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TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

August 26, 2008

Ms. Kimber Scavo
U.S. Environmental Protection Agency
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711
Mail Drop C539-01

Subject: Environmental Protection Agency's (EPA) Implementation Rule for the 0.075 parts per million (ppm) Eight-hour Ozone Standard

Dear Ms. Scavo:

Thank you for the opportunity to suggest an alternative to the existing classification scheme for the eight-hour ozone National Ambient Air Quality Standard (NAAQS or standard). Please consider this alternative as the EPA develops its implementation rule for the newly revised 2008 eight-hour ozone standard. It is our understanding that this rule will be proposed in the fall of 2008.

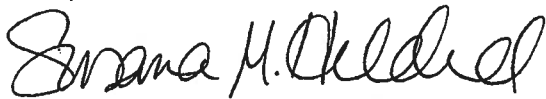
When the EPA promulgated the final rule in 2004 to implement the 1997 eight-hour ozone NAAQS, the classification thresholds in Table 1 of section 181 of the Federal Clean Air Act were translated from one-hour values to eight-hour ozone values, based on the percentage increase over the one-hour ozone standard. We believe that this translation did not fully consider the fundamental differences between the one-hour and eight-hour ozone NAAQS. For example, the one-hour standard measured local event spikes whereas the eight-hour standard is much more heavily influenced by background and long-range transport.

We believe that the EPA should develop a more practical resolution to the classification scheme when developing guidance on the transition to the 2008 ozone NAAQS to assist states with this potentially confusing matter. The Houston-Galveston-Brazoria (HGB) ozone nonattainment area is classified as "severe" (final approval is pending with EPA) under the 1997 ozone standard, but could be classified as "moderate" under the 2008 standard. If the HGB area were designated as moderate attainment under the new eight-hour standard, the deadline to attain the 2008 NAAQS would actually be before the deadline to attain the 1997 NAAQS. Of course, regardless of the deadline, we will work expeditiously to attain the NAAQS as soon as possible.

Ms. Kimber Scavo
Page 2
August 26, 2008

I have asked my technical staff to research potential alternatives for a classification scheme that would allow for the differences between the one-hour and eight-hour NAAQS, as well as provide adequate time for numerous nonattainment areas to reach attainment. The enclosure contains an alternative for your consideration. If you have any questions or need any further information, please contact me at 512-239-4696.

Sincerely,



Susana M. Hildebrand, P.E., Director
Air Quality Planning Division
Texas Commission on Environmental Quality

Enclosure

Expected and Alternative Classification Schemes for the 0.075 parts per million (ppm) Ozone Standard

In the 1990 Federal Clean Air Act Amendments [1], Congress devised a classification scheme that placed the areas with the most serious problems into higher classifications with correspondingly longer time frames with which to attain the one-hour ozone National Ambient Air Quality Standard (NAAQS) (see Table 1, Classifications Established in 1990 Clean Air Act Amendments with Distribution of Areas into Classifications). The Act established six distinct classifications of ozone nonattainment in recognition of the fact that all areas are not the same and that some would require as much as two decades to achieve the levels of emission reductions necessary to reach attainment. Table 1 shows the number of areas classified by the Environmental Protection Agency (EPA) into each category in 1991; while the lowest classifications have the highest numbers of areas, nearly one-third of the areas were classified Serious or above, providing those areas with nine or more years to reach attainment [5]. Under the Act, all areas are required to attain the NAAQS as “expeditiously as practicable,” so the years listed in Table 1 are regarded by the EPA as “not to exceed” numbers.

Table1: Classifications Established in 1990 Clean Air Act Amendments with Distribution of Areas into Classifications [5]

CLASSIFICATION	DESIGN VALUES FROM (PPM)	DESIGN VALUES UP TO (BUT NOT INCLUDING) (PPM)	YEARS TO REACH ATTAINMENT AFTER 1990 ENACTMENT	NUMBER OF AREAS CLASSIFIED IN 1991 (%OF NONATTAINMENT AREAS)
Marginal	0.121	0.138	3	43 (44%)
Moderate	0.138	0.160	6	31 (32%)
Serious	0.160	0.180	9	14 (14%)
Severe – 15	0.180	0.190	15	9 (9%)
Severe – 17	0.190	0.280	17	
Extreme	0.280	and above	20	1 (1%)

