

Drive Clean Rural USA

REPLICATION PLAYBOOK



Building New Clean Transportation Energy Foundations

An overview of the Drive Clean Rural USA project on building relationships with rural communities to attack barriers in the transition to clean energy

Thank you participating state coalitions!



Alabama
Clean Fuels
Coalition



COLUMBIA - WILLAMETTE



**CLEAN
CITIES**



DRIVE CLEAN
INDIANA

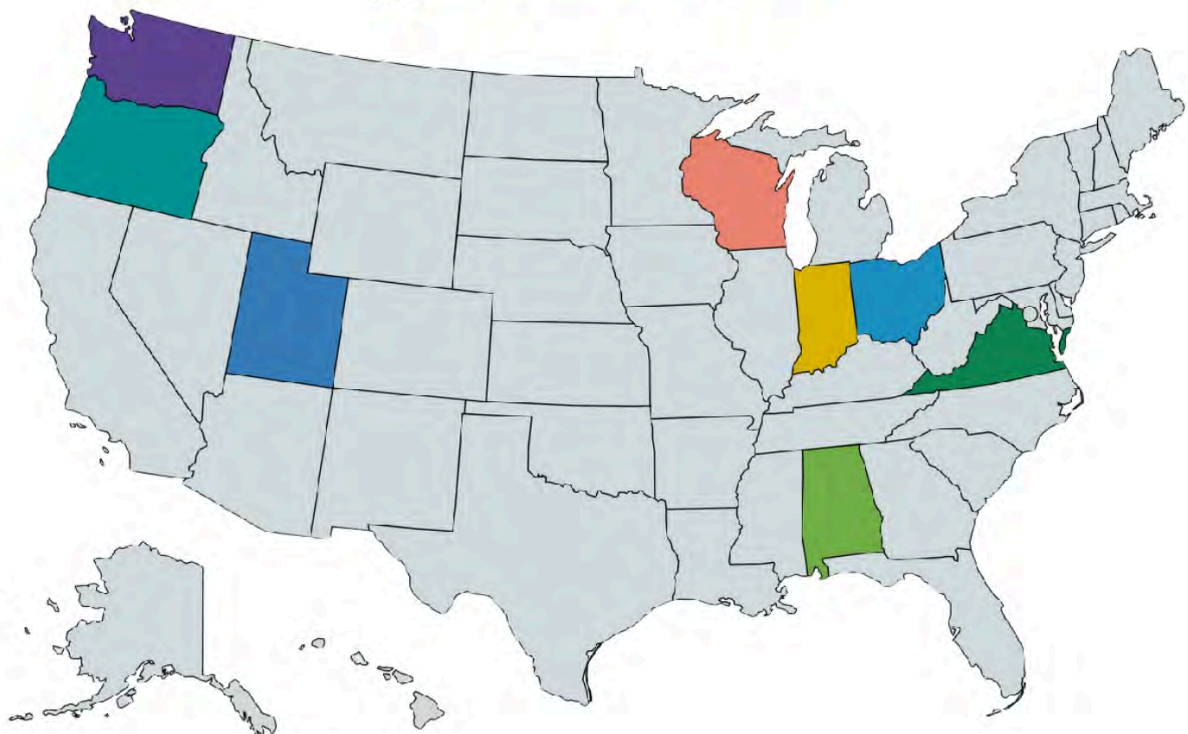


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Project Background and Purpose

Project Background:

The Drive Clean Rural USA project was designed to engage, educate, and conduct research on clean fuels and alternative transportation technologies within rural fleets and communities. Led by the Clean Cities and Communities Coalitions and their community partners, the project sought to raise awareness, bridge knowledge gaps, and dispel common misperceptions regarding alternative fuels. In doing so, it provided clear information on the economic and environmental benefits of clean transportation, helping rural communities understand the potential of adopting alternative fuel vehicles (AFVs) and infrastructure.

Rural communities face unique challenges, from limited staff resources to budget constraints and political barriers, which can hinder the transition to clean transportation solutions. Drive Clean Rural USA aimed to address these challenges by providing technical education, workforce training, and cost analyses. By doing so, the project helped communities navigate available resources and funding for alternative fuels while offering fleet assessments and hands-on demonstrations of AFVs. This approach enabled rural communities to make informed decisions and prepare for sustainable transportation solutions aligned with their local needs and capacities. Using this information and framework, we distilled **Focus Areas (FA)** that we feel are most valuable for replicating successes and mitigating challenges when working with rural communities in AFV transition. These FAs are listed as follows:

FA 1: Building clean energy education in rural communities through workshops and other community engagement activities

FA 2: Strengthening relationships with decision-makers and lowering other barriers to clean energy availability

FA 3: Coordinating and collaborating with stakeholders

FA 4: Highlighting individual state successes and stories

FA 5: Highlighting challenges faced

Why We Undertook the Project:

Economic Viability: Alternative fuels offer potential cost savings, but communities need clear, data-backed projections to understand these benefits. The project demonstrated economic advantages while dispelling misconceptions around AFVs, enabling fleet managers to present a well-rounded case to local decision-makers.

