EMFAC-HK

Using the Program

EMFAC-HK Version 3.1

- Scheduled for Release January 2016 (Beta V3.09 Today)
- Replaces EMFAC-HK V2.6
- Base Year 2002-2013
- Reorder of Vehicle Classes
- Revised INP format (SI Units, Header)
- Single Scenario limitation
- Alternate baseline forecasting algorithm and GUI

EMFAC-HK Version 3.1

Vehicle Classification Chart (Classes 1-10)

Index	Vehicle Class Description	Fuel Type*	Gross Vehicle Weight (tonnes)	Code
1	Private Cars (PC)	ALL	ALL	PC
2	Taxi	ALL	ALL	TAXI
3	Light Goods Vehicles (<=2.5t)	ALL	≤ 2.5	LGV3
4	Light Goods Vehicles (2.5-3.5t)	ALL	2.5-3.5	LGV4
5	Light Goods Vehicles (3.5-5.5t)	ALL	3.5-5.5	LGV6
6	Medium & Heavy Goods Vehicles (5.5-15t)	ALL	5.5-15	HGV7
7	Medium & Heavy Goods Vehicles (≥15t)	ALL	≥ 15	HGV8
8	Public Light Buses	ALL	ALL	PLB
9	Private Light Buses (≤ 3.5t)	ALL	≤ 3.5	PV4
10	Private Light Buses (>3.5t)	ALL	> 3.5	PV5

* All: petrol, diesel, or LPG.

EMFAC-HK Version 3.1

Vehicle Classification Chart (Classes 11-21)

Index	Vehicle Class Description	Fuel Type*	Gross Vehicle Weight (tonnes)	Code
11	Non-franchised Buses (<6.4t)	ALL	< 6.4	NFB6
12	Non-franchised Buses (6.4-15t)	ALL	6.4-15	NFB7
13	Non-franchised Buses (>15t)	ALL	>15	NFB8
14	Single Deck Franchised Buses	ALL	ALL	FBSD
15	Double Deck Franchised Buses	ALL	ALL	FBDD
16	Motor Cycles	ALL	ALL	MC
17	Placeholder (P1)	--	--	P1
18	Placeholder (P2)	--	--	P2
19	Placeholder (P3)	--	--	P3
20	Placeholder (P4)	--	--	P4
21	Placeholder (P5)	--	--	P5

Objectives

- Install EMFAC-HK v 3.1 software
- Step by step tutorial to demonstrate examples of emission data routinely run by EMFAC-HK
- Discuss EMFAC-HK 3.1 input/output screens
- Perform exercises using EMFAC-HK v 3.1

System Requirements / Installation

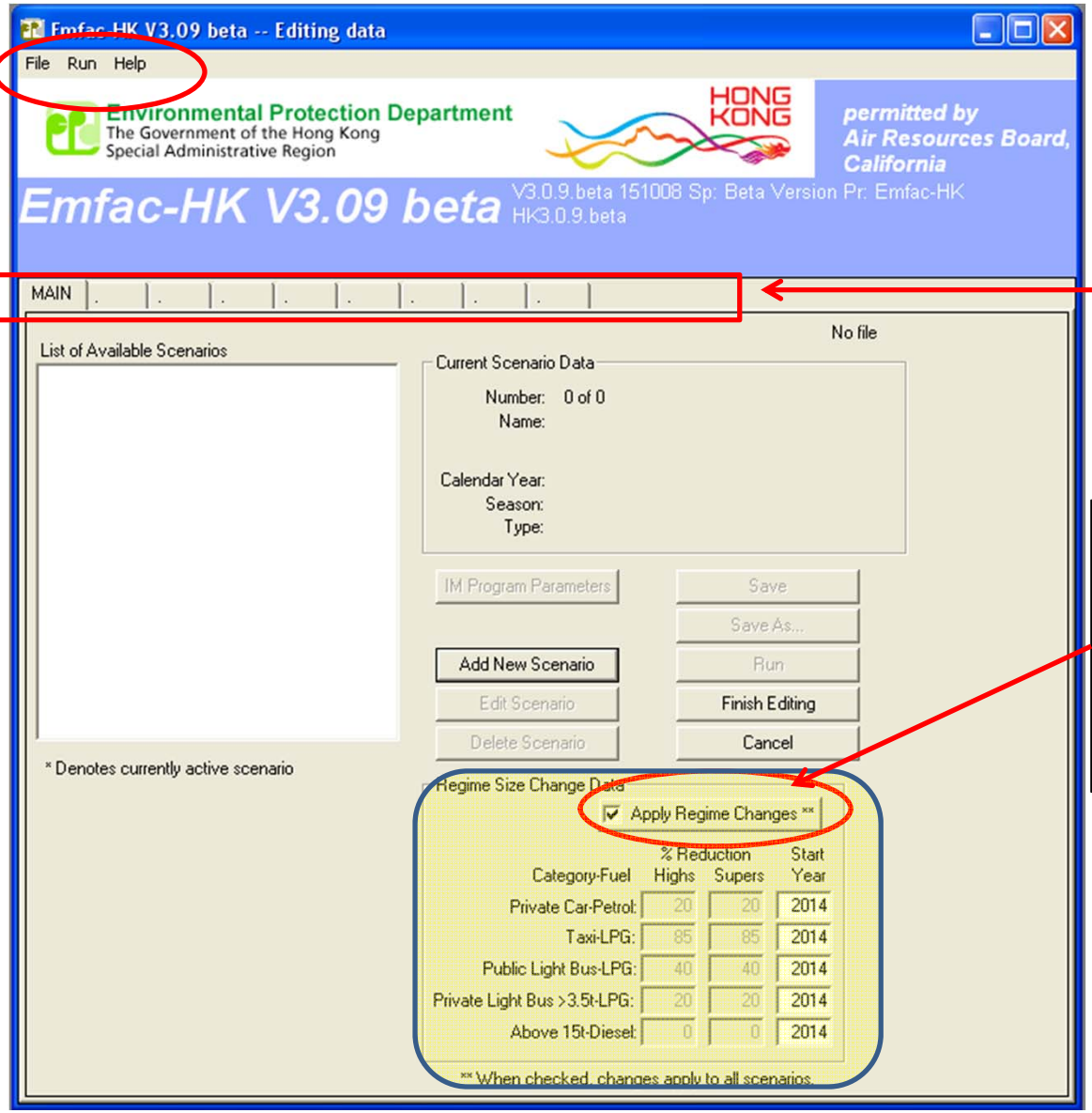
- **Executables** - *http://www.epd.gov.hk/epd/english/environmentinhk/air/guide_ref/emfac-hk.html*
- **x86 compatible Microsoft 32-bit or 64-bit OS (preferably Microsoft Windows XP Service Pack 3, Windows Vista, or Windows 7, 8 OR 10 operating systems)**
- **45 MB of Hard Disk** space
- **Minimum** 64 MB RAM (128 MB recommended)
- **Available Hard Disk Space** 350 MB

Installation

- Program:
  - EmfacHKV3.09Beta.exe
    - Emfac_HK_v3.1 “Beta” Installation Packet
    - Installs EmfacHKV3_0_9Beta.exe and supporting libraries in default, or user-specified directory

Running the Program
Opening Screen

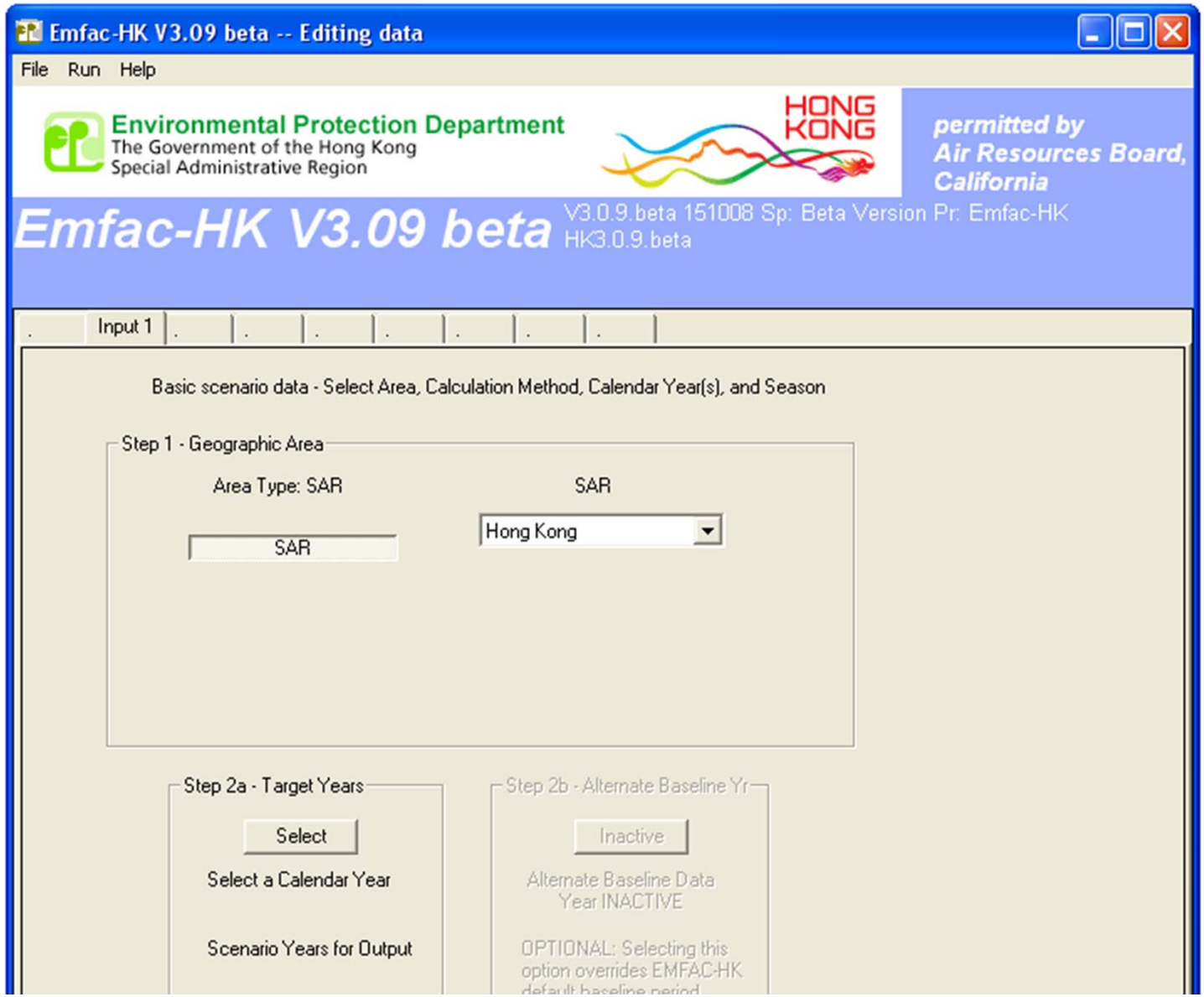
Main Screen



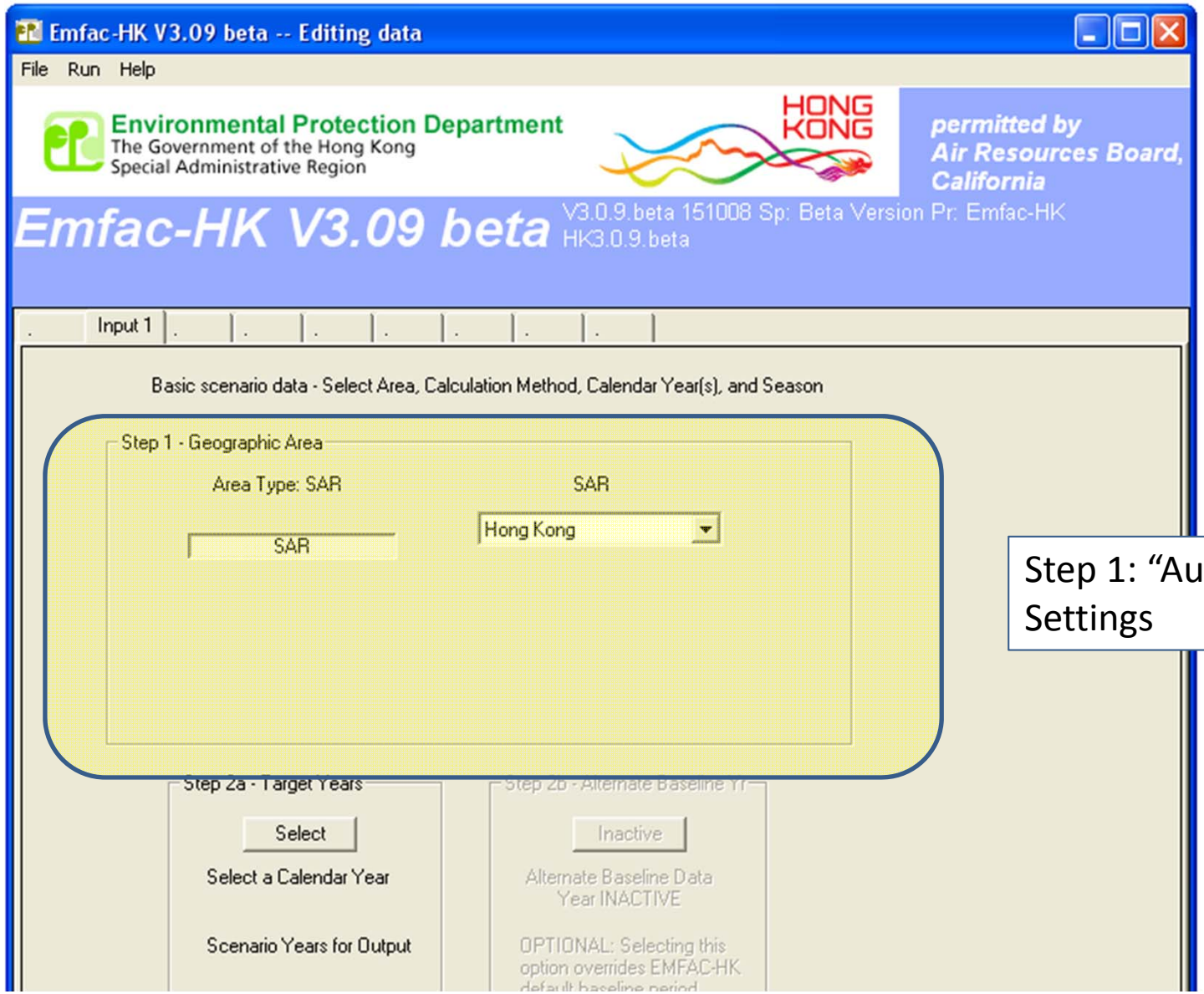
Tabs must be performed in sequence if “New”.

Include/exclude HK in-use emission reduction programs

Input 1: Adding or Editing Scenarios

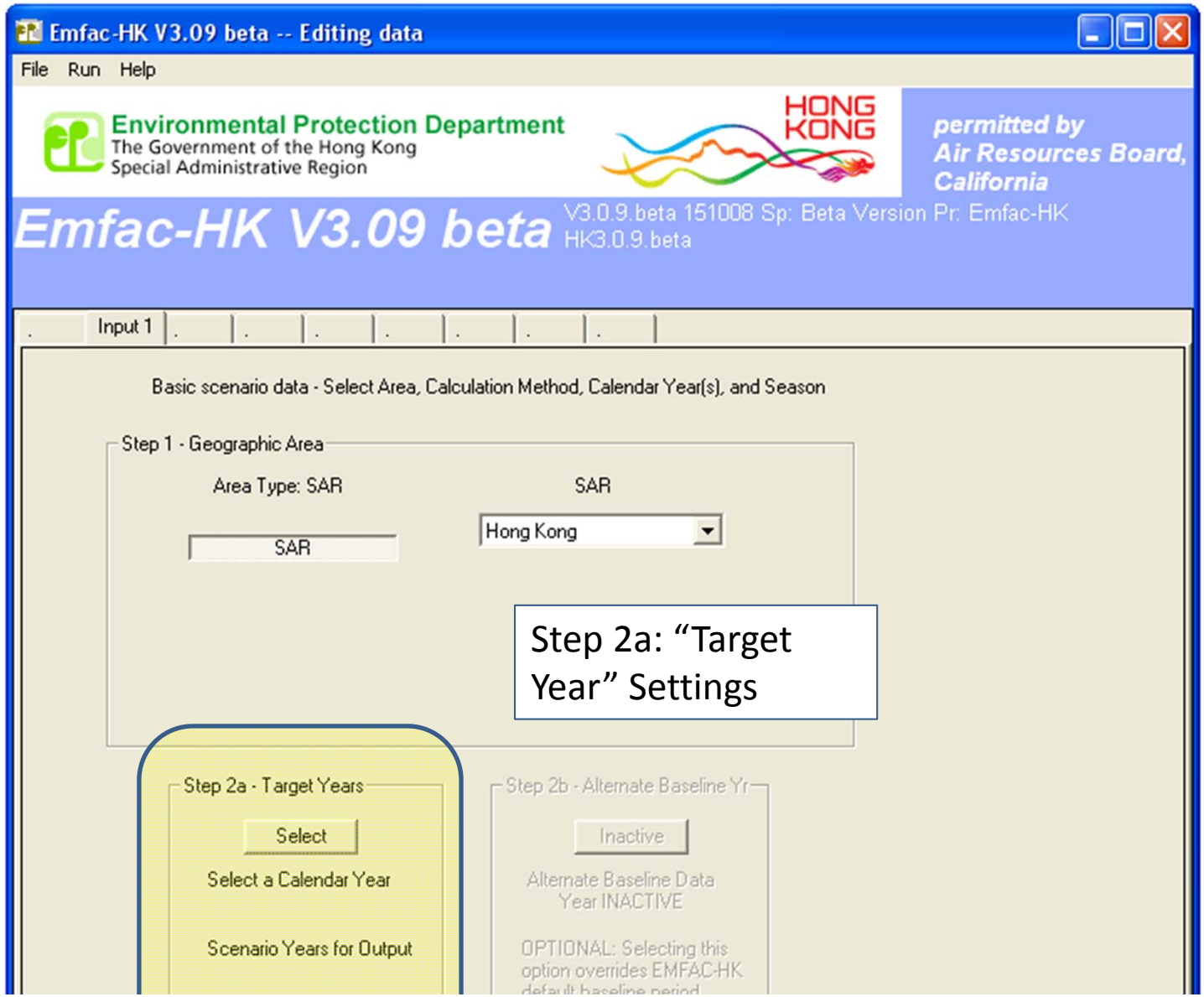


Step 1: Geographic Area

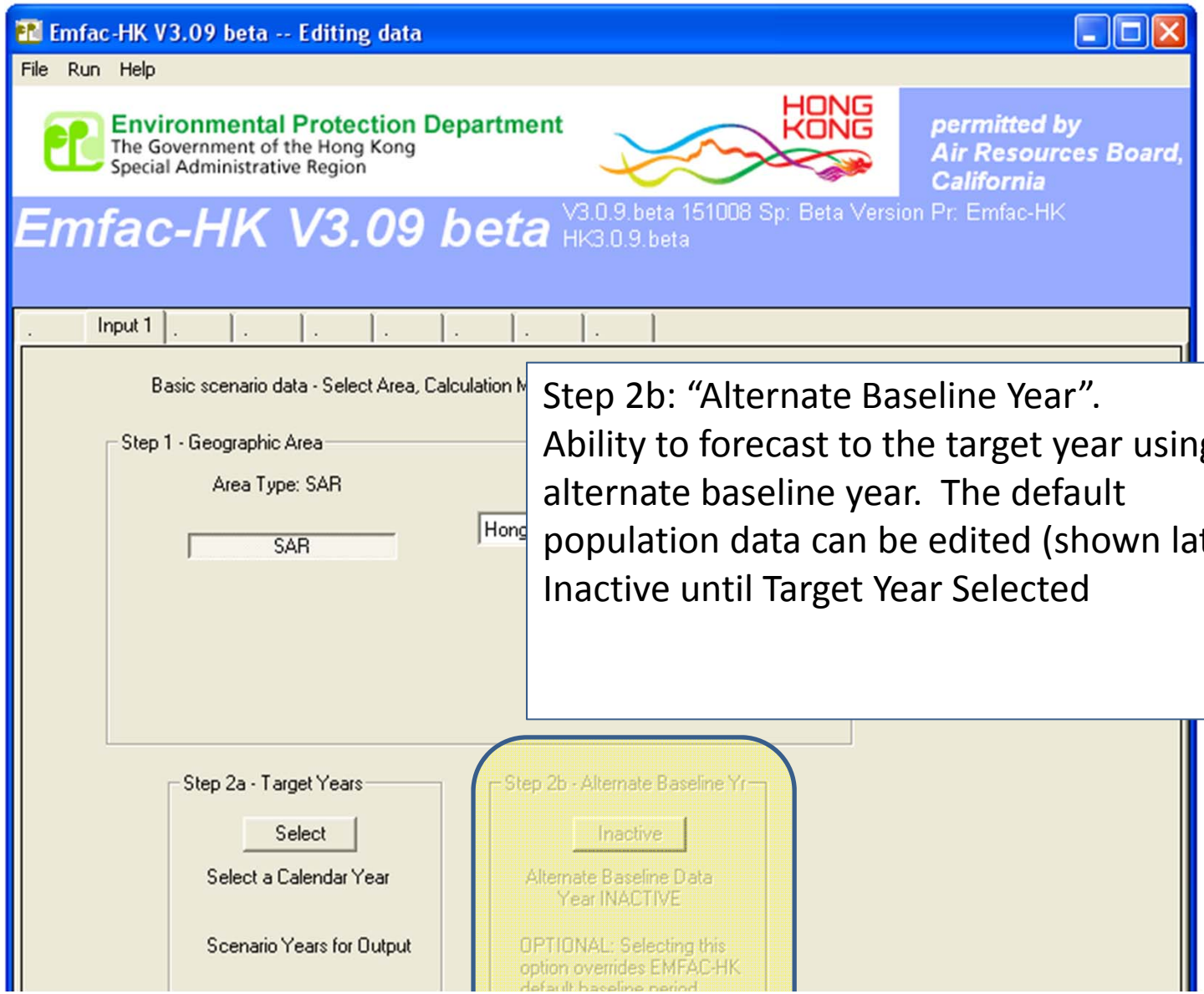


Step 1: "Automatic" Settings

Step 2a: Target Years

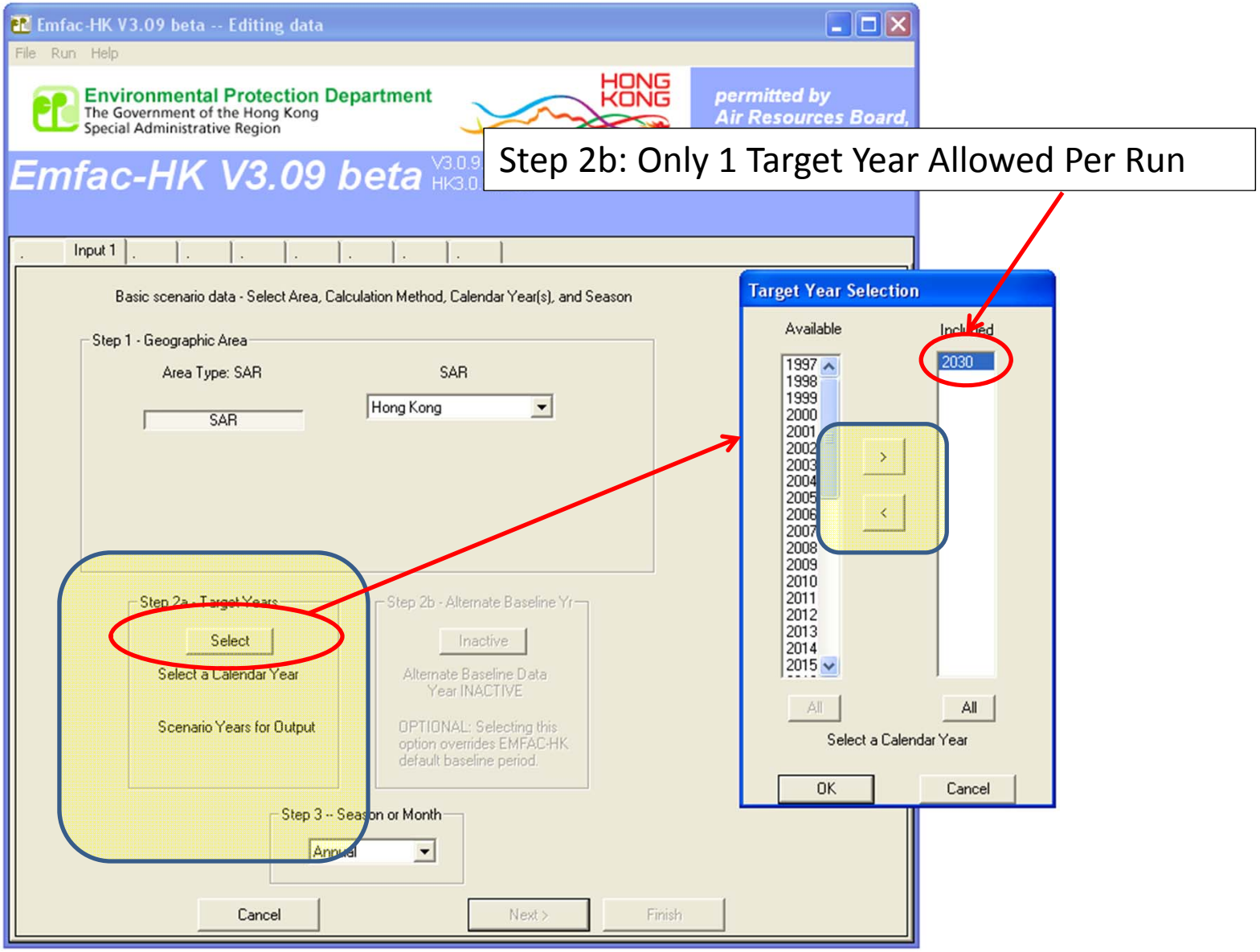


Step 2b: Alternate Baseline Year (Optional)

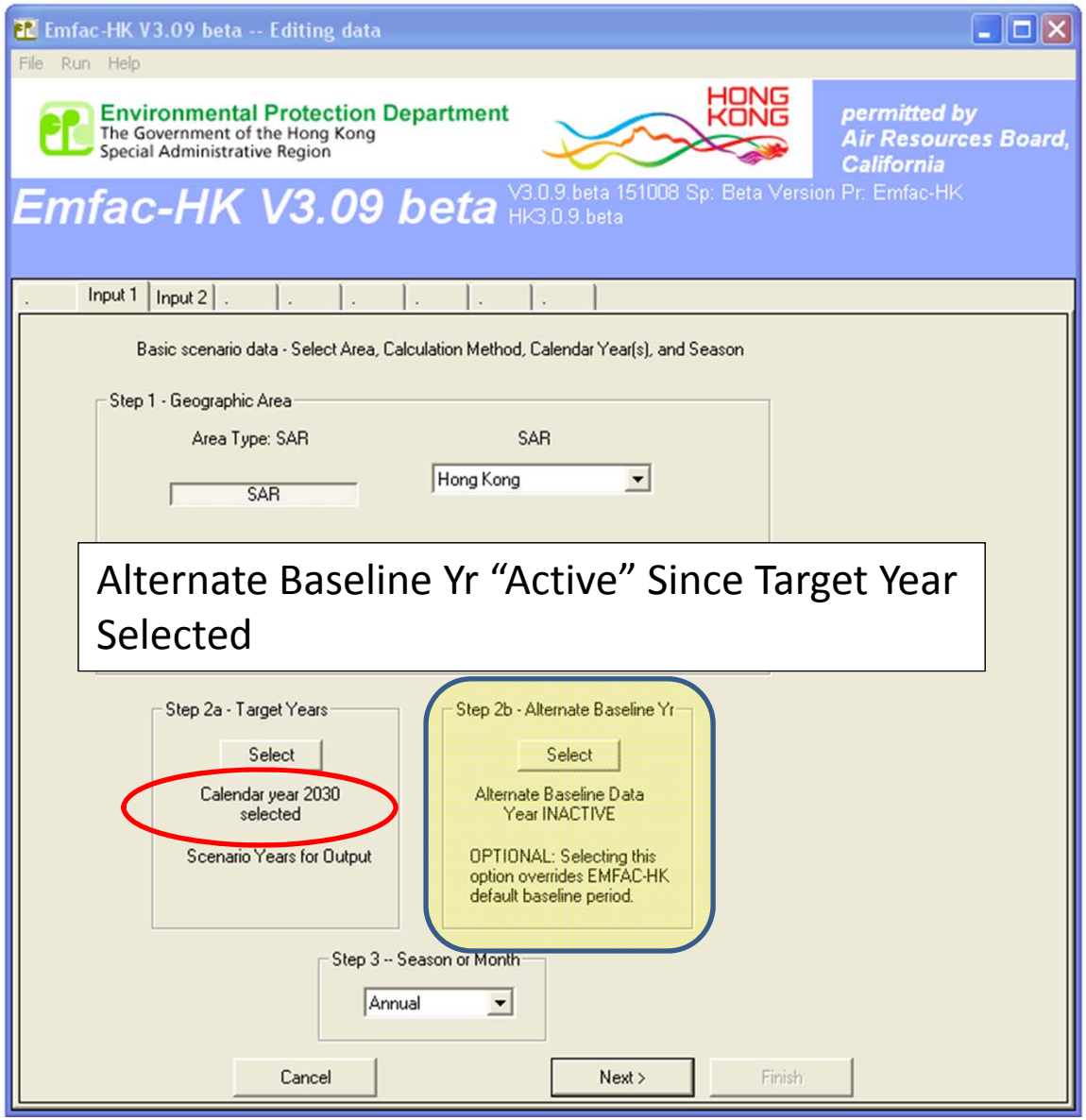


Step 2b: “Alternate Baseline Year”.
Ability to forecast to the target year using an alternate baseline year. The default population data can be edited (shown later).
Inactive until Target Year Selected

