

Reporting Template for Tracking and Calculating ABT Credits Heavy-Duty Highway Gasoline Vehicles and Engines

I. Background

A major component of the final rule for heavy-duty highway gasoline vehicles and engines (signed on January 18, 2001; 66 FR 5002) is the averaging, banking, and trading (ABT) program for NO_x. Note that some heavy-duty engines (HDEs) may still be subject to the previous NMHC+NO_x standard during the phase-in period. This rule established ABT programs for both heavy-duty vehicles (HDVs) and HDEs, and under certain circumstances, allows for credits to be transferred between the two programs. Manufacturers must track the implementation of these provisions based on the model year, engine family, and the NO_x or NMHC+NO_x level to which the engine family is certified. In the preceding vehicle-based ABT program, three compliance options were included in the rule (Options 1, 2, and 3). Options 1 and 2 required earlier compliance but with slightly more lenient standards and allowed for additional flexibility including the ability to convert and exchange credits between the vehicle-based ABT program and the engine-based ABT program. During the first few years that the new requirements are in effect, the compliance option previously selected could impact the applicable FEL cap.

In order to help streamline and standardize the process by which manufacturers submit information related to credits or deficits under the ABT program, EPA has created an Excel-based template to assist manufacturers with the organization, presentation, and submittal of their data. The template is designed for reporting ABT compliance data for 2007 and beyond. It allows the user to specify which program option applies and enter information regarding the conversion of credits. Due to the overlap and similarities between the previous and current ABT programs, this reporting template maintains much of the same structure as the template used to report ABT data under the preceding requirements.

II. Reporting Template

The Excel file contains three worksheets: "Credit Calculations-Current MY," "Field Descriptions," and "Averaging and Summary," which are described below.

- **Credit Calculations-Current MY:** This worksheet contains 19 fields, which apply to all of the information required to track ABT credits or deficits and Offsets (if applicable) for heavy-duty highway gasoline engines and vehicles. There are nine columns that allow data entry or input from the manufacturer for purposes of ABT credit or Offset calculations and two columns that allow for data entry if credits are being transferred between HDEs and HDVs. The remaining eight columns are preset or calculated values based on the data entered and cannot be modified manually. These columns are all highlighted in yellow, with the exception of the message field at the far right that provides an indication of whether there are any issues or problems with the data entered for the engine family (e.g., FEL cap exceedances). Note that if there are any messages in

this column, the entry is considered invalid and ABT credits will not be calculated. For example, any phase-out averaging sets entered in MY 2009 or after precludes credit calculations and results in a message indicating that the averaging set and parameter combination is invalid. In addition, credit transfers between HDE and HDV will not be reflected in the totals if the amount entered for transfer exceeds the amount available. In the top left corner of the worksheet, the applicable program compliance option may be selected. This entry should be consistent with the compliance option indicated in previous model years. This worksheet only applies to current model year (MY) calculations.

- **Field Descriptions:** This worksheet contains detailed notes on each of the fields in the first worksheet, including a description of the required data or information, how the data should be entered (for the columns allowing input), the existence of any drop-down menus, and any other information that would be relevant to that field (including whether the field is a calculated value based on preceding entries in the spreadsheet). As with the "Credit Calculations-Current MY" worksheet, all fields that are calculated (and thus, do not require any data entry) are highlighted in yellow.
- **Averaging and Summary:** This worksheet provides an overall summary of the credits for heavy-duty highway gasoline engines and vehicles that have been calculated from the first worksheet and allows for the entry of credits from previous model years so that banked credits can be properly applied and compared to current model year credits. This worksheet allows for the documentation of how current and previous MY credits will be used to ensure compliance with the standards.

III. Entering Data for the Current Model Year

Before entering data, it is important to ensure that the Excel file is set up to automatically calculate the data. To ensure that the data are calculated immediately upon entry, go to the Tools menu and select Options. In the window that appears, select the Calculations tab. In this tab, the option "Automatic" should be selected. Also, note that the drag and drop option should not be used to copy or move data entered in the worksheet since doing so will change how the cells are referenced in the formulas and may lead to erroneous calculations. In order to prevent this from occurring inadvertently, go to the Tools menu and select Options. In the window that appears, select the "Edit" tab and remove the check mark from the "Allow cell drag and drop" box.

