

**Notes from March 1<sup>st</sup> call with WRAP, EPA, Ramboll and ERG:**

**Recommended Updates from WRAP Dec 2021 Memo:**

ERG reviewed the recommended updates to the Tool and summarizes our findings as follows.

*Notes March 1 meeting in italics:*

- *Red means not doable in time for 2020NEI in O&G Tool*
- *Orange means doable with some additional input from WRAP*
- *Green means doable in time for 2020NEI for O&G Tool*

**Update recommended (#1):** Account for 23% engine electrification as indicated in the WRAP survey.

**Response:** The Tool does not currently accommodate electrified drilling engines; this capability may be considered for future updates.

- *Can't do now; will be on 2023NEI to do list. Ramboll commented that it is likely a minor emissions difference.*
- *NM point sources (non-TitleV; minor sources): option can be to submit as point sources and/or adjust Tool with point source subtraction. NM is submitting as point sources; ERG can possibly help with the point source subtraction. Once NM submits data to EIS for 2020.*

**Update recommended (#2):** It is reasonable to exclude the turbine configuration from the 2020 O&G Tool. If feasible, 5% electrification should be accounted for in the 2020 O&G Tool.

**Response:** The Tool does not currently accommodate electrified hydraulic fracturing pump engines; this capability may be considered for future updates.

*Notes March 1 meeting: Can't do now; will be on 2023NEI to do list. Ramboll commented that it is likely a minor emissions difference.*

**Update recommended (#3):** Gas venting rate should be updated based on WRAP survey data in the 2020 O&G Tool.

**Response:** ERG agrees with this suggestion and will develop updated gas venting rate factors for inclusion in the Tool for crude oil tanks.

**Update recommended (#4):** Gas venting rate should be updated based on WRAP survey data in the 2020 O&G Tool.

**Response:** ERG agrees with this suggestion and will develop updated gas venting rate factors for inclusion in the Tool for condensate tanks.

*ERG can use that data right away and will be in 2020NEI Tool; factors are in Appendix so ready of use.*

**Update recommended (#5):** For basins where horizontal and vertical survey inputs are available, we recommend estimating weighted average input factors based on the oil production by spud type.

**Response:** ERG agrees with this suggestion. However, production data by spud type is not presented in Table A5, please propose weighted average input factors based on the oil production by spud type if that data is available elsewhere.

*Ramboll: Data has not been published yet; different factor for each basin possibly could be generated if data was available. Ramboll may need to re-examine the data. Oil production by spud type and by basin. ERG suggested put on lower priority list. ERG will revisit this later and get back to WRAP/Ramboll on exact action item. Ramboll said generally will mean minor emissions changes.*

**Update recommended (#6):** Update 2020 O&G Tool based on WRAP survey estimates of lean-burn and rich-burn engine fractions.

**Response:** The Tool does not currently differentiate between lean-burn and rich-burn artificial lift engines; this capability may be considered for future updates

*Tom: Lean burn engines are more common. How might we be able to do something for this? Impacts on rulemaking! ERG: Basin factors can be used in Tool. Ramboll: Ratios are available in documentation. ERG will look in documentation for these factors and ask questions if necessary.*

*from Ramboll*

**Update recommended (#7):** Revise 2020 O&G Tool emission rates to be consistent with 99% of engines meeting NSPS JJJJ for the Permian (NM) basin.

**Response:** ERG agrees with this comment. Please suggest proposed emission factors to use for artificial lift engines in the Permian Basin. WRAP/Ramboll will follow-up with ERG and Jeff.

*ERG: Looking for technical direction here for engine profiles in each basin. Ramboll: fractions are in baseline for Lean and Rich-burn engines. Maybe that is not enough info. Alternatively, Ramboll can do so more digging to see what can pulled out and generated. Ramboll/WRAP will look into this and get back to EPA/ERG.*

**Update recommended (#8):** Revise venting and flaring volume inputs consistent with WRAP study Section 2.3.21: Combined volume of gas flared and vented: EIA publishes combined gas flared and vented volume estimates for each year, including 2020, for North Dakota and Montana. The Tool input factors should be adjusted so that venting and flaring volumes are consistent with EIA estimates. Vented and flared split. Apply the 2011 Williston Basin emission inventory estimate of 99.7% flared and 0.3% vented.

**Response:** ERG agrees with this comment and will use the suggested EIA data to develop state-specific flared and vented volume inputs and will update the Williston Basin flared and vented factors as proposed.

**Update recommended (#9):** Revise the toluene to volatile organic compound (VOC) weight fractions in Column AR.

**Response:** (Note: WRAP updated this comment to refer to Column AF of Attachment B of ERG’s November 2021 analysis memo.) Attachment B of ERG’s November 2021 analysis memo erroneously included the data for text field “2020 NEI Tool REF\_ACT\_OIL\_WT\_FRACTION\_TOLUENE\_VOC” under column AF “2020 NEI Tool ACT\_OIL\_WT\_FRACTION\_TOLUENE\_VOC”. ERG will update Attachment B to include the correct value for this field as documented in Attachment A of the November 2021 analysis memo. The data in the Tool for this field is correct and no update to the Tool is required.

**Update recommended (#10):** Revise the gas composition data for all applicable sources in this basin based on the WRAP OGWG gas composition for this basin.

**Response:** The gas composition data for the Central Montana Uplift does not include the full speciation data required to prepared updated Tool input data. Specifically, no benzene, toluene, ethylbenzene, or xylene (BTEX) data is provided.

- *Ramboll: Do not have information to do this.*

**Update recommended (#11):** Account for 23% engine electrification as indicated in the WRAP survey.

**Response:** The Tool does not currently accommodate electrified drilling engines; this capability may be considered for future updates. Will put on list of 2023 NEI / Tool improvements to be reviewed and prioritized by NOGEC.

**Update recommended (#12):** It is recommended that electrified activity fractions available from the WRAP OGWG survey be accounted for in 2020 O&G Tool emissions calculations.

**Response:** The Tool does not currently accommodate electrified hydraulic fracturing pump engines; this capability may be considered for future updates. Will put on list of 2023 NEI / Tool improvements to be reviewed and prioritized by NOGEC.

**Update recommended (#13):** Revise emission factor to be consistent with the fraction of engines meeting NSPS JJJJ as indicated in WRAP OGWG survey results.

**Response:** ERG agrees with this comment. Please suggest proposed emission factors to use for artificial lift engines in the Permian Basin.

- *Ramboll: will do more digging; only for Permian Basin. What should the general assumption (default) for the tool for basins where data is not available? Can this be discussed in the near future at NOGEC?.*

**Update recommended (#14):** Review and confirm 2020 O&G Tool calculations.

**Response:** ERG has reviewed this issue and identified an error in the Tool algorithm regarding the number of gas wells served per single lateral compressor engines related to the separate factors which should be used for coal-bed methane wells and gas wells. This error impacts estimated emissions for Montana and Wyoming and will be corrected in V1.2 of the Tool. Note that the variable “Fraction of natural gas wells in the county needing compression” is not needed to estimate emissions from lateral compressor engines. Refer to Equations 37 and 38 of Section 3.12 of the Tool report for more information. <sup>1</sup>

- *ERG: Implemented into v1.2 of the 2020NEI Tool; released last month (Feb 2022)*
- *Mark Jones: aren't these electrification changes a simple math change in Tool?*
- *ERG: Straightforward math. EPA will discuss possible outside the Tool option?*
- WRAP only found out about these electrification/NSPS JJJJ issues through surveys