## \*\*\* 1st cut at format for documentation of VE inputs by version \*\*\*

VE RSPM v3.8\_\_\_

## VisionEval Documentation

This appendix provides more detail on the inputs used in the RSPM grouped by major topic area. The focus is on those inputs that must be provided and customized for the local area. In some cases inputs are noted as “default”, indicating that default values are available from the STS work, although local adjustment in special cases is an option. In introducing each group of inputs, a table is provided listing the specific RSPM filenames with a short description of their contents, as well as the “geography” or spatial level of detail.

Version Toggle

* Pre-VE RSPM/GreenSTEP
* VE RPAT, VE RSPM, etc.

## Demographics Inputs +

## Vehicle & Fuel Inputs +

Vehicle and Fuel Technology are expected to change significantly during the next 20-50 years as vehicles turn-over and the newer fleets are purchased. The characteristics of the fleet of new cars and trucks are influenced by federal CAFÉ standards as well as state energy policies and promotions. Local areas can contribute through decisions about the light-duty fleet used by local transit agencies and by assisting in deployment of electric vehicle charging stations and their costs in work and home locations, but otherwise have less influence on the characteristics of the future vehicle fleet, including auto, light truck, and heavy truck vehicles. As a consequence, the RSPM inputs on vehicle and fuel technology are largely specified at the state level. These include inputs that reflect the default assumptions included in the Metropolitan GHG target rules and a more aggressive future as specified in the Oregon Statewide Transportation Strategy.

The key local contribution to these inputs is the bus electric/fuels inputs; although defaults can be used if no additional local data is available. These variables are briefly summarized below.

Add similar tables/text on:

* Modules
* Influence on Outcomes

**Table 9. Vehicle/Fuels Technology Inputs (DEFAULT)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Input File | | Geography | | Description |
| scen/phev\_characteristics.csv | metropolitan | | auto and light truck PHEV fuel economy, battery range, electricity economy, and market proportion by analysis year | |
| scen/ev\_characteristics | metropolitan | | auto and light truck EV characteristics (battery range, market proportion, efficiency) by model year | |
| scen/hev\_characteristics.csv | metropolitan | | auto and light truck HEV fuel economy and proportions of ICE & HEV vehicles that are HEV by model year | |
| scen/age\_adj.csv | metropolitan | | adjustment factors for vehicle fleet age by analysis year(change to 95th percentile age from 2005 vehicle age cumulative distribution) | |
| scen/lttruck\_prop.csv | division | | light truck proportion of household auto & light truck fleet by analysis year | |
| scen/comm\_service\_lttruck\_prop.csv | metropolitan | | light truck proportion of commercial service fleet by analysis year | |
| scen/comm\_service\_ev\_prop.csv | NA | | EV proportion of commercial service autos and light trucks by model year | |
| scen/comm\_service\_pt\_prop.csv | metropolitan | | powertrain proportions for commercial service autos and light trucks by model year | |
| scen/auto\_lighttruck\_mpg.csv | metropolitan | | MPG for autos and light trucks with ICE engines by model year | |
| scen/hvy\_veh\_mpg\_mpk.csv | metropolitan | | heavy truck and bus MPG and train MPkWh by model year | |
| scen/cong\_efficiency.csv | metropolitan | | relative fuel efficiency of light duty vehicles and heavy trucks in congestion by powertrain and analysis year | |
| scen/auto\_lighttruck\_fuel.csv | metropolitan | | auto and light truck fuel type proportions by analysis year | |
| scen/bus\_fuels.csv | metropolitan | | bus vehicle miles vehicle type (PropGas, PropCng) and fuel type (DieselPropBio, GasPropEth) proportions by analysis year | |
| scen/comm\_service\_fuel.csv | metropolitan | | commercial service auto and light truck fuel type proportions by analysis year | |
| scen/heavy\_truck\_fuel.csv | metropolitan | | fuel type proportions for heavy trucks by analysis year | |
| scen/fuel\_co2.csv | metropolitan | | carbon intensity of fuel types by analysis year | |
| scen/power\_co2.csv | district | | pounds of CO2e per kilowatt hour of electricity consumed by analysis year | |

Dark shading indicates default values are available.

Note: All Monetary units are reported in 2005 dollars; Light Gray entries are optional, dark Gray are typically default values provided by others.

#### Vehicle age, fuel economy, and congestion +

Several RSPM input files specify vehicle attributes relative to fuel source (diesel, compressed natural gas), fuel economy, and vehicle age for autos, light trucks, and heavy trucks. Four vehicle powertrain types are modeled by GreenSTEP:

* **ICE** - Internal Combustion Engines having no electrical assist;
* **HEV** - Hybrid-Electric Vehicles where all motive power is generated on-board;
* **PHEV** - Plug-in Hybrid Electric Vehicles where some motive power comes from charging an on-board battery from external power supplies;
* **EV** - Electric Vehicles where all motive power comes from charging an on-board battery from external power supplies.

***Calculating Parking Costs:***

*The proportion charged for parking and the division-wide parking rates can be calculated using the* ***regional travel demand model****. The proportion calculation uses the percentage of home based (or non-home based) work trips that originate in the respective division and end in a TAZ with paid parking. The parking rate can be calculated as the weighted average parking price in the MPO area (i.e., sum over all i zones: Daily price(i) x # spaces at price (i)/all paid spaces in MPO inventory).*

The proportions of vehicles of each powertrain are specified by 3 files in several sequential steps (***ev\_characteristics.csv, hev\_characteristics.csv, pev\_characteristics.csv***). Their associated efficiency (miles per gallon on kilowatt, mpg or mpk) is either contained in these files or two additional files (***auto\_lighttruck\_mpg.csv, hvy\_veh\_mpg\_mpk.csv***). Commercial service light duty vehicles are specified separately in another file (***comm\_service\_pt\_prop.csv***). More detail on the content of these files is provided in the following paragraph.

Best Practices call-out boxes

First vehicles are split between the combined categories of ICE/HEV and PHEV/EV using proportions for the PHEV/EV component stored in the ***phev\_characteristics.csv*** file. This file also specifies the battery range and power efficiency assumptions …. Likewise the MPG of heavy vehicles (trucks and buses) and power efficiency of streetcars and light rail trains is specified in the ***hvy\_veh\_mpg\_mpk.csv*** file. All of these inputs are specified by vehicle model year. The powertrain attributes of light-duty commercial service vehicles are specified in the ***comm.\_service\_pt\_prop.csv*** file.

An additional input looks at the performance of vehicles under congested conditions, as fuel economy varies by speed and varies by class of vehicles (***cong\_efficiency.csv).*** …A value of 1 means that the fleet operates like the best possible vehicle. The values are organized by year and by the vehicle and powertrain types.

Key User Actions/Assumptions

*Source: These inputs are defaults used statewide and should not be modified. If more detailed data is available, the default truck share of light duty vehicles (****lttruck\_prop.csv****) can be modified.*

*Assumptions: No local assumption.*

#### Vehicle Fuel Technology +

#### Truck share of personal + fleet autos (DEFAULT) +

#### Electric Emissions Rate (Co2e lbs/ kwhr) of electricity consumed (DEFAULT) +

#### Transit Vehicles/Fuels (DEFAULT) +

## Pricing +

## Community Design +