

Transportation Equity for Disadvantaged Communities

The Transportation Energy Institute (TEI) has explored the topic of transportation equity (TE), what it means and how it is being considered and incorporated by the federal government in a range of different initiatives. A working group was formed to discuss TE and experiences in rural, tribal, and urban areas, with a particular focus on transportation energy burdens in these communities and how they might transition to cleaner transportation options. A 2024 whitepaperⁱ captured these discussions and provided a history and background about how TE has evolved as well as current equity-related federal efforts.

In summary, TEI found there is a lot of history and expertise developed on the topic of environmental justice and equity at the federal, state and local levels. During the Biden Administration, TE was elevated to a major policy priority to better assess disadvantaged communities (DACs) so they can be better served. To that end, tools such as the Climate and Economic Justice Screening Tool (CEJST) were developed to better identify DACs. According to CEJST, approximately 27,000 census tracts across the U.S. have been identified as DACs, encompassing 100 million people – approximately one-third of the population.ⁱⁱ

Developing tools and beginning to assess the status of DACs nationally is the major success of federal TE efforts to date. However, TEI found that when it comes to personal mobility in DACs, efforts have focused squarely on electrification. This may be problematic since most communities and drivers still depend on internal combustion engine vehicles (ICEVs) and conventional fuels. Charging and other infrastructure may not have developed in these areas and some members of DACs may not be able to afford the cost of an electric vehicle, even a used one, or have access to reliable charging. Due to various circumstances in many of these communities, there should be careful analysis of the issues and needs for mobility in DACs, as well as robust engagement in these communities to find solutions that work. As policies seek to reduce emissions, these communities must not be left behind and solutions should be designed to satisfy their unique needs.

To assist policymakers and affected stakeholders in analyzing the particular effects TE initiatives might have on DACs, TEI has compiled the following considerations and questions that are critical to address when developing and implementing TE initiatives across the country.

Energy Burdens and Affordable Transportation

Residents in DACs often spend a higher proportion of their income on energy costs due to inefficient housing and limited access to affordable clean energy. This energy burden can perpetuate poverty and limit opportunities for economic advancement. According to an American Council for an Energy-Efficient Economy (ACEEE) report on energy burdens, the average U.S. household spends about 3.1% of its income on energy costs. However, low-income households in DACs often face energy burdens that are three times higher, with some spending more than 9% of their income on energy.ⁱⁱⁱ In another report, the U.S. Department of Energy found that low-income households (which are often concentrated in DACs) typically spend 6% to 30% of their income on energy, compared to 2% to 3% for higher-income households.^{iv}

In addition, according to the Bureau of Transportation Statistics, the households in the lowest income quintile spent 30% of after-tax income on transportation, whereas those in the highest quintile spent only 12%.^v These costs are especially burdensome in DACs with limited public transit options, where residents must rely on personal vehicles for commuting and accessing essential services. Moreover, there can be geographic disparities in transportation energy burdens, with rural and tribal areas, suburbs, and certain urban neighborhoods facing the highest costs due to longer commutes and less efficient transportation networks. Rural DACs often face the highest transportation energy burdens due to the necessity of long commutes in personal vehicles.

Rural households spent slightly more of their after-tax income on transportation (15.9%) than urban households (14.5%) in 2022, according to the Bureau of Transportation Statistics.^{vi} These vehicles are often older and less fuel-efficient, leading to higher fuel and maintenance costs. The lack of public transportation options further exacerbates these burdens. These higher costs limit access to essential services, including healthcare, education, and employment opportunities and can lead to social isolation and economic stagnation, particularly in regions with declining populations.

Key Considerations:

- Because many individuals in DACs still rely heavily on ICEVs and liquid fuels, understanding how these fuels can benefit these communities is crucial for determining the most effective and feasible strategies for improving transportation access while reducing environmental burdens.
 - How can alternative and low carbon fuels lower emissions and ensure affordable mobility and transportation access in these areas?
 - What can be done to support the availability of lower emissions and lower cost liquid fuels?

