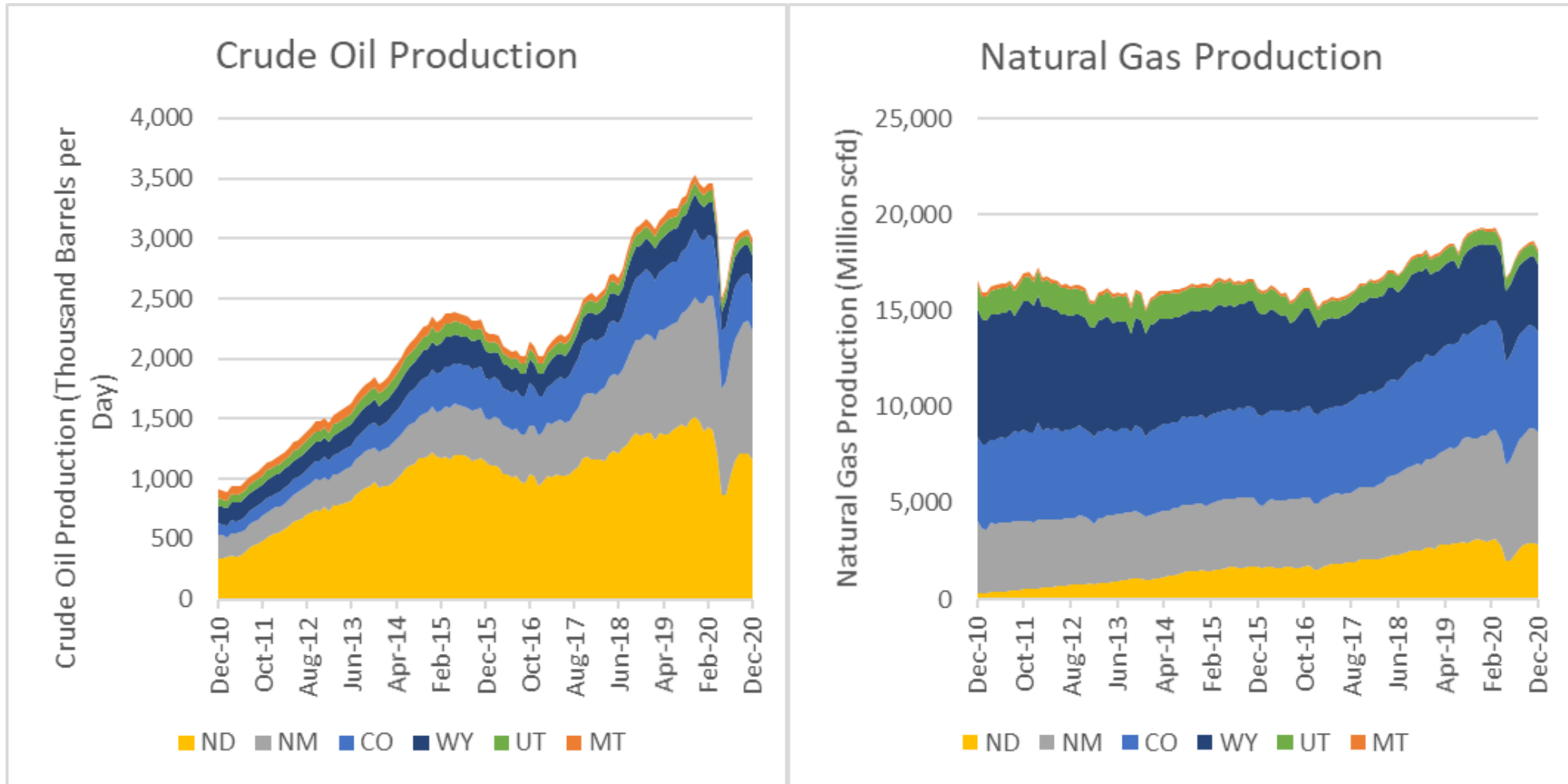


WRAP REGION OIL & GAS: RECENT ACTIVITY TRENDS AND EMISSION INVENTORIES

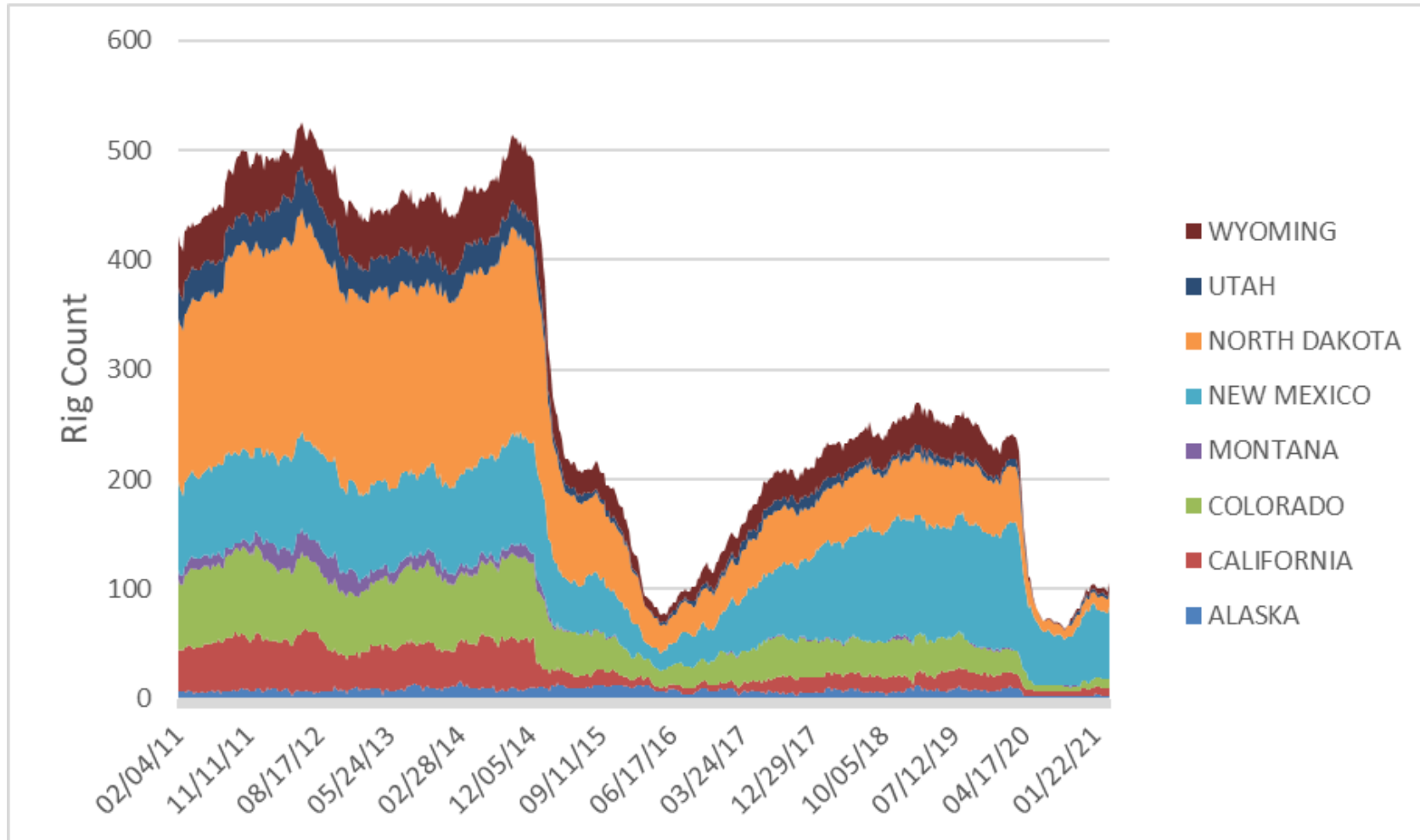
March 30, 2021

O&G PRODUCTION TRENDS: MAJOR O&G