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New Car Dealers and Retail Innovation in California's Plug-In Electric Vehicle Market

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Eric Cahill
Jamie Davies-Shawhyde
Thomas S. Turrentine

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Authors:

Eric C. Cahill (Corresponding Author)
University of California, Davis - Institute of Transportation Studies
1590 Tilia Street
Davis, CA 95616
Primary Phone: (714) 625-6604
Email: eccahill@ucdavis.edu

Jamie Davies
University of California, Davis – Institute of Transportation Studies
1590 Tilia Street
Davis, CA 95616
Primary Phone: (530) 752-9932
Email: jdavies@ucdavis.edu

Tom Turrentine
University of California, Davis – Institute of Transportation Studies
1590 Tilia Street
Davis, CA 95616
Primary Phone: (530) 752-1768
Fax: (530) 752-6572
Email: tturrentine@ucdavis.edu

1 Abstract

2 Innovative new products like plug-in electric vehicles may need new approaches to market and sell them. We
3 conducted 43 interviews with automakers and dealers selling plug-in vehicles in California's major metro markets
4 and analyzed data on customer satisfaction with new car dealers and Tesla retail stores. Initial findings revealed:

- 5 • Plug-in vehicle buyers rated the dealer purchase experience much lower than conventional vehicle buyers
6 while Tesla earned industry-high scores;
- 7 • Plug-in buyers expect more from dealers than conventional buyers, including product knowledge and support
8 that extends beyond traditional offerings;
- 9 • Profits from plug-in vehicles may not be compelling enough to convince more dealers to take on the greater
10 demands of selling these alternatives
- 11 • New retail approaches undertaken by dealer "pioneers", including new methods for building and scaling
12 dealer competence, could improve the PEV buying experience; and
- 13 • More "retail friendly" public incentives could improve program effectiveness.

14 Evidence suggests that pre-existing retail structure in the automotive sector could spur retail innovations for PEVs,
15 but may also hinder the quality of customer support and pace of diffusion amongst dealers and customers. The paper
16 examines the implications of these findings and advances opportunities policy.

1 INTRODUCTION

2 Plug-in Electric Vehicles (PEVs) represent a substantial leap forward in technology that entail not only new
3 engineering capabilities by firms (e.g. high-voltage electrical and mechatronic systems and interfaces), but also new
4 strategies and competencies to market and sell them [1]. This is especially true where substantial shifts in well-
5 established consumer behavior, or dependency on complementary infrastructure or products, are required [2].
6

7 In response to California's Zero Emission Vehicle mandate, automakers have recently begun introducing plug-in
8 electric vehicles in volume to the state's 1.7 million annual new car buyers. While automakers shoulder the burden
9 of compliance with California's Zero Emission Vehicle (ZEV) Program, franchise laws require that independently
10 owned and operated new car dealers sell vehicles to end customers [3, 4]. These independent businesses individually
11 decide which vehicles they sell and how they are retailed to customers.
12

13 The California Governor's Office has called on state agencies to "encourage and support auto dealers to increase
14 sales and leases of ZEVs" [5], yet policymakers have little understanding of dealer practices, or how they might
15 support increased ZEV sales vis-à-vis dealerships. Presently, 19 different models of PEVs from 10 different
16 manufacturers are available for purchase in California, but only three of these models are available nationally.
17 Although automakers have made PEVs available for purchase by private consumers in California since late 2010,
18 for most makes only a minority of dealers in core PEV markets currently offer them. Further, the quality of the
19 purchase experience has come under scrutiny. An April 2014 *Consumer Reports* investigation, in which it
20 dispatched 19 mystery shoppers to 85 dealers across four states, found many dealers knew little about the PEVs they
21 sold. In some cases, dealers outright discouraged PEV purchases [6]. In a number of states, dealer groups have
22 moved to block start-up EV automaker Tesla Motors from operating its direct-to-consumer retail model. Limited
23 engagement by dealers, poor purchase experience, or efforts to block innovations in the automotive retail sector
24 could adversely impact sales and slow the growth of the nascent PEV market.
25

26 Policies and incentive programs do not currently account for the key role dealers play in new vehicle transactions.
27 There is also little available information that describes the extent to which new car dealers are embracing PEVs or
28 that examine the quality of the purchase experience witnessed by PEV buyers. Data is needed to compare the
29 purchase experience for plug-in and conventional vehicle buyers and consider whether differences may impact PEV
30 adoption.
31

32 The study addresses three research questions: (1) How does the quality of the retail experience for PEV buyers
33 compare with buyers of conventional vehicles? (2) What retail-level drivers impact PEV sales? And (3), what are
34 the implications for continued PEV market growth and what opportunities might exist for policy? In this paper, we
35 present findings from a study of the retail market for PEVs in which we conducted 43 interviews with six
36 automakers and 20 new car dealers in California's major metro markets for PEVs. The paper aims to provide a short
37 background on the existing automotive retail landscape, to present data on the divergent purchase experiences and
38 needs of plug-in vehicle buyers, and to explore drivers that could influence the ability of established automakers and
39 their dealer networks to deliver retail-level innovations that support PEV sales and PEV market growth.

40 Emergence of the Franchised Dealership Model

41 As early as the 1930's, automakers divested direct sales to customers in favor of a franchised distribution system in
42 which automakers sell vehicles to independently owned dealers, who in turn sell them to customers. This model
43 better afforded automakers the ability to balance production capacity in a mature market with unstable demand [7, 8].
44 Traditional franchises typically occupy highly regulated spaces and, in the automotive sector include a large body of
45 stipulations governing licensing for new car sales, employee health and safety, and a variety of consumer protections
46 that vary from state to state. Dealers must make substantial investments in facilities, personnel, vehicle and parts
47 inventories, and service equipment. In return, automakers grant dealers exclusivity to sell its product within a given
48 market area [7, 8]. Dealers add value for manufacturers as a source of highly localized market information, and
49 facilitate thousands of unique and highly complex transactions, including trade-ins. Dealers add value for customers
50 by providing warranty coverage, repair parts, and localized service and maintenance for the vehicles they sell [7].
51

52 Though ostensibly partners, automaker-dealer relations are fraught by a long history of mistrust arising from
53 inequality in bargaining power. Dealers depend entirely on the automaker for supply of its product, creating

1 dependency relations that automakers sometimes exploited to its advantage. Federal and state regulations emerged
2 to protect dealers from unfair practices such as termination of franchise agreements without cause or forcing
3 unwanted inventory on dealers [8]. By 2002, every U.S. state had passed franchise laws governing commercial
4 relations between car dealers and auto manufacturers [9]. Though they vary from state to state, franchise laws
5 typically stipulate that automakers with existing franchise dealer networks must continue to sell all new vehicles
6 through these outlets. This effectively bans direct sale of vehicles by incumbent manufacturers. Also, as
7 independently owned and operated businesses, *new car dealers individually decide which vehicles they sell and how*
8 *they are retailed to customers*. Automakers are limited to more indirect means for influencing the purchase
9 experience and can include providing dealers with informed recommendations and financial incentives, including
10 offsets for marketing costs, facility improvements, training, or other investments deemed appropriate by automakers.

11 **Distributed Agency and Discontinuous Innovation**

12 Developing and commercializing innovative new products is rarely the domain of a single entity or “agent”; rather,
13 responsibility is typically distributed amongst multiple agents in a product’s value chain. In these instances, the path
14 to market is conditioned by pre-existing organizational arrangements and patterns of relations amongst multiple
15 agents [10]. The nature of these arrangements can vary from tightly integrated vertical relationships to loosely
16 coupled ‘arms-length’ interactions. This path-dependency [11] influences how new products are delivered and
17 received in the marketplace. Further, where innovation is distributed amongst agents, and where agents are not
18 readily substitutable, there is a degree of mutual dependency amongst them; a firm cannot introduce an innovation
19 without the coordinated participation of the other agents. Hence, the actions (or inaction) of one can constrain the
20 will of the other.

21
22 It is important to note, however, that constraint, dependency, and power does not necessarily preclude cooperative
23 relations amongst agents. Rather, the introduction of innovative new products (i.e. goods and services) can challenge
24 and alter existing relations amongst agents and the pathways for delivering new products to market. Thus, success in
25 commercializing an innovative new product may rely on concomitant innovation in how that product is distributed
26 and sold to end customers. Lessons learned downstream of production can thus spur innovations by downstream
27 agents that aid in sales growth and market development. They can also inform innovations in future iterations of the
28 product that similarly increase its appeal [10, 12].

29
30 This unique industry structure is potentially significant because, as GM CEO Mary Barra recently stated to an
31 audience at the Detroit Economic Club, “Technology advancements are revolutionizing the auto industry.” So much
32 so, according to Barra, that “This industry will experience more dramatic change in the next decade than it has in the
33 past 50 years.” She specifically cites new propulsion systems and alternative fuel sources as key catalysts of this
34 change. PEVs and fuel cell vehicles, in particular, represent a substantial leap forward that entail not only new
35 engineering capabilities by firms, but also new strategies and competencies to market and sell them [1]. Innovations
36 of this nature are unlike more routine and incremental upgrades of existing products. Rather, “discontinuous
37 innovations” often call for substantive changes in how customers interact with the product, alter current modes of
38 behavior, or require completely new or a highly modified set of complementary products to support them [2].

39
40 Such departures can invoke uncertainty in core attributes of historical product performance that can deter
41 prospective buyers from making the jump to the new technology. Early digital cameras, for example, lacked the high
42 resolution desired by amateur and professional photographers but appealed to the “point and shoot” customer for its
43 superior portability. By comparison, PEVs may appeal to similarly distinct customer segments. Plug-in technology
44 introduces new concepts such as at-home fueling, the use of new charging equipment, and unfamiliar gauges and
45 operating procedures. It can also invoke uncertainty in core attributes of vehicle performance (e.g. fuel economy,
46 range, and refuel times) that can deter prospective PEV buyers.