Empowering Rural Communities: Rural communities often have less availability of the resources necessary for sustainable transportation initiatives. The project aimed to close this gap, ensuring that these communities could benefit from cleaner transportation alternatives.

Reducing Environmental Impact: With growing concerns about the effects of fossil fuels on climate change, rural communities are increasingly motivated to pursue greener, more sustainable transportation options. The project aimed to reduce emissions and improve air quality in these regions by focusing on alternative fuels.

Workforce Development: The project recognized that transitioning to alternative fuels also creates new opportunities for jobs and training in clean transportation technologies, especially in underserved rural areas.

Focus Area 1: Building an Educational Infrastructure

In bringing new technology to rural communities, education was found to be a key pillar to the success of this project. Through holding demos, and workshops, and inviting speakers, coalitions informed communities and their leaders about the benefits of clean fuel. Here are some key points to think about:

“..nothing takes the place of being able to put your hands on a vehicle and operate it yourself.”

- Chris Hayes
Transportation Director
Clay County Schools, Alabama

The importance of educating locally

Funding and monetary support can only get rural communities so far. Federal funding programs are usually complex on many levels and add a layer of new reporting requirements and various regulations. These costs should be considered as part of the total cost of the project given the time and energy that must be dedicated to compliance. In their work on this project, Clean Cities and Communities Coalitions had the most successful interactions when working as true local partners, presenting not to “sell” alternative transportation fuels but rather to explore the practicality of their use in the targeted communities.



For example, in Alabama, Alabama Clean Fuels Coalition (ACFC) hosted an educational workshop to inform city, business, and community leaders in Marion, Alabama, about the Drive Clean Rural project. Leading up to the workshop and in collaboration with Mayor Dexter Hinton of Marion, ACFC provided an initial fleet assessment to help determine what type and number of vehicles were best candidates for future conversion to alternative fuels. Conducting this assessment in advance of the workshop provided a localized assessment of the potential costs of fuels like propane and electricity.

Mayor Hinton spoke about the importance of this clean fuel workshop saying, “We have attended a lot of meetings and workshops ‘out of town.’ It’s not the same as making it ‘real’ at home. The workshop was very helpful and helped us educate our local citizens and gain allies as we move forward” (Hinton).

Have patience throughout the process

When engaging with rural communities, it is especially important for a Clean Cities Coalition to be a real and trusted partner, enabling both sides to come to the table willing to learn from each other. Rural communities face plenty of challenges, so it is important to understand that local leaders may not rank the topic of alternative transportation fuels as high on their priority list as other topics. Striking the right balance between costs and benefits (efficiency, emissions reductions, etc.) of alternative transportation fuels is also critically important. Alternative transportation fuel projects that reduce operating costs and add new efficiencies are the most likely to be adopted in places like rural Alabama.

Focus Area 2: Lowering barriers

One area of this project that allowed progress in rural communities was coalitions strengthening relationships with local decision-makers to lower barriers to acquiring clean energy. These barriers often consisted of locality-specific issues, but here are some overarching concerns and what coalitions implemented to address them.

Preconceived notions: Myths of frequent catastrophes underpin much of mainstream discourse surrounding clean fuels in rural localities. In Ohio, Sam Sutherland, the City Manager for the City of Portsmouth, cited concerns from the local police chief about getting locked in an electric vehicle during a battery explosion—occurrences that are few and far between. His advice was this, “the more exposure folks [coalitions] like you all can put out the better. But until that exposure gets absorbed by these folks, it’s probably going to lay dormant” (Sutherland).

Connections between coalitions and residents are where this all begins.

Specifically, holding events where fleet managers are visible and willing to test-drive vehicles and outline the benefits. According to Sutherland, these kinds of demonstrations go a long way.

