Exercises 7-8

Exercise Setup

- Folders for each Exercise

- User to save input/output to folders for each Exercise

Exercise #7: Speed Distributions

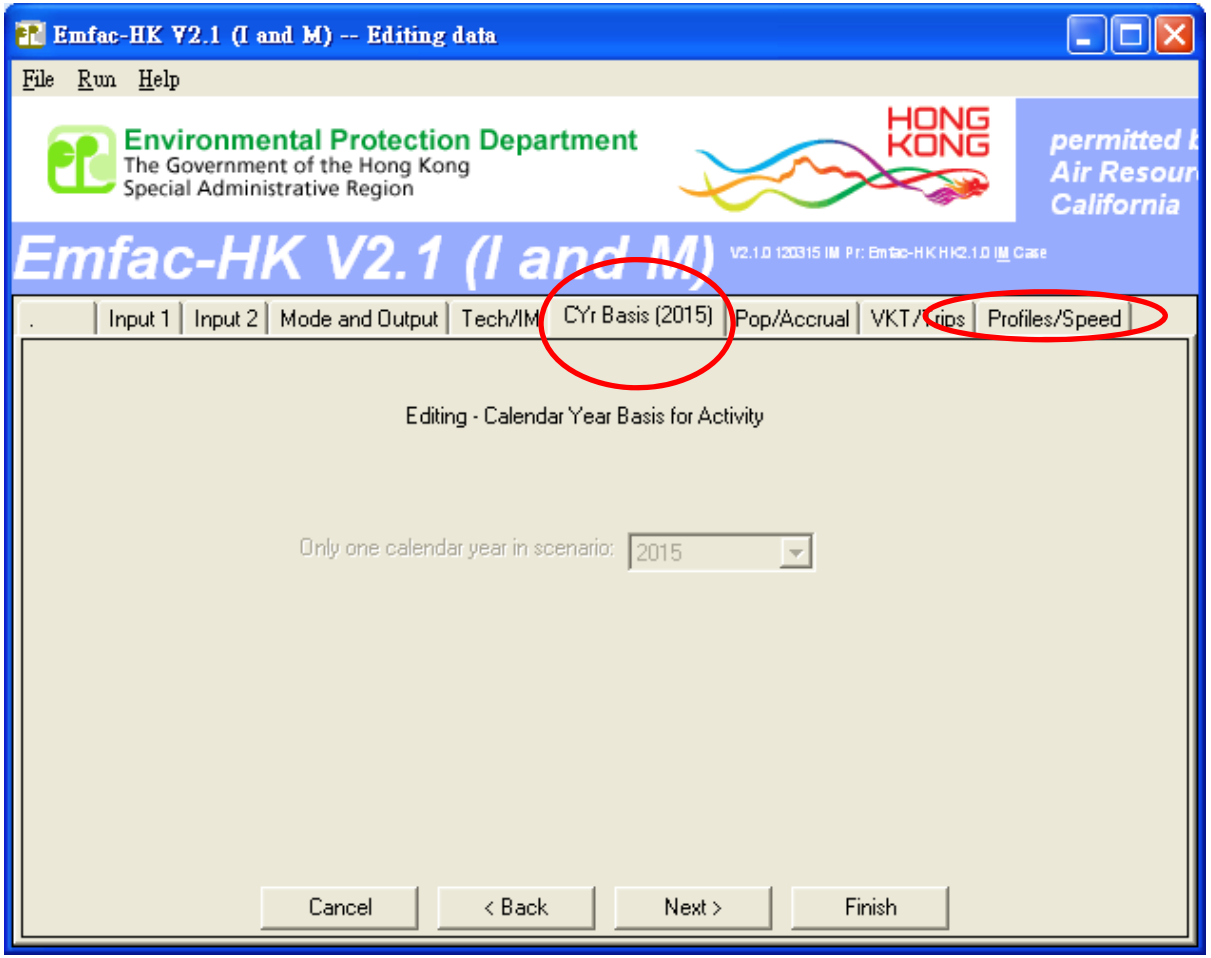
- Hong Kong has developed a TCM, which requires heavy goods vehicles (>5.5 tonne) to only travel between midnight (0-hr) and 8 a.m. and from 10 p.m. to midnight. 5% of the VKT occurs at average speed 1-8 km/hr (Speed Bin #1 in GUI); 25% at 24-32 km/hr (Speed Bin #4); 20% at 48-56 km/hr (Speed Bin #7), 25% at 56-64 km/hr (Speed Bin #8), and 25% at 64-72 km/hr (Speed Bin #9).

