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Potential Impacts of EV Policies on Puerto Ricans in Connecticut, 2024

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About this Report

On January 11, 2024, Connecticut's Governor Ned Lamont announced that the Department of Transportation was awarding the Connecticut Department of Energy and Environmental Protection with a $14.6 million grant through its Charging and Fueling Infrastructure Grant Program to expand Connecticut's network of electric vehicle (EV) charging stations. In addition, there has been an active discussion about increasing state funding to expand the state's electric vehicle infrastructure in the state and phasing out the sale of gas cars in Connecticut by 2035. This policy brief examines some of the potential challenges and benefits of these laws and policies on the Puerto Rican residents of Connecticut.

Despite last year's (2023) federal tax credits and other initiatives aimed at bolstering electric vehicle (EV) purchases, it is evident that in 2024 EVs will remain a relatively niche product category. With the lack of large-scale public or private infrastructure, the market niche naturally formed around suburban or rural homeowners, who purchase EV as a second vehicle or who drive limited distances each day. The federal tax benefit EV purchases in 2023 was most beneficial to buyers that would have overall federal tax burden higher than $7500.

Naturally it means, that under current circumstances these vehicles prove impractical for renters and others residing in urban cores. Furthermore, even certain homeowners with condos, coops, or mobile homes in trailer parks might find EVs unsuitable due to permission restrictions on modifications of certain types of property regulated by Homeowners Associations (HOA) and other entities. These and other issues possibly make long-term cost of EV ownership, for anyone who is not an owner of detached single family home prohibitive. This predicament also extends to Puerto Ricans in Connecticut, particularly those residing in urban areas and renting homes. **To be sure, the Puerto Rican population of Connecticut is more likely to rent (58%), with a typical rent burden of 55% of their salary. The purchase and ownership of electronic vehicles is generally out of reach for the average Puerto Rican residing in Connecticut. However, a smaller number of Puerto Rican homeowners (33%) capable of safely charging their vehicles at home could benefit from EV promotion and expansion programs even under current circumstances.**

Connecticut, with its modest EV adoption rate below 4% (exact numbers are not publicly available), significantly lags behind neighboring states such as Vermont (8%) and Massachusetts (11%)[1]. The cause of this sluggish adoption in Connecticut remains elusive, whether tied to structural

[1] Dan Mihalascu, California Tops US EV Adoption: 25% EV Share of Total Sales In H1 2023, *Inside EVs,* Available at: https://insideevs.com/news/688779/california-tops-us-ev-adoption-25-percent-share-total-sales-h1-2023/

impediments or consumer sentiment. However, charting a path forward necessitates addressing structural barriers before trying to change wider consumer sentiments.

This policy brief identifies a trifecta of structural challenges associated with EV adoption, encapsulated by three interdependent components that demand simultaneous attention for substantial policy outcomes. These interdependent components are infrastructure, battery technology, and affordability, collectively referred to as IBA. This policy brief also provides possible policy solutions for each component of the trifecta.

Charging Infrastructure Challenges

Presently, the state grapples with a critical deficit in charging infrastructure, rendering the sustained or promoted adoption of electric vehicles untenable. Even if the State reaches 20% adoption rate of EV's, current infrastructure will not be able to handle it. Connecticut's current EV adoption rate of about below 4% is significantly lower than the national average of 8%. Comparatively states like California or Washington, where public sentiment and infrastructure align more favorably, boast an EV adoption rate of around 25% and 18% respectively as of 2023.[2]

Across cities, suburbs, and rural areas, a shortage of chargers persists, both in quantity and quality. Currently there are two major types of chargers available for commercial installation. So called level 2 32 to 48-amp chargers, that use electrical wiring similar to an electrical residential dryer or oven, and direct current (DC) fast chargers such as Tesla Superchargers that have electrical loads ranging between 100 and 500 amps. Three major differences exist that are related to cost, speed of charging, and infrastructure requirements. Level 2 chargers cost varies between $3,000 to $8,000, making these a relatively affordable solution. They also do not require special wiring different than what is required for any large household appliance. The real issue with these chargers is a slow rate of charging of about 6 to 8 hours from 0 to full depending on the type of vehicle.

