Innovation, Retail Performance and Zero Emission Vehicle Policy

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Research Team and Partners

Funding:

Partners:

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Why Study the Retail Market for Plug-in Electric Vehicles (PEVs)?

Encourage and support auto dealers to increase sales and leases of ZEVs.” (p. 15)

Dealers not always plugged in about electric cars, Consumer Reports’ study reveals
Also, not all staff seemed enthusiastic about making EV sales; a few outright discouraged it

“In general, I found that the customer service experience to be lacking at most of the dealerships I contacted. I’m used to car lots being shark tanks but suddenly I felt like the least appetizing fish in the sea.”
Policy Focus is on Automakers and Consumers

Growing the PEV market

Structural & Institutional Barriers?
Implications of poor retail experience

For policymakers:
• Delayed growth of ZEV market
• Missed regulatory objectives and targets
• Industry resistance
• Adverse pollution, health, and climate impacts

For industry:
• Damage to brand (reduced loyalty)
• Lower profits (higher costs)
• Fewer sales
• Less economic resilience
• Less “goodwill” from customers & regulators
Why special consideration for PEVs?

• “Discontinuous” innovations involve jumps in technological and/or market dimensions

• Unlike convenience and safety features, PEVs are fundamentally DIFFERENT:
  - Involve changes in consumer behavior
  - Require new or highly modified support infrastructure
  - Invoke new contexts of use (e.g. home charging, portable power)
  - Enable new forms of value (e.g. convenience of home charging)
  - New dimensions of performance (e.g. charge rate, instant torque)
  - May be incompatible with current infrastructure and institutions
  - Initial shortfalls in expected performance by core customers

Discontinuous new products involve not just new technical capabilities by firms but also new competencies for marketing and selling them.
Innovation and the retail experience

For more radical ("discontinuous") innovations:
- Word-of-Mouth (WOM) plays outsize role in success
- How tech is handed off to customer may be critical

For Plug-in Electric Vehicles, customers may:
- Buy the wrong car for their needs
- Fail to realize the full value of PEV ownership
- Forego the technology, brand, or dealer next time
- Tell others to avoid the technology, brand, or dealer

Discontinuous innovations not only require good product design, but appropriate design of the retail experience as well.
Why is industry structure important for innovative new products?

• Distributed responsibility for innovation
• Introduces power and dependency relations
• OEM’s cannot “dictate” how new products are sold
• Product is confined to existing channel, regardless of fit
• OEM-dealer relations historically at ‘arms length’
• An emerging rift appears to be developing between how customers want to buy cars and how they are actually sold
• What happens when/if new products demand changes in how products are sold?
What are the main questions we are trying to answer?

1. How does the retail experience of plug-in vehicle buyers compare to conventional vehicle buyers?

2. What drivers might affect dealer performance and engagement in PEV sales?

3. What are the implications for achieving zero emission vehicle (ZEV) adoption targets and are there opportunities for policy?
We used a multi-method research approach

- Exploratory interviews w/ dealer principals & early buyers
- Survey data:
  - J.D. Power 2013 Sales Satisfaction Index (SSI) Study
    - 29,040 responses (13.5% return rate)
    - Examines buyers only (rejecters* excluded: survey did not specify powertrain type of rejected vehicle)
  - National data for Tesla excludes California (CA data unavailable)
  - California Clean Vehicle Rebate Program (CVRP) survey
    - 2,900 responses (17.5% return) from PEV buyers (also Tesla)
    - Completed survey less than 3 months after buying a PEV
- Interview data:
  - 63 total interviews
  - Included 21 new car dealers, 6 automakers, 5 utilities
  - 20 dealer site visits & 38 interviews (principals and sales staff)
  - 4 primary plug-in markets (San Diego, LA, Bay Area, Sacramento)

* Customers that shopped but did not buy from a particular make or dealer
To many dealers, PEVs are a hassle

- Deeper and wider product knowledge
- Bigger changes to current practice...
- ...For a much smaller portion of sales volume
- More demanding customers
  - Longer sales cycle
  - Longer transaction and delivery times
    “[A salesperson] can deliver a car in a half hour. You’re not delivering a [PEV] in a half hour. You’re looking at... nothing less than an hour.”
- High salesforce turnover deters investment
- Questionable profits; salesperson earns little
Dealers insist public incentives work and should continue...

“The [up to] $2,500 rebate is tremendous. Without having it, I think you would not sell as many electric cars.”

“I tell everyone about the $2,500. Most of them don’t know actually. So that’s what... sells the car.”