47
48 The success of discontinuous innovations often rests on a value proposition that is distinct from earlier offerings.
49 The “value proposition” is defined by the business literature as ‘the value created for users by a product offering
50 based on technology’ [13]. In the case of PEVs, the technology offers the potential to improve elements of vehicle
51 performance such as acceleration, responsiveness, and ride and handling, along with dramatic increases in fuel
52 economy. Public incentives may confer additional benefits such as tax breaks, purchase rebates, and carpool lane
53 access. The more the cumulative value of these benefits offsets the incremental costs incurred to the customer, the
54 greater the likelihood of market acceptance.

55

1 Starting with Rogers [14], a substantial body of literature establishes that early customers play a critical role in
2 technology diffusion. The effect early customers have on subsequent adopters is conditioned by learning derived
3 from experience with the technology; good experiences promote diffusion while bad experiences delay it [15]. The
4 marketing literature for new products (i.e. goods and services) suggests that when firms introduce substantially new
5 discontinuous products there is often a gap between the promised value proposition to the customer and the ability
6 of the product to fulfill that promise [2]. Closing the gap between the promised and realized value for customers
7 entails the provision of a number of supporting products and services [2]. These may entail changes to existing
8 modes of provision (e.g. online versus physical store) or entirely new business models. For example, after its
9 products languished on the shelves of big box electronics retailers alongside much cheaper alternatives from PC
10 makers IBM, Hewlett Packard, and Compaq, computer giant Apple re-invented its retail business model, branding
11 itself as a digital services company. It then unveiled both factory-owned retail stores and a virtual ‘Apple store’ with
12 a constellation of offerings to support a series of ground-breaking new products like the iPod, iPhone, and iPad that
13 fundamentally transformed the user experience.

14 **Retail Innovation and the Franchised Dealership Model**

15 Established automakers are introducing PEVs through the same established retail channels that have supported
16 customers of conventional vehicle for many decades. As early as the 1930’s, manufacturers divested direct sales to
17 customers in favor of the franchised distribution model in which automakers sell vehicles to dealers, who in turn sell
18 them to customers. The franchised dealer model emerged as a way for automakers to balance production capacity
19 against unstable demand in a mature market [7]. Traditional franchises typically occupy highly regulated spaces. In
20 the automotive sector, a large body of stipulations govern licensing for new car sales, employee health and safety,
21 and a variety of consumer protections that vary from state to state. Dealers must make substantial investments in
22 facilities, personnel, vehicle and parts inventories, and service equipment. In return, automakers grant dealers
23 exclusivity to sell product within a “relevant market area” [7], defined as a 10-mile radius around the retail facility.
24 Dealers add value for automakers as a source of highly localized market information. They also facilitate thousands
25 of unique and highly complex transactions, including trade-ins [7]. Dealers add value for customers by providing a
26 wide selection of immediately available models for test drives and purchase. Dealers also provide warranty coverage,
27 repair parts, and localized service and maintenance for the vehicles they sell.

28
29 Historically, dealerships have been run by independent small business owners. Though ostensibly partners,
30 automaker-dealer relations are fraught by a long history of mistrust arising from inequality in bargaining power that
31 has persisted from the formative years of industry growth to modern day. Dealers depend entirely on the automaker
32 for supply of its product, creating dependency relations that automakers sometimes exploited to its advantage. For
33 example, automakers at one time could terminate, or threaten to terminate, dealer franchise agreements and
34 sometimes pressured dealers for concessions such as taking unwanted vehicles [8]. Federal and state regulations
35 emerged to protect dealers from these practices such that by 2002, every U.S. state had passed franchise laws
36 governing the commercial relations between car dealers and auto manufacturers [9]. These laws limit the scope and
37 extent of control and influence that automakers can exert on franchise dealers. An arms-length relationship ensued,
38 and best characterizes automaker-dealer relations today.

39
40 Though they vary from state to state, franchise laws typically stipulate that automakers with standing franchise
41 dealer networks must continue to sell all new vehicles through these outlets. This effectively bans sales of vehicles
42 through factory-owned stores by incumbent vehicle manufacturers. Also, as independently owned and operated
43 businesses, *new car dealers individually decide which vehicles they sell and how they are retailed to customers.*
44 Without direct control over the retail experience, automakers are limited to more indirect means for influencing
45 dealer behavior. These can include informed recommendations and financial incentives, including offsets for costs
46 such as marketing, facility improvements, training, or other investments the automaker deems helpful for moving
47 branded products.

48 **Methodology**

49 The relative newness of policy research on the subject of new car dealers and environmental innovations means that
50 testable hypotheses are unavailable for study. The intent of the research is to begin laying the groundwork for such
51 hypotheses. The study invokes grounded theory [16] to explore factors influencing dealer engagement in PEV sales,
52 as well as retail practices that could affect the quality of the PEV purchase experience. We use a novel mixed
53 methods approach in which we examine the “buy” side of the PEV purchase experience through available data while

1 collecting information on the “sell” side of the purchase transaction to capture retail-level drivers affecting dealer
2 engagement in PEV sales. This approach inherently provides some convergent validity for the research by seeking
3 information on a topic area from multiple sources. Incorporating qualitative interview data also provides a “bottom
4 up” approach to building theory and testable hypotheses related to a problem where little information is currently
5 available [16]. Three primary methodologies and sources of information are used:

6 1. Consumer New Car Sales Satisfaction Data

7 We analyzed national and state-level J.D. Power 2013 Sales Satisfaction Index (SSI) study data on customer
8 satisfaction with new car dealerships and Tesla retail outlets. The SSI study is a national random sample survey of
9 new car buyers that measures customer satisfaction with the retail purchase experience [17]. Automakers and dealers
10 commonly use J.D. Power’s syndicated SSI studies to gauge and benchmark the performance of new car dealers
11 across the industry. It includes responses from 29,040 owners, representing a 13.5% response rate, of new 2012
12 through 2014 model-year private use vehicles purchased (or leased) and registered between April 1, 2013 and May
13 31, 2013.

14
15 The Sales Satisfaction Index is derived from a weighted composite of ratings from both new car buyers and buyers
16 who shopped a particular dealer but purchased elsewhere (aka “rejecters”). Since J.D. Power collects data at the
17 make (brand) level rather than at the model level, it was not possible to determine whether a ‘rejecter’ spurned a
18 conventional gas vehicle or a PEV (with the exception of Tesla). Hence, the findings presented here are Buyer Index
19 Scores, derived entirely from buyer data. Rejecter data, had we been able to include it, would lower the scores, in
20 some cases substantially. Consequently, our findings represent a conservative estimate of customer satisfaction with
21 the new vehicle purchase experience.

22
23 The buyer index score of the SSI survey assesses four distinct phases and 17 attributes of the car buying process and
24 assigns a weighted index score [17]. The data set also included buyer demographic information as well as “Power
25 Information Network” (PIN) data capturing dealer-level business financials such as transaction prices and dealer
26 gross profits.

27
28 The study captures 12 different PEV models from eight vehicle manufacturers, including GM (Chevrolet Volt),
29 Nissan (LEAF), Tesla (Model S), Ford (Focus EV, C-Max Energi and Fusion Energi), Honda (Fit EV and Accord
30 PHEV), Toyota (Prius Plug-in and RAV4 EV), Mitsubishi (i-MiEV), and Daimler (Smart Fortwo ED). The 2013
31 SSI study did not include start-ups CODA and Fisker, nor did it include models introduced after the 2013 SSI survey
32 period such as the Chevy Spark, Fiat 500e, or Cadillac ELR. The SSI study is facilitated by data provided by
33 automakers and collected by IHS/Polk, an automotive services provider. While Tesla Motors was part of the study,
34 California data was unavailable since Tesla opted out of providing IHS/Polk data in the state of California. We
35 further adjusted the SSI data by weighting it to the 2013 US sales mix of PEVs.

36 37 2. California PEV Buyer Data

38 We additionally collected data specific to the PEV purchase experience from survey questions co-developed with
39 the Center for Sustainable Energy (CSE) and incorporated in the PEV Demographic and Diffusion questionnaire.
40 CSE administers the survey to PEV rebate applicants as part of the state’s Clean Vehicle Rebate Program (CVRP).
41 All PEV buyers who submit a rebate application are invited via email to participate in a 45-minute online survey that
42 collects a variety of data on buyer demographics, purchase intentions, and other aspects of the PEV purchase
43 transaction. A small subset of co-developed questions elicited opinions about the retail purchase experience and
44 gathered feedback on how well retailers met the unique needs of PEV buyers.

45
46 Question development was informed by conversations with early PEV buyers and dealers offering PEVs from major
47 metro areas in Northern and Southern California. Given the early state of PEV sales, access to PEV buyers was
48 limited. We used a combination of criteria (attendees must have purchased a PEV in the previous six months) and
49 convenience sampling (area customers reached through Electric Vehicle Association contacts) to select participants
50 for the consumer focus group. Observations were drawn from 11 owners and lessees of various PEV makes and
51 models. All interviews were conducted in July of 2013. Participants shared experiences shopping and purchasing a
52 new PEV and expressed ideas for improving the customer purchase experience. Based on this feedback, we posited
53 that PEV buyer perceptions of salesperson expertise may be related to how well informed dealers are on topics that
54 extend beyond the vehicle itself to a breadth of topics that include support services specific to the differentiated
55 needs of PEV buyers.

