CDM: form for proposed new small scale methodologies (F-CDM-SSC-NM) (version 01)

(To be used for proposing a new small scale methodology in accordance with article 15 and 16 of the simplified modalities for small-scale CDM project activity categories. This form is not to be used in case of large scale methodologies).

Name of person/entity submitting this form:	Name: Yasuki Shirakawa Entity: Climate Consulting, LLC
Title of the proposed small scale methodology:	Transportation Energy Efficiency Activities using Idling Stop Device
Please suggest type to which the new proposed methodology (category) belongs to:	☐ Type I Renewable energy projects ☐ Type II Energy efficiency improvements ☒ Type III Other project activities

Information for completing the form

For proposing a new small scale methodology all sections below should be completed. Approved small scale methodologies shall be used as a reference for language and structure used. If necessary, attach files or refer to sources of relevant information.

1. **Technology/measure: please specify and provide reference to the exact technology/measure the proposed small scale methodology is applicable to and describe in detail the applicability conditions of the proposed methodology.**

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Technology/Measure

1. This category comprises installing post-fit type idling stop device to in-use motor vehicles resulting in saving of fuel consumptions while idling of the vehicle with consequent reduction in GHG emissions.

2. The device is post-fit type for in-use vehicles and it enables drivers to stop idling without turning off or on the ignition key. Therefore, it is possible to reduce operations of drivers to stop idling compared to manual operations.

3. The idling stop device installed must be able to record necessary parameters electronically to calculate emission reductions, i.e. idling stop time and idling period of each idling stop.

4. In this methodology, the term idling is defined as "Driving patterns where vehicle speed is zero keeping the engine running, i.e. waiting at stoplights, or boarding and alighting of passengers". The term idling stop is defined as "Actions to stop the idling that would otherwise have been continued without the project".

Applicability

5. The methodology is applicable to the following types of vehicles.

   (a) Vehicles using gasoline or diesel as fuel;

   (b) Mechanically possible to install post-fit type idling stop device;

   (c) Automatically and electronically possible to record periods and times of idling stop by post-fit type idling stop device.

6. The methodology is not applicable to:

    (a) Vehicles using biofuel or blended biofuel as fuel;

    (b) Electric vehicles;

    (c) Hybrid vehicles with electrical and internal combustion motive systems.

7. Measures are limited to those that result in emission reductions of less than or equal to 60 kt CO_2 equivalent annually.

2. Boundary: please specify the project boundary of the proposed methodology.

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8. The project boundary is the physical, geographical location of the vehicles with the idling stop device that are part of the project activity being implemented. This can be cities or routes between cities.

3. Baseline: please specify the baseline scenario and the way baseline emissions are calculated.

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9. The baseline scenario is the situation where, in the absence of the project activity, idling will be continued at stoplights or other situations without installing post-fit type idling stop device. This methodology is only applicable if the baseline scenario is assessed as the situation.

10. The first step to determine the baseline emissions is to calculate baseline emission factors per second at idling condition for baseline vehicles (BEF_i). The emission factors will be determined ex-ante.

    $$BEF_i = FC_{IS,i} \times D_j \times NCV_j \times EF_{CO2,j} \times 10^3 \qquad (1)$$

    Where:
    BEF_i : Baseline emission factor per second for the baseline vehicle i (gCO_2/second)
    $FC_{IS,i}$: Fuel consumption at idling condition of baseline vehicle i (liter/second)
    D_j : Density of fuel j (kg/liter)
    NCV_j : Net calorific value of fuel j (MJ/t)
    $EF_{CO2,j}$: CO_2 emission factor of fuel j (tCO_2/MJ)

11. In case the project participant chose "Option 2) Sample measurement" in paragraph 14, vehicles shall be categorized by their characteristics of fuel consumptions at idling condition ($FC_{IS,i}$), i.e. fuel types, vehicle types, engine displacements, engine model year, with or without air conditioner. In this case, FC_{IS} and BEF shall be calculated for each vehicle category.

12. Baseline emissions are summation of cumulative idling period times the baseline emission factor for each vehicle.

$$BE_y = \sum_i \left(BEF_i \times T_{i,y} \times 10^{-6}\right) \qquad (2)$$

Where:

BE_y : Total baseline emissions in the year y (tCO_2/year)

$T_{i,y}$: Cumulative idling period of vehicle i in the year y (second/year)

13. The following parameters shall be determined *ex ante* and shall not be monitored:

Parameters	Item/Unit	Measurement method/Item
NCV_j	Net calorific value of fuel j	National values or IPCC default value (lower value of 95% CI). Values need to be updated if national values or IPCC values change.
D_j	Density of fuel j	National values or International values.
$EF_{CO2,j}$	CO_2 emission factor of fuel j	National values or IPCC default value (lower value of 95% CI). Values need to be updated if national values or IPCC values change.
j	Fuel type	Interviews/ engine specifications
$FC_{IS,i}$	Fuel consumption at idling condition of baseline vehicle i	See paragraph 14 and 15

