

**GOVERNMENT OF PUERTO RICO  
PUERTO RICO PUBLIC SERVICE REGULATORY BOARD  
PUERTO RICO ENERGY BUREAU**

**NEPR**

**Received:**

**Jan 2, 2024**

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**IN RE: THE DEPLOYMENT OF  
ELECTRIC VEHICLE INFRASTRUCTURE**

**CASE NO. NEPR-MI-2021-0013**

**SUBJECT: Motion to Submit Customer Outreach Memorandum in Compliance with Resolutions and Orders of January 13, 2023, as Modified by Resolutions and Orders of March 29, 2023, June 6, 2023, and August 11, 2023**

**MOTION TO SUBMIT REPORT ON CUSTOMER OUTREACH MEMORANDUM IN COMPLIANCE WITH RESOLUTIONS AND ORDERS OF JANUARY 13, 2023, AS MODIFIED BY RESOLUTIONS AND ORDES OF MARCH 29, 2023, JUNE 6, 2023, AND AUGUST 11, 2023**

**TO THE HONORABLE PUERTO RICO ENERGY BUREAU:**

COMES now **LUMA Energy ServCo, LLC** (“LUMA”), through the undersigned legal counsel, and respectfully states and requests the following:

1. On January 13, 2023, the Energy Bureau issued a Resolution and Order (the “January 13<sup>th</sup> Resolution and Order”) making various findings and determinations regarding the Draft Phase I EV Plan filed by LUMA on September 1, 2022<sup>1</sup> and the Revised EV Rate Design Proposal (“Interim EV TOU Rate”) filed by LUMA on July 21, 2022,<sup>2</sup> as well as issuing associated orders.<sup>3</sup>

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<sup>1</sup> See *Motion Submitting Draft Phase I EV Plan and Request to Postpone Compliance Technical Hearing No. 3 and Concomitant Deadline to Submit Revised Phase I EV Plan* filed by LUMA on September 1, 2022. On September 2, 2022, LUMA resubmitted the Draft Phase I EV Plan document with certain technical repairs and requested this Energy Bureau to accept this corrected version in substitution of the version submitted on September 1, 2022. See LUMA’s *Motion Re-Submitting Exhibit 1 Filed on September 1, 2022 with Technical Repairs and Requesting Substitution of Original Exhibit* of that date. The term “Draft Phase I EV Plan” as used in this Motion refers to this corrected version.

<sup>2</sup> See LUMA’s *Motion Submitting Revised EV Rate Design Proposal* filed by LUMA on July 21, 2022 and its Exhibit 1.

<sup>3</sup> On that same date, the Energy Bureau also issued a *Resolution Nunc Pro Tunc* correcting *motu proprio* a clerical error related to two deadlines set forth in the January 13<sup>th</sup> Resolution and Order. The discussion herein of the January 13<sup>th</sup> Resolution and Order takes into account these corrections.

2. In the January 13<sup>th</sup> Resolution and Order, the Energy Bureau ordered LUMA to take several actions associated with the Phase I EV Plan and the Interim EV TOU Rate, by specified dates or within specified timeframes, including, among others, to submit by February 10, 2023 a Project Schedule for implementation of the Interim EV TOU Rate (the “Project Schedule” (see January 13<sup>th</sup> Resolution and Order on pages 11 and 14) and to file by March 30, 2023 a Final Phase I EV Plan incorporating the guidance of the January 13<sup>th</sup> Resolution and Order and containing plans for future updates and addressing various subjects and requirements (see *id.* at page 14). Among these subjects, the Energy Bureau indicated that there was a need to focus on low-income customers and develop a plan that, “considers the unique mobility challenges of low/moderate income households, ensuring that the benefits of clean transportation are broadly shared” (see *id.* at page 2); that LUMA should demonstrate it prioritizes low-income accessibility and affordability, in addition to market transformation (see *id.*); and that public meetings would be useful to low-income customers’ understanding of LUMA’s plans and proposed programs and for LUMA to engage the communities (see *id.*). The Energy Bureau also indicated that LUMA “should develop a better understanding of what its low-income customers want and need from transportation electrification before developing customer offerings”. *Id.* at page 3.

3. In the January 13<sup>th</sup> Resolution and Order, the Energy Bureau also ordered LUMA to consider undertaking efforts to “[a]dopt new practices to promote greater access and meaningful public engagement; engage in community outreach to inform and improve its understanding of low-income customer needs; and [a]dopt the goal of ongoing improvement in its public access practices and use of public participation to help inform its policies and the development of its programs”. *Id.* at page 2. Relatedly, the Energy Bureau ordered LUMA to “[o]ver the next six months, review and propose improvements to its outreach and public access policies and practices

[...] and submit a memorandum to the Energy Bureau setting out the actions it plans to adopt” (*id.* at pages 3 and 14) (the latter, the “Customer Outreach Memorandum”); and “[o]ver the next nine months, engage in outreach with low-income and disadvantaged communities to determine what they consider their transportation electrification priorities to be” (“Customer Outreach Implementation”) (*id.* at pages 4 and 14).

4. Following an extension granted by the Energy Bureau,<sup>4</sup> on February 17, 2023, LUMA submitted the Project Schedule addressing the tasks to meet the various requirements relating to the Phase I EV Plan and the development and launch of the Interim EV TOU Rate. *See Motion Submitting Project Schedule in Compliance with Resolution and Order of January 13, 2023 and Requesting Modification of Certain Deadlines Thereunder* of that date (“February 17<sup>th</sup> motion”) and its Exhibit 1. In addition, LUMA requested the Energy Bureau to modify certain deadlines or timeframes established in the January 13<sup>th</sup> Resolution and Order in accordance with those included in the Project Schedule, including to modify the timeframe to conduct the customer outreach research and analysis and submit the Customer Outreach Memorandum within the next nine (9) months (instead of the next six (6) months); and the timeframe for the Customer Outreach Implementation to provide that it will commence by the end of September 2023 (rather than completion within the next nine (9) months). *See id.* at page 9.

5. On March 29, 2023, the Energy Bureau issued a Resolution and Order (the “March 29<sup>th</sup> Resolution and Order”) determining, among others, to accept and approve the Project Schedule submitted by LUMA in its February 17<sup>th</sup> Motion and granting LUMA’s request in the

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<sup>4</sup> On February 9, 2023, LUMA requested an extension to file the Project Schedule by February 17, 2023 (*see Motion Requesting Brief Extension to File Project Schedule Required by Resolution and Order of January 31, 2023 and Submitting Progress Report Due By February 13, 2022 and Information on Status of RFP Due by February 15, 2023 under Such Resolution and Order* of that date, which was approved by the Energy Bureau by Resolution and Order of February 14, 2023).

February 17<sup>th</sup> Motion to modify certain deadlines and timeframes subject to maintaining the deadlines for filing the Final Phase I EV Plan and Interim TOU EV Rate Launch. See March 29<sup>th</sup> Resolution and Order on page 3. As pertinent to this Motion, the Energy Bureau granted LUMA an extension until December 31, 2023 to submit the Customer Outreach Memorandum and until September 30, 2023 to begin Customer Outreach Implementation. *See id.*

6. On May 1, 2023, LUMA submitted to the Energy Bureau the Final Phase I EV Plan in compliance with the January 13<sup>th</sup> Resolution and Order in the form of the document titled Puerto Rico’s Electric Vehicle Adoption Plan (“PR-EVAP”). *See Motion to Submit Final Phase I EV Plan in Compliance with Resolution and Order of January 13, 2023* filed on that date.

