United States Environmental Protection Agency

Office of Transportation and Air Quality
July 2025

EPA Clean Heavy-Duty Vehicles Program: Guide for Equipment and Infrastructure Activity Data Collection

Updated July 14, 2025

Disclaimer

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1. Introduction and Instructions

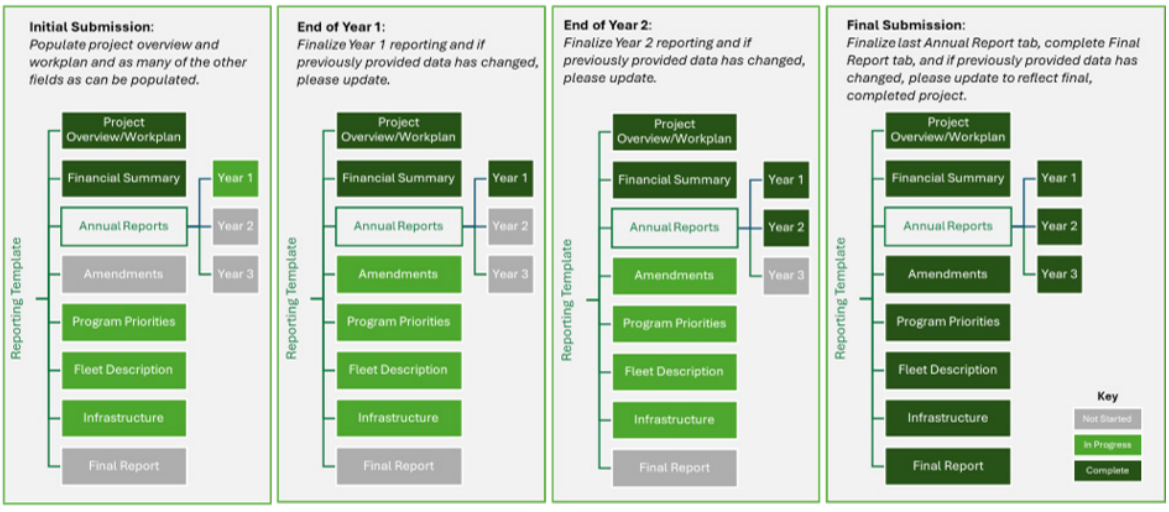
The purpose of this guide is to provide Clean Heavy-Duty Vehicles (CHDV) Program grant recipients with best practices for collecting equipment and infrastructure annual activity data for reporting to the EPA using the *Clean Heavy-Duty Vehicles (CHDV) Program Quarterly Project and Final Project Reporting Template* (EPA Form Number 5900-683). For additional guidance about the reporting template and the overall reporting process, refer to the CHDV progress reporting training slides and the *Instructions* and *Data Dictionary* tabs in the reporting template. Use of this guide is optional.

Recipients and subrecipients are responsible for the oversight of the Clean Heavy-Duty Vehicles (CHDV) award. As such, you must monitor your activities under the CHDV award to ensure you are compliant with all requirements and meeting performance expectations. Monitoring must cover each function or activity in accordance with 2 CFR 200.332. Throughout the award performance period, the recipient agrees to submit quarterly performance reports and combined eligibility and scrappage statements. Reports must be submitted electronically to the EPA Project Officer within 30 days after each reporting period.

Overview of the Data Reporting Process:

To support the collection, recording, and transmittal of project data to the EPA, grantees will be supplied with an Excel-based, fillable project reporting form. This form (EPA Form Number 5900-683) provides space for both financial data and performance updates that must be reported to EPA Project Officers, as well as space to record attributes and activity about the vehicles, equipment, and/or infrastructure included in the project. This workbook is designed to be completed incrementally throughout the project lifecycle as various components are completed and updated when necessary to reflect project changes. Each quarterly CHDV data recording event is treated as a separate input; however, data that is constant across the project lifecycle, such as existing vehicle or equipment Vehicle Identification Numbers (VINs) does not need to be inputted more than once. An illustration of this is shown in the figure below:

Project Reporting Templates are designed to be completed in stages and submitted incrementally to reflect the status of the project.
Abridged Example:



The vehicle and equipment activity data described in this document is primarily located in the 'Fleet Description' and 'Infrastructure' tabs of the reporting template. For further information regarding reporting submission deadlines, please view the instructions tab in the template.

Vehicle and Equipment Activity Data Collection:

Activity data in the 'Current Fleet Description', 'New Fleet Description', and 'Infrastructure' tabs should be collected for all vehicles impacted by the project (including newly acquired, sold, donated, scrapped, or reduced service vehicles), and infrastructure activity data should be collected for all eligible supporting infrastructure purchased as part of the project.