- What is the effect on NOx running exhaust emissions from this change?

Exercise #7: Speed Distributions

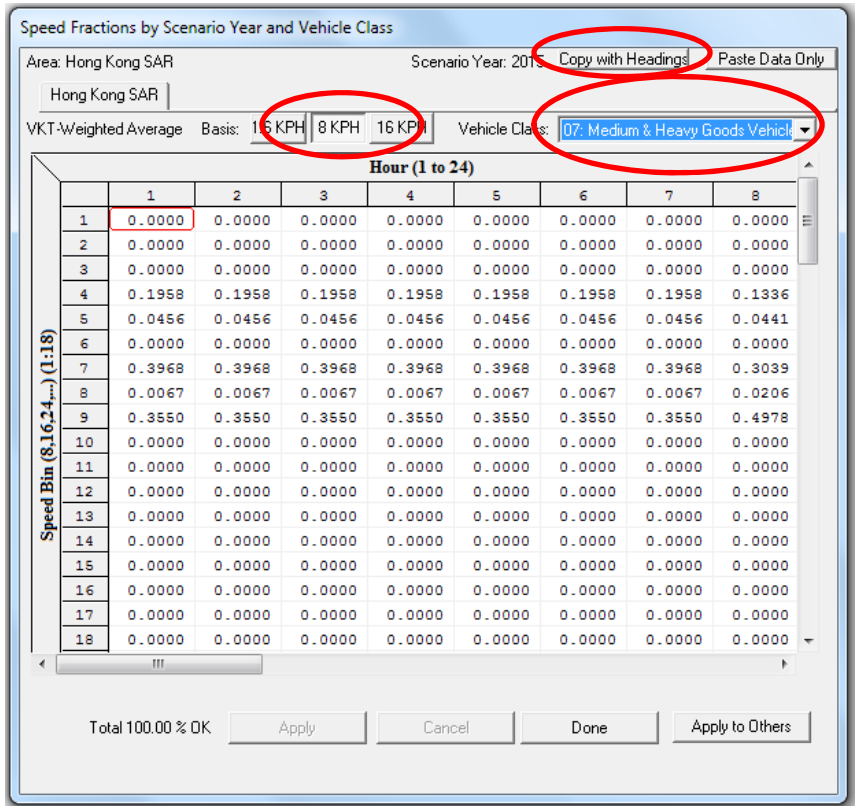
- Problem: Determine change in emissions in 2015 for HGV7 (Vehicle Class 7) and HGV8 (Vehicle Class 8) given the revised speed distribution below.
- Scenario data:
  - Geographic Area: Hong Kong SAR
  - Calendar Years: 2015
  - Season: Annual
  - Scenario Type: BURDEN
  - Output File types: Text (CSV), BCD
  - Output Frequency: daily
  - Pollutants: PM_{10}, VOC
- Speed Fractions: 5% of the VKT occurs at average speed 1-8 km/hr (Speed Bin #1);25% at 24-32 km/hr (Speed Bin #4),
- 20% at 48-56 km/hr (Speed Bin #7),
- 25% at 56-64 km/hr (Speed Bin #8), and
- 25% at 64-72 km/hr (Speed Bin #9)

