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Driving the Market for Plug-in Vehicles: Increasing Consumer Awareness and Knowledge

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Key Takeaways

1. Despite plug-in electric vehicles (PEVs) achieving some success, consumer awareness and knowledge of PEVs remains too low in many markets, limiting market growth.
2. Most consumers remain ignorant of these basics: what PEVs are and how they work, the difference between plug-in hybrid electric vehicles (PHEVs) and battery electric vehicles (BEVs), PEV charging at home, work, and public locations, incentives for PEV purchase and the potential benefits of owning a PEV.
3. Consumers being unaware of PEVs does not mean they are unwilling to purchase the vehicles. There is a positive relationship between increasing awareness and the likelihood that consumers purchase a PEV.
4. Increasing sales beyond those that can be achieved by the initial base of interested consumers requires awareness and knowledge of PEVs to grow beyond that initial base. Several activities can be undertaken to achieve this: ride and drive events, experience centers, traditional marketing, social media marketing, and dealer education and training.
5. Implementing education and awareness campaigns may be a more cost-effective way to increase PEV sales than increasing financial purchase incentives.
6. The impact of these activities should be continually tracked through ongoing research to ensure their effectiveness.

Introduction

PEVs are more efficient and less polluting than conventional vehicles. For PEVs to reduce urban air pollution and greenhouse gas emissions in time to meet emissions reduction goals, they must be deployed quickly and in large numbers. Yet the available evidence indicates most consumers remain largely unaware of PEVs, ignorant of their capabilities, and lacking experience to compare PEVs to conventional vehicles.

Currently, there is a small segment of pioneering PEV buyers: world markets have reached about 1% of annual sales. However, even in places where sales are higher, such as Norway, California, and Shanghai, many other vehicle buyers—especially used-car buyers—have little awareness and knowledge of PEVs and even less experience driving and charging them.

This policy brief describes both the education challenges and the variety of consumer education efforts and outcomes in “beachhead” markets like Norway or California.

Lessons from Academic Research and Empirical Data

Consumer Knowledge and Awareness

Academic research shows that consumer awareness, knowledge, and experience with PEVs is low [1–5], and has not been changing over time [6]. This is a significant barrier to market growth. Examples of this lack of awareness from California include:

- Despite doubling the number of public charging stations between 2014 and 2017 there was no increase in the percentage of car-owning households who claim to have seen a PEV charger.
- In 2014, 70% of consumers in the US could not

name a single PEV for sale. By 2017, this had not increased.

- Between 2014 and 2017 there was no increase in the number of people who know how to fuel a PHEV, BEV, or even a hybrid vehicle.

In addition to consumers being unaware of PEVs, they are unaware of the incentives available to purchase the vehicles [1,7,8].

Dealer Knowledge and Education

Studies have identified dealers as being uninformed, misinformed, and unmotivated to learn about how PEVs work, how and where to charge PEVs, and incentives for PEVs [9,10]. This leads to consumers having a poor experience at dealerships, often leading to consumers who want to purchase a PEV being unable to do so.

Dealers are also often unwilling to sell PEVs to consumers. One reason could be reduced revenue from PEV sales (compared to conventional vehicles) and because PEVs contribute less to dealers’ revenue from maintenance and service than conventional vehicles.

Increasing Knowledge and Awareness of PEVs

Existing PEV buyers are a small group of consumers who are highly motivated to educate themselves; this is not the case for the general population. Growing the PEV market requires a proactive approach.

A transition to PEVs requires programs that create public awareness of PEVs, educate consumers about PEV benefits, and provide trial experiences through ride and drives and PEV experience centers.

Comprehensive strategies include traditional and social media marketing campaigns, school education, dealer education, and incentives.

A Case Study on Norway

Norway is the leading nation for PEV market share. In 2017, 39% of all new vehicles sold were electric vehicles. PEV sales are high due to significant financial incentives, reoccurring incentives, and infrastructure development. Norway also has a history of proactive and successful consumer education and engagement.

The Norwegian Electric Vehicle Association is a self-sustained educational and outreach initiative. When consumers buy a PEV in Norway they get one year free membership in the EV Association, with the dealer paying the membership fee. As PEVs sales increase, the income of the EV Association increases, thus allowing them to reach more consumers.

EVs also have unique registration plates so are visually distinguishable from conventional vehicles. EVs can also drive in bus lanes which increases consumer awareness as drivers notice passenger cars driving in bus lanes [16].

The result of this long-term, widespread consumer engagement is 24% of the population planning to purchase a PHEV or BEV as their next vehicle and 47% of planning to do so in the next 2 years.

PEV Ride and Drives

Several studies have found that experience driving or using PEVs is an important factor in increasing the likelihood of a consumer purchasing a PEV [7,11–14]. Both short (such as public ride and drive events, or

dealer drives) and long experiences can increase consumer intent to purchase.

