Topeka Metropolitan Transit Authority Electric Vehicle Fleet Study

Request for Bids TO-22-09

Submitted by:
Center for Transportation & the Environment

January 20, 2022

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Mr. Richard Appelhanz
Topeka Metropolitan Transit Authority
201 North Kansas Avenue
Topeka, KS 66603

Dear Mr. Appelhanz:

The Center for Transportation and the Environment (CTE) is pleased to present our proposal in response to the Topeka Metropolitan Transit Authority Electric Vehicle Fleet Study (RFB TO-22-09). CTE is a 501(c)(3) nonprofit organization. Our mission is to improve the health of our climate and communities by bringing people together to develop and commercialize clean, efficient, and sustainable transportation technologies. Since its founding in 1993, CTE has managed a portfolio of more than $800 million in team research, development, and demonstration projects funded by a variety of federal and state organizations.

CTE is experienced in developing, implementing, and administering advanced transportation technology projects, with a focus on zero-emission transit buses. CTE has managed or participated in more than 30 transition planning projects across the country and has assisted more than 70 transit agencies that have either deployed, or will soon deploy, more than 350 zero-emission buses. Based on this extensive experience, CTE developed a ***Zero-Emission Bus Smart Deployment Methodology*** and a ***Zero-Emission Bus Transition Planning Methodology*** to support successful zero-emission bus deployments and fleet transitions. To our knowledge, there is no other organization in the country has the level of experience CTE possesses in supporting transit agencies in efforts to deploy zero-emission buses.

Thank you for your consideration of our proposal and the opportunity to support Topeka Metropolitan Transit Authority in completing an electric vehicle fleet study. You may contact me or Steve Clermont, CTE's Director of Planning and Deployment, with questions regarding the content of our proposal. My contact information is included below, as well as on the requested Cover Sheet, and Mr. Clermont can be reached at 404-606-3498 or steve@cte.tv.

Sincerely,

Daniel J. Raudebaugh, Executive Director
Center for Transportation and the Environment
730 Peachtree Street NE, Suite 450
Atlanta, GA 30308
dan@cte.tv
Ph: 404-518-2322 Fax: 404-817-3224

COVER SHEET

Proposer Information

Company Name: Center for Transportation and the Environment

Address: 730 Peachtree Street NE, Suite 450

City, State, Zip: Atlanta, Georgia 30308

Main Phone: 404-518-2322 (Dan Raudebaugh, Executive Director)

Contact Person Information

Name: Daniel J. Raudebaugh

Job Title: Executive Director

Phone: 404-518-2322

Alt. Phone: 404-606-3498 (Steve Clermont, Director of Planning & Deployment

Email: dan@cte.tv

Signature: 

Date: 1/11/2021

2) Description of Understanding

The Center for Transportation and the Environment (CTE) applauds the Topeka Metropolitan Transit Authority (Topeka Metro) for its planning efforts to prepare for electric transit buses. CTE understands that Topeka Metro is requesting the Bidder to evaluate what is required to provide existing levels of transit service with an electrified fleet of similar size to the present-day fleet.

CTE's approach to supporting transit agencies with electric bus deployment and long-range planning efforts starts from service requirements and followed by determination of vehicle and infrastructure requirements necessary to provide that level of service. Through supporting more than 30 transit agencies with zero-emission bus planning efforts, CTE has developed and refined a ***Zero-Emission Bus Transition Planning Methodology***. The resulting plans consider vehicle service requirements, fleet procurement timelines, infrastructure assessments, vehicle and facilities capital costs, operating and maintenance cost impacts, and emission benefits.

CTE's standard Zero-Emission Bus Transition Planning Methodology, as highlighted in Figure 1, encompasses 10 key phases: Planning & Initiation; Requirements & Data Collection; Service Assessment; Fleet Assessment; Fuel Assessment; Maintenance Assessment; Redundancy, Resilience, and Response Assessment; Facilities Assessment; Total Cost of Ownership Assessment; and finally, the creation of the Transition Plan: in this case, the Topeka Metropolitan Transit Authority Electric Vehicle Fleet Study. The plan for Topeka Metro will include the analysis of the planning, implementation, financing, and operational changes needed for the agency to provide a level of service that is equivalent to what is currently offered. CTE will evaluate strategies to maximize vehicle use and minimize projected fleet size growth, such as reorganizing runs to allow for vehicle swapping and mid-day charging or using on-route charging. CTE will also incorporate projected improvements in vehicle technology into the analysis and determine if certain runs, which may not be feasible with one vehicle using currently available technology, may be feasible in the future. This will be aligned with Topeka Metro's fleet replacement schedule.

The scope outlined below follows CTE's standard methodology and is customized to meet the needs of Topeka Metro. In addition, CTE has highlighted the issues Topeka Metro requested be addressed within the proposed scope under each appropriate task.