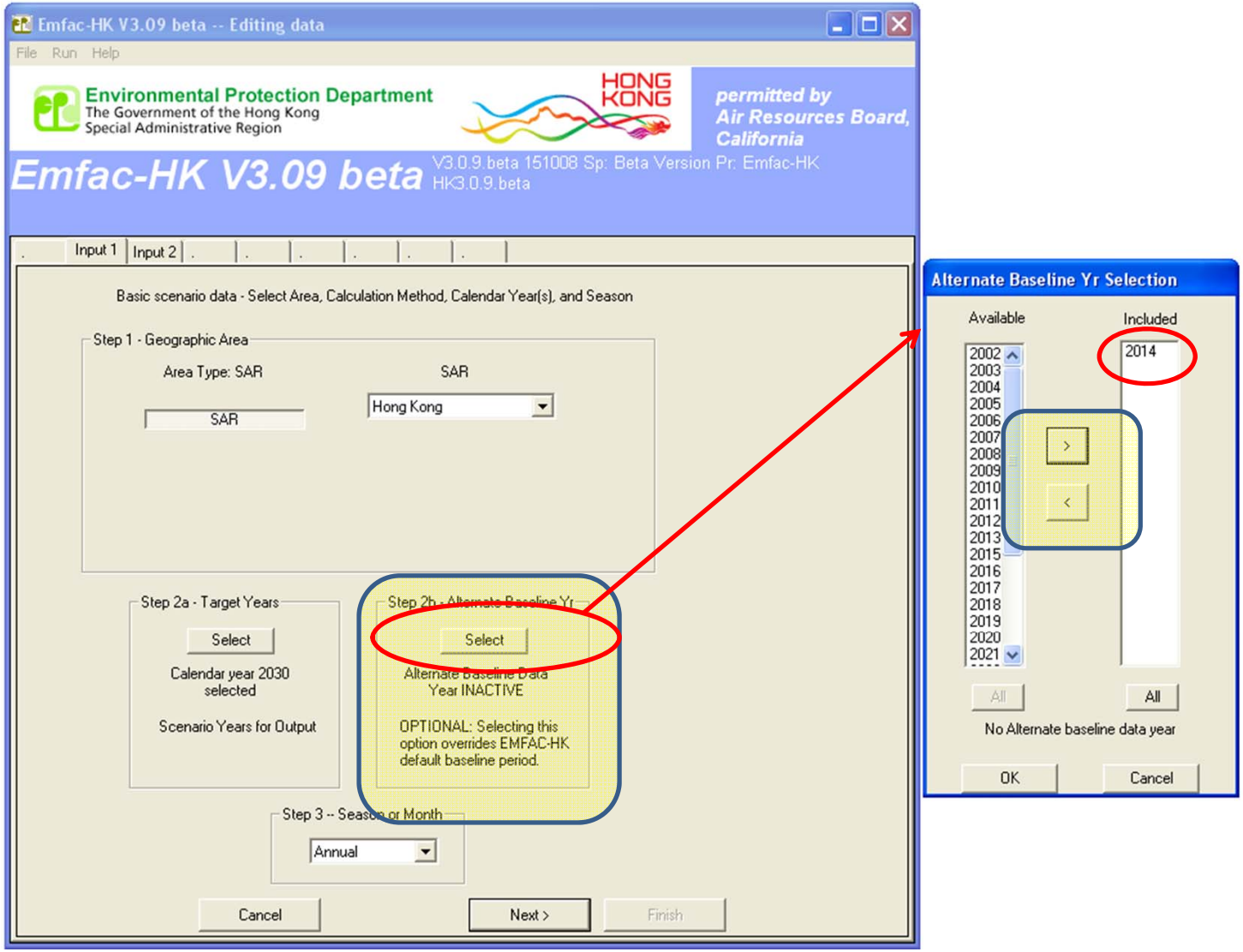
Step 2a: Target Year Selection



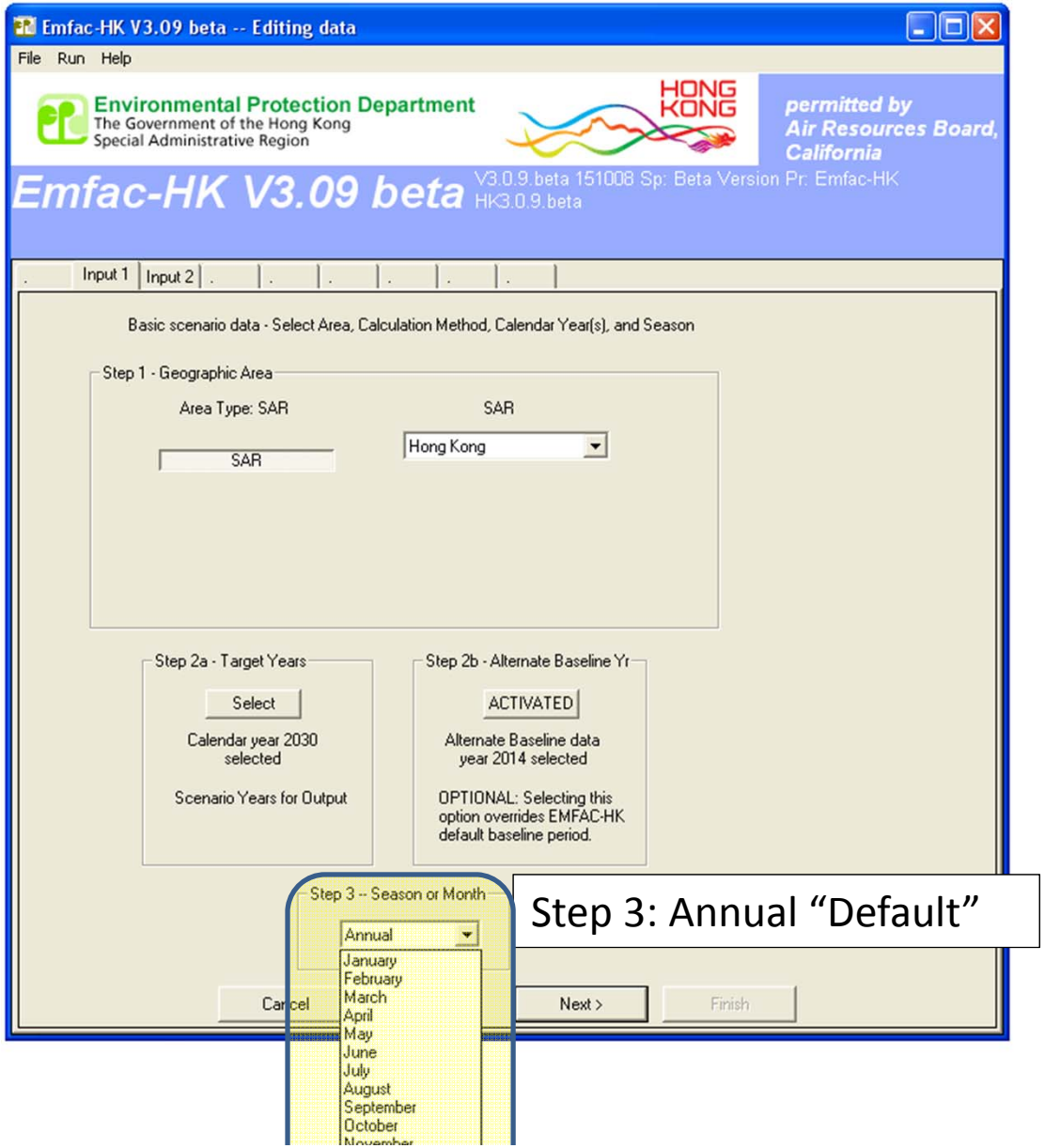
Step 2b: Alternate Baseline Year Selection



Step 2b: Alternate Baseline Year Selection

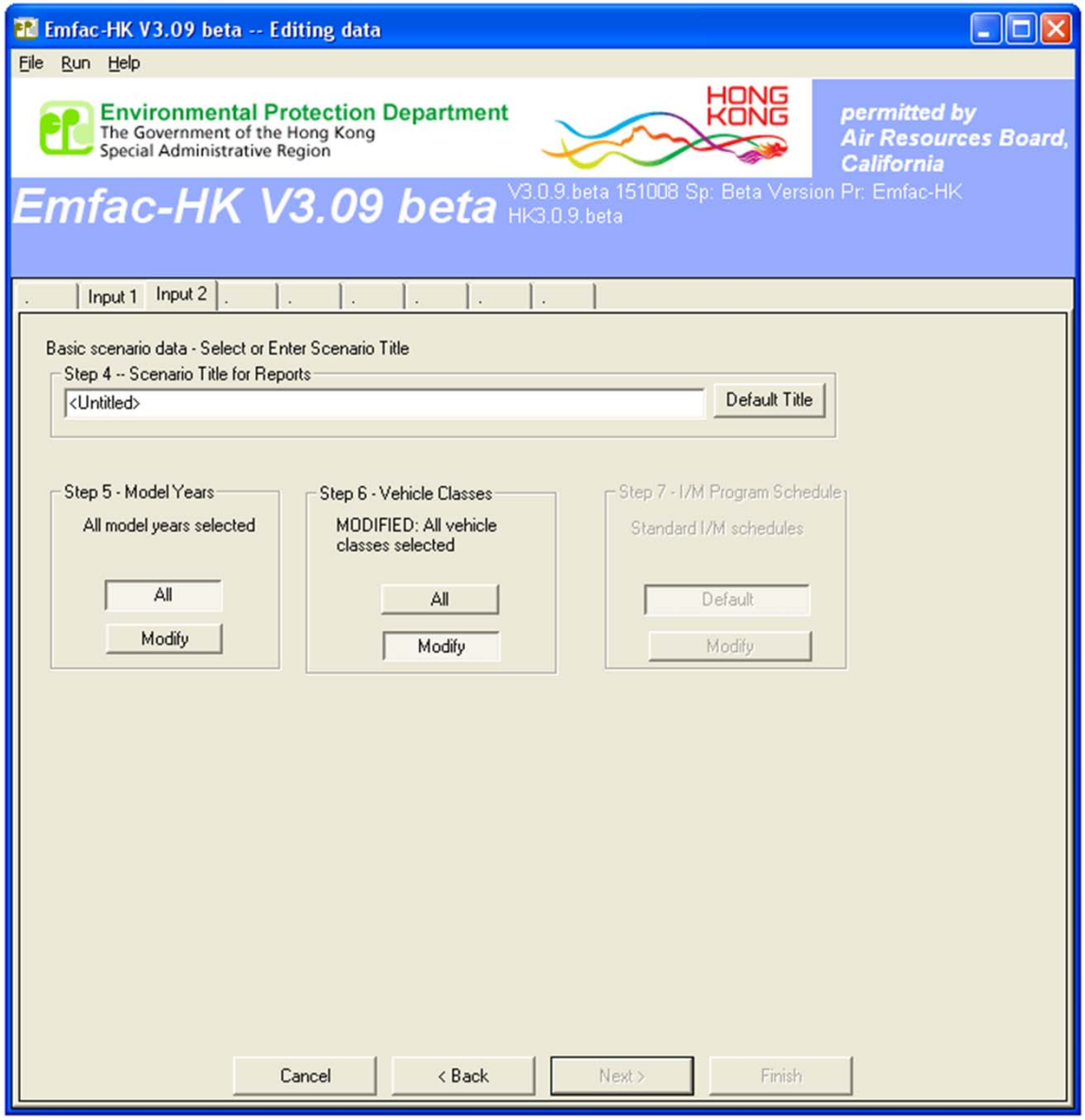


Step 3: Season or Month Selection

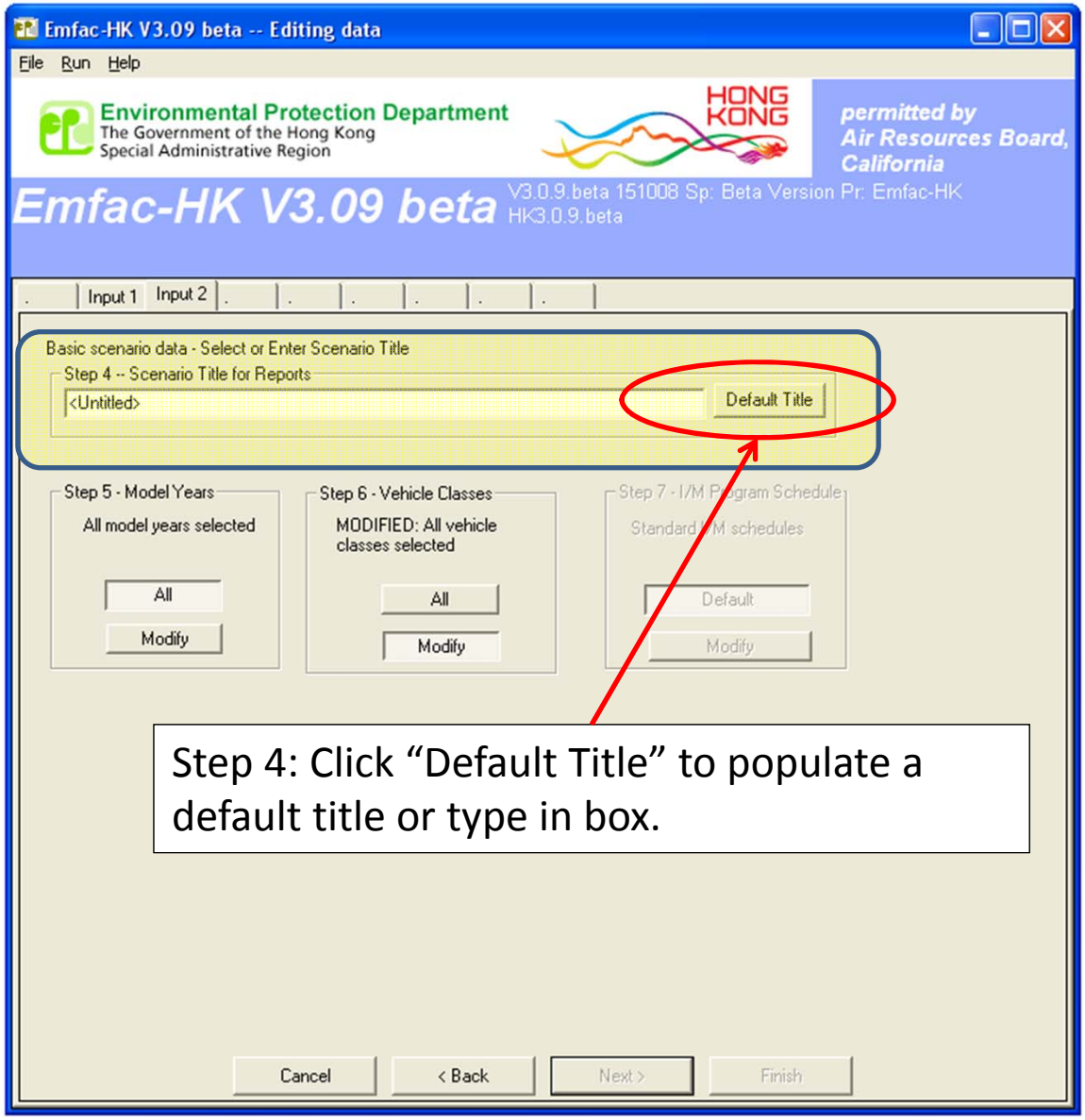


Step 3: Annual “Default”

Steps 4-7: Scenario Details Screen

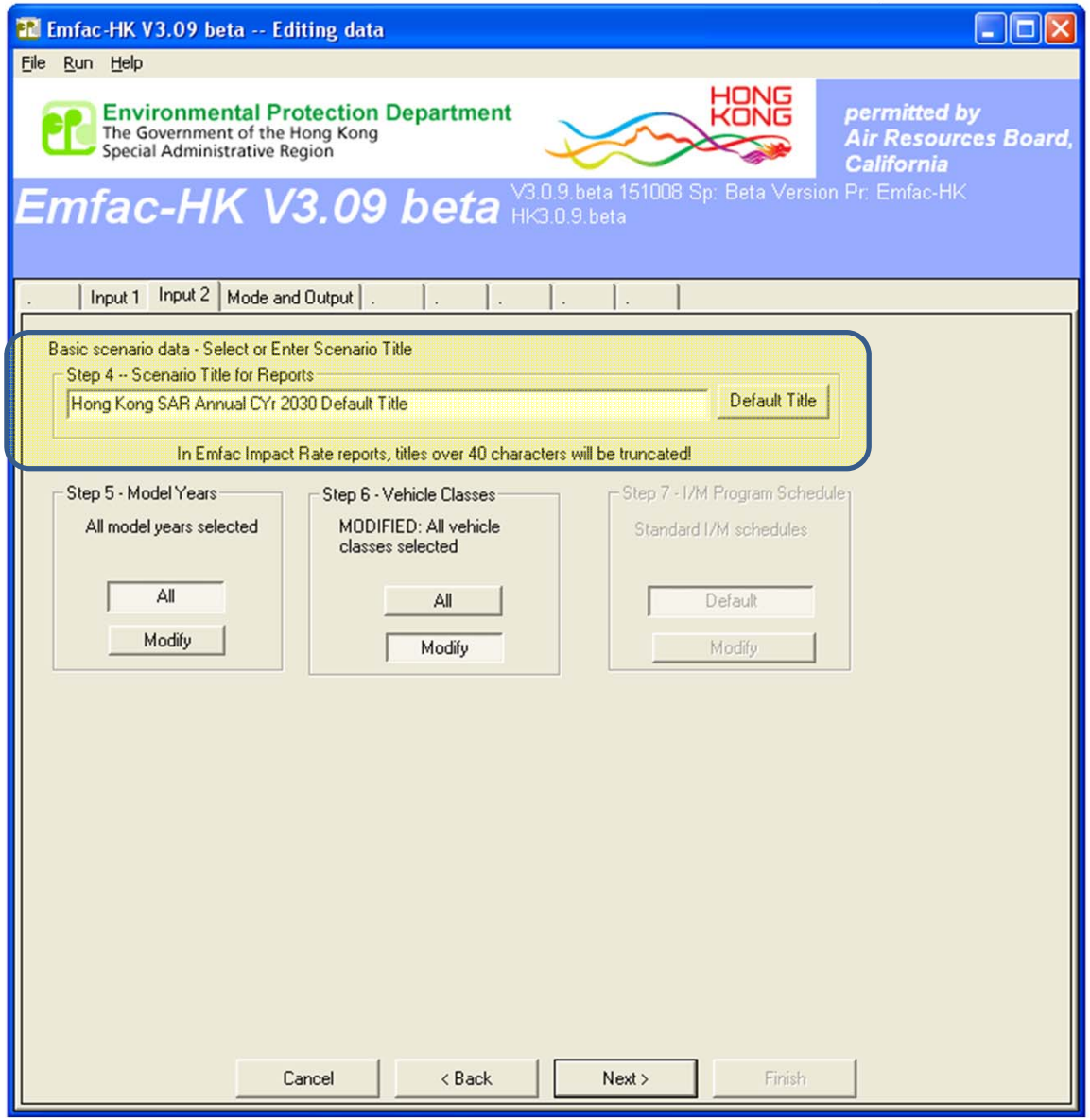


Step 4: Scenario Title

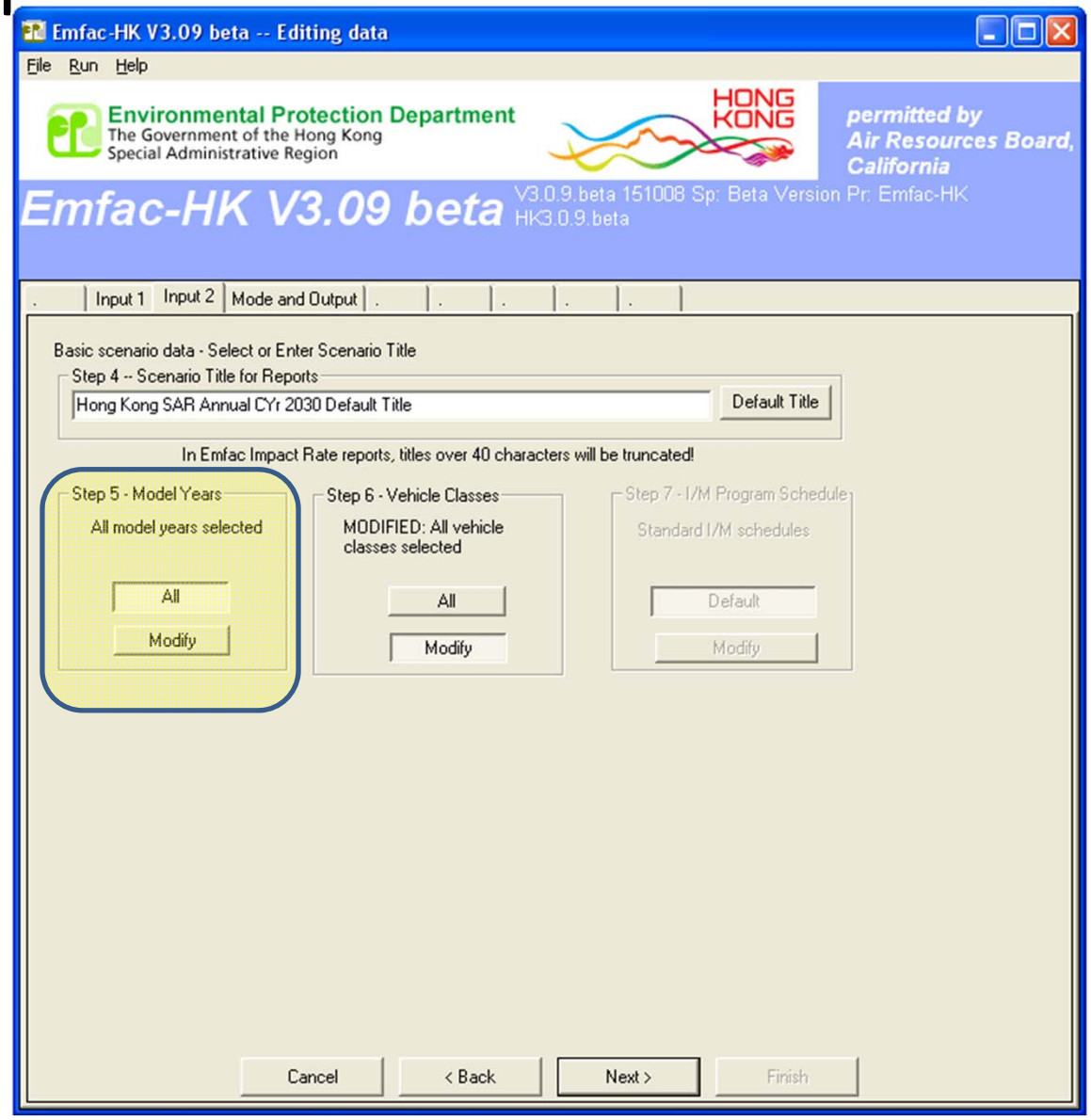


Step 4: Click “Default Title” to populate a default title or type in box.

Step 4: Scenario Title “Populated”

