EMFAC-HK Version 4.x - Input File Formats

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Objectives

- Describe/illustrate EMFAC-HK v 4.x input file format and keywords
- Provide general description of the input file format to facilitate creating/modifying input files outside of the graphical user interface (GUI).
- Provide steps to run EMFAC-HK Version 4.x without using the GUI (i.e., non-interactively or "batch" mode)
- Demonstration

Components

* EMFAC-HK V4.x Input file Format

- * Overview
- * Structure of input Files
- Keywords / Indices
- Running from the command-line
- * Batch mode use of EMFAC-HK
- Running/Processing Older Input File (INP file)
 Formats

EMFAC-HK V4.x Overview

Single Scenario Model

* INP file in SI (i.e. HK) Units

Parameter	V3.1.1-V4.x INP (Metric)
Accrual rates	Km
VKT	Km
Temperature	deg C
Relative Humidity	Percent
Other Parameters (i.e, fractions, trips, etc)	Unitless

 EMFAC-HK V4.x can read INP files of EMFAC-HK V3.4

EMFAC-HK Version 4.x Example Input File

HK_2030_Burden.inp

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💰 C:\Users\hp\Documents\My Projects\HongKong\2018\06_Documentation\04 Training_Examples\ERG_V409_Dec2018\Exercises\Ex1\HK_2030_Burden.inp

	M. <u>10</u> 20 30 40	50 60	70	80	90	100	110	120	131
1	EmfacHK409-Header								
2	Version 4 0 9 0								
3	Scenario-Count 1								
4	HK-IM Y 0 0 2020 0 0 2020 0 0 2020 0 0 202	20 0 0 2020 0 0 2020	0 0 2020	0 0 2020 0	0 2020 0 0	2020 0 0	2020 0 0 2	020 0 0 2	020
5	HKUNITS Y								
6	End-Header								
7	Begin-Scenario 1								
8	Title Hong Kong SAR Annual CYr 2030 Defaul	lt Title		Evtra ro	gime	aducti	ione wi	th val	
9	Program-Mode Burden			LALIAIC	ginei	Euuci			ues
10	Area-Method One-County			oditable	n in Cl	II Dof	aulte ai	ro all	
11	Area-Type SAR			Eultable			auits ai	e all	
12	Area-Number 38 [Hong Kong SAR]			zoroc N	loto th	ot ovic	ting 18	.N/I	
13	HC-Mode VOC			Zei05. I					
14	PM-Mode_PM10			romotin	d cond	ning pr	odram	ic	
15	CYr 2030			10 moun	ig sens	sing pi	ogiani	15	
15	BYr -1			alroady	built i	n tha a	odo ci	noo Va	
10	MYR ALL Mehiolog DS TAXT LOVA LOVA LOVA LOVA			alleauy	Duit-i		Jule Si	nce v.	5.4.
10	Venicles PC TAXI LONG LOV4 LOV6 HOV/ HOV8	PLB PV4 PV5 NFB6 NF	-B/ NFB8						
20	Season Annual Runden Reports CSV Standard RCD Datail Med	dalvaan Datail Tach							
21	Burden-Reports CSV_Standard BCD Detail_Mot	derivean Decarr_lecht	aroup						
22	Burden-Sneeds 5								
23	End-Scenario								
24	End Section 10	[,	1
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Annotated Sample Input File (Basic Scenario)

	🔶 HI	K_2030_Burden.inp ×	
	ſ	Ω	130
	1	EmfacHK409-Header	! EMFAC-HK Header (Beta Header)
	2	Version 4 0 9 0	! Version Which Created Input File
	3	Scenario-Count 1	! Number of Scenarios (Since EMFAC-HK V3.1: Always 1)
	4	HK-IM Y 0 0 2020 0 0 2020 0 0 2020 0 0 2020 0 0 2020 0 0 2020 0 0 2020 0 0 2020 0 0 2020 0 0 2020 0 0 2020 0 0 2020 0 0 2020	! HK-IM (Y or N); Regime Size Data
	5	HKUNITS Y	! INP Data in HK/SI Units (Y or N)
	6	End-Header	! End of Header
	7	Begin-Scenario 1	! Begin Scenario #1
	8	Title Hong Kong SAR Annual CYr 2030 Default Title	! Title Scenario #1
	9	Program-Mode Burden	! Program Mode (EMFAC or Burden)
	10	Area-Method One-County	! Area-Method Always One-County
	11	Area-Type SAR	! Area-Type Always SAR
	12	Area-Number 38 [Hong Kong SAR]	! Area-Number Always 38
	13	HC-Mode VOC	! HC-Mode Always VOC
	14	PM-Mode PM10	! PM-Mode PM30, PM10, or PM2.5
	15	CYr 2030	! Scenario Calendar Year (EMFAC-HK V3.1: ONLY SINGLE CALENDAR YEAR)
6	16	BYr -1	! Scenario Baseline Year (-1 if Inactive)
	17	MYr All	! Scenario Model Years: All typically
	18	Vehicles PC TAXI LGV3 LGV4 LGV6 HGV7 HGV8 PLB PV4 PV5 NFB6 NFB7 NFB8 FBSD FBDD MC	! Vehicle Classes to Run
	19	Season Annual	! Season
	20	Burden-Reports CSV_Standard BCD Detail_ModelYear Detail_TechGroup	! Burden-Reports: CSV_Standard, BCD, Weight, Detail_ModelYear, Detail_Te
	21	Burden-Daily	! Frequency of Output: Burden-Daily or Burden-Hourly
	22	Burden-Speeds 5	! Burden Speed Bins: 5 or 10 (KPH)
	23	End-Scenario	! End of Scenario #1