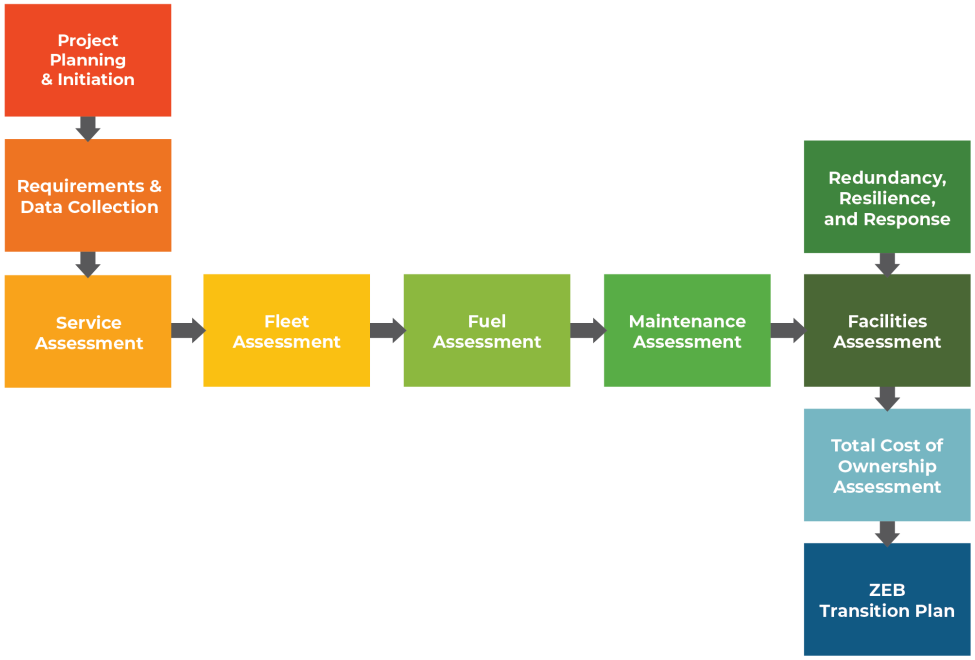


Figure 1 - Steps in CTE's Zero-Emission Bus Transition Planning Methodology

Task 1 Project Planning and Initiation

Bidder Responsibilities addressed in Task 1**:** *Internal and Electric Vehicle Regulations, Laws, Rules and Policies.* CTE will determine the characteristics of Topeka Metro's current fleet and planned electric buses and establish if any policies may need to be modified in order to optimize the transition to a mixed diesel/electric fleet.

Electric vehicle implementation strategies. CTE will identify potential vendors for electric buses and charging infrastructure.

Task 1.1 Planning & Initiation

CTE will work with Topeka Metro to finalize the scope, approach, tasks, assignments, and timeline for the study.

CTE will conduct a kickoff meeting with all stakeholders. This will either be in-person or virtual depending on Topeka Metro's preference. As part of the kickoff meeting, CTE will also conduct an "Assumptions Workshop" to start the Requirements & Data Collection phase. The assumptions collected during this phase provide key parameters used in each of the Assessment phases that follow. CTE shall work with Topeka Metro staff to collect route, run, fleet, operational, maintenance, and facilities information to define the "As Is" or baseline scenario. CTE shall also conduct a "Route Modeling"

workshop to determine the sample routes that will be used as the basis for the Service Assessment described in Task 2.1.

Issues to be Addressed:

- N/A

Deliverable: The deliverable of this task will be a project plan outlining the project goals, tasks, and timeline.

Task 1.2 Market Analysis with Regulations and Policies Addressed

CTE will provide an overview of the zero-emission bus market, including potential vendors for electric buses and charging stations. CTE will review current electric vehicle and charging station policies, laws, regulations and rules that apply to Topeka Metro's service area, as well as internal policies and practices within Topeka Metro's Planning and Operations department, and prepare a report on any items found that may be of critical importance to achieving Topeka Metro's objectives for the deployment of their upcoming and future electric bus fleet.

In addition to these policies and regulations, CTE will identify the skills required to plan for, procure, operate, and maintain zero-emission vehicles and associated infrastructure across all levels and functions of the organization. The assessment will include identifying the tools needed to operate and maintain a fleet of zero-emission vehicles and associated infrastructure, and implications for maintaining the software on which the fleet will depend. CTE will work with Topeka Metro to identify any skill gaps and suggest strategies for training current employees in these areas. The evaluation will also follow the Federal Transit Administration's (FTA) guidance to ensure the transition to zero-emission buses (ZEBs) does not displace the current workforce.

Issues to be Addressed:

- What is the impact of adding electric buses to the existing Topeka Metro fleet?