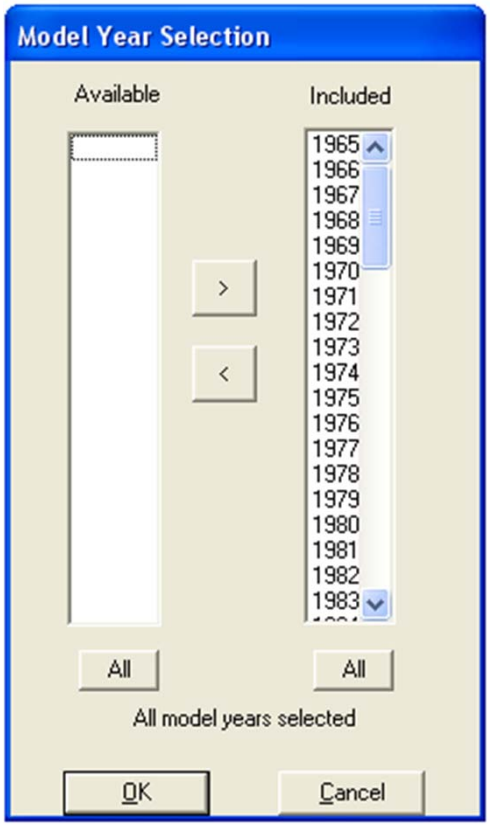


Step 5: Model Year Selection

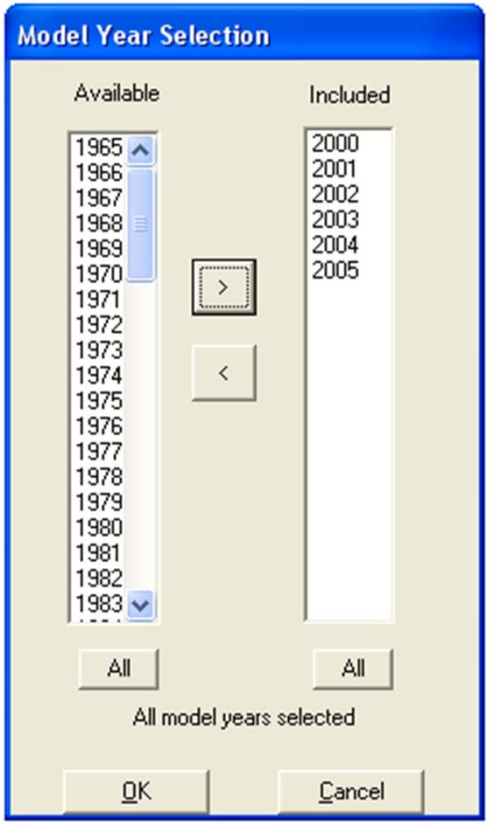


Step 5: Model Year Selection

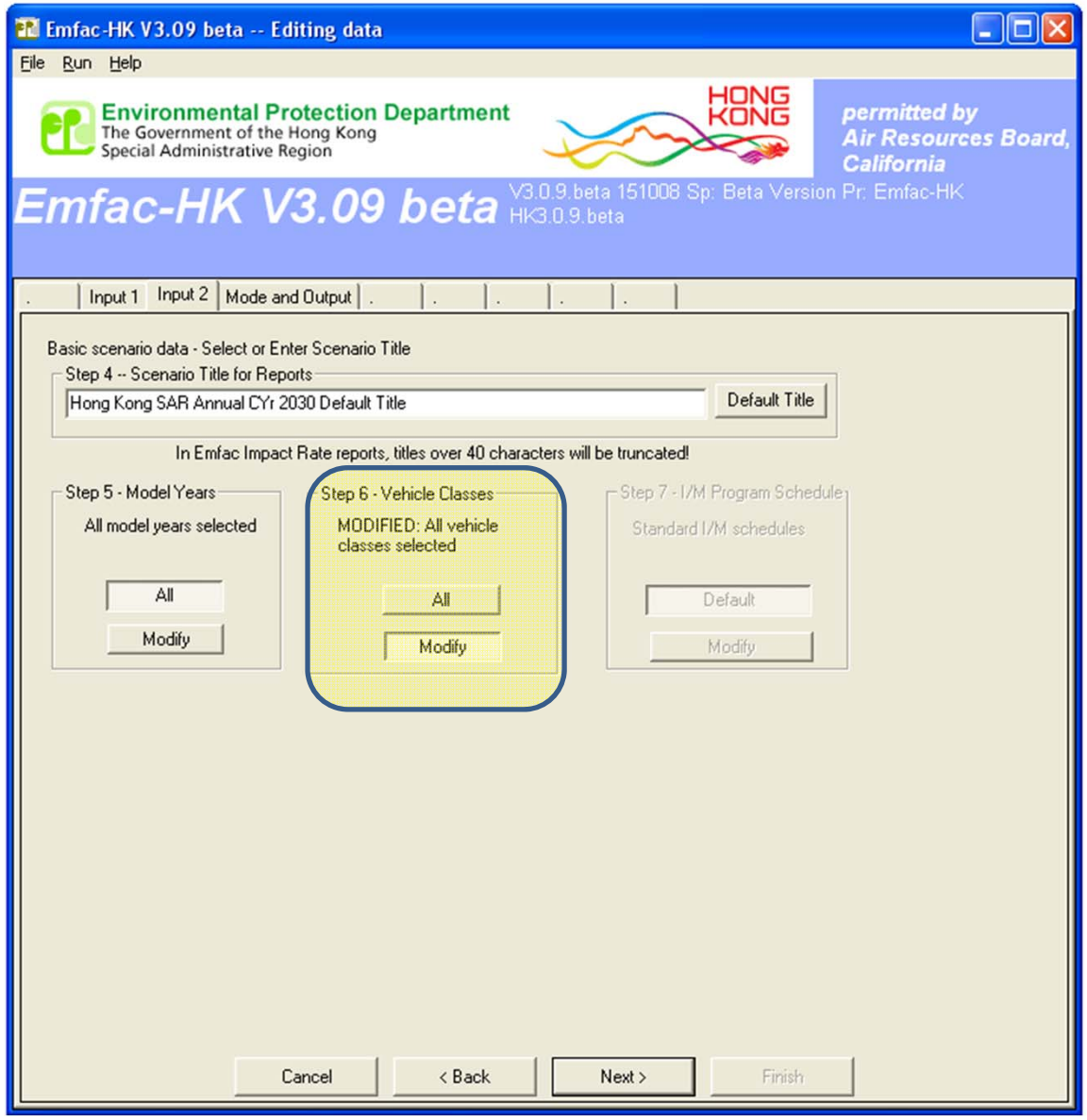
Before Changes



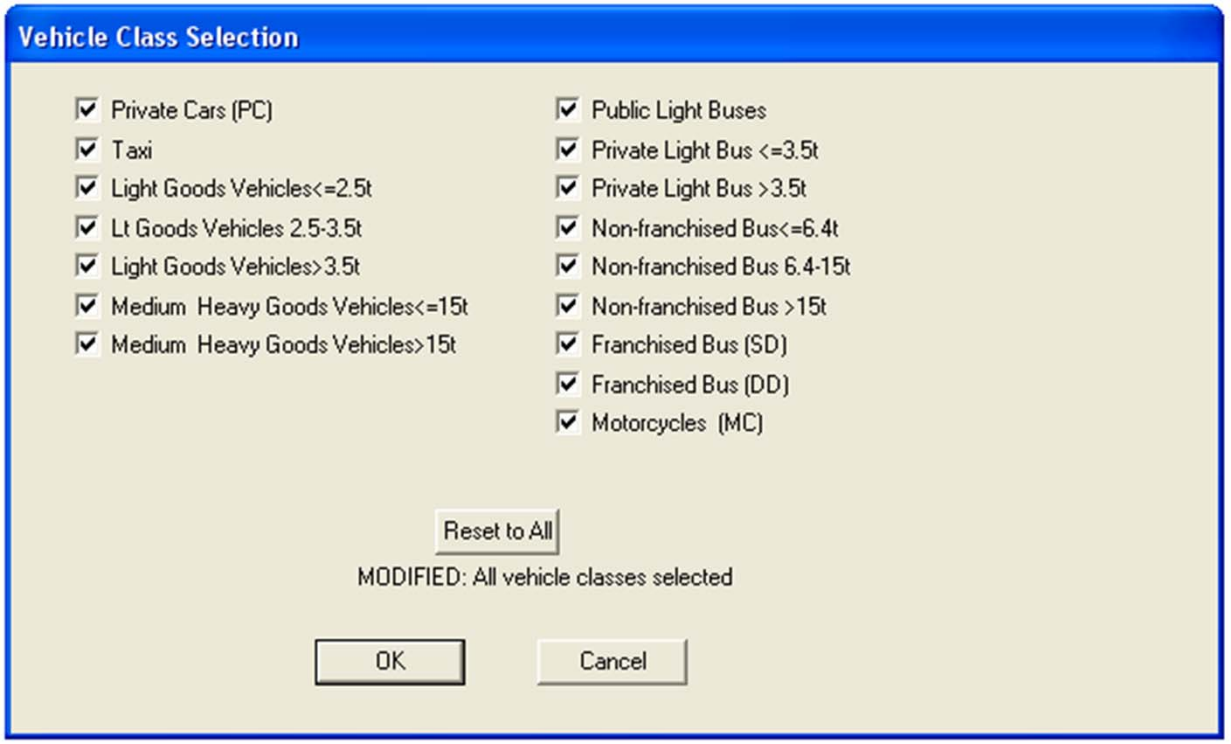
After Changes



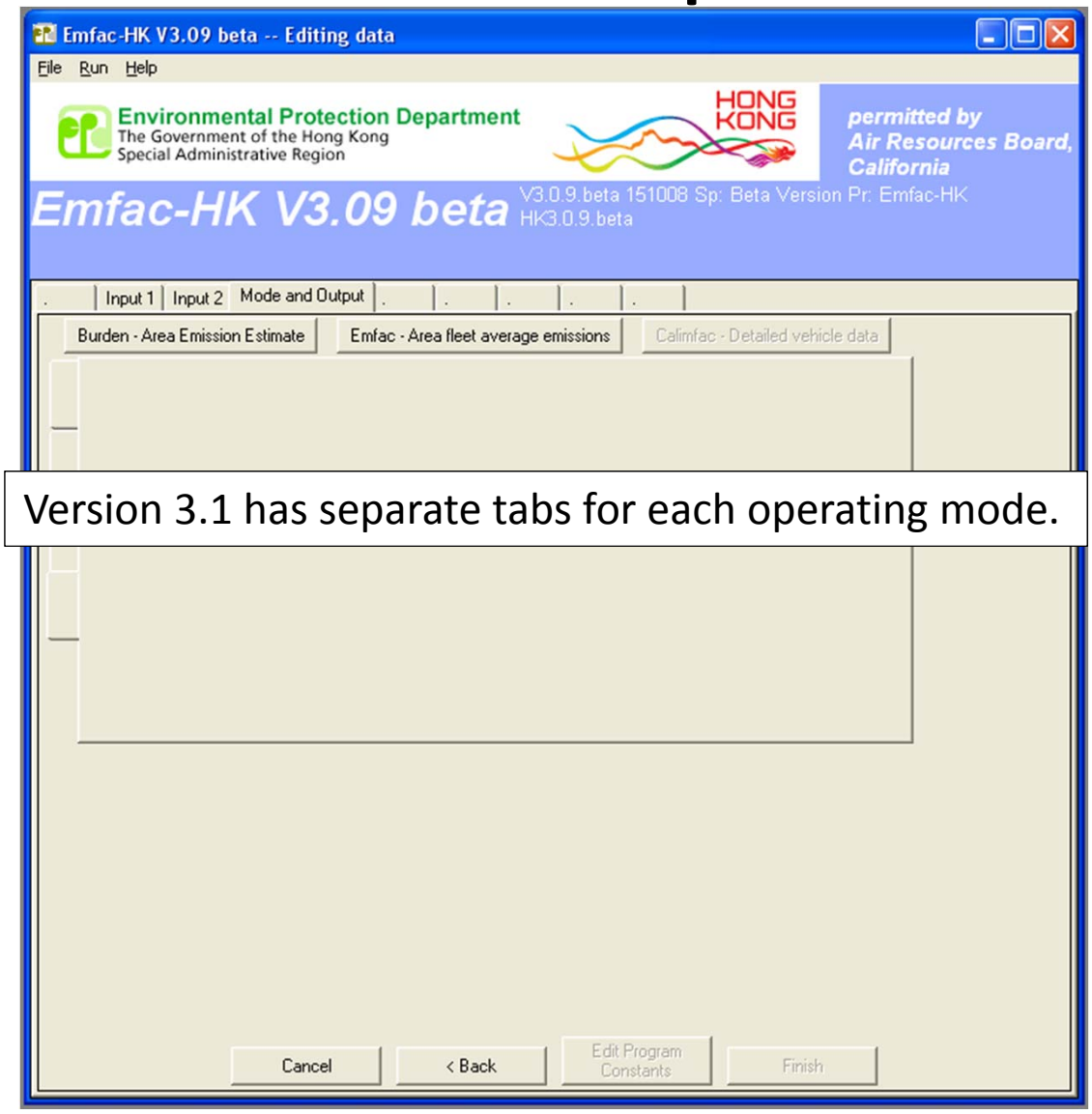
Step 6: Vehicle Class Selection



Step 6: Vehicle Class Selection

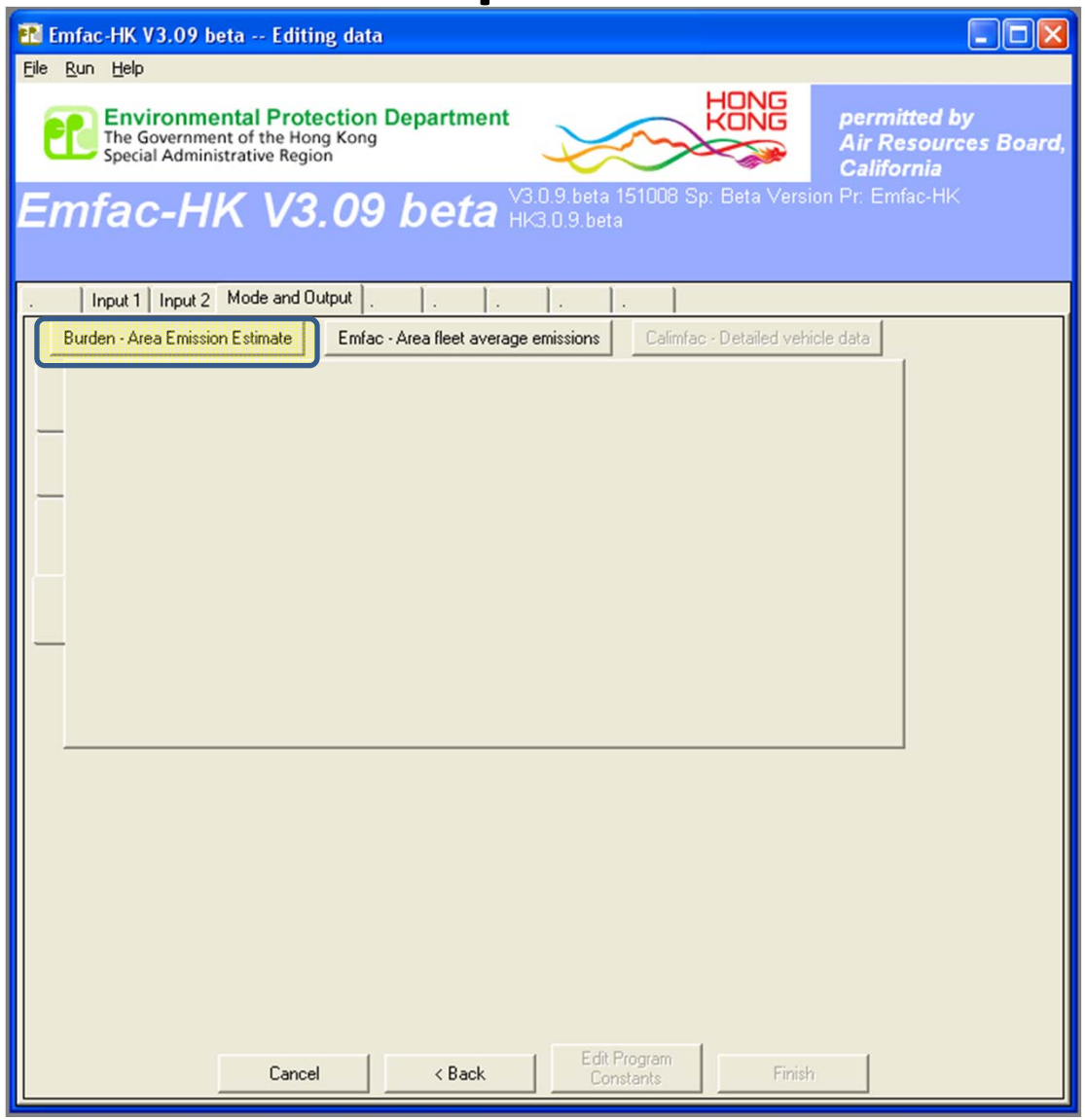


Mode and Output Tab

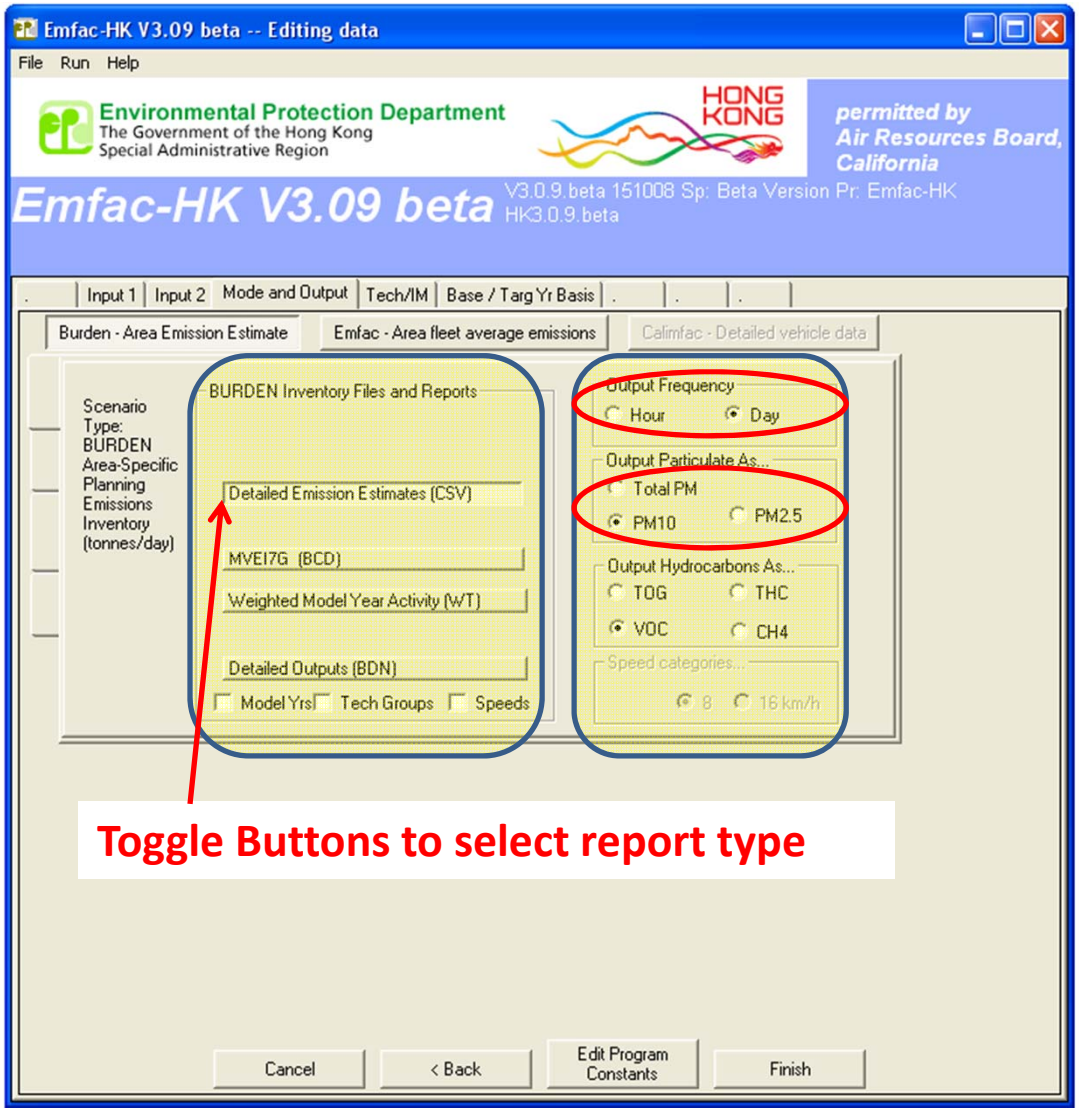


Version 3.1 has separate tabs for each operating mode.

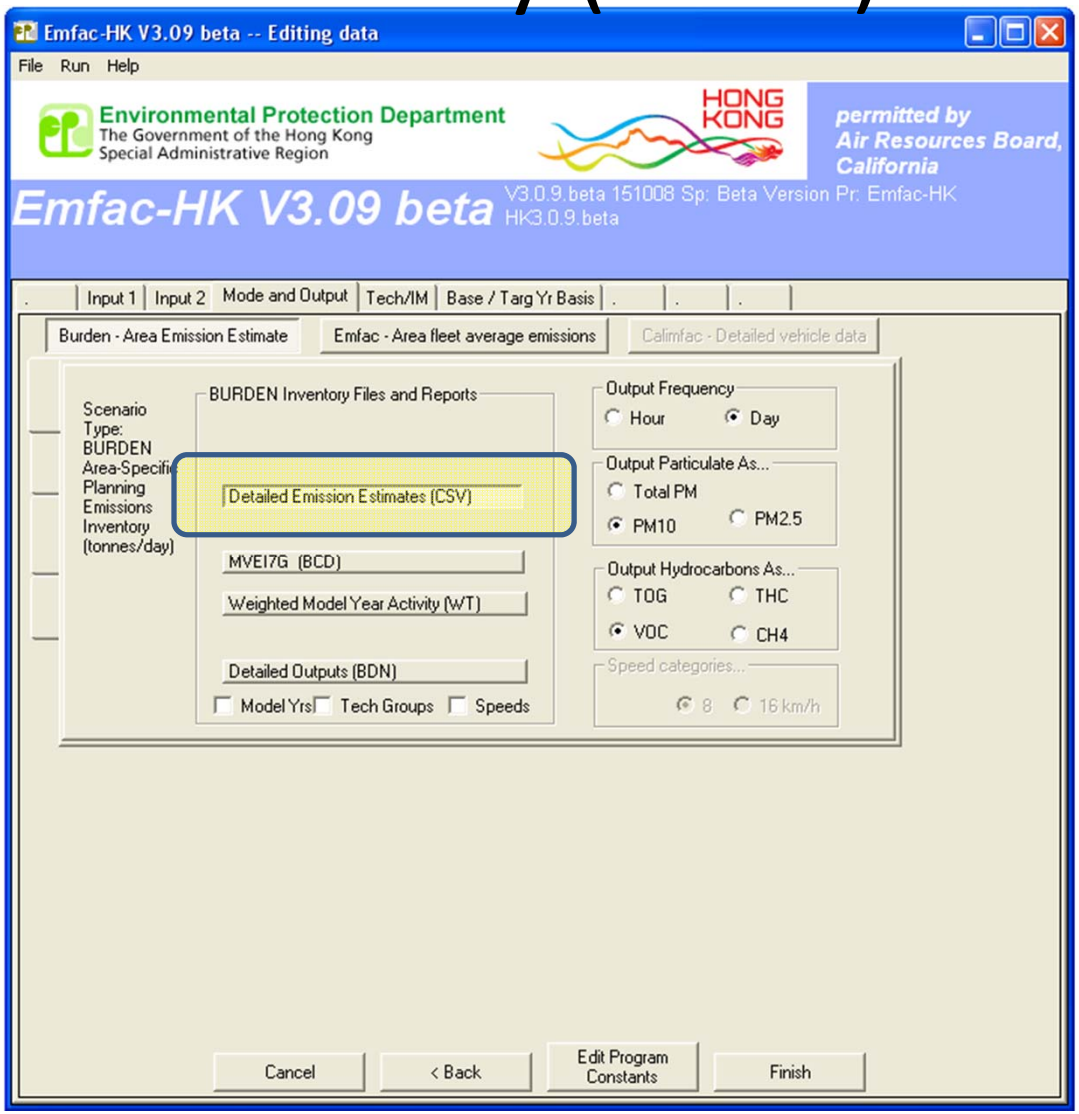
Mode and Output Tab: Burden



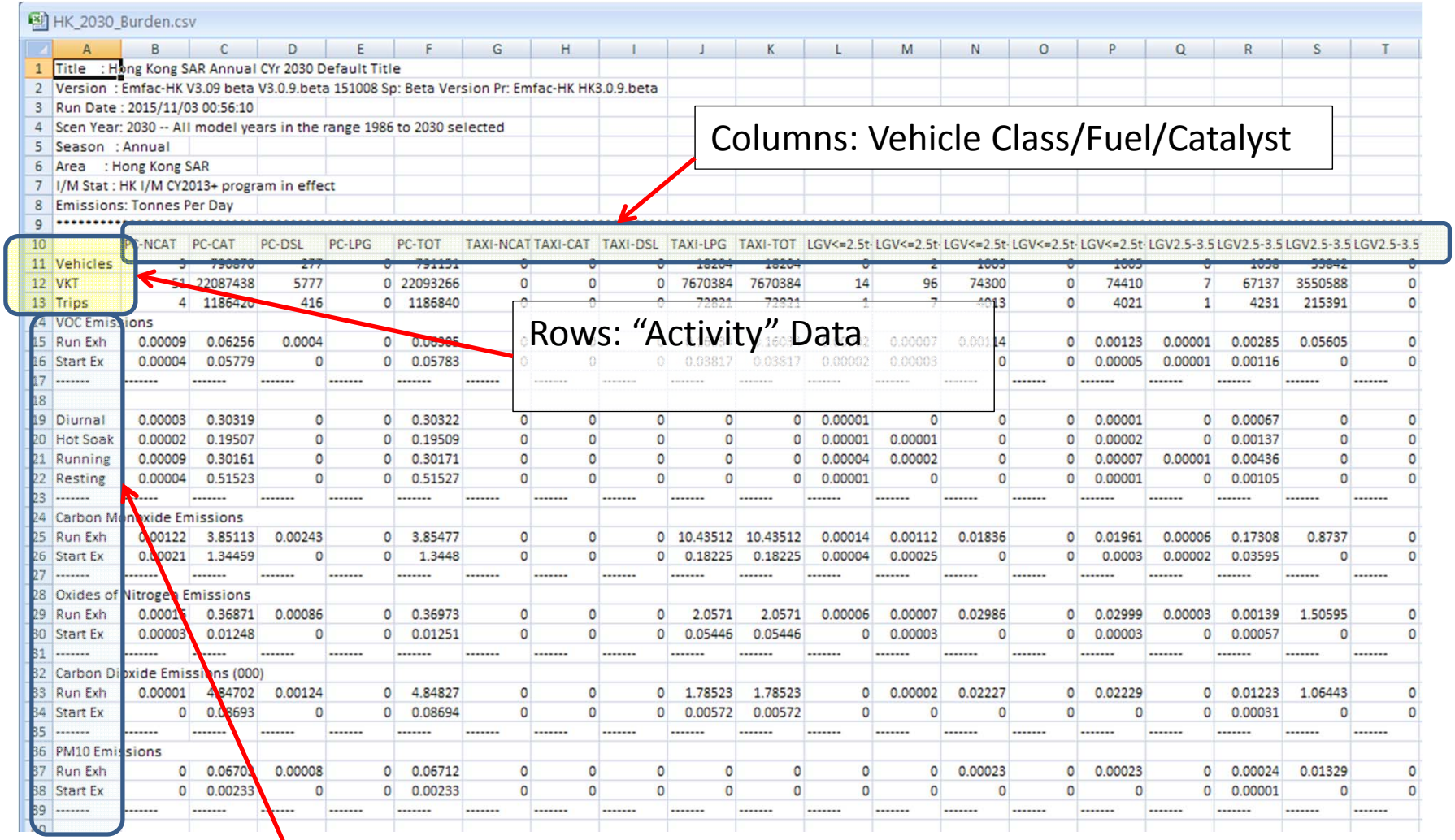
BURDEN Output Options



BURDEN Output: Detailed Planning Inventory (*.CSV)



Detailed Planning Inventory (*.csv)



HK_2030_Burden.csv

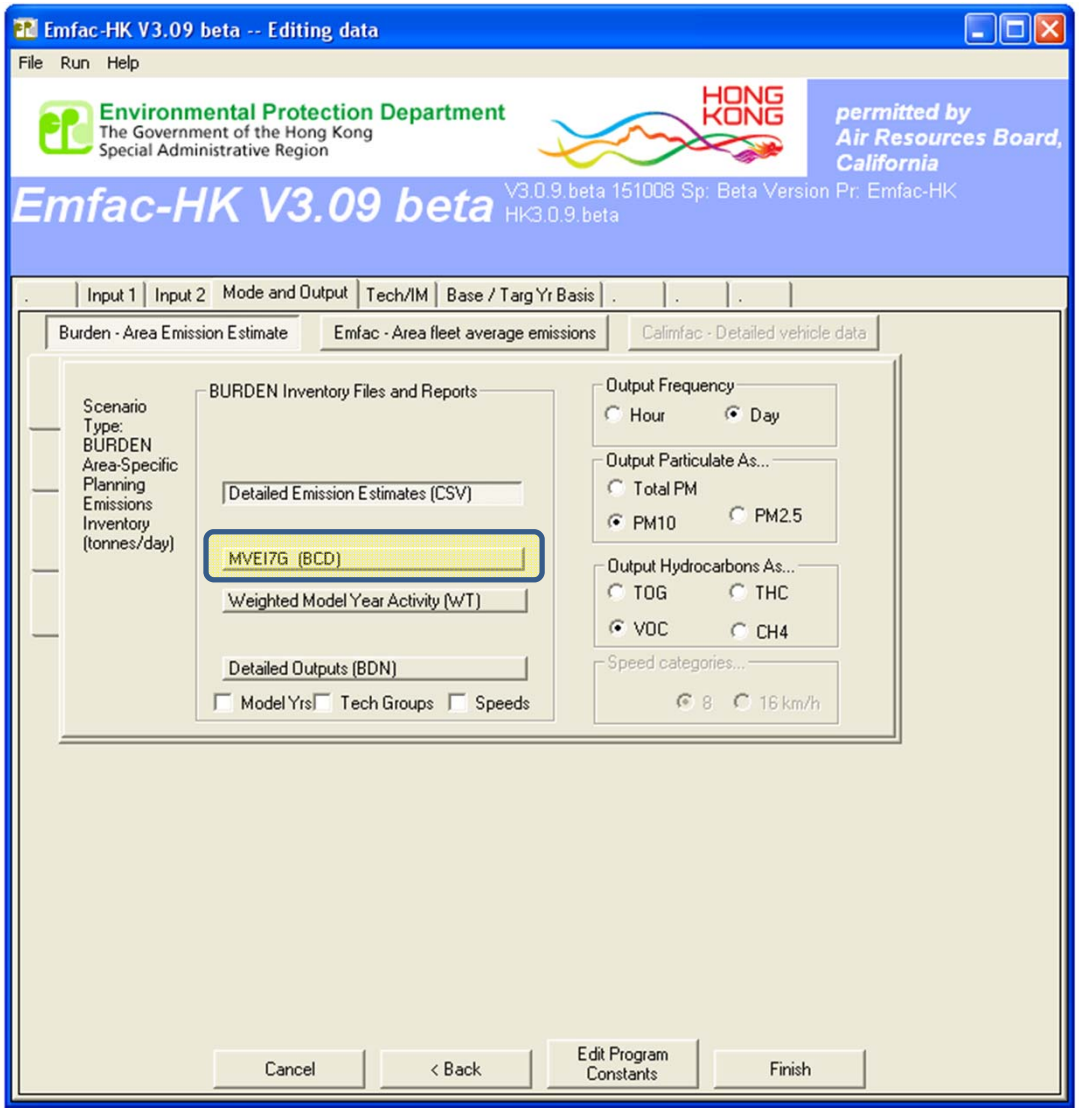
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	Title : Hong Kong SAR Annual CYr 2030 Default Title																			
2	Version : Emfac-HK V3.09 beta V3.0.9.beta 151008 Sp: Beta Version Pr: Emfac-HK HK3.0.9.beta																			
3	Run Date : 2015/11/03 00:56:10																			
4	Scen Year: 2030 -- All model years in the range 1986 to 2030 selected																			
5	Season : Annual																			
6	Area : Hong Kong SAR																			
7	I/M Stat : HK I/M CY2013+ program in effect																			
8	Emissions: Tonnes Per Day																			
9	**********																			
10		PC-NCAT	PC-CAT	PC-DSL	PC-LPG	PC-TOT	TAXI-NCAT	TAXI-CAT	TAXI-DSL	TAXI-LPG	TAXI-TOT	LGV<=2.5t	LGV<=2.5t	LGV<=2.5t	LGV<=2.5t	LGV<=2.5t	LGV2.5-3.5	LGV2.5-3.5	LGV2.5-3.5	LGV2.5-3.5	
11	Vehicles	3	730870	277	0	731151	0	0	0	18264	18264	0	2	1005	0	1005	0	1036	55842	0
12	VKT	51	22087438	5777	0	22093266	0	0	0	7670384	7670384	14	96	74300	0	74410	7	67137	3550588	0
13	Trips	4	1186420	416	0	1186840	0	0	0	72821	72821	1	7	4013	0	4021	1	4231	215391	0
14	VOC Emissions																			
15	Run Exh	0.00009	0.06256	0.0004	0	0.06305	0	0	0	0.01602	0.01602	0.00002	0.00007	0.00114	0	0.00123	0.00001	0.00285	0.05605	0
16	Start Ex	0.00004	0.05779	0	0	0.05783	0	0	0	0.03817	0.03817	0.00002	0.00003		0	0.00005	0.00001	0.00116	0	0
17	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
18																				
19	Diurnal	0.00003	0.30319	0	0	0.30322	0	0	0	0	0	0.00001	0	0	0	0.00001	0	0.00067	0	0
20	Hot Soak	0.00002	0.19507	0	0	0.19509	0	0	0	0	0	0.00001	0.00001	0	0	0.00002	0	0.00137	0	0
21	Running	0.00009	0.30161	0	0	0.30171	0	0	0	0	0	0.00004	0.00002	0	0	0.00007	0.00001	0.00436	0	0
22	Resting	0.00004	0.51523	0	0	0.51527	0	0	0	0	0	0.00001	0	0	0	0.00001	0	0.00105	0	0
23	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
24	Carbon Monoxide Emissions																			
25	Run Exh	0.00122	3.85113	0.00243	0	3.85477	0	0	0	10.43512	10.43512	0.00014	0.00112	0.01836	0	0.01961	0.00006	0.17308	0.8737	0
26	Start Ex	0.00021	1.34459	0	0	1.3448	0	0	0	0.18225	0.18225	0.00004	0.00025	0	0	0.0003	0.00002	0.03595	0	0
27	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
28	Oxides of Nitrogen Emissions																			
29	Run Exh	0.00013	0.36871	0.00086	0	0.36973	0	0	0	2.0571	2.0571	0.00006	0.00007	0.02986	0	0.02999	0.00003	0.00139	1.50595	0
30	Start Ex	0.00003	0.01248	0	0	0.01251	0	0	0	0.05446	0.05446	0	0.00003	0	0	0.00003	0	0.00057	0	0
31	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
32	Carbon Dioxide Emissions (000)																			
33	Run Exh	0.00001	4.84702	0.00124	0	4.84827	0	0	0	1.78523	1.78523	0	0.00002	0.02227	0	0.02229	0	0.01223	1.06443	0
34	Start Ex	0	0.08693	0	0	0.08694	0	0	0	0.00572	0.00572	0	0	0	0	0	0	0.00031	0	0
35	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
36	PM10 Emissions																			
37	Run Exh	0	0.06701	0.00008	0	0.06712	0	0	0	0	0	0	0	0.00023	0	0.00023	0	0.00024	0.01329	0
38	Start Ex	0	0.00233	0	0	0.00233	0	0	0	0	0	0	0	0	0	0	0	0.00001	0	0
39	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------

Columns: Vehicle Class/Fuel/Catalyst

Rows: "Activity" Data

Rows: Pollutant/Emissions Process

BURDEN Output: MVEI7G (*.bcd.csv)

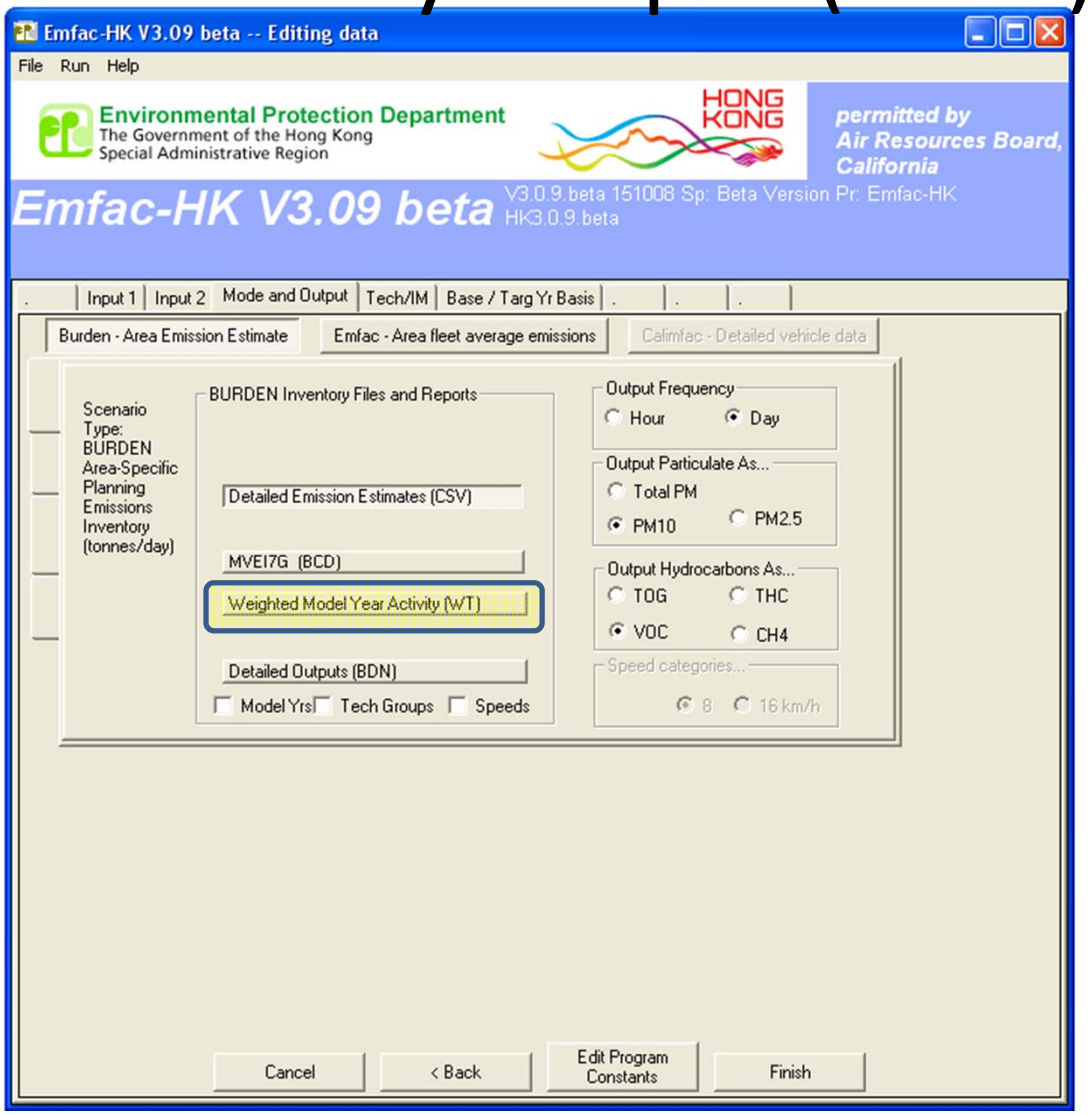


MVEI7G CSV file (*.bcd.csv)

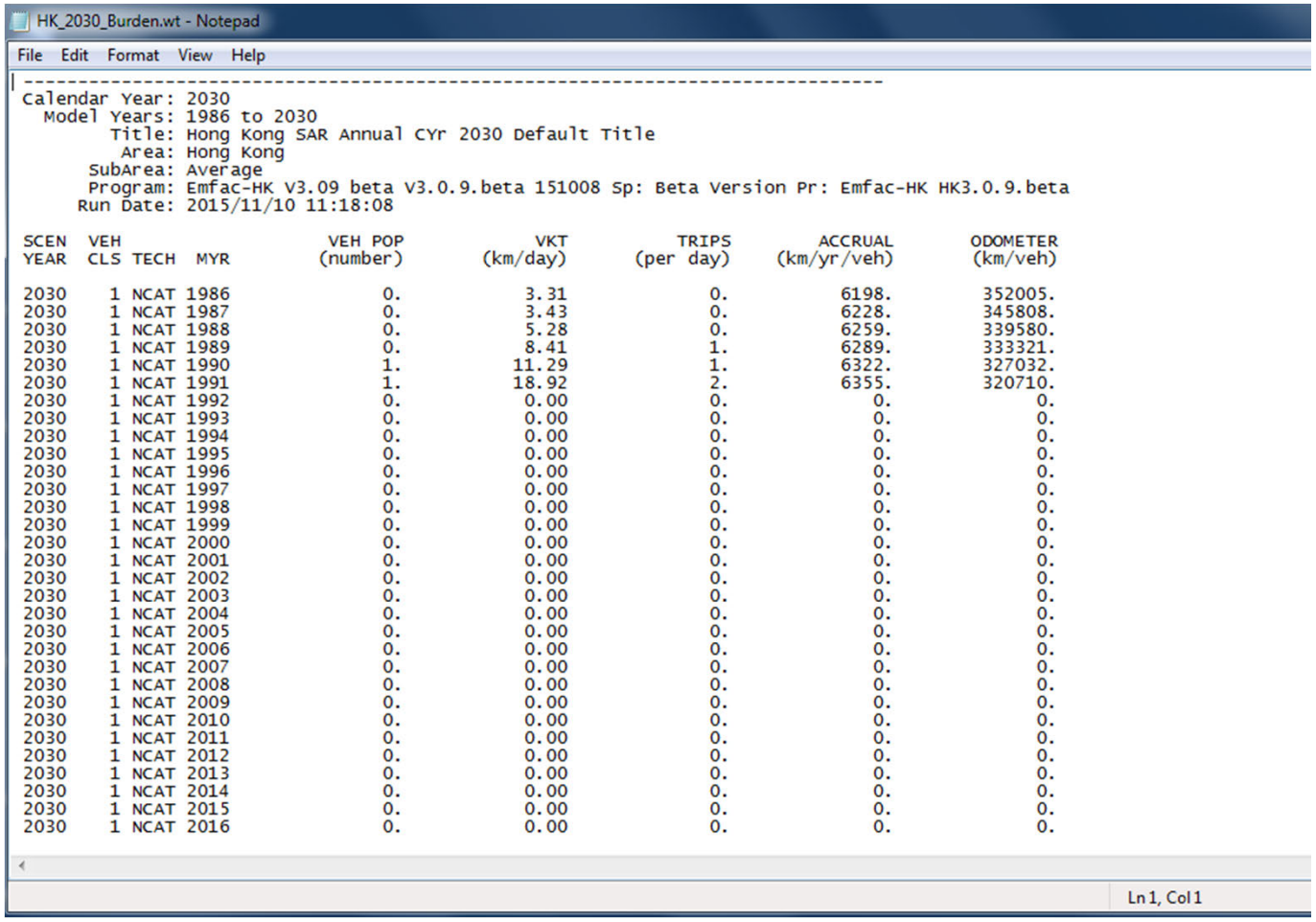
Ex0_Sample.bcd.csv

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	CALYR	START MYI	END MYR	REGION	SAR	STARTS	POPULATI	VKT	VEH TYPE	VEH TECH	POLLUTAN	PROCESS	EMISSION	BASIS
2	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	CO	Run Exh	0.001218	Day
3	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	NOx	Run Exh	0.000157	Day
4	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	PM	Run Exh	0.000001	Day
5	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	VOC	Run Exh	0.00009	Day
6	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	CO2	Run Exh	0.011113	Day
7	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	CO	Start Ex	0.000213	Day
8	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	NOx	Start Ex	0.00003	Day
9	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	PM	Start Ex	0	Day
10	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	VOC	Start Ex	0.000038	Day
11	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	CO2	Start Ex	0.000884	Day
12	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	CO	Hot Soak	0	Day
13	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	NOx	Hot Soak	0	Day
14	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	PM	Hot Soak	0	Day
15	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	VOC	Hot Soak	0.00002	Day
16	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	CO2	Hot Soak	0	Day
17	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	CO	Running	0	Day
18	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	NOx	Running	0	Day
19	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	PM	Running	0	Day
20	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	VOC	Running	0.000094	Day
21	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	CO2	Running	0	Day
22	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	CO	PD Rest	0	Day
23	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	NOx	PD Rest	0	Day
24	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	PM	PD Rest	0	Day
25	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	VOC	PD Rest	0.000036	Day
26	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	CO2	PD Rest	0	Day
27	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	CO	MD Rest	0	Day
28	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	NOx	MD Rest	0	Day
29	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	PM	MD Rest	0	Day
30	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	VOC	MD Rest	0.000002	Day
31	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	CO2	MD Rest	0	Day
32	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	CO	Resting	0	Day
33	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	NOx	Resting	0	Day
34	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	PM	Resting	0	Day
35	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	VOC	Resting	0.000039	Day
36	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	CO2	Resting	0	Day
37	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	CO	PD Diurn	0	Day
38	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	NOx	PD Diurn	0	Day
39	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	PM	PD Diurn	0	Day
40	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	VOC	PD Diurn	0.000032	Day
41	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	CO2	PD Diurn	0	Day
42	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	CO	MD Diurn	0	Day
43	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	NOx	MD Diurn	0	Day
44	2030	1986	2030	SAR Avera	Hong Kon	4	3	51	PC	NCAT	PM	MD Diurn	0	Day