1
2 The question subset explored PEV-specific product knowledge and support services for home and away charging,
3 local electricity rates, and public incentives, as well as overall satisfaction with the purchase experience. CSE
4 estimates the survey reaches approximately 70 percent of the state's PEV buyers. Over 7,000 responses were
5 collected between October 2013 and January 2014, representing a response rate of 17 percent. It was not possible to
6 weight the data for sales mix, however. Hence, the data may be biased toward less affluent respondents and may
7 over-sample and under-sample specific PEV makes and models. Consequently, we treat the data as suggestive,
8 rather than representative of the statewide population of PEV buyers.
9

10 3. Interviews with New Car Dealers and Automakers

11 A third approach used in the research involved interviews with dealer principals (owners or general managers) and
12 sales staff sampled from a cross-section of new car dealerships and retail stores in California's major PEV markets.
13 These included the Bay Area and the greater Sacramento, Los Angeles, and San Diego regions. Sampling was
14 intended to cover the range of dealer attributes (size, location, ownership structure) and influences that might impact
15 dealer participation in, and success with, PEV sales. This included dealers in metro and suburban areas with at least
16 six months of experience selling plug-in hybrid and/or full battery electric vehicles. Whenever possible, the
17 researchers selected dealers representing a specific make or makes for a given area in the top quartile of PEV sales,
18 and one dealer representing the same make(s) outside this top quartile but selling at least ten units monthly.
19

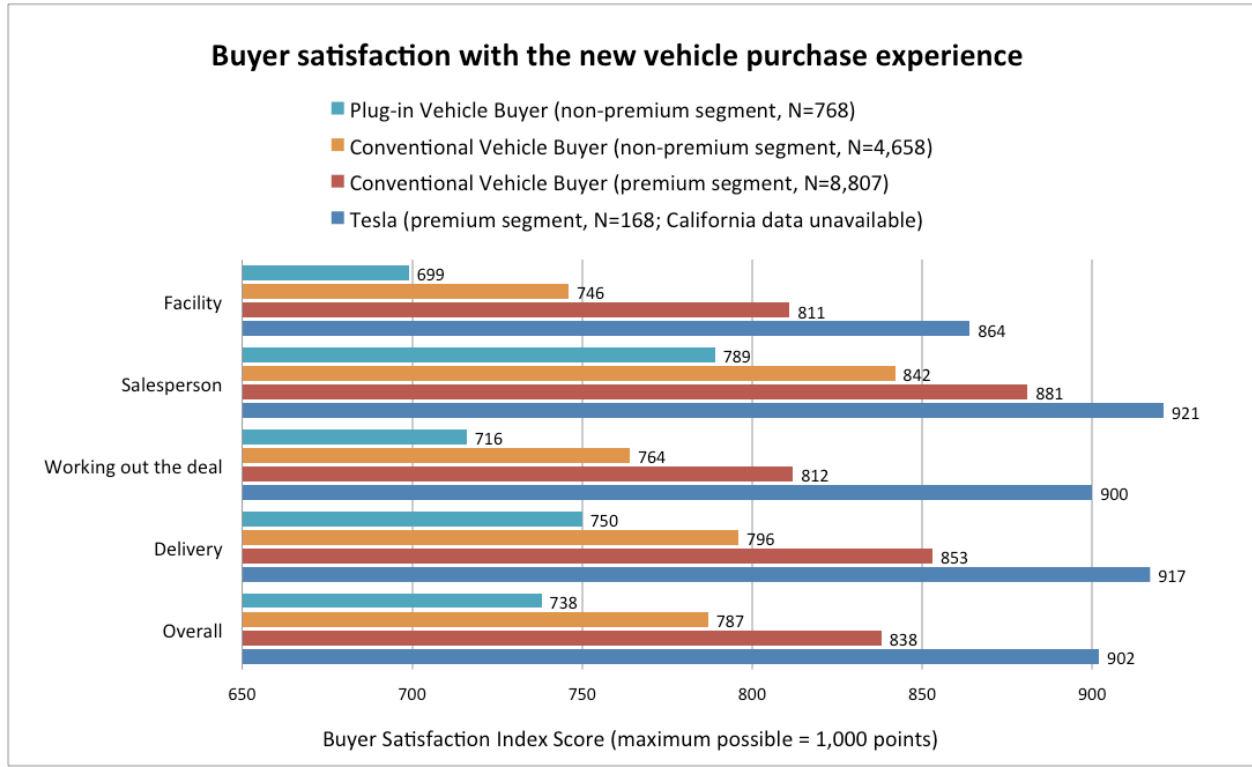
20 In most cases interviews were conducted by two researchers; two for each interview. Whenever possible,
21 interviewers took in-person meetings with the owner or general manager at the dealer facility, followed separately
22 by a member of the sales team. Interviews were semi-structured to allow both interviewer and interviewee to explore
23 topics that might emerge organically during the conversation. Interviews typically lasted between one to two hours,
24 and were guided by a set of specific topic areas: the interviewee's history with the dealership and sales, motivations
25 for selling PEVs, investments and requirements for doing so, attitudes toward new technologies, and perceptions
26 about barriers, opportunities, and incentive programs for PEVs. Interviews were typically followed by a tour of the
27 dealer's facility. Photographs and other marketing collateral were also collected.
28

29 The interview team met during and after the interview period to discuss preliminary themes and to consider whether
30 questions should be eliminated, modified, added, or emphasized. Interview recordings were transcribed and then
31 reviewed by members of the research team, including at least one interviewer. Each compiled a summary which was
32 then compared across dealers and automakers to surface initial themes representing common ideas, experiences, and
33 perceptions across interviews [18]. To identify themes in the data, the research team conducted a three-step coding
34 process that included open (or semantic) coding on the first reading to surface and assign initial codes, axial (or
35 thematic) coding to review and examine initial codes, and selective coding to locate illustrative examples of
36 identified themes [18, 19]. Observations are drawn from a total of 43 interviews, including five from OEM
37 representatives with specialized knowledge in marketing and retail strategy for advanced vehicles, and 38 dealer
38 interviews from 20 retail site visits.

39 Findings

40 Plug-in Buyers Rate Dealers Substantially Lower

41 PEV buyers universally report lower satisfaction with the dealer purchase experience. Figure 1 presents buyer
42 ratings of the retail experience based on market segment and powertrain. To address the argument that PEV buyers
43 expect more of dealers due to predominantly higher socio-economic status, we included only those responses
44 reporting an annual household income of \$100,000 or more and at least a college level education. We found that on
45 average, *plug-in vehicle buyers rated dealers much lower in sales satisfaction than conventional vehicle buyers*. In
46 contrast, buyers ranked Tesla much more favorably. The magnitude of these disparities is extraordinary by industry
47 standards and indicate the problem is likely systemic. Poor purchase experience may adversely impact PEV sales
48 and the growth of the nascent plug-in vehicle market through missed opportunities to attract and retain customers to
49 the technology. Within each phase, the results listed in Table 1 reveal large across-the-board deficits on specific
50 facets of the purchase experience, especially salesperson knowledge and expertise about the vehicle (86 points).
51 Tesla's industry-high marks suggest new retail approaches could lift satisfaction scores, engendering positive word
52 of mouth that could hasten consumer adoption.
53



1
2
3
4

FIGURE 1 Ratings of buyer satisfaction with the new vehicle purchase experience by phase of the purchase process from 2013 SSI buyer index scores [20]

Attribute	Phase	SSI Deficit
Knowledge/expertise about vehicles	Salesperson	86
Variety of Inventory	Facility	83
Ease of looking at inventory	Facility	73
Comfort of the area the vehicle was negotiated for	Facility	71
Appearance of the facility	Facility	66
Clarity explaining documents	The Deal	59
Timeliness of completing the final paperwork process	The Deal	58
Concern you purchased the best vehicle for your needs	Salesperson	55
Timeliness of completing final delivery	Delivery	53
Honesty of the people who handled paperwork	The Deal	52
Thoroughness explaining vehicle features	Delivery	49
Responsiveness	Salesperson	44
Honesty	Salesperson	43
Ease of Coming to agreement on final price	The Deal	42
Condition of vehicle	Delivery	42
Fairness of the price paid	The Deal	39
Courtesy	Salesperson	36

5
6
7

TABLE 1 Deficits in SSI scores (on a 1,000-point scale) of the buying experience assigned by U.S. non-premium PEV buyers as compared to scores assigned by non-premium conventional vehicle buyers [20]

1 PEVs also attract customers new to the brand (i.e. ‘conquest’ customers) at a higher rate than conventional vehicles
2 (55 percent versus 49 percent for non-premium vehicles), but only 21 percent of PEV buyers indicated they would
3 “definitely” purchase from the same dealer as compared to 35 percent of conventional vehicle buyers. Similarly,
4 only 20 percent of PEV buyers stated they would “definitely” buy from the same make again, compared to 32
5 percent of conventional vehicle buyers nationally. This evidence suggests customers endured a worse purchase
6 experience, which may not only cost dealers and OEMs repeat customers but could undermine customer perception
7 of plug-in technology.

8 **Dealer Heterogeneity Yields Highly Diverse Purchase Experiences**

9 Standard deviations associated with the scores reported in Figure 1 reveal substantial variability (183 and 162 points
10 respectively for conventional non-premium and premium makes). Plug-in vehicles track slightly higher (188 points
11 for non-premium makes). A number of factors may contribute to the variability in customer experience. The highly
12 decentralized nature of the franchise model, in which contractual arrangements and franchise laws confer a great
13 degree of operating freedom to new car dealers, translates into divergent business processes across the dealer
14 community. Franchise laws bar automakers from setting uniform processes for its retail networks. In its place,
15 automakers establish customer satisfaction performance criteria and reward those dealers that meet or exceed these
16 standards. Internal or third-party customer satisfaction surveys such as J.D. Power’s SSI study are often used for
17 these purposes. Thus, automakers typically perform quality control through tracking and reporting of customer
18 satisfaction metrics, targeted financial carrots, market information, and other indirect inducements to align dealer
19 behavior with automaker interests.

20
21 Franchise laws also constrain automaker discretion over which dealers offer PEVs. Automakers cannot withhold
22 product from some dealers to the exclusion of others. Automakers can and do establish “reasonable” threshold
23 criteria for dealer participation in PEV sales, however, and typically include investments in special equipment and
24 training for sales and service staff amounting to between \$10,000 and \$100,000 depending on manufacturer-specific
25 requirements and other variables. In most states, franchise laws require automakers to offer new vehicle models and
26 other products to all dealers within a fixed period after initial introduction to one or a limited number of dealers,
27 typically six months. Such rules beg the need to adroitly develop new competencies that can be shared across
28 broader segments of the dealer base.