[2] Dan Mihalascu, California Tops US EV Adoption: 25% EV Share of Total Sales In H1 2023, *Inside EVs,* Available at: https://insideevs.com/news/688779/california-tops-us-ev-adoption-25-percent-share-total-sales-h1-2023/

Direct Current (DC) fast chargers, including Tesla Superchargers are 10 times more expensive, with installation costs that might surpass $100,000 per charger. These chargers also require significant upgrades to the surrounding electrical grid infrastructure, which is not prepared to handle the high loads of superchargers. A major upside of superchargers is that it takes up to 40 minutes to charge most EVs from 0% to 80%. Given its infrastructure challenges, the Connecticut grid under ISO New England is presently ill-prepared to handle such high loads, especially during extreme weather events. More importantly during such extreme weather events (cold snaps or heat waves), adding supercharges to the grid could risk rolling blackouts.

Excluding grid load concerns, public charging expansion is viable in rural and suburban areas with ample stationary parking spaces. However, in high-density urban areas where parking is scarce, dedicating spaces to EVs may be a challenge and face local opposition. **Given that the majority of Puerto Ricans in Connecticut reside in urban areas, prioritizing charger saturation in cities becomes imperative, with that in mind DC fast charging might not be the best or only solution.**

Charging Infrastructure Policy Recommendations

Addressing these challenges requires a decentralized and nimble approach. A centralized public use charger installation, though effective, is costly, time-consuming, and ripe for waste. If the state decides to move in this direction now, it should consider a hybrid strategy that prioritizes a direct benefit to renters and urban populations, which could address infrastructure challenges.

If the State of Connecticut decides to invest in an EV charging infrastructure, it should allocate inflation-adjusted funding incrementally over the years to create a public supercharging DC infrastructure that could eventually cover the entire state. Simultaneously, the existing Eversource and UI home charging rebate program should be increased by adding direct grants/rebates to landlords, covering expenses beyond existing levels. These subsidies would facilitate the installation of 34–48-

amp chargers with monitoring devices, including wiring, electrical service upgrades, and permits. Landlords with qualifying properties should be allowed to install **chargers equal to the number of legal units and designated parking spaces,** each connected to the respective unit's electric meter. The General Assembly should also pass legislative changes that would compel qualifying landlords to install chargers upon tenant request, with any opposition mitigated by state and utility coverage of **all** costs.

Each charger must be connected to each unit's electrical meter so that a tenant who is using it would receive home charging benefits provided by utilities. Given that installation of residential chargers like this takes about 6 to 8 hours per charger on average, the roll-out of the program can be timely to see the results of it in the short term. It is important to note that using electricity charge an EV could result in doubling electricity costs for consumers who do not have solar energy infrastructure (including batteries) to offset the added consumption of electricity. However, this expense would be offset by the lower maintenance costs of electric vehicles, including the elimination of gasoline consumption.

Another legislative change should be added that would forbid HOA's in the state declining EV charger installation on any grounds other than site's technical restrictions, that are documented by licensed electrician. The burden of proof in this case lies with HOA to demonstrate why installation of a charger is not possible.

Enabling landlords to provide charging stations presents a cost-effective and expeditious strategy to establish a flexible and convenient EV infrastructure catering to both renters and homeowners. It is worth noting that the state of New York is already providing similar rebates for homeowners for up to $5,000 per charger, additional guidelines can be attained from the state program metrics and expenditures. The estimated state subsidy cost in Connecticut, in addition to existing incentives, ranges from $2,281,798,500 to $4,563,597,000, excluding administrative expenses. Separate

calculations are required for the expansion of public charging infrastructure, as costs vary based on factors such as location, existing grid capabilities, and contracted vendors.

Electric Vehicle Battery Technology

Since the inception of modern electric-powered vehicles, battery technology has become cheaper and more efficient. However, as of 2024, the average range of an electric vehicle (EV) on a full charge is still lower than a comparable gas vehicle tank capacity. Technological limitations of these vehicles contribute to a negative consumer sentiment colloquially known as range anxiety. This anxiety reflects concerns among EV drivers and potential adopters about running out of charge on longer trips without an available charger or facing extended charging times of 30 minutes to an hour, significantly impacting their travel plans.

