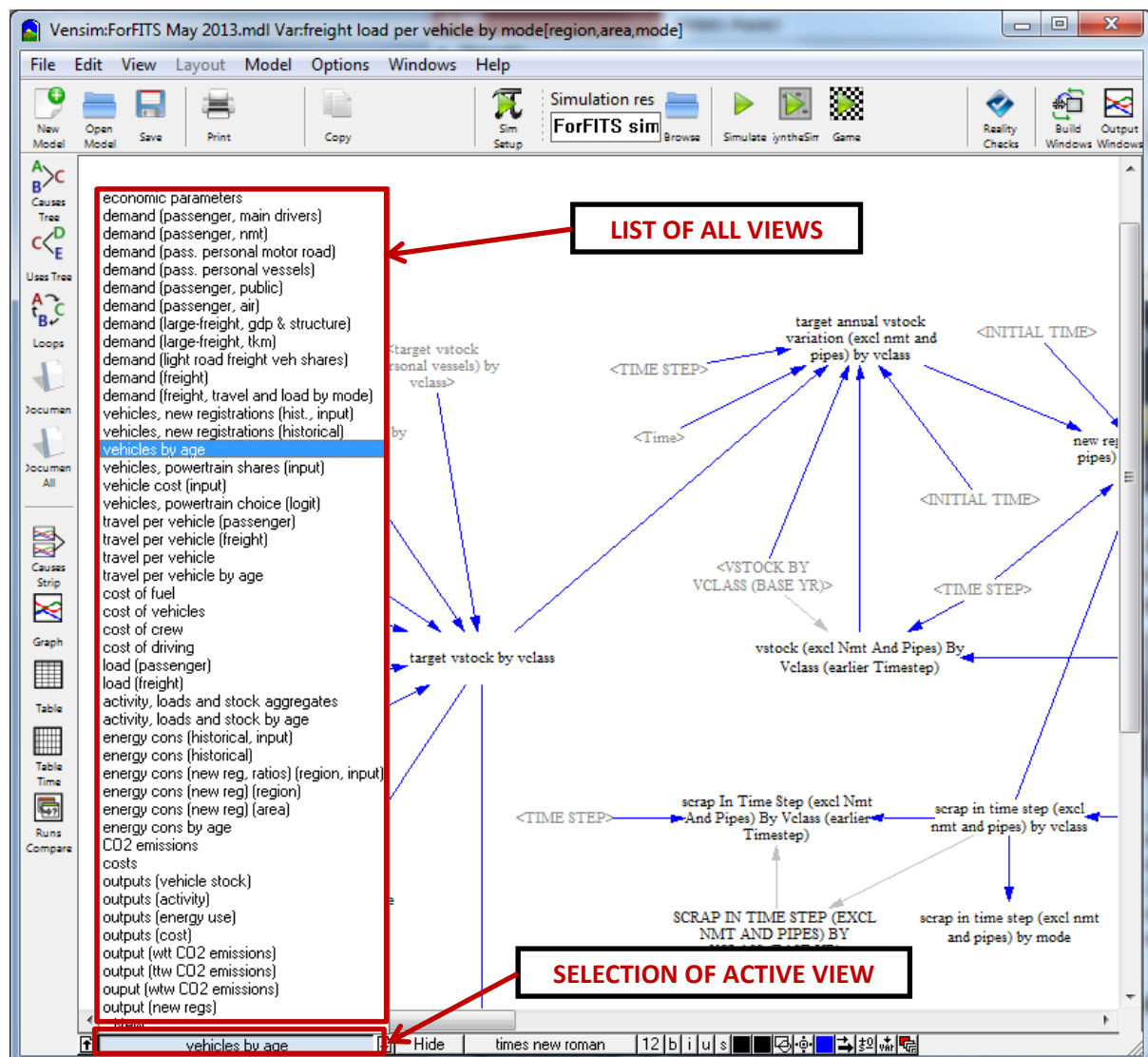# B.   ForFITS: Vensim Packaged Model (VPM) file

Content

The VPM file contains the detailed model structure (i.e. variables, represented by lines of text describing each of them, and links amongst variables, represented by arrows). Variables are defined by equations or linked to the ForFITS Excel file (for inputs into the VPM file). The variables appearing in black and purple in each of the views contain, respectively, model calculations and links to the ForFITS Excel file.

Views

The model structure is organized in "views" containing different Vensim sketches that representing parts of the model structure. This arrangement allows breaking the model up into a number of components (or modules), simplifying the understanding of it. The different modules are linked to each other by "shadow variables". The latter appear in grey on the sketches.

Figure B.1   VMR views

How to access the views

Users can access different views by clicking on the bottom left area of the Vensim Model Reader (VMR) window ("SELECTION OF ACTIVE VIEW" in Figure B.1). When this is clicked, the software prompts a list of all available views ("LIST OF ALL VIEWS" IN Figure B.1), allowing users to activate the one they are interested in (by clicking on it).

Mapping the views in the overall model structure

Table B.1 lists all the views contained in the VPM file. It links to Figure B.2, which contains a simplified model structure, illustrating with correspondence codes which views contribute to which section of the model.

The idea underlining the order of the views is to allow users to follow an input-to-output path that is similar to the one outlined by the four boxes located on the right side of Figure B.2. Transport activity is mainly linked to the views starting with "demand". The characterization of vehicles by age and powertrain is manly associated with the views staring with "vehicles". "Travel" views link information on vehicles and vkm. "Cost" views are related both activity and the powertrain choice. "Load" views link data on vkm with pkm and tkm. "Energy consumption" views are associated with information allowing the estimation of fuel consumption and the characterization of the vehicles in this respect. "CO_2 emissions" contains the calculations converting energy consumption and fuel characteristics in emission estimates. "output" views contain selected graphical representations of the key output parameters evaluated by ForFITS. This is the case for vehicles (vehicle stocks and new vehicle registrations), passenger and freight transport activity (pkm and tkm), energy use, and CO_2 emissions.