Focus Area 3: Stakeholder engagement

Many stakeholders have been involved and engaged with individual coalitions throughout the project. From interviews with project participants, here is what they reveal to be helpful in this area of focus:

Legislative information: In Oregon, Gary Romine, the Oregon Trucking Supervisor for Weyerhaeuser, mentioned partnering with the OTA or Oregon Transit Association—a nonpartisan, nonprofit organization that assists its members in informing them of legislative initiatives in the transportation world. Specifically, Romaine mentioned this organization to determine noncompliance with certain regulations, like the California Air Resources Board (CARB) rulings, for example. In areas impacted by these rulings and regulations, it is imperative to know the law before engaging in action.

Material education and acquisition: Many other coalitions involved in the project partnered with clean fuel vendors and supply organizations. Specifically, the City of Portsmouth, Ohio partnered with a solar panel company to help offset the cost of electricity on a prospective water treatment plant (Sutherland). Establishing relationships like these is significant to increase the ease of acquiring clean fuel options for rural areas.

Leasing EVs: For fleets looking to expand their EV options, leasing is an effective way to get started. A few participating localities and coalitions used Enterprise as their primary vehicle leasing company. In the case of Spencer County, Indiana, one interviewee said the county desires a greater connection to Toyota. In this way, leasing EVs can benefit local dealerships while spreading an informational message to rural residents.

Lean on your local coalition: The regional Clean Cities Coalition often has a wealth of resources regarding potential collaborators for localities to use. In the case of Clay County in Alabama, Chris Hayes, the transportation director of Clay County Public Schools speaks to the ease of his connection to ACFC. He said, “Our chosen vehicle dealer was brought into this project by ACFC and that really helped us by leveraging our existing relationships” (Hayes).

Focus Area 4: Highlighting State Successes (select)

Drive Clean Rural Alabama: The Drive Clean Rural Alabama initiative, led by the Alabama Clean Fuels Coalition, highlights Focus Area 2’s goal of building relationships with decision-makers to overcome barriers to clean fuels in rural communities. In Marion, Alabama, city leaders worked with Alabama Power to learn about EVs and Alabama Power’s programs that support customers who decide to transition to electric transportation. Alliance Autogas dedicated a bi-fuel (gasoline/propane) pickup truck to this project that delivered what was described as a surprisingly good driving experience and a significantly expanded fuel range to the Alabama State Parks during a demonstration of the vehicle. Vehicle demonstrations also help mechanics assess a vehicle and ask questions. . After the project, Alabama reflected on this interaction and wrote, “We appreciate our stakeholders like Alabama Power and Alliance Autogas who, like us, believe in the power of partnership and trust. We have the most long-term success when we go in as a team and deliver practical, real-world guidance.”



Drive Clean Rural Utah: Drive Clean Rural Utah has been carried out by Utah Clean Cities. This particular coalition has fostered Focus Area 3’s goal of engaging with stakeholders in order to progress the project and develop valuable connections for rural spaces. Specifically, they partnered with Original Equipment Manufacturers (OEMs) throughout the project. UCC partnered with OEMs like DANNAR—a company that designs and manufactures zero-emissions work vehicles—to provide a broader understanding of new technologies on the market. DANNAR traveled with UCC in 2023 to various conferences and workshops, showing off their Mobile Power Station, a battery-powered machine capable of multi-use utility functions for road maintenance. Ultimately, engaging stakeholders in rural communities (like Springfield) through DANNAR’s presentations “sparked interest in new possibilities for grid resiliency and EV options for municipal utility vehicles”, according to UCC.



Drive Clean Rural Virginia: Virginia Clean Cities' success with Drive Clean Rural Virginia was grounded in Focus Area 1's community engagement and education of rural communities. Namely, asking these communities what they needed spurred productive conversation and helped VCC better understand where to orient their expertise. Further, through [Virginia's Rural Reimagined Project](#), the relationships needed to engage with the communities properly were already in place. Upon reflection VCC discusses how "Education emerged as a key strategy, both to inform the workforce about the economic and environmental benefits but also education for fleet managers and operators to dispel...misconceptions".



Focus Area 5: Challenges

Throughout the Drive Clean Rural USA project, several challenges emerged that impacted fleet transition and alternative fuel adoption. These barriers spanned decision-making, funding, data collection, and supply chain limitations. Below is a summary of key obstacles encountered, for a full overview of barriers and challenges see *Appendix II*:

Decision Makers

- ❖ **High Staff Turnover** – Frequent changes in fleet managers required continuous engagement to cultivate new alternative fuel champions.
- ❖ **Competing Priorities** – Some stakeholders deprioritized the initiative, requiring shifts in strategy.
- ❖ **Communication Challenges** – Misaligned stakeholder priorities, database mix-ups, and rogue decisions limited engagement.
- ❖ **Industry Identity Resistance** – Strong historical ties to oil and gas led to initial skepticism toward alternative fuels.

