MEDIUM- AND HEAVY-DUTY VEHICLE GRANT PROGRAM VEHICLE INFORMATION CHECKLIST

OVERVIEW

Note: All terms that are both bolded and italicized are defined in Appendix D-2 of the Environmental Mitigation Trust Agreement for State Beneficiaries.[1]

Applicants should use this checklist to verify whether they have compiled and submitted all requested information for each Medium- or Heavy-Duty Vehicle they are requesting funds to replace or ***Repower***. Consult the **Medium- and Heavy-Duty Vehicle Grant Program Manual** for more information. Questions regarding these requirements should be sent to TDEC.OEP@tn.gov.

VEHICLES TO BE REPLACED

☐ **1.** Applicant has supplied all information requested for the **EXISTING VEHICLE**, including:

- ☐ Vehicle Type (***Class 4-7 Local Freight Trucks, Class 8 Local Freight Trucks, and Port Drayage Trucks, Class 4-8 Transit, Shuttle, and School Buses)***
  - "Refuse Truck" for all trucks primarily used to haul refuse to a central location.
  - "Single Unit Short-Haul Truck" for all single unit trucks with a range of operation of up to 200 miles (e.g., delivery step van; dump, bucket, and fire trucks).
  - "Single Unit Long-Haul Truck" for all single unit trucks with a range of operation of over 200 miles (e.g., straight and box trucks).
  - "Combination Short-Haul Truck" for all combination tractor/trailer trucks with a range of operation up to 200 miles.
  - "Combination Long-Haul Truck" for all combination tractor/trailer trucks with a range of operation of over 200 miles.
  - "Transit Buses" shall include all vehicles that provide public transportation, which shall mean regular and continuing shared-ride surface transportation services that are open to the general public.
  - "Shuttle Buses" shall include vehicles that provide transportation services for one or more specific entities, intra-terminal or intra-facility transportation services, or mobility-on-demand services.
- ☐ Vehicle Make and Model
- ☐ Vehicle Model Year
- ☐ Vehicle Identification Number (VIN)
- ☐ ***Gross Vehicle Weight Rating (GVWR)***
  - Vehicles eligible for replacement are limited to ***Class 4-7 Local Freight Trucks*** and ***Class 8 Local Freight Trucks and Port Drayage Trucks*** only, which shall mean trucks with a GVWR greater than 14,001 lbs. used for delivering cargo and freight and/or freight/cargo delivery, and ***Class 4-8 Transit, Shuttle, and School Buses*** (***GVWR***) greater than 14,001 lbs.) used for transporting people.
  - ***"Gross Vehicle Weight Rating (GVWR)"*** shall mean the maximum weight of the vehicle, as specified by the manufacturer. GVWR includes total vehicle weight plus fluids, passengers, and cargo.
- ☐ Engine Make and Model
- ☐ Engine Horsepower
- ☐ Engine Model Year
  - Vehicles eligible for replacement include 1992–2009 engine model year Medium- and Heavy-Duty Vehicles.
- ☐ Engine Serial Number
- ☐ EPA Engine Family Name
  - The EPA engine family name is a 12-character code that identifies all parts of that particular engine.

The first character of this code identifies the engine model year. For more information on EPA engine family names, please refer to this link: https://www.epa.gov/vehicle-and-engine-certification/information-about-family-naming-conventions-vehicles-and-engines.

For more information on how to locate the EPA engine family name on the engine's emission control label, please refer to Appendix B of the **Medium- and Heavy-Duty Truck Grant Programs Application Manual.**

- ☐ Annual Average Miles (or Annual Hours of Operation, if applicable)
- ☐ Fuel Type

☐ **2.** Applicant has supplied all information requested for the **NEW VEHICLE**, including:

- ☐ Vehicle Type
- ☐ Vehicle Make and Model
- ☐ Vehicle Model Year
- ☐ GVWR
- ☐ Engine Make and Model
- ☐ Engine Horsepower
- ☐ New Vehicle Purchase Price
  - The "New Vehicle Purchase Price" of eligible Medium- and Heavy-Duty Vehicles may include required costs to acquire the vehicle(s), such as taxes and delivery fees. Costs not integral to Medium- and Heavy-Duty Vehicle function (e.g., idle reduction technologies, etc.) cannot be considered eligible for reimbursement and so should not be included in the "New Vehicle Purchase Price" total.
- ☐ Expected Annual Average Miles
- ☐ Fuel Type
  - Bi-fuel vehicles will be considered on a case-by-case basis for Emergency Response Vehicles only. "Bi-fuel" shall mean an engine or motor vehicle that is capable of operating on gasoline or diesel fuel in addition to another type of fuel, such as natural gas or propane. Both fuels are stored on board and the driver can switch between the fuels. The vehicle is equipped with fuel tanks, fuel injection systems, and fuel lines for both fuels.

☐ **3.** Applicant has uploaded clear, legible photo of **EXISTING VEHICLE** VIN.

☐ **4.** Applicant has uploaded clear, legible photo of **EXISTING VEHICLE** EPA Engine Family Name.

- If an applicant cannot provide a legible photo of the EPA Engine Family Name due to emissions control label wear or destruction, applicants can instead provide the engine manufacturer's written confirmation of the **EXISTING VEHICLE** EPA Engine Family Name and engine model year.

☐ **5.** Applicant has uploaded clear, legible photo of **EXISTING VEHICLE** Engine Serial Number.

☐ **6.** Applicant has supplied expected lifetime NOx emissions reduction estimate for the vehicle replacement, calculated using the Argonne National Laboratory Heavy-Duty Vehicle Emissions Calculator (accessible at https://afleet-web.es.anl.gov/hdv-emissions-calculator/).

When utilizing the Heavy-Duty Vehicle Emissions Calculator, applicants should take the following steps:

- For "Project Type," select, "Environmental Mitigation with Scrappage."
- For "Vehicle Type," select one of the following options based on the duty cycle and application of the proposed vehicle being replaced:
  - "Refuse Truck" for all trucks primarily used to haul refuse to a central location.
  - "Single Unit Short-Haul Truck" for all single unit trucks with a range of operation of up to 200 miles (e.g., delivery step van; dump, bucket, and fire trucks).
  - "Single Unit Long-Haul Truck" for all single unit trucks with a range of operation of over 200 miles (e.g., straight and box trucks).
  - "Combination Short-Haul Truck" for all combination tractor/trailer trucks with a range of operation up to 200 miles.
  - "Combination Long-Haul Truck" for all combination tractor/trailer trucks with a range of operation of over 200 miles.
- "Transit Buses" shall include all vehicles that provide public transportation, which shall mean regular and continuing shared-ride surface transportation services that are open to the general public.
- "Shuttle Buses" and/or "School Buses" shall include vehicles that provide transportation services for one or more specific entities, intra-terminal or intra-facility transportation services, or mobility-on-

demand services.

