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Revolutionizing Plug-in Electric Vehicle Education

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Summary

Southern Company has established a new program called Revolution™ to increase exposure to and education surrounding plug-in electric vehicles (PEVs). Revolution is built on the company's experience in customer outreach and education, and aims to maximize the effectiveness of these efforts related to PEVs. It provides an objective source for information that showcases a range of technologies and manufacturers in one location. The program includes a website, a physical existence, and a survey system to ensure it is serving the needs of the customers. Responses have been positive with a majority of survey respondents indicating that they appreciate the work.

Keywords: consumers, education, market development, marketing, promotion

1 Background

Southern Company is an electric and natural gas energy utility headquartered in Atlanta, Georgia. It has four electric operating companies: Alabama Power Company (APC), Georgia Power Company (GPC), Gulf Power Company (FPC), and Mississippi Power Company (MPC). These operating companies, or Op-Cos, are the public face of the electric retail program in Southern Company.

Revolution™ was created as an entry to SOPrize, a cross-company innovation competition. It was conceived to promote PEV technology and to facilitate adoption of PEVs by Southern Company customers. Since being selected as a winning SOPrize idea, the project has adapted and has been in action since September 2016. Currently, Revolution initiatives take place through partnerships with Southern Company's existing operating companies.

1.1 Importance of Awareness and Education in PEV Adoption

It has been shown in numerous studies [1, 2] that there is a significant discrepancy in awareness of on-road plug-in electric vehicle (PEV) models and technology between people that own or drive PEVs and those that do not. More importantly, several studies [3-8] have indicated that increased awareness of and familiarity with PEV technology may increase willingness to purchase a PEV. It has been shown [2] that increased familiarity with PEVs also increases willingness to consider battery electric vehicles (BEVs) over plug-in hybrid electric vehicles (PHEVs). In addition, customers having hands-on experience with a vehicle further increases comfort with the technology and can reduce the need for incentives to purchase [3, 7, 9].

1.2 Company Prior Experience

Southern Company has been actively involved in PEV education and outreach for more than 25 years. Our experience shows that there are benefits in enabling customers and employees interested in PEVs to experience these vehicles first-hand. This is accomplished by hosting ride and drive events, incentivizing test drives at dealerships, and including PEVs in our company fleet.

From 1998-2001, GPC had the employee EV Commute Program. As part of this program, employees could take advantage of an EV lease that was subsidized by GPC. Program members could have a charging station installed at their home and were also able to use one at work. Over four years, this program had 245 employees who collectively drove more than 2.1 million miles. The program fleet was comprised of 141 Ford Ranger pickup trucks, 96 GM EV1s, and 8 Toyota RAV4 EVs. Even though these were prototype and early production PEVs and there were a wide range of technical problems, from charging station malfunctions to battery errors to insufficient range in certain weather, overall response to the program was highly positive. In 2008, when PEVs were re-introduced in the US market, it is estimated that 70% of early adopters within the company were those that had been part of the EV Commute Program nearly a decade before. Among other things, this behavior by those early company PEV drivers alerted Southern Company to the importance of first-hand experience with PEVs, especially to convert drivers to their first PEV. Southern Company began emphasizing programs that allowed employees and customers to experience the new vehicle models for themselves.

Currently, there are 561 electric vehicles in the Southern Company fleet, ranging from on-road, light-duty vehicles to forklifts and electric commercial and industrial equipment. Roughly 130 of these are on-road PEVs. Several vehicles are assigned to specific employees, but many are part of demonstration or vehicle pool programs, which can be used for customer and employee ride and drive events. This on-road fleet includes a wide variety of vehicles, with many vehicle manufacturers and body styles represented. It includes a mix of technologies, such as battery electric vehicles (BEVs), extended-range electric vehicles (EREVs), and plug-in hybrid electric vehicles (PHEVs). It also includes a range of vehicle prices, with vehicles from as low as \$20,000 (USD) up to more than \$130,000 (USD).

Southern Company has regularly tracked how many customers participate in ride and drive events, and has often partnered with automakers or dealerships to enable them. These events often feature multiple types of vehicles to appeal to a wide range of customer. In 2016, it is estimated that more than 305,000 customers saw a PEV in person at a Southern Company sponsored event.