Community Needs & Priorities

- ❖ **Limited Awareness of Funding** – Many rural communities were unfamiliar with state and federal funding opportunities.
- ❖ **Resource Constraints** – Smaller fleets lacked staff and funding to prioritize sustainability efforts.
- ❖ **Infrastructure Investment Hurdles** – Additional costs complicated fleet transition planning.
- ❖ **Large Dataset Challenges** – Gathering data for and assessing large fleets, like the Alabama State Parks, proved time-intensive.

Data Collection & Management

- ❖ **Lack of Telematics** – Many fleets relied on handwritten data, leading to gaps and inaccuracies.
- ❖ **Delayed Implementation** – Data often became outdated due to slow decision-making.
- ❖ **Challenges with Large Datasets** – Variability in fleet types made data processing difficult.

Procurement & Funding

- ❖ **State Bid List Limitations** – Restricted vehicle options made it difficult to purchase alternative fuel vehicles.
- ❖ **Budget & Time Constraints** – Many rural fleets lacked resources to apply for grants.
- ❖ **Demo Vehicle Access Issues** – Manufacturers prioritized urban areas over rural communities for test drives.

Supply Chain & Industry Management

- ❖ **Manufacturers' Urban Focus** – Some automakers prioritized high-density regions over rural areas.
- ❖ **Logistical Challenges** – Travel constraints made attending demos difficult.
- ❖ **Miscommunication & Coordination Issues** – Poor event planning led to missed networking opportunities.

Steps to Success

Based on insights and shared experiences, the following guide outlines actionable steps to facilitate fleet decarbonization and infrastructure development for sustainable transportation:

Fleet Managers: Focus on Practical Steps

❖ Inventory and Analysis:

- Conduct a detailed inventory of current vehicles, including VINs, mileage, and usage patterns.
- Use tools like AFleet or total cost of ownership (TCO) calculators to assess transition viability.

❖ Pilot Projects:

- Start with one or two vehicles for manageable trials. Evaluate daily needs, such as range, payload, or towing requirements.
- Use real-time data collection to validate assumptions and refine approaches.

❖ Infrastructure Planning:

- Coordinate with nearby certified EV service providers and local partners for maintenance and support.
- Assess and plan for appropriate charging infrastructure (e.g., Level 2 vs. DC Fast Charging based on vehicle use).
- Facilitate discussions about various types of alternative fueling infrastructure, for all of the fuels being considered for possible future deployment.

❖ Funding Exploration:

- Research available grants, rebates, and incentives for EVs and charging stations.
- Present clear TCO and ROI data to decision-makers to secure buy-in.

Community Leaders: Drive Education and Outreach

❖ Engage Stakeholders:

- Build coalitions with schools, local businesses, and government agencies to pool resources and expertise.
- Organize workshops or demonstrations with alternative fuel and EV providers.

❖ Tailored Messaging:

- Address specific concerns, such as upfront costs or range anxiety, with factual data and local success stories.
- Highlight community-specific benefits like reduced maintenance costs and local economic opportunities.

❖ **Leverage Partnerships:**

- Work with Clean Cities Coalitions, energy providers, and regional organizations for technical assistance and funding guidance.

❖ **Plan for Community Engagement:**

- Ensure rural or underserved areas receive additional planning support to address infrastructure gaps and limited resources.

Supporting Organizations: Build Capacity and Momentum

❖ **Provide Tools and Resources:**

- Offer clear, user-friendly templates for vehicle assessments, infrastructure planning, and grant applications.
- Include case studies and funding guides specific to rural and urban settings.

❖ **Facilitate Funding Navigation:**

- Simplify ease of acquiring funding opportunities with centralized databases or regular updates on grant deadlines and eligibility.

❖ **Promote Collaboration:**

- Encourage networking and knowledge-sharing across regions to replicate successes and avoid common pitfalls.
- Host regular forums or webinars for updates on technology and policy changes.

❖ **Prioritize Real-World Applications:**

- Support hands-on training and pilot demonstrations to showcase the practicality and benefits of alternative fuels and EV adoption.