PRODUCING STATES IN WRAP REGION

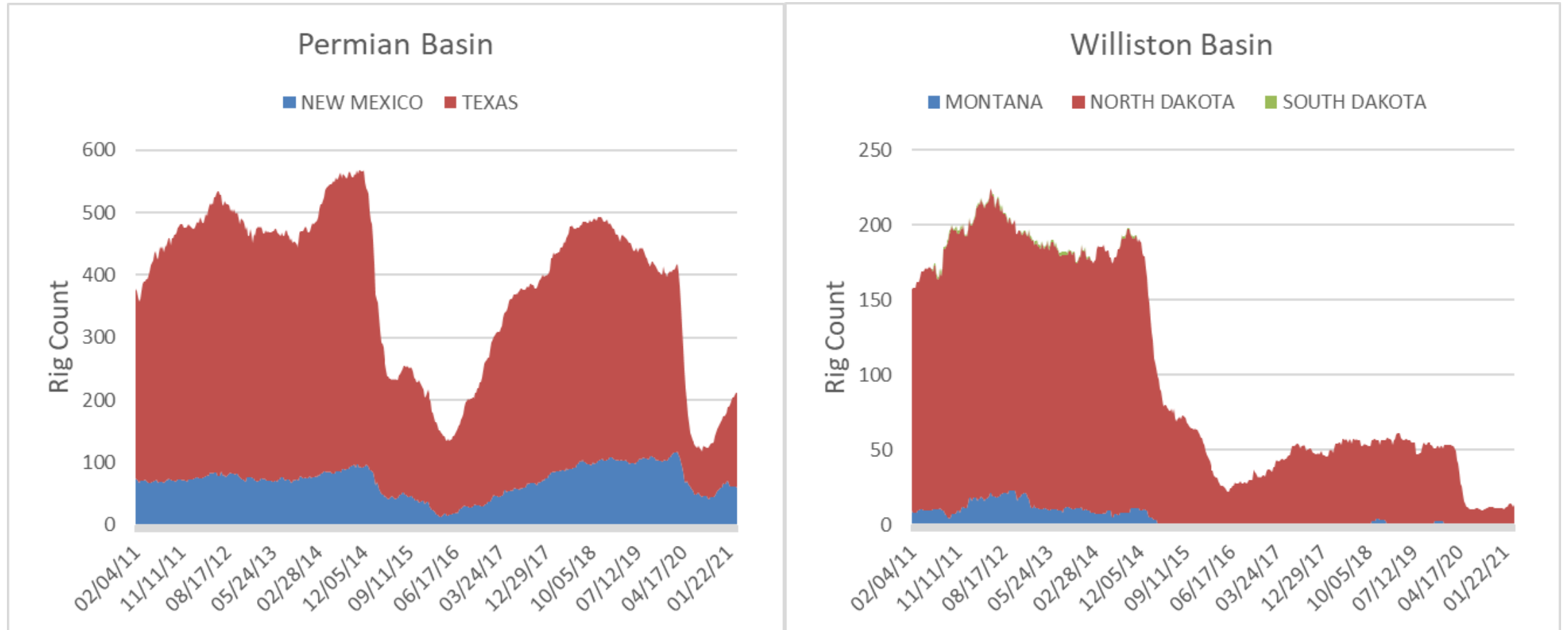


Source: US EIA, <https://www.eia.gov/petroleum/production/>

RIG COUNT TRENDS: MAJOR O&G PRODUCING STATES IN WRAP REGION