BURDEN Output: Weighted Model Year Activity Output (*.WT)



Weighted Model Year Activity Output (*.WT)



HK_2030_Burden.wt - Notepad

File Edit Format View Help

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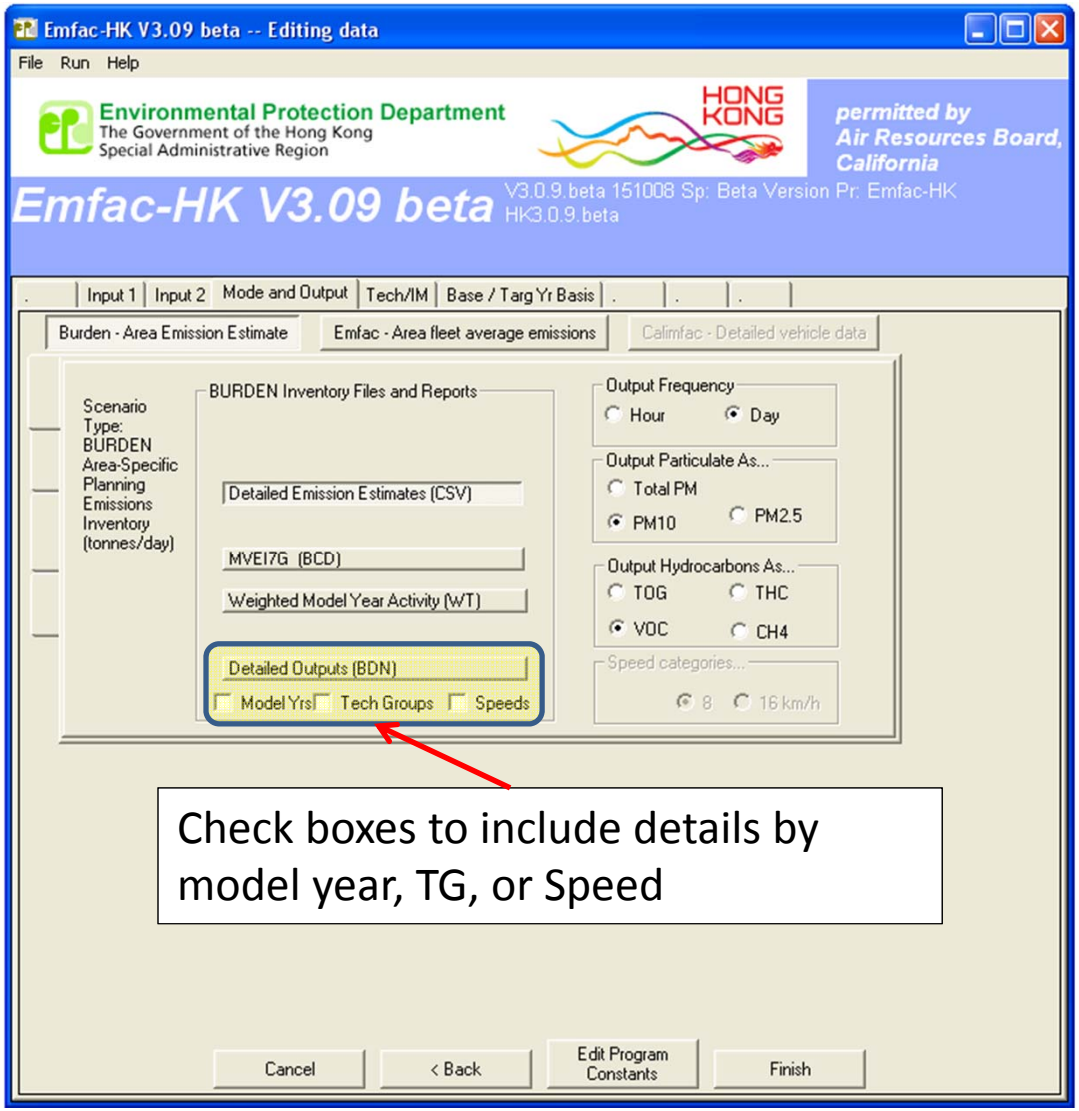
-------------------------------------------------------------------------------
 Calendar Year: 2030
   Model Years: 1986 to 2030
         Title: Hong Kong SAR Annual CYr 2030 Default Title
          Area: Hong Kong
       SubArea: Average
       Program: Emfac-HK V3.09 beta V3.0.9.beta 151008 Sp: Beta Version Pr: Emfac-HK HK3.0.9.beta
      Run Date: 2015/11/10 11:18:08

SCEN  VEH                    VEH POP          VKT         TRIPS       ACCRUAL       ODOMETER
YEAR  CLS TECH  MYR          (number)       (km/day)    (per day)   (km/yr/veh)     (km/veh)

