



Early residential EV charging programs were well-intentioned, aiming to accelerate the adoption of electric vehicles (EVs) by offering substantial incentives, sometimes even providing chargers at no cost. However, these programs primarily benefited a specific demographic: high-income, highly educated, middle-aged urban dwellers, predominantly White or Asian, with a preference for brands like Tesla.

While this group embraced the transition to EVs, they represented only a small segment of the American population – perhaps as little as the top 20 percent of earners.

But what about everyone else? Middle-class families, young adults, and people of color were noticeably absent from the early wave of EV adoption. Programs that did not address the unique needs and circumstances of these groups effectively sidelined them from benefiting from the long-term savings associated with EVs.

So, did these early incentives genuinely spur widespread adoption? The answer is no. Early adopters were not driven by these programs; they were already inclined toward electric vehicles due to environmental consciousness and a desire to reduce the total cost of ownership. The incentives, rather than generating new interest, simply subsidized decisions these consumers were already predisposed to make.

### **The Free-Rider Dilemma**

The "free-rider dilemma" in EV charging refers to individuals who would have purchased and installed home chargers without needing incentives. These early adopters, typically from higher-income brackets, ended up benefiting from incentives meant to drive broader EV adoption. This issue echoes back to the late 1990s, when energy efficiency programs in the United States first raised concerns about Free Ridership – ensuring that ratepayer programs did not provide benefits to those who did not need them to take action. When public funds are allocated to individuals already capable of transitioning to EVs, it undermines the intended purpose of these programs: supporting those who genuinely need assistance.

Affluent early adopters who could afford a new Tesla were also more likely to purchase an EV charger without financial help. These individuals were often better positioned, living in homes with the necessary electrical infrastructure to support Level 2 chargers, further reducing their need for subsidies. The consequences of this misallocation are significant. By channeling resources to those who did not need financial support, the effectiveness of EV charging programs was weakened. This misallocation not only diminishes the impact of these programs but also deepens existing disparities in EV adoption, leaving behind those who truly need help to join the electric vehicle movement.

### Current Disparities in EV Adoption

The initial wave of Residential EV Charging Programs – which intended to catalyze EV adoption – not only failed to do so equitably but also exacerbated existing disparities. These programs, aimed at early adopters, are largely defunct. For instance, Pepco's EV Smart Program, once a source of incentives for residential EV chargers, no longer offers these benefits. As a result, current adopters – those who missed out on early funding, who may struggle to afford EVs, who aren't high earners or highly educated, and whose homes may not be equipped to support Level 2 chargers – lack the necessary support to purchase a home charger. Ironically, these are the very individuals who need these programs the most.

The electric vehicle industry will face the repercussions of this inequitable early adoption phase for years to come, as the disparities it created are now deeply ingrained and challenging to overcome. Middle- to low-income households face the most significant obstacles, including higher energy burdens, a lack of public charging infrastructure, and the high cost of EVs.

### Higher Energy Burdens

For middle- to low-income households, energy costs consume a larger percentage of their income, a phenomenon known as "Energy Burden." These households often face challenges such as limited access to affordable housing, outdated appliances, and inadequate weatherization or energy upgrades. High transportation costs and fixed expenses like rent further strain their finances. Even those living in single-family homes may lack the necessary infrastructure – like garages, sealed windows, adequate shade, or sufficient electrical wiring – to support the installation of an EV charger.

These factors make the upfront costs of both EVs and charging infrastructure prohibitively expensive. Additionally, these households are less likely to have access to credit or financial products, such as loans or leases, that could make EVs more affordable. For residents of multi-unit dwellings or those without dedicated parking, accessing charging infrastructure presents an even greater challenge.

