

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

**IN RE: Despliegue de Infraestructura de
Cargadores para Vehículos Eléctricos**

CASE NO. NEPR-MI-2021-0013

**SUBJECT: Comments on electric
vehicle deployment**

Dear President Aviles and Commissioners of the Puerto Rico Energy Bureau:

CAMBIO PR appreciates the opportunity to provide comments on electric vehicle deployment in Puerto Rico. We appreciate that the Bureau is starting to plan for the widescale deployment of electric vehicles, which would significantly increase electricity demand in Puerto Rico and which requires forethought and planning for the necessary infrastructure upgrades.

First, we note that the CO₂ emissions benefit of converting to electric vehicles will become increasingly significant as Puerto Rico's electrical grid is decarbonized. We estimate that switching from a gasoline vehicle to a comparable electric vehicle today in Puerto Rico would result in a reduction in CO₂ emissions per mile of between 20-33%, depending on which of PREPA's units are the marginal generator.¹ However, Puerto Rico should avoid the situation where EV deployment increases demand for fossil fuel-based generation. It is thus essential that deployment of electric vehicles go hand in hand with the accelerated deployment of renewable energy on the grid. Under scenarios of much higher renewable energy deployment, in which electric vehicle charging can avoid curtailment of solar generation, the emissions reduction benefit of electric vehicles will be much higher.

Aggressive deployment of electric vehicles in Puerto Rico, in line with the targets set by the states of New York and California of eliminating sales of gasoline-powered vehicles by 2035, would result in a significant increase in electricity consumption. We estimate that if electric vehicle sales ramp up to 100% of new vehicle sales by 2035, this would result in an increase in annual electricity

¹ This is based on comparisons between a Nissan Sentra vs. Leaf and Chevrolet Trailblazer vs. Bolt, and assuming that the marginal unit on PREPA's system has an emissions rate between 1200 and 1500 lb/MWh and that total losses in PREPA's system are 15%.

consumption of approximately 2,500 GWh, or about 15% higher than FY 2021 sales.²

This increase in consumption makes it all the more urgent to develop energy efficiency and renewable energy resources. As the Bureau is well aware, energy efficiency is the least expensive system resource and to the extent that this increase in load can be served through efficiency, minimizing the need to invest in physical generation infrastructure, all ratepayers will be better off. Additionally, meeting the island's renewable energy target of 60% by 2040 will require greater investment in renewable energy than would otherwise be the case without electric vehicles. And CAMBIO has presented to the Bureau modeling demonstrating that Puerto Rico could achieve a more ambitious target of 75% by 2035 through investment in distributed rooftop solar and storage.

The extent to which additional grid storage infrastructure will also be required will depend on the extent to which electric vehicle owners can be incentivized via time-of-use pricing to charge their vehicles during the day, during the time of peak solar resource, rather than relying on night-time charging.

The distribution system planning required for integration of higher levels of distributed renewable energy must also consider the integration of electric vehicle charging, as well as evaluating the feasibility of solar-based residential charging stations not connected to the grid. A comprehensive analysis of distribution feeders should be undertaken in order to understand which feeders will likely need to be upgraded to accommodate some level of nighttime residential EV charging, and where non-residential charging stations should be located to minimize the need for grid upgrades.

Over the coming months, CAMBIO looks forward to working with stakeholders on these questions to ensure that the necessary rapid deployment of electric vehicles in Puerto Rico is done in a way that supports Puerto Rico's overall transition to a renewable energy-based, decentralized grid.

Sincerely,

Ingrid M. Vila-Biaggi
President / Co-Founder

Cathy Kunkel
Energy Program Manager

² Calculations based on recent data on annual vehicle sales, annual car survival rates, and an assumed trajectory of increasing electric vehicle sales to reach 100% by 2035. We assume an average efficiency of electric vehicles of 30 kWh per 100 mi (based on the Tesla Model Y) and annual vehicle miles traveled in Puerto Rico of 14,000 miles.

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