- Many government programs are designed to support and accelerate the adoption of electric vehicles (EV), yet many of these programs may be not easy to identify and could be difficult to understand and navigate. Of particular interest to DACs is how the cost of owning and maintaining an EV compares to traditional vehicles.
 - What programs are available to assist with these costs? Which programs are directed at the community in general and at consumers within DACs specifically? How do these programs support one another to provide benefits to the entire community?
 - How transparent and equitable is the allocation of federal and state funding for TE projects across different DACs, and what criteria are used to prioritize investments?
 - Is support available and accessible to DACs as they seek to benefit from such programs for their communities? What efforts are made to ensure DAC leaders are aware of these programs and support available to these communities? Are these programs structured in such a way to facilitate engagement with DAC community leaders and drivers?
 - Are the economic assistance programs designed to address the specific economic burdens experienced by many who live in DACs? Given the additional energy and environmental burdens experienced in many DACs, are there specific provisions that can enhance the benefits of these programs for these communities?
 - What resources are available to help drivers better understand the comparable economics between EVs and ICEVs, including the costs associated with vehicle purchase, insurance, operations, maintenance and total cost of ownership?
- Many DACs lack the infrastructure to enable efficient, low-emissions transportation options, including EVs and low emission ICEVs, and may need policy support to satisfy community needs.
 - How are federal and state funds being distributed to ensure that DACs receive sufficient investment in transportation infrastructure, and how does this investment align with long-term economic growth in these communities? How are these programs aligned with what community members need?
 - What policies can help ensure continued access to fuels for legacy vehicles in DACs, especially as traditional fueling equipment (such as underground storage tanks) reaches the end of its life and may require costly replacement?
- Do DACs have the capability to acquire and maintain the necessary infrastructure, such as charging stations, to support this form of transportation? What support might be required to enable such infrastructure development? How are infrastructure needs in DACs similar to and different from similar needs in another communities? What specific provisions relative to the needs of DACs are or should be included in such programs?
- Many DACs may lack resources to support modern and sophisticated technology and equipment for their first responder organizations. For example, many are served by volunteer fire departments with limited budgets and, potentially, older equipment. In addition, these first responders are often required to service a much larger geographic area than might be required in other communities. As new energy and vehicle technologies are introduced, ensuring that these organizations have the education, tools and resources to address emergencies should be a top consideration.
 - How might first responders acquire the necessary training and specialized equipment to address the unique characteristics of EV-related fires and emergencies?
 - How can such support be provided to address unique characteristics of emergencies related with new liquid fuel formulations?
 - How might DACs without first responders obtain such training and equipment?

Addressing Environmental Burdens

The environmental impacts experienced by DACs are closely intertwined with issues of TE. DACs often face a cumulative burden from multiple environmental stressors, including transportation-related pollution, industrial emissions, and poor housing conditions. For example, DACs are frequently located near highways, industrial zones, and other sources of air pollution, leading to higher exposure to harmful pollutants such as particulate matter (PM2.5), nitrogen dioxide (NO2), sulfur dioxide (SO2), and volatile organic compounds (VOCs).^{vii} This can lead to a degraded quality of life and limited economic opportunities.^{viii} Addressing TE will involve conducting comprehensive environmental reviews and community impact assessments before implementing new transportation projects or strategies, engaging directly with communities and considering the full range of transportation options that work best for residents. Matching emissions reducing transportation options with the specific needs and capabilities of DACs will accelerate successful adoption and facilitate environmental improvements.

Key Considerations:

- How do current TE efforts address the legacy of environmental injustice, particularly in DACs disproportionately affected by air pollution? What changes might be required to ensure such efforts are effective, affordable and accessible to a wide variety of DACs and their unique community needs and characteristics?
- What specific strategies are being implemented to ensure that TE initiatives lead to measurable improvements in air quality in DACs, particularly those near highways or industrial zones? Given the transient nature of air pollutant emissions from highways, how might TE priorities help evaluate the impact of broader commercial vehicle emissions reduction strategies? How might such strategies support DACs in participating in efforts to reduce criteria pollutant emissions from commercial vehicles?
- How do TE policies integrate air pollution prevention strategies, particularly in reducing emissions from existing ICEVs in rural, urban, and tribal areas? How do such policies support the introduction of alternative, lower tailpipe emitting vehicles? How do they position DACs to meaningfully participate in the energy transition to lower transportation emissions of air pollutants, from the acquisition of lower emitting vehicles to the provision of required energy for such vehicles both within and adjacent to the DAC?

Considerations Around Meaningful Engagement

Directly engaging DACs in discussions around TE is essential for ensuring that transportation policies and projects effectively address the unique challenges these communities face. Meaningful engagement not only helps identify and prioritize the needs of DACs but also empowers residents by giving them a voice in the decision-making process. Successful engagement must be rooted in facts, characterized by clear and transparent objectives and designed to empower community leaders and consumers to leverage available resources to adopt solutions that best satisfy their particular needs.

DACs often consist of diverse populations with distinct cultural, social, and economic backgrounds. Effective engagement requires a deep understanding of the community's history, values, and current challenges. This means recognizing the legacy of systemic discrimination, environmental injustices, and economic disenfranchisement that many DACs have faced, and not assuming a particular solution is right for them.