Figure B.2   ForFITS: simplified model structure with codes linking it to Table B.1
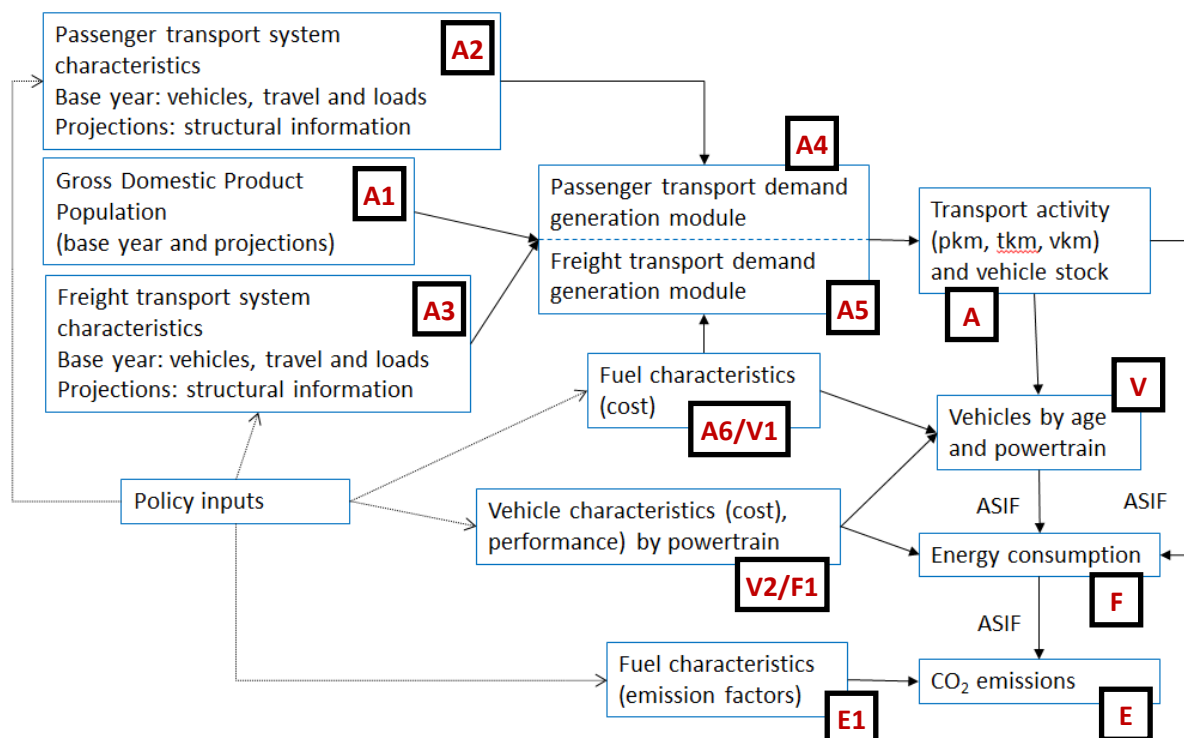
Number	View	Location in Figure B.2
01	economic parameters	A1
02	demand (passenger, main drivers)	A2, A4
03	demand (passenger, nmt)	A2, A4
04	demand (pass. personal motor road)	A2, A4
05	demand (pass. personal vessels)	A2, A4
06	demand (passenger, public)	A2, A4
07	demand (passenger, air)	A2, A4
08	demand (large-freight, gdp & structure)	A3, A5
09	demand (large-freight, tkm)	A3, A5
10	demand (light road freight veh shares)	A3, A5
11	demand (freight)	A3, A5
12	demand (freight, travel and load by mode)	A3, A5
13	vehicles, new registrations (hist., input)	V2
14	vehicles, new registrations (historical)	V2
15	vehicles by age	V
16	vehicles, powertrain shares (input)	V2
17	vehicle cost (input)	V2
18	vehicles, powertrain choice (logit)	V
19	travel per vehicle (passenger)	A
20	travel per vehicle (freight)	A
21	travel per vehicle	A
22	travel per vehicle by age	A, V
23	cost of fuel	A6/V1
24	cost of vehicles	V2
25	cost of crew	V
26	cost of driving	V
27	load (passenger)	A2, A4
28	load (freight)	A3, A5
29	activity, loads and stock aggregates	A
30	activity, loads and stock by age	A, V
31	energy cons (historical, input)	V2/F1
32	energy cons (historical)	V2/F1
33	energy cons (new reg, ratios) (region, input)	V2/F1
34	energy cons (new reg) (region)	V2/F1
35	energy cons (new reg) (area)	V2/F1
36	energy cons by age	F
37	CO_2 emissions	E1, E
38	costs	V, F
39	outputs (vehicle stock)	V
40	outputs (activity)	A
41	outputs (energy use)	F
42	outputs (cost)	V, F
43	output (wtt CO_2 emissions)	C
44	output (ttw CO_2 emissions)	C
45	ouput (wtw CO_2 emissions)	C
46	output (new regs)	V

Description of each view

The detailed description of the content of VPM file, explaining the whole calculation flow allowing ForFITS to generate outputs, is included in specific documents, annexed to this section (and bearing the same numeration used in Table B.1, addressing each of the views individually.