In 1997, the EPA revised the ozone NAAQS from a one-hour, 0.12 ppm standard to an eight-hour, 0.08 ppm standard [2]. Litigation pushed back the implementation of the new standard for several years until finally, in 2004, the EPA issued its final implementation rule [3]. Despite a number of comments to the contrary, the EPA adopted a scheme that defined new classification thresholds in the same ratio to the new standard as those used in the 1990 Clean Air Act (CAA) Amendments. The translation from the original one-hour classification thresholds to the new thresholds for the 0.08 ppm eight-hour standard is illustrated in Table 2, Ratios of One-Hour Classification Thresholds to One-Hour NAAQS. Table 3, Classification Thresholds for Eight-Hour Ozone Areas Based on One-Hour Threshold Ratios, demonstrates that the 1997 eight-hour thresholds were based on applying the same ratios to the 1991 one-hour standard.

Table 2: Ratios of One-Hour Classification Thresholds to One-Hour NAAQS

CLASSIFICATION	DESIGN VALUES FROM (PPM)	DESIGN VALUES UP TO (BUT NOT INCLUDING) (PPM)	RATIO OF LOWER BOUNDARY TO OZONE NAAQS
Marginal	0.121	0.138	
Moderate	0.138	0.160	1.150
Serious	0.160	0.180	1.333
Severe - 15	0.180	0.190	1.500
Severe - 17	0.190	0.280	1.583
Extreme	0.280	and above	2.333

Table 3: Classification Thresholds for Eight-Hour Ozone Areas Based on One-Hour Threshold Ratios

CLASSIFICATION	DESIGN VALUES FROM (PPM)	DESIGN VALUES UP TO (BUT NOT INCLUDING) (PPM)	YEARS TO REACH ATTAINMENT AFTER 2004 DESIGNATIONS	RATIO OF LOWER BOUNDARY TO OZONE NAAQS (FROM TABLE 2)
Marginal	0.085	0.092	3	
Moderate	0.092	0.107	6	1.150
Serious	0.107	0.120	9	1.333
Severe - 15	0.120	0.127	15	1.500
Severe - 17	0.127	0.187	17	1.583
Extreme	0.187	and above	20	2.333