“If you take the HOV incentive away it dramatically changes it. Because – and we saw that with hybrid... We went from selling 30 a month to seven.”

“The real kicker is the HOV sticker. That’s gold.”
Dealers urge “retail friendly” policies

1. Shift incentives to the point of purchase
   “Given the choice between $2,500 as it is now or $1,500 at point of sale... I’d take the point of sale stuff. It would be more valuable at the dealership level.”
   “If the state rebate had a program that was more instant. If you could... instantly use it on that lease program, it would be huge for payments.”

2. Reduce minimum ownership period
   “The 36 month rule is probably a negative thing... there’s some people that only want to lease the car for 24 months. down the road you have less people being able to drive this car and experience it.”
   “What if California offered $1,000 or $1,500 if you had a two-year lease? I think that would even push [PEVs] even more... They don’t want to be in it for three years. They come back in another two years, I’m happy.”
4. Assure continued availability of incentives

5. Dealers need same public incentive information as customers

   “The government tools are bad, and then the DOE tools are fragmented.”

   “If there’s a separate sticker... that the government provides to the dealers... something that’s applied at the point of the dealer... I think that would work best.”

6. Add public incentives for dealers

   “When the big bonuses stopped, so did the sales of said vehicle. So if you make it worth somebody’s while, they become an expert on the car overnight.”

7. Minimize burdens on dealers
Dealer engagement in PEV sales varies substantially

Dealer “Innovators” fit a certain profile:

- Dealer principal = product champion
- Proximity to affluent customers, HOV lanes
- See electrification as a long-term trend
- PEVs align with brand strategy
- See PEVs as a strategic opportunity to:
  - Win new customers to dealer and/or brand
  - Grow market share
  - Attract customers from other dealer territories
  - Increase sales turns (e.g. via leasing)
- Customer-centered business processes
“Dealer innovators” implement new approaches

- Designate PEV specialist(s)
- PEV specialist(s) drive PEVs daily
- Convey total monthly savings against conventional vehicles to customers
- On-lot marketing (e.g. co-locate PEVs w/ solar canopies & chargers)
- Target corporate & university campuses with ride & drive events and special deals
- Facilitate home charger installation
- Assist with incentive paperwork
Emergent practices for PEVs: Pre-lot and on-lot activities

- Participate in online user forums & chatrooms
  - Access to latest info, trouble spots, lead generation
  - Educate and inform customers; shape customer perceptions

- Engage local EV clubs
  - Lead generation
  - Volunteers for weekend/lunchtime ride & drive events
  - Access to latest info (e.g. charger roll-out, utility discounts)

- Pre-apply HOV decals

- Supplemental window stickers

- Maintain “drive-ready” PEVs

- Option for extended test drive
Emergent Practices: Delivery & post-sale support

- Demonstrate PEV-specific features at delivery
- Pre-configure in-vehicle PEV software and smartphone apps (e.g. Plugshare, ChargePoint)
- Enroll & issue charging network cards at delivery
- Take-away materials and resources for PEV buyers
- Provide publicly accessible chargers/fast chargers
- “No charge to charge” program
- Stock home charging equipment in service lobby
- Partner w/ local electricians for home EVSE installs
- Loaner program for access to conventional vehicles
Insights from Survey Data
PEVs as Opportunity (Non-Premium Makes)

More plug-in buyers switched from competing automakers

Source: 2013 Sales Satisfaction Index (SSI) Study, JD Power & Associates
*Predicted probabilities; model controls for income, education, and generational affiliation (N = 11,933)
Overall Retail Satisfaction (Non-Premium Makes)

Buyers of plug-in vehicles from dealers selling non-premium makes rated retail satisfaction significantly lower than conventional buyers.

Source: 2013 Sales Satisfaction Index (SSI) Study, JD Power & Associates

*Predicted mean rating: model controls for income, education, gender, and generational affiliation, as well as factors cited as unique to plug-in buyers by dealers (N = 13,526)
Impact on Brand Loyalty (Non-Premium Makes)

Based on the purchase experience, plug-in buyers may be less likely to buy a vehicle of the same make next time.

Source: 2013 Sales Satisfaction Index (SSI) Study, JD Power & Associates
*Predicted mean probabilities; model controls for income, education, gender and generational affiliation (N = 14,060)
Male buyers of plug-in vehicles from dealers selling premium makes rated retail satisfaction significantly higher than conventional buyers.

