

# 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 ( $\leq 2.5t$ )	ALL	$\leq 2.5$	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 ( $\geq 15t$ )	ALL	$\geq 15$	HGV8
8	Public Light Buses	ALL	ALL	PLB
9	Private Light Buses ( $\leq 3.5t$ )	ALL	$\leq 3.5$	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](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

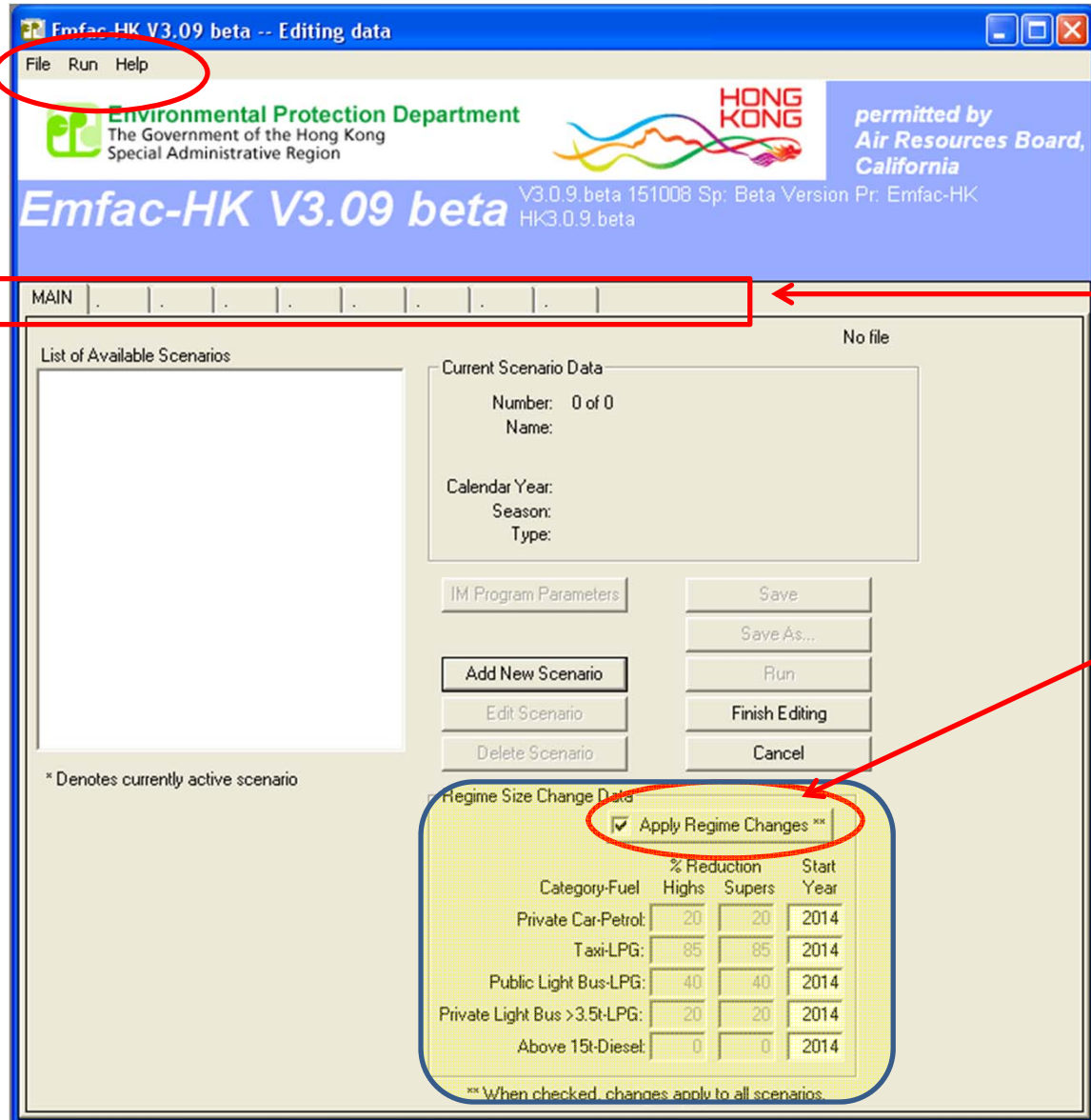
# Running the Program

## Opening Screen





# Main Screen



File Run Help

Environmental Protection Department  
The Government of the Hong Kong  
Special Administrative Region



permitted by  
Air Resources Board,  
California

Emfac-HK V3.09 beta V3.0.9.beta 151008 Sp: Beta Version Pr: Emfac-HK  
HK3.0.9.beta

MAIN

List of Available Scenarios

Current Scenario Data  
Number: 0 of 0  
Name:  
Calendar Year:  
Season:  
Type:

IM Program Parameters Save Save As... Run Finish Editing Cancel  
Add New Scenario Edit Scenario Delete Scenario

\* Denotes currently active scenario

Regime Size Change Data

Apply Regime Changes \*\*

Category-Fuel	% Reduction		Start Year
	Highs	Supers	
Private Car-Petrol:	20	20	2014
Taxi-LPG:	85	85	2014
Public Light Bus-LPG:	40	40	2014
Private Light Bus >3.5t-LPG:	20	20	2014
Above 15t-Diesel:	0	0	2014

\*\* When checked, changes apply to all scenarios.

Tabs must be performed in sequence if "New".

Include/exclude HK in-use emission reduction programs

# Input 1: Adding or Editing Scenarios

The screenshot shows the 'Emfac-HK V3.09 beta -- Editing data' window. The title bar includes 'File', 'Run', and 'Help' menus. The header area features the Environmental Protection Department logo, the Hong Kong Government logo, and a note: 'permitted by Air Resources Board, California'. Below this, the version information 'V3.0.9.beta 151008 Sp: Beta Version Pr: Emfac-HK HK3.0.9.beta' is displayed.

The main interface is titled 'Input 1' and contains the following sections:

- Basic scenario data - Select Area, Calculation Method, Calendar Year(s), and Season**
- Step 1 - Geographic Area**: Includes 'Area Type: SAR' with a text input field containing 'SAR', and a dropdown menu for 'SAR' currently showing 'Hong Kong'.
- Step 2a - Target Years**: Contains a 'Select' button, the text 'Select a Calendar Year', and 'Scenario Years for Output'.
- Step 2b - Alternate Baseline Yr**: Contains an 'Inactive' button, the text 'Alternate Baseline Data Year INACTIVE', and an optional note: 'OPTIONAL: Selecting this option overrides EMFAC-HK default baseline period'.

# Step 1: Geographic Area

The screenshot shows the 'Emfac-HK V3.09 beta -- Editing data' window. The title bar includes 'File', 'Run', and 'Help' menus. The header area features the Environmental Protection Department logo, the Hong Kong Government logo, and a note: 'permitted by Air Resources Board, California'. Below this, the software version 'Emfac-HK V3.09 beta' and 'V3.0.9.beta 151008 Sp: Beta Version Pr: Emfac-HK HK3.0.9.beta' are displayed. The main interface has a tab labeled 'Input 1' and a section titled 'Basic scenario data - Select Area, Calculation Method, Calendar Year(s), and Season'. A yellow rounded rectangle highlights the 'Step 1 - Geographic Area' section, which contains the following elements:

- 'Area Type: SAR' with a text input field containing 'SAR'.
- 'SAR' with a dropdown menu currently showing 'Hong Kong'.

Below the highlighted section, there are two panels:

- 'Step 2a - Target Years' with a 'Select' button and the text 'Select a Calendar Year' and 'Scenario Years for Output'.
- 'Step 2b - Alternate Baseline Year' with an 'Inactive' button and the text 'Alternate Baseline Data Year INACTIVE' and 'OPTIONAL: Selecting this option overrides EMFAC-HK default baseline period'.

Step 1: "Automatic" Settings

# Step 2a: Target Years

The screenshot shows the 'Emfac-HK V3.09 beta -- Editing data' window. The title bar includes 'File Run Help' and window control buttons. The header area contains the Environmental Protection Department logo, the text 'The Government of the Hong Kong Special Administrative Region', the 'HONG KONG' logo, and the text 'permitted by Air Resources Board, California'. Below this is the version information: 'Emfac-HK V3.09 beta V3.0.9.beta 151008 Sp: Beta Version Pr: Emfac-HK HK3.0.9.beta'. The main interface has a tab labeled 'Input 1' and a section titled 'Basic scenario data - Select Area, Calculation Method, Calendar Year(s), and Season'. Under 'Step 1 - Geographic Area', there are two input fields: 'Area Type: SAR' with a text box containing 'SAR', and 'SAR' with a dropdown menu showing 'Hong Kong'. A callout box points to the 'Step 2a: Target Years' section, which is highlighted in yellow. This section contains a 'Select' button, the text 'Select a Calendar Year', and 'Scenario Years for Output'. To the right, the 'Step 2b - Alternate Baseline Yr' section is visible, containing an 'Inactive' button, the text 'Alternate Baseline Data Year INACTIVE', and a note: 'OPTIONAL: Selecting this option overrides EMFAC-HK default baseline period'.

# Step 2b: Alternate Baseline Year (Optional)

Emfac-HK V3.09 beta -- Editing data

File Run Help

Environmental Protection Department  
The Government of the Hong Kong  
Special Administrative Region

HONG KONG

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Air Resources Board,  
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**Emfac-HK V3.09 beta** V3.0.9.beta 151008 Sp: Beta Version Pr: Emfac-HK  
HK3.0.9.beta

Input 1

Basic scenario data - Select Area, Calculation Method

Step 1 - Geographic Area

Area Type: SAR

SAR

Hong

Step 2a - Target Years

Select

Select a Calendar Year

Scenario Years for Output

Step 2b - Alternate Baseline Year

Inactive

Alternate Baseline Data  
Year INACTIVE

OPTIONAL: Selecting this  
option overrides EMFAC-HK  
default baseline period

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

The screenshot displays the 'Emfac-HK V3.09 beta -- Editing data' window. The main interface is titled 'Basic scenario data - Select Area, Calculation Method, Calendar Year(s), and Season'. It is divided into three steps:

- Step 1 - Geographic Area:** Area Type: SAR, Area: SAR, Region: Hong Kong.
- Step 2a - Target Years:** A 'Select' button is circled in red. Below it, the text reads 'Select a Calendar Year' and 'Scenario Years for Output'.
- Step 2b - Alternate Baseline Yr:** An 'Inactive' button is present. Below it, the text reads 'Alternate Baseline Data Year INACTIVE' and 'OPTIONAL: Selecting this option overrides EMFAC-HK default baseline period.'
- Step 3 - Season or Month:** Season: Annual.

A 'Target Year Selection' dialog box is open, showing a list of years from 1997 to 2015. The year 2030 is selected in the 'Included' column and circled in red. A red arrow points from the 'Select' button in Step 2a to the dialog box. Another red arrow points from a text box 'Step 2b: Only 1 Target Year Allowed Per Run' to the 'Included' column header. The dialog box also features 'All' buttons and 'OK'/'Cancel' buttons.

# Step 2b: Alternate Baseline Year Selection

Emfac-HK V3.09 beta -- Editing data

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HK3.0.9.beta

Input 1 Input 2 . . . . .

Basic scenario data - Select Area, Calculation Method, Calendar Year(s), and Season

Step 1 - Geographic Area

Area Type: SAR SAR

SAR Hong Kong

Alternate Baseline Yr "Active" Since Target Year Selected

Step 2a - Target Years

Select

Calendar year 2030 selected

Scenario Years for Output

Step 2b - Alternate Baseline Yr

Select

Alternate Baseline Data  
Year INACTIVE

OPTIONAL: Selecting this  
option overrides EMFAC-HK  
default baseline period.

Step 3 -- Season or Month

Annual

Cancel Next > Finish

# Step 2b: Alternate Baseline Year Selection

Emfac-HK V3.09 beta -- Editing data

File Run Help

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HK3.0.9.beta

Input 1 Input 2 . . . . .

Basic scenario data - Select Area, Calculation Method, Calendar Year(s), and Season

Step 1 - Geographic Area

Area Type: SAR SAR

SAR Hong Kong

Step 2a - Target Years

Select

Calendar year 2030  
selected

Scenario Years for Output

Step 2b - Alternate Baseline Yr

Select

Alternate baseline Data  
Year INACTIVE

OPTIONAL: Selecting this  
option overrides EMFAC-HK  
default baseline period.

Step 3 - Season or Month

Annual

Cancel Next > Finish

Alternate Baseline Yr Selection

Available	Included
2002	2014
2003	
2004	
2005	
2006	
2007	
2008	
2009	
2010	
2011	
2012	
2013	
2015	
2016	
2017	
2018	
2019	
2020	
2021	

All All

No Alternate baseline data year

OK Cancel



# Step 3: Season or Month Selection

The screenshot displays the 'Emfac-HK V3.09 beta -- Editing data' window. The interface includes a menu bar (File, Run, Help) and a header section with logos for the Environmental Protection Department and the Air Resources Board of California. The main area is titled 'Basic scenario data - Select Area, Calculation Method, Calendar Year(s), and Season'. It contains three steps: Step 1 - Geographic Area (Area Type: SAR, SAR, Hong Kong), Step 2a - Target Years (Select, Calendar year 2030 selected), and Step 2b - Alternate Baseline Yr (ACTIVATED, Alternate Baseline data year 2014 selected). A callout box highlights Step 3 - Season or Month, showing a dropdown menu with 'Annual' selected. A text box next to the callout reads 'Step 3: Annual "Default"'. The bottom of the window has 'Cancel', 'Next >', and 'Finish' buttons.

Emfac-HK V3.09 beta -- Editing data

File Run Help

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HK3.0.9 beta

Input 1 Input 2 . . . . .

Basic scenario data - Select Area, Calculation Method, Calendar Year(s), and Season

Step 1 - Geographic Area

Area Type: SAR SAR

SAR Hong Kong

Step 2a - Target Years

Select

Calendar year 2030  
selected

Scenario Years for Output

Step 2b - Alternate Baseline Yr

ACTIVATED

Alternate Baseline data  
year 2014 selected

OPTIONAL: Selecting this  
option overrides EMFAC-HK  
default baseline period.

Step 3 -- Season or Month

Annual  
January  
February  
March  
April  
May  
June  
July  
August  
September  
October  
November

Cancel Next > Finish

Step 3: Annual "Default"

# Steps 4-7: Scenario Details Screen

The screenshot displays the 'Emfac-HK V3.09 beta -- Editing data' window. The interface includes a menu bar (File, Run, Help) and a header section with logos for the Environmental Protection Department and the Government of the Hong Kong Special Administrative Region, along with a 'HONG KONG' logo and a note: 'permitted by Air Resources Board, California'. The main content area is titled 'Basic scenario data - Select or Enter Scenario Title' and contains three main steps:

- Step 4 -- Scenario Title for Reports:** A text input field containing '<Untitled>' and a 'Default Title' button.
- Step 5 - Model Years:** A panel with the text 'All model years selected' and two buttons: 'All' and 'Modify'.
- Step 6 - Vehicle Classes:** A panel with the text 'MODIFIED: All vehicle classes selected' and two buttons: 'All' and 'Modify'.
- Step 7 - I/M Program Schedule:** A panel with the text 'Standard I/M schedules' and two buttons: 'Default' and 'Modify'.

At the bottom of the window, there are four navigation buttons: 'Cancel', '< Back', 'Next >', and 'Finish'.

# Step 4: Scenario Title

Emfac-HK V3.09 beta -- Editing data

File Run Help

Environmental Protection Department  
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HONG KONG

permitted by  
Air Resources Board,  
California

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HK3.0.9.beta

Input 1 Input 2

Basic scenario data - Select or Enter Scenario Title

Step 4 -- Scenario Title for Reports

<Untitled> Default Title

Step 5 - Model Years  
All model years selected  
All  
Modify

Step 6 - Vehicle Classes  
MODIFIED: All vehicle  
classes selected  
All  
Modify

Step 7 - I/M Program Schedule  
Standard I/M schedules  
Default  
Modify

Cancel < Back Next > Finish

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

# Step 4: Scenario Title “Populated”

The screenshot shows the 'Emfac-HK V3.09 beta -- Editing data' window. The title bar includes 'File', 'Run', and 'Help' menus. The header area features the Environmental Protection Department logo, the Hong Kong Government logo, and a note: 'permitted by Air Resources Board, California'. Below this, the software version 'Emfac-HK V3.09 beta' and 'V3.0.9.beta 151008 Sp: Beta Version Pr: Emfac-HK HK3.0.9.beta' are displayed.

The main interface has a tabbed menu with 'Input 1', 'Input 2', and 'Mode and Output'. The 'Basic scenario data - Select or Enter Scenario Title' section is highlighted with a yellow border. It contains a text box with the text 'Hong Kong SAR Annual CYr 2030 Default Title' and a 'Default Title' button. Below the text box, a warning message states: 'In Emfac Impact Rate reports, titles over 40 characters will be truncated!'. Below this, there are three panels for 'Step 5 - Model Years', 'Step 6 - Vehicle Classes', and 'Step 7 - I/M Program Schedule', each with 'All' and 'Modify' buttons.

At the bottom of the window, there are four buttons: 'Cancel', '< Back', 'Next >', and 'Finish'.

# Step 5: Model Year Selection

The screenshot displays the 'Emfac-HK V3.09 beta -- Editing data' window. The interface includes a menu bar (File, Run, Help) and a header section with logos for the Environmental Protection Department and HONG KONG, along with a permit from the Air Resources Board, California. The main area is titled 'Basic scenario data - Select or Enter Scenario Title' and shows 'Step 4 -- Scenario Title for Reports' with a text box containing 'Hong Kong SAR Annual CYr 2030 Default Title' and a 'Default Title' button. A note states: 'In Emfac Impact Rate reports, titles over 40 characters will be truncated!'. Below this are three panels: 'Step 5 - Model Years' (highlighted with a blue border) showing 'All model years selected' with 'All' and 'Modify' buttons; 'Step 6 - Vehicle Classes' showing 'MODIFIED: All vehicle classes selected' with 'All' and 'Modify' buttons; and 'Step 7 - I/M Program Schedule' showing 'Standard I/M schedules' with 'Default' and 'Modify' buttons. At the bottom are 'Cancel', '< Back', 'Next >', and 'Finish' buttons.