The Importance of Highlighting Fleet Managers, Community Leaders, and Supporting Organizations in Rural Alternative Fuel Adoption

Transitioning rural fleets to alternative fuels requires a collaborative effort across multiple groups. Each plays a unique role in fostering innovation, driving adoption, and overcoming the unique challenges of rural settings. Here's why these three communities are indispensable to the project's success:

Fleet Managers: The Operational Backbone

Fleet managers are at the forefront of rural alternative fuel adoption, managing day-to-day operations and ensuring smooth transitions within their fleets.

❖ **Why They're Critical:**

- Fleet managers understand the nuanced needs of their vehicles, from mileage to payload and seasonal demands. Their expertise ensures that vehicle replacements or upgrades meet real-world requirements.
- They can track performance and cost-effectiveness through pilot projects, providing tangible proof of alternative fuels' benefits.

❖ **How They Drive Success:**

- By adopting data-driven approaches and sharing their findings, fleet managers provide the necessary credibility and technical insight for broader adoption.
-

Community Leaders: The Catalysts for Change

Community leaders, including local officials and decision-makers, influence public perception and allocate resources for alternative fuel initiatives.

❖ **Why They're Critical:**

- Leaders build bridges between stakeholders, mobilizing schools, local businesses, and residents to engage in sustainable efforts.
- Their advocacy ensures that alternative fuel projects align with community goals, such as economic development, environmental health, and resource efficiency.

❖ **How They Drive Success:**

- Through outreach and education, community leaders can dispel misconceptions about alternative fuels and highlight the long-term benefits for rural areas.

Supporting Organizations: The Architects of Implementation

Clean Cities Coalitions, alternative fuel providers, and technical experts bring essential knowledge and resources to the table.

❖ **Why They're Critical:**

- They provide the tools, training, and funding insights that rural communities might lack due to resource constraints.
- Supporting organizations act as liaisons, ensuring that rural needs are understood and addressed in regional or national alternative fuel strategies.

❖ **How They Drive Success:**

- By empowering local stakeholders with actionable data, hands-on training, and funding opportunities, they transform vision into reality.

Why These Communities Should Be Highlighted

The intersection of these three groups creates a foundation for success in rural alternative fuel adoption:

1. **Shared Expertise:** Fleet managers contribute technical insights, community leaders drive strategic engagement, and supporting organizations provide the tools to execute plans.
2. **Mutual Accountability:** Collaboration between these groups ensures that initiatives are both ambitious and feasible, fostering trust and collective ownership.
3. **Scalable Impact:** Highlighting their contributions amplifies their success stories, inspiring similar efforts in other rural areas.

By showcasing these communities' roles and achievements, we can build momentum for widespread adoption, reduce rural barriers to alternative fuels, and position rural regions as leaders in the clean energy transition.

What is a Supporting Organization in Clean Transportation

Many participants in this project asked, “**What is a supporting organization?**” To clarify, we want to define and outline what a supporting organization could be in this context.

A Supporting Organization, in the context of clean transportation, refers to a group, entity, or network that assists with the planning, promotion, and implementation of sustainable transportation initiatives. These organizations may not directly operate transportation services but instead provide resources, funding, technical expertise, advocacy, education, or logistical support to stakeholders in the clean transportation ecosystem.

In rural communities, these organizations play a critical role in addressing unique challenges such as limited infrastructure, dispersed populations, and resource constraints.

Examples of Supporting Organizations in Clean Transportation for Rural Communities

❖ **Clean Cities Coalitions**

- These coalitions, like any of the coalitions taking part in this project, work to reduce petroleum use, improve air quality, and support the adoption of alternative fuels and vehicle technologies. They offer technical assistance, grant application support, and stakeholder collaboration to rural and urban partners.

❖ **State Energy Offices**

- State-level organizations often provide funding opportunities and incentives for rural areas to adopt clean transportation projects. For example, the *Virginia Department of Energy* might support grant programs for rural EV charger deployment.

❖ **Utility Companies**

- Utilities such as *Dominion Energy* or rural cooperatives often support clean transportation initiatives by funding EV charging infrastructure, developing time-of-use rates for EV charging, or collaborating with stakeholders on grid readiness.

❖ **Nonprofit Advocacy Groups**

- Organizations like the *Electric Vehicle Association (EVA)* or *Generation180* work to raise awareness about clean transportation in rural communities through public education campaigns, workshops, and community events.

❖ **Transportation and Environmental NGOs**

- Groups like *Natural Resources Defense Council (NRDC)* or *Rural Local Initiatives Support Corporation (LISC)* may advocate for sustainable rural

transportation solutions, offering research, policy recommendations, and financial assistance.