1.2.1 Other Ongoing Programs within the Company

Within Southern Company and its subsidiaries, there are numerous engagement, educational, promotional, and incentives programs focused on PEVs. Each Op-Co has PEV time of use (TOU) rates, designed to reduce the cost of charging a PEV at home, and to encourage off-peak energy usage. One Op-Co has a large public charging

program and aggressive marketing approaches. Revolution is designed, not to replace these programs, but to complement them.

2 Revolution Components

2.1 Website

The website, www.joinEVrevolution.com, is a bold, call-to-action site designed to appeal to those in key demographics for EV ownership [2, 6, 10], while also remaining engaging to those in the next market segment and untapped demographics, or the fast followers [2]. As shown in Fig. 1, the website has been designed with bright colors and bold graphics to be eye catching and modern. A call-to-action site should prompt an immediate response by visitors. In this case, the webpage prompts visitors to find their ideal PEV, and then to share their results with their friends on social media. The “Revolutionary Recommender,” as it is called, allows users to match their vehicle needs and limitations to a plug-in vehicle. There is more information on the “Revolutionary Recommender” below. The selection tool encourages promotion of a customer’s result on social media, to publicize the website and PEVs in general. In addition, the website calls visitors to join mailing lists, to seek out additional information, and to share with us what they would like to see information on in the future.

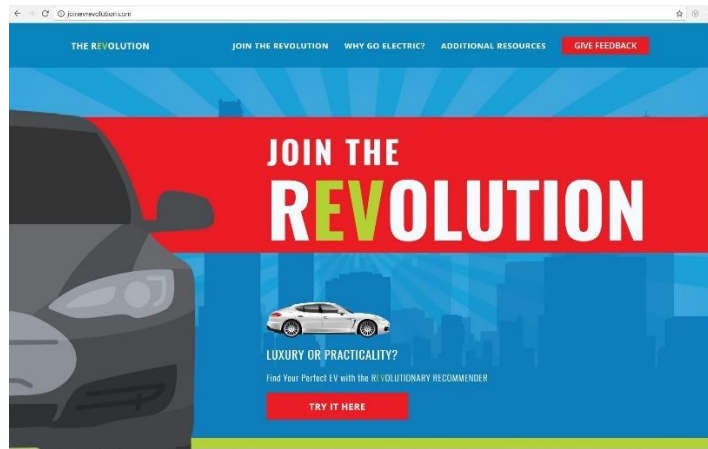


Figure 1: Revolution website

As shown in Fig. 2, the site explains the benefits of an electric vehicle, as well as the various types available. For detailed information, there are links to established websites such as the US DOE website on electric transportation. By directing customers to other educational sites, the Revolution website serves as a landing page on EV education without duplicating educational information which can already be found on the internet. The website brings these sources of information into one place which can be easily accessed by consumers.

Since the website was published in September, 2016, nearly it has had nearly 1,000 unique visitors, who have collectively viewed nearly 8,000 pages. Together, they have visited the site over 1,750 times. These visitors spend, on average, more than 7 minutes on each page. Revolution is working to collect feedback and information requests from site visitors to expand content in a way that will continue to answer our visitors’ needs.

