

Equivalence of 1-hour and 8-hour Ozone Design Values

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Background

Equivalence of 1-hour ozone values and 8-hour ozone values is difficult to define. When trying to determine equivalence, both the method for the determination and the scale to which the method is applied are important. For the purposes of this discussion, the scale is national and the three discussed methods can be described as mathematical (regression analysis), stringency (county counts), and health protection (population counts). The equivalent values of 8-hour ozone design values are determined for 3 key values of 1-hour ozone design values. These values are 0.12 ppm (the value of the 1-hour standard level), 0.121 ppm (used in the 1-hour classifications), and 0.125 ppm (the unrounded, lowest value (to three decimal places) above the 1-hour standard).

The data used in this discussion are derived from the EPA ambient monitoring data base, AQS. Only those sites were considered in the analysis that had at least 75% data completeness in any three year period for calculating design values. For the purposes of attainment and nonattainment designations, certain design values can be used that do not meet these requirements; however, design values not meeting the 75% criterion, while being valid for designation purposes, were considered potentially non-representative of the relationship between the 1-hour design values and the 8-hour design values. Three 3-year periods were examined: 1998-2000, 1999-2001, and 2000-2002.

Mathematical Equivalence

The following table contains the results of the regression analysis.

1-hour value Design value	Years	95% confidence		
		Interval Lower Bound	Equivalent 8-hour value	
			95% confidence Interval Upper Bound	
0.120	1998-2000	0.089	0.090	0.090
	1999-2001	0.089	0.089	0.089
	2000-2002	0.088	0.089	0.089
0.121	1998-2000	0.090	0.090	0.091
	1999-2001	0.089	0.090	0.090
	2000-2002	0.089	0.089	0.090
0.125	1998-2000	0.092	0.092	0.093
	1999-2001	0.091	0.092	0.092
	2000-2002	0.091	0.092	0.092

Table 1. Regression Analysis of 8-hour and 1-hour Ozone Design Values.

The results show that a mathematically equivalent value for 0.120 is 0.089 or 0.090 depending on what 3 year period is examined. Likewise the equivalent value for 0.121 is 0.090 and for 0.125 is 0.092. The table also shows that 1998 to 2000 has higher equivalent values while the 1999 to 2001 period is similar to the 2000 to 2002 period. The results of the regression analysis are in Table A-1 in the appendix of this discussion.

Stringency Equivalence

The stringency analysis is base on cumulative frequency tables (tables A-2, A-3, A-4, A-5, A-6, and A-7 in the appendix). These tables are based on the highest design value in a county and counts the cumulative number of counties at or below a given design value. Once the number of counties at or below the 1-hour design value level is found, the nearest count for the 8-hour design value level is found.

The results are in the following table.

1-hour value Design value	Years	County count for 1-hour value	Equivalent 8-hour value	County count for 8-hour value
0.120	1998-2000	435	0.092	437
	1999-2001	474	0.091	479
	2000-2002	504	0.091	499
0.121	1998-2000	447	0.093	456
	1999-2001	479	0.091	479
	2000-2002	511	0.092	519
0.125	1998-2000	475	0.094	472
	1999-2001	505	0.093	508
	2000-2002	546	0.094	548

Table 2. Cumulative County Count Analysis of 8-hour and 1-hour Ozone Design Values.

These results show equivalence values that are a little higher than those for the regression analysis. Again, 1998-2000 has higher equivalence values. The results show that equivalent value for 0.120 is 0.091 or 0.092 depending on what 3 year period is examined. Likewise the equivalent values for 0.121 range from 0.091 to 0.093 and for 0.125 the range is 0.093 to 0.094.

Health Protection Equivalence

The health protection analysis is based on cumulative frequency tables (tables A-8, A-9, A-10, A-11, A-12, and A-13 in the appendix). These tables are based on the highest design value in a county and counts the cumulative population in counties at or below a given design value. Once the cumulative population at or below the 1-hour design value level is found, the nearest cumulative population for the 8-hour design value level is found.

The results are in the following table.

1-hour value Design value	Years	Cumulative population count for 1-hour value	Equivalent 8-hour value	Cumulative population count for 8-hour value
0.120	1998-2000	111,442,378	0.090	112,801,437
	1999-2001	121,598,978	0.090	123,186,873
	2000-2002	123,309,306	0.090	122,934,040
0.121	1998-2000	114,264,183	0.090	112,801,437
	1999-2001	123,169,845	0.090	123,186,873
	2000-2002	124,225,447	0.090	122,934,040
0.125	1998-2000	121,074,515	0.092	121,378,399
	1999-2001	130,955,867	0.092	133,285,040
	2000-2002	136,549,839	0.093	137,470,512

Table 3. Cumulative Population Analysis of 8-hour and 1-hour Ozone Design Values.

These results show equivalence values that are generally between the regression analysis values and the cumulative county count analysis values. The values show less variation across time periods than the other two methods. The 1998-2000 time period does not have higher equivalence values in this case. The results show that equivalent value for 0.120 is 0.090. Likewise the equivalent value for 0.121 is also 0.090 and for 0.125 the range is 0.092 to 0.093.

APPENDIX

Period	Intercept	Slope	Mean Square Error	r ²
1998-2000	0.025	0.537	0.00003740	0.75
1999-2001	0.023	0.555	0.00002957	0.78
2000-2002	0.021	0.573	0.00002958	0.78

Table A-1. Results of regression analyses on 8-hour design values on 1-hour Design Values.

In tables A-2 through A-13, the shaded rows indicate values used to create the results in the report text.

Table A-2. Cumulative county counts for 1 Hour ozone design values, 1998-2000.

1998-2000 1 hour Design Value	Counties	Percent	Cumulative Counties	Cumulative Percent
0.054	1	0.181	1	0.181
0.058	2	0.361	3	0.542
0.059	1	0.181	4	0.722
0.061	1	0.181	5	0.903
0.063	1	0.181	6	1.083
0.068	3	0.542	9	1.625
0.069	1	0.181	10	1.805
0.070	1	0.181	11	1.986
0.073	2	0.361	13	2.347
0.074	1	0.181	14	2.527
0.075	3	0.542	17	3.069
0.078	3	0.542	20	3.610
0.079	1	0.181	21	3.791
0.080	5	0.903	26	4.693
0.081	1	0.181	27	4.874
0.082	6	1.083	33	5.957
0.083	6	1.083	39	7.040
0.084	1	0.181	40	7.220
0.085	2	0.361	42	7.581
0.086	6	1.083	48	8.664
0.087	2	0.361	50	9.025
0.088	3	0.542	53	9.567
0.089	6	1.083	59	10.650
0.090	9	1.625	68	12.274
0.091	8	1.444	76	13.718
0.092	6	1.083	82	14.801
0.093	7	1.264	89	16.065

Table A-2. Cumulative county counts for 1 Hour ozone design values, 1998-2000.

