An Introduction to MOVES: Custom Domains

FHWA Resource Center EPA Office of Transportation and Air Quality







After going over bullets, load the runspec "training_custom.mrs" in the "Custom Files" folder. Go through all the tabs of the runspec to show users what the runspec will cover, create or select a previously created output database on "General Output" panel, and then return to the "Geographic Bounds" panel.

ie <u>E</u> ai	t Preprocessing Action PostPro	cessing Settings He	4p		
	Description				
1	Scale				
	Time Spans				
	Geographic Bounds	Region:	Generic Cour	ity	
		O Nation	State ID: County ID:	99	
	Vehicles/Equipment	() State	Description:	Custom Example	
	🎻 On Road Vehicle Equipment	County	GPA Fraction:	0.0 Fraction of county within a fuel Geographic Phase-in Area	
ø	Road Type	Custom Domain	Altitude:	High Eow	
	Pollutants And Processes		Domain Input	Database	
	🖉 Manage Input Data Sets		The County do	omain scale requires a database of detailed data.	
Ŧ	Stratonios		Database:	Enter/Edit Data Refresh	
	Sualogios	Geographic B	ounds Require	ments	
	Output	Please select a dom	ain database.		
	of General Output				
	🚽 Output Emissions Detail				
	Arbancod Derformance Features				
	naralicou - chormanico - calui cs				
oen an e	existing RunSpec				

Point out that selecting the "Custom Domain" option in the "Region" section changes the appearance of the panel. Fill in the "County ID" and "Description" fields. Explain that Geographic Phase-in Area covers the Rocky Mountain states and (if users are from that area and need to know what the GPA is) allowed the Tier 2 gasoline sulfur requirements to be phased in over a longer timeframe. Since there is no default data for a custom domain, the selection of "High" or "Low" altitude gives you the average barometric pressure of the High and Low areas in the default database (4,000 ft is the altitude that determines high altitude). Click the "Refresh" button to clear an old database name if present, followed by the "Enter/Edit Data" button to open the County Data Manager.

🔕 Sourc	e Type Population	🧧 Vehicle Type	e VMT 🛛 🧕	Zone Road Activity	Tools M	1	
🦲 F	iel Supply	🧧 🥝 Meteorolo	igy Data	🕗 Ramp	Fraction	🔋 🔞 Road Type Disti	ribution
Rur	Spec Summary	Database	•	Age Distribution	I T	Average Speed Distril	bution
Select or c	reate a database to h	old the imported	l data.				
Server:	localhost						
Database:	training_custom_in		-	Create Database	Refresh		
Loa:							
							atabase
						D	atabase
						D	atabase

Enter a database name and click the "Create Database" button. Tell the users to import all the files in the "Custom Files" folder. The instructor can walk around to help the users import the files at this time.

🛛 🥝 Sourc	ce Type Population	Vehicle Type	VMT	0 20	пе коаа Аститу	TUUIS		
🥥 F	uel Supply	🥥 Meteorolog	y Data		🕗 Ramp	Fraction	6	Road Type Distribution
Rur	Spec Summary	Database		0	Age Distribution		l.	Average Speed Distribution
Select or c	reate a database to l	hold the imported	data.					
Server:	localhost							
)atabase:	training_custom_in		-	Crea	ate Database	Refresh		
.og:								
2009-03-3 2009-03-3 2009-03-3 2009-03-3 2009-03-3 2009-03-3 2009-03-3	un 1:57:20 2008 R0a 10 13:57:13 Vehicle Ty 10 13:56:57 Source Ty 10 13:56:51 Road Typ 10 13:56:45 Meteorolo 10 13:56:37 Fuel Supp 10 13:56:28 Average S 10 13:56:21 Age Distril	d Activity Filled Zon pe VMT Filled HPM pe Population Fille 2 Distribution Filled gy Data Filled Zong ly Filled FuelSuppl peed Distribution F oution Filled Sourc	eRoadT ISVType d Sourc I RoadT MonthF y table Filled Av eTypeA	Type tab Pear tai eTypeY ypeDist our tab gSpeec geDistri	ole ble fribution table tribution table ole dDistribution table ibution table			
2009-03-3 2009-03-3 2009-03-3 2009-03-3 2009-03-3 2009-03-3 2009-03-3 2009-03-3	0 13:57:12 Volte Roð 10 13:57:13 Vehicle Ty 10 13:56:57 Source Ty 10 13:56:51 Road Typ 10 13:56:545 Meteorolo 10 13:56:37 Fuel Supp 10 13:56:28 Average S 10 13:56:21 Age Distri	d Activity Filled Zon pe VMT Filled HPM pe Population Fille go Distribution Filled gy Data Filled Zont y Filled FuelSuppl peed Distribution f sution Filled Sourc	eRoadT SVType d Sourc I RoadT MonthH y table Filled Av eTypeA	Type tab Year tal eTypeY ypeDist Hour tab gSpeec geDistri	ole ble 'ear table tribution table ole dDistribution table ibution table			
2009-03-3 2009-03-3 2009-03-3 2009-03-3 2009-03-3 2009-03-3 2009-03-3 2009-03-3	0 13:57:12 2016 603 101:3:57:13 Vehicle Ty 1013:56:57 Source Ty 1013:56:51 Road Typ 1013:56:53 Fuel Soup 1013:56:37 Fuel Soup 1013:56:28 Average S 1013:56:21 Age Distri	d Activity Filled Zon pe VMT Filled HPM pe Population Fille 2 Distribution Fille gy Data Filled Zone y Filled FuelSuppl peed Distribution F sution Filled Sourc	eRoad1 SVType d Sourc I RoadT MonthF MonthF y table Filled Av eTypeA	Type tab Year tal eType ypeDist Your tab gSpeec geDistri	ole ble 'ear table tribution table ole dDistribution table ibution table			Database