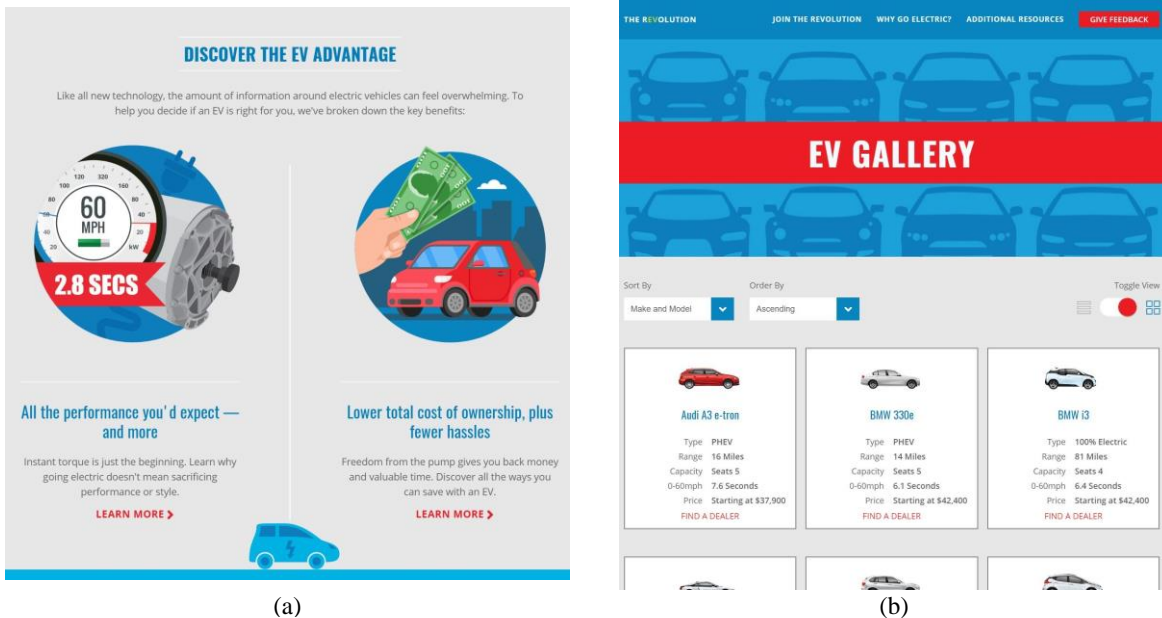
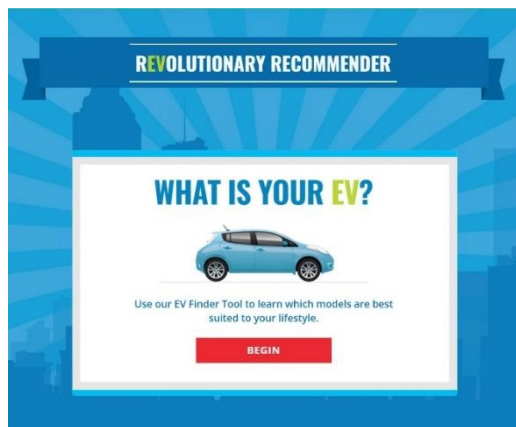


Figure 2: Some additional resources on the Revolution website

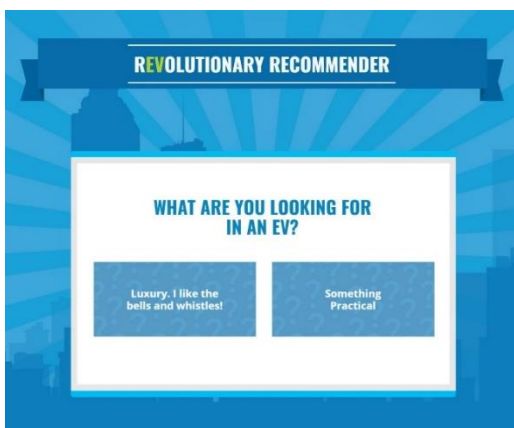
2.1.1 Revolutionary Recommender

The Revolutionary Recommender, shown in Fig. 3, is designed to draw in website visitors and turn PEV selection into a game. The Recommender tool uses several screening questions to understand a customer's buying motivation and limitations to direct the customer to an ideal vehicle. In keeping with the rest of the website design, the questions and answers are worded in a fun, modern, conversational way.

A sample Recommender tool result for someone looking to purchase a vehicle next year is shown in Fig. 4. Along with providing visitors with a top match, the Recommender tool also provides a second and third choice, which the visitor can click on to compare to their top choice. The vehicle information on the Recommender results page is designed to be engaging, but also to drive visitors to the PEV gallery page shown above in Fig. 2. As mentioned above, the Recommender results page also encourages visitors to promote their personal results on social media.



