Simplifying EV charging for the mass market consumer, evaluating the effectiveness of the Chargeway Oregon Pilot Program

Matt Teske and James Mast, Chargeway

Summary

Electric car charging is more complex than the current auto fueling experience, making it difficult to convince mass-market consumers to switch away from fossil fuels. Auto manufacturers, utilities and other stakeholders will invest over $300B by 2029 on EVs, infrastructure and awareness, but still don’t address the educational and user experience concerns consumers have with this new electric fuel: how does it work in my daily life. Chargeway has developed a simplified language to explain “electric fuel” using colors and numbers, making it easier for the general public to use and enjoy EVs. Chargeway launched a mobile app and point of sale dealer kiosk- the Beacon- and has been evaluating the success of this application in a pilot program in Oregon with electric utilities and other key stakeholders.

Keywords: Charging, Utility, Education, Sales, Consumers

Chargeway Oregon Pilot Program

In January 2019, Chargeway launched a pilot program in Oregon in conjunction with two primary utility partners- Portland General Electric and Pacific Power- to demonstrate the effectiveness of its new approach to simplifying the fueling experience for consumers. Other key partners in the pilot are Forth, State of Oregon agencies and most importantly the Oregon Auto Dealers Association (OADA). The pilot program consists of deploying 6-12 Chargeway Beacons, 43” touchscreen kiosks (see figure 1) with the Chargeway app, throughout the state of Oregon into auto dealerships in paired with messaging and marketing efforts coordinated electric utility partners, as of March 2020, 7 Beacons have been deployed around the state. Preliminary results have been encouraging to show that in dealerships with a Chargeway Beacon, sales volume has increased by a factor of 2-10X compared to dealerships without Beacons and with similar invent-
Chargeway Background

Chargeway® is a software platform, mobile app and communication solution for the auto industry and utilities designed to improve the electric car customer experience with “electric fuel”. Using colors and numbers, Chargeway® creates a simple identity for charging plug and speed options offering industry stakeholders and customers an easier way to understand how electric cars are charged, providing a simplified language to explain “electric fuel” to a mass market consumer. Instead of using the current industry jargon to explain different charging connectors, plug types (in the United States) and speeds (AC, DC, J1772, CHAdeMO, SAE Combo, Tesla Supercharger, etc) that can intimidate the average consumer, Chargeway uses colors and numbers to explain the various plug types and power levels- see figure 2 below. The basic premise is that color identifies plug type and number shows charging power/speed- the higher the number the faster the charge. This system brings EV charging more in line with terminology current consumers experience around fueling, such as using a fuel called “Regular”.

![Figure 2: Chargeway’s simplified language to explain electric fuel (US)](image)

Building on this simplified language to describe electric fuel, Chargeway is able to answer key consumer questions through its mobile application and at the point of sale with the Chargeway Beacon:

- Where can I charge?
- How long will it take?
- Where can I go?

The answers to these questions are presented through three key screens within the application as shown in figure 3. By providing answers to these basic questions, consumers can gain a higher level of confidence that an EV can work in their daily lives and provide a viable alternative to the internal combustion vehicle.

![Figure 3: Chargeway key features](image)
tailored to the vehicle that the consumer identifies, showing only compatible public charging options. The Chargeway Beacon in dealerships adds additional tools to help accelerate the sales process including incentives, fuel cost comparison and home charging options as shown in figure 4.

Figure 4: Chargeway Beacon key sales features

**Oregon Pilot Evaluation**

The Chargeway Oregon Pilot sought to demonstrate the value of the Chargeway Beacons as a dealership showroom training and sales tool to boost electric vehicle understanding and adoption in support of State of Oregon goals of increased EV adoption. Deployment of the Beacons at a broader scale has allowed study of user interaction, dealer feedback and overall effectiveness of kiosks as a tool to help better explain “electric fuel” and bridge the gap in EV understanding for consumers at the point of sale.

During the course of the pilot, Chargeway has been able to examine Beacon utilization and conduct in-person interviews with dealer staff. Feedback has been overwhelmingly positive from dealers stating that the Beacon is an effective reference tool and explanation device for the elements of electric car ownership that the general public needs to learn. As part of the pilot, Chargeway was able to establish a robust inventory tracking tool for plug-in vehicles in dealerships around the state with a particular focus on the Portland metro area. We’ve been able to identify trends in comparable dealerships (Chevrolet) around the Portland metro area demonstrating improved sales in the dealerships with Beacons on the showroom floor.