Exercise #7: Profiles/Speed Tab

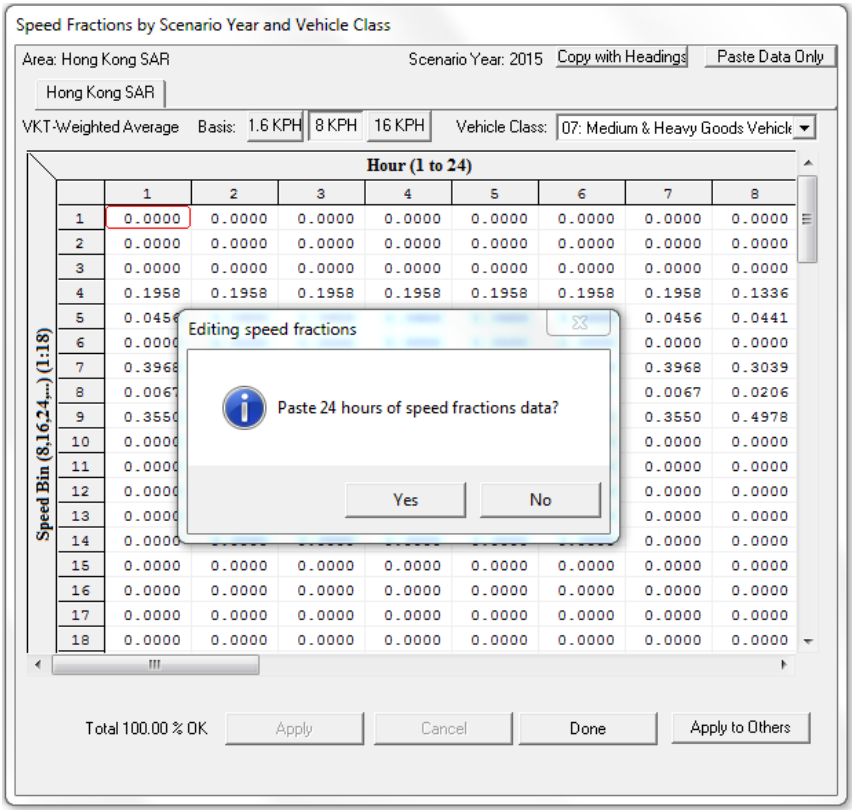


Exercise #7: Editing Speed Fractions

2015 Speed Fractions (HGV7)
Base Case



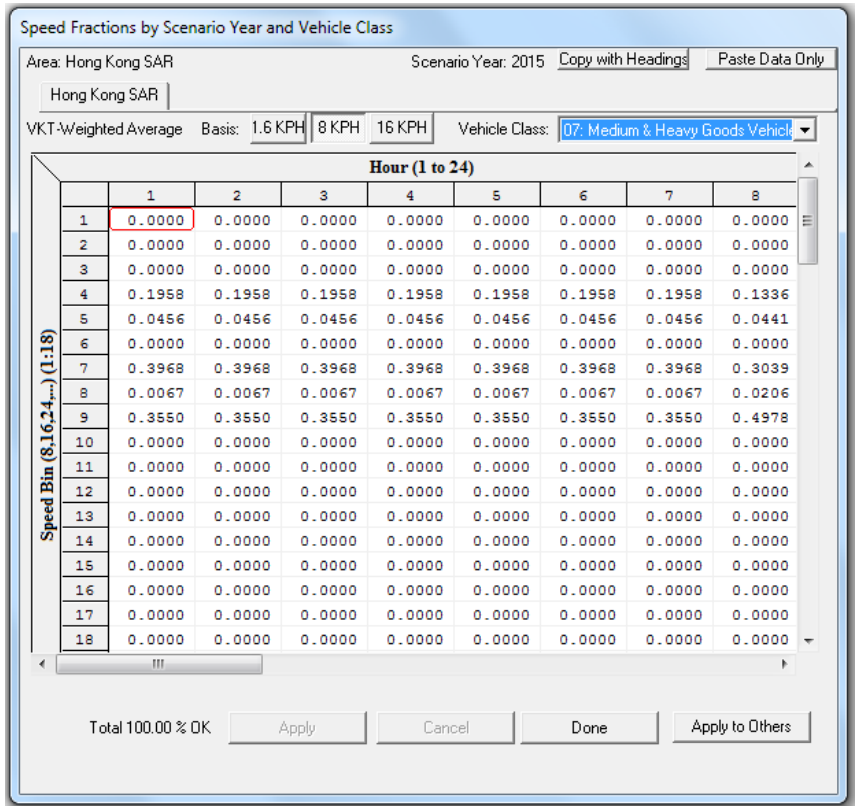
2015 Speed Fractions (HGV7)
About to Copy Edits from Spreadsheet