❖ **Universities and Research Institutes**

- Institutions such as *Virginia Tech* or *Argonne National Laboratory* support clean transportation by conducting research, providing training, and creating models or tools that guide rural fleet electrification.

❖ **Federal and State Grant Programs**

- Programs like the *Rural Energy for America Program (REAP)* or grants from the *U.S. Department of Energy* directly support rural entities by funding EV chargers, vehicle replacements, or other decarbonization efforts.

❖ **Manufacturers and Technology Providers**

- Companies like *Tesla*, *Proterra*, or *ChargePoint* sometimes partner with rural communities to pilot new technologies, donate equipment, or offer discounted pricing to expand clean transportation availability.

❖ **Economic Development Organizations**

- Regional development authorities, such as *Appalachian Regional Commission (ARC)*, assist rural areas with funding and planning to ensure clean transportation is incorporated into broader economic growth strategies.

❖ **Community Action Agencies**

- Local agencies that address rural challenges by supporting projects like clean school buses, EV rideshare programs, or public charging networks.

Appendix

Appendix I: Resource Guide

Resources and Tools (include links where available)	Category	Link	Fleets & Fleet Managers	Community Leaders	Supporting Organizations
AFDC Laws and Incentives	Funding/ Procurement	https://afdc.energy.gov/laws	X	X	X
Federal Transit Administration Grant Programs	Funding/ Procurement	https://www.transit.dot.gov/grants	X		X
Fleet Inventory Sheet	Fleet Analysis Tools	https://www.sustainablejersey.com/fileadmin/media/Actions_and_Certification/Actions/Energy/SJ_Fleet_Inventory_Spreadsheet_2022.xlsx	X	X	
Teletrac: Telematics & Fleet Transition Planning	Fleet Analysis	https://www.teletracnavman.com/fleet-management-software/multi-energy-fleet-solutions/resources/alternative-energy-transition-the-ultimate-technology-guide			
AFDC tools	Fleet Analysis Tools	https://afdc.energy.gov/tools	X	X	
AFDC Vehicle Search	Technology Selection Tool	https://afdc.energy.gov/vehicles/search/	X	X	
FuelEconomy.gov	Technology Selection Tool	https://fuelconomy.gov/efg/findacar.shtml	X	X	
Clean Cities and Community Directory	Find a Supporting Organization	https://cleancities.energy.gov/coalitions/locations/	X		X

Highlight of Partner Coalitions	Find a Supporting Organization	https://www.transportationenergypartners.org/dcrusa-background.html	X	X	
AFDC Fuels and Vehicles	Technology Basics	https://afdc.energy.gov/fuels/	X	X	X
AFDC Case Studies	Case Studies and Fact Sheets	https://afdc.energy.gov/case	X	X	X
Sourcewell	Funding/Procurement	https://www.sourcewell-mn.gov/	X	X	X
Equalis	Funding/Procurement	https://equalisgroup.org/	X	X	X
EPA Diesel Emissions Reduction Act Funding	Funding/Procurement	https://www.epa.gov/dera	X		X
Rural Opportunities to Use Transportation for Economic Success (ROUTES)	Transpo Support	https://www.transportation.gov/rural		X	X
Petroleum Reduction Menu of Ideas	Fleet Optimization	https://dca.colorado.gov/sites/dca/files/documents/PetroleumReductionMenuofIdeas.pdf	X		
Clean Cities and Communities Funding Guide	Funding/Procurement	https://cleancities.energy.gov/funding/	X	X	
Rural EV Toolkit - ROUTES	Other	https://www.transportation.gov/rural/ev/toolkit	X	X	
AFLEET Tool	Fleet Analysis Tools	https://afleet.es.anl.gov/home/	X	X	
Alt fuel station locator	Fleet Analysis	https://afdc.energy.gov/stations#/find/nearest	X		

	Tools				
PERC Resources	Technology Selection Tool	https://propane.com/research-development/	X	X	
AFV info broken down by state	Funding/ Procurement	https://afdc.energy.gov/states	X	X	
EVI-X Electric Vehicle Infrastructure Toolbox	Fleet Analysis Tools	https://afdc.energy.gov/evi-x-toolbox#/evi-pro-ports	X	X	
EV resource guide for greater Mid Atlantic Region	Other	https://gwrccc.org/ev-resources/	X	X	X
Vehicle Cost Savings	Fleet Analysis Tools	https://afdc.energy.gov/calc/	X	X	X
Articles about Rural EV/AltFuel Drivers	Other	https://blog.ucsusa.org/series/evs-for-rural-drivers/		X	X
Funding Opportunity Finder	Funding/ Procurement	https://localinfrastructure.org/funding-opportunities/	X	X	X
Alt Fuel Tool Kit	Case Studies & Data	https://altfueltoolkit.org/library/?_sft_resource_tags=afv-adoption-in-fleets#library	X	X	X
Supporting Rural Communities Through Clean Transportation Investment	Case Study / Report	https://www.nature.org/content/dam/tnc/nature/en/documents/TCI_Report_Rural_Aug_2020.pdf	X	X	X