In tandem with the deployment of Beacons, we’ve tracked adoption of the Chargeway mobile app in Oregon, which has seen steady uptake, despite no marketing or advertising. Most importantly, the most significant spike in downloads of the mobile application came after Portland General Electric featured Chargeway in a utility bill insert - indicating a close tie in with utility promotion and Chargeway downloads which are directly tied to public education of “fuel choice”.

Figure 5: The Chargeway Customer Journey

The key to the effectiveness of Chargeway is engagement in the four steps in the electric car customer journey as shown in Figure 5. The Oregon pilot looked most specifically at the purchase step (step two)- Beacons in dealerships- as well as providing a glimpse into steps three- mobile application tool and four- public charging experience. To create consistent visibility for the consumer experience around electric fuel,
Chargeway has labeled and/or photographed over 90% of the publicly available charging stations around Oregon. To form an effective overall approach to boosting EV sales and adoption, outreach and education of “fuel choice” must become a focus in order to drive traffic to prepared auto dealers and subsequent steps of the electric fuel journey.

**Kiosk Deployment and Dealer Training**

Preliminary deployment of the Chargeway Beacon kiosks commenced with the Forth EV Showcase and Wilsonville Chevrolet in October and November 2018. These two units served as early beta testers from which refinements were made to the platform before a full launch in January 2019 at the Portland International Auto Show. At the Auto Show, four Beacons were placed in the Forth Electric Avenue, Clean Cities and Oregon Electric Vehicle Association booth spaces. The initial auto show launch allowed broad consumer exposure, we were able to demonstrate the units to a range of consumers, EV advocates, dealers and government representatives at one of the top attended events in the State of Oregon. Additional Beacons were deployed throughout the state through 2019- as outlined in Figures 6 and 7. In addition to the launch at the Portland Auto Show, Chargeway also worked with its utility partners in a deployment at the 2020 Portland Auto Show- more closely tying their branding to “Electric Fuel”.

<table>
<thead>
<tr>
<th>Month</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 2018</td>
<td><strong>1- Forth EV Showcase, Portland</strong></td>
</tr>
<tr>
<td>November 2018</td>
<td><strong>2- Wilsonville Chevrolet, Wilsonville</strong></td>
</tr>
<tr>
<td>January 2019</td>
<td><strong>Portland International Auto Show- Four units deployed at show (event)</strong></td>
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<tr>
<td>June</td>
<td><strong>3- Platt Automotive (Used EVs- PGE), Milwaukie; EV Roadmap (event)</strong></td>
</tr>
<tr>
<td>July</td>
<td><strong>4- Kuni BMW, Beaverton (PGE)</strong></td>
</tr>
<tr>
<td>October</td>
<td><strong>5- TC Chevrolet, Medford (Pacific Power)</strong></td>
</tr>
<tr>
<td>November</td>
<td><strong>6- Team Kia, Bend (Pacific Power); 7- Ken Ware Chevrolet, North Bend (Pacific Power)</strong></td>
</tr>
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Figure 6: Oregon Pilot Beacon Deployment Timeline

Through its work with Portland General Electric, Pacific Power and Forth, Chargeway has been able to select and deploy Beacons throughout the state partnering with dealerships in both urban and rural areas. Working with utility partners, dealer locations were selected based on analysis of dealer EV inventory, geographic location and willingness of the dealer to host. In addition, one dealership was selected specifically because it sold used EVs, providing vehicle options to a broader range of consumers. It is critical to understand broader EV purchasing patterns beyond just the Portland metropolitan area. A map of deployed Beacons is shown in figure 7 below.

The deployment schedule was driven by work with our utility partners and identification and recruitment of dealer hosts for the Beacons with the support of the Oregon Auto Dealers Association. The deployed Beacons were sponsored by the utilities for placement in the dealerships, with no cost to the dealer for the installation. Locations for each utility program were selected by looking at brand diversity, location and inventory levels. Portland General Electric and Forth deployed Beacons within the Portland metropolitan area. Our work with Pacific Power allowed us to focus on more geographic diversity of the deployment, looking outside the main population center of the Willamette Valley at the Coast, Southern and Central Oregon.

