

Trading Ratios: Salt Lake Serious PM2.5 SIP

The Utah Division of Air Quality performed an air quality model (CAMx 6.30) analysis to estimate 24-hr PM2.5 concentrations given reductions in on-road mobile NOx, VOCs, and direct PM2.5 emissions. Reductions in on-road mobile emissions didn't include refueling or re-suspended road dust.

Three different simulations were conducted using the 2020 Salt Lake nonattainment area (NAA) controlled emissions inventory (EI) . Each modeled simulation involved taking a 1 ton/day reduction in one of three on-road mobile EI pollutants: NOx, VOC, and direct PM2.5. Resultant reductions in modeled PM2.5 were evaluated over all Salt Lake NAA PM2.5 FRM monitors. Modeled reductions were evaluated for the episode day with the largest 24-hour PM2.5 concentrations at the Rose Park monitor. The reduction in modeled 24-hour PM2.5, given a 1 ton/day reduction in a specific on-road mobile EI pollutant, is stated below in Table 1:

EI Pollutant	Modeled PM2.5 Reduction ($\mu\text{g}/\text{m}^3$)
NOx	0.074
VOC	0.029
Direct PM2.5	0.937

Table 1: Relative contributions of NOx, VOC, and direct PM2.5 emission (1 ton/day) reductions to modeled PM2.5 concentrations at Salt Lake NAA monitors.

Table 2, below, shows the reductions in 24-hr PM2.5 from the precursor emissions normalized to the reduction in 24-hr PM2.5 from NOx emissions (i.e., Normalized NOx-Equivalent Conversion Ratios).

EI Pollutant	Normalized NOx-Equivalent Conversion Ratios
NOx	1.000
VOC	0.378
Direct PM2.5	12.662

Table 2: Relative contributions of NOx, VOC, and direct PM2.5 emission reductions normalized to the relative contribution of NOx at Salt Lake NAA monitors.