29 **PEVs Lack Compelling Profits for Dealers**

30 The real or perceived profitability of PEVs relative to conventional vehicles plays a determining role in whether
31 dealers choose to engage in the sale of PEVs. Dealers have witnessed substantial erosion in new car profits over the
32 last decade, in part due to loss of pricing power with widening Internet use and a shift in customer preferences
33 toward smaller, less expensive platforms. Due to technical and cost constraints, automakers have introduced plug-in
34 powertrains almost exclusively in the compact (including subcompact) and midsize vehicle categories.
35 Improvements in vehicle reliability over the past two decades has further drained profits from service and
36 maintenance, another key profit center for dealerships. As one dealer aptly stated, “We’ve hurt ourselves by making
37 a product that’s really, really good.” Dealers in our interviews confirmed that PEVs have so far resulted in fewer
38 warranty repair and service and maintenance opportunities than conventional vehicles.

39
40 Many dealers reported little or no up-front profit on sales of PEVs (the industry term is ‘front end’ profit). We
41 investigated these claims by examining 2013 Power Information Network (PIN) data on dealer gross profits, defined
42 as the dealer’s total proceeds on a new vehicle sale minus the dealer’s costs. Proceeds include any amount held back
43 by the automaker and returned to the dealer upon closing the sale (aka “dealer holdback”). We found gross profits
44 vary widely by PEV make/model and in most cases (7 out of 10 models over the study period) proved higher for
45 PEVs than for the average across conventional models in the equivalent size category (i.e. compact and midsize
46 vehicles). Thus, in terms of gross profit, dealers on average not only *make money* on PEVs, they *make more money*
47 *than many conventional vehicles*. This is not to say that no dealers lose money on PEVs, only that on average most
48 dealers fair no worse selling PEVs than they do selling conventional vehicles.

49
50 Despite higher gross profits, traditional commission structures may inadequately compensate sales staff for the
51 additional burden associated with PEV sales. Closing a sale on a vehicle with little or no front-end profit earns a
52 salesperson a small, flat-rate bonus called ‘the mini deal’ or “mini”. These are typically in the range of between
53 \$150 and \$200. Since the vast majority of sales staff earn a living from commissions, these sums are unattractive

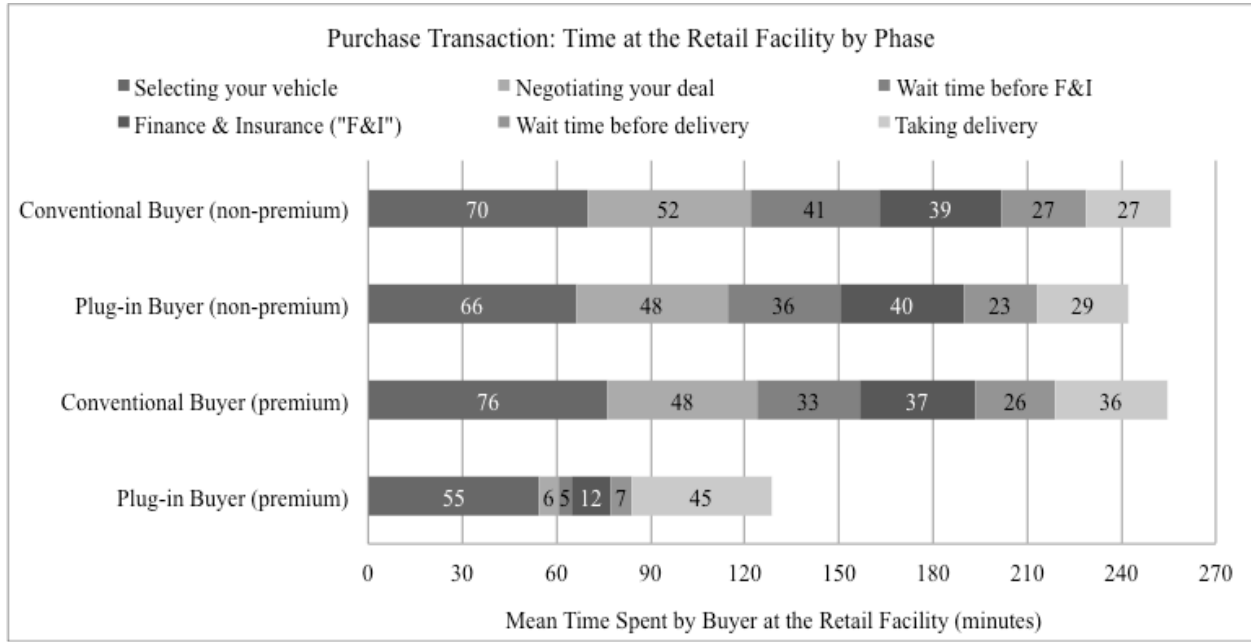
1 relative to other more lucrative vehicles. As part of normal practice, many OEMs offer dealer sales staff a fixed, per-
2 unit bonus called a “spiff” or a variable bonus or “spin” to increase the appeal of these vehicles.
3

4 Dealers similarly expressed few opportunities for ‘back-end’ profit on new PEV sales. ‘Back end’ profit refers to a
5 host of other less direct forms of income from a vehicle sale that can include optional upgrades and products,
6 warranty repairs, mark-up on vehicle financing (aka “dealer reserve”), or revenue from trade-ins. Dealers reported
7 that many PEV buyers, especially buyers of plug-in hybrids, forego purchase of optional charging equipment and
8 those that do yield marginal profits for dealers. Other products such as window-tinting (to improve range by
9 reducing burden on the battery for heating and cooling the cabin) have proven popular for some dealers, yielding an
10 additional \$100 to \$150 in profits. Since a majority of PEV sales are special leases, often to the most creditworthy
11 and informed of customers, there is little opportunity for dealer reserve. Moreover, dealers selling pure BEVs cite
12 fewer trade-ins, an increasingly valued source of more lucrative used car sales, in part because a greater proportion
13 of customers purchase them as second vehicles. Further, due in part to supply imbalances and/or more rapid price
14 declines for new PEVs relative to new conventional models, resale values of some PEV models have suffered.
15 Consequently, dealers expressed concern that competition from low-priced used PEVs may further erode margins on
16 new PEVs. Lastly, dealers foresee no new revenue streams on the horizon from PEV sales. Dealers do report
17 leveraging PEV sales to earn monthly volume-based bonuses from the automaker, often by selling them at reduced
18 prices. This is a common practice across vehicle categories. Regardless, as a category, PEVs may not represent a
19 compelling investment to many dealers.

20 **PEVs Involve a Longer Sales Process**

21 In addition to the steeper learning curve for dealers selling PEVs, the sentiment amongst many dealers is that PEVs
22 involve a much longer ‘sales process’ than conventional vehicles. The sales process refers to the point of first
23 contact with the customer to the final closing of the sale. Dealers described PEV customers as particularly
24 discriminating, requiring more time from sales staff not only to learn the technology and related incentives, but to
25 generate leads, field questions, and cultivate relationships that result in a sale. From a salesperson’s perspective, this
26 additional time represents a cost of doing business that detracts from time spent closing another potentially more
27 lucrative transaction.
28

29 Dealers similarly report that PEVs involve longer transaction times, defined as the total time spent at the retail
30 location from the point at which the customer arrives at the dealership to the point they drive off with a new car. But
31 the 2013 SSI data revealed that total transaction times at non-premium dealerships for PVBs average 4 hours and 2
32 minutes, slightly less than the industry average for CVBs at 4 hours and 16 minutes. Dealers similarly reported a
33 much longer delivery process for PVBs – anywhere from 10 minutes to twice as long as conventional vehicles.
34 Again, the data counters this perception. The average duration of the delivery process for non-premium PVBs was
35 slightly longer at 29 minutes, compared to 27 minutes for CVBs. In contrast, Tesla buyers on average spent just 2
36 hours and 10 minutes at the retail location, but with a delivery process 55 percent longer (45 minutes) than non-
37 premium conventional buyers and 25 percent longer than premium plug-in buyers (36 minutes). Much of the
38 reduction in the overall transaction time is due to Tesla’s online fixed-price retail model, which eliminates lengthy
39 price negotiations, slashes the time to complete paperwork, and obviates associated wait times at the physical
40 storefront.
41



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3 **FIGURE 2 Time spent by new car buyers at the selling dealer/retailer by stage of the purchase process [20].**

4 **PEV Buyers Expect More from Dealers**

5 Additional evidence from the state rebate survey supports the contention that PEV buyers expect more from dealers.
6 Questions derived from insights drawn from an exploratory focus group of PEV buyers and inserted into the CVRP
7 survey attempted to capture considerations unique to PEVs that the SSI study may have overlooked. The findings
8 revealed that many PEV buyers hold higher expectations for dealer knowledge and performance. This included the
9 expectation that sales staff grasp a much broader set of topics that extend beyond traditional knowledge areas to
10 include supporting equipment, charging infrastructure, and public incentives.