7. On June 6, 2023, the Energy Bureau issued a Resolution and Order (“June 6<sup>th</sup> Resolution and Order”) taking notice of the filing of the PR-EVAP and making several findings and determinations and issuing associated orders, including, in what is pertinent to this motion, the subject of low-income customers. On this subject, the Energy Bureau ordered LUMA to file by July 13, 2023 the Customer Outreach Memorandum setting out the actions LUMA plans to adopt based on its review of its outreach and public access policies and proposed improvements thereof; prepare for a Virtual Technical Conference to be scheduled by the Energy Bureau within thirty (30) days of LUMA filing the Customer Outreach Memorandum to “discuss the feedback LUMA collects from its low-income customers and articulate the next steps LUMA will take to address barriers to low-income EV adoption”; and “[c]onsider targeting public transportation, school buses, and fleets as a means to provide low-income customers with access to the benefits created by transportation electrification”. *See June 6<sup>th</sup> Resolution and Order* on page 3.

8. On July 13, 2023, LUMA submitted a motion to the Energy Bureau requesting clarification of various aspects of the June 6<sup>th</sup> Resolution and Order (*see Motion to Request*

*Clarification of Resolution and Order of June 6, 2023* filed by LUMA on that date (“July 13<sup>th</sup> Motion”)), including, among others, that the deadlines for the Customer Outreach Memorandum and the Customer Outreach Implementation are those set forth in the March 29<sup>th</sup> Resolution and Order. In addition, LUMA respectfully requested the Energy Bureau to leave without effect the July 13, 2023 deadline in the June 6<sup>th</sup> Resolution and Order and change the date for the Virtual Technical Conference ordered in the June 6<sup>th</sup> Resolution and Order to no less than thirty (30) days after December 31, 2023, which is the deadline to file the Customer Outreach Memorandum under the March 29<sup>th</sup> Resolution and Order.

9. On August 11, 2023, the Energy Bureau issued a Resolution and Order (“August 11<sup>th</sup> Resolution and Order”) making various findings and determinations and issuing associated orders in attention to the July 13<sup>th</sup> Motion. Regarding low-income customers, the Energy Bureau clarified that the deadlines for the Customer Outreach Memorandum and the Customer Outreach Implementation are those set forth in the March 29<sup>th</sup> Resolution and Order. *See* August 11<sup>th</sup> Resolution and Order on page 3. The Energy Bureau then ordered LUMA to begin Customer Outreach Implementation by September 30, 2023, submit the Customer Outreach Memorandum by December 31, 2023, prepare for a Virtual Technical Conference within 30 days of LUMA filing the Customer Outreach Memorandum and “[c]onsider targeting public transportation, school buses, and fleets as a means to provide low-income customers with access to the benefits created by transportation electrification as part of its engagement with low-income and disadvantaged communities and provide a discussion of its findings related to this topic in its December 31st Customer Outreach Memorandum”. *See id.* at page 5.

10. In compliance with the January 13<sup>th</sup> Resolution and Order, as modified by the March 29<sup>th</sup> Resolution and Order, the June 6<sup>th</sup> Resolution and Order and the August 11<sup>th</sup> Resolution and Order, LUMA herein submits the Customer Outreach Memorandum. *See Exhibit 1.*

**WHEREFORE**, LUMA respectfully requests the Energy Bureau to **take notice** of the aforementioned and **accept** LUMA's Customer Outreach Memorandum in *Exhibit 1* herein in compliance with the January 13<sup>th</sup> Resolution and Order, as modified by the March 29<sup>th</sup> Resolution and Order, July 6<sup>th</sup> Resolution and Order, and the August 11<sup>th</sup> Resolution and Order.

**RESPECTFULLY SUBMITTED**

In San Juan, Puerto Rico, this 2<sup>nd</sup> day of January, 2024.

We hereby certify that we filed this motion using the electronic filing system of this Energy Bureau and that we will send an electronic courtesy copy of this motion to the attorney for PREPA, Joannely Marrero-Cruz, jmarrero@diazvaz.law; lionel.santa@prepa.pr.gov; and to the Independent Office of Consumer Protection by submittal to Hannia Rivera, hrivera@jrsp.pr.gov. LUMA understands that other participants or stakeholders in this proceeding will be notified as a result of the publicity of the filings in this process. Notwithstanding, LUMA will send a courtesy copy of the filing to the following stakeholders: agalloza@aggpr.com; alberto.cortes@warrendelcaribe.com; aldo@skootel.com; angel.d.rodriguez@outlook.com; antonio@velocicharge.com; apietrantoni@pmalaw.com; azayas@azeng.net; bigwheelcorp@gmail.com; blazquezmalu@gmail.com; brightsunpr@gmail.com; carlosxcedeno@gmail.com; clrivera@caguasexpressway.com; flota@caguasexpressway.com; cnegrette@solrenew.com; CR.Tejera@ddec.pr.gov; dacosta@aggpr.com; daniel.perez@totalenergies.pr; dcordova@group-em.com; direxec@ciapr.org; divine.energy@hotmail.com; ecruz@pmalaw.com; eduardo.pinera@toyota.com; Edwin.Acevedo@ddec.pr.gov; emelyies.torres@toyota.com; epenegypr@gmail.com; erica.cosme@gsonnell.com; Fberrios@peritoselectricistas.org; francisco.berrios@hotmail.com; franciscojrullan@yahoo.com; gerard.berlinski@toyota.com; gerardo\_cosme@solartekpr.net; gperez@solrenew.com; hamely@motorambar.net; ialsina@plazalasamericas.com; idiaz@glenninternational.com; info@carlosmatta.com; jack@pantekpartners.com; jameauxl@aim.com; jan.rodriguez@toyota.com; javrua@sesapr.org; jbouza@caguasexpressway.com; jcardona@aggpr.com; jmartinez@pmalaw.com; jorrodriguez@motorambar.net; jortiz@caguasexpressway.com; jose.maeso@crowley.com; jpibernus@motorambar.com; JSantana@motorambar.com; jtosado@motorambar.net; juan.diaz.galarza@guidehouse.com; jvazquez905@gmail.com; kenan.d.davila@sargentlundy.com; kkoch@tesla.com; l.marcano@aconer.org; lsundeen@tesla.com; luisgmoreno@gmail.com; Marangelly.Cruz@toyota.com; marilyn.maldonado@toyota.com; mlandron@plazaad.com; mpietrantoni@pmalaw.com; nannette.berrios@solpetroleum.com; nmontes@ccmpr.com; nrodriguez@senado.pr.gov;

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*Exhibit 1*

*Customer Outreach Memorandum*



**ELECTRIC VEHICLE CUSTOMER  
OUTREACH MEMORANDUM  
NEPR-MI-2021-00013**

JANUARY 2, 2024

# Customer Outreach Memorandum

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# Customer Outreach Memorandum

## 1.0 Introduction

Since assuming operation of Puerto Rico's electric Transmission and Distribution (T&D) System on June 1, 2021, the nearly 4,500 men and women of LUMA have remained committed every day to building a more reliable, more resilient, more customer-focused, and cleaner energy system the people of Puerto Rico deserve. As part of this commitment, and given its responsibility under the T&D Operation and Maintenance Agreement and the Puerto Rico Energy Bureau (Energy Bureau) directives, LUMA has drafted and modified the Puerto Rico Electric Vehicle Adoption Plan (PR-EVAP). Effective and equitable access to electric vehicles (EVs) is one of the key goals of the PR-EVAP. In accordance with the Energy Bureau's direction, LUMA has engaged with low-income customers and other sectors it represents, to identify customer needs and ensure that the benefits of clean transportation are equally accessible.

