Instructions for using LEV and NLEV Inputs with MOVES4

Introduction

This document provides instructions for creating California Low Emission Vehicle (LEV) inputs and National Low Emission Vehicle (NLEV) inputs for use in certain states in MOVES. The instructions provided in this document are for use only in states other than California that adopted California LEV standards, and states in the Ozone Transport Commission (OTC) that received early implementation of NLEV standards. Specifically:

- OTC states that did not adopt California LEV standards but were subject to the early implementation of NLEV should follow the instructions in Section 1.
- OTC states that adopted California LEV standards prior to the 2001 model year should follow the instructions in Section 2.
- OTC states that were subject to the early implementation of NLEV and adopted California LEV standards beginning with model year 2001 or later should follow the instructions in Sections 1 and 2.
- All other states that adopted California LEV standards in any year should follow the instructions in Section 2.

Section 1: Instructions for using NLEV inputs in Ozone Transport Commission (OTC) states

The National Low Emission Vehicle Program was the result of an agreement between EPA, Ozone Transport Commission (OTC) states, and the auto manufacturers to introduce new emission standards in the OTC states beginning with the 1999 model year and in the rest of the country beginning with the 2001 model year (more information on light duty emissions standards, including NLEV standards, can be found at EPA Emission Standards for Light-Duty Vehicles and Trucks and Motorcycles).

The default emissions database that is included with MOVES4 includes the effects of the nationwide NLEV standards beginning with the 2001 model year. However, it does not include the effects of the NLEV standards for the 1999 and 2000 model years in OTC states. EPA has created a tool that allows OTC states to model the early introduction of NLEV standards in those states. This tool creates a special input database which contains a set of alternate hydrocarbon (HC), carbon monoxide (CO), and oxides of nitrogen (NOx) start and running emission rates based on EPA analysis of the NLEV program. The input database provides rates only for model years 1999 and 2000. These rates replace the rates in the default database for these particular pollutants.

Steps to build and use the NLEV input database

1. Open MOVES and create a RunSpec for the current analysis.
2. Open the NLEV database builder tool by clicking on the “Tools” menu and select “Build NLEV Input Database”.

3. Give the input database a name. This should follow database naming conventions, so do not use spaces or special characters other than the underscore (_). For example, enter `MOVES4_early_NLEV_in`.
4. Click the "Build Database" button. A message box will appear when it is created; click "OK" to acknowledge the message box and then click "Done" to close the database builder tool.
5. In the "Advanced Features" Panel, expand the "Database" drop-down menu in the "Input Data Sets" block, and locate the database created in step 4. If you don't see the database, press the "Refresh" button to refresh the list.
6. Select the database and press the "Add" button.
7. Complete the MOVES RunSpec and run as usual.

Section 2: Instructions for using California LEV inputs in MOVES

Beginning in the 1990s, a number of states chose to adopt California LEV standards in place of federal standards. The effects of these LEV standards are not included in the default MOVES emission rates. EPA has created a tool for those states that have adopted the California LEV program regulations. This tool creates a special input database which contains a set of alternate HC, CO, NOx, and particulate matter (PM) start and running emission rates based on EPA and CARB analysis of the LEV programs. The tool can provide rates starting with model year 1994 through model year 2060, including the LEV I, LEV II, and LEV III California standards. The input database created by running this tool contains emission rates to replace the rates in the default database for these particular pollutants.

Because states adopted the LEV standards at different points in time, substituting the full set of LEV emission rates may not be appropriate. For example, if the user's state adopted the LEV program starting in 1999, it would be incorrect to use the rates that apply to earlier model years. Along with the tool, EPA has provided a template MySQL script that users can tailor to incorporate the appropriate model years into the input database. The template can be found by navigating to the MOVES installation location (by default C:\Users\Public\EPA\MOVES\MOVES4), and then looking for database\LEV_NLEVScripts\MOVES4_MyLEVs_Template.sql. Alternatively, it may be directly opened via MOVES using the steps outlined below.

The template script lists all of the model years available in the tool. Therefore, if the template script is run without making any changes, all model years will be created in the database and LEV benefits will be calculated for model years 1994 to 2060 (although the specific model years included in the run will depend on the calendar year selected in the RunSpec). To properly use the tool to calculate LEV program benefits for a given state, the user must create a new script based on the template and delete the model years from the script in which the LEV standards were not applicable.

Steps to build and use the LEV input database

1. Open MOVES and create a RunSpec for the current analysis.
2. Open the NLEV database builder tool by clicking on the "Tools" menu and select "Build LEV Input Database".
3. Click the "Open File" button in the tool to open the template script in your default text editor.
4. Save a new version of the script, giving it a descriptive name. Do not overwrite the template file.
5. In your new script, edit the final command by deleting the lines corresponding to model years for which the LEV program is not applicable. Save your new script.

6. Back in the tool, click "Browse…" and select the script you created in the previous steps.
7. Give the input database a name. This should follow database naming conventions, so do not use spaces or special characters other than the underscore (_). For example, enter `MOVES4_LEV_in`.
8. Click the "Build Database" button. A message box will appear when it is created; click "OK" to acknowledge the message box and then click "Done" to close the database builder tool.
9. In the "Advanced Features" Panel, expand the "Database" drop-down menu in the "Input Data Sets" block, and locate the database named in step 7. If you don't see the database, press the "Refresh" button to refresh the list.
10. Select the database and press the "Add" button.
11. Complete the MOVES RunSpec and run as usual.

Example 1

State A adopted LEV standards beginning with the 1999 model year and will continue those standards in the future. To model this program, you would delete the lines in the script for ",94", ",95", ",96", ",97", and ",98", because State A's program did not apply to model years 1994-1998. The last command in the script would now look like:

```
and mid(sourcebinid,8,2) in (''
      -- shortModYrGroupID | modelYearGroupName
   ,99               -- 99 = 1999
   ,20               -- 20 = 2000
   ,21               -- 21 = 2001
   ,22               -- 22 = 2002
   ,23               -- 23 = 2003
   ,24               -- 24 = 2004
   ,25               -- 25 = 2005
   ,26               -- 26 = 2006
             .
             . (these lines omitted to save space)
             .
   ,49               -- 49 = 2029
   ,50               -- 50 = 2030
   ,9                --  9 = 2031-2050
   ,60               -- 60 = 2051-2060
);
```

In this example, using the tool with the new script will provide a LEV input database that includes model years 1999-2060. The LEV input database will not contain the 1994-1998 model years.

Example 2

State B adopted LEV standards with the 1999 model year but reverted to federal standards with the 2005 model year. To model this program, you would delete the lines in the script for ",94", ",95", ",96", ",97", and ",98", as well as lines for ",25" through ",60" because State A's program did not apply to model years 1994-1998 or 2005+. The last command in the script would now look like:

```
and mid(sourcebinid,8,2) in (''
      -- shortModYrGroupID | modelYearGroupName
   ,99                -- 99 = 1999
   ,20                -- 20 = 2000
   ,21                -- 21 = 2001
   ,22                -- 22 = 2002
   ,23                -- 23 = 2003
   ,24                -- 24 = 2004
);
```

In this example, using the tool with the new script will provide a LEV input database that includes model years 1999-2004. The LEV input database will not contain the 1994-1998 or 2005-2060 model years.