# Step 5: Model Year Selection

## Before Changes

**Model Year Selection**

Available	Included
	1965
	1966
	1967
	1968
	1969
	1970
	1971
	1972
	1973
	1974
	1975
	1976
	1977
	1978
	1979
	1980
	1981
	1982
	1983

All      All

All model years selected

OK      Cancel

## After Changes

**Model Year Selection**

Available	Included
1965	2000
1966	2001
1967	2002
1968	2003
1969	2004
1970	2005
1971	
1972	
1973	
1974	
1975	
1976	
1977	
1978	
1979	
1980	
1981	
1982	
1983	

All      All

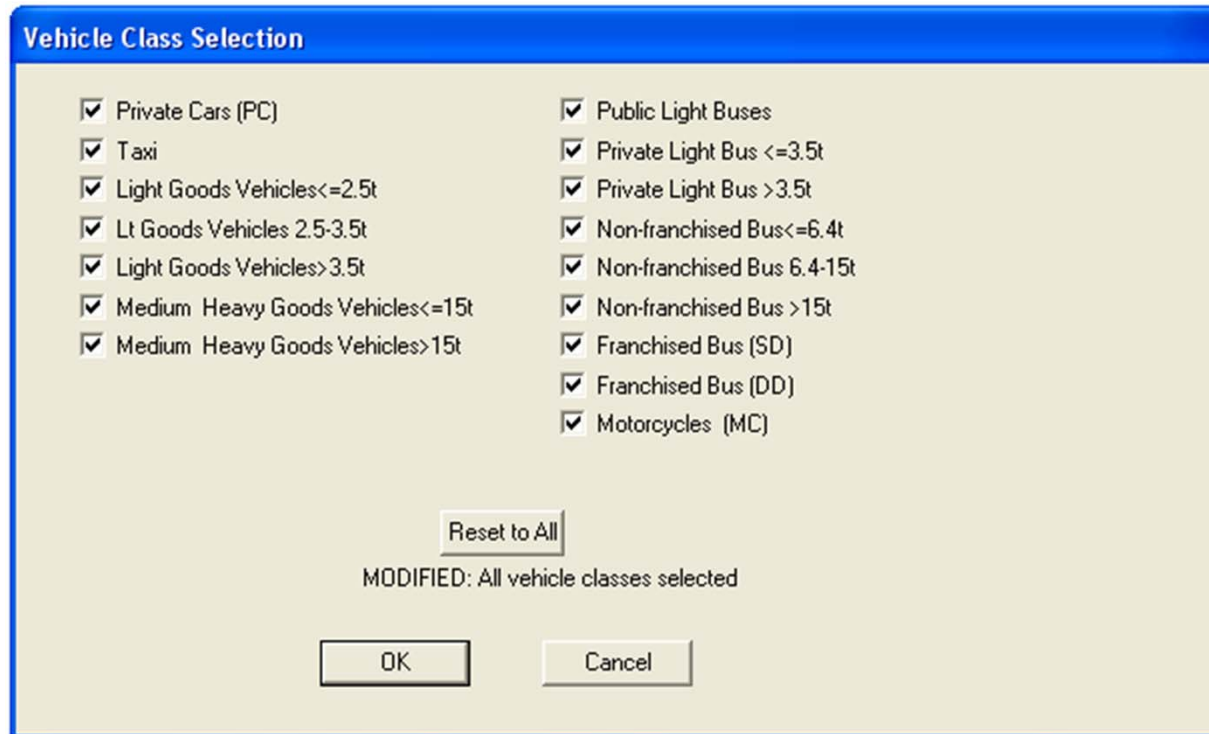
All model years selected

OK      Cancel

# Step 6: Vehicle Class Selection

The screenshot displays the 'Emfac-HK V3.09 beta -- Editing data' window. The interface includes a menu bar (File, Run, Help) and a header section with logos for the Environmental Protection Department and the Government of the Hong Kong Special Administrative Region, along with the HONG KONG logo and a note: 'permitted by Air Resources Board, California'. Below the header, the software version 'V3.0.9.beta 151008 Sp: Beta Version Pr: Emfac-HK HK3.0.9.beta' is shown. The main area contains a tabbed interface with 'Input 1', 'Input 2', and 'Mode and Output' tabs. The 'Mode and Output' tab is active, showing 'Basic scenario data - Select or Enter Scenario Title'. Under 'Step 4 - Scenario Title for Reports', a text box contains 'Hong Kong SAR Annual CYr 2030 Default Title' and a 'Default Title' button. A warning states: 'In Emfac Impact Rate reports, titles over 40 characters will be truncated!'. Three panels are visible: 'Step 5 - Model Years' (All model years selected, All, Modify buttons), 'Step 6 - Vehicle Classes' (MODIFIED: All vehicle classes selected, All, Modify buttons, highlighted with a blue border), and 'Step 7 - I/M Program Schedule' (Standard I/M schedules, Default, Modify buttons). At the bottom, there are 'Cancel', '< Back', 'Next >', and 'Finish' buttons.

# Step 6: Vehicle Class Selection



The screenshot shows a dialog box titled "Vehicle Class Selection" with a blue header. It contains two columns of checkboxes, all of which are checked. The first column lists: Private Cars (PC), Taxi, Light Goods Vehicles <=2.5t, Lt Goods Vehicles 2.5-3.5t, Light Goods Vehicles >3.5t, Medium Heavy Goods Vehicles <=15t, and Medium Heavy Goods Vehicles >15t. The second column lists: Public Light Buses, Private Light Bus <=3.5t, Private Light Bus >3.5t, Non-franchised Bus <=6.4t, Non-franchised Bus 6.4-15t, Non-franchised Bus >15t, Franchised Bus (SD), Franchised Bus (DD), and Motorcycles (MC). Below the checkboxes is a "Reset to All" button, followed by the text "MODIFIED: All vehicle classes selected". At the bottom are "OK" and "Cancel" buttons.

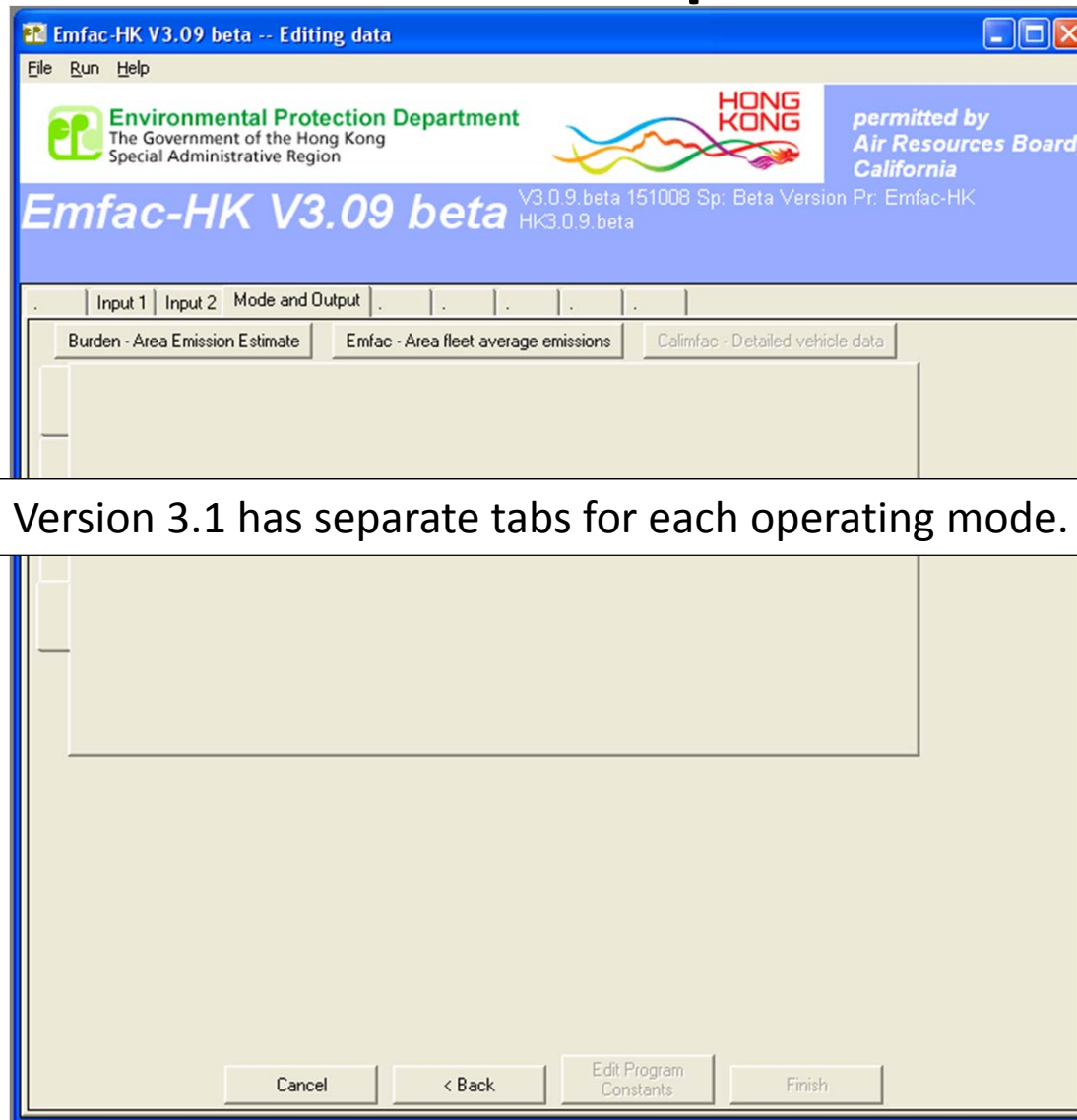
**Vehicle Class Selection**

- Private Cars (PC)
- Taxi
- Light Goods Vehicles <=2.5t
- Lt Goods Vehicles 2.5-3.5t
- Light Goods Vehicles >3.5t
- Medium Heavy Goods Vehicles <=15t
- Medium Heavy Goods Vehicles >15t
- Public Light Buses
- Private Light Bus <=3.5t
- Private Light Bus >3.5t
- Non-franchised Bus <=6.4t
- Non-franchised Bus 6.4-15t
- Non-franchised Bus >15t
- Franchised Bus (SD)
- Franchised Bus (DD)
- Motorcycles (MC)

MODIFIED: All vehicle classes selected

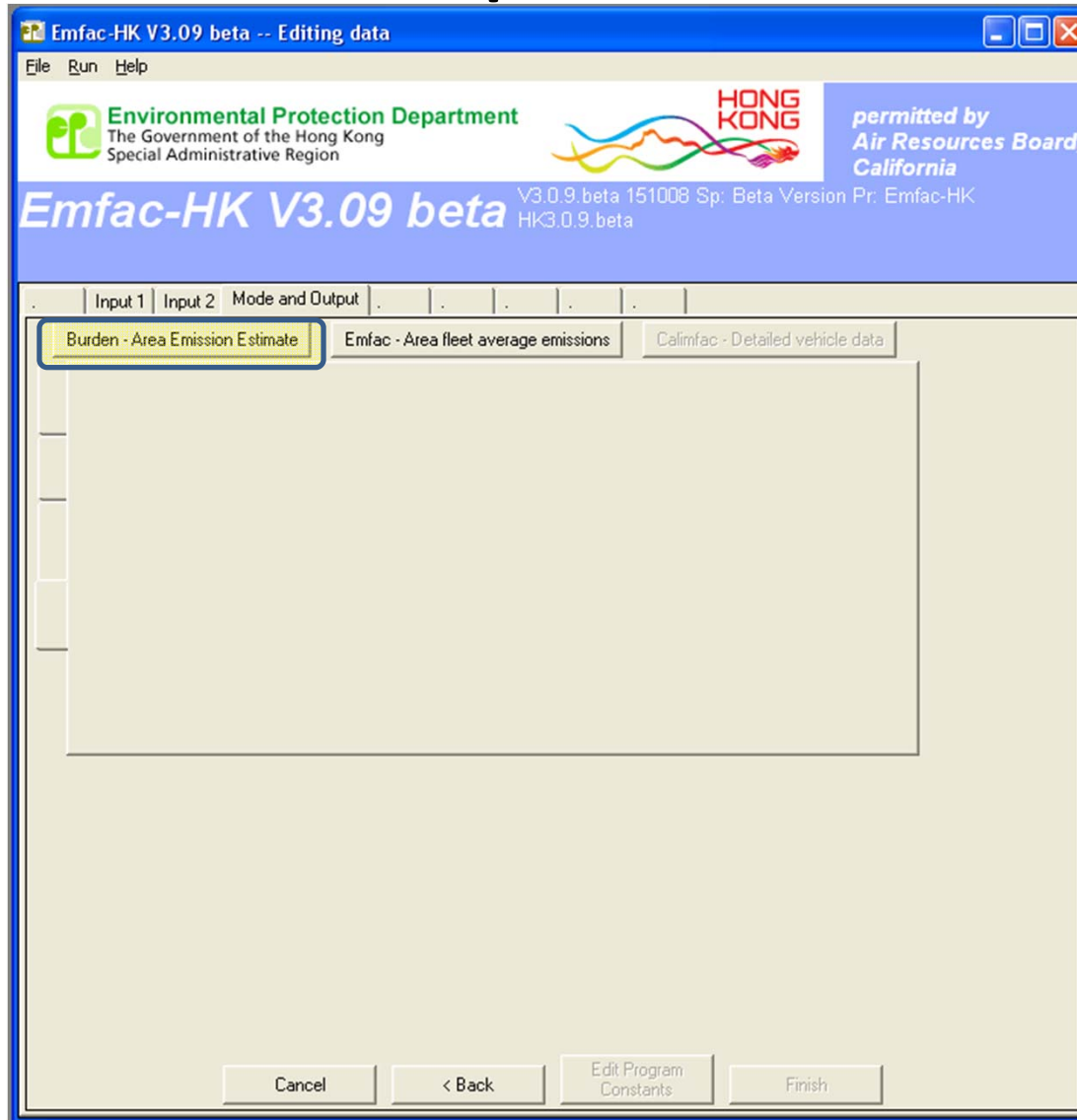


# Mode and Output Tab

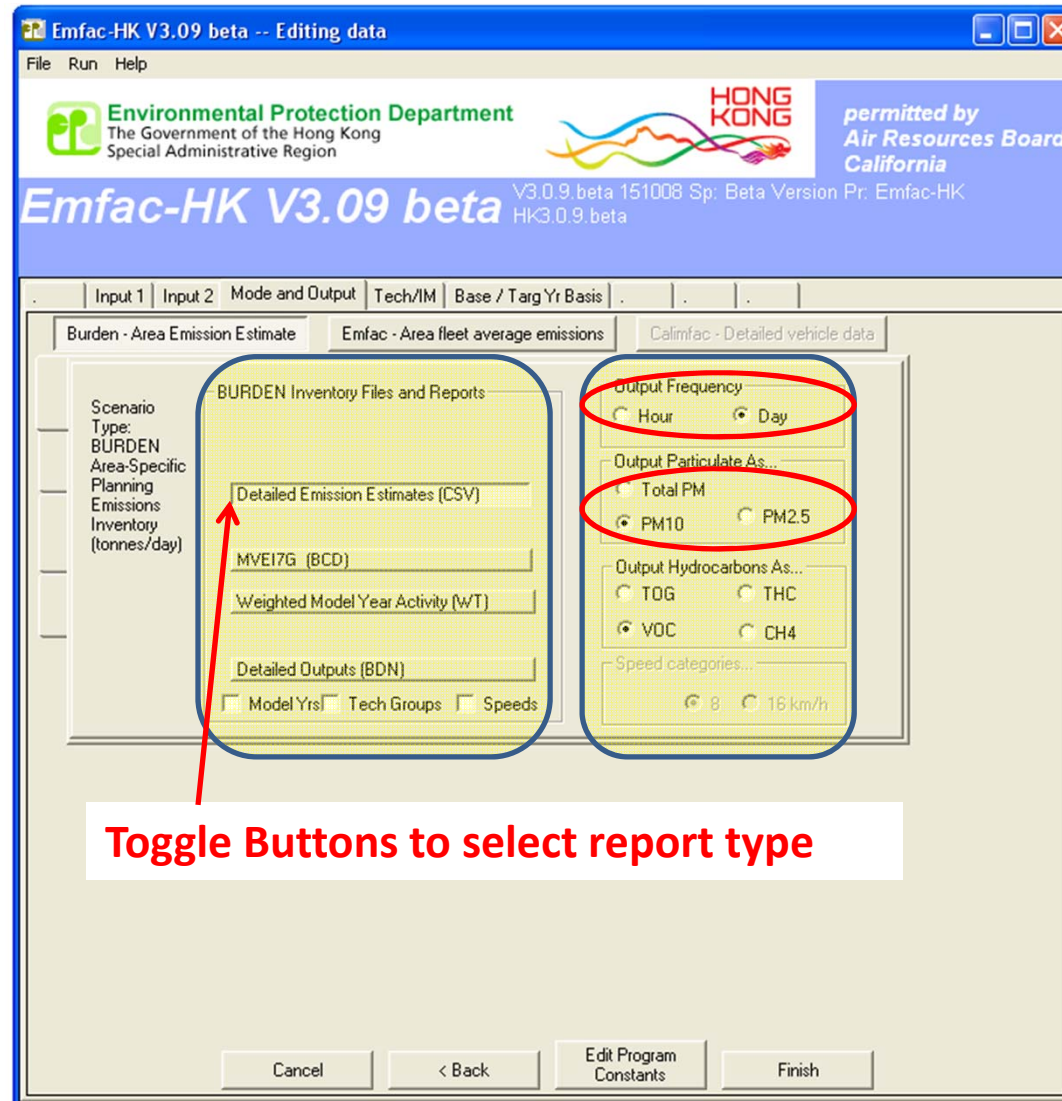


Version 3.1 has separate tabs for each operating mode.