This is what the "Database" tab will look like after all the files have been imported.



IM Program attributes that can be altered: Process, Pollutant, Fuel, Regulatory Class, Applicable Model Years, Frequency, Compliance Factor, Test Type, and Test Standard

	Vehicle Type VMT	Zone Road Activity	Tools	IM	
Fuel Supply	Meteorology Data	💛 Ramp F	raction		Road Type Distribution
RunSpec Summary	Database	🥑 Age Distribution		L.	Average Speed Distribution
					I/M Progra

Go to the "I/M" tab and the users can open it by clicking the button.



As you can see, for a custom domain there are no default programs. We will create a new one by clicking the "Generate New and Replacement Records" button.

The IM Program ID, Pollutant, and Reg Class fields required input/selections. Multiple selections can be highlighted by holding the control (multiple, unconnected selections) or shift keys (everything between selections is highlighted). The County, Year, and Fuel fields were already highlighted because there is only one option.

Don't forget the IM Program ID entry enter 10

Supply I/M coverage de	ails:	
IM Program ID:	10	
Inspection Frequency:	Biennial 🔻	
Test Type:	Exhaust Onboard Diagnostics Test (OBD)	•
Test Standards:	Exhaust OBD Check	•
Oldest Vehicle Age:	17 🔻	
Newest Vehicle Age:	2 🔻	
Compliance Factor:	93.12 [0-100]	
	OK Cancel	

All drop down menus were blank. Select the following frequency, test type/standard, model years and provide value for compliance factor. Note that the user can make illogical selections (Exhaust OBD Test Type but Evap Cap Test Standard) and we plan on fixing this, but for now users must make correct selection themselves. Click OK.



Highlight an IM program record to use the buttons numbered above.

1) "Edit Selected Records" button brings up the same screen as in previous slide which allows the user to change the model years, frequency, compliance factor, and test type/standard. Users should not select multiple IM programs to edit if any of these attributes are different as the changes made will be applied to all programs selected. For these reasons, the user generally should be instructed to edit just one record at a time.

2 and 3) Users can try the "Ignore I/M" and "Use I/M" to see that the "Ignore" column changes when you click the buttons.

4) Export button allows the user to save the selected record in an Excel file. There is no template button, so a user would need to generate a new IM program, select it, and export it to know what the table structure should look like to be able to import. MAKE SURE USER GIVES EXPORT FILE NEW NAME AND DOES NOT OVERWRITE ANY OF THE IMPORT FILES.

5) Delete button clears the selected records. MAKE SURE DELETE IS DONE LAST SO THE USER DOESN'T HAVE TO RECREATE A PROGRAM TO TEST THE OTHER BUTTONS.

	Pollutant	County	Year Fuel Reg Cla	Uld New Veh Veh Inspect ss Age Age Freq.	t Compl. Factor Te	st Type	Test Standards	Pgm ID Ignore
Io vehicle]	[/M programs are c	urrently in effec	st in the modeling do	main described in	the run spec	ification		
Print Report	E lit Selected R	ecords General	e New and Replacement	Records Delete				Exi
Export	Import Ignore /	M Use I/M						
coodgeo.	<u> </u>							
					6			
Import IN	F			? 🔀	🔮 Choo	se XLS	Worksheet	\mathbf{X}
Look in:	🗀 Custom Files		▼ ← € 6	* ==+	Select th	e Works	heet to read:	
					IM			
Training Training]_custom.mrs	omplato vic	training_custom	_ramptemplate.:	Change Y	rears		
	j_custom_ageuisto i_custom_avasnee	emplace.xis eddisttemplate.xls	Straining_custom	sourcepoptem	Change (Compliar	ice	
M training	custom fuelteme	late.xls	Training custom	vmttemplate.xl	Change 1	Type and	Standard	
	_custom_im.xls		Training_custom	_zonetemplate.;	Warning	Messag	e	
Etraining	_custom_meteoro	lgytemplate.xls						
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File <u>n</u> ame:	training_custo				\sim		1	100000000000
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File <u>n</u> ame: Files of <u>type</u>	training_custo		_	Lancel	ок)		Cancel

After records have been deleted, user can import a set of programs from the "training_custom_im.xls" file. They should select the IM tab. If desired/time allows, the users can import the other tabs to see how bulk changes can be made to multiple programs at once. The users should also be told that they should consult Appendix A of the user guide for more information about what should be entered in each field.