Source: 2013 Sales Satisfaction Index (SSI) Study, *JD Power & Associates*

*Predicted mean ratings; model controls for income, education and generational affiliation (N = 5,504)
Variation in Retail Performance (Premium Makes)

Source: 2013 Sales Satisfaction Index (SSI) Study, JD Power & Associates

*Box and whisker plot of observed data (N = 5,504)
Impact on Brand Loyalty (Premium Makes)

Based on the retail experience, premium plug-in buyers (Tesla) reported they are more likely to buy from the same make next time.

Source: 2013 Sales Satisfaction Index (SSI) Study, JD Power & Associates

*Predicted mean probabilities; model controls for income, education, gender and generational affiliation (N = 14,060)
Emerging plug-in buyer data suggests customers value non-traditional support services and support.

Source: 2013-2014 ARB CVRP Survey

<table>
<thead>
<tr>
<th>Service</th>
<th>% PEV buyers rating service as valuable or very valuable</th>
<th>% of dealers offering the service</th>
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<tbody>
<tr>
<td>HOV stickers affixed to car at purchase</td>
<td>23%</td>
<td>86%</td>
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<tr>
<td>Assistance preparing rebate/HOV forms</td>
<td>34%</td>
<td>83%</td>
</tr>
<tr>
<td>PEV Product Genius</td>
<td>25%</td>
<td>78%</td>
</tr>
<tr>
<td>Assistance selecting/installing home charger</td>
<td>30%</td>
<td>73%</td>
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<tr>
<td>Configuring Supporting Apps</td>
<td>46%</td>
<td>71%</td>
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<tr>
<td>&quot;Try before you buy&quot; program</td>
<td>14%</td>
<td>66%</td>
</tr>
<tr>
<td>Charging network enrollment</td>
<td>9%</td>
<td>63%</td>
</tr>
<tr>
<td>Tutorials/workshops for new owners</td>
<td>24%</td>
<td>61%</td>
</tr>
<tr>
<td>Access to non-EV for occasional use</td>
<td>9%</td>
<td>40%</td>
</tr>
</tbody>
</table>
Purchase Transaction: Average Time Spent by Customer at the Retail Facility

- Selecting your vehicle
- Negotiating your deal
- Finance & Insurance ("F&I")
- Wait time before delivery
- Taking delivery

### Conventional Buyer
- (non-premium)
  - Time Spent by Customer at the Retail Facility: 70 minutes
  - Selecting your vehicle: 52 minutes
  - Negotiating your deal: 41 minutes
  - F&I: 39 minutes
  - Time before delivery: 27 minutes
  - Taking delivery: 27 minutes

### Plug-in Buyer
- (non-premium)
  - Time Spent by Customer at the Retail Facility: 66 minutes
  - Selecting your vehicle: 48 minutes
  - Negotiating your deal: 36 minutes
  - F&I: 40 minutes
  - Time before delivery: 23 minutes
  - Taking delivery: 29 minutes

### Conventional Buyer
- (premium)
  - Time Spent by Customer at the Retail Facility: 76 minutes
  - Selecting your vehicle: 48 minutes
  - Negotiating your deal: 33 minutes
  - F&I: 37 minutes
  - Time before delivery: 26 minutes
  - Taking delivery: 36 minutes

### Plug-in Buyer
- (premium)
  - Time Spent by Customer at the Retail Facility: 55 minutes
  - Selecting your vehicle: 12 minutes
  - Negotiating your deal: 7 minutes
  - F&I: 45 minutes

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(1) **Tesla spends ~67% and 25% more time with buyers at delivery than dealers of non-premium and premium makes, respectively.**

(2) **Shorter upstream processes means Tesla buyers may be more receptive to extra time and attention at delivery.**

Source: 2013 Sales Satisfaction Index (SSI) Study, *JD Power & Associates*

*Denotes significant difference from conventional buyers at the 95% confidence level
(N = 19,274)
Dealer profits appear competitive...

But dealer gross profits vary significantly by make. Given additional burdens, is this compelling enough???

Source: 2013 Sales Satisfaction Index (SSI) Study, *JD Power & Associates*

*Predicted means; model accounts for variation from demographic factors (N = 1,269)*
Plug-in buyers may expect lower service & maintenance, and may travel further from home or work to find a PEV dealer.

Source: 2013 Sales Satisfaction Index (SSI) Study, *JD Power & Associates*
*Predicted means; model controls for education, gender, race and generational affiliation (N = 14,238)*
Could lower satisfaction be due to a more decided customer?

Source: 2013 Sales Satisfaction Index (SSI) Study, JD Power & Associates

*Model controls for income, education, gender and age (N = 14,317)
Are dealers more likely to try to sell plug-in buyers a vehicle they don’t want?

More plug-in buyers reported the dealer attempted to try to sell them a vehicle they did not want.