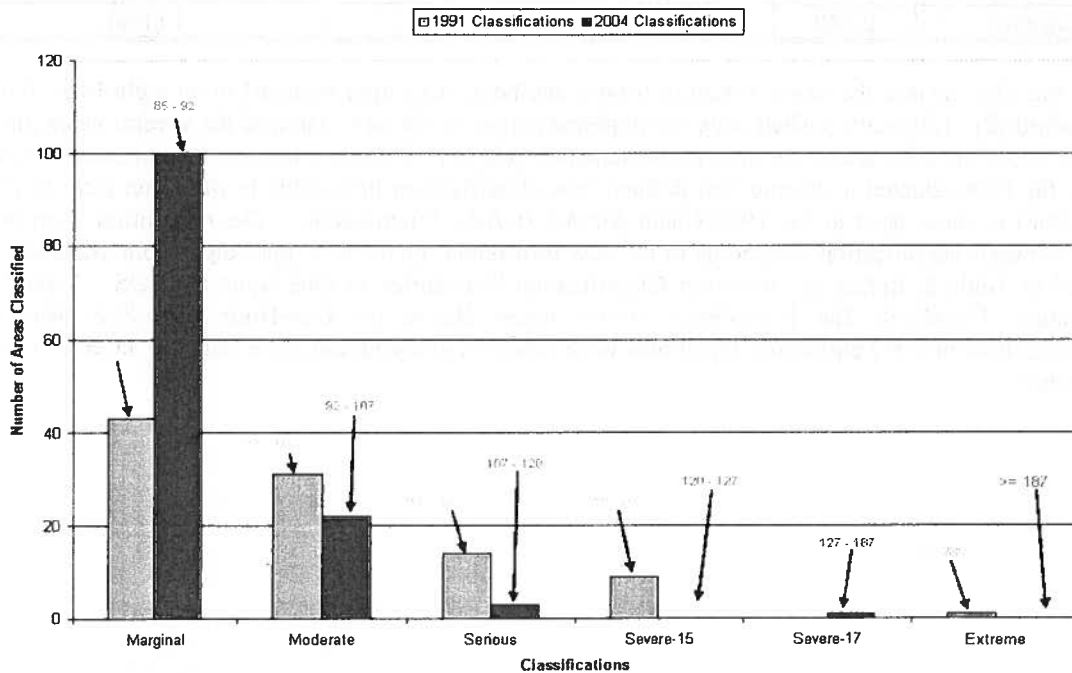


Figure 1: 1991 Ozone Classifications Compared to 2004 Ozone Classifications

The revised classification scheme implemented in 2004 was straightforward and legally supportable [3], but had the unfortunate effect of placing nearly all areas into the two lowest classifications¹, Marginal and Moderate. As seen in Table 4, Distribution of Nonattainment Areas by Classification in 1991 (One-Hour, 0.12 ppm) and 2004 (Eight-Hour, 0.08 ppm), only four areas were classified as Serious and above, far fewer than under the original designations from 1991 which had a smaller number of areas designated (98 under the one-hour standard, 126 under the eight-hour standard). Figure 1 graphically shows the disparity between the classification schemes.

Table 4: Distribution of Nonattainment Areas by Classification in 1991 (One-Hour, 0.12 ppm) and 2004 (Eight-Hour, 0.08 ppm)[5, 14, 15]

CLASSIFICATION	NUMBER OF AREAS CLASSIFIED IN 1991 (% OF NONATTAINMENT AREAS) [4]	NUMBER OF AREAS CLASSIFIED IN 2004 (% OF NONATTAINMENT AREAS) [5]
Marginal (incl. Subpart 1)	43 (44%)	100 (79%)
Moderate	31 (32%)	22 (17%)
Serious	14 (14%)	3 (2%)
Severe – 15	9 (9%) ²	0 (0%)
Severe – 17		1 (1%)
Extreme	1 (1%)	0 (0%)

Problems with the 2004 Designations

Table 4 illustrates the disparity between the two standards in their distributions of areas into classifications. Clearly, when Congress established the original one-hour classification scheme, its intent was to distribute areas into all six classifications, providing areas with the worst problems reasonable periods of time to reach attainment [6,7]. The 2004 classification scheme, instead, provided a maximum of six years to all but 3 percent of the nonattainment areas designated under the 0.08 ppm eight-hour standard compared with 30 percent in the 1991 classifications. Such a disparity might be reasonable were the standards equivalent, given the nationwide drop in overall ozone levels attributable to the success of the 1990 Clean Air Act Amendments. But the standards are not equivalent, as demonstrated in the 2003 EPA report titled “Equivalence of 1-hour and 8-hour Ozone Design Values” [8]. In that report, the EPA considered three methods of evaluating the equivalence of the one-hour and eight-hour design values, and found that a one-hour design value of 0.121 ppm was roughly equivalent to an eight-hour design value of 0.090 to 0.092 ppm. So the eight-hour standard of 0.08 ppm is actually more stringent than the one-hour standard.

In 2004, the EPA could have applied a more technically reasoned approach to developing a new classification scheme congruent with Congress’ original intent to distribute areas into all six classifications. Instead, the EPA simply adopted a linear translation of a scheme developed for a different ozone problem.

In fact, the one- and eight-hour ozone problems differ in many important ways. One-hour design values are much more strongly influenced by short-term excursions from the norm than are their eight-hour counterparts. This influence is reflected in the distribution of design values in metropolitan areas across the country. The 1991 one-hour design values exhibited a distribution having a greater number of metropolitan areas with high design values relative to the standard. For example, nearly one quarter of

¹ The EPA actually chose to deal with most newly-designated nonattainment areas under Subpart 1, which is essentially equivalent to Marginal. The remainder of this discussion will treat the Subpart 1 areas as though they were classified as Marginal.

² The EPA Trends Report from which these data were taken did not distinguish between Severe-15 and Severe-17

the areas classified as nonattainment in 1991 had design values greater than 1½ times the standard. This characteristic was responsible for the original classification thresholds being relatively far apart. On the other hand, the eight-hour design values are clustered relatively closer to their mean, causing almost all areas to be classified as Moderate or below under the EPA's translation of the original one-hour classification scheme. In fact, only 3 percent of the areas designated nonattainment in 2004 had design values greater than 1½ times the 0.08 ppm standard.