For consumers who are already aware of PEVs, ride and drives can increase their level of knowledge. Ride and drives, therefore, are important contributors to the PEV purchase process, but may not increase knowledge of PEVs among the wider public.

PEV Experience Centers

Experience centers are being used in a few places, including the US state of Oregon and the city of Milton Keynes, UK, to increase consumer awareness and knowledge of PEVs. They usually take the form of an exhibit of electric vehicles and charging equipment, and provide information about incentives, charging, etc. They also offer vehicles for short and long trials. Their effectiveness is currently not well understood.

Marketing Campaigns

Local and national governments should work together with industry and stakeholders to develop traditional and social marketing campaigns to reach the general population.

In the early stage of PEV markets, automakers may be unwilling to execute marketing campaigns due to lower returns on investment resulting from high comparative development cost and low PEV sales. Over time, they will become more willing to aggressively advertise PEVs as comparative development costs decrease and market shares increase.

Public-Private Partnerships

Partnerships could help address the issue of low automaker investments in PEV marketing. Policy makers, car companies, and other stakeholders

(regional authorities, electric utilities, non-governmental organizations) should take an active role in increasing knowledge and awareness. Examples include Go Ultra Low in the UK, and Forth in Oregon.

Go Ultra Low in the United Kingdom

PEVs are seeing early market growth in the UK. In 2017, close to 50,000 PEVs were sold, making up 1.9% of new vehicle sales. Of those PEV sales, 75% are PHEVs and 25% are BEVs.

Go Ultra Low is a public-private partnership funded by the Office of Low Emissions Vehicles and eight automakers in association with the Society of Motor Manufacturers and Traders. The aim of the initiative is to increase consumer awareness and purchase intentions of PEVs. This is being done via radio, print, online video, and social media.

In October 2017, Go Ultra launched its latest media campaign, which aimed to tackle consumer misconceptions by providing personalized, tailored information to consumers about why an electric vehicle could be right for them.

Between October 9 and December 31 the campaign achieved:

- 242,000 site visits
- 500,000 page views
- 45,000 uses of their online tool
- 5.7 million video views

Dealer Education

Car salespeople need to be educated so that they can answer prospective buyers' questions about

PEVs. Dealers need to be educated on all aspects of PEVs (incentives, infrastructure, recharging, etc.). Dealerships could appoint individual sales people who are specially trained to sell PEVs.

Some automakers are being proactive, providing workshops, training events, and online courses for dealership salespeople.

Dealers may need to be incentivized to encourage them to sell PEVs. In the US state of Connecticut, dealers receive a \$300 incentive from the Connecticut Hydrogen and Electric Automobile Purchase Rebate program (in addition to buyers of PEVs receiving a rebate).

The strategy taken to educate dealers may depend on whether dealers are predominantly independent franchises or automaker-owned.

Education Topics

Among the many topics on which consumers need education are the following:

- The differences between plug-in hybrids and battery-electric vehicles, and how they are fueled.
- The range of PEVs and how different ranges may suit different consumers' lifestyles.
- How PEVs are charged at home, including charging with a standard plug socket or installing a dedicated PEV charger.
- How and where PEVs can be charged in public. This can be supported by making recharging stations easily visible and well signposted.
- How to access various information databases on PEV charging locations so drivers can locate charging.
- Incentives available for PEVs and how to acquire/access them.
- Benefits of PEVs which can include lower fueling and maintenance costs, smoother and quieter driving, faster acceleration, fewer trips to the gas station, etc.

- That PEVs have been through multiple generations of product development and improvement. They are no longer a risky proposition, have a good record of reliability, and are exciting and fun to drive.

Incentives to Increase Awareness

Some incentives can be used to increase awareness of PEVs. In Norway PEVs can drive in bus lanes. The presence of PEVs in bus lanes is observable by non-PEV drivers [16]. In some regions PEVs are issued with different license plates. This includes Norway, and in some US states and China where PEVs have different coloured license plates. This can increase the observability of PEVs.

Long Term Analysis

Government policymakers should fund longitudinal research to track consumer awareness and knowledge of PEVs to ensure their activities are having the desired impact.

Cost Effectiveness of Education and Awareness Campaigns

The investment in financial incentives cannot achieve sales greater than the sum of the value of incentives applied to each PEV sold. In California 10,000 BEV sales incur a cost of around \$250 million in rebates. The same investment into consumer education could result in more PEV sales. Policy makers could dedicate a proportion of budgets for PEV incentives and infrastructure development to education and awareness campaigns.

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Further Reading

This policy brief is part of a series of briefs. Each brief concentrates on a specific aspect of PEVs.

The following briefs are available:

1. Regulatory Mechanisms and Implementation
2. Financial Purchase Incentives
3. Non- financial and in use incentives
4. Information, Education and Outreach
5. Electricity Grids and PEV Infrastructure

Briefs are available at: <https://phev.ucdavis.edu/international-ev-policy-council-policy-briefs/>

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