11
12 Figure 3 below indicates that PEV buyers perceive dealers to be much less knowledgeable than factory store
13 representatives about topics important to them. Despite this disparity, however, PEV buyers indicated that a majority
14 of dealers had at least some knowledge of these subject areas. Similarly, only a small proportion of California
15 dealers currently offer a set of non-traditional support activities valued by PEV buyers (Figure 4). Examples include
16 assistance preparing incentive applications, selecting a home charger and arranging for its installation, and
17 enrollment in ‘away from home’ charging networks.
18

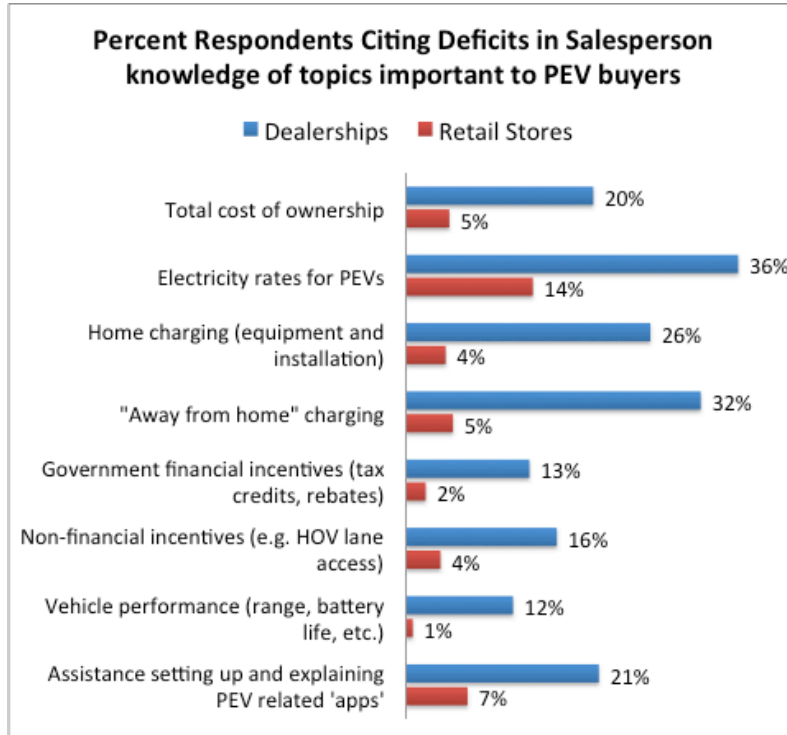


FIGURE 3 Percent of California PEV buyers stating that the PEV retailer was "not at all knowledgeable", "not very knowledgeable", or "unsure" of their knowledge about the topics listed [21].

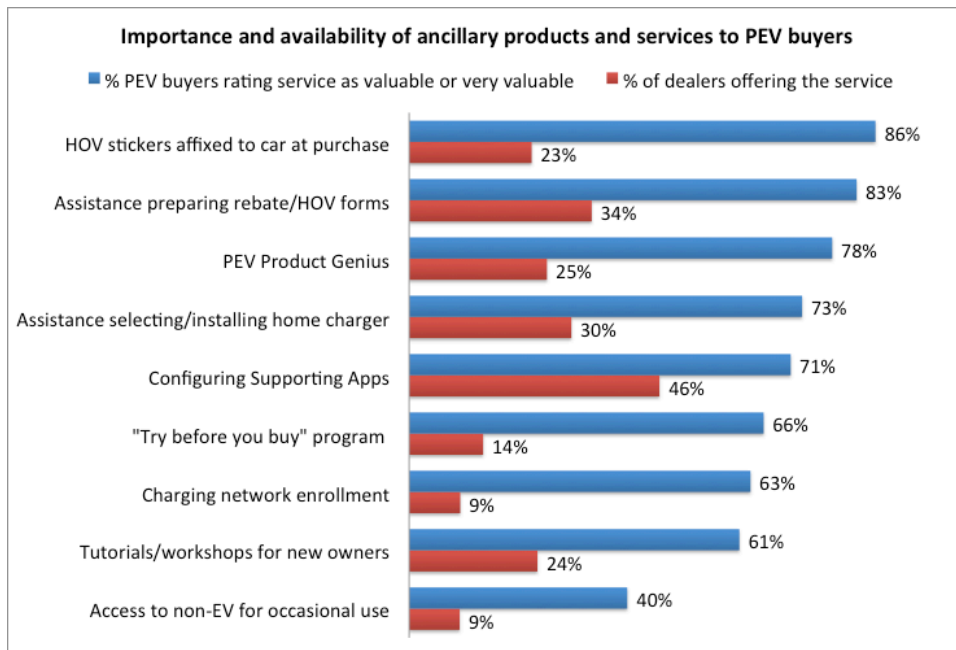


FIGURE 4 Percent of plug-in vehicle buyers indicating certain support products and services for PEVs were, or would be, "valuable" or "very valuable" compared to the percent of dealers that offered these products and services [21].

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1 Thus, for PEV buyers, perceptions of salesperson expertise appear to extend beyond the traditional bounds of
2 vehicle knowledge to a constellation of supporting products and services. We surmise these deficits in salesperson
3 knowledge and/or adequate support for all or a portion of these support products and services contribute to the
4 deficits in PEV buyer satisfaction with the dealer experience.

5 **New Training Approaches May Better Equip Dealers**

6 Traditional training and certification methods inadequately equip sales staff to sell more complex PEV technologies.
7 Dealers contend with an ever-growing amount of technology content amongst a broad array of products. It is not
8 unusual for dealers to carry multiple brands or “makes”. A GM dealer, for example, may carry Chevrolet, Cadillac,
9 Buick, and GMC branded vehicles. Within each make dealers sell multiple “models” or “nameplates”. Each model
10 consists of multiple “trim” levels that may contain a variety of evolving technologies from hands-free telematics
11 devices to sophisticated driver-assist and safety systems. Plug-in technologies can be substantially more complex,
12 involving new equipment, infrastructure, and adjustments in consumer behavior. Yet, as a consequence of the
13 automaker’s introduction strategy dealers typically sell PEVs alongside these other products. Many incumbent
14 automakers, for example, have initially introduced plug-in powertrains either as stand-alone models on a dedicated
15 platform and badged under the legacy brand (such as the Nissan LEAF and Chevy Volt), or as variants of
16 conventional models (such as Ford’s ‘Energi’ product line introduced in the Fusion and C-Max model lines).

17 Where PEVs may represent a small portion of dealer sales or where initial demand for PEVs is low, retention and
18 recall of PEV-specific information becomes challenging. Dealers emphasized that salesperson competence, as well
19 as salesperson confidence, is a by-product of hands-on learning achieved through regular exposure and repetition
20 that builds on one success after another. As one dealer aptly stated, “A salesperson is never more confident about
21 selling a car than the day he sold one”. Weak initial demand, or demand that is shared across a pool of sales
22 representatives, translates into fewer interactions for individual sales personnel, undermining repetition and retention
23 of PEV-specific information. Extraordinarily high employee turnover in the new car business, running upwards of
24 80% or more annually for some dealerships, further undercuts learning and retention.

25 Some automakers have taken steps to combat these challenges. All in our study maintain internal websites with
26 PEV-specific training modules available to dealer sales staff that cover such topics as product features, pricing,
27 financing, and incentives. These may include general information about available government incentives and other
28 discounts. Some automakers have instituted hotlines staffed by product experts and reachable by dealer sales staff
29 for answers to PEV-specific questions. Some dealers have similarly taken initiative to overcome barriers to learning.

30 **Dealers May Embrace PEVs in Progressive Stages**

31 It has long been established in the marketing literature that consumers adopt new technologies in fairly predictable
32 stages according to the Technology Adoption Life Cycle model first advanced by Rogers (1976). This conceptual
33 model describes a progression in the types of consumers that are attracted to new technologies over time as
34 illustrated in Figure 5 below. Rogers described ‘early adopters’ as those that embrace new technologies first and can
35 be characterized by a number of defining psychographic traits. These consumers are typically higher educated, more
36 affluent, and tend to be technology enthusiasts more willing to pay a premium in order to be ‘first on the block’ to
37 own a new product. Other researchers such as Moore (1999) argued that similar adoption dynamics are observed
38 amongst populations of business customers in high-tech industries. Moore emphasizes that attitudes toward new
39 products matter more where discontinuous innovation is concerned [2].
40

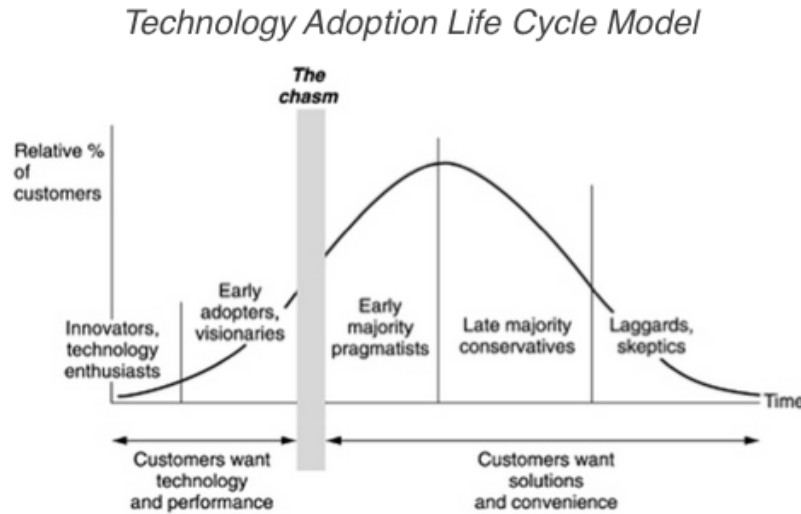


FIGURE 3 The Technology Adoption Life Cycle curve advanced by Rogers (1976) and adapted by Moore (1999) for high-tech products describing the progression by which different types of customers are attracted to new discontinuous technologies.

In any early market there lies a small sub-group of ‘innovators’ characterized as *technology enthusiasts* or *visionaries* amongst their less progressive peers. Technology enthusiasts, or “techies” as they are sometimes called, are the first to recognize the potential of an emerging technology. They will suffer through early bugs and shortcomings and often work collaboratively with vendors to solve vexing problems. Enthusiasts, Moore declares, ‘are the kindling that help start the fire’[2]. Visionaries, on the other hand, possess the insight to match emerging technologies with strategic opportunity. These ‘product champions’ typically occupy the executive ranks of management, hold the purse strings, and provide top-down leadership to the organization. It should be stated that we are not aware of existing research on technology diffusion specific to populations of franchise retailers. Nevertheless, we suspect a similar dynamic is at work within the automotive retail sector.