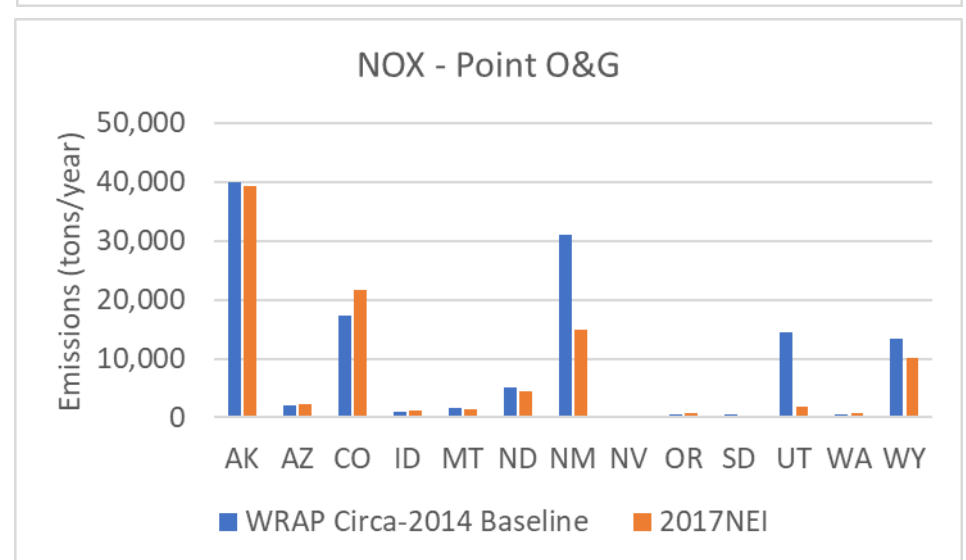
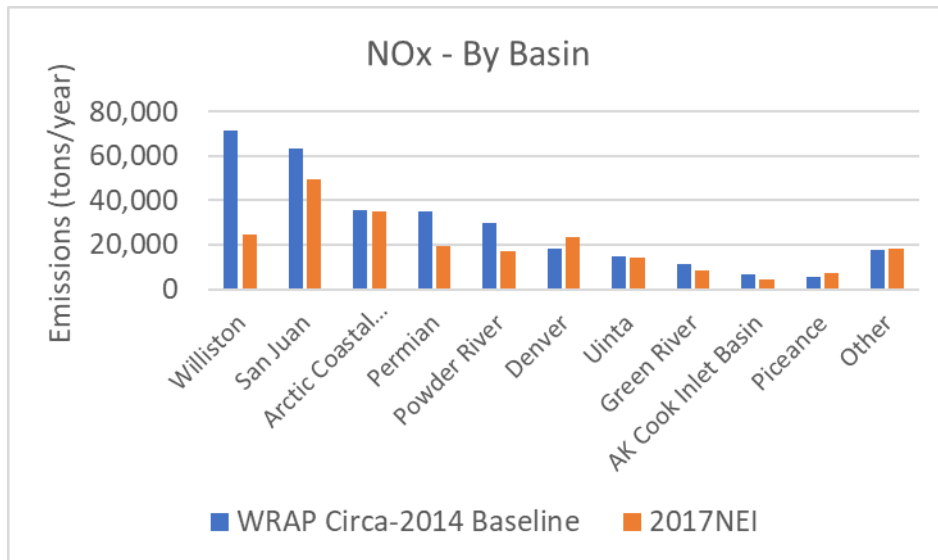
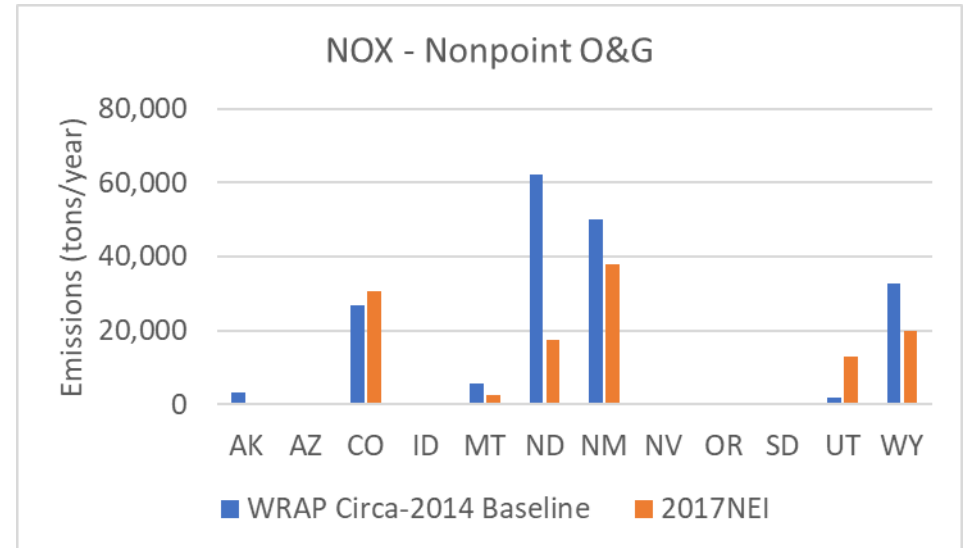
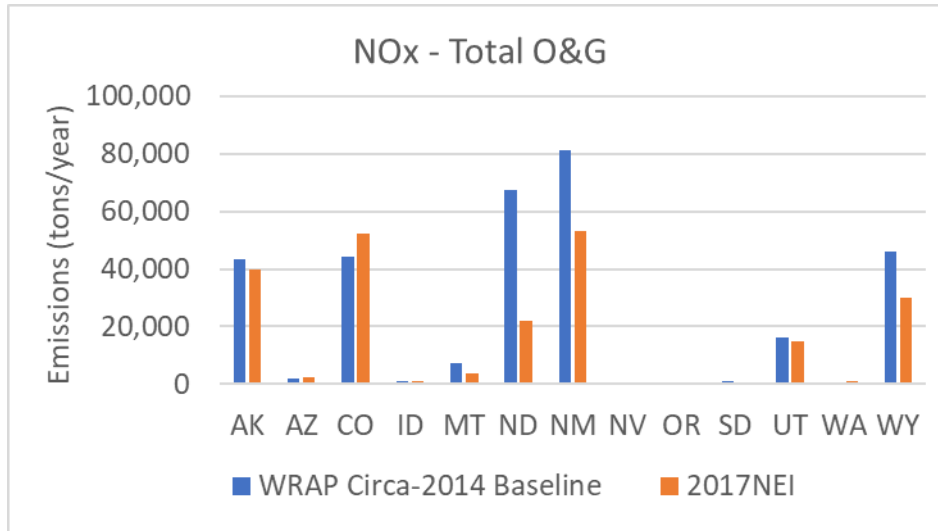
RIG COUNT TRENDS: PERMIAN AND WILLISTON BASINS