Even the fastest-charging vehicles, predominantly produced by Tesla, take between 15 to 30 minutes to charge from 0% to 80%. The most affordable EV (after federal incentives), the Chevrolet Bolt, requires up to an hour for the same level of charge. While the infrastructure solution described earlier alleviates concerns about regular charging locations, it does not fully address the issue without a widespread rollout of Direct Current (DC) chargers. Unfortunately, there is no immediate policy solution to completely solve this challenge. Nevertheless, certain steps can be taken to mitigate the issue and reduce negative public sentiments associated with range anxiety.

Electric Vehicle Battery Technology Policy Recommendations

The first obvious solution involves expanding EV vehicle infrastructure, particularly the installation of public use chargers. Priority for these chargers should be given to park-and-ride parking areas across the state, large public venues, and major highways and throwaways with at least one charger bloc (four chargers in one spot) every for 40 miles where none currently exists. The most cost-effective way to achieve it is to enter state private partnership, where state provides land and basic

infrastructure upgrades, and private companies install and maintain the chargers. Additional chargers should be strategically placed based on population density. This strategic placement could alleviate range anxiety, assuring users that they can charge their vehicles conveniently while travelling throughout the state.

To address range anxiety on a larger scale, the State of Connecticut, in collaboration with major EV manufacturers, should initiate a public awareness campaign. This campaign would promote EVs as cost-effective in-state commuter and city vehicles, ideal for short-range travel, particularly suited for those working in ride sharing. This approach could potentially create an image of modern EVs as a niche product that, with increased availability of home charging, could be expanded to a broader segment of Connecticut's residents, especially in urban areas. The messaging should focus on the incredible convenience of charging at home versus needing to go to a set place (gas station/charging station) to fuel your vehicle. A good analogy could be made with a cell phone where most users charge them at home but sometimes must charge them in public places. In essence EV is the same electronic device but with bigger battery, and different purpose.

We suspect that most Puerto Ricans wage earners commute within Connecticut, rarely exceeding 50 miles of travel. Modern EVs should provide sufficient range for daily commuting. This program might entice commuters who already use park-and-ride services with gas-powered vehicles. Bridging this awareness gap requires an effective public outreach campaign. The exact cost of such a campaign is challenging to estimate at this stage, contingent on vendor selection, administrative costs, and partnerships with EV manufacturers.

Electric Vehicle Affordability

A final component of the IBA trifecta is affordability, encompassing not just the cost of the vehicle itself but also the affordability of charging and the overall tax burden. **Each of these factors will be discussed separately, but all three collectively pose significant barriers to EV ownership,**

especially for Puerto Ricans. Available data suggests that only 67% of the Puerto Rican population of Connecticut is in the labor force, and the median income of Puerto Ricans is $48,824.

The EV sticker price is arguably the most significant issue in the equation. Until recently, the Chevrolet Bolt EV, priced around $26,000 and offering a relatively high driving range, was the most affordable option for consumers. However, GM discontinued this vehicle in 2023, with no scheduled production until early 2025. The next most affordable option is Nissan Leaf at around $29,000, but it is not eligible for federal tax credits and its effective range is almost 50 miles lower than for Chevrolet Bolt (210 to 259).

The next most affordable EV that qualifies for federal rebates, the Tesla Model 3 base, starts at around $38,000, but in 2024 it is only eligible for a partial credit of $3,250 bringing its effective price down to $34,750. While the initial Chevrolet Bolt price is lower than that of its competitors, it is still significantly higher than value segment internal combustion vehicles such as the Nissan Versa or Kia Rio, priced at around $17,000.

The amended 2024 federal EV tax credit applied at the point of sale starting in January 2024, would have had a dramatic effect on the affordability of EVs, since instead of being calculated based on overall tax burden, this credit would become an immediate discount. However, with the Chevrolet Bolt out of production for the next 1.5 years, the tangible effects of the credit are not set to benefit populations that cannot afford it. Additionally, the Tesla Model 3 is excluded from the full 2024 federal tax credit, eligible only for its part at $3,250, instead of the full $7,500 as it was in 2023. Other viable vehicles on the market, are generally more expensive (Ford Mustang Mach-E, Tesla Model 3 Performance, Tesla Model Y) and/or not produced in the US (Nissan Leaf, Toyota Prius Prime), making them ineligible for the full or partial tax credit.