At the time of deployment of each Beacon, staff training was conducted. The training was directed at sales staff and management, scheduled to take place along with each dealerships weekly sales meeting. Training consisted of walking through the features of the Beacon with sales staff, demonstrations of example customer questions (role playing) and having staff download the mobile app (which uses the same basic int-
Figure 7: Beacon Locations in Oregon

erface as the Beacon). Training focused on identifying the key features of the Beacon and guiding sales staff through the operation of the screens— as shown in figure 3 above: Stations, Timer and Trip Planner.

Total training time, with follow-up staff questions is generally one hour. A quick training can take place in as little as 20 minutes. Since the Beacon remains active on the showroom floor and users can also use the mobile version, it serves as a reliable reference point for salespeople and consumers. After an initial salesperson training, colleagues can train new staff themselves without requiring a lengthy training or explanation. This “quick start” feature of the Chargeway Beacon provides a constant resource and reference where dealers often have high staff turnover.

In addition to the primary informational screens in the Beacons, dealer staff were trained on the sales assistance screens (Incentives, Fuel Cost, Home Charging) in the Beacon as shown and further described in figure 4 above. These screens can directly address consumer questions with regard to the amount of savings they can realize, how much their fuel will cost if they charge at home with their utility, and the options they have to charge at home. These features provide easy reference for dealer sales staff to assist in the sale.

The design of the Beacon screens were updated throughout beta testing to offer two distinct training and sales channels that can be utilized by sales representatives depending on where a customer is in the sales funnel:

Top of Funnel: Emotional/Psychological – “What is ‘electric fuel’? How does it work?”

Consumers are already interested in buying cars, so in order for an electric car to be more easily sold consumers at dealers need to trust the vehicle can meet their needs. The primary screens of Chargeway create visibility for the main questions a consumer wants answered from a dealership when discussing their brand of electric car:

• Where are charging stations?

• How long does it take to charge?

• Where can I travel to?

With these questions effectively answered and providing a simple path to confidence in using an electric car a sales representative can focus on the “bells and whistles” of a vehicle, appealing to the wants of a customer.

Bottom of Funnel: Logical – “How much does it cost? How will it affect my wallet?”

Consumers who feel comfortable about buying an electric car and trusting “electric fuel” will want to justify their emotional purchase with logical decisions, such as cost savings, etc.
The sales assistance screens in the Beacon provide sales representatives with information that is attractive to buyers who are ready to talk more seriously about a purchase. Specifically, “Incentives” discusses near term savings, “Fuel Cost” comparison shows how a customer can save money during ownership, and “Home Charging” options offer a tangible way to make this experience happen for a buyer.

**Beacon feedback and effectiveness**

Chargeway received positive feedback from dealer staff at all deployment sites- from the time of initial training to follow-up after weeks and months on the showroom floor. To gauge dealer feedback, Chargeway conducted several “secret shopper” exercises at deployment sites to monitor actual usage of the Beacons. Chargeway has also been following up with dealer staff to get feedback on their use of the Beacon. This is in addition to Chargeway’s ability to monitor usage through activations of the Beacon remotely. The secret shopping demonstrated that 97% of the time dealers were guiding customers to the Beacon and utilizing it as a reference to answer questions and provide information during the sale of EVs on the showroom floor.

In numerous conversations with dealer staff and management, we’ve had very positive feedback on how the Beacon has improved and accelerated the EV sales process.

Some sample feedback from dealers include:

“(the) Beacon…has been greatly beneficial not only to our customers but to our sales professionals as well. It takes an otherwise often complicated process and offers solutions in an easy to use format that not only will be appreciated by our tech savvy customers but also our customer who may be brand new to electric vehicle technology.”

- Mark Garrow, Wilsonville Chevrolet Sales Manager

“While waiting for finance we have customers download the mobile app as a final step in the buying experience to ensure they are better prepared to enjoy their BMW i.”

- Devin Wells, Kuni BMW Client Advisor

“The visual tools help speed up the buying process. I was able to demonstrate to a customer the fuel cost savings tool that convinced them to switch their purchase from an SUV to a plug-in Kia Optima.”