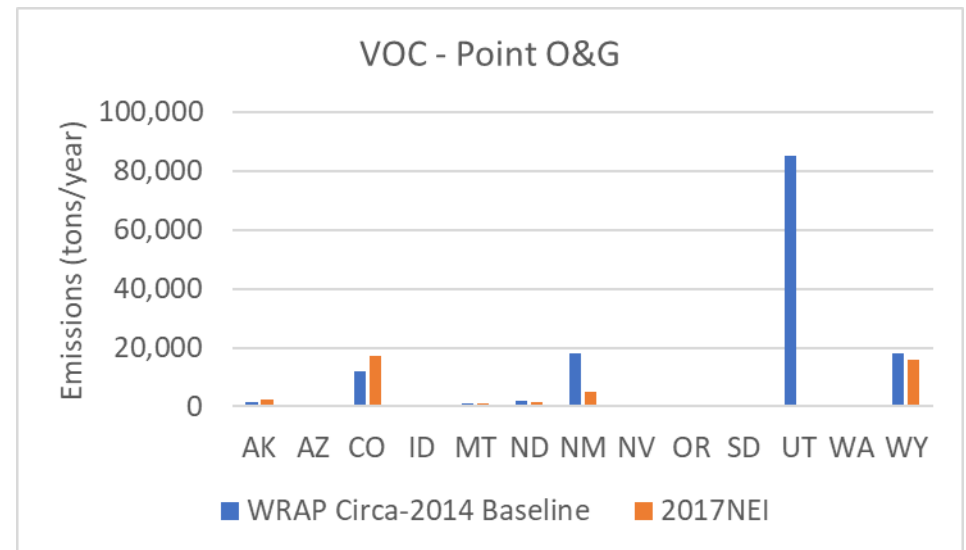
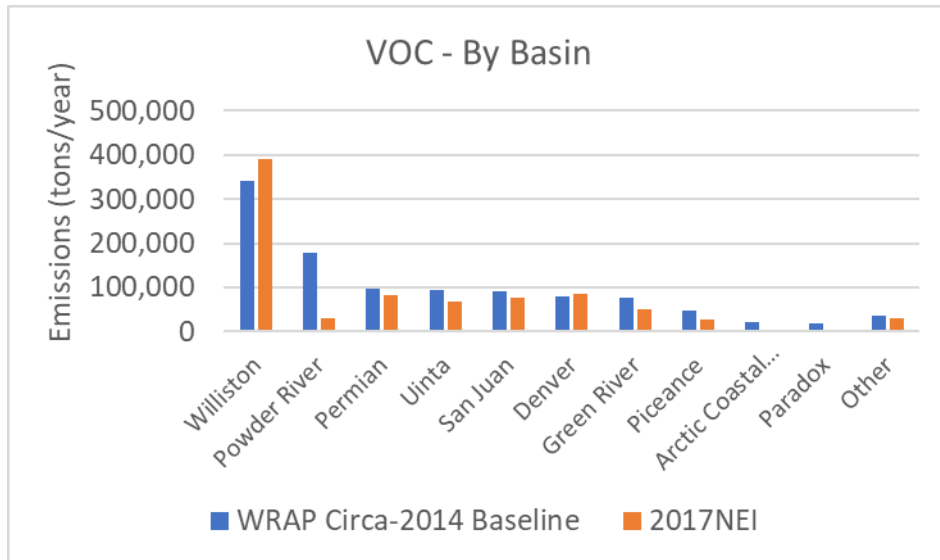
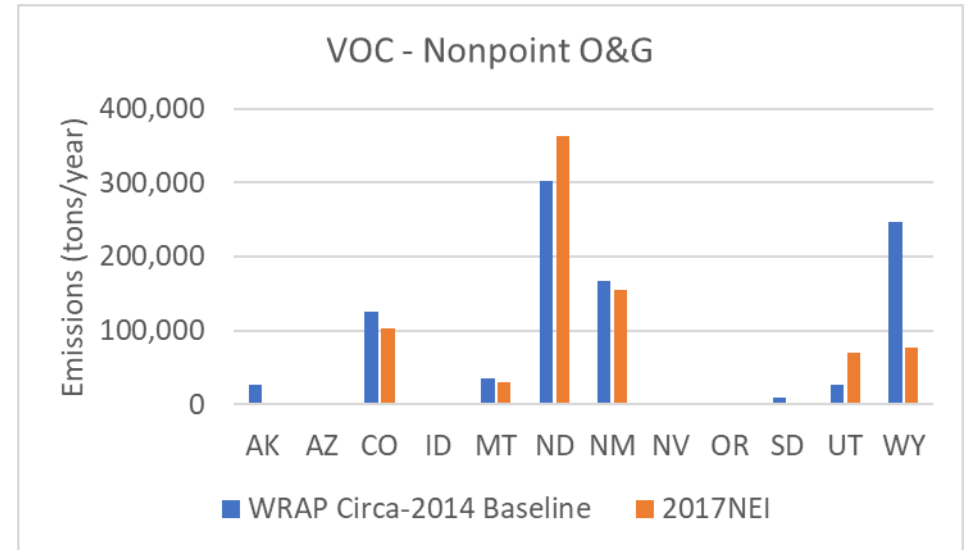
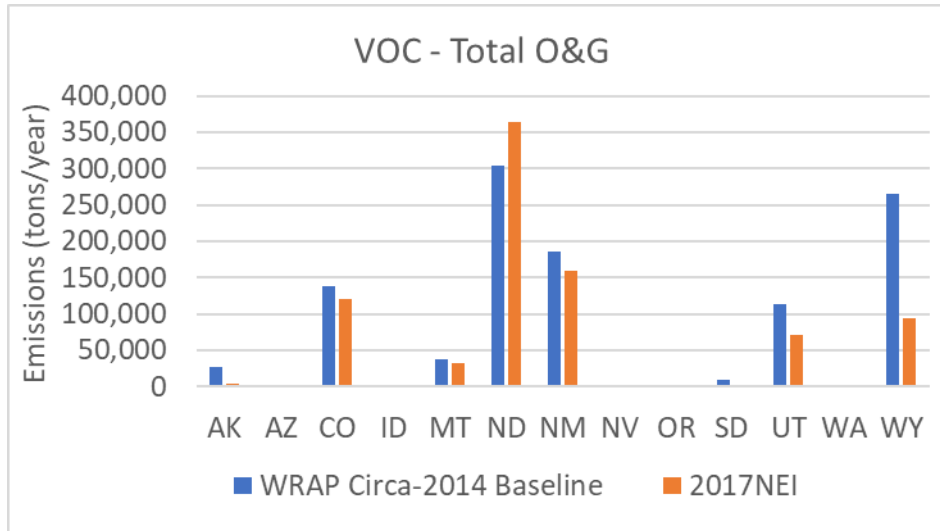
KEY POINTS ON INVENTORY BASIS