For example, a CHDV grantee replacing 10 existing internal combustion engine (ICE) school buses with 10 new electric school buses would record information regarding the 10 existing buses in the "Current Fleet Description Tab" within Table 22 "Current Vehicle Information", while the 10 new buses would be described in the "New Fleet Description Tab" within Table 23 "New Replacement Vehicle Information". To aid in populating the tables within each tab, the program reporting templates have a 'Data Dictionary' Tab with specific instructions for vehicle and activity fields. Note, Vehicle Identification Numbers (VIN) are required to be reported for each vehicle included in the project. Some of these attributes, especially for new vehicles, may not be available until the equipment is ordered, delivered, or in operation, and, as a result, these fields should be populated at the earliest reporting period after data collection can be completed. For existing vehicles, data should be entered into the reporting template as soon as possible. If different existing vehicles are identified for scrappage, sale, donation, or reduced service later during the project period, please update the "Current Vehicle Information" tab within the reporting template in the next quarterly submission to reflect the changes.

The project reporting forms similarly provide spaces for grantees to record infrastructure attributes and activity within the 'Infrastructure' tab.

Each quarterly CHDV) data recording event is treated as a separate input. The best practices described for each of the data fields below are intended to ensure that correct information is recorded for each vehicle and/or equipment included in the project; as noted above, these data should be included in the reporting template during the first reporting period in which the data become available and are only reported once during the project.

2. Clean Heavy-Duty Vehicles Program, Activity and Technical Fields

Listed below in Table 1 are the relevant activity fields for the CHDV program and a subset of technical vehicle and infrastructure attribute data that is essential for high quality environmental data collection. All fields should be inputted into the corresponding section of the reporting template (EPA Form Number 5900-683) provided by the EPA.

Table 1. *Mobile equipment activity data fields*

	CHDV Project Reporting Template Table	CHDV Project Reporting Template Data Field
Vehicle Information	Table 22c, Current Vehicle Activity Information	Annual Miles Traveled (miles per vehicle)
		Annual Idling Hours (hours per engine)
		Current Odometer (in miles)
		Annual Amount of Fuel Used (gallons/year per engine)
		Remaining Life of the Baseline Engine/Vehicle
		Vehicle Disposition/Replacement Process
	Table 23c, New Vehicle Activity Information	New Vehicle Annual Miles Traveled (miles per vehicle)
		New Vehicles Equipped with Auxiliary Heaters? (Yes/No)
		Auxiliary Heater Type (if not applicable, then N/A)
	Table 23d, New Vehicle Battery Information (for Battery Electric Vehicles Only)	Capable of Bidirectional Charging? (Yes/No/N/A)
		Battery Capacity per Battery Pack (kWh)
		Vehicle Total Battery Capacity (kWh)
	Table 23e, New Vehicle Fuel Cell Information (for Fuel Cell EVs Only)	Fuel Cell Stack Capacity (kW)
Infrastructure Information	Table 24a, EVSE Information Overview and Funding Source	EVSE Maximum Output Power (kW)
		Number of Plugs on the EVSE
		Is the EVSE Capable of Bidirectional Charging?
		Will the Vehicle and EVSE be Used for Vehicle-to-Grid (V2G)?
	Table 25, On-site Power Generation Equipment	Generation Capacity of the System (kW or MW)
	Table 26, Battery Energy Storage System (BESS) Equipment Information	Energy Capacity (kW or MW)
	Table 27a, Hydrogen Fueling Station Information	Refilling Pressure
		Total Hydrogen Storage Tank Capacity (kg)
		Maximum Dispensing Flow Ra
		Total Dispensing Capacity of the Station (kg/day)

Table 22c: Current Vehicle Activity Information

Annual Miles Traveled (miles per vehicle)

1. Review vehicle mileage data from the past year; data sources may include[1]:
    a. a driver's log, or
    b. the vehicle's service log, or
    c. odometer readings, or
    d. trip meters, or
    e. telematics system/fleet management software
    f. the Fleet Operations or contractor, if applicable.
2. Calculate the annual mileage by summing the vehicle mileage at the relevant intervals from the data source (e.g., weekly mileage from the driver's log, quarterly mileage from vehicle service log, etc.) for the previous two-years and dividing by 2. Note: please use the two previous calendar years for this calculation, i.e. January through December.
    a. Example January-December 2023 a bus traveled 9,000 miles per year and then January-December 2024 a bus traveled 7,500 miles. Take the total miles travel for the two years and (9,000 + 7,5000 = 16,500) and divide that value by 2 (16,500/2 = 8,250 average miles traveled.
3. For verification, have a second individual review the raw data (e.g., driver's log, vehicle service log) and confirm the inputs as well as the calculation to sum and average the data for the past two years.
4. Document the current mileage by inputting it into the reporting template (EPA Form Number 5900-683) provided by the EPA.