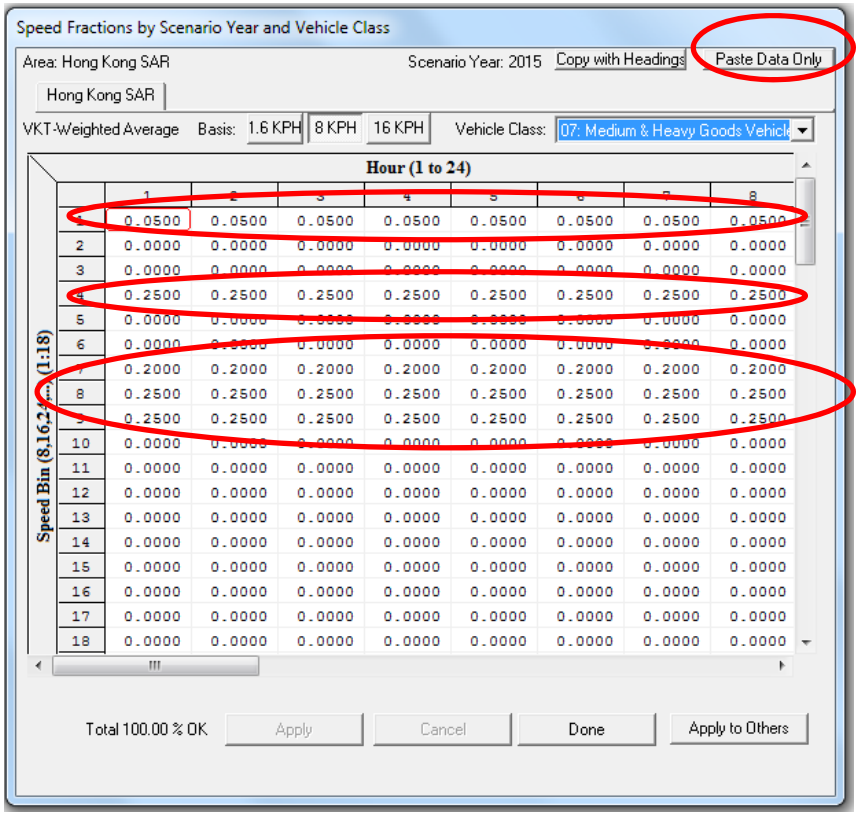
Set the “Basis” tab to “8 KPH” and select the Heavy Goods Vehicles<15t. Then change the VKT speed distribution. Then apply this change to this hour and vehicle class. Then apply this change to other vehicle classes.