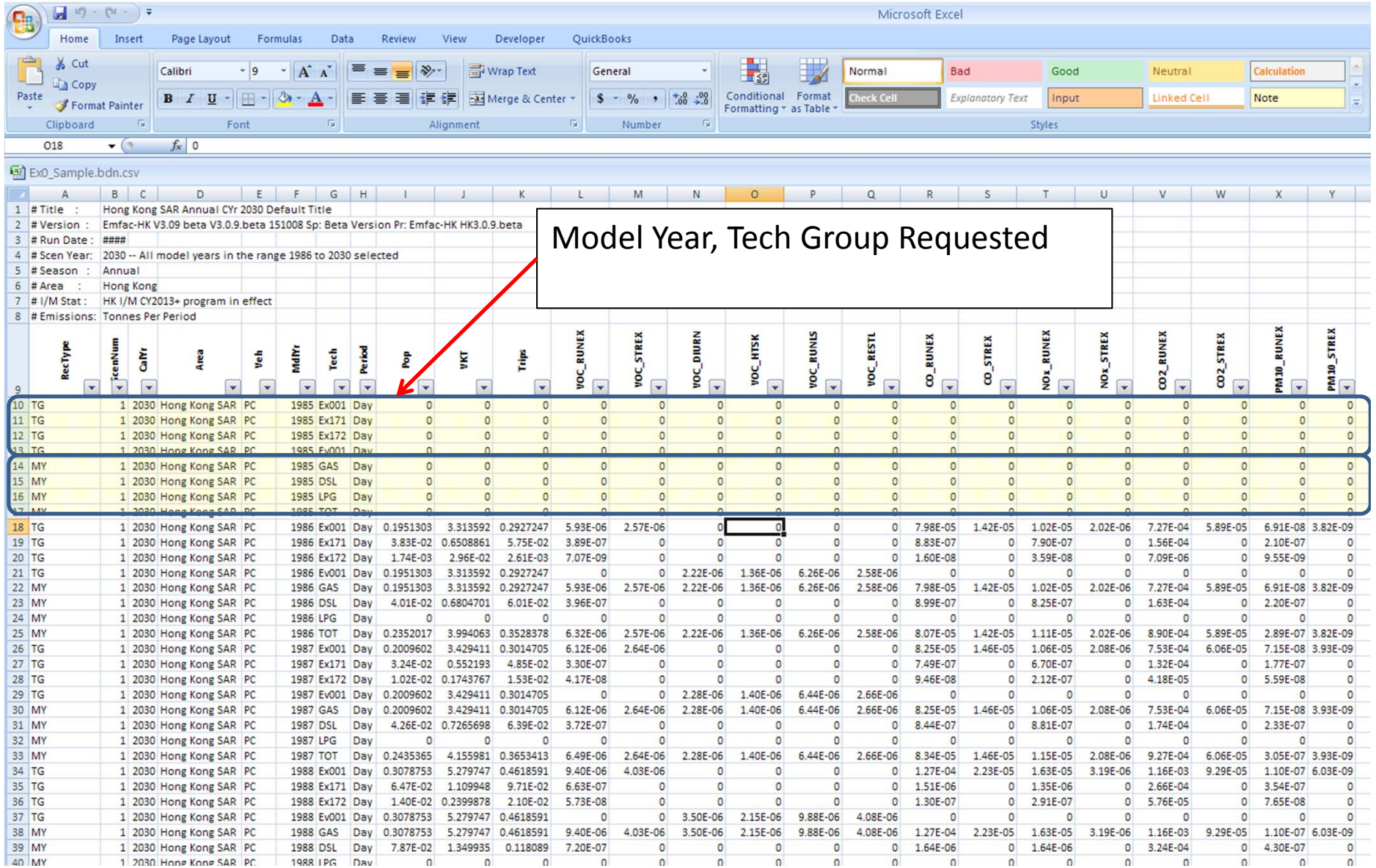
2030    1 NCAT 1986              0.           3.31           0.          6198.        352005.
2030    1 NCAT 1987              0.           3.43           0.          6228.        345808.
2030    1 NCAT 1988              0.           5.28           0.          6259.        339580.
2030    1 NCAT 1989              0.           8.41           1.          6289.        333321.
2030    1 NCAT 1990              1.          11.29           1.          6322.        327032.
2030    1 NCAT 1991              1.          18.92           2.          6355.        320710.
2030    1 NCAT 1992              0.           0.00           0.             0.             0.
2030    1 NCAT 1993              0.           0.00           0.             0.             0.
2030    1 NCAT 1994              0.           0.00           0.             0.             0.
2030    1 NCAT 1995              0.           0.00           0.             0.             0.
2030    1 NCAT 1996              0.           0.00           0.             0.             0.
2030    1 NCAT 1997              0.           0.00           0.             0.             0.
2030    1 NCAT 1998              0.           0.00           0.             0.             0.
2030    1 NCAT 1999              0.           0.00           0.             0.             0.
2030    1 NCAT 2000              0.           0.00           0.             0.             0.
2030    1 NCAT 2001              0.           0.00           0.             0.             0.
2030    1 NCAT 2002              0.           0.00           0.             0.             0.
2030    1 NCAT 2003              0.           0.00           0.             0.             0.
2030    1 NCAT 2004              0.           0.00           0.             0.             0.
2030    1 NCAT 2005              0.           0.00           0.             0.             0.
2030    1 NCAT 2006              0.           0.00           0.             0.             0.
2030    1 NCAT 2007              0.           0.00           0.             0.             0.
2030    1 NCAT 2008              0.           0.00           0.             0.             0.
2030    1 NCAT 2009              0.           0.00           0.             0.             0.
2030    1 NCAT 2010              0.           0.00           0.             0.             0.
2030    1 NCAT 2011              0.           0.00           0.             0.             0.
2030    1 NCAT 2012              0.           0.00           0.             0.             0.
2030    1 NCAT 2013              0.           0.00           0.             0.             0.
2030    1 NCAT 2014              0.           0.00           0.             0.             0.
2030    1 NCAT 2015              0.           0.00           0.             0.             0.
2030    1 NCAT 2016              0.           0.00           0.             0.             0.
```

Ln 1, Col 1

BURDEN: Detailed Output (*.bdn.csv)



Detailed Output File (*.BDN.CSV)

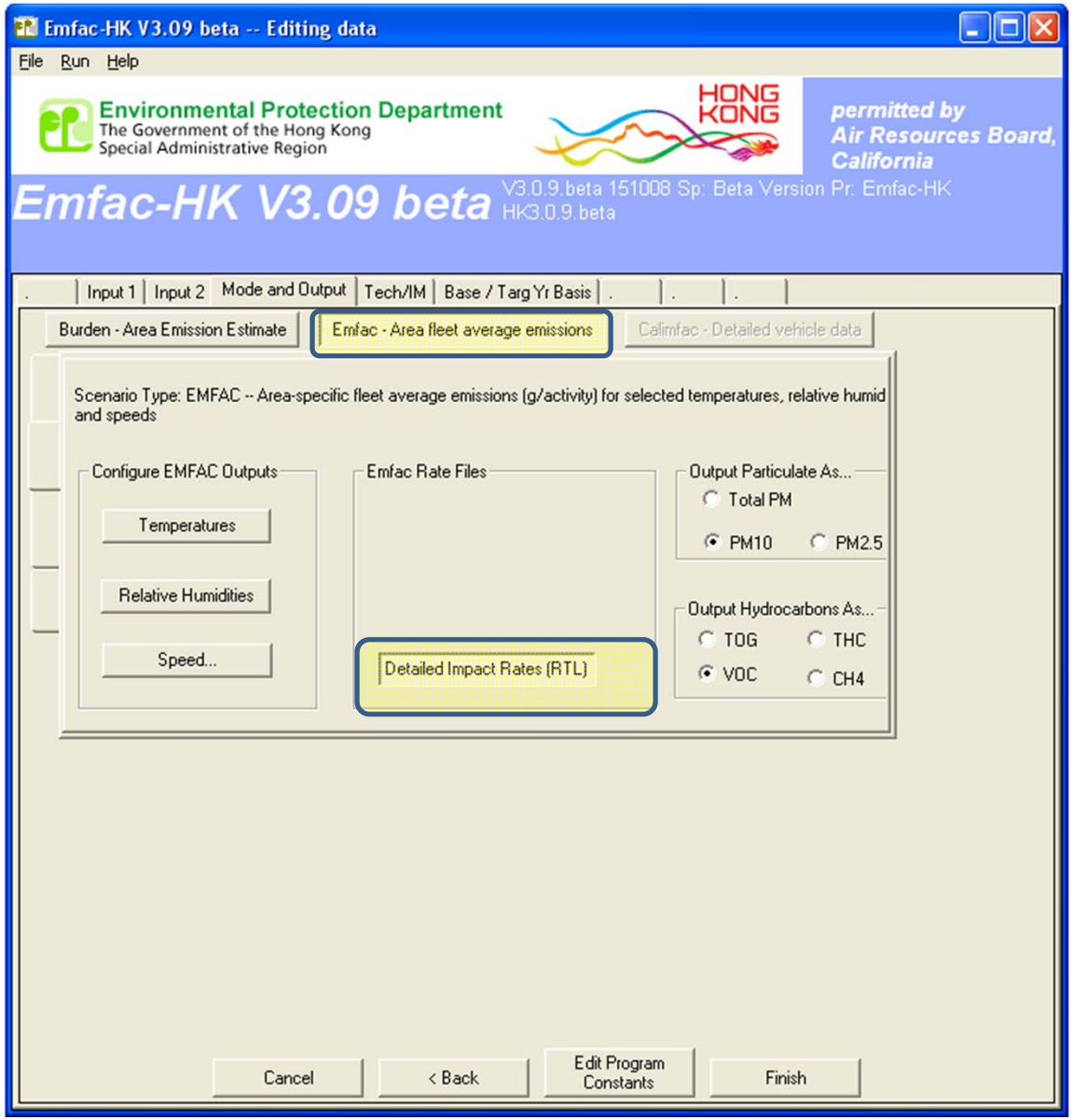


Model Year, Tech Group Requested

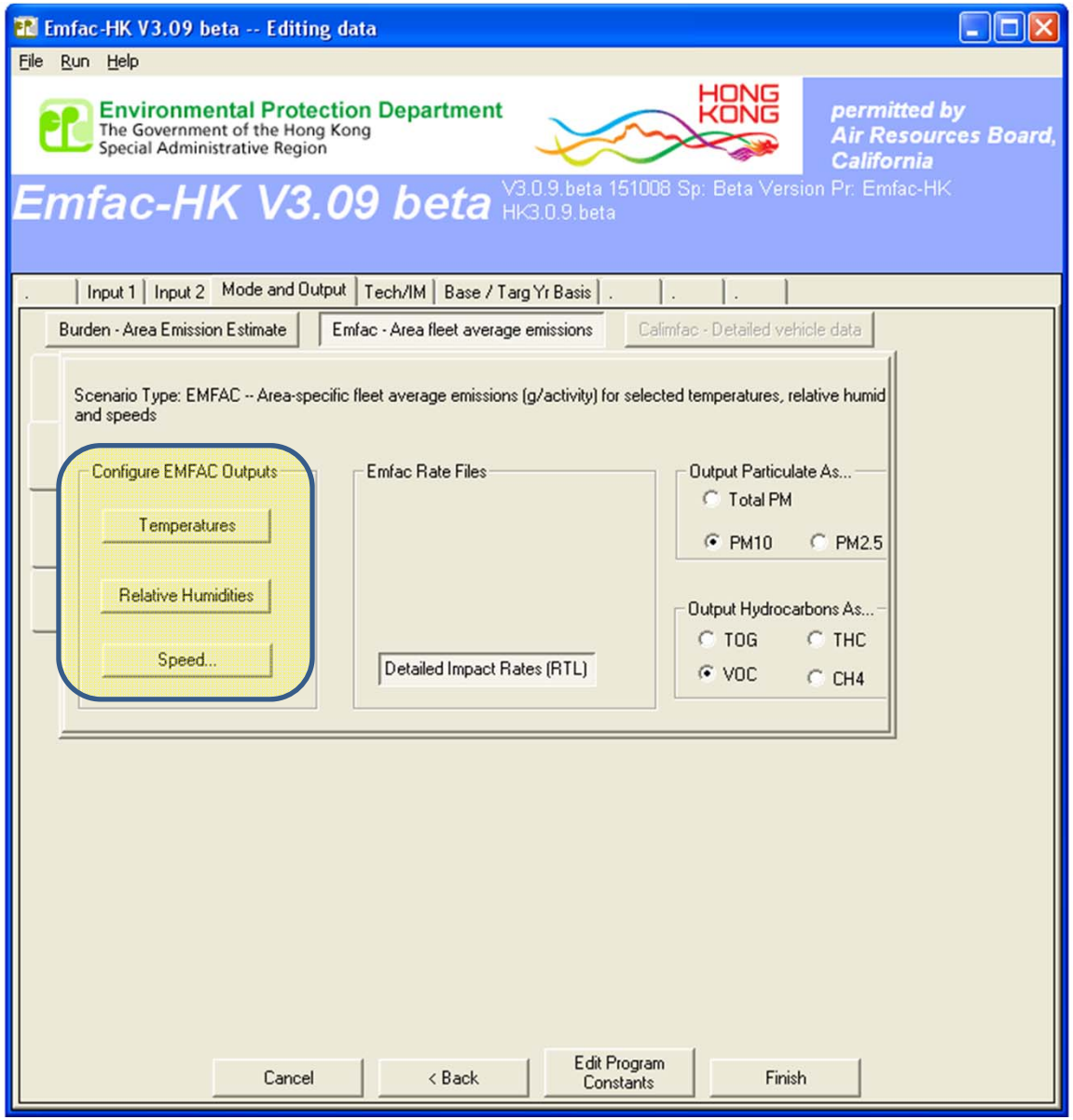
Title : Hong Kong SAR Annual CYr 2030 Default Title
Version : Emfac-HK V3.09 beta V3.0.9.beta 151008 Sp: Beta Version Pr: Emfac-HK HK3.0.9.beta
Run Date :
Scen Year: 2030 -- All model years in the range 1986 to 2030 selected
Season : Annual
Area : Hong Kong
I/M Stat : HK I/M CY2013+ program in effect
Emissions: Tonnes Per Period

RecType	ScenNum	CalYr	Area	Veh	MdlYr	Tech	Period	Pop	VKT	Trips	VOC_RUNEX	VOC_STREX	VOC_DIURN	VOC_HTSK	VOC_RUNLS	VOC_RESTL	CO_RUNEX	CO_STREX	NOx_RUNEX	NOx_STREX	CO2_RUNEX	CO2_STREX	PM10_RUNEX	PM10_STREX
TG	1	2030	Hong Kong SAR	PC	1985	Ex001	Day	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TG	1	2030	Hong Kong SAR	PC	1985	Ex171	Day	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TG	1	2030	Hong Kong SAR	PC	1985	Ex172	Day	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TG	1	2030	Hong Kong SAR	PC	1985	Ev001	Day	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MY	1	2030	Hong Kong SAR	PC	1985	GAS	Day	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MY	1	2030	Hong Kong SAR	PC	1985	DSL	Day	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MY	1	2030	Hong Kong SAR	PC	1985	LPG	Day	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MY	1	2030	Hong Kong SAR	PC	1985	TOT	Day	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TG	1	2030	Hong Kong SAR	PC	1986	Ex001	Day	0.1951303	3.313592	0.2927247	5.93E-06	2.57E-06	0	0	0	0	7.98E-05	1.42E-05	1.02E-05	2.02E-06	7.27E-04	5.89E-05	6.91E-08	3.82E-09
TG	1	2030	Hong Kong SAR	PC	1986	Ex171	Day	3.83E-02	0.6508861	5.75E-02	3.89E-07	0	0	0	0	0	8.83E-07	0	7.90E-07	0	1.56E-04	0	2.10E-07	0
TG	1	2030	Hong Kong SAR	PC	1986	Ex172	Day	1.74E-03	2.96E-02	2.61E-03	7.07E-09	0	0	0	0	0	1.60E-08	0	3.59E-08	0	7.09E-06	0	9.55E-09	0
TG	1	2030	Hong Kong SAR	PC	1986	Ev001	Day	0.1951303	3.313592	0.2927247	0	0	2.22E-06	1.36E-06	6.26E-06	2.58E-06	0	0	0	0	0	0	0	0
MY	1	2030	Hong Kong SAR	PC	1986	GAS	Day	0.1951303	3.313592	0.2927247	5.93E-06	2.57E-06	2.22E-06	1.36E-06	6.26E-06	2.58E-06	7.98E-05	1.42E-05	1.02E-05	2.02E-06	7.27E-04	5.89E-05	6.91E-08	3.82E-09
MY	1	2030	Hong Kong SAR	PC	1986	DSL	Day	4.01E-02	0.6804701	6.01E-02	3.96E-07	0	0	0	0	0	8.99E-07	0	8.25E-07	0	1.63E-04	0	2.20E-07	0
MY	1	2030	Hong Kong SAR	PC	1986	LPG	Day	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MY	1	2030	Hong Kong SAR	PC	1986	TOT	Day	0.2352017	3.994063	0.3528378	6.32E-06	2.57E-06	2.22E-06	1.36E-06	6.26E-06	2.58E-06	8.07E-05	1.42E-05	1.11E-05	2.02E-06	8.90E-04	5.89E-05	2.89E-07	3.82E-09
TG	1	2030	Hong Kong SAR	PC	1987	Ex001	Day	0.2009602	3.429411	0.3014705	6.12E-06	2.64E-06	0	0	0	0	8.25E-05	1.46E-05	1.06E-05	2.08E-06	7.53E-04	6.06E-05	7.15E-08	3.93E-09
TG	1	2030	Hong Kong SAR	PC	1987	Ex171	Day	3.24E-02	0.552193	4.85E-02	3.30E-07	0	0	0	0	0	7.49E-07	0	6.70E-07	0	1.32E-04	0	1.77E-07	0
TG	1	2030	Hong Kong SAR	PC	1987	Ex172	Day	1.02E-02	0.1743767	1.53E-02	4.17E-08	0	0	0	0	0	9.46E-08	0	2.12E-07	0	4.18E-05	0	5.59E-08	0
TG	1	2030	Hong Kong SAR	PC	1987	Ev001	Day	0.2009602	3.429411	0.3014705	0	0	2.28E-06	1.40E-06	6.44E-06	2.66E-06	0	0	0	0	0	0	0	0
MY	1	2030	Hong Kong SAR	PC	1987	GAS	Day	0.2009602	3.429411	0.3014705	6.12E-06	2.64E-06	2.28E-06	1.40E-06	6.44E-06	2.66E-06	8.25E-05	1.46E-05	1.06E-05	2.08E-06	7.53E-04	6.06E-05	7.15E-08	3.93E-09
MY	1	2030	Hong Kong SAR	PC	1987	DSL	Day	4.26E-02	0.7265698	6.39E-02	3.72E-07	0	0	0	0	0	8.44E-07	0	8.81E-07	0	1.74E-04	0	2.33E-07	0
MY	1	2030	Hong Kong SAR	PC	1987	LPG	Day	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MY	1	2030	Hong Kong SAR	PC	1987	TOT	Day	0.2435365	4.155981	0.3653413	6.49E-06	2.64E-06	2.28E-06	1.40E-06	6.44E-06	2.66E-06	8.34E-05	1.46E-05	1.15E-05	2.08E-06	9.27E-04	6.06E-05	3.05E-07	3.93E-09
TG	1	2030	Hong Kong SAR	PC	1988	Ex001	Day	0.3078753	5.279747	0.4618591	9.40E-06	4.03E-06	0	0	0	0	1.27E-04	2.23E-05	1.63E-05	3.19E-06	1.16E-03	9.29E-05	1.10E-07	6.03E-09
TG	1	2030	Hong Kong SAR	PC	1988	Ex171	Day	6.47E-02	1.109948	9.71E-02	6.63E-07	0	0	0	0	0	1.51E-06	0	1.35E-06	0	2.66E-04	0	3.54E-07	0
TG	1	2030	Hong Kong SAR	PC	1988	Ex172	Day	1.40E-02	0.2399878	2.10E-02	5.73E-08	0	0	0	0	0	1.30E-07	0	2.91E-07	0	5.76E-05	0	7.65E-08	0
TG	1	2030	Hong Kong SAR	PC	1988	Ev001	Day	0.3078753	5.279747	0.4618591	0	0	3.50E-06	2.15E-06	9.88E-06	4.08E-06	0	0	0	0	0	0	0	0
MY	1	2030	Hong Kong SAR	PC	1988	GAS	Day	0.3078753	5.279747	0.4618591	9.40E-06	4.03E-06	3.50E-06	2.15E-06	9.88E-06	4.08E-06	1.27E-04	2.23E-05	1.63E-05	3.19E-06	1.16E-03	9.29E-05	1.10E-07	6.03E-09
MY	1	2030	Hong Kong SAR	PC	1988	DSL	Day	7.87E-02	1.349935	0.118089	7.20E-07	0	0	0	0	0	1.64E-06	0	1.64E-06	0	3.24E-04	0	4.30E-07	0
MY	1	2030	Hong Kong SAR	PC	1988	LPG	Day	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

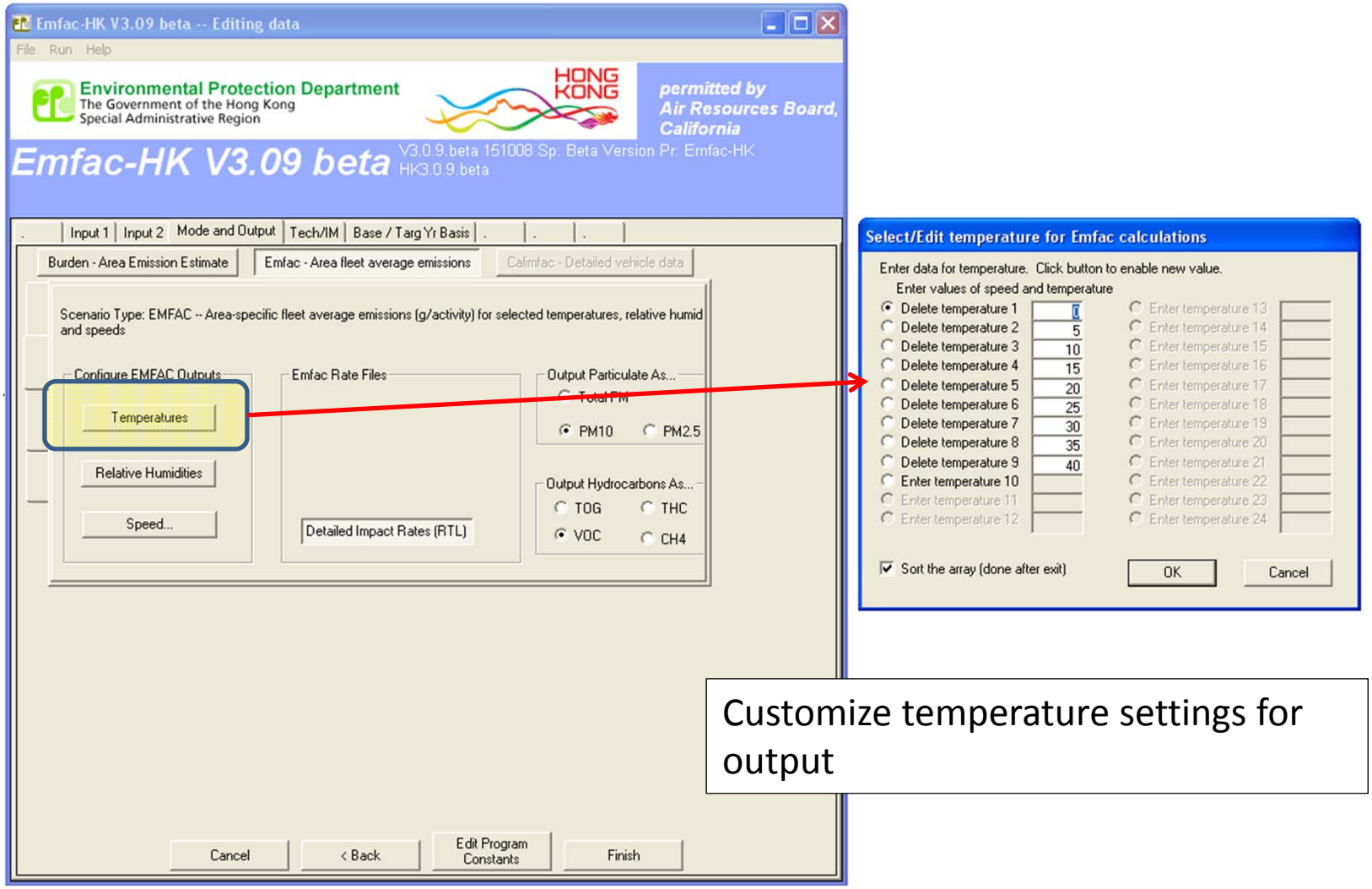
EMFAC Mode Options



EMFAC Mode Options

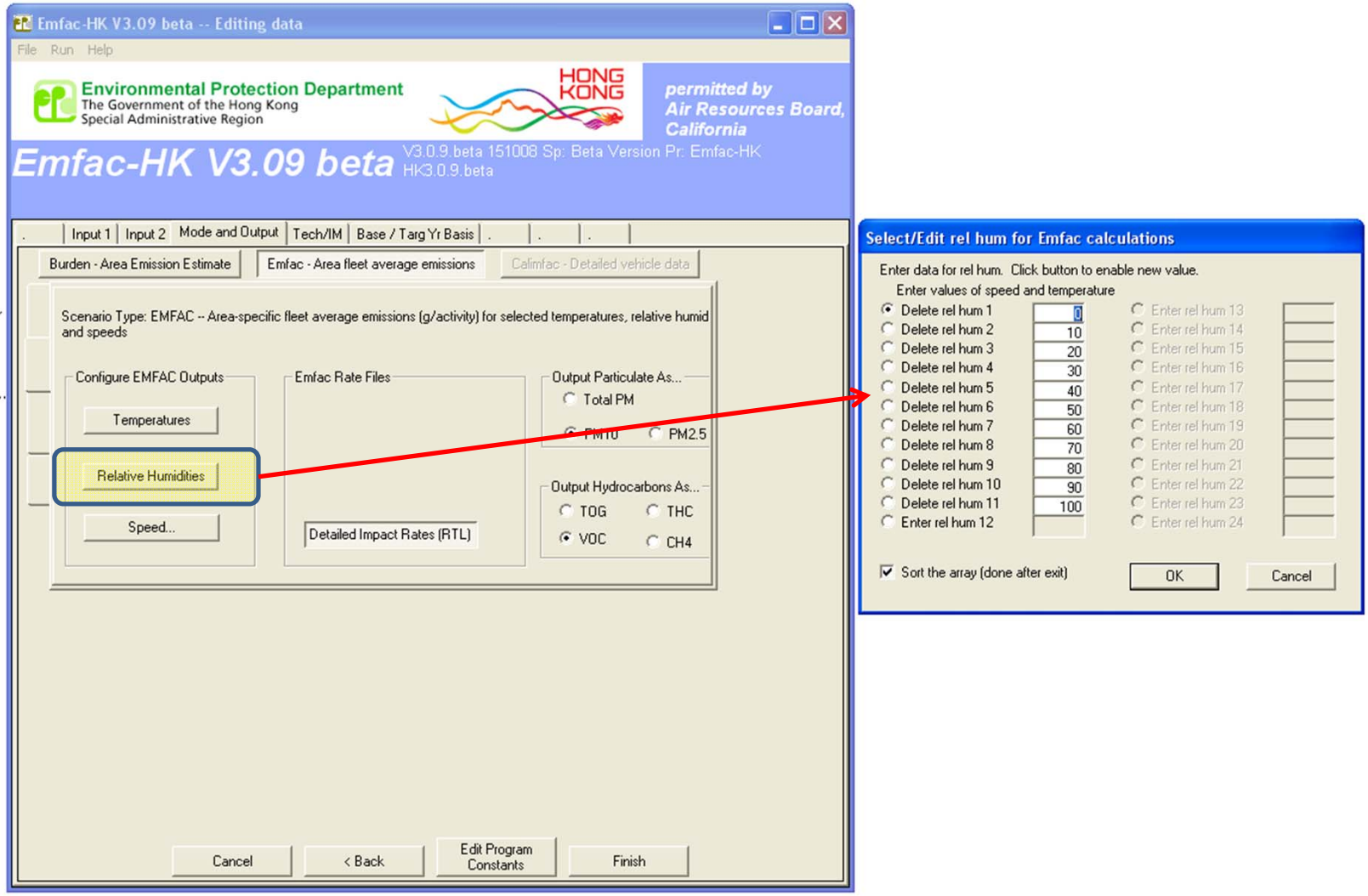