Annotated Sample Input File (HK_2015_M&HGV_speed.inp)

EmfacHK3B-Header	
····Version·3·0·9·0······	
····Scenario-Count 1	
·····HK-IM Y 20 20 2014 85 85 2014 40 40 2014 20 20 2014 0 2014	
+KUNITS N	
End-Header	
Begin-Scenario 1	
Title Hong Kong SAR Annual CYr 2015 Default Title	
····Program-Mode Burden	
Area-Method One-County	
Area-Type SAR	
Area-Number 38 [Hong Kong SAR]	
····HC-Mode ·VOC	
·····PM-Mode · PM10	
····CYr·2015	
····BYr -1	
····MYr All	
Vehicles PC TAXI LGV3 LGV4 LGV6 HGV7 HGV8 PLB PV4 PV5 NFB6 NFB7 NFB8 FBSD FBDD MC	
·····Season Annual	
Burden-Reports CSV_Standard BCD	
Burden-Daily	
Burden-Speeds -5	
End-Scenario	
Begin-Scenario-ProgData 2	
····Begin-Data-Item	
DataType 7 SpeedFractions	
·······Applies-To-CYr-2015	
·······Applies-To Area-Method One-County	
·······Applies-To-Area-Type-SAR	
········Applies-To Area-Number 38 [Hong Kong SAR]	
Applies-To-Vehicle HGV8	
······Integer-Value 5	
Begin-Real-Array	
Dims 18 24 1 1	
Data	
······································	
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EMFAC-HK Version 4.x Input Format Program Data Edit Syntax

	А	
1	! scenario data	
2	BEGIN-SCENARIO-PROGDATA (# Data	Items)
3	! BEGIN-DATA-ITEM (Repeat	for each data item)
4	! DATATYPE	19 PopTotal
5	! APPLIES-TO CYR	2020
6	! APPLIES-TO BYR	2014
7	! APPLIES-TO SEASON	Summer
8	! APPLIES-TO AREA-METHOD	One-County
9	! APPLIES-TO AREA-TYPE	SAR
10	! APPLIES-TO AREA-NUMBER	38
11	! APPLIES-TO VEHICLE	PC
12	! APPLIES-TO MYR	All
13	! APPLIES-TO AGES	All
14	! APPLIES-TO EXH-TECH-GROUP	23
15	! APPLIES-TO EVAP-TECH-GROUP	15
16	! APPLIES-TO FUEL	Gas
17	! REAL-VALUE	nn.nn
18	! INTEGER-VALUE	nn
19	! BEGIN-REAL-ARRAY	nn
20	!	values.nn
21	! END-REAL-ARRAY	
22	! END DATA-ITEM	
23	!END-SCENARIO-PROGDATA	