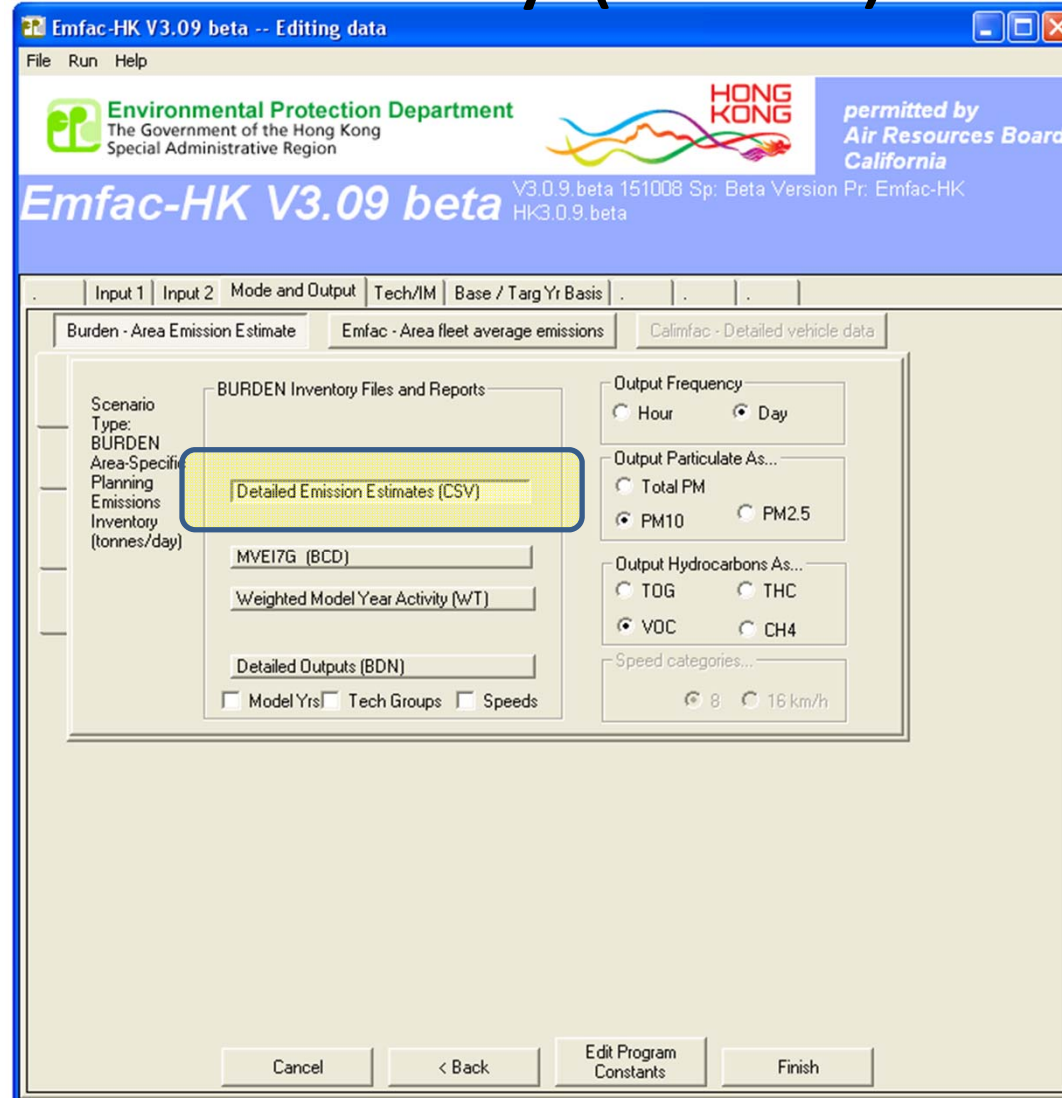
# Mode and Output Tab: Burden



# BURDEN Output Options



# BURDEN Output: Detailed Planning Inventory (\*.CSV)



# Detailed Planning Inventory (\*.csv)

HK\_2030\_Burden.csv

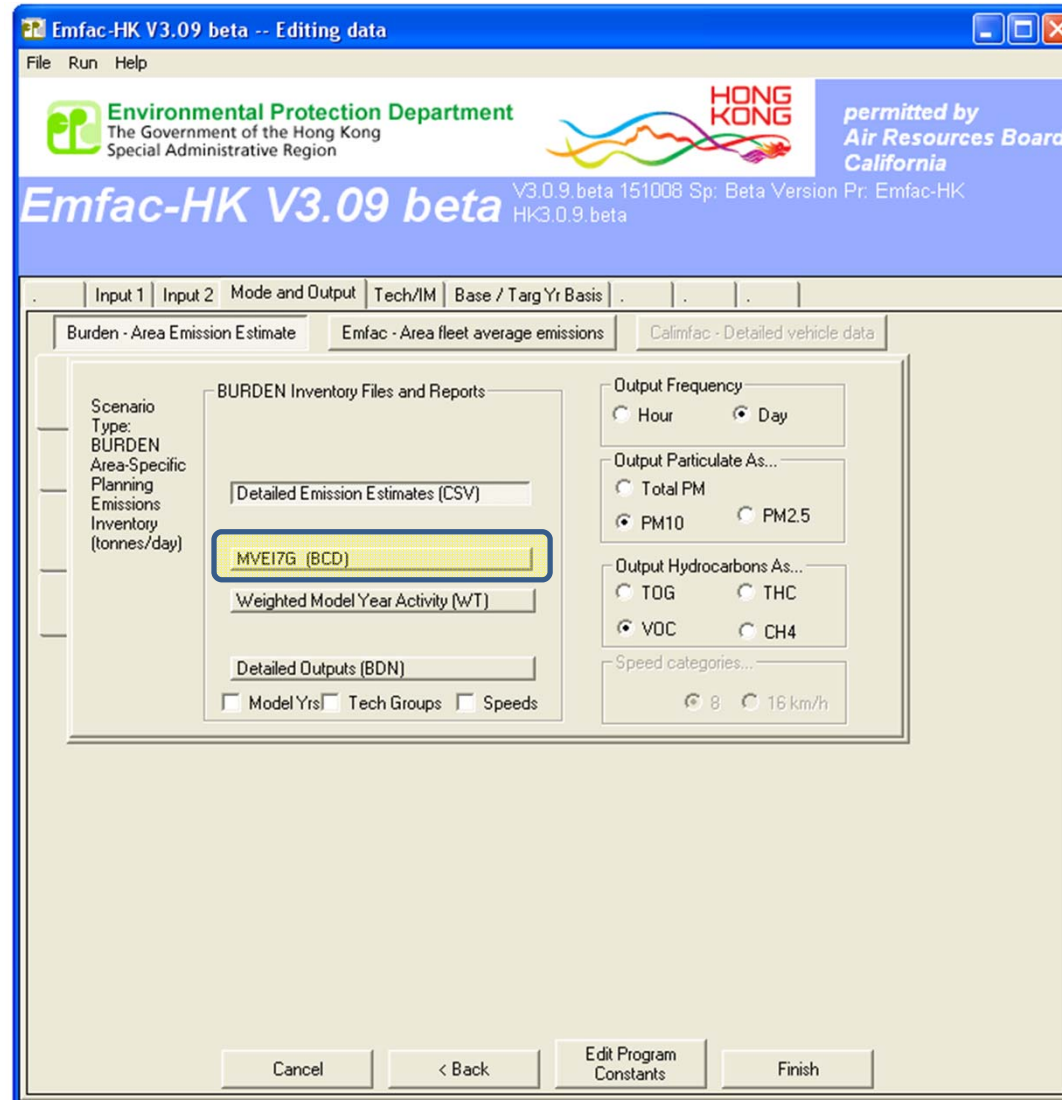
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	Title : Hong Kong SAR Annual CYr 2030 Default Title																			
2	Version : Emfac-HK V3.09 beta V3.0.9.beta 151008 Sp: Beta Version Pr: Emfac-HK HK3.0.9.beta																			
3	Run Date : 2015/11/03 00:56:10																			
4	Scen Year: 2030 -- All 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	790876	277	0	791151	0	0	0	18204	18204	0	2	1003	0	1003	0	1038	33842	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	0.03817	0.03817	0.00007	0.00014	0	0.00123	0.00001	0.00285	0.05605	0	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	0.00005	0.00001	0.00116	0	0
17	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
18	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
19	Diurnal	0.00003	0.30319	0	0	0.30322	0	0	0	0	0.00001	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	0.00001	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	0.00004	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	0.00001	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	0.00017	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	0.06703	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	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
40	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Columns: Vehicle Class/Fuel/Catalyst

Rows: "Activity" Data

Rows: Pollutant/Emissions Process

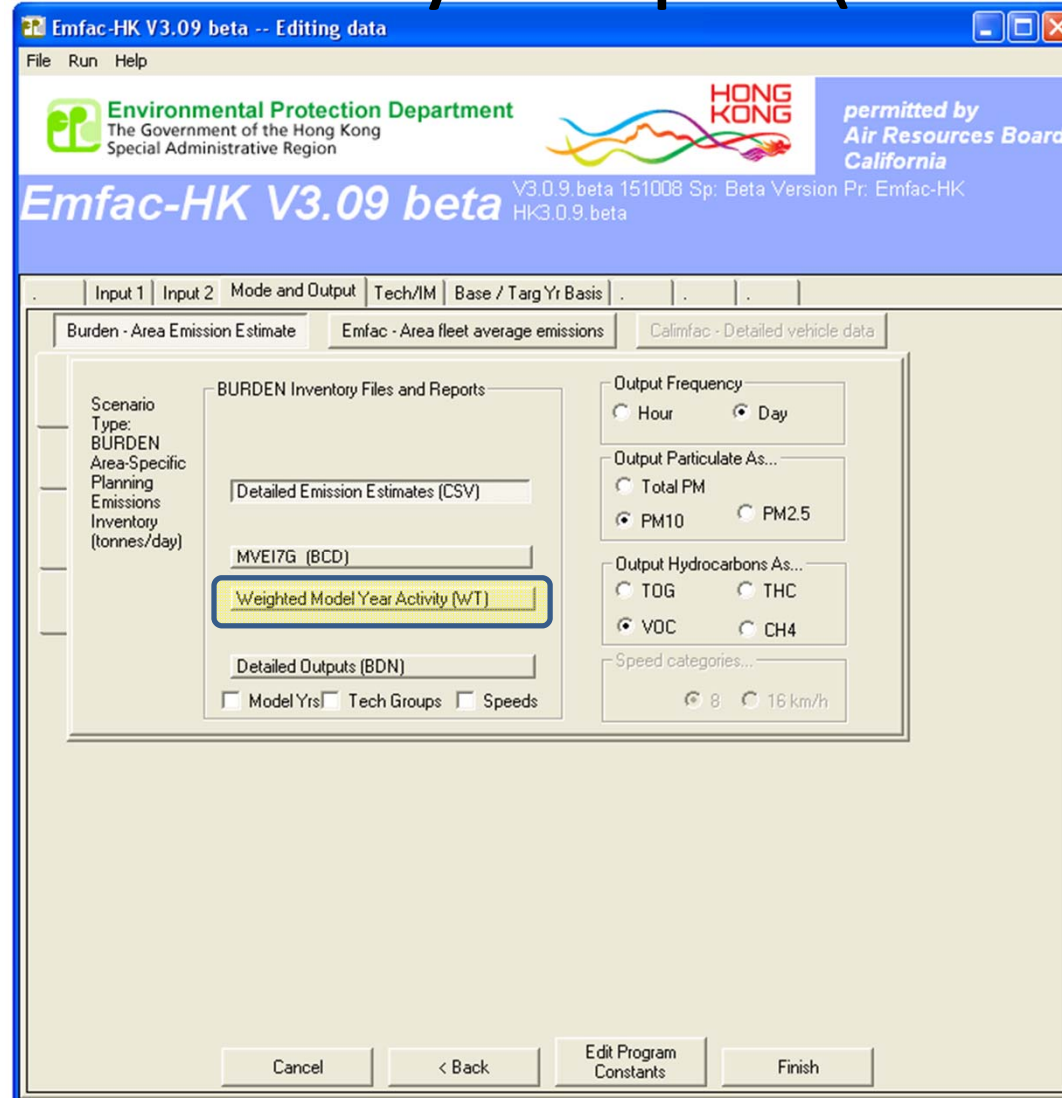
# BURDEN Output: MVEI7G (\*.bcd.csv)



# MVEI7G CSV file (\*.bcd.csv)

1	CALYR	START MY	END MYR	REGION	SAR	STARTS	POPULATIO	VKT	VEH TYPE	VEH TECH	POLLUTAN	PROCESS	EMISSION	BASIS
2	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	CO	Run Exh	0.001218	Day
3	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	NOx	Run Exh	0.000157	Day
4	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	PM	Run Exh	0.000001	Day
5	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	VOC	Run Exh	0.000009	Day
6	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	CO2	Run Exh	0.011113	Day
7	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	CO	Start Ex	0.000213	Day
8	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	NOx	Start Ex	0.000003	Day
9	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	PM	Start Ex	0	Day
10	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	VOC	Start Ex	0.000038	Day
11	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	CO2	Start Ex	0.000884	Day
12	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	CO	Hot Soak	0	Day
13	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	NOx	Hot Soak	0	Day
14	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	PM	Hot Soak	0	Day
15	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	VOC	Hot Soak	0.00002	Day
16	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	CO2	Hot Soak	0	Day
17	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	CO	Running	0	Day
18	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	NOx	Running	0	Day
19	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	PM	Running	0	Day
20	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	VOC	Running	0.000094	Day
21	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	CO2	Running	0	Day
22	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	CO	PD Rest	0	Day
23	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	NOx	PD Rest	0	Day
24	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	PM	PD Rest	0	Day
25	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	VOC	PD Rest	0.000036	Day
26	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	CO2	PD Rest	0	Day
27	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	CO	MD Rest	0	Day
28	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	NOx	MD Rest	0	Day
29	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	PM	MD Rest	0	Day
30	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	VOC	MD Rest	0.000002	Day
31	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	CO2	MD Rest	0	Day
32	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	CO	Resting	0	Day
33	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	NOx	Resting	0	Day
34	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	PM	Resting	0	Day
35	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	VOC	Resting	0.000039	Day
36	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	CO2	Resting	0	Day
37	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	CO	PD Diurn	0	Day
38	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	NOx	PD Diurn	0	Day
39	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	PM	PD Diurn	0	Day
40	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	VOC	PD Diurn	0.000032	Day
41	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	CO2	PD Diurn	0	Day
42	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	CO	MD Diurn	0	Day
43	2030	1986	2030	SAR Avera	Hong Kong	4	3	51	PC	NCAT	NOx	MD Diurn	0	Day
44	2030	1986	2030	SAR Avera	Hong Kong	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

-----

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

Ln1, Col1

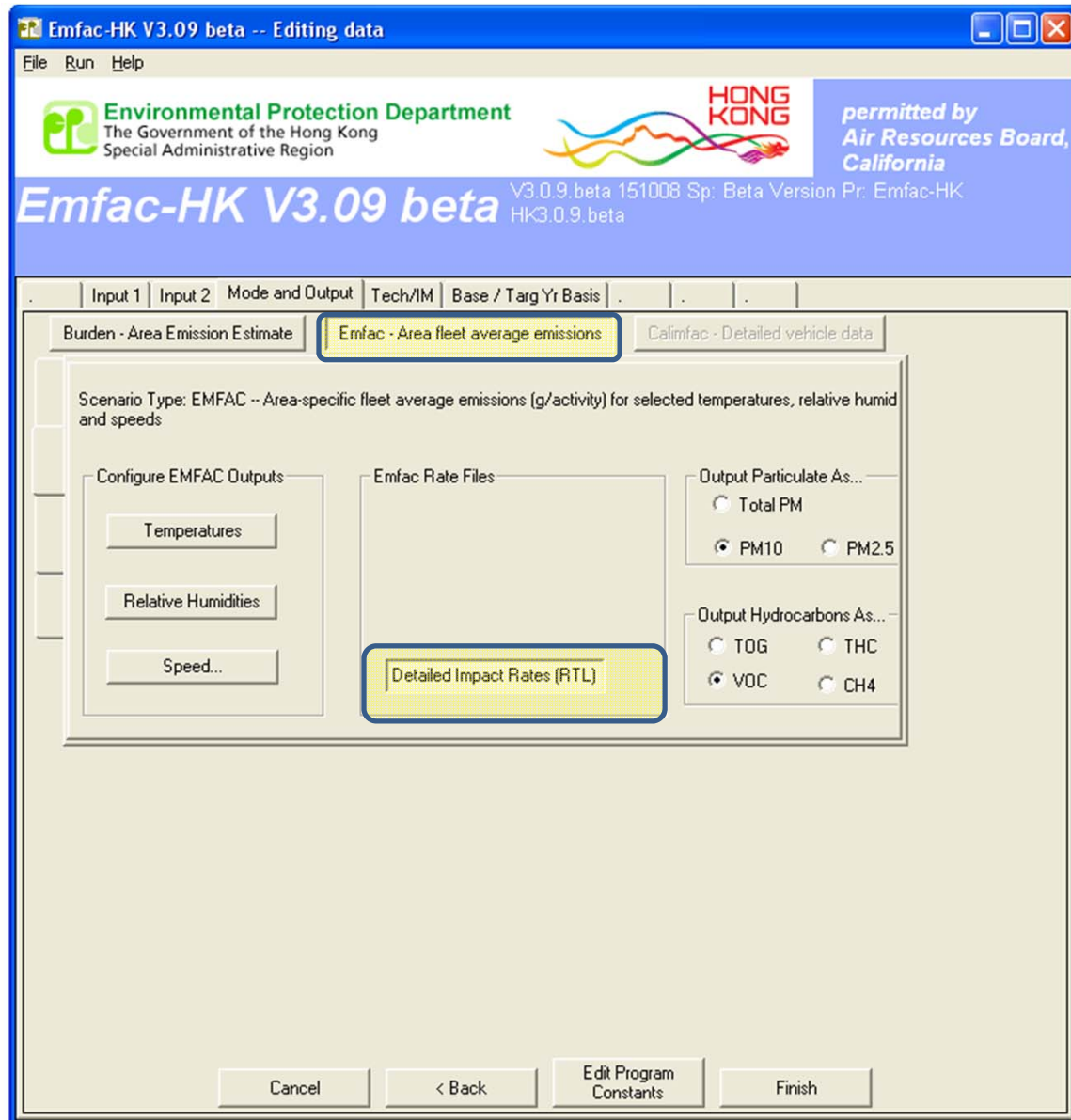
# BURDEN: Detailed Output (\*.bdn.csv)

The screenshot shows the 'Emfac-HK V3.09 beta -- Editing data' window. The interface includes a menu bar (File, Run, Help) and a header with logos for the Environmental Protection Department and the Air Resources Board, California. The main window is divided into tabs: 'Burden - Area Emission Estimate', 'Emfac - Area fleet average emissions', and 'Calimfac - Detailed vehicle data'. The 'BURDEN Inventory Files and Reports' section is active, displaying a list of options: 'Detailed Emission Estimates (CSV)', 'MVEI7G (BCD)', 'Weighted Model Year Activity (WT)', and 'Detailed Outputs (BDN)'. The 'Detailed Outputs (BDN)' option is highlighted with a yellow background. Below it are three checkboxes: 'Model Yrs', 'Tech Groups', and 'Speeds'. To the right, there are sections for 'Output Frequency' (Hour, Day), 'Output Particulate As...' (Total PM, PM10, PM2.5), 'Output Hydrocarbons As...' (TOG, THC, VOC, CH4), and 'Speed categories...' (8, 16 km/h). A red arrow points from a text box at the bottom to the checkboxes. The text box contains the instruction: 'Check boxes to include details by model year, TG, or Speed'. At the bottom of the window are buttons for 'Cancel', '< Back', 'Edit Program Constants', and 'Finish'.

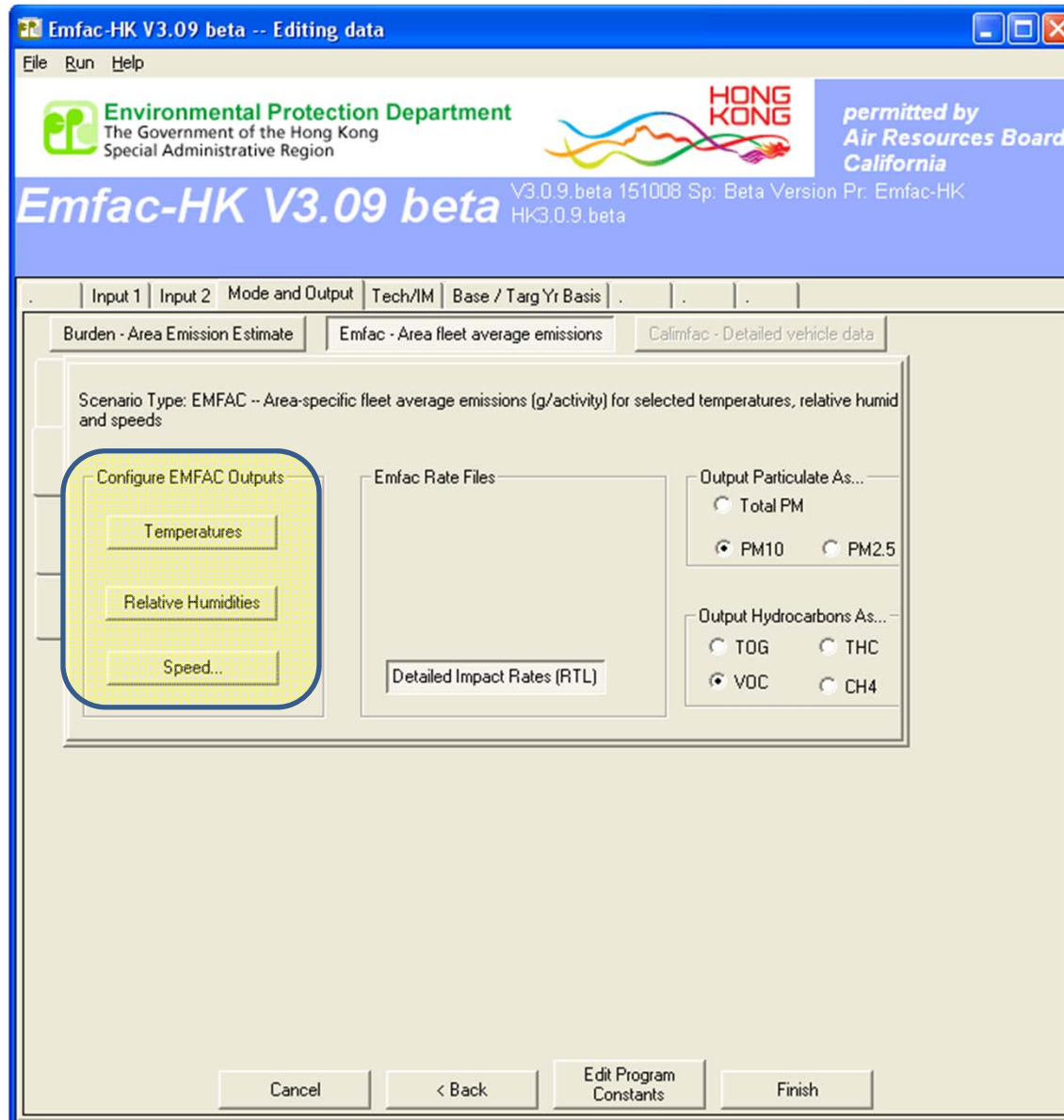
Check boxes to include details by model year, TG, or Speed



# EMFAC Mode Options



# EMFAC Mode Options



# EMFAC Mode Options – Select/Edit Temperatures (°C)

The screenshot displays the Emfac-HK V3.09 beta software interface. The main window title is "Emfac-HK V3.09 beta -- Editing data". The interface includes logos for the Environmental Protection Department of the Government of the Hong Kong Special Administrative Region and the Air Resources Board of California. The main menu bar contains "File", "Run", and "Help". The main window has several tabs: "Input 1", "Input 2", "Mode and Output", "Tech/IM", "Base / Targ Yr Basis", and "Detailed Impact Rates (RTL)". The "Mode and Output" tab is active, showing options for "Burden - Area Emission Estimate", "Emfac - Area fleet average emissions", and "Calmfac - Detailed vehicle data". The "Emfac - Area fleet average emissions" sub-tab is selected, showing a "Scenario Type" of "EMFAC -- Area-specific fleet average emissions (g/activity) for selected temperatures, relative humid and speeds". Under "Configure EMFAC Outputs", the "Temperatures" button is highlighted with a red box. A red arrow points from this button to a secondary dialog box titled "Select/Edit temperature for Emfac calculations". This dialog box contains a list of 24 temperature options, each with a radio button and a text input field. The first option, "Delete temperature 1", is selected and has a value of "5" entered. The other options are "Delete temperature 2" (5), "Delete temperature 3" (10), "Delete temperature 4" (15), "Delete temperature 5" (20), "Delete temperature 6" (25), "Delete temperature 7" (30), "Delete temperature 8" (35), "Delete temperature 9" (40), "Enter temperature 10", "Enter temperature 11", "Enter temperature 12", "Enter temperature 13", "Enter temperature 14", "Enter temperature 15", "Enter temperature 16", "Enter temperature 17", "Enter temperature 18", "Enter temperature 19", "Enter temperature 20", "Enter temperature 21", "Enter temperature 22", "Enter temperature 23", and "Enter temperature 24". A checkbox labeled "Sort the array (done after exit)" is checked. The dialog box has "OK" and "Cancel" buttons.