EMFAC Mode Options – Select/Edit Temperatures (ºC)

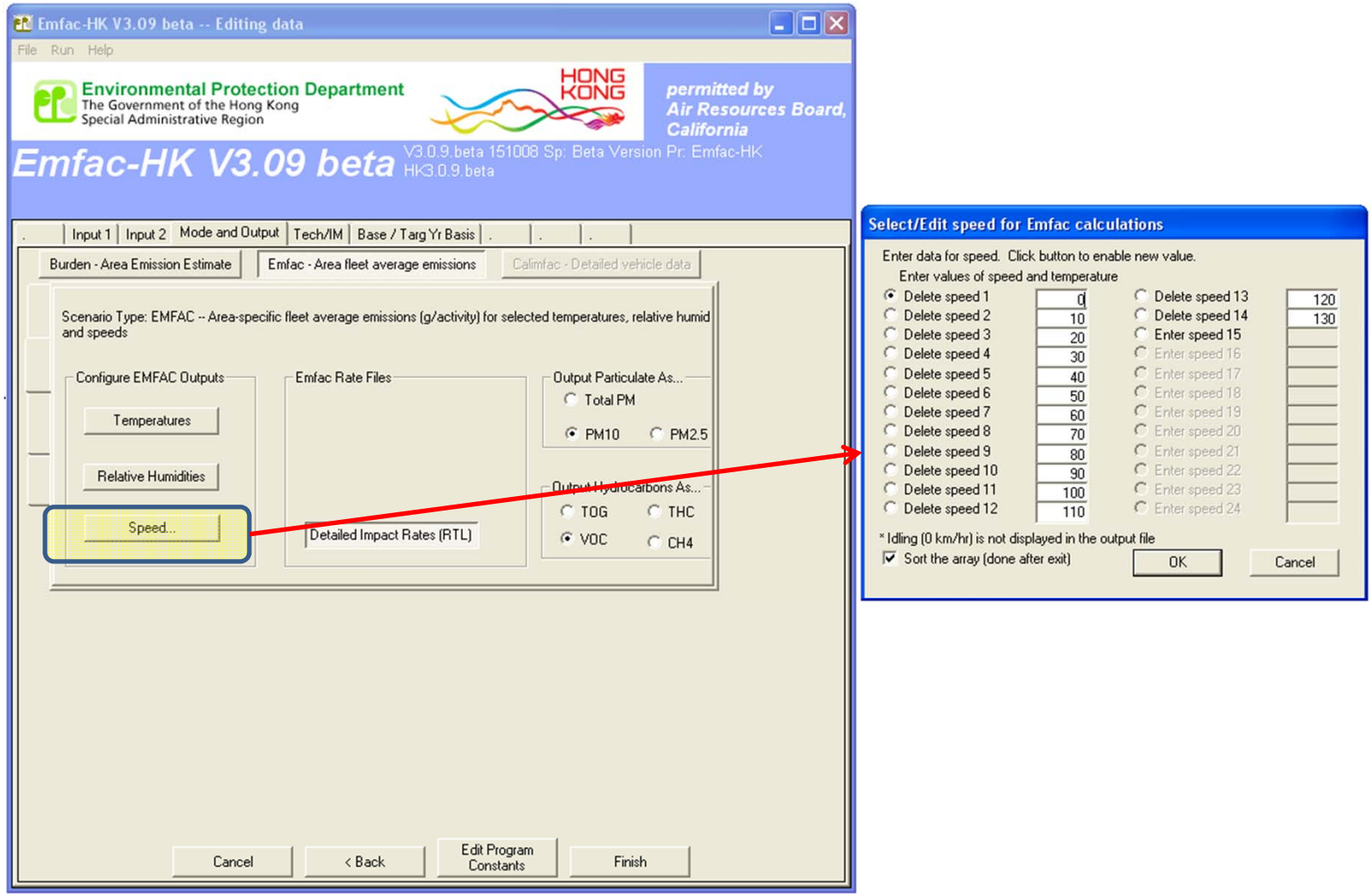


Customize temperature settings for output

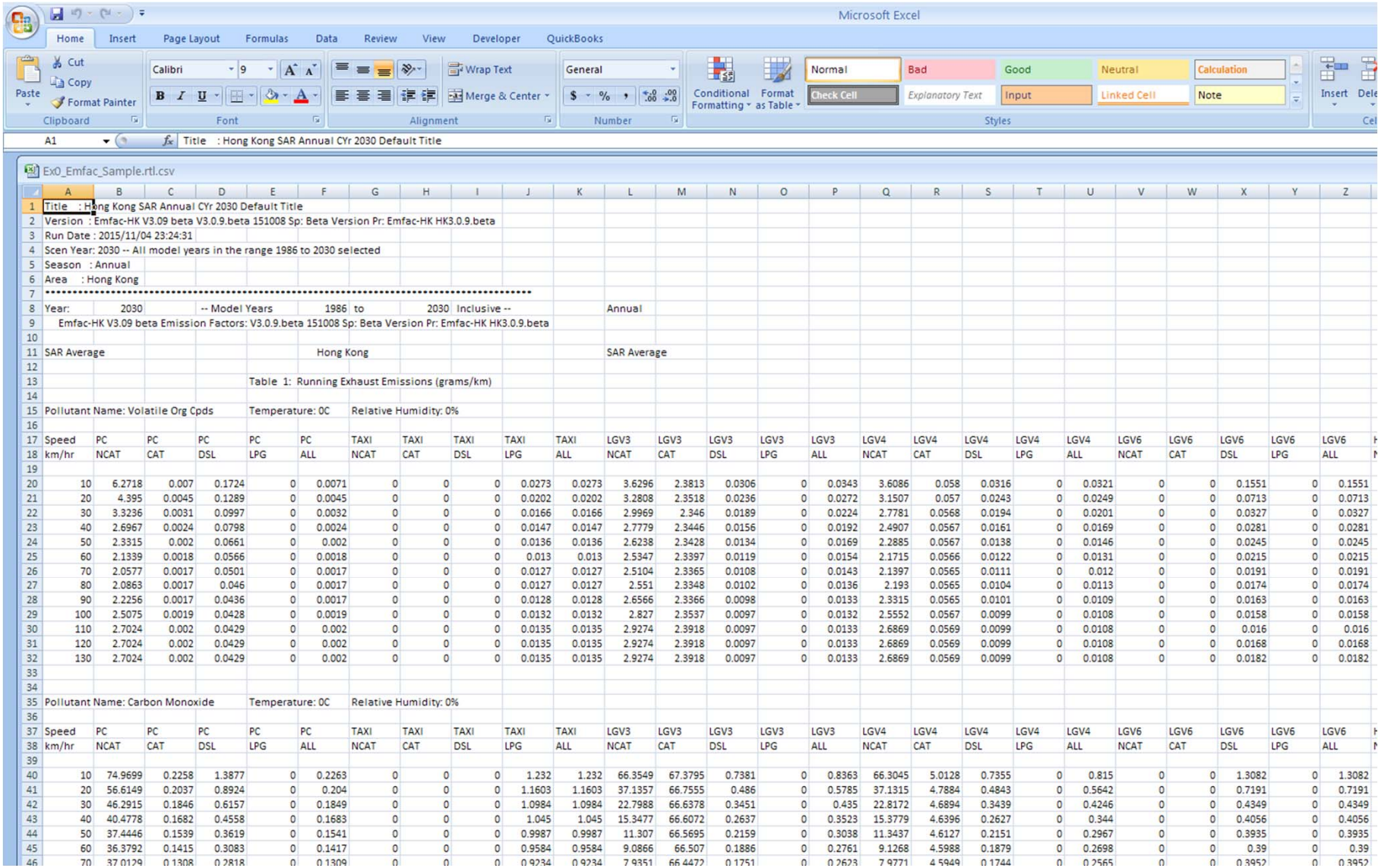
EMFAC Mode Options – Select/Edit Relative Humidity (%)



EMFAC Mode Options – Select/Edit Speed Profiles (kph)

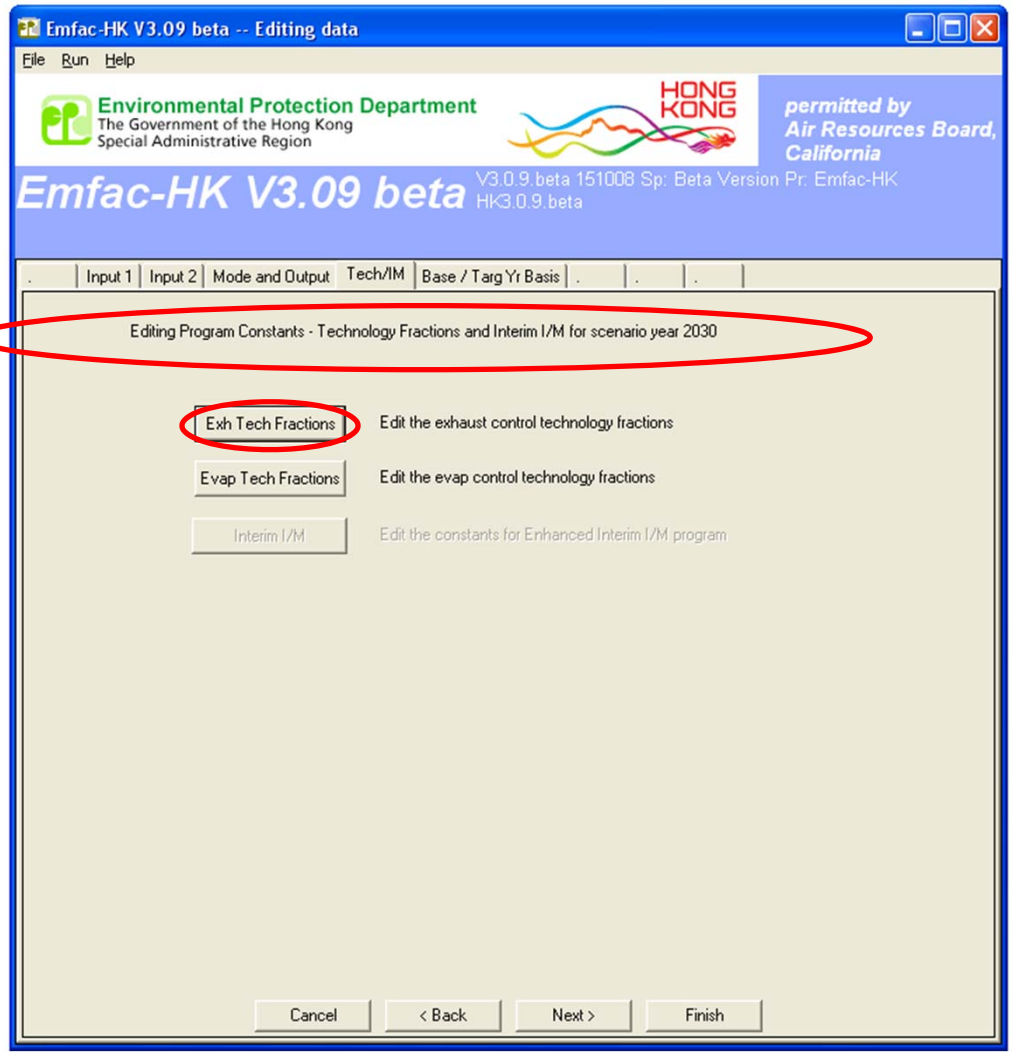


EMFAC Impact Rate Detail Format (*.rtl.csv)

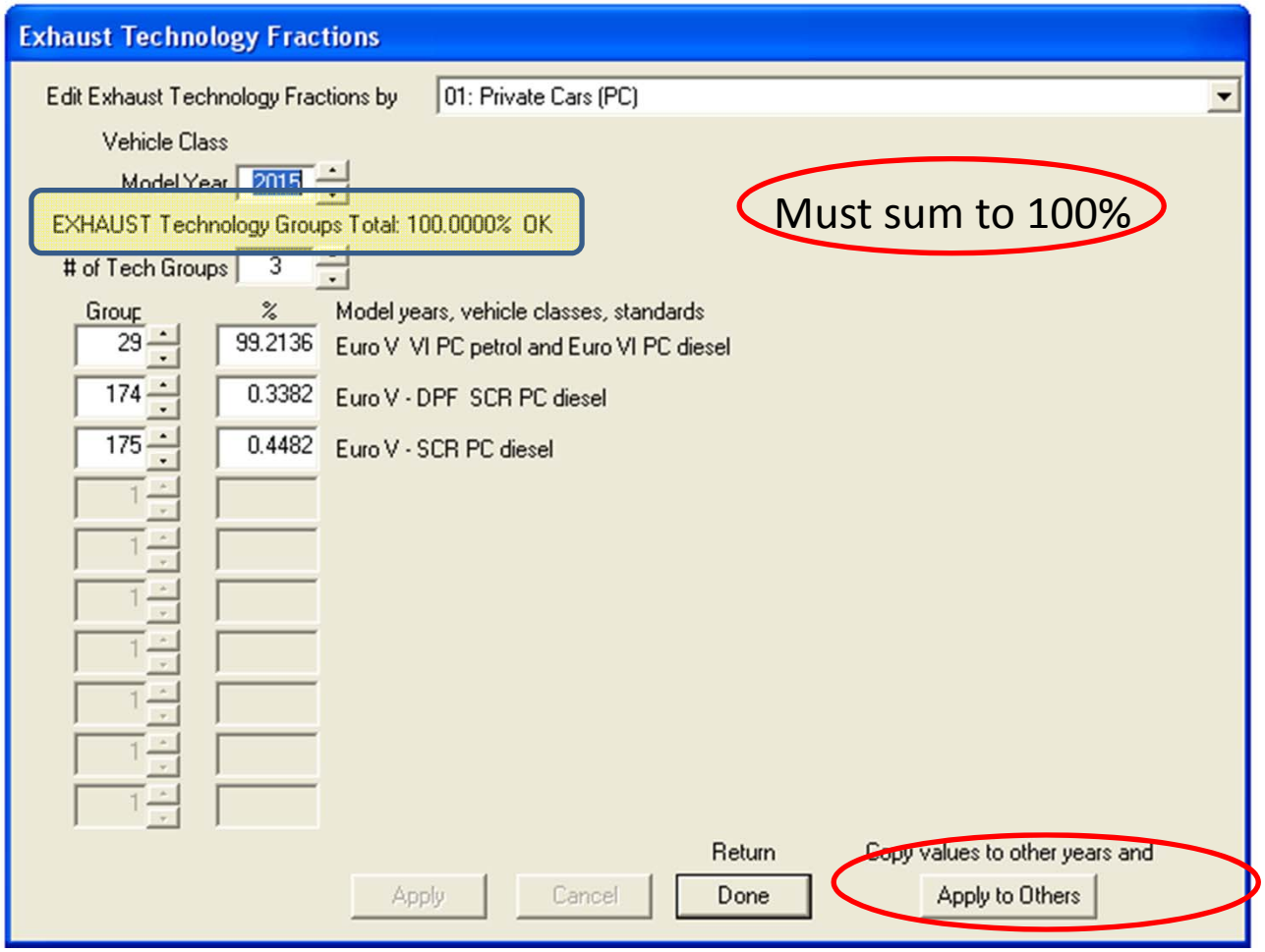


	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	Title : Hong Kong SAR Annual CYr 2030 Default Title																									
2	Version : Emfac-HK V3.09 beta V3.0.9.beta 151008 Sp: Beta Version Pr: Emfac-HK HK3.0.9.beta																									
3	Run Date : 2015/11/04 23:24:31																									
4	Scen Year: 2030 -- All model years in the range 1986 to 2030 selected																									
5	Season : Annual																									
6	Area : Hong Kong																									
7	**********																									
8	Year: 2030			-- Model Years	1986	to	2030	Inclusive --				Annual														
9	Emfac-HK V3.09 beta Emission Factors: V3.0.9.beta 151008 Sp: Beta Version Pr: Emfac-HK HK3.0.9.beta																									
10																										
11	SAR Average					Hong Kong						SAR Average														
12																										
13					Table 1: Running Exhaust Emissions (grams/km)																					
14																										
15	Pollutant Name: Volatile Org Cpds				Temperature: 0C		Relative Humidity: 0%																			
16																										
17	Speed	PC	PC	PC	PC	PC	TAXI	TAXI	TAXI	TAXI	TAXI	LGV3	LGV3	LGV3	LGV3	LGV3	LGV4	LGV4	LGV4	LGV4	LGV4	LGV6	LGV6	LGV6	LGV6	LGV6
18	km/hr	NCAT	CAT	DSL	LPG	ALL	NCAT	CAT	DSL	LPG	ALL	NCAT	CAT	DSL	LPG	ALL	NCAT	CAT	DSL	LPG	ALL	NCAT	CAT	DSL	LPG	ALL
19																										
20	10	6.2718	0.007	0.1724	0	0.0071	0	0	0	0.0273	0.0273	3.6296	2.3813	0.0306	0	0.0343	3.6086	0.058	0.0316	0	0.0321	0	0	0.1551	0	0.1551
21	20	4.395	0.0045	0.1289	0	0.0045	0	0	0	0.0202	0.0202	3.2808	2.3518	0.0236	0	0.0272	3.1507	0.057	0.0243	0	0.0249	0	0	0.0713	0	0.0713
22	30	3.3236	0.0031	0.0997	0	0.0032	0	0	0	0.0166	0.0166	2.9969	2.346	0.0189	0	0.0224	2.7781	0.0568	0.0194	0	0.0201	0	0	0.0327	0	0.0327
23	40	2.6967	0.0024	0.0798	0	0.0024	0	0	0	0.0147	0.0147	2.7779	2.3446	0.0156	0	0.0192	2.4907	0.0567	0.0161	0	0.0169	0	0	0.0281	0	0.0281
24	50	2.3315	0.002	0.0661	0	0.002	0	0	0	0.0136	0.0136	2.6238	2.3428	0.0134	0	0.0169	2.2885	0.0567	0.0138	0	0.0146	0	0	0.0245	0	0.0245
25	60	2.1339	0.0018	0.0566	0	0.0018	0	0	0	0.013	0.013	2.5347	2.3397	0.0119	0	0.0154	2.1715	0.0566	0.0122	0	0.0131	0	0	0.0215	0	0.0215
26	70	2.0577	0.0017	0.0501	0	0.0017	0	0	0	0.0127	0.0127	2.5104	2.3365	0.0108	0	0.0143	2.1397	0.0565	0.0111	0	0.012	0	0	0.0191	0	0.0191
27	80	2.0863	0.0017	0.046	0	0.0017	0	0	0	0.0127	0.0127	2.551	2.3348	0.0102	0	0.0136	2.193	0.0565	0.0104	0	0.0113	0	0	0.0174	0	0.0174
28	90	2.2256	0.0017	0.0436	0	0.0017	0	0	0	0.0128	0.0128	2.6566	2.3366	0.0098	0	0.0133	2.3315	0.0565	0.0101	0	0.0109	0	0	0.0163	0	0.0163
29	100	2.5075	0.0019	0.0428	0	0.0019	0	0	0	0.0132	0.0132	2.827	2.3537	0.0097	0	0.0132	2.5552	0.0567	0.0099	0	0.0108	0	0	0.0158	0	0.0158
30	110	2.7024	0.002	0.0429	0	0.002	0	0	0	0.0135	0.0135	2.9274	2.3918	0.0097	0	0.0133	2.6869	0.0569	0.0099	0	0.0108	0	0	0.016	0	0.016
31	120	2.7024	0.002	0.0429	0	0.002	0	0	0	0.0135	0.0135	2.9274	2.3918	0.0097	0	0.0133	2.6869	0.0569	0.0099	0	0.0108	0	0	0.0168	0	0.0168
32	130	2.7024	0.002	0.0429	0	0.002	0	0	0	0.0135	0.0135	2.9274	2.3918	0.0097	0	0.0133	2.6869	0.0569	0.0099	0	0.0108	0	0	0.0182	0	0.0182
33																										
34																										
35	Pollutant Name: Carbon Monoxide				Temperature: 0C		Relative Humidity: 0%																			
36																										
37	Speed	PC	PC	PC	PC	PC	TAXI	TAXI	TAXI	TAXI	TAXI	LGV3	LGV3	LGV3	LGV3	LGV3	LGV4	LGV4	LGV4	LGV4	LGV4	LGV6	LGV6	LGV6	LGV6	LGV6
38	km/hr	NCAT	CAT	DSL	LPG	ALL	NCAT	CAT	DSL	LPG	ALL	NCAT	CAT	DSL	LPG	ALL	NCAT	CAT	DSL	LPG	ALL	NCAT	CAT	DSL	LPG	ALL
39																										
40	10	74.9699	0.2258	1.3877	0	0.2263	0	0	0	1.232	1.232	66.3549	67.3795	0.7381	0	0.8363	66.3045	5.0128	0.7355	0	0.815	0	0	1.3082	0	1.3082
41	20	56.6149	0.2037	0.8924	0	0.204	0	0	0	1.1603	1.1603	37.1357	66.7555	0.486	0	0.5785	37.1315	4.7884	0.4843	0	0.5642	0	0	0.7191	0	0.7191
42	30	46.2915	0.1846	0.6157	0	0.1849	0	0	0	1.0984	1.0984	22.7988	66.6378	0.3451	0	0.435	22.8172	4.6894	0.3439	0	0.4246	0	0	0.4349	0	0.4349
43	40	40.4778	0.1682	0.4558	0	0.1683	0	0	0	1.045	1.045	15.3477	66.6072	0.2637	0	0.3523	15.3779	4.6396	0.2627	0	0.344	0	0	0.4056	0	0.4056
44	50	37.4446	0.1539	0.3619	0	0.1541	0	0	0	0.9987	0.9987	11.307	66.5695	0.2159	0	0.3038	11.3437	4.6127	0.2151	0	0.2967	0	0	0.3935	0	0.3935
45	60	36.3792	0.1415	0.3083	0	0.1417	0	0	0	0.9584	0.9584	9.0866	66.507	0.1886	0	0.2761	9.1268	4.5988	0.1879	0	0.2698	0	0	0.39	0	0.39
46	70	37.0129	0.1308	0.2818	0	0.1309	0	0	0	0.9234	0.9234	7.9351	66.4472	0.1751	0	0.2623	7.9771	4.5949	0.1744	0	0.2565	0	0	0.3952	0	0.3952

Editing Fundamental Data

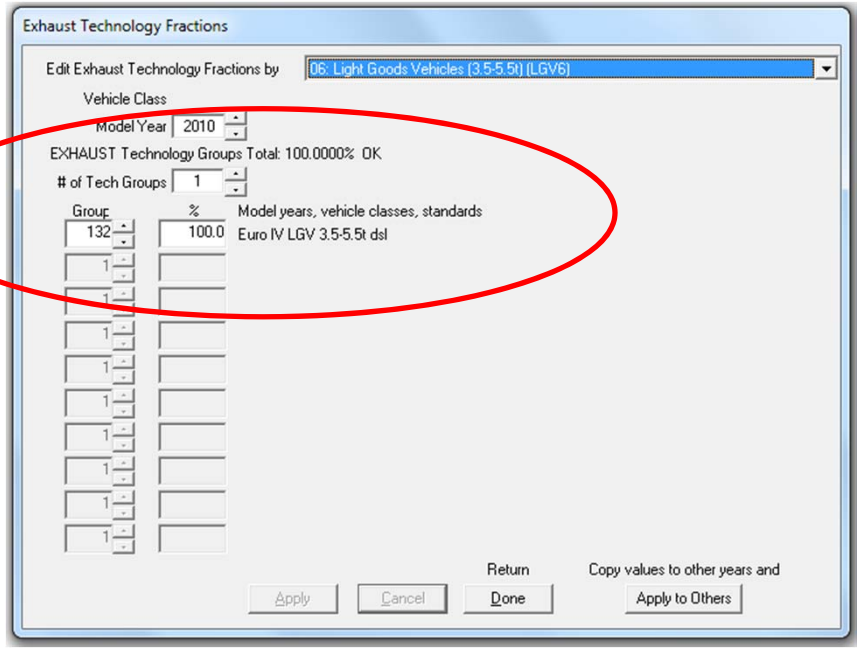


Editing Exhaust Technology Fractions

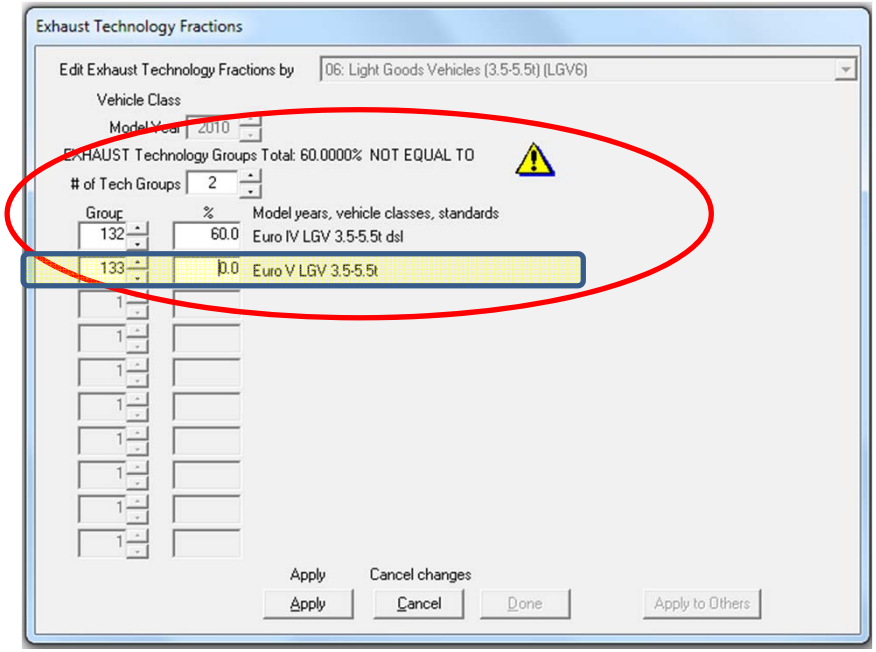


Editing Exhaust Technology Fractions (cont.)

Before Edit

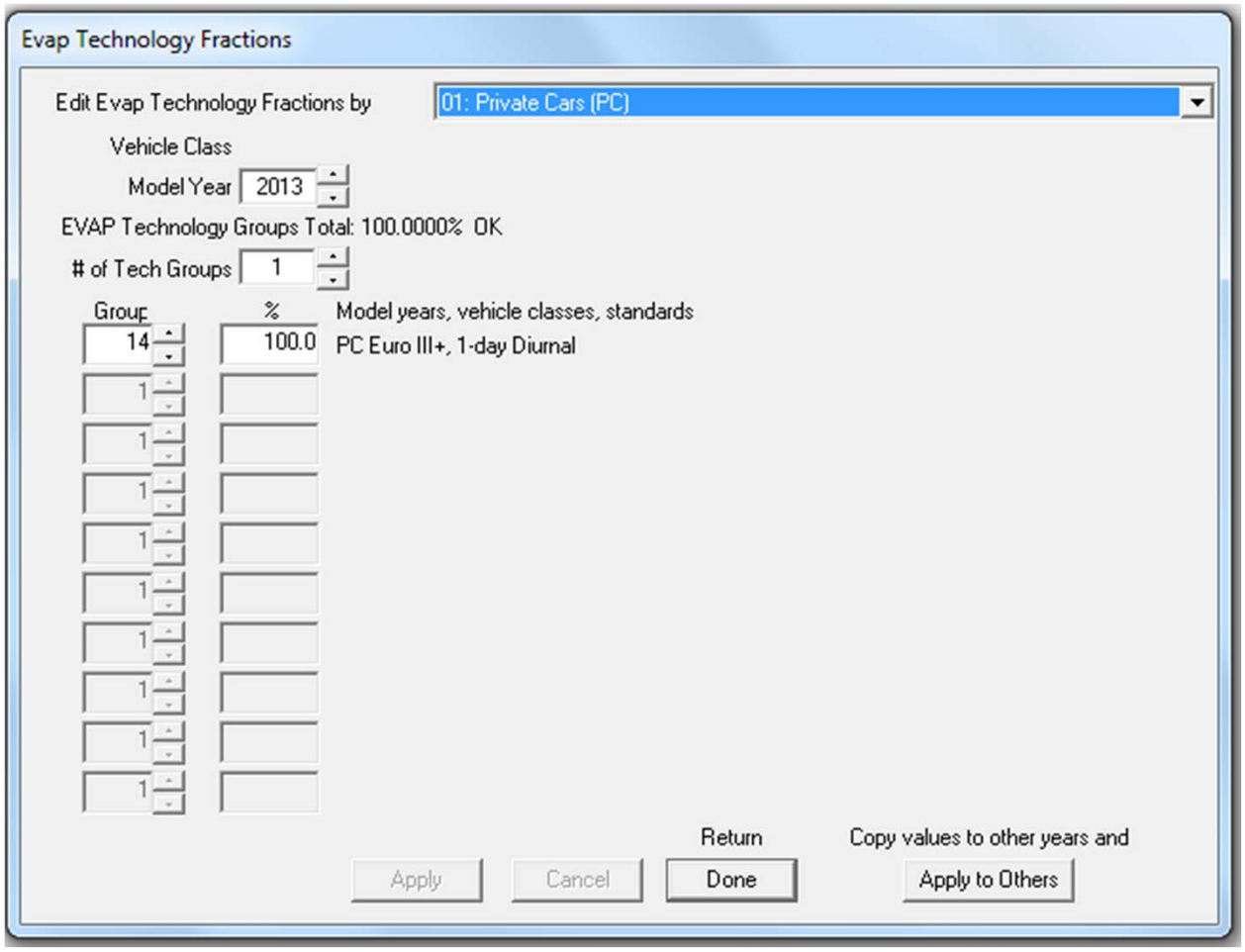


"During" Edit



Introducing another Exhaust TG. Note warning is displayed that total percentage is not 100%, yet. New percentage entered will be 40%.

Editing Evap Technology Fractions



Same functionality as just shown for Exhaust

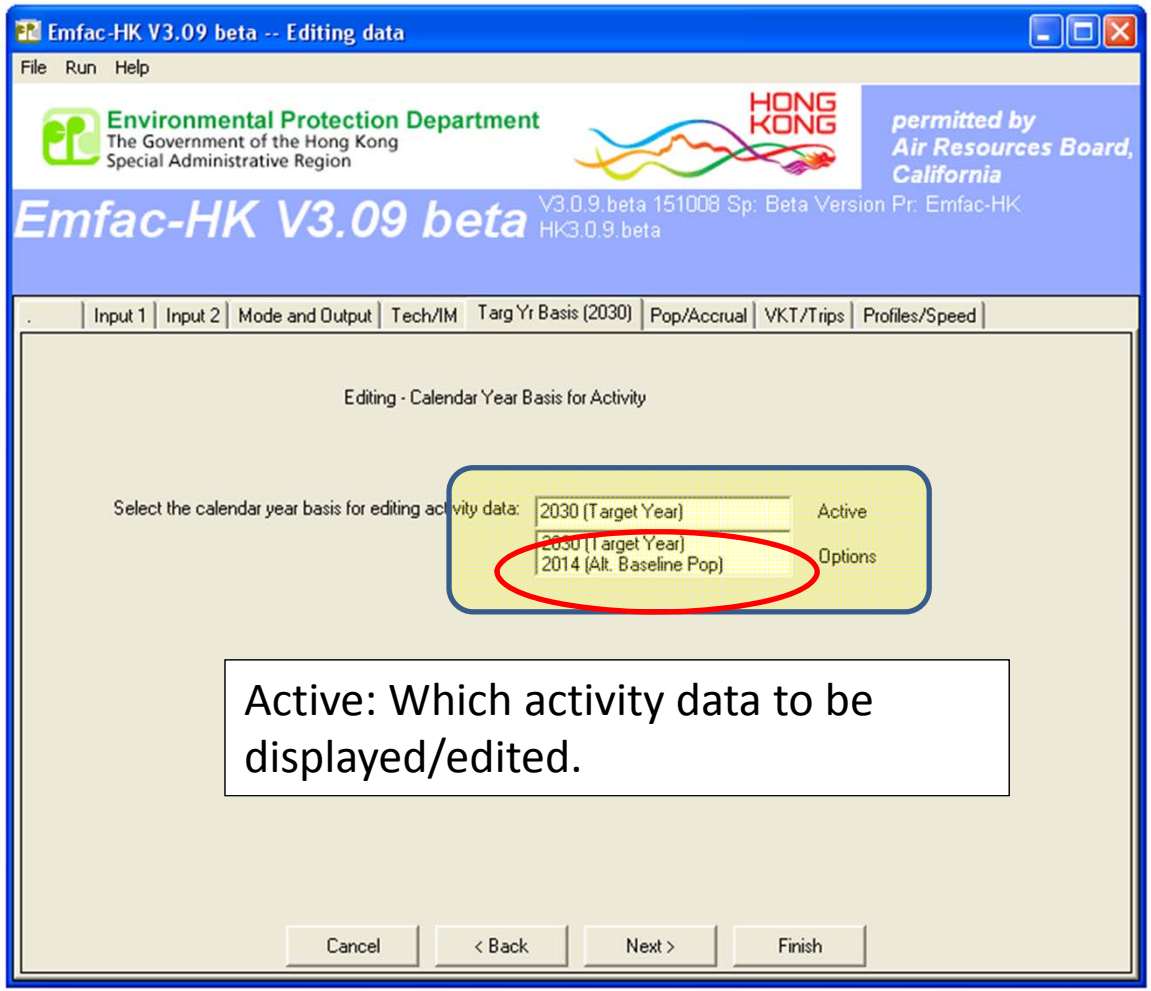
Changing Activity Data

- edit fundamental activity data such as target population or alternate baseline population, accrual rates, trips and vehicle kilometers traveled.
- dialogs are sequenced noting the inter-dependencies among the data
- Features to copy/paste data to spreadsheets for editing.

Alternate Baseline Data (New)

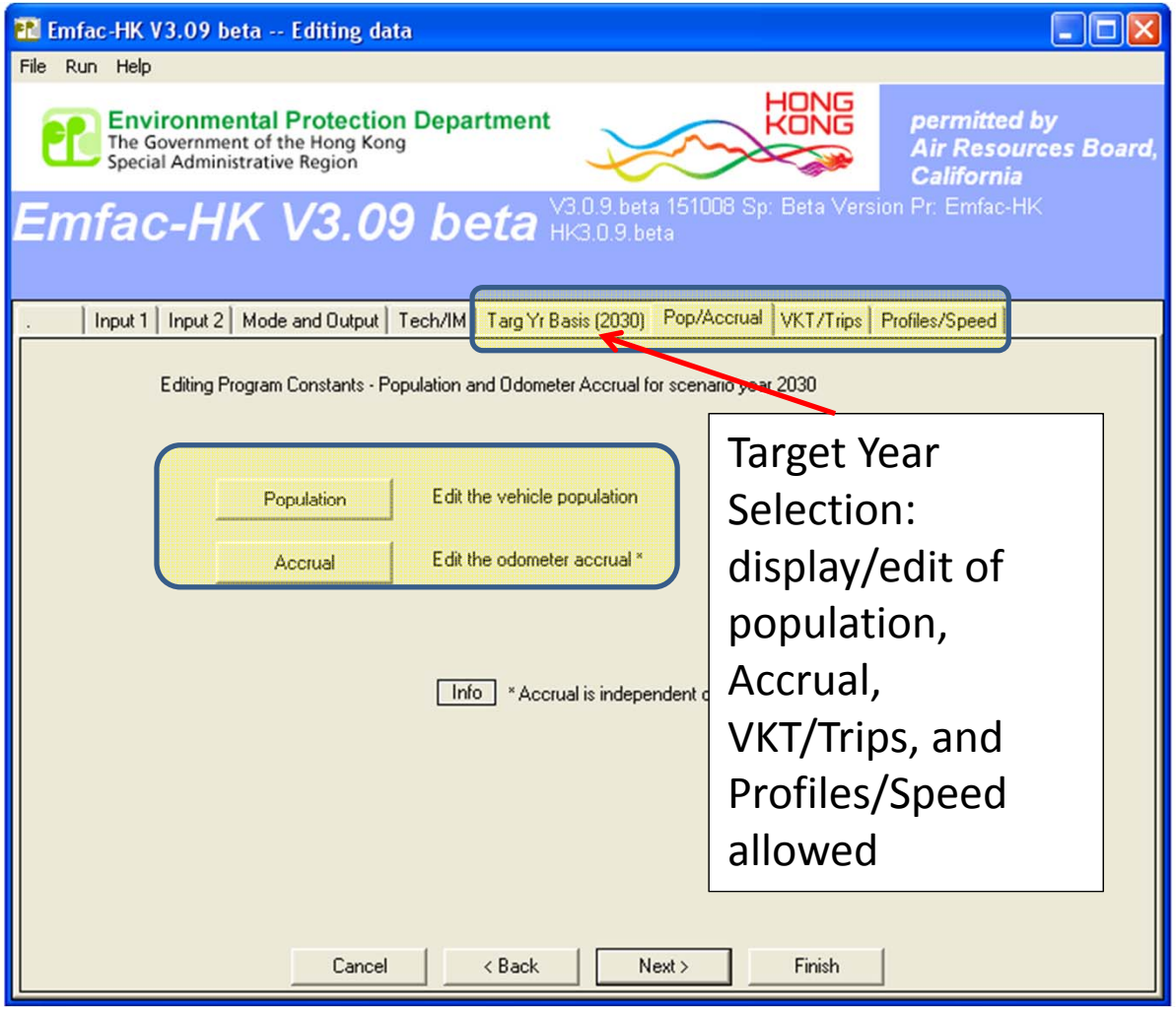
- Alternate Baseline year means specifying other baseline year vehicle population other than the program default (2002-2013).
- Forecasting only (no backcasting) (i.e., baseline year must be 2013+)
- Initial data presented is the forecast for the selected baseline year
- User can revise, if desired.

Population Edits: Target or Alt Baseline Year Selection

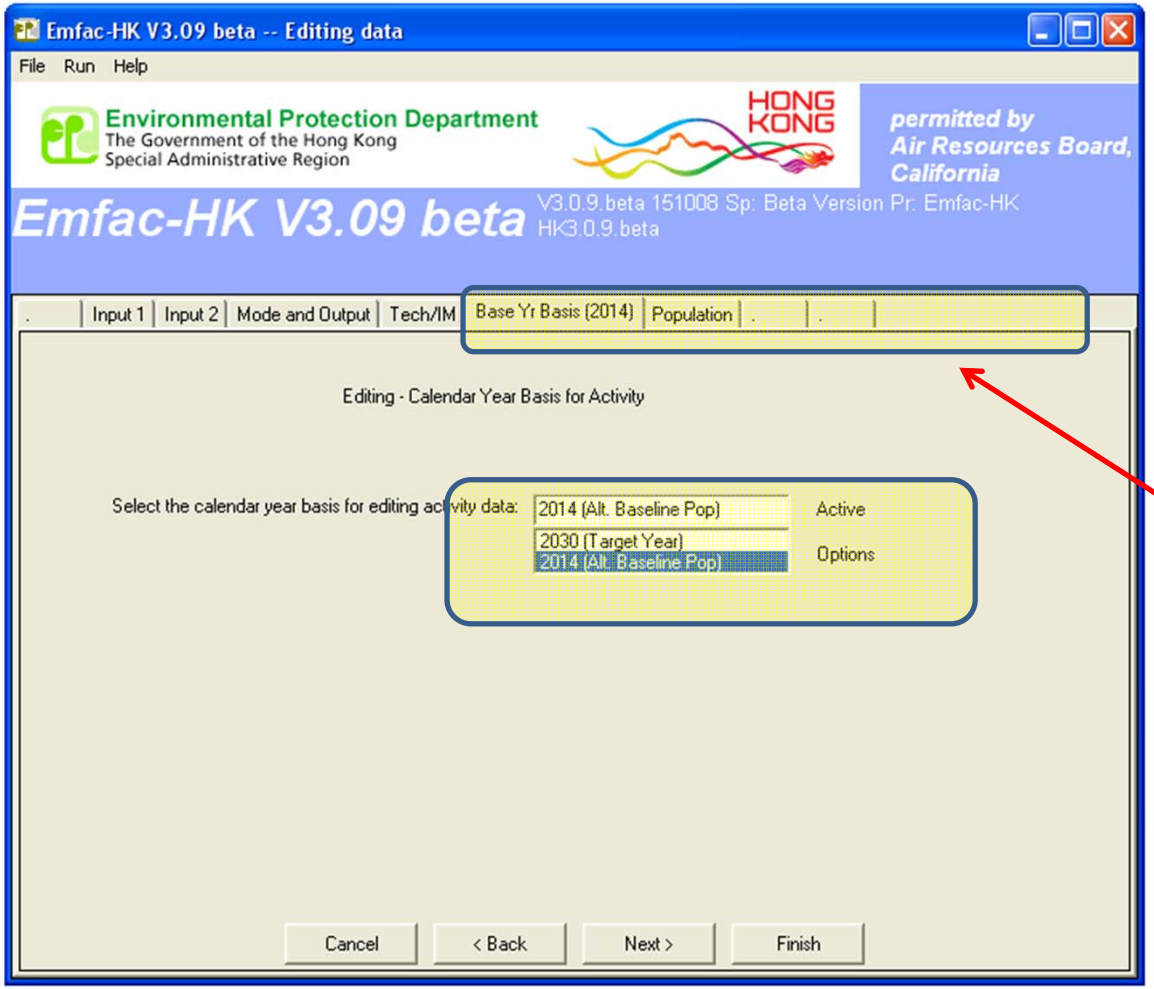


Active: Which activity data to be displayed/edited.

Target Year Display/Edits

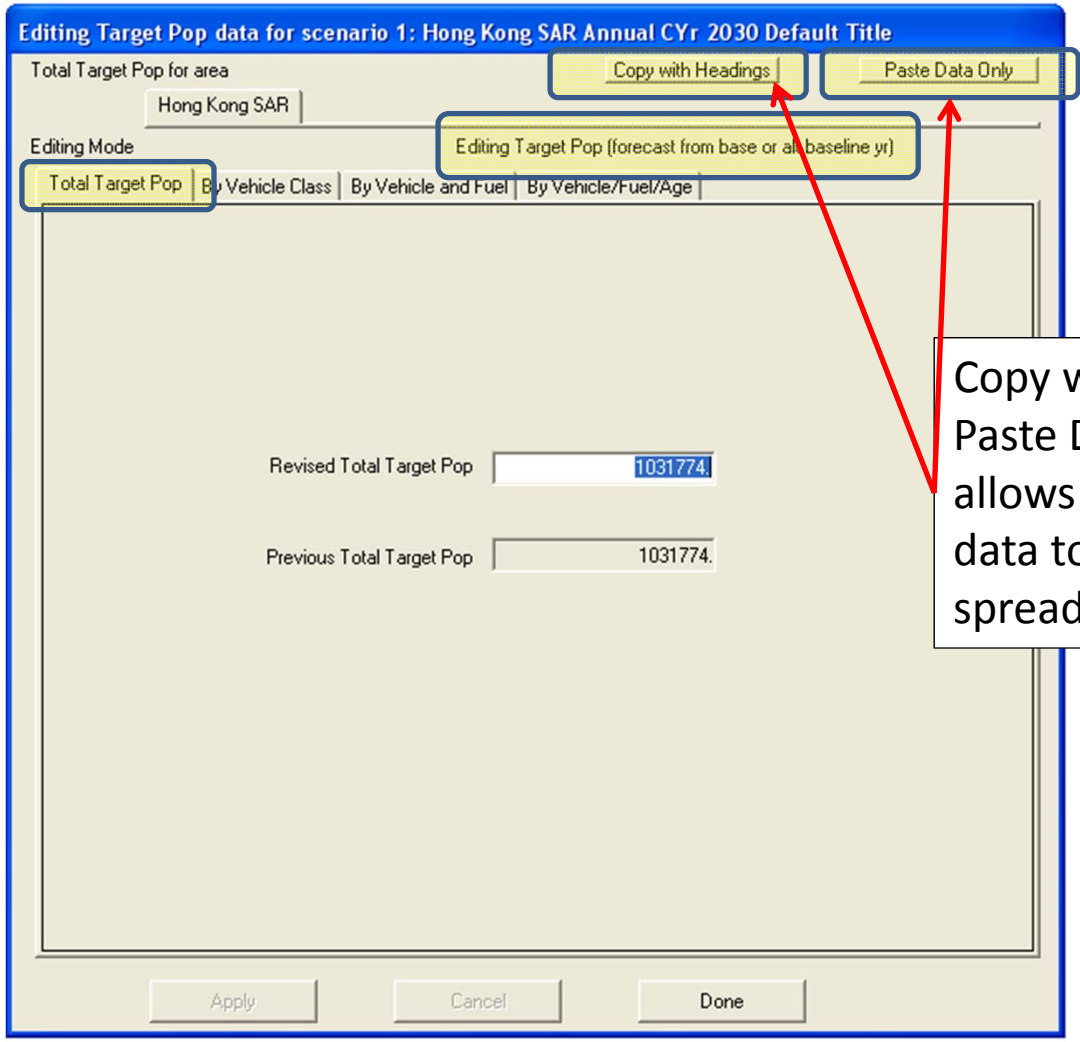


Alt Baseline Year Display/Edits



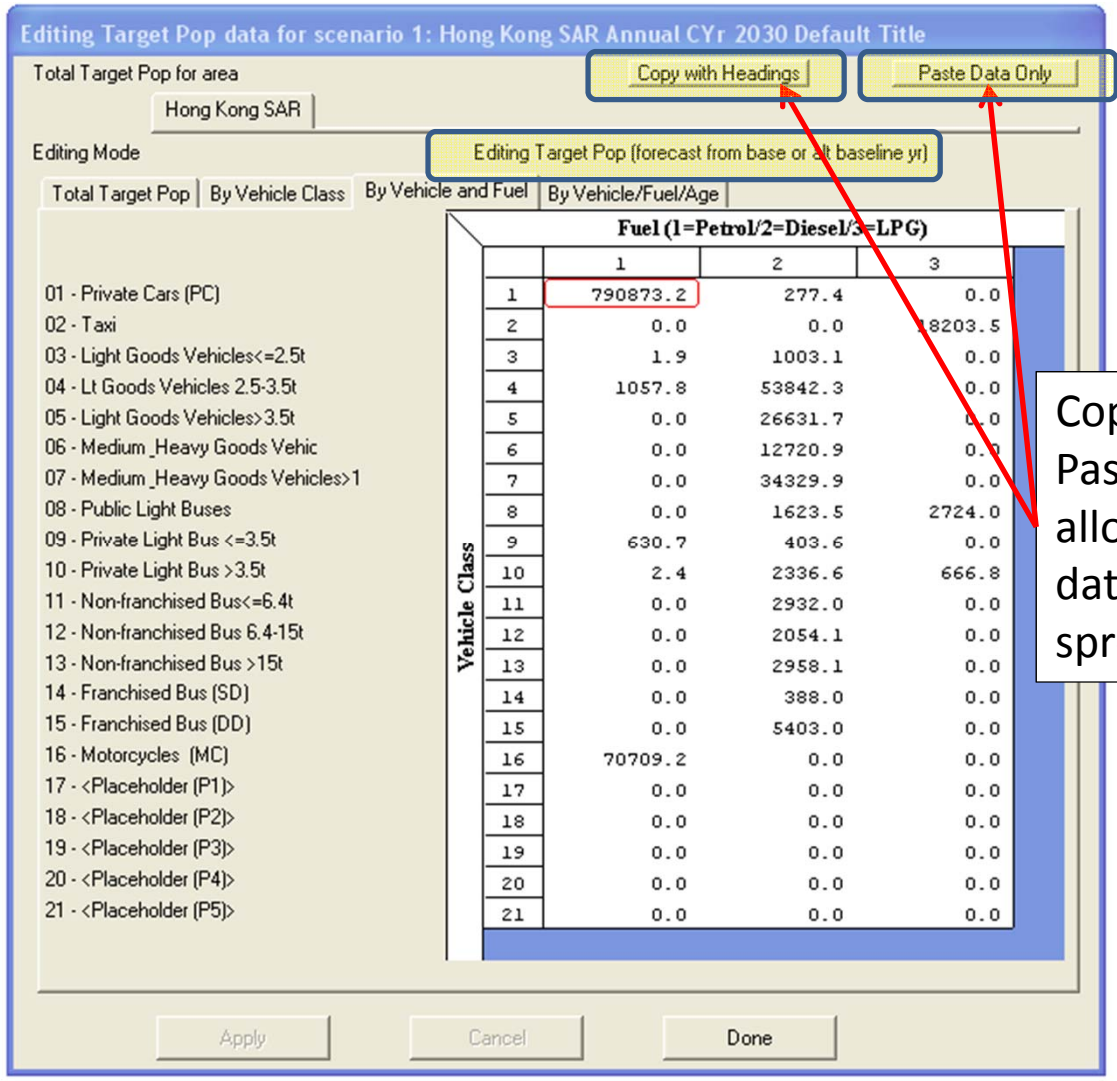
Alt BaselineYear Selection: Only population tab allowed

Editing Total Target Population



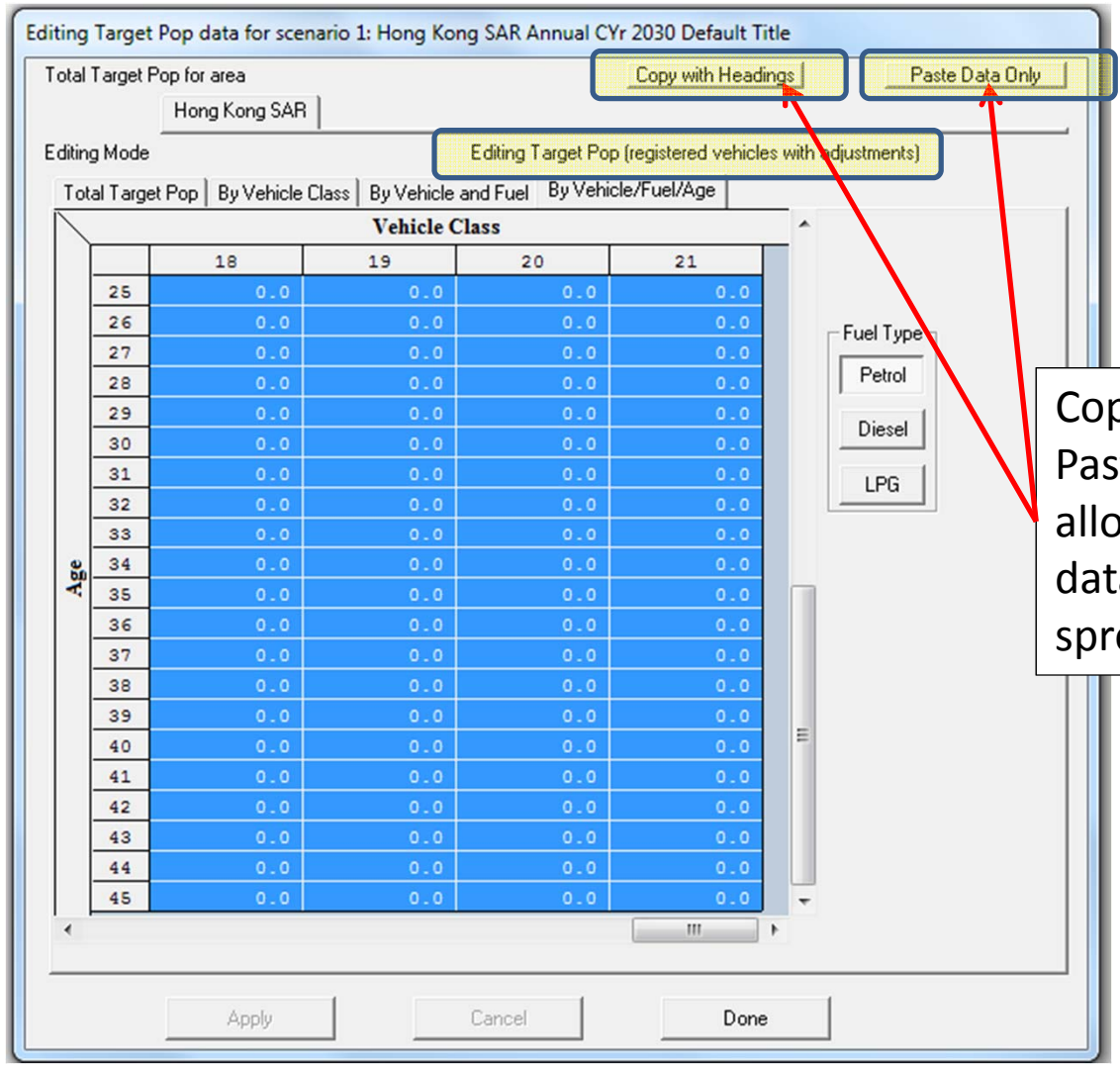
Copy with Headings and Paste Data only: allows copying/pasting data to/from a spreadsheet for editing.

Editing Target Yr Population by Vehicle Class and Fuel Type



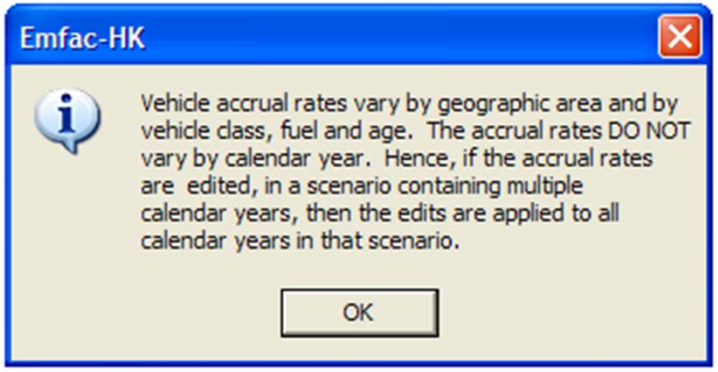
Copy with Headings and Paste Data only: allows copying/pasting data to/from a spreadsheet for editing.

Editing Target Yr Population by Vehicle Class and Fuel Type

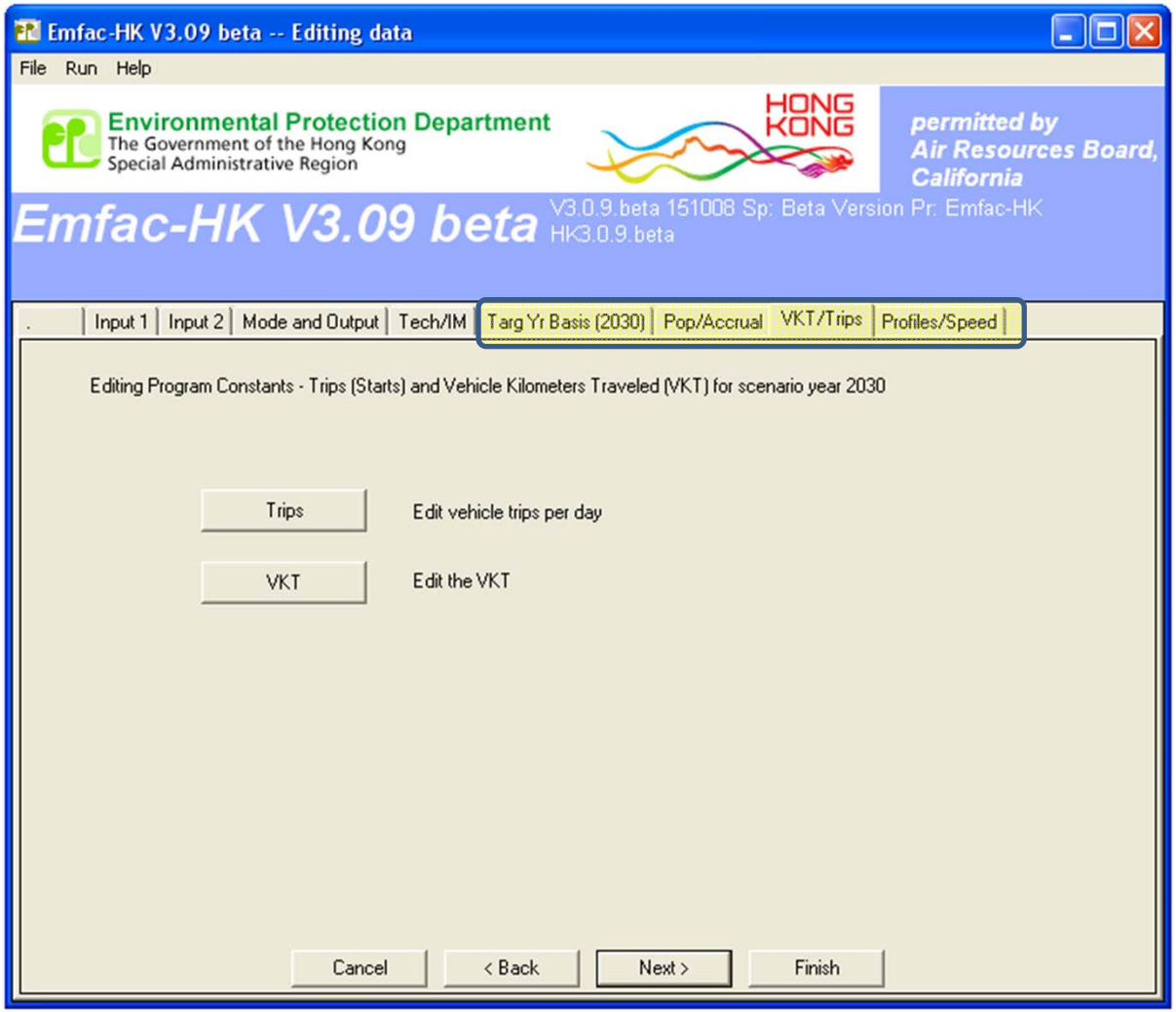


Copy with Headings and Paste Data only: allows copying/pasting data to/from a spreadsheet for editing.

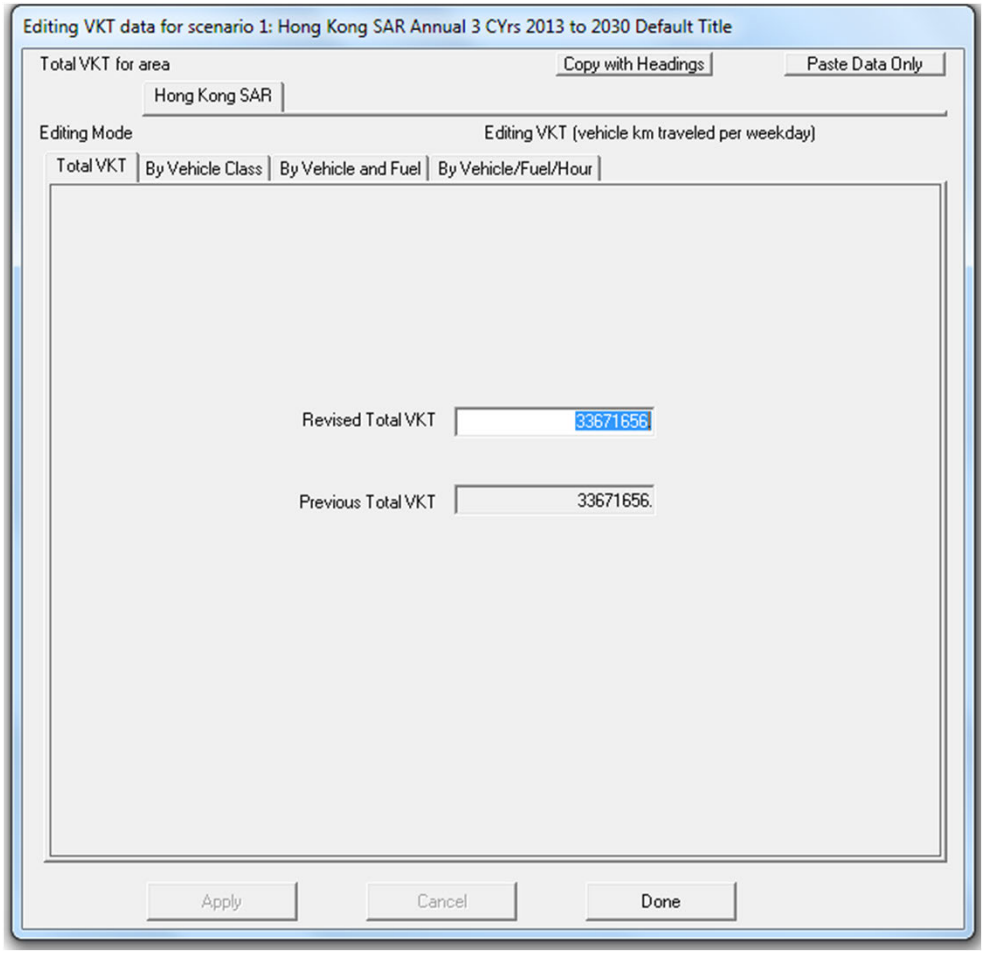
Info on Accrual Rates



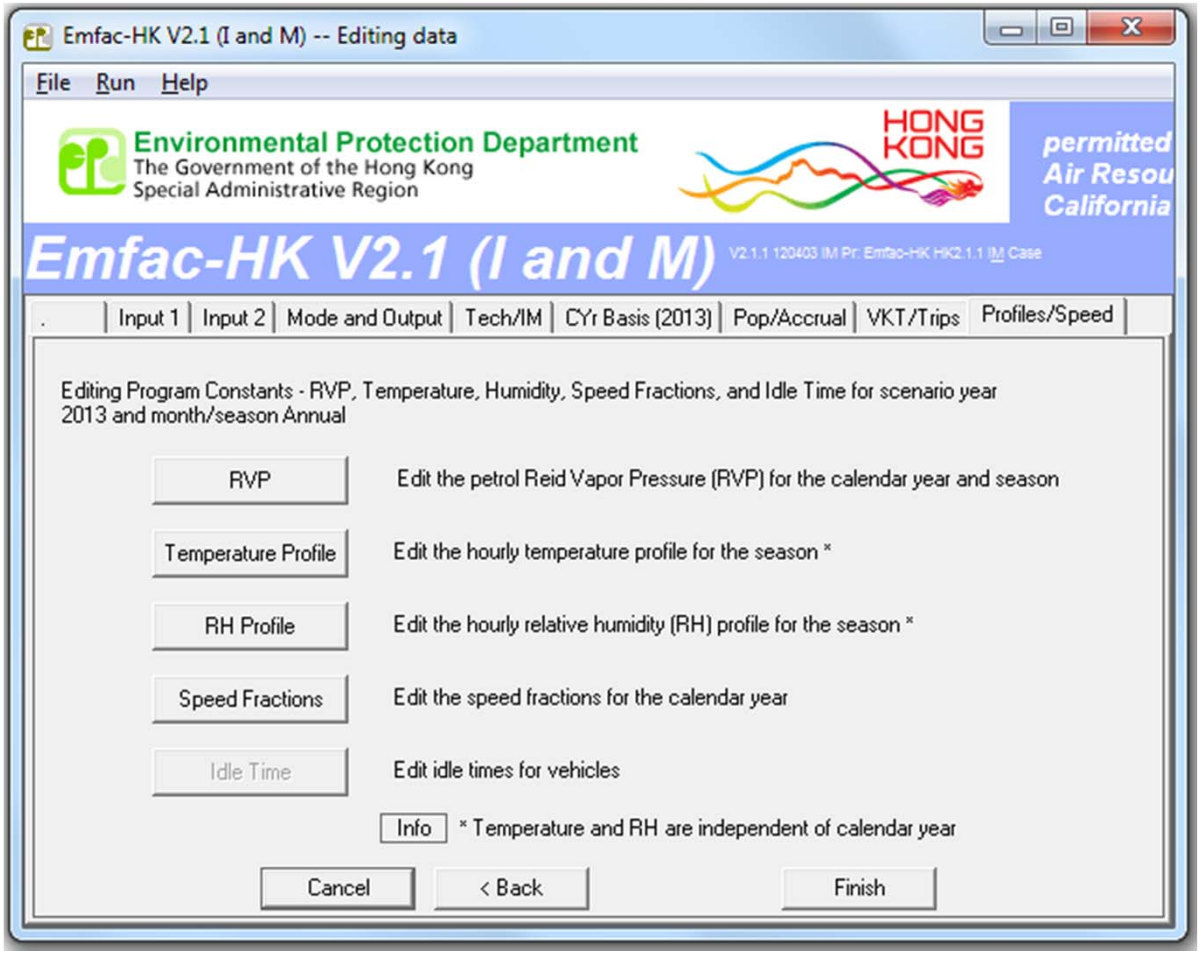
Target Yr: Editing Trip and VKT Profiles



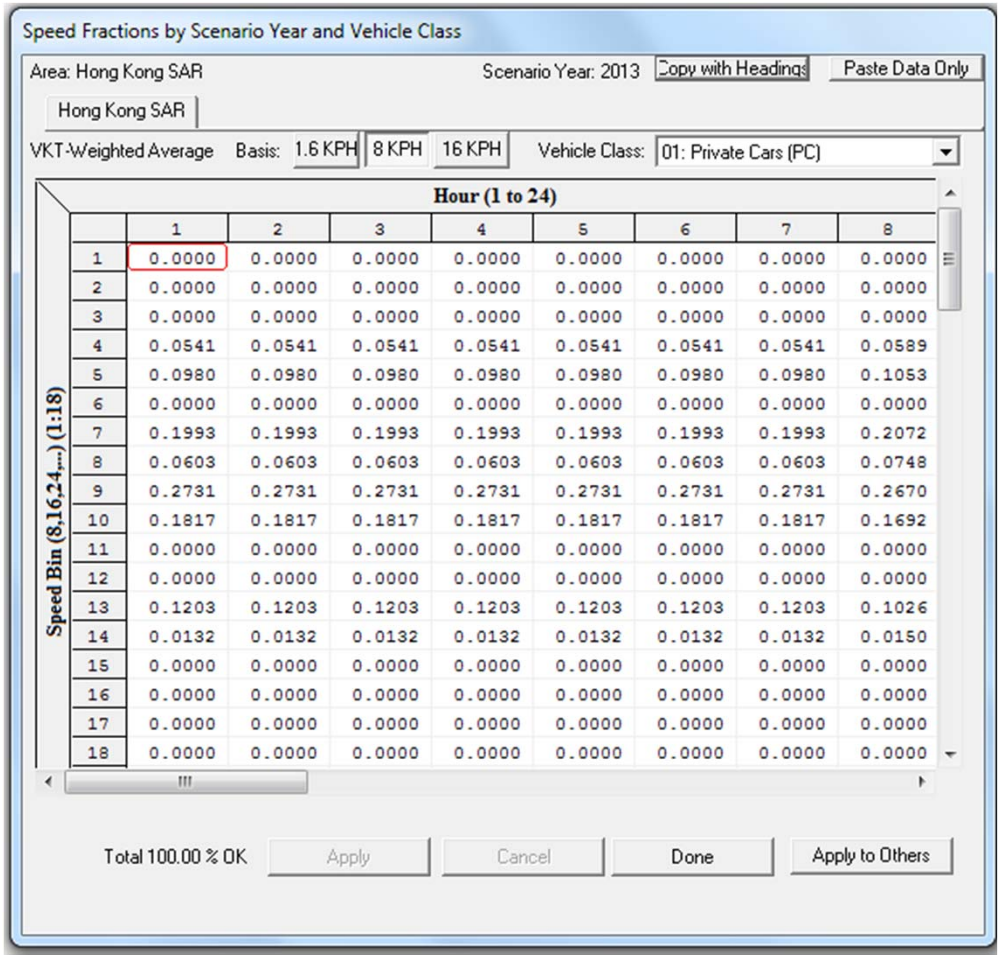
Editing Total VKT



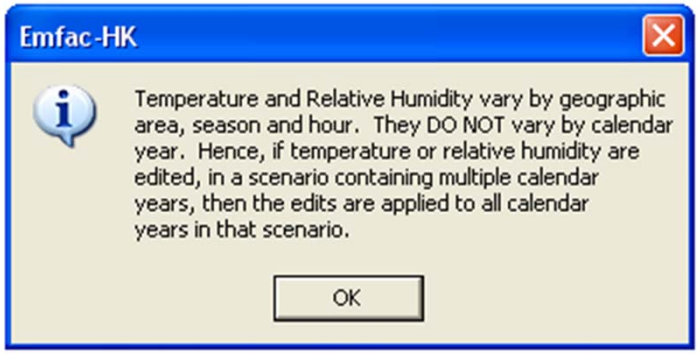
Editing Profiles/Speed



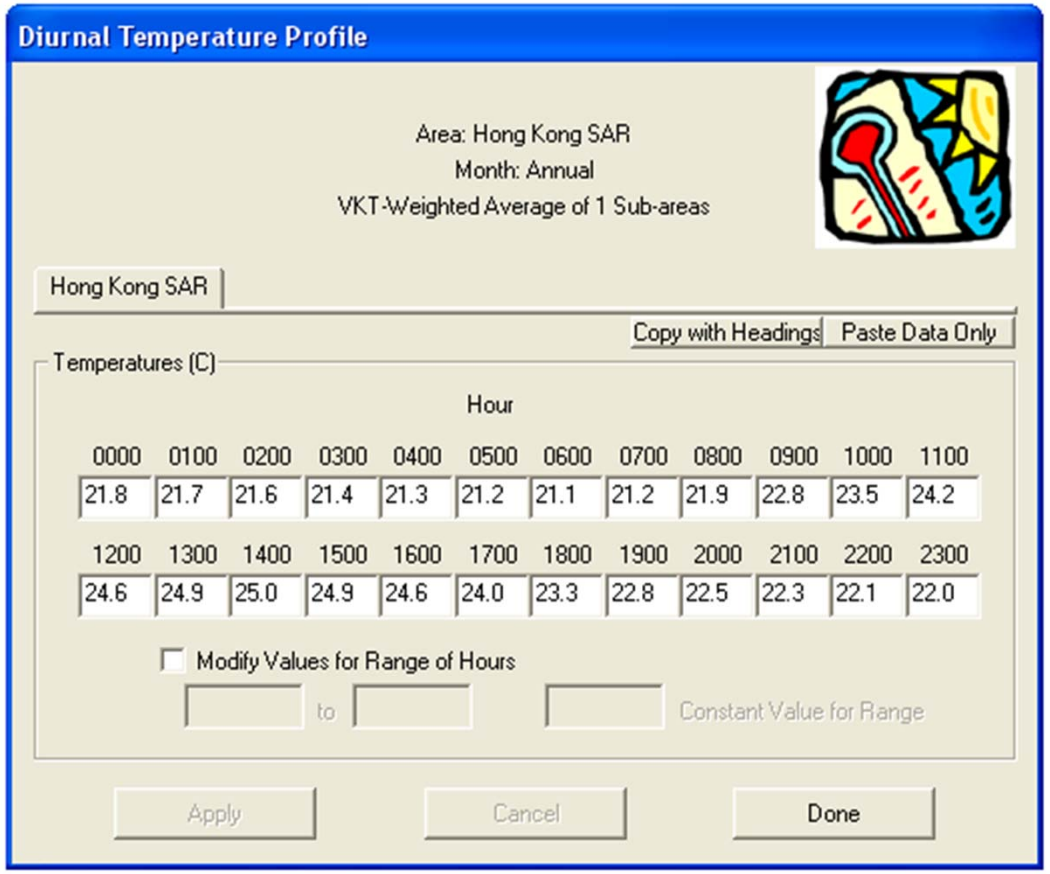
Editing Speed Profiles



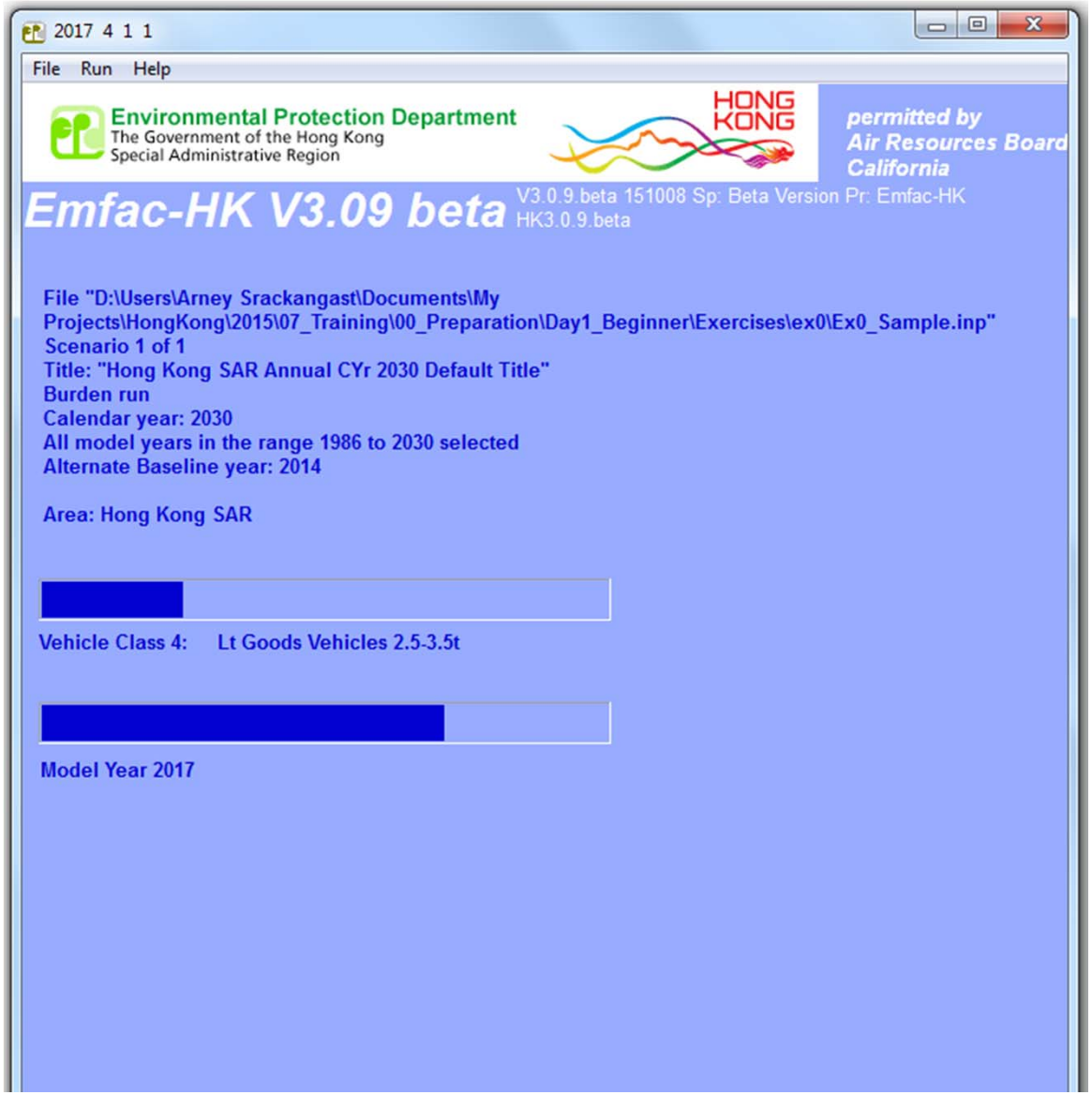
Info Message for ‘Profiles’ Option for Temperatures and Relative Humidity



Editing Temperature Profile



Final Run or Progress Screen



EMFAC-HK Version 3.1
Example Input File

HK_2030_Burden.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 0 2014
    HKUNITS Y
End-Header
Begin-Scenario 1
    Title Hong Kong SAR Annual CYr 2030 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 2030
    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
```

