Trading Ratios: Logan $PM_{2.5}$ Maintenance Plan

The Utah Division of Air Quality performed an air quality model (CAMx 6.30) analysis to estimate 24-hr $PM_{2.5}$ concentrations given reductions in on-road mobile NOx, VOCs, and direct $PM_{2.5}$ emissions. Reductions in on-road mobile emissions didn't include refueling or re-suspended road dust.

Three different simulations were conducted using the 2035 Logan nonattainment area (Logan NAA) 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 $PM_{2.5}$. Resultant reductions in modeled $PM_{2.5}$ were evaluated at the Smithfield FRM monitor using the modeled episode day with the largest 24-hour $PM_{2.5}$ concentrations. The reduction in modeled 24-hour $PM_{2.5}$, given a .1 ton/day reduction in a specific on-road mobile EI pollutant, is shown in Table 1:

EI Pollutant	**Modeled $PM_{2.5}$ Reduction ($\mu g/m^3$)***
NOx	1.12
VOC	-0.01
Direct PM2.5	.38

Table 1: Relative contributions of NOx, VOC, and direct $PM_{2.5}$ emission (.1 ton/day) reductions to modeled $PM_{2.5}$ concentrations at Provo NAA monitors.
*These numbers have been rounded. The ratios were calculated using numbers that were not rounded

To establish the MVEB ratio, simple division was applied between the model sensitivity results and multiplied by 10 to give a ratio for comparing 1 ton/day. There was no statistically significant change in $PM_{2.5}$ with the reduction of VOCs; therefore, a VOC/$PM_{2.5}$ ratio will not be available for transportation conformity.

NOx : $PM_{2.5}$ trading ratio = .38 / 1.12 = .34 X 10 = 3.4

Future increases in on-road direct $PM_{2.5}$ emissions may be offset with future decreases in NO_x emissions from on-road mobile sources at a NO_x to $PM_{2.5}$ ratio of 3.4 to 1.