PARTICULATE MATTER EMISSION FACTORS USING MOVES REGIONAL SCALE OF ANALYSIS

Prepared by,
Suriya Vallamsundar and Jane Lin
University of Illinois at Chicago
Date: 07/02/12

Table 1 shows the RunSpec generic parameters used for MOVES regional scale analysis

TABLE 1 MOVES RunSpec Parameters

Data Item	**Description**
Geographic location	Cook County, IL
Scenario Year	2029
Time Period	All 12 months
Pollutant	PM2.5
Emission Process	Running exhaust, crankcase running exhaust, break wear and tire wear, start exhaust
Vehicle- Fuel Combination	Diesel powered all MOVES vehicle types
Road Types	Both restricted and unrestricted road types
Scale of analysis	County
Output	Emission Rates

TABLE 2 MOVES Local Specific Input Parameters

Data item	**Description**	**Notes**
Fuel Supply	Fuel supply parameters and associated market share for each fuel	Chuck Gebhardt sent us the fuel supply data for the entire Chicago nonattainment region.
I/M Program	Inspection - maintenance parameters such as IMprogram ID, test standards ID, inspection frequency etc.	Chuck Gebhardt sent the MOVES IM coverage data from Mike Rogers
Meteorology	Hourly temperature and relative humidity values.	We obtained this data from Matt Will at IL EPA in AERMET format for PM Hot-Spot Project. We used the same data here.
Average Speed Distribution	The average speed data specific to vehicle type and road type and time of day/ type of data for geographic area being modeled	Claire Bozic sent us a workbook containing some of the standard MOVES outputs for Cook county. One of them was the average speed distribution which was utilized here.

Source Type Age Distribution	Vehicle age distribution	Initially Claire Bozic told us that they will be reviewing the license plate information from secretary of state to generate the source type population and age distribution. But Rob Robinson communicated that the data is not still ready to be used. Hence the registration distribution for Chicago area for year 2008 from IL EPA obtained for PM Hot-Spot project will be utilized here. The same data was utilized for calendar year 2029 assuming there will a little significant change in future fractions. EPA converters were utilized to convert this data in MOBILE format into MOVES compatible format.

Vehicle Type VMT	Annual vehicle miles traveled by HPMS vehicle class for the year and geographic area being modeled	In this case, vehicle type VMT for Cook County was obtained from the travel statistics from Highway Performance Monitoring System (HPMS) for Illinois for calendar year 2011. VMT distribution for calendar year 2029 was obtained using the growth factors from 2011 to 2029 which was sent to us by Claire Bozic. The same percentage was applied to all vehicle types as individual growth factors by vehicle types were not available. Claire Bozic sent us inputs on HPMS daily. MOVES requires annual VMT estimates and we asked her for the weekday/ weekend ratio to scale the daily VMT to annual VMT. But as that data was unavailable, the HPMS data was utilized. Further we did not get the source type population from Claire. The EPA VMT converter can produce source type population, road type distribution. The converter requires annual VMT in a certain format (rural and urban - 6 road types each) which was available with the HPMS data.

		Also to be consistent, it makes sense to use the VMT and source type population from the same data instead of using VMT from the data sent by Claire and source population from the converter. Due to these reasons, we think it is better to go with the HPMS estimates. The HPMS estimates for Cook county and VMT converter is attached.
Source Type Population	The number of vehicles in the geographic area being modeled for each vehicle type such as passenger cars, passenger trucks etc	EPA converter was utilized to obtain the source type population. The input to the converter was the vehicle type VMT for year 2029 and the converter computes the source type population.
Road Type Distribution	The fraction of VMT by road type for the geographic area being modeled	EPA converter was utilized to obtain the source type population. The input to the converter was the vehicle type VMT for year 2029 and the converter computes the road type distribution.