Customize temperature settings for output

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

The image shows the Emfac-HK V3.09 beta software interface. The main window has a menu bar (File, Run, Help) and a header with logos for the Environmental Protection Department of the Government of the Hong Kong Special Administrative Region and the Air Resources Board of California. The main area contains several tabs: 'Burden - Area Emission Estimate', 'Emfac - Area fleet average emissions', and 'Calimfac - Detailed vehicle data'. The 'Emfac - Area fleet average emissions' tab is active, showing a 'Scenario Type' of 'EMFAC -- Area-specific fleet average emissions (g/activity) for selected temperatures, relative humid and speeds'. Under 'Configure EMFAC Outputs', the 'Relative Humidities' button is highlighted with a blue box. A red arrow points from this button to a secondary dialog box titled 'Select/Edit rel hum for Emfac calculations'. This dialog box contains a list of 24 relative humidity options, each with a radio button and a text input field. The first option, 'Delete rel hum 1', is selected and has a value of 0. Other options range from 10 to 100. There are also options to 'Enter rel hum' from 13 to 24. At the bottom of the dialog, there is a checked checkbox for 'Sort the array (done after exit)' and 'OK' and 'Cancel' buttons.

Emfac-HK V3.09 beta -- Editing data

File Run Help

Environmental Protection Department  
The Government of the Hong Kong  
Special Administrative Region

HONG KONG

permitted by  
Air Resources Board,  
California

Emfac-HK V3.09 beta V3.0.9.beta 151008 Sp: Beta Version Pr: Emfac-HK  
HK3.0.9.beta

Input 1 Input 2 Mode and Output Tech/IM Base / Targ Yr Basis

Burden - Area Emission Estimate Emfac - Area fleet average emissions Calimfac - Detailed vehicle data

Scenario Type: EMFAC -- Area-specific fleet average emissions (g/activity) for selected temperatures, relative humid and speeds

Configure EMFAC Outputs

Temperatures

Relative Humidities

Speed...

Emfac Rate Files

Detailed Impact Rates (RTL)

Output Particulate As...

Total PM

PM10 PM2.5

Output Hydrocarbons As...

TOG THC

VOC CH4

Select/Edit rel hum for Emfac calculations

Enter data for rel hum. Click button to enable new value.

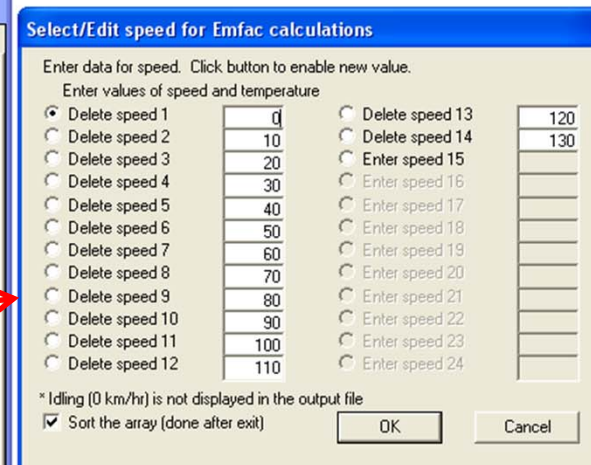
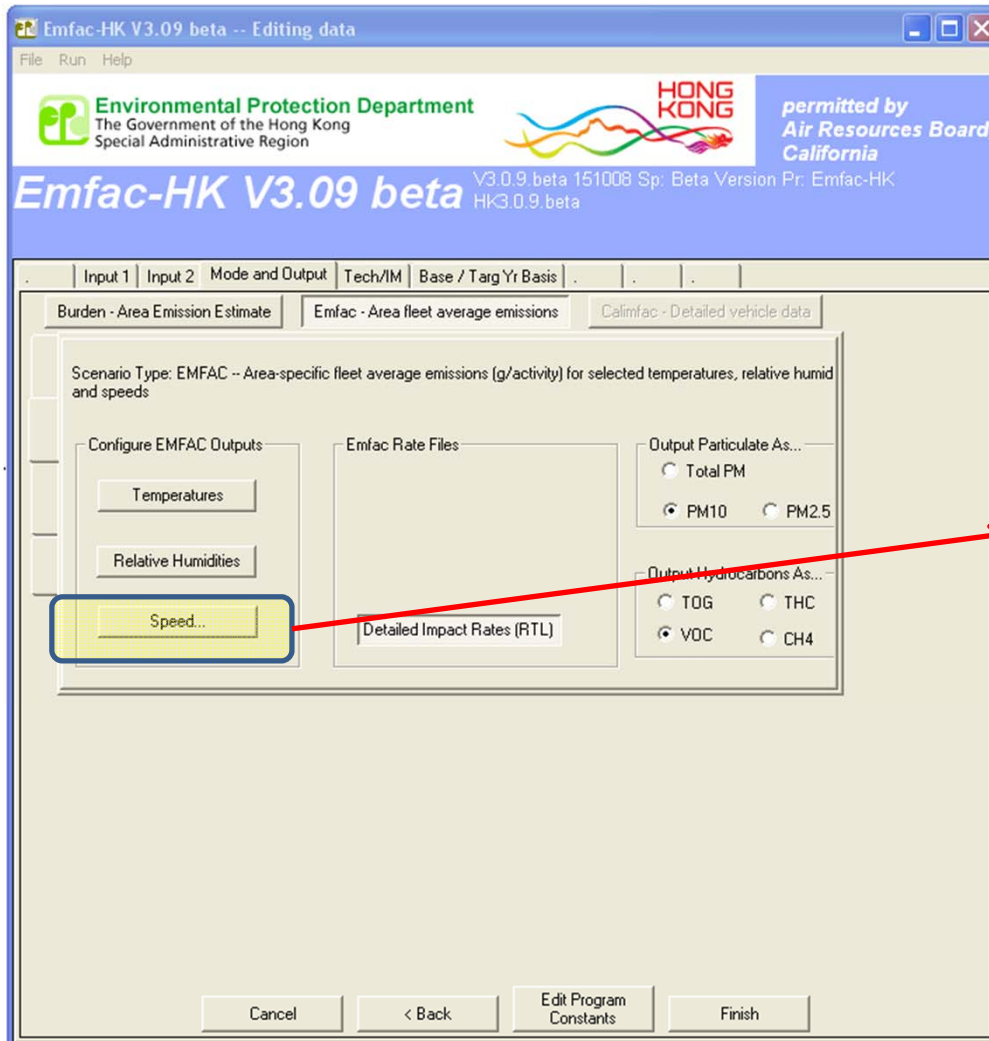
Enter values of speed and temperature

- Delete rel hum 1
- Delete rel hum 2
- Delete rel hum 3
- Delete rel hum 4
- Delete rel hum 5
- Delete rel hum 6
- Delete rel hum 7
- Delete rel hum 8
- Delete rel hum 9
- Delete rel hum 10
- Delete rel hum 11
- Enter rel hum 12
- Enter rel hum 13
- Enter rel hum 14
- Enter rel hum 15
- Enter rel hum 16
- Enter rel hum 17
- Enter rel hum 18
- Enter rel hum 19
- Enter rel hum 20
- Enter rel hum 21
- Enter rel hum 22
- Enter rel hum 23
- Enter rel hum 24

Sort the array (done after exit)

OK Cancel

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





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

Microsoft Excel

Home Insert Page Layout Formulas Data Review View Developer QuickBooks

Clipboard Font Alignment Number Styles

File Home Insert Page Layout Formulas Data Review View Developer QuickBooks

Clipboard Font Alignment Number Styles

Conditional Formatting Format as Table

Normal Bad Good Neutral Calculation

Check Cell Explanatory Text Input Linked Cell Note

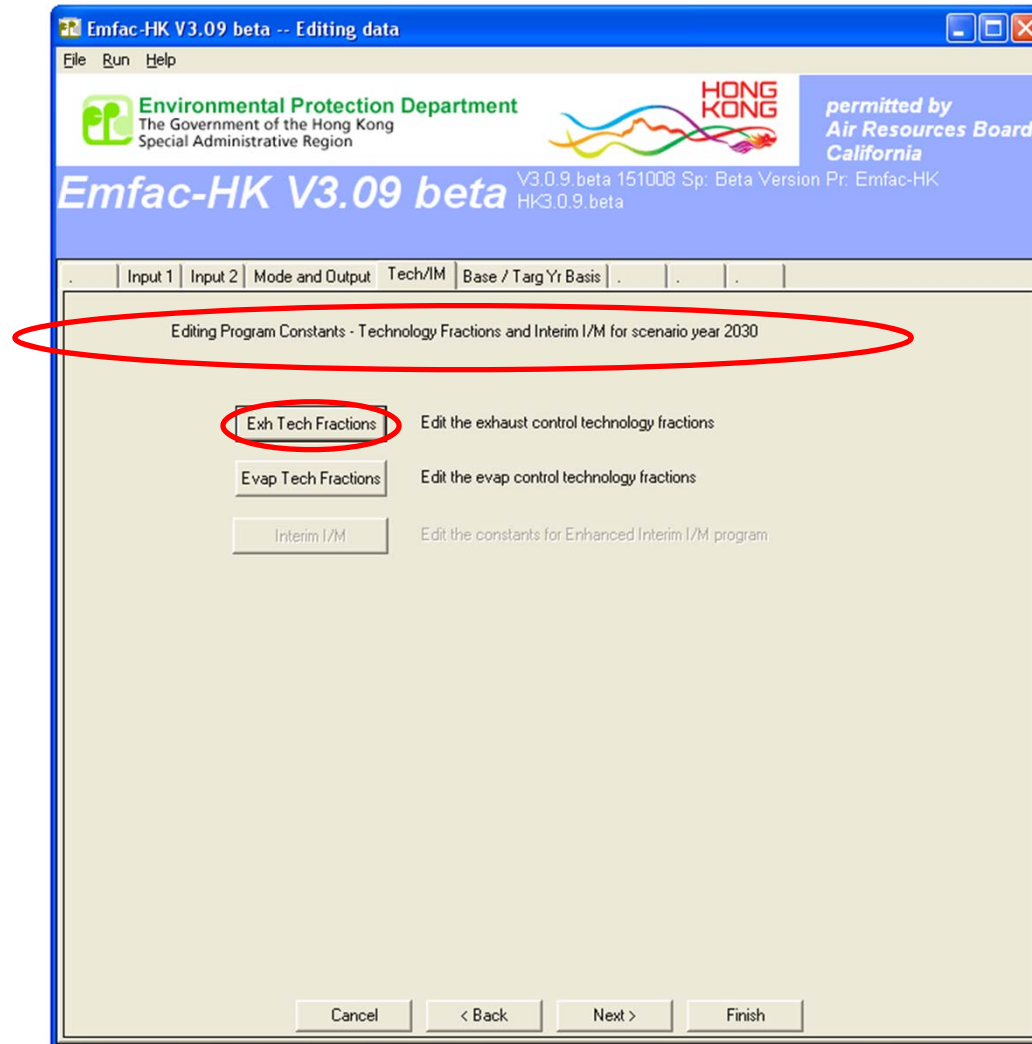
Insert Delete

A1 Title : Hong Kong SAR Annual Cvr 2030 Default Title

Ex0\_Emfac\_Sample.rtl.csv

1	Title : Hong Kong SAR Annual Cvr 2030 Default Title																											
2	Version : Emfac-HK V3.0.9 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 V3.0.9 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	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	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	66.4477	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

Exhaust Technology Fractions

Edit Exhaust Technology Fractions by 01: Private Cars (PC)

Vehicle Class

Model Year 2015

EXHAUST Technology Groups Total: 100.0000% OK

# of Tech Groups 3

Group	%	Model years, vehicle classes, standards
29	99.2136	Euro V - VI PC petrol and Euro VI PC diesel
174	0.3382	Euro V - DPF SCR PC diesel
175	0.4482	Euro V - SCR PC diesel
1		
1		
1		
1		
1		
1		
1		
1		

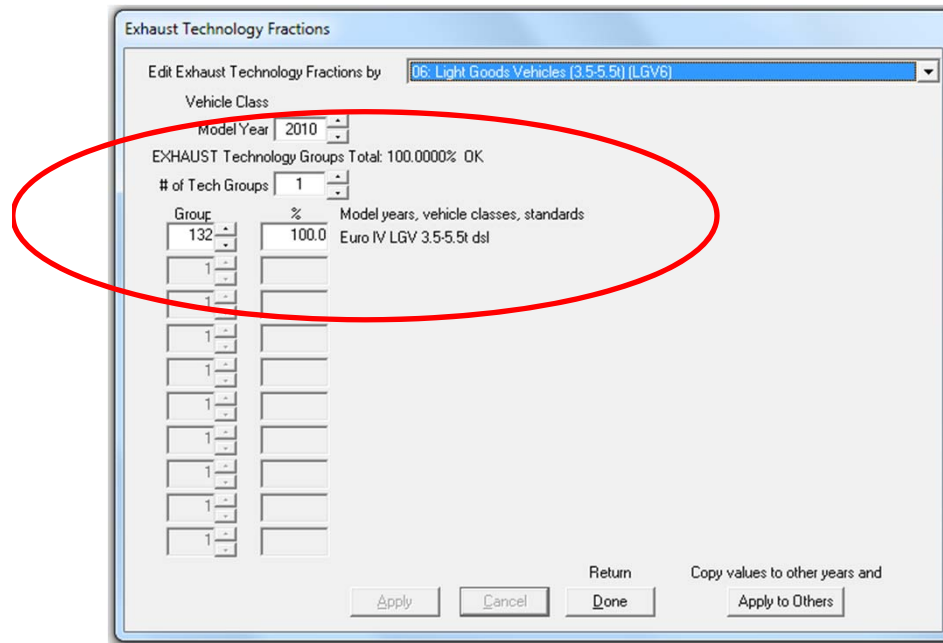
Return Copy values to other years and

Apply Cancel Done Apply to Others

# Editing Exhaust Technology Fractions (cont.)

Before Edit

“During” Edit



Exhaust Technology Fractions

Edit Exhaust Technology Fractions by: 06: Light Goods Vehicles (3.5-5.5t) (LGV6)

Vehicle Class

Model Year: 2010

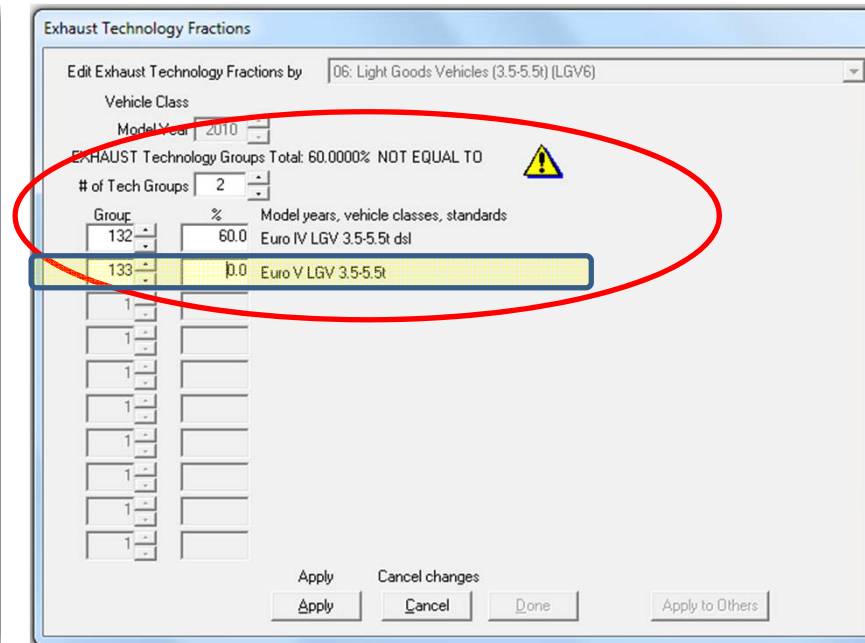
EXHAUST Technology Groups Total: 100.0000% OK

# of Tech Groups: 1

Group	%	Model years, vehicle classes, standards
132	100.0	Euro IV LGV 3.5-5.5t dsl

Return Copy values to other years and

Apply Cancel Done Apply to Others




Exhaust Technology Fractions

Edit Exhaust Technology Fractions by: 06: Light Goods Vehicles (3.5-5.5t) (LGV6)

Vehicle Class

Model Year: 2010

EXHAUST Technology Groups Total: 60.0000% NOT EQUAL TO 

# of Tech Groups: 2

Group	%	Model years, vehicle classes, standards
132	60.0	Euro IV LGV 3.5-5.5t dsl
133	0.0	Euro V LGV 3.5-5.5t

Apply Cancel changes

Apply Cancel Done Apply to Others

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

Evap Technology Fractions

Edit Evap Technology Fractions by 01: Private Cars (PC)

Vehicle Class

Model Year 2013

EVAP Technology Groups Total: 100.0000% OK

# of Tech Groups 1

Group	%	Model years, vehicle classes, standards
<span>14</span>	<span>100.0</span>	PC Euro III+, 1-day Diurnal
<span>1</span>		
<span>1</span>		
<span>1</span>		
<span>1</span>		
<span>1</span>		
<span>1</span>		
<span>1</span>		
<span>1</span>		
<span>1</span>		
<span>1</span>		

Return Copy values to other years and

Apply Cancel Done Apply to Others

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

Emfac-HK V3.09 beta -- Editing data

File Run Help

Environmental Protection Department  
The Government of the Hong Kong  
Special Administrative Region

HONG KONG

permitted by  
Air Resources Board,  
California

Emfac-HK V3.09 beta V3.0.9.beta 151008 Sp: Beta Version Pr: Emfac-HK  
HK3.0.9.beta

Input 1 | Input 2 | Mode and Output | Tech/IM | Targ Yr Basis (2030) | Pop/Accrual | VKT/Trips | Profiles/Speed

Editing - Calendar Year Basis for Activity

Select the calendar year basis for editing activity data:

2030 (Target Year)	Active
2030 (Target Year)	Options
2014 (Alt. Baseline Pop)	Options

Active: Which activity data to be displayed/edited.