(a)



(b)



(c)

Figure 3: Revolutionary Recommender tool

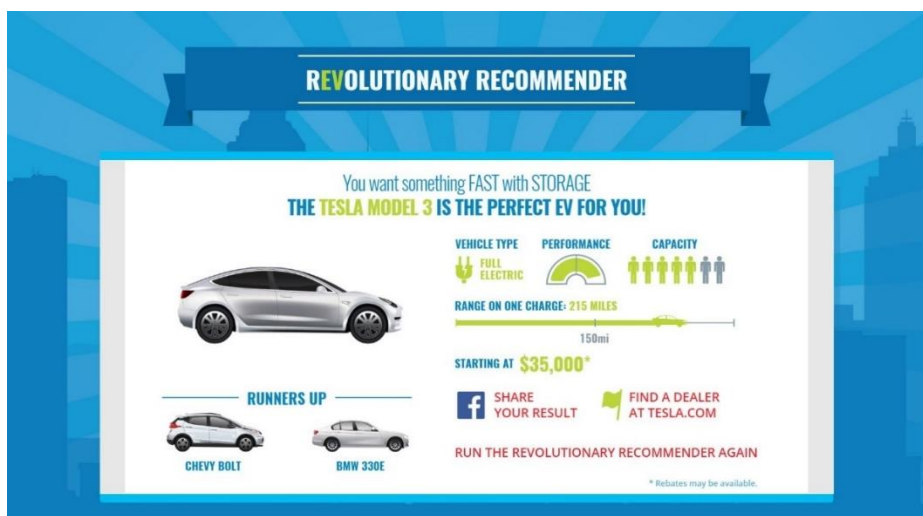


Figure 4: Sample recommender tool result

The Revolutionary Recommender decision tree is presented in Fig. 5. The tool was designed primarily to support Southern Company customers, so the vehicle availability reflects those vehicles either currently available in our territory or which have stated plans to be released there.

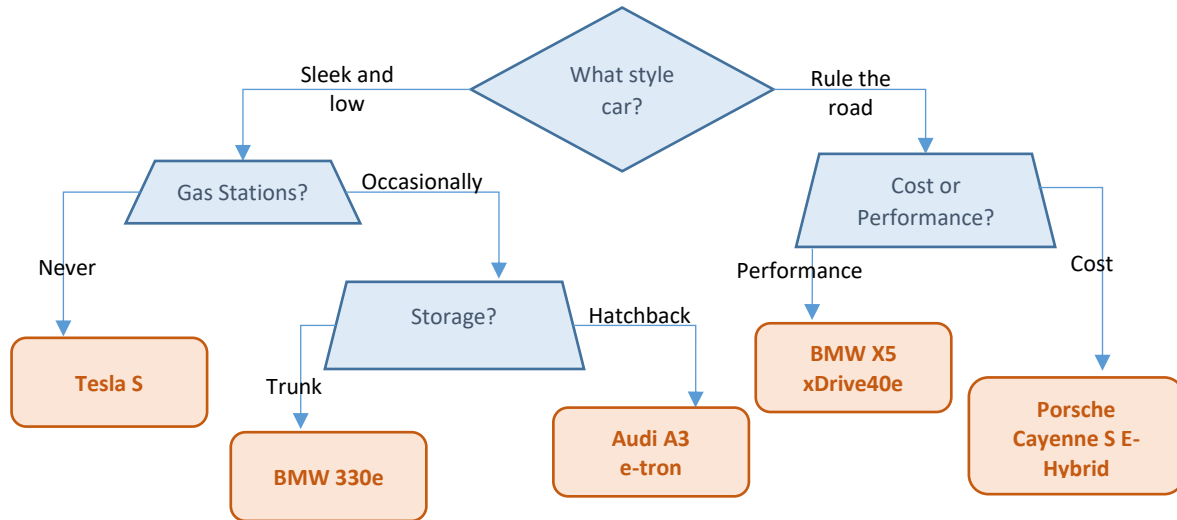


Figure 5: Portion of the recommender tool logic diagram

2.1.2 Social media presence

As demonstrated in other programs within Southern Company, a successful social media campaign can draw significant attention to websites and topics. Therefore, Revolution is leveraging these platforms to attract interest in the website. This has been shown to be a cost-effective way to maximize viewership. One of our operating companies estimates that their PEV program achieved over 85 million impressions from PEV-specific social media and digital marketing campaigns. The same company’s PEV social media accounts have roughly 46,000 followers, of which many are actively engaged in sharing news and progress.