- Brady Alison, Team Kia Sales Consultant

“The Beacon makes me look smarter than I am. I’m not ‘selling’ [the customer]how it works, the info they need is coming from a neutral party.”

- Zach Whitehurst, Ken Ware Chevrolet

“It draws in idle customers around the showroom, waiting for service, etc, and starts new conversations with customers that are unfamiliar with EVs.”

- Steven Alaman, Forth Program Manager

“We received fewer calls from our long-term test drivers when we set them up with the Chargeway app vs. other EV apps. We found users of other charging identification apps would call for help, versus no calls for Chargeway. Using Chargeway during their long-term (week) test-drive experience, users had a good conversion rate to purchase and were particularly satisfied with the ease of charging when using the Chargeway app.”

- Rodney Maxwell, TC Chevrolet General Sales Manager

“Chargeway is simple and I can use it show a customer how charging works in 5 minutes instead of hours.”

- Donnie Simons, Wilsonville Chevrolet Sales Specialist

In general, the feedback we’ve received in follow-up conversations with dealer staff has been very positive in terms of the effectiveness of the Beacons. Dealerships have expressed that Beacons provide a much needed EV sales tool that can quickly and easily answer basic consumer questions and help them more effectively close a sale. The presence of the Beacon on the showroom floor provides a non-confrontational, neutral tool that both dealer staff and the consumer can walk up to and obtain answers. Feedback from the
Oregon pilot has helped validate preliminary assumptions about dealer and consumer behavior regarding knowledge of a fuel choice and understanding electric fuel. The pilot has demonstrated that the Beacon is equipped with the appropriate answers to provide a level of confidence in EV buying and selling that is necessary to accelerate EV adoption.

**Beacon Utilization**

With a limited deployment of Beacons throughout the state and the majority of the units coming online in second and third quarter, we have limited full-year tracking of Beacon utilization. However, we’ve tracked that each dealership Beacon is activated on average about two times per day. Activation varies by dealer and also varies by season and stock availability based on foot traffic on the dealer floor. It is important to note that the placement of the Beacons has not been supported by additional marketing or awareness campaigns to funnel traffic into dealers. The utilization rates are in line with current market demand for EVs of less than 10% of buyers. For example, if there are 20 unique visitors to a dealer showroom in a given day, only about 10% (about 2) would be interested in an EV based on current market trends. With a more focused campaign to drive traffic to showrooms, additional Beacon traffic can be anticipated.

As Beacons were deployed, usage of around 1.5 times per day was observed across all Beacons (see figure 8 above). The Beacons in the Fort EV Showcase and Portland metro dealers saw greater usage because of higher foot traffic. The highest daily utilization generally was at the Fort EV Showcase, which is in a downtown retail setting and is a specific destination for EV education. To drive additional Beacon usage, utilities and other stakeholders will need to increase awareness campaigns about “electric fueled” vehicles being available at dealerships to increase potential EV purchasers to dealers. Once a consumer arrives at a dealership ready to ask questions about their vehicles that run on “electric fuel”, with a Beacon, the dealer is better equipped to provide answers and increase the level of confidence in an EV for the consumer and subsequently more efficiently close on a purchase or lease of a plug-in vehicle.

![Figure 8: Average Daily Beacon activations](image-url)

![Figure 9: Breakout of screen utilization in Beacon- Main tabs](image-url)
Over the course of the year we analyzed the usage of different screens in the Beacon (see figure 9). As Chargeway is comprised of three main screens: Stations, Timer and Trip Planner, we looked at a breakout of that usage. Our data shows a very evenly distributed use of all the primary screens. There was slightly more usage of the Timer screen (36%) as it is an effective tool to visually explain charging times to a consumer and what the station pins identify on the charging station map. Feedback from dealers indicated that this was a very effective feature for explaining how electric fuel can be explained to consumers in a simple, visual way that does not require an understanding of engineering, but instead speaking to a consumers interest in time spent on learning something new.

