

MaineDOT Low-No Grant Application

Attachment D

Proposed Scope of Work for Public Transportation to Connect Maine to a Cleaner Future and Benefits Calculations Methodology

Proposed Scope of Work for *Public Transportation to Connect Maine to a Cleaner Future*¹

- Bangor Community Connector
 - 2 electric vans (2025)
 - 1 hybrid bus (2026)
 - 2 level 2 chargers (2025)
- BSOOB
 - 4 battery electric buses (two in 2025; two in 2027)
 - 2 dispensers for existing charging cabinets (2025)
 - 1 charging cabinet with 2 dispensers (2027)
- GPTD / Metro
 - 3 New Flyer battery electric buses (2025)
 - 4 dispensers for existing charging cabinets (2025)
- YCCAC
 - 4 electric vans (2025)
 - 1 80 kW charger (2025)
 - 3 level 2 chargers (2025)

¹ To provide economies of scale, an increase of inter-agency knowledge sharing, and aligning with agency fleet replacement timelines, this grant includes three years of vehicle replacement requests.

Demonstration of Benefits Calculation Methodology

This document describes the methods used by the project team to determine the benefits of the proposed project per section E1b.

Background

Applicants to the Low-No Program must demonstrate how the proposed project will support the statutory requirements of the Low-No Program (See 49 U.S.C. 5339(c)(5)(A)). In particular, FTA will consider the quality and extent to which applications demonstrate how the proposed project will: (1) Reduce Energy Consumption; (2) Reduce Harmful Emissions; and (3) Reduce Direct Carbon Emissions.

Approach

- Estimate the petroleum consumption required annually to fuel and operate:
 - o The proposed low and zero-emission vehicle replacements
 - o The current fossil fuel vehicles
- Estimate the local harmful particles emitted annually as a result of operating:
 - o The proposed low and zero-emission vehicle replacements
 - o The current fossil fuel vehicles
- Estimate the greenhouse gases emitted annually as a result of operating:
 - o The proposed low and zero-emission vehicle replacements
 - o The current fossil fuel vehicles

Tools

- Alternative Fuel Life-Cycle Environmental and Economic Transportation (AFLEET) Tool developed by Argonne National Laboratory

Inputs

- Agency location (used by AFLEET to estimate emissions generated by local electric utilities and petroleum fuel pathways)
- Annual vehicle miles traveled (VMT) estimations for current vehicles and proposed replacements
- Fuel type and fuel economy of current vehicles and proposed replacements
- Purchase price and maintenance costs for current vehicles and proposed replacements

Relevant Output

- Reduced Energy Consumption: the difference between the estimated annual petroleum consumption of current vehicles and proposed vehicle replacements
- Reduced Harmful Emissions: the difference between the estimated annual particles emissions of current vehicles and proposed vehicle replacements (PM 2.5, PM 10)
- Reduced Direct Carbon and other Greenhouse Gas Emissions: the difference between the estimated annual carbon and nitrous oxide emissions of current vehicles and proposed vehicle replacements
- Related costs: social cost of carbon dioxide emissions (at suggested 3% discount rate); damages per metric ton of emissions (recommended monetized values)

Assumptions

- Estimations of vehicle costs and maintenance costs for electric, gasoline, hybrid, and diesel fueled vehicles are provided in the transition plans
- Estimations of fuel economy for electric, gasoline, hybrid, and diesel fueled vehicles are provided in the transition plans
- When diesel vehicle fuel economy was not provided, 5 MPGDE was assumed
- Estimations on annual vehicle miles travelled (VMT) for each agency were made based on total revenue miles travelled in 2021 and the number of vehicles in the current fleet
- Assumptions about which vehicles in each transit agency's current fleet will be replaced by the vehicles outlined for purchase in the project are outlined below:
 - o Bangor
 - o Project scope: 2 electric vans (2025) and 1 hybrid bus (2026)
 - o Assumptions: The agency will acquire 2 electric van vehicles, as a fleet expansion to serve unmet paratransit demand, and replace 1 existing 5 MPG diesel bus with 1 hybrid bus
 - Emissions savings were based on the assumptions that alternative expansion of fleet would include 2 gasoline-fueled vans
 - o BSOOB
 - o Project scope: 4 battery electric buses (Two in 2025, Two in 2027)
 - o Assumptions: The agency will replace 4, 5 MPG diesel-fueled vehicles with proposed electric buses
 - o GPTD / Metro
 - o Project scope: 3 New Flyer battery electric buses (2025)
 - o Assumptions: The agency will replace 3, 5 MPG diesel-fueled vehicles with electric buses
 - o YCCAC
 - o Project scope: 4 electric vans (2025)
 - o Assumptions: The agency will replace 4, 4.4 MPG diesel-fueled vehicles with electric van vehicles

References

- Argonne National Laboratory, Alternative Fuel Life-Cycle Environmental and Economic Transportation (AFLEET) Online Tool: [AFLEET Online \(anl.gov\)](https://afleet.anl.gov)
- Environmental Protection Agency: [The Social Cost of Carbon | Climate Change | US EPA](#)
- Maine Department of Transportation, Maine Transit Profiles: [Bangor](#), [BSOOB](#), [Metro](#), [YCCAC](#)
- U.S. Department of Transportation, Benefit-Cost Analysis Guidance for Discretionary Grant Programs: [Benefit Cost Analysis Guidance 2022 \(Revised\).pdf \(transportation.gov\)](#)
- U.S. Energy Information Administration, [Use of energy explained – Energy use in homes](#)
- U.S. Environmental Protection Agency, [Greenhouse Gas Equivalencies Calculator](#)
- U.S. Environmental Protection Agency, [Greenhouse Gas Emissions from a Typical Passenger Vehicle](#)