Deliverable(s):

- Report on electric bus market, including survey of existing vendors and current critical electric vehicle and charging station policies, laws, regulations and rules, both applicable to the Agency's service territory and internal to Topeka Metro.
- Workshop reviewing workforce development needed for adding electric buses to the existing fleet.
- Information required for a transition plan for applying for funding through FTA's Low or No Emission Vehicle Program (Low-No).

Task 2 Service Assessment

Bidder Responsibilities addressed in Task 2**:** *Electric Vehicle Implementation Strategies*. General vehicle and service implementation guidelines will be developed in Task 2.

During this project phase, CTE will evaluate expected energy needs for each vehicle to determine if zero-emission technologies have sufficient range to replace current vehicles on a 1:1 basis and complete every scheduled service day or route assignment. The results of this analysis include minimum and maximum anticipated energy consumption and range on each service run depending on weather conditions, use of auxiliary fossil-fueled heating systems, duty cycle, and battery degradation scenarios specific to Topeka Metro's run approach, fleet composition, and operating environment.

CTE will use an empirical model based on its electric bus operational database to estimate the energy consumption and range of the specific class of electric bus under consideration. The model considers the variability of range resulting from differences in route type, loading, topography, temperature conditions, driver behavior, and duty cycle to provide upper and lower bounds for the expected energy consumption for each operation. The agency-specific inputs to the model include duration and mileage of each current and future run, and anticipated operational conditions.

CTE will use this modeling to inform Topeka Metro's deployment strategy for its first three electric buses.

In the event that a scheduled service day cannot be completed as scheduled using an electric bus with a single overnight charge, CTE will explore other solutions to meet Topeka Metro's service requirements, including on-route charging, reblocking the service, and increasing the fleet size.

Issues to be Addressed:

- What is the impact of adding just three electric buses to the Topeka Metro fleet?
- Topeka Metro wants to evaluate at which point (if any) an on-route charger makes sense to extend runs that can be performed by an electric bus vs. having to purchase a higher number of buses to do so
- Topeka Metro wants to know how many extra electric buses are needed as runs are transferred to battery electric vehicles (BEVs)

Deliverable(s): The deliverable of this task will be a workshop reviewing the vehicle feasibility and strategies for scenarios where a vehicle cannot be replaced on a 1:1 basis.

Task 3 Fleet Assessment

Bidder Responsibilities addressed in Task 3**:** *Electric Vehicle Implementation Strategies*. Specific battery electric bus implementation guidelines, including integration with the existing diesel fleet, will be developed. This will include an evaluation at various levels of electrification.

CTE will use the outputs of Task 2.1 to create a projected timeline for replacement of current vehicles consistent with Topeka Metro's existing fleet replacement plan and existing service levels, with consideration for any technology constraints and alternative fleet compositions determined by the Service Assessment, and in compliance with Topeka Metro's sustainability and transition goals. This will be completed for different levels of electrification, including 25%, 50%, and 100% electric bus operation.

The Fleet Analysis also includes an assessment of projected fleet capital cost over the transition lifetime.

Issues to be Addressed:

- Please provide changes necessary to Topeka Metro's current operations (building facility, staging, fueling and cleaning processes, maintenance garage arrangement and repair processes, station processes, station location and staging etc.) for the following scenarios below. Topeka Metro wants a comprehensive look at the changes necessary to make Topeka Metro routes run with the level of reliability as they do with the current diesel fleet with consideration of; all externalities (examples including, but not limited to, standard and outlier climatic situations: extremes of both heat and cold, precipitation (rain, snow, ice etc.), elevation grades on all Topeka routes)
- Full review of changes necessary for 1/4 runs electric
- Full review of changes necessary for 1/2 runs electric
- Full review of changes necessary for all runs electric
- At what point would Topeka Metro need to make operational changes when adding electric buses to the Topeka Metro fleet? (Example: Implementation of 1/4 routes, 1/2 routes, etc.)

Deliverable(s): The deliverable of this task will be a workshop reviewing the vehicle replacement schedule for Topeka Metro's fleet.

Task 4 Fuel Assessment

Bidder Responsibilities addressed in Task 4**:** *Electric Vehicle Implementation Strategies*. Energy requirements will be evaluated to determine the number and power of chargers required to support the electric fleet.

Electric vehicle financial analysis. CTE will evaluate the cost of electricity to support the electric fleet.

During the Fuel Assessment task, CTE will analyze daily fuel consumption and demand requirements, projected annual fueling costs, and the potential for savings over current fuel costs.

CTE will create a charge model that will use the vehicle energy needs and parking times to determine Topeka Metro's power requirements at each facility over time. CTE will evaluate how many chargers will be required during each year of the fleet replacement, and this information will be used to inform how Topeka Metro should phase infrastructure installation. The utility rate schedules will be incorporated to provide recommendations for minimizing operating costs for the vehicles.

Issues to be Addressed:

- How should Topeka Metro schedule electric bus charging?