- In collaboration with state agencies survey data was collected for the WRAP Region in MT, ND, NM, and WY. This data was used to enhance the WRAP circa-2014 baseline inventory. Operator data collected for circa-2018 operations.
- Site specific emissions from Uinta Basin 2014 Air Agencies Oil and Gas Emissions Inventory were incorporated into the WRAP circa-2014 baseline inventory.
- WRAP circa-2014 Baseline Documentation: [Revised Final Report](#)
 - Mineral ownership applied to 2028 future year inventory (Emissions magnitudes and spatial allocations by mineral ownership) - Apply to 2017?
- EPA 2017 NEI Documentation:
 - [January 2021 Release of 2017 NEI Technical Support Document \(TSD\) \(PDF\)](#)
 - Additional documentation of O&G Tool available in [Supporting Data and Summaries](#)
 - No assessment of operator specific information unless reported directly by states (e.g., Wyoming)

WRAP REGION NOx EMISSIONS BY STATE OR BASIN

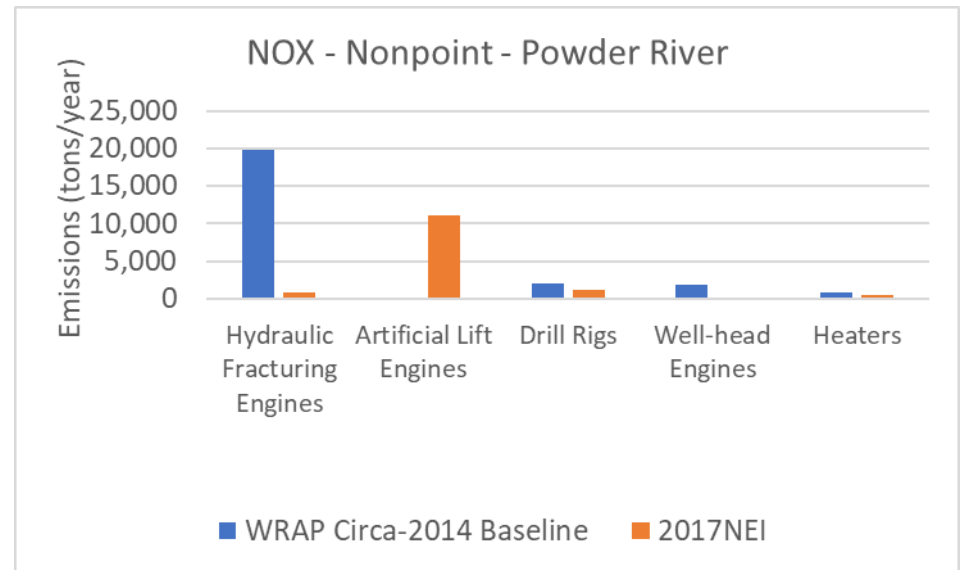
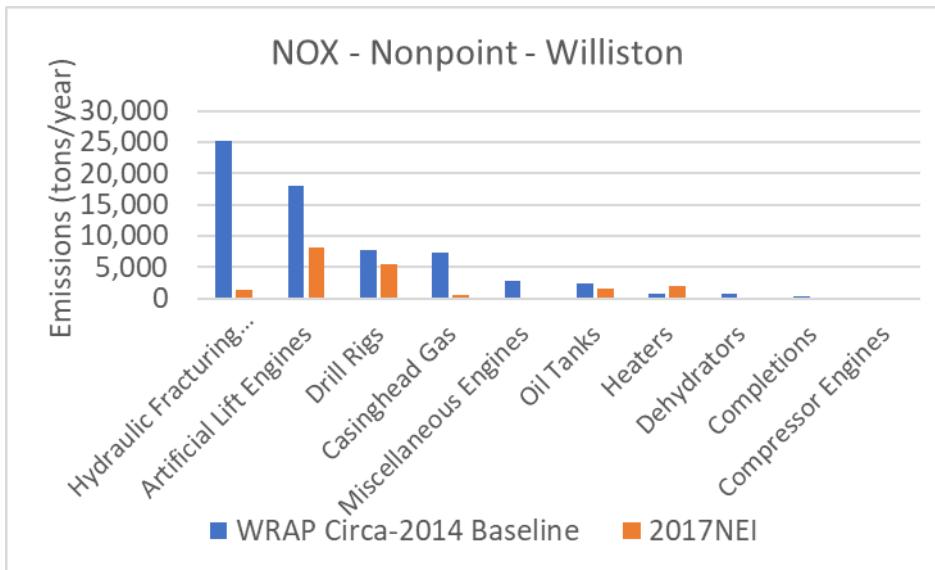
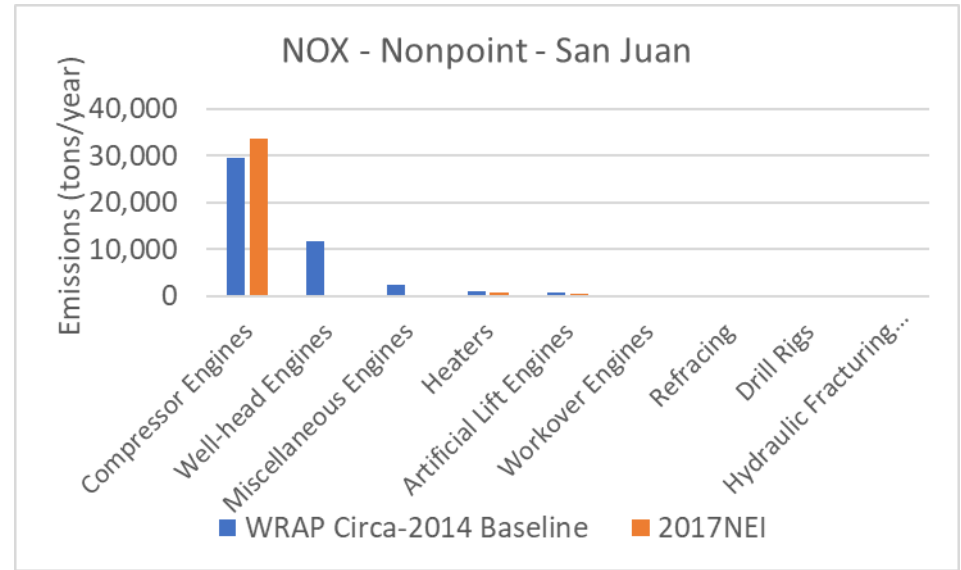
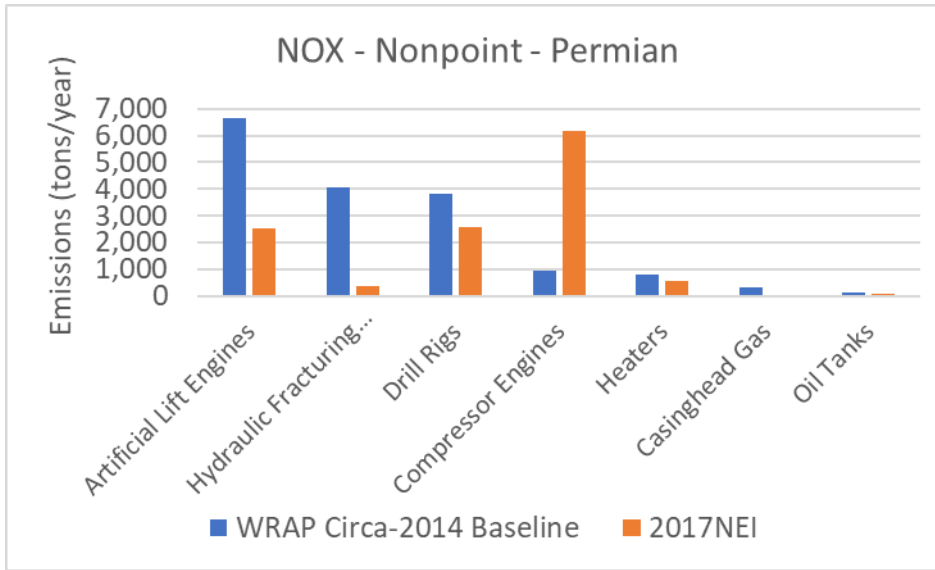