International users should ensure that the settings for number handling are consistent with the template. If your system is currently set up to use a comma for the decimal separator and a period for the thousands separator, you must temporarily modify the settings for number handling to avoid errors within the automatic calculations. To modify these settings, go to the Tools menu and select Options. In the window that appears, select the International tab. Within this tab, remove the check mark within the 'Use system separators' box within the section at the top entitled 'Number handling'. At this point, you may insert a period as the decimal separator and a comma as the thousands separator.

These worksheets are protected and as a result, you may navigate around the unlocked (i.e., data entry) cells using the arrow keys on your keyboard. However, to view the entire spreadsheet including the calculated cells and the credit totals below the data entry rows, you should navigate using the scroll bars at the bottom and right side of the worksheet. Using the scroll bars will allow you to view cells that cannot be selected.

- Step 1** **Select Program Option and Model Year:** In the top left corner, select the applicable compliance option: Option 1, 2 or 3, which indicates whether compliance was initiated in 2003, 2004, or 2005, respectively. Directly below the option, enter the applicable model year using a four character year format (e.g., 2008). These data elements will impact the credit and phase-in calculations as well as the determination of the applicable FEL caps in certain circumstances.
- Step 2** **Enter Data for Initial Credit Calculation:** Using the second worksheet ("Field Descriptions") as a guide, enter in the appropriate information for each data element in the first nine columns of the "Credit Calculations -- Current MY" worksheet. These columns contain the data needed to calculate the initial credit balances for both non-ABT and ABT-only engine families and the total Offset balances (i.e., Offsets accrued in 2007 or Offsets used in 2008 or 2009). The entries for Averaging Set, Use or Accrual of Early Compliance Offsets (if applicable), Weight Class, and Parameter should be selected from the drop-down menu provided. The next four columns highlighted in yellow will show the applicable standard and associated units of measure and the totals for non-ABT and ABT-only credits.
- Step 3** **Enter Data for Credit Transfers:** If any engine-based credits (g/bhp-hr) are going to be converted to vehicle/chassis-based credits (g/mi), or vice versa, enter the EPA-approved conversion factor and the number of credits that should be converted. Note that transfers are only allowed in cases where the manufacturer has designated Options 1 or 2 as the original compliance option. Based on the data entered in these two columns, the last three columns (highlighted in yellow) will show the credits transferred to one averaging set or the other. If the "Averaging Set" is specified as engine-based, then the "# Credits to Convert" as specified under the "Credit Transfers" section, will be converted to vehicle-based (g/mi) credits in the "Credits transferred to HDV" column. Similarly, if the averaging set is specified as vehicle-based, the credits will be converted to engine-based (g/bhp-hr) credits in the "Credits transferred to HDE" column. The far right column will show the ABT-only credit balance following any conversions. Note that engine family-specific credit balances will only differ (i.e., will be reduced) for the averaging sets from which credits are transferred. The averaging set to which the credits are being transferred in each case will be reflected in the overall totals below the data entry rows.

For engine families certified to the previous or "phase-out" standards, the vehicle-based credits are divided into those associated with a NO_x FEL above 0.6 g/mi and those at or below

this level. Banked or traded NO_x credits that are associated with FELs above this threshold will be subject to an adjustment factor of 0.90 (i.e., a 10 percent discount). Similarly, engine-based credits associated with engine families certified to the previous or "phase-out" standards will be discounted by 10 percent if the associated FEL is above 0.5 g/bhp-hr. There is no trigger associated with engine families certified to the new 0.2 g/mile NO_x standard for HDVs or the 0.20 or 0.40 g/bhp-hr standards for HDEs (i.e., "phase-in" engine families). The credit totals below the data entry rows distinguish between those above and below the threshold only for the credit totals associated with phase-out engine families. The "Transfer Credits Gained" will summarize the engine-based credits converted and added to the vehicle-based total, and vice versa.