Deliverable(s): The deliverable of this task will be a workshop reviewing the charging requirements and charging equipment needs for Topeka Metro's fleet, as well as how to schedule charging to best lower utility costs or best utilize equipment.

Task 5 Maintenance Assessment

Bidder Responsibilities addressed in Task 5**:** *Electric Vehicle Implementation Strategies*. Best practices for adding buses to Topeka Metro's fleet include the determination of maintenance needs.

Electric Vehicle Financial Analysis. CTE will evaluate maintenance costs in this task.

During the Maintenance Assessment task, CTE will analyze labor and materials costs battery electric vehicle maintenance over the transition period as well as major component replacements for battery electric buses based on expected vehicle usage.

Issues to be Addressed:

- What infrastructure, supplies, and labor are required to both introduce and maintain electric buses into the Topeka Metro fleet? (layouts at current facilities/properties)

Deliverable(s): The deliverable of this task will be a workshop reviewing the maintenance requirements and costs for Topeka Metro's fleet throughout the transition to zero-emission vehicles.

Task 6 Facility Assessment

Bidder Responsibilities addressed in Task 6**:** *Electric Vehicle Implementation Strategies*. Guidelines for planning, installing and managing electric bus charging stations will be developed.

Electric Vehicle Financial Analysis. CTE will evaluate infrastructure costs under this task.

During the Facilities Assessment task, CTE will further define the requirements for charging equipment to support the transition to battery electric buses. CTE will develop estimates for equipment and infrastructure costs; design, construction, and installation costs; space and siting requirements, operational impacts; and utility service requirements. CTE will coordinate with the local utility when evaluating existing infrastructure and feasibility of future infrastructure build-outs. CTE will also evaluate potential layouts for electric bus parking and charging. The assessment also provides a high-level projection to define the timeline for various facility and infrastructure projects to build-out the charging capacity consistent with the addition of battery electric vehicles to Topeka Metro's fleet.

Issues to be Addressed:

- What infrastructure, supplies, and labor are required to both introduce and maintain electric buses into the Topeka Metro fleet? (layouts at current facilities/properties)?
- What can be done for the initial three electric buses to allow for an easier transition to additional electric buses added at a later date?

Deliverable(s): The deliverable of this task will be a workshop reviewing the facility requirements to transition Topeka Metro's fleet to zero-emission buses.

Task 7 Total Cost of Ownership Assessment

Bidder Responsibilities addressed in Task 8**:** *Electric Vehicle Financial Analysis*. Cost estimates for all aspects of electric vehicle implementation will be developed as a part of Task 7.

During the *Total Cost of Ownership Assessment* phase, CTE will summarize the annual costs of bus procurements, fuel, maintenance, and labor—including labor costs related to operational changes that may be required to maintain service over the vehicle transition timeline—as well as the design, construction, and installation costs of charging equipment, supporting infrastructure, and facility upgrades.

Issues to be Addressed:

- What is the total cost of ownership for an electric fleet, taking into account impacts to operations, planning, and scheduling?
- This study needs to go beyond the Total Cost of Ownership of a single electric bus vs. a diesel bus. This is looking at larger impacts across Topeka Metro operations, planning and scheduling. What does the transition towards these higher levels of electric runs look like?

Deliverable(s): The deliverable of this task will be a workshop reviewing the total cost of ownership for the fleet transition.

Task 8 Electric Vehicle Fleet Study

Bidder Responsibilities addressed in Task 9**:** *Internal and Electric Vehicle Regulations, Laws, Rules, and Policies; Electric vehicle implementation strategies, and Electric Vehicle Financial Analysis*. CTE will summarize the results of all activities under this project in Task 8.

CTE will summarize the findings of each task and workshop into a comprehensive Electric Vehicle Fleet Study for Topeka Metro.

Issues to be Addressed:

- What is the impact of adding electric buses to the existing Topeka Metro fleet?
- Provide a transition plan for Topeka Metro that addresses what operational, maintenance, and infrastructure changes would be needed at various level of fleet electrification?

Deliverable(s): The deliverable of this task will be a presentation and final report with Topeka Metro's Electric Vehicle Fleet Study including 25%, 50% and 100% electric operations.

Optional Task 9 Resilience, Redundancy, and Emergency Response Planning

Bidder Responsibilities addressed in Task 7**:** *Electric Vehicle Implementation Strategies*. Best practices for adding electric buses to the Topeka Metro fleet may include reviews on resilience planning strategies.

The *Redundancy, Resilience and Emergency Response Assessment* investigates an agency's options to continue to provide service in fuel scarcity scenarios such as grid failures and shutdowns as well as review an agency's ability to support an emergency response in natural disaster events that may require differing duty cycles and vehicle applications. This can be an important consideration for agencies that also act as part of their community's emergency response network and would need to be able to perform under adverse conditions. Moreover, it is an advantageous study for entities interested in energy independence. At the conclusion of this assessment, a workshop will be conducted with the agency to review the facility and vehicle technology solutions to support a zero-emission fleet in off-grid or grid-down, and emergency situations, as well as an overview of the costs associated with those options.