Additionally, high one-hour design values are often associated with local phenomena such as emission events and flow reversals coupled with concentrated emission sources, while eight-hour ozone is much more heavily influenced by background and long-range transport. These factors take significantly more time to solve. The former case is more amenable to local strategies than the latter, which must, in most cases, rely on measures outside the province of local governments to resolve.

Because of these fundamental differences between one- and eight-hour ozone design values, the classification scheme for eight-hour ozone needs to be developed independently from the scheme designed for the obsolete one-hour standard.

Finally, it is worth paying special attention to the Houston/Galveston/Brazoria (HGB) ozone nonattainment area. The area has made extraordinary reductions to its industrial emissions of nitrogen oxides and highly reactive volatile organic compounds since 2003. The highly successful Texas Emission Reduction Program has accelerated reductions beyond those mandated by federal on-road and non-road emission standards, and a variety of local and statewide programs have further reduced emissions by unprecedented amounts. By 2007, most of the largest reductions had been implemented, and the area's eight-hour ozone design value dropped from 0.102 ppm in 2003 to 0.096 ppm in 2007 [9]. But as a Moderate area, the HGB area is required to further reduce its design value another 0.011 ppm in the following two years, which is simply not possible. Based on modeling analyses showing that the area could not reasonably expect to meet even the deadline for a Serious area, 2012, the State of Texas petitioned the EPA to redesignate the area from Moderate to Severe-15 [10].

The State of Texas invested considerable financial and manpower resources towards demonstrating attainment by 2009. The state also used additional resources into preparing the redesignation request for the HGB area. The state would have used these resources more effectively to develop a 2018 attainment demonstration in order to participate more fully in the second Texas Air Quality Study (TexAQS II) [11], if the EPA used a more practical classification scheme to begin with.

Moving Forward: The 2008 Ozone NAAQS

The EPA should reconsider the classification scheme to be used with the new 0.075 ppm standard when it is implemented. The EPA should discard the idea of simply performing a linear translation of the current scheme (itself a linear translation of the original classification scheme), and consider several factors when creating a new scheme. First, the EPA should return to a classification system that provides a reasonable amount of time to attain the standard for the areas with the worst problems. Second, the EPA should consider the fundamental differences between eight-hour design values and one-hour design values, such as the relative importance of local versus regional reduction programs. Third, the EPA should consider the differences between an eight-hour standard of 0.08 ppm versus an eight-hour standard of 0.075 ppm. A key element of the latter factor is the proximity of the new standard to continental background ozone levels, which in many rural areas today can reach levels above 0.075 ppm despite nationwide emission reductions for nearly two decades since the 1990 Federal Clean Air Act Amendments. The EPA should also be cognizant of what may be required to bring areas into compliance with a standard that may be as little as 0.030 ppm higher than what the EPA considers to be natural background levels of 0.025 to 0.045 ppm [12].

Table 5, Projected Classifications for the 2008 Ozone NAAQS (Assuming EPA Methodology), is an illustration of likely classification thresholds for the 2008 NAAQS, assuming the EPA were to carry forward its linear translation scheme from 2004 on 234 possible nonattainment areas (based on an analysis of 2005-2007 design values).

Table 5: Projected Classifications for the 2008 Ozone NAAQS (Assuming EPA Methodology) [13]

CLASSIFICATION	DESIGN VALUE FROM (PPM)	DESIGN VALUE UP TO (BUT NOT INCLUDING) (PPM)	RATIO OF LOWER BOUNDARY TO OZONE NAAQS	NUMBER (%) OF AREAS PROJECTED TO BE IN CLASSIFICATION [13]
Marginal	0.076	0.086		186 (79%)
Moderate	0.086	0.100	1.150	45 (19%)
Serious	0.100	0.113	1.338	2 (1%)
Severe – 15	0.113	0.119	1.50	0 (0%)
Severe – 17	0.119	0.175	1.588	1 (1%)
Extreme	0.175	and above	2.338	0 (0%)

A superior alternative to a simple translation scheme like that employed in 2004 would be one which assigns areas to classifications in proportion to the original 1991 classifications. Such a scheme would align closely with Congress' initial intent, and would provide areas with more reasonable amounts of time to meet the new, extremely stringent 0.075 ppm ozone standard. Table 6, Projected Classifications for the 2008 Ozone NAAQS, Assuming Allocation Proportional to 1991 Classification Distribution, shows the classification thresholds and resulting distribution of areas under the new standard using this proposed scheme. This data is also represented graphically in Figure 2.

