PM2.5 Hot Spot Modeling - Test Case
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Run MOVES to calculate emission rates

Local data: fleet mix, fuel characteristics, meteorology
Link data: average speed, grade, facility type
Obtain PM2.5 emission rates for 4 seasons and 4 times of day

Run CAL3QHCR to predict PM2.5 concentrations

Dispersion model to predict pollutant concentrations from roadway sources
Two links: EB and WB
inputs include vehicle volume, roadway length and width, MOVES emission rates,
    and hourly meteorological data
Receptors placed 3 meters from edge of roadway outward

Add background PM2.5 concentration

Representative site: Forest Elementary School 11.7 ug/m3
Closest site in proximity to project not necessarily representative
    (e.g. Schiller Park is next to airport and interstate)

Compare to NAAQS

Maximum Modeled Concentration: 14.2 ug/m3
NAAQS: 15 ug/m3

Test Case vs. Full Analysis

NAAQS is met when 3-year average is less than 15.0 ug/m3
5 years of met data
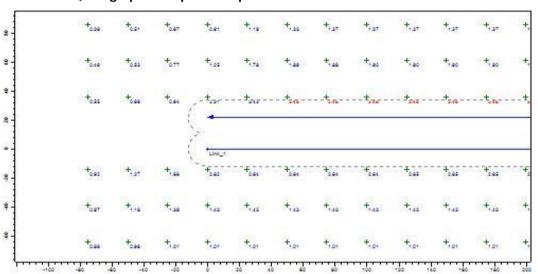Additional roadway segments inlcuded - there will be intersecting links
Possibly need to model no build scenario
May need to include other emission sources or re-entrained road dust
Use quarterly averages for background PM2.5

CAL3QHCR graphical input example:

Emission Factor Model Results		
PM2.5 Emissions in gram/mile		
	Link 1	Link 2
Jan AM	0.036027	0.041324
Jan noon	0.027763	0.027762
Jan PM	0.027955	0.03354
Jan mdnt	0.027147	0.027147
Apr AM	0.022192	0.027959
Apr noon	0.018275	0.018275
Apr PM	0.018222	0.02413
Apr mdnt	0.021982	0.021982
Jul AM	0.0166	0.022566
Jul noon	0.016286	0.016286
Jul PM	0.016286	0.022263
Jul mdnt	0.011672	0.011672
Oct AM	0.021864	0.027642
Oct noon	0.017634	0.017634
Oct PM	0.018013	0.023929
Oct mdnt	0.015475	0.015475

CAL3QHCR PM2.5 Concentration Results			
PM2.5 Concentration (µg/m³)			
Top 3 Receptors			
	rec6	rec9	rec21
1Q 1990	3.48	3.48	3.48
2Q 1990	1.87	1.91	1.91
3Q 1990	1.66	2	2.14
4Q 1990	1.94	2.21	2.37
Annual			
Average	2.2375	2.4	2.475

Concentration at Maximum Receptor	2.475	µg/m³ PM2.5
Background Concentration	11.7	µg/m³ PM2.5
Total Concentration	**14.175**	µg/m³ PM2.5
NAAQS	15	µg/m³ PM2.5