### **EV Stakeholder Outreach**

This Customer Outreach Memorandum outlines LUMA's work with local stakeholders and entities to help support EV adoption in Puerto Rico. LUMA has performed extensive outreach, including customer surveys, in-person meetings, and industry and stakeholder collaboration, to determine what customers and stakeholders want and need regarding accessing transportation electrification. LUMA has also developed educational tools on LUMA's website ([lumapr.com](http://lumapr.com)) to inform customers about EVs and the Time of Use Rate (TOU) for EV drivers.

### **Supporting Puerto Rico's Clean Energy Transformation**

As part of its commitment to building a next-generation electric system, LUMA is modernizing the grid to enable sustainable energy transformation, in accordance with Puerto Rico's energy public policy. To meet energy transformation by 2050 and advance smart fuel efficiency across Puerto Rico, LUMA will continue to work with the public and private sectors to support the adoption of EVs in Puerto Rico.

LUMA remains focused on empowering the sustainable transformation that our customers want by supporting the deployment of modern infrastructure to advance the reliability and resiliency of the electric system and enable equitable and accessible use of EVs.

# Customer Outreach Memorandum

## 2.0 Approach

The following sections outline LUMA's recent actions and collaborative efforts as part of its continued commitment to a sustainable clean energy transformation for Puerto Rico. LUMA team members attended numerous community meetings and industry events and performed in-depth research to identify customer needs and determine how LUMA, the Puerto Rico government and stakeholders can support and empower electric vehicle adoption.

### 2.1 Activities and Collaboration

Activity	Objectives
"Electrificación de la Transportación en Puerto Rico" sponsored by the Puerto Rico Public Energy Policy Program (PPPE)	This event convened key government representatives and industry stakeholders to discuss the status of transportation electrification and future efforts to accelerate electric vehicle adoption.
Solar and Energy Storage Association (SESA) 2023 Summit	Distribute educational material about Electric Vehicles.
	Engage with visitors, participants, and stakeholders to provide details on LUMA's commitment to and progress on the EVAP and the EV TOU rate.
Solutions for the Energy Transformation for Puerto Rico (SETPR) Meetings (Ten meetings across the island)	Distribute educational material about electric vehicles and the interim EV TOU rate.
	Engage with visitors, participants, and stakeholders to discuss LUMA's efforts about the EVAP and the interim EV TOU rate.

# Customer Outreach Memorandum

National Infrastructure Vehicle Infrastructure Program (NEVI)	Provide technical support for the installation of a series of electric vehicle chargers using federal funding.
ASORE Annual Convention	Distribute educational material about electric vehicles.
	Engage with convention participants and visitors at the LUMA booth to discuss EV initiatives such as the EV-TOU rate.

## 2.2 Collaborative Efforts

### 2.2.1 EV Market Study with Puerto Rico’s Department of Economic Development and Commerce DDEC

The Puerto Rico Department of Economic Development and Commerce (DDEC) is commissioning an Electric Vehicle market study. This study will provide information related to the availability and affordability of electric vehicles in the coming years. Additionally, it will provide data on the electrical load generated by charging for each vehicle model and its performance. The gathered data will serve as input for accurate forecasts of energy consumption and costs. These forecasts are crucial for various projects, including the planning of capital investments in the electric grid to support the growth of electric vehicles.

The Update on DDEC’s Electric Vehicle Market Study and how it will explore and impact the electrification of transportation on low-income communities is included as **Annex 1**.

### 2.2.2 Outreach with Low-income Community Leaders

LUMA met with the following community leaders who are engaged with low-income communities: 1. Director Autogestión Comunitaria, 2. Oficina para el Desarrollo Socio Económico y Comunitario (ODSEC)-Community Leaders. For this outreach effort, LUMA developed a questionnaire specifically tailored to community leaders to gather feedback and obtain a better understanding of low-income customers’ needs and desires regarding transportation electrification. A summary of comments from these interviews is included as **Annex 2**.

### 2.2.3 Public Transportation

LUMA has initiated discussions with the first transportation company in Puerto Rico to incorporate electric vehicles into its fleet through a grant from the US Department of Energy (DOE). The company recently added 25 electric buses to its fleet and is actively working to expand its electric bus inventory. According to the company’s personnel, their services directly impact low-income communities, given the nature of



# Customer Outreach Memorandum

the customers they serve. LUMA is committed to ongoing dialogues with organizations such as this to provide the necessary support and expedite the adoption of electric vehicles in the public transportation sector.

## 2.3 Surveys

LUMA published an online survey to gather insights into customers' knowledge, awareness, challenges, and opinions regarding electric vehicles and transportation. By analyzing responses related to income levels, LUMA can specifically identify feedback from low-income respondents. The survey is accessible at <https://lumapr.com/vehiculos-electricos/>. Additionally, a Quick Response (QR) Code for this survey has been incorporated into the Electric Vehicle Educational brochure. Customers can find a link to download the brochure in the EV section of the LUMA webpage at lumapr.com.

### J.D Power Survey

LUMA has partnered with J.D. Power and Associates (J.D. Power) to conduct EV customer surveys which include Low-income Customers to better understand EV adoption barriers and market characteristics in Puerto Rico. The key objectives of this survey include the following:

- Measure customers EV ownership and assess where EV owners charge.
- Evaluate customers familiarity with EVs to determine educational needs.
- Capture customers thoughts and concerns on buying and leasing EVs.
- Understand the key factors influencing the likelihood of EV purchases.
- Utilize survey findings to support the development of the PR-EVAP initiatives.

### Survey methodology

The J.D. Power survey utilizes an online methodology via multiple online panels. LUMA has a customer database of 543,682<sup>1</sup> customer email addresses (Residential: 415,349, Commercial: 128,333) as of the end of 2021. J.D. Power operates the customer database provided by LUMA through a query system that selects approximately 100,000 unique residential emails and 10,000 to 11,000 unique business emails. The email selection process occurred each time a survey was conducted to ensure an accurate representation of customers. Current survey results were collected in two periods as shown in Table 2-1.

**Table 2-1 Customer Survey Timeline and Number of Respondents**

Customer Survey Timeline and Number of Respondents		
Time Frame	2022 (Q1 – Q4)	2023 (Q1-Q3)
Total Number of Respondents	4, 269	1,873

<sup>1</sup> (2022, March 24) Motion in Compliance with Resolution and Order of March 11, 2022. NEPR-MI-2021-0013

# Customer Outreach Memorandum

J.D. Power included data integrity controls for the collections of customer surveys which ensures that each response is unique and prevents customers from submitting multiple responses. Therefore, the results are reliable and statistically significant.