New Retail Approaches by PEV ‘Dealer Innovators’

We found that retailers serve a number of key functions important for PEV sales: (1) ensuring the product matches the customer’s driving profile, (2) articulating the unique value and relative advantage of PEVs, and (3) enabling the customer to realize the promised value proposition through ongoing support before, during, and after purchase. Many of these activities are not necessarily new to dealers; rather, they appear to take on added importance for PEVs.

We found that particular dealers in certain regions stood out for their innovative efforts to attract and serve PEV customers. Many ‘dealer innovators’ often designate one or more seasoned, tech-savvy sales staff – typically holding the title of Internet sales managers or similar – as the PEV specialist or “product genius”. These sales people generally have at least two or three years of sales experience behind them. They are knowledgeable and passionate about technology, readily see the potential of vehicle electrification, and will go to great lengths to work through initial hiccups and meet the more burdensome demands of early customers. In many cases, these representatives drive a PEV on a regular basis, either a privately purchased personal vehicle or a demonstrator vehicle (aka “demo car”) supplied by the automaker or dealer for test drives, marketing, and other purposes.

Sales representatives underscored the value of full immersion in the ‘PEV lifestyle’ to their comprehension of the technology and their effectiveness in relating the value of these vehicles to customers. Living with a PEV serves to accelerate and deepen learning, and is particularly helpful for developing and honing effective language for conveying the unique value proposition of PEVs to customers. For example, by discussing vehicle pricing in terms of total monthly cost, factoring in not only savings from lower payments resulting from lease specials and government incentives, but also from savings in fueling costs, service and maintenance, and reduced commute times. Many facilities featured PEVs prominently in the showroom and on dealer lots. While this is a fairly traditional means for dealers to allocate limited space where demand justifies it, what is different is that these dealers co-

1 located complementary products such as Level 2 chargers and/or solar canopies with PEV models. More recently,
2 some acquire and affix the HOV lane access decals to vehicles on the lot and/or showroom floor. One dealer touted
3 this technique as a great “conversation starter” regardless of whether the customer came in with the intent to buy a
4 plug-in vehicle.
5

6 In addition to novel use of physical space, some leading PEV dealers exercise initiative in the virtual arena as well.
7 Dealers typically maintain an online presence that at minimum lists vehicle inventory and pricing, and possibly
8 descriptions of the store and its staff. PEV dealer innovators go further. Some provide dedicated real estate on the
9 dealer web page for PEV models and links to supporting PEV-related products and services. PEV specialists may
10 participate in online forums and chat-rooms for PEV drivers. These settings often provide a robust source of
11 information for dealers, as participants discuss issues and fixes for various problems that emerge, often well ahead
12 of formal notifications from the factory. The forums also provide an opportunity for dealers to answer questions,
13 inform customers, and ultimately guide prospective buyers to the dealership. Finally, dealers with more robust web-
14 based marketing efforts employ targeted marketing techniques that use common keywords and phrases entered by
15 online car shoppers to reach PEV customers and attract them to the dealership.
16

17 PEV dealer innovators further stand apart from their peers by taking initiative in a number of other respects. This
18 can take the form of grassroots outreach by sales staff to local EV user groups who often assist sales people to
19 develop leads through public education and outreach, often at little or no cost to the dealer. Examples include
20 facilitating ride and drive events at high-traffic areas such as community fairs and festivals. Some dealers have
21 proactively pursued leads at local employers, particularly targeting technology companies with large corporate
22 campuses, pairing these efforts with preferred pricing packages negotiated with the automaker. Finally, PEV sales
23 people at a number of these dealerships develop their own collateral with PEV-specific information and links for
24 additional after-sale support and assistance. Many also make a point of following up with customers at regular
25 intervals after the close of a sale. In this way, PEVs offer opportunities for dealers to add value to the purchase
26 experience by serving as a key link between PEV customers the product-service ecosystem they depend on.

27 **Lack of “Retail Friendly” Public Incentives could Hinder Program Effectiveness**

28 Not only does effective selling of PEVs appear to entail a broader scope of knowledge by dealers (beyond that
29 required for conventional vehicles), much of this knowledge rests on information that varies from customer to
30 customer. A dealer’s primary interest is to close a sale. Anything that introduces uncertainty into the customer’s
31 buying calculus reduces the likelihood of that outcome. For example, eligibility for all or a portion of the federal
32 income tax credit is based on the customer’s tax liability, a consideration that is typically unknowable until tax time
33 [22].

34 Moreover, only about 40 percent of potential tax filers (presumably a larger proportion of more affluent new vehicle
35 buyers) have federal income tax liability equal to at least \$2,500 (the minimum tax credit) [23]. Consumer protection
36 laws expose dealers to legal liability for communicating misleading information to customers. Consequently, dealers
37 face a choice: use carefully-worded qualifying statements when discussing these topics (e.g. by referring customers
38 to their individual accountants for guidance) or eschew mention of these incentives altogether. Lease deals obviate
39 this tap dance by allowing dealers to capture the full amount of the credit as a capital cost reduction at the point of
40 purchase, thereby eliminating uncertainty (i.e. risk). Not surprisingly, we found that 61 percent of California PEV
41 buyers favor leasing over other forms of vehicle financing as compared to just 22 percent of the state’s conventional
42 vehicle buyers [20].

43 Much like the federal tax credit, California’s state rebate introduces multiple levels of uncertainty and risk into the
44 retail transaction. First, buyers must apply for the rebate *after* completing the purchase. Thus both parties lack full
45 certainty during the purchase transaction. And, because the customer may not receive the rebate check until up to 60
46 days after vehicle purchase, the full monetary value of the incentive is not captured by the customer (i.e. it is
47 implicitly discounted to some lower value) [24]. Lastly, funding shortfalls have cast doubt on the continuing
48 availability of the state rebate. California’s HOV lane green decal program for plug-in hybrids involves similar
49 uncertainties, all of which sap the dealer’s ability to tap the full potential of these incentives.

50 Other incentive-related uncertainties abound. Electric utility rates can vary substantially from one utility district to
51 the next, and even from customer to customer based on a household’s individual use profile. Rate discounts for PEV
52 owners vary between districts, if offered at all. Further, individual air districts and municipalities may offer

1 incentives of their own. Residents of counties in the San Joaquin Valley, for example, are eligible for an additional
2 \$3,000 rebate for purchase of qualified zero-emission vehicles. Similarly, a state grant program in which PEV
3 buyers received free home charging equipment plus an allowance against installation cost wreaked havoc at
4 dealerships. Why? The program released a fixed amount of chargers on a monthly basis that could only be allocated
5 to a customer with the bill of sale on the day of purchase. The program often quickly ran out of supply and buyers
6 deliberately delayed purchase until release of the next monthly allotment, overwhelming dealers and interrupting
7 timely service to other customers. Consequently, dealers reported they avoided mention of the program unless raised
8 by the customer.

9 Even sales people highly motivated to sell PEVs must research these incentives carefully. While OEM-based online
10 training for dealers allude to government incentives for PEVs, they typically point dealers to a variety of online
11 resources to determine market or customer-specific incentives at the state, regional and local levels. Customers,
12 however, can come from any number of locations, compounding the challenge. For example, customers may reside
13 in different utility service territories; one district may offer rate discount for PEV buyers, the other may not. As a
14 consequence of these uncertainties, some dealers choose not to evangelize the benefits of various public incentive
15 programs. Worse yet, some automakers specifically advise dealers to avoid mentioning them at all. Many simply
16 refer customers to other sources for guidance, leaving questions that could otherwise solidify a PEV sale
17 unanswered. Failure to communicate these benefits ultimately undermines the effectiveness of these programs.

18 Dealers expressed agreement on the need for continued government supports for PEVs. Many signaled that current
19 amounts were appropriate and should continue for the near to mid-term. Most agreed these programs were not
20 particularly burdensome and many lauded changes to the HOV lane access decal program that afforded dealers the
21 opportunity to obtain decals from California's DMV upon delivery from the manufacturer. This move afforded
22 certainty for dealers, enabling them to market the benefit to customers, especially commuters near traffic corridors
23 featuring HOV lanes. Dealers underscored the need for similar adjustments to other public incentives, namely
24 pulling them forward to the point of purchase where the elements of immediacy and certainty reinforce their efficacy
25 [25] and bolster opportunities for dealers to market them more effectively. Some also advocated for dealer-targeted
26 public incentives to reward dealers for the added burden of PEV sales and to more consistently incent sales people to
27 pursue PEV sales efforts.

28 **Implications of Retail Structure on the Introduction of Zero Emission Vehicles**

29 While the pioneering efforts of some franchise dealers show they can be an invaluable source of innovation for
30 growing PEV sales, the question remains, how should automakers spread these and other lessons to less motivated
31 dealers?

32 Existing laws and systems that oversee the sales of mature technology may not be well suited to the introduction of
33 new and radically different technologies. Automakers would like more say over how innovative new products like
34 PEVs are sold, but power in the franchised model is highly decentralized. Automakers with established dealer
35 networks are bound by franchise laws to sell all new cars through licensed, fully independent dealers who make their
36 own decisions about which cars they sell and how they are sold. Moreover, these agreements vary according to the
37 unique franchise laws and consumer protections governing each state. This translates into divergent processes – and
38 hence very different experiences for customers – across the dealer community at large.