EMFAC-HK Version 4.x Program Data – Data Item

	$1, \dots, 10, \dots, 120, \dots, 120, \dots, 120, \dots, 140, \dots, 150, \dots, 160, \dots, 170, \dots, 180, \dots, 190, \dots, 110, \dots, 120, \dots, 130, \dots, 140, \dots, 150, \dots, 160, \dots, 170, \dots, 180, \dots,$	
24	Begin-Scenario-ProgData 1	
25	····Begin-Data-Item	
26		
27	Data Item' Population by Venicle Class Fliel A	۱QE
28	Bata Roma Denation by Vernore Olass, Fact, F	5
<u></u>	Apples to Area type SAR	
30	Apples to Area Number 38 (Hong Kong SAR)	
20	Dimo 4 04 0 1	
22		
34		
35		
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37		
38		
39	$\cdots \cdots $	
40	······································	
41	······································	
42	······································	
43	$\cdots \cdots \cdots \cdots \cdots 0 \cdot 0 \cdot 1, \cdot 0 \cdot 0 \cdot 7, \cdot 0 \cdot 2, \cdot 0 \cdot 0 \cdot 0 \cdot 2, \cdot 1, \cdot 0 \cdot 1, \cdot 4, \cdot 2, \cdot 0 \cdot $	
44	· · · · · · · · · · · · · · · · · · ·	
45	· · · · · · · · · · · · · · · · · · ·	
46	· · · · · · · · · · · · · · · · · · ·	
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51	· · · · · · · · · · · · · · · · · · ·	
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53	· · · · · · · · · · · · · · · · · · ·	
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55	342. 56. 104. 148. 81. 0.0.01. 3. 4. 1. 0.0.0113. 236. 150. 183. 152. 157. 93. 131. 102. 77. 45. 25. 23. 6. 10. 3. 2. 7. 2. 3. 2. 2. 2. 0.01. 0.00. 2.	
56		
57		
58	4/27.3482.3167.2/14.1681.3755.31/4.3086.2268.2089.1429.1617.1644.18/4.1726.2094.2307.1222.1032.998.904.601.194.95.23.14.3.2.1.0000.000.0000.000	0.0
59	1009.803.1048.900.023.1200.1058.1120.1135.017.1030.1255.1377.1539.1014.951.1408.1259.990.1064.997.714.225.132.132.132.01.01.10.15.01.00.00.0.0.0.0.0.0.0.0.0.	0.0
61	039, 776, 1014, 714, 030, 714, 031, 039, 040, 057, 040, 017, 030, 450, 039, 200, 447, 291, 031, 422, 000, 487, 201, 01, 03, 059, 012, 17, 03, 03, 010, 010, 010, 010, 010, 010,	0.0
62	2003.2003.2002.2103.0003.1173.1173.1173.1173.1173.01.100.1003.11230.11413.1110.1014.007.720.1113.0005.747.003.003.003.003.001.015.111.20.030.00.00.000.000.000.000.000.000.00	0.0
63		
64		

EMFAC-HK Version 4.x Program Data – Array Size

	_0, , , , , , , , , , , , , , , , , , ,	.80,
24	Begin-Scenario-ProgData 1	
25	····Begin-Data-Item	
26	DataType 22 PopVehicleFuelAge	
27	Applies-To-CYr-2013	Array Data Block: 45 x 21 x 3
28	······Applies-To-Area-Method-One-County	
29	Applies-To-Area-Type-SAR	
30	·····Applies-To-Area-Number-38-[Hing-Kong-SAr]	15 adag 21 yah classag 3 fualg
31	Begin-Real-Array	40 ages, 21 ven classes, 5 lueis
32	Date 21-3-1	
33		
34	43147. 41924. 40211. 38366. 20670. 33171. 31442. 25934. 24914. 249	598. 19397. 23828. 24276. 21011. 15268. 13542. 12/73. 4111. 2804. 2011. 1404. 880. 005. 309. 277. 176. 118. 1
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42	4 103 1 5 89 52 52 6 102 121 52 22 15 24 0 0 0 1 0	
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48		0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 -
49	4342. 3369. 3154. 2564. 2318. 3232. 3382. 3138. 2975. 2880. 2343.	1810. 1420. 1087. 1129. 917. 833. 553. 376. 209. 141. 93. 58. 51. 54. 24. 12. 7. 3. 4. 2. 11. 17. 5. 8. 2. 2
50		· 0 · 0 · 0 · 0 · 0 · 0 · 0 · 0 · 0 · 0
51		· 0 · 0 · 0 · 0 · 0 · 0 · 0 · 0 · 0 · 0
52		· 0 · 0 · 0 · 0 · 0 · 0 · 0 · 0 · 0 · 0
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54		• 0 • 0 • 0 • 0 • 0 • 0 • 0 • 0 • 0 • 0
55	······································	. 152. 157. 93. 131. 102. 77. 45. 25. 23. 6. 10. 3. 2. 7. 2. 3. 2. 2. 0.01. 0.02.
56		· 0 · 0 · 0 · 0 · 0 · 0 · 0 · 0 · 0 · 0
57	66. 72. 59. 24. 23. 7. 2. 2. 1. 0 1. 0 2. 1. 0 2. 0 4. 22. 97. 11	1. 75. 53. 96. 53. 39. 27. 11. 1. 0.0.0.0.1. 0.0.0.0.0.0.0.0.0.0.
58	4727. 3482. 3167. 2714. 1681. 3795. 3174. 3086. 2858. 2089. 1429.	· 1617. · 1644. · 1874. · 1726. · 2094. · 2307. · 1232. · 1032. · 998. · 904. · 601. · 194. · 95. · 23. · 14. · 3. · 2. · 1. · 0 · 0 · 0 · 0 · 0 · 0 · 0 · 0 · 0 ·
59	1009. 863. 1048. 960. 629. 1200. 1058. 1120. 1133. 1197. 1030. 125	35. 1377. 1539. 1014. 951. 1408. 1259. 996. 1064. 997. 774. 252. 132. 91. 67. 16. 15. 0 1. 0 0 1. 0 0 0 0 0 0 0
60	859. 778. 814. 714. 350. 714. 551. 539. 565. 526. 340. 517. 387. 4	436. 359. 285. 447. 291. 331. 422. 500. 487. 251. 81. 59. 59. 21. 7. 3. 3. 0.000.00000000000000000000000
61	2689. 2052. 2163. 2090. 680. 1799. 1477. 1538. 1560. 1837. 1298.	1415. 1118. 1544. 867. 720. 1113. 896. 747. 863. 803. 895. 491. 318. 260. 151. 111. 26. 30. 3. 0 1. 0 0 0 0 0
62	18. 11. 7. 39. 13. 86. 58. 16. 88. 185. 124. 22. 151. 133. 158. 1	24. • 116. • 50. • 38. • 11. • 3. • 0 • 0 • 0 • 0 • 0 • 0 • 0 • 0 • 0 •
63	3. 5. 6. 13. 1. 23. 2. 10. 4. 11. 20. 30. 22. 23. 31. 38. 31. 22.	31, 27, 14, 10, 6, 2, 0, 1, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
64	······································	58, 76, 59, 73, 82, 53, 37, 26, 7, 17, 4, 2, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,