## Survey Results

The overall survey results were consistent and broadly align with other national EV consumer surveys conducted by Pew Research Center (2021)<sup>2</sup>, and Plug in America (2022)<sup>3</sup>. Below are the graphs and observations related directly to respondents from the low-income group.

### Question 1

As noted in figure 2-1 below, the survey reflected a small percentage of low-income customers interviewed who possess electric vehicles in Puerto Rico. Only about 1% of the surveyed low-income customers own a fully electric vehicle and about 0.2% own a plug-in hybrid vehicle.

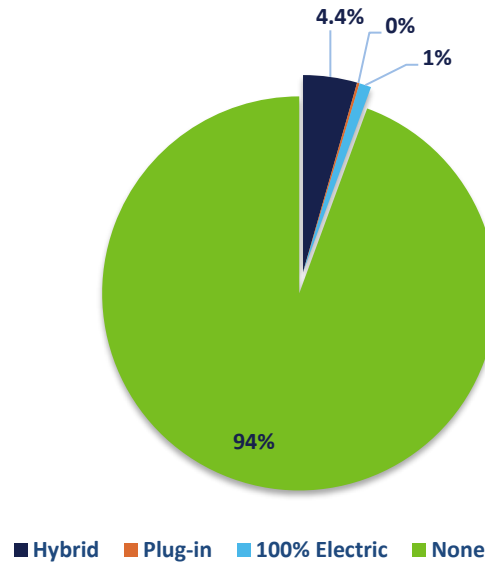
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<sup>2</sup> Spencer, A., & Funk, C. (2021, June 3). *Electric vehicles get mixed reception from American consumers*. Pew Research Center. Retrieved August 3, 2022, from <https://www.pewresearch.org/fact-tank/2021/06/03/electric-vehicles-get-mixed-reception-from-american-consumers/>

<sup>3</sup> (2022, February). *The Expanding EV Market - Observations in a year of growth*. Plug In America. Retrieved from <https://pluginamerica.org/wp-content/uploads/2022/03/2022-PIA-Survey-Report.pdf>

# Customer Outreach Memorandum

Figure 2-1: Low-Income Customers Type of Electric Vehicle Ownership



As shown in table 2-2 below, the survey found that a lower percentage (1% vs 2.9%) of individuals among the low-income community possess a fully electric vehicle when compared to those from the non-low-income group. The gap is larger (0.2% vs 2.3%) when compared to ownership of plug-in hybrid vehicles between low-income and non-low-income respondents.

Table 2-2 How many electric vehicles do you own?

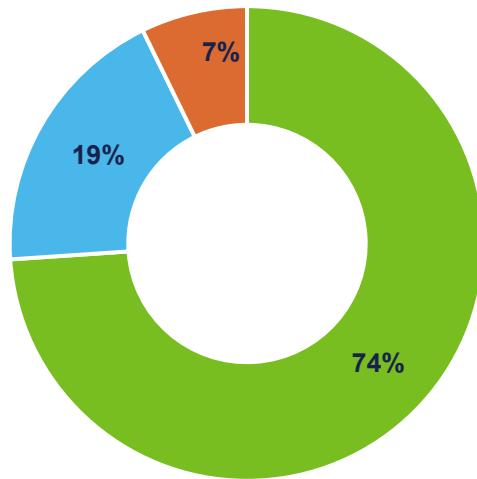
EV Ownership Type	Low-income		Non-Low-Income		Total	
	%	n	%	n	%	n
Hybrid	4.4	64	6.5	155	5.7	219
Plug-in hybrid	0.2	3	2.3	56	1.5	59
100% Electric	1.0	14	2.9	70	2.2	84
None	94.4	1,364	88.3	2,119	90.6	3,483
Total	100.0	1,445	100.0	2,400	100.0	3,845

# Customer Outreach Memorandum

## Question 2

As shown in Figure 2-2 below, regarding the familiarity of electric vehicles among low-income respondents, 74% expressed they have heard about EVs but they do not know much about them.

**Figure 2-2: Low-Income Customer familiarity with EVs**



- I've heard of electric vehicles but don't know much about them
- I have heard of electric vehicles and know quite a bit about them
- I know a lot about electric vehicles

Table 2-3 below shows a significant difference in familiarity (heard of EVs) with EV's between low-income and non-low-income individuals (73.9% vs 51%) however non-low-income respondents reflected a higher percentage about knowledge about EVs (15.1% vs 7.2%).

**Table 2-3 What is your familiarity with Electric Vehicles?**

Familiarity with EVs	Low-income		Non-Low-Income		Total	
	%	n	%	n	%	n
I've heard of electric vehicles but don't know much about them	73.9	1,021	51.0	1,140	59.8	2,161
I have heard of electric vehicles and know quite a bit about them	18.8	260	33.9	758	28.2	1,018
I know a lot about electric vehicles	7.2	100	15.1	337	12.1	437
Total	100.0	1,381	100.0	2,235	100.0	3,616

# Customer Outreach Memorandum

### Question 3

Figure 2-3 below shows that there is low interest in electric vehicles among the low-income customers who responded to the survey. Only 1.7% responded that they are planning to get an electric vehicle as their next vehicle.

**Figure 2-3: What is your interest in purchasing an EV?**

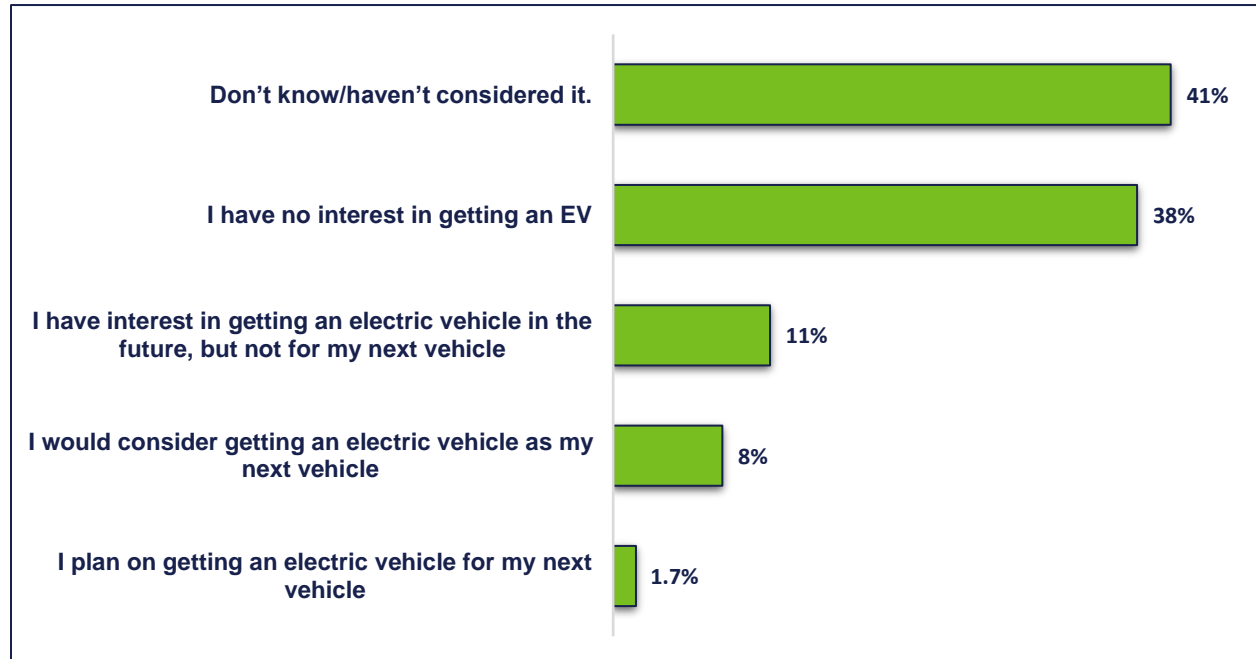


Table 2-4 below shows a lower percentage (1.7% vs 9.9%) of low-income respondents interested in getting an electric vehicle when compared to the respondents of the non-low-income group.