Appendix II: Barriers and Challenges

Rural Fleets

Adaptability: High fleet manager turnover posed a barrier to advancement, requiring the frequent cultivation of new alternative fuels champions. In Wisconsin's case, the point of contact deprioritized the initiative, necessitating a shift to a different community.

Communication: Communication between decision makers faced database mix-ups, competing stakeholder priorities, rogue decisions, and community history barriers. Databases handed off to the wrong party such as in the 2022 Lightning eMotors-Indiana collaboration limited follow-up and networking opportunities for future events. Toyota, a key stakeholder in rural Indiana, had conflicting priorities with the project goal where they focused on densely populated areas on the coast instead of prioritizing Indiana. Individual decisions made by communities such as Portsmouth, Ohio, have gone against recommendations of formal assessments that render these assessments potentially inert. Furthermore, within communities, there is often a strong identity history tied to the oil and gas industry that results in steadfast initial resistance to alternative fuel education and reception.

Community Needs/ Priorities: The capacity to remain involved is arguably the biggest barrier to community engagement. Many rural communities are unfamiliar with state and federal funding opportunities and further lack the resources to track and apply competitively for these funding opportunities. Engagement is also a challenge, particularly with smaller fleets that lack the capacity to remain involved with sustainability is outside of their job priorities and it is an effort that requires dedicated staffing and funding they do not have.

Large dataset breakdown was a challenge as well, particularly in the realm of massive and diverse datasets like those for Alabama's state parks.

As stated previously, gathering the data and assessing a large fleet with multiple locations—like the Alabama State Parks was time consuming. To overcome this challenge, the assessments were narrowed down to just the type of vehicles that are most frequently replaced and that the team believed would be the most practical to convert to alternative fuel vehicles in the future.

Data: Data concerns rise from the lack of telematic tools in rural fleets, resulting in a reliance on handwritten data, which leads to gaps, data fragmentation, missing fuel cost information, and inconsistencies. Limited capacity to prioritize green fleet transitions may delay data use, risking its relevance. Additionally, breaking down large datasets proved challenging due to vehicle diversity. Infrastructure was another significant barrier due to the additional investment requirements that complicated the planning process and made deployments more difficult."

Procurement/Funding: State bid list limitations, along with time and funding constraints, posed significant challenges in relation to purchase lists that limited vehicle options and deployments post-assessment. Time and funding constraints exacerbated issues like the travel funding for community partners to attend the vehicle demonstrations that came with their own host of challenges.

Demo vehicle availability and scheduling challenges posed significant barriers as the uncooperative nature and prioritization of larger and more populated areas for vehicle demonstrations took precedence for providers and commitment hesitance led to floundering between community and provider on whether a demonstration would be held or not. Furthermore, regional providers like Sonny Merryman were easier to work with, but national providers like Toyota posed complexity challenges between time, paperwork, and date commitment. Travel issues were also commonplace due to rural communities' travel constraints.

Supporting Organizations

Access to Knowledge: Rural communities face significant logistical and financial barriers to accessing vehicle demonstration events, making it difficult for fleet managers to explore new technologies. Challenges include travel constraints, limited funding, and complex coordination with national manufacturers. Additionally, many rural communities lack awareness and expertise in securing state and federal funding, limiting their ability to pursue fleet modernization. These issues highlight the need for flexible, locally tailored solutions to improve access to knowledge and resources.

Capacity: Time and funding constraints, data complexity, fleet manager capacity, post-assessment follow-through, vehicle demo availability, infrastructure barriers, staff turnover and engagement, and travel logistics have all posed capacity challenges. Many rural communities struggle to get partners to attend demos due to limited resources, and face “chicken-and-egg” problems where communities hesitate to attend without confirmations on demos, and providers are reluctant to confirm said demos without guaranteed attendance. Datasets on large and varied vehicle arrays like those in the State Parks provide further difficulties without being limited to time-intensive processes to attain meaningful insights. Engagement and follow-through are capacity challenges for fleet managers and smaller fleets as sustainability is often outside of their job scope or is low on their priority list and risks deprioritization, a factor further complicated by frequent staff turnovers in the case of Wisconsin that necessitated ever-changing alternative fuel champions. Infrastructure and travel logistics also pose barriers due to the high investment costs associated with charging infrastructure and the travel requirements for rural communities when it comes to traveling to demos or having the demos brought to these communities.