Figure 10: Breakout of screen utilization in Beacon- Sales Assistance Features

Analysis of the overall usage of the sales assistance features in Beacons in 2019 indicated that the incentives feature (49%) was the most heavily utilized sales assistance screen (see figure 10). Not surprisingly, this shows the consumer their federal and state incentives and can show a significant potential savings on making the vehicle purchase, making it a strong closing tool for sales representatives. Fuel cost, which indicates the operating costs for the EV during ownership was the second.

Dealer Inventory Tracking

In conjunction with deploying Beacons, Chargeway developed a robust tracking of dealer inventory for plug-in vehicles to aid with evaluating the efficacy of the Beacon as a sales assistant. Existing inventory levels were critical in determining appropriate host dealerships for Beacons. In the Portland metro area, only dealers with consistent inventory levels of ten or more plug-in vehicles were identified for deployment. In lower density population areas- such as the coast, southern and central Oregon, consistent inventory of more than five plug-in vehicles was sought. The rationale behind selection of dealerships with consistent inventory is that there are vehicles that salespeople can have customers test drive and drive home that day rather than a delay to wait for a vehicle to come onto the lot. As part of the Oregon Pilot, Chargeway has consistently been monitoring plug-in vehicle inventory levels at dealerships throughout Oregon.

Figure 11: Comparable Weekly Plug-in Sales- Chevrolet Dealers Portland Metro- Q2 2019

The longest Beacon deployment has been at Wilsonville Chevrolet where we’ve been able to compare inventory and sales to other Chevrolet dealers in the region. Over the three months (March- May
2019), when comparing Wilsonville to other dealers with similar inventory over the observation period, with the Beacon in place and regular dealer/customer interaction with the kiosk, Wilsonville has been selling four times (4X) and as many ten times (10X) EVs per week compared to other Chevrolet dealerships with similar inventories. Specifically, other dealerships are selling 0.63 vehicles/week, versus Wilsonville is selling 2.63 vehicles/week with a Beacon in place (see figure 11).

Figure 12: Comparable Weekly Plug-in Sales- Chevrolet Dealers Portland Metro- Q2- Q4 2019

When looking at the period from second quarter through the beginning of December (figure 12), the dealership with the Beacon still holds an edge over comparable dealers in the Portland metro area with 1.5-4X higher sales per week. As we’ve been tracking dealer inventory and sales for multiple months, we’re confident that we’ve established an effective baseline to measure current and future deployments.

In terms of EV inventory for comparable Chevrolet dealers in the Portland Metro, Figure 13 shows how the Beacon dealership was able to move more volume over the period on a month to month basis versus dealers without Beacons. The timing of this period also reflects the impact of the GM strike on inventory levels, as there was not a normal replenishment of new model year inventory until after the beginning of 2020 (Chevy Bolt EV).

Figure 13: Chevrolet EV inventory in Portland metro

Product Traction: Mobile application uptake in Oregon

In addition to deployment of Beacons, station labeling and photography, Chargeway has seen significant adoption of our mobile application. Without significant marketing or outreach for the app and relying primarily on word-of-mouth exposure, Chargeway added over 1,500 users in 2019 in Oregon, with the pace of downloads accelerating toward the end of the year. Geographic distribution of users around Oregon is shown in figure 14.
Figure 14: Heat map of Oregon Chargeway mobile application users 
(red is highest number of users-concentrated around metro areas)

Figure 15 shows new mobile application users by month in Oregon- showing a steady uptake over most months around the state, with a strong jump in July. The most significant increase in users coincided with Portland General Electric highlighting Chargeway within a utility bill insert. Immediately after the PGE highlight at the end of July, mobile account signups increased by over 300 users in a period of a few days. It is important to note that other than the PGE bill insert, Chargeway has done no active marketing or promotion of the mobile application. The heat map above (fig. 14) shows geographic distribution of users within Oregon, which as outlined below, we believe is directly attributable to charging station labeling around the state.

Figure 15: Mobile application new users in Oregon by month 2019

Charging Station Labeling and Photography

A key part of the Oregon Pilot was improving the EV charging experience at public charging stations (see figure 16) through labeling and photographing charging stations around the state. During the course of 2019, Chargeway labeled approximately 20% of the public charging stations in the state (over 150), which include Chargeway partners OpConnect, Portland General Electric and Pacific Power. In addition, Chargeway has labeled a number of privately owned non-networked stations with feedback from site owners-the bulk of these installations consist of “destination chargers” for Red level 2 and Tesla vehicles.