**Table 2-4 Low-income Customers' Interest in EVs**

Interest in EVs	Low-income		Non-Low-Income		Total	
	%	n	%	n	%	n
I plan on getting an electric vehicle for my next vehicle	1.7	23	9.9	221	6.7	244
I would consider getting an electric vehicle as my next vehicle	8.0	110	22.1	493	16.7	603
I have interest in getting an electric vehicle in the future, but not for my next vehicle	11.4	158	20.4	457	17.0	615
I have no interest in getting an EV	38.2	528	25.9	579	30.6	1,107
Don't know/haven't considered it	40.7	562	21.7	485	29.0	1,047
Total	100.0	1,381	100.0	2,235	100.0	3,616

# Customer Outreach Memorandum

## Question 4

Figure 2-4 below shows that the top three main concerns for low-income customers in purchasing an EV were knowledge about EVs (25%), the reliability of the electric system (23%) and the price of the vehicle (19%).

**Figure 2-4:**  
**Which of the following would be a greater concern in your decision to purchase an EV?  
Rank them in order of importance.**

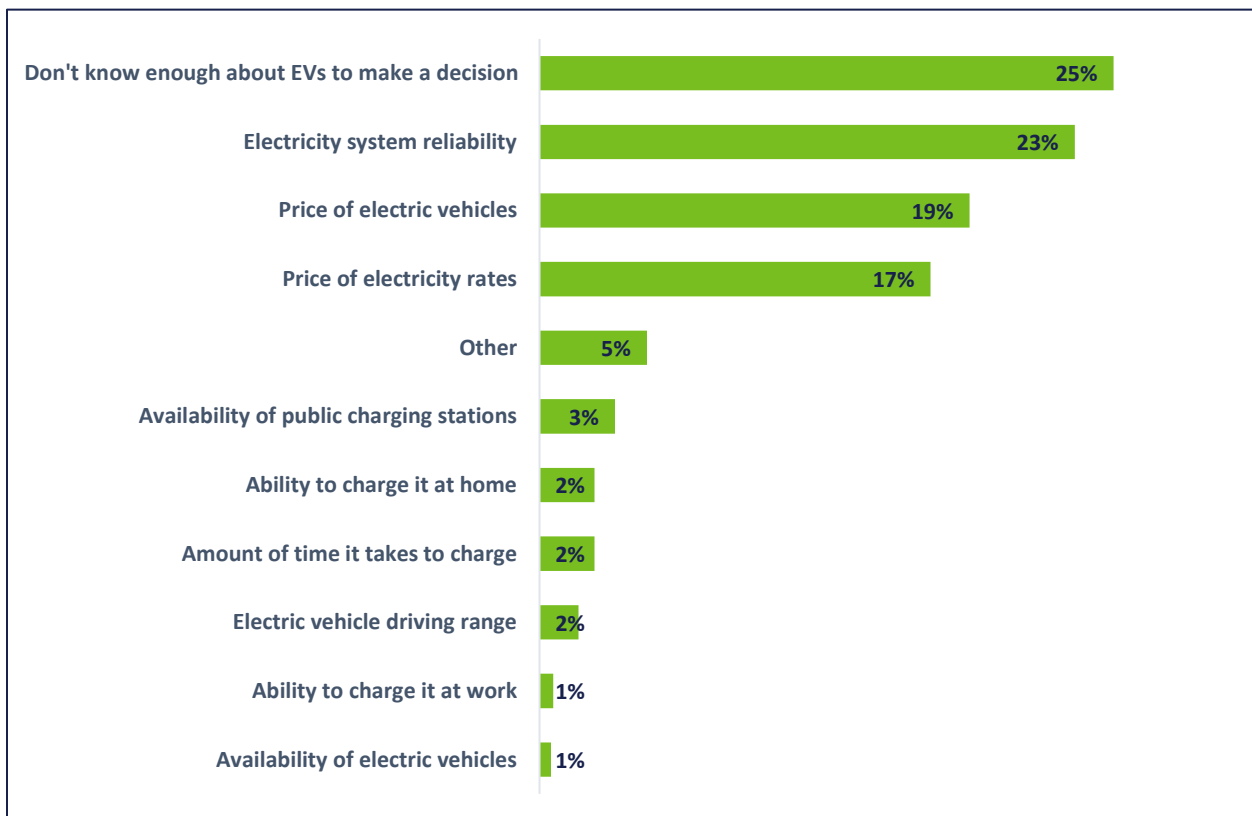


Table 2-5 below shows that there is larger gap between the low income and non-low-income group about their greatest concern where a higher percentage of respondents (25%) did not know much about EVs compared to 13.9% for the non-low-income group.

# Customer Outreach Memorandum

**Table 2-5 Which of the following would be a greater concern in your decision to purchase an EV? Rank them in order of importance.**