- For "Number of Vehicles," insert "1."
- For "Model Year of Scrapped Vehicle," insert the **engine model year** of the vehicle to be replaced.
    - Note: The engine model year may differ from the vehicle model year. The first character of the engine's EPA engine family name identifies the engine model year. For more information on EPA engine family names, please refer to this link: https://www.epa.gov/vehicle-and-engine-certification/information-about-family-naming-conventions-vehicles-and-engines. For more information on how to locate the EPA engine family name on the engine's emission control label, please refer to Appendix B - Locating the EPA Engine Family Name.
- For "Estimate Years for Early Retirement of Scrapped Vehicle," calculate **based on vehicle model year and the life expectancy of the vehicle in years** (e.g., if a vehicle model year 2009 Medium- and Heavy-Duty Vehicle with an 18-year life expectancy is to be ***Scrapped*** and retired in 2026, the vehicle will be retired one year early).
    - If an applicant believes that the useful life for the vehicle to be replaced is greater than 18 years the applicant will be required to provide supporting documentation to justify this input, including vehicle operations and maintenance records as well as a signed letter from a mechanic to corroborate that the applicant's reported useful life remaining is realistic, given the existing vehicle's current operational and maintenance status.
- For "Lifetime of New Vehicle," insert "18."
    - As noted above, if an applicant believes that the useful life of the new vehicle will be greater than the prescribed useful life of 18 years for Medium- and Heavy-Duty Vehicles, the applicant can enter a higher new vehicle lifetime. Applicants pursuing this option will be required to provide supporting documentation to justify such assumptions, including vehicle operations and maintenance records to demonstrate that comparable vehicles are maintained within the fleet for the suggested, alternate vehicle life.
- For "Annual Miles of Scrapped Vehicle," insert the average annual mileage of the vehicle to be replaced.
    - For applicants proposing the replacement of ***Class 8 Port Drayage Trucks*** that track vehicle use by hours of operation, convert said hours to estimated vehicle miles traveled by multiplying the vehicle's annual hours of operation by 16 mph (the average assumed speed of Port Drayage Trucks according to the U.S. Environmental Protection Agency's SmartWay Drayage Activity and Emissions Model and Case Studies Report) (e.g., a ***Port Drayage Truck*** with 10,000 hours of operation over the previous year is assumed to have traveled approximately 160,000 miles).
- For "Annual Miles of New Vehicle," insert an appropriate estimate for the annual miles of the new vehicle, based on the previous annual mileage of the vehicle to be replaced.
- **Do not** select the option for the "Diesel In-Use Multiplier."
- Only select the option for the Low NOx engine if proposing to purchase a new Medium- or Heavy-Duty Vehicle with this type of engine.
- For "Funding Options," insert only the amount of grant funding requested under the appropriate fuel type for the specific Medium- or Heavy-Duty Vehicle replacement, based on the applicant entity type and geographic location.
- For "Natural Gas Feedstock Source," select "North American NG," unless the proposed project is to utilize natural gas from landfill gas, anaerobic digester (AD) gas of animal waste, AD gas of wastewater sludge, or AD gas of municipal solid waste.
- For "GHGs & Air Pollutant Calculation Type," select the default of "Well-to-Wheels GHGs & Vehicle Operation Air Pollutants."
- If proposing to purchase an ***All-Electric*** Medium- Heavy-Duty, for "Source of Electricity," select "Custom Mix." Within the Custom Mix section, insert the following:[2]

Heavy Duty Vehicle Emissions Calculator Power Source Inputs	Percent Share (in 2023)*
Residual Oil	0.1%
Natural Gas	19.3%
Coal	20.2%
Nuclear	48.8%
Biomass	0.1%
Renewable (e.g., wind, solar)	11.5%
Total must add up to 100%	

*Data collected by the U.S. Energy Information Administration, net generation for electric power in Tennessee, 2023.

- Select "Calculate Results," and then "Export Results." Save the file and provide it as an attachment to the application.
- For applicants proposing the replacement of Emergency Response Vehicles with bi-fuel vehicle and/or engine options, perform the emissions reduction calculations as instructed above. Once the emissions reduction estimate has been processed, multiply the New Vehicle Emission Benefits for the appropriate alternative fuel's NOx total by 0.7, to calculate only 70% of the emissions benefit based on the bi-fuel vehicle's assumed fuel consumption. Divide the grant funding amount requested (same amount as noted under "Funding Options") by this new NOx total number to achieve the New Vehicle Cost Effectiveness in $/lb. (e.g., a natural gas truck's estimated New Vehicle Emission Benefit for NOx is 1,000 lbs.; multiply 1,000 lbs. by 0.7 to achieve a bi-fuel estimated New Vehicle Emission Benefit of 700 lbs.; divide the grant amount requested under Funding Options for the bi-fuel vehicle, assumed to be $50,000 for this example, by the New Vehicle Emission Benefit of 700 lbs. to achieve a cost effectiveness rating of $71.43 spent per pound of NOx reduced).
- Repeat this process for each proposed Medium- or Heavy-Duty Vehicle replacement.