Table 6: Projected Classifications for the 2008 Ozone NAAQS, Assuming Allocation Proportional to 1991 Classification Distribution (assuming 234 possible nonattainment areas based on an analysis of 2005-2007 design values)

CLASSIFICATION	FROM	UP TO (BUT NOT INCLUDING)	NUMBER (%) OF AREAS PROJECTED TO BE IN CLASSIFICATION [13]
Marginal	0.076	0.079	73 (31%)
Moderate	0.079	0.084	87 (37%)
Serious	0.084	0.087	37 (16%)
Severe – 15	0.087	0.090	13 (6%)
Severe – 17	0.090	0.109	21 (9%)
Extreme	0.109	and above	3 (1%)

Since design values are truncated to the nearest part per billion (0.001 ppm), it is not possible to define thresholds which reproduce the 1991 distribution exactly (as per Table 1), but the suggested thresholds in Table 6 provide a distribution that appears reasonably congruent with Congress' original intent. A scheme like the one shown in Table 6 is much more reasonable than the one the EPA applied in 2004, since it distributes areas throughout the six classifications and in so doing allows those areas needing more time to reach attainment a reasonable window in which to do so.

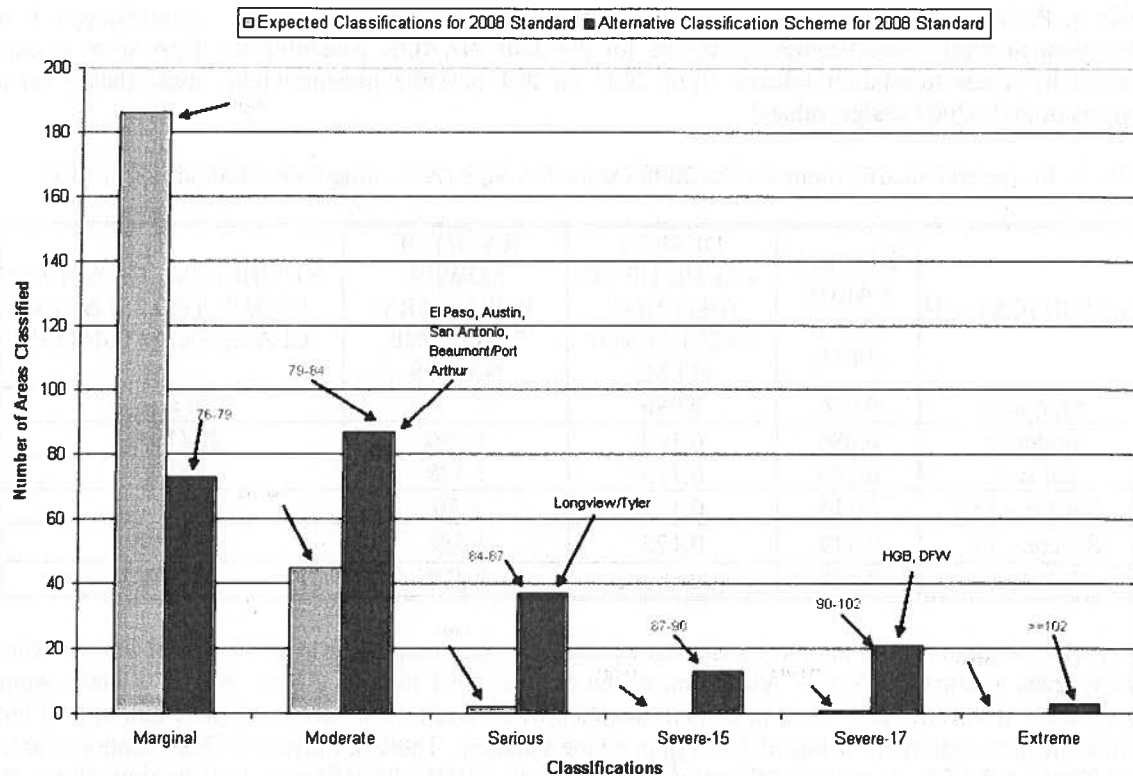


Figure 2: EPA's Expected Classification for 2008 Ozone Standard versus TCEQ Alternative Scheme

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