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# MOVES2014 Overview for Experienced MOVES Users

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## Introduction

The purpose of this guide is to provide experienced MOVES users with a brief overview of the major functional changes included in MOVES2014.

### Can I still run MOVES2010b if I've downloaded MOVES2014?

Yes. However, some users must download a patch that modifies MOVES2010b to communicate with the new version of MySQL. EPA has provided a patch that can be downloaded through the MOVES installation suite. If you skipped over this step, you may return at any time to the installation suite to install the patch. After the patch is installed, both MOVES2010b and MOVES2014 may be run from the same computer.

### How do I convert MOVES2010b databases into MOVES2014 format?

EPA has provided a database converter for both project and county scale databases. The converter can be accessed from the Tools menu of the GUI. Users are cautioned that because the fuels database has been updated, fuels tables that have been converted may not reflect the most recent fuel information. Additionally, the monthVMTfraction table may need to be re-imported if a leap-year is being modeled. EPA has removed leap years from MOVES, and consequently, monthVMTfractions for leap years will be deleted during database conversion.

### What changes have been made to the MOVES GUI?

EPA has added several enhancements that will improve how you can develop Runspecs through the MOVES GUI.

#### **Password Prompt**

The first obvious GUI change is when MOVES is first opened. MOVES2014 now requires a password. This is in response to user feedback indicating many IT departments require a password protected interface between software programs and MySQL. The default user name is "moves" and the default password is "moves" (lowercase, no quotes). These may be changed at any time by the user.

#### **Non-Road**

MOVES2014 includes the option to model either onroad or nonroad emissions. Under the Scale panel of the GUI, users can select either the "Onroad" or "Nonroad" model. The NONROAD2008 model has been incorporated into the framework of MOVES2014. It will produce the same emissions estimates as NONROAD2008 assuming no inputs are changed by the user.

#### **Ethanol**

In the On Road Vehicle and Equipment panel, users now have the option to choose Ethanol (E-85) as a fuel type. Users should select ethanol, along with gasoline, diesel, and CNG for most modeling scenarios. MOVES assumes that the default fleet uses all of these fuels;

omitting one may result in emissions being calculated for on a only sub-set of the complete vehicle fleet.

### **Ramp Option**

In the Road Type panel, users now have the option of separating ramp emissions from highway (restricted road) emissions. By selecting the box "Provide separate ramp output", emissions will be produced for seven road types (assuming all road types were selected):

Road type 1 – Off-network

Road type 3 - Rural Unrestricted

Road type 5 – Urban Unrestricted

Road type 6 – Rural Restricted without Ramps

Road type 7 – Urban Restricted without Ramps

Road type 8 – Rural Restricted only Ramps

Road type 9 – Urban Restricted only Ramps

This selection is completely optional, and will not affect the emissions calculations and the total emissions inventory.

### **Auto-chaining**

A button has been added to the pollutant and processes panel to automatically select the prerequisite pollutants for a given selection. For instance, selecting "Primary Exhaust PM2.5 – Total" will prompt the user to also select "Composite – NonECPM" and "Elemental Carbon". Clicking the button "Select Prerequisites" will automatically select those pollutants.

### **Regulatory Class Output Option**

In the output emissions detail panel, users now have the option to output by "Regulatory Class". This can be selected instead of, or along with, source type output. Selecting this option will not affect the total inventory, but will provide a breakdown of emissions by regulatory class.

## **What changes have been made to MOVES inputs?**

EPA has made several improvements and added flexibility to how users can provide local data to the model. The following are new or improved input options.

### **Hotelling Importer**

In the county and project data manager, users will now have the option of providing local truck hotelling activity. Hotelling is specific to activity performed by long haul combination

trucks (source type 62). The Hotelling importer has two panels; both are optional. The first, “hotellingActivityDistribution” allows users to specify the fraction of long haul combination trucks (by model year) that are in extended idle mode, Auxiliary Power Unit (APU) mode, or engine-off mode during the modeling period. National default data are available and will be used if no table is imported.

The second panel allows users to define “hotellingHours” directly to the model. In MOVES2014, the number of truck idle hours are based on a national allocation to the county-scale. The amount of idling occurring in a given county is based on long haul combination truck VMT on rural restricted roadways. Consequently, a county with no rural highway VMT for long haul combination trucks will have no hotelling hours. If local data are available, the importer can be used to provide these values to the model.

### **Starts Importer**

MOVES2014 offers the option to import local vehicle start information. Depending on the data available, users can use one or more of the following panels:

startsPerDay – defines the number of starts per day

startsHourFraction – specifies the distribution of starts throughout the day

startsSourceTypeFraction – allocates starts to different source types

startsMonthAdjust – adjusts start activity by month

importStartsOpModeDistribution – defines vehicles soak times

starts – allows users to provide the complete starts table (by source type, dayid, modelyear, monthid)

The starts importer is optional. If no data are provided, MOVES will calculate starts based on the user defined source type population input.

### **Fuel RegionID**

A new analysis of nationwide fuel use prompted a change in how fuels are defined at the county-level in the default database. Instead of each county having a unique fuel supply, the default fuel supply is divided into fuel regions. The obvious impact of this change is that the fuel supply table now has a column for fuelregionID rather than countyid. Using the MOVES2010b to MOVES2014 converter will automatically add the appropriate fuel region ID to the fuel supply table.

### **Fuel Usage Importer**

MOVES2014 allows users to model ethanol (E-85) in the fleet. The new fuelusage table specifies the fraction of E-85-capable vehicles using E-85 vs. conventional gasoline. Default information is available, but this input is required for running MOVES.

## **Fuel Wizard**

The Fuel Wizard is a tool available in the fuels tab of the county and project data manager where fuel properties can be modified in a manner consistent with refinery modeling. For instance, changing a given fuel's RVP should affect other properties of that fuel. The Fuel Wizard will correctly modify the other fuel formulation properties based on the change made to RVP.

## **VMT Changes**

EPA has removed leap years from the model. The monthVMTfraction table now has no column for ISleapyear.

Additionally, when populating the HPMSvtypeyear table, users should be aware that EPA has combined HPMS class 20 and 30 into a new 25 class. The Federal Highway Administration changed their definitions of 20 and 30 classes from "passenger cars" and "other 2-axle 4-tire trucks" to "short wheelbase" and "long wheel base." There is mapping of wheel base length to EPA's regulatory classes, so, EPA has combined 20 and 30 classes into the new 25 class to represent light-duty vehicles under 10,000 lbs. Users should not import an HPMSVTypeyear table with the old 20 and 30 classes into MOVES2014.