Cancel < Back Next > Finish



# Target Year Display/Edits

The screenshot shows the 'Emfac-HK V3.09 beta -- Editing data' window. The title bar includes 'File Run Help' and window control buttons. The header area features the Environmental Protection Department logo, 'The Government of the Hong Kong Special Administrative Region', the 'HONG KONG' logo, and a note 'permitted by Air Resources Board, California'. Below this, it says 'Emfac-HK V3.09 beta' and 'V3.0.9.beta 151008 Sp: Beta Version Pr: Emfac-HK HK3.0.9.beta'. The navigation bar contains tabs: 'Input 1', 'Input 2', 'Mode and Output', 'Tech/IM', 'Targ Yr Basis (2030)', 'Pop/Accrual', 'VKT/Trips', and 'Profiles/Speed'. The 'Targ Yr Basis (2030)' tab is highlighted and pointed to by a red arrow from a text box. The main content area is titled 'Editing Program Constants - Population and Odometer Accrual for scenario year 2030'. It contains two buttons: 'Population' with the text 'Edit the vehicle population' and 'Accrual' with the text 'Edit the odometer accrual \*'. Below these is an 'Info' button and the text '\* Accrual is independent of...'. At the bottom are 'Cancel', '< Back', 'Next >', and 'Finish' buttons.

Target Year Selection: display/edit of population, Accrual, VKT/Trips, and Profiles/Speed allowed

# Alt Baseline Year Display/Edits

Emfac-HK V3.09 beta -- Editing data

File Run Help

Environmental Protection Department  
The Government of the Hong Kong  
Special Administrative Region

HONG KONG

permitted by  
Air Resources Board,  
California

Emfac-HK V3.09 beta V3.0.9.beta 151008 Sp: Beta Version Pr: Emfac-HK  
HK3.0.9.beta

Input 1 Input 2 Mode and Output Tech/IM Base Yr Basis (2014) Population

Editing - Calendar Year Basis for Activity

Select the calendar year basis for editing activity data:

2014 (Alt. Baseline Pop)	Active
2030 (Target Year)	Options
2014 (Alt. Baseline Pop)	Options

Cancel < Back Next > Finish

Alt BaselineYear  
Selection: Only  
population tab  
allowed

# Editing Total Target Population

Editing Target Pop data for scenario 1: Hong Kong SAR Annual CYr 2030 Default Title

Total Target Pop for area: Hong Kong SAR

Editing Mode: Total Target Pop | By Vehicle Class | By Vehicle and Fuel | By Vehicle/Fuel/Age

Editing Target Pop (forecast from base or all baseline yr)

Revised Total Target Pop: 1031774

Previous Total Target Pop: 1031774

Buttons: Apply, Cancel, Done

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

Editing Target Pop data for scenario 1: Hong Kong SAR Annual CYr 2030 Default Title

Total Target Pop for area: Hong Kong SAR

Editing Mode: Editing Target Pop (forecast from base or alt baseline yr)

Total Target Pop | By Vehicle Class | By Vehicle and Fuel | By Vehicle/Fuel/Age

Vehicle Class	Fuel (1=Petrol/2=Diesel/3=LPG)		
	1	2	3
01 - Private Cars (PC)	790873.2	277.4	0.0
02 - Taxi	0.0	0.0	8203.5
03 - Light Goods Vehicles<=2.5t	1.9	1003.1	0.0
04 - Lt Goods Vehicles 2.5-3.5t	1057.8	53842.3	0.0
05 - Light Goods Vehicles>3.5t	0.0	26631.7	0.0
06 - Medium_Heavy Goods Vehic	0.0	12720.9	0.0
07 - Medium_Heavy Goods Vehicles>1	0.0	34329.9	0.0
08 - Public Light Buses	0.0	1623.5	2724.0
09 - Private Light Bus <=3.5t	630.7	403.6	0.0
10 - Private Light Bus >3.5t	2.4	2336.6	666.8
11 - Non-franchised Bus<=6.4t	0.0	2932.0	0.0
12 - Non-franchised Bus 6.4-15t	0.0	2054.1	0.0
13 - Non-franchised Bus >15t	0.0	2958.1	0.0
14 - Franchised Bus (SD)	0.0	388.0	0.0
15 - Franchised Bus (DD)	0.0	5403.0	0.0
16 - Motorcycles (MC)	70709.2	0.0	0.0
17 - <Placeholder (P1)>	0.0	0.0	0.0
18 - <Placeholder (P2)>	0.0	0.0	0.0
19 - <Placeholder (P3)>	0.0	0.0	0.0
20 - <Placeholder (P4)>	0.0	0.0	0.0
21 - <Placeholder (P5)>	0.0	0.0	0.0

Buttons: Copy with Headings, Paste Data Only, Apply, Cancel, Done

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

Editing Target Pop data for scenario 1: Hong Kong SAR Annual CYr 2030 Default Title

Total Target Pop for area: Hong Kong SAR

Editing Mode: Editing Target Pop (registered vehicles with adjustments)

Total Target Pop | By Vehicle Class | By Vehicle and Fuel | By Vehicle/Fuel/Age

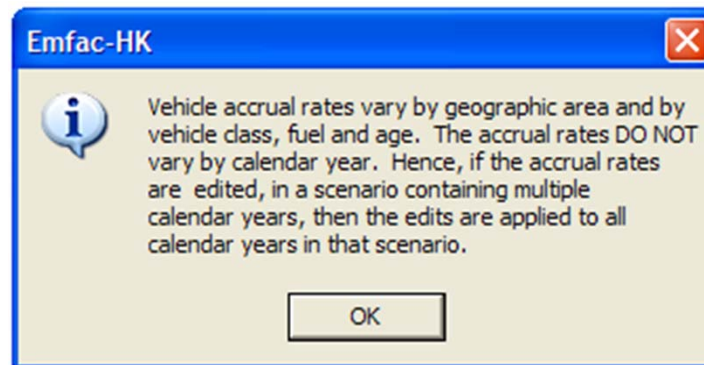
		Vehicle Class			
		18	19	20	21
Age	25	0.0	0.0	0.0	0.0
	26	0.0	0.0	0.0	0.0
	27	0.0	0.0	0.0	0.0
	28	0.0	0.0	0.0	0.0
	29	0.0	0.0	0.0	0.0
	30	0.0	0.0	0.0	0.0
	31	0.0	0.0	0.0	0.0
	32	0.0	0.0	0.0	0.0
	33	0.0	0.0	0.0	0.0
	34	0.0	0.0	0.0	0.0
	35	0.0	0.0	0.0	0.0
	36	0.0	0.0	0.0	0.0
	37	0.0	0.0	0.0	0.0
	38	0.0	0.0	0.0	0.0
	39	0.0	0.0	0.0	0.0
	40	0.0	0.0	0.0	0.0
	41	0.0	0.0	0.0	0.0
	42	0.0	0.0	0.0	0.0
	43	0.0	0.0	0.0	0.0
	44	0.0	0.0	0.0	0.0
	45	0.0	0.0	0.0	0.0

Fuel Type:  
Petrol  
Diesel  
LPG

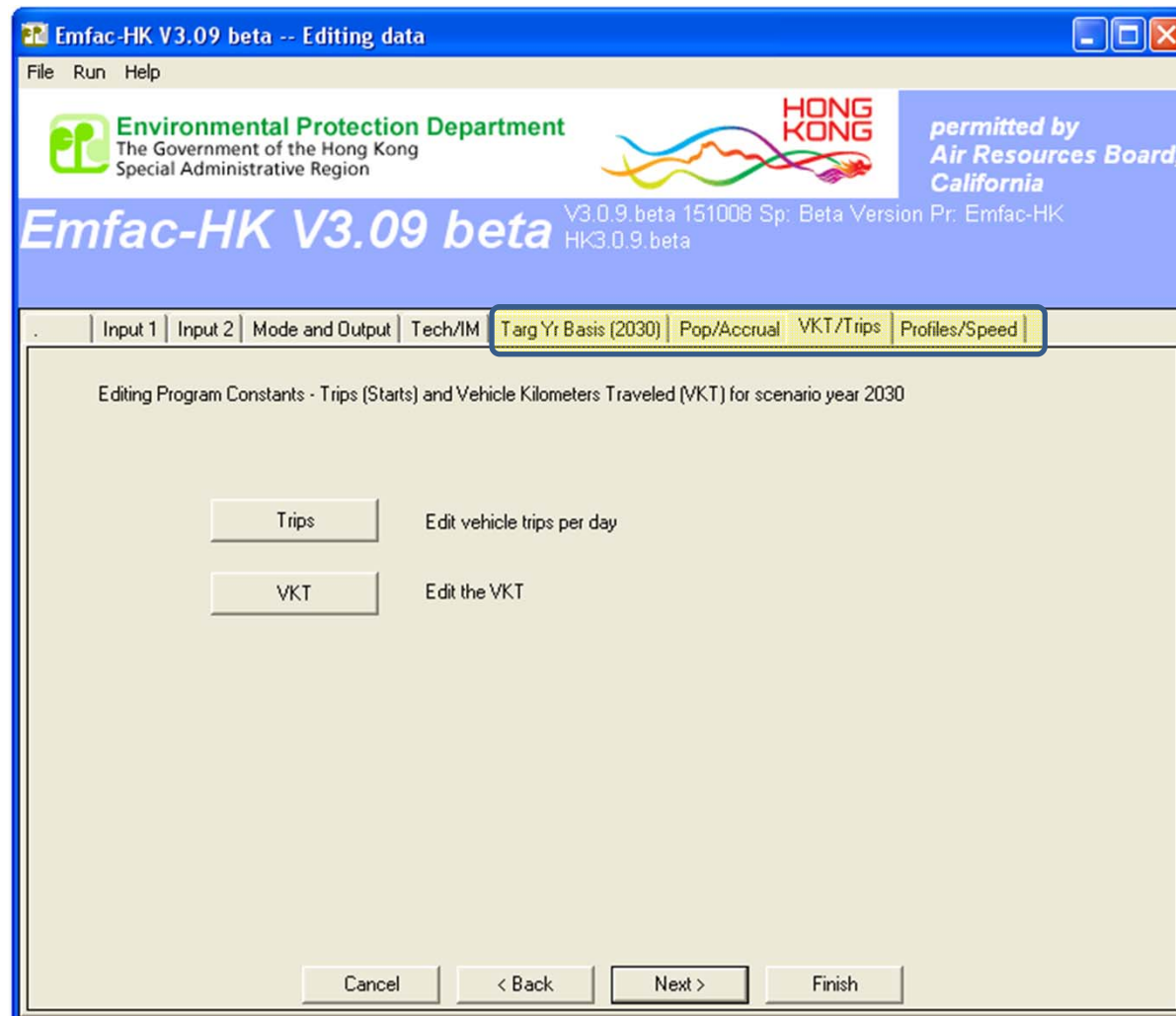
Apply Cancel Done

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 VKT data for scenario 1: Hong Kong SAR Annual 3 CYrs 2013 to 2030 Default Title

Total VKT for area

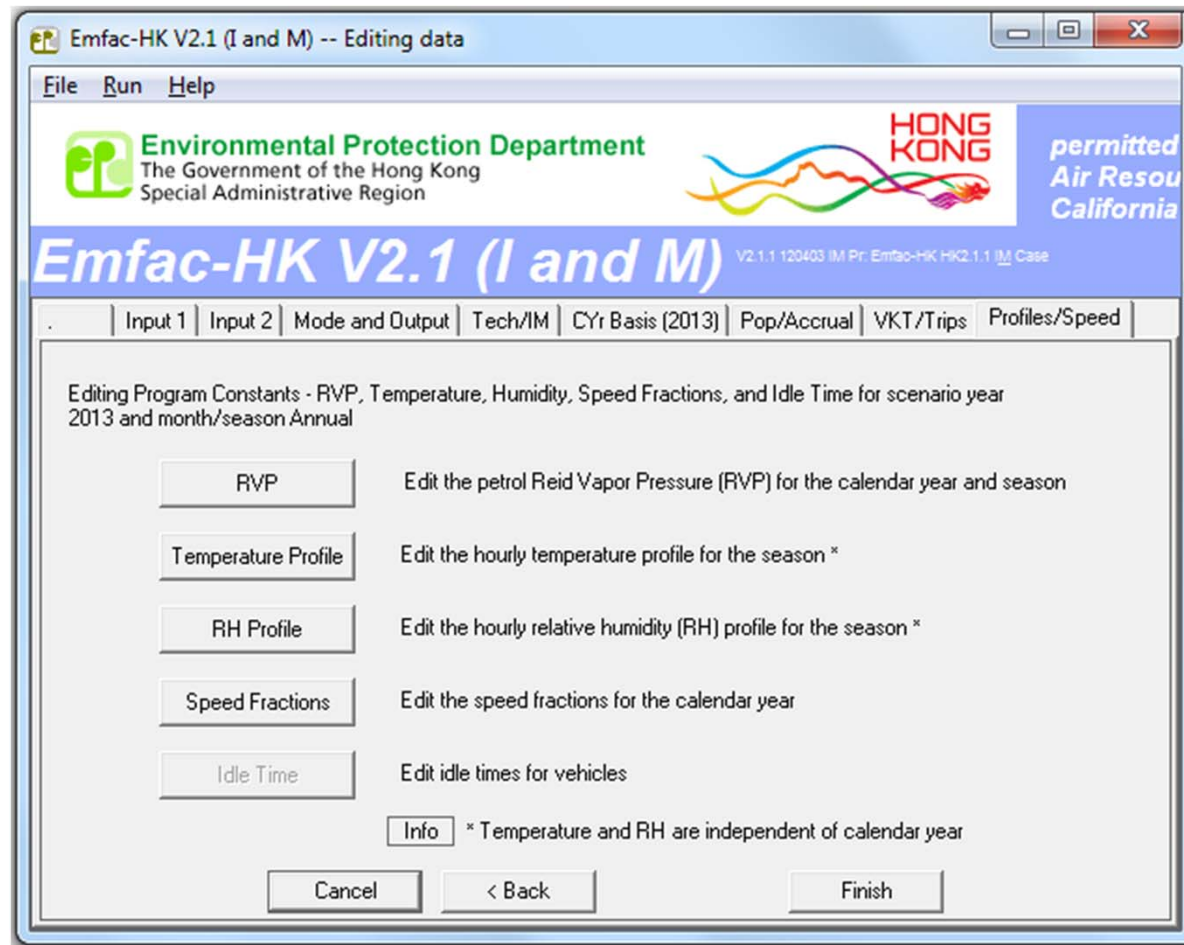
Editing Mode     Editing VKT (vehicle km traveled per weekday)

Revised Total VKT

Previous Total VKT



# Editing Profiles/Speed



# Editing Speed Profiles

Speed Fractions by Scenario Year and Vehicle Class

Area: Hong Kong SAR Scenario Year: 2013

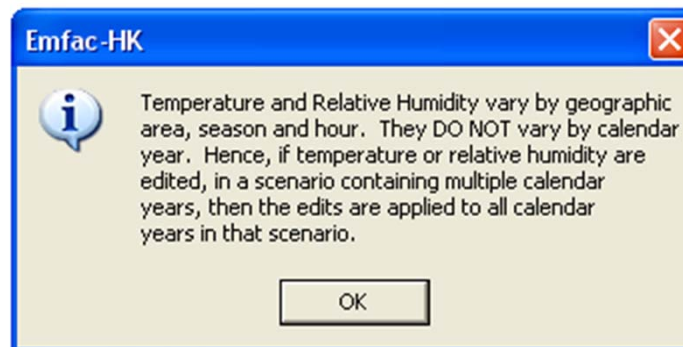
Hong Kong SAR

VKT-Weighted Average Basis: 1.6 KPH 8 KPH 16 KPH Vehicle Class: 01: Private Cars (PC)

		Hour (1 to 24)							
		1	2	3	4	5	6	7	8
Speed Bin (8,16,24,...) (1:18)	1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	4	0.0541	0.0541	0.0541	0.0541	0.0541	0.0541	0.0541	0.0589
	5	0.0980	0.0980	0.0980	0.0980	0.0980	0.0980	0.0980	0.1053
	6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	7	0.1993	0.1993	0.1993	0.1993	0.1993	0.1993	0.1993	0.2072
	8	0.0603	0.0603	0.0603	0.0603	0.0603	0.0603	0.0603	0.0748
	9	0.2731	0.2731	0.2731	0.2731	0.2731	0.2731	0.2731	0.2670
	10	0.1817	0.1817	0.1817	0.1817	0.1817	0.1817	0.1817	0.1692
	11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	12	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	13	0.1203	0.1203	0.1203	0.1203	0.1203	0.1203	0.1203	0.1026
	14	0.0132	0.0132	0.0132	0.0132	0.0132	0.0132	0.0132	0.0150
	15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	16	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	17	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	18	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Total 100.00 % OK


# Info Message for 'Profiles' Option for Temperatures and Relative Humidity



# Editing Temperature Profile

**Diurnal Temperature Profile**

Area: Hong Kong SAR  
Month: Annual  
VKT-Weighted Average of 1 Sub-areas



Hong Kong SAR

Copy with Headings Paste Data Only

Temperatures (C)