WRAP REGION VOC EMISSIONS BY STATE OR BASIN

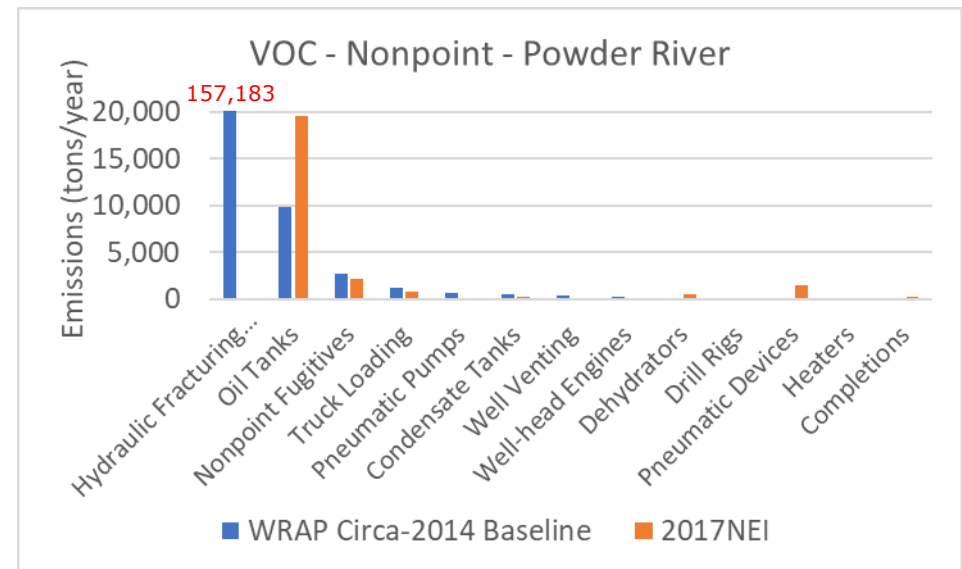
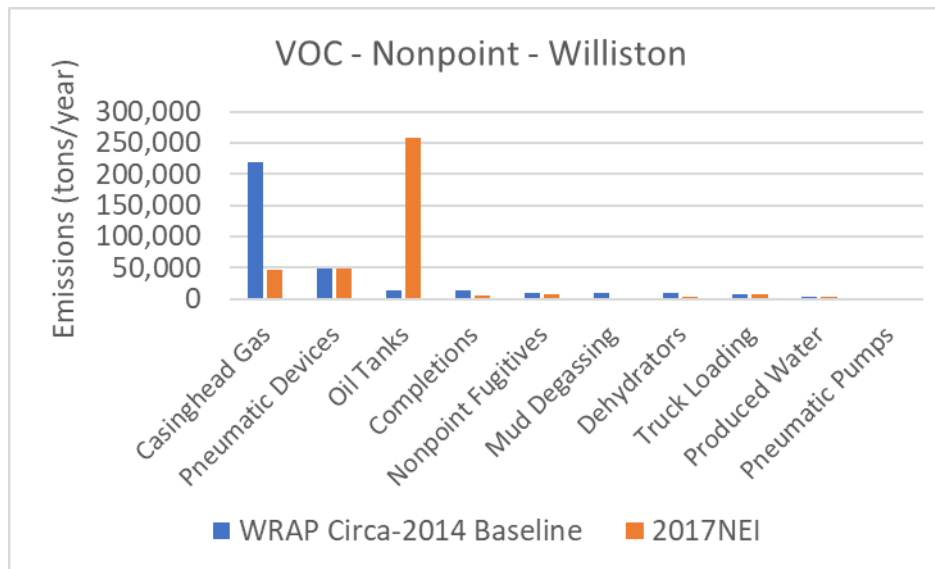
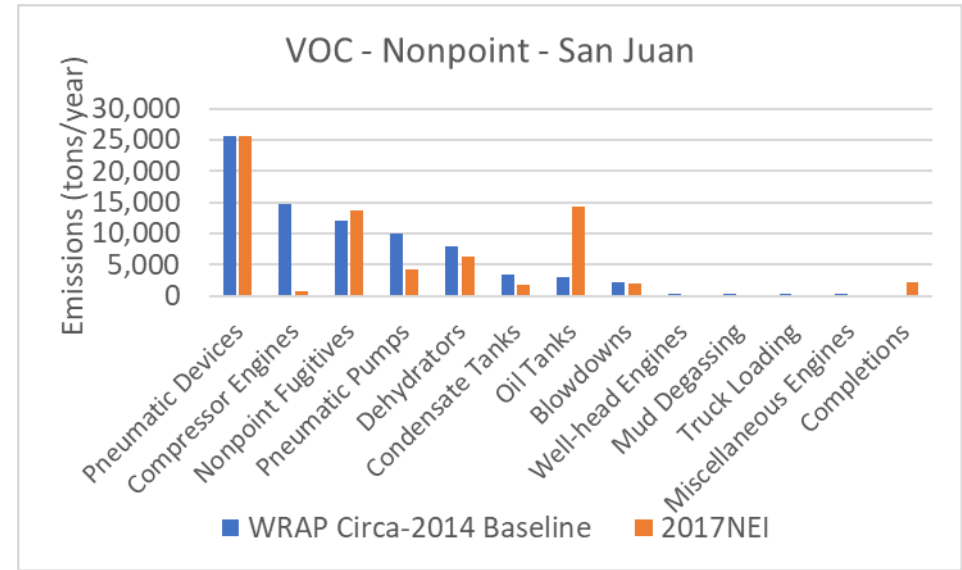
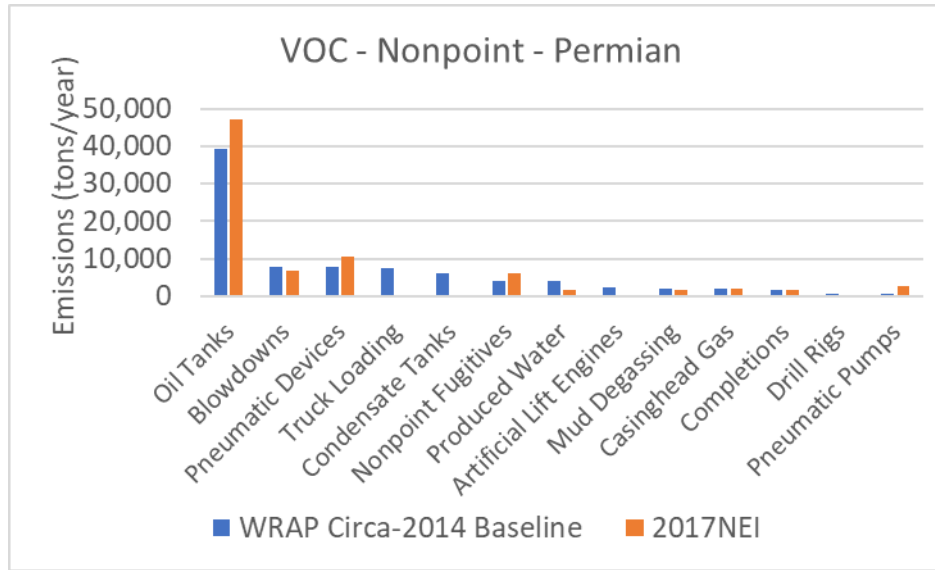