1998-2000 1 hour Design Value	Counties	Percent	Cumulative Counties	Cumulative Percent
0.094	9	1.625	98	17.690
0.095	8	1.444	106	19.134
0.096	6	1.083	112	20.217
0.097	11	1.986	123	22.202
0.098	6	1.083	129	23.285
0.099	13	2.347	142	25.632
0.100	12	2.166	154	27.798
0.101	11	1.986	165	29.783
0.102	8	1.444	173	31.227
0.103	16	2.888	189	34.116
0.104	8	1.444	197	35.560
0.105	12	2.166	209	37.726
0.106	11	1.986	220	39.711
0.107	20	3.610	240	43.321
0.108	10	1.805	250	45.126
0.109	17	3.069	267	48.195
0.110	10	1.805	277	50.000
0.111	20	3.610	297	53.610
0.112	10	1.805	307	55.415
0.113	19	3.430	326	58.845
0.114	19	3.430	345	62.274
0.115	16	2.888	361	65.162
0.116	17	3.069	378	68.231
0.117	17	3.069	395	71.300
0.118	18	3.249	413	74.549
0.119	11	1.986	424	76.534
0.120	11	1.986	435	78.520

Table A-2. Cumulative county counts for 1 Hour ozone design values, 1998-2000.

1998-2000 1 hour Design Value	Counties	Percent	Cumulative Counties	Cumulative Percent
0.121	12	2.166	447	80.686
0.122	8	1.444	455	82.130
0.123	10	1.805	465	83.935
0.124	7	1.264	472	85.199
0.125	3	0.542	475	85.740
0.126	5	0.903	480	86.643
0.127	12	2.166	492	88.809
0.128	9	1.625	501	90.433
0.129	5	0.903	506	91.336
0.130	6	1.083	512	92.419
0.131	2	0.361	514	92.780
0.132	6	1.083	520	93.863
0.133	1	0.181	521	94.043
0.134	4	0.722	525	94.765
0.135	2	0.361	527	95.126
0.136	2	0.361	529	95.487
0.137	2	0.361	531	95.848
0.138	1	0.181	532	96.029
0.139	4	0.722	536	96.751
0.140	1	0.181	537	96.931
0.145	3	0.542	540	97.473
0.147	1	0.181	541	97.653
0.148	3	0.542	544	98.195
0.154	1	0.181	545	98.375
0.157	2	0.361	547	98.736
0.161	2	0.361	549	99.097
0.166	1	0.181	550	99.278

Table A-2. Cumulative county counts for 1 Hour ozone design values, 1998-2000.

1998-2000 1 hour Design Value	Counties	Percent	Cumulative Counties	Cumulative Percent
0.172	1	0.181	551	99.458
0.188	1	0.181	552	99.639
0.199	1	0.181	553	99.819
0.211	1	0.181	554	100.000

Table A-2. Cumulative county counts for 1 Hour ozone design values, 1998-2000.

Table A-3. Cumulative county counts for 1 Hour ozone design values, 1999-2001.

1999-2001 1 hour Design Value	Counties	Percent	Cumulative Counties	Cumulative Percent
0.052	1	0.17	1	0.17
0.053	1	0.17	2	0.35
0.055	1	0.17	3	0.52
0.059	1	0.17	4	0.70
0.061	1	0.17	5	0.87
0.063	3	0.52	8	1.39
0.064	1	0.17	9	1.57
0.065	1	0.17	10	1.74
0.066	1	0.17	11	1.92
0.070	1	0.17	12	2.09
0.071	1	0.17	13	2.26
0.073	2	0.35	15	2.61
0.075	1	0.17	16	2.79
0.076	1	0.17	17	2.96
0.078	4	0.70	21	3.66
0.079	5	0.87	26	4.53
0.080	3	0.52	29	5.05
0.081	6	1.05	35	6.10
0.082	7	1.22	42	7.32
0.083	3	0.52	45	7.84
0.084	6	1.05	51	8.89
0.085	1	0.17	52	9.06
0.086	5	0.87	57	9.93
0.087	8	1.39	65	11.32
0.088	2	0.35	67	11.67
0.089	8	1.39	75	13.07
0.090	5	0.87	80	13.94

Table A-3. Cumulative county counts for 1 Hour ozone design values, 1999-2001.

1999-2001 1 hour Design Value	Counties	Percent	Cumulative Counties	Cumulative Percent
0.091	10	1.74	90	15.68
0.092	9	1.57	99	17.25
0.093	14	2.44	113	19.69
0.094	9	1.57	122	21.25
0.095	6	1.05	128	22.30
0.096	13	2.26	141	24.56
0.097	14	2.44	155	27.00
0.098	8	1.39	163	28.40
0.099	12	2.09	175	30.49
0.100	16	2.79	191	33.28
0.101	14	2.44	205	35.71
0.102	17	2.96	222	38.68
0.103	13	2.26	235	40.94
0.104	18	3.14	253	44.08
0.105	19	3.31	272	47.39
0.106	15	2.61	287	50.00
0.107	14	2.44	301	52.44
0.108	10	1.74	311	54.18
0.109	14	2.44	325	56.62
0.110	16	2.79	341	59.41
0.111	17	2.96	358	62.37
0.112	16	2.79	374	65.16
0.113	21	3.66	395	68.82
0.114	15	2.61	410	71.43
0.115	14	2.44	424	73.87
0.116	17	2.96	441	76.83
0.117	15	2.61	456	79.44

Table A-3. Cumulative county counts for 1 Hour ozone design values, 1999-2001.

1999-2001 1 hour Design Value	Counties	Percent	Cumulative Counties	Cumulative Percent
0.118	8	1.39	464	80.84
0.119	2	0.35	466	81.18
0.120	8	1.39	474	82.58
0.121	5	0.87	479	83.45
0.122	10	1.74	489	85.19
0.123	4	0.70	493	85.89
0.124	7	1.22	500	87.11
0.125	5	0.87	505	87.98
0.126	9	1.57	514	89.55
0.127	9	1.57	523	91.11
0.128	10	1.74	533	92.86
0.129	1	0.17	534	93.03
0.130	5	0.87	539	93.90
0.131	1	0.17	540	94.08
0.132	3	0.52	543	94.60
0.133	2	0.35	545	94.95
0.134	1	0.17	546	95.12
0.135	2	0.35	548	95.47
0.136	1	0.17	549	95.64
0.137	2	0.35	551	95.99
0.138	2	0.35	553	96.34
0.142	2	0.35	555	96.69
0.143	1	0.17	556	96.86
0.144	1	0.17	557	97.04
0.145	2	0.35	559	97.39
0.146	2	0.35	561	97.74
0.147	1	0.17	562	97.91

Table A-3. Cumulative county counts for 1 Hour ozone design values, 1999-2001.

1999-2001 1 hour Design Value	Counties	Percent	Cumulative Counties	Cumulative Percent
0.148	2	0.35	564	98.26
0.149	2	0.35	566	98.61
0.151	1	0.17	567	98.78
0.154	1	0.17	568	98.95
0.156	1	0.17	569	99.13
0.164	1	0.17	570	99.30
0.166	1	0.17	571	99.48
0.169	1	0.17	572	99.65
0.170	1	0.17	573	99.83
0.182	1	0.17	574	100.00

Table A-3. Cumulative county counts for 1 Hour ozone design values, 1999-2001.

Table A-4. Cumulative county counts for 1 Hour ozone design values, 2000-2002.

