



Effects of New EPA Ozone Limits

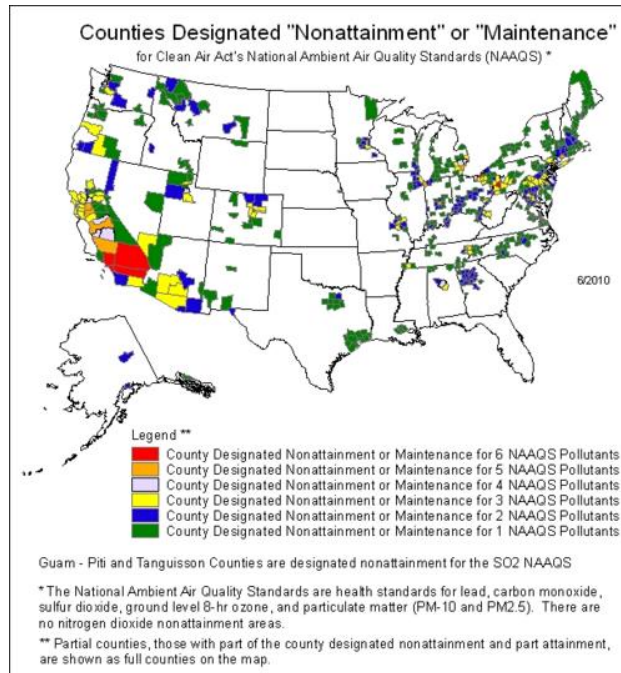
The EPA announced late last year that they are planning on reducing the allowable background ozone levels from 75 ppb to between 65-70 ppb. This announcement has been widely covered by the media, but what implications does it have on diesel and natural gas power generating facilities? The final EPA rule will be released on October 1st, 2015; this article was written in anticipation of these changes so that design engineers can be aware of the implications and can best decide how to minimize the impact on local sites.

In order to understand the effects of reduced ozone levels, it's best to start with some background information. The ozone emissions levels are being reduced through the National Ambient Air Quality Standards (NAAQS) established in the Clean Air Act. The idea behind NAAQS is that every American is entitled to the same minimum standard of air quality regardless of where they are located. For example, if you are located Texas you are entitled to the same minimum air quality as living in Vermont.

The EPA has determined that there are six (6) criteria pollutants that are harmful and need to be reduced. The EPA oversees the measurement of these six (6) criteria pollutants by monitoring hundreds of different locations throughout the US. Ozone, NO₂, Particulate Matter (PM) and Carbon Monoxide (CO) are the ones to be aware about when dealing with Diesel and Natural Gas Generators. NAAQS, establishes the maximum acceptable concentration levels for each of these criteria pollutants.

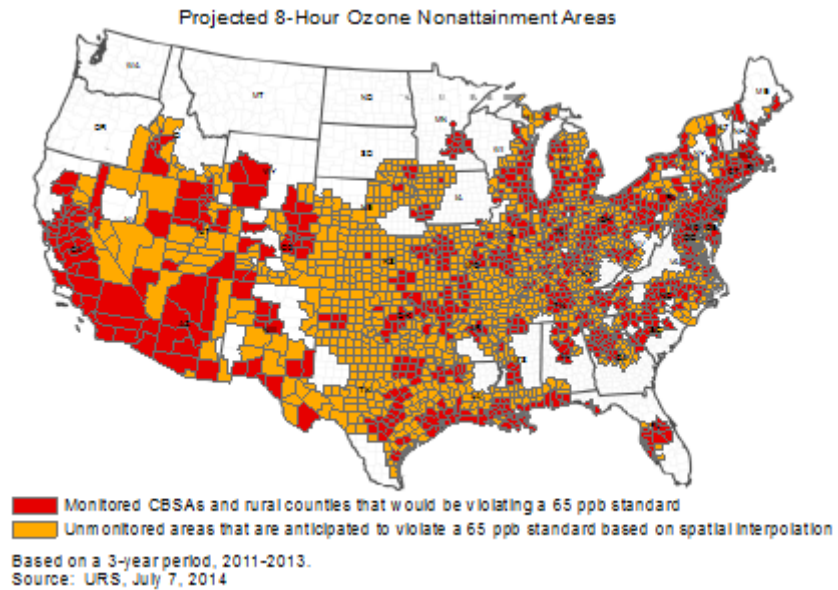
If the EPA measures higher concentrations for one of these criteria pollutants in a specific area, the area is considered to be in non-attainment. This analysis is performed for each criteria pollutant separately. For example if one area doesn't meet the Ozone concentration levels but meets the minimum concentrations for the rest of the criteria pollutants it's considered to have non-attainment for one criteria pollutant. It is possible to have non-attainment for all six measured pollutants.

Below is a map that shows the current non-attainment areas. The different colors represent the number of criteria pollutants that are in non-attainment. Most non-attainment areas have ozone non-attainment and are located near large urban centers.



Ozone emissions are of particular concern, as the presence of Ozone is manifested into smog. Smog is a huge problem in urban environments and has many adverse health effects. Ground level ozone is created indirectly by combustion processes; NO_x and VOCs emissions that are emitted by combustion processes and are referred to as Ozone precursors as they yield Ozone after exposure to the local environment. As a result the EPA keeps track how much NO_x and VOCs large facilities emit to limit ground level ozone levels.

Below is a graph that shows the potential non-attainment areas that will exist if the EPA selects 65 ppb as the new background ozone limit. It is very likely that the ozone limit will be between 65 and 70 ppb; so this map illustrates the worst case scenario. When comparing this map to the one above, the implications of this change become very evident. Under the new EPA ozone limits, most areas in the country will be in ozone non-attainment.



What does this mean to power generation facilities? Facilities that emit a certain amount of NO_x are considered to be a major source by the EPA. The chart below defines the NO_x thresholds that the EPA considers to be a Major Source. If a site exceeds or have the potential to exceed this major source limit the site is subject to a Title V permit. Sites with Title V permits are scrutinized much more diligently by regulators, in addition these sites have much more rigorous emissions reporting standards to follow and often require expensive pollution control technology.

Type of EPA Area	NOx (tons per year)
Attainment area	100
Non-attainment area – marginal	100
Non-attainment area – moderate	100
Non-attainment area – serious	50
Non-attainment area – severe	25
Non-attainment area – extreme	10

Sites that are subject to a Title V permit also require BACT (Best Available Control Technology) or MACT (Maximum Available Control Technology) depending on the severity of the non-attainment area that they are located in. BACT and MACT generally requires the installation of pollution control technology to reduce the overall site emissions. This technology would need to be continually updated on permit renewal which occurs every 5 years.

In summary; the reduction of the EPA background ozone limit will create many more non-attainment areas, resulting in several more Title V sites. It is best to avoid a Title V permit as the permitting process can be very expensive and time consuming to apply for and administer. In addition BACT and MACT compliance is very costly. If you believe your site has the potential to emit more than the NOx thresholds it's best to hire an environmental consultant and to take steps to avoid a Title V permit. One common way to avoid a Title V permit is to install Selective Catalytic Reduction (SCR) technology to reduce NOx emissions below the Title V thresholds. Safety Power Inc. is a manufacturer of SCR technology; more information on this technology and other environmental regulations can be found on our website (www.safetypower.ca or www.safetypowerinc.com) or call us at 1-800-657-1280. Our offices are located just outside of Toronto, Canada and San Jose, California.



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