

Directions:

- Based on the information provided, run CAL3QHCR for a subset of receptors and highway links from the Example Analysis (see next page)
- Select meteorology from St. Louis, MO for 2006 – 2010
- Simulate a typical day using traffic volumes and MOVES emission factors from information for four time periods and four quarters (refer to Class Exercise Data.xlsx)

Receptor / Link Map (coordinates are in feet):



Link configurations:

- Four 12 ft lanes in each direction
- All segments at-grade

Link traffic volumes (refer to Class Exercise Data.xlsx):

	A	B	C	D
1			VPHL	
2			Traffic Volume (vph)	
3			ON, MD	AM, PM
4	Link #	Link Description	Off-Peak	Peak
5	1	'NB Freeway Segment 1'	2775	6032
6	2	'NB Freeway Segment 2'	2519	5476
7	3	'NB Freeway Segment 3'	2519	5476
8	4	'SB Freeway Segment 1'	1960	4260
9	5	'SB Freeway Segment 2'	1960	4260
10	6	'SB Freeway Segment 3'	2337	5079

ON Off-Peak = 7 p.m. – 6 a.m.

MD Off-Peak = 9 a.m. – 4 p.m.

AM Peak = 6 a.m. – 9 a.m.

PM Peak = 4 p.m. – 7 p.m.

MOVES Emission Factors – Q1 (refer to Class Exercise Data.xlsx):

	A	B	C	D	E	F	G
1	movesRun	yearID	monthID	hourID	linkID	pollutant	Grams/veh-mile
2	1	2020	1	1	1	Total PM2.5	0.044152
3	1	2020	1	1	2	Total PM2.5	0.044179
4	1	2020	1	1	3	Total PM2.5	0.044179
5	1	2020	1	1	4	Total PM2.5	0.044214
6	1	2020	1	1	5	Total PM2.5	0.044214
7	1	2020	1	1	6	Total PM2.5	0.028208
8	2	2020	1	7	1	Total PM2.5	0.049007
9	2	2020	1	7	2	Total PM2.5	0.047895
10	2	2020	1	7	3	Total PM2.5	0.047895
11	2	2020	1	7	4	Total PM2.5	0.046441
12	2	2020	1	7	5	Total PM2.5	0.046441
13	2	2020	1	7	6	Total PM2.5	0.030816
14	3	2020	1	13	1	Total PM2.5	0.040609
15	3	2020	1	13	2	Total PM2.5	0.040632
16	3	2020	1	13	3	Total PM2.5	0.040632
17	3	2020	1	13	4	Total PM2.5	0.040661
18	3	2020	1	13	5	Total PM2.5	0.040661
19	3	2020	1	13	6	Total PM2.5	0.024339
20	4	2020	1	19	1	Total PM2.5	0.043451
21	4	2020	1	19	2	Total PM2.5	0.042375
22	4	2020	1	19	3	Total PM2.5	0.042375
23	4	2020	1	19	4	Total PM2.5	0.040970
24	4	2020	1	19	5	Total PM2.5	0.040970
25	4	2020	1	19	6	Total PM2.5	0.024820

hourID 1 = ON Off-Peak = 7 p.m. – 6 a.m.

hourID 7 = AM Peak = 6 a.m. – 9 a.m.

hourID 13 = MD Off-Peak = 9 a.m. – 4 p.m.

hourID 19 = PM Peak = 4 p.m. – 7 p.m.

MOVES Emission Factors – Q2 (refer to Class Exercise Data.xlsx):

	A	B	C	D	E	F	G
1	movesRun	yearID	monthID	hourID	linkID	pollutant	Grams/veh-mile
26	5	2020	4	1	1	Total PM2.5	0.034592
27	5	2020	4	1	2	Total PM2.5	0.034608
28	5	2020	4	1	3	Total PM2.5	0.034608
29	5	2020	4	1	4	Total PM2.5	0.034630
30	5	2020	4	1	5	Total PM2.5	0.034630
31	5	2020	4	1	6	Total PM2.5	0.017769
32	6	2020	4	7	1	Total PM2.5	0.038779
33	6	2020	4	7	2	Total PM2.5	0.037735
34	6	2020	4	7	3	Total PM2.5	0.037735
35	6	2020	4	7	4	Total PM2.5	0.036371
36	6	2020	4	7	5	Total PM2.5	0.036371
37	6	2020	4	7	6	Total PM2.5	0.019780
38	7	2020	4	13	1	Total PM2.5	0.031273
39	7	2020	4	13	2	Total PM2.5	0.031286
40	7	2020	4	13	3	Total PM2.5	0.031286
41	7	2020	4	13	4	Total PM2.5	0.031303
42	7	2020	4	13	5	Total PM2.5	0.031303
43	7	2020	4	13	6	Total PM2.5	0.014145
44	8	2020	4	19	1	Total PM2.5	0.033724
45	8	2020	4	19	2	Total PM2.5	0.032714
46	8	2020	4	19	3	Total PM2.5	0.032714
47	8	2020	4	19	4	Total PM2.5	0.031394
48	8	2020	4	19	5	Total PM2.5	0.031394
49	8	2020	4	19	6	Total PM2.5	0.014325

hourID 1 = ON Off-Peak = 7 p.m. – 6 a.m.