2000-2002 1 hour Design Value	Counties	Percent	Cumulative Counties	Cumulative Percent
0.046	1	0.16	1	0.16
0.051	1	0.16	2	0.33
0.055	2	0.33	4	0.66
0.057	1	0.16	5	0.82
0.059	1	0.16	6	0.99
0.060	1	0.16	7	1.15
0.063	1	0.16	8	1.32
0.066	1	0.16	9	1.48
0.067	1	0.16	10	1.65
0.068	1	0.16	11	1.81
0.071	5	0.82	16	2.64
0.074	3	0.49	19	3.13
0.075	2	0.33	21	3.46
0.077	1	0.16	22	3.62
0.078	3	0.49	25	4.12
0.079	5	0.82	30	4.94
0.080	4	0.66	34	5.60
0.081	7	1.15	41	6.75
0.082	6	0.99	47	7.74
0.083	4	0.66	51	8.40
0.084	4	0.66	55	9.06
0.085	3	0.49	58	9.56
0.086	8	1.32	66	10.87
0.087	6	0.99	72	11.86
0.088	5	0.82	77	12.69
0.089	8	1.32	85	14.00
0.090	9	1.48	94	15.49

Table A-4. Cumulative county counts for 1 Hour ozone design values, 2000-2002.

2000-2002 1 hour Design Value	Counties	Percent	Cumulative Counties	Cumulative Percent
0.091	8	1.32	102	16.80
0.092	13	2.14	115	18.95
0.093	16	2.64	131	21.58
0.094	15	2.47	146	24.05
0.095	12	1.98	158	26.03
0.096	11	1.81	169	27.84
0.097	12	1.98	181	29.82
0.098	10	1.65	191	31.47
0.099	18	2.97	209	34.43
0.100	9	1.48	218	35.91
0.101	14	2.31	232	38.22
0.102	20	3.29	252	41.52
0.103	7	1.15	259	42.67
0.104	24	3.95	283	46.62
0.105	13	2.14	296	48.76
0.106	16	2.64	312	51.40
0.107	17	2.80	329	54.20
0.108	15	2.47	344	56.67
0.109	22	3.62	366	60.30
0.110	15	2.47	381	62.77
0.111	17	2.80	398	65.57
0.112	16	2.64	414	68.20
0.113	9	1.48	423	69.69
0.114	17	2.80	440	72.49
0.115	10	1.65	450	74.14
0.116	16	2.64	466	76.77
0.117	11	1.81	477	78.58

Table A-4. Cumulative county counts for 1 Hour ozone design values, 2000-2002.

2000-2002 1 hour Design Value	Counties	Percent	Cumulative Counties	Cumulative Percent
0.118	12	1.98	489	80.56
0.119	9	1.48	498	82.04
0.120	6	0.99	504	83.03
0.121	7	1.15	511	84.18
0.122	10	1.65	521	85.83
0.123	12	1.98	533	87.81
0.124	8	1.32	541	89.13
0.125	5	0.82	546	89.95
0.126	5	0.82	551	90.77
0.127	4	0.66	555	91.43
0.128	7	1.15	562	92.59
0.129	1	0.16	563	92.75
0.130	4	0.66	567	93.41
0.131	3	0.49	570	93.90
0.132	8	1.32	578	95.22
0.133	3	0.49	581	95.72
0.134	2	0.33	583	96.05
0.135	6	0.99	589	97.03
0.136	2	0.33	591	97.36
0.138	1	0.16	592	97.53
0.139	2	0.33	594	97.86
0.141	1	0.16	595	98.02
0.142	1	0.16	596	98.19
0.143	1	0.16	597	98.35
0.144	1	0.16	598	98.52
0.145	1	0.16	599	98.68
0.146	1	0.16	600	98.85

Table A-4. Cumulative county counts for 1 Hour ozone design values, 2000-2002.

2000-2002 1 hour Design Value	Counties	Percent	Cumulative Counties	Cumulative Percent
0.147	1	0.16	601	99.01
0.149	2	0.33	603	99.34
0.151	1	0.16	604	99.51
0.169	2	0.33	606	99.84
0.175	1	0.16	607	100.00

Table A-4. Cumulative county counts for 1 Hour ozone design values, 2000-2002.

Table A-5. Cumulative county counts for 8 Hour ozone design values, 1998-2000.

1998-2000 8 hour Design Value	Counties	Percent	Cumulative Counties	Cumulative Percent
0.044	1	0.18	1	0.18
0.045	1	0.18	2	0.36
0.047	3	0.54	5	0.90
0.050	1	0.18	6	1.08
0.051	1	0.18	7	1.26
0.052	1	0.18	8	1.44
0.056	1	0.18	9	1.62
0.057	1	0.18	10	1.80
0.058	4	0.72	14	2.51
0.060	1	0.18	15	2.69
0.061	1	0.18	16	2.87
0.062	3	0.54	19	3.41
0.063	1	0.18	20	3.59
0.064	3	0.54	23	4.13
0.065	2	0.36	25	4.49
0.066	6	1.08	31	5.57
0.067	4	0.72	35	6.28
0.068	2	0.36	37	6.64
0.069	4	0.72	41	7.36
0.070	11	1.97	52	9.34
0.071	8	1.44	60	10.77
0.072	8	1.44	68	12.21
0.073	12	2.15	80	14.36
0.074	9	1.62	89	15.98
0.075	9	1.62	98	17.59
0.076	9	1.62	107	19.21

Table A-5. Cumulative county counts for 8 Hour ozone design values, 1998-2000.

1998-2000 8 hour Design Value	Counties	Percent	Cumulative Counties	Cumulative Percent
0.077	15	2.69	122	21.90
0.078	13	2.33	135	24.24
0.079	15	2.69	150	26.93
0.080	18	3.23	168	30.16
0.081	16	2.87	184	33.03
0.082	14	2.51	198	35.55
0.083	19	3.41	217	38.96
0.084	18	3.23	235	42.19
0.085	22	3.95	257	46.14
0.086	21	3.77	278	49.91
0.087	21	3.77	299	53.68
0.088	28	5.03	327	58.71
0.089	40	7.18	367	65.89
0.090	26	4.67	393	70.56
0.091	25	4.49	418	75.04
0.092	19	3.41	437	78.46
0.093	19	3.41	456	81.87
0.094	16	2.87	472	84.74
0.095	10	1.80	482	86.54
0.096	14	2.51	496	89.05
0.097	8	1.44	504	90.48
0.098	4	0.72	508	91.20
0.099	4	0.72	512	91.92
0.100	5	0.90	517	92.82
0.101	7	1.26	524	94.08
0.102	10	1.80	534	95.87
0.104	4	0.72	538	96.59

Table A-5. Cumulative county counts for 8 Hour ozone design values, 1998-2000.

1998-2000 8 hour Design Value	Counties	Percent	Cumulative Counties	Cumulative Percent
0.105	3	0.54	541	97.13
0.106	3	0.54	544	97.67
0.107	3	0.54	547	98.20
0.108	1	0.18	548	98.38
0.109	1	0.18	549	98.56
0.111	3	0.54	552	99.10
0.112	1	0.18	553	99.28
0.114	1	0.18	554	99.46
0.115	1	0.18	555	99.64
0.121	1	0.18	556	99.82
0.146	1	0.18	557	100.00

Table A-5. Cumulative county counts for 8 Hour ozone design values, 1998-2000.

Table A-6. Cumulative county counts for 8 Hour ozone design values, 1999-2001.