14. The parameter "Fuel consumption at idling condition of baseline vehicle category i ($FC_{IS,i}$)" can be determined by following options:

    Option 1) Entire measurement:
    Measuring the actual fuel consumptions of all the vehicles to which the devices will be installed

    Option 2) Sample measurement:
    Measuring the actual fuel consumptions of representative sample of vehicles for each vehicle category defined in paragraph 11. Sample vehicles shall be chosen in accordance with the statistical methods (Use 90% confidence interval and ±10% error margin to determine the sample size) in accordance with the latest version of "General guidelines for sampling and survey for small-scale CDM project activities". The lower 95% confidence interval is taken for baseline fuel consumption at idling condition.

15. "Fuel consumption at idling condition of baseline vehicle category i ($FC_{IS,i}$)" can be measured by i.e. fuel flow meter, chassis dynamometer test, direct measurements.

4. Leakage: please specify if leakage emissions can occur and how they should be calculated.

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16. No leakage calculation is required.

5. Project activity emissions: please specify possible project activity emissions and how they should be calculated.

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17. Project emissions are cumulative emissions from fuel consumptions in restarting the engine right after each idling stop.

$$PE_y = \sum_i \left(N_{i,y} \times PEF_{IS,i} \times 10^{-6} \right) \tag{3}$$

Where:
PE_y : Total project emissions in the year y (tCO$_2$/year)
$N_{i,y}$: Total times of stop-idling of vehicle i in the year y (times/year)
$PEF_{IS,i}$: Project emission factor per a time of idling stop for vehicle i (gCO$_2$ /time)

18. Project emission factor per a time of idling stop ($PEF_{IS,i}$) is calculated according to the following formula:

$PEF_{IS,i} = BEF_i$ (gCO$_2$ /second) $\times T_{PJ,i}$ (second)

Where:
$T_{PJ,i}$: Effective time. Idling stop period in second to compensate fuel consumption in restarting the engine right after each idling stop

19. The default value of effective time can be chosen from the most conservative value of the following table without implementing any measurements.

Fuel Type	Effective time (second)
Diesel	3 to 5[a] 3 to 4[b]
Gasoline	3 to 5[a]

Source:

a) Fundamental Study on NOx Emissions and Fuel Consumption at Vehicle Engine Starting, Tokyo Metropolitan Research Institute for Environmental Protection, Annual report 1999

b) Reduction Effect of CO$_2$ by Idling Stop in the Case of Route Buses that met New Exhaust Emission Regulations, Tokyo Metropolitan Research Institute for Environmental Protection, Annual report 2009

6. Monitoring: Please specify which parameters should be monitored and how they should be monitored.

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20. Parameters not monitored

Table: Parameters not monitored

Parameters	Item	Monitoring method
NCV$_j$	Net calorific value of fuel j	National values or IPCC lower 95% boundary. Values need to be updated if national values or IPCC values change.

D_j	Density of fuel j	Country specific data or International values.
$EF_{CO2,j}$	CO_2 emission factor of fuel j	National values or IPCC value lower 95% boundary. Values need to be updated if national values or IPCC values change.
$FC_{IS,i}$	Fuel consumption at idling condition of baseline vehicle i	See paragraph 14 and 15
$PEF_{IS,i}$	Project emission factor per a time of stop-idling for vehicle i	See paragraph 18

21. Parameters monitored

Table: Parameters monitored

Parameters	Item	Monitoring method	Frequency
$T_{i,y}$	Cumulative idling period of vehicle i in the year y	Signals of vehicle speed and engine on/off will be electronically collected by the post-fit type idling stop device, and each idling stop time will be calculated automatically. Cumulative idling period is calculated by summing up each idling stop time in a year.	Annually
$N_{i,y}$	Total times of stop-idling of vehicle i in the year y	Signals of vehicle speed and engine on/off will be electronically collected by the post-fit type idling stop device, and number of idling stop will be counted automatically.	Annually
-	Information of vehicles installing the post-fit type idling stop device, i.e. fuel types, vehicle types, engine displacements, engine model year, with or without air conditioner.	Necessary information shall be aggregated in a electronic database.	Annually

7. Project activity under a programme of activities: if the proposed methodology is also intended for application to a project activity under a programme of activities (CPA of PoA) guidance on consideration of leakage when applying to the CPA of PoA shall be provided.

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22. There is no particular guidance on consideration of leakage when applying to the CPA of PoA.

Date you are delivering the contribution:	

Information to be completed by the secretariat	
F-CDM-SSC-NM doc id number	
Related to SSC-Submission number	
Date when the form was received at UNFCCC secretariat	