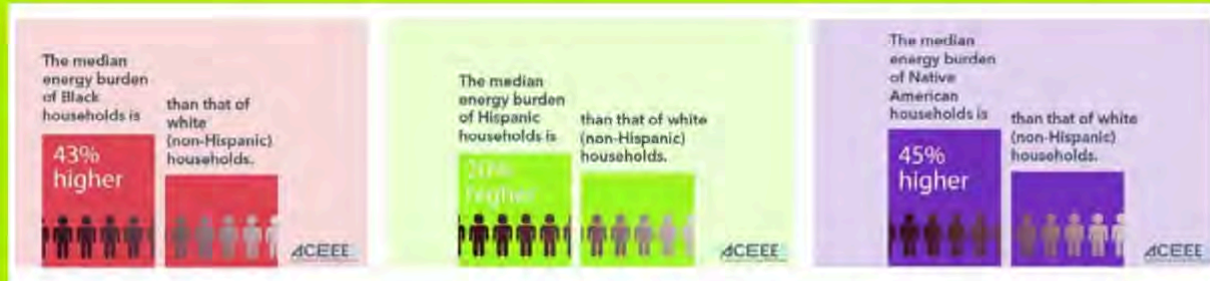


Chart 1: American Council for an Energy-Efficient Economy (ACEEE). (2024). Energy Burden Research. <https://www.aceee.org/energy-burden>

### Public Infrastructure Limitations

Access to reliable and convenient charging infrastructure is critical for widespread EV adoption. Yet, in many underserved areas, public charging stations are scarce or non-existent. Many states initially adopted the "Make Ready Model" for EV Charging Infrastructure, a market-driven approach that allowed EV charging companies to determine the placement of their privately owned charging stations. Utilities, local governments, and state agencies had little influence over these decisions.

This approach has proven problematic, as charging stations today are still predominantly located in areas with high adoption rates – typically, affluent neighborhoods where early adopters lived and worked. Consequently, even if a middle-class individual could afford an EV, their lack of resources to purchase and install home charging equipment is compounded by the limited accessibility to public charging stations.

### Affordability Concerns

While the cost of EVs has dropped significantly, particularly after Tesla's price cuts, the initial purchase price remains a barrier for many American households. Federal incentives are now aimed at helping middle- to low-income households afford EVs, but as of August 2024, the average new EV still costs around \$55,000. The emerging resale market offers some hope for broader affordability, but it is still in its early stages. Over time, as early adopters trade in or sell their vehicles for newer models, the resale market may provide more cost-effective options for a wider audience.

### The Journey Towards Equitable Residential EV Programs

Achieving equitable access to residential EV charging requires policies, legislation, incentives, and programs to be designed with equity at their core. This necessitates a comprehensive, multifaceted approach that integrates data-driven decision-making, targeted funding, community engagement, and a commitment to balancing competing priorities.

