawbacks include the cost associated with purchasing, operating, and maintaining these vehicles. Collectively, cost-related concerns represent a significant obstacle in preventing consumers in general from purchasing BEVs. Nearly one-third (30%) of vehicle owners cite cost-related issues, such as vehicle price; cost to replace the battery pack; price of electricity; and maintenance costs as the most important concerns of owning a BEV.

The differences in perception between practicality and value are not the only disconnects associated with BEVs. Vehicle owners also are misaligned in their understanding of what a BEV should cost. On average, vehicle owners expect the premium (cost above a comparably equipped vehicle powered by a traditional gas engine) to purchase a battery electric powertrain to be slightly more than \$2,000; however, actual premiums for BEVs far exceed that figure. Further, 41% of vehicle owners indicate that purchasing a vehicle with a battery electric powertrain should not add any additional cost to the vehicle. Given this disparity in the expected costs of a BEV vs. the actual costs, vehicle owners and consumers may be more amenable to leasing a BEV than purchasing one. For example, in the survey for the 2012 US BEV Market Study, vehicle owners were given a hypothetical option to upgrade to a battery electric powertrain for \$5,000 (or \$99 per month) in a traditional financing scenario. Slightly less than one-third (30%) indicate they would select this option. In comparison, 41% indicate they would upgrade to a battery

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2012 US BEV Market Study—BEV Challenge

electric powertrain if their lease was increased by just \$67 per month, on average. Lease options for BEVs may also be more attractive due to a typically shorter lease contract, compared with a typical loan for a gasoline-powered vehicle, due to rapidly expanding advancements being made in powertrain technology.

What Is the BEV Benefit?

Despite the concerns cited, vehicle owners do acknowledge some financial benefits in purchasing BEVs. The most-often-cited benefit of owning a BEV is lower cost to charge the vehicle vs. filling the fuel tank of a gasoline-powered vehicle (78%). Other important benefits of purchasing a BEV cited by 64% of vehicle owners are a decreased US dependence on foreign oil and tax credits/rebates. Not unexpectedly, as a result of the recovering economy and uncertainty of fuel costs, vehicle owners’ interest in BEVs is notably aligned with saving money.

Other expected benefits pertain to the level of eco friendliness and convenience offered by BEVs. For example, 67% of vehicle owners cite BEVs as being better for the environment through zero emissions, while 52% indicate convenience of charging the vehicle at home as a benefit.

Green Marketing: Not Buying It

While it is clear that vehicle owners are well aware of the eco friendliness of BEVs, there is not much evidence that green sentiment and propensity to practice green habits have any discernible impact on BEV consideration and, therefore, sales. For instance, the rates at which vehicle owners will consider a BEV for their next vehicle are quite similar among those who indicate they have been taking actions to reduce and conserve (44%) or are just starting to take some action (43%), and even among those who are exploring ways to reduce harm or conserve resources, but have not taken any specific actions (39%).

Perhaps even more telling is that among vehicle owners who indicate they “strongly agree” or “somewhat agree” with the statement that they would pay extra for green or eco friendly products, only 3% indicate their next vehicle will most likely have a battery electric powertrain. This likelihood to purchase a BEV is on par with vehicle owners who are indifferent about green products (2%).

Similarly, the level of concern about harmful emissions has almost no impact on the likelihood to purchase BEVs. Just 2% of those who “strongly agree” or “somewhat agree” with the statement that emissions are important to them indicate their next vehicle will most likely be a BEV.

Green sentiment aside, the likelihood to purchase a BEV is nearly five times higher among vehicle owners who perceive themselves as “flashy.”¹ OEMS may be doing themselves a disservice by relying so heavily on green-themed marketing in an effort to sell BEVs.

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1 n = 30-99, small sample. In the personal image section of the survey for this study, vehicle owners were asked to provide their perceptions of themselves in a number of categories. See Figure 4 for further details.