In addition to station labeling, Chargeway has photographed over 90% of the public charging stations in Oregon- all across the state. In addition to the main concentration of chargers in the Willamette Valley, Chargeway has covered the Oregon Coast, Central, Eastern and Southern Oregon and uploaded these photos into the Chargeway app, providing a good reference for users. The exposure of Chargeway’s color/number

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EVS33 10
system throughout the state has increased downloads of the mobile app and extended the reach of the pilot to rural areas that do not currently have Beacons deployed at auto dealerships.

![Figure 16: Chargeway labeling in the field: PGE Electric Avenue in Downtown Milwaukie, Pacific Power Fast Charger in Madras, OR and Tesla Destination Charger in Parkdale, OR](image)

**Conclusions**

The Oregon Pilot has provided validation of Chargeway’s initial hypothesis of providing a tool for dealers to more effectively explain electric fuel to consumers, providing consumer confidence in the new fuel type, thus improving the sales process with EVs and incentivize auto dealerships to more proactively engage EV sales with all customers.

**Positive Takeaways**

Simple is better: Chargeway has simplified how to explain a complex product (EV charging and electric fuel) within a B2B ecosystem creating more effective B2C sales solutions. Consumers already want cars but in order for EVs to succeed they must want electric fuel as well. Chargeway is removing barriers to EV adoption, by creating an effective competitor to the status quo: “regular gas.”

The Beacons have proven to be an effective tool to help close a sale of an EV once consumers arrive at the dealership, providing confidence in electricity as a fuel. The simplified and interactive training process for the Beacon engages dealer staff and provides them with a means to explain the new “fuel choice” and allow them to focus on their core competency: selling cars.

Dealerships trained on and equipped with the Beacon have expressed that they are better prepared for consumers that come in the door with questions about EVs. Also, as evidenced from dealer feedback, idle consumers are engaging the Beacon which provides an introduction to EVs and the existence of electric fuel. With the Beacon, dealer’s EV sales confidence is elevated, which in turn has improved EV sales opportunities and closing of EV sales.

Significant uptake of the mobile application in Oregon, and repeated evidence from dealers that they are encouraging users to download at the time of sale, creates a consistent EV customer journey. In addition, by providing Chargeway labeled public charging locations around the state, users have been directed to the Chargeway app reinforcing a consistent customer experience.

Another key learning is that Chargeway is providing solutions for the right customer- electric utilities. As the provider of “electric fuel” for personal transportation it is in the utilities’ best interest to simplify and promote their product for consumers. This is a necessary component to the EV customer journey that other EV Stakeholders have identified is not their core competency and must be resolved to drive EV demand and sales.

**Room for Improvement**

While dealers with Beacons are now better equipped to answer questions and more effectively sell an EV, a key to building adoption is driving consumers to dealerships who are aware and interested in the “new fuel type.” Without concerted efforts by utilities, to drive awareness about their product, electric fuel, sales of EVs will continue to have a ceiling.

As evidenced by continued by high volume sales of combustion vehicles in 2019, consumers already want to purchase cars. Without awareness and understanding of electricity as a fuel choice, electric cars will
continue to not resonate with the general public. We will be working with our utility partners to craft awareness campaigns and drive “electric fuel” curious/educated consumers into showrooms where Beacons can help close the sale.

Chargeway will continue to monitor Beacon performance and dealer feedback around Oregon and expand our pilot to new dealerships and parts of the state. Chargeway will deploy a final Beacon as part of the Oregon Pilot Project to Central Oregon in conjunction with Forth.

Looking Beyond Oregon

During the course of the Oregon Pilot, and aided with data from the pilot, Chargeway has deployed Beacons to new areas around the US in conjunction with Austin Energy in Texas, Avista in Washington State and recently deployed with Indianapolis Power and Light in Indiana. Chargeway is also in discussions for deployments in other states as shown in Figure 17.

Figure 17: Chargeway current and planned deployments in the United States, 2020.

References


Author

Matt Teske, CEO/Founder, is a marketing director and brand strategist with 20+ years in the auto industry. He has managed multiple vehicle projects and marketing campaigns for automotive OEMs, dealerships and aftermarket companies.