Note that any extra rows that do not contain any data, can be left blank. If additional rows are needed, please contact EPA for a revised form and specify how many entries/rows will be required.

Below the summary of current MY credits for each parameter and averaging set, the Phase-in percent is displayed. This value shows the percentage of engines that are certified to the new, more stringent NO_x standards and must exceed 50 percent for the model year 2008. For all subsequent model years, the phase-in must be complete (i.e., 100 percent).

For engine families associated with the use of offsets, an indication can be made in the column requesting whether offsets are being used or accrued (i.e., "Use or Accrual of Early Compliance Offsets" in Column D). The entry in this column should be "N/A (ABT)" for all engine families that are using or generating credits. For the entries indicating Use, Accrual, or Accrual-2X, there will be no corresponding credit calculation since offsets are considered separately from the ABT program. For all engine families certified to the voluntary standards for HDEs (0.10 g/bhp-hr NO_x) or HDVs (0.10 g/bhp-hr NO_x or 0.20 g/mile NO_x depending on the associated GVWR) in MY 2007, the option "Accrual-2X" should be selected to ensure that the corresponding Offsets calculated in the summary totals are accurate. The sales associated with an "Accrual-2X" option should be the actual sales since the corresponding offsets will be automatically doubled in the totals listed below the data entry rows. Note that the Accrual or Accrual-2X options only apply for MY 2007.

The reconciliation of offset balances is displayed in the rows below the credit totals and the phase-in percentage. The number of offsets that have been accrued prior to model year 2007 can be entered in the first row. If the current MY (as indicated in cell C37) is 2008, then the total offsets accrued to date (including MY 2007) should be entered. The subsequent row automatically displays the number of offsets accrued during MY 2007 (and will only populate if 2007 is entered as the MY in cell C37). This value will reflect any offset benefits in cases where the voluntary NO_x standard applies (i.e., the 1:2 ratio is applied for all sales associated with the "Accrual-2X" option). The third offset row is automatically populated with the number of offsets used, which only applies if the current MY is indicated in cell C37 as 2008 or 2009. The total offset balance in the last row will be automatically calculated based on the offset values entered in the preceding rows.

IV. Averaging and Summary

The "Averaging and Summary" worksheet contains a summary of all NMHC+NO_x, NO_x and NMHC credits and deficits (both banked and current year) for HDEs and HDVs. This worksheet allows for the application of these credits to current model year balances. The initial step requires the entry of carryover or traded credit balances. The application and averaging of these existing credits with current model year credits is summarized in the second step. Cells that are highlighted in green or blue will be automatically populated based on information in the "Credit Calculations-Current MY" worksheet or from other data in this summary worksheet. Note that the first row will show any current model year deficit balances for Phase-out credits. If there is a positive credit balance for the current model year, the value or "deficit" shown will be zero.

Step 1 **Credit Balances Before Averaging:** In the first and second rows of this section, enter credits acquired through trading and carryover credit balances from prior years, respectively.

Step 2 **Credit Usage and Averaging:** Based on the existing carryover (banked), traded, current model year credits transferred (between engine/vehicle), or current model year credits above and below the trigger for phase-out credits (as included in the "Credit Balances before Averaging" section), indicate the number of credits that should be applied to the overall current model year credit balance. If possible, apply all credits associated with phase-out engine families certified to an FEL above the trigger in order to avoid the application of the 10 percent discount, which is applied if these credits are banked or traded.

The "Credit Summary after Averaging" section of the worksheet is automatically populated with the credit balances based on the application of HDE and HDV credits in the preceding rows. The final credit totals include balances for the current model year deficit (if applicable for phase-out balances only), banked or carryover credits, and current MY credits. Note that it is important to apply credits in Step 2 such that the application of the 10 percent discount is minimized or eliminated. If any phase-out credits associated with an FEL above the trigger are remaining after Step 2, the discount is applied to those credits. The "Total Credit Balance after Averaging" reflects the grand total for both HDE and HDV, taking into account all credit and deficit balances.