39 Even if automakers and dealers devised an ideal retail experience for PEV shoppers, these laws would bar them
40 from implementing it across the entirety of the retail network. For example, Sonic and AutoNation, two of the
41 nation's largest dealer groups, are experimenting with an entirely new buying experience that features no-haggle
42 pricing and leverages technology to dramatically streamline the car buying experience in ways that could benefit
43 PEV buyers even more, namely by giving sales people the tools needed (such as customer-specific incentive
44 information) to better support PEV customers. But Sonic sells only a small fraction of the new cars sold nationwide,
45 and automakers cannot dictate that others implement similar practices. Further, even those automakers who are
46 pursuing a sub-brand strategy and actively trying to encourage dealers to try new and innovative approaches are still
47 facing hurdles. For example, the BMW I brand offers their buyers with 1. The option to participate in an extended
48 three day test drive and 2. access to a loaner vehicle when traveling out of town beyond the vehicle range or when
49 they need a larger vehicle. However, only about half of the existing BMW I dealerships offer these services to
50 customers.

1 Franchise laws also confer little automaker discretion over which dealers chose to sell PEVs, or the diversity of the
2 product and inventory which the dealer carries (aside from requiring perhaps one vehicle be available for test drives).
3 Automakers can and do establish threshold criteria for dealer participation in PEV sales. Required equipment and
4 training for sales and service staff, for example, can cost dealers anywhere from \$10,000 to \$100,000, depending on
5 manufacturer-specific requirements and other variables. But these must be justifiably “reasonable” to avoid contest
6 by dealers. In most states, once a manufacturer makes a new product available to one or more dealers, franchise laws
7 require them to offer them to all dealers within a fixed period, typically six months. Such rules beg the need for
8 automakers – and dealers – to adroitly develop new competencies that can be shared across broader segments of the
9 dealer base. Yet the added burdens, and marginal profits of PEVs (as for many new vehicles), may not be
10 compelling enough to drive other dealers to copy them.

11 **Opportunities for Policy**

12 Limited dealer engagement, and lower retail performance, may adversely impact PEV sales and the growth of the
13 nascent plug-in vehicle market through missed opportunities to attract and retain customers to the technology. To
14 address these challenges, a two-fold policy approach may be needed: One that both *relaxes restrictions* that block
15 the diffusion of new retail approaches, and that *aligns incentives* with how cars are actually sold.

16
17 Legislators, for example, could ease constraints by granting manufacturers a special exemption from overly
18 restrictive rules and regulations, capped at some set number of PEVs sold. This could give automakers the degree of
19 control, and space from legal complications, to work out kinks with dealers and early customers, develop scalable
20 processes for introducing PEVs to mass-market customers, and ensure that effective dealer performance standards
21 are in place before handing the reins over to wholly independent retailers.

22
23 Government could better aid dealers in other respects. Currently, customers must wait weeks or even months to
24 receive the state’s PEV rebate. Pulling it to the point of purchase, for example, by giving dealers the opportunity to
25 reserve the funds in advance (as was done with the decals that permit single-occupant access to carpool lanes),
26 would enable dealers to market them confidently without fear of unwanted liability. Customers would also gain
27 certainty in receiving the full value of the benefit, reinforcing the program’s efficacy [24]. To address the large gap
28 in product knowledge by dealers, government could pool incentive information into a single central database that
29 could be tapped by online apps for PEV retailers.

30 31 *Shift incentives to the point of purchase*

32 The authors contend that similar adjustments could be made to the state’s rebate program. As presently designed, a
33 number of policy incentives work counter to the needs of dealers and customers, diluting their value and
34 effectiveness. Given the constraints inherent in automaker-dealer relations, removing uncertainty and aligning
35 incentives with retail business drivers and well-established dealer practices should be the first priority of
36 policymakers. Akin to the HOV decal program, this would entail shifting the application process from the customer
37 to the dealer. Dealers could be made eligible to apply for the rebate upon proof of invoice payment to the automaker.
38 Under this design, the program administrator would review the request, grant or deny the request according to
39 requirements, and reserve the appropriate rebate amount. Upon sale of a PEV to a customer, the dealer would submit
40 a bill of sale to the program administrator, triggering release of a rebate check to the dealer. This would ensure
41 availability of the incentive prior to sale, capture the rebate’s full non-discounted monetary value, and give dealers
42 the flexibility to fold the rebate into the deal in a way that best meets customer needs. Most importantly, it would
43 provide the policy certainty needed by dealers to mitigate liability concerns, raise customer satisfaction scores by
44 adding value for PEV customers, and evangelize the rebate program with more new car buyers.

45 46 *Leverage incentives to reduce resale value risk*

47 An important feature of the HOV decal program is that it is the one incentive that continues to carry value as the
48 vehicle changed hands from owner to owner. A study by Audatex, a company that automates processing for
49 insurance claims, found the now discontinued yellow HOV decal program for hybrid-electric vehicles contributed an
50 additional \$1,200 to \$1,500 to the resale value of used Honda Civic Hybrids (roughly 7 percent its value) [26]. A
51 potential barrier to PEV adoption discussed previously is the uncertainty around the actual resale values of these
52 vehicles as they return to dealer lots. Since a substantial portion of dealer profitability hinges on converting trade-ins
53 into used car sales, the incremental value from HOV lane decals could boost market prices. This not only makes
54 selling PEVs a more attractive proposition for dealers, it in turn could reduce pressure on residual values, thereby

1 lowering monthly payments on newly originated PEV leases. Additional steps to bolster the value of used PEVs
2 could include eliminating the sales tax on these cars or reducing or waiving licensing and registration fees.
3

4 *Reduce minimum ownership term for rebate eligibility*

5 Another way to align policy with retail-level business drivers is to leverage incentives to increase opportunities to
6 generate return traffic to dealer showrooms. This can be achieved by reducing the minimum ownership term for
7 CVRP eligibility to 24 months from its current 36 month requirement. For dealers, doing so increases the rate of
8 ‘sales turns’, or the frequency with which customers purchase a new car. For example, over a six-year period, a
9 customer on consecutive 36-month lease terms would visit the dealer a total of three times. By contrast, over six
10 years a customer on consecutive 24-month lease terms would visit the dealer a total of four times. The incremental
11 increase in transactions translates to more opportunities for the dealer to earn a profit. For OEMs, shorter lease terms
12 may contribute to more stable valuation of residuals.
13

14 As envisioned, the rebate would be prorated, whereby a 24-month lease would reduce the value of a full \$2,500
15 rebate by \$833 (or by approximately \$69 per month). For customers and the PEV market at large, the merits of
16 expanding eligibility via reduced minimum ownership terms are three-fold. First, the shorter lease term spreads the
17 federal tax credit over a shorter period, effectively magnifying its impact by reducing the monthly payment by over
18 \$100 per month. Second, it increases the exposure of PEVs to a greater number of customers, effectively placing
19 ‘more butts in seats’. Third, the shorter term reduces the commitment period, and thus the risk, of being locked into
20 a product where actual driving conditions and/or changing circumstances could prove a poor fit for the customer’s
21 needs. Finally, it reduces uncertainty associated with resale value that stems from the relatively more rapid pace of
22 improvements in technology and reductions in price compared to conventional vehicles.
23

24 *Streamline the vehicle purchase process*

25 Government could also facilitate more electronic processing of purchase and finance documents to encourage online
26 sales. These steps would enable dealers to substitute activities that add less value to the plug-in car-buying
27 experience—such as in-person price negotiations, excessive paperwork and wait times at the showroom—for higher
28 value activities such as truly responsive customer Q&A, test drives with a PEV-knowledgeable dealer, and informed,
29 helpful delivery of products and services. Selling PEVs does involve extra legwork for dealers, at least initially. But
30 for those that adopt effective practices, governments could allocate a portion of the consumer PEV rebate to dealers
31 and salespeople to reward efforts and motivate additional PEV sales.

32 *Government incentives for dealerships?*

33 As a heterogenous group, new car dealers adopt new technologies in predictable stages in much the same way
34 consumers do. Therefore, it may be advisable to consider modest public incentives for dealerships. Presuming an
35 available funding source, a more impactful approach would be to offer dealers and their sales people a monetary
36 incentive that could be tied to category-based training and sales performance. A modest per-unit bonus for sales
37 people could potentially entice more dealership to offer PEVs for sale. Any government incentive program for
38 dealers, however, should focus foremost on ensuring a consistently higher level of service for PEV buyers. One way
39 of doing so is to tie eligibility to dealer performance via the existing CVRP survey instrument. For incentive
40 eligibility, a dealer would need to demonstrate that sales people responsible for selling PEVs complete periodic
41 training that covers particulars attributable to the entire category of vehicles defined as PEVs (or ZEVs), rather than
42 any specific make or model. The emphasis should be on topics that add value to local dealers and that automakers
43 are poorly positioned to serve. Examples include the state rebate, advance acquisition of HOV decals and their use
44 as a marketing tool, discounted electricity rates and solar options, charging equipment options and facilitating home
45 installation, charging subscription networks, best practices for selling PEVs, effective language for conveying the
46 value proposition of PEVs to customers, and myriad other topics.
47

48 Another way to qualify eligibility and ensure dealer compliance is to require the customer to complete a form at the
49 dealer verifying that the dealer fulfilled its responsibilities. Examples include proper screening of the customer to
50 ensure a match between the customer’s driving profile and the PEV, explaining charging options and installation
51 costs and processes, a physical demonstration of how to charge the vehicle, etc. It should further require that PEV
52 sales people have at least two weeks’ time behind the wheel of a PEV, using it as a daily driver to ensure they know
53 the ins and outs of the vehicle and the kind of questions they might expect from customers. Any loss in value of the
54 PEV daily driver due to miles would be recovered by the dealer owner/principal through the dealer incentive and
55 upon resale of the PEV.

1
2 The merit of such an incentive program organized is that it attempts to get to the heart of the problem: that in an
3 early market, before scale economies are realized, dealers have little incentive to adjust practices and procedures
4 until a more robust market emerges that justifies the investment. Further, automakers have no direct control over the
5 business processes of individual franchised dealers. Thus, dealer-level incentives attempt to reduce the inherent
6 variability in the purchase experience that is a natural byproduct of industry structure. By incentivizing a more
7 uniform and consistently higher level of service, key reinforcing dynamics such as positive word-of-mouth are
8 enabled that contribute to the building of a market for these products.

