

Helping Obtain Prosperity for Everyone (HOPE) Program

Applicant and Proposal Profile

Is this a resubmission due to an invalid/error message from FTA? Yes No

Section I. Applicant Information

Organization Legal Name:

FTA Recipient ID:

Organization Chief Executive Officer:
(Name and Direct Phone Number)

- Project Location: Small Urban (199,999 to 50,000)
 Large Urban (200,000 or greater)
 Rural (Less than 50,000)

Specify the County(s)/Cities and State where the project is located. Please refer to list posted to www.transit.dot.gov/HOPE to determine eligibility:

Project activities will be conducted in two communities in North Carolina. AppalCART in Boone, NC within Watauga County has been identified as a key partner. Watauga County is considered an area of persistent poverty based on the HOPE definition. The second project partner will be in an area of persistent poverty in Eastern North Carolina, to be identified after grant award. Possible partners in Eastern North Carolina include the communities of Greenville, Goldsboro, or Rocky Mount, all areas of persistent poverty.

Confirm that the project is located in an area of persistent poverty. Yes No
 Please provide mapping or narrative as an attachment to confirm eligibility. (Note: see www.transit.dot.gov/HOPE for maps and a complete list of areas of persistent poverty.)

Eligible Recipient or Subrecipient of 49 U.S.C. 5307, 5310, or 5311 Yes No

- Applicant Eligibility (select all that apply): State
 Local government authority
 Operator of Public Transportation
 Federally-recognized Native American Tribe
 Private Non-Profit Organization
 Intercity Bus Service
 Other

If Other,
specify:

Section II. Project Information

About the Project

Project Title: Mountains to Sea: Electrifying North Carolina’s Transit Fleets

Project Executive Summary:

The proposed project includes development of zero-emission transit vehicle (ZETV) deployment plans for two transit systems in counties with persistent poverty, and delivery of two workshops regarding ZETV deployment. The North Carolina Department of Transportation (NCDOT) will partner with the Center for Transportation and the Environment (CTE), AppalCART – the transit provider for Boone, NC in Watauga County and a community in Eastern North Carolina to be identified after award.

Project Statement of Work:

This project supports planning for the deployment of zero-emission transit vehicles (ZETVs) in two distinct geographic areas of North Carolina. The project team will develop ZETV transition plans for AppalCART in Boone, NC and for a transit provider in eastern North Carolina (to be identified). After developing the transition plans, the team will conduct two regional workshops on planning for ZETVs, using the agencies as case studies for others in the area.

General Information

Describe how this application addresses one or more departmental objectives addressed in the NOFO:

This project will support economic vitality at both the regional and national levels by providing two case studies that rural transit agencies nationwide can reference when developing transition plans for ZETVs and NCDOT can reference to develop a statewide strategy. This will provide needed information to ensure that rural, impoverished areas are beneficiaries of these technologies and their expected economic benefits, such as lower fuel and maintenance costs.

If applicable, describe how the proposed project is located in or will impact an Opportunity Zone. Please identify the Opportunity Zones impacted:

One of the key project partners, AppalCART, serves an opportunity zone near Boone, NC (OZ 37189920601). Deployment of an electric transit vehicle by AppalCART – facilitated by development of a plan and strategy created from this project – will reduce costs, improve the environment and better serve the community, including the opportunity zone.

If applicable, describe how the proposed project supports FTA's Accelerating Innovative Mobility (AIM) Initiative:

This project will support the successful integration of electric drive technology (an advanced propulsion system) within two transit agencies, including AppalCART. The transition planning will provide case studies to support deployment of zero-emission transit vehicle technology for agencies with similar operations. Benefits of electric drive technology can include reduced maintenance costs compared to conventional fuels, reduced operating costs, and a better experience for operators and riders.

If applicable, describe how the proposed project supports US DOT's R.O.U.T.E.S Initiative:

While most electric vehicle deployments are in urban areas, there is growing interest to deploy this technology in rural areas, such as the area served by AppalCART. This project will move the discussion forward by developing a comprehensive deployment strategy for a rural transit provider. Ultimate outcomes aligned with the goals of ROUTES include reduced transit operating costs, reduced emissions, and higher quality of service for the community, thereby improving quality of life for residents.