Community Needs/Priorities: Ohio collaborated with local entities to market workshops but struggled to mobilize them effectively, leading to a shift in approach. In Utah, convincing communities to consider alternatives to oil and gas was challenging due to historical ties, but strong relationships sometimes helped broaden their perspective.

Data: Rural fleets often lack high-tech telematics, relying on handwritten records, which have led to missing fuel cost data and other data anomalies. Some communities needed assistance in understanding substituted data. Additionally, large datasets, particularly for state parks, posed challenges due to the variety of vehicles and use cases.

Supply Chain/Industry Management: Demo vehicle availability is crucial for communities to test solutions before committing, but manufacturers prioritize high-population areas, making access difficult. Other barriers posed by supply chain and industry management include uncooperative providers, as seen in the case of Pittsylvania. Furthermore, companies often prioritize their own projects, sometimes at odds with local initiatives as was the case with Toyota in Indiana where they excluded DCI from a Hydrogen Hub meeting and focused hydrogen demos on coastal areas. The complex demo procedures of national vehicle providers like Toyota also proved to be a challenge in comparison to collaboration with local providers like Sonny Merryman.

Additionally, poor communication and information mix-ups like in the case of the 2022 demo event with Lightning eMotors that resulted in stakeholder contact information going to the partner have limited follow-up and networking for the coalition. More poor communication cases occurred when Pittsylvania was ready to adopt a vehicle, but demo limitations and poor communication with Battle Motors hindered the process, and Portsmouth had opted for a fuel transition based on local supplier relationships rather than assessment recommendations.

Community Leaders

Adaptability: High fleet manager turnover posed a barrier to advancement, requiring the frequent cultivation of new alternative fuels champions. In Wisconsin's case, the point of contact deprioritized the initiative, necessitating a shift to a different community.

Communication: Communication between decision makers faced database mix-ups, competing stakeholder priorities, rogue decisions, and community history barriers. Databases handed off to the wrong party such as in the 2022 Lightning eMotors-Indiana collaboration limited follow-up and networking opportunities for future events. Toyota, a key stakeholder in rural Indiana, had conflicting priorities with the project goal where they focused on densely populated areas on the coast instead of prioritizing Indiana. Individual decisions made by communities such as Portsmouth, Ohio, have gone against recommendations of formal assessments that render these assessments potentially inert. Furthermore, within communities, there is often a strong identity history tied to the oil and gas industry that results in steadfast initial resistance to alternative fuel education and reception.

Community Needs/ Priorities: The capacity to remain involved is arguably the biggest barrier to community engagement. Many rural communities are unfamiliar with state and federal funding opportunities and further lack the resources to track and apply competitively for these funding opportunities. Engagement is also a challenge, particularly with smaller fleets that lack the capacity to remain involved with sustainability is outside of their job priorities and it is an effort that requires dedicated staffing and funding they do not have.

Data: Data concerns rise from the lack of telematic tools in rural fleets, resulting in a reliance on handwritten data, which leads to gaps, data fragmentation, missing fuel cost information, and inconsistencies. Limited capacity to prioritize green fleet transitions may delay data use, risking its relevance. Additionally, breaking down large datasets proved challenging due to vehicle diversity. Large dataset breakdown was a challenge as well, particularly in the realm of massive and diverse datasets like those for Alabama’s state parks. Infrastructure was another significant barrier due to the additional investment requirements that complicated the planning process and made deployments more difficult.

Procurement/Funding: State bid list limitations, along with time and funding constraints, posed significant challenges in relation to purchase lists that limited vehicle options and deployments post-assessment. Time and funding constraints exacerbated issues like the travel funding for community partners to attend the vehicle demonstrations that came with their own host of challenges.

Demo vehicle availability and scheduling challenges posed significant barriers as the uncooperative nature and prioritization of larger and more populated areas for vehicle demonstrations took precedence for providers and commitment hesitance led to floundering between community and provider on whether a demonstration would be held or not. Furthermore, regional providers like Sonny Merryman were easier to work with, but national providers like Toyota posed complexity challenges between time, paperwork, and date commitment. Travel issues were also commonplace due to rural communities’ travel constraints.