Revolution has benefited from the exposure of the Southern Company portfolio of Operating Companies—Gulf Power has reposted Revolution’s articles on social media platforms. The company is currently considering how to leverage OpCo brands to move Revolution even further along. Revolution averages at least two to three posts per week on its social accounts.

2.1.3 Website plans

Like the rest of the program, Revolution’s website and other web presences are still under development. Specifically, Revolution would like to facilitate the purchase of PEVs and to ensure the transition to driving electric is a smooth one for drivers across the US. Plans for the website include a connection to a company specializing in vehicle sale and resale. This partner company plans to create a section on the website where visitors can enter their zip code and find current deals on new and used PEVs. In addition, Revolution would like to direct customers to their respective utility websites for information on local PEV electricity rates, rebates, tax incentives, or other local programs. Southern Company Op-Co websites also have information on recommended electricians to install residential charging stations (EVSEs).

2.2 Physical Presence: Cars and Coffee

To continue the conversation and increase comfort with PEVs, having a physical presence where customers can ask questions face to face is critical.

Revolution has hosted several targeted one-day events that include trained staff, educational material, and a ride and drive component. Where and when possible, local dealerships are involved with the events to establish a connection between interested customers and places that vehicles can be purchased. Cars and Coffee events are structured so Revolution can also learn what our customers would like to see from us. Follow-up surveys provide information used to measure program success. These Cars and Coffee events are located at local coffee shops on a Saturday. They normally last up to 6 hours to allow flexible attendance. More about the planning and execution of these events is below. Again, these events are held in partnership with the Op-Co servicing that location.

2.2.1 Cars and Coffee Events: Customer Engagement and Outreach

To maximize effectiveness of the one-day face-to-face events, the Op-Co reaches out to customers that meet demographics of a likely PEV purchaser. Using customer analytics, individuals are contacted that are high-income and have made environmentally friendly decisions in the past. Specifically, customers who have made technical changes with an environmental impact or are on a renewable energy rate are identified [2]. These customers are contacted by email or direct mail several weeks before the event and are invited to sign up for a time slot to meet with a PEV specialist during the event. Leveraging the brand recognition of the local Op-Co has proved to be an effective method of introducing Revolution in the Southern Company footprint. Fig. 6 shows an email invitation to an event held in Mississippi Power's territory. The event is often publicized on Op-Co social media pages, and the partnering coffee shop is encouraged to promote the event, as well. In this way, Revolution and the Op-Co ensure the most likely adopters of PEVs are reached, but messaging is not limited to those specific customers. In addition, the event is designed to be open and inviting so that anyone can walk-up and be engaged in discussion on PEVs.



Figure 6: Invitation to a Cars and Coffee event

By requesting an RSVP from visiting customers, Revolution can ensure the event is sufficiently staffed, and will be capable of also handling walk-up customers.

2.2.2 Cars and Coffee Events: Event Design

The Cars and Coffee event is comprised of a booth with general information on PEVs and PEV ownership, as well as a ride-along in demonstration vehicles. The information booth and PEV specialists are there to engage visitors and answer questions on PEV technology, special PEV electricity rates from the Op-Co, any additional local rebates or leasing programs, charging technology, public charging availability, and more. When possible, local dealerships are involved in the planning of the events. In some cases, they can participate directly, but at a minimum, Revolution and the Op-Co ensure the local dealerships have PEVs available on the lot before that model is shown at the event. The ride-along vehicles may be Southern Company-owned vehicles or demonstration vehicles from local dealerships.



Figure 7: Cars and Coffee event

2.2.3 Cars and Coffee Events: Customer Follow-Up

After the Cars and Coffee experience, customers are asked to fill out a short survey in exchange for a token gift, such as a USB car charger or stainless steel coffee travel mug. Feedback is presented in section 3. Customers are also given a form to take with them to a dealer for an EV test drive, so that we can track which customers ultimately continue the conversation at a dealership. As an incentive to follow up, customers who take a test drive at a dealership are entered into a drawing for a gift card.