1999-2001 8 hour Design Value	Counties	Percent	Cumulative Counties	Cumulative Percent
0.044	1	0.17	1	0.17
0.045	1	0.17	2	0.34
0.046	1	0.17	3	0.51
0.047	1	0.17	4	0.68
0.048	1	0.17	5	0.86
0.049	1	0.17	6	1.03
0.050	1	0.17	7	1.20
0.051	2	0.34	9	1.54
0.053	2	0.34	11	1.88
0.054	2	0.34	13	2.23
0.055	1	0.17	14	2.40
0.056	1	0.17	15	2.57
0.057	1	0.17	16	2.74
0.058	1	0.17	17	2.91
0.059	1	0.17	18	3.08
0.060	2	0.34	20	3.42
0.061	2	0.34	22	3.77
0.062	3	0.51	25	4.28
0.063	4	0.68	29	4.97
0.064	2	0.34	31	5.31
0.065	6	1.03	37	6.34
0.066	5	0.86	42	7.19
0.067	4	0.68	46	7.88
0.068	7	1.20	53	9.08
0.069	8	1.37	61	10.45
0.070	4	0.68	65	11.13
0.071	3	0.51	68	11.64

Table A-6. Cumulative county counts for 8 Hour ozone design values, 1999-2001.

1999-2001 8 hour Design Value	Counties	Percent	Cumulative Counties	Cumulative Percent
0.072	15	2.57	83	14.21
0.073	8	1.37	91	15.58
0.074	8	1.37	99	16.95
0.075	20	3.42	119	20.38
0.076	10	1.71	129	22.09
0.077	13	2.23	142	24.32
0.078	19	3.25	161	27.57
0.079	21	3.60	182	31.16
0.080	19	3.25	201	34.42
0.081	25	4.28	226	38.70
0.082	26	4.45	252	43.15
0.083	23	3.94	275	47.09
0.084	23	3.94	298	51.03
0.085	22	3.77	320	54.79
0.086	35	5.99	355	60.79
0.087	38	6.51	393	67.29
0.088	31	5.31	424	72.60
0.089	22	3.77	446	76.37
0.090	17	2.91	463	79.28
0.091	16	2.74	479	82.02
0.092	17	2.91	496	84.93
0.093	12	2.05	508	86.99
0.094	9	1.54	517	88.53
0.095	8	1.37	525	89.90
0.096	13	2.23	538	92.12
0.097	8	1.37	546	93.49
0.098	6	1.03	552	94.52

Table A-6. Cumulative county counts for 8 Hour ozone design values, 1999-2001.

1999-2001 8 hour Design Value	Counties	Percent	Cumulative Counties	Cumulative Percent
0.099	5	0.86	557	95.38
0.100	3	0.51	560	95.89
0.101	5	0.86	565	96.75
0.102	1	0.17	566	96.92
0.103	3	0.51	569	97.43
0.104	3	0.51	572	97.95
0.105	3	0.51	575	98.46
0.106	1	0.17	576	98.63
0.107	2	0.34	578	98.97
0.108	1	0.17	579	99.14
0.109	2	0.34	581	99.49
0.110	1	0.17	582	99.66
0.111	1	0.17	583	99.83
0.129	1	0.17	584	100.00

Table A-6. Cumulative county counts for 8 Hour ozone design values, 1999-2001.

Table A-7. Cumulative county counts for 8 Hour ozone design values, 2000-2002.

2000-2001 8 hour Design Value	Counties	Percent	Cumulative Counties	Cumulative Percent
0.040	1	0.16	1	0.16
0.043	2	0.33	3	0.49
0.044	1	0.16	4	0.65
0.046	1	0.16	5	0.82
0.047	2	0.33	7	1.14
0.051	2	0.33	9	1.47
0.052	2	0.33	11	1.79
0.054	1	0.16	12	1.96
0.055	1	0.16	13	2.12
0.057	1	0.16	14	2.28
0.058	4	0.65	18	2.94
0.059	3	0.49	21	3.43
0.060	2	0.33	23	3.75
0.062	3	0.49	26	4.24
0.063	3	0.49	29	4.73
0.064	7	1.14	36	5.87
0.065	3	0.49	39	6.36
0.066	4	0.65	43	7.01
0.067	3	0.49	46	7.50
0.068	7	1.14	53	8.65
0.069	10	1.63	63	10.28
0.070	7	1.14	70	11.42
0.071	8	1.31	78	12.72
0.072	12	1.96	90	14.68
0.073	12	1.96	102	16.64
0.074	10	1.63	112	18.27
0.075	10	1.63	122	19.90

Table A-7. Cumulative county counts for 8 Hour ozone design values, 2000-2002.

2000-2001 8 hour Design Value	Counties	Percent	Cumulative Counties	Cumulative Percent
0.076	19	3.10	141	23.00
0.077	15	2.45	156	25.45
0.078	20	3.26	176	28.71
0.079	20	3.26	196	31.97
0.080	16	2.61	212	34.58
0.081	38	6.20	250	40.78
0.082	20	3.26	270	44.05
0.083	25	4.08	295	48.12
0.084	27	4.40	322	52.53
0.085	31	5.06	353	57.59
0.086	29	4.73	382	62.32
0.087	22	3.59	404	65.91
0.088	29	4.73	433	70.64
0.089	19	3.10	452	73.74
0.090	28	4.57	480	78.30
0.091	19	3.10	499	81.40
0.092	20	3.26	519	84.67
0.093	16	2.61	535	87.28
0.094	13	2.12	548	89.40
0.095	13	2.12	561	91.52
0.096	8	1.31	569	92.82
0.097	8	1.31	577	94.13
0.098	9	1.47	586	95.60
0.099	5	0.82	591	96.41
0.100	2	0.33	593	96.74
0.101	3	0.49	596	97.23
0.102	3	0.49	599	97.72

Table A-7. Cumulative county counts for 8 Hour ozone design values, 2000-2002.

2000-2001 8 hour Design Value	Counties	Percent	Cumulative Counties	Cumulative Percent
0.103	1	0.16	600	97.88
0.104	5	0.82	605	98.69
0.106	1	0.16	606	98.86
0.107	1	0.16	607	99.02
0.111	1	0.16	608	99.18
0.112	1	0.16	609	99.35
0.113	1	0.16	610	99.51
0.115	2	0.33	612	99.84
0.128	1	0.16	613	100.00

Table A-7. Cumulative county counts for 8 Hour ozone design values, 2000-2002.

Table A-8. Cumulative Population counts for 1 Hour ozone design values, 1998-2000.

1998-2000 1 hour Design Value	Population in Counties	Percent	Cumulative Population in Counties	Cumulative Percent
0.054	876,156	0.49	876,156	0.49
0.058	71,076	0.04	947,232	0.53
0.059	102,979	0.06	1,050,211	0.59
0.061	776,733	0.43	1,826,944	1.02
0.063	74,471	0.04	1,901,415	1.06
0.068	419,170	0.23	2,320,585	1.30
0.069	2,258	0.00	2,322,843	1.30
0.070	374,601	0.21	2,697,444	1.51
0.073	209,403	0.12	2,906,847	1.62
0.074	2,899	0.00	2,909,746	1.63
0.075	74,679	0.04	2,984,425	1.67
0.078	153,241	0.09	3,137,666	1.75
0.079	19,161	0.01	3,156,827	1.76
0.080	1,353,682	0.76	4,510,509	2.52
0.081	10,147	0.01	4,520,656	2.53
0.082	599,673	0.34	5,120,329	2.86
0.083	402,527	0.22	5,522,856	3.09
0.084	79,981	0.04	5,602,837	3.13
0.085	649,051	0.36	6,251,888	3.49
0.086	1,541,205	0.86	7,793,093	4.36
0.087	370,702	0.21	8,163,795	4.56
0.088	349,953	0.20	8,513,748	4.76
0.089	819,584	0.46	9,333,332	5.22
0.090	2,130,650	1.19	11,463,982	6.41
0.091	1,058,173	0.59	12,522,155	7.00
0.092	1,493,426	0.83	14,015,581	7.83
0.093	1,523,980	0.85	15,539,561	8.69

Table A-8. Cumulative Population counts for 1 Hour ozone design values, 1998-2000.