Exercise #7: Editing Speed Fractions

2015 Speed Fractions (HGV7) Base Case

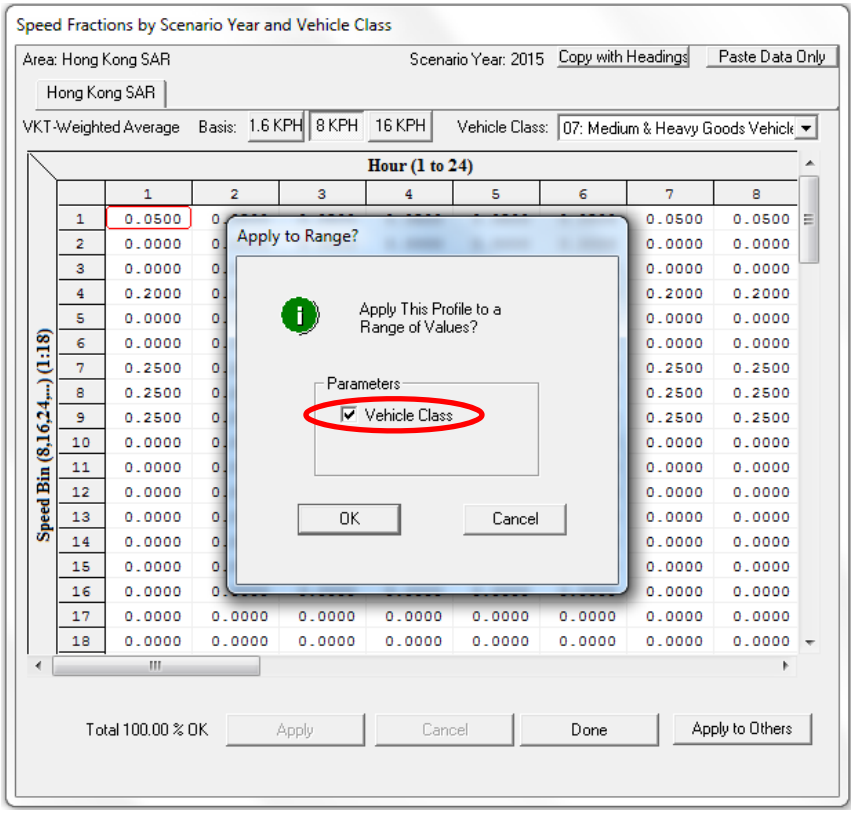


2015 Speed Fractions (HGV7) Edits Applied

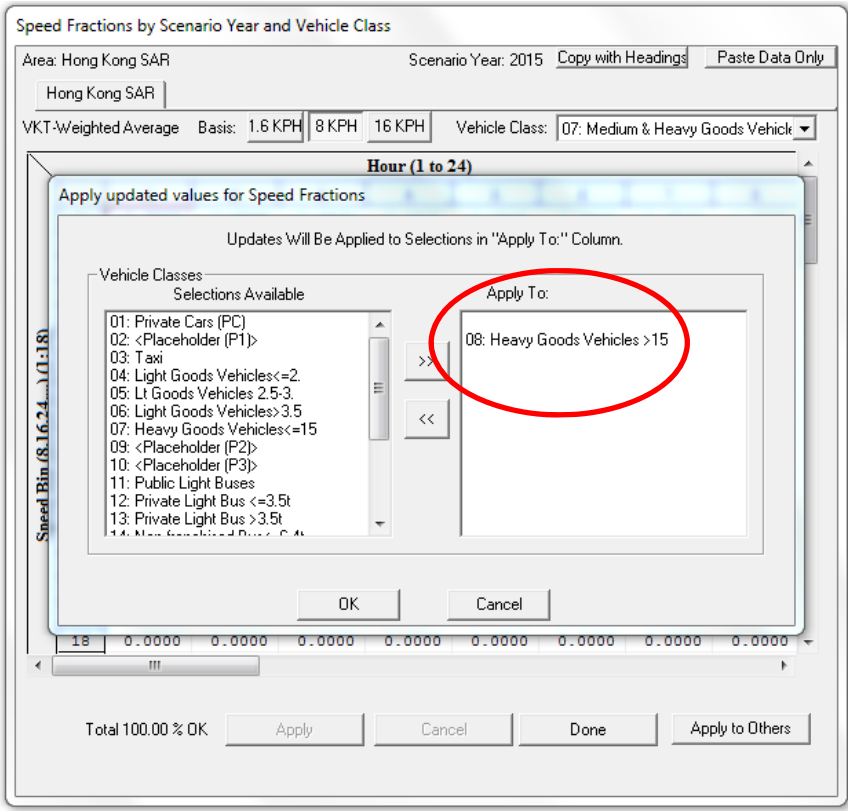


Exercise #7: Apply Speed Fraction Edits to Other Hours

Apply Edit to Another Vehicle Class



Apply Edit to HGV8



Exercise #7: Solution

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Ex7													
CALYR	START MYR	END MYR	REGION	SAR	STARTS	POPULATION	VKT	VEH TYPE	VEH TECH	POLLUTANT	PROCESS	EMISSIONS	BASIS
2015	1971	2015	SAR Average	Hong Kong SAR Average	43504	10875	1141345	HGV7	DSL	NOx	Run Exh	0.784739	Day
2015	1971	2015	SAR Average	Hong Kong SAR Average	123328	30829	3230292	HGV8	DSL	NOx	Run Exh	4.292101	Day
BASE													
CALYR	START MYR	END MYR	REGION	SAR	STARTS	POPULATION	VKT	VEH TYPE	VEH TECH	POLLUTANT	PROCESS	EMISSIONS	BASIS
2015	1971	2015	SAR Average	Hong Kong SAR Average	43504	10875	1141345	HGV7	DSL	NOx	Run Exh	3.197259	Day
2015	1971	2015	SAR Average	Hong Kong SAR Average	123328	30829	3230292	HGV8	DSL	NOx	Run Exh	17.508255	Day
						DIFFERENCE		VEH TYPE	VEH TECH	POLLUTANT	PROCESS	EMISSIONS	BASIS
								HGV7	DSL	NOx	Run Exh	2.41252	Day
								HGV8	DSL	NOx	Run Exh	13.216154	Day