EMFAC-HK Version 4.x Program Data – Array Data

	$0, \dots, 10, 10, 10, \dots, 110, \dots, 120, \dots, 130, \dots, 140, \dots, 50, \dots, 60, \dots, 70, \dots, 80, \dots, 90, \dots, 100, \dots, 110, \dots, 120, \dots, 130, \dots, 140, \dots, 150, \dots, 150, \dots, 160, \dots, 160, \dots, 100, \dots, 110, \dots, 120, \dots, 130, \dots, 140, \dots, 150, \dots, 160, \dots, 160, \dots, 100, \dots, 100, \dots, 110, \dots, \dots, \dots$	
24	Begin-Scenario-ProgData-1	
25	····Begin-Data-Item	
26	······DataType·22·PopVehicleFuelAge	
27	······Applies-To-CYr-2013	
28	······Applies-To-Area-Method-One-County	
29	Applies-To-Area-Type-SAR	
30	Applies-To Area-Number 38 [Hong Kong SAR] 45 COLUMINS (3865 1 TO 45)	
31	Begin-Real-Array	
32	Dime.45.21.3.1	
33	- C C C C C C C C C C C C C C C C C C C	
34	43147.41924.40211.38366.26670.33171.31442.25934.24914.24698.19397.23828.24276.21011.15268.13542.12773.4111.2804.2611.1464.880.605.4	369. 277. 176. 118. 1
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49	4442. 3369. 3154. 2564. 2318. 3232. 3382. 3138. 2975. 2880. 2343. 1810. 1420. 1087. 1129. 917. 833. 553.	. 11. 17. 5. 8. 2. 2
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55	2···· 3 42. 56. 104. 148. 81. 0.0.0.1. 3. 4. 1. 0.0.0.113. 236. 150. 183. 152. 157. 93. 131. 102. 77. 45. 25. 23	
56		
57	66.72.59.24.23.7.2.2.1.0.1.0.2.1.0.2.0.4.22.97.111.75.53.96.53.39.27.11.1.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0	
58	4/2/. 3482. 316/. 2/14. 1681. 3/95. 31/4. 3086. 2858. 2089. 1429. 161/. 1644. 18/4. 1/26. 2094. 230/. 1232. 1032. 998. 904. 601. 194. 95. 23. 14. 3. 2. 1	0 . 0 . 0 . 0 . 0 . 0 . 0 . 0 . 0 .
59	1004 - 803, 1048 - 900, 529, 1200, 1058, 1720, 1133, 1147, 1030, 1285, 1377, 1539, 1014, 951, 1408, 1259, 956, 1064, 997, 774, 252, 132, 91, 67, 16, 15, 0-	10.0.1.0.0.0.0.0.0.0
60	899.778.914.714.300.7714.501.539.505.526.340.517.387.430.359.285.447.291.331.422.500.487.201.81.59.59.21.77.33.000.00.00	
62		
63		
64		