1998-2000 1 hour Design Value	Population in Counties	Percent	Cumulative Population in Counties	Cumulative Percent
0.094	1,340,999	0.75	16,880,560	9.43
0.095	1,767,374	0.99	18,647,934	10.42
0.096	1,068,692	0.60	19,716,626	11.02
0.097	1,780,820	1.00	21,497,446	12.02
0.098	1,328,904	0.74	22,826,350	12.76
0.099	2,152,838	1.20	24,979,188	13.96
0.100	2,034,368	1.14	27,013,556	15.10
0.101	3,225,600	1.80	30,239,156	16.90
0.102	1,459,738	0.82	31,698,894	17.72
0.103	3,997,720	2.23	35,696,614	19.95
0.104	2,983,381	1.67	38,679,995	21.62
0.105	3,840,189	2.15	42,520,184	23.77
0.106	8,356,782	4.67	50,876,966	28.44
0.107	3,628,862	2.03	54,505,828	30.46
0.108	4,296,726	2.40	58,802,554	32.87
0.109	4,014,756	2.24	62,817,310	35.11
0.110	5,738,845	3.21	68,556,155	38.32
0.111	4,054,026	2.27	72,610,181	40.58
0.112	2,569,206	1.44	75,179,387	42.02
0.113	6,389,841	3.57	81,569,228	45.59
0.114	6,051,414	3.38	87,620,642	48.97
0.115	2,579,199	1.44	90,199,841	50.41
0.116	5,255,388	2.94	95,455,229	53.35
0.117	5,461,245	3.05	100,916,474	56.40
0.118	5,778,227	3.23	106,694,701	59.63
0.119	2,457,182	1.37	109,151,883	61.01
0.120	2,290,495	1.28	111,442,378	62.29

Table A-8. Cumulative Population counts for 1 Hour ozone design values, 1998-2000.

1998-2000 1 hour Design Value	Population in Counties	Percent	Cumulative Population in Counties	Cumulative Percent
0.121	2,821,805	1.58	114,264,183	63.86
0.122	2,470,823	1.38	116,735,006	65.24
0.123	2,336,997	1.31	119,072,003	66.55
0.124	828,902	0.46	119,900,905	67.01
0.125	1,173,610	0.66	121,074,515	67.67
0.126	1,498,199	0.84	122,572,714	68.51
0.127	7,373,439	4.12	129,946,153	72.63
0.128	2,802,670	1.57	132,748,823	74.19
0.129	2,284,424	1.28	135,033,247	75.47
0.130	3,474,457	1.94	138,507,704	77.41
0.131	4,260,052	2.38	142,767,756	79.79
0.132	4,481,023	2.50	147,248,779	82.30
0.133	750,162	0.42	147,998,941	82.72
0.134	2,035,396	1.14	150,034,337	83.86
0.135	671,940	0.38	150,706,277	84.23
0.136	1,000,572	0.56	151,706,849	84.79
0.137	897,585	0.50	152,604,434	85.29
0.138	382,032	0.21	152,986,466	85.51
0.139	3,453,832	1.93	156,440,298	87.44
0.140	882,567	0.49	157,322,865	87.93
0.145	464,924	0.26	157,787,789	88.19
0.147	85,951	0.05	157,873,740	88.24
0.148	1,959,475	1.10	159,833,215	89.33
0.154	661,645	0.37	160,494,860	89.70
0.157	958,367	0.54	161,453,227	90.24
0.161	1,041,174	0.58	162,494,401	90.82
0.166	1,545,387	0.86	164,039,788	91.68

Table A-8. Cumulative Population counts for 1 Hour ozone design values, 1998-2000.

1998-2000 1 hour Design Value	Population in Counties	Percent	Cumulative Population in Counties	Cumulative Percent
0.172	250,158	0.14	164,289,946	91.82
0.188	9,519,338	5.32	173,809,284	97.14
0.199	3,400,578	1.90	177,209,862	99.04
0.211	1,709,434	0.96	178,919,296	100.00

Table A-8. Cumulative Population counts for 1 Hour ozone design values, 1998-2000.

Table A-9. Cumulative Population counts for 1 Hour ozone design values, 1999-2001.

1999-2001 1 hour Design Value	Population in Counties	Percent	Cumulative Population in Counties	Cumulative Percent
0.052	876,156	0.49	876,156	0.49
0.053	4,197	0.00	880,353	0.49
0.055	64,525	0.04	944,878	0.53
0.059	6,551	0.00	951,429	0.53
0.061	102,979	0.06	1,054,408	0.59
0.063	1,018,018	0.57	2,072,426	1.16
0.064	888	0.00	2,073,314	1.16
0.065	8,644	0.00	2,081,958	1.17
0.066	250,291	0.14	2,332,249	1.31
0.070	374,601	0.21	2,706,850	1.52
0.071	8,866	0.00	2,715,716	1.52
0.073	209,403	0.12	2,925,119	1.64
0.075	43,560	0.02	2,968,679	1.66
0.076	335,227	0.19	3,303,906	1.85
0.078	242,419	0.14	3,546,325	1.99
0.079	403,090	0.23	3,949,415	2.21
0.080	604,075	0.34	4,553,490	2.55
0.081	1,423,777	0.80	5,977,267	3.35
0.082	980,905	0.55	6,958,172	3.90
0.083	840,970	0.47	7,799,142	4.37
0.084	972,030	0.54	8,771,172	4.91
0.085	182,791	0.10	8,953,963	5.01
0.086	919,274	0.51	9,873,237	5.53
0.087	1,525,932	0.85	11,399,169	6.38
0.088	384,890	0.22	11,784,059	6.60
0.089	1,783,699	1.00	13,567,758	7.60
0.090	1,304,773	0.73	14,872,531	8.33

Table A-9. Cumulative Population counts for 1 Hour ozone design values, 1999-2001.

1999-2001 1 hour Design Value	Population in Counties	Percent	Cumulative Population in Counties	Cumulative Percent
0.091	1,935,660	1.08	16,808,191	9.41
0.092	1,028,431	0.58	17,836,622	9.99
0.093	3,050,968	1.71	20,887,590	11.70
0.094	1,489,754	0.83	22,377,344	12.53
0.095	2,440,336	1.37	24,817,680	13.90
0.096	1,046,973	0.59	25,864,653	14.49
0.097	2,541,378	1.42	28,406,031	15.91
0.098	1,604,261	0.90	30,010,292	16.81
0.099	3,271,670	1.83	33,281,962	18.64
0.100	3,152,121	1.77	36,434,083	20.41
0.101	4,703,703	2.63	41,137,786	23.04
0.102	3,537,883	1.98	44,675,669	25.02
0.103	4,532,682	2.54	49,208,351	27.56
0.104	3,418,676	1.91	52,627,027	29.48
0.105	3,618,760	2.03	56,245,787	31.50
0.106	2,582,028	1.45	58,827,815	32.95
0.107	7,193,351	4.03	66,021,166	36.98
0.108	3,242,245	1.82	69,263,411	38.79
0.109	2,930,800	1.64	72,194,211	40.43
0.110	7,863,984	4.40	80,058,195	44.84
0.111	5,004,219	2.80	85,062,414	47.64
0.112	4,374,838	2.45	89,437,252	50.09
0.113	6,046,843	3.39	95,484,095	53.48
0.114	5,305,331	2.97	100,789,426	56.45
0.115	3,929,998	2.20	104,719,424	58.65
0.116	5,344,792	2.99	110,064,216	61.65
0.117	4,941,902	2.77	115,006,118	64.41

Table A-9. Cumulative Population counts for 1 Hour ozone design values, 1999-2001.