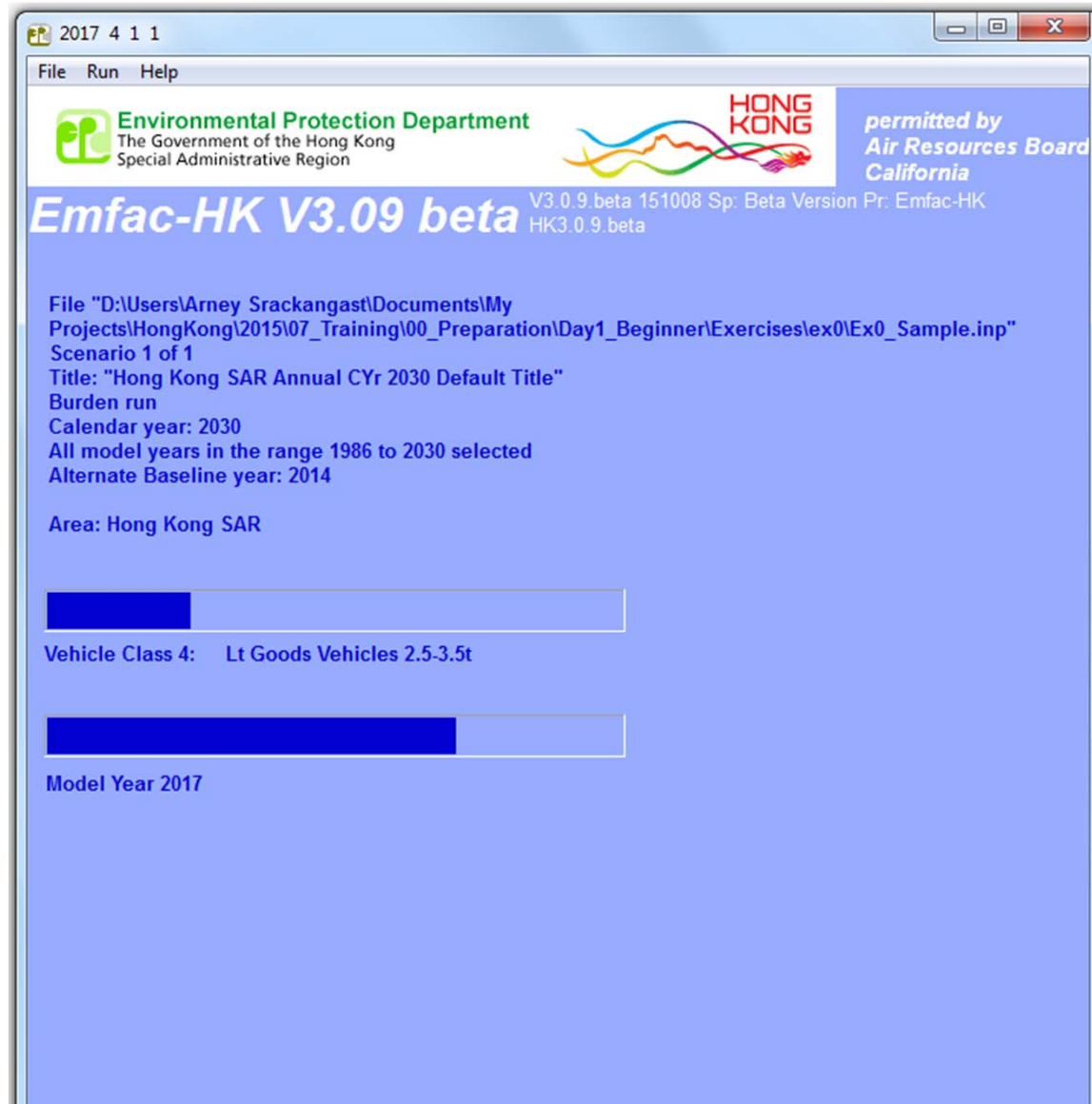
Hour											
0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100
21.8	21.7	21.6	21.4	21.3	21.2	21.1	21.2	21.9	22.8	23.5	24.2
1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
24.6	24.9	25.0	24.9	24.6	24.0	23.3	22.8	22.5	22.3	22.1	22.0

Modify Values for Range of Hours

to   Constant Value for Range

Apply Cancel Done

# Final Run or Progress Screen



# EMFAC-HK Version 3.1

## Example Input File

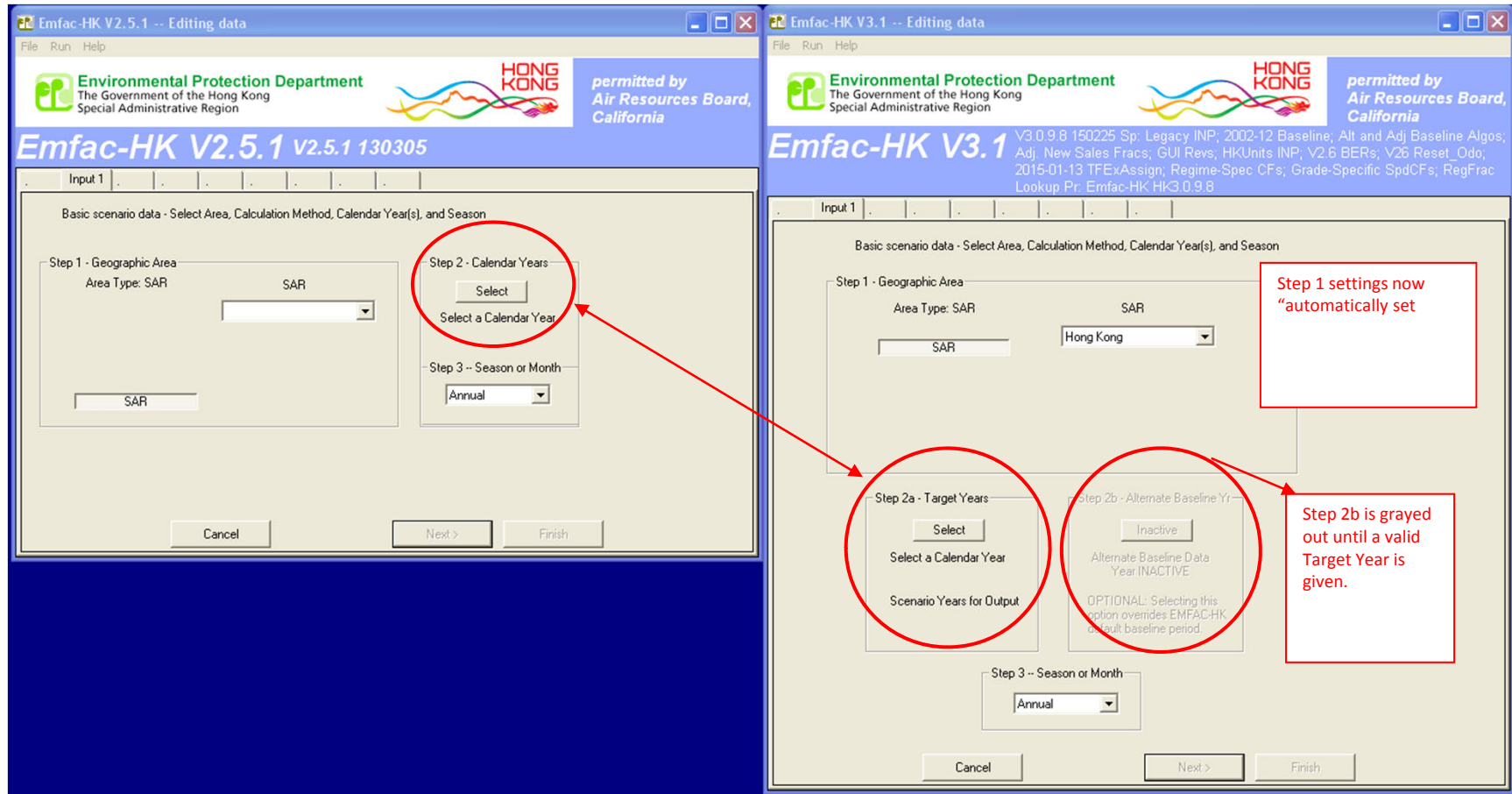
```
HK_2030_Burden.inp x
1 EmfacHK3B-Header
2 ....Version 3 0 9 0.....
3 ....Scenario-Count 1
4 ....HK-IM-Y 20 20 2014 85 85 2014 40 40 2014 20 20 2014 0 0 2014
5 ....HKUNITS-Y
6 End-Header
7 Begin-Scenario 1
8 ....Title Hong Kong SAR Annual CYr 2030 Default Title
9 ....Program-Mode Burden
10 ....Area-Method One-County
11 ....Area-Type SAR
12 ....Area-Number 38 [Hong Kong SAR]
13 ....HC-Mode VOC
14 ....PM-Mode PM10
15 ....CYr 2030
16 ....BYr -1
17 ....MYr All
18 ....Vehicles PC TAXI LGV3 LGV4 LGV6 HGV7 HGV8 PLB PV4 PV5 NFB6 NFB7 NFB8 FBSD FBDD MC
19 ....Season Annual
20 ....Burden-Reports CSV_Standard BCD
21 ....Burden-Daily
22 ....Burden-Speeds 5
23 End-Scenario
24
```

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



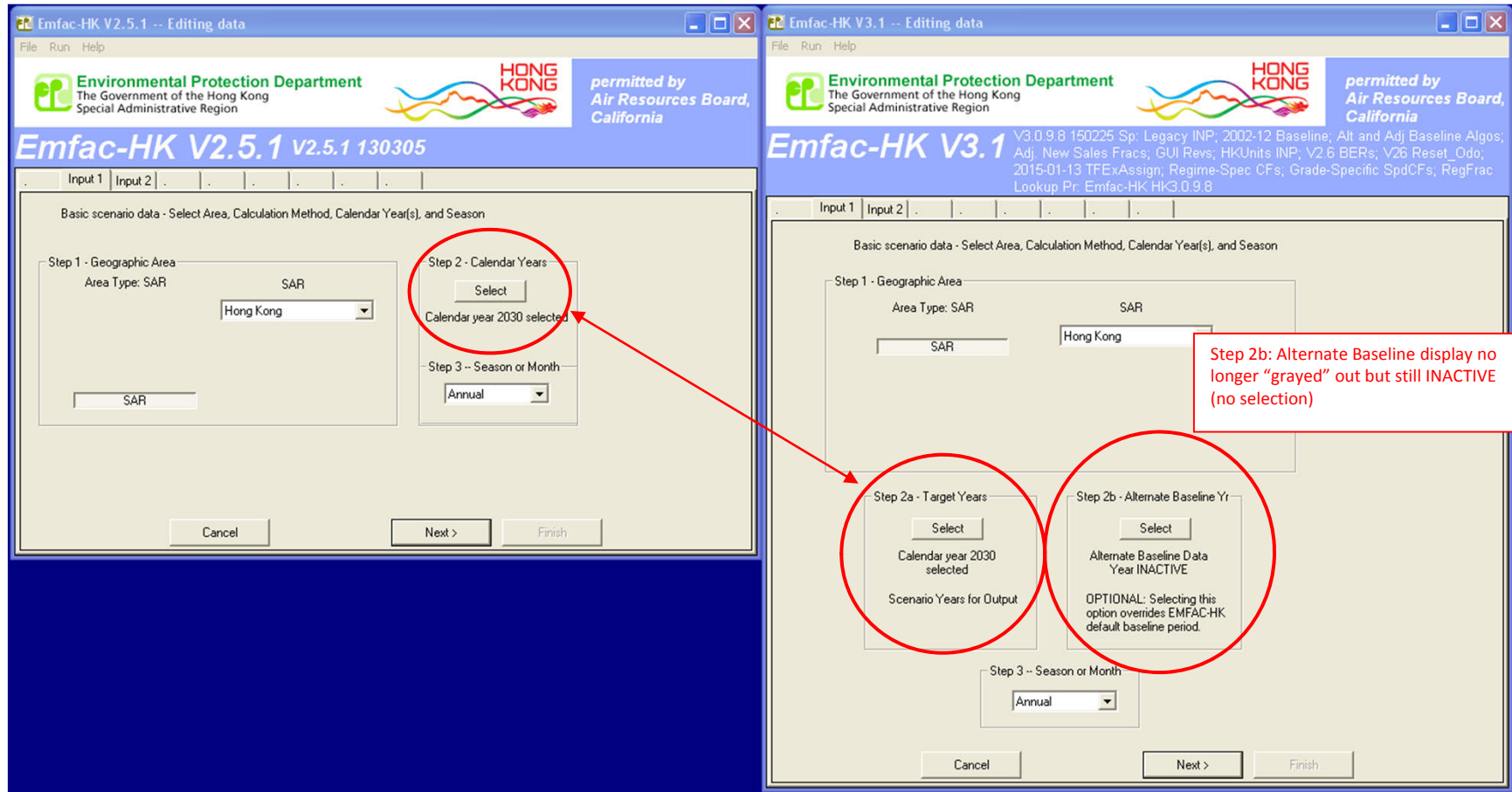
**Figure 1. Input 1 Screen (Initial)**

**Step 1 – Geographic Area (V3.1): “SAR and Hong Kong” is automatic (without having to invoke)**

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

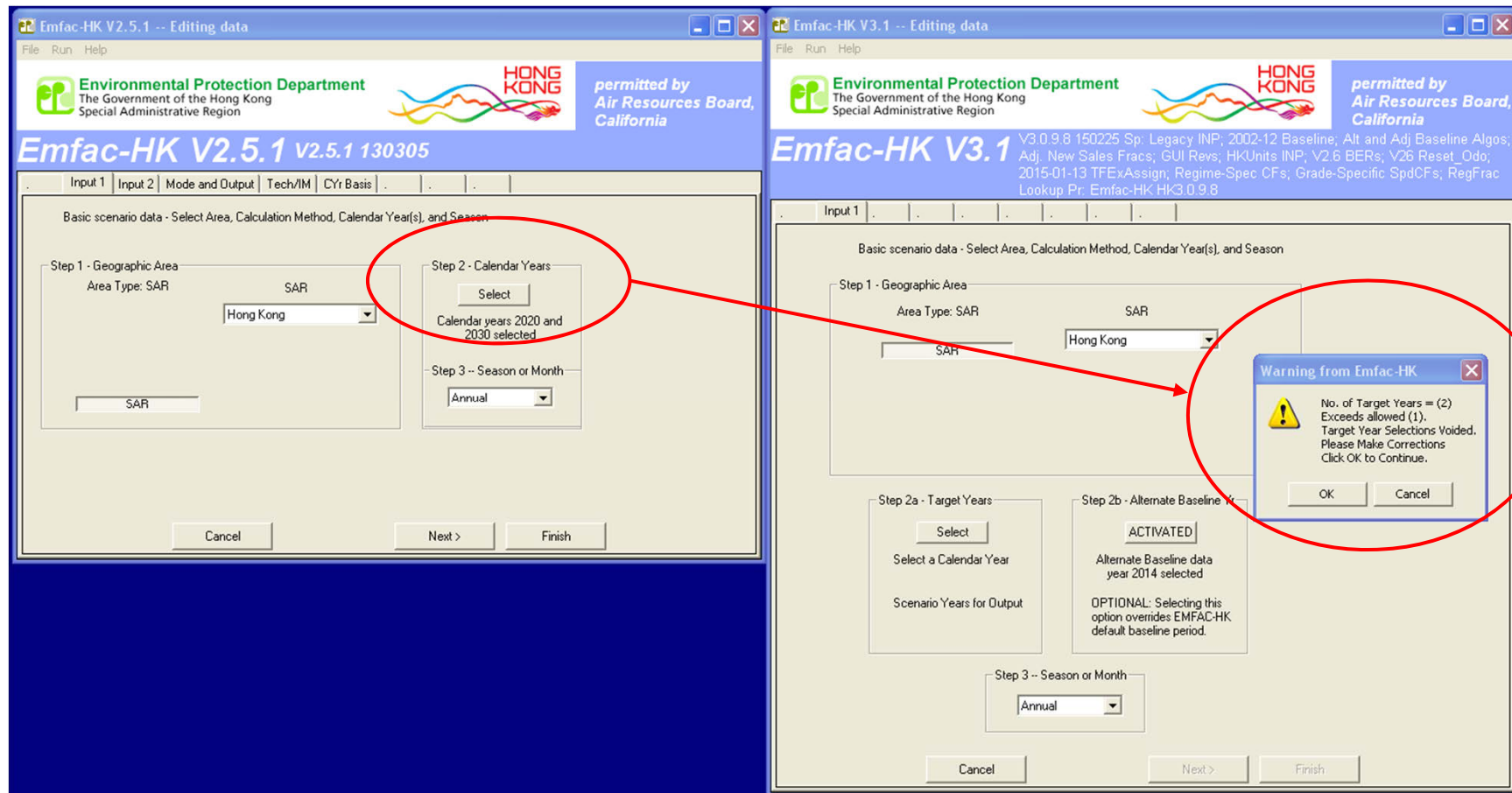
**Step 2b –Alternate Baseline Year is “grayed out” until a valid Target Year is entered.**