☐ **7.** (**Only required if the applicant has chosen to utilize a custom vehicle useful life when calculating NOx emissions reductions**): Applicant has supplied a letter from a mechanic to corroborate that the applicant's reported useful life remaining is realistic, given the existing vehicle's current operational and maintenance status as well as a copy of vehicle operations and maintenance records to demonstrate that comparable vehicles are maintained within the fleet for the proposed new lifetime, as estimated by the applicant.

VEHICLES TO BE ***REPOWERED***

☐ **1.** Applicant has supplied all information requested for the **EXISTING VEHICLE**, including:

- ☐ Vehicle Type (***Class 4-7 Local Freight Trucks, Class 8 Local Freight Trucks, and Port Drayage Trucks, Class 4-8 Transit, Shuttle, and School Buses)***
  - "Refuse Truck" for all trucks primarily used to haul refuse to a central location.
  - "Single Unit Short-Haul Truck" for all single unit trucks with a range of operation of up to 200 miles (e.g., delivery step van; dump, bucket, and fire trucks).
  - "Single Unit Long-Haul Truck" for all single unit trucks with a range of operation of over 200 miles (e.g., straight and box trucks).
  - "Combination Short-Haul Truck" for all combination tractor/trailer trucks with a range of operation up to 200 miles.
  - "Combination Long-Haul Truck" for all combination tractor/trailer trucks with a range of operation of over 200 miles.
  - "Transit Buses" shall include all vehicles that provide public transportation, which shall mean regular and continuing shared-ride surface transportation services that are open to the general public.
  - "Shuttle Buses" and "School Buses" shall include vehicles that provide transportation services for

one or more specific entities, intra-terminal or intra-facility transportation services, or mobility-on-demand services.

- ☐ Vehicle Make and Model
- ☐ Vehicle Model Year
- ☐ Vehicle Identification Number (VIN)
- ☐ ***Gross Vehicle Weight Rating (GVWR)***
  - Vehicles eligible for replacement are limited to ***Class 4-7 Local Freight Trucks*** and ***Class 8 Local Freight Trucks and Port Drayage Trucks*** only, which shall mean trucks with a GVWR greater than 14,001 lbs. used for delivering cargo and freight and ***Class 4-8 Transit, Shuttle, and School Buses*** (***GVWR***) greater than 14,001 lbs.) used for transporting people.
  - ***"Gross Vehicle Weight Rating (GVWR)"*** shall mean the maximum weight of the vehicle, as specified by the manufacturer. GVWR includes total vehicle weight plus fluids, passengers, and cargo.
- ☐ Engine Make and Model
- ☐ Engine Horsepower
- ☐ Engine Model Year
  - Vehicles eligible for ***Repower*** include 1992–2009 engine model year Medium- and Heavy-Duty Vehicles.
- ☐ Engine Serial Number
- ☐ EPA Engine Family Name
  - The EPA engine family name is a 12 character code that identifies all parts of that particular engine. The first character of this code identifies the engine model year. For more information on EPA engine family names, please refer to this link: https://www.epa.gov/vehicle-and-engine-certification/information-about-family-naming-conventions-vehicles-and-engines. For more information on how to locate the EPA engine family name on the engine's emission control label, please refer to this link: https://efc.umd.edu/assets/nameplatephotos.pdf.
- ☐ Annual Average Miles (or Annual Hours of Operation, if applicable)
- ☐ Fuel Type

☐ **2.** Applicant has supplied all information requested for the **REPOWERED VEHICLE**, including:

- ☐ Vehicle Type
- ☐ Engine Make and Model
- ☐ Engine Horsepower
- ☐ Engine Model Year
- ☐ Eligible ***Repower*** Cost(s) (Note: Non-engine equipment costs associated with the ***Repower*** of a vehicle (e.g., the cost of battery packs for an ***All-Electric*** project, the cost of a fuel tank for a compressed natural gas project, etc.) shall be considered eligible for reimbursement.)
- ☐ Expected Annual Average Miles
- ☐ Fuel Type

☐ **3.** Applicant has uploaded clear, legible photo of **EXISTING VEHICLE** VIN.