1999-2001 1 hour Design Value	Population in Counties	Percent	Cumulative Population in Counties	Cumulative Percent
0.118	4,463,732	2.50	119,469,850	66.91
0.119	670,285	0.38	120,140,135	67.29
0.120	1,458,843	0.82	121,598,978	68.11
0.121	1,570,867	0.88	123,169,845	68.99
0.122	1,670,740	0.94	124,840,585	69.92
0.123	834,985	0.47	125,675,570	70.39
0.124	2,489,771	1.39	128,165,341	71.78
0.125	2,790,526	1.56	130,955,867	73.35
0.126	3,726,727	2.09	134,682,594	75.43
0.127	2,292,954	1.28	136,975,548	76.72
0.128	5,581,274	3.13	142,556,822	79.84
0.129	2,229,379	1.25	144,786,201	81.09
0.130	4,163,133	2.33	148,949,334	83.42
0.131	1,223,499	0.69	150,172,833	84.11
0.132	1,059,825	0.59	151,232,658	84.70
0.133	243,102	0.14	151,475,760	84.84
0.134	293,768	0.16	151,769,528	85.00
0.135	770,004	0.43	152,539,532	85.44
0.136	489,656	0.27	153,029,188	85.71
0.137	1,363,267	0.76	154,392,455	86.47
0.138	883,875	0.50	155,276,330	86.97
0.142	1,347,797	0.75	156,624,127	87.72
0.143	882,567	0.49	157,506,694	88.22
0.144	123,546	0.07	157,630,240	88.29
0.145	436,712	0.24	158,066,952	88.53
0.146	1,623,415	0.91	159,690,367	89.44
0.147	155,071	0.09	159,845,438	89.53

Table A-9. Cumulative Population counts for 1 Hour ozone design values, 1999-2001.

1999-2001 1 hour Design Value	Population in Counties	Percent	Cumulative Population in Counties	Cumulative Percent
0.148	735,976	0.41	160,581,414	89.94
0.149	1,763,977	0.99	162,345,391	90.93
0.151	119,341	0.07	162,464,732	90.99
0.154	241,767	0.14	162,706,499	91.13
0.156	816,006	0.46	163,522,505	91.59
0.164	250,158	0.14	163,772,663	91.73
0.166	142,361	0.08	163,915,024	91.81
0.169	9,519,338	5.33	173,434,362	97.14
0.170	1,709,434	0.96	175,143,796	98.10
0.182	3,400,578	1.90	178,544,374	100.00

Table A-9. Cumulative Population counts for 1 Hour ozone design values, 1999-2001.

Table A-10. Cumulative Population counts for 1 Hour ozone design values, 2000-2002.

2000-2002 1 hour Design Value	Population in Counties	Percent	Cumulative Population in Counties	Cumulative Percent
0.046	148,677	0.08	148,677	0.08
0.051	876,156	0.49	1,024,833	0.57
0.055	68,722	0.04	1,093,555	0.61
0.057	102,979	0.06	1,196,534	0.66
0.059	776,733	0.43	1,973,267	1.09
0.060	74,471	0.04	2,047,738	1.14
0.063	6,551	0.00	2,054,289	1.14
0.066	166,814	0.09	2,221,103	1.23
0.067	250,291	0.14	2,471,394	1.37
0.068	888	0.00	2,472,282	1.37
0.071	715,777	0.40	3,188,059	1.77
0.074	81,353	0.05	3,269,412	1.81
0.075	268,322	0.15	3,537,734	1.96
0.077	36,776	0.02	3,574,510	1.98
0.078	507,737	0.28	4,082,247	2.26
0.079	309,125	0.17	4,391,372	2.43
0.080	883,442	0.49	5,274,814	2.92
0.081	1,179,908	0.65	6,454,722	3.58
0.082	691,083	0.38	7,145,805	3.96
0.083	690,000	0.38	7,835,805	4.34
0.084	1,170,739	0.65	9,006,544	4.99
0.085	381,011	0.21	9,387,555	5.20
0.086	2,259,291	1.25	11,646,846	6.46
0.087	1,397,920	0.77	13,044,766	7.23
0.088	694,562	0.39	13,739,328	7.62
0.089	2,551,006	1.41	16,290,334	9.03
0.090	1,272,707	0.71	17,563,041	9.74

Table A-10. Cumulative Population counts for 1 Hour ozone design values, 2000-2002.

2000-2002 1 hour Design Value	Population in Counties	Percent	Cumulative Population in Counties	Cumulative Percent
0.091	1,831,082	1.02	19,394,123	10.75
0.092	1,657,829	0.92	21,051,952	11.67
0.093	3,104,341	1.72	24,156,293	13.39
0.094	3,682,932	2.04	27,839,225	15.43
0.095	3,397,334	1.88	31,236,559	17.32
0.096	818,982	0.45	32,055,541	17.77
0.097	1,713,149	0.95	33,768,690	18.72
0.098	2,154,829	1.19	35,923,519	19.91
0.099	3,324,848	1.84	39,248,367	21.76
0.100	1,659,459	0.92	40,907,826	22.68
0.101	3,398,267	1.88	44,306,093	24.56
0.102	5,701,257	3.16	50,007,350	27.72
0.103	2,288,633	1.27	52,295,983	28.99
0.104	2,788,853	1.55	55,084,836	30.54
0.105	4,120,094	2.28	59,204,930	32.82
0.106	1,855,875	1.03	61,060,805	33.85
0.107	5,900,257	3.27	66,961,062	37.12
0.108	2,165,785	1.20	69,126,847	38.32
0.109	5,188,649	2.88	74,315,496	41.20
0.110	4,897,143	2.71	79,212,639	43.91
0.111	9,840,476	5.46	89,053,115	49.37
0.112	3,266,604	1.81	92,319,719	51.18
0.113	2,469,164	1.37	94,788,883	52.55
0.114	5,402,658	2.99	100,191,541	55.54
0.115	1,726,410	0.96	101,917,951	56.50
0.116	3,644,419	2.02	105,562,370	58.52
0.117	2,156,515	1.20	107,718,885	59.71

Table A-10. Cumulative Population counts for 1 Hour ozone design values, 2000-2002.