9 **Does the Franchise Dealer Model Support PEV Market Growth?**

10 California's Zero Emission Vehicle (ZEV) Program requires manufacturers to sell increasing numbers of advanced
11 clean vehicle technologies, including battery electric, plug-in hybrid and fuel cell electric vehicles. The state offers
12 rebates to buyers to bolster the rapid expansion in sales of these innovative new vehicles. What's missing from these
13 policies are the car dealers, who are fully independent of automakers.

14 The findings presented here suggest dealers are key to increased sales. Unfortunately, most dealers are not
15 participating, and many seem less than enthusiastic about plug-in vehicles, despite evidence that plug-ins are no less
16 profitable for dealers than conventional vehicles. These findings are troubling. Innovative new products, especially
17 those in which customers are expected to interact with the product in a different way, or involve new or very
18 different supporting infrastructure, often call for novel approaches to market and sell them [2, 27]. We've long
19 known that for radically new technologies, good experiences by early customers promote adoption while bad
20 experiences delay it. Retailers are central to ensuring that buyers, particularly ones being converted from an old way
21 of doing things to a new way, have the information and support they need to unlock the full benefits of making the
22 switch.

23 Manufacturer's like Apple perhaps best exemplify the concept of 'whole product design' that reaches beyond the
24 production line to the places in which its devices are sold. After years of watching many of its path-breaking, but
25 much higher-priced, products languish on the shelves of retailers, the company switched to a direct-sales approach
26 featuring its now iconic factory stores. As *Seizing the White Space* author Mark Johnson explains, "Apple did
27 something far smarter than wrap a good technology in a snazzy design; it wrapped a good technology in a great
28 business model" [28]. Plug-in (and fuel cell) vehicles might greatly benefit from approaches that borrow from this
29 model.

30 Bringing this approach to the the auto industry, however, isn't as easy it may sound. Laws, codes, and regulations
31 designed to protect dealers from automakers, and customers from dealers, and built up around selling well-
32 established products, are not typically well-suited for bringing radically different technologies to market (e.g.
33 entirely new powertrains and fuel sources). State franchise laws, for example, require automakers with established
34 dealer networks to sell all new vehicles through independent dealers. These same laws prohibit manufacturers from
35 having a more decisive say in how cars like PEVs and fuel cell vehicles are marketed and sold. Moreover, federal
36 and state codes and statutes intended to protect consumers make it difficult for automakers to include the potential
37 availability of incentives, gas savings, and tax benefits into advertisements for PEVs [22].

38 Undeterred by these restrictions, Tesla Motors, a start-up with no dealer network, did something others could not: it
39 chose a direct-sales model in which its vehicles are sold at fixed prices online or through factory-owned stores and
40 service centers. Borrowing a page from Apple's playbook, Tesla went so far as to hire a former Apple exec to run its
41 sales network and aggressively deployed its own charging infrastructure. Both are illustrative of its commitment to
42 the "whole product" experience. Tesla's industry-high satisfaction ratings demonstrate that a much better experience
43 for plug-in customers is achievable.

44 For the major automakers, however, scrapping the franchised dealer model is not something current laws allow,
45 raising the question: *Can dealers deliver on needed retail changes for PEVs?* The findings presented here points to a
46 small minority of innovative dealers who have introduced new approaches to better meet the needs of plug-in
47 customers. Examples include marketing carpool-lane stickers, enrolling buyers in charging networks, and preparing
48 incentive paperwork for customers. Some assigned seasoned salespeople as plug-in experts, many of whom drive
49 plug-ins themselves—to learn the ins and outs of the technology and relate the car's benefits to potential buyers.
50 Such dealers are few and far between, and profits on PEVs – as for many new vehicles – are not compelling enough
51 to drive other dealers to copy them. Yet automakers need to reach more dealers to achieve the scale needed to drive

1 down the initial high cost of these cleaner alternatives. So how should automakers spread these and other lessons to
2 less motivated dealers?

3 Automakers proved they can design and engineer award-winning plug-in vehicles, but they could do far more to
4 support dealers selling PEVs. First, manufacturers could introduce PEVs as premium models. Their smaller numbers,
5 and higher level of support, would better facilitate the attention and support from dealers needed by PEV customers.
6 BMW, for example, has introduced a new sub-brand expressly for this purpose. The move raises the profile of these
7 technologies, casts a halo of technology leadership across its product line, and leads mass-market customers to
8 aspire to have the technology for themselves.

9 To support these dealers, manufacturers should ensure that customers and salespeople alike can intuitively explore
10 and learn what a plug-in vehicle can do in real-world driving conditions, or how to plan trips and locate recharging
11 stations along popularly traveled routes. Tesla's website, for example, provides information for customers to find
12 out how public incentives and avoided trips to the gas station save money and reduce monthly household bills. To
13 close the yawning gap in product knowledge that so alienates PEV customers, automakers could collaborate by
14 enlisting vendors to develop a similar tool for dealers offering one-stop, online access to localized, customer-specific
15 information on PEV incentives and benefits.

16 A two-fold approach by government would both smooth the way for new automakers to experiment with innovative
17 approaches while equipping existing dealers to better serve PEV customers. Tesla, for example, cannot discuss price
18 or offer test drives at factory-owned retail stores in states that have adopted California's ZEV program. Such
19 restrictions are entirely at cross-purposes with the program's objectives. To provide a protected space for necessary
20 innovation legislators could, for example, grant automakers a limited special exemption from laws that bar selling
21 plug-in vehicles directly to customers, so long as they do so under a fixed-price model. Fixed prices, according to
22 the ITS study, avoids painful haggling and frees the energies of retailers to focus more on product knowledge. With
23 separation from the dealer lot, customers can explore and learn in a pressure free environment with no fear of the
24 "hard sell" from sales people. Incumbent automakers could try a similar approach.

25 Government could better aid dealers as well. Currently, customers must wait weeks or months to receive the state's
26 PEV rebate. Pulling these and other benefits to the point of purchase would allow dealers to confidently market them
27 without fear of unwanted liability. Further, governments could move to pool incentive information into a single
28 central warehouse that could be tapped by online apps for PEV retailers. Government could also move to modernize
29 outmoded contractual processes that hinder online sales—for example by facilitating electronic document
30 processing. These steps could enable dealers to substitute activities that add less value to the plug-in car-buying
31 experience—such as painful in-person price negotiations, excessive paperwork and time wasted at the showroom—
32 for higher value activities such as truly responsive customer Q&A, test drives with a PEV-knowledgeable dealer,
33 and informed, helpful delivery of products and services.

34 Selling PEVs does involve extra legwork for dealers, at least initially. But for those that adopt good practices,
35 governments should allocate a modest portion of plug-in vehicle rebates (perhaps \$500) to dealers and salespeople
36 to reward their efforts and motivate additional PEV sales.

37 In sum, how PEVs are sold can be just as important as how well they are designed. Bold and effective steps by
38 industry and government must be taken now if we are going to put more advanced clean cars on the road—to reduce
39 oil use, air pollution, and greenhouse gas emissions.

40 We have presented data largely consisting of industry averages of customer satisfaction with the dealer purchase
41 experience. But experiences can vary substantially from dealer to dealer. For PEVs, which require a robust support
42 ecosystem to enable customers to realize the potential value of conveniences such as at-home fueling or HOV lane
43 access, this initial data shows that with the exception of the most tech-embracing and forward looking dealers,
44 traditional retail approaches likely fall short. However, within the franchised model, some dealers are implementing
45 adjustments and adaptations to better serve the needs of plug-in vehicle buyers. Though these dealer innovators are
46 blazing a trail for others to follow, it remains to be seen whether and at what rate these lessons diffuse through
47 highly diverse dealer communities. Pursuing buy-in from dealers and sharing PEV "success stories" and best
48 practices could speed uptake across these dealer segments.

1 It should not be inferred that all of the lessons and approaches implemented by dealer innovators and discussed here
2 are applicable to all. This is especially the case where large up-front investments are required in market areas with
3 relatively lower demand for PEVs. It is thus important that dealers have access to resources and methods that can be
4 scaled appropriately according to local market conditions. Further, efforts to accommodate PEV buyers in a
5 learning-friendly environment free of sales pressure could also improve the purchase experience. This entails
6 eliminating activities that add less value to customers at the physical facility and that detract from activities of
7 import to PEV buyers, including price negotiations, in-person paperwork, and associated wait times. While many of
8 these same lessons may apply to conventional vehicles, the authors contend these are all the more important for
9 plug-in vehicle buyers to make way for a number of higher value activities such as informational customer Q&A,
10 test drives from PEV-knowledgeable salespeople, and the support products and services discussed previously.

11 **Conclusions and Avenues for Future Research**

12 The paper establishes that PEV buyers are substantially less satisfied with the dealer purchase experience than
13 buyers of conventional vehicles. The early evidence points to customers with divergent expectations regarding the
14 level of support they receive from dealerships. The paper contends that PEVs, insofar as these vehicles demand
15 changes in behavior or that rely on new support infrastructure, entail attendant innovation in how these products are
16 retailed to customers. As an asset, the inherent diversity of the dealer community can serve as a robust well-spring of
17 innovation in retail activities promulgating PEV sales. However, this same diversity could also hinder the quality
18 and pace of diffusion amongst dealers which, in turn, could (through a sub-par purchase experience) hinder the
19 quality and pace of diffusion of plug-in vehicles to customers. This dynamic may have repercussions for achieving
20 ZEV targets and potentially other regulatory objectives. It is important that leaders consider the inherent constraints
21 of existing industry configuration and institutional barriers when setting policy. Avenues for future research include
22 opportunities to test hypotheses derived from findings presented here, such as whether steps taken to improve the
23 PEV purchase experience can be correlated with PEV purchase satisfaction and/or impacts on PEV sales. Other
24 avenues could include a greater exploration of factors contributing to the path and rate of diffusion of PEV uptake
25 through the dealer community.

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