New “Header”

New Alt. Baseline Year: -1 = “Inactive”
Baseline Calendar Year is shown if activated.
For example, “BYr 2014” if Alt. Baseline Year 2014 was activated.

GUI CHANGES IN EMFAC-HK V3.1

Side-by-Side vs Version 2.6

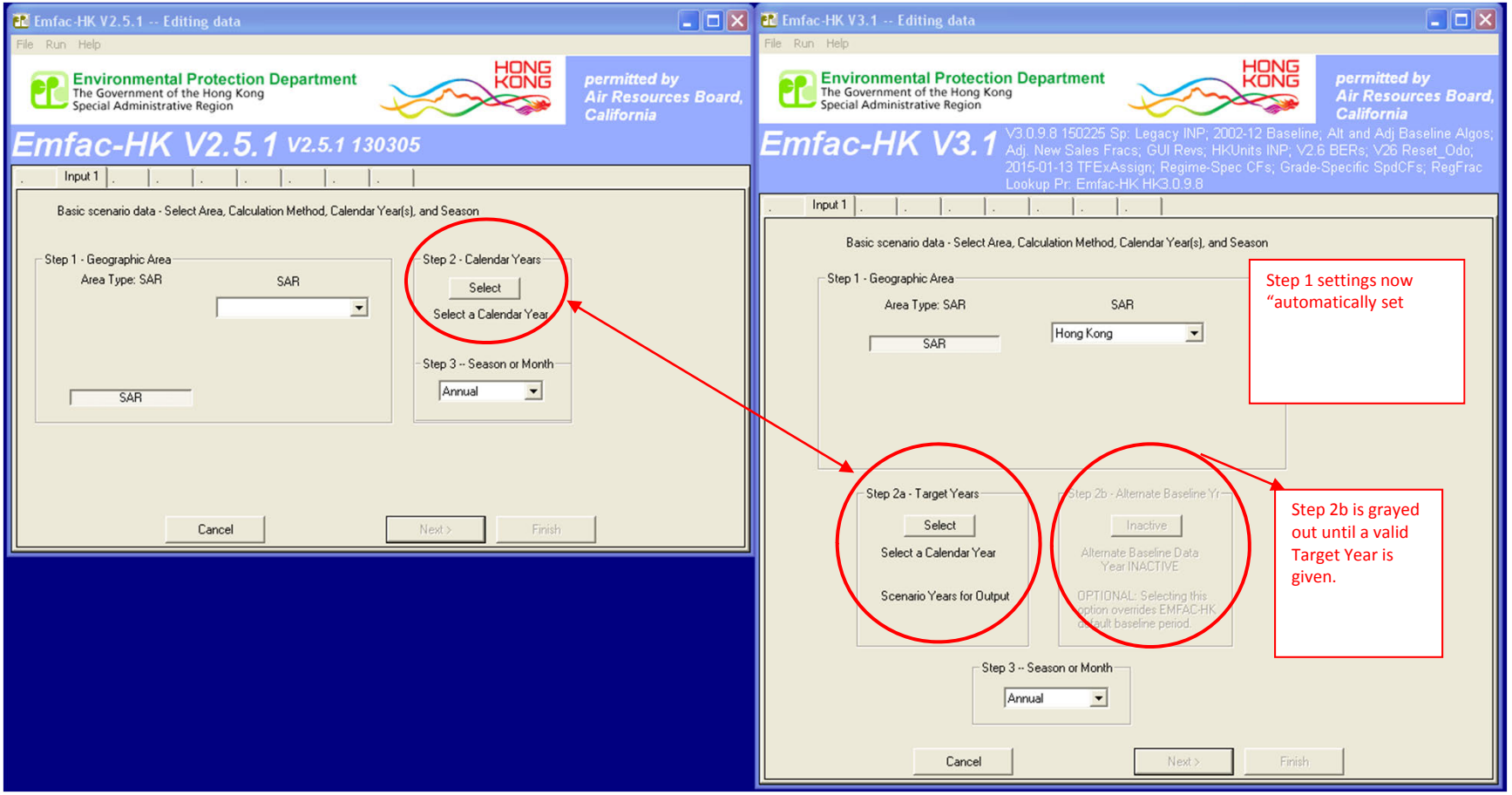


Figure 1. Input 1 Screen (Initial)

Step 1 – Geographic Area (V3.1): "SAR and Hong Kong" is automatic (without having to envoke)

Step 2 –Calendar Year now divided into Step 2a (Target Year) and Step 2b (Alternate Baseline Year

Step 2b –Alternate Baseline Year is "grayed out" until a valid Target Year is entered.

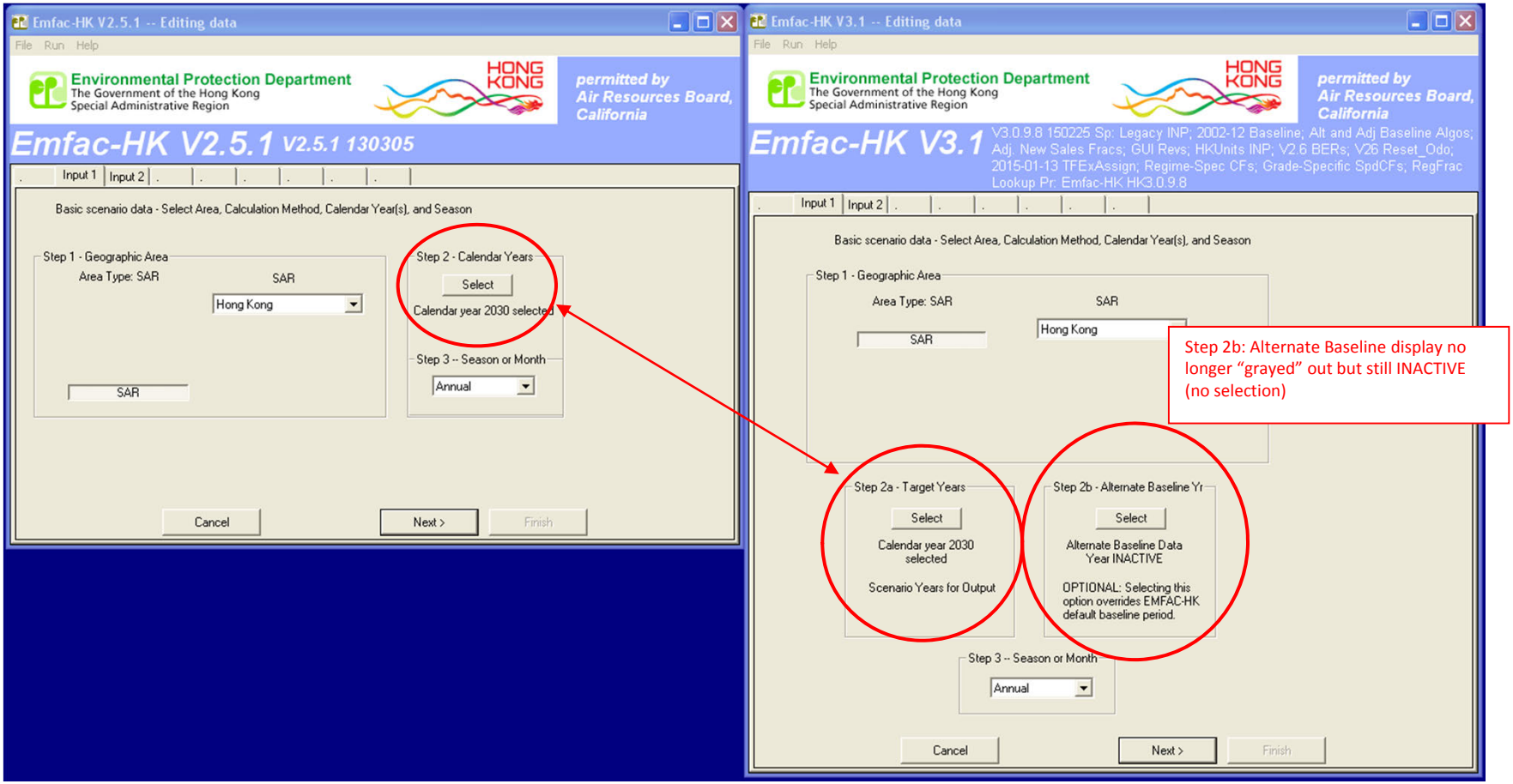


Figure 2. Input 1 Screen (After Step 2a Selection. Before Step 2b Selection)

Step 2b – Alt. Baseline Yr No Longer "Grayed Out" but INACTIVE: Target Yr Selected But No Baseline Yr Selected

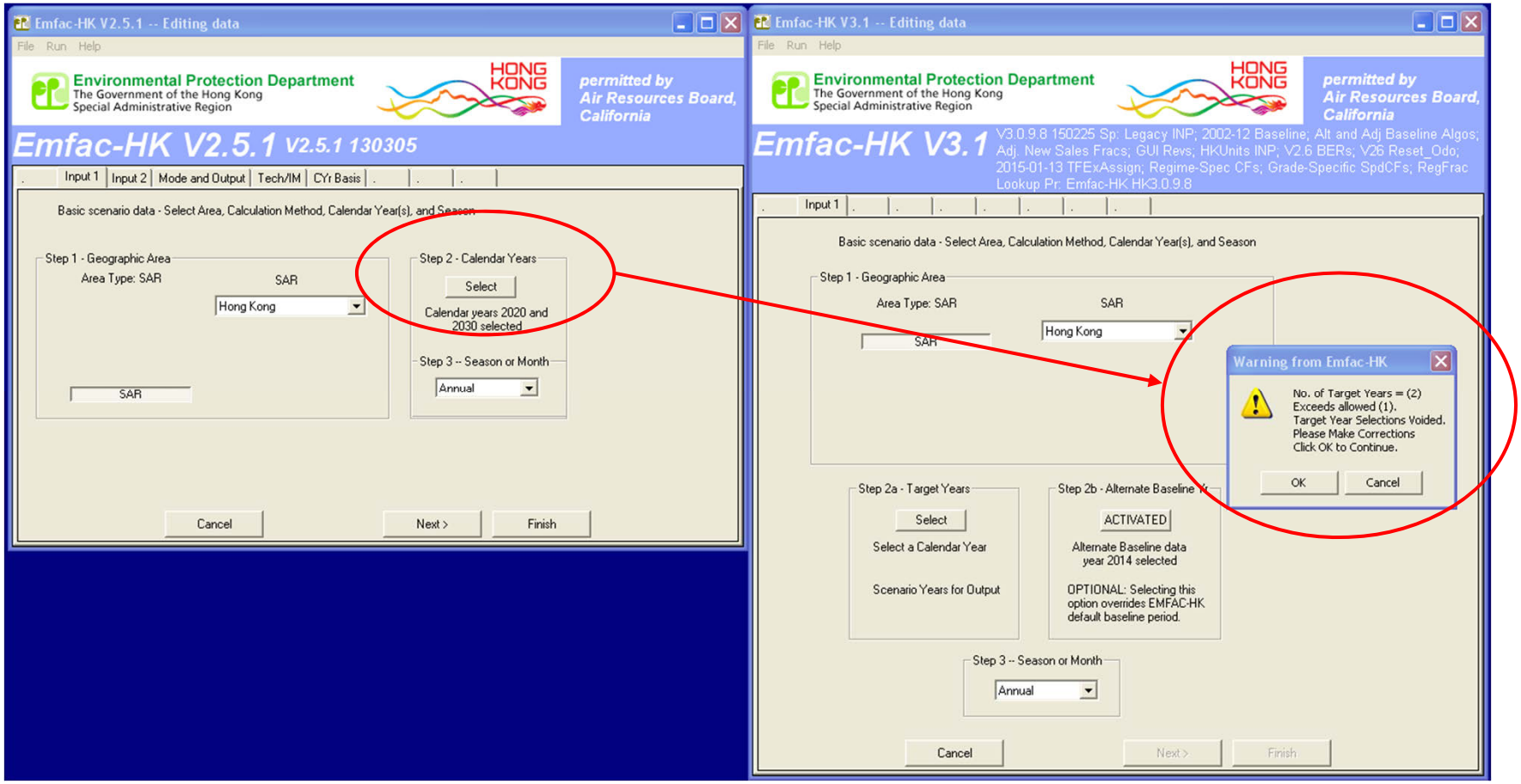


Figure 3. Target Year Selection (Multi-Year No Longer Available)

Step 2 – Multiple Target Years Allowed

Step 2a – Multiple Target Years NO LONGER ALLOWED! Warning Triggered.

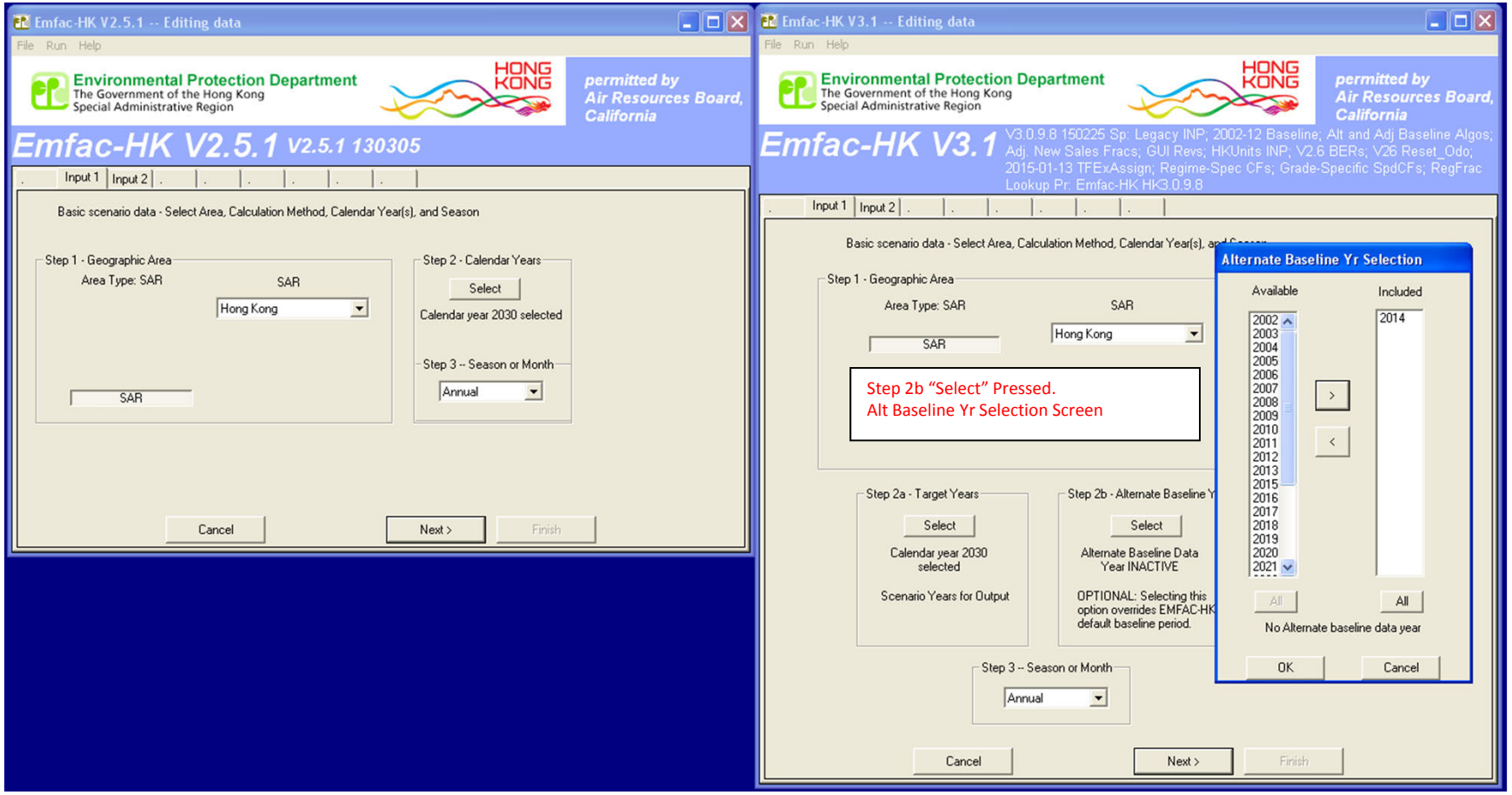


Figure 4. Alternate Baseline Yr Selection Screen

Step 2b – Alternate Baseline Year of Calendar Year 2014 Selected

Step 2b – Multiple Baseline Years NOT ALLOWED! Warning Will Be Triggered (see Figure 3).

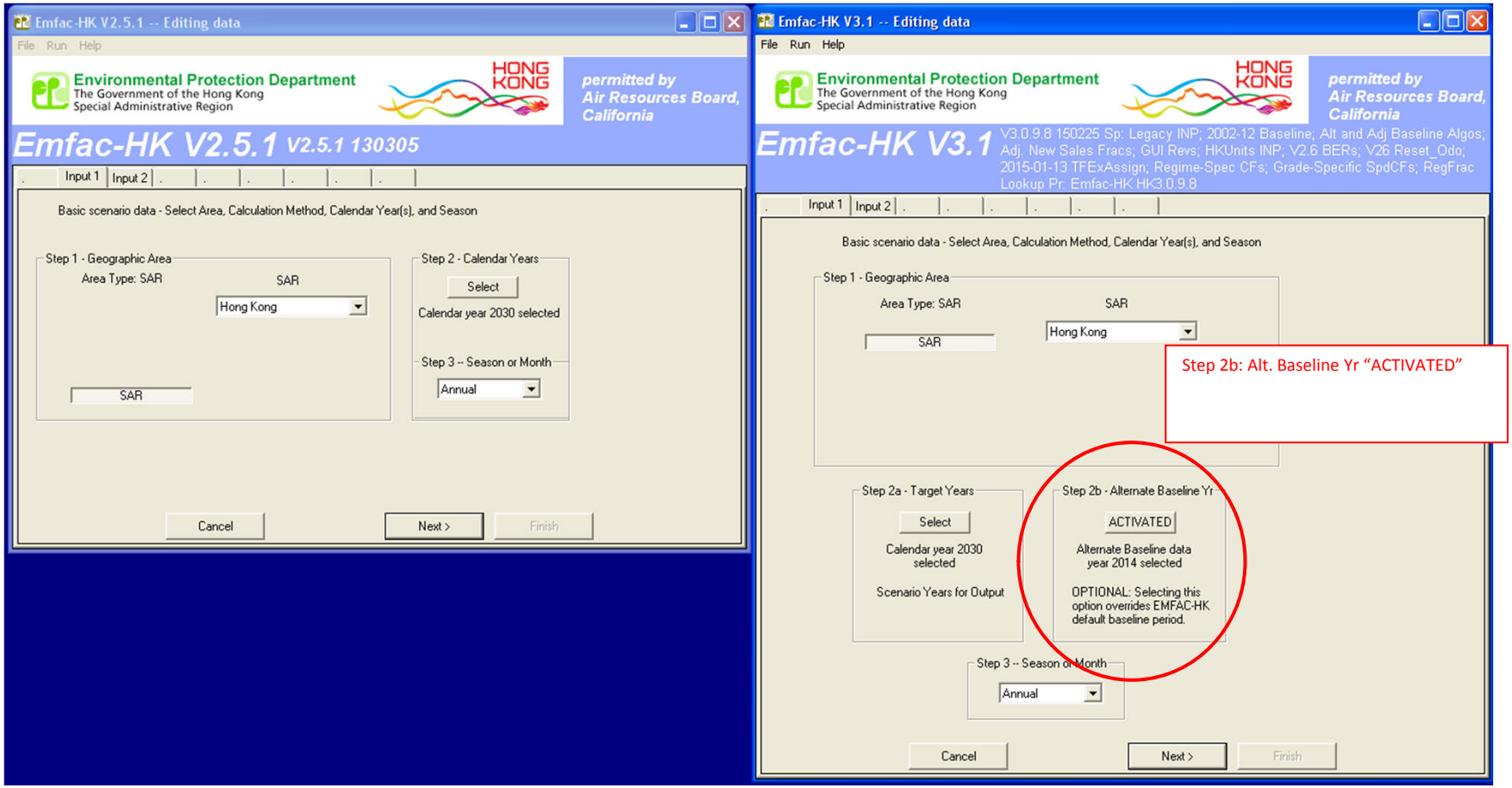


Figure 5. Input 1 Screen (After Alternate Baseline Yr Activated)

Step 2b – Alternate Baseline Year of Calendar Year 2014 Activated.