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hourID 13 = MD Off-Peak = 9 a.m. – 4 p.m.

hourID 19 = PM Peak = 4 p.m. – 7 p.m.

MOVES Emission Factors – Q3 (refer to Class Exercise Data.xlsx):

	A	B	C	D	E	F	G
1	movesRun	yearID	monthID	hourID	linkID	pollutant	Grams/veh-mile
50	9	2020	7	1	1	Total PM2.5	0.029325
51	9	2020	7	1	2	Total PM2.5	0.029336
52	9	2020	7	1	3	Total PM2.5	0.029336
53	9	2020	7	1	4	Total PM2.5	0.029350
54	9	2020	7	1	5	Total PM2.5	0.029350
55	9	2020	7	1	6	Total PM2.5	0.012018
56	10	2020	7	7	1	Total PM2.5	0.032628
57	10	2020	7	7	2	Total PM2.5	0.031625
58	10	2020	7	7	3	Total PM2.5	0.031625
59	10	2020	7	7	4	Total PM2.5	0.030314
60	10	2020	7	7	5	Total PM2.5	0.030314
61	10	2020	7	7	6	Total PM2.5	0.013142
62	11	2020	7	13	1	Total PM2.5	0.028601
63	11	2020	7	13	2	Total PM2.5	0.028611
64	11	2020	7	13	3	Total PM2.5	0.028611
65	11	2020	7	13	4	Total PM2.5	0.028624
66	11	2020	7	13	5	Total PM2.5	0.028624
67	11	2020	7	13	6	Total PM2.5	0.011221
68	12	2020	7	19	1	Total PM2.5	0.031193
69	12	2020	7	19	2	Total PM2.5	0.030199
70	12	2020	7	19	3	Total PM2.5	0.030199
71	12	2020	7	19	4	Total PM2.5	0.028901
72	12	2020	7	19	5	Total PM2.5	0.028901
73	12	2020	7	19	6	Total PM2.5	0.011588

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hourID 19 = PM Peak = 4 p.m. – 7 p.m.

MOVES Emission Factors – Q4 (refer to Class Exercise Data.xlsx):

	A	B	C	D	E	F	G
1	movesRun	yearID	monthID	hourID	linkID	pollutant	Grams/veh-mile
74	13	2020	10	1	1	Total PM2.5	0.033436
75	13	2020	10	1	2	Total PM2.5	0.033451
76	13	2020	10	1	3	Total PM2.5	0.033451
77	13	2020	10	1	4	Total PM2.5	0.033470
78	13	2020	10	1	5	Total PM2.5	0.033470
79	13	2020	10	1	6	Total PM2.5	0.016506
80	14	2020	10	7	1	Total PM2.5	0.037276
81	14	2020	10	7	2	Total PM2.5	0.036242
82	14	2020	10	7	3	Total PM2.5	0.036242
83	14	2020	10	7	4	Total PM2.5	0.034890
84	14	2020	10	7	5	Total PM2.5	0.034890
85	14	2020	10	7	6	Total PM2.5	0.018157
86	15	2020	10	13	1	Total PM2.5	0.030603
87	15	2020	10	13	2	Total PM2.5	0.030615
88	15	2020	10	13	3	Total PM2.5	0.030615
89	15	2020	10	13	4	Total PM2.5	0.030631
90	15	2020	10	13	5	Total PM2.5	0.030631
91	15	2020	10	13	6	Total PM2.5	0.013413
92	16	2020	10	19	1	Total PM2.5	0.033724
93	16	2020	10	19	2	Total PM2.5	0.032714
94	16	2020	10	19	3	Total PM2.5	0.032714
95	16	2020	10	19	4	Total PM2.5	0.031394
96	16	2020	10	19	5	Total PM2.5	0.031394
97	16	2020	10	19	6	Total PM2.5	0.014325

hourID 1 = ON Off-Peak = 7 p.m. – 6 a.m.

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hourID 19 = PM Peak = 4 p.m. – 7 p.m.

Meteorology:

- St. Louis, Missouri, 2006 – 2010 Meteorology
 - STL2006-2010.met
 - Surface Station Number – 13994
 - Upper Air Station Number – 4833

Run CAL3QHCR:

- Step 1 – Create an Input File, *.INP
 - May use CheaterExcelTemplateFile.xlsx or CheaterInputFile.inp provided
- Step 2 – Create a Batch File for executing the CAL3QHCR run, *.BAT
- Step 4 – Execute the Batch File created in Step 2
- Summarize the Highest PM_{2.5} Concentrations
 - 5-yr average highest 24-hour by quarter
 - 5-yr average annual