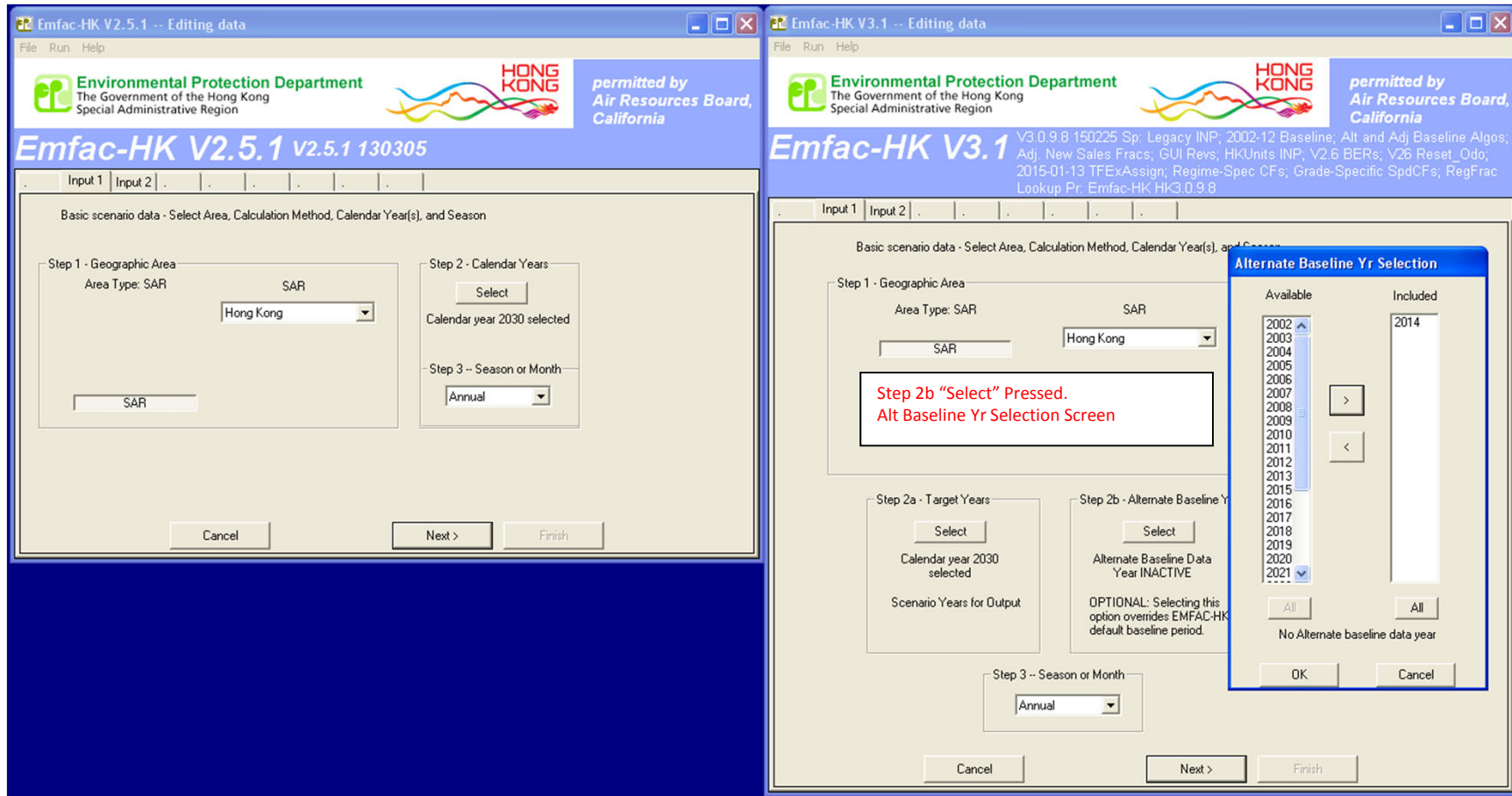


**Figure 2. Input 1 Screen (After Step 2a Selection. Before Step 2b Selection)**

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



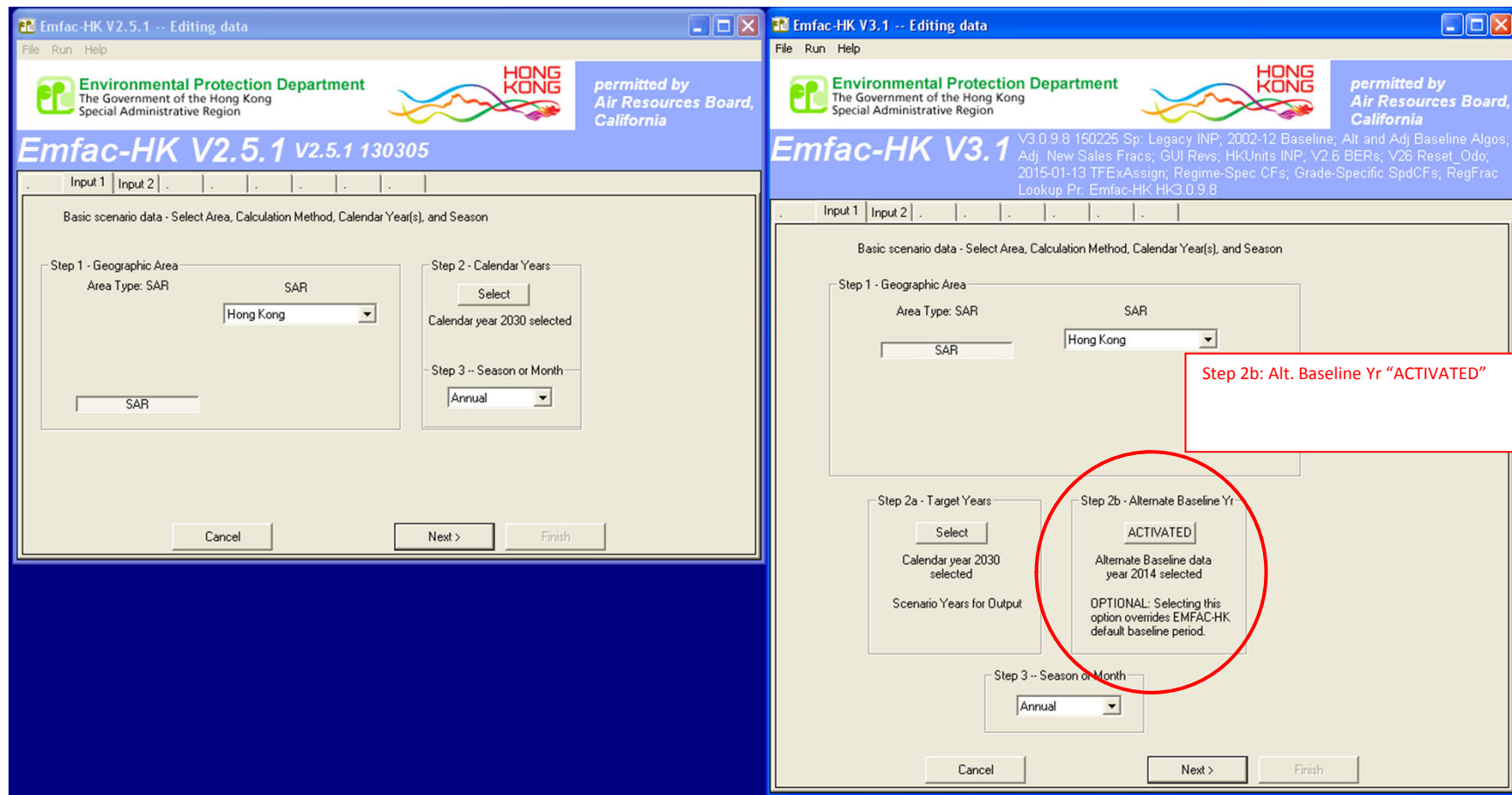
**Figure 3. Target Year Selection (Multi-Year No Longer Available)**  
**Step 2 – Multiple Target Years Allowed**  
**Step 2a – Multiple Target Years NO LONGER ALLOWED! Warning Triggered.**



**Figure 4. Alternate Baseline Yr Selection Screen**

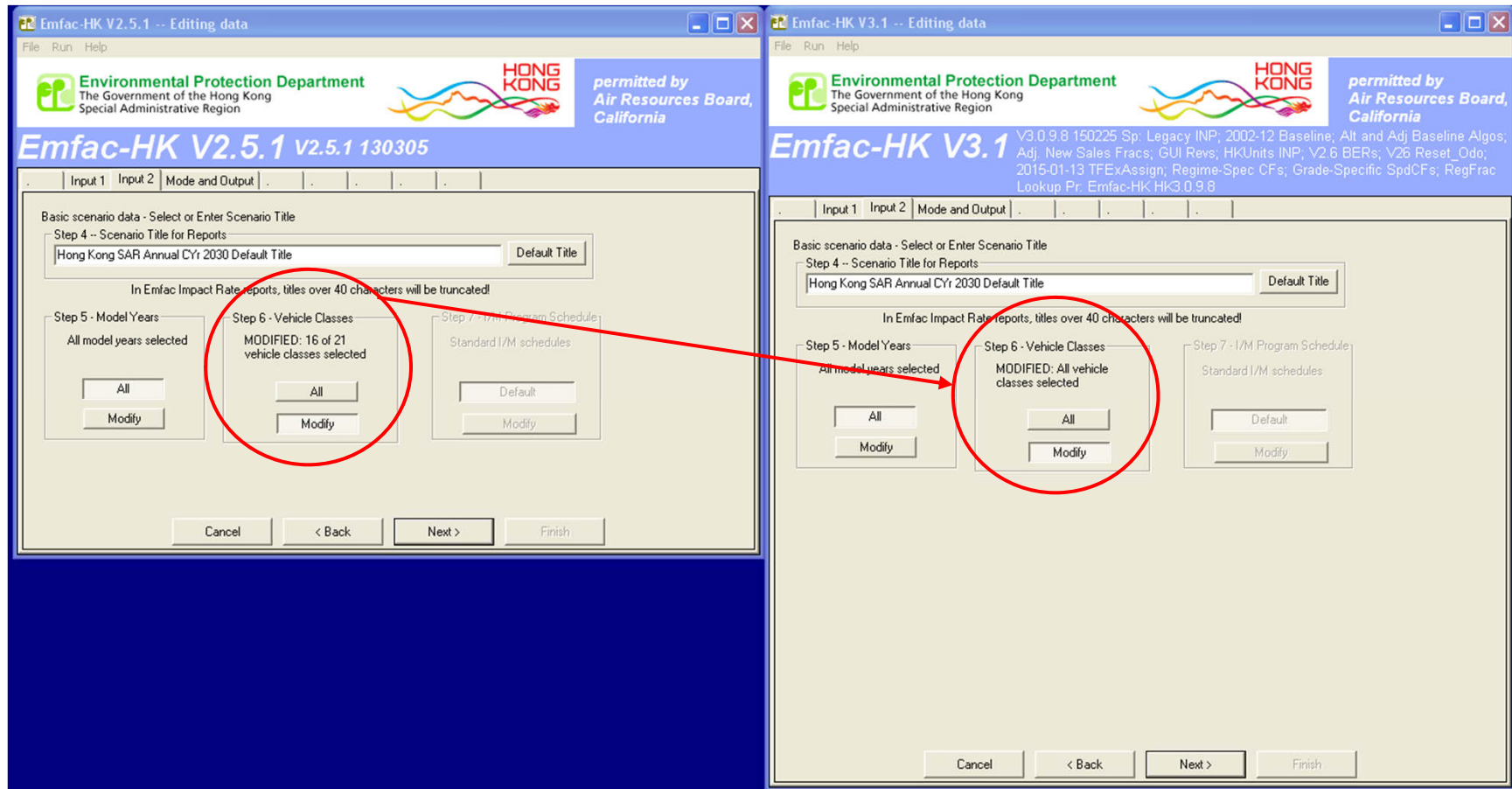
**Step 2b – Alternate Baseline Year of Calendar Year 2014 Selected**

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



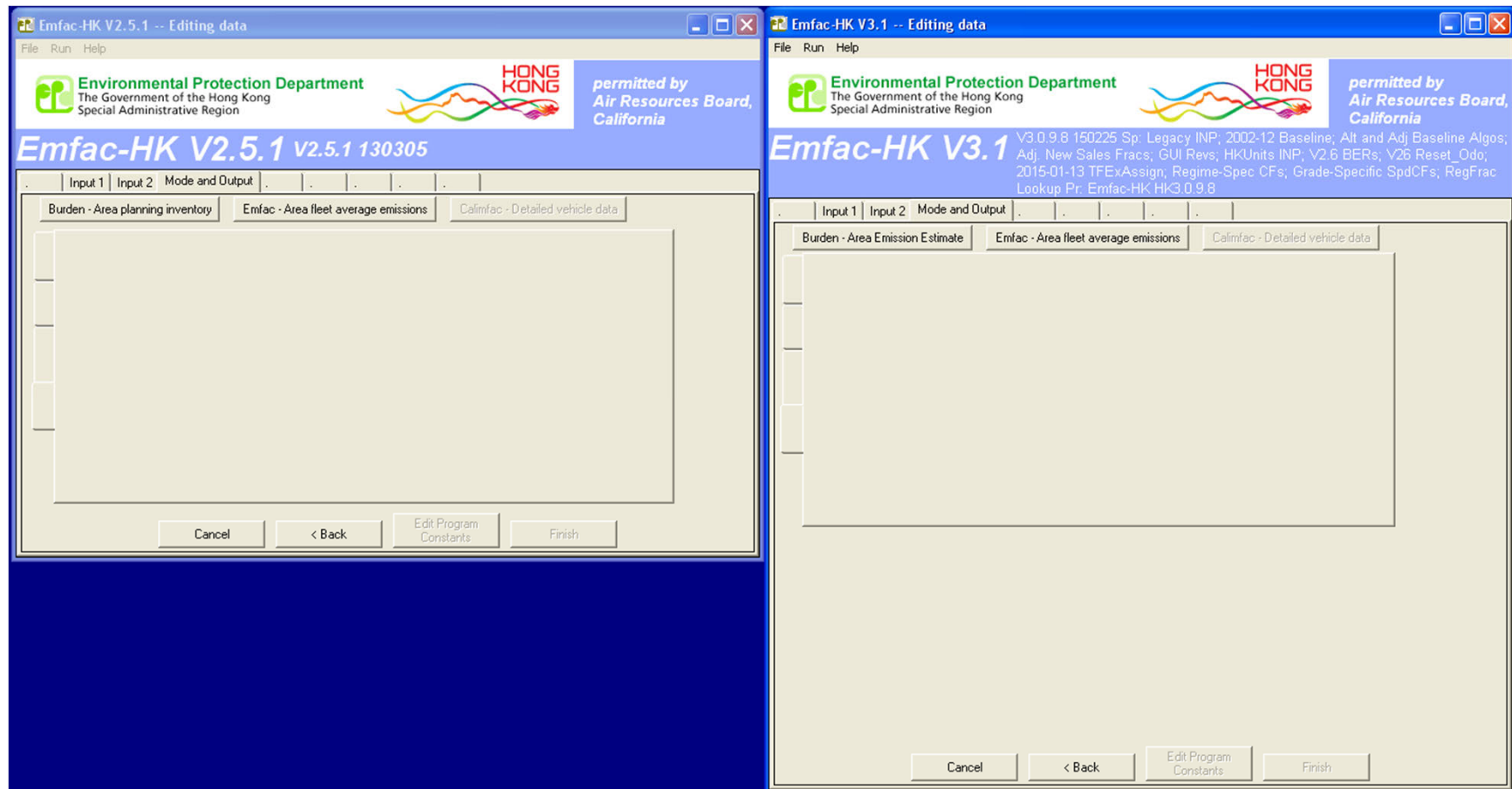
**Figure 5. Input 1 Screen (After Alternate Baseline Yr Activated)**