Keywords in INP Files

Keyword	Description
Temperature	Temperature
RelativeHumidity	Relative Humidity
RVP	Gasoline RVP
SpeedFractions	Speed Distribution by Hr
	Exhaust Technology Group
ExhaustTechFrac	Fractions
EvapTechFrac	Evap Technology Group Fractions
VKTTotal	VKT Total
VKTVehicle	VKT by Vehicle Class
VKTVehicleFuel	VKT by Vehicle Class, Fuel
VKTVehicleFuelH	
our	VKT by Vehicle Class, Fuel, Hr
TripsTotal	Trips Total
TripsVehicle	Trips by Vehicle Class
TripsVehicleFuel	Trips by Vehicle Class, Fuel
TripsVehicleFuelH	
our	Trips by Vehicle Class, Fuel, Hr

Keyword	Description
PopTotal	Population Total
PopVehicle	Pop by Vehicle Class
PopVehicleFuel	Pop by Vehicle Class, Fuel
	Pop by Vehicle Class, Fuel,
PopvenicierueiAge	Hr
Applies-To Cyr	Pop for Calendar Year
Applies-To Byr	Pop for Alternate Base Year
AccrualTotal	Accrual Total
AccrualVehicle	Accr by Vehicle Class
AccrualVehicleFuel	Accr by Vehicle Class, Fuel
AccrualVehicleFuel	Accr by Vehicle Class, Fuel,
Age	Hr
НК-ІМ	Regime Size Change

Note: New Datatype codes added to EMFAC-HK Since V3.1.1 for VKT, Alt Baseline, HK-IM

Running EMFAC-HK Non-Interactively (i.e., Bypassing the GUI)

- Purpose: user's who have already created input files and want to run without going through the GUI (i.e., execute the program from the command window or a batch file).
- Find out where EMFAC-HK is installed on your system
 - * "C:\Program Files\EMFACHK41"
 - (Windows 32-bit)
 - * "C:\Program Files (x86)\EMFACHK41" (Windows 64-bit)
- Use a text editor (i.e., notepad, etc.) and create a batch file to house the non-interactive batch file commands
 - Notepad emfac.bat
- Use the "set" command to create a shortcut to the EMFAC-HK located on your computer.
- Example:
 - * set EmfacHK41="C:\Program Files\EMFACHK41\EmfacHKV41.exe" (W
 - * set EmfacHK41="C:\Program Files
 (x86)\EMFACHK41\EmfacHKV41.exe"

(Windows 32-bit)

(Windows 64-bit)

Running EMFAC-HK Non-Interactively (i.e., Bypassing the GUI)

* Executing input files one at a time:

* %EMFACHK41% -exit HK_2030_Burden.inp

Executing multiple files at a time:

* %EMFACHK41% -batch HK_2030_Burden.inp HK_2015_Burden_by_Hour.inp HK_2015_change_pop_VKT.inp HK_2015_Conformity_Trip.inp

Running EMFAC-HK Non-Interactively (One-at-a-Time Example)

🤞 D:\	\Users\Arney Srackangast\Documents\My Projects\HongKong\2015\07_Training\00_Preparation\Day2_Advanced\Exercises\ex2\ex2_run.bat*
	0,
1	<pre>Bet EmfacHK309="C:\Program Files (x86)\EmFacHK3.09beta\EmfacHKV3_09_beta.exe"</pre>
2	%EmfacHK309% -exit ex2_2013_FBDD_1.inp
3	%EmfacHK309% -exit ex2_2013_FBDD_2.inp
4	%EmfacHK309% -exit ex2_2013_FBDD_3.inp
5	%EmfacHK309% -exit ex2_2020_FBDD_1.inp
6	%EmfacHK309% -exit ex2_2020_FBDD_2.inp
7	%EmfacHK309% -exit ex2_2020_FBDD_3.inp
8	



Running EMFAC-HK Non-Interactively (Batch Example)

Bet EmfacHK3	2,0 309="C:\Program·Fi	<u>.30</u> 40 iles·(x86)\EmFacH	<u>50</u> 60. K3.09beta\EmfacH			
%EmfacHK309%	•-batchexit-ex2	2_2013_FBDD_1.inp	ex2_2013_FBDD_2	.inp ex2_2013_FB	DD_3.inp	

Reading Prior INP Files

- Version 3.4 INP file or newer
- Caution
 - * Use at risk
 - * Single scenario only

Reading Prior INP Files

Emfac-HK		Х
i	NOTE: Input file created with older version of EMFAC-HK (V3.4.0.0)	
	ОК	1

Thank you!