Trading Ratios: Provo $PM_{2.5}$ 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 Provo nonattainment area (Provo 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 Lindon FRM monitor, which is the monitor that consistently measures the highest value in the NAA. Reductions were evaluated for the modeled episode day with the largest 24-hour $PM_{2.5}$ concentrations at the Lindon monitor. 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	0.495
VOC	0.103
Direct PM2.5	2.889

Table 1: Relative contributions of NOx, VOC, and direct $PM_{2.5}$ emission (1 ton/day) reductions to modeled PM2.5 concentrations at Provo NAA monitors.
*These numbers have been rounded. The ratios were calculated using number that were not rounded

To establish the MVEB ratios, simple division was applied between the model sensitivity results.

NOx : PM2.5 trading ratio = 2.889 / .495 = 5.8

VOC : PM2.5 trading ratio = 2.889 / .103 = 27.9

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 5.8 to 1 and/or future decreases in VOC emissions from on-road mobile sources at a VOC to $PM_{2.5}$ ratio of 27.9 to 1.