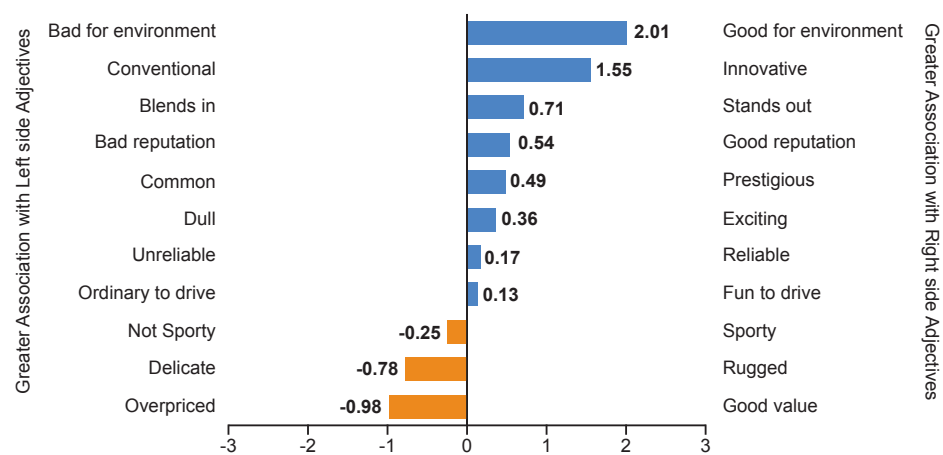
Green Yes, Good Value No

Even though vehicle owners consider cost savings a primary benefit to owning a BEV, OEMs continue to battle the perception that BEVs are not a good value, perhaps in part due to focusing so heavily on green-themed marketing.

Vehicle owners were asked in the survey for this study to provide their perceptions of BEVs in respect to 11 different sets of descriptive adjectives. In Figure 3 below, the distance a bar is from center, the more vehicle owners associate a BEV with the corresponding adjective. BEVs are most associated with being good for the environment, which aligns well with the marketing OEMs currently employ to promote the environmental benefits of these vehicles. In contrast, BEVs are least associated with being viewed as a good value.

BEVs are most associated with being good for the environment and least associated with being viewed as a good value.

Battery Electric Vehicle Association with Descriptive Adjectives



Source: J.D. Power and Associates US BEV Market StudySM Figure 3

Other associations of note include BEVs being seen as innovative (1.55) and for standing out (0.71), but are not viewed as being rugged (-0.78).

I’m Not Like a BEV Owner

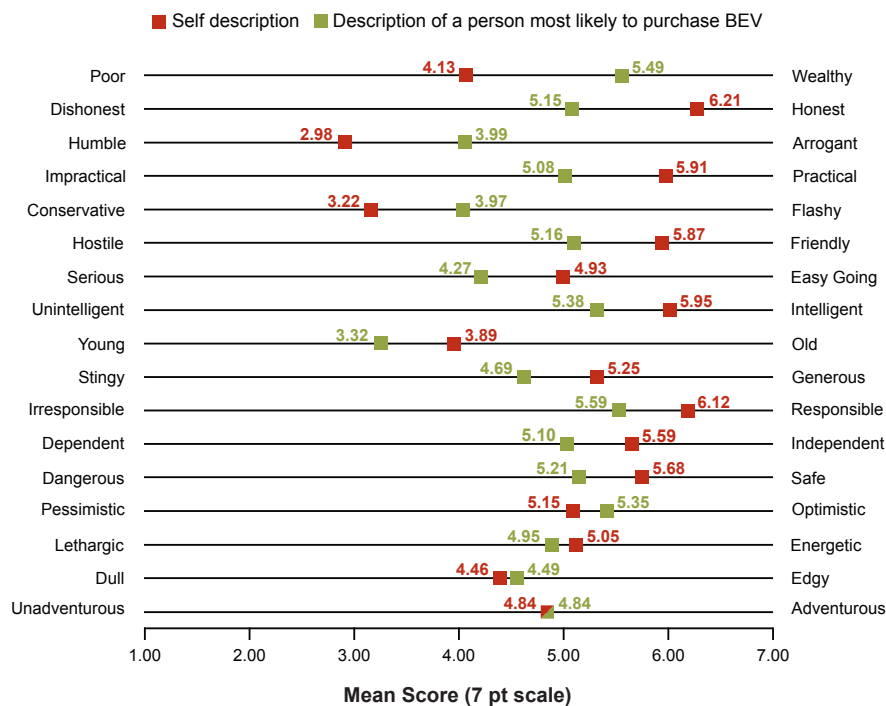
Similarly, OEMs must address vehicle owners’ perceptions about the typical BEV owner. There are a number of significant gaps between how vehicle owners perceive themselves and how they perceive the typical BEV owner. If BEVs are to be successful with consumers in general, OEMs must narrow these gaps.