- Project Type (select all that apply):
- Transit Planning Study for Services and Routes
 - Engineering Study of Transit Facilities or New Facilities
 - Technical Study or Plan for Advancing Technologies
 - Transit Financing Study or Plan
 - Planning and Environmental Linkage Study
 - Environmental Analysis
 - Planning for Low or No Emission Buses
 - Coordinated Public Transit Human Services Transportation Planning
 - Integrated Fare Collection Study
 - Planning for Service to Address the Opioid Epidemic
 - Other (Please specify)

If Other, specify:

Project Budget

Description	QTY	HOPE Amount	HOPE Match Amount	Other Federal Funds	Other	Total Cost	
Planning and Initiation	1	10,088	0	0	0	10,088	<input checked="" type="checkbox"/>

Description	QTY	HOPE Amount	HOPE Match Amount	Other Federal Funds	Other	Total Cost	
AppalCART Transition Plan	1	40,316	0	0	0	40,316	<input checked="" type="checkbox"/>

Description	QTY	HOPE Amount	HOPE Match Amount	Other Federal Funds	Other	Total Cost	
Eastern Transition Plan	1	40,316	0	0	0	40,316	X
AppalCART Workshop	1	15,664	0	0	0	15,664	X
Eastern Workshop	1	15,664	0	0	0	15,664	X
Total:		122,048	0	0	0	122,048	

Matching Funds Information

Matching Funds Amount : (Must match Project Budget Amount)

Source of Matching Funds:

Due to recent budget constraints caused by significant revenue losses as a result of COVID-19, no local or state match is being provided for this grant. If budget circumstances change in the future, additional funding may be added to expand the scope of the project and increase the non-federal matching share.

Matching Funds Availability:

Due to recent budget constraints caused by significant revenue losses as a result of COVID-19, no local or state match is being provided for this grant. If budget circumstances change in the future, additional funding may be added to expand the scope of the project and increase the non-federal matching share.

Project Scalability

Is project scope scalable? Yes No

If Yes, specify minimum HOPE Funds necessary:

Provide explanation of scalability with specific references to the budget line items above:

If necessary, NCDOT can scale the scope of the project to include only the planning and initiation step, a transition plan for AppalCART, and one workshop. AppalCART will benefit greatly from transition planning. Additionally, this will still provide value to NCDOT in future statewide planning efforts; however, the efficacy will be reduced due to a lack of information about zero-emission transit vehicle planning in eastern North Carolina and differences to western North Carolina.

Project Proposed Milestones Timeline (Please be as specific as possible)

Timeline Item Description	Timeline Item Date
Project Kickoff Meeting	1/15/2021
AppalCART Transition Plan	6/30/2021
Eastern Transition Plan	6/31/2021
AppalCART Workshop	7/31/2021
Eastern Workshop	7/31/2021
Project Closeout	8/31/2021

Congressional Districts (Place of Performance)

Congressional District

NC-005

Section III . Evaluation Criteria

***** Address each of the evaluation criteria as described in the Notice of Funding Opportunity.*****

Demonstration of Need

Describe the need for project and how the activities would support eligible projects under Chapter 53 of Title 49.

The lack of widespread experience with zero-emission transit vehicles can present challenges for transit agencies unfamiliar with zero-emission technologies. There are specific operating characteristics and fueling requirements associated with these deployments. The transition planning initiative proposed in this project will help build both NCDOT and the partner agencies' understanding of the technology to help ensure successful planning to transition to zero-emission technology and ultimately support successful deployment of zero-emission vehicles into revenue service. This supports HOPE project categories, including innovative technologies and low or no emission buses. Project outcomes will also result in case studies from two diverse geographies represented within the

state. The considerations included in the methodology used to guide the project are designed to address some of the impediments that can hinder the successful planning for and deployment of ZETVs. Agencies need to be able to select vehicles with the ability to meet their operational needs. Furthermore, agencies need to understand the energy required to operate their vehicles and select the appropriate charging strategy. Agencies also need to ensure their facilities can accommodate charging infrastructure and understand if electrical upgrades are required. CTE's Transition Planning Methodology is explained in more detail in the Project Implementation Strategy Section

The project also supports NCDOT's efforts to fulfill objectives outlined in the Governor of North Carolina's Executive Order 80 issued in 2018. The executive order requires the North Carolina Department of Transportation to develop a plan for increasing the number of zero-emission vehicles in the state. NCDOT's plan, released in October 2019, includes establishing a task force to study converting transit agency fleets to electric propulsion. Funding through the HOPE Program will provide necessary resources to allow NCDOT to better understand the state of the practice and challenges associated with electric vehicles so the right strategies can be developed for broad deployment. An excerpt from the executive order is included in Attachment 5 and an excerpt from the NCDOT ZEV plan is included in Attachment 6.