The general rule is that the "shortName" from the corresponding default database table is used, although that is not true for all attributes.

The warning message worksheet has different IM programs with all other attributes are the same, but one of the records is ignored.

The warning message can be turned into an error message by selecting the program being ignored (Program ID=11) and clicking the "Use I/M" button. The Editor will also allow the user to generate the error message if they use the "Generate New and Replacement Records" button, but the editor will not allow importation if both programs are active. This is an advantage to using the "Import" button instead of the "Generate New and Replacement Records" button.

Process	Pollutant	County		Year	Fuel	Reg Cl	01d Veh Lass Age	New Veh Age	Inspect Freq.	Compl. Factor	Test Type	Test Standards	Pgm ID	Ignore	
Running Exh	NOx	Custom	Example	2013	Gasol	LDT		2	Biennial	93.120	OBD	Exhaust OBD		N	
Running Exh	NOx	Custom	Example	2013	Gasol	LDT	32	18	Biennial	93.120	IM240/IM147	IM240 Final	6	N	
unning Exh	NOx	Custom	Example	2013	Gasol	LDV	17	2	Biennial	93.120	OBD	Exhaust OBD	10	N	
unning Exh	NOx	Custom	Example	2013	Gasol	LD∀	32	18	Biennial	93.120	IM240/IM147	IM240 Final	6	N	
Running Exh	Total Gas HC	Custom	Example	2013	Gasol	LDT	37	33	Biennial	93.120	Idle Basic	Unloaded Idle	1	N	
Running Exh	Total Gas HC	Custom	Example	2013	Gasol	LDT	17	2	Biennial	93.120	OBD	Exhaust OBD	10	N	
Running Exh	Total Gas HC	Custom	Example	2013	Gasol	LDT	32	18	Biennial	93.120	IM240/IM147	IM240 Final	6	N	
Running Exh	Total Gas HC	Custom	Example	2013	Gasol	LD∀	37	33	Biennial	93.120	Idle Basic	Unloaded Idle	1	N	
Running Exh	Total Gas HC	Custom	Example	2013	Gasol	LDV	17	2	Biennial	93.120	OBD	Exhaust OBD	10	N	
Delut Dewert	Edit Coloridad Da		C				4 D 1	-0.1	Delete	9				[F
Print Report	Edit Selected Re	cords	Generate	New ar	nd Repl	acemen	nt Record	s	Delete						Exit
Print Report Export In lessages:	Edit Selected Re	cords I Use	Generate I/M	New ar	nd Repl	acemen	nt Record	s	Delete						Exit

After importing the IM tab, this is what the screen will look like. Click Exit (at right of Editor) to return to the CDM, then Done (bottom right of the CDM) to return to the "Geographic Bounds" panel. No record of changes made to I/M programs will appear in the Log on the Database panel of the CDM.

ile	Edit	Pre Processing	Action	Post Processing S	ettings <u>H</u>	jelp				
	V	Description	Exe	ecute ^{np} Execute			- 2			
	1	Scale	II Pa I▶ Re	use sume						
	1	Time Spans	S> WC	VES Run Error Log						
	1	Geographic Bou		Region:	i	Generic Cou State ID:	99			
Ξ	1	📝 Vehicles/Equipment		⊖ State		County ID: Description:	1 Custom E	1-999, labels the xample	county within a state.	
		🧹 On Road V	ehicle Ed	quipment O Court	y 8. Link	GPA Fraction	0.0 O High	Fraction of coun	ty within a fuel Geographic Pha	ise-in Area
	1	Road Type		Custo	m Domain	Altitude:	• Low			
	1	Pollutants And F	rocesse	is		Domain Inpu The County d	t Database omain scale	e requires a databa	se of detailed data.	
	1	Manage Input Da	ata Sets			Server: lo	calhost			
+	1	Strategies		Ge	l (ographic	Database: t Bounds Require	aining_cust	tom_in	Enter/Edit Data	Refresh
Ξ	1	Output								
		of General O	utput							
		🧹 Output Em	issions (Detail						
	1	Advanced Perfo	rmance	Features						88
kec	ute ac	tive RunSpec		1 13 120 11 2000 000						

After use of CDM/IM Editor is complete, make sure the correct database is entered in the "Domain Input Database" area of the "Geographic Bounds" panel and then you can execute the runspec.