Connecticut's CHEAPR and CHEAPR+ programs include a larger list of vehicles, but with a generally high price point (starting at $29,000 with Nissan Leaf), the total rebate of $4,250 for lower

income Puerto Rican households is insufficient to make EVs affordable. For comparison, the state of California and local governments provide rebates ranging from $7,500 to $15,000 (in the Bay area) for new EV owners, depending on their income, making EV ownership more attainable to residents with lower incomes.

There are at least two options for the state to influence EV affordability. One is to provide additional incentives to reduce costs of EVs through the CHEAPR+ program. Another approach is to lobby the IRS to relax some manufacturing and battery component restrictions for the next two years, expanding the list of eligible EVs for the federal credit until more affordable American-made EVs, such as the new Chevrolet Bolt and rumored Tesla Model 2 enter the market.

Simultaneously, the state could provide subsidies for the purchase of used EVs, which are significantly more affordable than new models. The reduced federal tax credit of $4,000 can be applied to used EVs without additional conditions on component and manufacturing origins. A small boost aimed at used EVs through CHEAPR and CHEAPR+ would also be beneficial and should be increased from the current $2,000 in CHEAPR+ to $3 000 for all used EV's.

The state can provide reimbursement to the owners, based on the depreciated cost of the vehicle one month before a critical battery failure to alleviate the anxieties of owners over the unknowns about battery technology reliability, and ensure wider adoption through purchases of used EVs. Only vehicles produced in 2017 and later should be eligible for this reimbursement program. This program, would work for Connecticut residents who have lived in the state for the last two years and owned an EV for the same period, should be administered for the next five years. With residency and ownership requirements and defined critical failure conditions (EV driving under 30 miles on single charge), the program's cost should be manageable, and the risk of fraud minimized.

The next significant affordability barrier is the cost of charging. While the infrastructure policy suggestions provided earlier in this memo should reduce the cost of home charging, public charging, especially DC fast charging, remains expensive. To address this, a limited benefit should be provided

to residents who qualify for SNAP, mirroring the SNAP formula for public charging benefits. This would enable residents to travel and charge their vehicles during the in-between periods when they need to move to another residence.

The final EV affordability hurdle is the tax burden associated with EVs. Given the sticker price of EVs, sales and car excise taxes create significant barriers to adoption. Currently, sales taxes are calculated based on the sticker price of the vehicle, without including any rebates or tax credits. Mitigating this issue could involve excluding EVs from sales tax for the next two years or applying sales tax to the price of the EV after rebates and credits are accounted for.

A similar issue exists with excise taxes, calculated based on the market value of the vehicle. The fair market value of a used EV, excludes all rebates and tax credits, making it significantly higher than the purchase value. Excise tax burdens are particularly high in Connecticut's cities, acting as a general barrier for vehicle ownership, not just for EVs. To address this, the state could exclude EVs from excise taxation, like the exclusion of residential solar arrays and battery packs from property valuation. The state could also set a bar for the EV excise tax rate not to value any EV higher than its price with rebates and tax credits applied for five years after the initial purchase. At the end of the five-year period, the same formula should be applied to EVs as to gasoline vehicles.

Suggestions for Further Research

While this policy brief provides an overview of key issues associated with EV adoption in the State of Connecticut and way to address in a targeted manner, specific policy effects or outcomes are hard to identify at present without additional data. Three major sources of data that would help us to identify impacts on specific demographics are data from CHEAPER post purchase survey, data from CHEAPER+ on number of applications and associated purchases, data from DMV on electric vehicle registrations. This data will help us estimate in which parts of the state and among what demographics EV adoption rates are the highest as well as where new EV policies would have the most tangible

effect. If this policy brief is deemed viable based on additional research, the next step would be to conduct economic and budgetary analysis of said policy recommendations.

The Puerto Rican Studies Initiative for Community Engagement and Public Policy (PRSI) is a research initiative that can help document and support the Puerto Ricans' vital economic, intellectual, and cultural contributions to Connecticut and provide research-based support for the development of public policies addressing the needs of Puerto Ricans in the State of Connecticut.

This initiative is part of a collaboration between El Instituto (CLAS, UConn Storrs), the Puerto Rican and Latin@ Studies Project (School of Social Work, UConn Hartford), and the Hispanic Health Council.

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