2012 US BEV Market Study–BEV Challenge

Related to the sentiment that BEVs may not represent a good value, vehicle owners generally perceive themselves as far less wealthy than the typical BEV owner. In reality, those owners who say they “definitely will” consider purchasing or leasing a BEV are in fact wealthier, with a mean income of \$129,000² compared with a mean income of \$76,000 among those who say they “definitely will not” consider purchasing a BEV. In addition, vehicle owners perceive the typical BEV owner to be more arrogant and flashy than themselves. Not unexpectedly, vehicle owners perceive themselves as more practical than the typical BEV owner, as well as more honest and friendly.

Vehicle owners considering a BEV purchase are, in fact, as interested—if not more so—in showing off their green sentiment and edgy style than they are in reducing harmful emissions.

General Automotive Owners Characteristics vs. BEV Owner Characteristics



Note: A higher score indicates greater association with the right side characteristics, a lower score indicates greater association with the left side characteristics

Source: J.D. Power and Associates US BEV Market StudySM

Figure 4

Vehicle owners who say they will consider a BEV view themselves as more flashy, edgy, optimistic, adventurous, and easy going. This may indicate that vehicle owners considering a BEV purchase are, in fact, as interested—if not more so—in showing off their green sentiment and edgy style than they are in reducing harmful emissions.

So, how do OEMs sell BEVs? If the current typical BEV owner is more interested in the image a BEV conveys about them than about environmental impact, it raises a question about why the current OEM marketing campaigns are so focused on the environmental impact of these vehicles. Given all the financial and value barriers associated with BEVs, it is evident that playing the green card isn't nearly enough to get consumers interested in BEVs or into the showroom.

2 n = 30-99, small sample

Green, as in Money

Ultimately, the BEV market is complex and nuanced. Consumer preferences and tendencies that are evident today may not be evident tomorrow due to fluctuating gas prices, electricity costs, availability of charging stations, and the rate of improvements in internal combustion engine fuel economy. Currently, the outlook for BEV sales is minimal, based on all of the issues discussed above. For consumers to seriously consider purchasing BEVs, OEMs must continue to educate them on the value of owning or leasing a BEV. In addition, further advancements in battery technology must be made in order to reduce the cost of ownership. In a market where consumers carefully consider how they will spend their money, marketing environmental greenness won't convince them that BEVs are the right choice. OEMs need to make the case that a battery electric vehicle is a good value. If not, these vehicles will remain the "flashy" choice.

Upcoming Electric Vehicle Study

As momentum for electric vehicles increases, the need to educate consumers and to better understand the market remains critically important in stimulating electric vehicle market growth.

The inaugural *J.D. Power and Associates US Electric Vehicle Ownership Experience StudySM* examines the entire continuum of selecting (or rejecting) and owning an electric vehicle. The study draws data from three surveys: one focused on vehicle intenders, one on escaped shoppers, and one on vehicle owners. The study provides in-depth information and insights to OEMs, utility companies, and vehicle-charging station providers, among others, to help them better understand, shape, and fulfill current and future vehicle owner needs in this unique market. The study publishes in October 2012.

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