2000-2002 1 hour Design Value	Population in Counties	Percent	Cumulative Population in Counties	Cumulative Percent
0.118	9,368,368	5.19	117,087,253	64.91
0.119	3,667,863	2.03	120,755,116	66.94
0.120	2,554,190	1.42	123,309,306	68.36
0.121	916,141	0.51	124,225,447	68.86
0.122	4,281,953	2.37	128,507,400	71.24
0.123	3,947,031	2.19	132,454,431	73.43
0.124	2,815,585	1.56	135,270,016	74.99
0.125	1,279,823	0.71	136,549,839	75.70
0.126	2,376,721	1.32	138,926,560	77.01
0.127	1,526,634	0.85	140,453,194	77.86
0.128	2,481,030	1.38	142,934,224	79.24
0.129	923,459	0.51	143,857,683	79.75
0.130	1,339,447	0.74	145,197,130	80.49
0.131	1,154,613	0.64	146,351,743	81.13
0.132	5,410,999	3.00	151,762,742	84.13
0.133	1,101,184	0.61	152,863,926	84.74
0.134	443,345	0.25	153,307,271	84.99
0.135	3,641,906	2.02	156,949,177	87.01
0.136	731,423	0.41	157,680,600	87.41
0.138	155,071	0.09	157,835,671	87.50
0.139	1,555,733	0.86	159,391,404	88.36
0.141	665,865	0.37	160,057,269	88.73
0.142	661,645	0.37	160,718,914	89.09
0.143	218,590	0.12	160,937,504	89.22
0.144	119,341	0.07	161,056,845	89.28
0.145	510,916	0.28	161,567,761	89.57
0.146	824,008	0.46	162,391,769	90.02

Table A-10. Cumulative Population counts for 1 Hour ozone design values, 2000-2002.

2000-2002 1 hour Design Value	Population in Counties	Percent	Cumulative Population in Counties	Cumulative Percent
0.147	142,361	0.08	162,534,130	90.10
0.149	2,427,954	1.35	164,962,084	91.45
0.151	799,407	0.44	165,761,491	91.89
0.169	11,228,772	6.22	176,990,263	98.11
0.175	3,400,578	1.89	180,390,841	100.00

Table A-10. Cumulative Population counts for 1 Hour ozone design values, 2000-2002.

Table A-11. Cumulative Population counts for 8 Hour ozone design values, 1998-2000.

1998-2000 8 hour Design Value	Population in Counties	Percent	Cumulative Population in Counties	Cumulative Percent
0.044	776,733	0.43	776,733	0.43
0.045	64,525	0.04	841,258	0.46
0.047	1,686,296	0.93	2,527,554	1.39
0.050	247,289	0.14	2,774,843	1.53
0.051	6,551	0.00	2,781,394	1.53
0.052	166,814	0.09	2,948,208	1.63
0.056	250,291	0.14	3,198,499	1.76
0.057	74,471	0.04	3,272,970	1.81
0.058	517,686	0.29	3,790,656	2.09
0.060	2,258	0.00	3,792,914	2.09
0.061	345,238	0.19	4,138,152	2.28
0.062	282,899	0.16	4,421,051	2.44
0.063	123,138	0.07	4,544,189	2.51
0.064	464,589	0.26	5,008,778	2.76
0.065	980,514	0.54	5,989,292	3.30
0.066	666,109	0.37	6,655,401	3.67
0.067	1,384,292	0.76	8,039,693	4.43
0.068	393,645	0.22	8,433,338	4.65
0.069	2,718,198	1.50	11,151,536	6.15
0.070	972,018	0.54	12,123,554	6.69
0.071	729,925	0.40	12,853,479	7.09
0.072	1,534,513	0.85	14,387,992	7.94
0.073	1,904,354	1.05	16,292,346	8.99
0.074	2,132,426	1.18	18,424,772	10.16
0.075	4,904,771	2.71	23,329,543	12.87
0.076	1,052,492	0.58	24,382,035	13.45

Table A-11. Cumulative Population counts for 8 Hour ozone design values, 1998-2000.

1998-2000 8 hour Design Value	Population in Counties	Percent	Cumulative Population in Counties	Cumulative Percent
0.077	4,009,473	2.21	28,391,508	15.66
0.078	5,119,080	2.82	33,510,588	18.48
0.079	2,983,311	1.65	36,493,899	20.13
0.080	4,628,002	2.55	41,121,901	22.68
0.081	6,226,680	3.43	47,348,581	26.11
0.082	2,664,040	1.47	50,012,621	27.58
0.083	2,340,378	1.29	52,352,999	28.87
0.084	9,444,045	5.21	61,797,044	34.08
0.085	7,378,823	4.07	69,175,867	38.15
0.086	12,815,349	7.07	81,991,216	45.22
0.087	7,047,097	3.89	89,038,313	49.11
0.088	8,892,389	4.90	97,930,702	54.01
0.089	8,794,044	4.85	106,724,746	58.86
0.090	6,076,691	3.35	112,801,437	62.21
0.091	4,505,134	2.48	117,306,571	64.70
0.092	4,071,828	2.25	121,378,399	66.94
0.093	5,889,845	3.25	127,268,244	70.19
0.094	4,677,467	2.58	131,945,711	72.77
0.095	2,198,555	1.21	134,144,266	73.98
0.096	6,758,814	3.73	140,903,080	77.71
0.097	3,696,187	2.04	144,599,267	79.75
0.098	941,308	0.52	145,540,575	80.27
0.099	2,323,377	1.28	147,863,952	81.55
0.100	3,333,766	1.84	151,197,718	83.39
0.101	2,005,976	1.11	153,203,694	84.49
0.102	3,520,328	1.94	156,724,022	86.44
0.104	1,481,899	0.82	158,205,921	87.25

Table A-11. Cumulative Population counts for 8 Hour ozone design values, 1998-2000.

1998-2000 8 hour Design Value	Population in Counties	Percent	Cumulative Population in Counties	Cumulative Percent
0.105	2,130,583	1.18	160,336,504	88.43
0.106	546,663	0.30	160,883,167	88.73
0.107	1,156,871	0.64	162,040,038	89.37
0.108	91,263	0.05	162,131,301	89.42
0.109	665,865	0.37	162,797,166	89.78
0.111	1,531,163	0.84	164,328,329	90.63
0.112	3,400,578	1.88	167,728,907	92.50
0.114	1,545,387	0.85	169,274,294	93.36
0.115	9,519,338	5.25	178,793,632	98.61
0.121	816,006	0.45	179,609,638	99.06
0.146	1,709,434	0.94	181,319,072	100.00

Table A-11. Cumulative Population counts for 8 Hour ozone design values, 1998-2000.

Table A-12. Cumulative Population counts for 8 Hour ozone design values, 1999-2001.

1999-2001 8 hour Design Value	Population in Counties	Percent	Cumulative Population in Counties	Cumulative Percent
0.044	876,156	0.47	876,156	0.47
0.045	64,525	0.03	940,681	0.51
0.046	776,733	0.42	1,717,414	0.93
0.047	4,197	0.00	1,721,611	0.93
0.048	102,979	0.06	1,824,590	0.99
0.049	707,161	0.38	2,531,751	1.37
0.050	166,814	0.09	2,698,565	1.46
0.051	253,840	0.14	2,952,405	1.59
0.053	293,851	0.16	3,246,256	1.75
0.054	397,430	0.21	3,643,686	1.97
0.055	86,265	0.05	3,729,951	2.01
0.056	8,644	0.00	3,738,595	2.02
0.057	207,355	0.11	3,945,950	2.13
0.058	888	0.00	3,946,838	2.13
0.059	345,238	0.19	4,292,076	2.32
0.060	659,435	0.36	4,951,511	2.67
0.061	1,591,950	0.86	6,543,461	3.53
0.062	518,218	0.28	7,061,679	3.81
0.063	592,075	0.32	7,653,754	4.13
0.064	346,285	0.19	8,000,039	4.32
0.065	986,927	0.53	8,986,966	4.85
0.066	1,884,784	1.02	10,871,750	5.87
0.067	960,270	0.52	11,832,020	6.39
0.068	2,363,278	1.28	14,195,298	7.67
0.069	2,820,952	1.52	17,016,250	9.19
0.070	989,552	0.53	18,005,802	9.73
0.071	344,997	0.19	18,350,799	9.91

Table A-12. Cumulative Population counts for 8 Hour ozone design values, 1999-2001.

