

MOVES Anywhere

A Docker Container for EPA MOVES 5.0

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April 19, 2025

Learn More: github.com/Gao-Labs/moves_anywhere



What is MOVES Anywhere?

A Docker Container for the Environmental Protection Agency's Motor Vehicle Emissions Simulator MOVES 5.0.

- Runs on any OS via Docker
- Automatically writes Runspec .xml files for MOVES
- Synthesizes Missing Input Tables not provided by user
- Simplified file system storage (no database required)
- Can be iterated with Docker for distributed computing

Input Tables

MOVES Anywhere streamlines MOVES' functionality by filling in any required-but-not-provided custom input tables with national default traits, using reasonable assumptions.

Type	Table	Adjustment
Activity	sourcetypeyear.csv	Projected
Activity	sourcetypeyearvmt.csv	Projected
Activity	hpmsvtypeyear.csv	Projected
Activity	hpmsvtypeday.csv	Projected
Activity	roadtypedistribution.csv	Untouched
Activity	monthvmtfraction.csv	Untouched
Activity	dayvmttraction.csv	Untouched
Activity	hourvmtfraction.csv	Untouched
Activity	sourcetypepeagedistribution.csv	Filtered
Activity	avgspeeddistribution.csv	Filtered
Climate	zonemonthhour.csv	Filtered
Policy	imcoverage.csv	Filtered
Fuel	avft.csv	Projected
Fuel	fuelusagefraction.csv	Filtered
Fuel	fuelsupply.csv	Copied
Fuel	fuelformulation.csv	Copied

Pollutants

Default Selected Pollutants:

Pollutant	Abbreviation	EPA Code
Carbon Dioxide equivalent	CO _{2e}	98
Carbon Monoxide	CO	2
Oxides of Nitrogen	NO _x	3
Sulfur Dioxide	SO ₂	31
Nitrogen Dioxide	NO ₂	33
PM10 - Total	PM ₁₀	100
PM10 - Brakewear	PM ₁₀	106
PM10 - Tirewear	PM ₁₀	107
PM2.5 - Total	PM _{2.5}	110
PM2.5 - Brakewear	PM _{2.5}	116
PM2.5 - Tirewear	PM _{2.5}	117

For more pollutants, see the [EPA's MOVES on-road cheatsheet](#).

Get Started

To get started using MOVES Anywhere on your system, you will need...

1. Install **Git Bash** (or an alternative command line protocol)
2. Install **Docker**
3. **Pull Image** from DockerHub

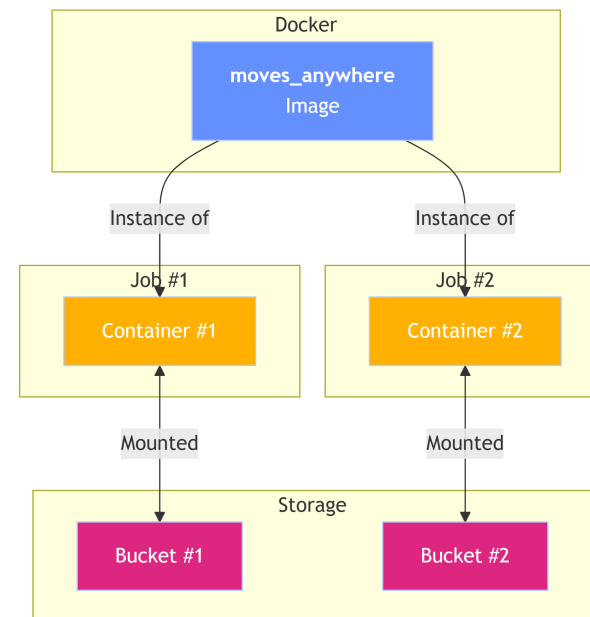
After installation, follow these steps to run MOVES anywhere!

1. **Design** any desired Custom Input Tables
2. **Add to Folder** any Custom Input Tables with a MOVES Runspec
3. **Run** Container N times Simultaneously

Learn more at: github.com/gao-labs/moves_anywhere

Container File Structure

```
/cat/  
  EPA_MOVES_Model / ...  
  scripts/  
    launch.sh ...  
  inputs/  
    rs_custom.xml  
    sourcetypeyear.csv -> example provided CSV  
    _sourcetypeyear.csv -> reformatted for MOVES  
    moveslog.txt  
    movesoutput.csv  
    movesactivityoutput.csv  
    data.csv
```



How to Use MOVES Anywhere

Pull Image from DockerHub

```
1 #\bin\bash  
2 docker pull tmf77/moves-anywhere:v2
```

Run Container

```
1 #\bin\bash  
2 IMAGE_NAME="tmf77/moves-anywhere:v2"  
3 # Set path to your folder for mounting  
4 BUCKET="$(pwd)/your_folder_of_inputs"  
5 # Run launch interactive container, to be removed on  
  ↪ exit  
6 docker run --name "dock" --rm \  
  --mount  
  ↪ src="$BUCKET/",target="/cat/inputs",type=bind  
  ↪ \  
7 --entrypoint bash \  
8 -it "$IMAGE_NAME" \  
9 -c "./scripts/launch.sh"
```

CAT
CLIMATE ACTION IN TRANSPORTATION

