Interactive comment on "Facility scale inventory of dairy methane emissions in California: Implications for mitigation" *by* Alison R. Marklein et al.

Anonymous Referee #2

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Interesting paper. However, the paper is long and sometimes is difficult to follow the idea started at the beginning of the section. A better presentation of results could be possible. Some comments are listed below: 1. Point.2.2 – Authors show that they are using 3 data sources for the herd population. Are these sources complementary and which periods being they covering? Or the years under consideration are 2005, 2011 and 2017? It is not clear. 2. A comparison between these sources might be interesting 3. Methods applied to calculate CH_4 emissions should get a reference with methods (Tier 1 and Tier 2) described at the IPCC 2006 Guidelines. Line 229-231 describe method E1 which seems to correspond to the IPCC 2006 Tier 1 method. 4. When writing an equation use separate paragraphs to list the components of this

equation staring with where: 5. Line 237 – which is the source of the assumed EFs? 6. Lines 247-250: it is clearer if EFs are presented in table format 7. Line 275 – which are methods M1, M2 and M3? The methods in points 1,2 and 3? Link better the explanation of methods with their names. The same for enteric fermentation 8. Point 4. Data availability can be part of supplementary material 9. Point 3.4 – can you explain why the uncertainty and standard errors are higher for manure compared to enteric fermentation? 10. Line 282 - Correct Methane density that is 0.657 kg/m3 (0.657 g/dm3) and not 0.662 g/cm3 11. DMI units in kg/day/cow 12. Long conclusions and repetitive with introduction and methods insert 13. Fig.2 – Specify the region in the figure title 14. It seems that the CH_4 emissions from all cattle and from dairy cows estimated using three methods in manure management are the same. This situation is not in enteric fermentation. Can you explain?