COGA FACT SHEET

Ozone

Colorado's oil and natural gas industry continues to reduce emissions and mitigate the effects of ground-level ozone as part of its ongoing commitment to being good stewards of our natural resources and protecting the environment.

What is Ozone?

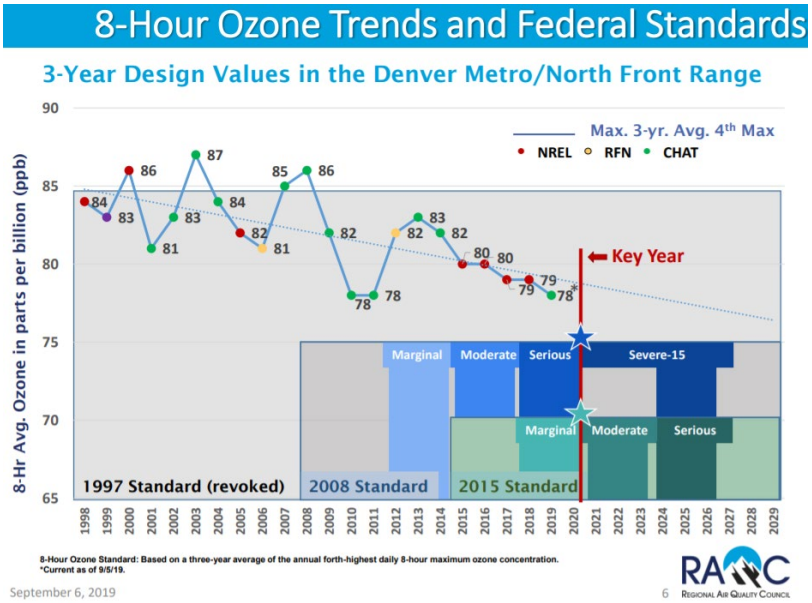
Ozone is a secondary pollutant formed when volatile organic compounds (VOCs) and nitrogen oxides (NOx) combine in the presence of sunlight and heat. Examples of VOC sources include paints, solvents, formaldehyde, methane, benzene, engine exhaust, household cleaners, as well as decomposing plants, animals, and landfill material.

NOx comes from fuel combustion, fertilizer, and lightning. During thunderstorms lightning will split nitrogen molecules in earth's atmosphere, of which 78-percent is nitrogen. Ozone formation is most prevalent in urban areas when VOCs and NOx combine during hot, sunny weather.

Ozone can lead to difficulty breathing, as it causes the muscles in the airways to constrict, trapping air in the alveoli, which are tiny air sacs in the lungs. For this reason, young children, older adults, and people with asthma stand the greatest risk. This leads to wheezing, shortness of breath, and may lead to lung infections.

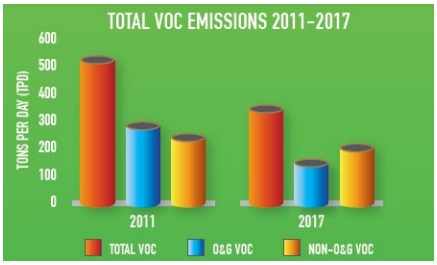
Nonattainment Area

The Denver Metro/North Front Range (DMNFR) area has been unable to meet the 2008 EPA ozone standard of 75 parts per billion over an 8-hour average, and it remains in moderate nonattainment status. A vast majority of ozone levels in the DMNFR nonattainment area, approximately 70 to 80 percent, qualify as background ozone, according to the Regional Air Quality Council (RAQC). Background ozone is formed by a combination of naturally occurring emissions and ozone that is transported to the Front Range from international and other domestic sources. Consequently, addressing ozone related challenges in Colorado is an extremely difficult, economy-wide undertaking, as only 20 to 30 percent of the emissions needed to form ozone in the nonattainment area are produced by Colorado-based human activities.



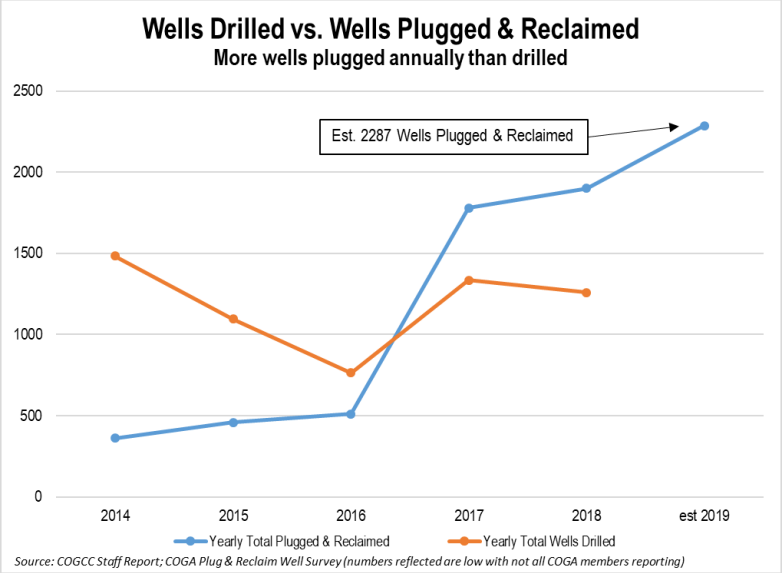
"Despite the air pollution challenges associated with increasing population, our ozone levels have improved over time." – CDPHE

Emission Reductions



Colorado's oil and natural gas industry has seen significant reductions of ozone-causing emissions in recent years because of technological innovation, regulatory initiatives, and leadership from within the industry. Over the past six years, the state's oil and natural gas industry cut its emissions of Volatile Organic Compounds (VOCs) in the Denver Metro/North Front Range (DMNFR) ozone nonattainment area by nearly 50-percent, all while oil production quadrupled statewide.

Notable Efforts



Between 2017 and 2019, COGA member companies will proactively plug and reclaim an estimated 6,000 oil and natural gas wells. Based on average production from the plugged and reclaimed wells and Colorado Air Pollution Control Division (APCD) default emission factors for tanks and loading, these efforts will provide additional annual emissions savings.

Over the past three years, the oil and natural gas industry also has participated in a voluntary and coordinated emission reduction initiative during APCD forecasted high-ozone days. Possible ozone mitigation activities include but are not limited to the following:

- Alternate vehicle fueling times
- Reduced vehicle traffic and miles traveled
- Managed drilling and completions on high ozone days to reduce emissions
- Lower emitting tank load outs
- Delayed operational activities (e.g., pigging, well unloading) on high ozone days
- Additional aerial surveys to detect and fix leaks

Additional Resources

Every Coloradan has an opportunity to reduce their emission profile. Additional information and resources are available at www.coga.org/factsonceo to give the public and policymakers a deeper look at the ozone issue in Colorado. COGA is also promoting the efforts of Simple Steps. Better Air, the public education initiative by the Regional Air Quality Council (RAQC).

Sources

Colorado Department of Public Health & Environment (CDPHE) | www.colorado.gov/cdphe
Regional Air Qaulity Council (RAQC) | www.raqc.org
Colorado Oil & Gas Association (COGA) | www.coga.org