☐ **4.** Applicant has uploaded clear, legible photo of **EXISTING VEHICLE** EPA Engine Family Name.

- If an applicant cannot provide a legible photo of the EPA Engine Family Name due to emissions control label wear or destruction, applicants can instead provide the engine manufacturer's written confirmation of the **EXISTING VEHICLE** EPA Engine Family Name and engine model year.

☐ **5.** Applicant has uploaded clear, legible photo of **EXISTING VEHICLE** Engine Serial Number.

☐ **6.** Applicant has supplied expected lifetime NOx emissions reduction estimate for the vehicle ***Repower***, calculated using the Argonne National Laboratory Heavy-Duty Vehicle Emissions Calculator (accessible at https://afleet-web.es.anl.gov/hdv-emissions-calculator/).

When utilizing the Heavy-Duty Vehicle Emissions Calculator, applicants should take the following steps:

- For "Project Type," select, "Environmental Mitigation with ***Repower***" if you are proposing a ***Repower.***
- For "State," select, "Tennessee."
- For "Vehicle Type," select one of the following options based on the duty cycle and application of the proposed vehicle being ***Repowered:***
  - "Refuse Truck" for all trucks primarily used to haul refuse to a central location.
  - "Single Unit Short-Haul Truck" for all single unit trucks with a range of operation of up to

200 miles (e.g., delivery step van; dump, bucket, and fire trucks).
    - "Single Unit Long-Haul Truck" for all single unit trucks with a range of operation of over 200 miles (e.g., straight and box trucks).
    - "Combination Short-Haul Truck" for all combination tractor/trailer trucks with a range of operation up to 200 miles.
    - "Combination Long-Haul Truck" for all combination tractor/trailer trucks with a range of operation of over 200 miles.

- For "Number of Vehicles," insert "1."
- For "Model Year of ***Repowered*** Vehicle," insert the **engine model year** of the engine to be ***Repowered***. For "Model Year of Scrapped Vehicle,"
    - Note: The engine model year may differ from the vehicle model year. The first character of the engine's EPA engine family name identifies the engine model year. For more information on EPA engine family names, please refer to this link: https://www.epa.gov/vehicle-and-engine-certification/information-about-family-naming-conventions-vehicles-and-engines. For more information on how to locate the EPA engine family name on the engine's emission control label, please refer to Appendix B - Locating the EPA Engine Family Name.

- For "Estimate Years for Early Retirement of Scrapped Vehicle," calculate **based on vehicle model year and the life expectancy of the vehicle in years** (e.g., if a vehicle model year 2009 Medium- and Heavy-Duty Vehicle with an 18-year life expectancy is to be ***Scrapped*** and retired in 2026, the vehicle will be retired one year early).
    - If an applicant believes that the useful life for the vehicle to be replaced is greater than 18 years the applicant will be required to provide supporting documentation to justify this input, including vehicle operations and maintenance records as well as a signed letter from a mechanic to corroborate that the applicant's reported useful life remaining is realistic, given the existing vehicle's current operational and maintenance status.
- For "Lifetime of New Vehicle," insert "18."
    - As noted above, if an applicant believes that the useful life of the new vehicle will be greater than the prescribed useful life of 18 years for Medium- and Heavy-Duty Vehicles, the applicant can enter a higher new vehicle lifetime. Applicants pursuing this option will be required to provide supporting documentation to justify such assumptions, including vehicle operations and maintenance records to demonstrate that comparable vehicles are maintained within the fleet for the suggested, alternate vehicle life.
- For "Annual Miles of New Vehicle," insert an appropriate estimate for the annual miles of the new vehicle, based on previous annual mileage of the vehicle to be ***Repowered***.
    - For applicants proposing the ***Repower*** of ***Class 8 Port Drayage Trucks*** that track vehicle use by hours of operation, convert said hours to estimated vehicle miles traveled by multiplying the vehicle's annual hours of operation by 16 mph (the average assumed speed of Port Drayage Trucks according to the U.S. Environmental Protection Agency's SmartWay Drayage Activity and Emissions Model and Case Studies Report) (e.g., a ***Port Drayage Truck*** with 10,000 hours of operation over the previous year is assumed to have traveled approximately 160,000 miles).
- **Do not** select the option for the "Diesel In-Use Multiplier."
- Only select the option for the Low NOx engine if proposing to ***Repower*** a Medium- or Heavy-Duty Vehicle with this type of engine.
- For "Funding Options," insert only the amount of grant funding requested under the appropriate fuel type for the specific Medium- or Heavy-Duty Vehicle ***Repower***, based on the applicant entity type and geographic location.
- For "Natural Gas Feedstock Source," select "North American NG," unless the proposed project is to utilize natural gas from landfill gas, anaerobic digester (AD) gas of animal waste, AD gas of wastewater sludge, or AD gas of municipal solid waste.