WRAP REGION NONPOINT NOX EMISSIONS BY BASIN

*Source categories with small emission contributions not shown in these charts



WRAP REGION NONPOINT VOC EMISSIONS BY BASIN



*Source categories with small emission contributions not shown in these charts

NEI2017 V. WRAP CIRCA-2014

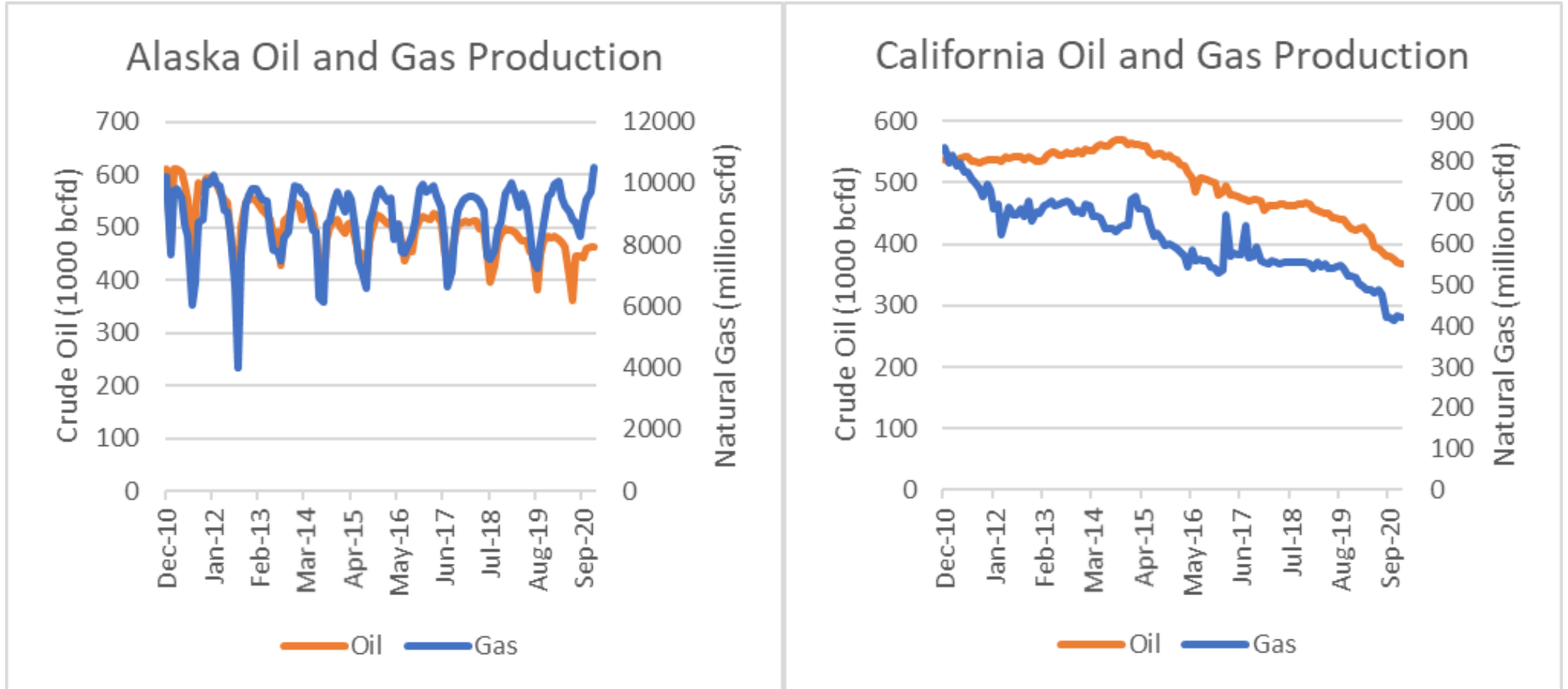
- O&G production changes by basin
- Well type/formation shifts
- Drilling activity changes
- Operational practice/equipment configuration changes
- Underlying 2017NEI assumptions
 - Application of O&G Tool vs. use of state provided emissions
 - O&G Tool application without recent survey updates

POTENTIAL NEXT STEPS

- Assess potential improvements of 2017 NEI for air quality modeling
 - Add mineral ownership detail to 2017 inventory?
 - Update 2017 emissions with WRAP OGWG survey results?
 - Evaluation of the EPA O&G Tool for select Western Basins?
 - Assess: dated inputs, how/where to get better inputs, sharing WRAP OGWG survey data with EPA for the O&G Tool
- Conduct additional targeted surveys, and integrate into inventory prior to air quality modeling
 - Equipment configurations and operational characteristics
 - Control prevalence/type
 - Engine age
 - Gas composition profiles
- Scope out additional potential analyses to assess the need for improvements in specific basins
 - Evaluate model performance/conduct sensitivity analyses (inventory improvements could come first, then model performance evaluation; would need RTOWG involvement)
 - Review of potential basin-specific implications of the most recent scientific publications
 - Comparison of satellite-derived NO_x and/or methane to emission inventory

END

ALASKA AND CALIFORNIA O&G PRODUCTION



Source: US EIA, <https://www.eia.gov/petroleum/production/>