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

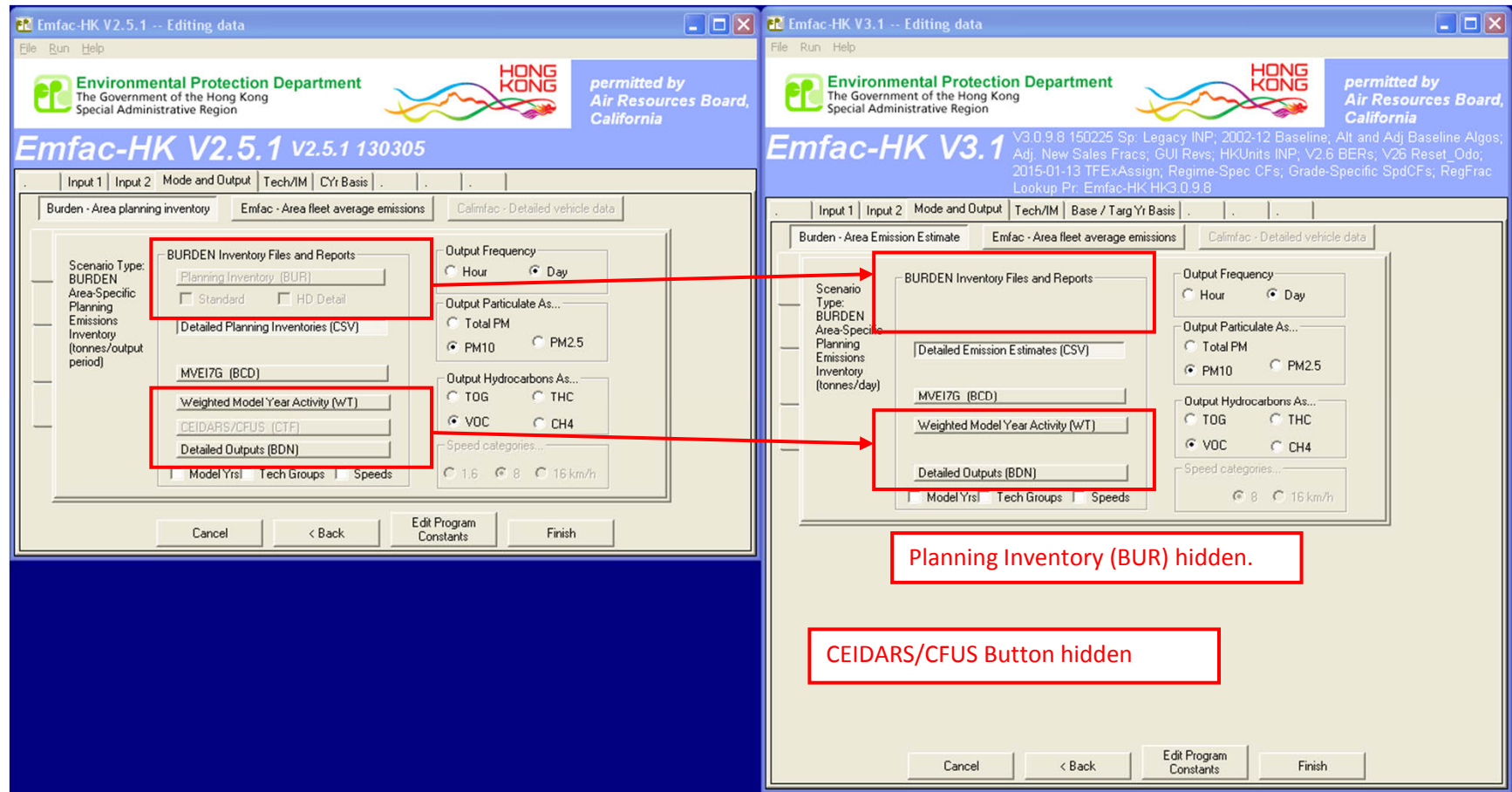


**Figure 6. Input 2 Screen (Default Title Clicked)**

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

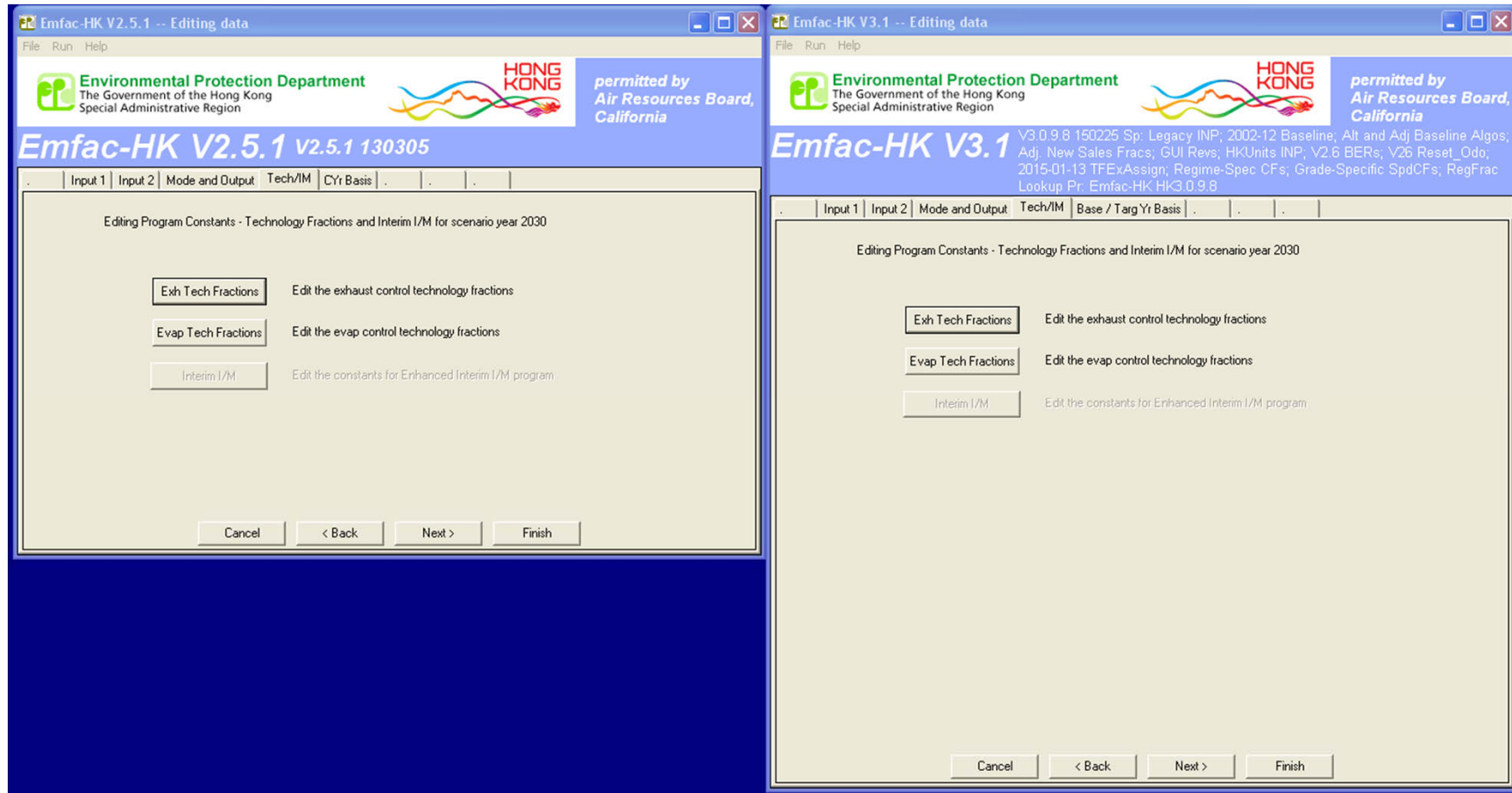


**Figure 7. Mode and Output Screen (No Changes)**



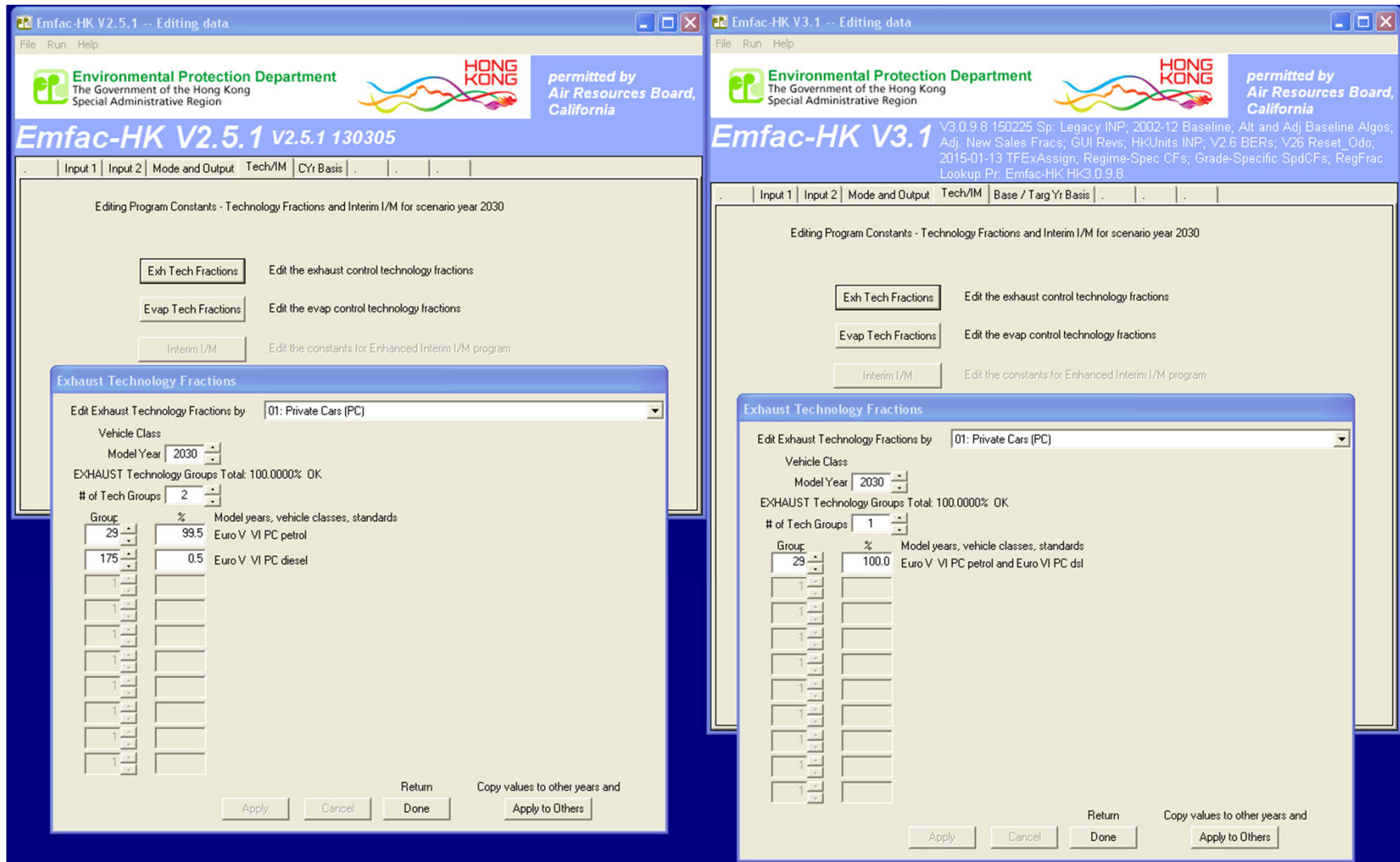
**Figure 8. Burden - Area Planning Inventory Screen (Removed Unnecessary Features)**

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

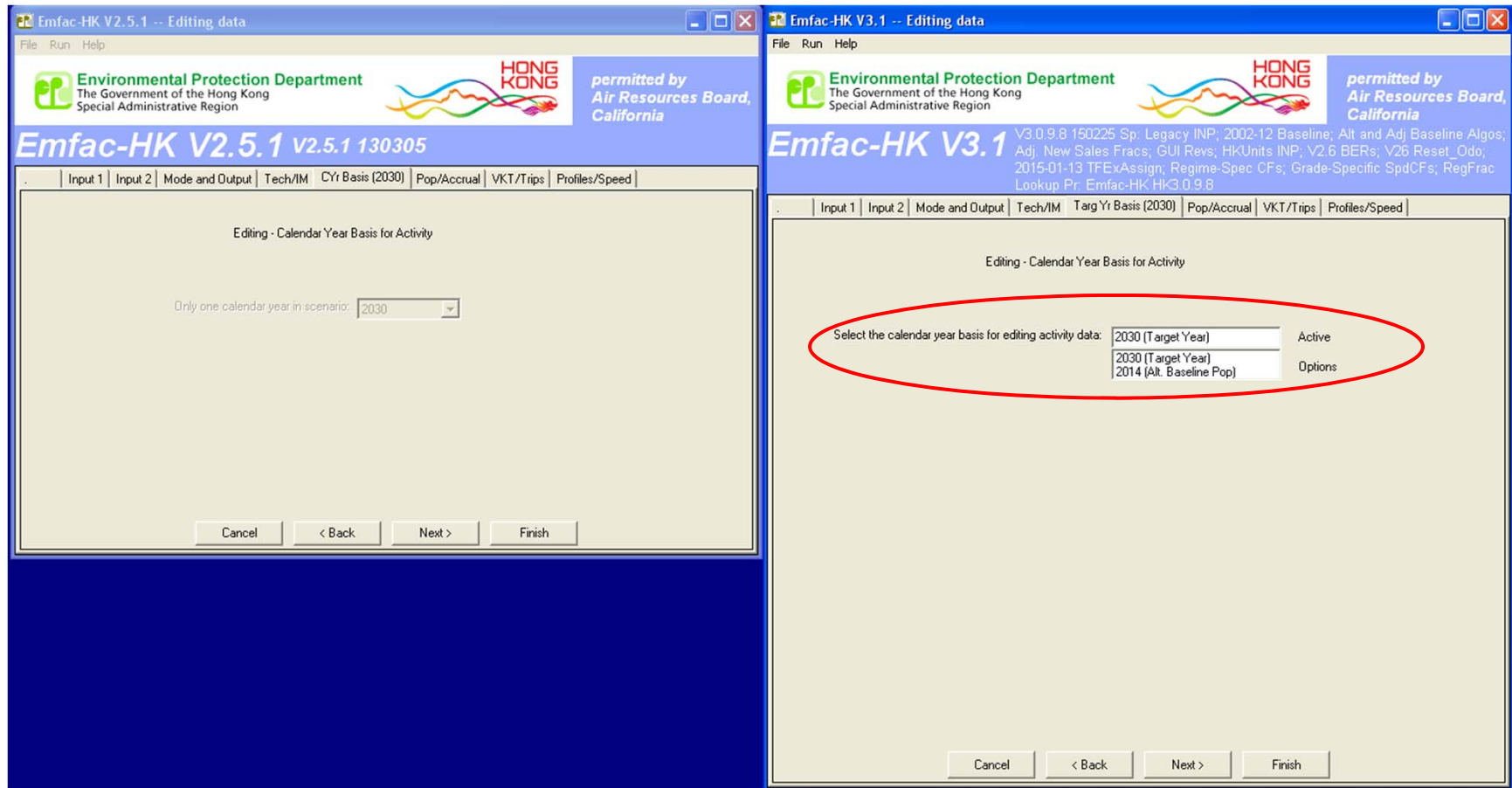


**Figure 9. Tech/IM Screen (No Changes)**



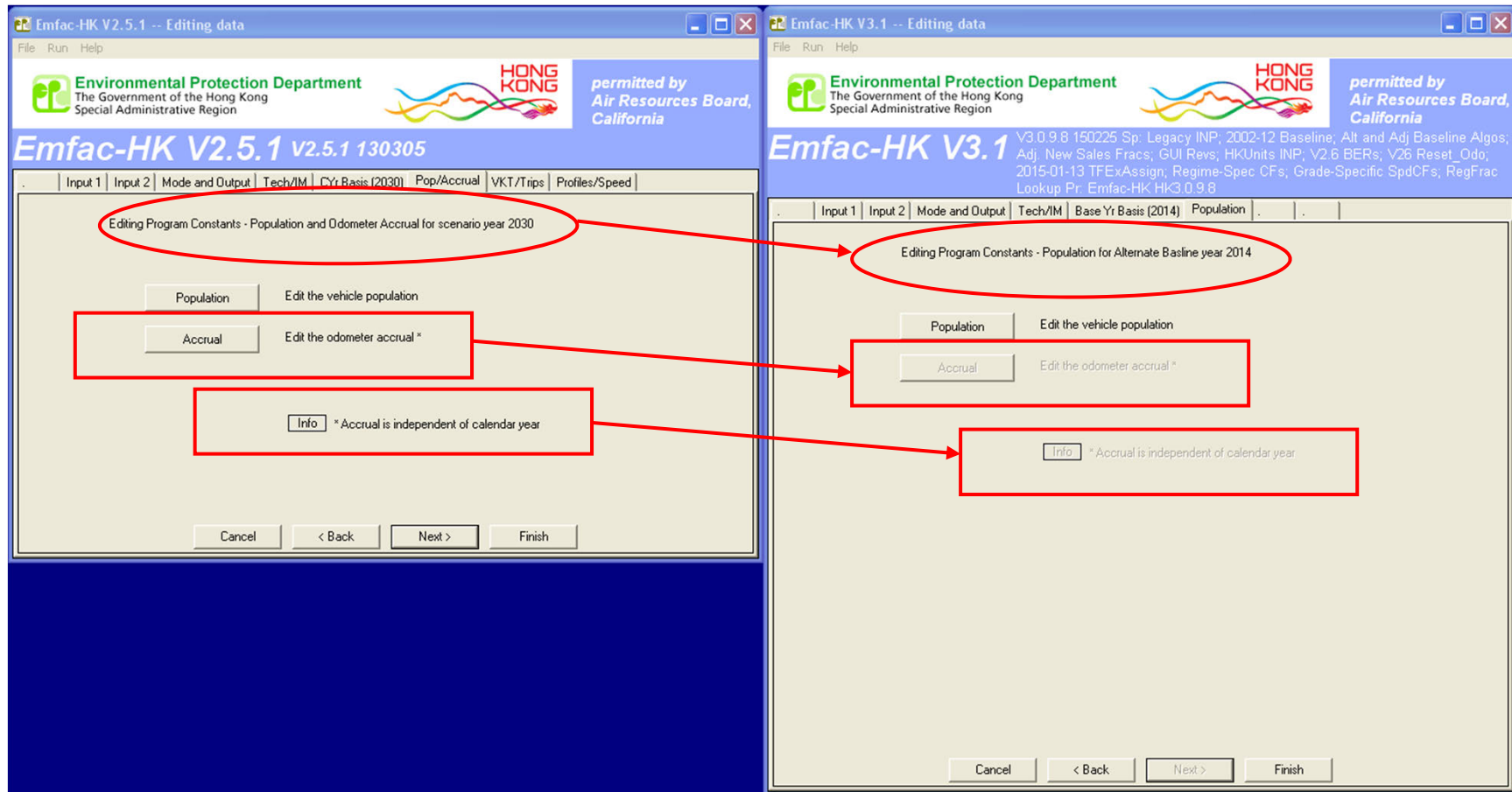


**Figure 10. Exhaust Technology Fractions Screen (No Changes)**



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

**Select between Editing Target Year or Alternate Baseline Year**

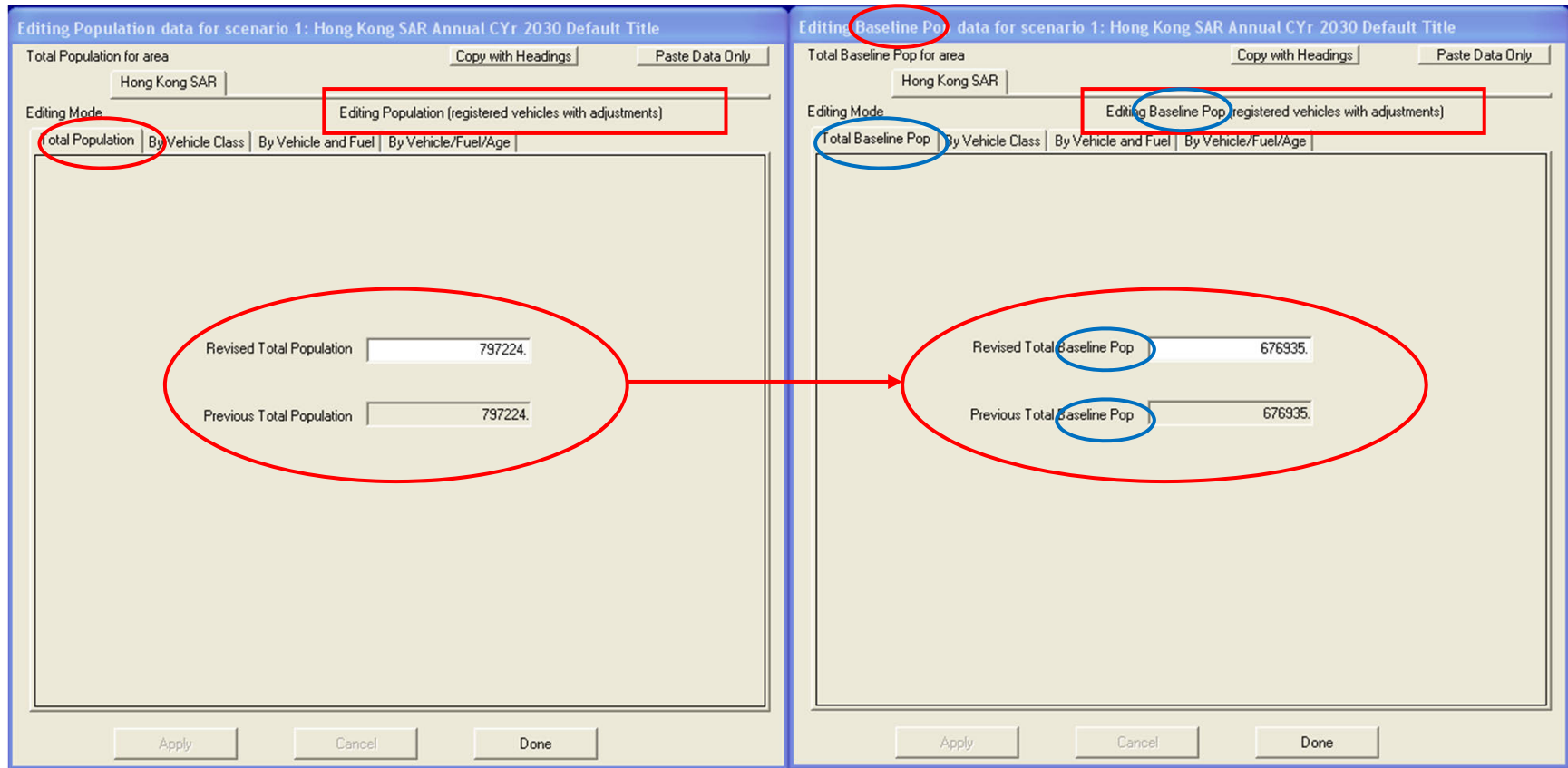


**Figure 12. Population for Alternative Baseline Year Screen**

**Title Reflects "Alternate Baseline Year 2014"**

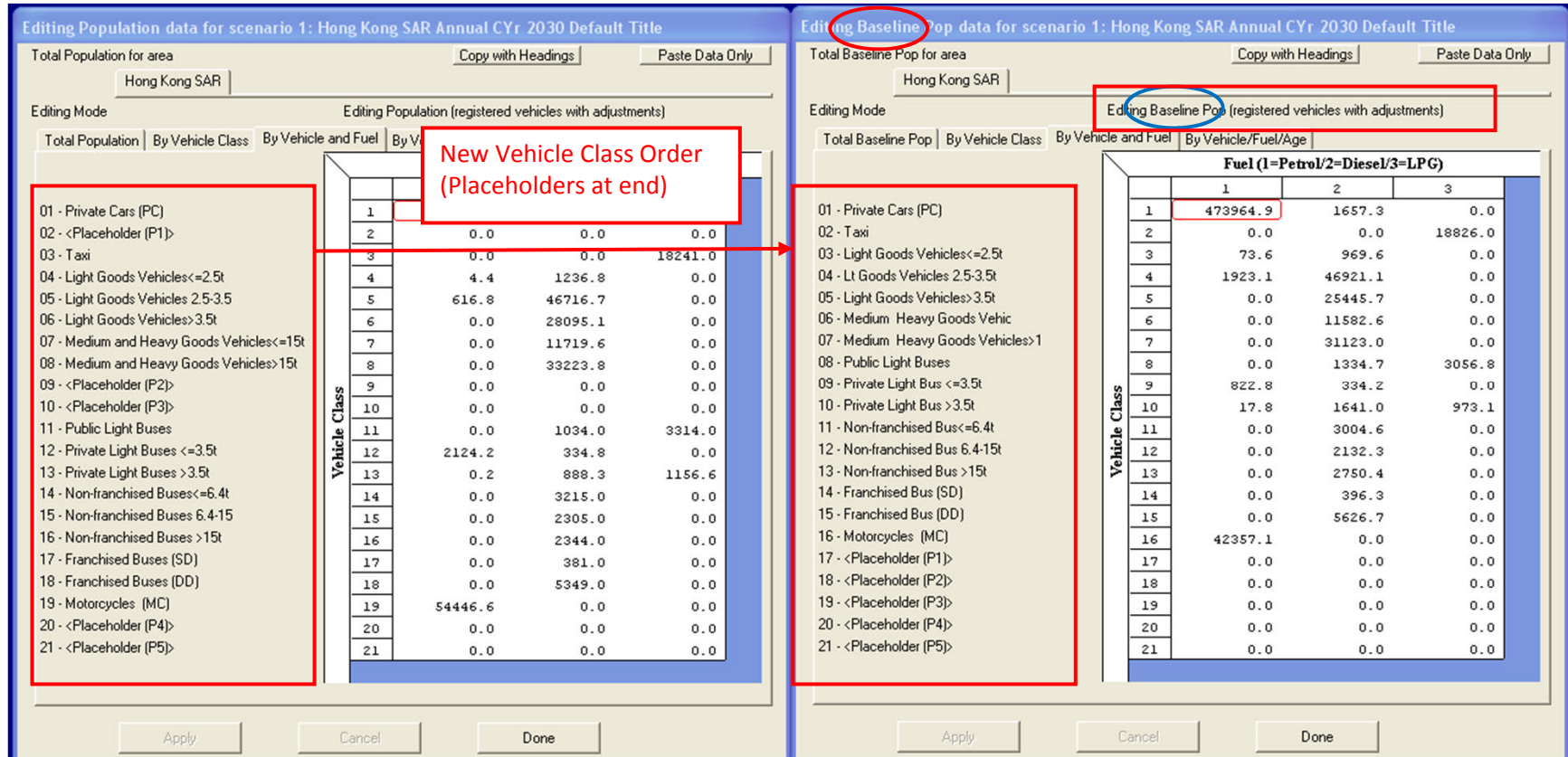
**Accrual Button Deactivated for Alternate Baseline (Baseline Accrual Not Editable)**

**"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!**