- For "GHGs & Air Pollutant Calculation Type," select the default of "Well-to-Wheels GHGs & Vehicle Operation Air Pollutants."
- If proposing to ***Repower*** a Medium- or Heavy-Duty Vehicle to be ***All-Electric***, for "Source of Electricity," select "Custom Mix." Within the Custom Mix section, insert the following:[3]

Heavy Duty Vehicle Emissions Calculator Power Source Inputs	Percent Share (in 2023)*
Residual Oil	0.1%
Natural Gas	19.3%
Coal	20.2%
Nuclear	48.8%
Biomass	0.1%
Renewable (e.g., wind, solar)	11.5%
Total must add up to 100%	

*Data collected by the U.S. Energy Information Administration, net generation for electric power in Tennessee, 2023.

- Select "Calculate Results," and then "Export Results." Save the file and provide it as an attachment to the application.
- For applicants proposing the ***Repower*** of Emergency Response Vehicles with bi-fuel vehicle and/or engine options, perform the emissions reduction calculations as instructed above. Once the emissions reduction estimate has been processed, multiply the New Vehicle Emission Benefits for the appropriate alternative fuel's NOx total by 0.7, to calculate only 70% of the emissions benefit based on the bi-fuel vehicle's assumed fuel consumption. Divide the grant funding amount requested (same amount as noted under "Funding Options") by this new NOx total number to achieve the New Vehicle Cost Effectiveness in $/lb. (e.g., a natural gas truck's estimated New Vehicle Emission Benefit for NOx is 1,000 lbs.; multiply 1,000 lbs. by 0.7 to achieve a bi-fuel estimated New Vehicle Emission Benefit of 700 lbs.; divide the grant amount requested under Funding Options for the bi-fuel vehicle, assumed to be $50,000 for this example, by the New Vehicle Emission Benefit of 700 lbs. to achieve a cost effectiveness rating of $71.43 spent per pound of NOx reduced).
- Repeat this process for each proposed Medium- or Heavy-Duty Vehicle ***Repower***.

☐ **7.** (**Only required if the applicant has chosen to utilize a custom vehicle useful life when calculating NOx emissions reductions**): Applicant has supplied a letter from a mechanic to corroborate that the applicant's reported useful life remaining is realistic, given the existing vehicle's current operational and maintenance status as well as a copy of vehicle operations and maintenance records to demonstrate that comparable vehicles are maintained within the fleet for the proposed new lifetime, as estimated by the applicant.

[1] Environmental Mitigation Trust Agreement for State Beneficiaries, https://www.tn.gov/content/dam/tn/environment/energy/documents/vw-resources/Modified_Environmental_Mitigation_Trust_Agreement_for_State_Beneficiaries_Effective_June_18_2020.pdf.