Annual Idling Hours (hours per engine)

1. Review the vehicle idling hours from the past two years; potential data sources include:
    a. quarterly service logs, or
    b. the driver's log, or
    c. telematics system/fleet management software
2. Calculate the annual idling hours by summing the vehicle idling hours at the relevant intervals from the data source (e.g., weekly idling from driver's log, quarterly idling from service log) for the previous two years and dividing by two. Note: Please use the two previous calendar years for this calculation, i.e., January through December.
    a. If you do not have idling hours readily accessible from prior data, then calculate the number of idling hours for each vehicle by first resetting the vehicle's idling meter and then reviewing the vehicle's idle hours meter at the end of the upcoming quarter. If the vehicle's usage over the past quarter was typical, then extrapolate the quarterly value to calculate an annual value (i.e., multiply the quarterly value by four).
3. For verification, have a second individual review the raw data (e.g., driver's log, vehicle service log) and confirm the inputs as well as the calculation to sum and average the data for the past two years.

[1] If you do not have ready access to the data from the sources noted here, or similar sources, then please contact your EPA Project Officer or Program Helpline email inbox for assistance.

Document the idling hours by inputting it into the reporting template (EPA Form Number 5900-683) provided by the EPA.

Current Odometer (in miles)

1. Find the odometer in each vehicle, usually a rectangular-shaped window near the speedometer. It can be mechanical or digital.
2. For mechanical odometers, some models feature a tenth-of-a-mile digit displayed in a different color wheel. Input the numbers from left to right, rounding the tenth-of-a-mile digit to the nearest whole mile.
3. For digital odometers, some models require the instrument cluster panel to be powered on by activating the vehicle's accessory power. Enter the displayed numbers, ensuring that the actual odometer reading is recorded, not a partial trip mileage that can be displayed on some models.
4. Document the current odometer mileage by inputting it into the reporting template (EPA Form Number 5900-683) provided by the EPA.

Annual Amount of Fuel Used for Each Vehicle (gallons/year)

The steps below combine the vehicle's calculated fuel usage amount during motion (from odometer) and while idling.

1. Review the fuel usage from the past two years; relevant data sources may include:
    a. fleet tracking system, or
    b. driver's log, or
    c. gas or fuel receipts, or
    d. fuel tracking system,
2. If you do not readily have annual fuel usage data from the last two years, then calculate fuel usage as follows:
    a. Locate the vehicles owner's manual or contact the vehicle vendor to determine the fuel mileage and/or idling fuel consumption.
    b. After the fuel mileage is found, use the annual miles traveled value and divide the annual miles traveled by the vehicle's fuel mileage to find the amount of fuel used per year while the vehicle is moving.
3. Document the current mileage by inputting it into the reporting template (EPA Form Number 5900-683) provided by the EPA.

Remaining Life of the Baseline Engine/Vehicle

1. At the time of the upgrade action, determine the remaining life of the current vehicle. Remaining life is the fleet owner's estimate of the number of years until the unit would have been retired from service if the vehicle were not being upgraded or scrapped, even if the unit were to be rebuilt or sold to another fleet. The remaining life estimate depends on the current age and condition of the vehicle at the time of upgrade, as well as things like usage, maintenance and climate.
2. Document the remaining life by inputting it into the reporting template (EPA Form Number 5900-683) provided by the EPA.

Vehicle Disposition/Replacement Process

1. Determine whether the current vehicle is being scrapped, sold, donated, or being moved to reduced service and select the appropriate field in the drop-down. For 2011 and newer vehicles that are being moved to reduced service per the terms of the NOFO in section III.D.2.c.ii.c, select "reduced service" in the drop-down. For any 2010 or older reduced service vehicles that are being scrapped in their place, please select "scrapped" in the drop down.

