

We appreciate the comment from Dr. Seth Lyman, which motivated us to take a deeper look into VOCs and NO_X in the WRF-Chem simulations of the UGRB. Our response to his comment is provided below:

1. **Reviewer Comment:** On lines 383-384, does the Boulder station measure speciated NMHC, or just methane and total NMHC? If it measures only total NMHC, I wouldn't trust the magnitude of the measurement. TNMHC GCs tend to strongly overestimate the amount of NMHC in the air compared to speciated measurements of individual compounds, so a comparison with that measurement is not likely to be useful.

Author Response: Thank you for the insightful comment. Based on this comment and those from the other reviewers, we have included a sensitivity study in the revised manuscript focused on VOCs and NO_X . We have used WYDEQ data to adjust emissions of VOCs and NO_X and compared the O_3 production. The result is that the basin appears to be highly constrained to the availability of NO_X .