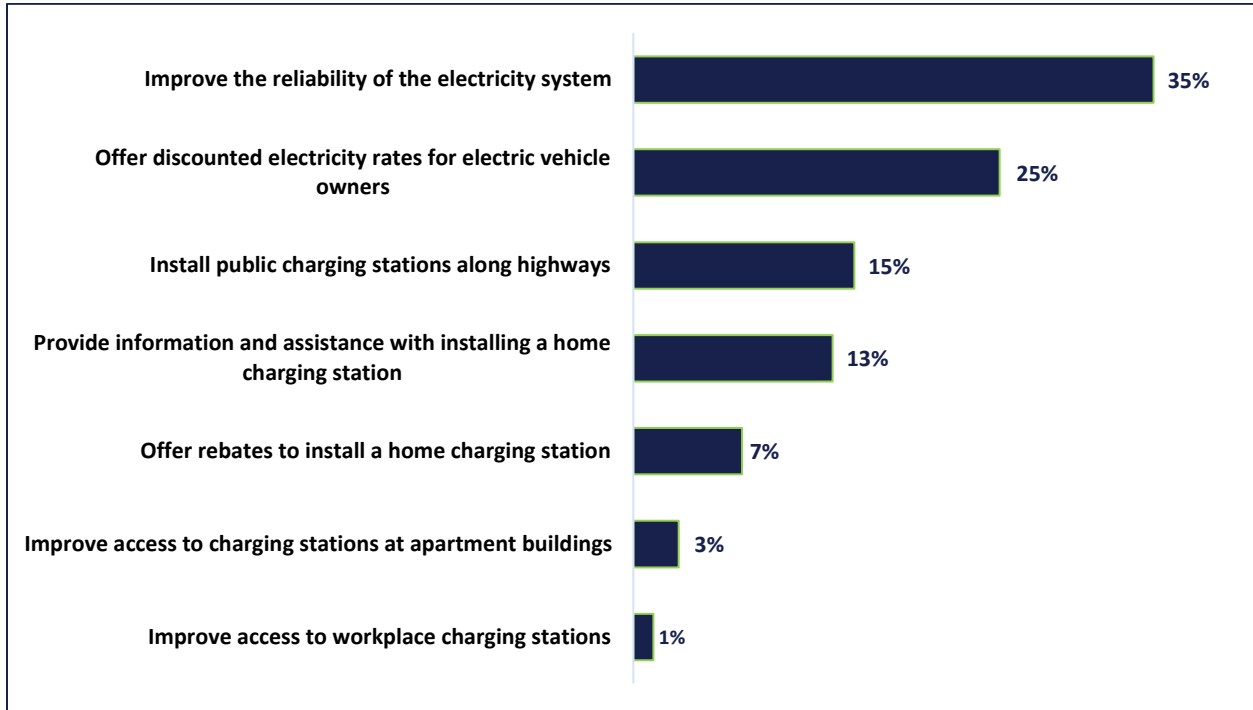
Greatest concern	Low-income		Non-Low-Income		Total	
	%	n	%	n	%	n
Electricity system reliability	23.4	403	26.5	1,175	25.7	1,578
Price of electric vehicles	18.8	323	21.5	953.	20.7	1,276
Price of electricity rates	17.1	294	17.9	794	17.7	1,088
Don't know enough about EVs to make a decision	25.1	432	13.9	618	17.1	1,050
Other	4.7	81	4.8	212.0	4.8	293.0
Availability of public charging stations	3.3	57	5.2	232.0	4.7	289.0
Ability to charge it at home	2.4	42	3.3	148.0	3.1	190.0
Electric vehicle driving range	1.7	29	2.6	113.0	2.3	142.0
Amount of time it takes to charge	2.4	41	2.3	102.0	2.3	143.0
Availability of electric vehicles	0.5	9	1.4	61.0	1.1	70.0
Ability to charge it at work	0.6	10	0.5	23.0	0.5	33.0
Total		1,721		4,431.0		6,152.0

## Question 5

As shown in Figure 2-5 below, the top three single (not ranked) factors that influence the likelihood of purchasing an EV are improving the reliability of the electrical system, discounted electricity rates and the installation of public charging stations.

# Customer Outreach Memorandum

**Figure 2-5:**  
Which of the following would most likely increase your interest in purchasing or leasing an electric vehicle? Single response.



## Customer Outreach Memorandum

As shown in Table 2-6 below, improving the reliability of the electrical system is higher (35%) as a factor in their likelihood of purchasing an EV compared to 28% non-low-income individuals. On the other hand, offering a discounted rate is more important (29% vs 24%) for non-low income respondents than for low-income respondents.

**Table 2-6 Which of the following would most likely increase your interest in purchasing or leasing an electric vehicle? Single response.**

Influencing factors	Low-income		Non-Low-Income		Total	
	%	n	%	n	%	n
Improve the reliability of the electricity system	35.1	598	28.6	788	31.1	1,386
Offer discounted electricity rates for electric vehicle owners	24.7	421	29.1	802	27.4	1,223
Install public charging stations along highways	14.9	254	17.7	489	16.7	743
Provide information and assistance with installing a home charging station	13.5	229	8.4	231	10.3	460
Offer rebates to install a home charging station	7.3	125	8.9	246	8.3	371
Improve access to charging stations at apartment buildings	3.1	52	5.8	159	4.7	211
Improve access to workplace charging stations	1.4	23	1.5	41	1.4	64
Total	100.0	1,702	100.0	2,756	100.0	4,458

## 3.0 Findings and Recommendations

1. Findings validate the need for education.
2. During the interviews with the community leaders, some responded that their communities have competing priorities such as conventional public transportation accessibility, housing, food, and health needs. According to one of the respondents, “these types of needs are more pressing when dealing with the elderly community where some of them live on a \$200 monthly paycheck.” Transportation electrification appears to be a low priority for the Low-Income community at this moment. Another community leader, interviewed during the consultation, expressed that some of these communities face difficulties or lack of access to a reliable and adequate conventional transportation system to fulfill their daily needs. Some of the responses reveal that part of the low-income community may be indifferent to whether the transportation is conventional or electric and the main priority is having an appropriate means of public transportation. Issues such as reliability or accessibility in the public transportation system as expressed by the low-income community leaders may need to be addressed prior to or while transitioning to the electrification of the transportation system.
3. Based on the feedback provided in both the interviews with community leaders and the JD Power survey future studies should focus on identifying the appropriate timing of adequate economic incentives for the low-income community to facilitate the purchase of an electric vehicle. This recommendation is supported by the conclusions discussed by Bauer et al (2021)<sup>4</sup> where it was stated that purchase incentives targeting the low-income group may be most effective to be implemented when EVs become part of the mainstream.
4. As proposed by LeBlanc<sup>5</sup>, the building of charging infrastructure for low-income communities shall be monitored based on the evolution of the EV market to ensure it is available when the time is appropriate. Any future study on incentives might provide direction on the appropriate timing for the installation of chargers accessible to low-income communities.

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<sup>4</sup> Bauer G., Hsu C., Lutsey N. (2021) When might lower-income drivers benefit from electric vehicles? Retrieved on 12/19/2023 from <https://theicct.org/publication/when-might-lower-income-drivers-benefit-from-electric-vehicles-quantifying-the-economic-equity-implications-of-electric-vehicle-adoption/>

<sup>5</sup> <https://www.esource.com/001211s20I/can-low-income-consumers-benefit-evs-yes-maybe-not-traditional-way> retrieved on December 27<sup>th</sup>, 2023

DEPARTMENT OF ECONOMIC  
**DEVELOPMENT**  
AND COMMERCE

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**Department of Economic Development and  
Commerce (DDEC) Update on the Electric  
Vehicle Infrastructure Market Study**

January 2, 2024  
NEPR-MI-2021-0013



# DDEC Electric Vehicle (EV) Infrastructure Market Study Update

G In progress
 Y Pending action
 R Critical action required
 C Complete

## Key Activity Summary

- GDS Associates, Inc was selected contracted to render professional services to support and collaborate with the Energy Public Policy Program (EPPP).
- Are the below items part of the design and timetable? If this is agreed-upon scope, then say so.
- The Electric Vehicle Market Study will explore Public Transportation - Mobility, and EV Adoption in Low-income Communities.
- The Study will evaluate Puerto Rico’s Public Transportation System and its ability to meet the transportation needs of low-income communities. Physical and cultural factors will be analyzed and convenience, reliability, accessibility, safety, comfort, and diversity of routes.
- The Study will also cover EV/Plug-in Hybrid Electric Vehicle (PHEV) adoption to meet the transportation needs of low-income communities.
  - Assessment of interest in EV car-sharing program
  - Assessment of affordability of shared mobility options from community scale up to large scale, under a region-wide focus.
- The Study will assess present and future tax impacts on EV/PHEV sales and evaluate existing policy recommendations that enhance the utilization of EV/PHEVs on a large scale for low and middle-income communities (e.g., expanded bus routes, addition of smaller vehicles to expand bus routes and stops, building codes and EV/PHEV chargers at multifamily units).

