



## Exercise Description

This exercise is designed to help you work through the challenge of having some but maybe not all MOVES inputs for a MOVES run. The exercise goal is to develop a hypothetical Carbon Monoxide (CO) inventory for a January weekday in Ann Arbor, Michigan (Washtenaw County) for 2028. All data files are located within the [Module 8 - Capstone Exercise](#) folder. *Review this page carefully before starting the exercise.*

### Available data:

The metropolitan planning organization (MPO) has provided several MOVES inputs. These files are located in the [MPO MOVES Files](#) folder and include:

**speeddistribution.xlsx** – this file contains average speed distributions inputs formatted for MOVES

**roadtypedistribution.xlsx** – this file contains road type distribution inputs formatted for MOVES

**agedistribution.xlsx** – this file contains historic age distributions formatted for MOVES, but they need to be projected to 2028 and will need to be combined with default age distributions for source type 62s

**avft.xlsx** – this file contains complete fuel type distribution inputs collected on July 1, 2020, formatted for MOVES, but they need to be projected as described below

Additional data are available but must be processed before they can be used as MOVES inputs. These files are located in the [Additional Data Files](#) folder and include:

**temp and humidity.xlsx** – this file contains temperature and humidity data that must be entered into a meteorology template

**daily VMT.xlsx** – the daily VMT provided is for a typical January 2028 weekday and must be entered into a properly formatted HPMSVtypeDay table. Use default HourVMTFraction data

**vehicle population.xlsx** – This data for 2028 must be entered into a sourcetypepopulation template

In this hypothetical scenario, the county has the following plans: All refuse trucks purchased in 2021 and later will be CNG, and all transit buses and school buses purchased in 2023 and later will be BEV. Modify following inputs to reflect this technology shift:

**avft.xlsx** – project the MPO data to 2028 while reflecting this scenario

Lastly, when hotelling, all diesel MY2009 and older combination long-haul trucks will be required to use truck stop electrification (i.e., shore power) in this scenario. Modify the following inputs to reflect this:

**HotellingActivityDistribution** – this input should be appropriately changed; defaults can be used for everything else

### Helpful Hints:

Begin by creating a RunSpec with the appropriate time period, vehicle/equipment, pollutant/processes, road types, etc. Next, create an input database and populate the known inputs. As noted above, extra steps must be taken to develop some inputs including VMT, population, meteorology, age distribution, fuels, and hotelling. After running MOVES, open HeidiSQL and calculate a total CO value for the modeled period (January weekday).