WRAP – Oil and Gas Work Group
Oil and Gas Emission Sources

Consensus on October 17, 2017

The following list of oil and gas emissions sources was developed as a tool to guide the scope of emissions sources to be addressed in future work products of the WRAP OGWG. The list is not intended to be a comprehensive itemization of all point, area, and fugitive sources associated with current oil and gas development, but rather, it presents a general overview of emissions sources representative of onshore oil and gas development within the WRAP region, including the intermountain West, California, and Alaska.

The spectrum of air emissions sources from the entire oil and gas industry is extensive in the WRAP region, varying by basin, production formation, age of the field, development and operations practices, regulatory programs, and various other factors. The purpose of this list is to identify those emission sources that the OGWG will focus on and to differentiate those sources that are outside the scope of the Work Group's efforts. The list may be used to inform the scope of WRAP oil and gas work products such as:

- Developing data on oil and gas sources to be used in emissions inventories for Regional Haze SIPs;
- Identifying gaps in emissions data for particular sources;
- Constructing historic and projected future emissions inventories for western oil and gas fields or basins; and
- Quantifying emissions controls for these sources.

The Work Group will focus its efforts primarily on emission sources in the upstream and midstream sectors. These sectors include emission sources where data gaps may exist such as:

- Fugitives, area sources, or leaks with limited sampling or measurement data and emissions are difficult to quantify,
- Multiple minor sources that may not be permitted and may not be required to report emissions,
- Emissions that vary widely depending on product, age of field, or other basin characteristics.

The Work Group, typically, will not address emission sources from the downstream sector in its work products. Emissions from the downstream sector may be included in a specific work product if these emissions are relevant to the goals and objectives of the work product. Generally, downstream emission sources are outside of the scope for the Work Group for the following reasons:

- Many of the emissions sources in the downstream sector are permitted major and/or Title V sources with emissions reporting and monitoring requirements,
- Extensive data from emissions monitoring and research studies exists,
- The complexity of downstream emissions sources is beyond the capacity of this Work Group.

Table 1
Oil and Gas Emissions Sources

Sources included within the scope of work to be completed by the WRAP-OGWG

Upstream
drill rig engines
completion engines
drilling and completion operations (other engines and equipment, venting, leaks)
hydraulic fracturing (frac engines, pumps, mixers, etc.)
flowback pits, produced water evaporation ponds
storage tanks (produced water, condensate, oil)
well pad treatment equipment (heaters, dehydrators, separators)
well operations (fugitives, blowdowns, liquids unloading, leaks)
pneumatic pumps and controllers
well pad flaring
truck traffic for drilling and completion
truck traffic for maintenance
truck traffic for well pad product to disposal or processing
truck loading and unloading
loading docks and delivery
compressor units

Midstream
gathering pipelines (leaks, blowdowns, pigging)
storage tank batteries
gas processing (mid field or near field sweetening, dehydrators)
pipeline transmission from well pad to gas treatment or refining
compressor stations (boosting, infield compression, and/or transportation for gas treatment)
liquefaction for LNG
terminals (above the loading flange)

O&G Emissions Sources outside the scope of work to be completed by the WRAP-OGWG

Downstream
compressor stations (long range transmission of pipeline sale-ready gas)
interstate pipelines (long range transmission of pipeline sale-ready gas)
transportation of product (tanker truck and rail)
refining (may be considered midstream depending on field)
natural gas Processing (may be considered midstream depending on field)
terminals (below the loading flange)
LNG storage
underground storage
distribution (pipeline mains, regulators, meters)