Issues to be Addressed:

- What is the impact of adding electric buses to the existing Topeka Metro fleet?

Deliverable(s): The deliverable of this task will be a workshop reviewing the facility and vehicle availability requirements to support a zero-emission fleet in off-grid, grid-down, and emergency scenarios at Topeka Metro.

Optional Task 10 External Funding and Partnership Options

CTE has an established process for tracking public funding opportunities and is knowledgeable of programs through which transit agencies are eligible to receive funding to support a transition to ZEBs, both at the federal and state levels. CTE will develop a matrix of potential public funding sources for rebates, incentives, grants, and other opportunities. The matrix shall include eligibility requirements, funding amounts and availability, application timelines, and partnership opportunities with local businesses and organizations.

To be eligible to apply for funding under FTA's Low or No Emission Vehicle Program, an agency must submit a transition plan. CTE has ensured that all of the requirements for FTA's transition plan would be met through the Electric Vehicle Fleet Study.

Issues to be Addressed:

- N/A

Deliverable(s): Workshop reviewing funding opportunities for electric buses.

3) Experience and Qualifications

The Center for Transportation and the Environment is a 501(c)(3) nonprofit, membership-based planning and engineering organization. CTE's mission is to improve the health of the climate and communities by bringing people together to develop and commercialize clean, efficient, and sustainable transportation technologies. CTE collaborates with federal, state, and local governments, fleets, and vehicle technology manufacturers to advance clean, sustainable, innovative transportation and energy technologies. Since its founding in 1993, CTE has managed a portfolio of more than $800 million in team research, development, and demonstration projects funded by a variety of federal and state organizations including the U.S. Departments of Transportation, Energy, Defense, and Interior, as well as the California Air Resources Board and the California Energy Commission.

CTE is experienced in developing, implementing, and administering advanced transportation technology projects, with a focus on zero-emission transit buses. CTE has provided technical assistance and project management services on many zero-emission bus deployment projects made possible through FTA's Low-No Program, TIGGER Program, and Clean Fuels Program. CTE has also demonstrated experience in the fuel cell arena as one of the three National Fuel Cell Bus Program Consortia responsible for deploying fuel cell transit buses for FTA. Through these and other programs, CTE has managed or participated in more than 30 transition planning projects across the country and has assisted more than 70 transit agencies that have either deployed, or will soon deploy, more than 350 zero-emission buses (see Figure 2). As a result, the level of experience and expertise with zero-emission buses that CTE provides to their clients is unprecedented in the transit industry.

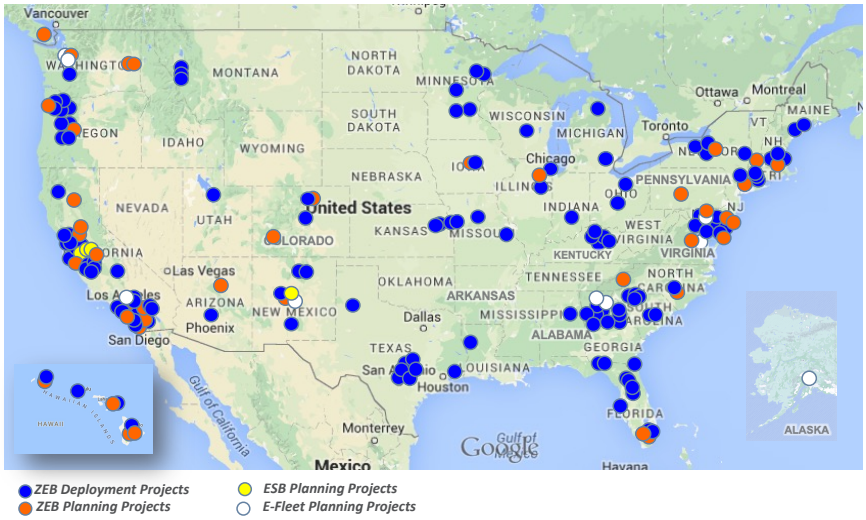


Figure 2 - CTE's Zero-Emission Projects

CTE developed a ***Zero-Emission Bus Smart Deployment Methodology*** to assist transit agencies through their initial or pilot zero-emission bus deployment programs. The cornerstone of CTE's approach is to ensure that the fleet operator matches the most appropriate propulsion technology to the intended use, operational strategy, and deployment scenario. CTE has leveraged this deployment experience to

develop a ***Zero-Emission Bus Transition Planning Methodology*** for transit agencies as introduced in Section 2. 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 as fleets move to become 100 percent zero emission.