Key Milestones	Date	Status
Finalizing Consulting firm contract.*	October 2023	C
Developing market study design and timetable.	December 2023	G
RFP published and vendor evaluation	January – February 2024	Y
Market study kickoff (phase 1)	March 2024	Y
Market study mid-term report (phase 2)	TBD	TBD
Market study close-out (phase 3)	TBD	TBD
Market study final report and results (including publication) – (phase 4)	TBD	TBD

## Risks / Issues:

- Timeline delays due to vendor evaluation.
- GDS Associates, Inc. (consulting firm) will generate proposals, among other tasks.

# Electric Vehicles: Community Leaders' Insights

This document presents the results of interviews conducted with community leaders in various locations, including Caguas, Corozal, San Juan, and Naguabo, to explore and understand their opinions and perspectives on the electrification of transportation. In total six interviews were conducted. The interviews focused on various aspects, from the perception of electric vehicles to the obstacles and possible solutions to promote the adoption of this technology in their communities. The results provide valuable information that can be used to inform strategies and decisions related to the implementation of electric vehicles in community settings in Puerto Rico.

## 1.0 Awareness of the Benefits of Transportation Electrification

Out of the six (6) interviewees, five (5) indicated that the level of awareness of the benefits of transportation electrification is poor in their communities.

## 2.0 Presence of Electric Vehicles in the Community

Two (2) of the interviewees have seen from one (1) to three (3) electric vehicles in their community.

## 3.0 Community Support for the Transition to Electric Vehicles

One of the interviewees indicated that within their community, there is general support for the transition to electric vehicles. The others mentioned that they have never discussed the topic with their community.

## 4.0 Opinion on the Benefits of Electric Vehicles

Only one of the interviewees indicated that they do not consider electric vehicles a feasible and beneficial option for their communities.

## 5.0 Community Concerns

Major obstacles or concerns faced by communities in adopting electric vehicles include:

- Cost of electric vehicles
- Cost of electric rates
- Lack of charging infrastructure
- Lack of information about electric vehicles
- Reliability of the electrical system

## Community Leaders' Insights

Additional comments from the interviewees on this question included:

- "The community is not prepared for this change; the infrastructure in communities is not suitable, and the service with LUMA is not the most appropriate at the moment."<sup>1</sup>
- "There is a situation that could worsen the ownership of EVs. The electricity fluctuations that can damage equipment or power outages that could damage the vehicle or not have the necessary energy charge to establish the electrical system. Who would pay for those vehicles then?"<sup>2</sup>
- "We need to work on citizen education and the generational gap."<sup>3</sup>

### 6.0 Existing Initiatives Within Communities

Currently, there are no initiatives or programs to promote electric transportation in any of the interviewed communities.

### 7.0 Communities Emphasize the Importance of Education

Community leaders indicated that in order to promote the adoption of electric vehicles in their community, there needs to be more education for the people about the benefits of electric vehicles. They must engage in the topic and convey the message to their communities. At present, it is not a priority for them. Some of the responses were:

- "It has to be a relevant topic for the community. The community must feel the need to switch to electric vehicles to engage in that topic. No community has expressed interest in the topic so far."<sup>4</sup>
- "The first thing is that I believe we need to convene community leadership for workshops or meetings to explain the benefit and scope of having an electric vehicle and having a solid infrastructure that conveys a message of credibility to residents that acquiring a vehicle will not have the problem of energy distribution, and it will always be available. If we don't have that, the process to transition will be difficult. Community leadership is what builds the country up, as we could experience in the aftermath of Hurricane Maria. But if community leadership is not informed

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<sup>1</sup> "La comunidad no está preparada para ese cambio, la infraestructura en las comunidades no está apta y el servicio con LUMA no es el más adecuado en estos momentos." Original response in Spanish provided for clarity and reference.

<sup>2</sup> "Hay una situación que pudiese agravar a que la gente posee EV. Las fluctuaciones de electricidad que hay que puede dañar equipos o bajas que pudieran dañar el vehículo o no tener la carga energética necesaria para establecer el sistema eléctrico. ¿Y luego quien pagaría por esos vehículos?" Original response in Spanish provided for clarity and reference.

<sup>3</sup> "Hay que trabajar con la educación al ciudadano y la brecha generacional". Original response in Spanish provided for clarity and reference.

<sup>4</sup> "Tiene que ser un tema relevante para la comunidad. La comunidad debe sentir la necesidad de cambiar a vehículos eléctricos para insertarse en ese tema. Ninguna comunidad al momento ha expresado interés en el tema." Original response in Spanish provided for clarity and reference.

## Community Leaders' Insights

about the topic, it will be difficult to be a spokesperson and ally of LUMA in conveying that message."<sup>5</sup>

### 8.0 Effective Actions According to Community Opinion

Among the actions considered most effective in promoting transportation electrification are citizen education and the offering of incentives. Some responses were:

- "Mass education, lower costs of electric vehicles, and integration of public transport. Incentives at the municipal, state, and federal levels, a combination of all. This is how I see reaching low-income communities."<sup>6</sup>
- "There should be a kind of summit of community leaders like the Alliance of Community Leaders, which brings together 750 leaders throughout Puerto Rico. We definitely need to have a kind of workshop or seminar in the morning or on a day where people with knowledge explain to us the advantages and disadvantages of having this type of service and especially in low-income communities. The population is skeptical about everything related to essential services, and community leaders can bring trust because they have already taken a workshop or seminar and can explain in detail the advantages and disadvantages of having this type of alternative. Because the community's trust lies with the community leader."<sup>7</sup>

### 9.0 Concerns About Infrastructure

Regarding concerns about charging infrastructure in communities, interviewees indicated that the electrical system is not appropriate and not solid at the moment.

- "One issue is the need to replace poles because, understandably, with a somewhat, if not significantly, deteriorated infrastructure, introducing an additional service to that infrastructure raises concerns. Without a solid infrastructure in place, I remain highly skeptical of this type of offer. I see poles that are tilted, wooden poles that are falling, and when you see the infrastructure so weak and you are going to indicate to people the advantages of this type of alternative, the

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<sup>5</sup> "Lo primero es que yo creo que hay que convocar el liderato comunitario unos talleres o reuniones donde se explique el beneficio y alcance de tener un vehículo eléctrico y tener una infraestructura solida que lleve un mensaje de credibilidad a los residentes que adquirir un vehículo no tendrán el problema de distribución de energía y que la misma siempre va a estar disponible. Si no tenemos eso se dificulta el proceso. El liderato comunitario es quien saca a flote al país y se vio en Huracán María. Pero si el líder comunitario no está empapado del tema se dificultará que sea un portavoz y un aliado de LUMA en llevar ese mensaje." Original response in Spanish provided for clarity and reference.

<sup>6</sup> "Educación masiva, costos de los vehículos eléctricos más bajos y que se integre el transporte colectivo. Incentivos tanto municipales, estatales y federales, una combinación de todos. Así veo que se pueda llegar a las comunidades de bajos ingresos." Original response in Spanish provided for clarity and reference.