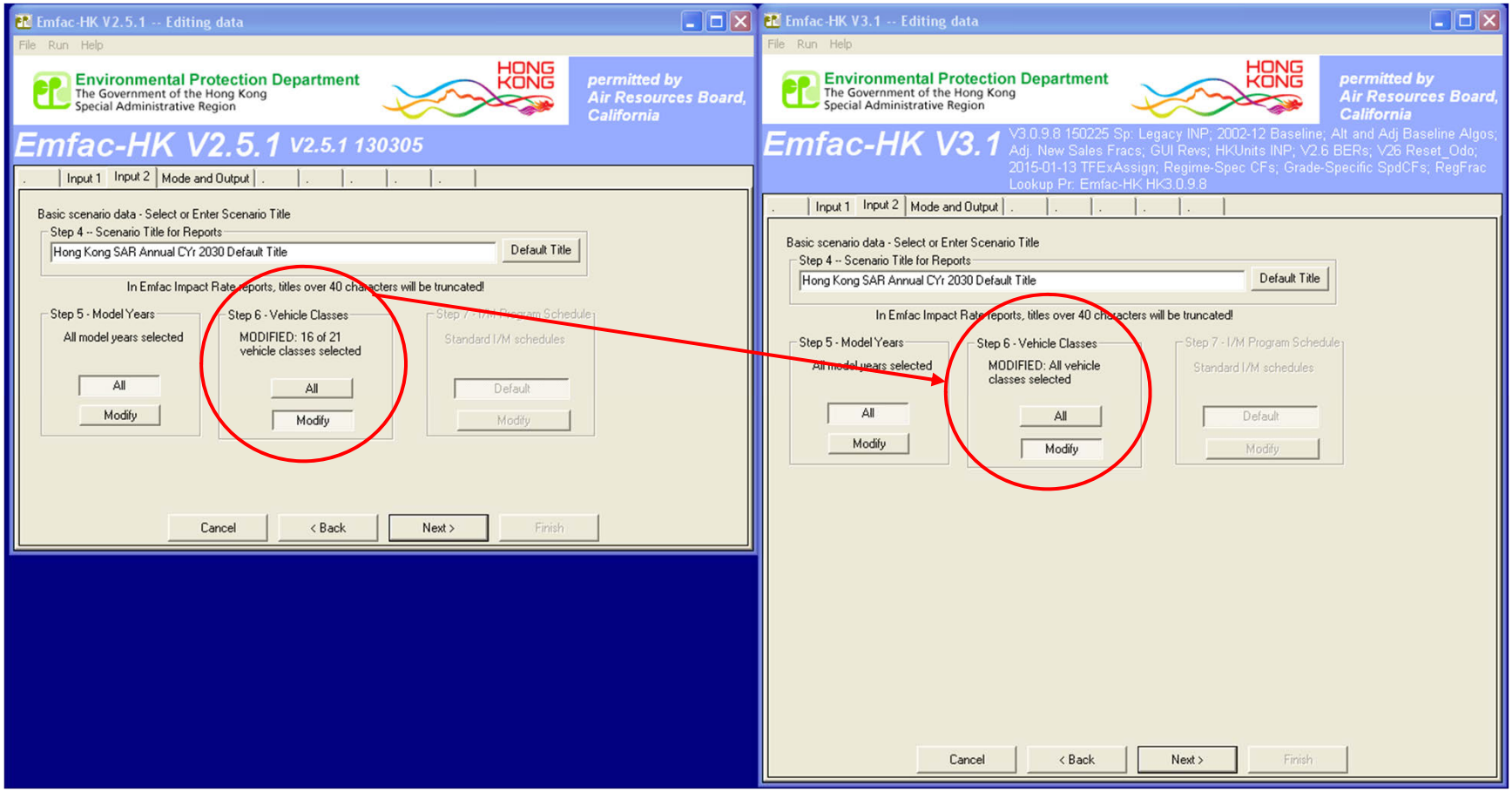


Figure 6. Input 2 Screen (Default Title Clicked)

Step 6 Annotation Updated (“ALL” vs 16 of 21)

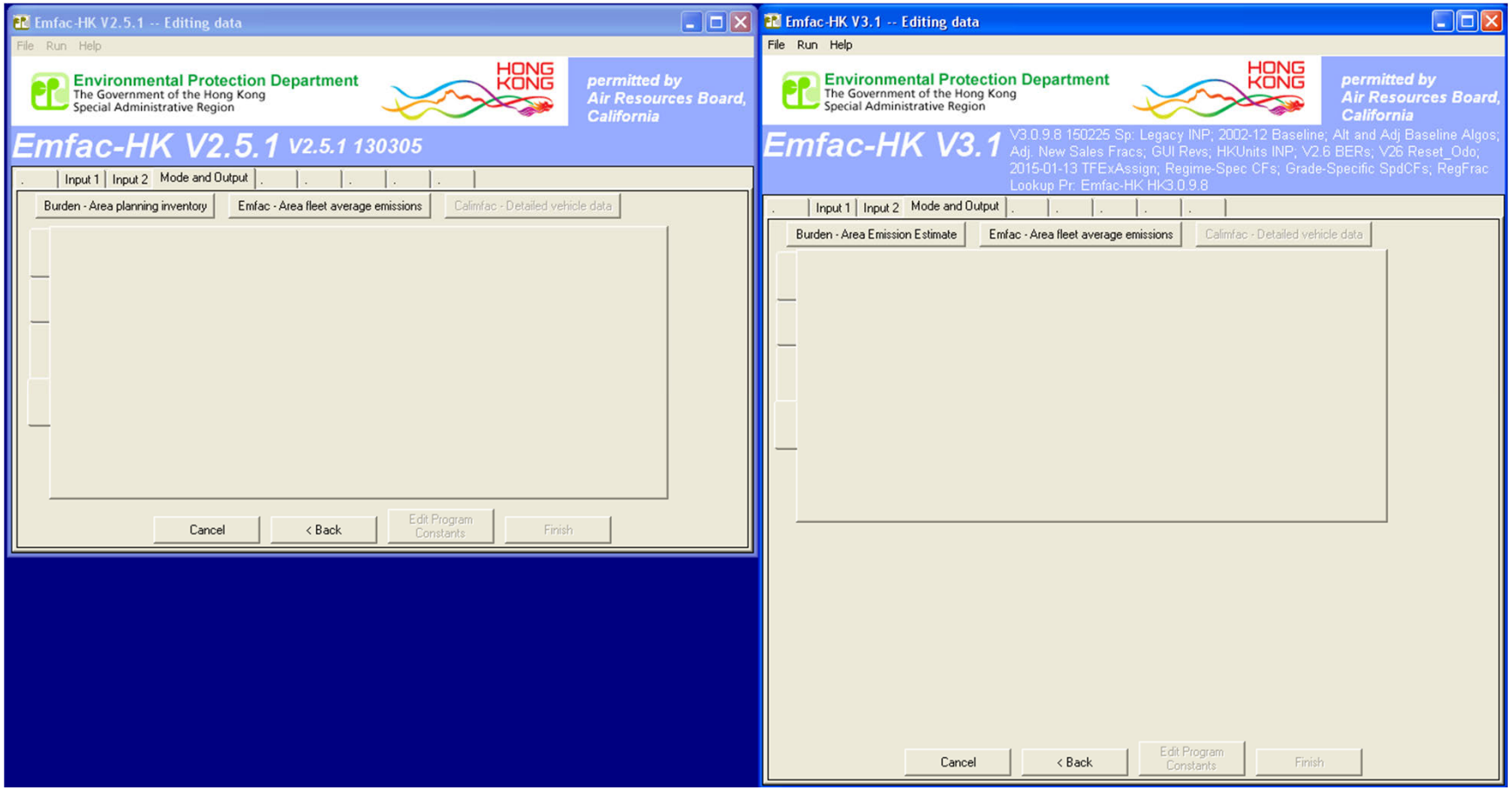


Figure 7. Mode and Output Screen (No Changes)

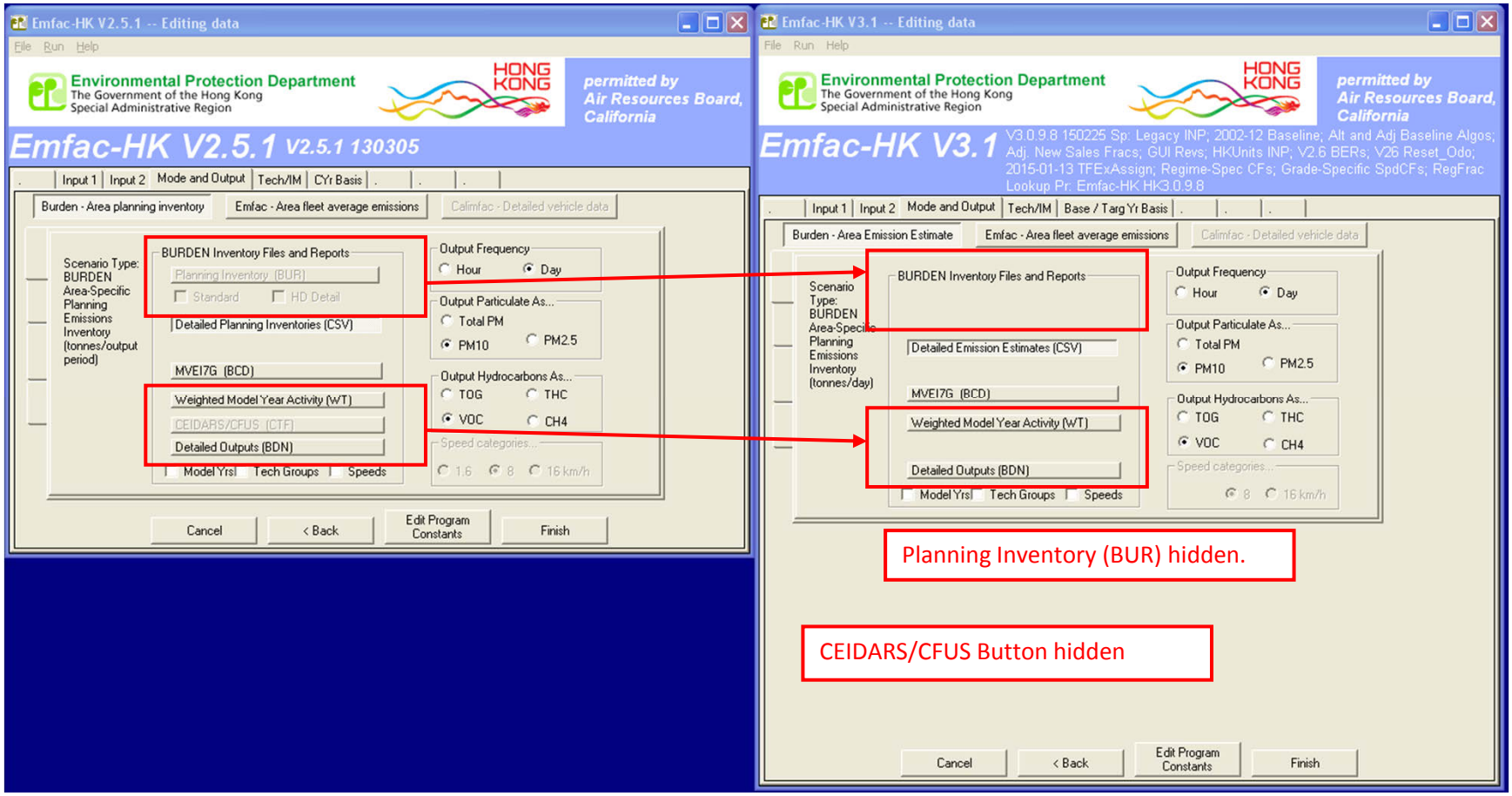


Figure 8. Burden - Area Planning Inventory Screen (Removed Unnecessary Features)

Planning Inventory (BUR) and CEIDARS/CFUS Button Groups Removed.

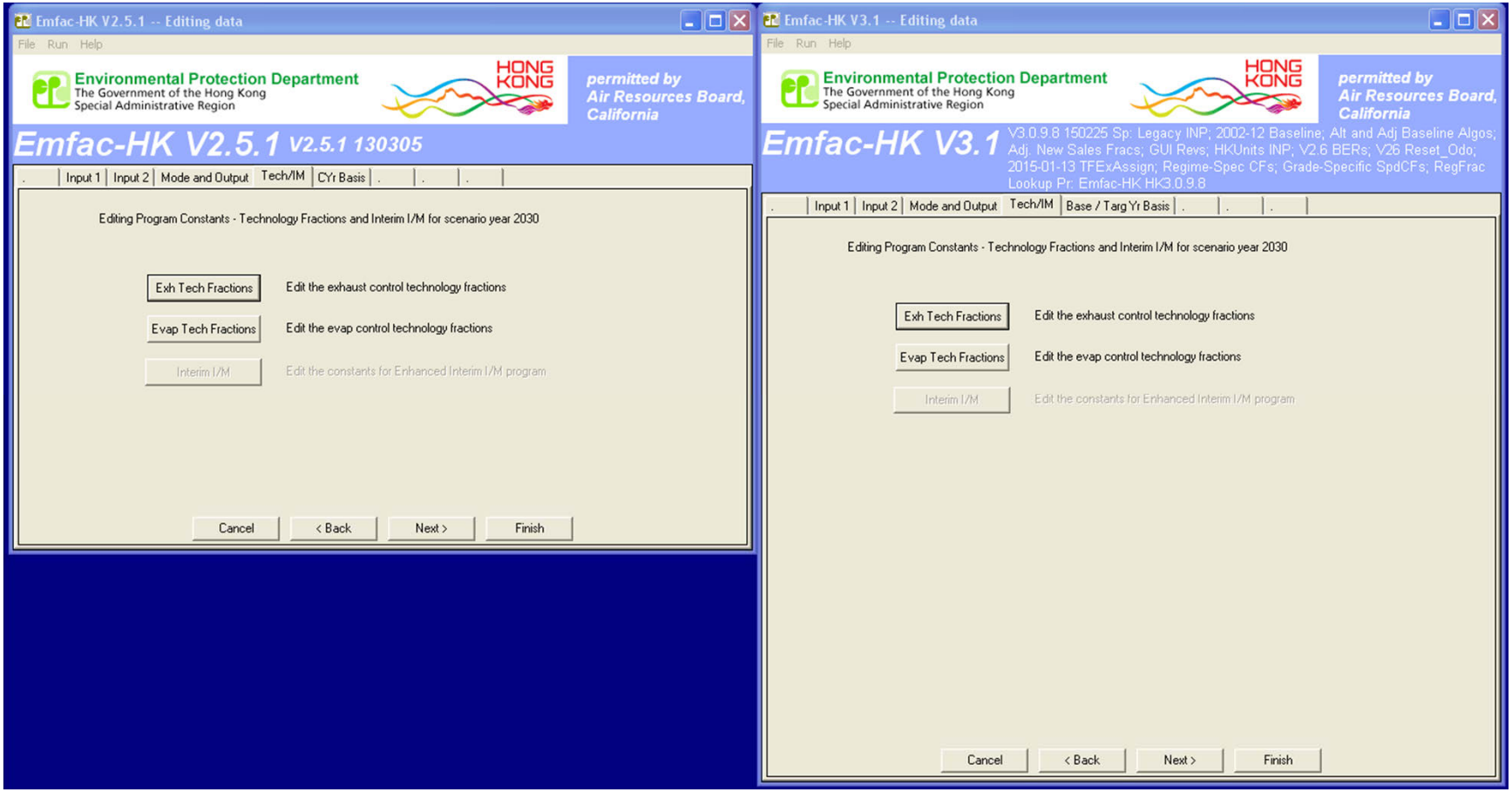


Figure 9. Tech/IM Screen (No Changes)

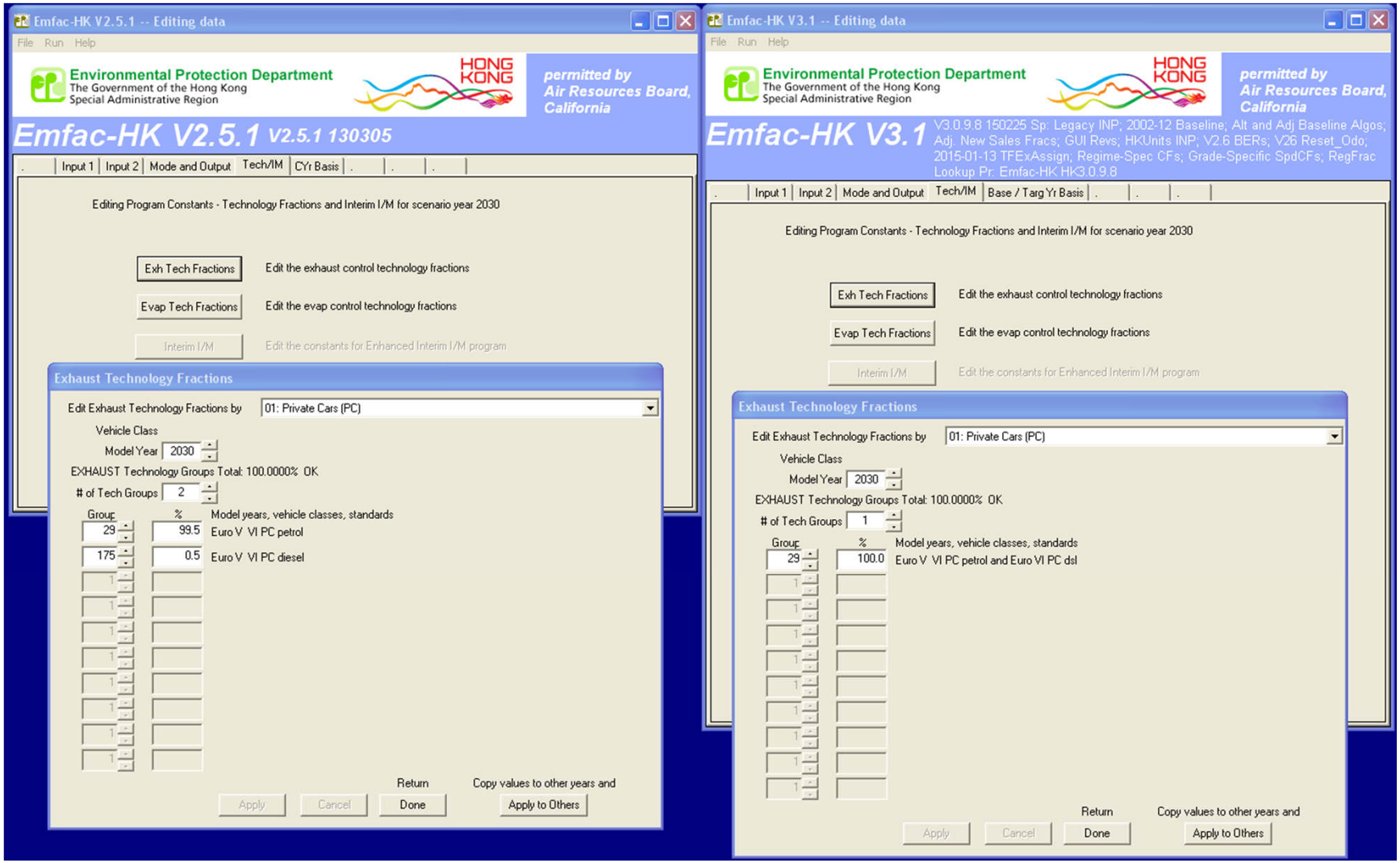


Figure 10. Exhaust Technology Fractions Screen (No Changes)

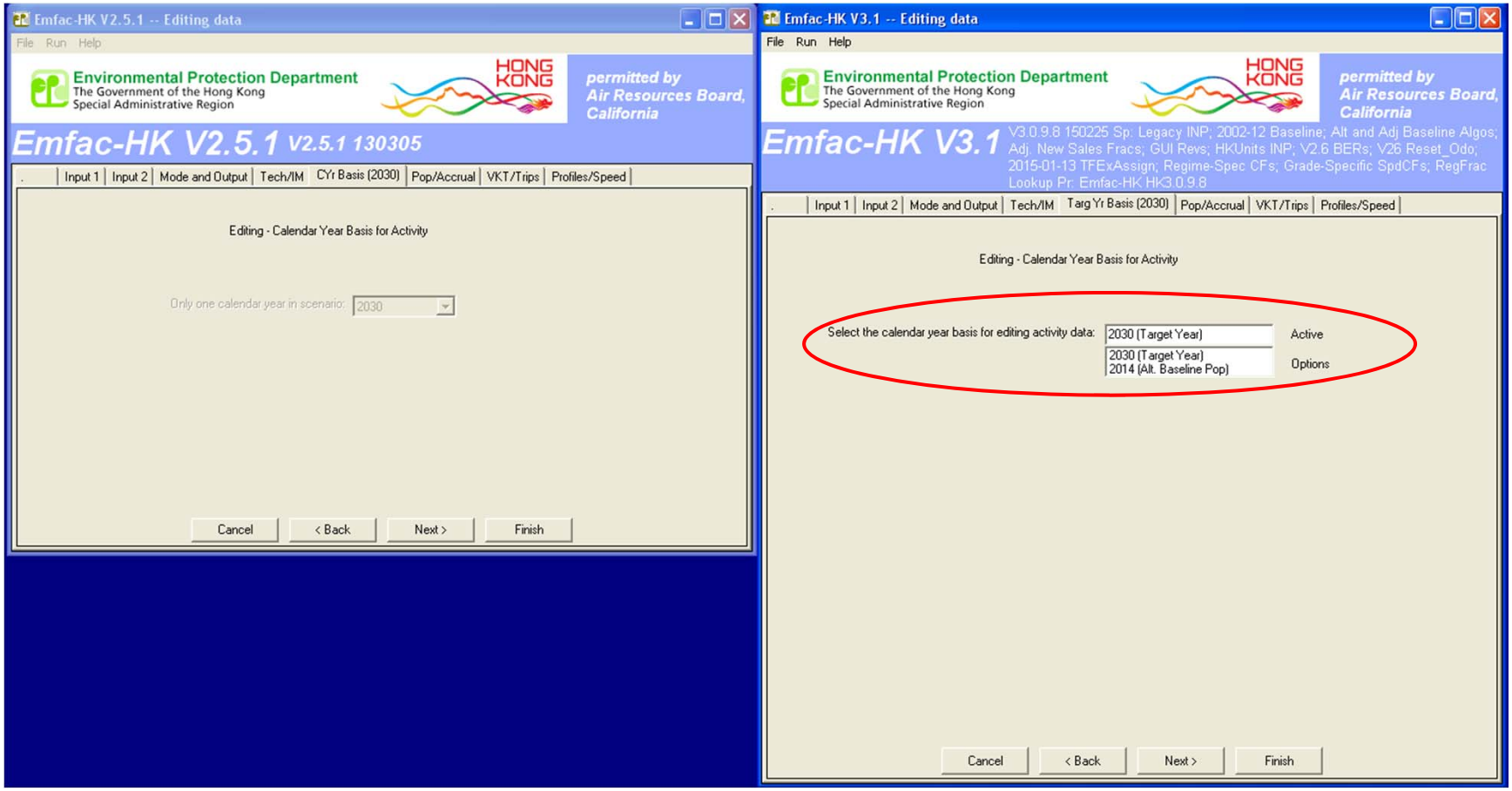


Figure 11. Editing - Calendar Year Basis (Targ Yr or Alt Base Yr)

Select between Editing Target Year or Alternate Baseline Year

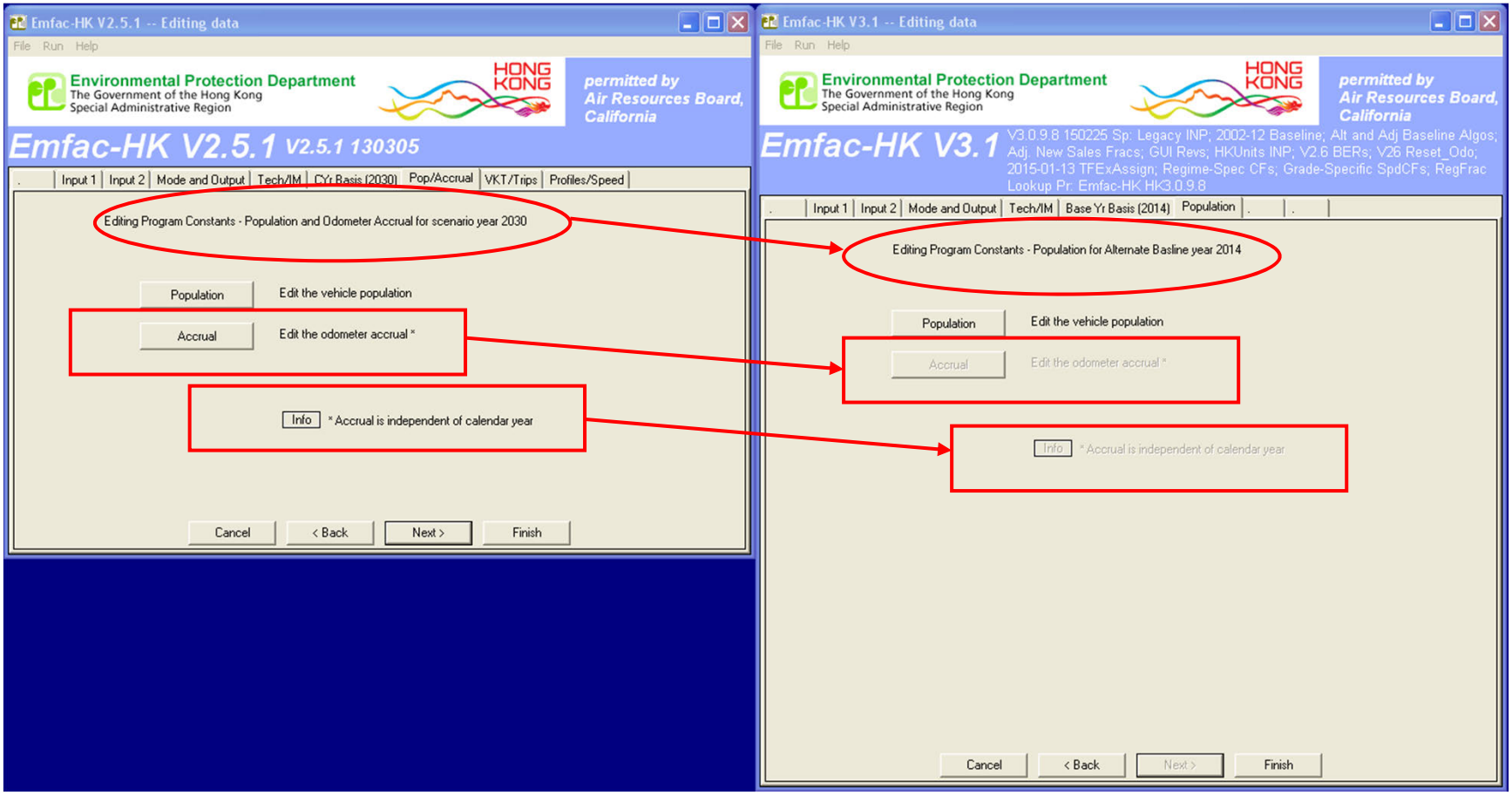


Figure 12. Population for Alternative Baseline Year Screen

Title Reflects “Alternate Baseline Year 2014”

Accrual Button Deactivated for Alternate Baseline (Baseline Accrual Not Editable)

“Info” Button Deactivated for Alternate Baseline

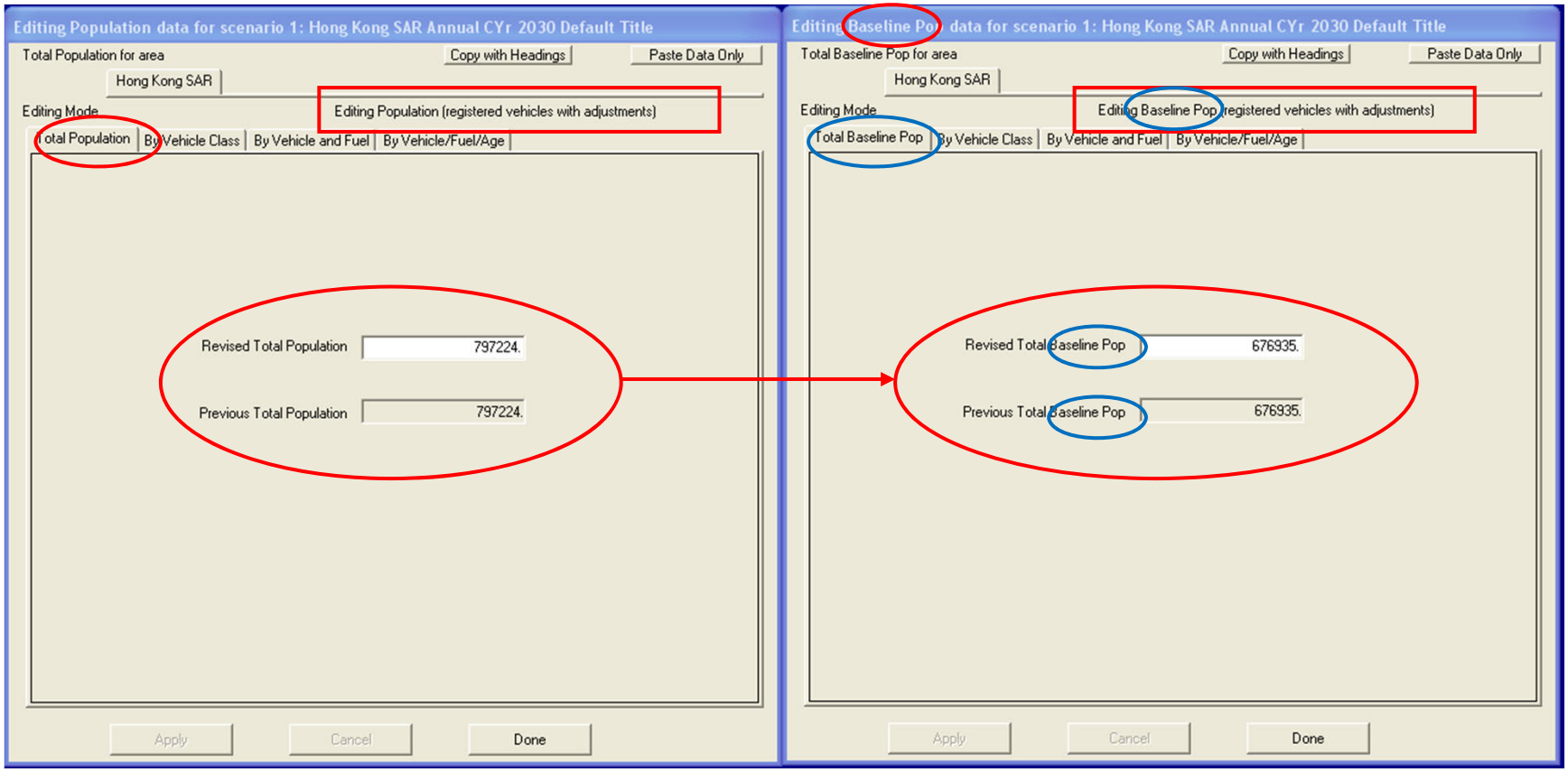


Figure 13. Editing Baseline Pop Data

New Title Reflects "Baseline Year" to Make User Aware of What's Being Edited
Similar Annotation for "Target Year" Editing Case

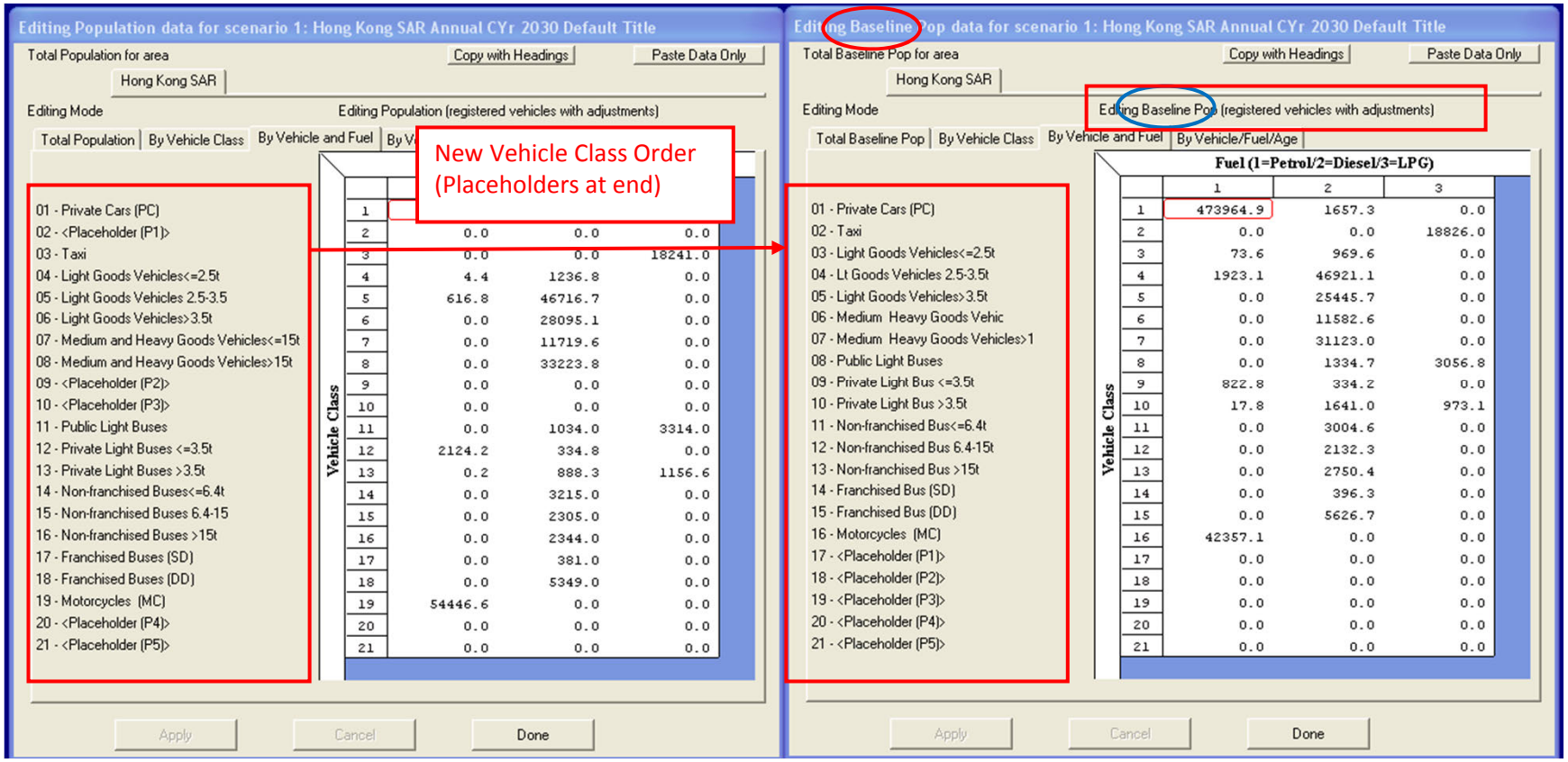


Figure 14. Editing Baseline Population by Vehical Class and Fuel

New Title Reflects “Baseline Year” to Make User Aware of What’s Being Edited

NEW VEHICLE CLASS ORDER!