CTE is also an active participant in industry-led initiatives, including the Electric Power Research Institute (EPRI) Bus and Truck Charging Group and American Public Transportation Association's (APTA) Zero Emission Bus Standard Bus Procurement Guidelines Development Committee. CTE was selected by the Transportation Research Board's Transit Cooperative Research Program to author two research reports: *Electric Battery Buses – State of Practice* and the *Guidebook for Deploying Zero-Emission Transit Buses*. The reports provide resources to transit agencies exploring opportunities to deploy zero-emission buses.

CTE is leading the zero-emission bus industry with a number of outreach initiatives designed to educate, collaborate, and advance the state of the technology to best serve the needs of transit agencies across the country. Initiatives include leadership on the Zero Emission Bus Resource Alliance (ZEBRA) and International Zero Emission Bus Conference as well as managing some of the initial activities for the Midwest Hydrogen Center of Excellence and the West Coast Center of Excellence in Zero-Emission Technology.

References

Examples of similar services CTE has provided are included below with contact information for references.

Project Name: SMART Electric Bus Feasibility Study and Implementation Plan	
Agency: San Miguel Authority for Regional Transportation (SMART)	*Contact:* David Averill, Executive Director *Ph:* (970) 708-4066 *Email:* David.averill@smarttelluride.com
Project Description: CTE is leading an effort to provide SMART with a Zero Emission Bus Roadmap. This roadmap will detail a deployment plan that lays out the actions and costs necessary to maximize battery electric bus (BEB) usage within SMART's operations, maintenance practices, and facilities. SMART is one of Colorado's newest transit agencies, having been created in November 2016. With cold winters and steep terrain, SMART has a great opportunity to showcase the capabilities of battery electric buses. SMART's fleet is comprised of both transit buses and cutaway buses. CTE conducted a market assessment of both the zero-emission cutaway and transit bus markets and used the results of those assessments to inform an Operational Review. In the Operational Review, CTE analyzed which existing routes in SMART's system could be completed using battery electric bus technology and determined the number of buses necessary. CTE also assessed options for charging equipment and strategies for SMART's operations. In addition, CTE conducted a fleet and maintenance review, as well as a financial and economic analysis. CTE compiled a final presentation that was presented to SMART's Board of Directors in August 2021. CTE also created a written final report deliverable that documented a final plan summarizing the recommendations for incorporating BEBs into SMART's fleet. The project was closed out after completion of the final report in September 2021.	

Project Name: Fort Collins Zero-Emission Fleet Transition (Phase I)	
Agency: Transfort — Fort Collins, CO	*Contact:* Annabelle Phillips, Project Manager *Ph:* (480) 229-5876 *Email:* aphillips@fcgov.com
Project Description: CTE is leading a project for Transfort to identify the lifecycle costs, performance issues, risks, and recommended timelines of transitioning to a zero-emission transit bus fleet. CTE is partnering with Hatch LTK and Fiedler Group on this project. The analyses consider the financial and operational impacts of different zero-emission transit bus technologies that will most likely be commercially available over the next 20 years. The analyses also include the facilities infrastructure modifications that will be necessary to support the fleet of buses. The transition plan will be completed in two primary phases, with screening analysis of the scenarios in Phase I and detailed evaluation of a selected approach in Phase II. CTE's transition planning methodology progresses through a series of assessments to form a cohesive analysis of transition options. The methodology includes a service assessment to determine which ZEB technologies have sufficient range to successfully complete every service run; a fleet assessment to develop projected capital costs and timeline for transition; a fuel assessment and rate analysis to calculate daily fuel consumption and demand requirements and projected annual fueling costs; a maintenance assessment to analyze labor and materials costs for ZEB maintenance over the transition	

period; the facilities assessment defines requirements for charging infrastructure and/or hydrogen fueling infrastructure to support the transition and provides a high-level master plan to define the timeline for infrastructure projects to build-out; and the emissions analysis calculates the emissions reductions for each scenario.

Hatch LTK is assisting CTE with the development of the charging infrastructure assessment, and Fiedler Group is assisting CTE with the development of the hydrogen fueling facilities assessment.

The zero-emission fleet composition scenarios evaluated in Phase I include depot-charged battery electric buses only, depot and on-route-charged battery electric buses, fuel cell electric buses, and a mixed fleet of depot-charged battery electric and fuel cell electric buses. Upon completion of Phase I, the City of Fort Collins elected to move forward with Phase II detailed analysis of depot and on-route charged battery electric buses. The final evaluation will include development of an Implementation Plan to support the transition strategy.

CTE will also provide deployment assistance in support of Transfort's initial BEB deployment project. Transfort is purchasing two GILLIG 35' BEBs that are expected to be delivered in Spring 2022. Concurrently, Transfort is completing infrastructure upgrades through City of Fort Collins Utilities and is purchasing two ABB depot chargers, equipped with up to three dispensers each, to support the deployment. CTE will assist Transfort in responding to technical questions or concerns during infrastructure planning and charger installation as well as bus fabrication and deployment, including support during bus and charger acceptance.