1999-2001 8 hour Design Value	Population in Counties	Percent	Cumulative Population in Counties	Cumulative Percent
0.072	2,145,172	1.16	20,495,971	11.07
0.073	862,672	0.47	21,358,643	11.54
0.074	3,914,551	2.11	25,273,194	13.65
0.075	6,592,713	3.56	31,865,907	17.21
0.076	4,265,172	2.30	36,131,079	19.52
0.077	4,522,113	2.44	40,653,192	21.96
0.078	2,775,885	1.50	43,429,077	23.46
0.079	3,765,766	2.03	47,194,843	25.49
0.080	5,081,118	2.74	52,275,961	28.24
0.081	5,206,798	2.81	57,482,759	31.05
0.082	5,317,668	2.87	62,800,427	33.92
0.083	5,912,179	3.19	68,712,606	37.12
0.084	6,623,097	3.58	75,335,703	40.70
0.085	6,703,168	3.62	82,038,871	44.32
0.086	7,856,269	4.24	89,895,140	48.56
0.087	7,058,645	3.81	96,953,785	52.37
0.088	17,703,065	9.56	114,656,850	61.94
0.089	5,182,535	2.80	119,839,385	64.74
0.090	3,347,488	1.81	123,186,873	66.54
0.091	4,589,962	2.48	127,776,835	69.02
0.092	5,508,205	2.98	133,285,040	72.00
0.093	6,115,683	3.30	139,400,723	75.30
0.094	5,945,412	3.21	145,346,135	78.51
0.095	1,996,487	1.08	147,342,622	79.59
0.096	2,695,970	1.46	150,038,592	81.05
0.097	5,338,290	2.88	155,376,882	83.93
0.098	2,292,907	1.24	157,669,789	85.17

Table A-12. Cumulative Population counts for 8 Hour ozone design values, 1999-2001.

1999-2001 8 hour Design Value	Population in Counties	Percent	Cumulative Population in Counties	Cumulative Percent
0.099	1,236,370	0.67	158,906,159	85.84
0.100	891,283	0.48	159,797,442	86.32
0.101	2,346,854	1.27	162,144,296	87.59
0.102	665,865	0.36	162,810,161	87.95
0.103	1,748,750	0.94	164,558,911	88.89
0.104	445,000	0.24	165,003,911	89.13
0.105	10,467,734	5.65	175,471,645	94.79
0.106	85,951	0.05	175,557,596	94.83
0.107	935,347	0.51	176,492,943	95.34
0.108	799,407	0.43	177,292,350	95.77
0.109	1,172,561	0.63	178,464,911	96.40
0.110	3,400,578	1.84	181,865,489	98.24
0.111	1,545,387	0.83	183,410,876	99.08
0.129	1,709,434	0.92	185,120,310	100.00

Table A-12. Cumulative Population counts for 8 Hour ozone design values, 1999-2001.

Table A-13. Cumulative Population counts for 8 Hour ozone design values, 2000-2002.

2000-2002 8 hour Design Value	Population in Counties	Percent	Cumulative Population in Counties	Cumulative Percent
0.040	148,677	0.08	148,677	0.08
0.043	940,681	0.50	1,089,358	0.58
0.044	776,733	0.41	1,866,091	0.99
0.046	4,197	0.00	1,870,288	1.00
0.047	350,268	0.19	2,220,556	1.18
0.051	173,365	0.09	2,393,921	1.27
0.052	781,632	0.42	3,175,553	1.69
0.054	250,291	0.13	3,425,844	1.82
0.055	86,265	0.05	3,512,109	1.87
0.057	43,560	0.02	3,555,669	1.89
0.058	582,899	0.31	4,138,568	2.20
0.059	630,960	0.34	4,769,528	2.54
0.060	429,356	0.23	5,198,884	2.77
0.062	143,062	0.08	5,341,946	2.84
0.063	623,564	0.33	5,965,510	3.18
0.064	1,695,266	0.90	7,660,776	4.08
0.065	375,803	0.20	8,036,579	4.28
0.066	387,519	0.21	8,424,098	4.49
0.067	1,100,390	0.59	9,524,488	5.07
0.068	3,664,050	1.95	13,188,538	7.02
0.069	3,967,859	2.11	17,156,397	9.14
0.070	1,621,032	0.86	18,777,429	10.00
0.071	3,301,286	1.76	22,078,715	11.76
0.072	2,025,458	1.08	24,104,173	12.83
0.073	2,485,437	1.32	26,589,610	14.16
0.074	3,017,119	1.61	29,606,729	15.76
0.075	5,073,328	2.70	34,680,057	18.47

Table A-13. Cumulative Population counts for 8 Hour ozone design values, 2000-2002.

2000-2002 8 hour Design Value	Population in Counties	Percent	Cumulative Population in Counties	Cumulative Percent
0.076	4,057,735	2.16	38,737,792	20.63
0.077	2,404,466	1.28	41,142,258	21.91
0.078	4,269,082	2.27	45,411,340	24.18
0.079	2,575,871	1.37	47,987,211	25.55
0.080	1,933,665	1.03	49,920,876	26.58
0.081	9,588,486	5.11	59,509,362	31.69
0.082	6,397,589	3.41	65,906,951	35.09
0.083	3,236,569	1.72	69,143,520	36.82
0.084	5,119,104	2.73	74,262,624	39.54
0.085	11,679,391	6.22	85,942,015	45.76
0.086	7,977,378	4.25	93,919,393	50.01
0.087	3,115,484	1.66	97,034,877	51.67
0.088	10,591,450	5.64	107,626,327	57.31
0.089	7,389,355	3.93	115,015,682	61.24
0.090	7,918,524	4.22	122,934,206	65.46
0.091	6,747,464	3.59	129,681,670	69.05
0.092	3,905,813	2.08	133,587,483	71.13
0.093	3,883,029	2.07	137,470,512	73.20
0.094	2,407,743	1.28	139,878,255	74.48
0.095	9,504,001	5.06	149,382,256	79.54
0.096	1,819,291	0.97	151,201,547	80.51
0.097	5,780,139	3.08	156,981,686	83.59
0.098	6,106,119	3.25	163,087,805	86.84
0.099	1,581,984	0.84	164,669,789	87.68
0.100	517,598	0.28	165,187,387	87.96
0.101	1,091,056	0.58	166,278,443	88.54
0.102	1,204,307	0.64	167,482,750	89.18

Table A-13. Cumulative Population counts for 8 Hour ozone design values, 2000-2002.

2000-2002 8 hour Design Value	Population in Counties	Percent	Cumulative Population in Counties	Cumulative Percent
0.103	508,932	0.27	167,991,682	89.45
0.104	1,507,610	0.80	169,499,292	90.25
0.106	156,299	0.08	169,655,591	90.34
0.107	3,400,578	1.81	173,056,169	92.15
0.111	9,519,338	5.07	182,575,507	97.22
0.112	661,645	0.35	183,237,152	97.57
0.113	1,545,387	0.82	184,782,539	98.39
0.115	1,310,323	0.70	186,092,862	99.09
0.128	1,709,434	0.91	187,802,296	100.00

Table A-13. Cumulative Population counts for 8 Hour ozone design values, 2000-2002.