Table 23c: New Vehicle Activity Information

New Vehicle Annual Miles Traveled (miles per vehicle)

1. Collect the new vehicle mileage. Potential methods to identify data for this field may include:
    a. Gathering electronic mileage from a fleet vehicle tracking system application, or
    b. Locating the odometer in each vehicle and documenting the mileage on the first day of each quarter (or similar interval), or
    c. Obtaining the data from the driver's log, or
    d. Obtaining the data from the vehicle service log, or
    e. Obtaining the data per vehicle from the fleet operator or contractor, if applicable.
2. Calculate the annual mileage by summing the vehicle mileage at the relevant intervals from the data source (e.g., weekly mileage from the driver's log, quarterly mileage from vehicle service log, etc.) for the previous year.
    a. *Note*: if you do not have a full year of data prior to the end of the performance period, then collect new vehicle mileage for the remaining time available within the performance period and then calculate annual mileage by extrapolating the data (e.g., if data collection was completed for three-months, then take the average of the three-months of data and multiply by twelve). Please consider whether the new vehicle will be more or less active than normal within the period of collected data (e.g., lower mileage for a school bus during summer break), and correct the imbalance when extrapolating the data.
2. For verification, the difference between the odometer reading at the end of the reporting year and the reading at the end of the previous reporting year should match the total mileage calculated for all quarters with the reporting year.
3. Document the current mileage by inputting it into the reporting template (EPA Form Number 5900-683) provided by the EPA.

New Vehicles Equipped with Auxiliary Heater? (Yes/No)

An auxiliary heater is a supplementary heating system designed to warm the passenger compartment, the engine of a vehicle, or both, and operates independently of the engine. Externally vented passenger heaters are allowed under the CHDV program.

1. View the owner's manual or contact the vehicle vendor to determine if each new vehicle is equipped with an auxiliary heater.

2. Document if the new vehicle is equipped with an auxiliary heater by providing the appropriate response in the relevant data field in the reporting template (EPA Form Number 5900-683) provided by the EPA.

Auxiliary Heater Type

1. If you have answered "yes" to the previous field identifying if the new vehicle is equipped with an auxiliary heater, please use the owner's manual or contact the vehicle vendor to determine the fuel type of auxiliary heater. This can include electric, diesel, gasoline, propane, etc.
2. Document the appropriate heater type in the relevant data field in the reporting template (EPA Form Number 5900-683) provided by the EPA.

Table 23d: New Vehicle Battery Information (for Battery Electric Vehicles Only)

Capable of Bidirectional Charging? (Yes/No/N/A)

1. For applicable vehicles (e.g., battery electric vehicles), document if each vehicle is capable of bidirectional charging, also known as Vehicle-to-Grid (V2G) charging.
2. Document if each vehicle will be used for V2G in the relevant data fields in the reporting template (EPA Form Number 5900-683) provided by the EPA.

Battery Capacity per Battery Pack (kWh)

1. For applicable vehicles (e.g., battery electric vehicles), document the listed battery capacity in kWh per battery pack as listed on the vehicle and/or manufacturer-provided documentation (such as an owner's manual) in in the relevant data fields in the reporting template (EPA Form Number 5900-683) provided by the EPA. In this field, kWh is "kilowatt-hours".

Vehicle Total Battery Capacity (kWh)

1. For applicable vehicles (e.g., battery electric vehicles), document each vehicle's total battery capacity in kWh as listed on the vehicle and/or manufacturer-provided documentation (such as an owner's manual) in in the relevant data fields in the reporting template (e.g., EPA Form Number 5900-683) provided by the EPA.

Table 23e: New Vehicle Fuel Cell Information (for Fuel Cell EVs Only)

Fuel Cell Stack Capacity (kW)

1. For applicable vehicles (e.g., fuel cell electric vehicles), document each vehicle's fuel cell stack capacity [2]in kW as listed on the vehicle and/or manufacturer-provided documentation (such as an owner's manual) in the relevant data fields in the reporting template (EPA Form Number 5900-683) provided by the EPA. In this field, kW is "kilowatts".

[2] Fuel cell stack capacity may be referred to as power output or power capacity in documentation.

Table 24a: EVSE Information Overview and Funding Source

EVSE Maximum Output Power (kW)

1. View the owner's manual or contact the EVSE vendor to determine the maximum power output (kW) of each EVSE unit.
2. Document the maximum power output in the relevant data fields in the reporting template (EPA Form Number 5900-683) provided by the EPA.

Number of Plugs on the EVSE

1. Determine the number of plugs for each EVSE unit; data sources include:
    a. Visually inspecting each EVSE unit for the number of connections from the EVSE to the vehicle
    b. Reviewing the owner's manual
2. Document the number of plugs for each EVSE unit in the relevant data fields in the reporting template (EPA Form Number 5900-683) provided by the EPA.