Project Name: City of Lawrence Battery Electric Bus Deployment Project	
Agency: City of Lawrence (Kansas)	*Contact:* Adam Weigel, Transit & Parking Manager *Ph:* (785) 764-4200 *Email:* aweigel@lawrenceks.org

Project Description: CTE has partnered with the City of Lawrence and University of Kansas for a successful award under the 2020 FTA Low-No Program. For this project, CTE is managing and providing technical assistance as Lawrence Transit deploys five 40' GILLIG battery electric buses.

The project will take place over a 36-month performance period, which includes eight months for contracting and requirements analysis, fifteen months of vehicle production/deployment and installation of charging stations, followed by one year of data collection and reporting. A final report, summarizing the project and results, will be submitted to FTA following the data collection period. The City of Lawrence anticipates collecting and reporting performance and evaluation data through 2023 and operating the buses through their useful life.

All project partners are currently working together to finalize the infrastructure construction phase of the project to prepare for the charging equipment installation in February 2022. The infrastructure is scheduled to be completed by February 2022 and the five buses are scheduled to be delivered in May 2022.

After the buses are delivered, CTE will conduct validation testing and adjust its route modeling accordingly. Additionally, CTE will collect operational data and present quarterly key performance indicator (KPI) reports for approximately one year prior to project close-out.

Project Name: Cascades East Electric Technology Feasibility Study	
Agency: Central Oregon Intergovernmental Council (COIC)	*Contact:* Ashely Mohni, Strategic Programs and Partnerships Coordinator *Ph:* (541) 699-4096 *Email:* amohni@coic.org

Project Description: CTE is leading an effort to provide COIC, the entity that operates Cascades East Transit (CET), with a Zero Emission Bus Roadmap. This roadmap will detail a deployment plan that lays out the actions and costs necessary to maximize battery electric bus usage within COIC's and CET's operations.

While CTE will use its established methodology to guide creation of a roadmap for COIC and CET, CET also stressed the need for heavy stakeholder involvement. CTE will work with COIC and CET staff to identify local partners that can create a local support network for this fleet transition process. To increase engagement with these stakeholders, CTE will be conducting multiple in-person stakeholder workshops that foster cross-sector engagement.

The objectives of CTE's established transition planning methodology are to give recommendations regarding how much of the fleet can feasibly be transitioned to battery electric buses along with the total cost of ownership of the resulting fleet. CTE identifies the routes where CET can efficiently operate battery electric buses and the number of buses in the fleet that would need to be swapped to electric vehicles in the resulting scenario. After completing this operational review, CTE also analyzes the facilities and equipment necessary to operate this battery electric fleet, recommending charging equipment options and strategies that apply to CET's specific operational needs. The costs of the fleet transition based on these operational and infrastructure recommendations are combined with additional cost data on maintenance, warranties, training, and other cost categories to provide CET with a total cost of ownership for the recommended electric bus fleet.

CTE will summarize the results of these analyses into a final report for COIC and CET. CTE will also present the results of the study to COIC and CET staff, as well as COIC's Board of Directors, if requested.

Appendix A – Price Quote

PRICE QUOTE

Price to Complete Electric Vehicle Fleet Study	$ 115,464
Additional Charges:	
Optional Task: Resilience, Redundancy, and Emergency Response	$ 13,200
Optional Task: External Funding and Partnership Options	$ 2,700
Total:	$ $131,364

List all applicable charges on the price quote. Any charge other than those listed on the price quote will not be paid.

Topeka Metro is tax exempt. Do not include sales tax in your proposed price

Appendix B – Certifications

DISADVANTAGED BUSINESS ENTERPRISES (DBE) CERTIFICATION

This contract is subject to the requirements of Title 49, Code of Federal Regulations, Part 26, *Participation by Disadvantaged Business Enterprises in Department of Transportation Financial Assistance Programs*. The national goal for participation of Disadvantaged Business Enterprises (DBE) is 10%. Metro's overall 2019-2021 goal for DBE participation is 2.00%; the race neutral goal is 1.12%, and the race conscious goal is 0.88%. There is no contract goal for this procurement.

The contractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of this DOT-assisted contract. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as Metro deems appropriate. Each subcontract the contractor signs with a subcontractor must include the assurance in this paragraph (see 49 CFR 26.13(b)).

The contractor is required to pay its subcontractors performing work related to this contract for satisfactory performance of that work no later than 30 days after the contractor's receipt of payment for that work from Metro.

The contractor may not hold retainage from its subcontractors.

The contractor must promptly notify Metro, whenever a DBE subcontractor performing work related to this contract is terminated or fails to complete its work, and must make good faith efforts to engage another DBE subcontractor to perform at least the same amount of work. The contractor may not terminate any DBE subcontractor and perform that work through its own forces or those of an affiliate without prior written consent of Metro.