A key guiding principle and goal of NCDOT's long-range transportation plan is to provide environmental stewardship in all activities. Advancing the conversation on deployment of transit vehicles which have lower emissions and are better for the environment closely aligns with this long-range planning objective.

Demonstration of Benefits

Describe how the proposed activities would improve the ability to address one or more of the following factors - improve the existing condition of the transit system, improve the reliability of transit service for its riders, enhance access and mobility within the service area, accelerate the introduction of innovative technologies, reduce vehicle emission, reduce barriers to low income housing, or improve rural transportation.

The HOPE program is intended to improve transit in areas of persistent poverty by providing funding for planning projects in those areas, particularly if those projects will introduce innovative technologies to those communities. This project does exactly that by creating transition plans for transit agencies to follow to introduce new vehicle technologies into their communities.

This project will provide specific support for two transit agencies in North Carolina and lay the groundwork for developing similar plans throughout other regions by establishing case studies for similar agencies to use as a model. The transition plans developed through this effort will provide AppalCART and another transit agency with a solid plan to use as a foundation for procuring and deploying zero-emission transit vehicles in the future. One of the challenges associated with ZETV deployments is estimating the actual range of the vehicles and ensuring that the vehicle deployed is capable of completing service as assigned. These transition plans will address this challenge and accelerate the deployment of electric vehicles in these communities in the future.

In turn, the ZETVs reduce vehicle emissions as there are no tailpipe emissions associated with their operation. This offers immediate benefits to the community, improving local air quality. AppalCART used 168,202 gallons of diesel across their fleet in 2019. Results from the EPA's Diesel Emissions Quantifier indicate that moving to a zero-emission fleet could result in annual reductions of 52.1 tons of NOx, 0.95 tons of PM 2.5, 12 tons of CO, and 77,583 tons of CO₂. Zero-emission vehicles can also be less expensive to maintain and operate than conventionally fueled ones, an especially needed benefit in areas of persistent poverty.

The state's involvement in this project is further indication of the support for this project. As described in the Demonstration of Need section, this project will provide critical planning results to NCDOT to assist in meeting the state's goal to increase the number of zero-emission vehicles deployed in the state.

Other entities in the AppalCART community have initiatives that align with project objectives associated with low or no emissions projects and consider reducing emissions in AppalCART's fleet as in support of those projects. Appalachian State University Office of Sustainability's efforts include transition-related initiatives to promote options to personal automobile use, including AppalCART. The university is also developing a Climate Action Plan with a working group dedicated to University Transportation. The working group is focused on transportation-related carbon reduction strategies.

The Town of Boone also has aggressive sustainability goals which this project would support, including climate neutrality in municipal operations by 2030, 100 percent clean renewable energy in municipal operations by 2040, and 100 percent clean renewable energy for

the entire Boone community by 2050.

Local Financial Commitment

Describe the source of non-federal match and whether non-federal match is available, currently reserved or committed for this project, or will be secured upon project approval. (Attach documents to substantiate, as appropriate)

Due to recent budget constraints caused by significant revenue losses as a result of COVID-19, no local or state match is being provided for this grant. If budget circumstances change in the future, additional funding may be added to expand the scope of the project and increase the non-federal matching share.

Project Implementation Strategy

Describe the Work Plan, Schedule, and Deliverables for the proposed activities. Describe the Partnerships involved in the project. Describe the technical capacity of the Partnership to undertake the proposed work. Describe the regional or local support for the proposed work and attach documentation.

As allowed in the NOFO, NCDOT is partnering with a nonprofit that can assist with making this project low or no emissions. CTE is experienced in developing, implementing, and administering advanced transportation technology projects, with a focus on zero-emission transit buses. CTE has managed prototype vehicle developments, including a number of vehicles under the FTA's National Fuel Cell Bus Program; managed deployment projects, including a number of buses deployed through FTA's Low-No Program; and has developed a number of fleet transition plans for agencies of all sizes. This breadth of experience is critical for ensuring successful planning for and supporting the deployment of ZETVs at rural transit agencies. Relatively few vehicles sized appropriately for operation in rural transit service have been deployed, and many rural transit agencies will not have deployed ZETVs before. CTE will ensure that best practices for ZETV deployment are included in all deliverables from this planning effort.