Exercise #8: Changing RH

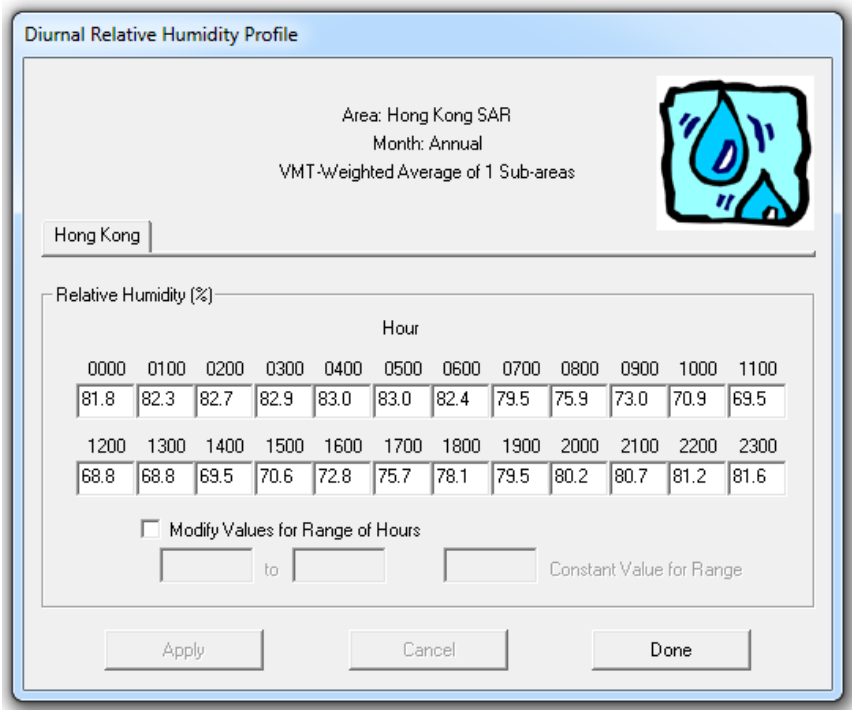
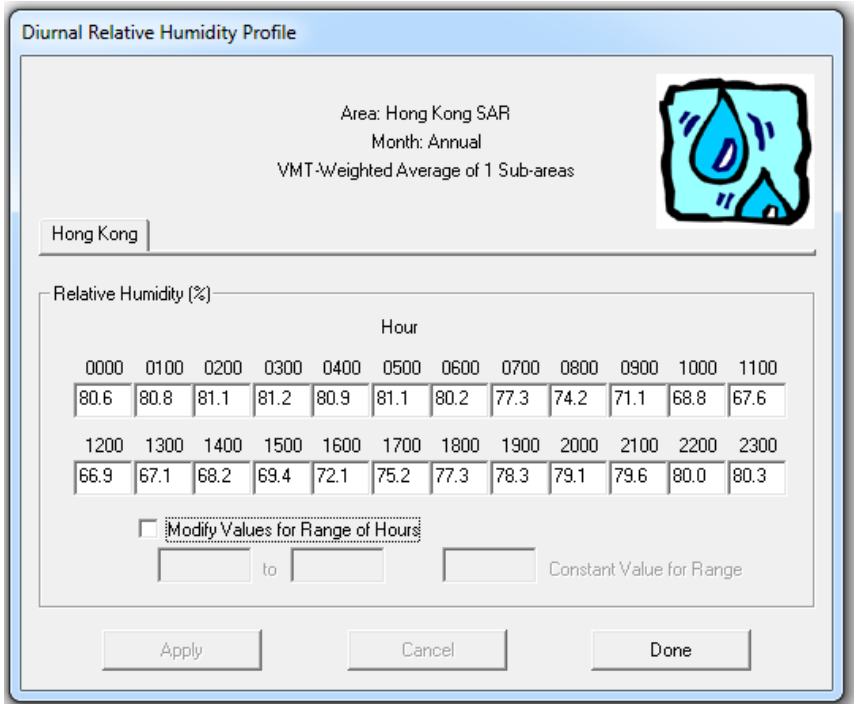
- Context: This exercise shows how the user can change the relative humidity for an area of concern, say, area near a weather station, P, in 2015.
- Problem: Set up a base run for 2015 calendar year for Hong Kong. Include a second scenario, replacing the annual relative humidity values with the annual values provided on RH.XLS.

Exercise #8: Entering Different Relative Humidity Values

- Scenario data:
  - Scenario #1
    - Geographic Area: Hong Kong SAR
    - Calendar Years: 2015
    - Season: Annual
    - Scenario Type: BURDEN
    - Output File types: Text (CSV), BCD
    - Output Frequency: daily
    - Pollutants: PM_{10}, VOC
  - Scenario #2: Replace annual Relative Humidity Values with values from RH.XLS

Exercise #8: Changing RH

RH Annual (Default)



RH Annual from RH.XLS