Initial participation in the follow-up test drives at dealerships has been low. It has been determined that availability at dealerships was a problem for customers. Additionally, follow-up from the Revolution team was limited. Adjustments are currently underway for future events to improve the customer experience to increase participation in the future.

3 Metrics of Success

Most of Southern Company service territory falls in areas with low PEV adoption. So far, success for this new program has been measured in public response, ride and drive events, dealership interaction, and survey results.

3.1 Focus Group Feedback

Before developing this program, extensive research was done on public interest and thoughts about an electric utility running the program. Overall, response was that some type of resource was needed for education, and that the electric utility was a respected, impartial, and qualified source of this information. Feedback also indicated that any way that the program could reduce their time in a dealership would be appreciated. Thus, the program is structured so that all available technologies are displayed in one location so customers can determine which technology fits their lifestyle before ever going to a dealership.

3.2 Survey Responses

Our metrics to date indicate that:

- More than 70% of respondents said that Revolution greatly enhanced their knowledge of electric vehicles.
- Nearly nine out of 10 respondents feel better about their electric utility after attending a Cars and Coffee event
- About half of respondents interviewed are **highly likely** to visit a permanent concierge locations, go on a test drive, and/or purchase a EV after attending a Revolution event
- Significantly, 60% of respondents said that the test drive was very important to their visit

4 Partnerships

A significant portion of the success of this program has been through partnerships. Revolution has worked closely with local dealers, local businesses, and established online used vehicle sales companies. Educational materials produced by many companies and organizations have been utilized. The continued success of this program will also depend on maintaining existing partnerships and expanding community relationships. Members of this program look forward to working with other utilities, automotive manufacturers, non-governmental agencies, and more to expand the range and efficacy of Revolution.

References

- [1] F. Liao et. Al., *Consumer preferences for Electric Vehicles: a literature review*, Transport Reviews, 37.3 (2016), 252-275
- [2] J. Axsen, et. Al., *How might potential future plug-in electric vehicle buyers differ from current “Pioneer” owners?* Transportation Research Part D, 47 (2016), 357-370
- [3] A. Jensen, et. Al., *On the stability of preferences and attitudes before and after experiencing an electric vehicle*, Transportation Research Part D, 25 (2013) 24-32
- [4] M. Singer. (2016). *Consumer Views on Plug-in electric Vehicles – National Benchmark Report (Second Edition)*, NREL Technical Report
https://www.afdc.energy.gov/uploads/publication/consumer_views_pev_benchmark_2nd_ed.pdf, accessed on 2017-6-26
- [5] S. Knupfer, et. Al. *Electrifying insights: How automakers can drive electrified vehicle sales and profitability*. Advanced Industries. McKinsey&Company. (2017).
- [6] J. Dubin, et. Al., *Realizing the Potential of the Los Angeles Electric Vehicle Market*,
<http://innovation.luskin.ucla.edu/sites/default/files/LA%20EV%20Final%20Report%20-%20Formatted%20-%20Final%20-%20High%20Quality%20for%20printing.pdf>, accessed on 2017-6-27
- [7] Plug In America, *Evaluating Methods to Encourage Plug-in Electric Vehicle Adoption*, October, 2016. Prepared for CalETC
- [8] K. Kurani, et. Al., *New car buyer’s valuation of zero-emission vehicles: California*, Prepared for Air Resources Board, (2016). <https://www.arb.ca.gov/research/apr/past/12-332.pdf>, accessed on 2017-6-25

- [9] California Plug-in Electric Vehicle Collaborative, *California Plug-in Electric Vehicle Statewide Ride-and-Drive Series Best. Ride. Ever! 2016 Final Report*, (2017). <http://www.pevcollaborative.org/sites/all/themes/pev/files/2016%20BRE%20Final%20Report.pdf>, accessed on 2017-6-27.
- [10] P. Plötz, et. Al., *Who will buy electric vehicles? Identifying early adopters in Germany*, *Transp. Res. Part A: Policy Pract.* 67(2014). 96-109

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