Source: 2013 Sales Satisfaction Index (SSI) Study, JD Power & Associates
*Predicted means; model controls for demographic factors (N = 14,127)
Plug-in buyers weigh facets of the buying process differently

Change in Overall Buyer Satisfaction vs. Salesperson knowledge/expertise about the vehicle

For plug-in buyers from dealers of non-premium makes, overall purchase satisfaction is more adversely impacted by salesperson knowledge. Not so for premium buyers.

Source: 2013 Sales Satisfaction Index (SSI) Study, JD Power & Associates
Some facets of the buying process matter more to plug-in buyers

Plug-in buyers score premium retailers much higher when considering explanation of vehicle features at delivery… And are more forgiving on overall score when less satisfied.

Source: 2013 Sales Satisfaction Index (SSI) Study, JD Power & Associates
Guidance for Policy
Dealers could play a greater role in selling PEVs

1. Ensuring the product matches the customer’s driving profile and needs

2. Re-framing and conveying the unique value of PEVs

   “That lease is like $240.00 a month... I’m saving $140.00 a month in gas and I’m getting the HOV lane... When you kind of lay it out to people like that, it’s really kind of a no brainer.”

3. Providing the customer the support needed to unlock the value of PEV ownership
Dealers likely follow consumer adoption patterns

Technology Adoption Life Cycle Model

Uptake of PEVs through heterogeneous dealer populations results in widely inconsistent sales quality. Uptake in stages adds another layer of delay and uncertainty.

New technologies and sales channel conflict... “On steroids”

- Characteristics of early markets:
  - Substantial uncertainty (supply, demand, profits)
  - Problems that need solving; experimentation
  - Institutional and legal barriers
- Magnifies knowledge deficit with customer
- Requires bigger adjustments to practice... for a small proportion of total sales
- Difficult conditions for knowledge retention
  - Uncertain/questionable rewards
  - Few early sales = Insufficient repetition for knowledge retention
  - Supply swings interrupt sales momentum
Findings point to a dual path approach to close the retail gap

1. Remove barriers to alternative retail models
   a. PEVs need new approaches appropriate for more radical technological advancements
   b. PEVs face significant headwinds within a traditional model in which incremental product improvements dominate
   c. Policy should make space for business model innovation
   d. Protections for consumers must be preserved

2. Institute “retail friendly” incentives
   a. Increase effectiveness of existing incentive programs
   b. Bring more targeted incentives to bear
   c. Accelerate engagement in PEV sales by more dealers
Policy Options

1. Provide limited relief from franchise sales restriction on new entrants

2. Increase effectiveness of existing programs:
   a. Amend state Clean Vehicle Rebate Program
      ▪ Reduce or eliminate minimum ownership period
      ▪ Let dealers reserve rebate funds upon taking inventory from factory
   b. Offer installation credit in lieu of free or discounted home chargers

3. To accelerate uptake by more dealers:
   a. Targeted sharing of success stories and best practices to principals at highest volume dealerships
   b. Create a single database for utility rates & public incentives
   c. Enlist trusted vendors to build apps/tools for dealers
Policy options to encourage even more plug-in vehicle sales...

1. Waive state sales tax on Zero Emission Vehicles

2. Implement public incentives for dealers
   - Performance-based (e.g. CVRP survey)
   - $500 to $1000 per unit sold (tie to notification of utility; no-haggle); stabilize dealer demand to counter conflicting OEM priorities

3. Eliminate restrictions blocking regulated utilities:
   - From marketing PEVs as a category
   - From installing and operating charging infrastructure

4. More (and more highly visible) public chargers

5. Provide standard window sticker for ZEVs
   - Line items for public incentives, discounts, & perks
   - QR code for customer-specific incentives and rates
   - Comparison of monthly total cost of ownership
Dealer uptake of PEVs may follow consumer adoption patterns

Technology Adoption Life Cycle Model

A more effective strategy for engaging dealers may be to win over dealer populations by enlisting successful dealers to showcase their PEV success stories and best practices.

Summary

• Plug-in buyers of non-premium makes score dealers lower in satisfaction, which could hurt sales and market development

• Facets of Tesla’s model could benefit PEV dealers

• Dealers can serve as a key source of innovation but uptake by more dealers faces challenges

• Greater focus on salesperson knowledge, explanation of features at delivery and post-sale follow-up

• Profits may not sufficiently offset greater burdens of selling PEVs (and likely FCVs)

• More “retail friendly” policies & incentives are needed
Thank you!

QUESTIONS?

Please contact Eric Cahill (eccahill@ucdavis.edu) for more information.