<sup>7</sup> "Debe haber una especie de cumbre de liderato comunitario como la Alianza de Líderes Comunitarios que agrupa 750 lideres en todo Puerto Rico. Definitivamente hay que hacer una especie de taller o seminario en una mañana o de un día donde personas que tengan conocimiento nos expliquen bien las ventajas y desventajas tener este tipo de servicio y sobre todo en comunidades de escasos recursos. La población tiene un escepticismo a todo lo que tiene que ver son servicios esenciales y somos los líderes comunitarios los que podemos llevarle la confianza porque ya hemos tomado un taller o un seminario y podemos explicar en arroz y habichuelas las ventajas y desventajas de tener este tipo de alternativa. Porque la confianza la tiene un líder comunitario." Original response in Spanish provided for clarity and reference.

## Community Leaders' Insights

first thing they will say is how is this going to be done if we have 30 to 40 poles in the community that need to be changed. Without a solid infrastructure, there will always be skepticism."<sup>8</sup>

- "Electrical redistribution so that it does not affect the service during peak usage hours."<sup>9</sup>

### 10.0 Government Support

Interviewees agreed that the way the government can help in this transition is by offering incentives to low-income individuals, education, and accessible costs to make it more appealing to the community. Some responses were:

- "There should be people who want to do this, but there must be an economic incentive. It is assumed that those who have the means can acquire such vehicles, but sometimes it is overlooked that, for instance, in my community, people used to consider solar panels as something only the wealthy could afford. Now, they have solar panels in my community due to numerous issues with the electricity supply. So, vouchers can be given so that others, after those incentives run out, can see that it is functional. When a community sees that something is functional, they will trust the system more. It happened to me with LUMA because I had to acquire an alternative energy system due to a health condition. When people in the neighborhood saw my house lit up, they started asking me how I had light. And then some who had their savings started asking me how I had light. It was at that moment that people started buying it. A lady told me that she wanted it for tomorrow and that money didn't matter; she had it. Sometimes some people have economic resources, but until they need them, they don't spend them because there is skepticism about why they would need electric vehicles."<sup>10</sup>
- "Education, incentives, and affordable costs for electric vehicles so that more people acquire electric vehicles. Work on the technology gap, especially for the elderly population. Work on a plan to present the program as a necessity for these communities."<sup>11</sup>

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<sup>8</sup> "Una situación es postes que hay que cambiar porque obviamente si tenemos una infraestructura un poco, por no decir bastante deteriorada, y le vamos a añadir un servicio a esa infraestructura adicional ahora, mientras yo no veo una infraestructura solida pues seré muy suspicaz de este tipo de ofrecimiento. Veo postes que están virados, postes de madera que se están cayendo y cuando ves la infraestructura tan débil y le vas a indicar a las personas las ventajas de este tipo de alternativa lo primero que dirán es que como se va a hacer esto si tenemos en la comunidad 30 a 40 postes que hay cambiar. Sin una infraestructura solida siempre habrá escepticismo." Original response in Spanish provided for clarity and reference.

<sup>9</sup> "Redistribución eléctrica para que no afecte el servicio en la hora de uso pico." Original response in Spanish provided for clarity and reference.

<sup>10</sup> "Debería haber gente que quiera hacer esto, pero debe haber un incentivo económico. Se parte de la premisa que el que tiene chavo es quien puede adquirir este tipo de vehículo, pero a veces se olvida que por ejemplo en mi comunidad, lo que son las placas solares y ahora ellos en mi comunidad tienen placas solares porque tienen muchos problemas con la luz. Así que se puede hacer unos "vouchers" que se den para que otros luego que se acaben esos incentivos, puedan ver que es funcional. Cuando una comunidad ve que algo es funcional confían más en el sistema. Me sucedió con Luma, pues tuve que por una condición de salud adquirir un sistema alterno de energía. Cuando la gente del barrio vio mi casa alumbrada empezaron a preguntarme como tenía luz. Y entonces algunos que tenían sus ahorros empezaron a preguntarme como tenía luz. Fue en ese momento que la gente empezó a adquirirlo. Una señora me dijo que lo quería para mañana y que el dinero no importaba que lo tenía. A veces algunas personas tienen recursos económicos, pero hasta que no los necesitan no lo gastan porque existe el escepticismo de porque habría que tener vehículos eléctricos." Original response in Spanish provided for clarity and reference.

<sup>11</sup> "Educación, incentivos y costos accesibles de VE para que más personas adquieran vehículos eléctricos. Trabajar con la brecha en tecnología en especial para la población de adultos mayores. Trabajar en un plan para presentar el programa como una necesidad para estas comunidades. Original response in Spanish provided for clarity and reference.

## 11.0 LUMA's Role

Interviewees indicate that the way LUMA can support the transition to electric vehicles in their communities is by lowering the cost of tariffs. Some responses from interviewees:

- "Lowering the cost of electricity. Currently, the priorities of the communities with relation to LUMA are to fix streetlights or constant blackouts. It is important to know the viability of having an electric vehicle against the cost of the vehicle, which is very high at the moment. I don't see that a 'click' has been made with the low-income population on this issue. I can observe that in communities of medium and high income, there are people with EVs since they have accessibility to resources that low-income communities do not have."<sup>12</sup>
- "They don't prune trees to protect the wiring. I understand they should lower tariffs for the subscriber."<sup>13</sup>

## 12.0 Consensus on Subsidies

All interviewees agreed that there should be subsidies or incentives to encourage people to consider the adoption of an electric vehicle. Some of the suggestions expressed by the interviewees were:

- "Exemption from taxes paid for a vehicle, incentives for a lower cost of the vehicle."<sup>14</sup>
- "To make it attractive for low-income people, there must be incentives that lower the cost of the EV and education to the population to bridge the technological gap, especially for the elderly who know less about the subject."<sup>15</sup>
- "Anything that reduces the electricity bill. Financial support to buy the vehicle, grants. It has to be something attractive and cannot compete with food or medicine expenses. These people will not buy an electric vehicle if it represents an additional expense that affects their limited income."<sup>16</sup>

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<sup>12</sup> "Bajando el costo de electricidad. Al momento las prioridades de las comunidades con relación a LUMA son para que se le arregle el foco de la calle o los apagones constantes. Es importante saber la viabilidad de tener un vehículo eléctrico contra el costo del vehículo el cual es muy elevado en estos momentos. No veo que se haya hecho un "click" con la población de bajos ingresos sobre este tema. Si puedo observar que en comunidades de medianos y altos ingresos hay personas con VE, ya que estos cuentan con accesibilidad de recursos que no tienen las comunidades de bajos ingresos." Original response in Spanish provided for clarity and reference.

<sup>13</sup> "No podan árboles para cuidar el tendido. Entiendo deben bajar las tarifas al abonado." Original response in Spanish provided for clarity and reference.

<sup>14</sup> "La exención de los arbitrios que se pagan por un vehículo, incentivos de un costo menor del vehículo." Original response in Spanish provided for clarity and reference.

<sup>15</sup> "Para que sea atractivo para personas de bajos ingresos debe haber incentivos que bajen el costo del VE y educación a la población para romper la brecha tecnológica en especial a las personas de edad avanzada la cuales conocen menos sobre el tema." Original response in Spanish provided for clarity and reference.

<sup>16</sup> "Todo lo que reduzca la factura de luz. Apoyo financiero para comprar el vehículo, subvenciones. Tiene que ser algo atractivo y no puede pelear con el plato de comida o medicinas, estas personas no van a comparar un vehículo eléctrico si esto representa un gasto adicional que afecte sus ingresos limitados." Original response in Spanish provided for clarity and reference.