Signature: 

Name and Title: Daniel J. Raudebaugh, Executive Director

Company Name: Center for Transportation and the Environment

Date: 1/11/2021

FLY AMERICA CERTIFICATION

The Contractor agrees to comply with 49 U.S.C. 40118 (the "Fly America" Act) in accordance with the General Services Administration's regulations at 41 CFR Part 301-10, which provide that recipients and sub-recipients of Federal funds and their contractors are required to use U.S. Flag air carriers for U.S Government-financed international air travel and transportation of their personal effects or property, to the extent such service is available, unless travel by foreign air carrier is a matter of necessity, as defined by the Fly America Act. The Contractor shall submit, if a foreign air carrier was used, an appropriate certification or memorandum adequately explaining why service by a U.S. flag air carrier was not available or why it was necessary to use a foreign air carrier and shall, in any event, provide a certificate of compliance with the Fly America requirements. The Contractor agrees to include the requirements of this section in all subcontracts that may involve international air transportation.

Signature: _____

Name and Title: _Daniel J. Raudebaugh, Executive Director_____

Company Name: _Center for Transportation and the Environment _____

Date: 1/11/2021

LOBBYING CERTIFICATION

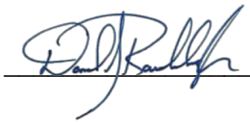
The undersigned contractor certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan or cooperative agreement, the undersigned shall complete and submit Standard Form LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions. See 49 CFR 20.100.

(3) The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 USC. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure. [Note: Pursuant to 31 USC 1352(c)(1)-(2)(A), any person who makes a prohibited expenditure or fails to file or amend a required certification or disclosure form shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such expenditure or failure. See 49 CFR 20.400.]

The undersigned contractor certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 USC 3801, et seq, apply to this certification and disclosure, if any.

Signature: 

Name and Title: Daniel J. Raudebaugh, Executive Director

Company Name: Center for Transportation and the Environment

Date: 1/11/2021

NON-COLLUSION CERTIFICATION

This is my sworn statement to certify that this proposal was not made in the interest of or on behalf of any undisclosed entity. This proposal is not collusive.

This proposer has not been a party to any agreement or collusion in restraint of freedom of competition by agreement to bid a fixed price, to refrain from bidding, or otherwise. This proposer has not, directly or indirectly, by agreement, communication or conference with anyone, attempted to induce action prejudicial to the interest of Topeka Metropolitan Transit Authority, or of any proposer, or anyone else interested in the proposed contract.

Signature: 

Name and Title: Daniel J. Raudebaugh, Executive Director

Company Name: Center for Transportation and the Environment

Date: 1/11/2021

SUSPENSION / DEBARMENT CERTIFICATION

In regard to 2 CFR Parts 180 and 1200

In accordance with 2 CFR Parts 180 and 1200, the contractor is required to verify that none of its principals or affiliates:

1) is included on the federal government's suspended and debarred list;
2) is proposed for debarment, declared ineligible, voluntarily excluded or disqualified;
3) within three years preceding this proposal, has been convicted of or had a civil judgment rendered against them for (a) commission of fraud or criminal offense pertaining to performing a public transaction, (b) violation of any federal or state antitrust statute, or (c) embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements or receiving stolen property;
4) is indicted or charged by a governmental entity for any of the charges in 3) above; and
5) has had any public transaction terminated for cause or default within three years preceding this proposal.

The contractor is required to include this requirement in any subcontracts related to this contract.

By signing and submitting its proposal, the proposer certifies that the certification in this clause is a material representation of fact relied upon by Metro. If it is later determined that the proposer knowingly rendered an erroneous certification, in addition to remedies available to Metro, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment. The proposer agrees to verify that none of its principals or affiliates is included on the federal government's suspended and debarred list at any time throughout the period of this contract. The proposer further agrees to include a provision requiring the same compliance in its subcontracts related to this contract.

Signature: _____

Name and Title: _Daniel J. Raudebaugh, Executive Director_____

Company Name: _Center for Transportation and the Environment_____

Date: 1/11/2021

Appendix C – Requested Contract Deviations

The Center for Transportation CTE requests consideration of the following edit to the indemnification section, if awarded:

16 . 0 INDEMNIFICATION

Contractor shall be responsible for and indemnify, defend and hold harmless Metro, its directors and employees from all demands, claims, suits and settlements for loss of or damages to property, or personal injuries, including death to persons, and from all judgments recovered, and from all expenses incurred in defending or settling said claims or suits, ~~or enforcing this provision~~, including court costs and attorney fees and other expenses arising out of and to the extent caused by the negligent acts, errors, omissions ~~or negligent acts~~ of the Contractor, its employees, or agents in connection with the goods and/or services provided under this contract.