One of the transition plans will be for AppalCART. AppalCART, operating in Watauga County, North Carolina, offers service through 11 bus routes and 10 van routes. The agency has 41 passenger vehicles, including 26 transit buses. AppalCART provides needed transportation service to eligible participants over the age of 60 through a partnership with the Project on Aging, and the agency also serves Appalachian State University.

CTE has leveraged experience in helping transit agencies through their initial or pilot zero-emission bus deployment programs to develop a Zero-Emission Transit Vehicle Transition Planning Methodology for transit agencies. These plans consider bus and service requirements, fleet procurement timelines, infrastructure assessments, bus and facilities capital costs, operating and maintenance cost impacts, and emission benefits. CTE's ZETV Transition Planning methodology which will guide this project includes four key phases: Market Analysis, Operational Review, Facility and Equipment Review, and a Financial and Economic Analysis. A more detailed description of each phase of the transition planning methodology is included below.

Market Analysis: CTE develops a high-level comparison of relevant and available zero-emissions technologies to evaluate which options would be most viable for a transit agency's specific operations.

Operational Review: CTE evaluates the transit agency's current operations to determine the feasibility of operating ZETVs in their system. This analysis will be based on a screening-level assessment of the agency's weekday transit service. The screening-level assessment is designed to evaluate the general potential for replacing current transit vehicles with zero-emission technologies.

Facility and Equipment Review: CTE will conduct charge modeling to determine the power and energy required to charge battery electric transit vehicles overnight at the depot and the resulting cost. CTE will identify utility service levels needed to accommodate battery electric transit vehicles based on a hypothetical 100% conversion.

Financial and Economic Analysis: CTE will evaluate the capital and operational costs and cost sensitivities of a transition to ZETVs to support an analysis of the overall business case.

CTE will conduct this analysis for two specific transit agencies: one in eastern North Carolina and one in western North Carolina. The two regions of the state have very different characteristics, and both will be informative for NCDOT as they develop ZETV plans statewide.

NCDOT and CTE will also host two regional workshops based on these transition plans so that other rural agencies can benefit from the work conducted under this funding opportunity.

The project begins with a kickoff meeting followed by a five-month period to complete the transition planning process. The regional workshops are planned a month after the transition plans are completed.

Technical, Legal, and Financial Capacity

Describe the technical, legal, and financial capacity of the applicant to undertake the project and describe any outstanding legal, technical or financial compliance issues from an FTA compliance review or Federal Transit grant-related Single Audit Finding and the status of work to address the compliance issues, if any.

NCDOT is committed to assisting during the project implementation process through financial management, identification of project management support, technical assistance, and grant compliance management. If this project is awarded funding it will have a dedicated project manager assigned to it to ensure the project's scope, schedule and budget remain on track and required laws and regulations are followed. NC DOT has also selected strong partners to ensure the success of this project. There are no outstanding legal, technical, or financial issues that would make this a high-risk project.

CTE is an experienced project participant in FTA funded projects. As described in the Project Implementation Strategy section, CTE is experienced in developing, implementing, and administering advanced transportation technology projects, with a focus on zero-emission transit buses. CTE has developed both a project management approach as well as methodologies specifically designed for zero-emission bus deployments augmented by a set of established project control and risk management procedures. CTE's implementation of the project tasks associated with this project will be guided by performance criteria to adhere to the project schedule and budget.

AppalCART is a subrecipient of Federal Transit Administration funds received by NCDOT and has the technical knowledge and capacity to manage the grant funding. The second partner in Eastern North Carolina to be identified later will also be an existing subrecipient of FTA funds from NCDOT.

All required statewide and local planning processes will be followed to ensure this project is properly included and approved by all planning bodies. In the case of AppalCART, because they are a rural community, they are not required to develop a Unified Planning Work Program. However, the project team will ensure that all local and regional planning bodies are involved in all aspects of the project.

Letters of support from project partners are included in Attachments 2, 3 and 4.