Engagement strategies must be tailored to the specific context of each DAC, considering factors such as language barriers, literacy levels, and technological access.^{ix} This approach ensures that all community members, including those who may be marginalized or hard to reach, can participate meaningfully. Building trust in DACs requires a long-term commitment from government agencies, planners, and other

stakeholders. Moreover, DACs should be actively involved in the decision-making process, not just as consultees but as partners with real influence over outcomes. This can be achieved through participatory planning processes, community advisory boards, and other mechanisms that give residents a direct role in shaping transportation projects and policies.^x

Key Considerations:

- How are DACs being engaged in the decision-making process for transportation projects, and what mechanisms are in place to ensure their voices are heard and respected? How effective are current community engagement strategies?
- In what ways are TE efforts sensitive to the cultural and social practices of rural and tribal communities, particularly in terms of transportation preferences and needs?
- Are the details of available programs clear and understandable, are their objectives in line with those of the DACs and are the benefits accessible to communities with different economic conditions and different levels of policy experience?
- Are there resources available to support DACs in understanding, participating in and taking advantage of these programs?
- What metrics and criteria should be used to evaluate the effectiveness of initiatives?
- What TE ancillary needs does the DAC have and should these be considered through broader discussions on infrastructure and energy availability that help meet transportation as well as other community needs?

Summary

The questions presented in this document are designed to facilitate a comprehensive evaluation of TE initiatives. By addressing these questions, policymakers and stakeholders can better understand the multifaceted impacts of TE policies and projects and engage meaningfully with DACs. This holistic approach is essential for achieving truly equitable outcomes in DACs, ultimately bridging the gaps in access, opportunity, and environmental justice across diverse populations.

About the Author

Tammy Klein is a globally recognized authority in transport energy and the energy transition, offering unparalleled expertise and strategic guidance to clients navigating the complexities of rapidly evolving industries. As Founder and CEO of Transport Energy Strategies, Tammy delivers a unique combination of extensive experience, forward-thinking guidance and insights, and actionable solutions tailored to the needs of governments, senior leadership teams of Fortune 500 companies and NGOs worldwide. With over 25 years of experience, Tammy has worked across the full spectrum of transport energy, including low-carbon fuels, synthetic and alternative fuels, vehicle electrification, and emerging technologies.

About the Transportation Energy Institute

The Transportation Energy Institute, founded by NACS in 2013, is a 501(c)(4) nonprofit research-oriented think tank dedicated to evaluating the market issues related to vehicles and the fuels that power them. By bringing together diverse stakeholders of the transportation and fuels markets, the Institute helps to identify opportunities and challenges associated with new technologies and to facilitate industry coordination to help ensure that consumers derive the greatest benefit.

The Transportation Energy Institute commissions and publishes comprehensive, fact-based research projects that address the interests of the affected stakeholders. Such publications will help to inform both business owners considering long-term investment decisions and policymakers considering legislation and regulations affecting the market. Research is independent and unbiased, designed to answer questions, not advocate a specific outcome. Participants in the Transportation Energy Institute are dedicated to promoting facts and providing decision makers with the most credible information possible so that the market can deliver the best in vehicle and fueling options to the consumer.

For more about the Transportation Energy Institute visit transportationenergy.org

ⁱ <https://www.transportationenergy.org/research/reports/white-paper-transportation-equity/>

ⁱⁱ Environmental Protection Agency, Climate and Economic Justice Screening Tool, <https://screeningtool.geoplatform.gov/en/#3/33.47/-97.5>.

ⁱⁱⁱ American Council for an Energy-Efficient Economy (ACEEE), How High Are Household Energy Burdens? An Assessment of National and Metropolitan Energy Burden Across the United States, September 2020 at <https://www.aceee.org/research-report/u2006>.

^{iv} U.S. Department of Energy, Low-Income Energy Affordability Data (LEAD) Tool, <https://www.energy.gov/scep/low-income-energy-affordability-data-lead-tool-and-community-energy-solutions>.

^v <https://www.bts.gov/data-spotlight/household-cost-transportation-it-affordable>

^{vi} U.S. Department of Transportation, Bureau of Transportation Statistics, Household Spending on Transportation: Average Household Spending, 2022 Year in Review, <https://data.bts.gov/stories/s/ida7-k95k> (last accessed Aug. 15, 2024).

^{vii} American Lung Association, State of the Air 2024, April 2024 at <https://www.lung.org/getmedia/dabac59e-963b-4e9b-bf0f-73615b07bfd8/State-of-the-Air-2024.pdf>.

^{viii} See e.g., David Reichmuth, Union of Concerned Scientists, Inequitable Exposure to Air Pollution from Vehicles in California (2019), Jan. 28, 2019 at <https://www.ucsusa.org/resources/inequitable-exposure-air-pollution-vehicles-california-2019#:~:text=What%20is%20PM2.,major%20contributor%20to%20PM%20pollution>.

^{ix} U.S. Department of Transportation (DOT), Equity Action Plan: The Power of Community available at <https://www.transportation.gov/priorities/equity/equity-action-plan/power-community> (last updated Feb. 14, 2024).

^x For example, DOT plans to complete at least three public engagement workshops to promote practices for effective and equitable public engagement in the transportation process by September 2024 and has taken a range of other actions to engage DACs. See DOT, Equity Actions, <https://www.transportation.gov/priorities/equity/equity-action-plan/actions> (last updated Feb. 14, 2024).