

**“California ZEV-Investment Plan: Cycle 1”
Written Comments for Public Hearing on Friday March 24, 2017
Drucker-Ito School of Management at Claremont Graduate University**

The Key to Creating a ZEV Success Story: Creating a Customer Success Story

First of all, we want to thank you for the California ZEV Investment Plan and for giving us an opportunity to comment.

Our Drucker School has submitted a proposal to Volkswagen that is directly aligned with what you’re considering with the ZEV Investment Plan.

However, we are concerned that something may be overlooked as your initiative is being developed. What we are concerned about can be summed up in just one word: **Customer**.

The importance of **customer-centricity** too often becomes an afterthought in large-scale initiatives like the ZEV Investment Plan. Too often, there is a great deal of excitement focused only on the technology side alone. We have spent our academic careers studying examples of technology-driven initiatives that have gone wrong because this aspect has been overlooked.

Usage Gap. To ensure that it isn’t, the customer-centric approach requires closing three specific usage gaps, abbreviated as “AEV.” These are:

1. **Awareness** / Advertising
2. **Education**
3. **Value** - a particular concern in underserved communities

In our VW proposal, we have recommended that any ZEV infrastructure investments should be complemented with a **customer analytics-based approach** that will ensure that infrastructure will actually be used.

We were glad to see that the initial Board’s Guidance (Feb 2017) required spending on “Education,” (as pointed out by Board Member Dr. Alexander Sherriffs in a response to our testimony on March 24th), but the new ZEV Investment Plan (Mar 2017) suggests spending on “Advertising”. This is a reason for our concern, and for our comments.

The picture below illustrates the very real problem of infrastructure investments.

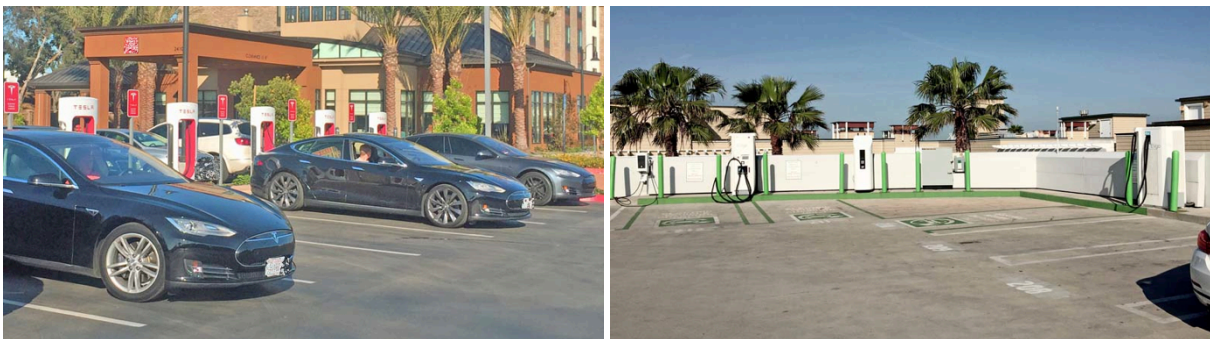


Fig.: Usage gap - busy Tesla Supercharger versus empty public charger in top spot

These pictures are intended only as anecdotes. However, Tesla's Superchargers have certainly been so popular, that the company switched to fee-based usage to curb waiting lines and demand. Others, such as ChargePoint or PlugShare, would wish for this.

Why does a usage gap exist? Tesla's vehicles and its brand have certainly strong appeal. Yet, does the "Tesla factor" explain the entire usage gap, half of it - how much?

AEV Research. As you prepare your ZEV Investment Plan for implementation, please consider what our customer research has revealed: that actual, real-life usage of products is usually much lower than the expected usage. Furthermore, our research has revealed that it is not a single factor causing this usage gap. Instead the gap is a result of the three, different factors abbreviated with AEV – and closing it requires **different treatments**:

1. **Awareness** gap: Many customers are not aware of a particular product or product feature.
2. **Education** (or "know-how-to-use") gap: Of those who are aware, some don't know how to use the technology properly.
3. **Value** gap: Of those who are aware of the product and know how to use it correctly, quite a few won't use it anyways because they will decide it's just not for them.

One way to illustrate the importance of AEV is to consider the math. It can be quite shocking. Even when 50% of the market is aware of a product, and 50% of these customers know how to use the technology, if they end up using it half of the time, the total product usage barely creeps above 10% (.5 times .5 times .5 equals .125).

Do we want the ZEV plan to have an actual success rate of only 10%?

Advertising falls short and Tesla's success is an indication that ZEV awareness is not even a big problem – awareness has been so strong that it established Tesla as a top 100 brand on Interbrand's Best Global Brands ranking (Interbrand 2017). The key challenges facing the ZEV plan and any new technology are the Education and Value gaps.

Education Gap. Automakers are already struggling to educate customers in how to use the many features in their vehicles: How to pair a phone, switch between phones? How to program radio stations? Who reads Operating Manuals? Do we really need a "Genius Bar" at a car dealership? JD Power's Vehicle Dependability Study confirms our experience: Most complaints today relate to usability problems (JD Power 2017).

If this is the case for operating a car, imagine the confusion of a system that features power adapters, user accounts, IDs, charger login screens and menus, credit cards, etc. Even Apple continues to struggle with Apple Pay – and it comes on every new iPhone (WSJ 2017).

Value Gap. In addition to the challenge of Education, an even bigger obstacle to ZEV success is posed by the Value gap. Range anxiety is one big obstacle here, and we used this example in our testimony. Another high hurdle to ZEV success are mobility habits.

How will we change habits in order to make more people open to the promise of your ZEV plan? It can be very difficult to change habits. Carpooling serves as a reminder of how difficult it can be. Despite expensive infrastructure investments in California, such as HOV lanes, only 11% of drivers carpool while 78% of drivers commute alone to work (Auto Alliance 2017).

Underserved Communities. Furthermore, the hurdle of habit formation is compounded by the desire to help underserved communities. It is quite obvious that installing a charging station in a poor neighborhood won't get people with lower income to use it (even in affluent neighborhoods they may remain rarely used as illustrated in our Figure). It would take additional, supportive measures or moderating factors to get the success formula right.

Which brings us back to our Drucker School proposal to you.

In order to maximize the chances that ZEV will succeed in our state and charging stations will be widely used, in order to get the success formula right so that this won't result in another project of great promise that doesn't thrive, we suggest that it would be prudent to complement the ZEV Investment Plan with an investment in customer-centricity including customer economics and consumer psychology.

We would be very glad to explain our proposal in more detail and how our Drucker School might assist you in this project critical to our state's future.

Thank you.

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