Is the EVSE Capable of Bidirectional Charging?

1. View the owner's manual or contact the EVSE vendor to determine if each EVSE unit is capable of bidirectional charging.
2. Document if each EVSE unit is capable of bidirectional charging in the relevant data fields in the reporting template (EPA Form Number 5900-683) provided by the EPA.

Will the Vehicle and EVSE be Used for Vehicle-to-Grid (V2G)?

1. If the EVSE is capable of bidirectional charging, document if each EVSE unit will be used for Vehicle-to-Grid (V2G) charging in the relevant data fields in the reporting template (EPA Form Number 5900-683) provided by the EPA. Please specify if the vehicle and EVSE will be used for V2B (Vehicle-to-Building) or V2G.

Table 25: On-site Power Generation Equipment*

Generation Capacity of the System (kW or MW)

1. View the owner's manual or contact the vendor to determine the generation capacity (kW or MW) of any on-site power generation system(s). In this field, MW is “Megawatts”.
   Document the generation capacity in the relevant data field(s) in the reporting template (EPA Form Number 5900-683) provided by the EPA. *Note, this table only needs to be completed if the project includes on-site power generation equipment.

Table 26: Battery Energy Storage System (BESS) Equipment Information*

Energy Capacity

1. View the owner's manual or contact the Battery Energy Storage System (BESS) vendor to determine the battery energy capacity (kWh or MWh). In this field, MWh is “Megawatt-hours”.
2. Document the BESS energy capacity in the relevant data field in the reporting template (EPA Form Number 5900-683) provided by the EPA.
   *Note, this table only needs to be completed if the project includes a battery energy storage system.

Table 27a: Hydrogen Fueling Station Information

Refilling Pressure

1. Select from the dropdown menu in the reporting template the refilling pressure level supported by the hydrogen fueling equipment. H35 refers to a 350 bar dispenser, and H70 a 700 bar dispenser. Dual pressure means access to both 350 bar and 700 bar dispensing capabilities.
2. Potential methods for locating the refilling pressure include:
   a. Consulting the owner’s manual for the hydrogen refueling station.
   b. Checking the dispensers, which frequently indicate the refilling pressure.

Total Hydrogen Storage Tank Capacity (kg)

1. This field refers to the maximum capacity, in kilograms, of the hydrogen fueling system.
2. Locate the system total storage volume of the hydrogen fueling system.
   a. View the owner's manual or engineering plans to determine the system total storage capacity (kg).
   b. Contact the hydrogen fueling system vendor to determine the system total storage capacity (kg).
3. Document the storage capacity in the relevant data field in the reporting template (EPA Form Number 5900-683) provided by the EPA.

Maximum Dispensing Flow Rate per Hose (kg/min)

Refers to the maximum flow rate per hose, in kilograms per minute, of the hydrogen fueling system.

1. Locate the maximum flow rate of the hydrogen fueling system for each hose.
   a. View the owner's manual or engineering plans to determine the maximum flow rate in kg/min.
   b. Contact the hydrogen fueling system vendor to determine the maximum flow rate (kg/min).
2. Document the maximum flow rate in the relevant data field in the reporting template (EPA Form Number 5900-683) provided by EPA.

Total Dispensing Capacity of the Station (kg/day)

Refers to the hydrogen station design size or maximum refueling capacity, typically measured in kilograms per day.

1. Locate the total dispensing capacity (or rated capacity) of the hydrogen fueling system.
    a. View the owner's manual or engineering plans to determine the total dispensing capacity in kg/day.
    b. Contact the hydrogen fueling system vendor to determine the total dispensing capacity in kg/day.
1. Document the total dispensing capacity of the station in the relevant data field in the reporting template (EPA Form Number 5900-683) provided by the EPA.

3. Appendix

Additional Program Resources

The following documents provide additional information about the CHDV Program, and the data fields described in this document.

- Clean Heavy-Duty Vehicles Grants Notice of Funding Opportunity (NOFO): https://www.epa.gov/system/files/documents/2024-04/2024-chdv-grants-nofo-2024-04.pdf
- Chapter 7, Onroad Vehicles, of the Port Emissions Inventory Guidance: Methodologies for Estimating Port-Related and Goods Movement Mobile Source Emissions (EPA, 2022): https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P1014J1S.pdf
- Clean Heavy-Duty Vehicles Program Grantee Resources Web page: https://www.epa.gov/clean-heavy-duty-vehicles-program/clean-heavy-duty-vehicles-program-grantee-resources