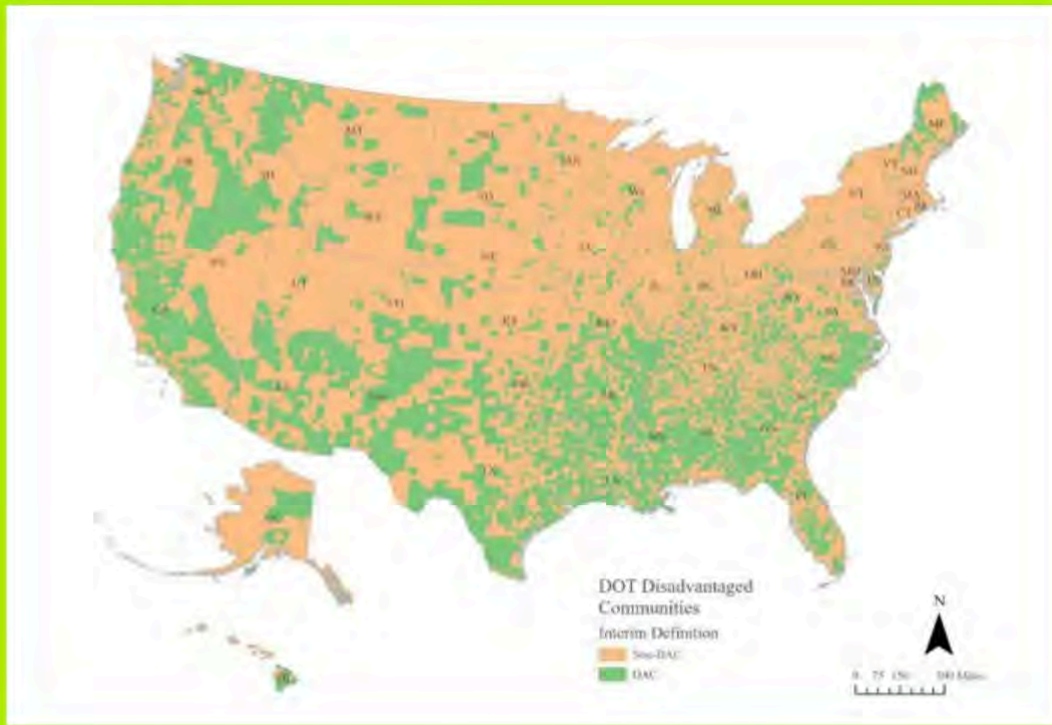


Chart 2: Display of the disadvantaged communities across the United States. U.S. Department of Energy, Alternative Fuels Data Center. (2023, March). Electric vehicle charging infrastructure trends: First quarter 2023. [https://afdc.energy.gov/files/u/publication/electric\\_vehicle\\_charging\\_infrastructure\\_trends\\_first\\_quarter\\_2023.pdf](https://afdc.energy.gov/files/u/publication/electric_vehicle_charging_infrastructure_trends_first_quarter_2023.pdf)

Several key strategies can help:

**Justice40 Data Integration:** The federal Justice40 initiative aims to ensure that 40 percent of the overall benefits of certain federal investments flow to underserved communities. Leveraging this data is crucial for identifying key disparities within these communities and ensuring targeted program interventions. By integrating Justice40 data into the planning process, policymakers can pinpoint areas that would benefit most from focused efforts and resources.

**Targeted Funding:** Ensuring equitable access to EVs requires targeted funding. This could include developing new financial products and incentives to help underserved populations purchase EVs, providing grants for installing charging infrastructure both in homes and for public use, and funding targeted awareness campaigns. Additionally, energy efficiency incentives can help reduce the energy burden for these communities. The solution must be multifaceted, addressing the unique challenges faced by underserved areas rather than applying a one-size-fits-all approach.

**Community Engagement:** For residential EV programs to be truly equitable, active and ongoing engagement with the communities they serve is vital. This involves involving community members in planning and decision-making processes, listening to their concerns, and equipping them with the information and resources needed to make informed choices. Such engagement not only helps tailor programs to the specific needs of each community but also builds trust, ensuring that the initiatives are both responsive and effective.

**Balancing Priorities:** Crafting equitable residential EV programs requires balancing the promotion of widespread EV adoption while ensuring that the benefits are fairly distributed. This could mean prioritizing equity over sheer numbers in terms of charger installations, utilization, or EV purchases. It might involve allocating a portion of program funds specifically for underserved communities or providing additional support to those facing the greatest barriers to adoption. Importantly, this could signal the end of "Make Ready Programs," recognizing that a purely market-driven approach has failed to serve underserved Americans adequately. Local government oversight or other forms of intervention may be necessary to rebalance the market and ensure fair access.

By implementing these strategies, policymakers can create a more equitable EV charging landscape that benefits all community members, ensuring that the transition to electric vehicles is both inclusive and just.

### **Conclusion: Building an Equitable EV Future**

To ensure no community is left behind in the EV revolution, addressing the free-rider dilemma and existing disparities is crucial. Policymakers must prioritize equity in designing residential EV programs, turning the transition into a powerful tool for reducing emissions, advancing social and economic justice, and achieving a more inclusive future.



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Brooke Smallwood is the founder of OASIS Energy Partners, a pioneering firm focused on advancing clean energy technologies with a commitment to equity, diversity, and justice. With over two decades of leadership experience at major utilities and Fortune 500 companies, including Exelon, Alta Gas, and Honeywell, Brooke has established herself as a national authority on energy equity, grid modernization, and program design.

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Jessica Echegile, a second-year MBA student at Georgetown University, has over six years of experience in the energy and utilities sector. With a bachelor's degree in Energy Engineering and a minor in Women's Studies, she brings deep expertise in energy distribution and grid management. Passionate about sustainable energy solutions, Jessica is dedicated to expanding global energy access and driving positive change.

